Decision 90 06 058 JUN 2 0 1990

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Investigation for the purpose of)
establishing a list for the fiscal)
years 1990-91 and 1991-92 of existing)
and proposed crossings at grade of)
city streets, county roads, or state)
highways most urgently in need of)
separation, or projects effecting)
the elimination of grade crossings)
by removal or relocation of streets)
or railroad tracks, or existing)
separations in need of alteration)
or reconstruction as contemplated)
by Section 2452 of the Streets and)
Highways Code.)
)

ORIGINAL

I.89-09-021
(Filed September 27, 1989)

(See Appendix C for appearances.)

INTERIM OPINION

This is an investigation required by Streets and Highways (S&H) Code § 2452 to establish a Railroad-Highway Grade Separation Priority List (priority list) for the fiscal years 1990-91 and 1991-92. Copies of the Commission's Order Instituting Investigation (OII) were served upon each city, county, and city and county in which there is a railroad, every railroad corporation, the California Department of Transportation (Caltrans), the California Transportation Commission (CTC), the League of California Cities, the County Supervisors Association, and other persons who might have an interest in the proceeding. The OII invited public agencies and railroad corporations desiring to have particular grade separation projects considered for inclusion on the 1990-91 and 1991-92 priority lists to submit their nominations of those projects to the Commission on or before November 30, 1989. The OII also invited written comments on the Commission Safety Division's (Division) recommended changes to the priority formula which were attached to the OII.

Detailed procedures and forms for nominations were included in the OII. Each nominating body was required to furnish copies of its nomination(s) to Caltrans and the appropriate railroad, and was informed of the requirement to appear at the scheduled public hearings in either San Francisco or Los Angeles to present evidence concerning the nominations. A limitation of one witness per project was established by the OII to expedite the proceeding. Parties were informed of the opportunity to submit verification of supplemental data in support of nominations to the Division not later than one week following the last scheduled date of hearings.

More than 100 nominations were timely filed and eight parties submitted written comments on Division's proposed revisions to the formula. One request for a late-filed nomination was

denied. A motion to exclude exclusive light rail transit (LRT) projects was taken under submission. Evidentiary hearings were subsequently held in San Francisco on February 26, 27, and 28, 1990 and in Los Angeles on March 5 and 6, 1990 before Administrative Law Judge Bennett. The investigation was submitted March 28, 1990 upon receipt of briefs addressing the proposed revisions to the formula.

On May 16, 1990, the Proposed Decision of ALJ Bennett was filed. Comments were duly received which generally supported this decision. We decline to adjust the proposed adopted formula or delay its final adoption. We correct the list of appearances in Appendix C as requested by parties and make minor editorial changes.

Background

S&H Code § 2450 et seq. establish the Grade Separation Program to fund projects which will eliminate hazardous grade crossings in the state. A total of $15 million annually is provided for funding eligible projects. (S&H Code § 190.) Eligible projects may include the alteration or reconstruction of existing grade separations, the construction of a new grade separation to eliminate an existing or proposed grade crossing, and the removal or relocation of highways or railroad tracks to eliminate existing grade crossings. S&H Code § 2452 requires the Commission to establish the priority list of grade separation projects which are most urgently in need of separation or alteration by July 1 of each year.[1]

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1 Decision (D.) 88-06-050 established a two-year proceeding to accomplish this task. The first year nominations for a two-year period are made, hearings are held, and the first year list is established. The second year, funded projects are deleted from the first year list. The remaining projects are established for the second year.

The CTC allocates funds based upon our priority list and the requirements set forth in S&H Code § 2454. Projects to eliminate existing grade crossings are allocated 80% of the total cost. Projects to alter or reconstruct existing grade separations are allocated 50% of the total cost. The statutes specify that no allocation in excess of 50% shall be made unless the grade crossing to be eliminated has been in existence for at least 10 years prior to the date of allocation. The maximum allocation for a project is $5 million or a calculation of one-third of existing funds, whichever is greater. Provision is made for cost underruns, cost overruns, and reimbursement to an agency for previously financing an eligible project. (S&H §§ 2457-2461)

Existing Priority Formula

The criteria for ranking projects to determine their priority is left to the discretion of the Commission. (S&H § 2452) The criteria has been continually refined in previous proceedings. The principal method adopted by the Commission to determine project priority is a formula which weighs vehicular and train traffic volumes (V x T) at a project location along with project costs (C x F), and which also measures a variety of special condition factors (SCF) at the proposed site. Different SCF were developed for the elimination and separation of grade crossings than for the alteration or reconstruction of grade separations. Application of the formula to data for a particular project results in the assignment of points for factors occurring at the project location. The points form the basis for a rank on the priority list.

Secondary criteria are used to rank projects which obtain the same number of points. In such cases based upon the intent to eliminate hazardous grade crossings, priority is given to projects which eliminate or separate existing grade crossings, then to projects to alter or reconstruct existing grade separations, and last to projects to construct new grade separations. Within each category, priority is given to the lowest cost project in order to

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finance the maximum number of projects.[2] Minor modifications to
the formula have been made from 1975 to 1982; however, the existing
formula has remained unchanged since 1982:

$$P = \frac{V \times T}{C \times F} + SCF$$

Where:

P = Priority Index Number

V = Average 24-hour Vehicular Volume

C = Total Cost of Separation Project
(in thousands of dollars)

T = Average 24-hour Train Volume

F = Cost Inflation Factor
(based on current Construction Cost Index)

SCF = Special Condition Factor*

*For Existing or Proposed Crossings
Nominated for Separation or Elimination

SCF = G1 + G2 + G3 + G4 + G5 + G6 + G7

Where:	Points
G1 = Vehicular Speed Limit	0 - 5
G2 = Railroad Prevailing Maximum Speed	0 - 5
G3 = Crossing Geometrics	0 - 5
G4 = Crossing Blocking Delay	0 - 10
G5 = Alternate Route Availability	0 - 5
G6 = Accident History	0 - 20
G7 = Irreducibles	0 - 20
Total SCF	0 - 70

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2 This tie-breaking criteria dictated by S&H § 2452 is repealed
on July 1, 1991 unless the operative date is extended or deleted
prior to that time. (S&H Code § 2452.)

*For Existing Separations Nominated
for Alteration or Reconstruction

$SCF = S1 + S2 + S3 + S4 + S5 + S6$

Where: Points

   $S1 =$ Width Clearance   0 - 10

   $S2 =$ Height Clearance   0 - 10

   $S3 =$ Speed Reduction or Slow Order   0 - 5

   $S4 =$ Load Limit   0 - 5

   $S5 =$ Accidents At or Near Structure   0 - 10

   $S6 =$ Probability of Failure and
           Irreducibles   0 - 10

                              Total SCF   0 - 50

Proposed New Formula and Methodology

For the purpose of determining the 1990-91 and 1991-92 priority lists, Division recommends that the following revisions to the existing formula, hereinafter called "new formula", be adopted in this proceeding:

$$P = \frac{V \times T}{C \times F} (AH^* + BD) + SCF$$

Where:

P = Priority Index Number

V = Average 24-hour Vehicular Volume

C = Total Cost of Separation Project
    (in thousands of dollars)

T = Average 24-hour Train Volume

F = Cost Inflation Factor (Use F = 11 for 1990-91
    and 1991-92 F.Y. Priority List based on the
    current Construction Cost Index)

AH = Accident History

BD = Blocking Delay at Crossing

SCF = Special Conditions Factor

SCF = VS + RS + CG + AR + PT + OF

Where: Points Possible

VS = Vehicular Speed Limit   0 - 5
RS = Railroad Prevailing Maximum Speed   0 - 7
CG = Crossing Geometrics   0 - 7
AR = Alternate Route Availability   0 - 5
PT = Passenger Trains   0 - 10
OF = Other Factors   0 - 16

                            Total Points   0 - 50

*Points in each category are assigned according to the
 following calculation:

AH = (1 + 2 x No. Killed + No. Injured) x PF

PF = protection factor at site according to
GO 75 protection standards:

Standard #9 = 1.0
Standard #8 = 0.4
Standard #3 = 0.2
Standard #1 = 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 shall be rated separately and
modified by a factor appropriate to the
protection in existence at the time of the
accident.

BD = Crossing Blocking Delay Per Train
(Total Minutes per day r T)

Minutes	Points
0 - .49	0
.5 - .99	.5
1.0 - 1.49	1.0
1.5 - 1.99	1.5
2.0 - 2.49	2.0
2.5 - 2.99	2.5
3.0 - 3.49	3.0
3.5 - 3.99	3.5
4.0 - 4.49	4.0
4.5 - 4.99	4.5
5.0 - 5.49	5.0
5.5 - 5.99	5.5
6.0 - 6.49	6.0
6.5 - 6.99	6.5
7.0 - 7.49	7.0
7.5 - 7.99	7.5
8.0 - 8.49	8.0
8.5 - 8.99	8.5
9.0 - 9.49	9.0
9.5 - 9.99	9.5
10 +	10.0

VS = Vehicular Speed Limit

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

RS = Railroad Maximum Speed

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

CG = Crossing Geometrics

> 0 - 7 points based on relative severity of physical conditions, i.e., grade, alignment, site distance, etc.

AR = Alternate Route Availability

Distance (Feet)	Points
0 - 1,000	0
1,001 - 2,000	1
2,001 - 3,000	2
3,001 - 4,000	3
4,001 - 5,000	4
5,001 +	5

PT = Passenger Trains

Number of Trains Per Day	Points
1 - 2	1
3 - 5	2
6 - 10	3
11 - 20	4
21 - 30	5
31 - 40	6
41 - 50	7
51 - 60	8
61 - 70	9
71 +	10

OF = Other Factors

0 - 16 points based on:
secondary accidents, emergency vehicle usage, passenger buses, school buses, hazardous materials trains and trucks, community impact.

In its new formula, in addition to moving accident history (AH) and blocking delay (BD) in the formula, Division also readjusts the number of points allocated to some of the SCF within each type of project. The remaining factors in the formula are unchanged.

As part of its new methodology, Division recommends using the existing (old) formula for projects which alter or reconstruct existing separations and adjusting the SCF points in the existing formula to give greater weight to the probability of failure factor (PF). This is done to insure where structural problems pose a potential safety threat, projects to improve the structure receive more points than structures that do not pose a hazard. In the new formula, the accident history is added to blocking delay. This sum is multiplied by the number of vehicles times trains. (V x T (AH + BD).) Since both accident history (AH) and blocking delay (BD) equal zero at grade separations, the sum of the number of vehicles times trains is multiplied by zero to result in zero. However, if

the old formula is used, the sum of vehicle times trains has no further multiplier, meaning a zero result does not occur. In addition, the new methodology for use of the old formula changes the points for projects to eliminate proposed crossings. Under the new method, proposed crossings are given no points for BD or crossing geometrics (CG) since the crossing is nonexistent with no actual location factors. This assures that projects to eliminate proposed crossings rank at the bottom of the priority list, which is the intent of the Legislature, in Division's opinion.

As in the past, the new formula evaluates projects involving the closure of multiple crossings in the same manner as single crossing projects with two new exceptions. The AH reflects the total cumulative points for the crossings. BD is the total 24-hour delay from all crossings divided by the train volume.

As in the past, where two or more projects obtain the same ranking, Division proposes to use the same method established in prior proceedings to break the tie. First the project with 50% or greater city or county contribution is given priority. Should the contribution on two projects be equal, priority is given first to projects which eliminate or separate existing crossings; then to projects which alter or reconstruct existing grade separations; and last to projects which construct new grade separations.

Division tested the effect of the new formula by applying it to projects nominated during the previous proceeding, I.87-10-033. The old priority ranking of those railroad crossings with higher AH and BD points is increased using the new formula.

Motion to Exclude Exclusive Light Rail Projects

The existing priority formula generated no major controversy until our previous proceeding, I.87-10-033. The San Diego Metropolitan Transit Development Board (San Diego or MTDB) nominated 14 projects which involved the LRT operations of its subsidiary, San Diego Trolley, Inc. After the completion of hearings and the filing of briefs, San Diego withdrew 7 of the 14

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nominations which involved exclusive LRT operations. The seven remaining nominations involved railroad tracks over which both light rail and freight operations are conducted. As a result of the withdrawal of the seven exclusive light rail projects, the Commission held the issue of excluding these projects to be moot and subject to a decision in the future.

