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BEFORE THE

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Investigation on the Commission's Own Motion into the Closure of the Highway-Rail At-Grade Crossing at West Doran Street south of State Route 134 between San Fernando Road and West San Fernando Road, in the City of Glendale, California, DOT Crossing No. 746804B, CPUC Crossing No. 101VY-7.99, and the Effects of that Closure on the City of Glendale and Nearby Residents in the City of Los Angeles, California.	Investigation 10-02-020 (Filed February 25, 2010)

RULE 12 MOTION FOR APPROVAL OF SETTLEMENT AGREEMENT

Christina R. Sansone (SBN 151284)
MICHAEL J. GARCIA, CITY ATTORNEY
613 East Broadway, Suite 220
Glendale, CA 91206
Telephone: (818) 548-2080
Facsimile: (818) 547-3402
Email: csansone@ci.glendale.ca.us
Attorneys for the City of Glendale

Pursuant to Rule 12 of the Rules of Practice and Procedure of the California Public Utilities Commission ("Commission"), the City of Glendale ("Glendale"), Southern California Regional Rail Authority ("Metrolink"), the City of Los Angeles ("Los Angeles"), and the Pelanconi Estates Homeowners Association ("Pelanconi HOA") (collectively, the "Settling Parties") hereby move for approval of the settlement detailed in the Stipulation of the Parties ("Settlement Agreement"), a true and correct copy of which is attached hereto as **Exhibit A** and by this reference incorporated herein, pertaining to the Commission's above-captioned Order ("OII").

I. BACKGROUND

A. Flower Street Crossing. On March 15, 2007, the Commission issued Order 07-03-027 ("Order") approving the construction of the Flower Street at-grade crossing in Glendale. Among other things, the Order required Glendale to provide for safety enhancements at all at-grade crossings in Glendale (Grandview Avenue and Sonora Avenue) and those crossings that Glendale shares with Los Angeles (Broadway/Brazil and Chevy Chase), plus to seek the closure of Doran Street Crossing which does not meet current safety standards. For the crossings shared with Los Angeles, Glendale would use its best efforts with cooperation from LA to make crossing improvements. Glendale proceeded to design and provide safety enhancements to the crossings within Glendale. Although no formal agreement had yet been executed between Glendale and Los Angeles, their respective staffs met informally to discuss designing safety enhancements for the shared crossings. As part of the Order, Glendale deposited $2 million in an escrow account to be used for enhancement of the shared crossings, including the closure of the Doran Street Crossing.

Prior to the Commission's action in the instant case, Glendale, Metrolink and Los Angeles worked together to develop the proposed design for safety enhancements at the Broadway/Brazil Street Crossing, the first crossing south of the Doran Street Crossing. At that time, Glendale, Metrolink, and Los Angeles had reached an impasse with regard to the allocation of liability risk between the parties.

B. Commission Order Investigating the Closure of the Doran Street Crossing. On February 25, 2010, the Commission issued the Order Instituting Investigation ("OII"). The OII was filed by the Commission's rail safety staff to investigate the possible full closure of the Doran Street Crossing and examine the impacts of its closure on nearby residences and businesses. Commission staff favored full closure of the Doran Street Crossing to mitigate the following safety concerns:

(1) The proximity of a propane facility to the Doran Street Crossing poses risk of collision with trains and motorists.

(2) The width of the Doran Street Crossing between the railroad tracks and San Fernando Road is insufficient for truck traffic to safely make turns into or out of the crossing area. For example, the configuration of the Doran Street Crossing forces southbound tractor trailer trucks and long flatbed trucks on San Fernando Road that turn right (westbound) onto Doran Street to extend into and block the eastbound traffic on Doran Street.

In addition to the above safety concerns, there is significant noise generated by the freeway, local traffic on San Fernando Road, the nearby City of Glendale power plant and south coast Recycling Center; and the Doran Street Crossing is redundant given that Broadway/Brazil Crossing is only one-half mile to the south.

Two public participation hearings were conducted during which Administrative Law Judge Rochester ("ALJ Rochester") heard testimony from the nearby businesses, residents, and first-responder agencies who opposed full closure of the Doran Street Crossing. They testified that the closure would impose significant traffic impacts on the nearby Broadway/Brazil Crossing and have an adverse effect on response times by public safety personnel.

On November 18, 2011, CPSD withdrew as a party in the proceeding and notified the parties that it will act only in an advisory capacity to ALJ Rochester concerning the OII.

C. Mediation. The remaining parties were invited to attend a two-day mediation on March 29-30, 2012. The mediators in attendance were ALJ W. Anthony Colbert and former ALJ Kenneth Koss. The parties who participated in the mediation were: Los Angeles, Glendale, Metrolink, Los Angeles County Metropolitan Transportation Authority (LACMTA)(not a formal party but an interested party), Pelanconi HOA, Atwater Village Neighborhood Council, and Cinelease.

D. Results of Mediation. At the conclusion of the mediation, Metrolink, Los Angeles, and Glendale agreed to a proposed allocation of liability risk regarding the Broadway/Brazil Crossing which resolved the final contractual issues between the parties. As for the Doran Street Crossing, the Settling Parties compared three options to their effectiveness in alleviating the safety concerns raised by the OII. The options were: full closure, one-way westbound, and two-way upgrade. Full closure appeared to eliminate all of the safety issues with the exception of the adjacent propane facility. However, although Glendale and Metrolink were in favor of closure, testimony from public safety personnel representing emergency-response agencies in Los Angeles and Glendale were opposed to the full closure of the Doran Street Crossing due to the concern that the closure would leave only one remaining crossing

available—Broadway/Brazil Crossing. If the Broadway/Brazil Crossing were blocked or unavailable, emergency-response agencies would have no other crossing available to enter or exit the area. The Settling Parties also agreed that the relocation of the propane facility or the building of a crash wall to protect the facility from train collisions would not be financially, legally or technically feasible.

Glendale, Los Angeles, Metrolink, Metro, and Pelanconi entered into a Settlement Agreement with the provision that the signing parties would bring the Settlement Agreement to their respective governing boards or councils for final authorization. At the time of this writing, all of the settling parties have received authorization of the Agreement.

II. SETTLEMENT AGREEMENT

A. Broadway/Brazil Crossing. The Settlement Agreement provides for designing and constructing safety enhancements at the Broadway/Brazil Crossing. These safety enhancements will include an advance preemption system; extinguishable message signs; widening at Broadway, Brazil, and San Fernando Road West; increased curb radii; raised concrete medians; four-quad gates; modified traffic signal at San Fernando Road and Broadway on Glendale side; new traffic signal at San Fernando Road West and Brazil Street on the Los Angeles side; improved street lighting; and right-of-way dedication by Metro. In the Settlement Agreement, Metrolink, Los Angeles, and Glendale have agreed in concept to pursue the following for the Broadway/Brazil Crossing:

1. Construction of Improvements. Under a construction and maintenance agreement with Metrolink, Los Angeles will construct safety improvements in Los Angeles. Metrolink will construct the improvements in its own rail right-of-way and in Glendale.

2. Traffic Signals. Metrolink will design traffic signals at the Broadway/Brazil crossing in both Glendale and Los Angeles. Metrolink will construct traffic signals in Glendale. Los Angeles will construct traffic signals in Los Angeles. Glendale will maintain the traffic signals for both cities pursuant to a future Traffic Maintenance Agreement with Los Angeles, which will include a cross-indemnity provision.

3. Construction and Maintenance Agreement. Metrolink and Los Angeles will enter into a construction and maintenance agreement in which Metrolink will indemnify Los Angeles for SCRRA work and Los Angeles will indemnify Metrolink for the Los Angeles work.

4. Memorandum of Understanding. Metrolink, Los Angeles and Glendale will work in good faith to enter into a global memorandum of understanding to provide safety enhancements to the remaining shared crossings at the Doran Street and Chevy Chase crossings.

5. Assistance for Los Angeles. MTA, Metrolink, and Glendale will provide assistance to Los Angeles, including utility and right-of-way assistance, for Los Angeles to secure/appropriate federal funding. If necessary, Los Angeles may request a delay to the work if needed to pursue funding. Los Angeles will inform Metrolink of any request to delay the advertising of the Metrolink and Glendale work.

6. Hazardous Waste and Cost Overruns. Each party would be responsible for hazardous waste remediation on its own property and bears its own costs on project overruns related to work in its agreed scope of work.

7. Funding for the Broadway/Brazil Crossing. Los Angeles has agreed to expeditiously pursue authorization of funding for construction for the Los Angeles portion of

work. And subject to Los Angeles securing that funding, it will work expeditiously to complete all obligations in the agreement. At present, the anticipated cost of completing the safety enhancements at the Broadway/Brazil Crossing improvement project for work in Glendale and the SCRRA ROW is estimated at $8 million. The cost for the work for the Los Angeles portion is not yet determined.

B. Doran Street Crossing. The Settling Parties agreed to proceed with the following improvements for the Doran Street Crossing:

1. Temporary One-Way Proposal. The Settling Parties have agreed to proceed with the temporary one-way-westbound crossing configuration with automatic warning devices conforming to SCRRA, MUCTD and CPUC standards. A team approach following the CPUC Field Diagnostic Process involving the Parties, railroads and the CPUC will be used to determine the specific improvements required. This configuration would be installed on a temporary basis until a grade separation can be constructed or, if a grade separation is impracticable and an alternative location for a grade separation not possible, reconsideration would be made by all parties of a full upgrade of the crossing safety with two-way traffic operation at the Doran Street Crossing . The One-Way Proposal would convert two-way operations into a one-way westbound operation to enable vehicles to use the entire roadway to make wide turns required by many trucks, and it will prevent the congestion that opposing eastbound traffic often generates. Emergency-response vehicles would be able to approach and cross the Doran Street Crossing from any direction.

2. Other Safety Enhancements. Glendale and Metrolink will also implement a smoother approach grade at the Doran Street Crossing. This will eliminate the possibility of a

large truck getting "stuck" on the railroad tracks. The construction of one-way modifications to the Doran Street Crossing would commence only after the improvements at Broadway/Brazil have been completed.

Improvements to the Doran Street Crossing will be enhanced with a vehicle detection system with a gate-down circuit to prevent early termination of the track clearance green time to clear vehicles on the track and advance pre-emption timing to provide pedestrian clearance time before preemption.

3. Funding for Design and Construction of the One-Way Proposal. LACTC's Board has approved $6.6 million for the complete upgrade of the Doran Street Crossing. Based on a preliminary estimate, the One-Way Proposal will cost $1.5-$2 million. It is the intent of the parties to reserve the remaining balance of the $6.6 million as a local match for a larger grant for a grade separation.

LACMTA agreed to investigate the method for procuring a consultant and/or contractor to design and construct the One-Way Proposal. On May 2, 2012, LACMTA confirmed that it will provide funding for Metrolink to procure a design to prepare the final design of the interim one-way west bound Doran Street configuration. This will be accomplished by the use of a consulting firm currently under contract with Metrolink for grade-crossing improvements. LACMTA will construct the improvements for the interim one-way configuration through its procurement process.

4. Metrolink Construction of Improvements. Metrolink reported that it will not undertake the road and pedestrian improvements in the rail right-of-way on behalf of Glendale.

As such, Glendale, Metrolink and Los Angeles will be responsible for improvements within their own perspective jurisdictions.

5. Possible Future Two-Way Improvements. The temporary One-Way Proposal design will not preclude a future design of a two-way improvement of the Doran Street Crossing.

6. Possible Future Grade Separation. There are two possible grade separation options: the first would involve the closure of the Doran Street Crossing and construction of a new north-south roadway west of West San Fernando Road that would connect Doran Street to the Fairmont Avenue Flyover north of the SR-134 freeway. A separate option would be the construction of a Doran Street Flyover (over San Fernando Road) comparable to the recently completed Fairmont Avenue Flyover. Either option would require the cooperation of Glendale, Los Angeles, Metrolink, and Caltrans. LACMTA has agreed to report by October 2, 2012, as to whether there is any funding available to construct a grade separation at or near Doran Street. If there is such funding, LACMTA will advise the parties as to the timing and procedure for such a project. If no funding is available, the parties have reserved the right to consider restoring the crossing to a two-way operation with safety enhancements.

The Settling Parties have agreed to work cooperatively and sign all necessary agreements with the other parties and to seek final design approval and funding for the Broadway/Brazil Crossing. All improvements will comply with Commission procedures where applicable.

III. ACCEPTANCE OF A SETTLEMENT IS WARRANTED WHERE THE SETTLEMENT IS "REASONABLE IN LIGHT OF THE WHOLE RECORD, CONSISTENT WITH LAW, AND IN THE PUBLIC INTEREST." CPUC RULE 12.1(E).

A. The Settlement Agreement Is Reasonable in Light of the Whole Record:

The Settlement Agreement addresses the major safety concerns raised in the OII to the extent possible. The One-Way Proposal addresses the needs of the businesses, public safety officers, and residents in the area and provides a temporary solution to address the concerns set forth in the OII while future potential improvements can be considered, including the determination as to whether a grade separation would be practicable. LACMTA has already begun that process. In the interim, if Doran Street were completely closed, it would negatively impact the Broadway/Brazil Crossing. The Settling Parties have agreed that the One-Way Proposal is an acceptable interim measure which would ensure that the impacts at Broadway/Brazil are kept to a minimum while the grade-separation option is analyzed.

B. The One-Way Proposal Is Consistent with Law.

California Public Utilities Code Sections 1201 – 1205 provide that the Commission may order the modification of an at-grade crossing.

In Pasadena Metro Blue Line Decision (D.02-05-047) and affirmed in the San Diego Decision (D.03-12-018), the Commission established a seven-factor test for evaluating new at-grade crossings to establish public convenience, necessity and public safety. Blue Line, D.02-05-047 at 11-12. Although the legal test set forth in Pasadena Metro Blue Line Decision (D.02-05-047) and affirmed in the San Diego Decision (D.03-12-018) pertain to the installation of new at-grade crossings, that test is relevant in this case as well. The seven factors are as follows:

(1) A convincing showing that the City has eliminated all potential safety hazards;

(2) The concurrence of local community and emergency authorities;

(3) Consideration of Commission railroad staff's recommendation;

(4) A demonstration that there is a public need for the crossing;

(5) The opinions of the general public, and specifically those who may be affected by the crossing;

(6) Analysis of comparative costs of the at-grade crossing with a grade separated crossing; and

(7) Staff's recommendation, including any conditions.

The first three factors are generally based on public safety, the primary concern of all parties. The Commission has utilized two standards for evaluating the safety measures of an at-grade crossing. In Pasadena Metro Blue Line, the Commission ruled that an at-grade crossing need not eliminate risk, but instead should show an "overwhelming reduction of … risk." D.02-05-047, at 26. In San Diego, the Commission also stressed that an application should address and assess all risks, but that another key measure is whether the proposed crossing is safer than existing crossings in the area such that denying the application would confine traffic to less safe crossings. D.03-12-018, at 27. The One-Way Proposal meets both standards by utilizing safety measures that will make the crossing a safer alternative than the crossing as it currently exists.

The Settling Parties recognize that although the One-Way Proposal is a positive control measure, it may not resolve all of the problems at the Doran Street Crossing. Legal precedent does not require that all problems be resolved at one time. In Pasadena Metro Blue Line, the proposed crossings utilized four-quadrant gates, and vehicle detection systems. The Commission found these positive control measures may not eliminate all hazards at a crossing, but certainly provide an "overwhelming reduction" sufficient to satisfy this factor. D.02-05-047, at 26. In the San Diego Decision, the City of San Diego proposed an at-grade crossing with pre-signals, raised medians, and four-quadrant gates. The Commission found that the crossing design "comprehensively identified and assessed the potential safety hazards, and … proposed a variety

of safety features to diminish these hazards." D.03-12-018, at 30. While acknowledging that no crossing design is fail proof, the Commission asserted that an at-grade crossing should be evaluated for its potential in providing a safer passage for traffic—both existing and future—than current crossings in the area. *Id.* at 29. Additionally, the Commission noted that the City of San Diego closed an existing at-grade crossing, creating no net increase in at-grade crossings. In finding that the proposed crossing would allow a safer alternative for current and future traffic than existing crossings, the Commission concluded that the application sufficiently satisfied safety measures factor. *Id.* at 30.

The design of the One-Way Proposal represents a comprehensive and substantial reduction in risks as well as a safer alternative to full closure. It will handle westbound traffic into the area rather than shifting all traffic to the Broadway/Brazil Crossing. It will employ a smoother approach grade to avoid any risk of trucks getting "stuck" on the tracks, and will readily accommodate large trucks making right turns from southbound San Fernando Road to westbound Doran Street to avoid any stacking issues. These safety measures will make both crossings safer than current conditions.

The third and seventh factors set forth in the Pasadena Metro Blue Line analysis pertain to the recommendation of Commission staff.. The Commission staff while not a party to the mediation will be a key participant in the CPUC Field Diagnostic Process and will approve the G0-88.

The fourth and fifth factors are considerations of public need which has been demonstrated by the comments heard by ALJ Rochester in the public participation hearings.

The sixth factor compares the cost of the crossing improvements to grade separation. The Settlement Agreement considers a possible grade separation at which time the Doran Street

Crossing would be completely closed. The cost and practicability of a grade separation in the Doran Street area are being analyzed by LACMTA.

C. The Settlement Agreement Is In the Public Interest

The purpose of the OII is to study the impacts of closing the Doran Street Crossing on nearby residences and businesses in light of the safety concerns expressed in the OII. The Settlement Agreement provides for the best available safety features to upgrade the Broadway/Brazil Crossing and limits the access to the Doran Street Crossing.

If Doran were closed completely, the Settling Parties believe that the entire region would be impacted by increased traffic and response times by emergency responders. If the Settlement Agreement were not approved, the Settling Parties believe that the outcome would be that the businesses would be forced to use the only crossing remaining: Broadway/Brazil causing that crossing to be severely overloaded. At the hearing on June 24, 2010, Ms. Min from the office of Los Angeles Councilman Tom LeBonge stated that while there is a safety issue at the Doran Street Crossing, closure of the Doran Street Crossing would be detrimental to business and, as such, full closure should be a last resort. *Public Participation Hearing Transcript,* June 24, 2010 p 39. Consequently, the public interest would not be served.

Emergency-response authorities endorse the One-Way Proposal for the Doran Street Crossing. Representatives from the Los Angeles and Glendale Police and Fire departments support the One-Way Proposal. They recognize emergency-response times are among the most critical measures of performance and effectiveness and that increased delays in emergency-response times, even by seconds, can lead to the loss of life. Ms. Min testified that emergency responders in both cities have "expressed concern over closing the access to this northern portion of a heavily industrial business area. Should there be any major disaster, . . . it would be crucial

for fire and police personnel to reach those businesses." *Public Participation Hearing Transcript,* June 24, 2010 pp 39-40.

Matthew Gatewood, Los Angeles City Fire Department, Fire Prevention Bureau stated "Any closure, whether it be a partial closure for emergency apparatus only or a full closure would put all three . . . responsibilities [life, property, and economic growth] at risk in some form or fashion." *Public Participation Hearing Transcript,* September 29, 2010 pp153-154. By a mutual aid agreement Glendale Fire Department's fire stations also service the area of Los Angeles west of the tracks and, as a result, the Glendale Fire Department must use one of the railroad crossings when responding to a medical or fire emergency on the west side of the tracks. The closest fire stations with a paramedic rescue ambulance that use the Doran Street Crossing as the most direct route into the area west of the tracks concluded that the "closure of the Doran Street Crossing would cause delays in cases where victims need to be transported out of the area" and "is also necessary in cases where emergency response originates from the area west of the tracks and needs to get to other parts of the City." From the Glendale Fire Department's perspective, "it is critical that the Doran Street at-grade crossing remain open." Declaration of Harold Scoggins, Glendale Fire Department, paragraph 14.

According to David Lindsay, Los Angeles Police Department, closing the Doran Street Crossing will prevent the ability to evacuate people from the area immediately west of the Doran Street Crossing and cause them to have a longer delay not only because one of their exit routes would be blocked but because Alger, which runs parallel to San Fernando, is only 22 feet wide with parking on both sides. In the event of an emergency "it would make it very difficult for both police and fire to respond northbound on Alger to access the area west of Doran." *Public Participation Hearing Transcript,* September 29, 2010 p. 79.

In Pasadena Metro Blue Line, the fact that the crossings were part of a regional railway project and were supported by community and emergency authorities seemed sufficient to satisfy the demonstration of public need. D.02-05-047, at 20. In San Diego, the Commission looked at the City's evidence on projected development in the area and the resulting vehicular traffic using the crossing and determined that public need had been thoroughly demonstrated. D.03-12-018, at 22.

Because of emergency-access needs, the Doran Street Crossing will need to remain open as either a two-way operation (the existing traffic-flow condition) or a one-way operation. The full closure of the Doran Street Crossing without creating replacement access is unacceptable from an emergency-access perspective insofar as the Doran Street Crossing provides a second means of vehicle access--in addition to the Broadway/Brazil Street Crossing located one-half mile to the south--to the geographic area in the City of Los Angeles generally bounded by the SR-134 freeway to the north, Brazil Street to the south, San Fernando Road to the east, and the Los Angeles River to the west. As such, the Doran Street Crossing is a key component for traffic circulation in the area.

The operation of the Doran Street Crossing directly impacts the Broadway/Brazil Street Crossing. Specifically, if the Doran Street Crossing continues to operate as a two-way facility, existing traffic volumes at these two crossings would be unaffected. However, if the Doran Street Crossing were to be converted to a one-way-westbound operation, the existing eastbound traffic would be diverted to the Broadway/Brazil Street Crossing. This redistribution of eastbound traffic would improve the Level of Service ("LOS") or quality of flow at the San Fernando Road-Doran Street intersection, but it would degrade the LOS at the San Fernando Road-Broadway/Brazil Street intersection. Technical studies of these impacts contained in the

Fehr & Peers Report, February 21, 2012, attached hereto and incorporated herein as **Exhibit B,** contain the following findings:

- Regardless of the operation of the Doran Street Crossing, the Broadway/Brazil Street Crossing will be upgraded with various safety-related improvements. In addition to enhanced train protection, additional travel lanes will be provided and, moreover, the two intersections of San Fernando Road-Broadway/Brazil Street and West San Fernando Road-Brazil Street will be operationally integrated to function as one signalized intersection.
- With the Doran Street Crossing continuing to operate as a two-way facility, the proposed safety enhancements at the Broadway/Brazil Street Crossing will result in LOS B ("very good") during the weekday morning peak hour and LOS D ("fair") during the weekday evening peak hour at the integrated San Fernando Road-West San Fernando Road-Broadway/Brazil Street intersection. However, the addition of a northbound right-turn lane on San Fernando Road at this intersection would result in LOS C ("good") during the weekday evening peak hour, a mitigation measure deemed feasible by the City of Glendale.
- With the Doran Street Crossing operating as a one-way-westbound facility, the proposed safety improvements at the Broadway/Brazil Street Crossing will result in LOS C ("good") during the weekday morning peak hour and LOS D ("fair") during the weekday evening peak hour at the integrated San Fernando Road-West San Fernando Road-Broadway/Brazil Street intersection. (Note: The addition of a northbound right-turn lane on San Fernando Road at this intersection would not improve the LOS at this intersection.)

Such degraded LOS affects not only commuters, but emergency vehicles as well.

The businesses, adjacent residents, and emergency responders support keeping the Doran Street Crossing open and there is at this juncture no substantial opposition to the One-Way Proposal or to the improvements to the Broadway/Brazil Crossing, particularly now that the Commission's staff has withdrawn from this proceeding as a party. Initially, the Pelanconi HOA voiced concerns about keeping the Doran Street Crossing, particularly with regard to the noise caused by trains in the area. The Pelanconi HOA has joined in the Settlement Agreement as an acceptable solution to the safety issues identified in the OII. They have indicated their desire to establish a "quiet zone" along the entire corridor which is being considered as a separate matter by the Settling Parties.

Clear public consensus in the public-participation hearings is not required, but it is a factor in the Commission's decision-making. In Pasadena Metro Blue Line, the Commission noted that they heard "impassioned testimony" on both sides and that the "general public is quite divided" on the application. D.02-05-047, at 20. In granting the application, the Commission noted that their decision "undoubtedly will not please everyone[.]" *Id.* Thus, based upon the continued support of many of those at the public-participation hearing, that factor is present.

