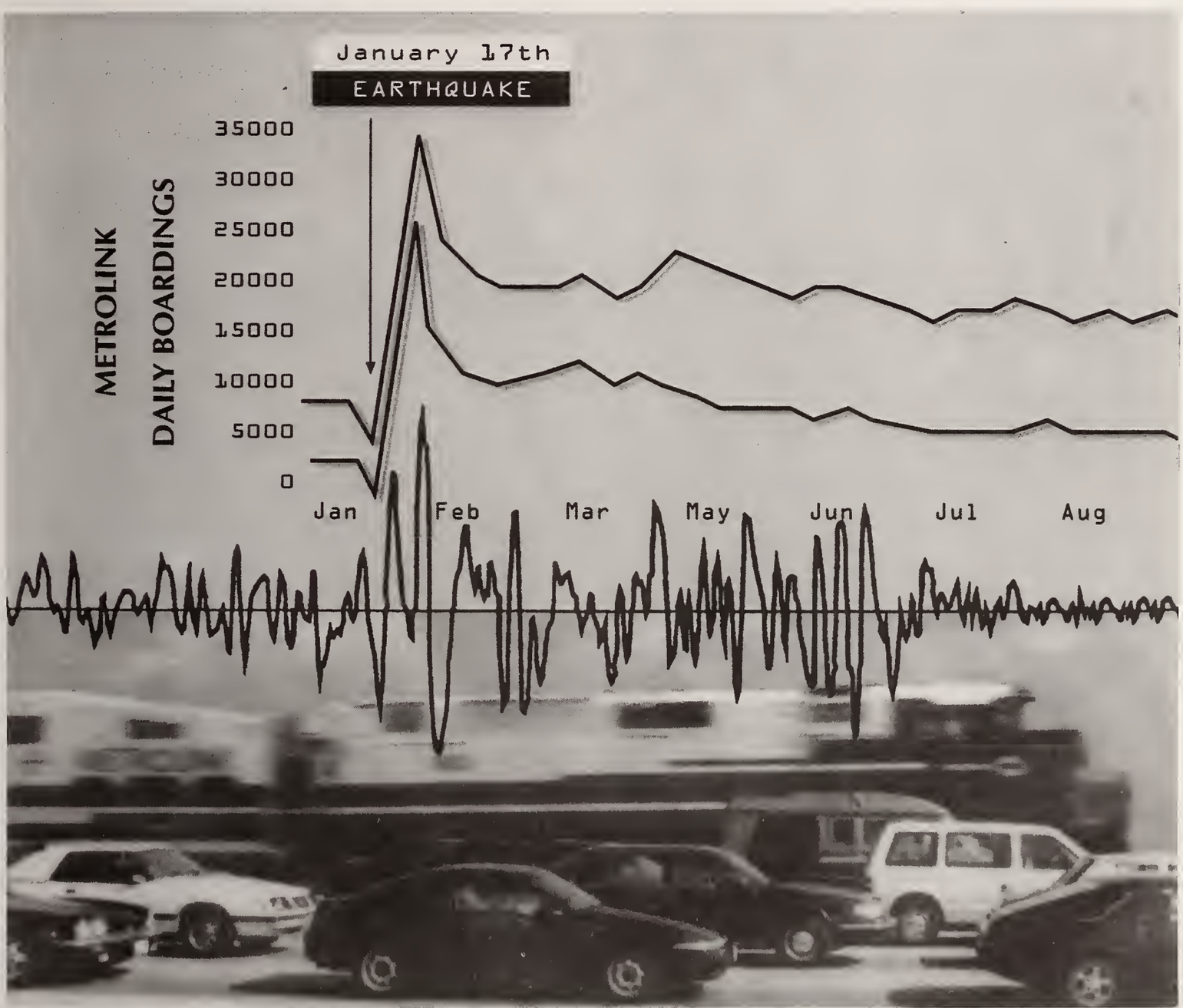
U.S. Department of Transportation

Los Angeles Earthquake Transportation Study

An Analysis of the 1994 Northridge Quake on Metrolink Commuter Rail Ridership

August 1995



FEDERAL TRANSIT ADMINISTRATION

Los Angeles Earthquake Transportation Study

An Analysis of the 1994 Northridge Quake on Metrolink Commuter Rail Ridership

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Final Report
August 1995

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Gardner Consulting Planners is indebted to the enormous contribution by various public agencies and private organizations who generously opened the doors to their staff as well as their resources, provided our staff with an invaluable breadth and wealth of information from their existing studies and survey data, without which this research report could have not been possible. We wish to extend our heart-felt gratitude to the following agencies and organizations: Southern California Regional Rail Authority (Metrolink); Los Angeles County Metropolitan Transportation Authority (LACMTA); and the State of California Department of Transportation (Caltrans).

The Los Angeles (Northridge) 1994 Earthquake Transportation Study is dedicated to the heroic efforts by all the men and women in all sectors, who truly rose to the occasion in the rebuilding process of the Los Angeles transportation system in record time.

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I. EXECUTIVE SUMMARY

Background

At 4:31 a.m. on Monday, January 17, 1994, a powerful earthquake (quake) struck the Los Angeles region with a magnitude of 6.7 on the Richter Scale and lasted approximately 30 seconds. Strong aftershocks of 4.5 to 5.0 magnitude and above, continued numerous times a day, and for several days following the initial major shock. The quake struck for the second time in almost twenty five years, in the same general vicinity of the San Fernando and Santa Clarita Valleys, which are located approximately eighteen miles northwest of downtown Los Angeles.

This 1994 quake known as the **"Northridge Quake" wreaked havoc on some of the region's transportation facilities, especially the freeway system. The quake caused varying degrees of damage to some of the region's freeways, interchanges, bridges, ramps and roadways. In all, four freeways were severely damaged** which included the Interstate 5 (Golden State Freeway), Interstate 10 (Santa Monica Freeway), State Route 14 (Antelope Valley Freeway) and State Route 118 (Simi Valley Freeway).

trucks **The collapsed freeways created a significant traffic disruption to the region's mobility, as well as to the normal interstate motorist travel and truck movement. Approximately one million vehicles per day, were forced off of these freeways.** Most drivers had to resort to utilizing detours or surface streets. Others had to find alternate modes of transportation, or changing their route, time of travel, tripmaking frequency, and even in some cases, discontinue their trips entirely.

Immediately following the quake, **California Governor Pete Wilson declared a State of Emergency, and created a quake recovery task force. Its main objective was to make sure all agencies were coordinating their efforts, and to remove roadblocks to rapid rebuilding and recovery from the affects of the earthquake. A multi-faceted action plan was developed through a partnership of the key transportation providers. Thus began a "Herculean Effort" of a magnitude that has not been witnessed in the history of (re)building a transportation system that took over half a century to create, but only seconds to destroy.** Despite the formidable task and list of participants involved in the quake relief and reconstruction, a cooperative spirit was maintained, and inter-agency rivalry never manifested itself during the quake recovery.

Immediately following the quake crews from all state and local agencies, began to assess the damage from the quake and subsequent tremors. **Rail operations were suspended pending the inspection of tracks and bridges for freight and passenger rail services. Caltrans crews began inspections of the freeways, and initiated closures on bridges that had collapsed or were considered unsafe. Unfortunately, strong aftershocks of 4.5 to 5.0 magnitude complicated matters, forcing engineers to reinspect all facilities for signs of new damage.**

Caltrans' Traffic Management Center spent a grueling first day establishing detours around closed freeways and roads. In the days immediately following the quake, this team of **traffic operations engineers formulated traffic management strategies that provided major congestion relief during the upcoming reconstruction period known as the Traffic Management Plan.** The rapid implementation and success of this plan was due to the unparalleled cooperation and assistance from Federal Highway Administration (FHWA) and the City of Los Angeles DOT.

Soon after, work began on **a high-tech nerve center for a comprehensive traffic management network called the EPI-Center. It provided real-time detour management throughout the reconstruction process. The center was designed, built and operational by a single contractor within 90 days,** thanks to the constant interaction and cooperation between Federal and State DOTs.

Caltrans instituted a computerized means for communicating roadway information to the public via INTERNET. Additionally, **viewers received "Freeway Vision" a computer map showing the real-time conditions of the freeway system. Traffic congestion and delays, closures or detours were also disseminated several times all day to the news media and radio traffic reporters via fax and through the L.A. Cityview Cable Channels.**

A comprehensive multi-faceted, joint-effort action plan was developed as a means of news dissemination and **public awareness campaign, known as the *Commuter Action Guide.*** This **campaign initiated a single, bi-lingual, easy toll-free telephone number (1-800-COMMUTE), which offered regional transportation and commute information for bus and rail routes, schedules, carpool and vanpool partners, park-n-ride lots, and even how to establish telecommuting centers and services.**

The Governor signed an Executive Order allowing Caltrans to streamline its contracting process, and relaxing certain statutory requirements in order to speed up the process of designing, advertising, awarding and beginning construction contracts. This reduced the normal process time from 4 to 5 months to just 5 days. This came to be known as Informal Bid Contracts and Force Accounts.

In order to ensure early completion of work on critical closed freeways, contracts utilized an "A-plus-B" bid process and **incentives and disincentives.** If the winning contractor finished the job early, a "bonus" was awarded for each day the deadline was beaten. Conversely, for every day over the deadline, the contractor would be penalized the same amount. **This method proved to be a powerful motivating tool for contractors working on earthquake reconstruction jobs. Santa Monica Freeway reconstruction was completed in just 66 days, +76 days ahead of schedule, thus earning the contractor a bonus of $14.8 million.** Contracts for **rebuilding the Golden State Freeway bridges were to take 133 days, but were finished in 100 days, earning the contractor a bonus of $4.95 million.** Although most contractors were awarded bonuses for early completion, they spent extra for overtime, bonuses, and premiums to keep the job rolling. Contractors streamlined their operations, and work was done much like assembly line fashion. **Contractors expanded their work force anywhere between triple to ten-fold the amount of the workers normally needed. Often crews worked**

around the clock everyday, 7 days/week, 24 hours/day, often in inclement weather to finish the job early.

Caltrans selected one program manager who would be responsible for total coordination of the freeway rebuilding process. Caltrans recruited maintenance, engineering and administrative staff from other neighboring districts as well as Sacramento Headquarters. **Projects were partnered between the contractors and Caltrans, to facilitate the progress of the work and make quick decisions right on the job site. Great emphasis was placed on individual initiative and problem solving.**

Caltrans district offices possessed existing "as-built" plans of the damaged bridges, and were fortunate to have numerous resident engineers who were already familiar with the destroyed structures. **Replacing the existing structures meant that no cumbersome environmental review process was necessary.**

Metrolink had been in operation for only 15 months and its program was at the height of expansion **when the quake struck.** With 5 lines operationally covering 350 miles of commuter rail line and 39 stations, Metrolink was poised to take on the function of an alternate commuting mode, giving the residents of Los Angeles a glimpse of commuting in the future. **From the extent of the damage and the projected length of time for the reconstruction of the freeway system, it quickly became evident to Metrolink planners that it needed to extend services and lines deep into the valleys that were isolated by the quake, in order to intercept people** in Ventura County and the valleys of San Fernando, Santa Clarita and Antelope. **Fortunately, Metrolink had recently purchased the right-of-way from Southern Pacific (SP) into Antelope Valley and possessed the extra rail cars it needed** from the Orange County Line which was slated to open in March, 1994.

Actions Taken

Three days following the quake, the Southern California Regional Rail Authority (SCRRA) **Board agreed on January 20, 1994, to extend Metrolink service as far north as Lancaster, and west into Ventura County. Since the SCRRA owned the land, the 43-mile extension** beyond the Santa Clarita Station to Lancaster **was not a problem in itself, however it had to still build the track. Metrolink had no rights to operate its trains over this important SP freight line, but was graciously given permission to operate its commuter trains temporarily until it could new build tracks of its own.** Consequently, **the first Metrolink train rolled south from Lancaster to downtown Los Angeles** on Monday, January 24, 1994**, just seven days after the quake.**

The extension of Metrolink lines into new market areas necessitated the construction of new stations and ancillary park-n-ride lots. Work proceeded around the clock to simultaneously build 8 new stations, platforms and parking areas, each designed/built in the field within a week. In addition, three existing stations were also modified by having their passenger loading platforms extended to accommodate the 12-car trains soon to follow.

Within a week following the quake, Metrolink had increased service on the Santa Clarita Line **from 14 to 23 trains per day**, in order **to accommodate ridership demands which increased from a daily average of approximately 850 riders to almost 22,000 riders on the Santa Clarita Line.** The reductions in headway were primarily scheduled to coincide with morning and evening commuter peak periods.

Metrolink also **increased the capacity of each train from 3 to 12 cars, which in itself required multiple stops at each station.** SCRRA had **procured 20-year old Toronto cars from GO Transit of Ontario**, in order to replace the Orange County cars. Due to the increases in ridership, **leases for additional trains were executed with other commuter train systems** in North America, mainly, Caltrains from San Francisco Bay Area, and GO Transit from Ontario, Canada, **as well as Amtrak and Southern Pacific Railway for extra locomotives to pull the additional loads.** During the week of January 24-28, **Metrolink's daily ridership peaked to 31,276 systemwide, with 21,952 riders just from the Santa Clarita Line alone. Train equipment demand on this line grew from two locomotives and three passenger car train sets before the quake to 11 locomotives and 41 passenger cars respectively at the peak of the emergency.** In spite of this equipment expansions, Metrolink still could not deliver more than 14,000 peak hour seat capacity. **More passengers boarded the Santa Clarita Station alone, than any of the other 39 train stations on the entire regional commuter rail network.**

Metrolink increased Santa Clarita Line's speed by undertaking a $52 million improvements and rehabilitation of the track and signalization, in order to reduce the travel time for the 78-mile journey from 2 hours and 25 minutes down to 1 hour and 43 minutes. **It was able to increase the speed from 28 mph to 45 mph,** comparable to the commute trip speeds on the paralleling I-5 and SR-14 corridor.

Almost all **bus transit providers in the quake affected areas, introduced temporary bus service modifications, including adding new bus routes, schedule extensions and changes of existing bus routes, introduced commuter oriented express bus service** to downtown Los Angeles, and to Metrolink stations. Some of these services were run jointly by the various public agencies, while others were privately contracted by employers.

In order **to support the use of new express or line-haul bus routes, and facilitate the increasing formation of carpools, Caltrans and other agencies developed an additional 5 new park-n-ride lots** paralleling the I-5 and SR-14 corridors. These emergency facilities continue to be used as staging locations for carpools and vanpools even today.

The *Commuter Action Guide*, developed to assist quake impacted area residents and commuters, **identified telecommuting as a productive option for those businesses and their employees to work at home or from telecommuting centers near their residences. Local communication vendors** such as Pacific Bell and General Telephone responded to the stranded commuter's needs by **establishing Emergency Telecommuting Relief Packages, offered business type telephone system for residences, installed phone banks and provided loans that covered such costs as modems and other telecommuting related equipment.**

Immediately following the quake, the SCRRA announced changes to their fare structure in order to attract and retain the customer base it retained from the quake impacted residences in the valleys. On January 21, the SCRRA Board approved a one zone discount for the newly Santa Clarita Line extension to Lancaster. On February 11, the Board approved a two-for-one Monthly Pass special for February and March 1994. On March 11, **the Board discounted fares approximately 50% for the Lancaster Station extension and 25% discount for the Santa Clarita Station fares from April 1 through June 30, 1994.** On July 20 all Metrolink fare discounts were terminated.

The reduction of Metrolink ticket prices, as a means of attracting or keeping gained ridership, seemed to have little impact on the overall ridership profile. Even though fare reductions were extended and even doubled up, in the final analysis ridership continued to drop, which suggests that fares were not a large issue. Two reasons exist for this phenomenon, first the **mean household income for Metrolink commuters ranged from a low of $60,000 to $89,000,** and second, **over seventy (70%) percent of Metrolink's Santa Clarita Line riders were subsidized by their employers** in varying amounts ranging from $50-$100 on monthly passes costing $208. Fare discounting not withstanding, **the price of commuting on Metrolink was in fact perceived as a superior value for its customers.** Overall systemwide, the surveys indicated that sixty (60%) percent of train riders believed they were receiving a better value, while thirty (30%) percent said they were receiving a much better value than their former commute mode.

Surveys that were conducted six months after the quake, indicate the travel characteristics of the train commuters which showed that over two-thirds of the train riders commuted five or more days a week, seventy-seven (77%) percent drove to and thirteen (13%) percent were dropped off at the originating station. For those traveling between home to origin station, nearly two-thirds traveled between 6 to 15 minutes, about thirty (30%) percent traveled between 1 to 5 minutes. More than two-thirds traveled 5 miles or less between home and their origin station, and one-quarter traveled between 6 to 10 miles to their origin station.

Numerous shuttles were put in service connecting Metrolink or Amtrak train stations with major employment centers. Many of these feeder shuttles were financed by grants from FEMA, while others were either employer or City-sponsored. Transportation Management Associations/ Organizations in cities like Glendale, Burbank, Pasadena and parts of the San Fernando Valley sponsored many of the Metrolink-based shuttles for the employers.

On the average, approximately one third of the riders who exited the stations traveled to work using an employer shuttle. Specifically, one half of those who exited the Burbank Station took an employer shuttle, followed by approximately one third of those who exited at Glendale Station, and one quarter who exited at Sylmar/San Fernando Station used employer shuttles. Only one-tenth who exited at the downtown Los Angeles Union Station used employer shuttles. More than a third who exited Union Station used Metro Red Line subway, while forty (40%) percent used the bus, and only seven (7%) percent walked to work from Union Station. On the average it took 17 minutes and at least 5 miles to get to a commuter's work destination from Union Station. It took on the average 13 of minutes and 6 miles from Burbank and Glendale Stations, and 23 minutes and 11 miles from the Sylmar/San Fernando Station to a work site.

The high percentage of riders responding to using shuttles at exit stations, is consistent with the wide availability of public shuttles like the Los Angeles City DASH, City of Glendale, City of Burbank, City of Santa Clarita, and Antelope Valley Authority shuttle buses which brought employees to work and back. In addition, **a number of quasi-public organizations** like the Pasadena Transportation Management Association (TMA), Mid-San Fernando Valley TMA, the Glendale Community College and the Unified Shuttle, which serves the Warner Center, **organized emergency shuttles which connected major employment centers with Metrolink or Amtrak stations. Many of these shuttles mentioned above were financed by grants from the Federal Emergency Management Agency. Finally major private employers** like the Disney Corporation, Kaiser Permanente medical/hospital facilities, the Studio Limousine/Shuttle and many others **organized private employer sponsored employee shuttles. In conclusion, the establishment of feeder shuttle services from Metrolink train stations to major employment centers was pivitol in attracting and maintaining commuter train ridership.**

Throughout the fiscal year 1993-94, **Metrolink actively promoted its employer subsidized pass sales to employers** impacted by the Air Quality Management District's Regulation 15 Programs. **Through the Transportation Marketing Associations, and Employer Transportation Coordinators, employer subsidized pass sales tripled with over seventy (70%) percent of riders purchasing passes through this program.**

Prior to quake Metrolink's marketing program and public information dissemination campaigns concentrated on new line and station opening promotions. A month before the quake, Metrolink had conducted its first comprehensive direct mail/newspaper advertising which resulted in a fourteen (14%) percent retained increase in ridership during the first two weeks of January, 1994.

The quake on January 17, required Metrolink to shift its marketing efforts from a promotional mode to an emergency information dissemination and critical service mode. Metrolink was actually involved in the transport of critical emergency personnel in the absence of major transportation routes. **A media response team was established to handle the dramatic increase in media related calls to answer questions about new line extensions and station openings, construction progress, service enhancements or interruptions, ridership counts, and increased ambassadors at stations.** In addition **Metrolink retained the services of advertising agencies for the production, promotion and distribution of direct mail pieces, newspaper ads and more than twenty schedule update bulletins** in response to the overwhelming ridership demands.

Following the initial emergency response, Metrolink's marketing efforts switched to retaining riders that were gained during the quake by producing and placing five-second ads on cable and television, radio spots, geographically targeted newspaper ads and supplement inserts, direct mail campaign along the Santa Clarita/ Lancaster and the Ventura County Lines.

Ridership Response

After the quake, the **loss of capacity on the freeways resulted in longer-than-usual delays for vehicles attempting to use those freeways through their detour routes.** As a result of the delays, **thousands of people sought other means of transportation to commute to work, such as carpooling, buses and commuter rail trains** such as Metrolink. **The improvements that were undertaken by Metrolink and others accommodated, at best, the pent-up ridership demands that already existed. For the most part, this captive audience** in the Santa Clarita and Antelope Valleys **in affect had no other alternative modes of travel.**

Metrolink commuter rail ridership surged dramatically immediately following the quake, especially on the Santa Clarita Line which served the two aforementioned valleys. Ridership which was averaging 850 boardings per weekday before the quake, reached a high of almost 22,000 riders on Tuesday, January 25. Ridership maintained over 20,000 for the rest of the week, until Friday, January 28, **when Caltrans opened by-pass lanes on the southbound SR-14 to southbound I-5 to 50% of its capacity, at which point ridership dropped** over 7,000 riders down to 12,000 to 14,000 range for the rest of January 1994. Aided by a 50% fare discount for Palmdale/Lancaster Stations, and 25% fare discount for Santa Clarita/ Princessa Stations, ridership maintained at an average of 8,000 daily through March, 1994. Ridership continued to decline in April to an average of 5,600 daily, and to 4,800 daily passengers by end of the May, 1994, following Caltrans' opening of Interstate 5 on May 18. The 4,000 average daily boardings during June were still almost five times higher than before the quake. The re-opening of State Route 14 on July 8, may have contributed to some declines in ridership. The discontinuation of service at the Palmdale Station on June 20, coupled with the ending of fare discounts on the Santa Clarita Line on July 31, may have also affected ridership trends downwards to 3,575 in July, 2, 875 in August and 2,740 average daily passengers in September, 1994. As of July, 1995, ridership on the Santa Clarita Line has remained relatively constant at around 2,965. **This would indicate that Metrolink ridership on the Santa Clarita Line has increased from an average 850 daily passengers from the second half of 1993 calendar year, to an average of 2,985 daily passengers for the first half of 1995 calendar year, an increase of approximately three hundred fifteen (315%) percent.**

This increase of 315% firmly confirms a long term shift in behavior patterns when it comes to daily home-to-work commuting. Commuters from the Antelope and Santa Clarita Valleys **are continuing to ride the Metrolink trains, at least in part, because of their satisfaction with Metrolink's service. Among the merits that Metrolink riders cited about commuting by train, included avoiding driving and related parking, fuel and maintenance costs, less stress, convenience, more productive time, speed and on time performance.** Former drivers traded their former congested and stressful long and slow, drive-alone commuting pattern for a more pleasurable, satisfying, and valuable commuting experience, one where they could work, read or sleep on the train, instead of idling their time wastefully sitting in stalled traffic.

II. INTRODUCTION

On January 17, 1994, a powerful earthquake struck the Los Angeles region with a magnitude of 6.7 on the Richter Scale and lasted approximately 30 seconds. Strong aftershocks of 4.5 to 5.0 and above continued numerous times a day and for several days following the initial major shock. The quake struck the same general vicinity of the San Fernando and Santa Clarita Valleys northwest of downtown Los Angeles for the second time in almost twenty-five years.

The 1994 earthquake, centered in Northridge, wreaked havoc on some of the region's transportation facilities, especially the freeway system. The quake caused varying degrees of damage to some of the region's freeways, interchanges, bridges, ramps and roadways. In all, four freeways were damaged, which included the Interstate 5 (Golden State Freeway), which traverses the entire length of western United States as well as into Mexico to the south and Canada to the north, and Interstate 10 (Santa Monica Freeway), which traverses easterly through the continental United States, State Route 14 (Antelope Valley Freeway) and State Route 118 (Simi Valley Freeway).

The collapsed freeways created a significant traffic disruption to the region's mobility, as well as to interstate motorist travel and truck movement. Approximately one million vehicles and trucks per day, were forced off of these freeways. Most drivers had to resort to utilizing freeway detours or surface streets which significantly added to already normal delays. Others had to find alternative modes of transportation such as buses or commuter rail, or changing their route, time of travel, trip-making frequency, and even in some cases, discontinue their trips entirely.

These conditions offered an unparalleled opportunity to study transit ridership behavior and modal splits of commuters in general, and Metrolink commuter rail specifically, in what can be described as a "controlled laboratory" setting. The analyses of this report focuses on two Metrolink lines, the Santa Clarita Line and the Moorpark/Ventura Line, which parallel two freeway corridors (I-5/SR-14 and SR-118 respectively) which were damaged from the quake. Motorists who utilized SR-118, however had alternative freeway and arterial highway options, thus ridership on the Metrolink's Moorpark/Ventura County Line increased slightly. The situation on Metrolink's Santa Clarita Line however was entirely unique. The collapse of Interstate 5 at Gavin Canyon and also, and most significantly, the collapse of the Interstate 5 and State Route 14 interchange in its entirety, had catastrophic results for motorists who utilized the I-5/SR-14 corridors. The only reasonable means of travel between Los Angeles and the isolated valleys for these frustrated commuters became Metrolink's Santa Clarita Line. The ridership on this commuter rail line which was averaging 850 daily riders prior to the quake increased dramatically to a record of almost 22,000 daily riders a week after the quake, prompting US Department of Transportation, Secretary Federico Pena, to declare "Metrolink is the fastest growing commuter railroad in the country".

Metrolink with its network of five lines covering some 343 miles with 39 stations, was called upon to meet the massive emergency transportation needs created by the quake. The Southern California Regional Rail Authority which operates Metrolink, accepted the challenge by engaging in a remarkable expansion of capacity, with added trains, new stations and the addition of over 63 miles of new track. Most of this new service was operating within the first two weeks following the January 17 quake. A year and half after the quake, Metrolink trains have doubled its daily ridership system-wide from approximately 8,000 prior to the quake to over 17,000 at the end of July 1995. Ridership on the Santa Clarita Line has steadily declined since the reconstruction and re-opening of the freeways, however it has maintained at triple the ridership of approximately 3,000 daily passengers.

The **Los Angeles (Northridge) Earthquake Transportation Study** attempts to document in detail the actions that were undertaken after the quake, by identifying and quantifying the actions taken by Metrolink officials and others to enhance service. The main intent is to use the information from this study, to make more informed decisions through cost-effective actions, which can be utilized by other commuter rail and transit agencies to accommodate and enhance ridership during and after natural disasters.

III. METHODOLOGY

Background

The Los Angeles (Northridge) Earthquake of January 17, 1994, resulted in the destruction of key freeway links, causing severe hardship to personal mobility and causing massive auto congestion. Commuters who traditionally relied on their autos had to utilize other means, specifically Metrolink, a commuter rail system, which one of its lines connects downtown Los Angeles to San Fernando, Santa Clarita and Antelope Valleys to the north where the quake was centered. Upon the completion of the freeway reconstruction, most of the new Metrolink patrons returned to auto commuting again. However, some remained as Metrolink commuters. A year and a half after the quake, ridership on the Santa Clarita rail line that serves these valleys, is still over three times greater than pre-quake levels. This situation provides a natural laboratory to study ridership responses to service changes.

Gardner Consulting Planners (GCP) has been retained by the U.S. Department of Transportation/Federal Transit Administration, and the Southern California Regional Rail Authority, operator of Metrolink, to prepare a study documenting what happened to the transportation system following the Northridge earthquake. The objective of this study is to better understand the trade-offs that were made by the stranded commuters in the Interstate 5 and State Route 14 freeway corridors.

Evaluation Overview and Objectives

The objective is to identify and quantify the actions taken by Metrolink and other transportation related agencies, to quantify the ridership response to the service changes as well as the costs associated with these improvements. The intent is to use the information developed from this study, to make more informed cost-effective decisions and actions, that can be utilized by other transportation/transit agencies to deal with natural disasters and to accommodate and retain ridership after such an event.

Survey Questionnaire

Accordingly, the staff of GCP developed a comprehensive survey questionnaire, as shown in Appendix A, to be sent out to the region's transportation/transit providers listed in Appendix B. The purpose of this questionnaire was to solicit pertinent data dealing with the occurrences just before, immediately after, post earthquake and current conditions. The survey was forwarded to the Los Angeles County Metropolitan Transportation Authority (LACMTA), the Southern California Regional Rail Authority (SCRRA/ Metrolink), the State of California Department of Transportation (Caltrans), and other transit agencies in the region. The survey requested such information as general conditions, emergency response situation, actions taken and resulting transit ridership,

the characteristics and attitudes of this ridership, public information and news media dissemination activities and programs.

Study Focus

The opportunity to study transit commuter ridership behavior, juxtaposed with other transportation modes, especially highway commuting by autos, was enhanced by the complete severing of links of the freeway system along the Interstate 5 and State Route 14 corridors, which directly paralleled Metrolink's Santa Clarita Line. This line remained open with a minimum of damage from the quake, and its service was re-established on a full basis within 36 hours after the major seismic event. For almost two weeks, until Caltrans opened the initial detour by-pass lanes, the only effective means of travel between Los Angeles and the valleys to the north, was to ride Metrolink commuter rail line. For this reason, the focus of this study is primarily the effects of the quake and the resulting transit ridership on Metrolink's Santa Clarita Line. Although State Route 118, which paralleled Metrolink's Ventura County Line, was also severed in the San Fernando Valley, the availability of numerous alternative freeways and arterial highways kept auto traffic moving and train ridership on this line relatively constant.

Four issues of interest to ridership characteristics and behavior were selected for analysis. These issues include the effects of:

i. the extension of the Santa Clarita Line 43 miles into Antelope Valley, a new market area and a major source of commuters for Metrolink;

ii. the interplay of fare structure on ridership behavior of rail transit riders, immediately following and longer term post-quake period;

iii. the benefit of adding feeder shuttle services and facilities at each end of the transit commute trip;

iv. the affects of public information and media campaign on commuter modal behavior.

Each of these four key issues is analyzed for three characteristics, including:

i. a description of the action or improvements taken by the host agency;

ii. the response of transit riders to the changes in conditions, relative to commuter travel patterns and modal split;

iii. the costs of actions associated with the actions or improvements.

A comprehensive data gathering effort took place following the survey questionnaire preparation and solicitation phase. All relevant transportation agencies which received the survey

questionnaire, were solicited for their participation and cooperation in this data gathering phase, as well as providing the requested information from their existing database. This task resulted in a cache of information that existed within each organization or agency as listed in the bibliography section, which proved to be invaluable during the preparation of this study.

The outcome of findings and recommendations of the **Los Angeles (Northridge) 1994 Earthquake Study**, are a result of the enormous contribution by various public agencies and private firms and organizations, who generously opened the doors to their staff as well as their resources. They also provided an incredible breadth and wealth of information from their existing studies and survey data, personal and telephone interviews, without which this research report could have not been possible.

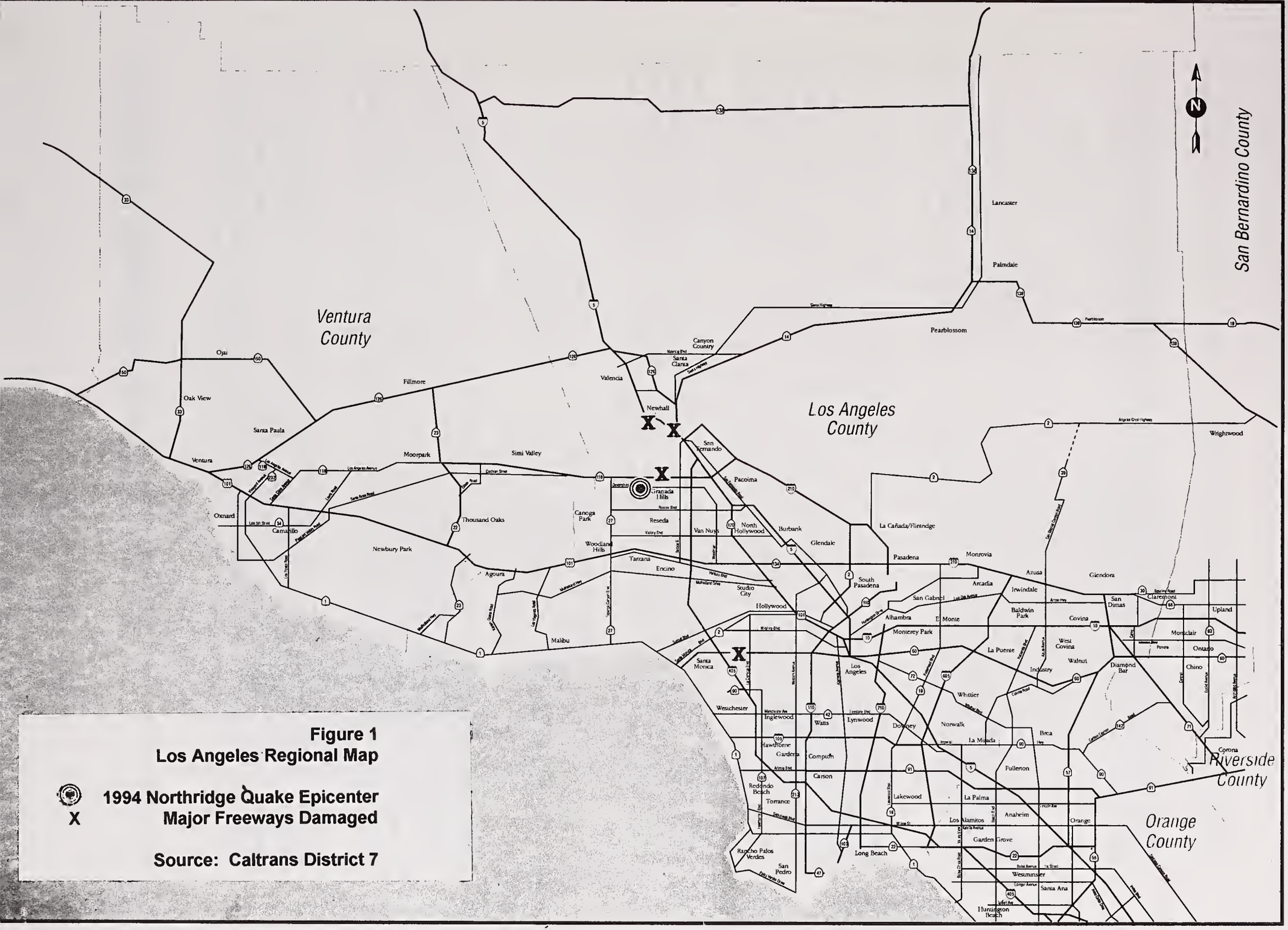


Figure 1
Los Angeles Regional Map

1994 Northridge Quake Epicenter
X Major Freeways Damaged

Source: Caltrans District 7

IV. BACKGROUND

A. SETTING

At 4:31 a.m. on Monday, January 17, 1994, a powerful earthquake struck the Los Angeles (L.A.) region with a magnitude of 6.7 on the Richter Scale and lasted approximately 30 seconds. A major fault line located 9 miles below the ground, snapped in a spot near the area of the City known as Northridge in the San Fernando Valley, northwest of downtown Los Angeles, as shown in Figure 1 on the preceding page.

The initial jolt caused violent vertical thrust on the surface of up to 12 feet in some areas. Strong aftershocks of 4.5 to 5.0 magnitude and above, continued numerous times a day, and for many days following the initial major shock, as shown in Appendix C. Vibrations from the initial jolt and subsequent aftershocks from the epicenter, radiated outward with amazing strength and distance, as shown in Figures 2 and 2A, on the following pages. This was the second time in recorded history that a major earthquake had struck the same general area, with the same devastating results; the first one occurred in 1971.

The January 17th earthquake wreaked havoc on some of the region's transportation facilities, especially the freeway system. The earthquake caused varying degrees of damage to some of the region's freeways, interchanges, bridges, ramps and roadways. The following four key freeways were damaged, as shown in Figure 3 and the accompanying photographs:

- Interstate 5 (I-5, Golden State Freeway)
- Interstate 10 (I-10, Santa Monica Freeway)
- State Route 14 (SR-14, Antelope Valley Freeway)
- State Route 118 (SR-118, Simi Valley Freeway)

The collapsed freeways created a significant traffic disruption to regional mobility, both motorists and truckers alike, as shown in the accompanying photographs. Approximately 700,000 (seven hundred thousand) to 1,000,000 (one million) drivers or vehicles were forced off these freeways, and had to resort to utilizing surface streets, finding alternative modes of transportation, or changing their route, time of travel, tripmaking frequency, and even in some cases, discontinuing their trip entirely.