The seven remaining San Diego projects dominated the 1988-89 priority list adopted by D.88-06-050. This occurred because LRT had high volumes of train traffic, even though the locations had no history of accidents and minor blocking delay. Parties voiced concern over San Diego's monopoly of funds. The City of Bakersfield and County of Kern (Bakersfield) petitioned for rehearing to reconsider the inclusion of these seven nominations. The petition was denied in D.88-08-067. The Supreme Court denied Bakersfield's Petition for Writ of Review of our decision on January 4, 1989.

Subsequently, workshops were held pursuant to D.88-06-050 to review the program, including the issue of LRT eligibility. Division concluded that the domination of the 1988-89 priority list by crossings with low accident frequencies and short blocking delay indicated that the priority rankings generated by the priority formula were not consistent with the intent of the Grade Separation Program.

The major flaw in the existing formula is the disproportionate weight given to train volume independent of traffic delay or accidents. This results in a calculation which poorly predicts the risk of an accident at a crossing and one which places the more frequent and higher volume LRT at the top of the priority list without regard to the major legislative concern of eliminating accidents at grade crossings. The new formula weighs the train/vehicle volume by the AH and BD, correcting this inadequacy.

Based upon its new formula, Division presents a priority list which it recommends be established for 1990-1991 and which shall form the basis for the priority list established in 1991-1992.

Since Division excludes from the recommended priority list all exclusive LRT projects as part of its methodology, it filed a motion to exclude these projects from consideration in this proceeding. Five parties responded to this motion, two of which oppose the request.

In its response to Division's motion, San Diego indicates that this issue is moot because no exclusive LRT projects are nominated in this proceeding. However, because Division's new formula excludes all LRT projects as ineligible under the statutes and this position is disputed, we must decide the legality of this position before we may consider adopting it.

In addition, during the hearings in San Francisco, Sacramento Regional Transit District (Sacramento) testified that its three nominations, Mather Field, Sunrise and Power Inn Road, were projects involving exclusive LRT operations. The projects propose to separate solely the LRT trains to an underpass, leaving railroad trains and vehicles intersecting at the existing grade crossing. Based upon this testimony, Division renewed its motion to exclude the projects. (The testimony was admitted and the matter taken under submission.)[3] Therefore, the issue of excluding exclusive LRT projects is in dispute and will now be resolved.

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3 We granted a second Division motion to exclude the Sunrise and Mather Field projects because they are based on facts which do not presently exist nor will occur in the immediate future. The operational date of trains involved in these two projects is 1993.

Division's Position

Division's position is that LRT projects are not within the definition of a "project" contained in § 2450 and therefore, do not qualify for placement on the priority list.

In 1973, by Senate Bill (SB) 456, the Legislature added § 2450. Division argues that the Legislature intended to apply this section to mainline railroad tracks and not to tracks used exclusively for LRT. Division points out that the Legislature amended SB 456 just prior to its passage to revise the language "the tracks of a railroad corporation or of a public entity that provides rail passenger services". The final wording of § 2450 refers to "railroad tracks", eliminating tracks of "a public entity that provides rail passenger services". In Division's opinion, this shows an intent to apply § 2450 et seq. to mainline railroad tracks and not those used exclusively for LRT.

Division argues that LRT has a meaning separate and apart from the term "railroad" and is used nowhere in § 2450 et seq. However, specific reference is made to railroads throughout this statute. Division believes if exclusive LRT projects are intended to qualify for grade separation funds, the Legislature would have amended § 2450 in 1975 or thereafter to include reference to LRT or public entities.

Division argues it is incongruous to allow LRT to receive funds under the Grade Separation Program when other funds for LRT grade separations are provided under other public transit programs, such as, the Transportation Planning and Development Account.

Division contends that its position is supported by the California Supreme Court's denial of a petition to review D.88-06-050, which found eligible for grade separation funding crossings which involve tracks where both LRT and freight operations are conducted. (Bakersfield and Kern Counties' Writ of Review denied, January 4, 1989.)

Respondents Unopposed to the Motion

The City of Bakersfield, County of Kern and Greater Bakersfield Separation of Grade District (Bakersfield) contend that the Commission has no broad grant of jurisdiction over publicly owned LRT operators except those public entities designated by statute to be subject to its safety regulations. Under § 2456, in order to receive funds, a project nominee must have executed all necessary orders of the Commission. One requirement is to obtain Commission authorization to construct the project. Such authorization will contain Commission orders to be executed. The Commission must have jurisdiction over the party to issue such orders. Therefore, Bakersfield argues, the Commission must have jurisdiction over LRT operators to approve their projects for construction and to subsequently place them on the priority list. Bakersfield contends the Commission has no such jurisdiction over public entities; therefore, Bakersfield concludes that they cannot be placed on the priority list.

While agreeing with the Division's position that exclusive LRT projects are ineligible for funding, Bakersfield argues that the Commission should find that the Grade Separation Program does not apply to projects involving "the tracks...of a public entity...", which is the exact phrase deleted by the Legislature from § 2450 in SB 456.

The Los Angeles County Transportation Commission (LACTC) challenges Bakersfield's legal analysis. LACTC contends that the Grade Separation Program statutes do not require that exclusive LRT projects be excluded from funding. However, LACTC's position is that, even though the law does not dictate this result, as a matter of public policy, the Commission may decide to do so. Therefore, while disagreeing with Division's legal analysis, LACTC supports the result reached by Division to exclude exclusive LRT projects.

Caltrans takes a neutral position on the legal issue because it believes that Division's new formula will accomplish the

intent of § 2450 et seq., which is to separate those grade crossings most urgently in need of separation or alteration.

Opponents to the Motion

Sacramento disagrees with Division's legal analysis. Sacramento points out that at the same time amendments were made to the definition of "projects" in 1973, the Legislature added S&H Code §§ 2451 and 2456. Section 2451 defines a "local agency" applicant as including any other public entity which provides rail passenger transportation services. Section 2456 refers to the allocation of funds to a "local agency". Therefore, Sacramento argues, the Legislature intended to fund exclusive light rail projects unless expressly excluded. Sacramento argues that its position is supported by the fact that such projects are not expressly excluded in S&H Code § 2450 et seq.

Sacramento asserts that the alternative funding alleged by the Division does not exist. Sacramento contends that PU § 99317.8 limits funding to railroad lines over which four or more railroad passenger trains operate daily. Sacramento argues that this limitation was inserted because the Legislature was aware that exclusive LRT grade separation projects are being funded under the Grade Separation Program.

San Diego contends that projects involving public transit guideway railroad systems (LRT) are eligible for grade crossing program funding regardless of whether the project involves tracks used by a freight railroad, Amtrak, or commuter rail. San Diego asserts that the Commission is charged with promoting safety by requiring grade separations. San Diego argues that the Legislature clearly identifies the highest priority of the Grade Separation Program as eliminating the most hazardous railroad-highway grade crossings. San Diego contends that § 2450 et seq. focuses on the type of project rather than the ownership of the tracks or vehicles or legal structure of the owner in achieving its objective. Therefore, while most projects may involve private railroads

operating on tracks of private railroads, San Diego contends that
§ 2454(f) recognizes that a project may involve a public entity
operating over railroad tracks directly or by contract with the
owner.

San Diego argues that in 1973, the Legislature favored
the term "railroad" instead of the phrase "tracks of a railroad
corporation or of a public entity providing rail passenger
services" because "railroad" is virtually all inclusive, excluding
only publicly owned freight railroad tracks. San Diego argues that
it meets the definition of a railroad corporation and railroad.

Discussion

In resolving the issue of whether exclusive light rail
projects are eligible for funding under the Grade Separation
Program, we are guided by the legislative intent in enacting this
law. Under rules governing statutory interpretation, we must first
seek to ascertain the legislative intent of the statutes using the
plain meaning of the words in the statutes. Where legislative
intent is clear from such a reading, the matter at issue is
resolved in accordance with this intent. (58 Cal Jur 3d, Statutes,
§§ 102, 103, and 104)

The purpose of the Grade Separation Program is clearly
stated in the legislative declaration preceeding the 1973
amendments to various statutes governing the Grade Separation
Program: "Concern for public safety and convenience makes it
desirable that an expanded program be undertaken that places the
highest priority on eliminating the most hazardous railroad-highway
grade crossings that continue to take the lives of the people in
this state." The Legislature proceeds to enact revisions to the
statutes to correct existing hindrances to achieving the intent,
such as increasing the amount of funding to local agencies and
streamlining application and allocation procedures.

In these amendments, the Legislature provides the
definition of an eligible project, rejecting a definition which

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includes public entities.   The final version of § 2450 defines and
lists eligible projects:

> "§ 2450. Definitions...
>
> * * *
>
> "(b) 'Project' means the grade separation and
>   all approaches, ramps, connections,
>   drainage, and other construction required
>   to make the grade separation operable and
>   to effect the separation of grades. Such
>   grade separation project may include
>   provision for separation of nonmotorized
>   traffic from the vehicular roadway and the
>   railroad tracks... Such project may
>   consist of:
>
> "(1) the alteration or reconstruction of
>   existing grade separations;
>
> "(2) the construction of new grade separations
>   to eliminate existing or proposed grade
>   crossings; or,
>
> "(3) the removal or relocation of highways or
>   railroad tracks to eliminate existing
>   grade crossings."

Division correctly points out that "light rail transit"
is not mentioned in § 2450 et seq. Division contends that the
absence of the term "light rail transit", or words to that effect,
and constant reference to "railroad" in § 2450 implies an intent to
exclude LRT projects. Division points out that § 2450 was amended
prior to its passage to exclude language which would have included
exclusive LRT operations within the definition of a project
eligible for funding. Therefore, Division concludes that LRT
projects are not intended to be funded. We agree.

Opponents argue that the tracks of an LRT are included in
the term "railroad" and one respondent, San Diego, contends that it
qualifies to be a railroad corporation. We think not. The term
"railroad" used in § 2450 does not under its general and plain

meaning include LRT systems. Nor is an LRT system generally
defined as a railroad corporation. A railroad corporation is a
private entity providing transportation services for profit to the
public and is regulated by this Commission. LRT systems
participating in these proceedings are publicly owned
transportation systems which govern themselves but are subject to
CPUC safety oversight under the Public Utilities (PU) Code. (52
Cal Jur 3d, Public Transit, §§ 11-13.) Thus, LRT systems cannot be
interpreted as being included in the terms "railroad" or "railroad
corporation".

In support of its position, Division argues that funding
for LRT grade separation projects is provided under other statutes,
therefore, funding under the Grade Separation Program is
incongruous. Sacramento argues that these funds are limited to
tracks over which at least four railroad passenger trains travel
daily. However, we find that in 1989 the Legislature repealed PU
Code § 99317.8 which removes this four daily passenger train
restriction and leaves the potential for funding exclusive LRT
grade crossing projects under the Transportation Planning and
Development Account, PU Code § 99310 et seq. It is also possible
to fund the grade separation projects of metropolitan transit
district boards, such as Sacramento, under gasoline taxes set aside
for development of public mass transit guideways (PU Code § 99314),
the Mills-Alquist-Deddeh Transit Development Act (PU Code § 99200
et seq.) and the imposition of a special county use tax. (PU Code
§§ 130350-130540.) Alternative funding for LRT grade separation
projects does exist. However, even though the existence of
alternative funding may minimize the impact of our conclusions
herein, it is not germane to understanding or following the
legislative intent of the relevant statutes.

Sacramento argues that §§ 2451 and 2456 imply that
exclusive LRT projects may be funded. We disagree. The term
"local agency", which is defined in § 2451, does not appear in

§ 2450 which describes eligible projects. "Local agency" is used only in §§ 2453-2461 which discuss the allocation of funds. While it is true that a local agency may receive funds, those funds are limited to eligible projects. Any and all projects of a local agency are not eligible for funding. The project must meet the requirements of § 2450.

San Diego argues that § 2454(f) establishes the intent to fund public entity projects. Section 2454(f) states that: "Where a project includes the separation of a highway and a railroad passenger service operated by a city or county, the operating agency shall contribute 20 percent of the cost..." We disagree with San Diego's interpretation of this statute. The plain meaning of words used in this section is that when a local agency operates a railroad corporation's passenger service it must pay its share (10%) and the railroad's share (10%) of the total cost of the project. But even if San Diego's interpretation is accepted, this section does not address which projects are eligible for funding. Again, the project must meet § 2450 requirements.