The Settlement Agreement's provisions not only provide committed enhancements to the two crossings, it promises continued cooperation between the Settling Parties to address safety issues into the future. Fostering cooperation, as opposed to adversarial relations, is certainly in the public interest considering the complicated nature of regional transit issues.

Although the Atwater Village Neighborhood Council ("AVNC") did not choose to sign on to the Settlement Agreement, it indicated in its Motion to Become a Party to this Proceeding dated October 18, 2010, that it "voted to oppose the closure of the Doran Street railroad crossing

based on the strong increase in traffic congestion as well as the potential increase in crime faced by not only the North Atwater businesses but also the residents by closing yet another main access point to North Atwater Village" i.e., the Goodwin Street railroad crossing closure. Page 1, *AVNC Motion to Become a Party to this Proceeding*. It cited negative traffic and environmental impacts that would occur with the closing of the Doran Street Crossing.

IV CONCLUSION.

With the execution of the Settlement Agreement and no objections from the remaining parties, this is an uncontested matter. The Settlement Agreement results in keeping the Doran Street Crossing operational and with the One-Way Proposal, emergency responders can get into and out of the area without having to resort to a single crossing at Broadway/Brazil. The improvements to the Broadway/Brazil Crossing will ensure that the crossing is equipped with state of the art safety features. Accordingly, the Settling Parties hereby seek approval as set forth in the Settlement Agreement.

Dated: June 7, 2012

Respectfully submitted,

Christina R. Sansone, General Counsel
613 East Broadway, Suite 220
Glendale, CA 91206
Telephone: (818) 548-2080
Facsimile: (818) 547-3402
Email: csansone@ci.glendale.ca.us

Attorneys for the City of Glendale

By: Christina Sansone

Donald Del Rio, General Counsel
Southern California Regional Rail Authority
One Gateway Plaza, 12th Floor
Los Angeles, CA 90012
Telephone: (213) 974-4334
Facsimile: (213) 687-7337
Email: Delriod@scrra.net

Attorneys for SCRRA

By: _____

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Dated: June 7, 2012 Respectfully submitted,

Christina R. Sansone, General Counsel
613 East Broadway, Suite 220
Glendale, CA 91206
Telephone: (818) 548-2080
Facsimile: (818) 547-3402
Email: csansone@ci.glendale.ca.us

Attorneys for the City of Glendale

By:_____

Donald Del Rio, General Counsel
Southern California Regional Rail Authority
One Gateway Plaza, 12th Floor
Los Angeles, CA 90012
Telephone: (213) 974-4334
Facsimile: (213) 687-7337
Email: Delriod@scrra.net

Attorneys for SCRRA

By: Donald Del Rio

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DECLARATION OF HAROLD SCOGGINS IN SUPPORT OF RULE 12 MOTION FOR APPROVAL OF SETTLEMENT AGREEMENT

I, Harold Scoggins, declare:

1. I the Fire Chief for the City of Glendale Fire Department ("GFD" or the "Department"). I am a resident of the State of California. I have first-hand knowledge of all matters referred to herein, and, if called upon to do so, could and would testify truthfully thereto.

2. I have a Master's degree in Public Administration from California State Universtiy, at Long Beach . Additionally, I hold a Bachelor's degree in Fire Administration from California State Universtiy, at Los Angeles .

3. I have been employed with the Department for almost 23 years. I started as a firefighter and have been promoted to various positions, including Fire Engineer, Fire Captain, Battalion Chief and Deputy Fire Chief. I became the Fire Chief May 1, 2008 .

4. The GFD has nine fire stations, which include twelve fire companies, nine Paramedic Engine companies, three Ladder Truck companies, and Basic Life Support (BLS)

rescue ambulances. As Chief, I am responsible for overseeing the entire Fire Department and for ensuring that they quickly respond to and operate effectively at fires, rescues, medical emergencies and hazardous materials incidents as well as other emergency situations.

5. I wholeheartedly concur with the Settling Parties' Motion for Approval of the Settlement Agreement which, among other things, would provide for a One-Way operation of the Doran Street Crossing.

Emergency Response Times

6. Emergency response times are among the most critical measures of a fire department's operational performance and effectiveness. Increased delays in emergency response times, even by seconds, can lead to the loss of life. There is a direct relationship between response times and saving lives. Brain cells and cells in the nervous system may die within six minutes without oxygen. Dead brain cells can never be replaced. Permanent changes in the body, such as brain damage, result from the damage caused by lack of oxygen. There is a six minute window to get to an emergency scene where a victim is not breathing. If the emergency personnel do not arrive within the four to six minute window, there almost always will be irreversible brain damage or death. Thus, travel time from Glendale fire stations is critical to providing life-saving medical assistance in emergencies. Response times are also critical to the protection of the environment with hazardous materials incidents and the reduction of property loss during fires and other emergencies.

7. By Mutual Aid and Automatic Aid agreements Glendale fire stations also service the area of Los Angeles west of the tracks (San Fernando Road West) and, as a result, the GFD must use one of the railroad crossings when responding to an emergency incident on the west side of the tracks.

8. The area that is served by the Doran Street Crossing is a difficult area to access because it is bounded by, among other things, the railroad tracks, State Route 134, the Los Angeles River, and the I-5 freeway. With the increase in traffic congestion in recent years, the ability to reach access points in this area has become even more limited, and the resulting emergency response times to this area have increased.

9. The GFD must use either the Doran Street Crossing or the Broadway/Brazil Crossing when responding to an emergency on the west side of the tracks. The GFD has four fire stations which are the primary response stations for the GC3 site -- Station Nos. 21, 22, 26 and 27.

10. The closest fire station to this area is located at Station No.21 at 421 Oak Street with a cross of Columbus Avenue. Glendale Memorial Hospital, at Los Feliz Road and Brand Boulevard is the hospital nearest to the GC3 project site. St. Joseph's Hospital, located at 501 South Buena Vista Street near Alameda Avenue in Burbank, although far away, would be the back-up medical facility.

11. It is important to understand that there are no fixed routes for emergency response. The routes that emergency responders take for access to and from the area will depend upon which responders are available to respond to an emergency, when it occurs, whether the Doran Street or Broadway/Brazil crossings are available or blocked by congested traffic or an incident, and the location of the incident requiring the emergency response. Depending on the time of day and the location of the incident, emergency responders will determine the best way to get to the emergency location as quickly as possible.

12. At times, the origin of an emergency response may occur to the west of the railroad tracks and responders would need to travel in an easterly direction across the tracks to

the emergency site. For example, an ambulance in the area may need to cross the railroad tracks to get to an emergency in the residential neighborhoods east of the tracks. The closest fire stations with a paramedic rescue ambulance may need to use the Doran Street Crossing as the most direct route into the area west of the tracks. Closure of the Doran Street Crossing would cause delays in cases where victims need to be transported out of the area and is also necessary in cases where emergency response originates from the area west of the tracks and needs to get to other parts of the City.

13. In the event of an emergency within the area, the Fire Department Paramedic Engine and ambulance personnel would need to transport emergency victims to the areas hospitals, all of which are east of the railroad tracks. Maintaining eastbound access across the Doran Street Crossing would save time and lives in cases where victims need to be transported out of the area.

14. From the Glendale Fire Department's perspective, it is critical that the Doran Street at-grade crossing remain open. The One-Way Proposal does just that. The crossing will continue to provide into and out of the area and thus maintain emergency response times to protect the lives and property of people within the area.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration was executed on June 6, 2012 at Glendale, California.

Harold Scoggins

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Investigation on the Commission's Own Motion into Closure of the Highway-Rail At-Grade Crossing at West Doran Street south of State Route 134 between San Fernando Road and West San Fernando Road, in the City of Glendale, California, DOT crossing No.746804B, CPUC Crossing No 101VY-7.99, and the Effects of that Closure on the City of Glendale and Nearby Residents in the City of Los Angels, California.,	Investigation 10-02-020 (filed February 25, 2010)

STIPULATION OF THE PARTIES

Pursuant to the mediation conference held on March 29 and 30, 2012 the parties have agreed to abide by the following:

With respect to Broadway/Brazil:

Metrolink, City of Los Angeles and City of Glendale (collectively the "parties") agree in concept to pursue the following resolution for designing and constructing improvements at Broadway/Brazil:

1. City of Los Angeles will construct the improvements within its jurisdiction, i.e the LA work.

2. Metrolink will construct the improvements within its rail right-of-way, i.e. the SCRRA work, and within Glendale's jurisdiction, i.e. the Glendale work.

3. Glendale will design, construct and maintain the joint traffic signals at Broadway/Brazil.

4. Metrolink and City of Los Angeles will enter into a Construction & Maintenance (C&M) Agreement. City of Los Angeles and City of Glendale will enter a separate Traffic Maintenance Agreement.

5. For the C&M Agreement, Metrolink will indemnify City of Los Angeles for the SCRRA work and the City of Los Angeles will indemnify Metrolink for the LA

EXHIBIT A

work. For the Traffic Maintenance Agreement, the two cities agree to a cross-indemnity obligation between City of Los Angeles and City of Glendale.

6. MTA, Metrolink and City of Glendale will provide whatever assistance is needed to City of Los Angeles, including utility and right of way assistance, for City of Los Angeles to secure/appropriate HSIP funds.

7. City of Los Angeles will inform Metrolink of any request to delay advertising of the SCRRA and Glendale work.

8. Each party is responsible for hazardous waste remediation on its own property, if necessary.

9. Each party bears its own costs on project overruns related to work in its agreed scope of work.

10. City of Los Angeles will expeditiously pursue authorization of funding for construction. Subject to L.A securing funding, it will work expeditiously to complete all obligations provided herein. SCRRA and Glendale will work expeditiously to complete all obligations provided herein.

11. City of Glendale and City of Los Angeles will work in good faith to enter into a global memorandum of understanding for the remaining shared crossings, i.e. Doran and Chevy Chase.

12. This agreement is subject to approval by the various public agencies. All parties agree to work cooperatively and sign all necessary agreements with the other parties, and to seek final design approval and funding for the Broadway/Brazil crossing.

With respect to Doran St:

1. The parties have agreed to proceed with a temporary, one-way westbound crossing configuration for Doran St.

2. Concurrently with the immediate process related to design and construction of the Doran St. improvements, MTA will investigate the method for procurement of a consultant and/or contractor for design and construction of the temporary one-way westbound improvement, and report back to the parties and the ALJ by May 2, 2012.

3. Metrolink will also report back by May 2, 2012, on whether it will consider undertaking road and pedestrian improvements in the rail right of way on behalf of Glendale.

4. The temporary one-way westbound design will not preclude a future design of a two-way improvement of Doran St. The design will also allow first responders to exit eastbound on Doran St.

5. MTA will report back to the parties and the ALJ by October 2, 2012, on the status of available funding for the grade separation, and how the procurement related to a grade separation is progressing. After receiving MTA's report, the parties reserve the right to revisit a two way improvement of Doran St. should the parties not be able to secure funding for the grade separation work.

6. The construction of any modifications to Doran St. shall commence after Broadway/Brazil is complete.

7. Any improvements will comply with CPUC procedures, where applicable.

8. This agreement is subject to approval by the various public agencies. All parties agree to work cooperatively and sign all necessary agreements with the other parties, and to seek final design approval and funding for the Doran St. crossing.

SIGNATURE PAGE
Case I.10-02-020
Stipulation of the Parties

For Party CITY OF GLENDALE, dated 3-30-12
Signed By: [signature]
For Party Southern California Regional Rail Authority (METROLINK), dated 3/30/2012
Signed By: [signature]
For Party L.A. MTA, dated 3/30/2012
Signed By: [signature]
For Party City of Los Angeles, dated 3/30/2012
Signed By: [signature]
For Party Pelanconi Estates HOA, dated 4/3/12
Signed By: [signature]
For Party _____, dated _____
Signed By: _____
For Party _____, dated _____
Signed By: _____
For Party _____, dated _____
Signed By: _____
For Party _____, dated _____
Signed By: _____
For Party _____, dated _____

Signed By: _____

For Party _____, dated _____

Signed By: _____

Respectfully submitted by,

Mediator Lanette Kam,

dated 3/30/12

Mediator _____, dated _____

FEHR PEERS

MEMORANDUM

Date: February 21, 2012

To: City of Glendale Public Works Department
Jano Baghdanian, Traffic & Transportation Administrator

From: Tom Gaul and Audrey Naval

Subject: Analysis of the Potential Traffic Impacts of Implementing Safety Enhancements at the Broadway/Brazil Street At-Grade Railroad Crossing and Converting the Doran Street At-Grade Railroad Crossing to 1-Way Westbound

Ref: SM12-2250.02

This memorandum summarizes Fehr & Peers' analysis of the potential traffic impacts from implementing safety enhancements, described below, at the Broadway/Brazil Street at-grade railroad crossing that the City of Glendale shares with the City of Los Angeles. The purpose of this analysis was to determine whether the safety enhancements would have a significant impact on near-term traffic operations at the two flanking intersections, San Fernando Road West & Brazil Street and San Fernando Road & Broadway/Brazil Street, shown in Figure 1A. The memorandum also examines the potential traffic impacts of the reconfiguration of the Doran Street at-grade crossing on operations at both the Broadway/Brazil Street crossing and the Doran Street crossing, shown in Figure 1B. These safety enhancements would be implemented under the March 15, 2007 California Public Utilities Commission (CPUC) approval of the construction of the Flower Street at-grade crossing, based on a September 2006 settlement agreement to implement safety enhancements at all at-grade crossings in the City of Glendale[1].

[1] The Settlement Agreement also requires safety enhancements at the Chevy Chase at-grade crossing. Potential traffic impacts associated with the proposed safety enhancements at the Chevy Chase crossing would be the subject of a separate report.

201 Santa Monica Boulevard, Suite 500, Santa Monica, CA 90401 (310) 458-9916 Fax (310) 394-7663
www.fehrandpeers.com

EXHIBIT B

PROPOSED IMPROVEMENTS

Improvements to the Broadway/Brazil Street Crossing Under the Settlement Agreement of September 27, 2006

The following list of safety enhancements to be implemented at the Broadway/Brazil Street crossing was included in the September 27, 2006 Settlement Agreement:

- Advanced pre-emption system
- Extinguishable message "No-Left/No-Right Turn" signs
- Widen Broadway, Brazil Street, and San Fernando Road West
- Increase curb radii (all corners)
- Install raised concrete median
- Install four quad gates (entrance/exit gates)
- Modify traffic signal, signage, and striping at the intersection of Broadway & San Fernando Road
- Install traffic signal at the intersection of San Fernando Road West & Brazil Street (Los Angeles)
- Improve street lighting at the crossing
- Right-of-way dedication by SCRRA/Metrolink

Since the March 2007 CPUC approval, the Los Angeles Department of Transportation (LADOT), the City of Glendale, and Metrolink have worked together to further develop the proposed design for the Broadway/Brazil Street grade crossing. Figure 2 presents the current design proposal.

Certain of the proposed safety enhancements are specifically pertinent to intersection capacity analysis and are therefore described herein in greater detail. These improvements, illustrated in Figure 2, call for an additional signal to be installed at San Fernando Road West & Brazil Street that will operate in conjunction with the existing signal at San Fernando Road & Broadway/Brazil Street. The two signals operating in tandem would have an advance train pre-emption system whereby the standard signal phasing would be pre-empted to clear the tracks in advance of oncoming trains. These improvements would increase operational safety at the crossing by stopping all movements that would enter the crossing when a train approaches, and by ensuring that vehicles that enter the crossing are able to clear the other side of the crossing well before the train reaches the crossing.

Additionally, the approaches at each intersection would be reconfigured. Specifically, the westbound approach at San Fernando Road & Broadway/Brazil Street would be reconfigured to provide one left-turn lane, one through lane and one right-turn lane. The eastbound approach would be reconfigured to provide one left-turn lane, one shared left-turn/through lane and one right-turn lane, and the southbound approach would be reconfigured to provide one left-turn lane, two through lanes and one right-turn lane. At San Fernando Road West & Brazil Street, the southbound approach would be reconfigured to provide one left-turn lane and one shared through/right-turn lane, and the northbound approach would be reconfigured to provide one shared left-turn/through lane and one right-turn lane.

While the proposed improvements would enhance safety at the grade crossing, the advance train pre-emption system and increased number of signal phases would reduce operational efficiency of the intersections. The purpose of this analysis was to determine whether that reduction in operational efficiency would constitute a significant impact on traffic operations under City of Glendale and/or City of Los Angeles significance criteria.

Reconfiguration of the Doran Street Crossing

In addition to the safety enhancements at the Broadway/Brazil Street crossing, the Doran Street at-grade crossing would be reconfigured and the following improvements would be implemented:

- Improve/widen San Fernando Road West (L.A.) between Doran Street and Brazil Street
- Modify traffic signal, signage and striping at the intersection of Doran Street & San Fernando Road

There are two potential options being evaluated for this intersection. Under the first option, as shown in Figure 3A, the northbound approach would be reconfigured as stop-controlled and would provide one left-turn lane and one right-turn lane, and the westbound approach would be reconfigured to provide one left-turn lane and one through lane. Under the second option, as shown in Figure 3B, Doran Street between San Fernando Road and San Fernando Road West would be converted to 1-way westbound operation. The eastbound approach would remain stop-controlled and would be converted to a right-turn lane, the northbound approach would be reconfigured as stop-controlled and would provide one left-turn lane and the westbound approach would remain one shared through/left-turn lane.

EXISTING INTERSECTION OPERATING CONDITIONS

Intersection Counts and Analysis Volumes

Classified traffic counts were collected on Wednesday, February 27, 2008 during the morning and evening peak periods (from 7:00 to 9:00 AM and 4:00 to 6:00 PM) at the following four locations:

- San Fernando Road West & Brazil Street
- San Fernando Road & Broadway/Brazil Street
- San Fernando Road West & Doran Street
- San Fernando Road & Doran Street

The three classes of vehicles were cars (including pick-up trucks), light duty trucks (two axles), and heavy duty trucks (more than two axles). For the purpose of this analysis, light duty and heavy duty truck counts were converted to passenger car equivalents (PCEs) with factors if 1.5 and 2.0, respectively. These adjusted volumes, as shown in Figures 4A and 4B, were used for the intersection analysis. The traffic count sheets are provided in Attachment A.

Intersection Capacity and Passing Trains

The two intersections flanking the Broadway/Brazil crossing are approximately 115 feet apart and separated by train tracks. When the trains pass, certain movements at each intersection can no longer proceed, which effectively reduces the capacity of the intersection to handle these movements. Field observations showed that each passing train causes approximately 47 seconds of available green time to be lost while the clearance phase at San Fernando Road & Broadway/Brazil Street is activated and the gate arms are down.

Metrolink and Amtrak timetables indicate that six trains, three in each direction, pass this point during both the AM and PM peak hours. Therefore, approximately 10% of the 1-hour capacity of the affected movements is lost while trains pass. Capacities used for level of service (LOS) calculations were reduced accordingly.

Existing Intersection Levels of Service

Table 1 illustrates the existing LOS at the four study intersections. The intersections of San Fernando Road West & Brazil Street and San Fernando Road West & Doran Street are controlled by stop signs and were analyzed using the Highway Capacity Manual (HCM) 2000 stop-controlled intersection methodology. San Fernando Road & Broadway/Brazil Street and San Fernando Road & Doran Street are signalized and were analyzed using the Intersection Capacity Utilization (ICU) methodology. Table 2 provides LOS definitions for the HCM stop-controlled methodology, and Table 3 provides LOS definitions for the ICU methodology.

Currently, San Fernando Road West & Brazil Street operates at LOS A during both the AM and PM peak hours, and San Fernando Road & Broadway/Brazil Street operates at LOS A during the AM peak hour and LOS B during the PM peak hour. San Fernando Road West & Doran Street currently operates at LOS B during the AM peak hour and LOS A during the PM peak hour, and San Fernando Road & Doran Street currently operate at LOS B during the AM peak hour and LOS C during the PM peak hour. Table 1 provides volume to capacity calculations and LOS for the four study intersections. Detailed LOS calculations are provided in Attachment B.

BROADWAY/BRAZIL STREET GRADE CROSSING SAFETY ENHANCEMENT TRAFFIC IMPACT ANALYSIS

Intersection Operating Conditions With Broadway/Brazil Street Safety Enhancements

Operating conditions with the proposed combined intersection configuration were analyzed using the ICU methodology, and the results are shown in Table 1. The analysis assumes that six normal operation signal phases, plus two additional rail preemption phases, illustrated in Attachment C, would be provided such that vehicles that enter the crossing area from one intersection can proceed across and out through the other intersection on the same signal phase without having to wait on the tracks. Capacity values for the relevant movements were reduced to account for green time lost to passing trains, as in the existing

conditions analysis. Because the project would be completed in the near term and because it is assumed that minimal growth has occurred in the area since the time of the counts, no growth factor was applied to the existing traffic volumes.

With the grade crossing improvements at the Broadway/Brazil Street crossing, the proposed combined intersection would operate at LOS B during the AM peak hour and LOS D during the PM peak hour. With the safety improvements at the Doran Street crossing, the intersection of San Fernando Road West & Doran Street would operate at LOS A during both peak hours, and the intersection of San Fernando Road & Doran Street would operate at LOS B and C during the AM and PM peak hours, respectively.

City of Glendale Criteria for the Determination of a Significant Traffic Impact

The City of Glendale has established threshold criteria that determine if a project has a significant traffic impact at a specific intersection. According to the criteria used by the City of Glendale, a project impact would be considered significant if it increases the V/C ratio by 0.020 or greater and the intersection is projected to operate at LOS D, E, or F with the project.

City of Los Angeles Criteria for the Determination of a Significant Traffic Impact

The City of Los Angeles has established threshold criteria that determine if a project has a significant traffic impact at a specific intersection. According to the criteria used by the City of Los Angeles, a project impact would be considered significant if it increases the V/C ratio by 0.040 or greater and the intersection is projected to operate at LOS C with the project; or, it increases the V/C ratio by 0.020 or greater and the intersection is projected to operate at LOS D with the project; or, it increases the V/C ratio by 0.010 or greater and the intersection is projected to operate at LOS E or F with the project.

Impact Analysis with the Broadway/Brazil Street Grade Crossing Safety Enhancements

As shown in Table 1, of the intersections studied, the crossing enhancements at the Broadway/Brazil Street and Doran Street would result in one significant impact at the combined intersection of San Fernando Road & San Fernando Road West & Broadway/Brazil Street during the PM peak hour, (with a V/C increase of 0.126 at LOS D). This intersection would be impacted under both the City of Los Angeles and City of Glendale impact criteria.

Potential Mitigation Measures

A mitigation measure was identified to mitigate the impact of the Broadway/Brazil Street Grade Crossing Safety Enhancements below City of Glendale levels of significance and would partially mitigate the impact according to City of Los Angeles levels of significance. The proposed lane configurations are illustrated in Figure 4. Adding a northbound right-turn lane on San Fernando Road would require the elimination of parking on the east side of San Fernando Road south of Broadway and widening San Fernando Road by approximately two feet.

This mitigation measure would improve operating conditions to LOS C during the PM peak hour, as shown in Table 1. This would mitigate the impact caused by the implementation of the Broadway/Brazil grade crossing safety enhancements under City of Glendale criteria because the intersection would operate better than LOS D during both peak hours. Since the Broadway/Brazil Street Grade Crossing Safety Enhancements with the proposed mitigation measures would still increase the V/C ratio by more than 0.040 during the PM peak hour with the intersection operating at LOS C, the intersection would remain impacted under City of Los Angeles impact criteria. The feasibility of the suggested mitigation measure remains to be determined.

DORAN STREET GRADE CROSSING RECONFIGURATION TRAFFIC IMPACT ANALYSIS

An alternative scenario, with the Doran Street grade crossing reconfigured to 1-way westbound only in addition to the safety enhancements at the Broadway/Brazil Street grade crossing, was also analyzed.

Intersection Counts and Analysis Volumes

Existing LOS for the analyzed intersections is shown in Table 4.

Volume Shifts as a Result of the Doran Street Grade Crossing Reconfiguration

Existing traffic using the Doran Street crossing to travel eastbound was shifted to other routes. It was assumed that 80% of the eastbound traffic currently using the Doran Street crossing would shift to cross the tracks at the Broadway/Brazil Street crossing. Those traveling back toward Doran Street were assumed to continue travel in the same direction as they approached San Fernando Road. For example, vehicles traveling eastbound left at Doran Street & San Fernando were assumed to travel northbound through at this intersection after using the Broadway/Brazil crossing to the south. The remaining 20% was assumed to shift south to the Colorado Street grade-separated crossing and the I-5 freeway.