Transit riders who used buses for express or line-haul services on freeways fared about the same as motorists. Los Angeles' rail transit network however, fared much better. The Red Line subway was bounced a foot vertically and a foot laterally, but remained undamaged. Surface rail tracks, especially those in curves, were whipsawed as much as a foot to the side, but still maintained gauge. The Saugus Tunnel on Metrolink's Santa Clarita Line permanently

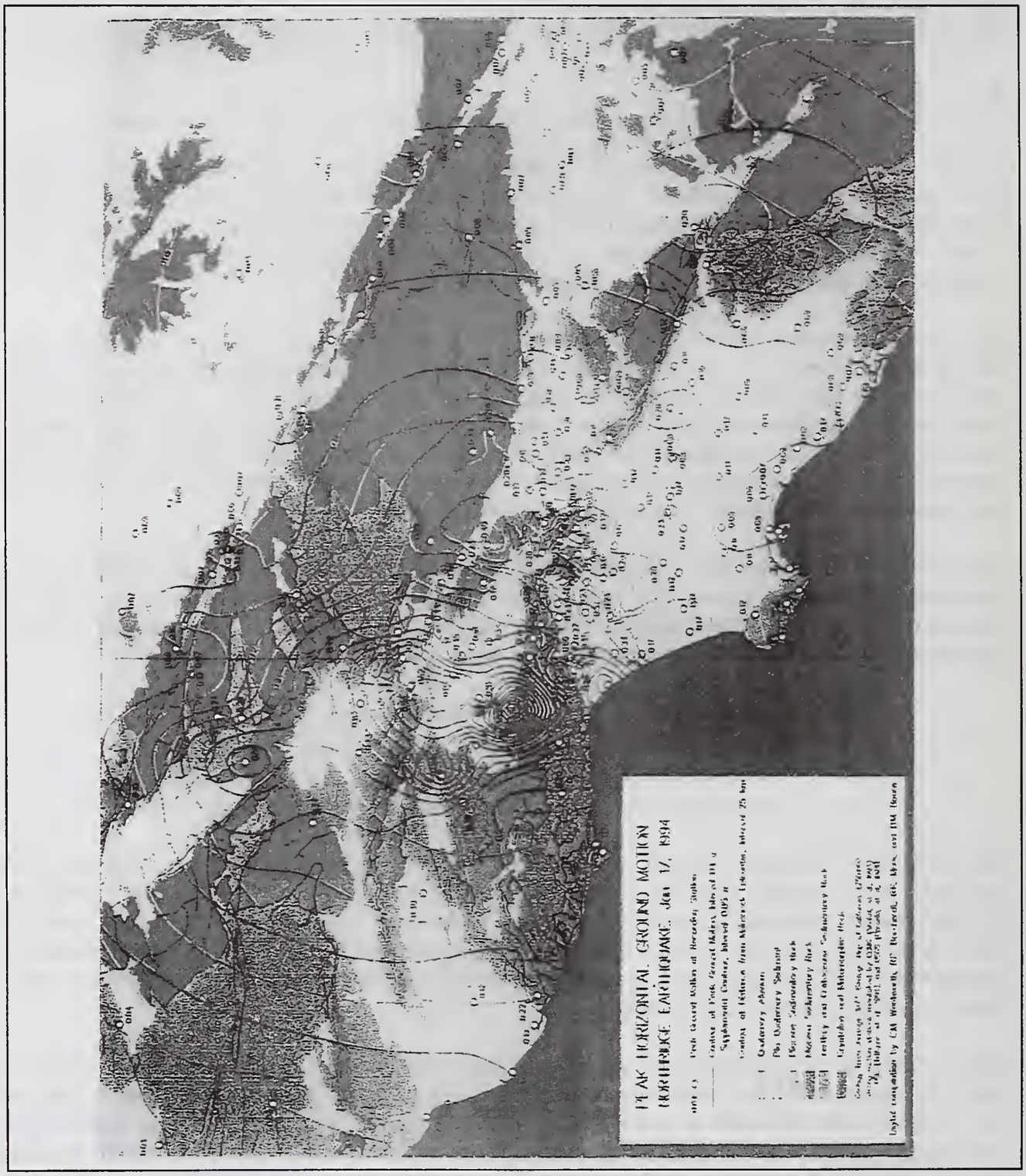


Figure 2 - Earthquake Seismic Maps (Horizontal Movement)

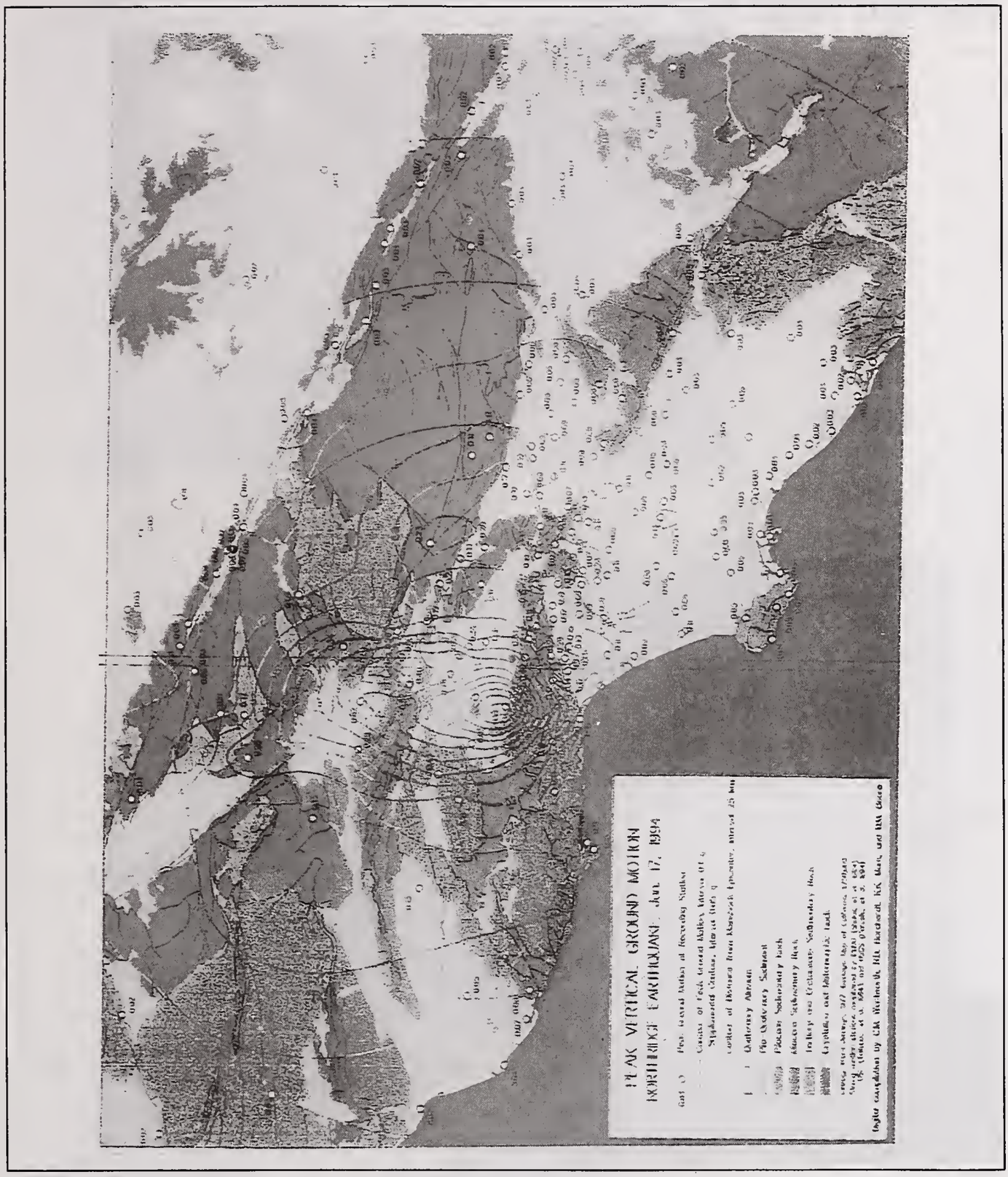
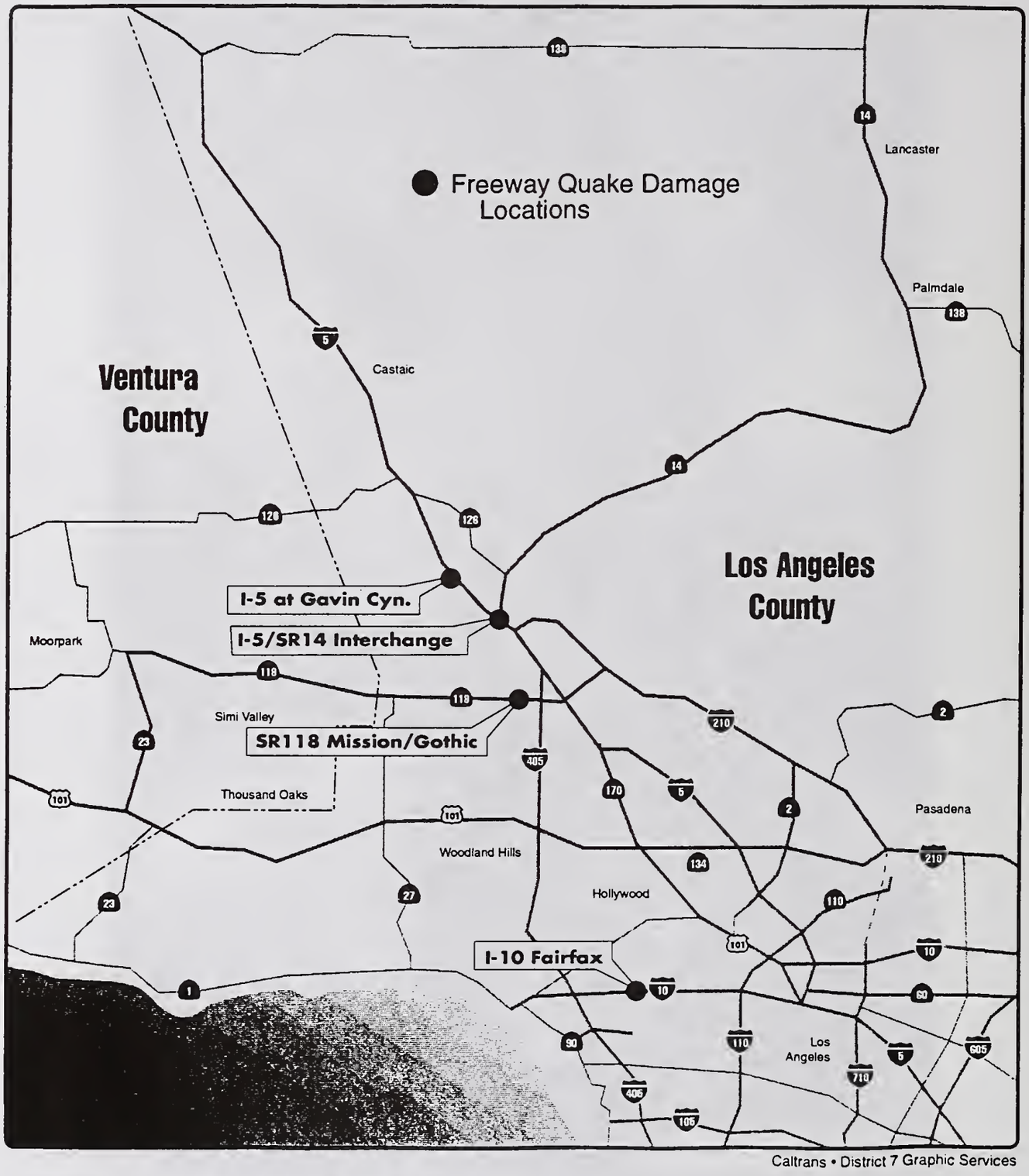


Figure 2A - Earthquake Seismic Maps (Vertical Movement)

Northridge Earthquake Structural Damage



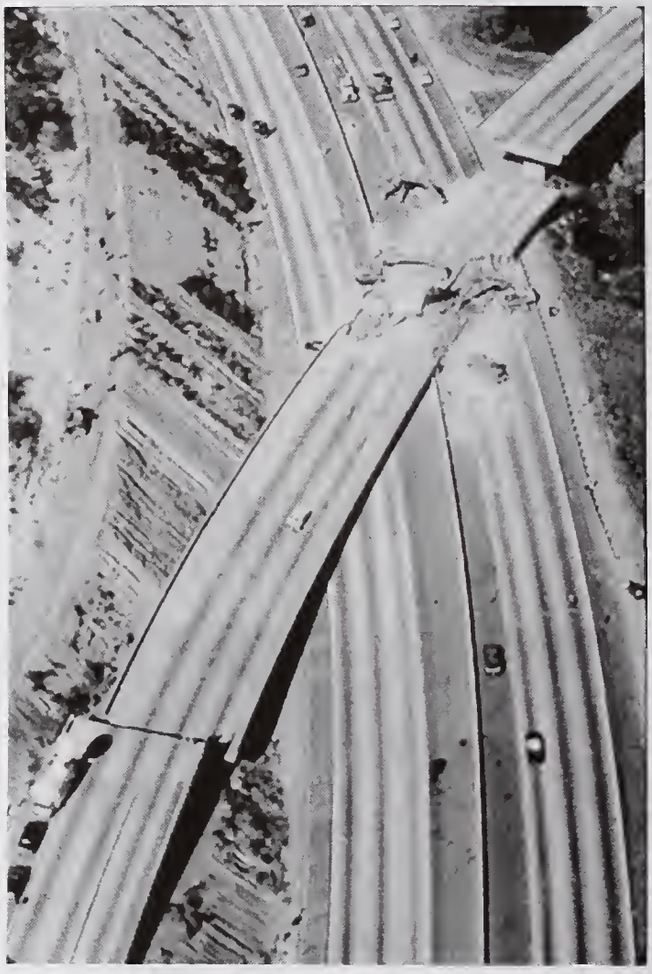
Source: Caltrans - District 7 Graphic Services

Figure 3

Source: Metrolink **PHOTOGRAPH A**

Source: Metrolink **PHOTOGRAPH B**

The interchange ramps connecting Interstate 5 and State Route 14 Freeways were nearly completely destroyed.



The reconstruction of the Interstate 5 and State Route 14 began days after the earthquake.

Source: Metrolink

PHOTOGRAPH C

Metrolink Tunnel, directly below the collapsed Interstate 5 and State Route 14, remained undamaged.

Source: Metrolink

PHOTOGRAPH D

The impact of the Northridge Earthquake necessitated the complete reconstruction of the entire Interstate 5 and State Route 14 interchange.

Source: Caltrans

PHOTOGRAPH E

This was the second time in 25 years this interchange had to be rebuilt due to a quake.

Source: Caltrans **PHOTOGRAPH F**

Source: Caltrans

PHOTOGRAPH G

Interstate 5 and State Route 14 interchange during reconstruction in June, 1994.

Interstate 5 and State Route 14 interchange upon completion in November, 1994

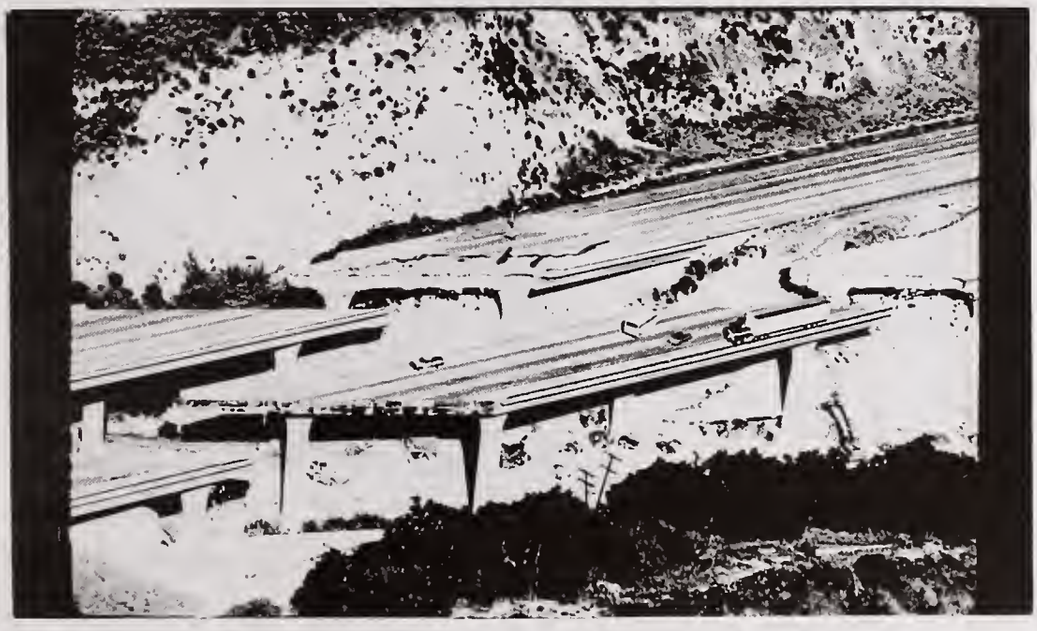
Source: Caltrans

PHOTOGRAPH H

Sections of bridges on Interstate 5 at Gavin Canyon completely collapsed, leaving motorists and truckers precariously stranded.

Source: Caltrans

PHOTOGRAPH I



Source: Caltrans

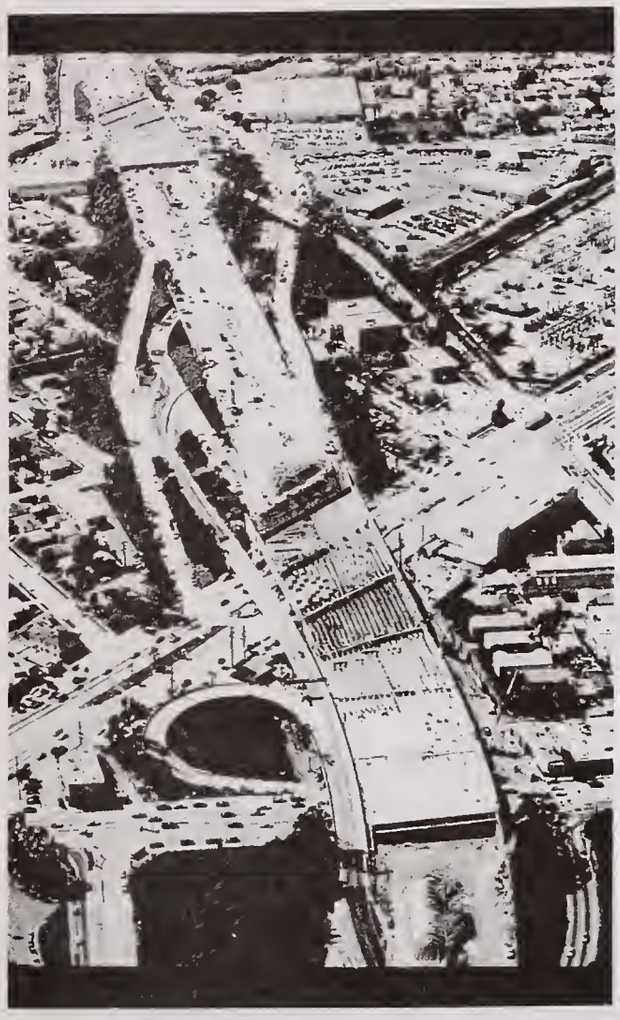
PHOTOGRAPH J

Source: Caltrans

PHOTOGRAPH K

Sections of Interstate 10 at Fairfax Avenue collapsed, leaving 375,000 drivers to seek alternative routes.

Source: Caltrans **PHOTOGRAPH L**



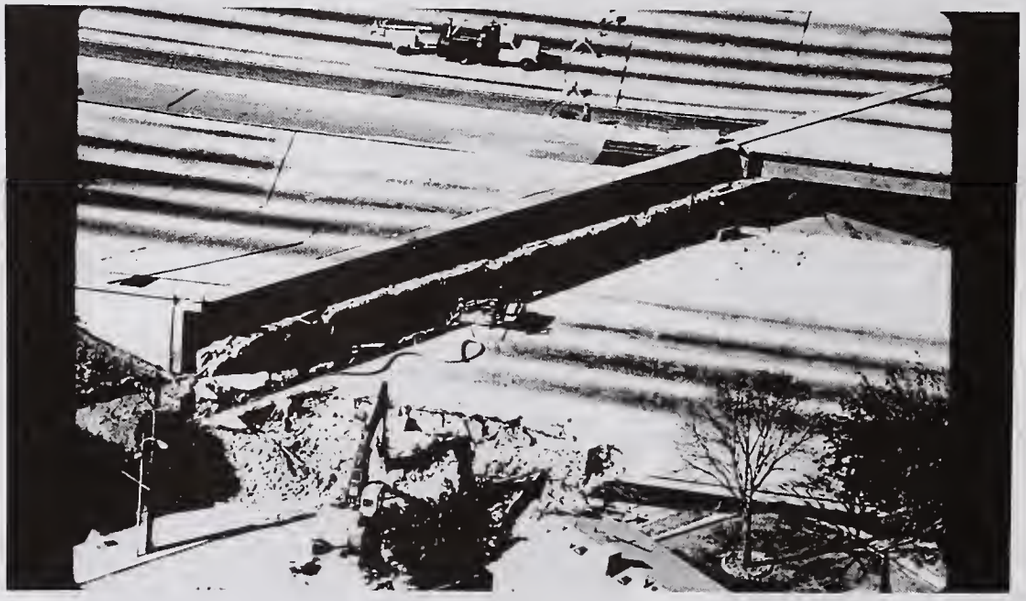
Sections of Interstate 10 at Fairfax Avenue and La Cienega Boulevard needed reconstruction when support columns buckled under pressure.

Source: Caltrans

PHOTOGRAPH M

Source: Caltrans

PHOTOGRAPH N



State Route 118 (Simi Valley Freeway). Detour at Woodley Avenue west of the State Route 405 (San Diego Freeway).

Source: Caltrans **PHOTOGRAPH O**

Source: Caltrans **PHOTOGRAPH P**

rose 16 inches with the surrounding land, but continued to function. Just above the tunnel of Metrolink, the I-5 and SR-14 interchange completely collapsed. In spite of the damages caused by the earthquake, all Metrolink rail lines were back in full servce within three (3) days.

B. OVERVIEW NARRATIVE

Immediately following the earthquake, California Governor Pete Wilson declared a state-of-emergency, and created an earthquake recovery task force headed by Secretary Dean Dunphy of the California Business, Transportation and Housing Agency. The task force's main objective was to make sure all agencies were coordinating their efforts, and to remove any roadblocks to rapid rebuilding and recovery from the affects of the earthquake.

1. Establishment of Earthquake Recovery Task Force

A multi-faceted action plan was developed through a partnership effort by the California Department of Transportation (Caltrans), the California Business, Transportation and Housing Agency, The Los Angeles County Metropolitan Transportation Agency (LACMTA), and the Mayor's Office of the City of Los Angeles. The strategy of attack of this partnership was three pronged:

(i) Initial emergency response;
(ii) Interim traffic management;
(iii) Longer-term rebuilding efforts.

Thus began a "Herculean Effort" of a magnitude that had not been witnessed in the history of (re) building a transportation network, a system which took half a century to create, but only seconds to destroy. With the destruction behind, it was time now to focus on the reconstruction of the transportation facilities as rapidly and efficiently as possible. This entailed a tremendous commitment on the part of all the transportation providers and agencies in order to get L.A.'s freeways and roads repaired in record time.

Those involved in this rebuilding process included: Federal Emergency Management Agency (FEMA), US Department of Transportation (US/DOT), Federal Highway Administration (FHWA) (which provided funding for the reconstruction for the first six months), Federal Transit Administration (FTA), CALTRANS, California Highway Patrol (CHP), LACMTA's Metro Transit, Southern California Regional Rail Authority (SCRRA)-Metrolink, City of Los Angeles Department of Transportation (DOT), Antelope Valley Transit, Santa Clarita Transit, Burbank and Glendale City Transit Departments, Air Quality Management District, and Commuter Transportation Services (CTS) (Commuter Computer). Despite the formidable list of those involved in the earthquake relief and reconstruction, a cooperative spirit was maintained, and inter-agency rivalry never manifested itself during the earthquake recovery.

The following discussion presents the scenario of events that occurred immediately after the earthquake struck on January 17, 1994, at 4:31 a.m. Fortunately, both the time and date that the earthquake struck helped minimize transportation related casualties and fatalities. First, the

early morning hour when the earthquake struck meant that there was light traffic conditions on the region's freeways and roads. Second, the date that it struck was a Monday, traditionally a heavy commute day. The day of January 17, 1994, however, fell on Martin Luther King, Jr.'s Birthday, a national holiday, therefore many commuters would not have been traveling the highways that day. What might have possibly been a quiet, three-day holiday weekend, instead started with a tremendous jolt, shaking and uncontrollable rolling motion, that jarred people out of their beds and scrambling for cover. As the news media began the coverage of the earthquake, it became evident to most that this was not going to be another normal day in L.A.

2. Assessment of Earthquake Impacts

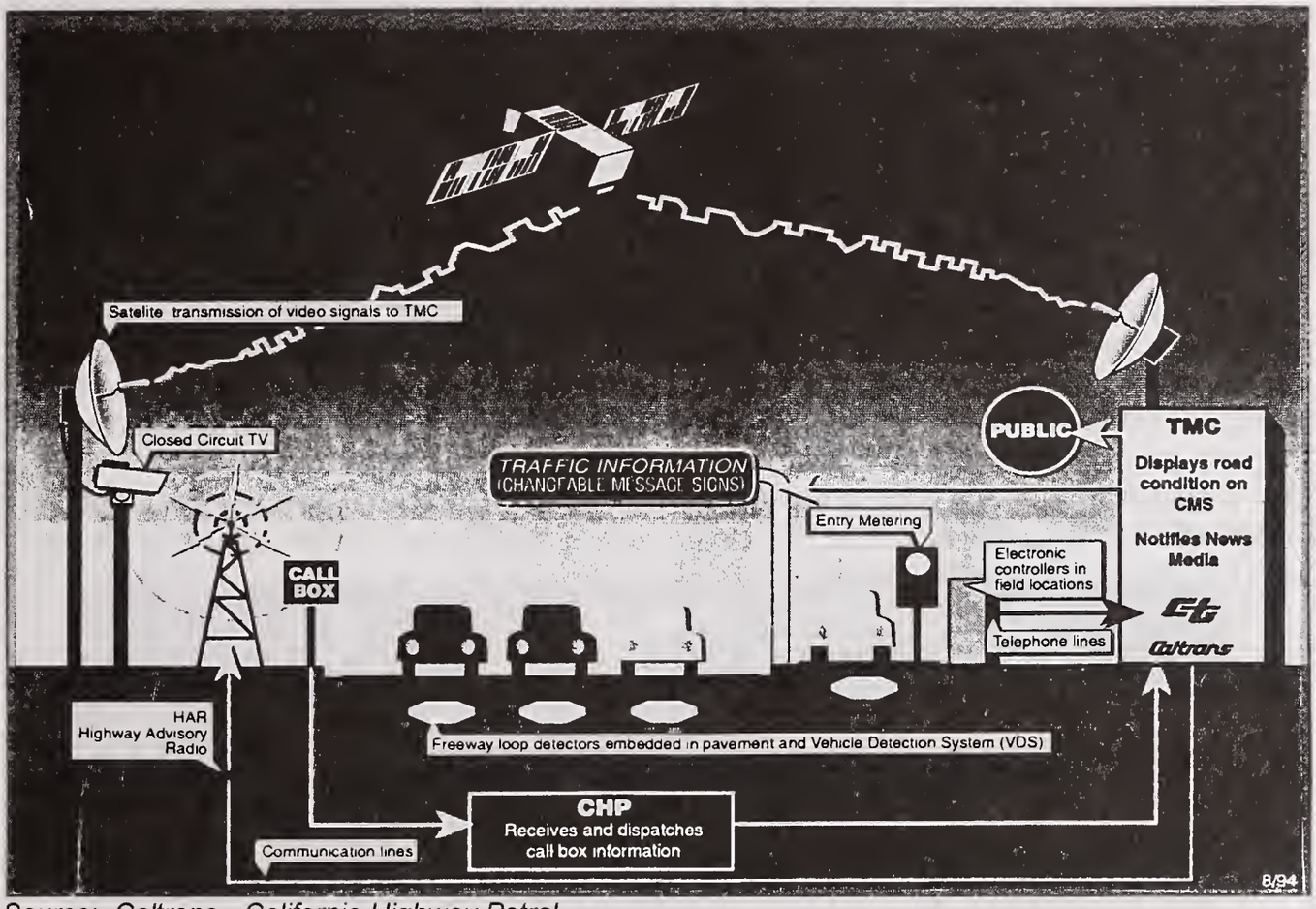
Immediately, crews from various aforementioned state and local agencies, began to assess the extent of the damage caused by the earthquake and subsequent tremors. All rail related agencies halted rail operations and began inspection of the entire track system of both passenger and freight rail service. Hours after the initial earthquake, most of Caltrans' 1000 maintenance personnel fanned out over the metropolitan region, to do visual "windshield" inspections of the freeway system, and to initiate closures on freeways that had collapsed or were considered unsafe. This process was followed up by more detailed inspections by structural engineers. Unfortunately, strong aftershocks of 4.5 to 5.0 magnitude complicated matters worse, forcing engineers to re-inspect freeways, bridges, tunnels and rail tracks, which had already been inspected for signs of new damage.

3. Traffic Management Center

Caltrans maintenance workers, in coordination with Caltrans' downtown L.A. Traffic Management Center (TMC), illustrated on Figure 4 on the following page, spent a grueling first day establishing detours around closed freeways and roads. The TMC regularly gave out traffic conditions and closure/detour information, which was also carried by television (T.V.) news media and radio traffic stations. In the days immediately following the earthquake, this team of traffic operations engineers, formulated traffic management strategies that would provide major congestion relief during the upcoming reconstruction period.

The proposals that were quickly developed by the TMC team became known as the earthquake relief Traffic Management Plan (TMP). It's strategies included:

- installation of motorist information;
- vehicle detection system in the field;
- Emergency Detour Management Center to control this equipment;
- comprehensive public awareness campaign;
- short-term traffic control measures;
- acquisition of communication equipment;



Source: Caltrans - California Highway Patrol

Figure 4 - Traffic Management Center

- helicopter surveillance;
- traffic data collection;
- tow service in the affected areas;
- increased highway patrol support;
- new park-n-ride lots.

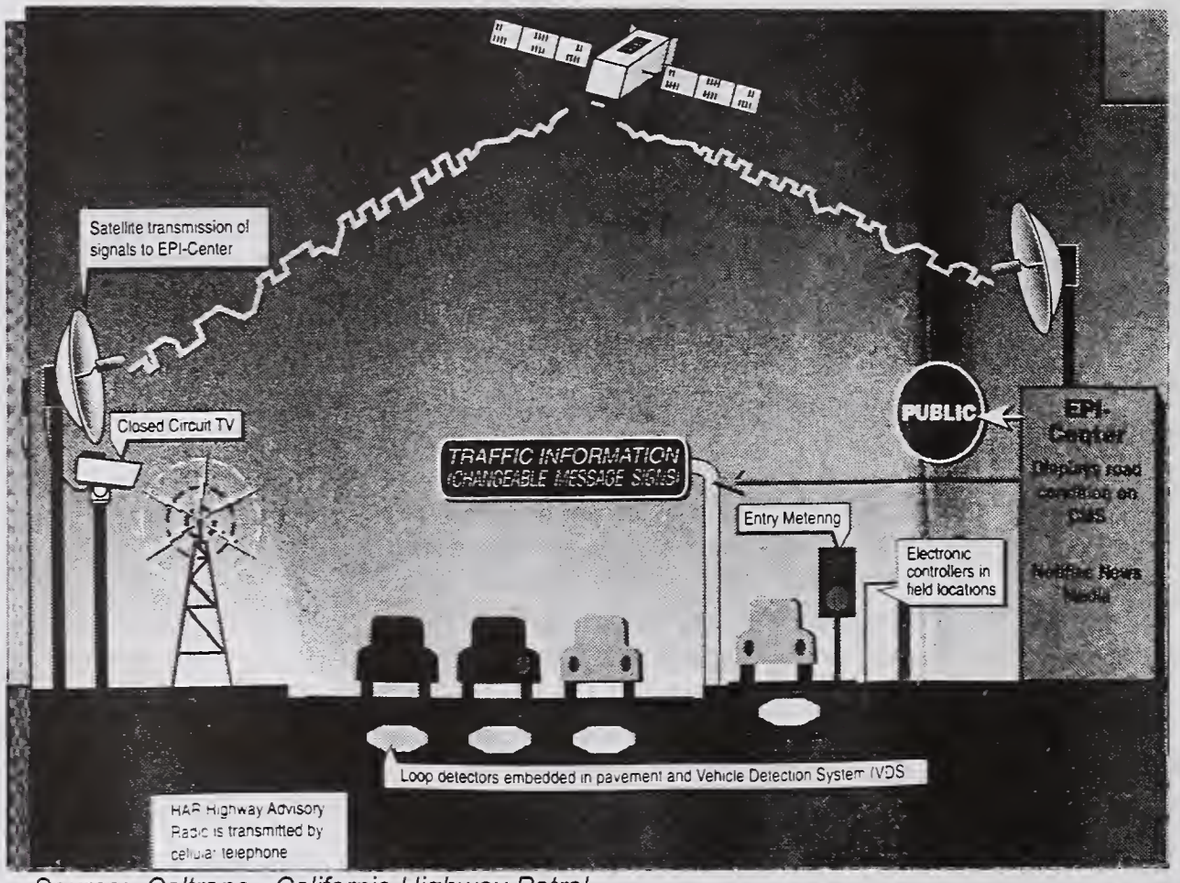
The rapid implementation of the TMP, and the successful part it played in dealing with what could have been a major transportation catastrophe, was due in large part to the unparalleled cooperation and assistance from the Federal Highway Administration (FHWA) and the City of Los Angeles DOT.

4. Development of the Earthquake Planning and Implementation Center

When the earthquake struck, Caltrans was faced with literally hundreds of top-priority demands on its resources. Caltrans' traffic engineers and planners could see that the existing TMC

would immediately be overwhelmed with a flood of earthquake-related detours and lane closures that had to be planned for and managed. Soon after the earthquake, work begun on a high-tech nerve center for a comprehensive traffic management network called the "EPI-Center", for Earthquake Planning and Implementation Center. The only facility of its type in the nation, it is a hub for managing earthquake related detours for impacted areas with major traffic congestion.

The EPI-Center, as illustrated on Figure 5, was developed under an emergency situation and designed to provide real-time detour management throughout the reconstruction process. In concert, new field instrumentation was designed, built, and placed into operation in the field by a single contractor within 90 days. This arrangement was the first of its kind for a major Caltrans project, and resulted in faster deployment of this center. Without constant interaction and cooperation between state officials and Federal DOT, the EPI-Center would have never been built as rapidly as it was.



Source: Caltrans - California Highway Patrol

Figure 5 - Earthquake Planning and Implementation Center (EPI-Center)

The functions of the EPI-Center were threefold:

(i) Detour Planning - EPI is a central repository for information about earthquake-related detours, lane closures and plans;

(ii) Motorist Advisories - traffic engineers can use changeable message signs to relay detour and lane closure information to motorists from the center. Information is regularly fed to the TMC and traffic reporters as well;

(iii) Traffic Surveillance and Detection - satellite communication systems at the EPI-Center augment traditional traffic monitoring devices, such as loop detectors, CCTC and other elements, providing a reliable link that could be established soon after a earthquake or disaster strikes.

Vital to providing traffic management capabilities at the EPI-Center, a host of field instrumentations were installed. These field elements described below, and shown on Figure 5, link the center using a state-of-the-art Very Small Aperture Transmitter (VSAT) satellite communication system. Additionally, the Highway Advisory Radios (HAR) and Slow Scan Closed Circuit Television Cameras (CCTC), utilize a cellular communications system which facilitates rapid installation.

The instrumentation of the EPI-Center are described below and are located on the freeway systems, as shown on Figure 6 on the following page:

- 8 Changeable Message Signs (CMS);
- 9 Closed Circuit Television Cameras (CCTC);
- 8 Slow Scan CCTCs;
- 9 Highway Advisory Radios (HAR);
- 2 Video Image Processing Systems (VIPS);
- 20 Vehicle Detection Stations (VDS).

5. Establishment of "Real Time" Traffic Information on INTERNET

To provide timely, accurate and effective information regarding traffic congestion freeway or roadway closures and detours, Caltrans has instituted a computerized means for communicating this information to the public. Since the earthquake, Caltrans District 7 in conjunction with Maxwell Laboratories, has been providing as a free public service, regional traffic information for Los Angeles area freeways via INTERNET. This service is available to any computer user with an Internet link.

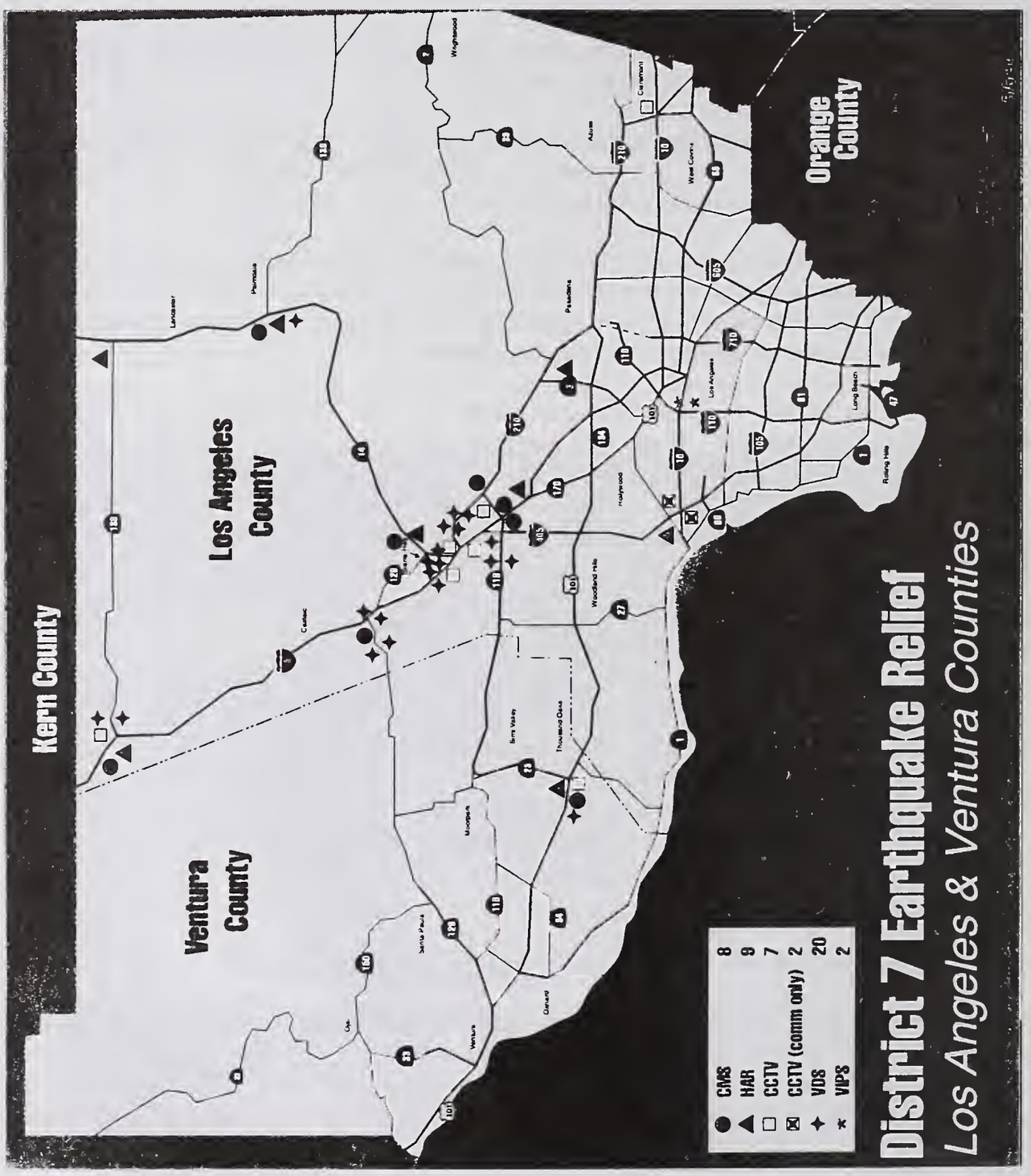


Figure 6 - Epicenter Instrumentation and Location

Providing current or "real time" freeway sensor data to end users, is an efficient, rapidly implementable way, through an existing communication network such as Internet's Worldwide Web at Universal Resource Locator (URL). This service is available 24 hours/day - 7 days/week, and normally runs in an unattended mode requiring no operator. The graphical traffic display shows a schematic representation of the local freeway network. Upon this, color dots indicating speed ranges are overlaid at the instrumented interchanges, and is updated every 30 seconds from Caltrans' data field. Each of the colored dots on the map are "live" links to additional displays, which provide detailed information about that particular sensor location. Accessing the freeway maps requires the use of a Graphical Web browser such as NCSA Mosaic.