Therefore, based upon the plain meaning of the words in § 2450, the omission of any mention of LRT or words to that effect in this chapter and the legislative amendments in SB 456, we conclude that the Legislature did not intend to fund projects which involve exclusive LRT operations. Such projects are defined in this proceeding as projects which solely separate LRT trains from an at-grade crossing without removing conventional rail or vehicle traffic.

In addition, the three Sacramento exclusive LRT projects are not eligible for funding because they do not meet § 2450 specifications. They do not alter or reconstruct an existing grade separation or construct a new grade separation to eliminate an existing or proposed grade crossing. Nor do they remove or relocate highways or railroad track to eliminate existing railroad grade crossings. These three projects propose to build an LRT

track for LRT traffic without eliminating the existing grade crossings. Accordingly, we will grant Division's motion and eliminate these projects from the priority list.

Revisions to Proposed New Formula

The City of Irvine (Irvine) and Frank Hiyama propose revisions to Division's new formula, whereas other commenters proposed completely new formulas. The two types of proposals are discussed separately.

Irvine recommends revising AH in the proposed new formula to include a weighting factor for each increment of 5 years after an accident's occurrence to account for the changed potential for another accident. As an accident gets older, it is given less weight. Thus, more weight is given for the accident potential than a past accident. In addition, Irvine proposes that the AH factor of 1-3 points to indicate the severity of an accident in the AH formula could be lower to emphasize other special conditions, such as increases in traffic. A limit would be set for the total weighting points, such as a maximum of three per year, similar to the limit of three points per accident in Division's proposed formula.

Irvine provides no rationale for its presumption that the potential for another accident decreases with the passage of time after an accident occurs. We have no basis upon which to conclude whether the potential for a second accident increases or decreases over the passage of time. Therefore, the existing treatment of inserting AH and BD to predict the hazard of the next accident is preferable to one which is unsubstantiated.

Irvine also contends that the proposed averaging of individual delays to calculate the BD factor gives equal weight to one train blocking a crossing for 20 minutes as it does 20 trains blocking a crossing one minute each. Irvine believes that each of these scenarios has different safety hazards. Therefore, Irvine recommends that more points be given to the potential for accidents

according to the greater number of trains and the type of train.
To do so, a weight of .50 is suggested to apply to LRT trains.
Passenger trains would be given a higher weighting factor. As an
alternative, the CG factor could include additional points for
potential safety hazards.

Irvine would make BD reflect the potential severity of an
accident by weighting this factor according to the type of train.
However, we believe the purpose of the BD factor is to evaluate the
length of delay at a crossing to correlate the likelihood of an
accident. AH appropriately correlates the severity of the accident
in Division's formula. The type of train and number of passengers
are factors unrelated to delay. It is more appropriate to separate
the number of passenger trains (PT) as a factor which is
independent and added to the conflict factor as in Division's
proposal. Irvine gives no recommendations how to implement its
proposal, other than using half the weight of LRT trains based upon
their different safety characteristics. The proposed revisions are
incomplete without a point system for the various types of trains
and varying number of passengers. Therefore, it cannot be adopted.

Frank Hiyama, a retired Caltrans employee representing
himself, recommends that SCF be expanded to include a category for
extraordinary circumstances, assigning from 0 to 200 points to one
project every four years. Hiyama believes this addition is needed
so that certain existing dangers warranting priority in funding may
be evaluated and have a viable chance to receive funding. An
example of a dangerous, extraordinary circumstance is an underpass
shared by school children or school buses.

Division contends that the circumstances described by
Hiyama can be considered in the new formula under a variety of
criteria including each of the elements of SCF. However, witness
for Division, Ray Yick, emphasized that such information is often
not provided by nominating agencies. Yick also pointed out that

Hiyama's point system would place much greater weight on these
circumstances than Division's formula.

We believe Hiyama's point system is excessive.
Extraordinary circumstances are given more balanced weight under
Division's proposal. We do not believe providing a category of SCF
in which we may veto the formula's results is warranted.
Accordingly, we find Hiyama's proposed revisions unreasonable.

Proposed Alternative Formulas

Three proposals for alternative formulas were presented.
The formulas offer alternative treatment of AH, BD, and cost which
are major factors in Division's formula.

San Mateo's Formula

The City of San Mateo (San Mateo) argues that AH should
include only those accidents that are correctible by a grade
separation. San Mateo believes that accidents caused by
inebriates or suicides lying on the railroad tracks of the crossing
or vehicles striking fixed objects at the crossing will not be
prevented by the construction of a grade separation. San Mateo
recommends removing these accidents from statistics used for AH.

San Mateo would also revise the cost factor (C) in the
formula to require the net cost, that is, exclude the contributions
required by the applicant (10%) and the railroad (10%). San Mateo
believes this change will motivate nominating agencies to
contribute more project funds in order to reduce the denominator in
the formula which would advance their project on the priority list.
San Mateo argues that this would benefit the fund by increasing the
number of projects that can be funded from the inadequate $15
million funds available. San Mateo recognizes that this is
contrary to Division's preference to benefit the public by
identifying hazardous projects without undue advantages to the
agency with the greatest contributions in the formula.

Barton's Proposed Formula

Robert M. Barton, representing himself, proposes a different treatment of AH. Barton believes the proposed formula places undue emphasis on an accident without evaluating the circumstances surrounding the accident. According to Barton, under the proposed formula two identical locations with an equal potential for an accident will receive widely different rankings if an accident has occurred at one site.

Barton would retain the present position of AH in the existing formula as one of several SCF, but substitute in the conflict factor (V X T) a factor for accident preventability/ severity (APS). This change is intended to diminish train/vehicle volumes by the prevention and/or severity of an accident, while the number of recorded accidents (AH) remains as one of several special conditions.

In Barton's opinion, his formula better evaluates the real potential of an accident. Barton proposes the adoption of the following formula with the accompanying criteria:

$$\text{Points} = \frac{V \times T (APS + BD)}{C \times F} + SCF$$

Where SCF is: VS + RS + CG + AR + PT + AH + OF

    VS = vehicle speed
    RS = railroad prevailing maximum speed
    CG = crossing geometrics
    AR = alternate route availability
    PT = passenger trains
    AH = accident history
    OF = other factors

Where APS is: 1.0 x FT + .35-.75 x SE + .10 x LRT

    FT = 1.00 - 80% or more of train movements are
                through freight, AMTRAK, or CalTrain.

    SE = 0.75 - Switching movements comprise 50-80% of the
                train count, or train speeds do not exceed
                20 mph; or,

         0.50 - Switching movements comprise 20-50% of total
                train count; or,

         0.35 - Less than 20% of train movements are through
                the remainder low speed switching.

    LRT = 0.10 - Light rail movements.

Where BD disregards delays of less than one minute.

In Barton's opinion, this change will reflect the difference in accident preventability and severity that exists between light rail and conventional railroad trains since the ability to slow and/or stop a light rail train is substantially greater than that of a conventional railroad train. If a train is able to slow down prior to striking an object, the severity of the accident is less. If a train is able to stop, the accident is avoided.

In his closing brief, Barton recommends that the train volume factor (T) in Division's formula should be revised to count one-tenth of total LRT train volume should Division's formula be adopted.

San Diego's Formula

San Diego prefers to retain the existing formula.
However, should it be changed, San Diego comments on Division's new
formula and offers an alternative.

San Diego believes that the BD criteria is given too much
weight in Division's new formula. It contends that a delay of
9.0-9.49 minutes is equal in points to three accidents with deaths
or injuries. San Diego criticizes the fact that BD can increase
the magnitude of the entire conflict factor (V x T) by one-half or
increase it by 10 times based on the average delay. San Diego
agrees that delays at crossings increase the safety hazard, but not
as significantly as the formula indicates. In addition, San Diego
contends that Division gives no consideration to the time of day of
the delay, for example, at night when traffic volumes are low. San
Diego recommends a revised formula and revised criteria for BD:

$$P = \frac{V \times T \, (1 + AH) \; BD}{C \times F} + SCF$$

Where BD is:

Delay (minutes)	Points
0.0 - 0.99	1.0
1.0 - 1.99	1.1
2.0 - 2.99	1.2
3.0 - 3.99	1.3
4.0 - 4.99	1.4
5.0 - 5.99	1.5
6.0 - 6.99	1.6
7.0 - 7.99	1.7
8.0 - 8.99	1.8
9.0 - 9.99	1.9
10 +	2.0

San Diego's contends that its revisions place more
emphasis on safety and it recommends that the formula take into
account the number of people potentially involved in an accident.

During the proceeding, Lorenz, witness for San Diego,
revised its recommendation to the following formula:

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$$\frac{V \times T \ (AH + BD + PT)}{C \times F} + VS + RS + CG + AR + OF$$

The revised San Diego alternative formula gives greater weight to passenger trains (PT). Points ranging from one to ten are given based upon the number of daily PT.

Division's Rebuttal

For informational purposes prior to the hearing, Division prepared the priority lists generated by each of the four proposed alternative formulas and the old formula. However, during the proceeding, in rebuttal to criticism of Division's proposed new formula, Division witness, Paul King, introduced two exhibits portraying a statistical comparison of all of the formulas.

Exhibit 12 shows the correlations between several policy criteria (the various factors) and the indexes (total points per project) that the alternative formulas produce. These "zero order" correlations show the direction and the degree of each relationship, as it stands alone, with ".00" representing no relationship and "1.00" representing a perfect relationship. A negative sign denotes a reverse relationship, that is, as a criteria increases, the index will decrease. Using a multiple regression technique, Exhibit 13 shows the relative relationship of several criteria to the indexes produced by the formulas when these criteria are combined to create the indexes. These relative relationships are expressed as percentages. Together these exhibits can be used to gauge the weight each formula gives the various factors.

Based upon its statistical analysis, Division contends that San Diego's allegation that Division's formula gives greater weight to BD than AH is unfounded. King asserts that Division's formula predicts 25% of the variance due to accident hazard, compared with 5-12% by the other formulas. Thus, Division concludes that its formula is at least twice as likely as the alternate formulas to select the most hazardous crossings. In

addition, Division's formula weighting of the conflict factor (V x T) in relation with the special conditions (SCF) is 30/70%. This is the closest match to the relative weight for these factors, 40/60%, in the existing formula before the LRT systems were included. King contends that this fact shows the new formula performs more closely to the old formula when the latter performed at its best.

Division's statistical comparison of San Mateo and Division's formulas shows that San Mateo's proposal does not select hazardous crossings as well as Division's. San Mateo's formula treats BD with almost the same or greater importance as AH.

Using Exhibits 12 and 13, King is of the opinion that Barton's criticism of Division's proposed formula, that one accident has too much impact on the rankings, is overstated and is not supported by statistical analysis. King investigated this assumption by evaluating Division's formula as accidents were added one by one. King found that overall, a single accident does not have much effect on the rankings. In fact, it is not until about four accidents are added that the overall rankings change significantly. King considers Barton's example of similar sites being ranked differently when one site has an accident and the other does not to be a rare occurrence. King alleges that Barton's argument capitalizes on a single example and does not explain how differences of one accident may affect the overall interrelationship of the rankings.

King contends that in the absence of an accident, the conflict factor, V x T, is the best substitute for AH because it pinpoints the site where there is the greatest exposure of vehicle/train conflict. Such a location is, in fact, where an accident will likely occur. This conflict factor has even a greater weighting than AH.

Evaluating Barton's formula, King testified that it did not perform well in its ability to select hazardous crossings, as

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shown by statistical analysis. Correlations to AH for Division's formula are .49 and of Barton's are .29. The weighting given to AH by each formula is 25% and 5%, respectively. It appears the APS factor does not function as represented and has less impact on the results than BD. In King's opinion, the low AH weighting in Barton's formula can be explained by the points in the APS factor. APS ranges between .10 and 1.0, while BD ranges between 0 and 10. This results in APS having little impact in the formula while BD has a great deal of impact. King concludes that Barton's formula places a higher priority on a factor, BD, which is given secondary preference by the Legislature.

Division's statistical analysis disproves San Diego's contention that BD outweighs safety in Division's proposed formula. Statistical analysis shows that AH and BD are correlated to the final index, .49 and .10, respectively, in Exhibit 12 and are given weighting of 25% and 8%, respectively, in Exhibit 13. Thus, Division's formula places at least three times the importance on accidents as it does on delay.

Division finds that San Diego's revised formula places the most weight on the volume of trains, via the conflict factor V x T, giving safety a secondary position. San Diego's formula gives crossings with passenger trains up to 10 points in a factor which is then used as a multiplier of train volume. This potentially may result in a conflict factor which is ten times the train volume. In King's opinion this means that LRT projects, which have a high volume of passenger trains, are assured ranks at the top of the priority list.