Operating Conditions at Broadway/Brazil Street with Doran Street Grade Crossing Reconfiguration

Operating conditions at the Broadway/Brazil Street combined intersection with the Doran Street grade crossing reconfigured to 1-way westbound only were analyzed using the ICU methodology, and the results are shown in Table 4. As in the previous scenario, the analysis assumes that six normal operation signal phases, plus two additional rail preemption phases, would be needed and the capacity values for the relevant movements were reduced to account for green time lost to passing trains.

This scenario also uses the existing volumes, but adds the additional traffic that would be shifted south as a result of the Doran Street grade crossing reconfiguration, as illustrated in Figures 4A and 4B.

With the additional volumes from the Doran Street grade crossing reconfiguration, the proposed combined Broadway/Brazil Street intersection is estimated to operate at LOS C during the AM peak hour and LOS D during the PM peak hour. The intersection of San Fernando Road West & Doran Street would continue to operate at LOS A during the morning and evening peak hours. The intersection of San

Fernando Road & Doran Street would improve to LOS A during the AM peak hour and continue to operate at LOS C during the PM peak hour.

Impact Analysis with the Doran Street Grade Crossing Reconfiguration

The resulting LOS and ICU values at the combined Broadway/Brazil Street intersection were again compared with both cities' impact criteria. Under City of Glendale criteria, the Doran Street grade crossing reconfiguration would create a significant impact on traffic operations during the PM peak hour at the Broadway/Brazil Street combined intersection because it would increase the V/C ratio by more than 0.020 during both the PM peak hour, with the intersection operating at, or worse than LOS D.

Under City of Los Angeles criteria, the Doran Street grade crossing reconfiguration would create a significant impact on traffic operations during both peak hours at the Broadway/Brazil Street combined intersection because it would increase the V/C ratio by more than 0.040 during the AM peak hour (with the intersection operating at LOS C), and increase the V/C ratio by more than 0.020 during the PM peak hour (with the intersection operating at LOS D).

The intersections at the Doran Street crossing would not be impacted under either peak hour or either city's impact criteria.

Potential Mitigation Measures for the Doran Street Grade Crossing Reconfiguration

The mitigation described, the addition of a northbound right-turn lane on San Fernando Road at Broadway, would partially mitigate the impacts with the addition of the Doran Street grade crossing traffic. The mitigation measure is expected to improve the estimated V/C during the PM peak hour, as shown in Table 4. The mitigation measure would not affect V/C during the AM peak hour. Although the intersection would operate at LOS D during the PM peak hour, with an estimated V/C increase of 0.159 the addition of the Doran Street grade crossing traffic to the Broadway/Brazil crossing would still be considered a significant impact under City of Los Angeles impact criteria during the AM peak hour and both cities' impact criteria during the PM peak hour.

SUMMARY AND CONCLUSIONS

This study was undertaken to evaluate the potential near-term traffic impacts of implementing the safety enhancements at the Broadway/Brazil Street at-grade crossing. In addition, the effects on operating conditions of the Doran Street grade crossing reconfiguration to 1-way westbound operation at the Broadway/Brazil Street grade crossing were analyzed. The following summarizes the key findings of this study:

- Currently, San Fernando Road West & Brazil Street operates at LOS A during both the AM and PM peak hours, and San Fernando Road & Broadway/Brazil Street operates at LOS A during the AM peak hour and LOS B during the PM peak hour. San Fernando Road West & Doran Street currently operates at LOS B during the AM peak hour and LOS A during the PM peak hour, and

San Fernando Road & Doran Street currently operate at LOS B during the AM peak hour and LOS C during the PM peak hour.

- The proposed project would implement a series of safety enhancements at the Broadway/Brazil Street grade crossing. The safety enhancements would affect traffic operating conditions by installing a signal at San Fernando Road West & Brazil Street, reconfiguring the approaches, and combining operations with the San Fernando Road & Broadway/Brazil Street traffic signal, which would allow for an advance train pre-emption system. The combined intersection is estimated to operate at LOS B in the AM peak hour and LOS D in the PM peak hour with existing levels of traffic.

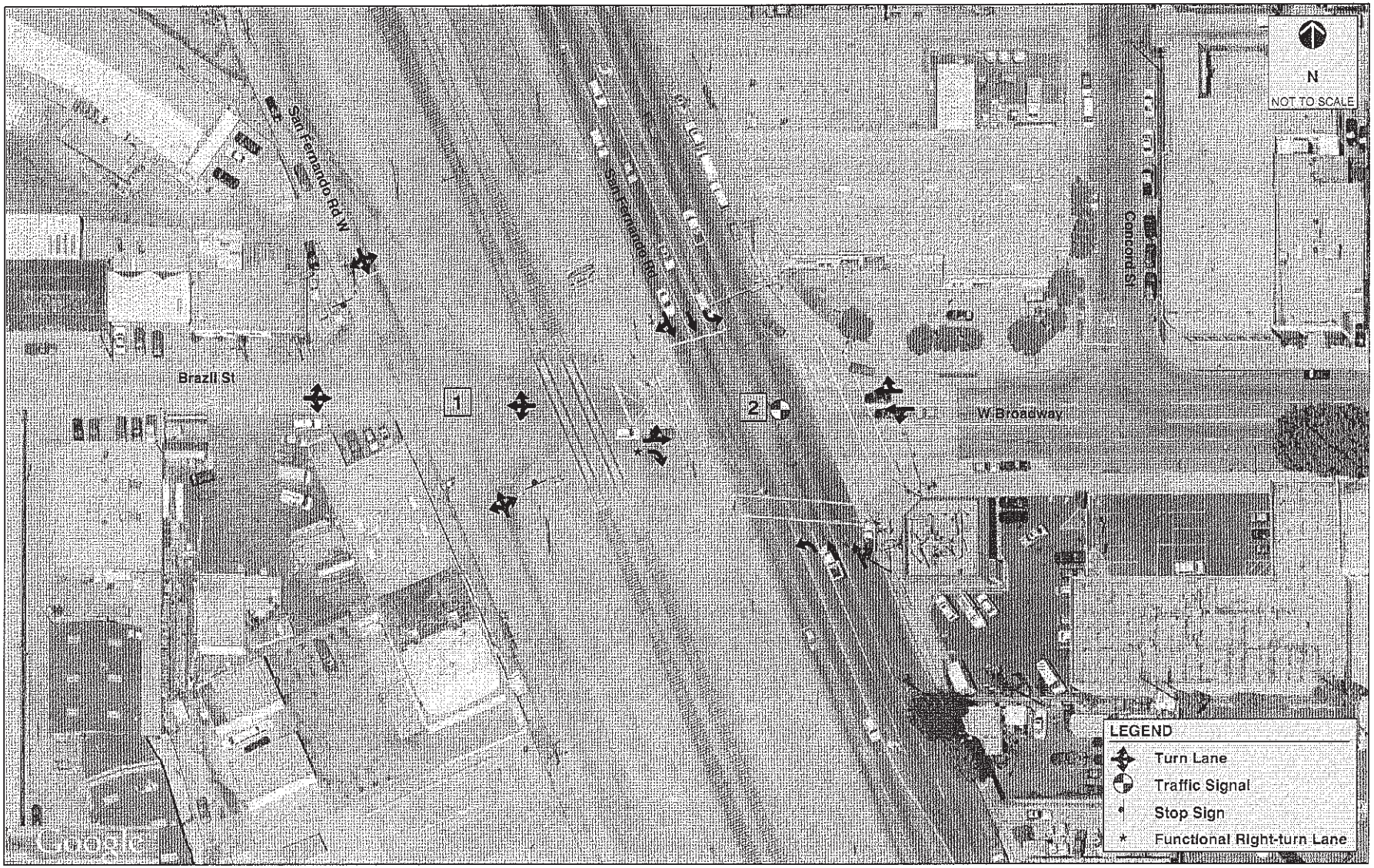
- With the Broadway/Brazil safety enhancements described above, the combined intersection is expected to operate at LOS D during the PM peak hour with a V/C increase of greater than 0.020, which would constitute a significant impact to traffic operations under both City of Glendale and City of Los Angeles impact criteria.

- The addition of a northbound right-turn lane on San Fernando Road at Broadway would improve operating conditions to LOS C during the PM peak hour. This addition would mitigate the traffic impacts of the Broadway/Brazil safety enhancements under City of Glendale criteria, but would only partially mitigate the traffic impacts under City of Los Angeles impact criteria.

- If the Doran Street grade crossing were reconfigured to 1-way westbound operation in addition to the Broadway/Brazil safety enhancements, traffic volumes would be added to the Broadway/Brazil Street crossing. The combined Broadway/Brazil Street intersection is expected to operate at LOS C during the AM peak hour and LOS D during the PM peak hour with the addition of existing eastbound traffic shifted from the Doran Street grade crossing.

- Under City of Glendale criteria, the Doran Street grade crossing reconfiguration would create a significant impact on traffic operations during the PM peak hour at the Broadway/Brazil Street combined intersection because it would increase the V/C ratio by more than 0.020 during the PM peak hour, with the intersection operating at or worse than LOS D. Under City of Los Angeles criteria, the Doran Street grade crossing reconfiguration would create a significant impact on traffic operations during both peak hours at the Broadway/Brazil Street combined intersection because it would increase the V/C ratio by more than 0.040 during the AM peak hour (with the intersection operating at LOS C), and increase the V/C ratio by more than 0.020 during the PM peak hour (with the intersection operating at LOS D). No significant impacts were found at the Doran Street crossing.

- The addition a northbound right-turn lane on San Fernando Road is estimated to improve V/C during the PM peak hour and would not affect V/C during the AM peak hour. Although the intersection would operate at LOS D during the PM peak hour, with an estimated V/C increase of 0.159 the addition of the Doran Street grade crossing traffic to the Broadway/Brazil crossing would still be considered a significant impact under City of Los Angeles impact criteria during the AM peak hour and both cities' impact criteria during the PM peak hour.



FEHR & PEERS
TRANSPORTATION CONSULTANTS

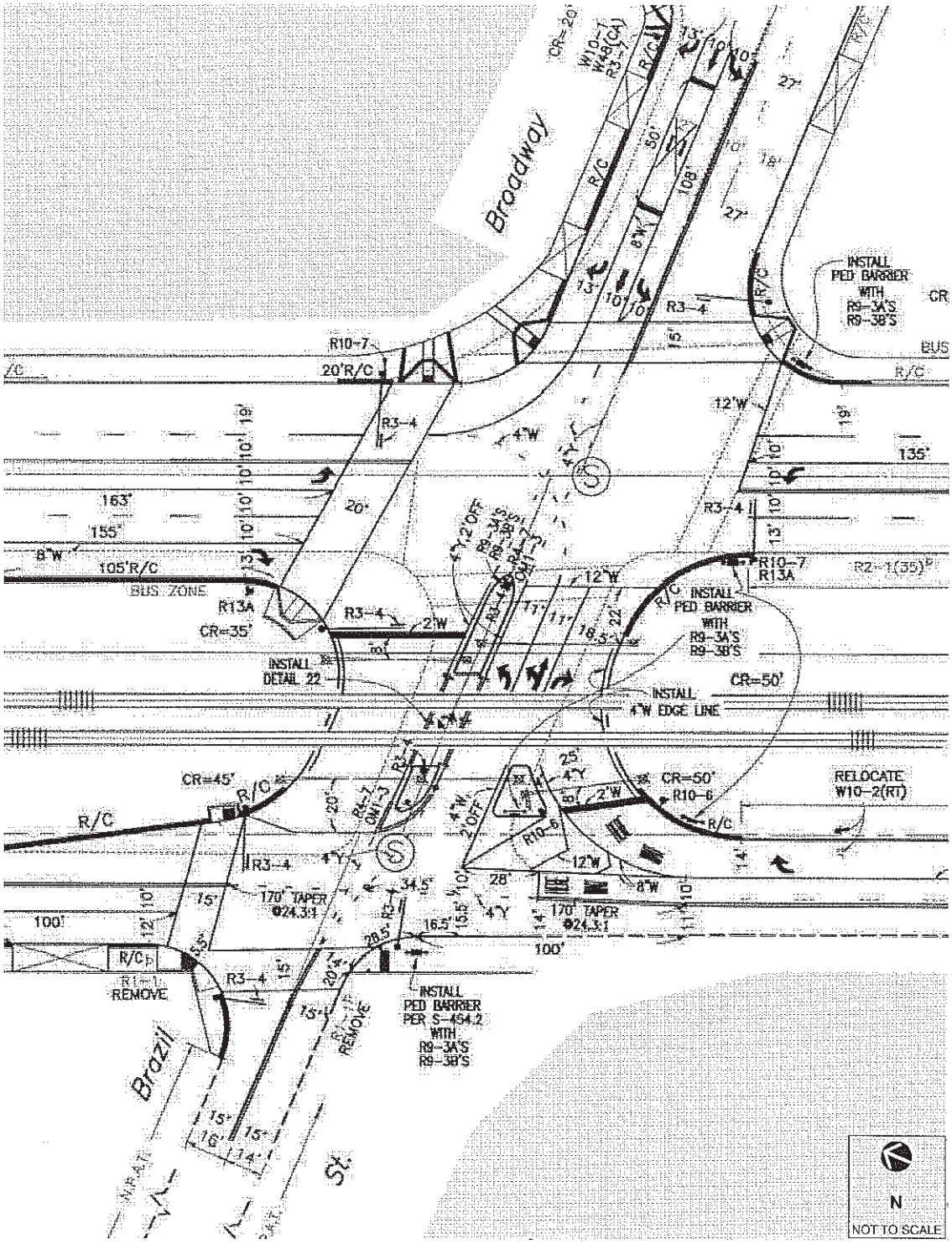
EXISTING LANE CONFIGURATIONS
BROADWAY/BRAZIL STREET CROSSING

FIGURE 1A

FEHR & PEERS
TRANSPORTATION CONSULTANTS

EXISTING LANE CONFIGURATIONS
DORAN STREET CROSSING

FIGURE 1B



Source: LADOT

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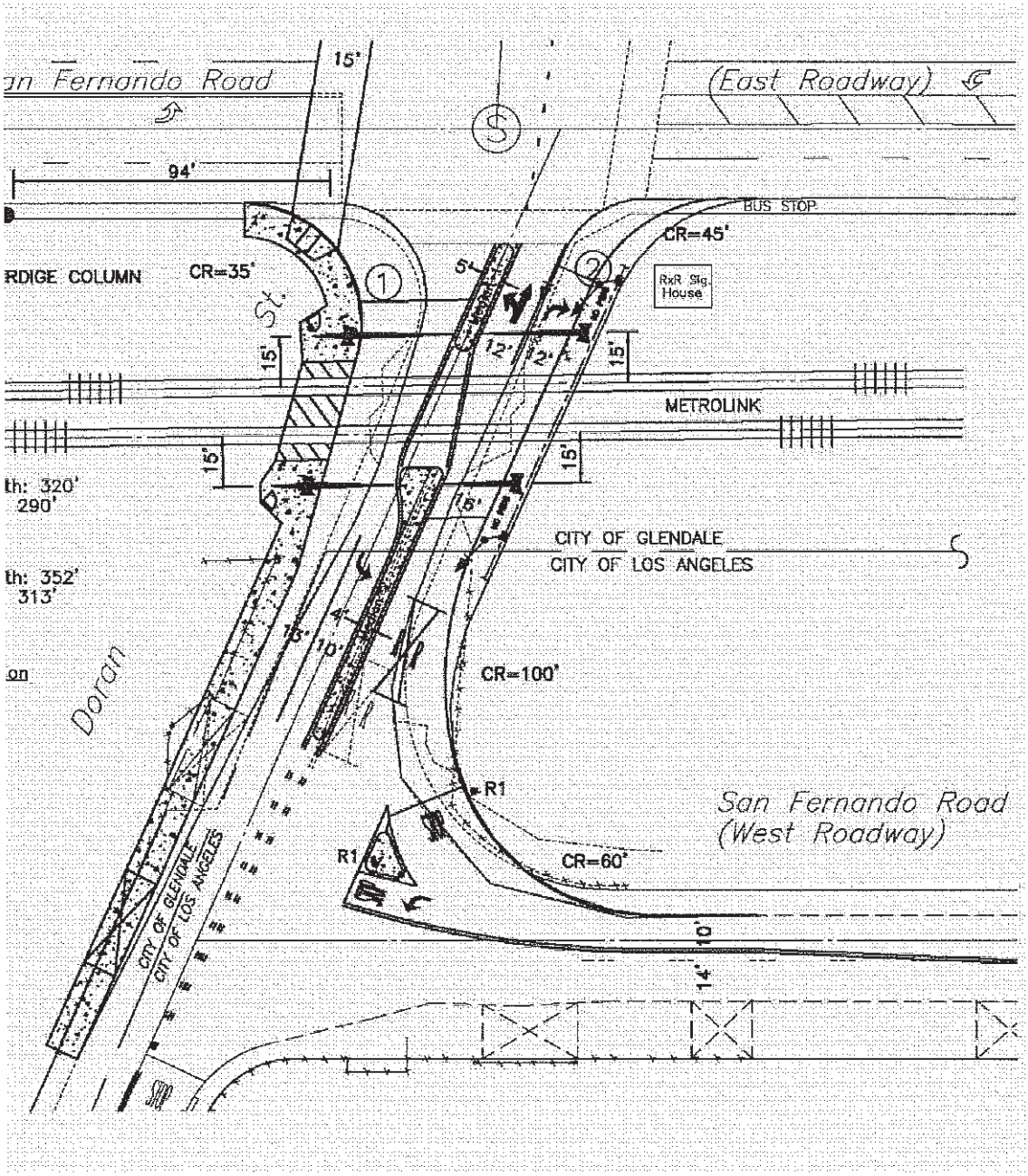
TRANSPORTATION CONSULTANTS

PROPOSED BROADWAY/BRAZIL IMPROVEMENTS

FIGURE 2



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N
NOT TO SCALE

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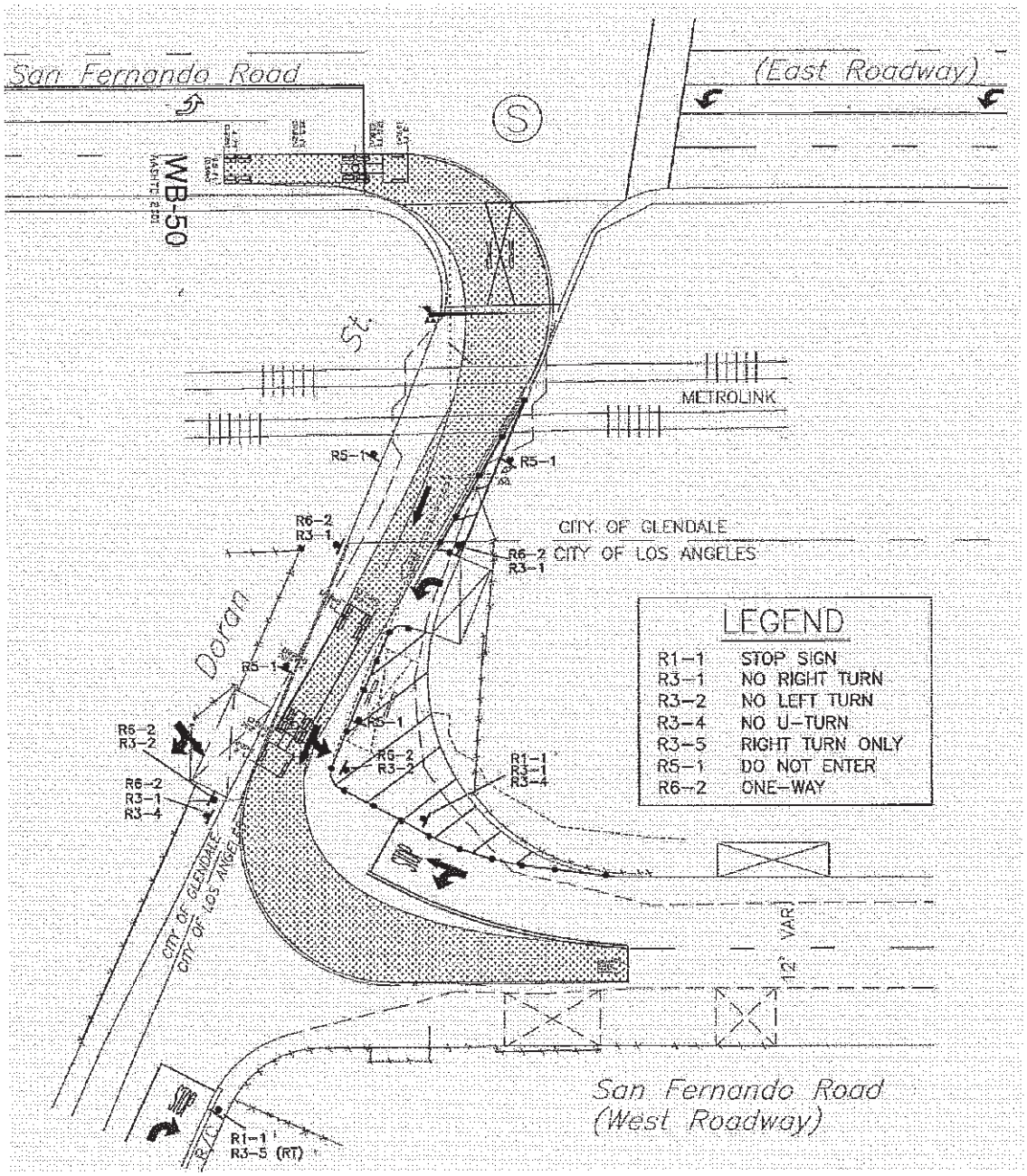
PROPOSED DORAN STREET IMPROVEMENTS
2-WAY OPTION

FIGURE 3A



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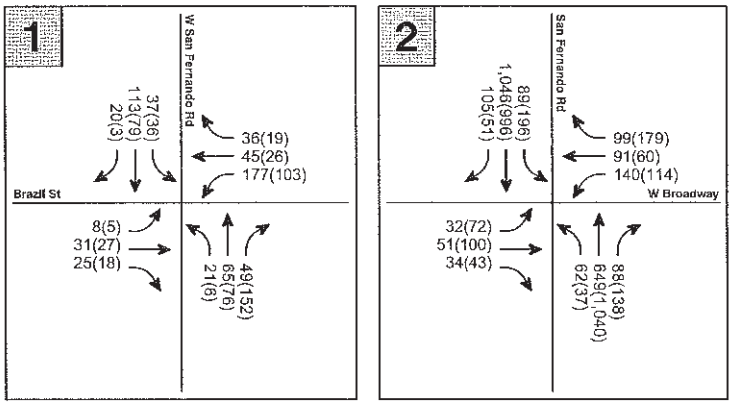
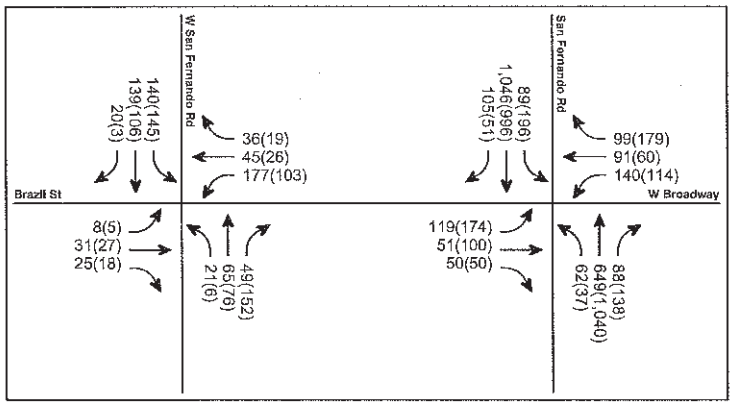
PROPOSED DORAN STREET IMPROVEMENTS
ONE-WAY WESTBOUND OPTION