Additionally, traffic congestion and delays, closures or detours were also disseminated several times a day to the news media and radio traffic reporters via fax, and through the L.A. Cityview Cable Channel (City's government cable access). Viewers also received "Freeway Vision" - a version of Caltrans' "real time" computer map of the freeway system conditions which was described above.

6. Public Awareness Campaign and News Dissemination

A comprehensive multi-faceted, joint-effort action plan was developed through the partnership efforts of Caltrans, Metro (bus and rail transit), Metrolink (commuter rail), City of L.A. DOT DASH (bus transit), Southern California Air Quality Management District (SCAQMD), and Commuter Transportation Services (commuter computer). Accordingly, ridesharing and transportation demand management efforts were incorporated by this group into a unified Commuter Action Plan (CAP), which was to cover the initial six-week period following the earthquake. This plan was intended to provide accurate information on alternative transportation options in targeted earthquake-affected areas, through the use of newspaper inserts, radio and television public service announcements.

The message coined for this plan was "Together, We'll All Get Moving Again". It developed the *Commuter Action Guide*, a comprehensive 8-page, color, newspaper size publication, offering regional transportation and commute information for bus and rail routes and schedules, carpool partners, vanpools, park-n-ride lots and telecommuting centers--with a single, easy toll-free 1-800-COMMUTE telephone number.

7. Fast Tracking the Reconstruction Process

Under normal circumstances, the process to build freeways and major structures is long. The process of awarding a contract for such facilities can usually take weeks if not months. However, when the earthquake struck, normal rules and procedures were suspended.

a. Informal Bid Contracts

The Governor signed an Emergency Declaration, allowing Caltrans to streamline its contracting process. An Executive Order was made, relaxing certain statutory requirements of the State Contract Act, thus allowing Caltrans to speed the process of designing, advertising, awarding and beginning construction contracts. With this action, Caltrans was able to advertise with minimum plans, ask for bids back within three to four days, open bids and award contracts the same day, and begin work the next day. This reduced the normal process time from 4 months to five days, yet still retaining the advantage of competitive bidding. During the reconstruction phase, Caltrans awarded sixty (60) such contracts totaling $230 million to rebuild L.A.'s devastated freeway system.

b. Force Account

The Force Account is a standard Caltrans tool to respond to emergencies and disasters. It allows immediate selection of a single contractor within hours, one which is available, capable and has the resources to do certain work. Usually, contractors begin work immediately, often with a minimum of plans, but still under the direction of Caltrans' resident engineer. They are paid for actual labor, material and equipment costs plus overhead and profits. This type of contract was used for shoring salvageable bridges, demolishing damaged bridges and constructing detours.

8. Incentives and Disincentives to Expedite Earthquake Related Reconstruction

In order to ensure early completion and opening to traffic of the critical closed freeways, several of the informal bid contracts utilized an "A-plus-B" bid process and incentives and disincentives. An incentive and disincentive amount was determined, based on daily cost of traffic disruption and detouring; and a maximum number of calendar days (working 24 hours/day - 7 days/week).

A pre-selected list of well-qualified contractors (usually about 5) were asked to bid on an "A" amount for the normal contract quantities, and a "B" amount based on a number of days they bid to complete the work, times the incentive and disincentive amount. The total of "A-plus-B" then became the basis for comparison of bids and the contract is then awarded to the low bidder.

If the winning contractor finished the job early, a bonus was "awarded" for each day that the deadline was beaten. Conversely, for every day over the deadline, the contractor would be penalized the same amount. The amount varied depending upon the importance of the route. This method proved to be a powerful motivating tool for contractors working on the earthquake

reconstruction jobs. For example, the contract to rebuild the I-10 Santa Monica Freeway proceeded at a blistering pace and was completed in 66 days; ahead of schedule by 74 days, thus earning the contractor a bonus of $14.8 million. Another contract to rebuild the Gavin Canyon bridges at Interstate 5 was to take 133 days; the job was however, finished 33 days early; thus earning the contractor a bonus of $4.95 million.

Although most contractors received bonuses for early completion, they spent extra for overtime, bonuses, and premiums to keep the job rolling. Generally, contractors streamlined their operations and work was done much like an assembly line fashion. Contractors greatly expanded their work force anywhere between triple to ten-fold the amount of workers normally needed to do the job. Crews worked around the clock everyday, often in inclement weather, in order to finish the job early.

9. Special Project Management Process for Emergency Situations

Program, project and construction management for disaster response is provided by Caltrans staff personnel in much the same manner as with normal projects. In the case of this earthquake, an overall program manager was selected and responsible for total coordination of the projects. Individual project managers were responsible for the delivery of plans, specifications and estimates, to the point of being ready to advertise for bids.

10. Project Partnering

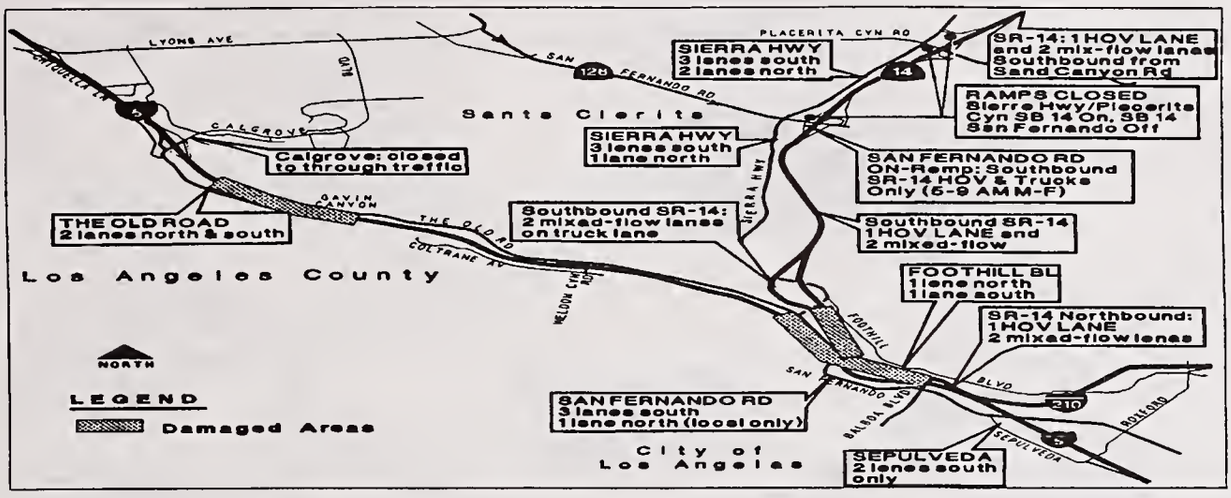
Projects were partnered between Caltrans and the individual contractors, thus greatly facilitating the progress of the work, and making quick decision right on the job site. Due to the fast pace of this type of natural disaster rebuilding, great emphasis was placed on individual initiative and problem solving. The contractor's relentless schedules were matched by shifts of Caltrans inspectors, surveyors, and material testing personnel. To augment its own personnel, Caltrans' Local District 7 drew upon maintenance, engineering and administrative staff from other neighboring districts, as well as from headquarters in Sacramento, California.

11. As - Built Plans

Since Caltrans has been in the freeway construction business for over half a century, its offices possessed existing as-built plans of the damaged structures and bridges, as well as aerial photographs and survey data. Most importantly, the Caltrans District was fortunate to still have an army of engineers, who were already familiar with the destroyed structures. All that remained was to update the existing plans for current earthquake standards and specifications. From this point on the task remaining was to build what was there - no more and no less - which most importantly, meant that no cumbersome environmental review process was necessary.

12. Chronology of Freeway Reconstruction by Caltrans

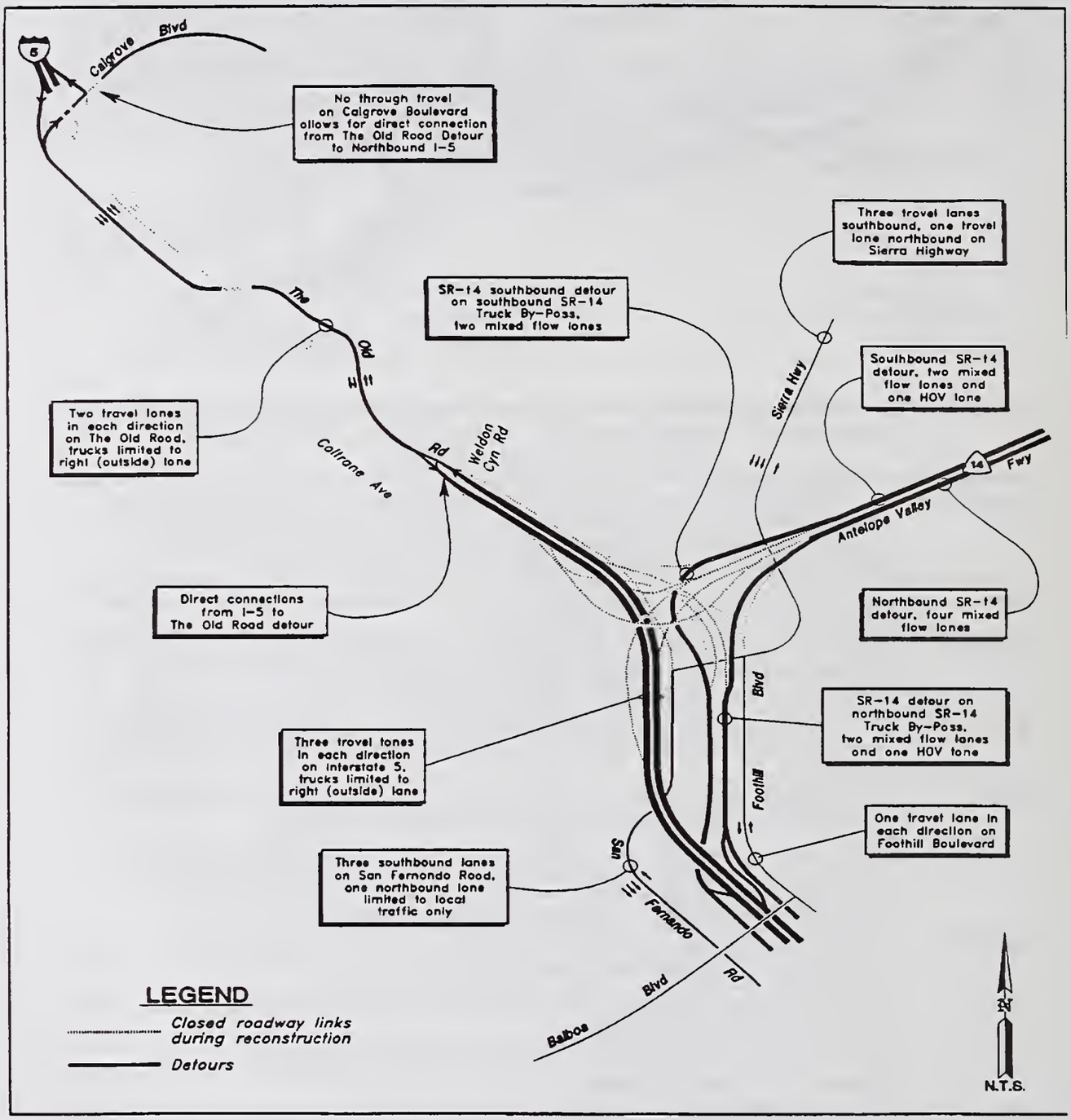
Table 1, shown on the following page, describes the chronology of effort by Caltrans to develop detours as shown in Figure 7 on the following pages, and reconstruction of the damaged freeways to their original status, as shown in Figure 8 on the following pages.



CHRONOLOGY OF IMPLEMENTATION OF DETOURS AT OR NEAR THE I-5/SR-14 INTERCHANGE

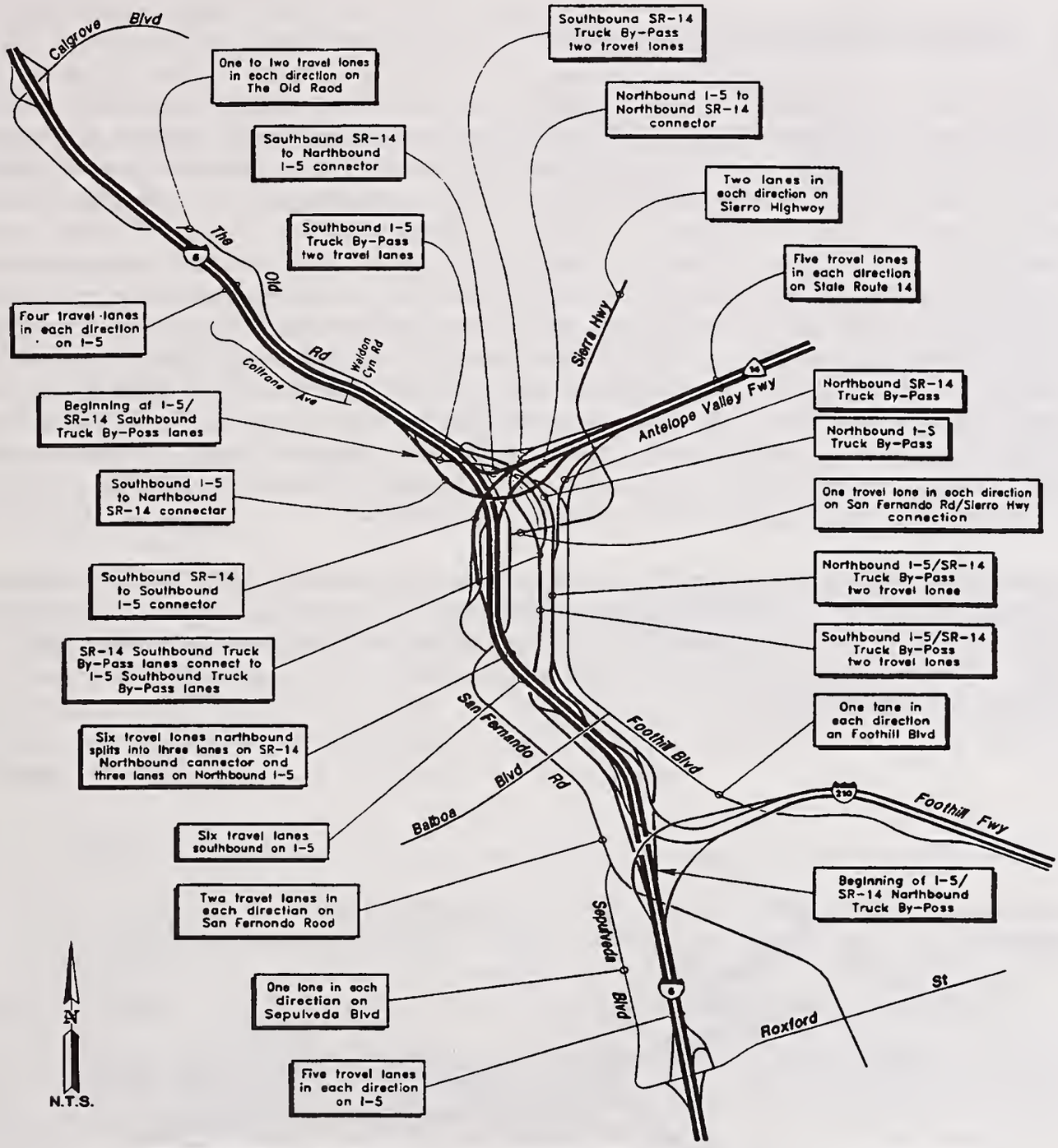
January 18	All I-5 and SR-14 Freeway lanes except the northbound I-5 to northbound SR-14 truck bypass were closed. Detours were implemented via local streets. Sierra Highway operated with four lanes one-way during the peak periods; Foothill Boulevard also operated as a one-way facility during peak periods.
January 27	The northbound I-5 to northbound SR-14 truck bypass was enhanced to provide two mixed-flow lanes and one HOV lane.
January 28	One HOV and two mixed-flow lanes were opened on the southbound SR-14 to the southbound SR-14 truck bypass. On the southbound SR-14 truck bypass, one mixed-flow lane and one HOV lane were opened.
January 29	The Old Road Detour opened with two travel lanes in each direction and direct connections to the undamaged I-5 mainline at Weldon Canyon Road and Calgrove Boulevard.
January 31	Restriping began on Sierra Highway (SR-14U) to accommodate three lanes in the southbound direction and one lane in the northbound direction. San Fernando Road also began operating with three lanes southbound and one lane northbound from Sepulveda Boulevard to the junction with Sierra Highway/Old Road. Sepulveda Boulevard was operated as a one-way street between San Fernando Road and the I-5 on-ramp at Roxford Street.
April 25	The two northbound and two southbound freeway mainline lanes previously closed at the Santa Clara River were reopened to traffic.
May 17	The southbound lanes on I-5 were reopened to traffic following the reconstruction of the bridges at Gavin Canyon.
May 18	The northbound lanes on I-5 were reopened to traffic following the removal of a portion of The Old Road detour.
July 8	The northbound I-5 to northbound SR-14 and southbound SR-14 to southbound I-5 connectors reopened.
November 4	The southbound SR-14 to northbound I-5 and southbound I-5 to northbound SR-14 connectors reopened.

Table 1 - Chronology and Listing of Detour Implementation



Travel Lanes in the Vicinity of the I-5/SR-14 Interchange During Reconstruction (March 1994)

Figure 7 - Freeway Detour Lanes



Travel Lanes in the Vicinity of the I-5/SR-14 Interchange Prior to the Earthquake

Figure 8 - Freeway Lanes Construction Pre-Earthquake

13. Metrolink Commuter Rail Expansion

Metrolink, Southern California's new commuter rail network, had been in operation only 15 months when the earthquake struck. Prior to that, there had been vague plans for a commuter rail in Southern California since the early 1980s. The idea of rail transportation languished from lack of interest, and what seemed like insurmountable problems with the railroads. Some improvements to the Los Angeles-San Diego (LOSSAN) corridor through Orange County occurred in the mid 1980s. However, between 1989 and 1990 this situation changed, when bond and transit sale tax measures were passed, thus earmarking enough funds for a commuter rail. In addition, freight railways offered to sell major portions of their urban trackage. Southern California was able to purchase 700 miles of railroad rights and right-of-way, and 700 acres for approximately $1 billion. Improvement of these existing railroad rights-of-way was categorically exempt under California environmental law. The counties of Southern California agreed to work closely together to implement the Metrolink program quickly. Since no federal funds were used, the program was supported aggressively through State funding. The confluence of all these factors is what made Metrolink possible.

In addition, a joint-powers agreement by the counties created the Southern California Regional Rail Authority (SCRRA), which developed the Metrolink Commuter Rail Service. It immediately started to design a system in early 1991, and opened the first three lines by October 1992. By spring 1994, five lines covering 350 miles of commuter rail lines with 39 stations were in operation as shown on Figure 9.

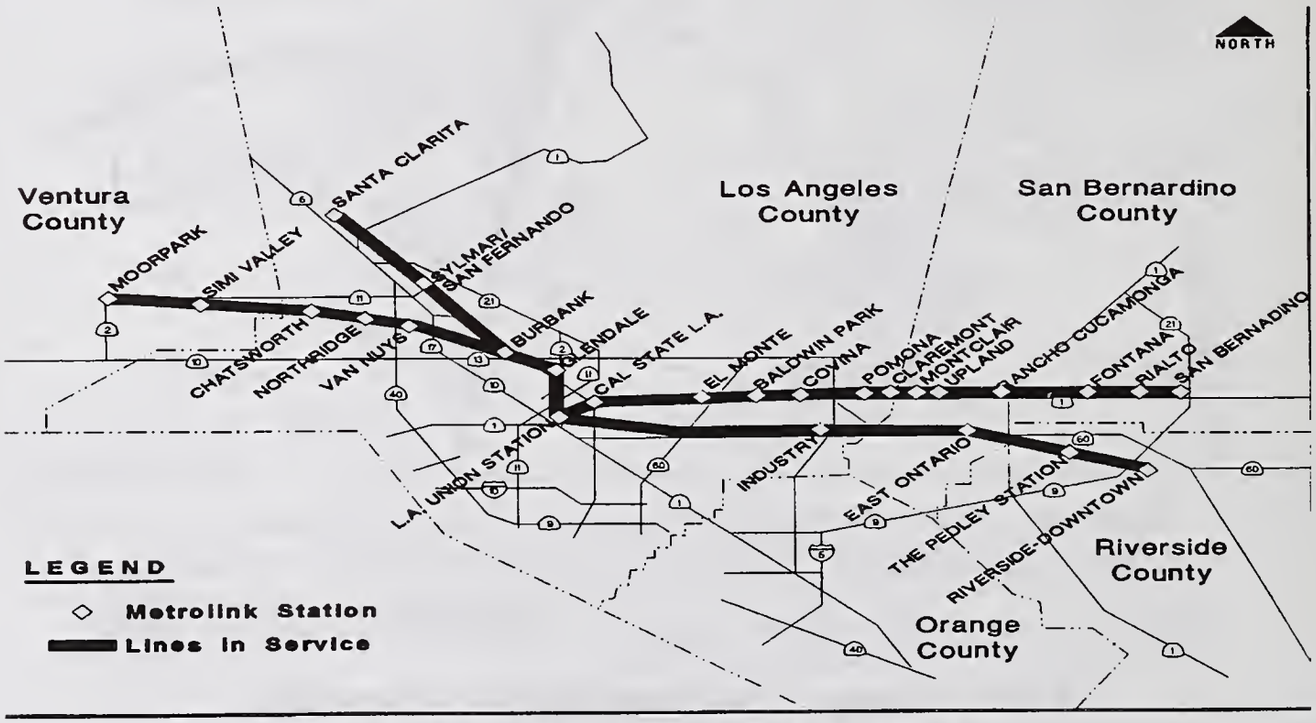


Figure 9 - Metrolink Lines Pre-Earthquake

The Metrolink program was at the height of its expansion when the Northridge earthquake struck. The earthquake significantly severed access to the valleys north such as Santa Clarita and Antelope Valleys, due to its destruction of freeways and bridges on I-5 at Gavin Canyon and the interchange of I-5 and SR-14. This devastation severely affected the mobility of residents of this area, creating a major bottleneck with no effective alternative routes even on arterials or local streets. In essence, Metrolink's Santa Clarita Line remained one of the few viable options of transportation for the inhabitants of these valleys.

It became immediately clear from the earliest reports of freeway damage that Metrolink would need to provide additional service on the Santa Clarita Line. Fortunately, two circumstances allowed the planners at Metrolink to implement a rapid response to deal with this crisis. First, extra rail cars were ready for the opening of the new Orange County Line in March of 1994, and therefore could be temporarily used for the Santa Clarita Line. Second, most of the right-of-way to the Antelope Valley (to serve cities like Palmdale and Lancaster), had been purchased from Southern Pacific earlier, so decisions on improvements, such as line extension, improving track conditions, adding new stations, adding extra cars, increasing service or frequency, were solely SCRRA/ MTA's to make.

In an ironic twist of fate, the earthquake in many ways put Metrolink on the map. Prior to the earthquake, probably less than ten (10%) percent of the population knew of Metrolink, after the earthquake however, possibly ninety (90%) percent knew of Metrolink. Name recognition was invaluable - one can't buy that kind of publicity. It gave it a legitimacy beyond its growing importance as a commuter rail service. It showed that it could be counted on, and was necessary as a transportation alternative. It also gave L.A. a glimpse of the future, one of a multitude of people riding trains throughout Southern California.

C. Time Line of Events

This section of the report describes a chronology of events that occurred following the January 17, 1994, earthquake that struck the Northridge area. As indicated earlier, the earthquake occurred pre-dawn Monday morning on a national holiday celebrating Martin Luther King Day. Fortunately, traffic on the region's freeways and roads was extremely light.

Table 2, on the following page, is a time line of events of the actions that were undertaken by major transportation agencies and the resulting ridership figures on Metrolink's Santa Clarita Line (SCL) and Ventura County Lines (VCL) respectively.

Table 2 - Timeline of Events: Actions Taken and Resulting Ridership

Date/ Month	Day of Week	SCL Riders	VCL Riders	Event
Oct 93		832 Avg.	1,712	
Nov 93		867 Avg.	1,889	
Dec 93		1,360 Avg.	2,275	
Jan 17	Monday	0	0	• A major earthquake struck the Los Angeles region at 4:31 a.m. • Caltrans inspection crews assess damage to state highways and freeways. • Begins demolition of collapsed spans within hours after the earthquake. • Metrolink suspends service and crews begin track inspections
Jan 18	Tuesday	1,125	237	• Metrolink ridership
Jan 19	Wednesday	6,357	555	• Metrolink ridership. • Announces that it is honoring passes Santa Clarita Transit and Antelope Valley Transit. • LACMTA announces the opening of 7 new Metro bus lines to respond to transportation demand created by the damages to the freeway system.
Jan 20	Thursday	9,316	1,715	• Metrolink ridership. SCRRA increases service to 14 round trips a day with many of the trains pulling 12 cars. • Additional cars were borrowed from the Orange County Line which was not yet opened. • Amtrak provided extra locomotives to maintain speed in the hills.
Jan 21	Friday	12,589	1,976	• Metrolink Ridership.

Table 2 - Timeline of Events: Actions Taken and Resulting Ridership (continued)

Date/ Month	Day of Week	SCL Riders	VCL Riders	Event
				• SCRRA staff recommends that extension to the Santa Clarita Line be made to Palmdale and beyond to Lancaster. A discounted fare of 1 zone (down to 5 zones) till the end of the fiscal year is recommended by staff.
Jan 24	Monday	17,847	2,792	• Metrolink ridership. • Service is extended to Lancaster as new stations (Palmdale and Lancaster) are opened using Southern Pacific tracks on an emergency basis. • SCRRA announces February monthly passes are available and may be used for the balance January.
Jan 25	Tuesday	21,952	2,840	• Metrolink ridership • In spite of the additional trains, SCRRA operations could not deliver more than 14,000 peak hour seats. • Service reliability is, however, marginal mainly because most of the line was single-track, and the few passing lanes has hand-thrown switches. Moreover, stopping at the Burbank and Glendale Stations initially required multiple stops to accommodate the longer trains.
Jan 26	Wednesday	20,883	3,067	• Metrolink ridership. • SCRRA opens new station at Sylmar/ San Fernando.
Jan 27	Thursday	20,341	2,884	• Metrolink ridership.
Jan 28	Friday	14,243	2,826	• Metrolink ridership.

Table 2 - Timeline of Events: Actions Taken and Resulting Ridership (continued)

Date/ Month	Day of Week	SCL Riders	VCL Riders	Event
				• Caltrans opens by-pass lanes for SB 14 to SB 5 to handle 50% capacity using a truck by-pass lane which is restripped for (1) general use lane and (1) HOV lane.
Jan 29	Saturday	No Service	No Service	• Caltrans opens Old Road to handle traffic from I-5 at Gavin Canyon.
Jan 31	Monday	12,362	2,898	• Metrolink ridership. • SCRRA opens new station at Acton (Vincent Grade)
Feb 1	Tuesday	13,043	2,759	• Metrolink ridership.
Feb 2	Wednesday	10,226	2,951	• Metrolink ridership.
Feb 3	Thursday	9,819	2,956	• Metrolink ridership.
Feb 4	Friday	8,284	2,802	• Metrolink ridership. • Caltrans begins work on rebuilding westbound lanes of SR-118 accommodate traffic for both directions.
Feb 5	Saturday	No Service	No Service	• Caltrans begins work to rebuild the Santa Monica Freeway.
Feb 7	Monday	8,972	3,192	• Metrolink ridership. • SCRRA opens new station at Canyon Country (Princessa).
Feb 8	Tuesday	9,182	3,050	• Metrolink ridership.
Feb 9	Wednesday	7,873	2,983	• Metrolink ridership.
Feb 10	Thursday	7,625	3,026	• Metrolink ridership.

Table 2 - Timeline of Events: Actions Taken and Resulting Ridership (continued)

Date/ Month	Day of Week	SCL Riders	VCL Riders	Event
				• Caltrans awards contracts to rebuild East Bound SR-118 structures, and to demolish (3) main bridges as part of the I-5/SR-14 interchange rebuilding.
Feb 11	Friday	8,024	2,791	• Metrolink ridership. • SCRRA Board approves (5) zone fare discount to Palmdale and Lancaster; as well as two-for-one fare for February and March.
Feb 14	Monday	7,972	3,166	• Metrolink ridership. • SCRRA opens (2) new stations on the Ventura County Line at Northridge and Camarillo.
Feb 15	Tuesday	8,407	2,881	• Metrolink ridership.
Feb 16	Wednesday	7,530	3,441	• Metrolink ridership.
Feb 17	Thursday	7,431	3,532	• Metrolink ridership.
Feb 18	Friday	7,329	2,913	• Metrolink ridership.
Feb 22	Tuesday	8,057	3,399	• Metrolink ridership.
Feb 23	Wednesday	7,572	3,515	• Metrolink ridership.
Feb 24	Thursday	7,142	2,902	• Metrolink ridership.
Feb 25	Friday	7,661	2,750	• Metrolink ridership.
Feb 28	Monday	7,881	2,832	• Metrolink ridership.
Mar 1-4		8,243 Avg.	2,957	• Metrolink ridership. • LACMTA drops (4) Metro bus lines that were activated in response to the earthquake.

Table 2 - Timeline of Events: Actions Taken and Resulting Ridership (continued)

Date/ Month	Day of Week	SCL Riders	VCL Riders	Event
Mar 7-11		8,524 Avg.	2,951	• Metrolink ridership. • On March 11, SCRRA Board discounts fares from April through June 30 by 50% for Palmdale/Lancaster, and 25% for the monthly passes to Santa Clarita/Princessa Stations.
Mar 14-18		8,135 Avg.	3,037	• Metrolink ridership. • On March 17, Caltrans completes work demolishing (3) main bridges at I-5/SR 14 interchange. On March 19 work begins on rebuilding SB SR-14 to SB I-5 and NB I-5 to NB SR-14.
Mar 21-25		8,111 Avg.	2,913	• Metrolink ridership.
Mar 28-Apr 1		7,396 Avg.	2,832	• Metrolink ridership.
Apr 4-8		5,957 Avg.	2,921	• Metrolink ridership. • On April 4, SCRRA opens new station on the Ventura County Line at Oxnard.
Apr 11-15		5,720 Avg.	3,127	• Metrolink ridership.
Apr 18-22		5,448 Avg.	2,887	• Metrolink ridership.
Apr 25-29		5,376 Avg.	2,666	• Metrolink ridership.
May 2 - 6		5,174 Avg.	2,879	• Metrolink ridership.
May 9 - 13		5,083 Avg.	2,899	• Metrolink ridership. • On May 13, SCRRA Board extends previous discounts until July 20.

Table 2 - Timeline of Events: Actions Taken and Resulting Ridership (continued)

Date/ Month	Day of Week	SCL Riders	VCL Riders	Event
				• On May 12, Caltrans awards contract to rebuild WB SR-118 structures. On May 13, Caltrans completes rebuilding EB SR-118 structures. Traffic is moved over in (2) stages beginning on May 20, as work can begin on rebuilding WB R-18 structures.
May 16 - 20		4,660 Avg.	2,810	• Metrolink ridership. • On May 17, Caltrans completes rebuilding the Gavin Canyon bridges at I-5; SB lanes open to traffic. On May 18 NB I-5 at Gavin Canyon is open to traffic in both directions.
May 23 - 27		4,370 Avg.	2,762	• Metrolink ridership.
May 31- Jun 3		3,905 Avg.	2,598	• Metrolink ridership.
Jun 6 - 10		3,958 Avg.	2,709	• Metrolink ridership.
Jun 13 - 17		3,653 Avg.	2,895	• Metrolink ridership.
Jun 20 - 24		4,329 Avg.	3,106	• Metrolink ridership.
Jun 27-Jul 1		4,141 Avg.	2,863	• Metrolink ridership.
Jul 4 - 8		3,807 Avg.	2,711	• Metrolink ridership. • On July 8, Caltrans completes work on rebuilding SB SR-14 to SB I-5 and NB I-5 to NB SR-14. • On July 9, Caltrans begins work to rebuild SB SR-14 to NB I-5, and SB I-5 to NB SR-14.

Table 2 - Timeline of Events: Actions Taken and Resulting Ridership (continued)

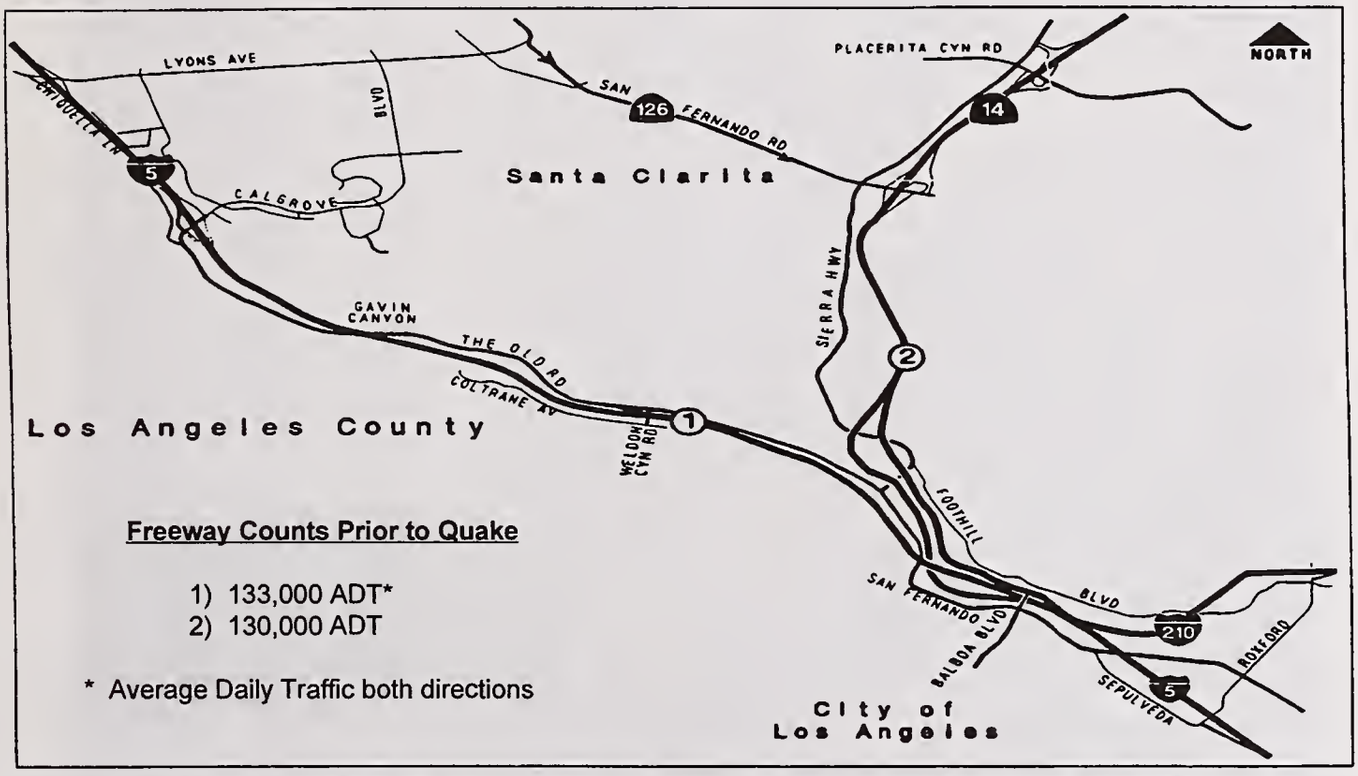
Date/ Month	Day of Week	SCL Riders	VCL Riders	Event
Jul 11 - 15		3,656 Avg.	3,214	• Metrolink ridership.
Jul 18 - 22		3,411 Avg.	2,686	• Metrolink ridership. • Caltrans opens EB I-10 off-ramps to NB La Cienega, and SB La Cienega on-ramp to EB I-10 to traffic.
Jul 25 - 29		3,440 Avg.	3,027	• Metrolink ridership.
Aug 1994		2,877 Avg.	2,756	• Metrolink ridership.
Sep 1994		2,739 Avg.	2,620	• Metrolink ridership. • On September 3, Caltrans opens WB lanes on SR-118.
Oct 1994		2,752 Avg.	2,783	• Metrolink ridership.
Nov 1994		2,728 Avg.	2,715	• Metrolink ridership. • On November 4, Caltrans completes I-5/ SR-14 interchange.
Dec 1994		2,591 Avg.	2,486	• Metrolink ridership.
Jan 1995		2,871 Avg.	2,771	• Metrolink ridership.
Feb 1995		2,974 Avg.	2,933	• Metrolink ridership.
Mar 1995		2,982 Avg.	2,937	• Metrolink ridership.
Apr 1995		3,073 Avg	2,776	• Metrolink ridership.
May 1995		3,098 Avg	2,883	• Metrolink ridership.
Jun 1995		3,005 Avg	2,854	• Metrolink ridership.
July 1995		2,964 Avg	2,681	• Metrolink ridership.