The Adopted Formula

San Diego argues for retaining the existing formula. We note that the old formula has performed well for many years. However, since LRT systems have been included, it is shown statistically that the old formula performs no better than a roll of the dice; therefore, we must replace it.

Our job in establishing a priority list, as dictated by
the legislative intent, is to rank projects which will remove the
hazard of life-taking accidents.   Therefore, identifying those
grade crossings most urgently in need of separation and those grade.
separations most urgently in need of improvement is our foremost
task.   In addition, the Legislature indicates it is also concerned
about the public inconvenience of delay at grade crossings.
Therefore, the second priority is to identify locations where
traffic delay is the greatest.

Based upon the legislative intent, in past proceedings we
developed the existing formula.   The formula consists of three
parts: a conflict factor (V x T), SCF which vary based on the type
of project and include individual point systems, and a cost factor.

The conflict factor (V x T) is the existing indicator of
accident potential and traffic delays.   Division believes this
indicator is improved by adding the actual AH and BD.   We agree
that recorded accident and delay data enhance the accuracy of
predicting hazards.   Division's statistical analysis proves this
point by, not only showing a priority of AH and second importance
of BD, but it shows that the greatest percentage of weight is given
to these two factors in Division's formula.

BD has greater weight in San Mateo's formula than AH.
Barton's APS factor intended to evaluate accident potential and
severity places significantly more weight on BD than accident
factors. ,The weighting of BD greater than AH is contrary to the
intent of the program, and is therefore, unreasonable.   Such
priority is not in accordance with legislative intent and must be
rejected.   We are persuaded by the reversed priorities and lower AH
and BD weight in the alternative formulas that Division's formula
performs best in appropriately evaluating our priorities and giving
them sufficient weight.

We disagree with Barton's criticism that similar sites,
one with and one without an accident, should receive similar

rankings. If the choice for priority is between a location with an accident and one without, the accident location should take priority. We agree that this is exactly the primary purpose of the criteria, to locate accident-prone sites. It is such locations which the Legislature considers hazardous, especially where fatalities occur.

We take official notice of Division's procedure of eliminating train accidents caused by suicide from the accident statistics used in this proceeding. We disagree with San Mateo's conclusion that injury and fatalities caused by suicides and inebriates cannot be eliminated by grade separation. These accidents produce fatalities which are desirable to eliminate. We believe making either the tracks or the roadway, or both, less accessible to pedestrians will tend to reduce, if not eliminate, such accidents. Therefore, we will not eliminate these types of accident from accident statistics since they represent injuries and fatalities which can be minimized by constructing separated grade levels for train and vehicle traffic.

The result of San Mateo's change to net cost by excluding any greater than required contribution of local funds would be a proposal which the Legislature has expressly disapproved. The result of this proposal is to increase the priority of a project based upon a larger local contribution. In 1973, the Legislature increased the allocation percentages and lowered the local contribution to prevent a disadvantage to smaller local agencies. In addition, San Mateo's formula does not perform satisfactorily under Division's statistical analysis.

While testifying in support of Barstow's First Avenue Project, Schiermeyer proposed a variation of San Mateo's net cost proposal. A cutoff of reportable costs would be set for reconstruction projects because the maximum grade separation fund allocation is 80% of the cost. Since there is generally a $5 million maximum award to one project, in Schiermeyer's opinion, it

is to an agency's disadvantage to be required to submit costs which it cannot recover, that is costs roughly above $6 million.

We also reject this alternative net cost proposal.   It does not provide a savings to the grade separation fund because the allocation of funds to one project is limited by statute to $5 million or one-third of total funds, whichever is greater.   In addition, reducing the total cost will distort the evaluation of potential hazard, since the total points for various criteria are divided by the total cost to derive the index number for ranking.   This proposal also violates the purpose of the Legislature's 1973 amendments by giving undue advantage to large, well-funded local agencies.

Even though we prefer Division's treatment of AH and BD because of the priority and weight given these factors, we question Division's treatment of the T factor in light of Barton's testimony in this proceeding.   Barton is the Chief Engineer of DeLeuw, Cather & Company specializing in grade crossing projects since 1957.   Barton criticizes including total LRT train counts in the formula.   In Barton's opinion the result is a totally unreasonable priority ranking.   For example, the San Diego-Main Street project receives a total of 134 points with 119 of these points attributed solely to its light rail train volume of 154 average trains per day.   This project has special condition factors of 15, indicating little justification for the total points other than LRT train counts.   In comparison, various San Mateo projects without LRT trains received significantly lower total points even though they had train volumes of 58 average trains per day and special condition factors totalling 48-53 points.   These projects received total points of 49-57 which is roughly one-third the total points of the project which has LRT trains.   (Exh. 8, Table 2, page 1 of 1, Existing Separations.)   In Barton's opinion, this gross inequity of placing projects to improve existing separations in good condition above those in poor condition must be changed.

Moreover, Barton introduced testimony to show that the safety of conventional trains and LRT is significantly different. Based upon Amtrak maintenance manuals and specifications for LRT, Barton testified LRT trains can stop 24 times faster than freight trains where both are travelling at 50-60 mph. When the speed of both trains is 40 mph, LRT trains stop 25 times faster. In addition, Barton testified that the respective weight of these two types of trains causes a momentum of movement called "dynamic energy" which affects the stopping capability of the trains. The average 8,000-foot freight train is 22-1/2 times longer than the average 4-unit, 356-foot LRT train. The freight train weighs 10,000 tons or more, while LRT trains fully loaded with passengers weigh 270 tons. Thus, the ratio of dynamic energy for conventional and LRT trains is 1:37, meaning LRT has significantly less momentum than heavier conventional trains.

Based upon the different stopping distances and dynamic energy, Barton concludes that LRT trains are safer. In his opinion a conservative ratio of the difference in safety between conventional and LRT train volumes is 1:10. No party sought to rebut his evidence.

In its new formula, Division continues the practice of including the full count of LRT trains plus conventional trains to calculate the T factor. However, Barton recommends that only one-tenth of total LRT trains counts be included in T because of the significantly shorter time within which LRT trains can slow and/or stop to avoid or minimize accidents. There is no dispute of the significant difference between LRT and conventional train braking capacity. Therefore, LRT trains are significantly safer than conventional trains and Division's treatment using the full count of LRT is unreasonable.

In addition, this overweighting of LRT train volumes will have a significant effect on the 1990-91 and 1992 priority list. San Diego witness, Lorenz, testified that its projects rank from Nos. 2 to 8 on the 1989 priority list and that applications for

allocation of funds will be filed before the April 1 deadline.
Lorenz testified that allocation of funds to just three of these
projects will deplete the 1989 funds. Because San Diego has not
yet applied for or received 1989 funds, the same projects are
nominated in this proceeding. In addition, during the proceeding
Los Angeles County (LA County) requested to add 164 average daily
LRT trains to its Imperial Highway, Slauson Avenue, El Segundo
Boulevard, and Florence Avenue projects. Ondrozeck, witness for
LA County, admitted that should these revisions be made, these
projects would compete with those of San Diego to monopolize
1990-1991 funds. Thus, projects involving LRT could be the only
ones funded for fiscal years 1988-1989 and 1989-1990. It is
obvious that including the full count of LRT trains gives undue
priority to LRT projects to the exclusion of more hazardous
conventional railroad crossings.

Therefore, we find it reasonable to revise T to include
one-tenth LRT train counts plus the full conventional train counts.
We believe this adjustment in Division's formula will result in a
more accurate assessment of risk at grade crossings. The change
will undoubtedly accomplish an equally important task, the funding
of more projects which eliminate hazardous grade crossings and
separations.

Accordingly, we adopt the Division formula with a
revision to add an LRT factor to the train volume calculation.
(The revised adopted formula is contained in Appendix A.)

The Adopted Methodology

Parties did not dispute the existing criteria to resolve
the priority of projects which gain equal points. Nor was the
existing treatment of projects involving multiple grade crossings
disputed. We find these policies, described above, reasonable and
adopt them. However, several proposed changes in methodology were
disputed. We discuss and resolve these disputed issues below.

Preconstruction Costs

Barton requests that Ordering Paragraph 6 in the OII in this proceeding be deleted. This ordering paragraph states:

> "6. A nominating agency may elect to exclude preconstruction costs (engineering, right-of-way, preparation of environmental impact reports, and utility relocation), as such costs would be construed for the purpose of S&H Code Section 2457,[4] from project costs included in a nomination. In order for preconstruction costs to be eligible for exclusion, the funds must have been expended on or before February 28th of the year in which the hearings are being held and the involved agency may be required to submit evidence in support of the fact that the funds have been expended. To the extent that preconstruction costs are excluded from a project's cost for the purpose of a nomination, the cost will be considered as nonparticipating; i.e., the railroad will not be required to contribute 10 percent of the excluded preconstruction costs."

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4 S&H § 2457 states:

"Preconstruction costs (engineering, right-of-way, preparation of environmental impact reports and utility relocation) expended by a local agency prior to any allocation shall be included in the total cost of the project even though expended prior to an allocation. Allocations shall be made for preconstruction costs to a local agency that submits evidence satisfactory to the department that the local agency will be able to meet the requirements for an allocation for construction costs, and that preconstruction costs will exceed the local share of the cost of the project. A local agency may also proceed with the advertising for bids and the construction of a project without prejudice to its right to receive an allocation if an allocation is, in fact, made for such project within the same fiscal year that the construction contract was awarded."

Barton believes Ordering Paragraph 6 violates S&H Code § 2454 which provides:

"Allocations made pursuant to Section 2453[5] shall be made on the basis of the following: . . . (d) On projects which eliminate an existing crossing or alter or reconstruct an existing grade separation, no allocation shall be made unless the railroad agrees to contribute 10 percent of the cost of the project."

Barton's interpretation of Ordering Paragraph 6 is incorrect, although we admit the wording is misleading and should be revised. This option is intended to give local agencies the option to exclude preconstruction costs paid prior to submission of the nomination for an amount which cannot be recovered under § 2454 because it is less than 10% of the total cost. Including such costs in the nomination simply increases the total cost denominator which decreases the overall calculation of points. With this decrease in points comes the possibility of a lower ranking on the priority list because of additional costs which are not reimbursable. This result serves no beneficial purpose to the fund or the nominating agency other than to needlessly lower the rank. Therefore, providing the option for an agency to exclude such costs is reasonable. This option differs from the net cost proposal, discussed above, because it excludes nonreimbursable expenses;

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5   S&H § 2453 states:

"From the funds set aside pursuant to Section 190, as well as from any other funds that may be set aside for the purposes of this chapter, the California Transportation Commission shall make allocations for projects contained in the latest priority list established pursuant to Section 2452. Such allocations shall be made for preconstruction costs and construction costs. Where allocations are made to a local agency, the requirements of Sections 2456 and 2457 shall first be met."

whereas, the net cost proposal is to exclude expenses which may be qualified for reimbursement.

In order to clarify our intent, future OIIs may contain the following revisions to the first sentence of this ordering paragraph:

> "A nominating agency may elect to exclude preconstruction costs (engineering, right-of-way, preparation of environmental impact reports, and utility relocation), which are not sufficient to meet S&H Code § 2454 requirements, that is, those preconstruction costs which are less than the local agency's share of total costs..."

Proposed Crossings

Ten projects are nominated for grade separations which replace proposed grade crossings. Because these proposed grade crossings do not presently exist, under new methodology Division gave no points for BD and CG for these projects.

While testifying for the Cities of Montclair and Menlo Park, Barton challenged the policy which was applied to these two projects and eight others.[6] Barton recommended that the existing treatment of proposed crossings be retained. That treatment is to evaluate proposed crossings based upon the data supplied for similar crossings in the vicinity of the project.

Division rejected this recommendation, arguing that the zero ratings were given because currently there is no delay at these proposed crossings which is consistent with legislative intent. In Division's opinion, the Legislature intended that projects eliminating existing grade crossings and those improving

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6 These projects are: Emeryville Yerba Buena Avenue, Fremont Blacow Road, Oceanside 8th Street, Ontario Haven Avenue, Roseville Harding Boulevard, Stockton March Lane, Torrance Del Amo Boulevard, and Yorba Linda Fairmont.

existing grade separations take priority over those eliminating
proposed grade crossings.