FIGURE 3B



EXISTING TURNING VOLUMES



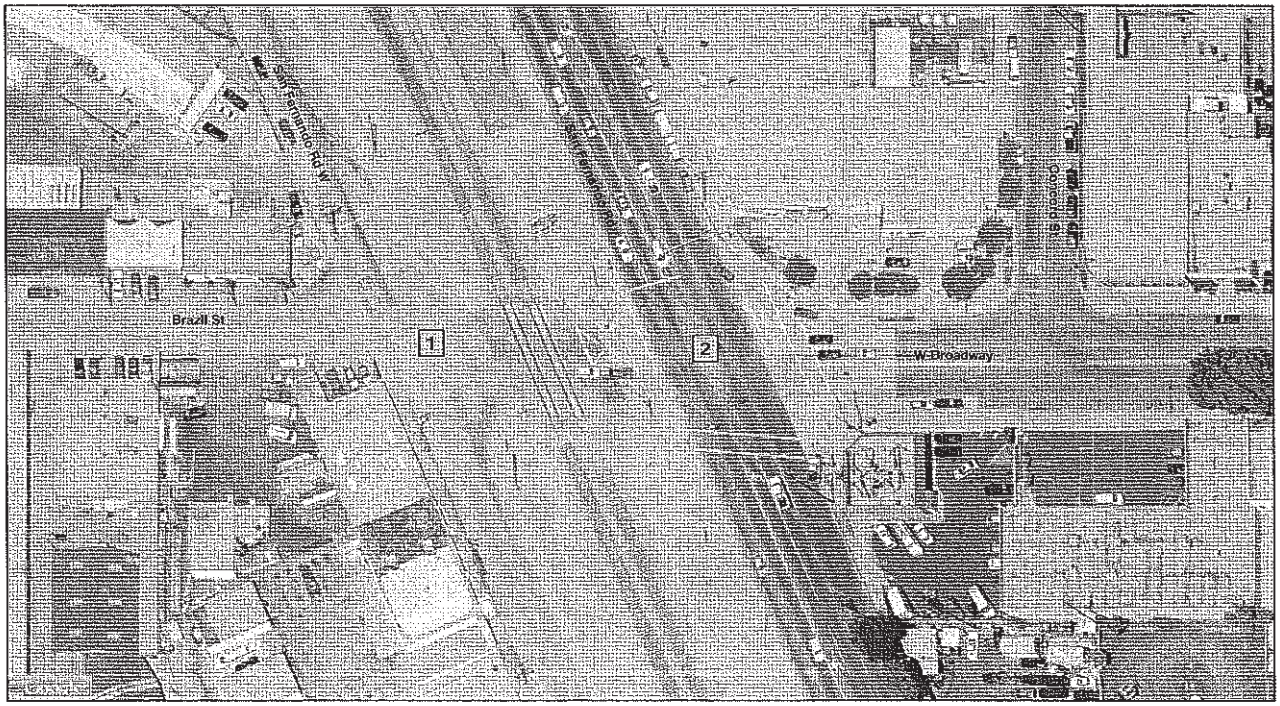
VOLUMES SHIFTED AS A RESULT OF DORAN STREET GRADE CROSSING RECONFIGURATION

LEGEND

X(X) AM(PM) Peak Hour Traffic Volume

N

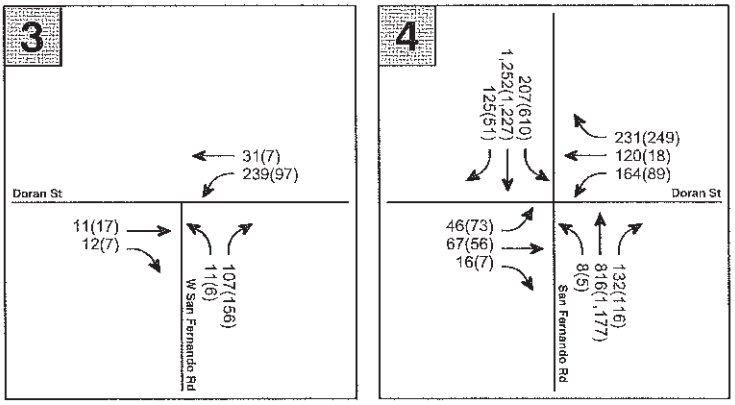
NOT TO SCALE



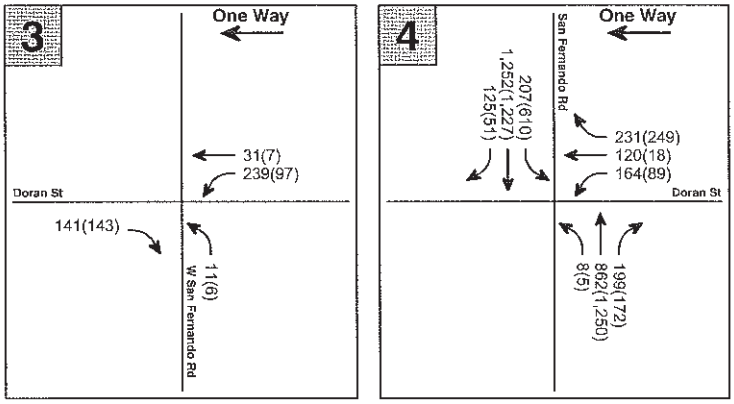
FEHR & PEERS
TRANSPORTATION CONSULTANTS

TRAFFIC VOLUMES WITH AND WITHOUT DORAN STREET GRADE CROSSING RECONFIGURATION BROADWAY/BRAZIL CROSSING

FIGURE 4A



EXISTING TURNING VOLUMES



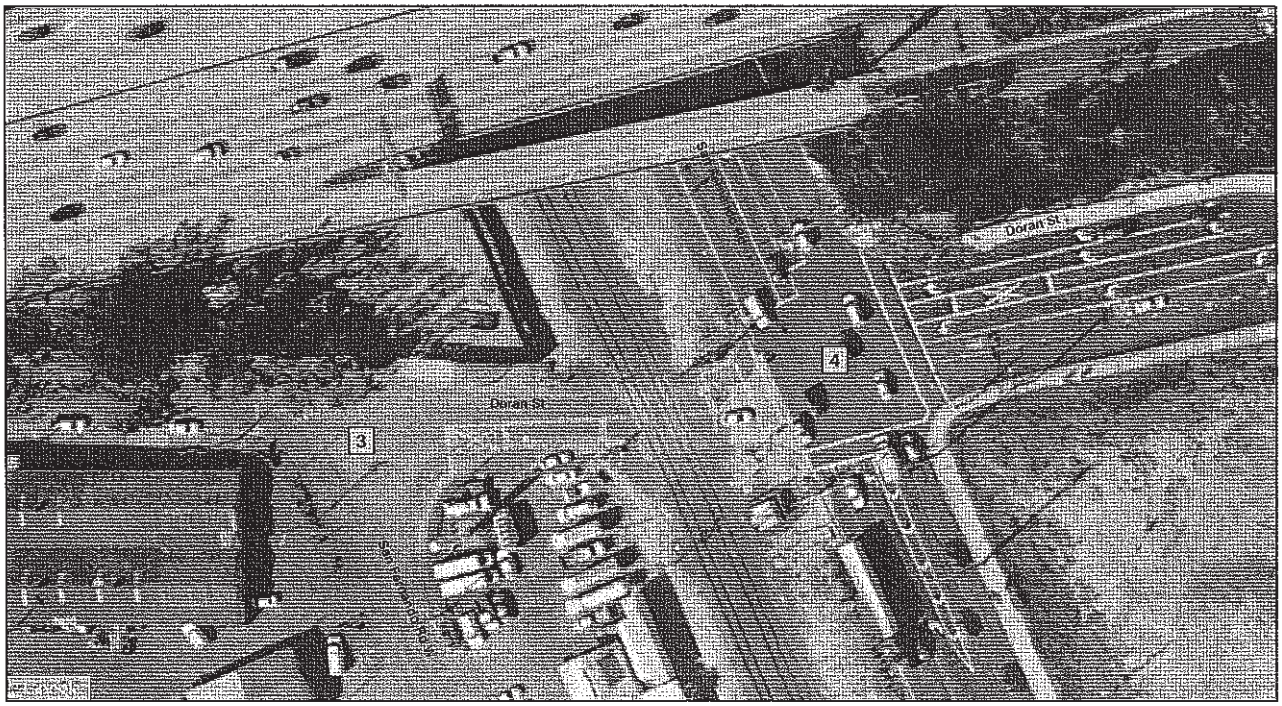
VOLUMES SHIFTED AS A RESULT OF DORAN STREET GRADE CROSSING RECONFIGURATION

LEGEND

X(X) AM(PM) Peak Hour Traffic Volume

N

NOT TO SCALE



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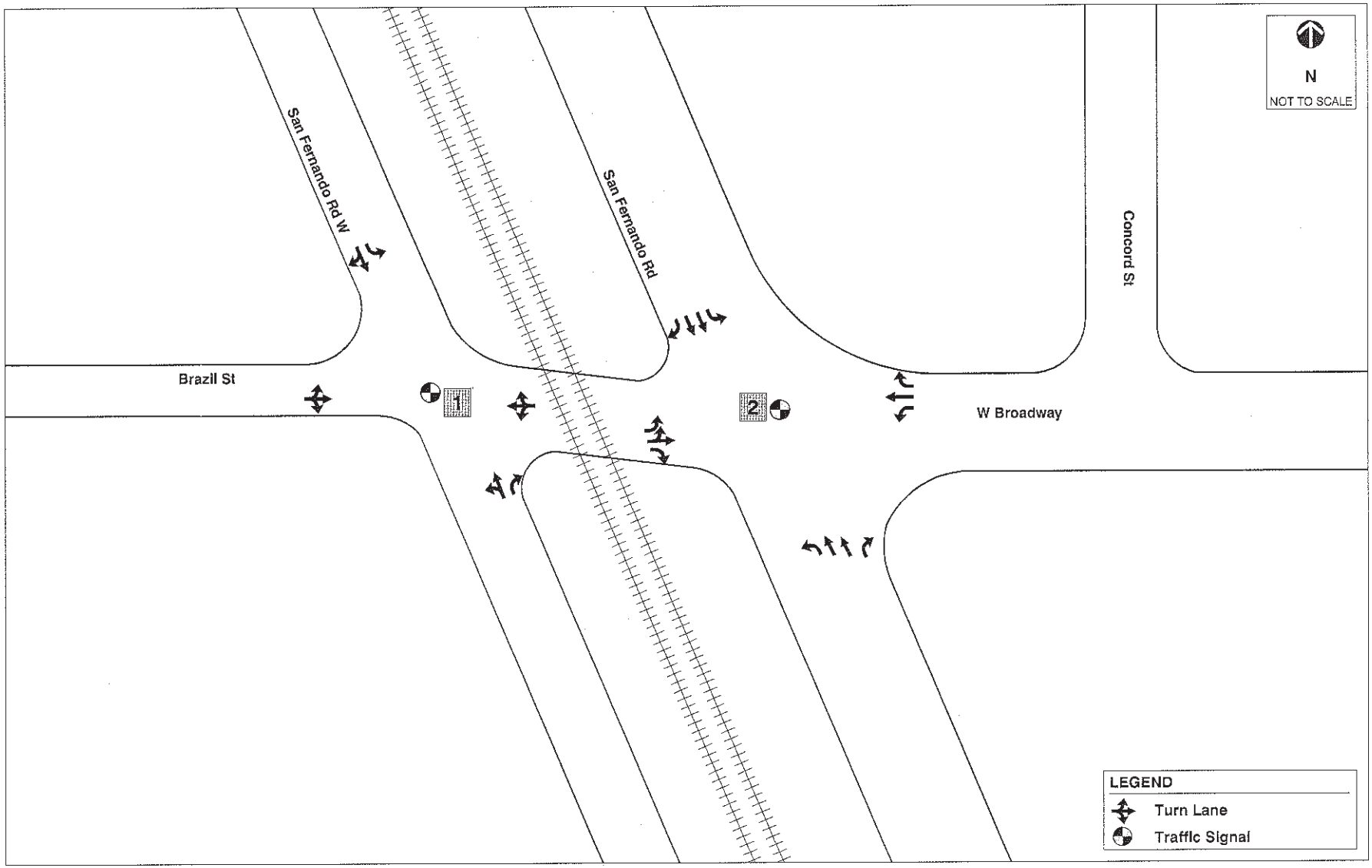
TRAFFIC VOLUMES WITH AND WITHOUT DORAN STREET GRADE CROSSING RECONFIGURATION DORAN STREET CROSSING

FIGURE 4B



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BROADWAY/BRAZIL LANE CONFIGURATIONS WITH PROPOSED MITIGATIONS

FIGURE 5

TABLE 1

LEVELS OF SERVICE WITH AND WITHOUT BROADWAY/BRAZIL SAFETY ENHANCEMENTS

	Existing Conditions: Two Separate Intersections			New Configuration: Single Intersection Control with Existing Traffic Volumes						New Configuration: Single Intersection Control with Existing Traffic Volumes - with Mitigations					
Intersection	Peak Hour	V/C or Delay	LOS	Peak Hour	V/C	LOS	Change in V/C	Significant Impact Glendale?	Significant Impact Los Angeles?	Peak Hour	V/C	LOS	Change in V/C	Significant Impact Glendale?	Significant Impact Los Angeles?
1 West San Fernando Road	AM	9	A												
Brazil St	PM	9	A												
Combined [a]				AM	0.654	B	0.096	NO	NO	AM	0.654	B	0.096	NO	NO
				PM	0.815	D	0.126	**YES**	**YES**	PM	0.772	C	0.083	NO	**YES**
2 San Fernando Road	AM	0.558	A												
Broadway/Brazil St	PM	0.689	B												
3 West San Fernando Road	AM	11	B	AM	2	A	-9	NO	NO	n/a					
Doran Street	PM	10	A	PM	2	A	-8	NO	NO						
4 San Fernando Road	AM	0.640	B	AM	0.628	B	-0.012	NO	NO	n/a					
Doran Street	PM	0.798	C	PM	0.794	C	-0.004	NO	NO						

Notes:

[a] Intersection operations combined. Each intersection has a signal and both signals are on one controller.

TABLE 2
LEVEL OF SERVICE DEFINITIONS FOR
STOP-CONTROLLED INTERSECTIONS

Level of Service	Average Total Delay (seconds per vehicle)
A	$\leq$ 10.0
B	> 10.0 and $\leq$ 15.0
C	> 15.0 and $\leq$ 25.0
D	> 25.0 and $\leq$ 35.0
E	> 35.0 and $\leq$ 50.0
F	> 50.0

Source: Transportation Research Board

TABLE 3
LEVEL OF SERVICE DEFINITIONS FOR SIGNALIZED INTERSECTIONS

Level of Service	Intersection Capacity Utilization	Definition
A	0.000-0.600	EXCELLENT. No Vehicle waits longer than one red light and no approach phase is fully used.
B	0.601-0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701-0.800	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801-0.900	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901-1.000	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 1.000	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.

Source: *Transportation Research Circular No. 212, Interim Materials on Highway Capacity* Transportation Research Board, 1980.

TABLE 4

LEVELS OF SERVICE WITH BROADWAY/BRAZIL SAFETY ENHANCEMENTS AND DORAN STREET GRADE CROSSING RECONFIGURATION

	Existing Conditions: Two Separate Intersections			New Configuration: Single Intersection Control with Doran Street Grade Crossing Westbound Only						New Configuration: Single Intersection Control with Doran Street Grade Crossing Westbound Only - with Mitigations					
Intersection	Peak Hour	V/C or Delay	LOS	Peak Hour	V/C	LOS	Change in V/C	Significant Impact Glendale?	Significant Impact Los Angeles?	Peak Hour	V/C	LOS	Change in V/C	Significant Impact Glendale?	Significant Impact Los Angeles?
1 West San Fernando Road	AM	9	A												
Broadway/Brazil St	PM	9	A												
Combined [a]				AM	0.741	C	0.183	NO	**YES**	AM	0.741	C	0.183	NO	**YES**
				PM	0.891	D	0.202	**YES**	**YES**	PM	0.848	D	0.159	**YES**	**YES**
2 San Fernando Road	AM	0.558	A												
Broadway/Brazil St	PM	0.689	B												
3 West San Fernando Road	AM	11	B	AM	4	A	-7	NO	NO	n/a					
Doran Street	PM	10	A	PM	3	A	-7	NO	NO						
4 San Fernando Road	AM	0.640	B	AM	0.550	A	-0.090	NO	NO	n/a					
Doran Street	PM	0.798	C	PM	0.744	C	-0.054	NO	NO						

Notes:

[a] Intersection operations combined. Each intersection has a signal and both signals are on one controller.

ATTACHMENT A

TRAFFIC COUNTS

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION VEHICLE CLASSIFICATION TURNING MOVEMENT COUNT SUMMARY

CLIENT: FEHR AND PEERS
PROJECT: DORAN STREET TRAFFIC COUNTS
DATE: WEDNESDAY, FEBRUARY 27,2008
PERIOD: 7:00 AM TO 9:00 AM
INTERSECTION: N/S WEST SAN FERNANDO BOULEVARD
E/W BROADWAY

	SB WEST SAN FERNANDO																				TOTALS			
	A1				A2				A3				A4				A5							
15-MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
700-715	4	0	0	4	14	0	0	14	1	0	0	1	0	0	0	0	2	1	0	3	21	1	0	22
715-730	2	0	0	2	18	0	2	20	0	0	0	0	3	0	0	3	0	0	0	0	23	0	2	25
730-745	6	0	0	6	43	3	1	47	0	0	0	0	1	0	0	1	3	2	0	5	53	5	1	59
745-800	2	0	0	2	28	1	0	29	0	0	0	0	5	1	0	6	5	0	0	5	40	2	0	42
800-815	4	1	0	5	26	3	1	30	2	0	0	2	2	0	0	2	2	1	1	4	36	5	2	43
815-830	7	1	0	8	22	3	1	26	0	0	0	0	5	1	0	6	5	0	0	5	39	5	1	45
830-845	3	0	0	3	19	1	0	20	0	0	0	0	2	0	0	2	1	0	0	1	25	1	0	26
845-900	4	0	0	4	24	1	0	25	1	0	0	1	5	1	0	6	4	2	0	6	38	4	0	42
HOUR TOTALS																								
700-800	14	0	0	14	103	4	3	110	1	0	0	1	9	1	0	10	10	3	0	13	137	8	3	148
715-815	14	1	0	15	115	7	4	126	2	0	0	2	11	1	0	12	10	3	1	14	152	12	5	169
730-830	19	2	0	21	119	10	3	132	2	0	0	2	13	2	0	15	15	3	1	19	166	17	4	189
745-845	16	2	0	18	95	8	2	105	2	0	0	2	14	2	0	16	13	1	1	15	140	13	3	156
800-900	18	2	0	20	91	8	2	101	3	0	0	3	14	2	0	16	12	3	1	16	138	15	3	156

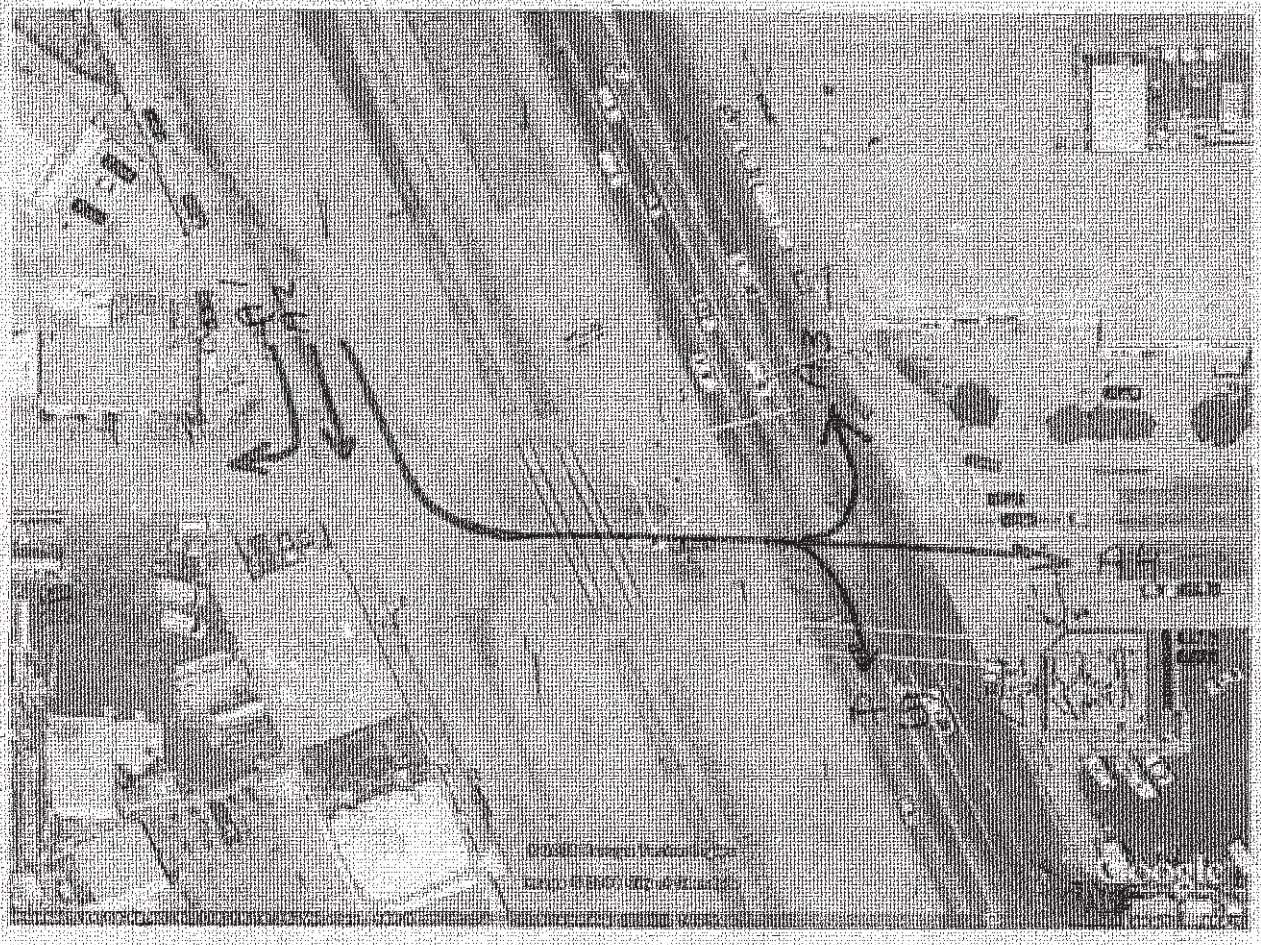
WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION VEHICLE CLASSIFICATION TURNING MOVEMENT COUNT SUMMARY

CLIENT: FEHR AND PEERS
PROJECT: DORAN STREET TRAFFIC COUNTS
DATE: WEDNESDAY, FEBRUARY 27,2008
PERIOD: 4:00 PM TO 6:00 PM
INTERSECTION: N/S WEST SAN FERNANDO BOULEVARD
E/W BROADWAY

	SB WEST SAN FERNANDO																				TOTALS			
	A1				A2				A3				A4				A5							
15-MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
400-415	2	2	0	4	22	1	0	23	2	0	0	2	1	2	0	3	7	0	0	7	34	5	0	39
415-430	1	0	0	1	12	1	0	13	0	0	0	0	3	0	0	3	4	1	0	5	20	2	0	22
430-445	0	0	0	0	14	1	0	15	0	0	0	0	9	0	0	9	7	0	0	7	30	1	0	31
445-500	1	0	0	1	14	0	0	14	1	0	0	1	3	0	0	3	3	0	0	3	22	0	0	22
500-515	1	0	0	1	33	0	1	34	2	0	0	2	8	0	0	8	8	0	0	8	52	0	1	53
515-530	0	0	0	0	19	0	0	19	3	0	0	3	2	0	0	2	3	0	0	3	27	0	0	27
530-545	0	0	0	0	16	0	0	16	0	0	0	0	2	0	0	2	6	0	0	6	24	0	0	24
545-600	2	0	0	2	9	0	0	9	0	0	0	0	1	0	0	1	1	0	0	1	13	0	0	13
HOUR TOTALS																								
400-500	4	2	0	6	62	3	0	65	3	0	0	3	16	2	0	18	21	1	0	22	106	8	0	114
415-515	3	0	0	3	73	2	1	76	3	0	0	3	23	0	0	23	22	1	0	23	124	3	1	128
430-530	2	0	0	2	80	1	1	82	6	0	0	6	22	0	0	22	21	0	0	21	131	1	1	133
445-545	2	0	0	2	82	0	1	83	6	0	0	6	15	0	0	15	20	0	0	20	125	0	1	126
500-600	3	0	0	3	77	0	1	78	5	0	0	5	13	0	0	13	18	0	0	18	116	0	1	117