Source: Gardner Consulting Planners
Source: Metrolink ridership data provided by SCRRA

V. RIDERSHIP ANALYSIS

A. Introduction

Immediately following the earthquake of January 17, 1994, Metrolink rail operations and service was suspended, pending inspection of the track system, tunnels and bridges. The following morning Metrolink begun rolling again, this time with a renewed role and purpose in providing transportation mobility within the Los Angeles region. The earthquake had significantly severed access to the valleys north of downtown Los Angeles, mainly Santa Clarita and Antelope Valleys. The destruction of the freeways and bridges on I-5 and at the I-5/SR-14 interchange created a bottleneck, with limited effective alternative routes even on arterials or local streets as shown on Figure 10, shown below, and Table 3, shown on the following page. In effect, Metrolink's Santa Clarita Line remained the only viable option of transportation for the residents of these valleys. Since the track paralleled the damaged freeways as shown on Figure 11 on the following pages, it was clear that Metrolink would have to provide immediate additional service to win over this captive audience.



Source: Caltrans - Northridge Earthquake Recovery: Report of Interstate5/State Route 14 Recovery

Figure 10 - Freeway and Arterials in Vicinity of I-15 and SR-14

I-5 AND SR-14 CORRIDORS — ARTERIAL TRAFFIC VOLUMES

DATE	Foothill Boulevard parallel to I-5[1]		San Fernando Road at Sepulveda Boulevard [2]	
	Daily Volumes	Percent of Pre-quake	Daily Volumes	Percent of Pre-quake
Pre-quake	5,200	N/A	3,900	N/A
February	4,800	92%	13,800	354%
March 1	24,600	473%	21,100	541%
March 8	15,400	296%	26,600	682%
March 15	16,200	312%	23,800	610%
March 29	16,600	319%	22,500	577%
April 5	16,900	325%	22,000	564%
April 12	16,100	310%	21,200	544%
April 19	16,700	321%	22,100	566%
April 26	16,100	310%	22,000	564%
May 3	15,200	292%	22,000	564%
May 10	15,000	288%	23,800	610%
May 17	14,000	269%	22,300	572%
May 23	13,200	254%	17,700	454%
May 31	13,300	256%	18,100	464%
June 7	13,600	262%	18,300	469%
June 14	13,300	256%	18,100	464%
June 21	14,400	277%	17,600	451%
June 28	13,600	262%	18,100	464%
July 6	15,100	290%	18,600	477%
July 12	11,000	212%	7,100	182%
July 19	15,300	294%	16,300	418%
July 27	9,200	177%	10,400	267%
August 2	6,600	127%	4,700	120%
August 10	5,000	96%	10,300	264%
August 16	8,000	154%	12,400	318%
August 24	7,900	152%	11,500	295%
August 30	8,100	156%	12,300	315%
September 7	7,200	138%	11,700	300%
September 14	7,500	144%	11,500	295%
September 21	7,400	142%	12,900	331%
September 28	7,200	138%	11,000	282%

(1) Pre-quake data from LADOT, Traffic Surveys.

(2) Post-quake data from Caltrans, District 7.

Source: Caltrans - Northridge Earthquake Recovery: Report of Interstate5/State Route 14 Recovery

Table 3 - Post-Earthquake Arterial Traffic Volumes

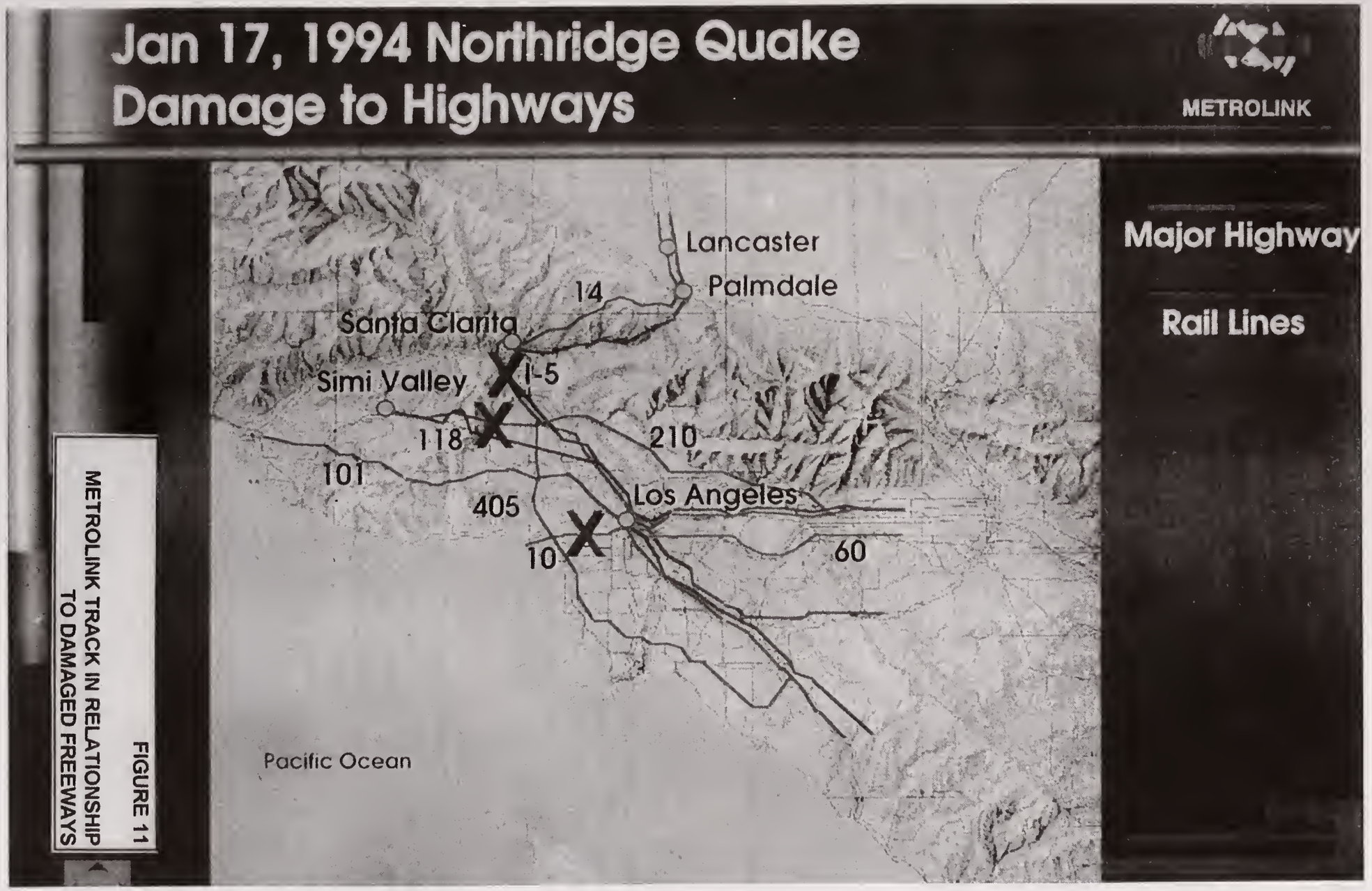


FIGURE 11
METROLINK TRACK IN RELATIONSHIP TO DAMAGED FREEWAYS

B. Line Extensions And Other Service Enhancements

The type of service enhancements to attract and maintain the stranded residents of the valleys included such improvements to Metrolink and other transportation and communication providers, such as:

(i) extending the line beyond its current terminus at Santa Clarita Station;
(ii) constructing new stations and park-n-ride lots; and by improving old stations by lengthening the passenger loading platforms;
(iii) decreasing headway between trains by increasing more round trips a day;
(iv) increasing the capacity of each train by adding more cars per train;
(v) increasing train speed by adding more locomotives and undertaking major track and signal and switching improvements;
(vi) modification and expansion of bus service;
(vii) development of new park-n-ride lots;
(viii) establishment of feeder shuttle service;
(ix) providing telecommuting centers and services.

1. Actions Taken

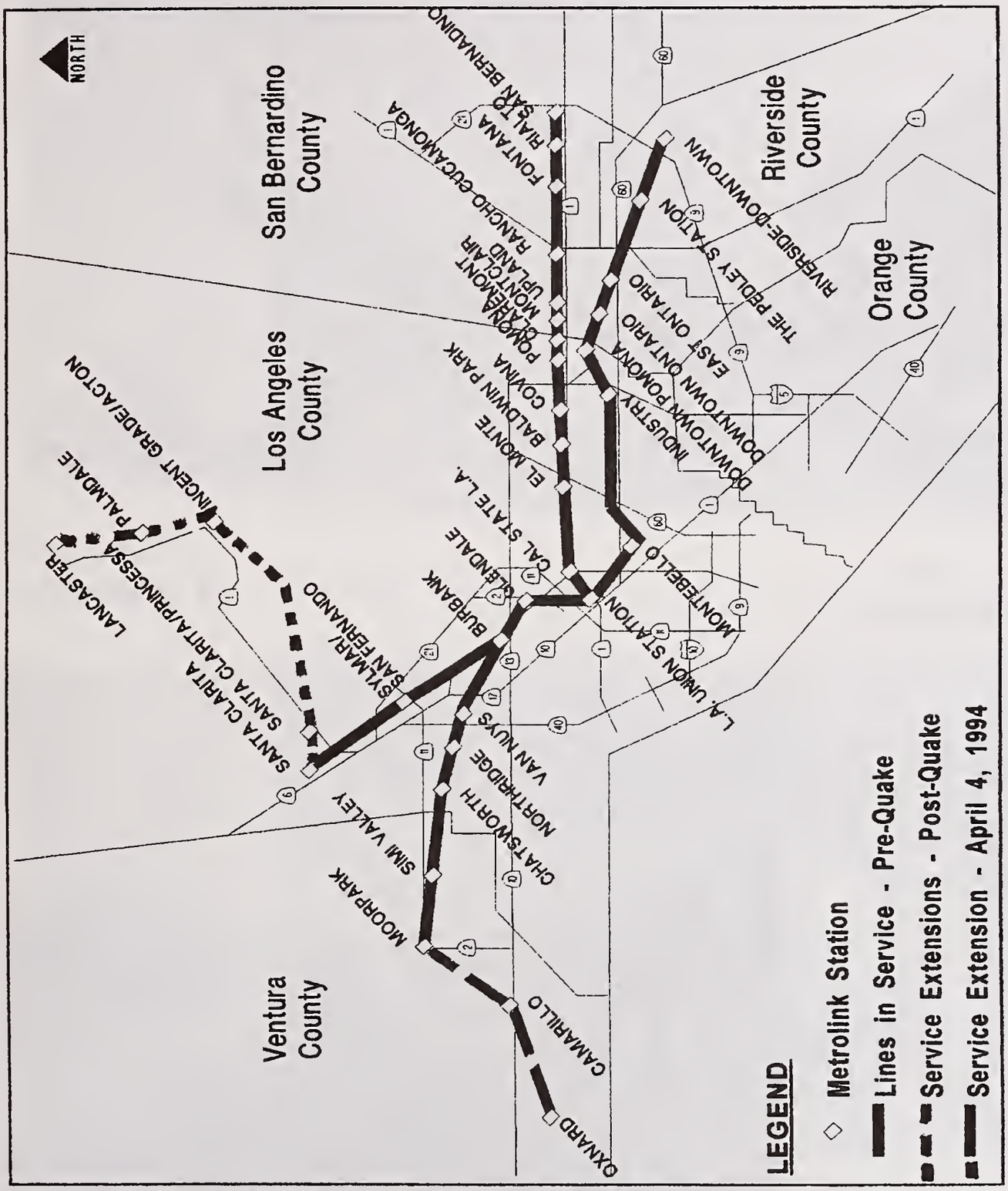
ACTION 1.1 Extension of the Existing Metrolink's Santa Clarita Line

By Wednesday, January 19, it was clear to the Metrolink planners that the Santa Clarita Line should be extended deep into Antelope Valley, in order to intercept commuters closer to their originating zone. On Thursday, January 20, officials from Metrolink and the cities of Palmdale and Lancaster agreed and committed to open two new stations by Monday, January 21, (only 4 days away and a week after the earthquake). Time was of the essence to serve the commuter needs and to demonstrate to the desperate public that public officials were there to respond to their crisis.

Due to the devastation of the I-5/SR-14 interchange, the Santa Clarita Line was given top priority by the SCRRA. For the first three weeks all Metrolink efforts were focused on that line. Less affected was the Ventura County Line, thus the extension of that line and construction of new stations occurred later on and in the following weeks.

The 43-mile extension of the line beyond Santa Clarita, illustrated on Figure 12 on the following page, was not a problem in itself. A year prior, SCRRA had already purchased the railroad right-of-way adjacent to the existing Southern Pacific (SP) freight line for $15 million; however it still had to build the track itself (a decision that could solely be made by SCRRA/LACMTA). Metrolink did not have legal jurisdiction to operate its trains over this important Southern Pacific (SP) freight line, however it was graciously given permission to

operate temporarily until new Metrolink tracks were build. Consequently, the first Metrolink train rolled south from Lancaster on Monday, January 24, at 4:11 a.m.



Source: Caltrans - Northridge Earthquake Recovery: Follow-up Metrolink Intercept Survey

Figure 12 - Metrolink Lines and Stations Post-Earthquake

Ultimately, the 43-mile extension of the Santa Clarita Line required laying new track adjacent to Southern Pacific's freight track.

Source: Caltrans

PHOTOGRAPH Q

Also, the extension required straightening out and super-elevating the track.

Source: Caltrans

PHOTOGRAPH R

As part of the line extension, bridges were required.

Source: Metrolink

PHOTOGRAPH S

"Recycled" bridges from the downtown Los Angeles area were imported and hoisted into place in order to expedite the extension of service to new territory.

Source: Metrolink **PHOTOGRAPH T**

ACTION 1.2 Construction of New Metrolink Stations

The extension of Metrolink lines to new market areas also necessitated the constructing of new stations and ancillary park-n-ride lots. The challenge was to build the stations, the platforms and the parking areas quickly to allow pedestrian access. Almost stumbling over each other, contractors worked around the clock, (supervised by City and Metrolink staff) to construct a total of 8 new emergency train stations immediately following the earthquake. It should be noted that even Metrolink Sheriff's deputies responded by assisting in the establishment of makeshift parking lots. The stations were literally designed and built in the field; each taking no more than a week to complete. The chart below, Table 4, illustrates the schedule of new Metrolink Passenger Rail Station openings and their respective dates opening.

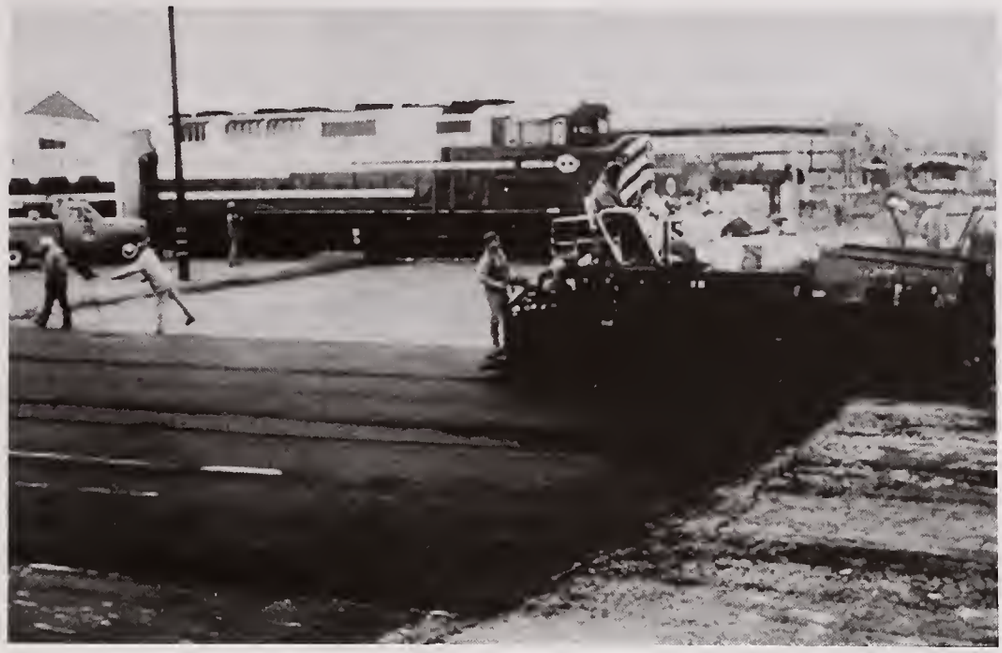
In addition to new station construction, three existing stations were also modified by having their passenger loading platform extended, in order to handle the 12-car trains (which will be discussed later in this section). Until the time of the platform extensions, stopping at stations such as Burbank and Glendale initially required multiple stops, thus longer dwell time at each stations.

Table 4 - Schedule/Listing of New Metrolink Stations

Santa Clarita Line	**Date Opened**
Lancaster	Jan. 24, 1994
Palmdale	Jan. 24, 1994
Sylmar / San Fernando	Jan. 26, 1994
Acton (Vincent Grade)	Jan. 31, 1994
Canyon Country (Princessa)	Feb. 7, 1994
Ventura County Line	**Date Opened**
Camarillo	Feb. 14, 1994
Northridge	Feb. 14, 1994
Oxnard	Apr. 4, 1994

ACTION 1.3 Reduction of Headway Between Each Train

Decreasing the headway between trains (by adding more runs during peak hours or throughout the day) is usually done to give riders options regarding their departure times. Often such a move is done with the purpose in mind to attract ridership and provide flexibility and convenience to existing riders.



Five new stations were developed within two weeks on the Santa Clarita Line.

Source: Metrolink

PHOTOGRAPH U

Shown here, the existing Santa Clarita Station with its parking lot at capacity.

Source: Caltrans

PHOTOGRAPH V

Construction of new stations, platforms, ramps proceeded day and night, even when the trains were operating.

Source: Metrolink

PHOTOGRAPH W

Source: Metrolink

PHOTOGRAPH X

Parking lot of the new Princessa/ Canyon Country Station on the Santa Clarita Line being graded.

Source: Metrolink

PHOTOGRAPH Y

Parking lot of the new Princessa/ Canyon Country Station on the Santa Clarita Line which was completed the day after it was graded (shown in Photograph Y).

Source: Caltrans

PHOTOGRAPH Z

In the case of Metrolink, however, the earthquake left behind a pent-up demand that soared upwardly 22 times the previous ridership. The overnight tripling or quadrupling of ridership per day, over the next week after the earthquake, only begins to tell the story of the pressures and growing pains that Metrolink planners experienced. Also, these were not your ordinary passengers either, that were used to commuting on a public transport such as a rail line. Traumatized by the earthquake, stressed by the inability to use their personal vehicles (due to the loss of freeway and highway routes), pressured to attempt to maintain some semblance of normalcy in a world turned upside down, they were frightened and confused, impatient and volatile. Nonetheless, deputies from the Los Angeles Sheriff's Department which patroled and policed Metrolink trains, performed commendably in organizing passenger loading and alighting, and providing a friendly environment of semblance and order that sped boarding/deboarding from the extra trains that were put in place.

Within a week after the earthquake, Metrolink had increased service on the Santa Clarita Line from 14 trains a day to 23 trains a day. Tables 5 and 6, shown on the following pages, indicate the timetable or schedule for the trains before and after the earthquake respectively. As seen from the timetables, the majority of the trains that were added were designed to coincide with the morning and evening work commute periods.

ACTION 1.4 Increasing the Capacity of Each Train

In addition to reducing headway (or increasing the number of train running per day), Metrolink planners also reverted to trying to increase the capacity of each running train. Just a week after the earthquake, Metrolink was running trains that were 12 cars in length, which in itself required multiple stops at each station.

Initially, Metrolink utilized cars from the Orange County Line until its opening in April, after which they were replaced by 20-year old Toronto cars. Due to the increases in ridership, leases for additional trains were executed with other commuter train systems in North America, mainly, Caltrain from the San Francisco Bay Area, GO Transit of Ontario, Canada, Amtrak and Southern Pacific for extra locomotives to pull the additional loads.

During the week of January 24-28, Metrolink daily ridership peaked to 31,276 on the entire system, with 21,952 riders just from the Santa Clarita Line alone. Train equipment demands on this line grew from two locomotives and three passenger car train sets before the earthquake, to 11 locomotives and 41 passenger cars at the peak of the emergency. In spite of adding all the trains and cars it could, SCRRA operations still could not deliver more than 14,000 peak hour seats. To put this in perspective, more passengers boarded from the Santa Clarita Station, than any of the other 39 train stations on the entire regional rail network.

Capacity on each train was increased from 3 to 12 cars. This was to respond to passenger demand.

Source: Metrolink

PHOTOGRAPH AA

Additional equipment was procured from other sources such as these green cars and locomotive from Go Transit *of Ontario Canada.*

Source: Metrolink

PHOTOGRAPH AB

Schedule of Metrolink Commuter Rail Trains on the Santa Clarita and Ventura Lines Prior to the Earthquake

FROM SANTA CLARITA AND VENTURA COUNTY TO LOS ANGELES

MONDAY THROUGH FRIDAY

TRAIN NUMBER	READ DOWN	200	100	102	202	104	204	106	206	108	208	110	900	902	210	212	Amtrak 774	Amtrak 784
MOORPARK		-	5:15A	5:55A	-	6:49A	-	7:25A	-	-	-	2:50P	-	-	-	-	8:55A	4:21P
SIMI VALLEY		-	5:28A	6:08A	-	6:59A	-	7:38A	-	-	-	3:03P	-	-	-	-	9:11A	4:38P
CHATSWORTH		-	5:41A	6:21A	-	7:12A	-	7:51A	-	11:20A	-	3:16P	-	-	-	-	9:26A	4:52P
VAN NUYS		-	5:52A	6:32A	-	7:23A	-	8:02A	-	11:31A	-	3:27P	-	-	-	-	9:38A	5:12P
SANTA CLARITA		5:22A	-	-	6:22A	-	7:33A	-	8:55A	-	2:22P	-	-	-	5:19P	7:35P	-	-
SYLMAR/SAN FERNANDO		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BURBANK		5:54A	6:02A	6:42A	6:54A	7:33A	8:05A	8:12A	9:27A	11:41A	2:54P	3:37P	4:47P	5:01P	5:51P	8:07P	-	-
GLENDALE		6:01A	6:09A	6:49A	7:01A	7:40A	8:12A	8:19A	9:34A	11:48A	3:01P	3:44P	4:54P	5:08P	5:58P	8:14P	9:58A	5:30P
L.A. UNION STATION		6:15A	6:23A	7:03A	7:15A	7:54A	8:26A	8:33A	9:48A	12:04P	3:15P	4:00P	5:10P	5:24P	6:14P	8:30P	10:25A	6:00P
(M) METRO RED LINE		METRO RED LINE SUBWAY RUNS EVERY 5-10 MINUTES TRANSFER FREE WITH METROLINK TICKET																

FROM LOS ANGELES TO SANTA CLARITA AND VENTURA COUNTY

MONDAY THROUGH FRIDAY

TRAIN NUMBER	READ DOWN	201	901	203	903	905	101	103	205	207	105	107	209	109	111	211	213	Amtrak 773	Amtrak 783
(M) METRO RED LINE		METRO RED LINE SUBWAY RUNS EVERY 5-10 MINUTES TRANSFER FREE WITH METROLINK TICKET																	
L.A. UNION STATION		6:25A	7:00A	7:43A	8:10A	8:40A	10:20A	1:05P	1:15P	4:15P	4:25P	5:00P	6:32P	5:40P	6:23P	6:31P	8:40P	9:40A	8:05P
GLENDALE		6:40A	7:13A	7:57A	8:23A	8:53A	10:33A	1:18P	1:28P	4:28P	4:38P	5:13P	6:45P	5:53P	6:36P	6:44P	8:53P	9:57A	8:22P
BURBANK		6:47A	7:23A	8:04A	8:33A	9:03A	10:40A	1:25P	1:36P	4:35P	4:45P	5:20P	5:52P	6:00P	6:43P	6:51P	9:00P	-	-
SYLMAR/SAN FERNANDO		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SANTA CLARITA		7:29A	-	8:40A	-	-	-	-	2:12P	5:09P	-	-	6:28P	-	-	7:25P	9:34P	-	-
VAN NUYS		-	-	-	-	-	10:50A	1:35P	-	-	4:55P	5:30P	-	6:10P	6:53P	-	-	10:14A	9:39P
CHATSWORTH		-	-	-	-	-	11:04A	1:46P	-	-	5:06P	5:41P	-	6:21P	7:04P	-	-	10:27A	8:52P
SIMI VALLEY		-	-	-	-	-	-	1:58P	-	-	5:18P	5:53P	-	6:33P	7:16P	-	-	10:40A	9:05P
MOORPARK		-	-	-	-	-	-	2:17P	-	-	5:36P	6:11P	-	6:51P	7:34P	-	-	10:54A	9:40P

Source: Caltrans - Northridge Earthquake Recovery: Report of Interstate5/State Route 14 Recovery

Table 5

Schedule of Metrolink Commuter Rail Trains on the Santa Clarita and Ventura Lines After the Earthquake

(schedule effective February 28, 1994)

FROM SANTA CLARITA AND VENTURA COUNTY TO LOS ANGELES

MONDAY THROUGH FRIDAY

TRAIN NUMBER — READ DOWN	200	100	202	201	102	206	104	208	106	210	212	211	108	216	110	900	218	220
LANCASTER	-	-	4:11A	-	-	4:52A	-	5:55A	-	-	-	-	-	-	-	-	-	-
PALMDALE	-	-	4:26A	-	-	5:07A	-	6:10A	-	-	-	-	-	-	-	-	-	-
VINCENT GRADE/ACTON	-	-	4:40A	-	-	5:22A	-	6:25A	-	-	-	-	-	-	-	-	-	-
SANTA CLARITA/PRINCESSA	-	-	5:28A	-	-	6:10A	-	7:13A	-	8:20A	-	-	-	-	-	-	-	-
SANTA CLARITA	5:22A	-	5:41A	6:05A	-	6:23A	-	7:26A	-	9:31A	9:15A	10:55A	-	2:22P	-	-	5:06P	7:35P
SYLMAR/SAN FERNANDO	5:43A	-	6:02A	6:26A	-	6:44A	-	7:47A	-	8:54A	9:36A	11:16A	-	2:43P	-	-	5:40P	7:56P
CAMARILLO	-	-	-	-	5:42A	-	6:33A	-	-	-	-	-	-	-	-	-	-	-
MOORPARK	-	5:13A	-	-	5:54A	-	6:44A	-	7:24A	-	-	-	-	-	-	-	-	-
SIMI VALLEY	-	5:28A	-	-	6:07A	-	6:57A	-	7:37A	-	-	-	-	-	-	-	-	-
CHATSWORTH	-	5:39A	-	-	6:20A	-	7:10A	-	7:49A	-	-	-	11:18A	-	3:14P	-	-	-
NORTHRIDGE	-	5:45A	-	-	6:26A	-	7:16A	-	7:55A	-	-	-	11:24A	-	3:20P	-	-	-
VAN NUYS	-	5:52A	-	-	6:33A	-	7:23A	-	8:02A	-	-	-	11:31A	-	3:27P	-	-	-
BURBANK	5:59A	6:02A	6:13A	6:37A	6:43A	6:55A	7:33A	7:58A	8:12A	9:08A	9:47A	11:27A	11:41A	2:54P	3:37P	4:53P	5:51P	8:07P
GLENDALE	6:01A	6:09A	6:20A	6:44A	6:50A	7:02A	7:40A	8:05A	8:19A	9:19A	9:54A	11:34A	11:45A	3:01P	3:44P	5:00P	5:58P	8:14P
L.A. UNION STATION	6:16A	6:24A	6:36A	7:00A	7:05A	7:18A	7:55A	8:21A	8:34A	9:28A	10:10A	11:50A	12:04A	3:16P	4:00P	5:15P	6:14P	8:30P
Ⓜ METRO RED LINE	METRO RED LINE SUBWAY RUNS EVERY 5-10 MINUTES TRANSFER FREE WITH METROLINK TICKET																	

FROM LOS ANGELES TO SANTA CLARITA AND VENTURA COUNTY

MONDAY THROUGH FRIDAY

TRAIN NUMBER — READ DOWN	200	901	203	903	905	101	205	103	202	208	212	213	105	215	107	217	109	219	111	221	223
Ⓜ METRO RED LINE	METRO RED LINE SUBWAY RUNS EVERY 5-10 MINUTES TRANSFER FREE WITH METROLINK TICKET																				
L.A. UNION STATION	6:28A	7:00A	7:42A	8:10A	8:40A	10:30A	8:38A	1:05P	1:15P	3:20P	3:45P	4:00P	4:25P	4:57P	5:07P	5:31P	5:53P	6:01P	6:23P	8:31P	8:40P
GLENDALE	6:40A	7:13A	7:56A	8:23A	8:53A	10:43A	8:51A	1:18P	1:29P	3:33P	4:00P	4:13P	4:38P	5:10P	5:20P	5:46P	6:00P	6:14P	6:36P	8:44P	8:53P
BURBANK	6:47A	7:23A	8:08A	8:33A	9:03A	10:49A	8:58A	1:25P	1:36P	3:40P	4:07P	4:20P	4:46P	5:16P	5:27P	5:53P	6:10P	6:21P	6:43P	8:51P	9:00P
VAN NUYS	-	-	-	-	-	10:55A	-	1:35P	-	-	-	-	4:56P	-	5:37P	-	6:17P	-	6:53P	-	-
NORTHRIDGE	-	-	-	-	-	10:57A	-	1:42P	-	-	-	-	5:02P	-	5:44P	-	6:23P	-	7:00P	-	-
CHATSWORTH	-	-	-	-	-	11:05A	-	1:48P	-	-	-	-	5:08P	-	5:50P	-	6:36P	-	7:08P	-	-
SIMI VALLEY	-	-	-	-	-	-	-	2:00P	-	-	-	-	5:20P	-	6:02P	-	6:52P	-	7:18P	-	-
MOORPARK	-	-	-	-	-	-	-	2:19P	-	-	-	-	5:39P	-	6:19P	-	7:04P	-	7:36P	-	-
CAMARILLO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6:31P	-	-	-	-	-	-
SYLMAR/SAN FERNANDO	7:00A	-	8:16A	-	-	-	10:10A	-	1:47P	3:51P	4:19P	4:32P	-	5:29P	-	6:05P	-	6:32P	-	7:02P	9:11P
SANTA CLARITA	7:43A	-	8:45A	-	-	-	10:39A	-	2:12P	4:20P	4:42P	4:57P	-	5:54P	-	6:28P	-	6:56P	-	7:25P	9:34P
SANTA CLARITY/PRINCESSA	7:58A	-	-	-	-	-	-	-	-	-	4:52P	-	-	6:04P	-	6:39P	-	7:07P	-	-	-
VINCENT GRADE/ACTON	-	-	-	-	-	-	-	-	-	-	5:42P	-	-	6:54P	-	7:29P	-	-	-	-	-
PALMDALE	-	-	-	-	-	-	-	-	-	-	5:57P	-	-	7:09P	-	7:44P	-	-	-	-	-
LANCASTER	-	-	-	-	-	-	-	-	-	-	6:10P	-	-	7:22P	-	7:57P		-	-	-	-

Source: Caltrans - Northridge Earthquake Recovery: Report of Interstate5/State Route 14 Recovery

Table 6

ACTION 1.5 Increasing Train Speed Through Track Rehabilitation and Signal Improvements

It was clear from the earliest reports of freeway damage following the earthquake that Metrolink would need to undertake improvements of its tracks and signals to reduce travel times and make the train ride comparable to commuting by freeways. Initially, the running time between Lancaster and Los Angeles was 2 hours and 25 minutes for the 78-mile trip, or 28 mph. The old Southern Pacific rail line curved languishingly for 33 miles through the scenic Soledad Canyon and was slow. Since full reconstruction of the I-5/SR-14 interchange was not expected before November 30, SCRRA decided that an investment in speed was fully justified.

Metrolink engineers believed that they could reduce the travel time down to 1 hour and 25 minutes, by undertaking the following improvements:

(i) Build 10 miles of new track in the Antelope Valley paralleling the old Southern Pacific mainline. This new track would save 10 minutes and give SCRRA complete line dispatching capabilities. Cost = $15 million.

(ii) Rehabilitate the line for 33 miles through Soledad Canyon, straightening curves where possible, super-elevating other curves and replacing old or worn out track and ties, thus saving an additional 30 minutes. Cost = $28 million.

(iii) Repair the Saugus Tunnel to provide adequate drainage and speed, thus saving 3 minutes. Cost = $8 million.

(iv) Complete the track and signal rehabilitation from Burbank south into Los Angeles, a project that was already underway, and which would save two minutes. In addition, the old signal system was also overhauled and tied into Metrolink's Central Control Facility. Radio communication, which until now was in the dark through Soledad Canyon, was extended in coverage.

(v) Grout and rock-bolt the one-mile Saugus Tunnel and install adequate drainage system and new track structure.

(vi) Implement speed improvements at Tunnel 25 and around Taylor Yard.

To give some sense of the tremendous effort involved, all of this work was done right under Metrolink and Southern Pacific freight train traffic. On an average, each day during the first six months after the earthquake, Metrolink contractors:

a) moved 6,400 cubic yards of earth;
b) placed 900 tons of ballast;
c) installed or replaced 330 ties;
d) laid 1,500 feet of rail.

Track rehabilitation and signal improvements contributed to increases of speed on the Santa Clarita Line.

Source: Metrolink

PHOTOGRAPH AC

Source: Metrolink

PHOTOGRAPH AD

With these aforementioned improvements in place, Metrolink was able to accomplish a substantial reduction in travel time down to one hour and 43 minutes. Additionally, they provided a service comparable in speed (now up to 45 mph) to the parallel SR-14 and I-5 freeways, as well as high reliability on the entire line.

ACTION 1.6 Modification and Expansion of Bus Services

Table 7, on the following page, indicates the pre-earthquake bus service/routes in the I-5, SR-14, and SR-118 corridors. In addition to Metrolink's improvement programs, four of the bus transit systems operating in the San Fernando, Santa Clarita, and Antelope Valleys in the Los Angeles County, either added new emergency service or extended existing routes. These alterations to regular services and new bus routes were introduced to respond to sudden demands for transit service in the I-5 and SR-14 travel corridors due to damaged freeways and roadways. The LACMTA METRO buses, Los Angeles City (LADOT) Commuter Express and Downtown Area Short Haul (DASH), Antelope Valley Transportation Authority, Santa Clarita Transit, Simi Valley Transit, Glendale Express Shuttle/Beeline Service, Burbank Airport Shuttle, Santa Monica Municipal Bus Line, all introduced a number of temporary bus service modifications. These included new bus routes, schedule extensions and changes for existing bus routes, increased frequency of service on some of their bus lines, introduced commuter-oriented express bus service to downtown Los Angeles, and finally, feeder shuttle service to the Metrolink stations. Some of these routes were run jointly by the various agencies mentioned above, while some were privately contracted. A complete chronology of the changes to transit service in the earthquake impacted corridors is listed on Table 8, on the following pages, with accompanying route maps in Appendix D.

Table 7 - Pre-Earthquake Transit Bus Routes and Service

PRE-QUAKE BUS ROUTES IN THE I-5 AND SR-14 CORRIDORS AFFECTED BY THE NORTHRIDGE EARTHQUAKE

Bus Route	Origin	Destination	Travel Corridor
• LACMTA 92	San Fernando	LA CBD	Brand Blvd.
• LACMTA 93	San Fernando	LA CBD	Glendale Blvd.
• LACMTA 94	San Fernando	LA CBD	San Fernando Rd.
• LACMTA 96	North Hollywood	LA CBD	I-5
• LACMTA 97	Burbank	LA CBD	I-5
• LACMTA 410	Santa Clarita	LA CBD	I-5
• LACMTA 412	N. Hollywood/Burbank	LA CBD	I-5
• LACMTA 418	Northridge	LA CBD	Roscoe Blvd., I-5
• AVTA 785	Antelope Valley	LA CBD	I-5
• SCT 799	Santa Clarita	LA CBD	I-5

LA CBD - Los Angeles Central Business District
LACMTA - Los Angeles County Metropolitan Transportation Authority.
AVTA - Antelope Valley Transit Authority.
SCT - Santa Clarita Transit.

Source: Caltrans - Northridge Earthquake Recovery Report of Interstate 5/State Route 14 Recovery

Table 8 - Post-Earthquake Transit Bus Routes and Service

CHRONOLOGY OF CHANGES TO TRANSIT SERVICES IN THE I-5 AND SR-14 CORRIDORS AFFECTED BY THE EARTHQUAKE

DATE	ROUTE NAME/NUMBER	CHANGE IN SERVICE
January 17	SCT 779 AVT 75, AVT 787	Suspended until 2/28. Suspended.
January 19	AVTA 785 AVTA 787	Shuttle to Santa Clarita Metrolink station until 1/26. Service resumed via Balboa Detour.
January 21	Metrolink-SCRRA	Santa Clarita Metrolink Commuter Rail Line extended to the Antelope Valley. Four new stations added north of Santa Clarita. Seven new trains are put into weekday service, four of which serve new stations to the end of the line in Lancaster.
January 26	LACMTA 640, 641	Activated as distributor bus routes from the Burbank Metrolink station.
January 28	LACMTA 642	Activated as a distributor bus route from the Metrolink commuter rail station.
February 3	LACMTA 643	Activated as a Metrolink distributor bus route.
February 21	LACMTA 640 LACMTA 643	Modified to cover portions of Lines 641, 642. Contracted to LADOT/shuttle by private contractor.
March 26	LACMTA 640	Line terminated. Van shuttle service, supported by FEMA and the City of Pasadena continued.
June 20	Metrolink-SCRRA	Train service to the Metrolink Palmdale Station is discontinued and replaced with Antelope Valley Bus Service that connects to other Metrolink stations.

Note:
- SCT — Santa Clarita Transit
- AVTA — Antelope Valley Transit Authority
- LACMTA — Los Angeles County Metropolitan Transportation Authority
- LADOT — City of Los Angeles Department of Transportation
- SCRRA — Southern California Regional Rail Authority (Metrolink)

Source: Caltrans - Northridge Earthquake Recovery Report of Interstate 5/State Route 14 Recovery

ACTION 1.7 Developing New Park-n-Ride Lots

To support the use of new express bus routes and facilitate the increasing the formation of carpools, Caltrans and other agencies additionally developed five new park-n-ride lots next to I-5 and SR-14 corridors as shown on Table 9. These lots were above and beyond the park-n-ride lots developed as part of the new temporary Metrolink stations. These emergency facilities continue to be used not only by commuters taking transit, but have become staging locations for carpools and vanpools.