While we agree that projects alleged to eliminate
proposed grade crossings require additional evaluation on whether
the proposed crossing is practical and feasible, we find no
indication in the statutes or legislative declaration to
arbitrarily place these projects at the bottom of the priority
list. Therefore, we disagree that we are required to do so as a
matter of law.

As a matter of public policy, we also disagree that these
projects should be given such treatment. Our existing policy is to
require that a proposed grade crossing be feasible in order to meet
the definition of a project contained in § 2450 to qualify for
grade separation funding. We implemented this policy in 1973 to
comply with the addition of these types of projects to § 2450.
Priority is determined for these projects in the same manner as
others, using the formula and point system. The BD and CG are
presently based upon similar existing crossings since this
information does not exist for proposed crossings. We are given no
rational basis in this proceeding to treat them as Division
requests. In fact, should we rate BD as zero, we would negate the
conflict factor (V x T) which parties agree is the best indicator
of potential hazard where no accidents have occurred. We find it
unreasonable to ignore increasing vehicle and train volumes at a
location where the need for a safe crossing is evident.

However, we believe the eligibility of projects to
eliminate proposed crossings, as any other projects, can and should
be challenged if warranted. The proper challenge to be made of
such projects is whether the project is feasible and, therefore,
meets the criteria of being a potential hazard. If it is shown
that a proposed crossing is needed and is possible to build, a
project for its elimination meets this requirement. However, if a
grade crossing is not needed or cannot be built, it does not meet

the definition of a feasible proposed crossing and is not eligible
for funding.

In our nomination application we require nominees to
state whether a proposed crossing is feasible. Of the ten
nominations for projects to eliminate proposed crossings, the
feasibility of one project was challenged. Evidence was introduced
to challenge the feasibility of the Monte Vista Avenue project
nominated by the City of Montclair.

In 1980 the Commission denied the City of Montclair's
request for authority to construct a grade crossing at Monte Vista
Avenue, the same location as the proposed project in this
proceeding. The reason for the denial was lack of need
for the crossing. (D.92587.) Barton testified that although a
grade separation is now approved for this site, an at-grade
crossing is also feasible because of an increased need. He
believes an application for a grade crossing would have been
granted had one been filed. He cites the application of the City
of El Segundo as an example of changed circumstances justifying a
second application requesting the Commission to overrule a previous
denial of authority to construct a grade crossing. (Application
89-02-007.)

We cannot ignore a Commission decision which concludes
that the Montclair grade crossing is not needed. Such a decision
by the Commission raises considerable doubt about the feasibility
of this project. However, the recent approval of an application
for a grade separation at the same site removes any doubt regarding
the need for a crossing. (D.88-03-074.) Therefore, we find that
the proposed crossing in the Montclair project is feasible, and
therefore, does qualify for grade separation funding.

There is no evidence disputing the feasibility of the
nine other projects to eliminate proposed grade crossings.
Therefore, we accept the representation that they are feasible and

direct Division to evaluate these ten projects using data provided
in the nomination.

We reject Barton's suggestion that points awarded for
these projects in a prior proceeding should be carried forward in
this proceeding. We have no assurance that data which is at least
two years old is reliable. However, should Division find no data
for BD and CG is provided in the nomination in this proceeding or
that the data provided is unreliable, only then may a zero rating
for BD and/or CG be awarded for these projects.

Speculative Data

During the proceeding, numerous data revisions raised the
issue of whether future estimates of vehicle traffic and future
operational light rail trains should be included in train counts.
Division moved to exclude those estimates which were to occur in
the future. Based upon Ordering Paragraph 5 in the OII which
requires that future, speculative data not be included in
nominations, we exclude the following revisions:

1. Sunrise and Mather Field Projects: add 132
   light rail trains operable in 1993
   (Sacramento Rapid Transit District);

2. Sand Canyon Project: add 20,000 to average
   daily vehicle traffic (City of Irvine)
   estimated to occur in 1992.

3. Archibald Avenue: add 34,000 to average
   daily vehicle traffic estimated to occur in
   1993 (City of Ontario).

4. El Cajon Main Street and Fletcher Parkway:
   add average daily train volume of 145
   passenger trains per day estimated to be
   completed in mid-1993.

It will be our policy in the future to exclude data which
is not based upon reliable existing facts or facts which will occur
imminently.

The Priority List for 1990-91

Numerous parties disputed the ratings given its project(s) by Division.

City of Barstow

During the proceeding, Schiermeyer, representing the City of Barstow, disputed Division's rating for its First Avenue project for probability of failure. In Division's late-filed Exhibit 22, this project has been awarded the maximum of 30 points for this category which resolves this dispute. Schiermeyer also requested reconsideration of the width clearance (WC) points since in its project there is no room for emergency vehicle or pedestrian access on the bridge proposed to be widened. Schiermeyer requests that the awarded six points be increased. The maximum points in this category is ten. We believe this category is best evaluated with other nominations based upon Division's judgment. We find the number of points awarded to be reasonable and will not direct an increase in the WC factor.

City of Belmont.

The City of Belmont's witness Hopkins requested more points be awarded for CG of its Ralston Avenue project to construct an underpass to eliminate an existing grade crossing. Hopkins bases his request on the environment in the location of the project. Traffic is very congested by the presence of a train station (causing 58 delays a day), infrequent freight trains, fire stations, and businesses located in the area. In addition, the visibility of crossing warning signals is poor because of the surrounding buildings. In Hopkins' opinion, the project ranks low because there have been no accidents. However, he believes the probability of an accident is high since the train traffic is estimated to double in the near future.

Hopkins contends the traffic congestion is so great that it takes extra time for the crossing to clear after the gates are raised. Hopkins requests that the BD factor for this project

include the delay in clearing the crossing as well as delay of a stopped train.

Hopkins' request for a higher rating due to congestion is partly based on future conditions, which we discuss herein as inappropriate to consider. In addition, Hopkins' future conditions are speculative, not based on any estimates of future traffic volume. The rating given by Division is in relationship with the crossing environments of all projects in this proceeding. Therefore, points are awarded in comparison with conditions at the sites of other projects. Division bases this scoring on a field investigation of each proposed site. Division ranks Belmont's Ralston Avenue crossing environment on the high end of the 0-10 scale. From the testimony of witnesses describing other projects, we are given no reason to believe Division's score is unreasonable. The environment of this crossing fits the description of many witnesses' testimony of other crossings involved in this proceeding. We are not convinced that Belmont's Ralston Avenue project CG rating should be changed.

Hopkins' second request should also be denied. Undoubtedly, the time it takes for traffic to clear after a train passes is a factor at any location which has significant traffic congestion; therefore, it affects all nominations in this case. This time will vary among crossing locations and can only be estimated by a site inspection. Such data for each site is not presented in this proceeding; therefore, we cannot adopt this suggestion. However, if Hopkins desires, this proposal may be explored at any workshops held in the year prior to hearings.

Train Counts

After the hearing, railroad parties submitted revised train counts for various projects. Several affected parties submitted written statements disputing these revisions. Division investigated the basis of each party's train counts and has used the data which is the more reliable. Exhibit 22 indicates that

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these disputes have been resolved. We accept these revisions as
reasonable.

Division Revisions

Division submitted late-filed Exhibit 22 on
April 13, 1990. The exhibit contains revisions of data based on
undisputed additions, revisions, and corrections made during the
proceeding and train counts resolved after the close of hearings.
We find the following data revisions reasonable:

**Projects with points revised because of changes in factual data, a
further explanation of previously submitted information or staff
evaluation:**

NOMINATING AGENCY	CROSSING NAME	CROSSING NUMBER	AFFECTED CATEGORY AND CHANGE
ANAHEIM	ST. COLLEGE BL	2-170.3	T decreased to 21 Trmph increased to 79
BAKERSFIELD	COFFEE RD.	2-891.6	T decreased to 23
BARSTOW	FIRST AVE	2-746.5-A	PF increased to 30
BELMONT	RALSTON AVE	E-22.0	T decreased to 56
BUENA PARK	DALE ST	2-161.3	T decreased to 43
CALTRANS	JOHN ST(SR68)	E-119.29	T increased to 7
CALTRANS	MISSN BLVD	4-30.4-B	T increased to 24
CAMARILLO	UPLAND RD	E-418.9	T decreased to 8
CAMARILLO	ADOLFO RD	E-417.9	T decreased to 8
COMPTON	ALONDRA BLVD	BG-494.3	T decreased to 10
COMPTON	COMPTON BLVD	BG-493.8	T decreased to 10 & Vehmph decreased to 30
DIXON	W. A ST. CNSL	A-67.4 DEP	50% CONTR. changed to 1
EL MONTE	ARDEN DRIVE	B-494.0	Trmph increased to 65 &
EL MONTE	RAMONA BLVD	B-495.1	Trmph increased to 65
EL MONTE	BALDWIN AVE	B-493.6	Trmph increased to 65
FREMONT	BLACOW RD	DA-33.4 PRO	50% CONTR. changed to 1
FREMONT	WASHINGTON BLVD	DA-32.8	V increased to 31,000
FRESNO	CONSOLIDATION	VARIOUS	T increased to 24 & PT increased to 3,& G7 increased to 18
FRESNO	SHAW AVE	2-1004.2	T increased to 25 & PT increased to 3, & G7 increased to 16
FRESNO CO.	CHESTNUT AVE	B-210.3	AH increased to 9 & T decreased to 22 OF increased to 9 G6 increased to 9
FRESNO CO.	CLOVIS AVE	B-213.3	AH increased to 5 & T decreased to 22 & OF increased to 8 G6 increased to 5
FRESNO CO.	MTN VIEW AVE	B-222.5	T decreased to 22 & OF increased to 7
IRVINE	SAND CANYON AVE	2-182.9	V increased to 11,000 & AH increased to 1 G6 increased to 1
KERN CO.	MORNING DR	B-317.5	CG increased to 5 G3 increased to 3
KERN CO.	OSWELL ST	B-315.4	Trmph decreased to 60

NOMINATING AGENCY	CROSSING NAME	CROSSING NUMBER	AFFECTED CATEGORY AND CHANGE
LOS ANG'ES	VAN NUYS BLVD	B-463.4	T increased to 11
LOS ANG'ES	N. SPRING ST	3B-1.7-A	T decreased to 14
LOS ANG'ES	SUNLAND AVE	B-467.8	T increased to 11
LOS ANG'ES	VINELAND AVE	E-459.6	T decreased to 12
LOS ANG'ES	DE SOTO AVE	E-446.8	T decreased to 14
LOS ANG'ES	VALLEY BLVD	B-485.8	T increased to 35
LOS ANG'ES	ROSCOE BLVD	E-452.3	T decreased to 14
L.A. CO.	FLORENCE AVE	BG-488.3	T increased to 10
L.A. CO.	NORWALK BLVD	BBJ-497.28	T decreased to 52
L.A. CO.	SLAUSEN AVE	BG-487.3	T decreased to 6
L.A. CO.	TELEGRAPH RD	2-148.8-B	T increased to 48
L.A. CO.	EL SEGUNDO BLVD	BBH-492.60	T increased to 174
			Trmph increased to 55
			PT increased to 10
			G7 increased to 9
L.A. CO.	IMPERIAL HWY	BBH-491.6	T increased to 174
			Trmph increased to 55
			PT increased to 10
			G7 increased to 12
L.A. CO.	SLAUSEN AVE	BBH-487.42	T increased to 17
L.A. CO.	FLORENCE AVE	BBH-488.43	T increased to 176
			Trmph increased to 55
			PT increased to 10
			G7 increased to 12
ONTARIO	ARCHIBALD AVE	B-523.4	Vehmph increased to 45
ONTARIO	HAVEN AVE	3-42.3 PRO	BD decreased to 0
			G4 decreased to 0
OROVILLE	LINCOLN ST	3-204.7-B	T increased to 26
OROVILLE	MYERS ST	3-204.9-B	T increased to 26
PARAMOUNT	ALONDRA BLVD	3A-12.3	C decreased to $7,760,000
ROSEVILLE	HARDING BLVD.	A-107.7	T increased to 29 &
			BD decreased to 0
			G4 decreased to 0
SANTA ANA	GRAND AVENUE	2-176.2	T decreased to 20
STA BARB CO	HOLLISTER AVE	E-365.7-B	T decreased to 6 &
			HC increased to 4
STOCKTON	HAMMER LANE	D-95.6	Vehmph inserted at 35
STOCKTON	HAMMER LANE	4-98.5	Vehmph decreased to 35
STOCKTON	MARCH LANE	D-94.5 PRO	50% CONTR. changed to 1

Adopted Priority List for 1990-91

Division requests that the corrected priority list based upon its proposed new formula and methodology contained in Exhibit 22 be established for the fiscal year 1990-91. However, because we adopt Division's formula with modification of the calculation of the T factor, we establish the priority list for fiscal year 1990-91 contained in Appendix B based on our adopted formula and methodology contained in Appendix A.