All A movements

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION VEHICLE CLASSIFICATION TURNING MOVEMENT COUNT SUMMARY

CLIENT: FEHR AND PEERS
PROJECT: DORAN STREET TRAFFIC COUNTS
DATE: WEDNESDAY, FEBRUARY 27,2008
PERIOD: 7:00 AM TO 9:00 AM
INTERSECTION: N/S WEST SAN FERNANDO BOULEVARD
E/W BROADWAY

	EB BROADWAY																				TOTALS			
	B1				B2				B3				B4				B5							
15-MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
700-715	4	1	0	5	7	0	0	7	2	2	0	4	1	1	0	2	1	0	0	1	15	4	0	19
715-730	1	2	0	3	0	0	0	0	0	2	0	2	1	1	0	2	0	0	0	0	2	5	0	7
730-745	2	2	0	4	3	0	0	3	0	0	0	0	4	0	0	4	1	2	0	3	10	4	0	14
745-800	1	2	0	3	1	0	0	1	0	0	0	0	1	1	0	2	0	0	0	0	3	3	0	6
800-815	4	1	0	5	5	0	0	5	1	0	0	1	2	0	0	2	5	0	0	5	17	1	0	18
815-830	3	2	2	7	0	0	0	0	3	2	0	5	3	0	0	3	0	1	0	1	9	5	2	16
830-845	3	1	0	4	4	0	0	4	3	0	0	3	1	1	0	2	1	0	0	1	12	2	0	14
845-900	1	1	0	2	1	0	0	1	0	0	0	0	0	0	0	0	2	0	0	2	4	1	0	5
HOUR TOTALS																								
700-800	8	7	0	15	11	0	0	11	2	4	0	6	7	3	0	10	2	2	0	4	30	16	0	46
715-815	8	7	0	15	9	0	0	9	1	2	0	3	8	2	0	10	6	2	0	8	32	13	0	45
730-830	10	7	2	19	9	0	0	9	4	2	0	6	10	1	0	11	6	3	0	9	39	13	2	54
745-845	11	6	2	19	10	0	0	10	7	2	0	9	7	2	0	9	6	1	0	7	41	11	2	54
800-900	11	5	2	18	10	0	0	10	7	2	0	9	6	1	0	7	8	1	0	9	42	9	2	53

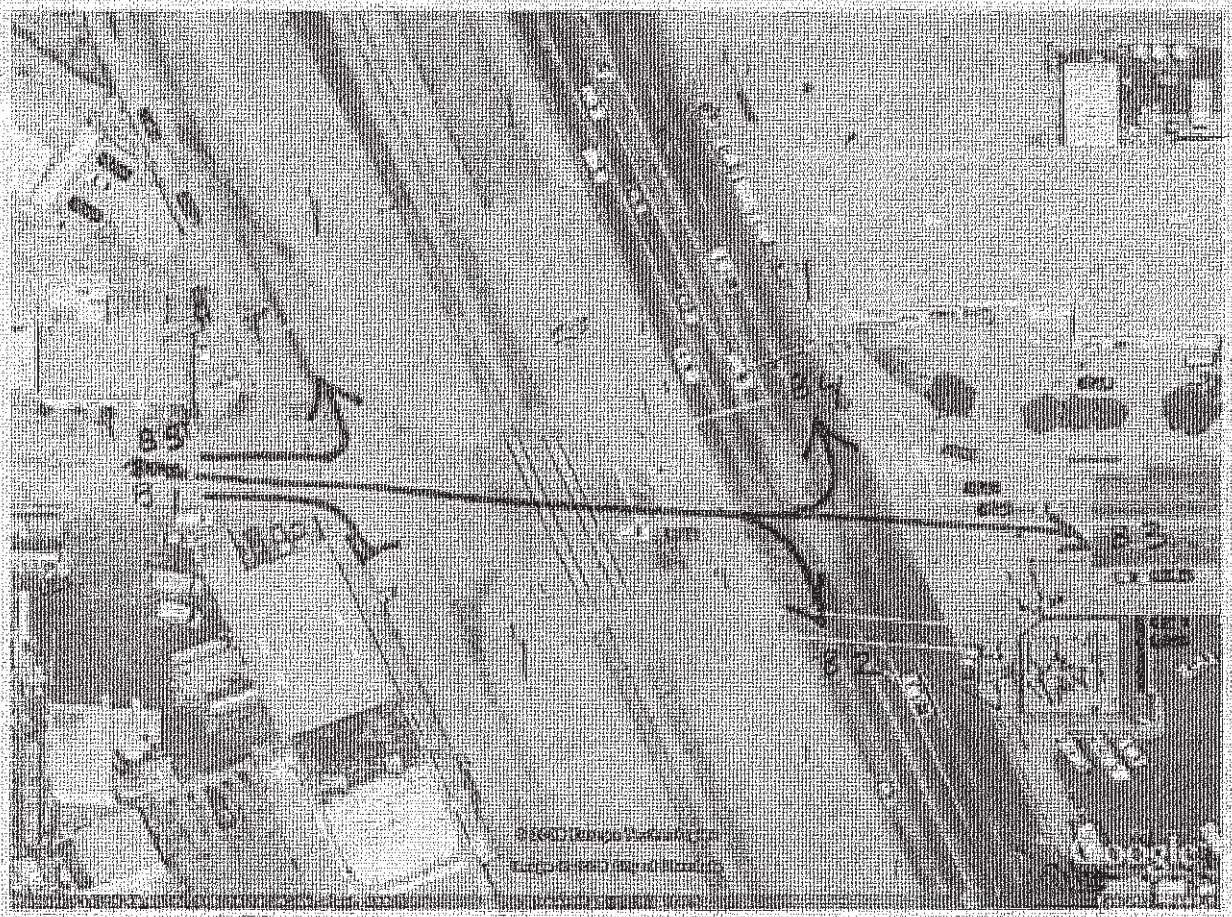
WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION VEHICLE CLASSIFICATION TURNING MOVEMENT COUNT SUMMARY

CLIENT: FEHR AND PEERS
PROJECT: DORAN STREET TRAFFIC COUNTS
DATE: WEDNESDAY, FEBRUARY 27,2008
PERIOD: 4:00 PM TO 6:00 PM
INTERSECTION: N/S WEST SAN FERNANDO BOULEVARD
E/W BROADWAY

	EB BROADWAY																				TOTALS			
	B1				B2				B3				B4				B5							
15-MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
400-415	9	1	0	10	4	0	0	4	1	0	0	1	3	0	0	3	3	0	0	3	20	1	0	21
415-430	4	0	0	4	3	0	0	3	3	0	0	3	2	0	0	2	4	0	0	4	16	0	0	16
430-445	6	0	0	6	0	1	0	1	2	0	0	2	5	0	0	5	2	0	0	2	15	1	0	16
445-500	3	0	0	3	0	0	0	0	1	0	0	1	4	0	0	4	0	0	0	0	8	0	0	8
500-515	6	0	0	6	0	0	0	0	2	0	0	2	4	0	0	4	1	0	0	1	13	0	0	13
515-530	5	0	0	5	1	0	0	1	3	0	0	3	3	0	0	3	0	0	0	0	12	0	0	12
530-545	7	0	0	7	1	0	0	1	5	0	0	5	1	0	0	1	0	0	0	0	14	0	0	14
545-600	0	0	0	0	1	0	0	1	3	0	0	3	3	0	0	3	4	0	0	4	11	0	0	11
HOUR TOTALS																								
400-500	22	1	0	23	7	1	0	8	7	0	0	7	14	0	0	14	9	0	0	9	59	2	0	61
415-515	19	0	0	19	3	1	0	4	8	0	0	8	15	0	0	15	7	0	0	7	52	1	0	53
430-530	20	0	0	20	1	1	0	2	8	0	0	8	16	0	0	16	3	0	0	3	48	1	0	49
445-545	21	0	0	21	2	0	0	2	11	0	0	11	12	0	0	12	1	0	0	1	47	0	0	47
500-600	18	0	0	18	3	0	0	3	13	0	0	13	11	0	0	11	5	0	0	5	50	0	0	50



All B movements

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Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION VEHICLE CLASSIFICATION TURNING MOVEMENT COUNT SUMMARY

CLIENT: FEHR AND PEERS
PROJECT: DORAN STREET TRAFFIC COUNTS
DATE: WEDNESDAY, FEBRUARY 27,2008
PERIOD: 7:00 AM TO 9:00 AM
INTERSECTION: N/S WEST SAN FERNANDO BOULEVARD
E/W BROADWAY

	NB WEST SAN FERNANDO																				TOTALS			
	C1				C2				C3				C4				C5							
15-MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
700-715	1	0	0	1	5	0	0	5	11	0	0	11	9	0	1	10	2	1	0	3	28	1	1	30
715-730	2	0	1	3	4	1	0	5	3	0	0	3	12	0	0	12	1	1	0	2	22	2	1	25
730-745	3	0	0	3	9	0	0	9	5	1	0	6	7	1	0	8	5	0	1	6	29	2	1	32
745-800	0	0	0	0	4	0	0	4	5	1	0	6	16	1	3	20	3	0	1	4	28	2	4	34
800-815	2	0	0	2	5	0	0	5	8	0	0	8	8	1	1	10	1	1	1	3	24	2	2	28
815-830	2	0	1	3	9	1	0	10	1	0	0	1	15	1	1	17	1	3	0	4	28	5	2	35
830-845	1	0	0	1	3	0	0	3	3	0	0	3	8	1	0	9	2	2	0	4	17	3	0	20
845-900	1	0	0	1	6	0	0	6	8	0	0	8	2	1	0	3	0	0	1	1	17	1	1	19
HOUR TOTALS																								
700-800	6	0	1	7	22	1	0	23	24	2	0	26	44	2	4	50	11	2	2	15	107	7	7	121
715-815	7	0	1	8	22	1	0	23	21	2	0	23	43	3	4	50	10	2	3	15	103	8	8	119
730-830	7	0	1	8	27	1	0	28	19	2	0	21	46	4	5	55	10	4	3	17	109	11	9	129
745-845	5	0	1	6	21	1	0	22	17	1	0	18	47	4	5	56	7	6	2	15	97	12	8	117
800-900	6	0	1	7	23	1	0	24	20	0	0	20	33	4	2	39	4	6	2	12	86	11	5	102

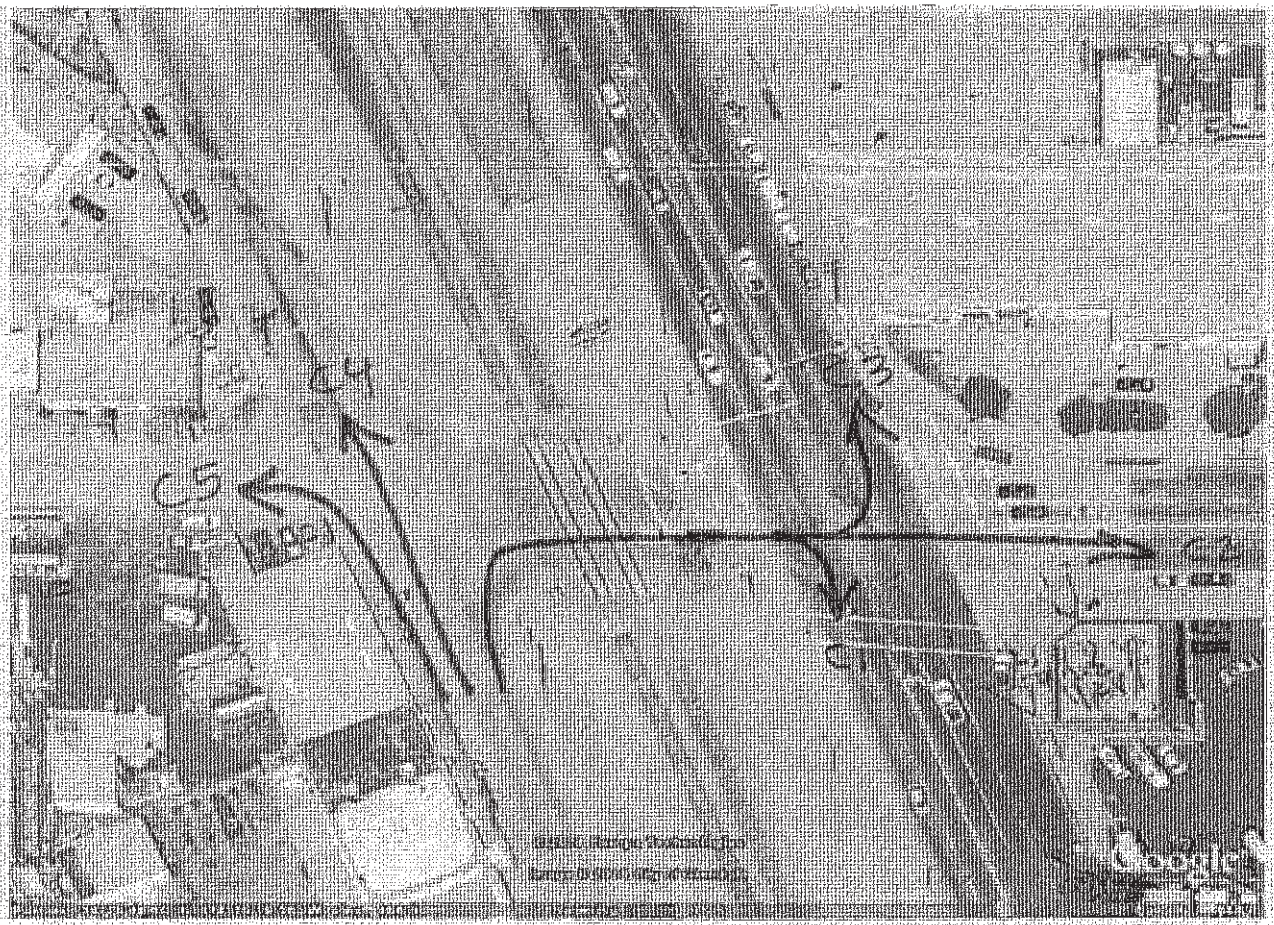
WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION VEHICLE CLASSIFICATION TURNING MOVEMENT COUNT SUMMARY

CLIENT: FEHR AND PEERS
PROJECT: DORAN STREET TRAFFIC COUNTS
DATE: WEDNESDAY, FEBRUARY 27,2008
PERIOD: 4:00 PM TO 6:00 PM
INTERSECTION: N/S WEST SAN FERNANDO BOULEVARD
E/W BROADWAY

	NB WEST SAN FERNANDO																				TOTALS			
	C1				C2				C3				C4				C5							
15 MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
400-415	15	0	0	15	26	0	0	26	25	0	0	25	16	0	0	16	3	0	0	3	85	0	0	85
415-430	8	0	0	8	16	0	0	16	11	0	0	11	15	1	0	16	0	0	0	0	50	1	0	51
430-445	9	1	0	10	21	0	0	21	14	1	0	15	15	3	1	19	2	0	1	3	61	5	2	68
445-500	1	0	0	1	13	0	0	13	16	0	0	16	12	0	1	13	0	2	0	2	42	2	1	45
500-515	9	0	0	9	17	0	0	17	15	0	0	15	16	2	0	18	1	0	0	1	58	2	0	60
515-530	3	0	0	3	21	0	0	21	12	0	0	12	20	1	0	21	0	2	0	2	56	3	0	59
530-545	4	0	0	4	23	0	0	23	14	0	0	14	19	0	0	19	2	0	0	2	62	0	0	62
545-600	6	0	0	6	11	1	0	12	15	0	0	15	12	1	1	14	0	0	0	0	44	2	1	47
HOUR TOTALS																								
400-500	33	1	0	34	76	0	0	76	66	1	0	67	58	4	2	64	5	2	1	8	238	8	3	249
415-515	27	1	0	28	67	0	0	67	56	1	0	57	58	6	2	66	3	2	1	6	211	10	3	224
430-530	22	1	0	23	72	0	0	72	57	1	0	58	63	6	2	71	3	4	1	8	217	12	3	232
445-545	17	0	0	17	74	0	0	74	57	0	0	57	67	3	1	71	3	4	0	7	218	7	1	226
500-600	22	0	0	22	72	1	0	73	56	0	0	56	67	4	1	72	3	2	0	5	220	7	1	228



All C Movements

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION VEHICLE CLASSIFICATION TURNING MOVEMENT COUNT SUMMARY

CLIENT: FEHR AND PEERS
PROJECT: DORAN STREET TRAFFIC COUNTS
DATE: WEDNESDAY, FEBRUARY 27,2008
PERIOD: 7:00 AM TO 9:00 AM
INTERSECTION: N/S SAN FERNANDO BOULEVARD (EAST)
E/W BROADWAY

	SB:SAN FERNANDO (EAST)																				TOTALS			
	D1				D2				D3				D4				D5							
15-MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
700-715	0	0	0	0	4	0	0	4	20	2	0	22	161	5	3	169	5	0	0	5	190	7	3	200
715-730	1	0	0	1	0	0	0	0	28	0	0	28	185	7	0	192	13	0	0	13	227	7	0	234
730-745	0	0	0	0	4	0	0	4	30	0	0	30	209	7	1	217	13	1	0	14	256	8	1	265
745-800	2	0	0	2	5	1	0	6	30	0	0	30	303	8	0	311	25	1	0	26	365	10	0	375
800-815	0	1	0	1	4	0	0	4	15	0	0	15	245	6	3	254	24	0	0	24	288	7	3	298
815-830	0	0	0	0	1	0	0	1	24	0	0	24	218	7	0	225	20	0	0	20	263	7	0	270
830-845	1	0	0	1	2	0	0	2	17	0	0	17	231	6	1	238	18	0	0	18	269	6	1	275
845-900	1	0	0	1	3	0	0	3	19	0	0	19	211	8	1	220	27	0	0	27	261	8	1	270
HOUR TOTALS																								
700-800	3	0	0	3	13	1	0	14	108	2	0	110	858	27	4	889	56	2	0	58	1038	32	4	1074
715-815	3	1	0	4	13	1	0	14	103	0	0	103	942	28	4	974	75	2	0	77	1136	32	4	1172
730-830	2	1	0	3	14	1	0	15	99	0	0	99	975	28	4	1007	82	2	0	84	1172	32	4	1208
745-845	3	1	0	4	12	1	0	13	86	0	0	86	997	27	4	1028	87	1	0	88	1185	30	4	1219
800-900	2	1	0	3	10	0	0	10	75	0	0	75	905	27	5	937	89	0	0	89	1081	28	5	1114

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION VEHICLE CLASSIFICATION TURNING MOVEMENT COUNT SUMMARY

CLIENT: FEHR AND PEERS
PROJECT: DORAN STREET TRAFFIC COUNTS
DATE: WEDNESDAY, FEBRUARY 27,2008
PERIOD: 7:00 AM TO 9:00 AM
INTERSECTION: N/S SAN FERNANDO BOULEVARD (EAST)
E/W BROADWAY

	SB SAN FERNANDO (EAST)																				TOTALS			
	D1				D2				D3				D4				D5							
15-MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
400-415	0	0	0	0	3	0	0	3	8	0	0	8	222	6	0	228	30	1	0	31	263	7	0	270
415-430	0	0	0	0	4	0	0	4	10	0	0	10	166	7	1	174	29	0	0	29	209	7	1	217
430-445	0	0	0	0	1	0	0	1	9	0	0	9	186	1	0	187	32	1	0	33	228	2	0	230
445-500	0	0	0	0	0	1	0	1	3	0	0	3	210	7	0	217	31	1	0	32	244	9	0	253
500-515	0	0	0	0	0	1	0	1	8	0	0	8	249	5	0	254	30	1	0	31	287	7	0	294
515-530	0	0	0	0	1	0	0	1	11	1	0	12	212	5	0	217	67	1	0	68	291	7	0	298
530-545	0	0	0	0	0	1	0	1	11	0	0	11	274	4	0	278	48	0	0	48	333	5	0	338
545-600	2	0	0	2	3	0	0	3	9	0	0	9	231	4	1	236	47	0	0	47	292	4	1	297
HOUR TOTALS																								
400-500	0	0	0	0	8	1	0	9	30	0	0	30	784	21	1	806	122	3	0	125	944	25	1	970
415-515	0	0	0	0	5	2	0	7	30	0	0	30	811	20	1	832	122	3	0	125	968	25	1	994
430-530	0	0	0	0	2	2	0	4	31	1	0	32	857	18	0	875	160	4	0	164	1050	25	0	1075
445-545	0	0	0	0	1	3	0	4	33	1	0	34	945	21	0	966	176	3	0	179	1155	28	0	1183
500-600	2	0	0	2	4	2	0	6	39	1	0	40	966	18	1	985	192	2	0	194	1203	23	1	1227

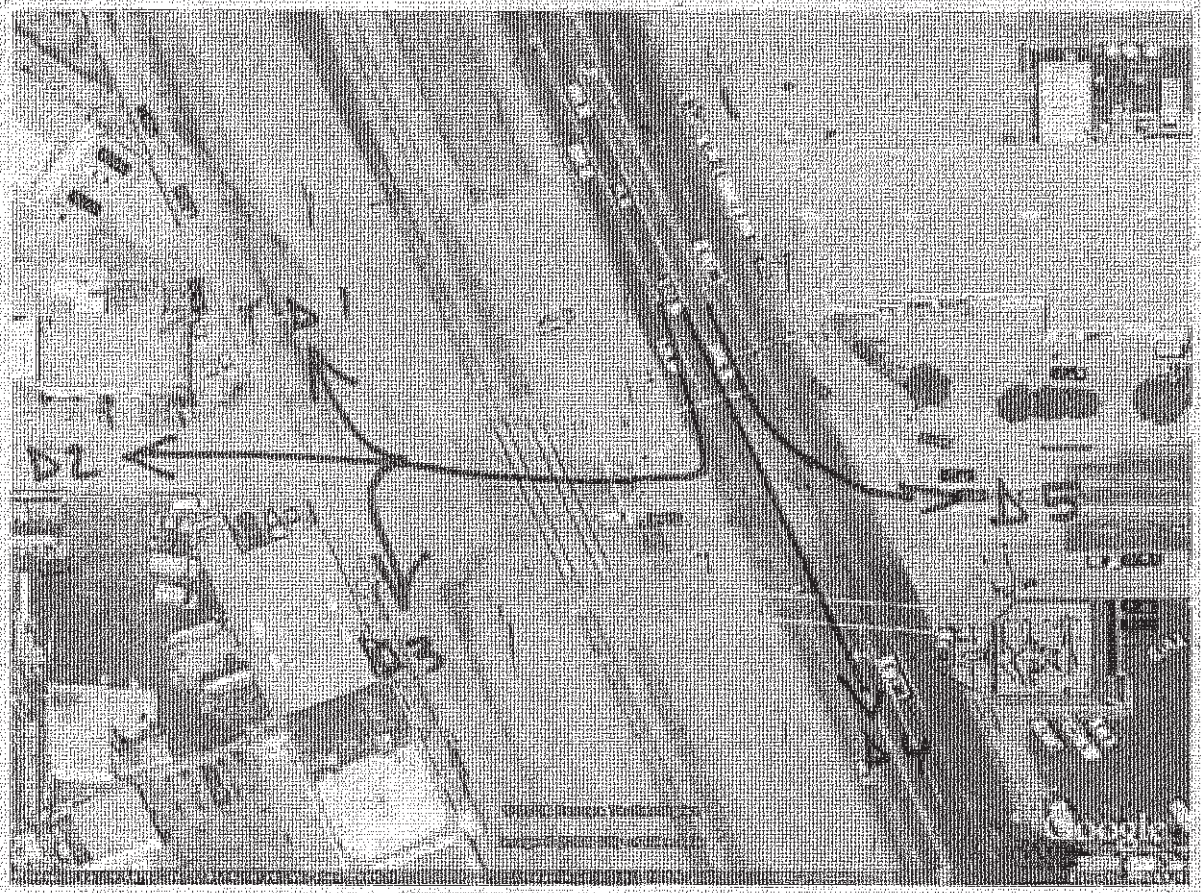


Fig. 1. Movements

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION VEHICLE CLASSIFICATION TURNING MOVEMENT COUNT SUMMARY

CLIENT: FEHR AND PEERS
PROJECT: DORAN STREET TRAFFIC COUNTS
DATE: WEDNESDAY, FEBRUARY 27,2008
PERIOD: 7:00 AM TO 9:00 AM
INTERSECTION: N/S SAN FERNANDO BOULEVARD (EAST)
E/W BROADWAY