Table 9 - Chronology Of Implementation Of New Park-N-Ride Lots

Date	*Site Location and Operator*
January 18, 1994	• McBean Parkway at Del Monte Road, site opened by City Of Santa Clarita.
January 18, 1994	• Lyons Avenue at Orchard Village Road, site opened by the City of Santa Clarita.
January 18, 1994	• The Old Road near Pico Canyon Road/ Lyons Avenue intersection, opened by Caltrans.
January 18, 1994	• SR-14 and Golden Valley Road, site opened by Caltrans.
February 25, 1994	• Sylmar Metrolink Station (already mentioned above), opens to serve LADOT Line 574.

ACTION 1.8 Establishment of Feeder Shuttle Service

Numerous shuttles were put in service connecting Metrolink or Amtrak train stations with major employment centers. Many of these emergency shuttles were financed by grants from the FEMA. Since the Burbank and Glendale Stations are destination stations on both, the Santa Clarita and Ventura County Lines of Metrolink, numerous employer, or City-sponsored shuttles would meet trains at these stations, to transport working commuters to their work or job sites in Glendale, Burbank, Pasadena and to parts of the San Fernando Valley. Transportation Management Associations/ Organizations (TMAs/TMOs) in these cities sponsored many of the Metrolink-based shuttles for their employers.

Action 1.9 *Providing Telecommuting Centers and Services for Employers and Employees*

The *Commuter Action Guide*, a guide developed to assist Santa Clarita, Antelope Valley and Los Angeles commuters faced with transportation difficulties, indicated that telecommuting was a productive option for those employers whose businesses and employees were impacted by the Northridge earthquake. The *Commuter Action Guide* cited that many employers supported telecommunicating because it provided them with the ability to conduct their work, either at home or telecommuting centers near residential areas. The *Commuter Action Guide* was developed in association with Caltrans, MTA, Metrolink, AQMD, City of Los Angeles, and Commuter Transportation Services. Telecommuting services and information on how to set up a telecommuting program could be accessed either by employers or employees by calling the toll free number 1-800-COMMUTE.

Pacific Bell and GTE were two known respondents for telecommuting relief which established temporary telecommuting centers for their customers. These centers were set up to provide transportation-impaired commuters with an alternative resource for communicating information to commuters' traditional central information processing center or job sites.

A. Telecommuting Services Offered by Pacific Bell

Pacific Bell established an *Emergency Telecommuting Relief Package* on January 20, 1994, four days following the earthquake, in order to assist business-at-home owners, employers, and employees who were disabled by the highway collapse. The offer concluded on March 20, 1995. Three Segments existed for the Pacific Bell's *Emergency Telecommuting Relief Package Hot Line*, which was a component of the above mentioned package, and was available for those who called for assistance.

Pacific Bell advised those businesses that were in need of methods for communicating information because of their stranded employees and restricted transportation with telecommunication options which included:

I. *Installation*- Pacific Bell's installation charges were waived for all businesses and individuals who provided substantial proof that their transportation was hampered by the collapse of the freeways.

II. *Loans*- Pacific Bell's Equipment Program was equipped with $1 million dollars of loan money that covered such costs as modems and telecommuting equipment.

In addition to the featured free installation that facilitated telecommuting, the package included Centrex business telephone service, Integrated Services Digital Network (ISDN), Custom Calling Services, Voice Mail and Custom 800.

Over six thousand Pacific Bell customers called the *Emergency Telecommuting Relief Package* and 1,300 customers purchased more than 5,000 different service packages. The Emergency Package was established after the 1989 San Francisco earthquake in Loma-Prieta. In addition Pacific Bell also established a $1 million equipment loan program to provide modems and terminal adapters to small businesses, schools and non-profit organizations.

B. Telecommuting Services Offered by GTE

GTE had a similar response which was intended to "help area residents spend more time in productive work, and less time stuck on damaged freeways". The details of GTE's telecommuting package included:

I. Waived basic monthly phone rates for up to 90 days for earth earthquake victims;

II. Phone banks set up at critical sites such as city parks, Foothill Police Department and GTE San Fernando;

III. Services free for one year to earthquake victims with:
--transfer of one number to a new location, or
--remote call forward for one number, or
--Personal Secretary voice mail service
--re-establish phone service at original location

GTE waived certain installation charges through February 21, 1994, on the following services for people who adopted telecommuting programs in response to the earthquake:

Basic Work at Home Package (Recommended)
- A second telephone line - single business line
- Smarter Pak
- Three-way Calling
- Speed Dialing (eight numbers pre-programmed)
- Call Waiting
- Call Forwarding
- Cancel Call Waiting
- Personal Secretary Voice Mail
- GTE Calling Card

Add-Ons to Basic Work at Home Package
- Business Line 800
- Smart Ring (two numbers with distinctive ringing on a single line)
- Personal Secretary, with pager notification and/or additional mailboxes
- Additional Smart Call Services

- Busy Number Redial
- Last and Saved Number Redial
- Enhanced Smart Call Services
- VIP Alert
- Special Call Acceptance
- Call Block
- Special Call Waiting
- Auto Busy Redial
- Auto Call Return

Work at Home Package with Data Communications

- Dial Data Link (conditions line to improve accuracy, reliability of data communications)
- Integrated Services Digital Network (ISDN)/ Circuit Switched Data
- Quick Connect

Other Work at Home Offerings

- Centranet Application
- GTE waived certain installation charges for Centranet customers who required additional subscriber lines at an employee's residence
- Centranet was also applicable to remote neighborhood or satellite offices for corporations.

GTE also established specialized teams to assist and educate customers about capabilities and options, as well as using this as an oppurtunity to promote the benefits of telecommuting applications throughout the region.

GTE service areas include the San Fernando Valley communities of Northridge, San Fernando, Sylmar, Mission Hills, Sepulveda, Pacoima and Sunland. GTE also serves the affected areas of Santa Monica and West Los Angeles.

As mentioned earlier, over six thousand (6,000) Pacific Bell customers called the Emergency Telecommuting Relief Package. Approximately 1,300 customers purchased over 5,000 different telecommuting services and packages.

Pacific Bell conducted a research among a random sample of these 1,300 customers, excluding national and public sector accounts. According to the survey developed and conducted by Consultant Dena Coughlan for Pacific Bell prepared in August, 1994, only eight months following the earthquake, telecommuting remained popular in Southern California despite the repairs that were made to freeways. "Earthquake-driven telecommuters have discovered the information superhighway, and they are not about to get off." said Julie Dodd-Thomas, Pacific Bell director of market applications.

Key findings among survey respondents who took advantage of Pacific Bell's telecommuting relief package indicated the following:

a) Ninety (90%) percent of the people still worked from home or a satelite office;

b) Forty-two (42%) percent had not considered working from home or satellite office before the earthquake;

c) Thirty-seven (37%) percent work from home five days a week;

d) Seventy-six (76%) percent have sales responsibilities, while sixty-five (65%) percent have managerial responsibilities;

e) Sixty-three (63%) percent of the businesses that took advantage of telecommuting have 25 or fewer employees;

f) The telecommuters worked in more than 15 industries, including banking, legal, medical and construction;

g) Eighty-four (84%) percent rated their telecommuting experience as good or excellent;

h) Eighty-five (85%) percent of users rated the Pacific Bell telecommuting services as good or excellent;

i) Ninety (90%) percent started telecommuting without formal training or participation in a pilot program.

In conclusion, it appears that telecommunication has proved itself as an important means of communicating information in case of a natural disaster. It appears that it would be to the advantage of businesses to develop an emergency telecommuting system in the event of any future disaster in order to maintain a flow of business.

2. Ridership Response

a. Why Riders Started Using Metrolink After the January Earthquake

Caltrans' *Northridge Earthquake Recovery Report: Follow-up Metrolink Intercept Survey* conducted in October, 1994, queried riders as to why they had chosen to ride Metrolink Santa Clarita trains over other modes of transportation after the earthquake. The majority of riders who responded, seventy-four (74%) percent, said that they did so to avoid stress and delays from road and freeway traffic and construction, and generally to alleviate the overall stress of their commute. Of the surveyed commuters who had made the equivalent trip prior to the earthquake, all of the above reasons mentioned had influenced their decision to

begin riding the commuter train. In addition, half of those surveyed reported that they favored Metrolink because they could work, read or sleep on the train, instead of idling their time wastefully sitting in stalled traffic.

Another major factor influencing the choice of the survey respondents to ride Metrolink, was employer incentives. Thirty-seven (37%) percent indicated that they rode the Metrolink train because there was an incentive by their employers to do so. Additionally, twenty-seven (27%) percent reported that they rode because a shuttle was provided by their employer at their destination station. Of the home-to-work commuters about twenty (20%) percent cited both, employer incentive, and employer shuttle availability at their exit station. Between 12-13% cited less expensive and free parking as another reason for riding the Metrolink commuter trains. Others reasons for switching to the train were less "wear and tear" on their vehicles, riders were concerned about the longevity of their cars. The safety of Metrolink was also mentioned in the surveys; many riders felt that there were far less accidents on Metrolink than on public roads and freeways.

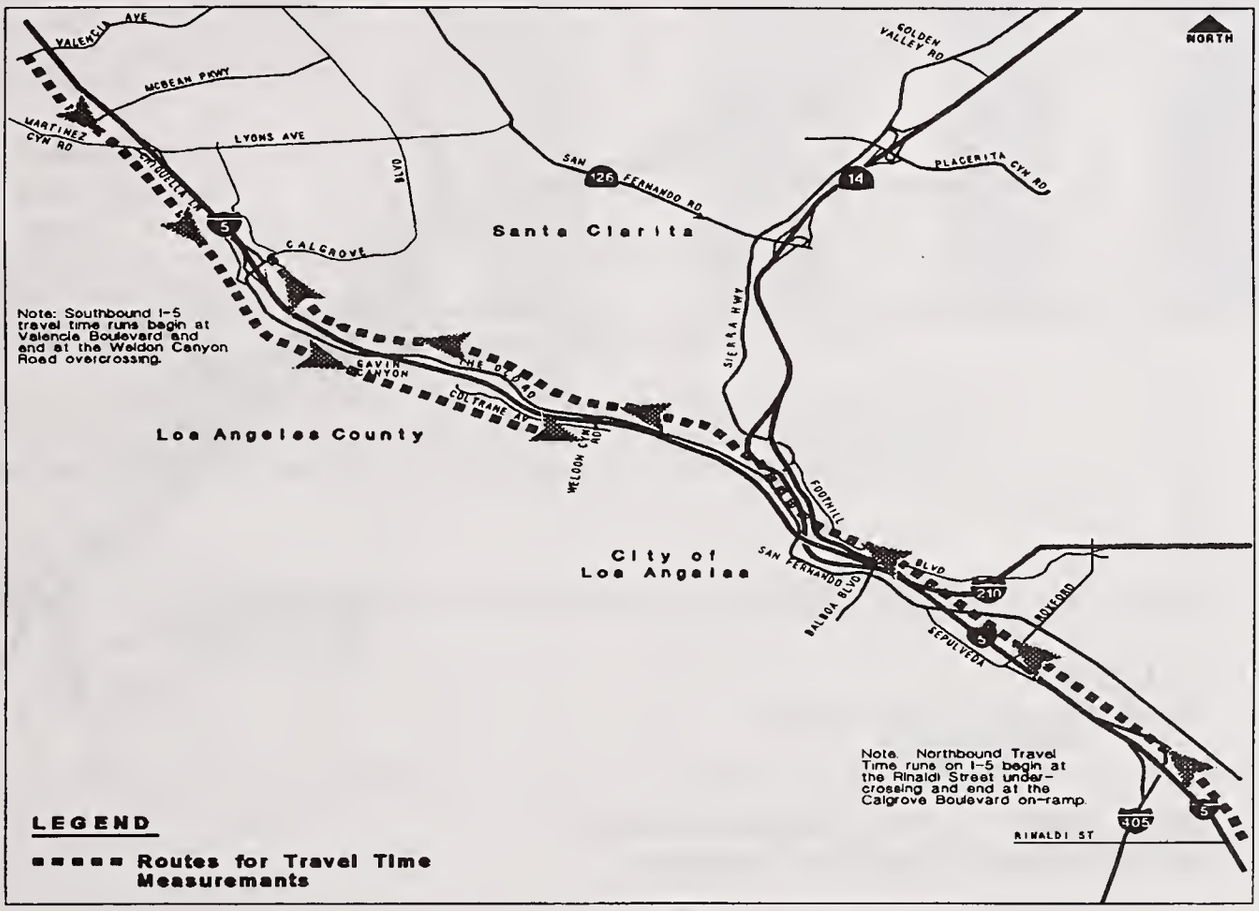
After the earthquake, the loss of capacity on I-5, I-10, SR-14, SR-118 freeways due to damaged structures, resulted in longer-than-usual delays for vehicles attempting to use those freeways through their detour routes. Figures 13 and 14 and Tables 10 and 11, on the following pages, indicate total travel times on the detours, as well as the traffic delays (which resulted from comparing current travel times to those estimated for pre-earthquake conditions). As a result of the delays, thousands of people sought other means of transportation to commute to work, such as carpooling, buses and commuter railroad trains such as Metrolink.

As mentioned earlier in this report, the improvements that were taken by Metrolink and others simply accommodated, at best, the pent-up ridership demand that already existed. This captive audience, for the most part, had no other alternatives modes of travel. Table 12, on the following pages, indicates transit ridership on the most important transit carriers (Metrolink and MTA) over a period of three months following the earthquake.

As previously stated, Metrolink commuter rail ridership surged dramatically immediately following the January 17, 1994 earthquake. According to SCRRA, ridership on Metrolink's Santa Clarita Line was averaging 850 boardings per weekday in the months before the quake, reached a high of almost 22,000 riders on Tuesday, January 25. Ridership maintained over 20,000 for the rest of the week, until Friday, January 28, when Caltrans opened by-pass lanes for southbound SR-14 to southbound I-5 to fifty (50%) percent of its capacity, at which point ridership dropped over 7,000 commuters down to 14,243 in one day. The next day, Saturday January 29, Caltrans opened the remainder of the I-5 detour at Gavin Canyon, using the Old Road to handle the I-5 traffic. The following Monday and Tuesday, January 31, and February 1, ridership on Metrolink had dropped to 12,362 and 13,043 respectively.

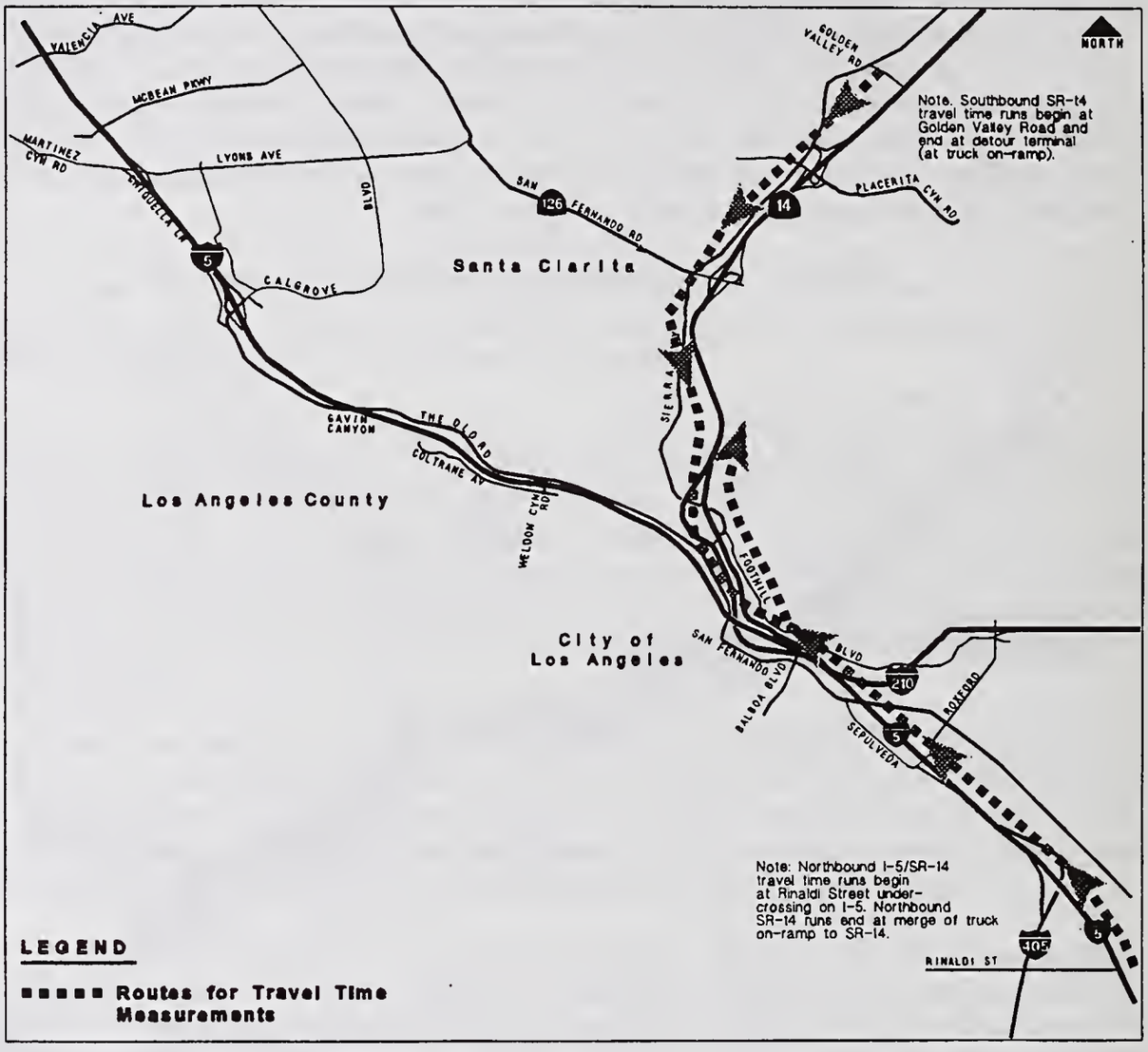
By the end of February, 1994, Santa Clarita trains were carrying an average of 8,600 passengers per day. Aided by a fifty (50%) percent fare discount for Palmdale/Lancaster, and twenty-five (25%) percent fare discount for Santa Clarita/ Princessa Stations, ridership maintained at an average of 8,000 per day through March, 1994. Ridership continued to decline in April to an average of 5,600 per day, and to 4,800 passengers per day by the end of May, 1994, following Caltrans' completion of the Gavin Canyon bridges and complete reopening of I-5 by May 18. The 4,000 average daily boardings on Metrolink for June, 1994, were still at a level four times higher than before the earthquake, thus indicating some longer-term travel behavioral changes. This ridership trend is somewhat confirmed by the results of the May, 1994 Metrolink rider survey, which indicated that seventy-four (74%) percent of the new riders interviewed intended to continue using Metrolink trains, at least as frequently after the reopening of the I-5 mainline route.

Figure 13 - I-5 Routes for Travel Time Measurements



I-5: Routes for Travel Time Measurements

Figure 14 - SR-14 Routes for Travel Time Measurements



Source: Caltrans - Northridge Earthquake Recovery Report of Interstate 5/State Route 14 Recovery

Table 10 - I-5 Detour Travel Times and Delays

DETOUR TRAVEL TIMES & DELAYS (minutes)

I-5 (March 22)

	A.M.				P.M.			
	Northbound		Southbound		Northbound		Southbound	
	Mixed Flow	HOV Lane	Mixed Flow	HOV Lane	Mixed Flow	HOV Lane	Mixed Flow	HOV Lane
Pre-Quake Travel Time	9		7		9		7	
Post-Quake Travel Time	25		18		16		7	
Freeway Travel	5		2		4		3	
Freeway Queue	10		10		8		0	
Detour	10		6		4		4	
Delay After Quake	16		11		7		0	

Source: Wiltec, travel time runs conducted on Tuesday, March 22, 1994.
From 6:00-9:00 AM and 3:00-6:00 PM
NB travel times from Rinaldi Street undercrossing to Calgrove Boulevard on-ramp.
SB travel times from Valencia Boulevard to Weldon Canyon Road overcrossing.
Pre-earthquake travel times were estimated based on a travel speed of 55 MPH.

Source: Northridge Earthquake Recovery Transportation Report (Week of March 21 - March 25, 1994)

Table 11 - SR-14 Detour Travel Times and Delays

DETOUR TRAVEL TIMES & DELAYS (minutes)

SR-14 (March 22)

	A.M.				P.M.			
	Northbound		Southbound		Northbound		Southbound	
	Mixed Flow	HOV Lane	Mixed Flow	HOV Lane	Mixed Flow	HOV Lane	Mixed Flow	HOV Lane
Pre-Quake Travel Time	6	6	7	7	6	6	7	7
Post-Quake Travel Time	6	6	23	14	14	11	7	7
Freeway Travel	3	3	1	1	2	2	4	4
Freeway Queue	0	0	19	10	6	3	0	0
Detour	3	3	3	3	6	6	3	3
Delay After Quake	0	0	16	7	8	5	0	0
HOV Time Savings	--	0	--	9	--	3	--	0

Source: Wiltec, travel time runs conducted on Tuesday, March 22, 1994.
From 6:00-9:00 AM and 3:00-6:00 PM
NB travel times from Rinaldi Street undercrossing to end of detour at truck on-ramp to SR-14.
SB travel times from Golden Valley Road undercrossing to end of detour at truck on-ramp to I-5.
Pre-earthquake travel times were estimated based on a travel speed of 55 MPH.

Source: Northridge Earthquake Recovery Transportation Report (Week of March 21 - March 25, 1994)

TRANSIT RIDERSHIP AND SERVICES

TOTAL DAILY BOARDINGS

METROLINK COMMUTER RAIL

Day	Ventura County Line	Santa Clarita Line	Total System
January 4	2,154	1,031	9,551
11	2,306	1,017	9,453
18	237[1]	1,125[1]	6,171[1]
25	2,840	21,952	31,276
February 1	2,759	13,043	21,986
8	3,050	9,182	18,599
15	2,881	8,407	18,053
22	3,339	8,057	18,152
March 1	2,952	8,546	18,229
8	2,983	9,109	18,810
15	3,152	7,840	17,605
22	2,967	8,530	18,266
Average Daily Ridership			
• In January 1994	2,171	7,344	15,697
• In February 1994	2,958	8,173	17,494
• In March 1994	2,959	8,320	18,077

Source: Southern California Regional Rail Authority.

SPECIAL MTA BUS LINES[2]

Day	Line 634	Line 640	Line 646	Total
January 25	205	--	--	205
February 1	209	58	--	268
8	212	73	--	285
15	301	56	61	418
22	138	104	100	342
March 1	367	38	--	405
8	349	135	196	680
15[3]	210	Cancelled[4]	241	451
22	234	--	280	514

Source: Los Angeles County Metropolitan Transportation Authority.

1. Ridership for day following the January 17, 1994, earthquake.
2. After the earthquake, the LACMTA put into service seven new bus lines to respond to the travel needs of persons affected by freeway closures and detours. Only three of these lines remained in service after the week of March 7-11.
3. During this week, MTA route 634 and LADOT route 644 were merged into one route.
4. Cancelled on March 18.

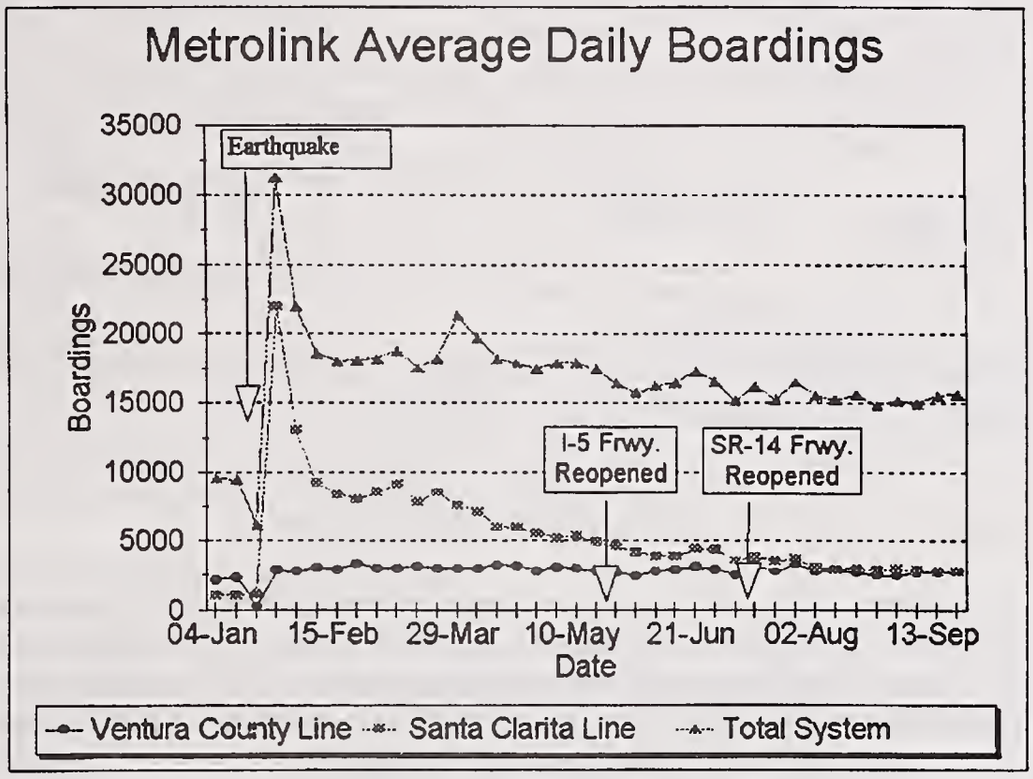
Table 12 - Transit Ridership and Services

The reopening of the SR-14 mainline on July 8, may have contributed to some additional declines in ridership. However, the discontinuation of service at the Palmdale Station on June 20, coupled with the discontinuation of Metrolink fare discounts on the Santa Clarita Line after July 31, are strong factors that affected riderships trends downwards to 3,575 in July, 2, 875 in August, and 2,740 average daily passengers in September of 1994.

As shown in the transit ridership figures shown on Figure 15 on the following page, boardings on Metrolink trains in general, and Santa Clarita Line in specific, increased much more sharply than did ridership on bus routes on I-5 and SR-14 corridors following the earthquake. Some minor ridership gains, however, were experienced on AVTA and SCT during the reconstruction period, as illustrated in Figure 16 on the following pages.

Figure 15

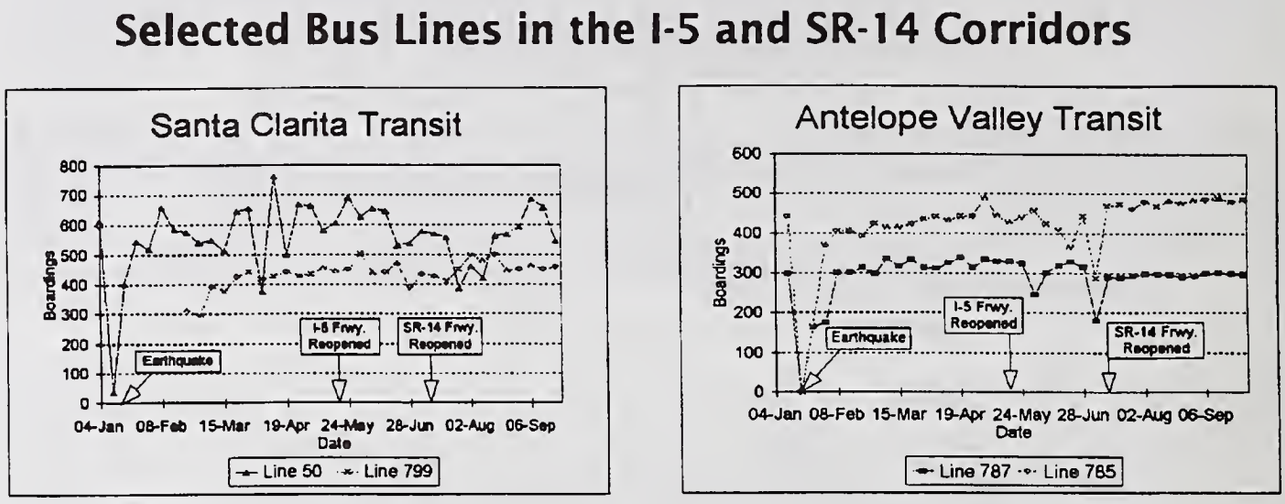
Comparisons of Daily Boardings on Metrolink Commuter Trains In the I-5 and SR-14 Corridors



Note: Total system ridership for all five Metrolink lines (Ventura, Santa Clarita, San Bernardino, Riverside, and Orange County).

Source: Data provided by SCRRA.

Figure 16 - Selected Bus Lines Transit Ridership in I-5 and SR-14 Corridors



Source: Data provided by the transit operators.

b. Why Commuters Chose Metrolink Trains Over Buses

The selection of Metrolink trains over buses by commuters, may have been caused by the fact that express bus routes served only a limited number of destinations in the Los Angeles Basin. Also, buses lacked any preferential treatment on I-5, and therefore were affected by the same delays as all other vehicles on the primary detours. Additional reasons included:

a. It was easier for new transit riders to find train stations than bus stops;

b. Metrolink offered long-distance service between the Santa Clarita and Antelope Valleys and destinations in the Los Angeles Basin, where that option was not always available on bus routes;

c. Surveys of new transit riders revealed that those persons declared commuter rail trains to be more comfortable and convenient than bus service;

d. Metrolink trains were also deemed to be more reliable, because the respondents compared the operation of buses in mixed-flow traffic with the operation of trains within their exclusive right-of-way. In other words, bus riders would be affected by the same traffic delays as would those motorists who continued to drive, and would never recover the additional in-vehicle and out-of-vehicle travel times associated with using the buses versus driving.

In May, 1994, Caltrans conducted a comprehensive rider survey called *"Survey of Transit Riders on Metrolink Rail and Bus Routes"* which dealt with passengers on the Santa Clarita Line who began using Metrolink after the January earthquake. The survey queried respondents on their trip purpose, as well as other more detailed aspects of their commute, in order to ascertain why riders began using Metrolink's train service. This sample surveys of transit riders were conducted to determine what modal shifts could be actually attributed to the disruption in highway travel. The surveys were conducted on board buses along the affected corridors as well as at some Metrolink stations. The survey results also helped quantify travel mode changes made by these commuters, also it identified the factors that influenced their choices in travel modes. The following was concluded from the May 1994 ridership survey for buses and the Metrolink train.

c. On-Board Survey Of Earthquake Affected Areas

1. Post Earthquake Changes in Travel Modes

Bus service in the I-5, SR-14 and SR-118 corridors attracted only minor to moderate increases in ridership on buses. Only eighteen (18%) percent indicated that they had shifted to bus transit since the earthquake. Of those respondents who had made this type of trip before the earthquake, sixty-two (62%) percent had used public transit to make this trip, and only thirty (30%) percent formerly drove alone.

2. Reasons for Choosing to Ride the Bus

Respondents were asked why they chose to ride the bus. Forty-one (41%) percent indicated that it was less expensive, and twenty-three (23%) percent said it was less stressful. Eleven (11%) percent cited convenient service, while five (5%) percent said the service was reliable. Twenty-one (21%) percent of the respondents reported that they rode the bus because of delays due to damaged freeway structures. Fifteen (15%) percent indicated that the bus was their only option.

Of those who diverted from their automobiles, only three (3%) percent cited delays due to damaged freeway structures as a factor for switching to transit. Thirty-eight (38%) percent cited reduced costs, while thirty-seven (37%) percent were influenced by the reduced stress.

3. Alternative Travel Mode for This Trip

Respondents were asked what their alternative travel mode was to riding the bus for this trip. Thirty-four (34%) percent indicated they had no other way to make the trip. Thirty (30%) percent indicated they would drive themselves, while sixteen (16%) percent indicated they would carpool. Forty-nine (49%) percent of those who had previously traveled in private vehicles indicated that their automobile was still a viable alternative to the bus for

this particular trip. Twenty-one (21%) percent cited carpooling as their alternative to riding the bus. Thirteen (13%) percent felt that they had no other way to make the trip.

4. Intended Bus Transit Usage After Damaged Freeways Reopen

Seventy-eight (78%) percent of the respondents said that they would continue to use bus transit at about the same level after the damaged freeways are reopened. Ten (10%) percent said they would ride bus transit more often, while another ten (10%) percent said they would ride the bus less often. Only two (2%) percent of the respondents said they would no longer ride the bus.

Seventy-eight (78%) percent of the diverted automobile users stated that they intended to continue bus transit usage about the same as now, when the damaged freeways are reopened. Three (3%) percent intended to use bus transit more, while thirteen (13%) percent stated they would use it less. Only five (5%) percent of the former automobile users intended to stop using bus transit altogether. For those respondents who would continue using bus transit, the main factors influencing this decision included, reduced cost forty-nine (49%) percent and reduced stress twenty-four (24%) percent.

d. Surveys Of Commuter Train Riders At Metrolink Stations

In contrast to the bus ridership surveys, a majority, fifty-three (53%) percent, of the Metrolink train riders interviewed at the stations, were attracted from other travel modes since the Northridge earthquake. Although Metrolink commuter rail lines experienced post-earthquake ridership peaks in late January and early February, boardings during May, 1994 (when this survey was conducted) had already declined substantially from the initial increases following immediately after the earthquake. Ridership however, was well above, pre-earthquake levels. Ridership on the Santa Clarita Line was still approximately 5,000 boardings per day in late May, a level which was still at least five times higher than before the earthquake. The Ventura County Line's ridership was still approximately twenty (20%) percent higher than pre-earthquake level at the time of the survey.

1. Characteristics of the New Metrolink Riders

A total of fifty-three (53%) percent of the Metrolink train riders contacted at the stations on the Santa Clarita and Ventura Lines were new riders. Of these new riders, over ninety (90%) percent were traveling between home and work, only nine (9%) percent indicated that Metrolink was their only option. Approximately eighty-eight (88%) percent were automobile drivers or passengers prior to the earthquake. Sixty-nine (69%) percent drove to their origin station, and about eighty-four (84%) percent were between the ages of 30 and 64, of which seventy (70%) percent had annual household incomes of $50,000 or more.

As expected, the overwhelming majority of new riders began using Metrolink trains for earthquake-related reasons, such as delays due to freeway damage, reduction of stress, and great reliability of the trains. Fifty-six (56%) percent of those who diverted from their vehicles to the trains, cited delays due to damaged freeways as their primary reason for doing so. Other factors include reduced stress, forty-eight (48%) percent; convenient service, fourteen (14%) percent; and reduced cost thirteen (13%) percent.

The extensions of the Santa Clarita and Ventura County Lines directly resulted in the capture of new ridership due to line extension to new market areas, as shown on Table 13 on the following page. The number of passengers boarding and alighting from the morning peak-period trains clearly indicate that the new stations (that were developed beyond Santa Clarita Station to Lancaster) are origination stations, accounting for half the boardings of the Santa Clarita Line. This would indicate that Metrolink struck a ridership bonanza when it extended its line to Lancaster.

2. Alternate Travel Modes for New Metrolink Riders

When asked about alternative travel modes to the train, fifty-six (56%) percent of the new Metrolink riders said they would rather drive themselves. Twenty-six (26%) percent said they would carpool/vanpool, and eleven (11%) percent indicated they would take bus transit. Only four (4%) percent of the respondents were captive riders, indicating they had no other way to make the trip. Only eight (8%) percent of new Metrolink riders formerly rode the bus prior to the earthquake. Only eleven (11%) percent of new Metrolink riders indicated that bus transit was a viable option for them. This survey data from Caltrans showed similar results to the survey conducted by Metrolink in their "Topline Report" published in August, 1994, as shown on Figure 17 on the following pages. With respect to factors influencing the decision of new riders to continue to use Metrolink trains, less stress was the overwhelming first choice of sixty-eight (68%) percent of the respondents. Cost and convenience were distant second and third choices at twenty-five (25%) and twenty-three (23%) percents, respectively.

LANCASTER / SANTA CLARITA ROUTE
ESTIMATED METROLINK BOARDINGS & ALIGHTINGS
Prior to January 17, 1994 Earthquake
Morning Peak-Period Trains Only

STATION	Aug 93		Sep 93		Oct 93		Nov 93		Dec 93		5 Mo TOTAL		5 Mo AVERAGE	
	Avg On	Avg Off	Avg On	Avg Off	Avg On	Avg Off	Avg On	Avg Off	Avg On	Avg Off	On	Off	Avg On	Avg Off
Lancaster														
Palmdale														
Vincent Grade														
Princessa														
Santa Clarita	299	0	297	0	212	0	225	0	213	0	1246	0	249	0
Sylmar/SF													0	0
Burbank	54	48	62	45	48	53	75	87	65	58	304	289	61	58
Glendale	20	45	22	46	26	49	24	68	24	45	116	252	23	50
LAUS	0	282	0	291	0	184	0	169	0	199	0	1125	0	225
TOTAL	373	373	381	381	286	288	324	324	302	302	1686	1666	333	333

Reference: Station Ambassador Counts [redacted] = Count not available.

FOR INTERNAL USE
LANCASTER / SANTA CLARITA ROUTE
ESTIMATED METROLINK BOARDINGS & ALIGHTINGS
After January 17, 1994 Earthquake
Morning Peak-Period Trains Only

STATION	Feb 94		Mar 94		Apr 94		May 94		Jun 94		5 Mo TOTAL		5 Mo AVERAGE	
	Avg On	Avg Off	Avg On	Avg Off	Avg On	Avg Off	Avg On	Avg Off	Avg On	Avg Off	On	Off	Avg On	Avg Off
Lancaster	136	0	90	0	94	0	105	0	119	0	544	0	109	0
Palmdale	162	0	118	0	89	0	76	0	62	0	507	0	101	0
Vincent Grade	151	0	143	0	186	0	173	0	253	0	898	0	180	0
Princessa	288	0	392	1	297	1	220	4	253	1	1448	7	290	1
Santa Clarita	3536	0	2532	2	1720	6	1282	7	738	9	9808	24	1962	5
Sylmar/SF	43	310	71	414	87	393	92	319	99	226	392	1662	78	332
Burbank	87	700	98	848	104	485	100	516	116	498	505	3045	101	609
Glendale	28	631	36	453	33	332	34	307	34	307	165	2030	33	406
LAUS	0	2788	0	1762	0	1375	0	929	0	645	0	7499	0	1500
TOTAL	4429	4429	3480	3480	2592	2592	2082	2082	1884	1684	14267	14267	2853	2853

Reference: Station Ambassador Counts [redacted] = Count not available.