Findings of Fact

1. The current formula for ranking projects eligible for grade separation funding does not properly evaluate the risk of accidents or public inconvenience of delay at grade crossings, therefore, revisions are needed.

2. Exclusive light rail projects separate only light rail trains. The separation of light rail trains from a grade crossing does not eliminate the hazard of a potential accident or traffic delays which exists at a remaining railroad grade crossing.

3. Division recommends the adoption of the following new formula, which excludes exclusive LRT projects, to be used to establish priority lists: $V \times T (AH + BD) / (C \times F) + SCF$. The new formula is recommended for evaluating projects to eliminate and separate existing and proposed grade crossings. The new formula revises the treatment of accident history (AH), blocking delay (BD), and various special condition factors (SCF) to better measure the accident hazard of a location.

4. Division recommends the use of the existing formula $(V \times T / (C \times F) + SCF)$ for projects to alter or reconstruct grade separations because in the new formula AH and BD equal zero at existing grade separations, and this would negate the entire $\frac{V \times T}{C \times F}$ factor.

5. Division proposes to use the existing secondary criteria to rank projects of equal points. Projects to eliminate proposed

crossings are placed last by this criteria. The ranking of these projects is reasonable.

6. Division proposes to rank projects to eliminate proposed crossings toward the bottom of the priority list by arbitrarily awarding zero for BD and CG. There is no justification for such treatment. It is reasonable to award points for these factors based upon reliable evidence of similar locations in proximity of the proposed project.

7. Division does not change the existing method of treating projects involving multiple grade crossings as separate projects.

8. Division requests the establishment of the priority list derived from its new formula and methodology for fiscal years 1990-91 and 1991-92.

9. Irvine recommends revising Division's new formula to weigh any accident by the length of time since the accident occurred, giving less weight in increments of five years for older accidents. However, no basis is provided for the presumption that older accidents are entitled to less weight and no recommended points for various weights are presented.

10. Hiyama request the inclusion of an SCF of 200 points for unusual circumstances. However, this duplicates the proposed SCF and the points recommended give an unreasonable degree of weight to these unusual circumstances.

11. San Mateo recommends the removal from the AH of accidents caused by inebriates and suicides lying on tracks. Accidents caused by suicides are removed from accident statistics used by Division. However, it is unreasonable to remove accidents such as these because they involve deaths and injuries which can be avoided by grade separation.

12. Barton proposed the adoption of the formula: V x T (APS + BD) / (C x F) + SCF. Barton provides a point system for the element accident preventability/severity (APS) which includes

points from 1.0 to .35 for various types of train movements and .10 points for all LRT trains.

13. Barton believes his index for APS will evaluate the circumstances surrounding an accident, giving a better prediction of hazard and potential hazard of locations.

14. San Diego recommends that the existing formula be retained. However, if it is changed, San Diego proposed an alternative formula: V x T (1 + AH) BD / (C x F) + SCF. San Diego provides an index of points for BD which it believes gives this factor less weight. San Diego revised its proposed alternative formula to: V x T (AH + BD + PT) / (C x F) + (VS + RS + CG + AR + OF.

15. Division performed a statistical analysis to compare the relative weight of factors in the old, Division's new, and the San Mateo, Barton, and San Diego alternative formulas. This analysis shows that Division's formula places the most weight on AH which is the primary legislative concern. It places BD in second place of importance. The old formula does not project hazardous sites. The alternatives give less weight to AH and/or BD and generally do not predict hazardous locations as well as Division's new formula. However, Division's formula continues the practice of allowing a full count of both light rail and conventional trains.

16. AH should be given the greatest weight in any formula we adopt since it projects which sites are most in need of separation; traffic delays are a secondary purpose to impose grade separation.

17. The SCF added to the formula by past decisions should be retained and adjusted as Division recommends.

18. Light rail train counts should be one-tenth of the total average daily trains to account for the significantly increased ability of LRT to slow and/or stop compared with that of conventional trains. There is no dispute that light rail trains slow and/or stop significantly faster than conventional trains. If the T factor is revised to include one-tenth of light rail train

counts and all conventional train counts, a more realistic evaluation of the risk of train volume is provided.

19. Division's proposed new formula, with a revision to the T factor, is the best method of evaluating accident risk and traffic delay at grade crossing locations.

20. Data included in a nomination which is based upon nonexistent facts or unreliable estimates of future operations is unreasonable. However, where it is proven that events are imminent and estimates are highly reliable, such data is reasonable.

21. The City of Riverside did not appear to support its nomination; therefore, its project should be excluded from consideration.

22. The Cities of Barstow and Belmont did not show that Division's ratings are unreasonable.

Conclusions of Law

1. Projects which involve exclusive LRT operations are not eligible nor intended to be funded under the Grade Separation Program established by S&H Code § 2450 et seq.

2. The adopted formula and methodology contained in Appendix A achieve the intent of S&H Code § 2452 of determining the priority of projects most in need of construction. The list set out in Appendix B should be established as the 1990-91 priority list.

3. This investigation should remain open for the purpose of establishing the 1991-92 priority list.

4. As S&H Code § 2452 requires issuance of our order by July 1, the effective date of this order should be the date of signing.

INTERIM ORDER

IT IS ORDERED that:

1. The formula and methodology contained in Appendix A shall be used to establish the priority list of projects eligible for funding under the Grade Separation Program.

2. The Commission Safety Division's motion is granted. Projects involving exclusive light rail transit operations shall be excluded from the nominations.

3. Projects involving multiple grade crossings shall be considered one project. However, a cumulative total of accidents shall be used for accident history (AH); whereas, blocking delay (BD) shall reflect the total 24-hour delay from all crossings, divided by the train volume. AH shall reflect all train involved accidents.

4. Projects to eliminate or separate proposed grade crossings shall receive points proposed for crossing geometrics (CG) and blocking delay (BD) based upon reliable data supplied for similar grade crossings in close proximity to the one proposed.

5. In applying the existing formula for projects to alter or reconstruct existing separations, the probability of failure (PF) factor shall receive greater points for the potential for failure.

6. Data in nominations which is not based on existing reliable facts or facts which will occur imminently shall be excluded from consideration.

7. The list of projects appearing in Appendix B is established as required by the California Streets and Highways Code § 2452 as the 1990-91 priority list of those projects which the Commission determines to be most urgently in need of separation or alteration.

8. The Executive Director shall furnish a certified copy of this opinion and order to the California Department of

Transportation and the California Transportation Commission prior to July 1, 1990.

9. This investigation remains open for the purpose of establishing the 1991-92 priority list.
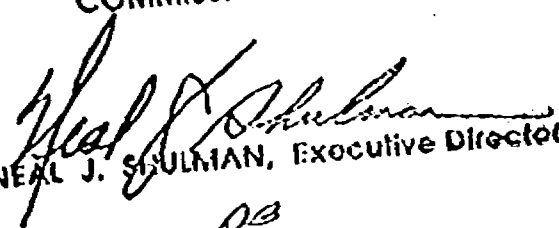
This order is effective today.

Dated ____JUN 2 0 1990____, at San Francisco, California.

FREDERICK R. DUDA
STANLEY W. HULETT
JOHN B. OHANIAN
PATRICIA M. ECKERT
Commissioners

President G. Mitchell Wilk, being necessarily absent, did not participate.

I CERTIFY THAT THIS DECISION WAS APPROVED BY THE ABOVE COMMISSIONERS TODAY

NEAL J. SHULMAN, Executive Director

I N D E X

APPENDIX A
Page 1

FORMULA FOR CROSSINGS NOMINATED
FOR SEPARATION OR ELIMINATION

$$P = \frac{V\,(T + 0.1 \times LRT)}{C \times F} \,(AH + BD) + SCF$$

Where:

P = Priority Index Number
V = Average 24-Hour Vehicular Volume
C = Total Cost of Separation Project
    (In Thousands of Dollars)
T = Average 24-Hour Railroad Train Volume
LRT = Average 24-Hour Light Rail Transit Volume
F = Cost Inflation Factor (Use F = 11 for
    1990-91 & 1991-92 F.Y. Priority List
    Based on the Current Construction Cost
    Index)
AH = Accident History
BD = Blocking Delay at Crossing
SCF = Special Conditions Factor

SCF = VS + RS + CG + AR + PT + OF

Where:

		Points Possible
VS = Vehicular Speed Limit		0 - 5
RS = Railroad Prevailing Maximum Speed		0 - 7
CG = Crossing Geometrics		0 - 7
AR = Alternate Route Availability		0 - 5
PT = Passenger Trains		0 - 10
OF = Other Factors		0 - 16
	Total Points	0 - 50

POINTS IN EACH CATEGORY ARE ASSIGNED ACCORDING TO THE FOLLOWING
SCHEDULE:

AH = Accident History (10 Years)
     Each reportable train-involved accident

Points = (1 + 2 x No. Killed +
          No. Injured) x PF*

*PF = Protection Factor for:

Std. #9 = 1.0
Std. #8 = 0.4
Std. #3 = 0.2
Std. #1 = 0.1

APPENDIX A
Page 2

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

Note 2.   Each accident shall be rated
separately and modified by a
factor appropriate to the
protection in existence at the
time of the accident.

BD = Crossing Blocking Delay Per Train

(Total Minutes per Day ÷ T)

Minutes	Points
0 - .49	0
.5 - .99	.5
1.0 - 1.49	1.0
1.5 - 1.99	1.5
2.0 - 2.49	2.0
2.5 - 2.99	2.5
3.0 - 3.49	3.0
3.5 - 3.99	3.5
4.0 - 4.49	4.0
4.5 - 4.99	4.5
5.0 - 5.49	5.0
5.5 - 5.99	5.5
6.0 - 6.49	6.0
6.5 - 6.99	6.5
7.0 - 7.49	7.0
7.5 - 7.99	7.5
8.0 - 8.49	8.0
8.5 - 8.99	8.5
9.0 - 9.49	9.0
9.5 - 9.99	9.5
10 +	10.0

VS = Vehicular Speed Limit

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

APPENDIX A
Page 3

RS = Railroad Maximum Speed

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

CG = Crossing Geometrics

    0-7 points based on relative severity
    of physical conditions, i.e., grade,
    alignment, site distance, etc.

AR = Alternate Route Availability

Distance (Feet)	Points
0 - 1,000	0
1,001 - 2,000	1
2,001 - 3,000	2
3,001 - 4,000	3
4,001 - 5,000	4
5,001 +	5

PT = Passenger Trains

No. of Trains Per Day	Points
1 - 2	1
3 - 5	2
6 - 10	3
11 - 20	4
21 - 30	5
31 - 40	6
41 - 50	7
51 - 60	8
61 - 70	9
71 +	10

OF = Other Factors

    0 - 16 points based on:
    secondary accidents, emergency vehicle usage,
    passenger buses, school buses, hazardous
    materials trains and trucks, community impact.