	WB BROADWAY																				TOTALS			
	E1				E2				E3				E4				E5							
15-MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
700-715	2	2	0	4	6	0	0	6	6	0	0	6	9	3	0	12	16	1	0	17	39	5	0	45
715-730	12	0	0	12	2	2	0	4	3	0	0	3	14	2	0	16	20	0	0	20	51	4	0	55
730-745	16	0	1	17	0	1	0	1	6	1	0	7	19	0	0	19	30	0	0	30	71	2	1	74
745-800	20	0	0	20	0	0	0	0	4	0	0	4	22	1	0	23	37	4	0	41	83	5	0	88
800-815	30	1	0	31	2	2	0	4	3	0	0	3	23	0	0	23	34	0	1	35	92	3	1	96
815-830	17	0	0	17	5	0	0	5	1	0	0	1	10	0	0	10	31	2	0	33	64	2	0	66
830-845	26	0	2	28	1	0	0	1	1	0	0	1	12	1	0	13	27	0	0	27	67	1	2	70
845-900	31	0	1	32	4	0	0	4	2	0	0	2	8	0	0	8	23	0	0	23	68	0	1	69
HOUR TOTALS																								
700-800	50	2	1	53	8	3	0	11	19	1	0	20	64	6	0	70	103	5	0	108	244	17	1	262
715-815	78	1	1	80	4	5	0	9	16	1	0	17	78	3	0	81	121	4	1	126	297	14	2	313
730-830	83	1	1	85	7	3	0	10	14	1	0	15	74	1	0	75	132	6	1	139	310	12	2	324
745-845	93	1	2	96	8	2	0	10	9	0	0	9	67	2	0	69	129	6	1	136	306	11	3	320
800-900	104	1	3	108	12	2	0	14	7	0	0	7	53	1	0	54	115	2	1	118	291	6	4	301

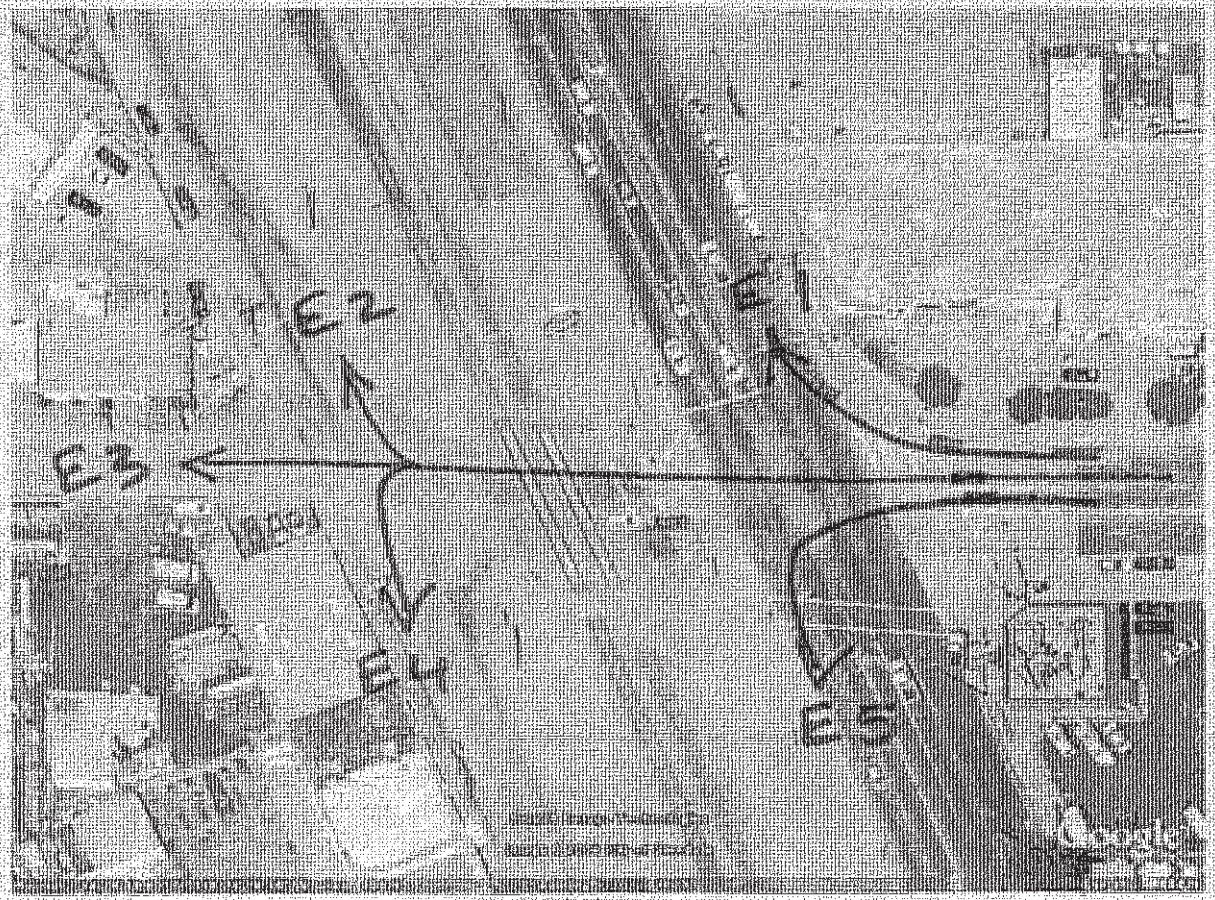
WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION VEHICLE CLASSIFICATION TURNING MOVEMENT COUNT SUMMARY

CLIENT: FEHR AND PEERS
PROJECT: DORAN STREET TRAFFIC COUNTS
DATE: WEDNESDAY, FEBRUARY 27,2008
PERIOD: 4:00 PM TO 6:00 PM
INTERSECTION: N/S SAN FERNANDO BOULEVARD (EAST)
E/W BROADWAY

	WB BROADWAY																				TOTALS			
	E1				E2				E3				E4				E5							
15-MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
400-415	26	0	0	26	2	2	0	4	2	1	0	3	6	0	0	6	20	0	0	20	58	3	0	61
415-430	31	0	0	31	0	0	0	0	2	0	0	2	8	0	0	8	19	0	1	20	60	0	1	61
430-445	33	0	0	33	1	0	0	1	2	0	0	2	13	0	1	14	23	0	0	23	72	0	1	73
445-500	34	3	0	37	0	0	0	0	2	0	0	2	14	0	0	14	19	0	0	19	69	3	0	72
500-515	46	1	0	47	1	0	0	1	0	1	0	1	6	0	0	6	26	1	0	27	79	3	0	82
515-530	38	0	0	38	2	0	0	2	0	0	0	0	14	1	0	15	39	4	0	43	93	5	0	98
530-545	42	0	0	42	0	0	0	0	2	0	0	2	18	0	0	18	20	0	0	20	82	0	0	82
545-600	48	2	0	50	0	0	0	0	0	0	0	0	13	0	0	13	21	0	0	21	82	2	0	84
HOUR TOTALS																								
400-500	126	3	0	129	3	2	0	5	8	1	0	9	41	0	1	42	81	0	1	82	259	6	2	267
415-515	144	4	0	148	2	0	0	2	6	1	0	7	41	0	1	42	87	1	1	89	280	6	2	288
430-530	151	4	0	155	4	0	0	4	4	1	0	5	47	1	1	49	107	5	0	112	313	11	1	325
445-545	160	4	0	164	3	0	0	3	4	1	0	5	52	1	0	53	104	5	0	109	323	11	0	334
500-600	174	3	0	177	3	0	0	3	2	1	0	3	51	1	0	52	106	5	0	111	336	10	0	346



All E movements

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION VEHICLE CLASSIFICATION TURNING MOVEMENT COUNT SUMMARY

CLIENT: FEHR AND PEERS
PROJECT: DORAN STREET TRAFFIC COUNTS
DATE: WEDNESDAY, FEBRUARY 27,2008
PERIOD: 7:00 AM TO 9:00 AM
INTERSECTION: N/S SAN FERNANDO BOULEVARD (EAST)
E/W BROADWAY

	NB SAN FERNANDO (EAST)																				TOTALS			
	F1				F2				F3				F4				F5							
15-MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
700-715	17	0	0	17	111	6	0	117	8	0	0	8	12	2	0	14	2	1	0	3	150	9	0	159
715-730	13	3	0	16	108	9	0	117	6	1	0	7	3	0	0	3	2	0	0	2	132	13	0	145
730-745	10	1	0	11	136	7	0	143	5	0	0	5	0	0	0	0	5	0	0	5	156	8	0	164
745-800	28	0	0	28	145	9	0	154	1	1	0	2	7	0	0	7	6	0	0	6	187	10	0	197
800-815	18	0	0	18	146	3	0	149	5	2	0	7	4	0	0	4	4	1	0	5	177	6	0	183
815-830	15	1	0	16	138	8	0	146	7	0	0	7	2	1	0	3	3	0	0	3	165	10	0	175
830-845	23	1	0	24	184	3	0	187	2	0	0	2	7	0	0	7	3	1	0	4	219	5	0	224
845-900	22	0	0	22	144	2	0	146	5	1	0	6	8	0	0	8	6	0	0	6	185	3	0	188
HOUR TOTALS																								
700-800	68	4	0	72	500	31	0	531	20	2	0	22	22	2	0	24	15	1	0	16	625	40	0	665
715-815	69	4	0	73	535	28	0	563	17	4	0	21	14	0	0	14	17	1	0	18	652	37	0	689
730-830	71	2	0	73	565	27	0	592	18	3	0	21	13	1	0	14	18	1	0	19	686	34	0	719
745-845	84	2	0	86	613	23	0	636	15	3	0	18	20	1	0	21	16	2	0	18	748	31	0	779
800-900	78	2	0	80	612	16	0	628	19	3	0	22	21	1	0	22	16	2	0	18	746	24	0	770

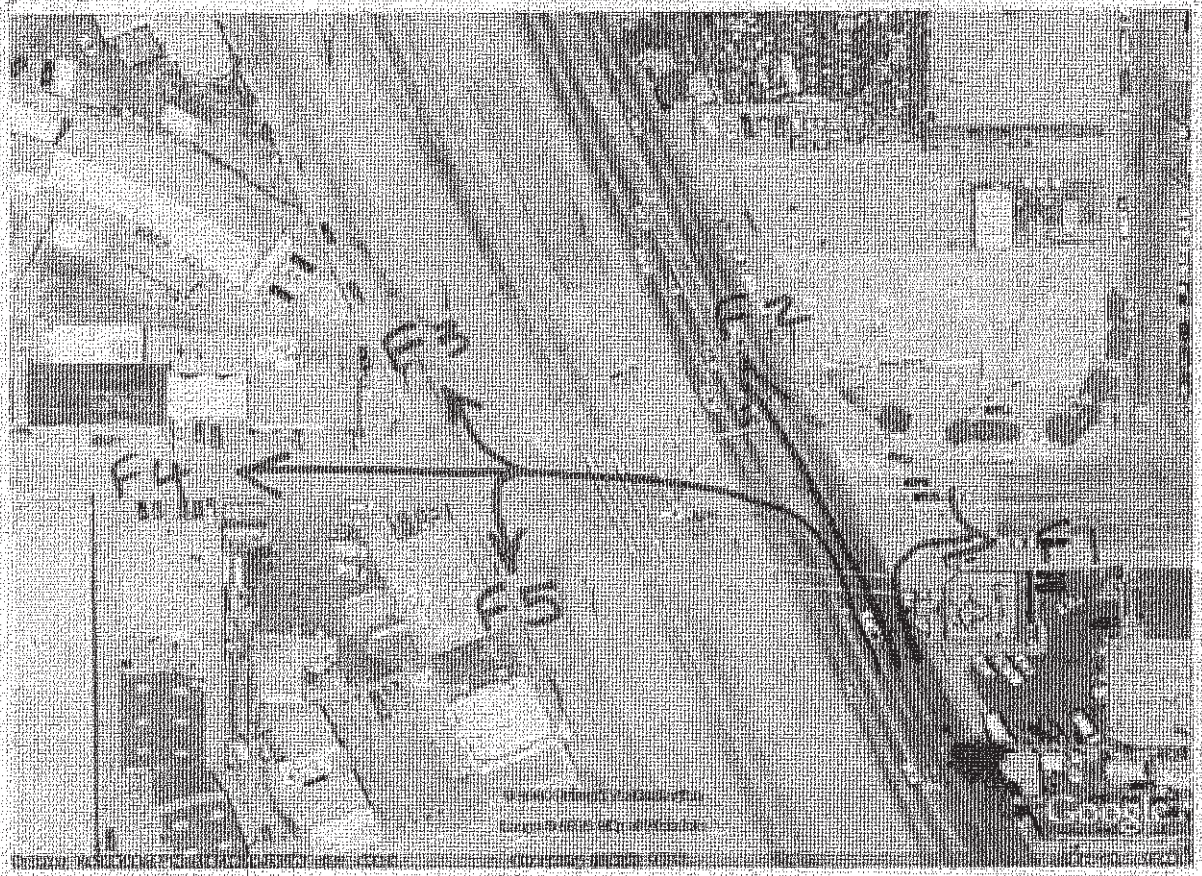
WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION VEHICLE CLASSIFICATION TURNING MOVEMENT COUNT SUMMARY

CLIENT: FEHR AND PEERS
PROJECT: DORAN STREET TRAFFIC COUNTS
DATE: WEDNESDAY, FEBRUARY 27,2008
PERIOD: 4:00 PM TO 6:00 PM
INTERSECTION: N/S SAN FERNANDO BOULEVARD (EAST)
E/W BROADWAY

	NB SAN FERNANDO (EAST)																				TOTALS			
	F1				F2				F3				F4				F5							
15 MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
400-415	33	0	0	33	228	6	0	234	5	0	0	5	4	1	0	5	5	1	0	6	275	8	0	283
415-430	38	1	0	39	231	4	0	235	3	0	0	3	4	1	0	5	4	0	0	4	280	6	0	286
430-445	32	0	0	32	262	5	0	267	2	1	1	4	1	0	0	1	0	0	0	0	317	6	1	324
445-500	29	0	0	29	254	3	0	257	3	0	0	3	0	0	0	0	7	0	0	7	293	3	0	296
500-515	37	0	0	37	270	4	1	275	3	0	0	3	5	0	0	5	2	0	0	2	317	4	1	322
515-530	38	0	0	38	252	3	0	255	8	0	0	8	5	0	0	5	4	0	0	4	307	3	0	310
530-545	39	0	0	39	278	2	0	280	0	0	0	0	1	0	0	1	0	0	0	0	318	2	0	320
545-600	24	0	0	24	219	2	1	222	3	0	0	3	3	0	0	3	3	0	0	3	252	2	1	255
HOUR TOTALS																								
400-500	132	1	0	133	995	18	0	1013	13	1	1	15	9	2	0	11	16	1	0	17	1165	23	1	1189
415-515	136	1	0	137	1037	16	1	1054	11	1	1	13	10	1	0	11	13	0	0	13	1207	19	2	1228
430-530	136	0	0	136	1058	15	1	1074	16	1	1	18	11	0	0	11	13	0	0	13	1234	16	2	1252
445-545	143	0	0	143	1054	12	1	1067	14	0	0	14	11	0	0	11	13	0	0	13	1235	12	1	1248
500-600	138	0	0	138	1019	11	2	1032	14	0	0	14	14	0	0	14	9	0	0	9	1194	11	2	1207



All F movements

WILTEC

INTERSECTION VEHICLE CLASSIFICATION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		FEHR AND PEERS
PROJECT:		DORAN STREET TRAFFIC COUNTS
DATE:		WEDNESDAY, FEBRUARY 27,2008
PERIOD:		7:00 AM TO 9:00 AM
INTERSECTION:	N/S	SAN FERNANDO BOULEAVRD
	E/W	DORAN STREET

	1 SBRT				2 SBTH				3 SBLT			
15-MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
700-715	22	3	0	25	140	5	0	145	22	0	0	22
715-730	21	5	1	27	197	5	0	202	34	5	0	39
730-745	43	0	1	44	218	6	1	225	42	1	0	43
745-800	40	1	0	41	285	9	0	294	55	0	0	55
800-815	35	0	0	35	336	8	3	347	66	0	0	66
815-830	21	1	0	22	310	2	0	312	47	1	0	48
830-845	17	5	0	22	279	3	1	283	37	0	0	37
845-900	16	0	0	16	245	7	0	252	49	0	0	49
HOUR TOTALS												
700-800	126	9	2	137	840	25	1	866	153	6	0	159
715-815	139	6	2	147	1036	28	4	1068	197	6	0	203
730-830	139	2	1	142	1149	25	4	1178	210	2	0	212
745-845	113	7	0	120	1210	22	4	1236	205	1	0	206
800-900	89	6	0	95	1170	20	4	1194	199	1	0	200

	7 NBRT				8 NBTH				9 NBLT			
15-MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
700-715	15	2	0	17	126	10	1	137	3	0	0	3
715-730	25	3	0	28	141	9	1	151	1	0	0	1
730-745	18	1	0	19	166	5	1	172	1	0	0	1
745-800	27	5	1	33	214	7	1	222	3	0	0	3
800-815	33	1	2	36	182	2	1	185	2	0	0	2
815-830	22	2	0	24	195	5	2	202	0	0	0	0
830-845	31	0	0	31	184	6	1	191	1	1	0	2
845-900	19	0	1	20	183	4	0	187	1	1	0	2
HOUR TOTALS												
700-800	85	11	1	97	647	31	4	682	8	0	0	8
715-815	103	10	3	116	703	23	4	730	7	0	0	7
730-830	100	9	3	112	757	19	5	781	6	0	0	6
745-845	113	8	3	124	775	20	5	800	6	1	0	7
800-900	105	3	3	111	744	17	4	765	4	2	0	6

WILTEC

INTERSECTION VEHICLE CLASSIFICATION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		FEHR AND PEERS
PROJECT:		DORAN STREET TRAFFIC COUNTS
DATE:		WEDNESDAY, FEBRUARY 27,2008
PERIOD:		4:00 PM TO 6:00 PM
INTERSECTION:	N/S	SAN FERNANDO BOULEAVRD
	E/W	DORAN STREET

	1 SBRT				2 SBTH				3 SBLT			
15-MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
400-415	19	0	0	19	249	4	0	253	128	0	0	128
415-430	9	0	0	9	227	3	1	231	104	0	0	104
430-445	4	0	1	5	265	2	0	267	115	1	0	116
445-500	13	0	0	13	241	9	0	250	100	0	0	100
500-515	11	0	1	12	274	5	1	280	132	0	0	132
515-530	9	0	0	9	284	5	0	289	143	2	0	145
530-545	14	2	0	16	341	3	1	345	163	0	0	163
545-600	12	0	0	12	298	3	0	301	167	1	0	168
HOUR TOTALS												
400-500	45	0	1	46	982	18	1	1001	447	1	0	448
415-515	37	0	2	39	1007	19	2	1028	451	1	0	452
430-530	37	0	2	39	1064	21	1	1086	490	3	0	493
445-545	47	2	1	50	1140	22	2	1164	538	2	0	540
500-600	46	2	1	49	1197	16	2	1215	605	3	0	608

	7 NBRT				8 NBTH				9 NBLT			
15-MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
400-415	34	0	0	34	270	4	0	274	1	0	0	1
415-430	29	1	0	30	243	7	0	250	0	0	0	0
430-445	23	0	0	23	304	6	0	310	1	0	0	1
445-500	32	0	0	32	268	8	0	276	2	0	0	2
500-515	31	1	0	32	281	5	0	286	1	0	0	1
515-530	26	0	0	26	289	4	1	294	2	0	0	2
530-545	30	0	0	30	294	5	0	299	0	0	0	0
545-600	27	0	0	27	283	1	2	286	2	0	0	2
HOUR TOTALS												
400-500	118	1	0	119	1085	25	0	1110	4	0	0	4
415-515	115	2	0	117	1096	26	0	1122	4	0	0	4
430-530	112	1	0	113	1142	23	1	1166	6	0	0	6
445-545	119	1	0	120	1132	22	1	1155	5	0	0	5
500-600	114	1	0	115	1147	15	3	1165	5	0	0	5

WILTEC

INTERSECTION VEHICLE CLASSIFICATION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		FEHR AND PEERS
PROJECT:		DORAN STREET TRAFFIC COUNTS
DATE:		WEDNESDAY, FEBRUARY 27,2008
PERIOD:		7:00 AM TO 9:00 AM
INTERSECTION:	N/S	SAN FERNANDO BOULEAVRD (WEST)
	E/W	DORAN STREET

	1 SBRT				2 SBTH				3 SBLT			
15 MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
700-715	0	0	0	0	0	0	0	0	0	0	0	0
715-730	0	0	0	0	0	0	2	2	0	0	0	0
730-745	0	0	0	0	0	0	0	0	0	0	0	0
745-800	0	0	1	1	0	0	0	0	0	0	0	0
800-815	0	0	0	0	0	0	0	0	0	0	0	0
815-830	0	0	0	0	0	0	1	1	0	0	0	0
830-845	0	0	0	0	0	0	1	1	0	0	0	0
845-900	0	0	0	0	0	0	0	0	0	0	0	0
HOUR TOTALS												
700-800	0	0	1	1	0	0	2	2	0	0	0	0
715-815	0	0	1	1	0	0	2	2	0	0	0	0
730-830	0	0	1	1	0	0	1	1	0	0	0	0
745-845	0	0	1	1	0	0	2	2	0	0	0	0
800-900	0	0	0	0	0	0	2	2	0	0	0	0

	7 NBRT				8 NBTH				9 NBLT			
15 MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
700-715	6	3	0	9	0	0	0	0	2	1	0	3
715-730	15	1	0	16	0	0	0	0	1	0	0	1
730-745	12	6	1	19	0	0	0	0	2	0	0	2
745-800	16	7	0	23	0	0	0	0	4	0	0	4
800-815	11	13	0	24	0	0	0	0	0	0	0	0
815-830	15	6	1	22	0	0	0	0	3	0	1	4
830-845	16	7	0	23	0	0	0	0	0	1	0	1
845-900	13	17	0	30	0	0	0	0	1	0	0	1
HOUR TOTALS												
700-800	49	17	1	67	0	0	0	0	9	1	0	10
715-815	54	27	1	82	0	0	0	0	7	0	0	7
730-830	54	32	2	88	0	0	0	0	9	0	1	10
745-845	58	33	1	92	0	0	0	0	7	1	1	9
800-900	55	43	1	99	0	0	0	0	4	1	1	6

WILTEC

INTERSECTION VEHICLE CLASSIFICATION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		FEHR AND PEERS
PROJECT:		DORAN STREET TRAFFIC COUNTS
DATE:		WEDNESDAY, FEBRUARY 27,2008
PERIOD:		4:00 PM TO 6:00 PM
INTERSECTION:	N/S	SAN FERNANDO BOULEAVRD (WEST)
	E/W	DORAN STREET

	1 SBRT				2 SBTH				3 SBLT			
15-MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
400-415	0	0	0	0	0	0	0	0	0	0	0	0
415-430	0	0	0	0	0	0	0	0	0	0	0	0
430-445	0	0	0	0	0	0	0	0	0	0	0	0
445-500	0	0	0	0	0	0	0	0	0	0	0	0
500-515	0	0	0	0	0	0	0	0	0	0	0	0
515-530	0	0	0	0	0	0	0	0	0	0	0	0
530-545	0	0	0	0	0	0	0	0	0	0	0	0
545-600	0	0	0	0	0	0	0	0	0	0	0	0
HOUR TOTALS												
400-500	0	0	0	0	0	0	0	0	0	0	0	0
415-515	0	0	0	0	0	0	0	0	0	0	0	0
430-530	0	0	0	0	0	0	0	0	0	0	0	0
445-545	0	0	0	0	0	0	0	0	0	0	0	0
500-600	0	0	0	0	0	0	0	0	0	0	0	0

	7 NBRT				8 NBTH				9 NBLT			
15-MIN COUNTS	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL	AUTOS	LIGHT DUTY TRUCK	HEAVY DUTY TRUCK	TOTAL
400-415	40	0	2	42	0	0	0	0	2	0	0	2
415-430	40	0	0	40	0	0	0	0	1	0	0	1
430-445	43	1	0	44	0	0	0	0	1	1	0	2
445-500	25	1	0	26	0	0	0	0	0	0	0	0
500-515	46	0	1	47	0	0	0	0	0	1	0	1
515-530	37	0	0	37	0	0	0	0	1	0	0	1
530-545	42	0	0	42	0	0	0	0	0	0	0	0
545-600	33	0	0	33	0	0	0	0	1	0	0	1
HOUR TOTALS												
400-500	148	2	2	152	0	0	0	0	4	1	0	5
415-515	154	2	1	157	0	0	0	0	2	2	0	4
430-530	151	2	1	154	0	0	0	0	2	2	0	4
445-545	150	1	1	152	0	0	0	0	1	1	0	2
500-600	158	0	1	159	0	0	0	0	2	1	0	3

ATTACHMENT B

LEVEL OF SERVICE WORKSHEETS

EXISTING CONDITIONS

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1

Cycle (sec):	100	Critical Vol./Cap.(X):	0.355
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	9.4
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	21	65	49	37	113	20	8	31	25	177	45	36
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	21	65	49	37	113	20	8	31	25	177	45	36
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	21	65	49	37	113	20	8	31	25	177	45	36
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	21	65	49	37	113	20	8	31	25	177	45	36
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	21	65	49	37	113	20	8	31	25	177	45	36
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.16	0.48	0.36	0.22	0.66	0.12	0.13	0.48	0.39	0.69	0.17	0.14
Final Sat.:	112	347	261	154	471	83	88	342	276	499	127	101
Capacity Analysis Module:												
Vol/Sat:	0.19	0.19	0.19	0.24	0.24	0.24	0.09	0.09	0.09	0.35	0.35	0.35
Crit Moves:		****			****		****				****	
Delay/Veh:	8.7	8.7	8.7	9.2	9.2	9.2	8.2	8.2	8.2	10.2	10.2	10.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.7	8.7	8.7	9.2	9.2	9.2	8.2	8.2	8.2	10.2	10.2	10.2
LOS by Move:	A	A	A	A	A	A	A	A	A	B	B	B
ApproachDel:		8.7			9.2			8.2			10.2	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.7			9.2			8.2			10.2	
LOS by Appr:		A			A			A			B	
AllWayAvgQ:	0.2	0.2	0.2	0.3	0.3	0.3	0.1	0.1	0.1	0.5	0.5	0.5

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1

Cycle (sec):	100	Critical Vol./Cap.(X):	0.278
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	8.6
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	6	76	152	36	79	3	5	27	18	103	26	19
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	6	76	152	36	79	3	5	27	18	103	26	19
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	6	76	152	36	79	3	5	27	18	103	26	19
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	6	76	152	36	79	3	5	27	18	103	26	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	6	76	152	36	79	3	5	27	18	103	26	19
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.03	0.32	0.65	0.30	0.67	0.03	0.10	0.54	0.36	0.70	0.17	0.13
Final Sat.:	22	273	546	225	495	19	72	388	258	496	125	91
Capacity Analysis Module:												
Vol/Sat:	0.28	0.28	0.28	0.16	0.16	0.16	0.07	0.07	0.07	0.21	0.21	0.21
Crit Moves:		****			****			****			****	
Delay/Veh:	8.6	8.6	8.6	8.5	8.5	8.5	8.0	8.0	8.0	8.9	8.9	8.9
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.6	8.6	8.6	8.5	8.5	8.5	8.0	8.0	8.0	8.9	8.9	8.9
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		8.6			8.5			8.0			8.9	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.6			8.5			8.0			8.9	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.4	0.4	0.4	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2

Note: Queue reported is the number of cars per lane.