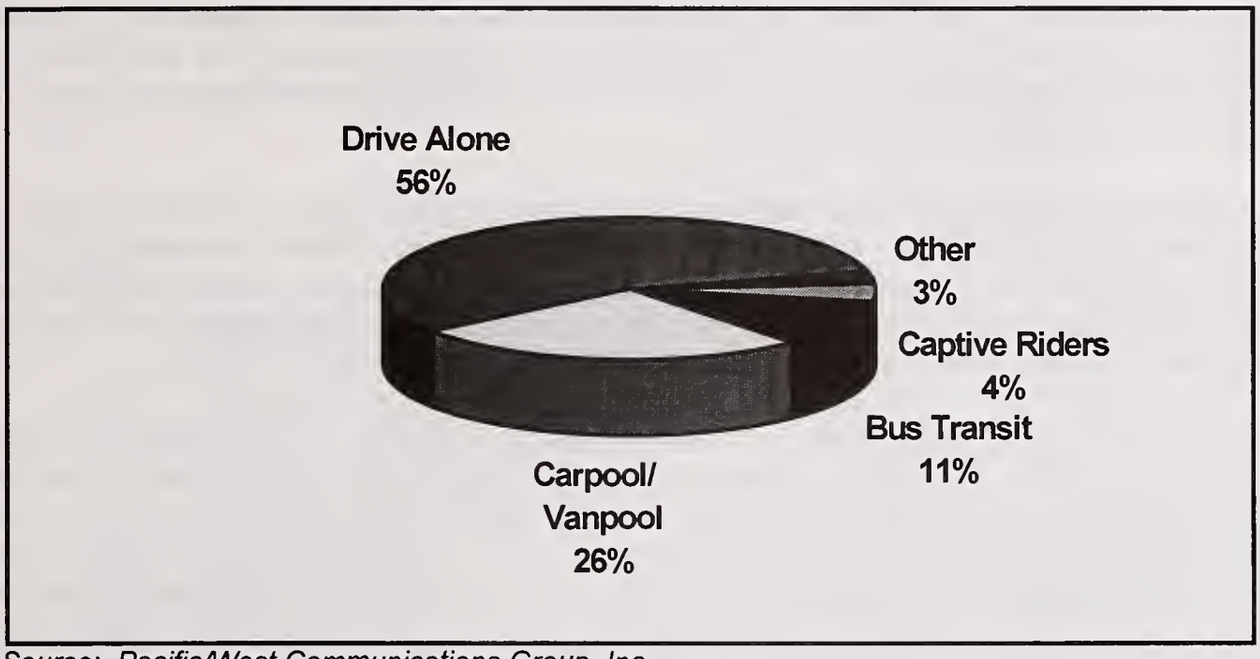
FOR INTERNAL USE
LANCASTER / SANTA CLARITA ROUTE
ESTIMATED METROLINK BOARDINGS & ALIGHTINGS
After Highways Opened & Fares Returned to Normal
Morning Peak-Period Trains Only

STATION	Aug 94		Sep 94		Oct 94		Nov 94		Dec 94		5 Mo TOTAL		5 Mo AVERAGE	
	Avg On	Avg Off	Avg On	Avg Off	Avg On	Avg Off	Avg On	Avg Off	Avg On	Avg Off	On	Off	Avg On	Avg Off
Lancaster	121	0	120	0	141	0	143	0	131	0	656	0	131	0
Palmdale (Closed)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vincent Grade	122	0	129	1	145	1	152	2	156	1	704	5	141	1
Princessa	139	1	143	2	148	3	182	3	165	2	775	11	155	2
Santa Clarita	499	9	413	7	417	7	380	6	338	6	2047	35	409	7
Sylmar/SF	101	115	104	110	121	75	68	46	88	45	482	390	92	78
Burbank	116	359	97	329	93	270	97	167	109	239	512	1364	102	273
Glendale	32	141	28	100	24	98	15	74	41	114	140	525	28	105
LAUS	0	505	0	485	0	635	0	740	0	601	0	2366	0	593
TOTAL	1130	1130	1034	1034	1087	1087	1037	1037	1008	1008	5296	5296	1059	1059

Reference: Station Ambassador Counts [redacted] = Count not available.

Table 13 - Estimated Metrolink Boardings & Alightings

Figure 17 - Metrolink Customer's Preferred/Prior Mode



Source: Pacific/West Communications Group, Inc.

3. Cost Of Actions

The costs undertaken by the various agencies to reconstruct the transportation system after the Northridge earthquake and get the people moving again was on a grand scale. As background information, Caltrans' early repair estimates around January 20, 1994, figured the damages to the State Transportation Facilities at approximately $671 million. This figure was revised by April 1, to an estimated $308 million. The actual costs, however was $250 million on State Highways/Freeways and $26 million for local roads.

Financing such an undertaking would have been extremely difficult to say the least, had there not been the declaration of a State of Emergency made by President Clinton. An additional $100 million was made available for demolition and reconstruction from the Federal Highway Fund. Eventually Congress voted to authorize $1.4 billion mandated for earthquake recovery, which included a $200 million contingency. For the first 180 days after the earthquake, Federal Emergency Restoration Funds (FERF) paid for 100% of completed restoration work. Thereafter, the normal federal participating share was available for reconstruction.

The Los Angeles County Metropolitan Transportation Authority (LACMTA) also undertook a number of transportation related improvements and services which helped alleviate the demand for mobility through the region. These included such projects and programs as feeder vanpools, Pasadena shuttle program, City of Burbank shuttle program, emergency bus services, park-n-ride lots, transit information centers, corridor emergency workshops,

emergency and expanded public outreach programs, telecommuting centers, rideshare incentive programs, modification of Union Station Transit Center, transporting emergency workers, and others as shown on Table 13A on the following page. The budget for these improvement programs was $7 million, of which $3.5 million was expended as of February 28, 1994.

The SCRRA also undertook major facility and service improvements for Metrolink commuter rail which was already mentioned earlier in the section of the report. These included extending the Santa Clarita Line 43 miles, rehabilitating 33 miles of line and signal system, all at a cost of about $52 million; in addition to the $15 million it had already expended on the right-of-way purchase of this line in the early '90s from Southern Pacific Railroad.

The United States Department of Transportation (US/DOT) and Federal Emergency Management Agency (FEMA) have been supportive and generous with their assistance. From the beginning, Secretary Federico Pena and his administrators, Gordon Linton of the FTA and Rodney Slater of the FHWA, encouraged the Metrolink response to the earthquake recovery efforts. FEMA also had representatives working closely with SCRRA to assess needs, define direction and support progress. The MTA had also been extremely helpful, particularly by backing and supporting the funding, since the SCRRA had no emergency contingency funding sources of its own. Of the total cost, FEMA was expected to pay 92.5%, the State 5%, and the MTA 2.5% of the $52 million cost. It should be noted here that this cost does not include almost $500 million for the acquisition of 350 miles of Metrolink's commuter rail right-of-way systemwide between 1990 and 1993.

Table 13A - LACMTA's Post-Earthquake Transit Improvements and Service Enhancements

PREPARED: 4/10/95
SCHEDULE "A"

LACMTA
ANALYSIS OF MTA PROJECT COST
AS OF FEBRUARY 28, 1995

DSR/DAR NUMBER	BRIEF DESCRIPTION	TOTAL WRITTEN	TOTAL EXPENDED
73947	VARIOUS PROJECTS	0	0
0	AVIATION PARK & RIDE		
0	MODIFY UNION STAT./TRANSIT CTR		
73906	EXPANDED PUBLIC OUTREACH	1,160,100	307,562.38
73912	EMERGENCY PUBLIC OUTREACH	470,000	227,529.06
73911	CORRIDOR EMERGENCY WORKSHOPS	50,000	36,373.83
73925	CORRIDOR EMERGENCY WORKSHOPS	15,640	
0	5 NEW LOT OPER/COST		
0	2 NEW LOTS OPER/COST		
73907	VANPOOL PROJECT	62,100	21,034.86
73907	VANPOOL PROJECT	62,850	39,137.84
73907	VANPOOL PROJECT	41,170	16,012.13
73907	VANPOOL PROJECT	13,008	2,979.65
73928	VANPOOL PROJECT	8,672	
73919	PASADENA SHUTTLE PROGRAM	31,281	31,281.00
73926	PASADENA SHUTTLE PROGRAM	100,415	32,545.54
73908	UCLA/WESTWOOD	71,932	36,455.88
73909	TRANS INFORMATION CENTER	4,070	
73910	RIDESHARE INCENTIVES	0	
73908	LACRA/HOLLYWOOD	40,000	20,599.97
73904	TELEBUSINESS EXPANSION	127,350	108,039.23
73927	TELEBUSINESS EXPANSION	0	
73908	SAN FERNANDO	29,148	17,902.94
73908	12TH DISTRICT TMA	958,341	649,001.50
73926	12TH DISTRICT TMA	(310,757)	
73908	CITY OF BURBANK	71,738	52,211.15
73926	CITY OF BURBANK	29,019	
73908	CITY OF BURBANK	118,776	118,776.00
73926	CITY OF BURBANK	78,204	63,091.88
73908	WEST HOLLYWOOD	271,462	171,462.00
73926	WEST HOLLYWOOD	(100,000)	
DAF 6	FREEWAY ASSISTANCE PROGRAM	2,243,452	152,280.25
73913	EMERGENCY BUS SERVICE	320,949	320,949.00
73937	EMERGENCY BUS SERVICE	272,286	272,286.00
73961	EMERGENCY BUS SERVICE	567,901	568,770.91
0	WESTCHESTER RABBIT TRANSIT		
0	TRANS FOR EMERGENCY WORKERS		2,722.00
	AUTHORIZED ADMIN CHARGES	250,966	236,545
TOTALS		7,060,073	3,510,801

Source: Los Angeles County Metropolitan Transit Authority

C. Fare Structure

1. Actions Taken

Immediately following the earthquake, the SCRRA announced changes to their fare structure. This was undertaken in order to attract and retain the customer base Metrolink gained, when residents of the earthquake affected areas had little or no choice or means of transportation, but to ride Metrolink trains. The following Table 14, shown below, describes the chronology of fare structure changes on the Santa Clarita and Ventura County Lines in response to the earthquake.

Table 14 - Chronology of Metrolink Fare Structure Changes

Date of Action	*Description of Action*
January 19, 1994	• For Santa Clarita and Ventura County Lines only, February Monthly Passes, which were available on January 24, could be used for travel the balance of January. • Antelope Valley Transit Authority and Santa Clarita Transit passes honored by Metrolink's Santa Clarita Line through the end of January.
January 21, 1994	• Staff recommends that SCRRA set fares for the newly extended line/service to Lancaster (including Palmdale and Vincent Grade Stations) at six zones from Los Angeles Union Station (LAUS), and the new Princessa Station be placed in the same zone (five) as Santa Clarita Station. • A one zone discount was also requested for the fares from Lancaster, Palmdale and Vincent until the end of the fiscal year. The resulting fares would be five zones from Lancaster/Palmdale/Vincent to LAUS, or $208 for a Monthly Pass, and $65 for a 10-Trip Ticket. • These new fares would then be comparable to the prices charged from Santa Clarita Station.
February 11, 1994	• SCRRA Board approved fares for the new stations along the Antelope Valley emergency extension to Lancaster. • Staff recommended fares for the Ventura County Line. • Northridge placed three zones from LAUS (the same as Chatsworth), and Camarillo placed at five zones from LAUS. • SCRRA Board approves a two-for-one Monthly Pass special for February and March months for the earthquake affected areas.

March 11, 1994	• Ventura County Transportation Commission agrees to extend a one zone discount to passengers from Camarillo until June. • Effective April 1, through June 30, Monthly Pass prices for travel to/from Lancaster, Palmdale and Vincent Grade/Acton are discounted approximately 50%. Monthly Passes from Santa Clarita and Princessa Stations are discounted approximately 25%. • Burbank Station becomes a split zone. • SCRRA Board established Oxnard at six zones from LAUS, but approved a temporary one zone discount for all ticket types through June 30.
May 13, 1994	• SCRRA Board extends discounts on the Santa Clarita and Ventura County Lines.
July 20, 1994	• All Metrolink fare discounts terminated as of this date.

2. Ridership Response

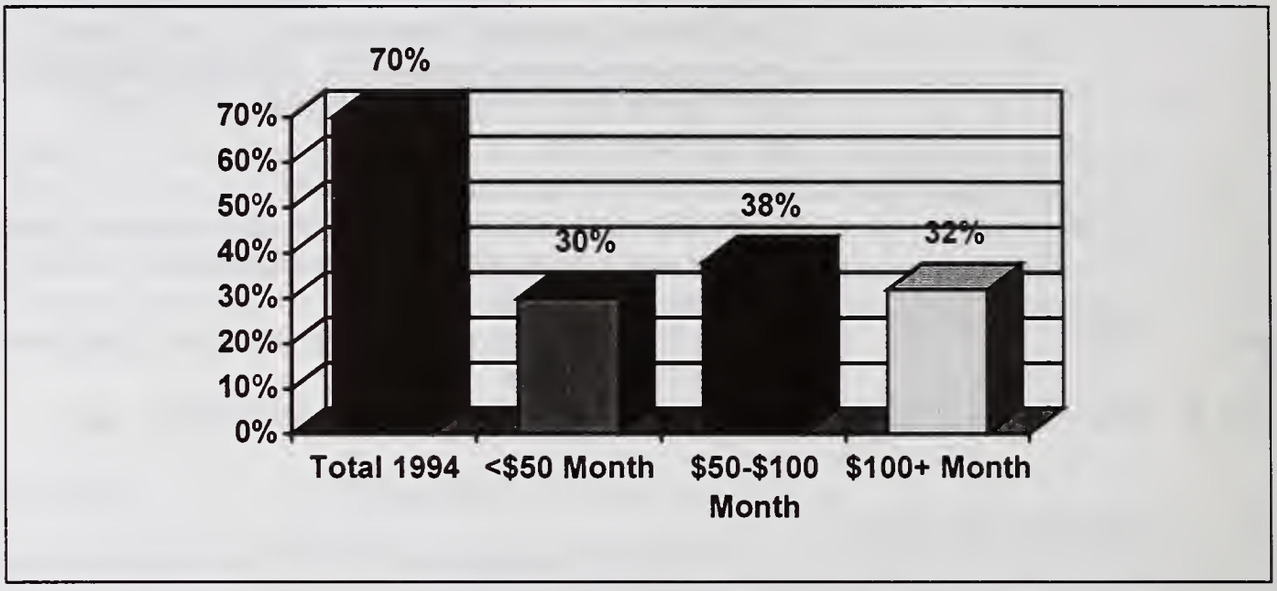
a. Effects of Fare Discount on Ridership

The reduction of Metrolink ticket prices as a means of attracting or keeping gained ridership, seemed to have little impact on the overall ridership profile. Ironically, even though fare reductions were extended, or even doubled, in the final analysis ridership continued to drop. There was little appreciable change in the rate of decline which suggests that fares were not a large issue. This can be substantiated by the fact that the mean household income of Metrolink commuters surveyed ranged from a low of $60,000 to $89,000 per year.

b. Effects of Employer Incentives

Employer subsidy is another major factor why discounting ticket prices on Metrolink's service did not produce any significant increases in ridership. Figure 18, shown below, illustrates this point, in that seventy (70%) percent of Metrolink Santa Clarita riders are subsidized by their employer in varying amounts, ranging from $50 to over $100 for a monthly pass costing $208, according to Metrolink's Topline Survey.

Figure 18 - Metrolink Employer Subsidies



Source: Pacific/West Communications Group, Inc. - 1994 Metrolink On-Board Rider Survey

Similarly, Caltrans' Follow-Up Metrolink Intercept Survey conducted in October, 1994, verifies the importance of employer incentives showing that fifty-seven (57%) percent of those who exited the Burbank Station for example, said in their survey it influenced their decision, while sixty-four (64%) percent said they were influenced by employer shuttles at the exit point of the train ride. Table 15, on the following page, also shows that forty-five (45%) percent of the Burbank bound commuters were influenced by the affordability of their decision, while twenty-six (26%) percent of those who exited Union Station indicated the service was less expensive than the mode they were using prior to the earthquake.

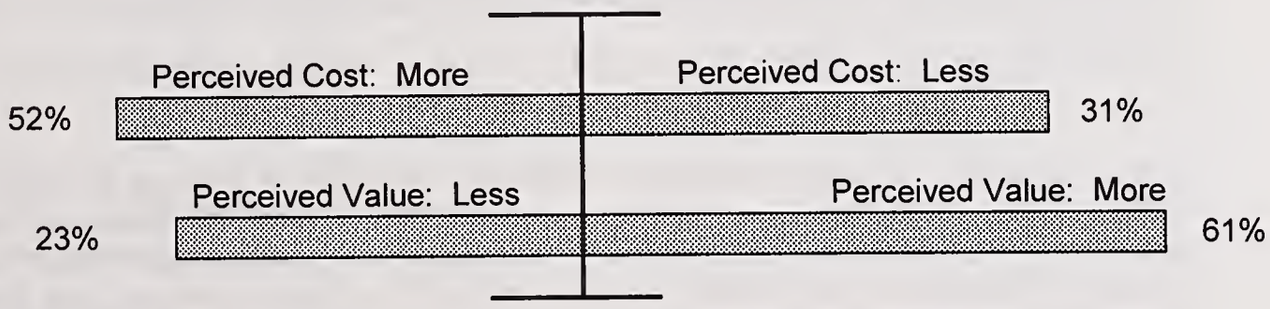
Table 15 - Reasons for Metrolink Use - by Station
(Includes Multiple Responses)

Response	Station											
	Santa Clarita		Sylmar/San Fernando		Burbank		Glendale		LA Union Station		Totals	
	Num	%	Num	%	Num	%	Num	%	Num	%		
Employer Incentive	1	1%	12	10%	69	57%	21	18%	17	14%	120	100%
Employer Shuttle	1	1%	6	8%	57	64%	16	17%	7	10%	87	100%
Less Expensive	1	2%	5	12%	19	45%	6	14%	11	26%	42	100%
Total Respondents	2		14		88		27		31		162	
Other Response											167	
Total Valid Cases											**329**	
Did not make equivalent trip prior to the earthquake											55	
Total											**384**	

Source: Caltrans - Northridge Earthquake Recovery: Follow-up Metrolink Intercept Survey

Important in analyzing ridership behavior as it relates to pricing, is the perception of price/value in the overall satisfaction of Metrolink customers, as shown in Figure 19 below. While pricing may be upper tier, the perceived value returned on that price must be, and is, higher than the price itself.

Figure 19 - Metrolink Perceived Cost/Value Compared to Prior Mode 1994



Source: Pacific/West Communications Group, Inc. - 1994 Metrolink Ridership Survey

c. Perception of Superior Value

According to the 1994 Metrolink On-Board Rider Survey - *Executive Summary of Key Findings Topline Report*, published in August, 1994, by Pacific/West Communications Group, Inc. Group, the price of commuting on Metrolink is, in fact, a perceived superior value for its customers. Overall systemwide basis, sixty-one (61%) percent of the train riders believed they were receiving a better value, (31% said much better value) than their former commute mode. Similarly, thirty-one (31%) percent of Metrolink customers perceive that they actually save money by riding the trains. Also, thirty-four (34%) percent of former commuters who drove alone perceive that they are now paying more to ride the train than they recall paying when they drove alone for their commute.

This data vary significantly by line as it can be seen on Table 16. Those passengers riding Metrolink's Orange County Line perceived that they were getting a better value overall by scoring seventy-one (71%) percent; followed by the Riverside County Line which scored sixty-four (64%) percent on the survey. In contrast, those passengers riding the Santa Clarita Line gave it the lowest rating on the survey relative to value. Forty-five (45%) percent of Santa Clarita customers say they are paying more on Metrolink than their prior mode (21% "a lot more").

Table 16 - Perceived Value of Metrolink Fares
(All Data Expressed in %)

	Ventura County	Santa Clarita County	San Bernadino County	Riverside County	Orange County
Better Value	56	54	63	64	71
Same Value	17	18	14	13	13
Worse Value	28	28	24	22	16

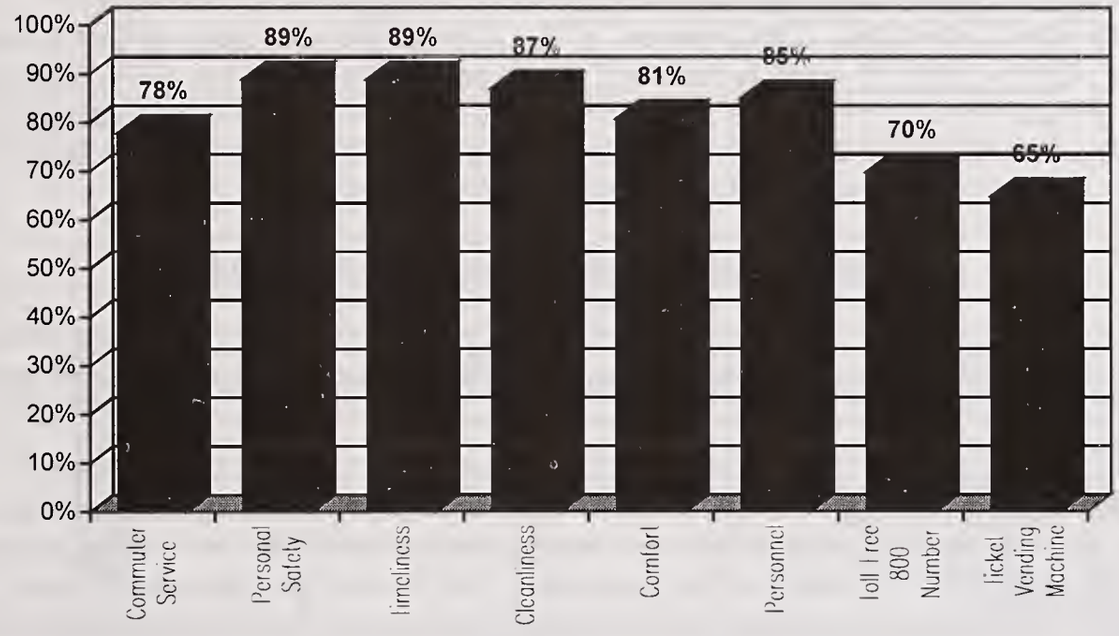
Source: Metrolink - Pacific/West Communications Group,Inc.: 1994 On-Board Rider Survey

From a customer satisfaction standpoint, while "sticker shock" is an issue for Santa Clarita Line customers, it is not more of an issue there than elsewhere. There is no significant correlation between Metrolink customer's perception of "paying more" and household income. Generally it could be said that the higher the household income, the higher the propensity to commute by driving alone. It should be noted that along the Santa Clarita Line, seventy-seven (77%) percent of Metrolink's customers trace their ridership of the trains directly to the earthquake. Most likely to be among the post-earthquake customers are the relatively lower-income (under $60,000 annually) residents of the Santa Clarita Valley. Even more likely to perceive Metrolink as a lesser value are blue collar workers

thirty-nine (39%) percent and public employees thirty-four (34%) percent. Perhaps one explanation for the lower perceived value of Santa Clarita residents about Metrolink fares, is that the train was the only viable choice (almost out of necessity) of transportation after the earthquake, whereas the higher perceived value by Orange County residents perhaps reflect a mode of choice for an easier commute.

This data, though reflecting a cost/pricing sensitivity, should not detract from the larger and more significant findings. As shown on Figure 20, Metrolink's Santa Clarita Line customers rated the commuter rail service 7.8 out of a possible 10. From issues of personal safety (8.9) and timeliness (8.9) to cleanliness (8.7) and comfort (8.1) to personnel (8.5), the 800 toll free number (7.0) and even ticket vending machines (6.5), the Santa Clarita customers are continuing to ride Metrolink trains after the Northridge Earthquake, at least in part, because of their satisfaction with the service. They have traded their former long and slow drive alone commutes for a more satisfying, valuable commuting experience.

Figure 20 - Customer Rating by Metrolink Riders



D. Feeder Services

1. Introduction

This section presents the actions taken by various public agencies and private entities, which instituted a series of transit oriented improvements, such as feeder shuttle services, to connect with Metrolink/Amtrak Stations. Before this section is represented in detail, a brief discussion is

presented describing the travel characteristics of morning riders who began riding the Metrolink commuter trains between January 17 and July 1, 1994, and continued to ride even after the re-opening of damaged portions of the I-5 and SR-14 freeways.

The findings presented below are based on Caltrans' *"Northridge Earthquake Recovery Report-Follow-Up Survey of Transit Riders on Metrolink Commuter Rail"* survey of on-board home-to-work commuters of the Santa Clarita Line, conducted in October, 1994 and published on January 5, 1995. The analyses of the survey provided below is divided into the following sub-sections:

- Trip frequency;
- Trip origins and destinations;
- Travel between home and origins stations;
- Travel between exit stations and final work destinations;

2. Trip Frequency

Approximately ninety-two (92%) percent of the Metrolink commuters surveyed were frequent riders. Of the home-to-work commuters surveyed, nearly two-thirds (65%) percent reported using the train five or more days a week. Twenty-seven (27%) percent rode the train three to four days a week, while eight (8%) percent surveyed reported using the train two or less days a week. Table 17 represents the distribution of trip frequencies.

Table 17 - Days/Week Respondents Rode Metrolink

# of Days	Number	Percent
Less than once a week	7	2%
1-2 days a week	23	6%
3-4 days a week	102	27%
5 or more days a week	251	65%
Total Valid Responses	**383**	**100%**
No Response	1	-
Total	**384**	-

Source: Caltrans - Northridge Earthquake Recovery: Follow-up Metrolink Intercept Survey

3. Trip Origins and Destinations

As Table 18 illustrates, more than forty (40%) percent of those morning riders surveyed, boarded Metrolink at the Santa Clarita Station. Twenty-five (25%) percent of those surveyed boarded at Princessa Station, another twenty-two (22%) percent boarded at Vincent Grade/Acton Station. The remaining eleven (11%) percent of the respondents boarded at the Lancaster Station, the first station on the Santa Clarita Line.

Table 18 - Boardings by Stations and Train

Boarding Station	Train	Number	Percent
Lancaster	202	2	
	206	14	
	208	25	
	Total	41	11%
Vincent Grade/Acton	202	21	
	206	31	
	208	34	
	Total	86	22%
Princessa	202	13	
	206	36	
	208	48	
	Total	97	25%
Santa Clarita	202	19	
	206	61	
	208	80	
	Total	160	42%
Total		**384**	**100%**

Source: Caltrans - Northridge Earthquake Recovery: Follow-up Metrolink Intercept Survey

As shown in Table 19, Santa Clarita to Burbank passengers accounted for about twenty (20%) percent of the riders who had used a different mode of transportation for their home to work trip before the earthquake. Santa Clarita to Union Station passengers and Princessa to Burbank passengers, each accounted for ten (10%) percent of these riders. In addition, Vincent Grade/Acton to Burbank, Santa Clarita to Glendale, and Princessa to L.A. Union Station passengers each accounted for nine (9%) percent of those who had an equivalent trip using another mode of transportation prior to the earthquake.

Table 19 - Pre-Earthquake Home to Work Trip Mode

Origin-Destination Station	Number	Percent
Santa Clarita - Burbank	66	20%
Princessa - Burbank	33	10%
Santa Clarita - LA Union Station	33	10%
Vincent Grade - Burbank	28	9%
Santa Clarita - Glendale	28	9%
Princessa - LA Union Station	29	9%
Vincent Grade - Sylmar/San Fernando	15	5%
Vincent Grade - LA Union Station	16	5%
Santa Clarita - Sylmar/San Fernando	12	4%
Vincent Grade - Glendale	14	4%
Princessa - Glendale	12	4%
Lancaster - Sylmar/San Fernando	9	3%
Lancaster - Burbank	10	3%
Princessa - Sylmar/San Fernando	8	2%
Lancaster - LA Union Station	7	2%
Lancaster - Glendale	5	1%
Total Valid Responses	**325**	**100%**
No Response	5	-
Did not make equivalent trip prior to the earthquake	54	-
Total	**384**	-

Source: Caltrans - Northridge Earthquake Recovery: Follow-up Metrolink Intercept Survey

Table 20 summarizes the station location where the morning riders exited the trains after the earthquake; forty-two (42%) percent of those surveyed exited at the Burbank Station, twenty-eight (28%) percent exited at the Los Angeles Union Station (LAUS). About sixteen (16%) percent exited at the Glendale Station, while thirteen (13%) percent exited at Sylmar/San Frenando Station.

Table 20 - Stations Where Respondents Exited

Station	Number	Percent
Princessa & Santa Clarita	4	1%
Sylmar/San Fernando	50	13%
Burbank	159	42%
Glendale	63	16%
Los Angeles Union Station	107	28%
Total Valid Responses	**383**	**100%**
No Response	1	-
Total	**384**	-

Source: Caltrans - Northridge Earthquake Recovery: Follow-up Metrolink Intercept Survey

4. Travel Between Home and Origin Stations

a. Mode of Access

As seen in Table 21, the majority - seventy-seven (77%) percent, surveyed drove to their origin station where they boarded the train. Thirteen (13%) percent were dropped off at the stations, and another six (6%) percent took the bus to the station.

Table 21 - Mode of Travel to Boarding Stations

Mode of Travel	Number	Percent
Walked	9	2%
Drove	293	77%
Dropped Off	48	13%
Bus	22	6%
Other	9	2%
Total Valid Responses	**381**	**100%**
No Response	3	-
Total	**384**	-

Source: Caltrans - Northridge Earthquake Recovery: Follow-up Metrolink Intercept Survey

b. Travel Time Between Home to Origin Stations

Commuter time spent traveling in the morning from home to the Metrolink origin stations averaged about 10 minutes. As Table 22 illustrates, nearly two-thirds (63%) of those surveyed traveled between 6 and 15 minutes, and another twenty-nine (29%) percent spent between one and five minutes traveling to their origin stations.

Table 22 - Traveling Time to Origin Station

Duration	Number	Percent
1-5 minutes	108	29%
6-15 minutes	238	63%
16-30 minutes	27	7%
30+ minutes	4	1%
Total Valid Responses	**377**	**100%**
No Response	7	-
Total	**384**	-

Source: Caltrans - Northridge Earthquake Recovery: Follow-up Metrolink Intercept Survey

c. Distance Traveled Between Home and Origin Stations

Respondents traveled an average of 5.5 miles from home to the origin station which they boarded the train. As may be seen in Table 23, more than two-thirds, (67%) of those surveyed, traveled 5 miles or less between home and their origin station, and another twenty-five (25%) percent traveled between 6 and 10 miles. Only eight (8%) percent had to travel more than 10 miles from their home to their origin station.

Table 23 - Miles Traveled to Origin Station

Distance	Number	Percent
1-5 miles	250	67%
6-10 miles	95	25%
11-15 miles	21	5%
16+ miles	10	3%
Total Valid Responses	**376**	**100%**
No Response	8	-
Total	**384**	-

Source: Caltrans - Northridge Earthquake Recovery: Follow-up Metrolink Intercept Survey

1. Actions Taken

a. Travel Between Exit Stations and Final Work Destinations

1. Mode of Egress - Use of Employer Feeder Shuttles

The mode of transportation respondents used to get from their exit station to their final work destination varied, depending on their exit station. Table 24, on the following page, shows that half of those who exited at Burbank fifty-two (52%) percent took an employer shuttle from their exit station to work, followed by twenty-nine (29%) percent of those who exited at Glendale, and twenty-six (26%) percent of those who exited at the Sylmar/ San Fernando Station. Only ten (10%) percent of the 107 respondents who exited at Union Station used employer shuttles to get to work. On the average, approximately thirty-one (31%) percent riders surveyed reported using an employer shuttle to get to work from their exit stations.

Following the quake, various public and quasi-public agencies, private entities and major employers instittuted numerous feeder shuttle services that connected Metrolink stations with major employment centers. The high percentage of respondents who reported using employer shuttles at the Burbank and Glendale Stations, is consistent with the wide availability of employer shuttles at those stations. Burbank has at least four major shuttles which brought employees from the Metrolink Station to work and back. These include the Pasadena Transportation Management Association (TMA); Unified Shuttle which serves the Warner Center and Mid-San Fernando Valley TMA's; and various other shuttles provided by private companies in the market area for the Burbank Station.

Table 24 - Mode of Transportation from Exit Station to Final Work Destination

	Mode of Transportation																	
Exit Station	Transfer to Red Line		Other Metrolink		Employer Shuttle		Picked Up		Drive		Taxi		Bus/DASH		Walk		Totals	
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
Sylmar/San Fernando	-	-	1	2%	12	26%	4	9%	-	-	17	37%	9	20%	3	6%	46	100%
Burbank	-	-	1	1%	78	52%	8	5%	22	15%	6	4%	26	17%	9	6%	150	100%
Glendale	-	-	1	2%	18	29%	2	3%	5	8%	-	-	31	50%	5	8%	62	100%
LA Union Station	39	36%	1	1%	11	10%	2	2%	3	3%	-	-	41	39%	10	9%	107	100%
Total Valid Responses	39		4		119		16		30		23		107		27		365	-
No Response																	19	
Total																	384	

Source: Caltrans - Northridge Earthquake Recovery: Follow-up Metrolink Intercept Survey

Those who exited at the Glendale Station also had numerous shuttles available to them. Kaiser Permanente medical/hospital facilities provided a shuttle for its employees, as did Disney Corporation, and Glendale Community College. In addition, there was a general Studio Limousine/Shuttle Service, a City of Glendale Shuttle Service, and various other shuttles from other companies in Glendale.

Half of those who exited at Glendale and thirty-nine (39%) percent of those who exited at LAUS, respectively, reported taking local public transit buses (City of Los Angeles Department of Transportation (LADOT) or Downtown Area Short Haul (DASH)) to work. Seventeen (17%) percent of riders who exited at Burbank, and twenty (20%) percent of those who exited at Sylmar/San Fernando Stations respectively, reported taking the bus to work. More than a third, thirty-six (36%) percent of the 107 riders who exited at LAUS, at the downtown Los Angeles Station rode the LACMTA's Metrorail Red Line (subway) to their final destination. Systemwide, only seven (7%) percent, or 27 persons out of the 384 surveyed, reported walking to work from their exit station. Of those, ten persons exited at Union Station in downtown, and another nine exited at the Burbank Station.

b. Travel Time From Exit Station to Work

The average time spent traveling from exit station to work varied across exit stations. As Table 25 shows, the shortest average time spent traveling from exit station to work was 13 minutes for respondents who exited at the Burbank Station. Those who exited at Glendale spent 14 minutes, while commuters who exited at Los Angeles Union Station took on an average 17 minutes to get to work from the station. The longest averaged trip time it took for those who exited at Sylmar/San Fernando Station was 23 minutes.

c. Distance Traveled From Exit Station to Work

As seen in Table 25, riders who exited at Los Angeles traveled an average of 5 miles from their exit station to work, while those who exited at the Burbank and Glendale Stations traveled an average of 6 miles from their exit station to work. The average station to work distance for those who exited at Sylmar/San Fernando Station was 11 miles. This indicates that after reaching the train stations, riders still had another leg in their journey ahead of them, either by subway, a train or bus ride, feeder shuttle, short-haul carriers like DASH, or even walking a fair distance to their job sites.

Table 25 - Average Time/Distance from Exit Station to Final Work Destination

Exit Station	Mean Time (minutes)	Mean Distance (miles)	Number
Sylmar/San Fernando	23	11	50
Burbank	13	6	159
Glendale	14	6	63
LA Union Station	17	5	107
Total Valid Responses	-	-	**380**
No Response	-	-	4
Total			**384**

Source: Caltrans - Northridge Earthquake Recovery: Follow-up Metrolink Intercept Survey

2. Ridership Response

Metrolink commuter rail ridership surged dramatically immediately following the earthquake. Ridership on the Santa Clarita Line, which was averaging 1,000 boardings per weekday before the earthquake, reached a high of 22,000 riders on January 25, 1994. By the end of March, ridership was at 7,600. Ridership following the reopening of he I-5 mainline showed only about a twenty (20%) percent decrease in boardings from mid-May through the beginning of July, 1994. The 4,000 daily boardings in early July was still four times higher than pre-earthquake period, indicating some longer-term travel behavioral changes. The reopening of the connector ramps from SR-14 to I-5 on July 8, may have contributed to some additional declines in Metrolink ridership. However, the discontinuation of service at the Palmdale Station on June 20, and the discontinuation of fare discounts after July 31, also affected ridership trends in the summer of 1994. By late September, Metrolink ridership on the Santa Clarita Line was approximately 2,900 riders per day.

As mentioned earlier, the high percentage of respondents who reported using Metrolink commuter rail service because they had a mode available after egressing their final or exit station, is consistent with the wide availability of employer feeder shuttles at those stations. On the average, approximately thirty (30%) percent of train riders surveyed, reported using an employer shuttle to get to work from their exit station. This study has not documented the actual numbers relative to the daily boardings of these shuttles.

E. Public Information And Media

"Metrolink is the fastest growing commuter railroad in the country" said U.S. Secretary of Transportation Federico Pena, shortly after the January 17, 1994 earthquake. The Northridge Earthquake of 1994, required Metrolink to expand its services at a rate much more quickly than its already ambitious expansion plans for the year. The rapid growth had not only impacted engineering and operations, but also had a dramatic impact on its public information dissemination and marketing plans of the system.

Metrolink's Marketing Program Prior to the Earthquake

With less than two years of operation, Metrolink had grown remarkably. Metrolink had built its marketing effort from the standpoint of flexibility. Prior to December 1993, Metrolink's marketing program had concentrated on line and station opening promotions. In December, the system conducted its first comprehensive direct mail/newspaper advertising program on established lines. This program appears to have resulted in fourteen (14%) percent retained increase in ridership during the first two weeks of January 1994.

Typical methods utilized by Metrolink prior to the earthquake to transmit public information, enhance public awareness, thus increase ridership included:

- Periodic news releases and media advisories were prepared and distributed via fax to Los Angeles metropolitan area market wire services, radio, TV stations and daily newspapers;
- Radio, TV traffic reporters received periodic Metrolink delay reports and/or incident information, which was in turn broadcasted on the air during traffic reports;
- Monthly two-page information sheets were faxed and mailed to specific employer contacts located within destination stations;
- Passengers received updated bulletins placed on the seats periodically on board the trains, as well as additional announcements made by Metrolink's train conductor;
- The Metrolink customer service number could be reached by calling 808-LINK in the greater Los Angeles metropolitan area for general information.