APPENDIX A
Page 4

FORMULA FOR EXISTING SEPARATIONS
NOMINATED FOR ALTERATION OR RECONSTRUCTION

$$P = \frac{V\ (T + 0.1 \times LRT)}{C \times F} + SCF$$

Where:

P = Priority Index Number
V = Average 24-Hour Vehicular Volume
C = Total Cost of Separation Project
        (In Thousands of Dollars)
T = Average 24-Hour Railroad Train Volume
LRT = Average 24-Hour Light Rail Transit Volume
F = Cost Inflation Factor (Use F = 11 for
        1990-91 & 1991-92 F.Y. Priority List
        Based on the Current Construction Cost
        Index)
SCF = Special Conditions Factor

SCF = WC + HC + SR + LL + AS + PF

Where:

		Points Possible
WC = Width Clearance		0 - 10
HC = Height Clearance		0 - 10
SR = Speed Reduction or Slow Order		0 - 5
LL = Load Limit		0 - 5
AS = Accidents At or Near Structure		0 - 10
PF = Probability of Failure and Other Factors		0 - 30
	Total Possible	0 - 70

POINTS IN EACH CATEGORY ARE ASSIGNED ACCORDING TO THE FOLLOWING
SCHEDULE:

WC = Width Clearance

Width (feet)	Points
16' + 12(N)	0
12' but less than 16' + 12(N)	2
8' but less than 12' + 12(N)	4
0" but less than 8' = 12(N)	6
11(N) but less than 12(N)	8
Less than 11(N)	10

N = Number of Traffic Lanes

HC = Separation Height Clearance

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 1/2' and above	0
20' but less than 22 1/2	4
18' but less than 20'	8
Less than 18'	10

SR = Speed Reduction or Slow Order

	Points
None	0
Moderate	2
Severe	5

LL = Load Limit

	Points
None	0
Moderate	2
Severe	5

AS = Accidents at or Near Structure (10 years)

Number	Points
0 - 10	0
11 - 20	1
21 - 30	2
31 - 40	3
41 - 50	4
51 - 60	5
61 - 70	6
71 - 80	7
81 - 90	8
91 - 100	9
100 +	10

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Agency	Crossing Name	RR	Br.	Mile Post	Typ Sfx Prj	Vehvol	Trvol	C	Veh MPH	VS	Trn MPH	RS	CG	BD	AR	AX	PT	OF	SCF	VxT*(AH+BO) CxF	Priority Index
Kern County	Morning Drive	1	B	317.5	A	9533	63	4790	45	3	60	4	5	2.5	5	0	0	10	27	28	55
Kern County	Oswell Street	1	B	315.4	A	11500	65	5603	45	3	60	4	5	3.5	5	2	0	10	27	67	94
Los Angeles	De Soto Avenue	1	E	466.8	B	55600	14	18885	40	2	60	4	3	0.5	5	0	2	5	21	2	23
Los Angeles	Imperial Highway	2	N	13.1	Depr	56700	4	13677	40	2	15	0	5	2.5	1	2	0	5	13	7	20
Los Angeles	Roscoe Blvd.	1	E	452.3	B	55000	14	10038	35	1	60	4	3	0.5	2	0	2	7	19	3	22
Los Angeles	Sunland Blvd.	1	B	467.8	B	29300	11	18885	30	0	50	3	5	2.5	3	3	0	8	19	9	28
Los Angeles	Valley Blvd.	1	B	485.8	A	25500	35	17879	35	1	30	1	6	8.0	4	3	1	8	21	50	71
Los Angeles	Van Nuys Blvd.	1	B	463.4	B	27000	11	8568	35	1	55	3	5	2.5	2	3	0	8	19	17	36
Los Angeles	Vineland Ave.	1	E	459.6	B	32000	12	8605	35	1	60	4	3	0.5	2	0	2	5	17	2	19
Los Angeles County	Bandini Blvd.	3	A	3.4	C A	25000	21	17262	45	3	20	0	5	4.0	1	2	0	11	20	17	37
Los Angeles County	El Segundo Blvd.	1	BBH	492.60	A	21900	174	10785	35	1	55	3	3	0.5	0	0	10	10	27	2	29
Los Angeles County	Florence Avenue	1	BG	488.3	A	36400	10	13710	35	1	10	0	4	10.0	2	1	0	10	17	27	44
Los Angeles County	Florence Avenue	1	BBH	488.43	A	33800	176	12961	35	1	55	3	3	1.0	2	6	10	10	29	47	76
Los Angeles County	Imperial Highway	1	BBH	491.60	A	39500	174	18990	35	1	55	3	4	0.5	0	2	10	10	28	12	40
Los Angeles County	Norwalk Blvd.	1	BBJ	497.28	A	20100	52	21120	45	3	65	4	4	1.0	1	1	4	10	26	9	35
Los Angeles County	Slauson Avenue	1	BBH	487.42	B	35900	17	14641	35	1	20	4	4	10.0	1	3	0	10	20	49	69
Los Angeles County	Slauson Avenue	1	BG	487.3	A	36400	6	15356	35	1	10	0	5	2.5	1	0	0	10	17	3	20
Menlo Park	Burgess Drive	1	E	29.4	Pro B	8000	56	4507	25	0	70	5	3	1.0	1	0	8	4	21	9	30
Menlo Park	Encinal Avenue	1	E	28.4	B	4200	56	4412	25	0	70	5	4	1.0	1	3	8	6	24	19	43
Menlo Park	Glenwood Avenue	1	E	28.6	B	6300	56	6680	25	0	70	5	3	1.0	1	0	8	6	23	5	28
Menlo Park	Oak Grove Avenue	1	E	28.8	B	9800	56	6103	25	0	70	5	3	1.5	1	0	8	10	27	12	39
Menlo Park	Ravenswood Avenue	1	E	29.0	B	22500	56	4541	25	0	70	5	3	1.0	1	0	8	12	29	25	54
Millbrae	Millbrae Avenue	1	E	13.7	A	43250	56	10038	35	1	70	5	3	1.0	4	2	8	8	29	66	95
Montclair	Monte Vista Ave.	2		103.74	Pro B	25000	15	1462	45	3	65	4	0	1.5	2	0	1	4	14	0	49
Oceanside	8th Street	2		225.5	Pro A	4000	22	4810	25	0	50	3	0	0.0	0	0	4	3	10	0	10
Oceanside	Cassidy Street	2		228.0	A	8200	22	7092	25	0	90	7	3	1.0	3	0	4	8	25	2	27
Oceanside	Hill Street	2	E	0.3	A	25000	1	7581	35	1	15	0	5	10.0	3	3	0	10	19	4	23
Oceanside	Oceanside Blvd.	2		227.2	A	5300	22	15747	25	0	90	7	5	1.0	2	0	4	7	25	1	26
Ontario	Archibald Avenue	1	B	523.4	B	5694	31	12066	45	3	70	5	6	2.0	5	0	1	8	28	3	31
Ontario	Archibald Avenue	3		41.2	B	12216	18	5687	40	2	60	4	5	3.0	5	0	0	7	23	11	34
Ontario	Grove Avenue	3		39.0	B	26805	18	8156	35	1	60	4	5	3.0	2	11	0	8	20	75	95
Ontario	Haven Avenue	3		42.3	Pro B	21500	18	5662	45	3	60	4	0	3.0	5	0	0	5	17	0	36
Paramount	Alondra Blvd.	3	A	12.3	B	33600	18	7760	40	2	20	0	3	8.5	2	2	0	16	23	74	97
Redwood City	Brewster Avenue	1	E	25.2	B	11000	58	6000	25	0	55	3	3	1.5	0	3	8	10	24	44	68

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Agency	Crossing Name	RR	Br.	Mile Post	Typ Sfx Prj	Vehvol	Trvol	C	Veh MPH	VS	Trn MPH	RS	CG	BO	AR	AH	PT	OF	SCF	VxT*(AH+BD) CxF	Priority Index
Redwood City	Jefferson Ave.	1	E	25.6	B	20000	58	12750	25	0	55	3	3	2.0	0	1	8	12	26	25	51
Redwood City	Whipple Avenue	1	E	24.8	B	30000	58	14725	25	0	45	2	3	1.5	1	0	8	12	26	16	42
Roseville	Harding Blvd.	1	A	107.7	Pro A	25300	29	4351	45	3	35	1	3	1.0	5	0	1	4	17	15	32
Sacramento RTD	Power Inn Road	83	E	5.64	A	36800	133	4067	45	3	50	3	3	0.5	2	0	10	5	26	6	32
San Bernardino	Rialto Avenue	2	B	0.7	A	10000	13	2798	35	1	15	0	4	5.0	1	1	0	10	16	25	41
San Carlos	Holly Street	1	E	23.2	B	21000	54	16020	30	0	70	5	3	1.0	5	8	7	9	29	58	87
San Carlos	Howard Street	1	E	24.10	B	17800	58	12825	30	0	70	5	3	1.5	5	0	7	8	28	11	39
San Diego MTDB	28th Street	36		2.8	A	20000	154	7930	30	0	35	1	3	0.5	3	0	10	7	24	2	26
San Diego MTDB	32nd Street	36		3.4	A	20000	154	8744	30	0	35	1	3	0.5	3	0	10	7	24	2	26
San Diego MTDB	Allison Avenue	36	D	12.4	A	7500	147	7600	25	0	40	2	3	0.5	0	0	10	9	24	1	25
San Diego MTDB	E Street	36		7.1	A	39000	154	6676	35	1	35	1	3	0.5	1	0	10	12	28	4	32
San Diego MTDB	Euclid Avenue	36	D	5.7	A	20000	147	6930	35	1	40	2	4	0.5	2	0	10	8	27	2	29
San Diego MTDB	Fletcher Parkway	36	D	17.8	C A	38050	2	7868	40	2	20	0	3	0.5	3	0	0	10	18	0	18
San Diego MTDB	X Street	36		7.9	A	30000	154	6578	35	1	30	1	4	0.5	2	0	10	11	29	4	33
San Diego MTDB	La Mesa Blvd.	36	D	12.3	A	13500	147	7600	25	0	35	1	4	0.5	0	0	10	12	27	1	28
San Diego MTDB	Lemon Avenue	36	D	12.2	A	3650	147	7600	25	0	50	3	4	0.5	0	0	10	10	27	0	27
San Diego MTDB	Main Street	36	D	16.9	A	27400	2	7086	35	1	20	0	4	0.5	2	0	0	5	12	0	12
San Diego MTDB	Severin Drive	36	D	14.7	A	19986	147	6736	30	0	50	3	6	0.5	2	2	10	9	30	11	41
San Diego MTDB	University Ave.	36	D	12.5	A	20598	147	7600	35	1	40	2	6	0.5	0	0	10	10	29	2	31
San Mateo	1st - 9th Ave cnsl	1	E	18.3	Depr	45050	56	62600	25	0	70	5	7	10.0	0	0	8	16	36	37	73
San Mateo	25th Avenue	1	E	19.7	B	11200	56	8300	25	0	70	5	3	1.5	3	1	8	12	31	17	48
San Mateo County	Fifth Avenue	1	E	27.2	B	18800	54	9517	25	0	70	5	6	0.5	2	6	8	10	31	63	94
Santa Ana	Grand Avenue	2		176.2	A	31037	20	7001	40	2	40	2	5	0.5	2	5	4	11	26	44	70
South San Francisco	Oyster Point Blvd.	1	E	8.4	A	16787	58	12500	35	1	60	4	7	0.5	3	4	8	15	38	32	70
Stockton	Hammer Lane	1	D	95.6	B	20300	25	9896	35	1	60	4	3	2.0	5	5	0	11	24	33	57
Stockton	Hammer Lane	4		98.5	B	41800	13	11192	35	1	60	4	3	4.5	5	6	0	12	25	46	71
Stockton	March Lane	1	D	94.5	Pro B	50000	25	9278	45	3	40	2	2	2.0	5	0	0	2	14	24	38
Stockton	March Lane	4		97.1	B	26900	19	9496	45	3	50	3	3	3.0	1	1	3	10	23	20	43
Torrance	Del Amo Blvd.	2	N	20.0	Pro A	25000	10	5192	45	3	20	0	3	2.5	5	0	0	3	14	11	25
West Sacramento	Harbor Blvd.	1	A	86.4	B	11000	16	2360	35	1	60	4	6	3.0	5	2	2	13	31	30	61
Yorba Linda	Fairmont	2	B	37.7	Pro A	7000	26	2670	55	5	35	1	2	0.0	5	0	3	2	18	0	18

Note: In the term VT*/CF(AH+BD), T* equals the regular train volume plus 1/10 the LRT volume.