Project Title: BRAZIL STREET GRADE CROSSING
Intersection: SAN FERNANDO ROAD & BROADWAY/BRAZIL STREET
Description: EXISTING CONDITIONS

Date/Time: AM PEAK HOUR

Capacity lowered by passing trains

Thru Lane:	1600 vph	1440	N-S Split Phase :	N
Left Lane:	1600 vph	1440	E-W Split Phase :	N
Double Lt Penalty:	20 %		Lost Time (% of cycle) :	10
ITS:	10 %		V/C Round Off (decs.) :	3
OLA Movements :				
FF Movements:				

APPROACH	MVMT	LANES	VOLUME	CAPACITY	V/C
Southbound	RT	0.00	105	0	0.000
	TH	2.00	1,046	3,200	0.360 *
	LT	1.00	89	1,600	0.056
Westbound	RT	0.00	99	0	0.000
	TH	2.00	91	2,880	0.115
	LT	0.00	140	1,440	0.097 *
Northbound	RT	0.00	88	0	0.000
	TH	2.00	649	3,200	0.230
	LT	1.00	62	1,440	0.043 *
Eastbound	RT	1.00	34	1,440	0.002
	TH	1.00	51	1,440	0.058 *
	LT	0.00	32	1,440	0.022

ICU ANALYSIS	
N-S(1):	0.286
N-S(2):	0.403 *
E-W(1):	0.155 *
E-W(2):	0.137
V/C:	0.558
Lost Time:	0.100
ITS:	-0.100
ICU:	0.558
LOS:	A

Date/Time: PM PEAK HOUR

APPROACH	MVMT	LANES	VOLUME	CAPACITY	V/C
Southbound	RT	0.00	51	0	0.000
	TH	2.00	996	3,200	0.327
	LT	1.00	196	1,600	0.123 *
Westbound	RT	0.00	179	1,600	0.112
	TH	2.00	60	1,440	0.121
	LT	0.00	114	1,440	0.079 *
Northbound	RT	0.00	138	0	0.000
	TH	2.00	1,040	3,200	0.368 *
	LT	1.00	37	1,440	0.026
Eastbound	RT	1.00	43	1,440	0.017
	TH	1.00	100	1,440	0.119 *
	LT	0.00	72	1,440	0.050

ICU ANALYSIS	
N-S(1):	0.491 *
N-S(2):	0.353
E-W(1):	0.198 *
E-W(2):	0.171
V/C:	0.689
Lost Time:	0.100
ITS:	-0.100
ICU:	0.689
LOS:	B

* - Denotes critical movement

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 West San Fernando Road & Doran Street

Average Delay (sec/veh): 8.0 Worst Case Level Of Service: B[11.0]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	-	R	L	- T	-	R	L	- T	-	R	L	- T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Yield Sign			
Rights:	Include				Include				Include				Include			
Lanes:	0 0	1! 0	0		0 0	0 0	0		0 0	0 1	0		0 1	0 0	0	
Volume Module:																
Base Vol:	11	0	107		0	0	0		0	11	12		239	31	0	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	11	0	107		0	0	0		0	11	12		239	31	0	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Volume:	11	0	107		0	0	0		0	11	12		239	31	0	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
FinalVolume:	11	0	107		0	0	0		0	11	12		239	31	0	
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx		6.5	6.2			7.1	6.5	xxxxx	
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx		4.0	3.3			3.5	4.0	xxxxx	
Capacity Module:																
Cnflict Vol:	0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx		129	0			81	76	xxxxx	
Potent Cap.:	900	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx		765	900			912	819	xxxxx	
Move Cap.:	900	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx		756	900			881	809	xxxxx	
Volume/Cap:	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx		0.01	0.01			0.27	0.04	xxxx	
Level Of Service Module:																
2Way95thQ:	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx		xxxx	xxxxx			xxxx	xxxx	xxxxx	
Control Del:	9.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx		xxxx	xxxxx			xxxxx	xxxx	xxxxx	
LOS by Move:	A	*	*	*	*	*	*		*	*			*	*	*	
Movement:	LT -	LTR -	RT		LT -	LTR -	RT		LT -	LTR -	RT		LT -	LTR -	RT	
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx		xxxx	825			872	xxxx	xxxxx	
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx		xxxx	0.1			1.3	xxxx	xxxxx	
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx		xxxx	9.5			11.0	xxxx	xxxxx	
Shared LOS:	*	*	*	*	*	*	*		*	A			B	*	*	
ApproachDel:	xxxxxx			xxxxxx					9.5				11.0			
ApproachLOS:	*			*					A				B			

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 West San Fernando Road & Doran Street

Average Delay (sec/veh): 4.5 Worst Case Level Of Service: A[9.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Yield Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	0 0	0 0	0	0 0	0 1	0	0 1	0 0	0
Volume Module:												
Base Vol:	6	0	156	0	0	0	0	17	7	97	7	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	6	0	156	0	0	0	0	17	7	97	7	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	6	0	156	0	0	0	0	17	7	97	7	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	6	0	156	0	0	0	0	17	7	97	7	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	6.5	6.2	7.1	6.5	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	4.0	3.3	3.5	4.0	xxxxx
Capacity Module:												
Cnflict Vol:	0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	168	0	99	90	xxxxx
Potent Cap.:	900	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	728	900	888	804	xxxxx
Move Cap.:	900	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	724	900	861	799	xxxxx
Volume/Cap:	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.02	0.01	0.11	0.01	xxxx
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	9.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	767	857	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.1	0.4	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.8	9.8	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	A	A	*	*
ApproachDel:	xxxxxx			xxxxxx			9.8			9.8		
ApproachLOS:	*			*			A			A		

Note: Queue reported is the number of cars per lane.

Project Title: BRAZIL STREET GRADE CROSSING
Intersection: SAN FERNANDO ROAD & DORAN STREET
Description: EXISTING CONDITIONS

Date/Time: AM PEAK HOUR

Capacity lowered by passing trains

Thru Lane:	1600 vph	1440	N-S Split Phase :	N
Left Lane:	1600 vph	1440	E-W Split Phase :	N
Double Lt Penalty:	20 %		Lost Time (% of cycle) :	10
ITS:	10 %		V/C Round Off (decs.) :	3
OLA Movements :	WBR			
FF Movements:				

APPROACH	MVMT	LANES	VOLUME	CAPACITY	V/C	ICU ANALYSIS	
Southbound	RT	0.00	125	0	0.000	N-S(1):	0.377
	TH	2.00	1,252	3,200	0.430 *	N-S(2):	0.436 *
	LT	2.00	207	2,560	0.081	E-W(1):	0.204 *
Westbound	RT	2.00	231	3,200	0.000	E-W(2):	0.115
	TH	1.00	120	1,440	0.083		
	LT	1.00	164	1,440	0.114 *	V/C:	0.640
Northbound	RT	0.00	132	0	0.000	Lost Time:	0.100
	TH	2.00	816	3,200	0.296	ITS:	-0.100
	LT	1.00	8	1,440	0.006 *		
Eastbound	RT	0.00	16	0	0.000	ICU:	0.640
	TH	1.00	67	1,440	0.090 *		
	LT	0.00	46	1,440	0.032	LOS:	B

Date/Time: PM PEAK HOUR

APPROACH	MVMT	LANES	VOLUME	CAPACITY	V/C	ICU ANALYSIS	
Southbound	RT	0.00	51	0	0.000	N-S(1):	0.642 *
	TH	2.00	1,227	3,200	0.399	N-S(2):	0.402
	LT	2.00	610	2,560	0.238 *	E-W(1):	0.156 *
Westbound	RT	2.00	249	3,200	0.000	E-W(2):	0.064
	TH	1.00	18	1,440	0.013		
	LT	1.00	89	1,440	0.062 *	V/C:	0.798
Northbound	RT	0.00	116	0	0.000	Lost Time:	0.100
	TH	2.00	1,177	3,200	0.404 *	ITS:	-0.100
	LT	1.00	5	1,440	0.003		
Eastbound	RT	0.00	7	0	0.000	ICU:	0.798
	TH	1.00	56	1,440	0.094 *		
	LT	0.00	73	1,440	0.051	LOS:	C

* - Denotes critical movement

CONDITIONS WITH PROPOSED IMPROVEMENTS

BROADWAY/BRAZIL STREET RAIL CROSSING INTERSECTION LEVEL OF SERVICE ANALYSIS (MODIFIED ICU)
YEAR 2008 COMBINED INTERSECTION OPERATIONS
AM PEAK HOUR

VOLUMES, LANES, AND SIGNAL PHASING

		West San Fernando/Broadway-Brazil						San Fernando/Broadway-Brazil					
Approach	Move	Total Volume	Lane Group	# of Lanes	Per Lane Volume	Regular Phase	Rail Phase	Total Volume	Lane Group	# of Lanes	Per Lane Volume	Regular Phase	Rail Phase
SB	R	20	R	0				105	R	1	105	3	
	T	113	T	1	133	6,8	4	1,046	T	2	523	3	4
	L	37	L	1	37	6		89	L	1	89	3	4
WB	R	36	R	0				99	R	1	99	1	
	T	46	T	1	258	1,2,3	7	91	T	1	91	1	
	L	177	L	0				140	L	1	140	1	
NB	R	49	R	1	49	8		88	R	0		3	4
	T	65	T	1	86	8	4	649	T	2	369	3	4
	L	21	L	0		8	4	62	L	1	62	2	
EB	R	25	R	0				34	R	1	34	5,6,8	7
	T	31	T	1	64	5		51	T	0.75	68	5,6,8	7
	L	8	L	0				32	L	1.25	26	5,6,8	7

CRITICAL VOLUME AND ICU CALCULATION

	Unadjusted			Adjusted for Rail Phase Lost Time					
	Critical Volume					Effective V/C & LOS			
Regular Phase	WSF/BB	SF/BB	Max	Regular Phase % of Hour	Effective Capacity	WSF/BB	SF/BB	Max	Effective Max Crit Vol
1 (WB)	91	140	140	90%	1,440	0.063	0.097	0.097	156
2 (ESF NBL)	62	62	62	90%	1,440	0.043	0.043	0.043	69
3	105	523	523	100%	1,600	0.066	0.327	0.327	523
5 (EB)	64	31	64	90%	1,440	0.044	0.022	0.044	71
6	37	37	37	90%	1,440	0.026	0.026	0.026	41
8	154	49	154	100%	1,600	0.096	0.031	0.096	154
Total	513	842	980						1,014
V/C	0.321	0.526	0.613			0.338	0.545	0.634	0.634
Amber	0.120	0.120	0.120			0.120	0.120	0.120	0.120
ITS Adj.	-0.100	-0.100	-0.100			-0.100	-0.100	-0.100	-0.100
ICU	0.341	0.546	0.633			0.358	0.565	0.654	0.654
LOS	A	A	B			A	A	B	B

ICU Capacity Value	1,600 vphpl
ITS Adjustment	10%
ICU Lost Time Factor	0.12

BROADWAY/BRAZIL STREET RAIL CROSSING INTERSECTION LEVEL OF SERVICE ANALYSIS (MODIFIED ICU)
YEAR 2008 COMBINED INTERSECTION OPERATIONS
PM PEAK HOUR

VOLUMES, LANES, AND SIGNAL PHASING

		West San Fernando/Broadway-Brazil						San Fernando/Broadway-Brazil					
Approach	Move	Total Volume	Lane Group	# of Lanes	Per Lane Volume	Regular Phase	Rail Phase	Total Volume	Lane Group	# of Lanes	Per Lane Volume	Regular Phase	Rail Phase
SB	R	3	R	0				51	R	1	51	3	
	T	79	T	1	82	6,8	4	996	T	2	498	3	4
	L	36	L	1	36	6		196	L	1	196	3	4
WB	R	19	R	0				179	R	1	179	1	
	T	26	T	1	148	1,2,3	7	60	T	1	60	1	
	L	103	L	0				114	L	1	114	1	
NB	R	152	R	1	152	8		138	R	0		3	4
	T	76	T	1	82	8	4	1,040	T	2	589	3	4
	L	6	L	0		8	4	37	L	1	37	2	
EB	R	18	R	0				43	R	1	43	5,6,8	7
	T	27	T	1	50	5		100	T	0.75	133	5,6,8	7
	L	5	L	0				72	L	1.25	58	5,6,8	7

CRITICAL VOLUME AND ICU CALCULATION

	Unadjusted			Adjusted for Rail Phase Lost Time					
	Critical Volume			Regular Phase %	Effective	Effective V/C & LOS			Effective Max
Regular Phase	WSF/BB	SF/BB	Max	of Hour	Capacity	WSF/BB	SF/BB	Max	Crit Vol
1 (WB)	60	179	179	90%	1,440	0.042	0.124	0.124	199
2 (ESF NBL)	37	37	37	90%	1,440	0.026	0.026	0.026	41
3	51	785	785	100%	1,600	0.032	0.491	0.491	785
5 (EB)	50	27	50	90%	1,440	0.035	0.019	0.035	56
6	36	36	36	90%	1,440	0.025	0.025	0.025	40
8	88	152	152	100%	1,600	0.055	0.095	0.095	152
Total	322	1,216	1,239						1,273
V/C	0.201	0.760	0.774			0.214	0.779	0.795	0.795
Amber	0.120	0.120	0.120			0.120	0.120	0.120	0.120
ITS Adj.	-0.100	-0.100	-0.100			-0.100	-0.100	-0.100	-0.100
ICU	0.221	0.780	0.794			0.234	0.799	0.815	0.815
LOS	A	C	C			A	C	D	D

ICU Capacity Value	1,600 vphpl
ITS Adjustment	10%
ICU Lost Time Factor	0.12

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 West San Fernando Road & Doran Street

Cycle (sec):	1	Critical Vol./Cap.(X):	0.471
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	2.2
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Stop Sign					Yield Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0
Volume Module:																				
Base Vol:	11		0		107	0		0		0	0		11		12	239		31		0
Growth Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	11		0		107	0		0		0	0		11		12	239		31		0
User Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	11		0		107	0		0		0	0		11		12	239		31		0
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	11		0		107	0		0		0	0		11		12	239		31		0
Saturation Flow Module:																				
Sat/Lane:	0		0		0	0		0		0	0		0		0	0		0		0
Adjustment:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
Lanes:	1.00		0.00		1.00	0.00		0.00		0.00	0.00		0.48		0.52	1.00		1.00		0.00
Final Sat.:	227		0		227	0		0		0	0		236		258	672		672		0
Capacity Analysis Module:																				
Vol/Sat:	0.05		0.00		0.47	0.00		0.00		0.00	0.00		0.05		0.05	0.36		0.05		0.00
Crit Moves:					****					****					****	****				
Green/Cycle:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
Volume/Cap:	0.05		0.00		0.47	0.00		0.00		0.00	0.00		0.05		0.05	0.36		0.05		0.00
Delay/Veh:	1.2		0.0		6.0	0.0		0.0		0.0	0.0		1.2		1.2	3.9		1.2		0.0
Delay Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
AdjDel/Veh:	1.2		0.0		6.0	0.0		0.0		0.0	0.0		1.2		1.2	3.9		1.2		0.0
DesignQueue:	0		0		0	0		0		0	0		0		0	0		0		0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 West San Fernando Road & Doran Street

Cycle (sec):	1	Critical Vol./Cap.(X):	0.417
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	1.9
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Stop Sign			Stop Sign			Stop Sign			Yield Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0 0	1	0 0	0 0	0	0 0	0 1	0	1 0	1 0	0
Volume Module:												
Base Vol:	6	0	156	0	0	0	0	17	7	97	7	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	6	0	156	0	0	0	0	17	7	97	7	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	6	0	156	0	0	0	0	17	7	97	7	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	6	0	156	0	0	0	0	17	7	97	7	0
Saturation Flow Module:												
Sat/Lane:	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.71	0.29	1.00	1.00	0.00
Final Sat.:	374	0	374	0	0	0	0	235	97	526	526	0
Capacity Analysis Module:												
Vol/Sat:	0.02	0.00	0.42	0.00	0.00	0.00	0.00	0.07	0.07	0.18	0.01	0.00
Crit Moves:			****			****			****	****		
Green/Cycle:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Volume/Cap:	0.02	0.00	0.42	0.00	0.00	0.00	0.00	0.07	0.07	0.18	0.01	0.00
Delay/Veh:	1.1	0.0	4.9	0.0	0.0	0.0	0.0	1.3	1.3	2.0	1.1	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	1.1	0.0	4.9	0.0	0.0	0.0	0.0	1.3	1.3	2.0	1.1	0.0
DesignQueue:	0	0	0	0	0	0	0	0	0	0	0	0

Note: Queue reported is the number of cars per lane.

Printed: 2/21/2012
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K-ICU - Doran.xls

Project Title: BRAZIL STREET GRADE CROSSING
Intersection: SAN FERNANDO ROAD & DORAN STREET
Description: DORAN TWO-WAY

Date/Time: AM PEAK HOUR

Capacity lowered by passing trains

Thru Lane:	1600 vph	1440	N-S Split Phase :	N
Left Lane:	1600 vph	1440	E-W Split Phase :	N
Double Lt Penalty:	20 %		Lost Time (% of cycle) :	10
ITS:	10 %		V/C Round Off (decs.) :	3
OLA Movements :	WBR			
FF Movements:				

APPROACH	MVMT	LANES	VOLUME	CAPACITY	V/C	ICU ANALYSIS	
Southbound	RT	0.00	125	0	0.000	N-S(1):	0.377
	TH	2.00	1,252	3,200	0.430 *	N-S(2):	0.436 *
	LT	2.00	207	2,560	0.081	E-W(1):	0.192 *
Westbound	RT	2.00	231	3,200	0.000	E-W(2):	0.115
	TH	1.00	120	1,440	0.083		
	LT	1.00	164	1,440	0.114 *	V/C:	0.628
Northbound	RT	0.00	132	0	0.000	Lost Time:	0.100
	TH	2.00	816	3,200	0.296	ITS:	-0.100
	LT	1.00	8	1,440	0.006 *		
Eastbound	RT	1.00	16	1,440	0.008	ICU:	0.628
	TH	1.00	67	1,440	0.078 *		
	LT	0.00	46	1,440	0.032	LOS:	B

Date/Time: PM PEAK HOUR

APPROACH	MVMT	LANES	VOLUME	CAPACITY	V/C	ICU ANALYSIS	
Southbound	RT	0.00	51	0	0.000	N-S(1):	0.642 *
	TH	2.00	1,227	3,200	0.399	N-S(2):	0.402
	LT	2.00	610	2,560	0.238 *	E-W(1):	0.152 *
Westbound	RT	2.00	249	3,200	0.000	E-W(2):	0.064
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	LT	1.00	89	1,440	0.062 *	V/C:	0.794
Northbound	RT	0.00	116	0	0.000	Lost Time:	0.100
	TH	2.00	1,177	3,200	0.404 *	ITS:	-0.100
	LT	1.00	5	1,440	0.003		
Eastbound	RT	1.00	7	1,440	0.003	ICU:	0.794
	TH	1.00	56	1,440	0.090 *		
	LT	0.00	73	1,440	0.051	LOS:	C

* - Denotes critical movement

CONDITIONS WITH PROPOSED IMPROVEMENTS AND MITIGATIONS

BROADWAY/BRAZIL STREET RAIL CROSSING INTERSECTION LEVEL OF SERVICE ANALYSIS (MODIFIED ICU)
YEAR 2008 COMBINED INTERSECTION OPERATIONS WITH MITIGATIONS
AM PEAK HOUR

VOLUMES, LANES, AND SIGNAL PHASING

		West San Fernando/Broadway-Brazil						San Fernando/Broadway-Brazil					
Approach	Move	Total Volume	Lane Group	# of Lanes	Per Lane Volume	Regular Phase	Rail Phase	Total Volume	Lane Group	# of Lanes	Per Lane Volume	Regular Phase	Rail Phase
SB	R	20	R	0				105	R	1	105	3	
	T	113	T	1	133	6,8	4	1,046	T	2	523	3	4
	L	37	L	1	37	6		89	L	1	89	3	4
WB	R	36	R	0				99	R	1	99	1	
	T	45	T	1	258	1,2,3	7	91	T	1	91	1	
	L	177	L	0				140	L	1	140	1	
NB	R	49	R	1	49	8		88	R	1	88	3	4
	T	65	T	1	86	8	4	649	T	2	325	3	4
	L	21	L	0		8	4	62	L	1	62	2	
EB	R	25	R	0				34	R	1	34	5,6,8	7
	T	31	T	1	64	5		51	T	0.75	68	5,6,8	7
	L	6	L	0				32	L	1.25	26	5,6,8	7

CRITICAL VOLUME AND ICU CALCULATION

	Unadjusted			Adjusted for Rail Phase Lost Time					
	Critical Volume			Regular Phase %	Effective	Effective V/C & LOS			Effective Max
Regular Phase	WSF/BB	SF/BB	Max	of Hour	Capacity	WSF/BB	SF/BB	Max	Crit Vol
1 (WB)	91	140	140	90%	1,440	0.063	0.097	0.097	156
2 (ESF NBL)	62	62	62	90%	1,440	0.043	0.043	0.043	69
3	105	523	523	100%	1,600	0.066	0.327	0.327	523
5 (EB)	64	31	64	90%	1,440	0.044	0.022	0.044	71
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8	154	49	154	100%	1,600	0.096	0.031	0.096	154
Total	513	842	980						1,014
V/C	0.321	0.526	0.613			0.338	0.545	0.634	0.634
Amber	0.120	0.120	0.120			0.120	0.120	0.120	0.120
ITS Adj.	-0.100	-0.100	-0.100			-0.100	-0.100	-0.100	-0.100
ICU	0.341	0.546	0.633			0.358	0.565	0.654	0.654
LOS	A	A	B			A	A	B	B