Throughout fiscal year 1993-94, Metrolink actively promoted its employer subsidized pass sales to employers impacted by the Air Quality Management District (AQMD) Regulation 15 Programs. Through the Transportation Marketing Associations (TMAs), and Employer Transportation Coordinators (ETCs), employer subsidized pass sales tripled with over seventy (70%) percent of riders purchasing passes through this program. Thus, the ETCs served as Metrolink's primary on-site sales force. The ETCs are in the best position to respond to inquiries regarding Metrolink service, as well as to know what employees are potential or likely train riders. These individuals also knew who is a new employee, and in many cases, when an

employee had changed residences or commute patterns. Subsequently, ETCs were in the perfect position to "close the sale" for Metrolink. To help the ETCs take on a proactive position, Metrolink provided each of the participating coordinators with a supply of promotional 4-ride complimentary tickets, which the ETCs could distribute at their discretion to likely convert riders. Additionally, the ETCs would supplement the trial offer tickets with appropriate customized new rider information kits.

1. Actions Taken

a. Metrolink's Marketing Program and Information Dissemination After the Earthquake

The January 17th earthquake required Metrolink Marketing to shift from a promotional mode to an emergency information dissemination and critical service mode. Immediately following the earthquake, a media response team was established to handle the dramatic increase in media related calls. Daily contact with wire service representatives greatly assisted in disseminating news about line extensions, new station openings, and critical service delays following each 4.5 to 5.0+ aftershocks.

Staff prepared daily Metrolink Status Reports to the news media, which summarized construction progress, service enhancements, and ridership counts. In essence, the earthquake transformed Metrolink's marketing program from a promotional mode to an emergency preparedness/response mode. The one-person media staff was temporarily increased by an additional two persons during the crisis period. During the first month after the earthquake, Metrolink's marketing and public relations staff:

- Responded to over 1,000 inquires;
- Produced and distributed with the help of Metrolink's retained advertising agency known as Pulsar Advertising, over 200,000 direct mail pieces along the impacted Ventura County and Santa Clarita Lines;
- Produced and placed through Pulsar Advertising a dozen newspaper advertisements;
- Added twenty-five (25) operators to their telephone information center;
- Produced and distributed more than twenty (20) schedule update bulletins.

To accommodate the substantial increase in public inquiry regarding Metrolink services, the hours of the live operators were extended at the Metrolink 800 Customer Service Line. Hours of operator availability were also expanded by four hours each weekday, from 6:00 p.m. to 10:00 p.m. Monday through Friday. Eight hours of expanded operator availability were added on Saturdays and four hours were added on Sundays.

Additionally, the demands for public information were also accommodated by increasing the number of ambassadors at the existing stations, such as Santa Clarita. Also the number of hours the station ambassadors were available was extended at stations with extremely high volume passenger numbers, (like Glendale/Burbank), and at the new stations that were constructed.

b. Unified Commuter Action Plan and Guide

As a result of the earthquake, a multi-faceted, joint-effort action plan was developed, through a partnership effort by the California Department of Transportation (Caltrans), the California Business, Transportation and Housing Agency, the Los Angeles County Metropolitan Transportation Agency (LACMTA), and the Mayor's Office of the City of Los Angeles.

This consortium developed a unified Commuter Action Plan (CAP), which incorporated ridesharing and transportation demand management efforts, and were to cover the initial six-week period after the earthquake. The CAP plan was designed to provide accurate information on alternative transportation options in targeted earthquake-affected areas through the use of newspaper inserts, radio and television public service announcements. The estimated cost of this effort was $2.6 million, which also included surveys and an evaluation of the effort. Pacific/West Communication Group was selected to perform this effort.

"The Official Commuter Action Guide", published in February 1994, was an eight-page, newspaper format large color glossy publication, jointly produced by providers of transportation services in Southern California, including Caltrans, LACMTA, SCRRA (Metrolink), Air Quality Management District (AQMD), City of Los Angeles, and Commuter Transportation Services, Inc. *"The Commuter Action Guide"* established a single toll-free telephone number (800-COMMUTE), which provided bi-lingual service information on regional transportation systems available and other commute options, which included routes and schedules for riding commuter rail, rail and bus transit, carpooling partners, vanpooling, park-n-ride lots, and even telecommuting options.

Additional outreach and publicity after the initial six-week period was needed to inform the public about the freeway recovery plan and schedules. This effort included newspaper inserts and brochures, lane closure information in newspapers, and the development of an information hotline. Estimated costs for this effort was approximately $819,000. The firm of Frank Wilson & Associates was selected to perform this contract.

Following the initial emergency response to the earthquake, Metrolink's marketing effort switched to retaining riders who were gained during the earthquake, as well as to marketing the new Orange County Line service which opened March 2, 1994. As part of this effort, Metrolink:

- Produced and placed five-second cable TV spots (two were produced in cooperation with Caltrans), and four radio spots;

- Produced and placed fifteen geographically targeted newspaper advertisements;

- Produced three special newspaper supplement inserts for the Orange County Line, and earthquake impacted areas;

- Conducted a major direct mail (400,000 pieces) campaign along the Santa Clarita/Lancaster and the Ventura County Lines.

Finally, community outreach consultants were retained by Caltrans' Construction Department to deal with issues caused by the round-the-clock re-construction of the freeway system. For example, Caltrans paid for temporary relocation of immediately-adjacent residents, if the construction noise became a major problem.

2. Ridership Response

a. Evaluation of Metrolink's Marketing and Public Information Campaign

During July 29, to August 9, 1994, the Pacific/West Communication Group conducted a telephone survey, under contract from Caltrans, to evaluate the effectiveness of the various public information campaigns, marketing programs that followed immediately after the earthquake and through September, 1994. The study was named *"Commuter Monitor: Post-Earthquake Evaluation-Wave II, Caltrans District 7".* Appendix E illustrates the rating of Metrolink's attributes in relationship to other alternative modes.

The Commuter Monitor provided a standardized monitoring and evaluating system. Its consumer outreach methodology measures and assesses changes in commuter awareness and attitudes of -- and behavior in -- all transportation modes within a geographic region, so that agencies and transportation policymakers can plan, develop and market products and services that consumers desire and will use. *The Commuter Monitor's* standard research methodology compares timely survey research, and current transportation data by mode within a specific region-examining variances and trends in each set of data. *The Commuter Monitor-Wave I Survey* that was conducted immediately after the earthquake, and this report, are intended to continuously track and evaluate the effectiveness of marketing and public relation/information efforts. The key findings in this study are based on four focus areas, including:

- Mode Awareness and perception of specific modes available in the region or corridor;

- Marketing Campaign -- Awareness and perceptions of marketing activities which speak to the marketing ability to communicate effectively with target audiences;

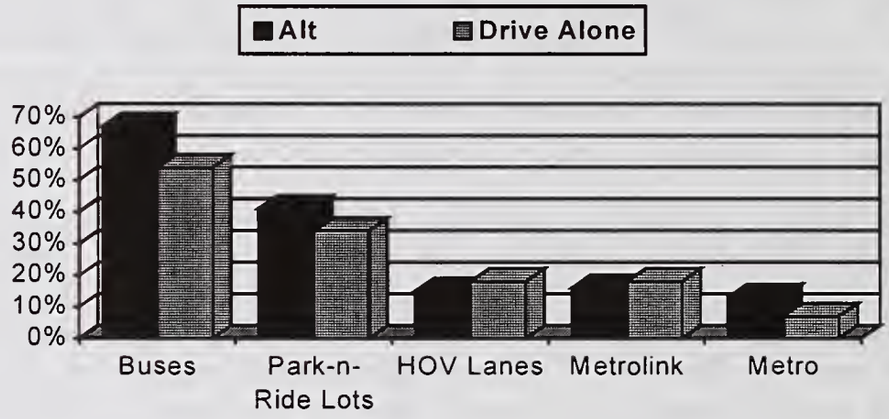
- Stated Effect -- Assessment of the effect of marketing activities on consumers, as stated by the consumer themselves;

- Stated Behavior -- Commuters behavior at the corridor level as stated by consumers. Examine commuter behavior over the course of various or long marketing campaigns, in order to analyze long-term behavioral changes relative to mode.

1. Awareness of Modes

As illustrated on Figure 21, sixty-four (64%) percent of all commuters in this second wave of the Commuter Monitor were aware of at least some alternative mode that provides service from the general area they live to the general area they work/school. Fifty-eight (58%) percent were aware of bus service, seventeen (17%) percent were aware of Metrolink and nine (9%) percent were aware of Metro. Thirty-five (35%) percent were aware of park-n-ride lots along their regular commute. Seventeen (17%) percent were aware of a limited number of carpool lanes in Los Angeles County. Thirty (30%) percent said they were not aware of any alternative modes available to them.

Figure 21 - Awareness of Alternative Modes by Drive Alones and Alternative Mode Commuters



Source: Pacific/West Communications Group, Inc. - District 7 Commuter Monitor

Analysis and Conclusions

Forty-three (43%) percent of commuters who were aware of alternative modes said they are likely to sample those modes. Thirty (30%) percent of commuters who reported that they were not aware of alternative modes, said they would sample some way of commuting other than driving alone. Thirty-four (34%) percent were unlikely to sample alternative transportation modes.

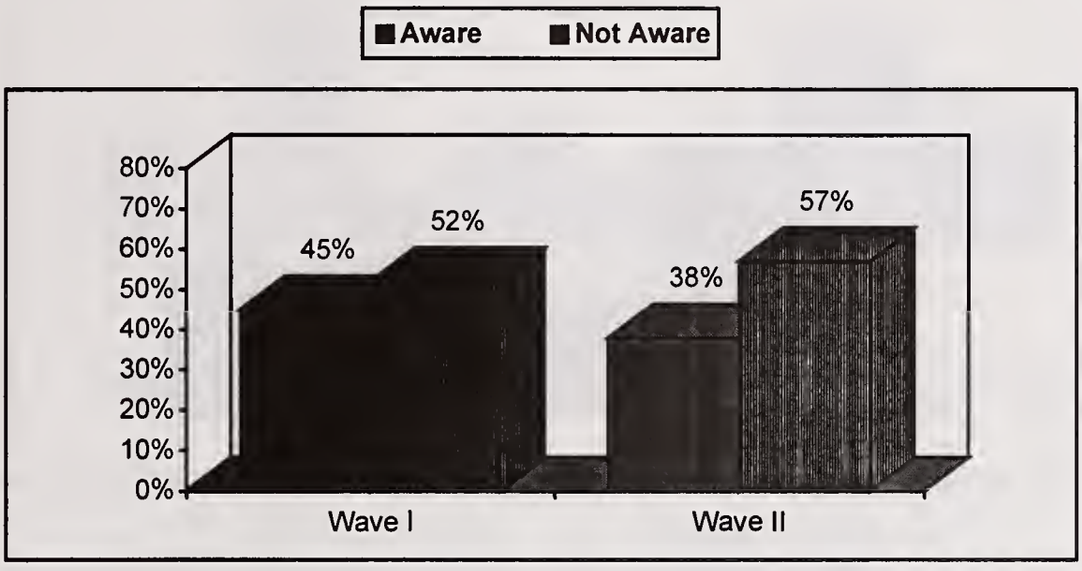
Awareness of available alternative modes correlates with socio-economics: lower socio-economic groups are significantly more aware of transportation products, largely due to the

placement of those products. For example, the desparity in awareness of alternative modes is greatest for buses, where little disparity exists for other modes.

2. Awareness of Marketing and Promotion Campaign

Key findings of this section indicated in Figures 22 and 23, show that thirty-eight (38%) percent of commuters reported that they had recently seen, read or heard messages about alternatives to driving alone and getting around easier after the earthquake. Specifically, nine (9%) percent recalled messages about Metrolink, another six (6%) percent recalled information about alternative modes, six (6%) percent recalled carpool themes, and finally three (3%) percent recalled maps of detours around earthquake-damaged areas.

Figure 22 - Awareness of Specific Messages about Alternative Mode Commuting



16%	Carpool	9%	Metrolink
13%	Every Thursday	6%	Alt. Routes
9%	Ride with People at Work	6%	Carpool
6%	TV/Radio	4%	Maps/Detours
4%	Employers	3%	Easier Commute
3%	Reduce Traffic	2%	Less Congestion
1%	Reduce Pollution	1%	1-800-COMMUTE

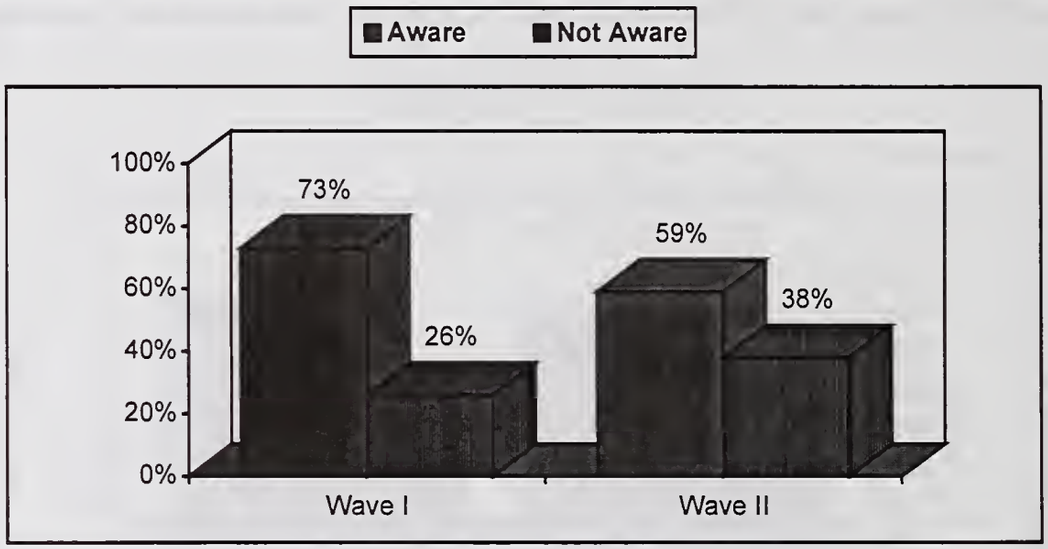
Source: Pacific/West Communications Group, Inc. Group, Inc - District 7 Commuter Monitor

Analysis and Conclusions

Forty-four (44%) percent of commuters were aware of specific messages about alternative modes. Fifty-nine (59%) percent recalled general messages about alternatives to driving alone in the post-earthquake period.

Thirty-eight (38%) percent who were aware of general messages were likely to sample alternative modes, as compared to forty-four (44%) percent, who were aware of specific information about alternative modes and were likely to sample alternative modes.

Figure 23 - Awareness of General Messages about Alternative Mode Commuting



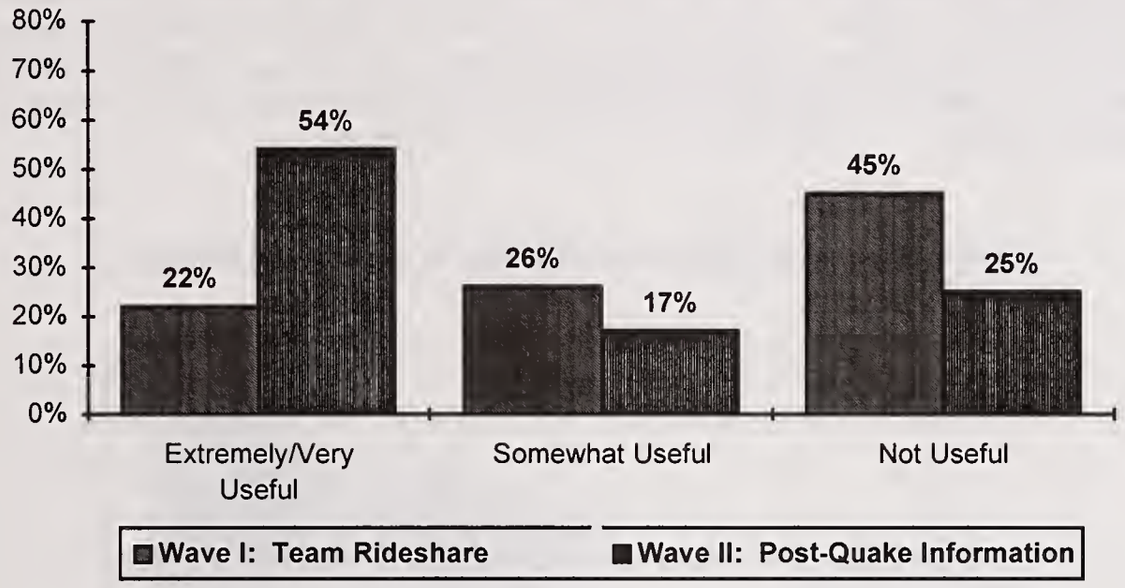
18%	Carpooling	12%	Carpools
15%	Freeway Cogestion	11%	Metrolink
11%	Pollution/ Environemnt	8%	Alternative Routes
8%	Carpool Thursday	4%	Congestion
6%	General Info	4%	1-800-COMMUTE
6%	Save Money/ Gas	3%	Buses
6%	1-800-COMMUTE	3%	Prices
5%	Employers	3%	Easier Commuting

Source: Pacific/West Communications Group, Inc. Group, Inc - District 7 Commuter Monitor

The key findings from the Perceptions of Marketing and Promotions Campaigns, as shown on Figure 24, indicate that seventy-three (73%) percent of the 1-800-COMMUTE callers

reported that the information they received was helpful in choosing a way of commuting after the earthquake. Seventy-nine (79%) percent of commuters who were aware of specific promotional messages about getting around after the earthquake said the information they received was useful. The correlation between useful information and trial of an alternative mode is clear. In general, commuters who believed the post-earthquake information to be useful were three times more likely to sample alternative modes.

Figure 24 - Preferred Usefulness of Marketing and Promotion Campaigns



Source: Pacific/West Communications Group, Inc. - District 7 Commuter Monitor

3. Stated Effects

As indicated in Figure 25, the key findings from the Stated Effect section of the survey indicated, that thirty-five (35%) percent of commuters who recalled seeing specific messages about alternative modes, said that those messages made them more likely to find out about those alternatives. Forty-three (43%) percent of the part-time "Drive Alone" commuters were more likely to seek more information. Seventy-three (73%) percent of commuters who sampled alternative modes for the first time since the earthquake, said they are likely to continue using the alternative mode. Eleven (11%) percent were unlikely to try alternative modes again.

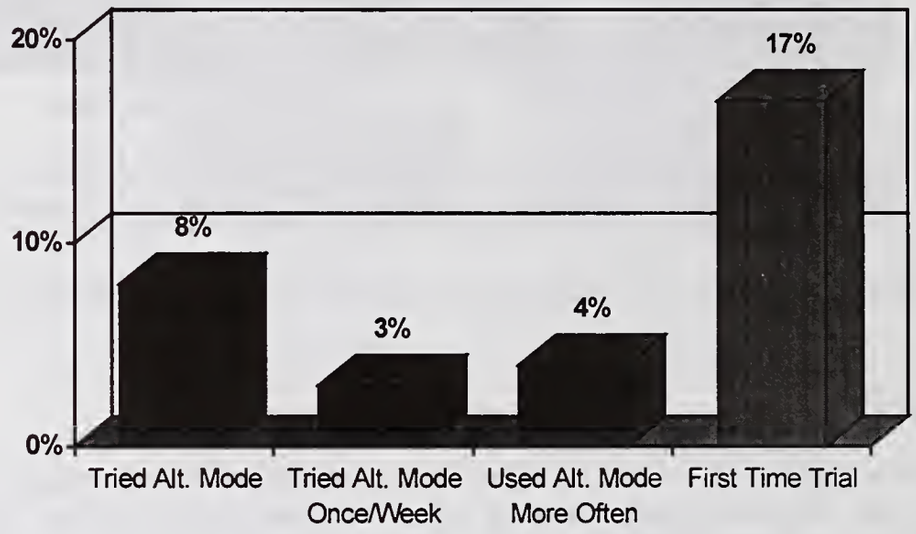
Analysis and Conclusions

Sixty-three (63%) percent of commuters likely to seek more information, were also more likely to sample alternative products/services. These data strengthen the case that

information is a very direct path to purchase intent and, ultimately, product trial. Twenty-one (21%) percent of the commuters said that they have to tried to find out information about carpooling and other alternative modes since the earthquake. Comparatively, only eight (8%) percent said that they sought out information prior to the earthquake (Wave I data).

Fifty-five (55%) percent of those who looked for alternative mode information, said they were likely to sample those products. The 1-800-COMMUTE phone number had become the source for consumer information about transportation services. Thirty-nine (39%) percent of commuters who looked for information after the earthquake, said they used the 1-800-COMMUTE number. Thirty-eight (38%) percent said they would use the 1-800-COMMUTE number if they needed information about commuting. Most importantly, fifty-seven (57%) percent of the 1-800-COMMUTE callers and users were likely to sample alternative modes.

Figure 25 - Stated Effects of Alternative Mode Trial Results



Source: Pacific/West Communications Group, Inc. - District 7 Commuter Monitor

4. Stated Behavior

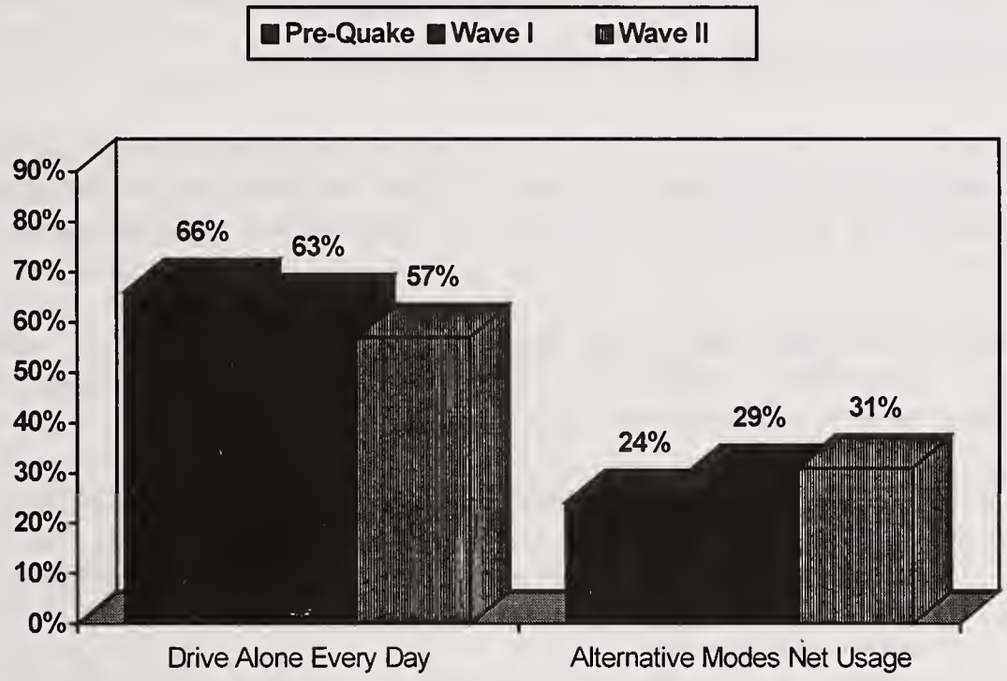
As shown on Figure 26, the key findings of the Stated Behavior section of the survey indicates, thirty-one (31%) percent of the commuters said they used alternative modes once a week. Eleven (11%) percent were using alternative modes daily and thirteen (13%) percent said that they are commuting some other way than driving alone every day. Driven largely by changing commute behavior in the earthquake areas, commuters collectively have indicated that they

have decreased driving alone on a daily basis from sixty-six (66%) percent down to fifty-seven (57%) percent currently.

Analysis and Conclusions

Based on the aforementioned data and discussion presented, a definite case can be made in support of the fact that based on the evaluation surveys, a long-term behavioral shift has occurred in transforming former "drive-alone" commuters into a ride-sharing mode, based on the immediate and long-term public information, advertising and marketing efforts of all agencies involved in the delivery of transportation services in the metropolitan region of Los Angeles and in Southern California.

Figure 26 - Stated Behavior Comparing Drive Alones and Net Alternative Mode Usage



Source: Pacific/West Communications Group, Inc. - District 7 Commuter Monitor

VI. RECOMMENDATIONS

The 1994 Northridge Earthquake that struck the Los Angeles region, for the second time in twenty-five years in the same general vicinity of the valleys northwest of downtown Los Angeles, clearly illustrates the need for emergency preparedness in the event of cataclysmic disasters such as earthquakes, floods and fires in California, as well as tornadoes and hurricanes in other parts of the United States. Although it is difficult to predict where and when disasters will strike, or emergency conditions will prevail, it is crucial for all public agencies to develop policies, procedures and plans to deal with such events immediately after it happens, and in a concerted manner. The following recommended actions are presented as a guide as to how to proceed following a disaster as lessons learned from the Los Angeles earthquake recovery efforts.

ADMINISTRATIVE ACTIONS - Prior to an Emergency

- Establish a current list or chart of all local city, county, state and federal agencies involved in transportation (both highway and transit), as well as emergency management agencies, their functional responsibilities, names of key officials, address and telephone/fax numbers.

- Establish inter-agency cooperative arrangements, prior understanding, written or legally binding agreements, establishing functional responsibilities during disasters or emergencies, for the sole purpose of temporarily recruiting, borrowing or procuring:

    i. personnel, such as administrators, inspectors, structural engineers, maintenance crews, etc.
    ii. transportation equipment, such as vans, buses, rail cars, locomotives, etc.
    iii. communications equipment, such as beepers, walkie-talkies, field personal phones or cellular phones, etc.
    iv. surveillance equipment, such as surveillance cameras, light planes, helicopters.

ADMINISTRATIVE ACTIONS - Following a Disaster

- Establish an emergency recovery task force composed of key members of major transportation related agencies, to ensure the coordination of all efforts, so as to remove duplication of efforts, and to remove roadblocks to rapid rebuilding and recovery from the effects of the emergency. This will also help foster a cooperative spirit and ensure inter-agency rivalry is not manifested.

- Develop a multi-faceted, joint-effort action plan through a partnership of key transportation providers, following the strategy of (a) initial emergency response, (b) interim traffic management, and (c) long term rebuilding efforts.

DISASTER ASSESSMENT

- Assess the impacts caused by the disaster by initiating immediate inspections of freeways, bridges and roads, and ordering closures of structures which have either collapsed, or are considered unsafe.

EMERGENCY MANAGEMENT

- Develop a Traffic Management Center for the purpose of traffic data collection, vehicle detection system in the field, helicopter surveillance, tow service, short-term traffic control measures, deployment of highway patrol units, operating the Emergency Detour Management Center and communication equipment, providing comprehensive public awareness campaign and motorist information regarding traffic conditions.

- Develop an Earthquake or Emergency Planning and Implementation (EPI) Center and install the necessary field instrumentation such as changeable message signs, closed circuit television (CCTV) cameras, slow scan CCTVs, highway advisory radios, video image processing systems, and vehicle detection stations, all utilizing a state-of-the-art Very Small Aperture Transmitter (VSAT) and cellular communications system. The functions of the EPI-Center are for detour planning, motorist advisories and traffic surveillance and detection.

- Formulate traffic management strategies and plans by initiating detours around closed freeways and roads. Develop a network of high-occupancy-vehicle lanes along the established detours, in order to provide major capacity to transport high volumes of people using carpools/vanpools, and/or buses.

PUBLIC INFORMATION

- Establish computerized means for communicating roadway information to the public utilizing Internet.

- Establish "Freeway Vision", a computer map showing the "real time" conditions of the freeway system.

- Utilize cable channels that provide public service or access, to disseminate traffic congestion and delays closures or detours.

- Establish a single comprehensive multi-faceted, joint-effort plan for public information dissemination using all forms of media, including newspapers, television, radio to inform the public of important information regarding alternative transportation options.

- Establish a single toll-free telephone, such as 1-800-COMMUTE, which provides local and regional commute information options for bus and rail routes and schedules, carpool/vanpool partners, park-n-ride lots.

RIDESHARING

- Establish, if not already existing, ride-share services to match drivers with passengers through a computerized repository of names, such as Commuter Computer.

TELECOMMUTING

- Establish in cooperation with communication vendors, such as telephone companies, telecommuting centers and services for stranded employees in disaster affected areas, such programs as Emergency Telecommuting Relief Packages which offer business type telephone/fax systems for residences, install phone banks, and provide loans that cover such costs as computers and modems, and other telecommuting related equipment.

RECONSTRUCTION EFFORTS

- Encourage public officials such as state governor(s), county supervisors and city mayors to sign Executive Orders immediately following a disaster allowing public agencies to streamline its contracting/construction process, and relax certain statutory requirements, in order to speed up the process of designing, advertising, awarding and beginning construction contracts. The normal process time can be reduced from 4 - 5 months down to just a week or two, through such methods as Informal Bid Contracts and Force Account.

- Encourage construction contracts to utilize a system of incentives/disincentives with bonuses for early completion. Under such a process, contractors may be allowed to increase their work force, work around the clock 7 days/week, 24 hours/day, even in inclement weather in order to finish the job early.

- Select one program manager who is responsible for the total coordination of the rebuilding process. Projects should be partnered between the public agency and the private contractor, to facilitate the progress of the work, and make quick decisions right on the job site. Great emphasis should be placed on individual initiative and problem solving in the field.

- Maintain readily available "as-built" plans of all structures and facilities which would facilitate early completion of rebuilding efforts.

- Rebuild or replace existing structures or facilities to its status quo prior to the disaster, which in most cases would not necessitate cumbersome environmental review process.

TRANSPORTATION SERVICES AND FACILITIES

- Procure extra buses, rail cars and locomotives, in order to facilitate early deployment of equipment to disaster areas. If not readily available, a quick arrangement or master agreement with agencies who possess the needed equipment is imperative through such means as short-term leases, loans or even purchases.

- Extend line-haul bus or passenger rail services at the earliest date possible which would help intercept residents in those isolated area affected by the disaster. In the absence of trackage for commuter rail service to these areas, arrangements should be pursued with freight railroads to obtain permission to operate passenger rail service on a temporary basis.

- Encourage all transit providers to introduce temporary local bus service modifications, including adding new bus routes, schedule extensions and changes of existing bus routes.

- Increase the capacity of each train as travel demand requires, by increasing the number of cars per train, and reducing the headway between each train.

- Undertake track improvements such as straightening out curves, super-elevating the track, replacing old or worn out track and ties, as well as improvement to the signalization system, in order to increase line speed and decrease travel time.

- Develop plans for the construction of temporary or permanent rail stations, platforms and ancillary park-n-ride lots.

- Develop new temporary or permanent park-n-ride lots to support the use express or line-haul buses or train stations, or carpool/vanpool staging areas.

- Develop a comprehensive network of shuttles or feeder services, using buses or vans (to transport passengers from their homes to the originating train stations or major bus stops/transfer centers, and to transport them from the exiting station to their final work destinations at major employment areas). Such shuttles can be financed by FEMA during emergencies, while others can be provided by employers, Transportation Management Associations/Organizations, or simply publicly sponsored.

FARE SUBSIDIES

- Develop changes to the fare structure by having transit agencies offer fare discounts as a means of attracting or keeping gained ridership.

- Promote actively the sale of employer subsidized monthly passes, especially to employers impacted by air quality regulations, through Transportation Management Associations and Employer Transportation Coordinators.

MARKETING AND PROMOTION

- Establish a media response team to handle the increased number of calls, regarding line extensions, station openings, construction progress, service enhancements or interruptions, ridership counts, and increased ambassadors at stations.

- Retain the services of professional advertising agencies for the advertising production, promotion and distribution of direct mail pieces, geographically targeted newspaper ads, service schedule updates, five-second ads on television and cable channels, and radio spots.

VII. GLOSSARY OF TERMS

ADT	Average Daily Traffic on freeways or roads-usually denoted in both directions
ADR	Average Daily Ridership
AMTRAK	National Railroad Passenger Corporation, a quasi-public national corporation managed by US/DOT which provides passenger rail service, known as America on Tracks
AQMD	Air Quality Management District
AVTA	Antelope Valley Transit Authority
CALTECH	California Institute of Technology
CALTRANS	California State Department of Transportation
CAP	Commuter Action Plan
CCTV	Closed Circuit Television
CHP	California Highway Patrol
CMS	Changeable Message Signs
CTS	Commuter Transportation Services, also known as Commuter Computer
DASH	Downtown Area Short Haul
DOT	Department of Transportation
EB	Eastbound
EPI-Center	Earthquake Planning and Implementation Center
ETC	Employee Transportation Coordinator
FEMA	Federal Emergency Management Agency
FERF	Federal Emergency Restoration Funds
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GTE	General Telephone, a provider of communication services
HAR	Highway Advisory Radio
HOV	High Occupancy Vehicle, a lane on freeways dedicated for vehicles with two or more occupants
I-5	Interstate 5, also known as the Golden State Freeway
I-10	Interstate 10, also known as the Santa Monica Freeway
ISDN	Integrated Services Digital Network
L.A.	Los Angeles
LACBD	Los Angeles Central Business District
LACMTA	Los Angeles County Metropolitan Transportation Authority
LADOT	City of Los Angeles Department of Transportation
LAUS	Los Angeles Union Station, a multi-modal hub of transportation
LOSSAN	Los Angeles to San Diego train corridor
METRO	Bus and Rail Transit Services provided by LACMTA
METROLINK	Commuter Rail Services provided by the SCRRA
MPH	Miles Per Hour
MTA	Metropolitan Transportation Authority, also known as LACMTA

NB	Northbound
PACBELL	Pacific Bell or Pacific Telesis, a provider of communication services
SB	Southbound
SCRRA	Southern California Regional Rail Authority, also known as Metrolink
SC-CCTV	Slow-Scan Closed Circuit Television
SCL	Santa Clarita Line of Metrolink Commuter Rail Services
SP	Southern Pacific Freight Railroad
SCT	Santa Clarita Transit
SR-14	State Route 14, also known as Antelope Valley Freeway
SR-118	State Route 118, also known as Simi Valley Freeway
TMA	Transportation Management Association
TMC	Traffic Management Center
TMP	Traffic Management Plan
TMO	Transportation Management Organization
UP	Union Pacific Freight Railroad
URL	Universal Resource Locator
US/DOT	United States Department of Transportation
VDS	Vehicle Detection Station
VIPS	Video Image Processing System
VCL	Ventura County Line of Metrolink Commuter Rail Services
WB	Westbound

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IX. APPENDICES

APPENDIX A
Earthquake Study Survey Questionnaire

LOS ANGELES EARTHQUAKE TRANSPORTATION IMPACTS

SURVEY QUESTIONNAIRE

BACKGROUND

The Los Angeles Earthquake of January 17, 1994, resulted in the destruction of key freeway links, causing severe hardship to personal mobility and causing massive auto congestion. Commuters who traditionally used autos, had to utilize other means, specifically Metrolink, a commuter rail system, which connects Los Angeles to the Santa Clarita and San Fernando Valleys to the north. Upon the reconstruction of the freeways, most new Metrolink customers returned to auto commuting again. However, some remained as Metrolink users. A year later, ridership on the Santa Clarita Valley rail line is now almost three times greater than pre-earthquake levels. This situation provides a natural laboratory to study ridership responses to service changes.

GARDNER Consulting Planners™ (GCP) -- is under contract to the U.S. Department of Transportation Federal Transit Administration (USDOT/FTA) to collect and tabulate data directed at the documentation of exactly what happened during the post earthquake period. GCP has also received authorization from Southern California Regional Rail Authority (SCRRA) -- Metrolink to proceed with the survey. Our assignment is to identify and quantify the actions taken by Metrolink and others to enhance service after the earthquake. In addition, to quantify the ridership response to these changes, and to quantify the costs associated with each of the above improvements.

EVALUATION OVERVIEW AND OBJECTIVES

The objective of this questionnaire is to better understand the trade-offs made by the commuters in the corridors effected by the earthquake. The intent is to use the information developed from this survey to make more informed decisions on cost-effective actions that can be utilized by Metrolink and other commuter rail agencies to further enhance ridership.

The purpose of this questionnaire is to solicit pertinent data dealing with the occurrences just before, immediately after and post earthquake scenarios. The following is the target information that is being requested from the affected or appropriate agencies based on four distinct time scenarios:

(i) Prior to the earthquake;
(ii) Immediately following the earthquake (0-21 days);
(iii) Post earthquake (22-90 days); and
(iv) Current conditions.

Actual information availability will dictate the time frames and the depth of the analysis and documentation of the findings. All participating agencies are encouraged to provide as much information as possible relative to the requested existing relevant data. Additionally, any organizational contacts who can provide the requested data or valuable insights as to what trade-offs were made by commuters in the corridors responsible by the earthquake, would be essential and greatly appreciated.

LOS ANGELES EARTHQUAKE
TRANSPORTATION IMPACTS
SURVEY QUESTIONNAIRE
- SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY (SCRRA) (Metrolink) -

General Conditions

- What was the Average Daily (ADT) Ridership on the train for the Santa Clarita and Moorpark lines?
- What were the morning and afternoon peak period ridership volumes?
- How many trains ran on a daily basis and during peak periods?
- How was the additional ridership demand accommodated immediately following the earthquake?
- Were additional trains or cars added to the system after the earthquake?
- Was the headway between trains increased or decreased following the earthquake?
- How many train stations were there before the earthquake?
- Were there any new stations added after the earthquake and how many new stations currently exist?
- How soon after the earthquake were the new stations built and ready for boarding?
- Did the parking spaces inventory change after the earthquake?
- Was there any additional park-and-ride lots established after the earthquake?
- Was there an increase in' kiss-n-ride' activity following the earthquake?
- Was there a change in the fare structure to attract new patronage following the earthquake?
- Was there any quantification of costs associated with the above rail service/facility improvements?

Public Information and Media Dissemination

- What are typical methods utilized by your agency to transmit public information, enhance awareness, thus increase ridership? For example: radio, television, newspapers, employer bulletins, and telephone information lines, etc.
- What additional means or changes in the frequency of news releases did you undertake as a result of the earthquake?
- Was there a substantial increase in public inquiry regarding train service after the earthquake; and how was this demand accommodated?
- Have additional telephone lines or operators put in place a result of the earthquake?
- Is public information being transmitted electronically since the earthquake? For example, touch screen, cable, on-line computers, etc.?
- Was there a quantification of costs associated with the additional media activity due to the earthquake?

Emergency Response Situations

- Describe any official emergency response activity or command center that responded to emergencies prior to the earthquake.
- Has a permanent emergency response command center been established since the earthquake?
  Describe the types of official agreements and understandings between agencies that handle transportation/transit services that existed prior to the earthquake.
- What types of agreements and memorandum of understanding between agencies have been developed since the earthquake?