Agency	Crossing Name	RR	Br.	Mile Post	Sfx	Vehvol	Trvol	C	VC	HC	SR	LL	AS	PF	VT*/CF	SCF	Priority Index
Barstow	First Avenue	2		746.5	exs A	13500	69	14625	6	0	0	2	10	30	6	48	54
Caltrans	Mission Blvd	4		30.4	exs B	26000	24	1544	10	0	0	0	0	15	37	25	62
Caltrans	Rte 238 (MissionBl)	4	G	1.4	exs B	30000	10	2506	8	4	0	0	0	15	11	27	38
Los Angeles	Alameda Street	2	N	27.63	exs B	13200	6	5343	10	0	5	0	0	15	1	30	31
Los Angeles	North Spring St.	3	8	1.7	exs A	15800	14	7412	10	0	2	0	2	24	3	38	41
Los Angeles County	Telegraph Road	2		148.8	exs B	15200	48	6261	6	4	0	0	2	18	11	30	41
Oroville	Lincoln Street	3		204.7	exs B	3400	26	1050	4	8	0	0	0	12	8	24	32
Oroville	Myers Street	3		204.9	exs B	6800	26	1050	2	8	0	0	0	12	15	22	37
Pittsburg	Harbor Street	1	B	49.3	exs B	14200	12	1023	8	4	0	0	2	15	15	29	44
San Diego MTDB	Main Street	36		10.3	exs C	29000	154	3411	2	0	0	0	4	9	15	15	30
San Mateo	Monte Diablo Ave.	1	E	17.4	exs B	1340	58	5900	6	10	0	0	0	27	1	43	44
San Mateo	Poplar Avenue	1	E	17.2	exs B	10560	58	9000	6	8	0	0	5	24	6	43	49
San Mateo	Santa Inez Ave.	1	E	17.3	exs B	1020	58	6900	4	10	0	0	5	24	1	43	44
San Mateo	Tilton Avenue	1	E	17.5	exs B	4750	58	5900	6	10	0	0	5	27	4	48	52
Santa Barbara Co.	Hollister Ave.	1	E	365.7	exs B	15700	6	4206	2	4	0	0	10	21	2	37	39

Note: In the term VT*/CF, T* equals the regular train volume plus 1/10 the LRT volume

Agency	Crossing Name	RR	Br.	Mile Post	Sfx	Typ Prj	Priority Index	Priority Number
Fresno	Consolidation	Various, ATSF & SP				Othr	1663	1
Paramount	Alondra Blvd.	3	A	12.3		B	97	2
Ontario	Grove Avenue	3		39.0		B	95	3
Millbrae	Millbrae Avenue	1	E	13.7		A	95	4
Kern County	Oswell Street	1	B	315.4		A	94	5
San Mateo County	Fifth Avenue	1	E	27.2		B	94	6
Fresno	Shaw Avenue	2		1004.2		B	91	7
San Carlos	Holly Street	1	E	23.2		B	87	8
Los Angeles County	Florence Avenue	1	BBH	488.43		A	76	9
San Mateo	1st - 9th Ave cnsl	1	E	18.3		Depr	73	10
Stockton	Hammer Lane	4		98.5		B	71	11
Los Angeles	Valley Blvd.	1	B	485.8		A	71	12
South San Francisco	Oyster Point Blvd.	1	E	8.4		A	70	13
Bakersfield	P - Q - S Sts.	2		886.7		B	70	14
Santa Ana	Grand Avenue	2		176.2		A	70	15
Los Angeles County	Slauson Avenue	1	BBH	487.42		B	69	16
Redwood City	Brewster Avenue	1	E	25.2		B	68	17
Buena Park	Dale Street	2		161.3		A	67	18
Belmont	Ralston Avenue	1	E	22.0		B	62	19
Caltrans	Mission Blvd	4		30.4	exs B	B	62	20
West Sacramento	Harbor Blvd.	1	A	86.4		B	61	21
Fresno County	Clovis	1	B	213.3		A	61	22
Fresno	Shaw Avenue	1	B	198.5		A	61	23
Downey	Brookshire Ave.	1	BK	495.4		B	57	24
Stockton	Hammer Lane	1	O	95.6		B	57	25
Bakersfield	Coffee Road	2		891.6		A	56	26
Caltrans	State Route 58	2		780.3		A	56	27
Fresno County	Chestnut Avenue	1	B	210.3		A	56	28
Kern County	Morning Drive	1	B	317.5		A	55	29
Barstow	First Avenue	2		746.5	exs A	A	54	30
Menlo Park	Ravenswood Avenue	1	E	29.0		B	54	31
Fresno	Herndon Avenue	1	B	195.8		A	53	32
San Mateo	Tilton Avenue	1	E	17.5	exs B	B	52	33
Redwood City	Jefferson Ave.	1	E	25.6		B	51	34
San Mateo	Poplar Avenue	1	E	17.2	exs B	B	49	35
Montclair	Monte Vista Ave.	2		103.74	Pro	B	49	36
Hayward	Tennyson Road	1	O	23.0		B	49	37
San Mateo	25th Avenue	1	E	19.7		B	48	38
San Mateo	Monte Diablo Ave.	1	E	17.4	exs B	B	44	39
San Mateo	Santa Inez Ave.	1	E	17.3	exs B	B	44	40
Los Angeles County	Florence Avenue	1	BG	488.3		A	44	41
Pittsburg	Harbor Street	1	B	49.3	exs B	B	44	42
Caltrans	State Route 58	2		753.2		A	43	43
Menlo Park	Encinal Avenue	1	E	28.4		B	43	44
Stockton	March Lane	4		97.1		B	43	45
Redwood City	Whipple Avenue	1	E	24.8		B	42	46
San Bernardino	Rialto Avenue	2	B	0.7		A	41	47
Hayward	Harder Road	1	O	21.6		B	41	48
San Diego MTDB	Severin Drive	36	O	14.7		A	41	49

Agency	Crossing Name	RR	Br.	Mile Post	Sfx	Typ Prj	Priority Index	Priority Number
Los Angeles County	Telegraph Road	2		148.8	exs B	B	41	50
Los Angeles	North Spring St.	3	B	1.7	exs A	A	41	51
Los Angeles County	Imperial Highway	1	BBH	491.60		A	40	52
San Carlos	Howard Street	1	E	24.10		B	39	53
Dixon	West A Street cnsl.	1	A	67.4		Depr	39	54
Menlo Park	Oak Grove Avenue	1	E	28.8		B	39	55
Santa Barbara Co.	Hollister Ave.	1	E	365.7	exs B	B	39	56
Caltrans	Rte 238 (MissionBl)	4	G	1.4	exs B	B	38	57
Stockton	March Lane	1	D	94.5	Pro	B	38	58
Irvine	Sand Canyon Ave.	2		182.9		B	38	59
Los Angeles County	Bandini Blvd.	3	A	3.4	C	A	37	60
Compton	Alondra Blvd.	1	BG	494.3		B	37	61
Oroville	Myers Street	3		204.9	exs B	B	37	62
Anaheim	State College Blvd.	2		170.3		A	36	63
Ontario	Haven Avenue	3		42.3	Pro	B	36	64
Los Angeles	Van Nuys Blvd.	1	B	463.4		B	36	65
Compton	Compton Blvd.	1	BG	493.8		B	36	66
Los Angeles County	Norwalk Blvd.	1	BBJ	497.28		A	35	67
Fresno County	Mountain View Ave.	1	B	222.5		A	35	68
Hayward	A Street	4		20.2		B	35	69
Ontario	Archibald Avenue	3		41.2		B	34	70
El Monte	Baldwin Avenue	1	B	493.6		B	34	71
Fremont	Washington Blvd.	1	OA	32.8		A	33	72
San Diego MTDB	H Street	36		7.9		A	33	73
Caltrans	State Route 132	2		1089.3		A	33	74
Roseville	Harding Blvd.	1	A	107.7	Pro	A	32	75
Sacramento RTD	Power Inn Road	83	E	5.64		A	32	76
San Diego MTDB	E Street	36		7.1		A	32	77
Oroville	Lincoln Street	3		204.7	exs B	B	32	78
San Diego MTDB	University Ave.	36	D	12.5		A	31	79
Ontario	Archibald Avenue	1	B	523.4		B	31	80
Los Angeles	Alameda Street	2	M	27.63	exs BC	B	31	81
Menlo Park	Burgess Drive	1	E	29.4	Pro	B	30	82
Caltrans	State Route 166	1	E	276.8		A	30	83
San Diego MTDB	Main Street	36		10.3	exs C	B	30	84
El Monte	Arden Drive	1	B	494.0		B	29	85
San Diego MTDB	Euclid Avenue	36	D	5.7		A	29	86
Los Angeles County	El Segundo Blvd.	1	BBH	492.60		A	29	87
Menlo Park	Glenwood Avenue	1	E	28.6		B	28	88
San Diego MTDB	La Mesa Blvd.	36	D	12.3		A	28	89
Los Angeles	Sunland Blvd.	1	B	467.8		B	28	90
Oceanside	Cassidy Street	2		228.0		A	27	91
San Diego MTDB	Lemon Avenue	36	D	12.2		A	27	92
Camarillo	Adolfo Road	1	E	417.9		B	26	93
Camarillo	Upland Road	1	E	418.9		A	26	94
San Diego MTDB	28th Street	36		2.8		A	26	95
San Diego MTDB	32nd Street	36		3.4		A	26	96
Oceanside	Oceanside Blvd.	2		227.2		A	26	97
El Monte	Ramona Blvd.	1	B	495.1		B	25	98

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Agency	Crossing Name	RR	Br.	Mile Post	Sfx	Typ Prj	Priority Index	Priority Number
San Diego MTDB	Allison Avenue	36	D	12.4		A	25	99
Torrance	Del Amo Blvd.	2	N	20.0	Pro	A	25	100
Emeryville	Yerba Buena Ave.	1	A	6.5	Pro	A	24	101
Fremont	Paseo Padre Parkway	1	DA	32.1		A	24	102
Oceanside	Hill Street	2	E	0.3		A	23	103
Los Angeles	De Soto Avenue	1	E	446.8		B	23	104
Los Angeles	Roscoe Blvd.	1	E	452.3		B	22	105
Los Angeles County	Slauson Avenue	1	BG	487.3		A	20	106
Los Angeles	Imperial Highway	2	X	13.1		Depre	20	107
Caltrans	John St. (SR 68)	1	E	119.29		B	19	108
Los Angeles	Vineland Ave.	1	E	459.6		B	19	109
Yorba Linda	Fairmont	2	B	37.7	Pro	A	18	110
San Diego MTDB	Fletcher Parkway	36	D	17.8	C	A	18	111
San Diego MTDB	Main Street	36	D	16.9		A	12	112
Oceanside	8th Street	2		225.5	Pro	A	10	113
Fremont	Blacow Road	1	DA	33.4	Pro	B	10	114

(END OF APPENDIX B)

APPENDIX C

List of Appearances

Applicants: Ronald F. Ruettgers, by Robert M. Barton, for Greater
     Bakersfield Separation of Grade District and for himself; John
     Hopkins, for City of Belmont; Eugene C. Bonnstetter, for
     Caltrans; Paulette B. Garcia, Attorney at Law, for City of
     Fremont; Jack Limber, Attorney at Law, and William C. Lorenz,
     for San Diego Metropolitan Transit Development Board; Messrs.
     Graham & James, by David J. Marchant and Peter W. Hanschen,
     Attorneys at Law, for Los Angeles Transportation Commission;
     Arch Perry, for City of San Mateo; John Segerdell and Jeff
     Gualco, for Sacramento Regional Transit District; Adam P. Gee,
     for City of Redwood City; Ed Hardin, for City of Hayward;
     James A. Kellner, for City of Pittsburg; Geoffrey C. Kline, for
     San Mateo County Department of Public Works; Wally Kolb, for
     City of Emeryville; Edwin Ohannesian, for County of Fresno
     Public Works and Development Service; Roy M. Smith, for AT&SF
     Railway; Anthony J. Telesco, for City of Fresno; Roger Young,
     for City of San Carlos; Vernita H. Anderson, for City of Downey;
     Irwin L. Chodash, for City of Los Angeles; Michael A. Curtin,
     for City of Ontario; Ken H. Hanson, for City of Compton; Randy
     Kensing, for City of Santa Ana; Shirley Land, for City of
     Irvine; Victor Martinez, for City of Paramount; Richard D.
     Perkins, for City of Torrance; Robert J. Pinniger, for City of
     El Monte; Carl Schiermeyer, for City of Barstow; Paul Singer,
     for City of Anaheim; Loren A. Tuthill, for City of Buena Park;
     City of Yorba Linda, by Francisco Borges, for Roy Stephenson,
     City Engineer; NHA Inc., Surfare Transportation Consultants, by
     Noel Braymer, for City of Oceanside; Michael Grubbs, for City of
     San Bernardino; James H. Larsen, for City of Camarillo;
     Ronald D. Ondrozeck, for Los Angeles County; and Mark A.
     Schleich, for County of Santa Barbara.

Respondents: Jeff S. Asay, Attorney at Law, for Union Pacific
     Railroad Company, and Leland E. Butler, Attorney at Law, for
     Southern Pacific Transportation Company.

Safety Division: Alberto Guerrero, Attorney at Law; Vahak
     Petrossian; and Raymond D. Yick.

(END OF APPENDIX C)