ICU Capacity Value	1,600 vphpl
ITS Adjustment	10%
ICU Lost Time Factor	0.12

BROADWAY/BRAZIL STREET RAIL CROSSING INTERSECTION LEVEL OF SERVICE ANALYSIS (MODIFIED ICU)
YEAR 2008 COMBINED INTERSECTION OPERATIONS WITH MITIGATIONS
PM PEAK HOUR

VOLUMES, LANES, AND SIGNAL PHASING

		West San Fernando/Broadway-Brazil						San Fernando/Broadway-Brazil					
Approach	Move	Total Volume	Lane Group	# of Lanes	Per Lane Volume	Regular Phase	Rail Phase	Total Volume	Lane Group	# of Lanes	Per Lane Volume	Regular Phase	Rail Phase
SB	R	3	R	0				51	R	1	51	3	
	T	79	T	1	82	6,8	4	996	T	2	498	3	4
	L	36	L	1	36	6		196	L	1	196	3	4
WB	R	19	R	0				179	R	1	179	1	
	T	26	T	1	148	1,2,3	7	60	T	1	60	1	
	L	103	L	0				114	L	1	114	1	
NB	R	152	R	1	152	8		138	R	1	138	3	4
	T	76	T	1	82	8	4	1,040	T	2	520	3	4
	L	6	L	0		8	4	37	L	1	37	2	
EB	R	18	R	0				43	R	1	43	5,6,8	7
	T	27	T	1	50	5		100	T	0.75	133	5,6,8	7
	L	5	L	0				72	L	1.25	58	5,6,8	7

CRITICAL VOLUME AND ICU CALCULATION

	Unadjusted			Adjusted for Rail Phase Lost Time					
Regular Phase	Critical Volume WSF/BB	SF/BB	Max	Regular Phase % of Hour	Effective Capacity	Effective V/C & LOS WSF/BB	SF/BB	Max	Effective Max Crit Vol
1 (WB)	60	179	179	90%	1,440	0.042	0.124	0.124	199
2 (ESF NBL)	37	37	37	90%	1,440	0.026	0.026	0.026	41
3	51	716	716	100%	1,600	0.032	0.448	0.448	716
5 (EB)	50	27	50	90%	1,440	0.035	0.019	0.035	56
6	36	36	36	90%	1,440	0.025	0.025	0.025	40
8	88	152	152	100%	1,600	0.055	0.095	0.095	152
Total	322	1,147	1,170						1,204
V/C	0.201	0.717	0.731			0.214	0.736	0.752	0.752
Amber	0.120	0.120	0.120			0.120	0.120	0.120	0.120
ITS Adj.	-0.100	-0.100	-0.100			-0.100	-0.100	-0.100	-0.100
ICU	0.221	0.737	0.751			0.234	0.756	0.772	0.772
LOS	A	C	C			A	C	C	C

ICU Capacity Value	1,600 vphpl
ITS Adjustment	10%
ICU Lost Time Factor	0.12

CONDITIONS WITH PROPOSED IMPROVEMENTS AND DORAN STREET GRADE CROSSING RECONFIGURATION

BROADWAY/BRAZIL STREET RAIL CROSSING INTERSECTION LEVEL OF SERVICE ANALYSIS (MODIFIED ICU)
YEAR 2008 COMBINED INTERSECTION OPERATIONS WITH DORAN WESTBOUND ONLY
AM PEAK HOUR

VOLUMES, LANES, AND SIGNAL PHASING

		West San Fernando/Broadway-Brazil						San Fernando/Broadway-Brazil					
Approach	Move	Total Volume	Lane Group	# of Lanes	Per Lane Volume	Regular Phase	Rail Phase	Total Volume	Lane Group	# of Lanes	Per Lane Volume	Regular Phase	Rail Phase
SB	R	20	R	0				105	R	1	105	3	
	T	138	T	1	159	6,8	4	1,046	T	2	523	3	4
	L	140	L	1	140	6		89	L	1	89	3	4
WB	R	36	R	0				99	R	1	99	1	
	T	45	T	1	258	1,2,3	7	91	T	1	91	1	
	L	177	L	0				140	L	1	140	1	
NB	R	49	R	1	49	8		88	R	0		3	4
	T	86	T	1	86	8	4	649	T	2	369	3	4
	L	21	L	0		8	4	62	L	1	62	2	
EB	R	25	R	0				50	R	1	50	5,6,8	7
	T	31	T	1	64	5		51	T	0.75	68	5,6,8	7
	L	8	L	0				119	L	1.25	95	5,6,8	7

CRITICAL VOLUME AND ICU CALCULATION

	Unadjusted			Adjusted for Rail Phase Lost Time					
	Critical Volume			Regular		Effective V/C & LOS			Effective Max
Regular Phase	WSF/BB	SF/BB	Max	Phase % of Hour	Effective Capacity	WSF/BB	SF/BB	Max	Crit Vol
1 (WB)	91	140	140	90%	1,440	0.063	0.097	0.097	156
2 (ESF NBL)	62	62	62	90%	1,440	0.043	0.043	0.043	69
3	105	523	523	100%	1,600	0.066	0.327	0.327	523
5 (EB)	64	31	64	90%	1,440	0.044	0.022	0.044	71
6	140	140	140	90%	1,440	0.097	0.097	0.097	156
8	180	49	180	100%	1,600	0.113	0.031	0.113	180
Total	642	945	1,109						1,154
V/C	0.401	0.591	0.693			0.426	0.617	0.721	0.721
Amber	0.120	0.120	0.120			0.120	0.120	0.120	0.120
ITS Adj.	-0.100	-0.100	-0.100			-0.100	-0.100	-0.100	-0.100
ICU	0.421	0.611	0.713			0.446	0.637	0.741	0.741
LOS	A	B	C			A	B	C	C

ICU Capacity Value	1,600 vphpl
ITS Adjustment	10%
ICU Lost Time Factor	0.12

BROADWAY/BRAZIL STREET RAIL CROSSING INTERSECTION LEVEL OF SERVICE ANALYSIS (MODIFIED ICU)
YEAR 2008 COMBINED INTERSECTION OPERATIONS WITH DORAN WESTBOUND ONLY
AM PEAK HOUR

VOLUMES, LANES, AND SIGNAL PHASING

		West San Fernando/Broadway-Brazil						San Fernando/Broadway-Brazil					
Approach	Move	Total Volume	Lane Group	# of Lanes	Per Lane Volume	Regular Phase	Rail Phase	Total Volume	Lane Group	# of Lanes	Per Lane Volume	Regular Phase	Rail Phase
SB	R	3	R	0				51	R	1	51	3	
	T	106	T	1	109	6,8	4	998	T	2	498	3	4
	L	145	L	1	145	6		196	L	1	196	3	4
WB	R	19	R	0				179	R	1	179	1	
	T	26	T	1	148	1,2,3	7	60	T	1	60	1	
	L	103	L	0				114	L	1	114	1	
NB	R	152	R	1	152	8		138	R	0		3	4
	T	76	T	1	82	8	4	1,040	T	2	589	3	4
	L	6	L	0		8	4	37	L	1	37	2	
EB	R	18	R	0				50	R	1	50	5,6,8	7
	T	27	T	1	50	5		100	T	0.75	133	5,6,8	7
	L	5	L	0				174	L	1.25	139	5,6,8	7

CRITICAL VOLUME AND ICU CALCULATION

	Unadjusted			Adjusted for Rail Phase Lost Time					
Regular Phase	Critical Volume WSF/BB	Critical Volume SF/BB	Critical Volume Max	Regular Phase % of Hour	Effective Capacity	Effective V/C & LOS WSF/BB	Effective V/C & LOS SF/BB	Effective V/C & LOS Max	Effective Max Crit Vol
1 (WB)	60	179	179	90%	1,440	0.042	0.124	0.124	199
2 (ESF NBL)	37	37	37	90%	1,440	0.026	0.026	0.026	41
3	51	785	785	100%	1,600	0.032	0.491	0.491	785
5 (EB)	50	27	50	90%	1,440	0.035	0.019	0.035	56
6	145	145	145	90%	1,440	0.101	0.101	0.101	161
8	115	152	152	100%	1,600	0.072	0.095	0.095	152
Total	458	1,325	1,348						1,394
V/C	0.286	0.828	0.843			0.307	0.855	0.871	0.871
Amber	0.120	0.120	0.120			0.120	0.120	0.120	0.120
ITS Adj.	-0.100	-0.100	-0.100			-0.100	-0.100	-0.100	-0.100
ICU	0.306	0.848	0.863			0.327	0.875	0.891	0.891
LOS	A	D	D			A	D	D	D

ICU Capacity Value	1,600 vphpl
ITS Adjustment	10%
ICU Lost Time Factor	0.12

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 West San Fernando Road & Doran Street

Cycle (sec):	1	Critical Vol./Cap.(X):	0.446
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	3.9
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Stop Sign					Yield Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
Volume Module:																				
Base Vol:	11		0		0	0		0		0	0		0		141	239		31		0
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	11		0		0	0		0		0	0		0		141	239		31		0
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	11		0		0	0		0		0	0		0		141	239		31		0
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	11		0		0	0		0		0	0		0		141	239		31		0
Saturation Flow Module:																				
Sat/Lane:	0		0		0	0		0		0	0		0		0	0		0		0
Adjustment:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Lanes:	1.00	0.00		1.00		0.00	0.00		0.00		0.00	0.00		1.00		0.89	0.11		0.00	
Final Sat.:	177		0		177	0		0		0	0		0		316	774		100		0
Capacity Analysis Module:																				
Vol/Sat:	0.06	0.00		0.00		0.00	0.00		0.00		0.00	0.00		0.45		0.31	0.31		0.00	
Crit Moves:	****								****					****		****				
Green/Cycle:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Volume/Cap:	0.06	0.00		0.00		0.00	0.00		0.00		0.00	0.00		0.45		0.31	0.31		0.00	
Delay/Veh:	1.3		0.0		0.0	0.0		0.0		0.0	0.0		0.0		5.4	3.2		3.2		0.0
Delay Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
AdjDel/Veh:	1.3		0.0		0.0	0.0		0.0		0.0	0.0		0.0		5.4	3.2		3.2		0.0
DesignQueue:	0		0		0	0		0		0	0		0		0	0		0		0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

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Intersection #2 West San Fernando Road & Doran Street

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Cycle (sec):	1	Critical Vol./Cap.(X):	0.383
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	3.1
Optimal Cycle:	0	Level Of Service:	A

****

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Stop Sign					Yield Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
Volume Module:																				
Base Vol:	6		0		0	0		0		0	0		0		143	97		7		0
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	6		0		0	0		0		0	0		0		143	97		7		0
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	6		0		0	0		0		0	0		0		143	97		7		0
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	6		0		0	0		0		0	0		0		143	97		7		0
Saturation Flow Module:																				
Sat/Lane:	0		0		0	0		0		0	0		0		0	0		0		0
Adjustment:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Lanes:	1.00	0.00		1.00		0.00	0.00		0.00		0.00	0.00		1.00		0.93	0.07		0.00	
Final Sat.:	240		0		240	0		0		0	0		0		373	753		54		0
Capacity Analysis Module:																				
Vol/Sat:	0.03	0.00		0.00		0.00	0.00		0.00		0.00	0.00		0.38		0.13	0.13		0.00	
Crit Moves:	****								****					****		****				
Green/Cycle:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Volume/Cap:	0.03	0.00		0.00		0.00	0.00		0.00		0.00	0.00		0.38		0.13	0.13		0.00	
Delay/Veh:	1.1	0.0		0.0		0.0	0.0		0.0		0.0	0.0		4.3		1.6	1.6		0.0	
Delay Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
AdjDel/Veh:	1.1	0.0		0.0		0.0	0.0		0.0		0.0	0.0		4.3		1.6	1.6		0.0	
DesignQueue:	0		0		0	0		0		0	0		0		0	0		0		0

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Note: Queue reported is the number of cars per lane.

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K-ICU - Doran.xls

Project Title: BRAZIL STREET GRADE CROSSING
Intersection: SAN FERNANDO ROAD & DORAN STREET
Description: DORAN ONE WAY WESTBOUND

Date/Time: AM PEAK HOUR

		Capacity lowered by passing trains		
Thru Lane:	1600 vph	1440	N-S Split Phase :	N
Left Lane:	1600 vph	1440	E-W Split Phase :	Y
Double Lt Penalty:	20 %		Lost Time (% of cycle) :	10
ITS:	10 %		V/C Round Off (decs.) :	3
OLA Movements :	WBR			
FF Movements:				

APPROACH	MVMT	LANES	VOLUME	CAPACITY	V/C	ICU ANALYSIS	
Southbound	RT	0.00	125	0	0.000	N-S(1):	0.413
	TH	2.00	1,252	3,200	0.430 *	N-S(2):	0.436 *
	LT	2.00	207	2,560	0.081	E-W(1):	0.114 *
Westbound	RT	2.00	231	3,200	0.000	E-W(2):	0.000
	TH	1.00	120	1,440	0.083		
	LT	1.00	164	1,440	0.114 *	V/C:	0.550
Northbound	RT	0.00	199	0	0.000	Lost Time:	0.100
	TH	2.00	862	3,200	0.332	ITS:	-0.100
	LT	1.00	8	1,440	0.006 *		
Eastbound	RT	0.00	0	0	0.000	ICU:	0.550
	TH	0.00	0	0	0.000		
	LT	0.00	0	0	0.000 *	LOS:	A

Date/Time: PM PEAK HOUR

APPROACH	MVMT	LANES	VOLUME	CAPACITY	V/C	ICU ANALYSIS	
Southbound	RT	0.00	51	0	0.000	N-S(1):	0.682 *
	TH	2.00	1,227	3,200	0.399	N-S(2):	0.402
	LT	2.00	610	2,560	0.238 *	E-W(1):	0.062 *
Westbound	RT	2.00	249	3,200	0.000	E-W(2):	0.000
	TH	1.00	18	1,440	0.013		
	LT	1.00	89	1,440	0.062 *	V/C:	0.744
Northbound	RT	0.00	172	0	0.000	Lost Time:	0.100
	TH	2.00	1,250	3,200	0.444 *	ITS:	-0.100
	LT	1.00	5	1,440	0.003		
Eastbound	RT	0.00	0	0	0.000	ICU:	0.744
	TH	0.00	0	0	0.000		
	LT	0.00	0	0	0.000 *	LOS:	C

* - Denotes critical movement

CONDITIONS WITH PROPOSED IMPROVEMENTS AND DORAN STREET GRADE CROSSING RECONFIGURATION AND MITIGATIONS

BROADWAY/BRAZIL STREET RAIL CROSSING INTERSECTION LEVEL OF SERVICE ANALYSIS (MODIFIED ICU)
YEAR 2008 COMBINED INTERSECTION OPERATIONS WITH DORAN WESTBOUND ONLY AND MITIGATIONS
AM PEAK HOUR

VOLUMES, LANES, AND SIGNAL PHASING

		West San Fernando/Broadway-Brazil						San Fernando/Broadway-Brazil					
Approach	Move	Total Volume	Lane Group	# of Lanes	Per Lane Volume	Regular Phase	Rail Phase	Total Volume	Lane Group	# of Lanes	Per Lane Volume	Regular Phase	Rail Phase
SB	R	20	R	0				105	R	1	105	3	
	T	139	T	1	159	6,8	4	1,046	T	2	523	3	4
	L	140	L	1	140	6		89	L	1	89	3	4
WB	R	36	R	0				99	R	1	99	1	
	T	45	T	1	258	1,2,3	7	91	T	1	91	1	
	L	177	L	0				140	L	1	140	1	
NB	R	49	R	1	49	8		88	R	1	88	3	4
	T	65	T	1	86	8	4	649	T	2	325	3	4
	L	21	L	0		8	4	62	L	1	62	2	
EB	R	25	R	0				50	R	1	50	5,6,8	7
	T	31	T	1	64	5		51	T	0.75	68	5,6,8	7
	L	6	L	0				119	L	1.25	95	5,6,8	7

CRITICAL VOLUME AND ICU CALCULATION

	Unadjusted			Adjusted for Rail Phase Lost Time					
	Critical Volume					Effective V/C & LOS			
Regular Phase	WSF/BB	SF/BB	Max	Regular Phase % of Hour	Effective Capacity	WSF/BB	SF/BB	Max	Effective Max Crit Vol
1 (WB)	91	140	140	90%	1,440	0.063	0.097	0.097	156
2 (ESF NBL)	62	62	62	90%	1,440	0.043	0.043	0.043	69
3	105	523	523	100%	1,600	0.066	0.327	0.327	523
5 (EB)	64	31	64	90%	1,440	0.044	0.022	0.044	71
6	140	140	140	90%	1,440	0.097	0.097	0.097	156
8	180	49	180	100%	1,600	0.113	0.031	0.113	180
Total	642	945	1,109						1,154
V/C	0.401	0.591	0.693			0.426	0.617	0.721	0.721
Amber	0.120	0.120	0.120			0.120	0.120	0.120	0.120
ITS Adj.	-0.100	-0.100	-0.100			-0.100	-0.100	-0.100	-0.100
ICU	0.421	0.611	0.713			0.446	0.637	0.741	0.741
LOS	A	B	C			A	B	C	C

ICU Capacity Value	1,600 vphpl
ITS Adjustment	10%
ICU Lost Time Factor	0.12

BROADWAY/BRAZIL STREET RAIL CROSSING INTERSECTION LEVEL OF SERVICE ANALYSIS (MODIFIED ICU)
YEAR 2008 COMBINED INTERSECTION OPERATIONS WITH DORAN WESTBOUND ONLY AND MITIGATIONS
PM PEAK HOUR

VOLUMES, LANES, AND SIGNAL PHASING

		West San Fernando/Broadway-Brazil						San Fernando/Broadway-Brazil					
Approach	Move	Total Volume	Lane Group	# of Lanes	Per Lane Volume	Regular Phase	Rail Phase	Total Volume	Lane Group	# of Lanes	Per Lane Volume	Regular Phase	Rail Phase
SB	R	3	R	0				51	R	1	51	3	
	T	105	T	1	109	6,8	4	996	T	2	498	3	4
	L	145	L	1	145	6		196	L	1	196	3	4
WB	R	19	R	0				179	R	1	179	1	
	T	26	T	1	148	1,2,3	7	60	T	1	60	1	
	L	103	L	0				114	L	1	114	1	
NB	R	152	R	1	152	8		138	R	1	138	3	4
	T	76	T	1	82	8	4	1,040	T	2	520	3	4
	L	6	L	0		8	4	37	L	1	37	2	
EB	R	18	R	0				50	R	1	50	5,6,8	7
	T	27	T	1	50	5		100	T	0.75	133	5,6,8	7
	L	5	L	0				174	L	1.25	139	5,6,8	7

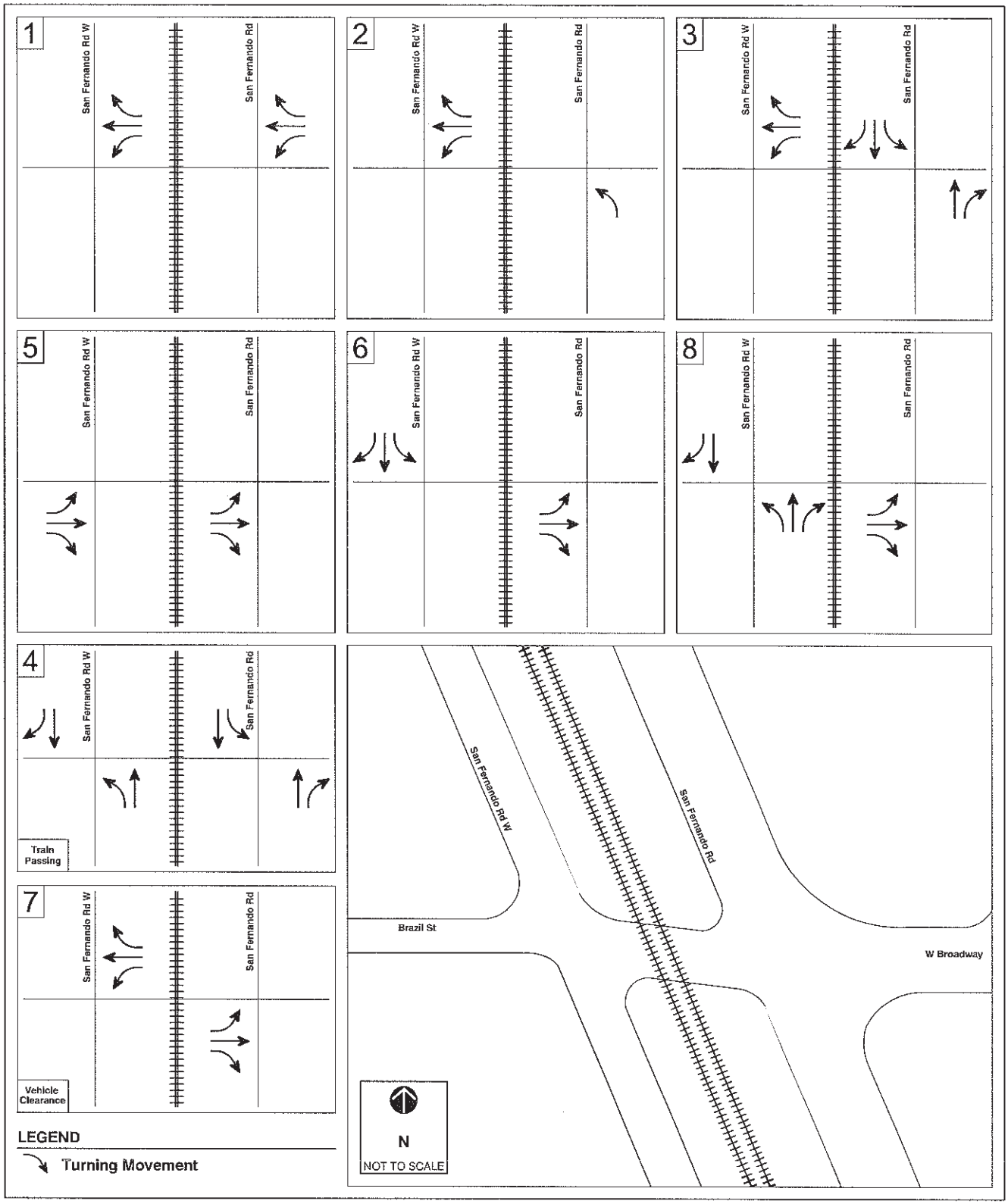
CRITICAL VOLUME AND ICU CALCULATION

	Unadjusted			Adjusted for Rail Phase Lost Time					
	Critical Volume			Regular		Effective V/C & LOS			Effective Max
Regular Phase	WSF/BB	SF/BB	Max	Phase % of Hour	Effective Capacity	WSF/BB	SF/BB	Max	Crit Vol
1 (WB)	60	179	179	90%	1,440	0.042	0.124	0.124	199
2 (ESF NBL)	37	37	37	90%	1,440	0.026	0.026	0.026	41
3	51	716	716	100%	1,600	0.032	0.448	0.448	716
5 (EB)	50	27	50	90%	1,440	0.035	0.019	0.035	56
6	145	145	145	90%	1,440	0.101	0.101	0.101	161
8	115	152	152	100%	1,600	0.072	0.095	0.095	152
Total	458	1,256	1,279						1,325
V/C	0.286	0.785	0.799			0.307	0.812	0.828	0.828
Amber	0.120	0.120	0.120			0.120	0.120	0.120	0.120
ITS Adj.	-0.100	-0.100	-0.100			-0.100	-0.100	-0.100	-0.100
ICU	0.306	0.805	0.819			0.327	0.832	0.848	0.848
LOS	A	D	D			A	D	D	D

ICU Capacity Value	1,600 vphpl
ITS Adjustment	10%
ICU Lost Time Factor	0.12

ATTACHMENT C

PHASING DIAGRAM FOR PROPOSED IMPROVEMENTS



FEHR & PEERS
TRANSPORTATION CONSULTANTS

PROPOSED PHASING DIAGRAM
SAN FERNANDO WEST & SAN FERNANDO & BROADWAY/BRAZIL

ATTACHMENT C