Transit Ridership Characteristics and Attitudes

- Were surveys developed and conducted since the earthquake?
- Were surveys conducted as to the trip origination/destination?
- Were surveys conducted as to what influenced the transit rider to choose this mode?
- Were there attitude surveys which might indicate positive/negative elements which might encourage/discourage transit use? Possible elements might include comfort and convenience, safety (personal or operational) and security (perceived or real), passenger amenities, accessibility, frequency of services, length of transit trip, door-to-door time, directness/in-directness of a particular route, and others.
- Are there any surveys that might indicate changes in the fare structure relative to attracting riders?

LOS ANGELES EARTHQUAKE
TRANSPORTATION IMPACTS
SURVEY QUESTIONNAIRE
-CALTRANS-

STATE FREEWAY AND HIGHWAY SYSTEM (Includes Interstate 5, State Routes 2, 101, 118, 126, 170, 210, 405) and significant **Arterial Highways** (including The Old Road, San Fernando Road, Sierra Highway, Foothill Boulevard, Placerita Canyon Road, Little Canyon Road, Balboa Boulevard for north and south corridors).

General Conditions

- What was the Average Daily Traffic (ADT) on each of the freeways and arterioles mentioned above?
- What were the morning and afternoon peak hour volumes on these facilities?
- Which sections or links of the freeway system were closed immediately or at a later time after the earthquake?
- What were the affective date and time of these closures?
- When were detours or by-pass lanes opened for general public use?
- When did reconstruction activity begin on the damaged portions of the freeways?
- When was freeway reconstruction completed (by link or as a whole)?
- Was there a quantification of costs associated with the reconstruction of the freeways?

Public Information and Media Dissemination

- What typical methods are utilized by your agency to transmit public information regarding freeway and roadway conditions, closures, emergency related detours? For example: radio, television, newspapers, employer bulletins, telephone information lines, etc.
- What additional means or changes in the frequency of news releases did you undertake as a result of the earthquake?
- Was there a substantial increase in public inquiry regarding freeway conditions after the earthquake, and how was this demand accommodated?
- Were additional telephone lines or operators put in place as a result of the earthquake?
- Is public information being transmitted electronically since the earthquake -- i.e., touch screen, cable, on-line computers?
- Was there a quantification of costs associated with the additional media activity due to the earthquake?

Emergency Response Situations

- Describe any official emergency response activity or command center that responded to emergencies prior to the earthquake.
- After the earthquake has a permanent emergency response center been established?
- Describe the types of official agreements and understandings between agencies that handle transportation/transit services that existed prior to the earthquake.
- What types of agreements and memorandum of understanding between agencies were developed since the earthquake?

LOS ANGELES EARTHQUAKE
TRANSPORTATION IMPACTS
SURVEY QUESTIONNAIRE
Los Angeles County Metropolitan Transportation Authority (LACMTA)
- BUS TRANSIT (MTA) -

General Conditions

- What was the Average Daily Ridership (ADR) before and following the earthquake?
- What were the morning and afternoon peak period volumes before and following the earthquake ?
- How many buses ran during the day and during peak periods?
- How was the additional ridership demand accommodated following the earthquake?
- Were additional routes and/or buses added to the system after the earthquake?
- Was the headway between buses increased or decreased after the earthquake?
- Were there any changes to the number of bus stops on the system? Any service route changes made?
- Was there a change in the fare structure to attract new patronage after the earthquake?
- Was there any quantification of costs associated with the above bus service/facility improvements?

Transit Ridership Characteristics and Attitudes

- Were there surveys conducted as to the nature of the transit trip?
- Were there surveys conducted as to the trip origination/destination?
- Were there surveys conducted as to what influenced the transit rider to choose this mode?
- Were there attitude surveys which might indicate positive/negative elements which might encourage/discourage transit use? Possible elements might include comfort and convenience, safety (personal or operational) and security (perceived or real), passenger amenities, accessibility, frequency of services, length of transit trip, door-to-door time, directness/in-directness of a particular route, and others.
- Are there any surveys that might indicate changes in the fare structure relative to attracting riders?

Public Information and Media Dissemination

- What are typical methods utilized by your agency to transmit public information , enhance awareness, thus increase ridership? For example: newspapers, television, radio, employer bulletins, telephone information lines etc.
- Was there a substantial increase in public inquiry regarding transit service after the earthquake, and how was this demand accommodated?
- Have additional telephone lines or operators put in place as a result of the earthquake?
- Is public transit information being disseminated electronically - i.e. touch screen, cable, on-line computers?
- Was there a quantification of costs associated with the additional media activity due to the earthquake?

Emergency Response Situations

- Were there any official emergency response activity or centers to respond to any emergency prior to the earthquake?
- Has a permanent emergency response command center been established since the earthquake to respond to public transportation/ transit mobility needs?
- What types of official agreements and understandings between agencies that handle transportation/transit services been established since the earthquake?
- How were such agreements accomplished in the past and present?
- Is there currently the ability to respond to the increased public information demand to meet any type of emergency (i.e., earthquakes, fires or floods)?

LOS ANGELES EARTHQUAKE
TRANSPORTATION IMPACTS
SURVEY QUESTIONNAIRE
Santa Clarita Transportation Authority (SCTA)
- BUS TRANSIT (Santa Clarita Transit) -

General Conditions

- What was the Average Daily Ridership (ADR) before and following the earthquake?
- What were the morning and afternoon peak period volumes before and following the earthquake ?
- How many buses ran during the day and during peak periods?
- How was the additional ridership demand accommodated following the earthquake?
- Were additional routes and/or buses added to the system after the earthquake?
- Was the headway between buses increased or decreased after the earthquake?
- Were there any changes to the number of bus stops on the system? Any service route changes made?
- Was there a change in the fare structure to attract new patronage after the earthquake?
- Was there any quantification of costs associated with the above bus service/facility improvements?

Transit Ridership Characteristics and Attitudes

- Were there surveys conducted as to the nature of the transit trip?
- Were there surveys conducted as to the trip origination/destination?
- Were there surveys conducted as to what influenced the transit rider to choose this mode?
- Were there attitude surveys which might indicate positive/negative elements which might encourage/discourage transit use? Possible elements might include comfort and convenience, safety (personal or operational) and security (perceived or real), passenger amenities, accessibility, frequency of services, length of transit trip, door-to-door time, directness/in-directness of a particular route, and others.
- Are there any surveys that might indicate changes in the fare structure relative to attracting riders?

Public Information and Media Dissemination

- What are typical methods utilized by your agency to transmit public information, enhance awareness, thus increase ridership? For example: newspapers, television, radio, employer bulletins, telephone information lines etc.
- Was there a substantial increase in public inquiry regarding transit service after the earthquake, and how was this demand accommodated?
- Have additional telephone lines or operators put in place as a result of the earthquake?
- Is public transit information being disseminated electronically -- i.e. touch screen, cable, on-line computers?
- Was there a quantification of costs associated with the additional media activity due to the earthquake?

Emergency Response Situations

- Were there any official emergency response activity or centers to respond to any emergency prior to the earthquake?
- Has a permanent emergency response command center been established since the earthquake to respond to public transportation/ transit mobility needs?
- What types of official agreements and understandings between agencies that handle transportation/transit services been established since the earthquake?
- How were such agreements accomplished in the past and present?
- Is there currently the ability to respond to the increased public information demand to meet any type of emergency (i.e., earthquakes, fires or floods)?

APPENDIX B
Survey Questionnaire Contact List

LOS ANGELES 1994 EATHQUAKE TRANSPORTATION IMPACT STUDY

CONTACT LIST FOR SURVEY QUESTIONNAIRE

	AGENCY	FUNCTION	CONTACT NAME / POSITION	PHONE NUMBER	FAX NUMBER
1	FEMA	Regional Office		(800) 462-9029	
2	FTA	Regional Office	Stewart Taylor - Dir. Leslie Rogers - Dep. Dir.	(415) 744 3133	(415) 744 7268
3	CALTRANS	Construction	Stan Lisiewicz- Dep. Dir.	(213) 897 0362	(213) 897 0360
			Dan Goble	(213) 897 0059	(213) 897 0073
		Planning	Ron Kosinski -Int.Dep.Dir.	(213) 897 0703	(213) 897 0685
		Traffic Operations	Chuck O'Connell	(213) 897 0362	(213) 897 0360
		Public Affairs	Marge Tintilli	(213) 897 3800	(213) 897 3674
4	SCAG		Mark Pissano -Exec. Dir.	(213) 236 1808	(213) 236 1825
			Lou Moret -Dep. Dir.	(213) 236 1818	(213) 236 1825
		Planning	Jim Gosnell -Dir.	(213) 236 1889	(213) 236 1936
		Programming	Ricardo Alvarez -Dir.	(213) 236 1865	(213) 236 1825
5	MTA		Franklin White-Exec. Dir.	(213) 244 7400	(213) 244 6014
		Operations	Art Leahy - Exec. Officer	(213) 244 7473	(213) 244 6014
		Construction	Pam Murano- Manager	(213) 244 6257	(213) 244 6000
		Facities Planning.	Linda Bohlinger -Dir.	(213) 623 1197	(213)
		Emerg. Prep.	Robert Torres -Manager	(213) 972 4963	(213) 972 4949
		Public Affairs	Lupe Valdez -Manager	(213) 244 6163	(213) 244 6000
6	SCRRA		Richard Stanger -Dir.	(213) 244 6803	
	(Metrolink)		Adrianne Brooks -Dep.Dir.	(213) 244 7179	(213) 244 1469
		Budget	Bruce Ferguson -Manager	(213) 244 6192	(213) 244 6007
		Enforcement	Marc Klugman -Bur. Comm.	(213) 244 6877	(213) 244 6027
7	CTS	Commuter Comp.	Jim Simms -Pres.	(213) 365 6800	

LOS ANGELES 1994 EATHQUAKE TRANSPORTATION IMPACT STUDY

CONTACT LIST FOR SURVEY QUESTIONNAIRE

	AGENCY	FUNCTION	CONTACT NAME / POSITION	PHONE NUMBER	FAX NUMBER
8	PULSAR	Marketing	Susan Reed	(213) 669 5200	(213) 383 8034
9	COUNTY OF LOS ANGELES	Fire Dept. Road/Traffic Disaster Office	Steve Valanzuela, Captain	(213) 881 2411 (818) 458 3539 (213) 267 2521	(213) 267 0668
10	CITY OF LOS ANGELES	PW- Traffic Fire Dept./ Emerg. Prep.	Mr. Cardinale - Captain	(213) 485 2257 (213) 773 7273	(213) 756 9681
11	SANTA CLARITA	Transit Authority	Ronald Kilcoyn	(805) 294 1287	

APPENDIX C
Chronology of Earthquake Seismic Activity and Maps

Southern California Seismographic Network

A Cooperative Project of
Caltech and the U. S. Geological Survey

January 20, 1994

Weekly Earthquake Report for Southern California

January 13 - 19, 1994

Prepared by: Kate Hutton, Seismological Laboratory
(kate@bombay.gps.caltech.edu)
Egill Hauksson, Seismological Laboratory
Lucy Jones, U.S. Geological Survey
California Institute of Technology

This document is a commentary on current seismic activity. The earthquakes discussed have been detected and processed automatically. All epicenters and magnitudes have been reviewed to exclude obvious blunders; however, they must still be considered preliminary. For further information, please contact the authors or the Caltech Public Relations Office at 818-395-6326. For daily updates, call our Earthquake Information Hotline: 818-395-6977.

This week's Report covers the time period from midnight Tuesday morning, January 13, Pacific Standard Time, to midnight Wednesday night, January 19, Pacific Standard Time. There are 857 this week, and the list is by no means complete since we are behind in the data processing.

It's probably safe to say that virtually everyone in southern California was awake at 4:31 am on Monday. The MS6.6 earthquake, that originated under Northridge, in the San Fernando Valley, scared the wits out of most of us and left many standing in the middle of piles of debris. Damage was most extensive in San Fernando Valley, Simi Valley, and the northern part of Los Angeles Basin.

Although we had some difficulty early in the sequence due to a phone line dropout caused by the main shock and two seismic stations destroyed by the Malibu fire in October, the Southern California Seismographic Network has recorded over 1000 aftershocks to the Northridge quake, and the staff has done preliminary analysis on about half of them. Most were small, except for 245 of them that were M3.0 or larger. Of these, 26 were M4.0 or larger, and 2 were M5.0 or larger. Their hypocenters outline a shallowly south-dipping plane, which is in agreement with the thrust focal mechanism of the main shock. The rupture started at about 9 miles depth and, during the course of the main shock, ruptured upward and northward, spreading both eastward and westward.

The northern end of the fault extends under the Santa Susana Mtns. The Frew fault is one of several that could have been responsible.

The rate of aftershocks is decaying as expected for a "textbook" earthquake, just slightly more energetic than the average. If the same rate of decay continues, about 7 more M5 or larger aftershocks are expected during the sequence, which will be going on for months with every decreasing frequency.

Many people have questioned the relationship between the Northridge quakes and the cluster offshore of Santa Monica last week and this week. Whether they were "related" is still an open question. No physical cause and effect relationship is known, and quakes in the Santa Monica Bay are common enough that coincidence is a quite reasonable explanation. The two quakes in the table that have "West Los Angeles" locations are probably actually offshore and in the cluster, mislocated because of the high rate of Northridge aftershocks. In the same vein, the activity in the rest of the Network is probably not lower after the Northridge main shock, as the table seems to imply. The regular background activity and the week's allotment of Landers quakes are probably buried in the aftershocks and will emerge with further data processing.

The table lists the quakes that were M2.0 or larger in the central part of the coverage area, during the time period before the Northridge main shock. After it, the data processing is very incomplete due to the huge number of events. Aftershocks must be at least M3.5 to be listed. Times are local times; if you want Greenwich Mean Time, add 8 hrs, to the Pacific Standard Time listed.

Table 1

Date	Time	N Lat.	W Long.	Mag	
1/13	2:56 am	34 58.4	116 57.8	2.3	6 mi. NNE of Barstow
1/13	3:06 am	34 58.5	116 57.6	3.3	"
1/13	3:13 am	34 58.2	116 57.6	2.3	"
1/13	3:37 am	34 58.2	116 57.8	2.1	"
1/13	3:51 am	33 13.9	116 2.2	2.5	5 mi. SW of Salton City
1/13	3:52 am	34 58.2	116 57.6	2.5	6 mi. NNE of Barstow
1/13	4:20 am	34 34.2	116 34.1	2.2	23 mi. ENE of Lucerne Valley
1/13	8:51 am	34 58.4	116 57.8	2.7	6 mi. NNE of Barstow
1/13	11:55 am	33 43.4	116 50.3	2.2	7 mi. WSW of Idyllwild
1/13	11:59 am	34 8.9	116 25.9	2.2	2 mi. NNE of Yucca Valley
1/13	12:11 pm	34 58.1	116 57.5	2.2	6 mi. NNE of Barstow
1/13	2:18 pm	34 37.1	116 40.0	2.0	19 mi. NE of Lucerne Valley
1/13	5:10 pm	34 23.3	116 28.4	2.5	18 mi. N of Yucca Valley
1/13	8:09 pm	35 2.5	116 59.1	2.2	10 mi. NNE of Barstow
1/13	10:12 pm	35 29.5	118 26.6	2.9	10 mi. S of the town of Lake Isabella
1/13	10:12 pm	35 29.4	118 26.6	3.2	"
1/14	2:13 am	34 19.8	116 26.4	3.2	14 mi. N of Yucca Valley
1/14	2:35 am	34 2.5	117 5.8	3.0	4 mi. ESE of Redlands
1/14	2:52 am	34 20.5	116 28.7	2.3	15 mi. N of Yucca Valley
1/14	4:37 am	34 11.3	116 25.7	2.3	4 mi. N of Yucca Valley
1/14	4:38 am	34 11.9	116 25.6	2.3	"
1/14	4:39 am	34 11.0	116 25.9	2.1	"
1/14	4:59 am	34 37.5	116 32.6	2.4	26 mi. ENE of Lucerne Valley
1/14	6:00 am	33 14.5	116 1.9	2.0	4 mi. WSW of Salton City
1/14	2:34 pm	34 15.6	116 26.2	2.3	9 mi. N of Yucca Valley
1/14	2:45 pm	34 6.9	116 55.1	2.1	5 mi. W of Mt. San Gorgonio
1/14	4:45 pm	34 29.3	116 27.0	2.6	25 mi. N of Yucca Valley
1/14	5:24 pm	34 58.2	116 57.7	2.5	6 mi. NNE of Barstow

1/14	9:35 pm	35	17.1	118	36.7	2.3	14 mi. NW of Tehachapi
1/15	1:45 am	33	58.5	116	38.3	2.4	7 mi. W of Desert Hot Springs
1/15	2:40 am	32	45.4	115	14.9	2.1	15 mi. ENE of Calexico
1/15	11:20 am	32	52.5	117	30.9	2.1	15 mi. W of La Jolla
1/15	11:34 am	34	19.2	116	38.6	2.9	12 mi. ENE of Big Bear City
1/15	9:28 pm	33	42.6	116	42.5	3.0	2 mi. S of Idyllwild
1/15	11:51 pm	34	38.0	116	40.1	2.1	20 mi. NE of Lucerne Valley
1/16	4:08 am	34	34.3	116	34.4	2.0	22 mi. ENE of Lucerne Valley
1/16	7:35 am	34	10.7	116	25.7	2.0	4 mi. NNE of Yucca Valley
1/17	4:30 am	34	12.9	118	32.3	6.6	1 mi. S of Northridge
1/17	4:39 am					4.5	Northridge aftershock zone
1/17	4:40 am					4.8	"
1/17	4:41 am					4.0	"
1/17	4:49 am	34	18.8	118	25.8	3.5	2 mi. NNE of San Fernando
1/17	4:51 am	34	23.6	118	26.3	3.8	5 mi. ENE of Newhall
1/17	4:53 am	34	22.7	116	26.4	2.5	18 mi. N of Yucca Valley
1/17	4:54 am					3.5	Northridge aftershock zone
1/17	4:57 am	34	21.2	118	25.5	3.7	5 mi. N of San Fernando
1/17	4:59 am	34	19.4	118	28.9	3.7	3 mi. NW of San Fernando
1/17	4:59 am	35	9.6	118	25.7	3.1	2 mi. NNE of Tehachapi
1/17	5:01 am	34	21.3	118	37.3	3.8	5 mi. SSW of Magic Mtn.
1/17	5:06 am	34	14.7	118	33.0	3.9	1 mi. WNW of Northridge
1/17	5:08 am	34	18.0	118	27.5	3.6	1 mi. NW of San Fernando
1/17	5:17 am	34	18.3	118	28.9	3.6	2 mi. WNW of San Fernando
1/17	5:22 am	34	21.9	118	37.2	3.5	4 mi. SSW of Magic Mtn.
1/17	5:25 am	34	20.0	118	30.3	3.5	3 mi. SSE of Newhall
1/17	5:26 am	34	19.3	118	27.2	4.5	2 mi. NNW of San Fernando
1/17	5:28 am	34	15.1	118	34.8	3.5	2 mi. WNW of Northridge
1/17	5:29 am	34	20.5	118	28.5	3.8	3 mi. SE of Newhall
1/17	5:32 am	34	19.0	118	25.4	3.7	2 mi. NNE of San Fernando
1/17	5:37 am	34	21.0	118	35.8	3.9	5 mi. S of Magic Mtn.
1/17	5:44 am	34	21.0	118	33.0	3.8	2 mi. SW of Newhall
1/17	5:45 am	34	21.6	118	37.5	3.9	4 mi. SSW of Magic Mtn.
1/17	5:56 am	34	16.9	118	37.4	4.3	5 mi. N of Canoga Park
1/17	6:03 am	34	21.8	118	37.7	3.6	4 mi. SSW of Magic Mtn.
1/17	6:06 am	34	18.0	118	32.4	3.7	4 mi. N of Northridge
1/17	6:08 am	34	18.7	118	26.0	3.7	2 mi. N of San Fernando
1/17	6:14 am	34	20.1	118	26.1	4.3	3 mi. N of San Fernando
1/17	6:20 am	33	57.7	118	29.7	2.7	2 mi. WSW of Marina del Rey
1/17	6:26 am	34	22.7	118	28.1	3.6	3 mi. E of Newhall
1/17	6:33 am	34	18.1	118	29.4	3.5	3 mi. WNW of San Fernando
1/17	6:50 am	34	19.1	118	27.8	3.8	2 mi. NNW of San Fernando
1/17	7:07 am	34	18.7	118	29.5	4.2	3 mi. NW of San Fernando
1/17	7:07 am	34	21.5	118	31.8	4.1	1 mi. S of Newhall
1/17	7:10 am	34	19.0	118	26.8	3.9	2 mi. NNW of San Fernando
1/17	7:14 am	34	21.2	118	27.2	3.7	5 mi. N of San Fernando
1/17	7:24 am	34	22.1	118	36.7	3.5	4 mi. SSW of Magic Mtn.
1/17	7:42 am	34	18.9	118	24.7	3.8	2 mi. NNE of San Fernando
1/17	7:45 am	34	22.1	118	37.0	3.8	4 mi. SSW of Magic Mtn.
1/17	7:45 am	34	25.3	118	36.9	3.7	1 mi. W of Magic Mtn.
1/17	7:46 am					3.7	northern San Fernando Valley
1/17	7:54 am	34	22.4	118	37.3	4.5	3 mi. SSW of Magic Mtn.
1/17	8:16 am	34	17.4	118	28.7	3.7	2 mi. WNW of San Fernando
1/17	8:19 am	34	20.9	118	27.0	3.5	4 mi. N of San Fernando
1/17	9:21 am	34	19.1	118	25.9	3.5	2 mi. N of San Fernando
1/17	9:56 am	34	13.5	118	34.6	4.5	2 mi. NE of Canoga Park
1/17	10:20 am	34	17.0	118	27.9	3.5	1 mi. W of San Fernando
1/17	10:32 am	34	17.4	118	30.4	3.7	3 mi. NNE of Northridge
1/17	10:51 am	34	17.9	118	26.1	3.7	1 mi. NNE of San Fernando
1/17	11:23 am	34	16.7	118	34.6	3.5	3 mi. NW of Northridge

1/17	11:35 am	34 19.0	118 26.8	3.9	2 mi. N of San Fernando
1/17	11:43 am	34 22.0	118 38.0	4.1	4 mi. SSW of Magic Mtn.
1/17	11:46 am	34 22.7	118 38.1	3.5	"
1/17	11:53 am	34 13.3	116 46.4	2.1	5 mi. ESE of Big Bear City
1/17	11:58 am	34 22.3	118 37.8	3.6	4 mi. SSW of Magic Mtn.
1/17	12:02 pm	34 24.0	118 34.0	3.8	2 mi. SE of Magic Mtn.
1/17	12:05 pm	34 20.4	118 32.0	3.7	2 mi. S of Newhall
1/17	12:11 pm	34 19.4	118 31.3	3.6	"
1/17	12:17 pm	34 19.9	118 31.4	3.5	"
1/17	12:32 pm			3.7	Northridge aftershock zone
1/17	12:35 pm			3.5	"
1/17	12:38 pm	34 18.5	118 28.3	3.5	2 mi. NW of San Fernando
1/17	12:39 pm	34 17.5	118 29.8	3.6	3 mi. WNW of San Fernando
1/17	12:46 pm	34 18.0	118 34.9	4.7	5 mi. NNW of Northridge
1/17	12:50 pm	34 20.8	118 29.6	3.8	2 mi. SE of Newhall
1/17	2:07 pm	34 20.6	118 29.4	3.5	"
1/17	2:11 pm	34 15.2	118 35.9	3.5	3 mi. N of Canoga Park
1/17	2:19 pm	34 22.0	118 37.2	3.9	4 mi. SSW of Magic Mtn.
1/17	2:21 pm	34 20.2	118 28.3	3.5	4 mi. NNW of San Fernando
1/17	2:24 pm	34 20.3	118 31.8	3.5	2 mi. S of Newhall
1/17	2:31 pm	34 20.2	118 26.3	3.9	3 mi. N of San Fernando
1/17	2:50 pm	34 18.7	118 29.3	3.5	3 mi. NW of San Fernando
1/17	2:57 pm	34 21.0	118 36.1	3.5	5 mi. S of Magic Mtn.
1/17	3:33 pm	34 19.3	118 42.2	5.3	3 mi. N of Simi Valley
1/17	3:36 pm	34 20.9	118 40.0	3.6	5 mi. NNE of Simi Valley
1/17	3:38 pm	34 22.4	118 31.3	3.4	Under Newhall
1/17	3:49 pm	34 20.7	118 40.0	3.9	5 mi. NNE of Simi Valley
1/17	4:01 pm	34 20.4	118 41.5	3.5	"
1/17	4:36 pm	34 16.0	118 28.8	3.9	2 mi. WSW of San Fernando
1/17	4:39 pm	34 22.8	118 33.8	4.0	2 mi. W of Newhall
1/17	4:40 pm			3.8	Northridge aftershock zone
1/17	4:43 pm	34 22.7	118 41.5	4.9	7 mi. N of Simi Valley
1/17	4:45 pm	34 22.4	118 43.8	3.5	"
1/17	5:17 pm	34 22.9	118 42.1	3.6	"
1/17	6:05 pm	34 1.5	116 52.6	2.3	5 mi. SSW of Mt. San Gorgonio
1/17	7:34 pm	34 22.1	118 38.8	3.6	5 mi. SW of Magic Mtn.
1/17	8:01 pm	34 21.1	118 37.6	4.2	5 mi. SSW of Magic Mtn.
1/17	8:31 pm	34 21.8	118 27.0	3.7	4 mi. ESE of Newhall
1/17	8:43 pm	34 18.0	118 29.3	3.6	3 mi. WNW of San Fernando
1/17	9:19 pm	34 20.2	118 40.6	3.7	4 mi. NNE of Simi Valley
1/17	9:54 pm	33 41.5	116 43.8	2.7	3 mi. SSW of Idyllwild
1/17	10:29 pm	34 18.0	118 26.2	3.7	1 mi. N of San Fernando
1/17	11:11 pm	34 19.0	118 26.7	3.5	"
1/17	11:23 pm	34 20.0	118 37.1	4.0	6 mi. SSW of Magic Mtn.
1/17	11:53 pm	34 20.6	118 36.2	3.5	5 mi. S of Magic Mtn.
1/18	1:05 am	34 12.1	116 47.0	2.4	5 mi. SE of Big Bear City
1/18	1:09 am	33 58.1	116 23.0	2.2	6 mi. E of Desert Hot Springs
1/18	1:41 am	34 13.3	118 31.1	3.6	1 mi. SE of Northridge
1/18	3:35 am	34 13.0	118 36.3	4.1	1 mi. N of Canoga Park
1/18	5:24 am	34 18.5	118 34.0	4.3	5 mi. NNW of Northridge
1/18	6:17 am	34 17.2	118 29.5	3.5	3 mi. W of San Fernando
1/18	6:56 am	34 40.3	116 42.5	2.6	20 mi. NE of Lucerne Valley
1/18	7:01 am	34 22.0	118 27.5	3.5	4 mi. ESE of Newhall
1/18	7:19 am	34 13.0	118 35.4	3.8	1 mi. NE of Canoga Park
1/18	7:23 am	34 22.6	118 33.6	4.7	1 mi. W of Newhall
1/18	7:42 am	34 18.1	118 35.5	3.5	5 mi. NW of Northridge
1/18	7:51 am	34 14.6	118 27.9	3.9	3 mi. SSW of San Fernando
1/18	8:23 am	34 22.1	118 34.0	3.8	2 mi. WSW of Newhall
1/18	8:34 am	34 10.7	117 24.2	3.0	1 mi. S of Glen Helen Regional Park

1/18	10:03 am	34 19.9	118 27.0	3.6	3 mi. N of San Fernando
1/18	10:46 am	33 57.4	118 26.5	3.1	West Los Angeles
1/18	3:00 pm	34 21.1	116 27.8	2.0	16 mi. N of Yucca Valley
1/18	8:40 pm	34 21.6	118 34.3	4.3	2 mi. WSW of Newhall
1/18	8:43 pm	34 21.9	118 42.5	4.1	5 mi. N of Simi Valley
1/18	9:14 pm	34 17.6	118 28.0	3.6	1 mi. WNW of San Fernando
1/18	11:14 pm	34 17.2	118 28.5	3.9	2 mi. W of San Fernando
1/18	11:58 pm	34 14.3	118 32.2	3.2	Under Northridge
1/19	1:13 am	34 18.5	118 43.8	3.7	2 mi. NNW of Simi Valley
1/19	4:38 am	34 19.7	118 25.6	3.5	3 mi. NNE of San Fernando
1/19	5:12 am	33 13.1	115 37.1	2.4	5 mi. WSW of Niland
1/19	6:09 am	34 12.9	118 30.6	4.4	2 mi. SE of Northridge
1/19	6:46 am			3.9	Northridge aftershock zone
1/19	7:03 am	34 17.8	118 28.4	3.6	2 mi. WNW of San Fernando
1/19	10:53 am	33 34.0	116 42.8	2.7	2 mi. WNW of Anza
1/19	11:01 am	34 6.0	118 29.5	2.0	West Los Angeles
1/19	11:50 am	34 17.2	118 26.7	3.7	Under San Fernando
1/19	1:09 pm	34 21.7	118 41.9	5.0	5 mi. N of Simi Valley
1/19	1:11 pm	34 22.6	118 37.1	4.6	3 mi. SSW of Magic Mtn.
1/19	1:34 pm	34 22.2	118 40.5	3.5	6 mi. NNE of Simi Valley
1/19	5:18 pm	35 35.8	118 13.7	2.6	13 mi. ESE of the town of Lake Isabella
1/19	7:52 pm	33 59.3	116 40.1	2.1	8 mi. NE of Cabazon
1/19	9:09 pm	33 13.1	115 37.4	2.4	6 mi. WSW of Niland
1/19	9:58 pm			3.6	Northridge aftershock zone
1/19	10:58 pm			3.8	Northridge aftershock zone

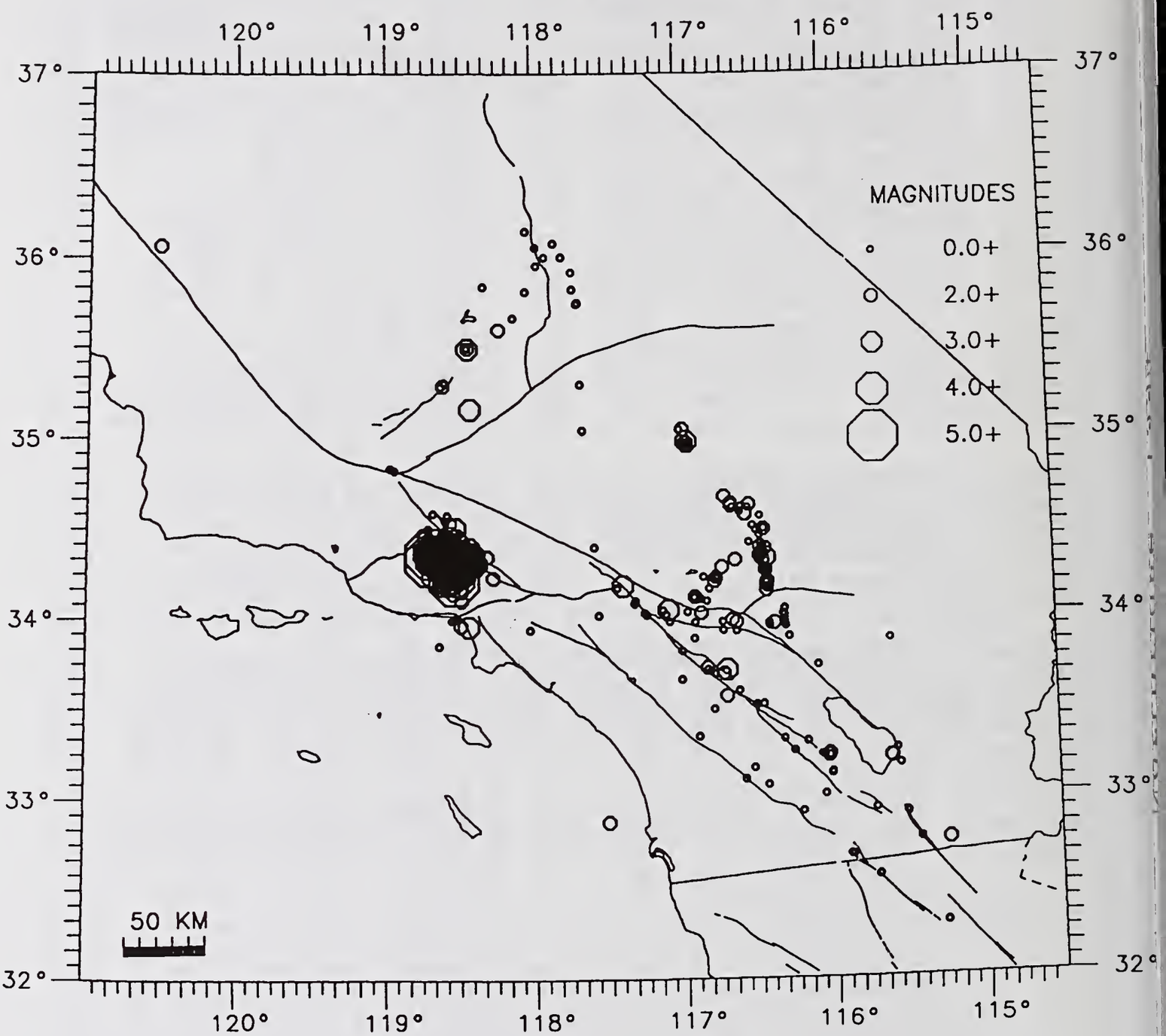
Figure 1. A map of southern California showing the earthquakes recorded during the past week by the Caltech/USGS Seismic Network. Major faults are marked, as well as the metropolitan areas of Los Angeles (L.A.), Palm Springs (P.S.), San Diego (S.D.), and Santa Barbara (S.B.). The circles denote the earthquakes, the size of the circle indicating the magnitude.

Figure 2. A more detailed map showing the locations of some of the best located Northridge aftershocks. Northridge itself is at the large symbol at the southern end of the zone, and the many faults shown are in the mountainous terrain north of San Fernando Valley.

Figure 3. A cross section showing the same aftershocks plotted in Figure 2. The viewer is looking from the west, through the Earth's crust.

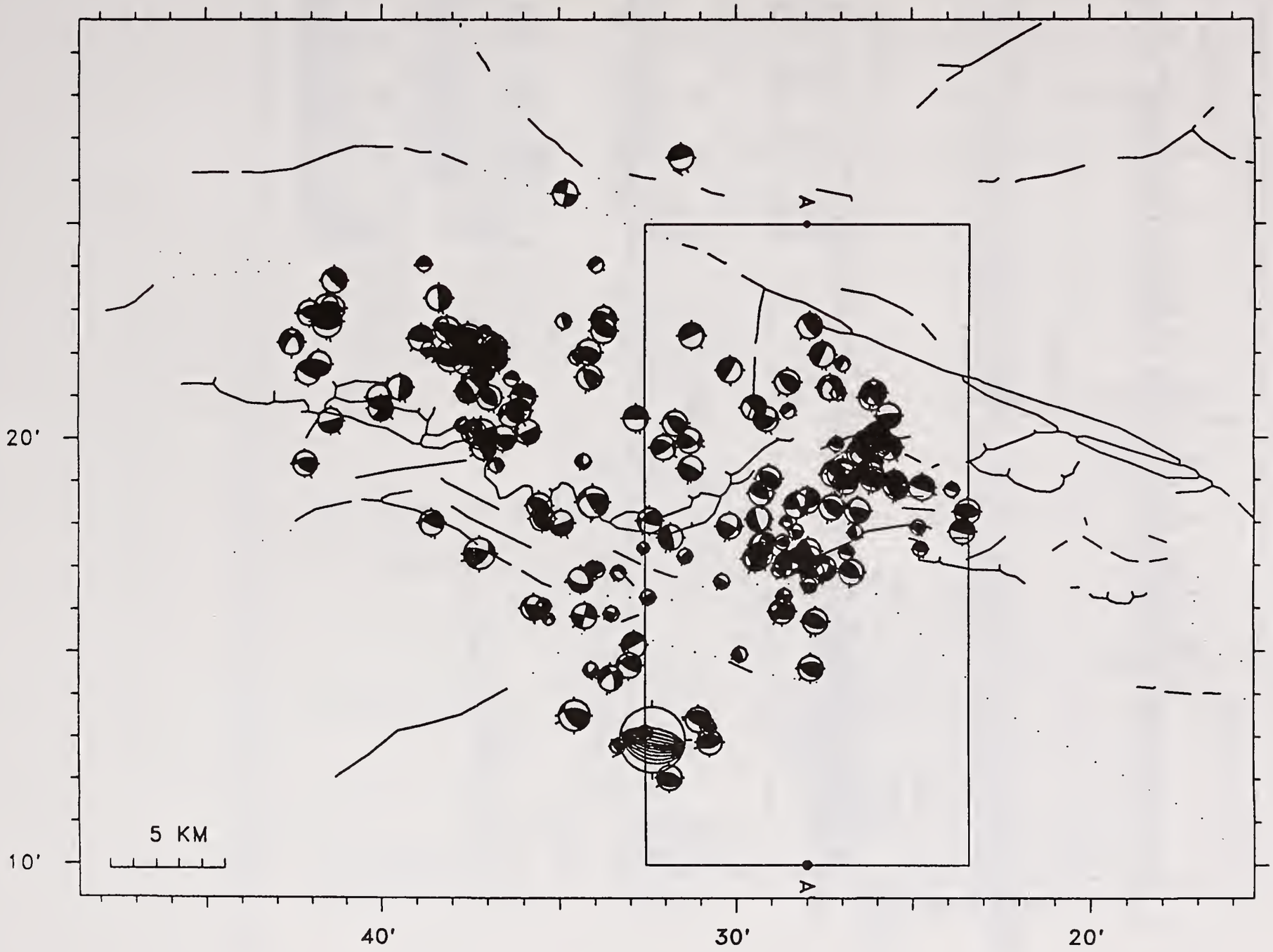
JANUARY 13 – 19, 1994

Preliminary Epicenters and Magnitudes



Northridge 1994

Preliminary Aftershocks 17-19 January 1994



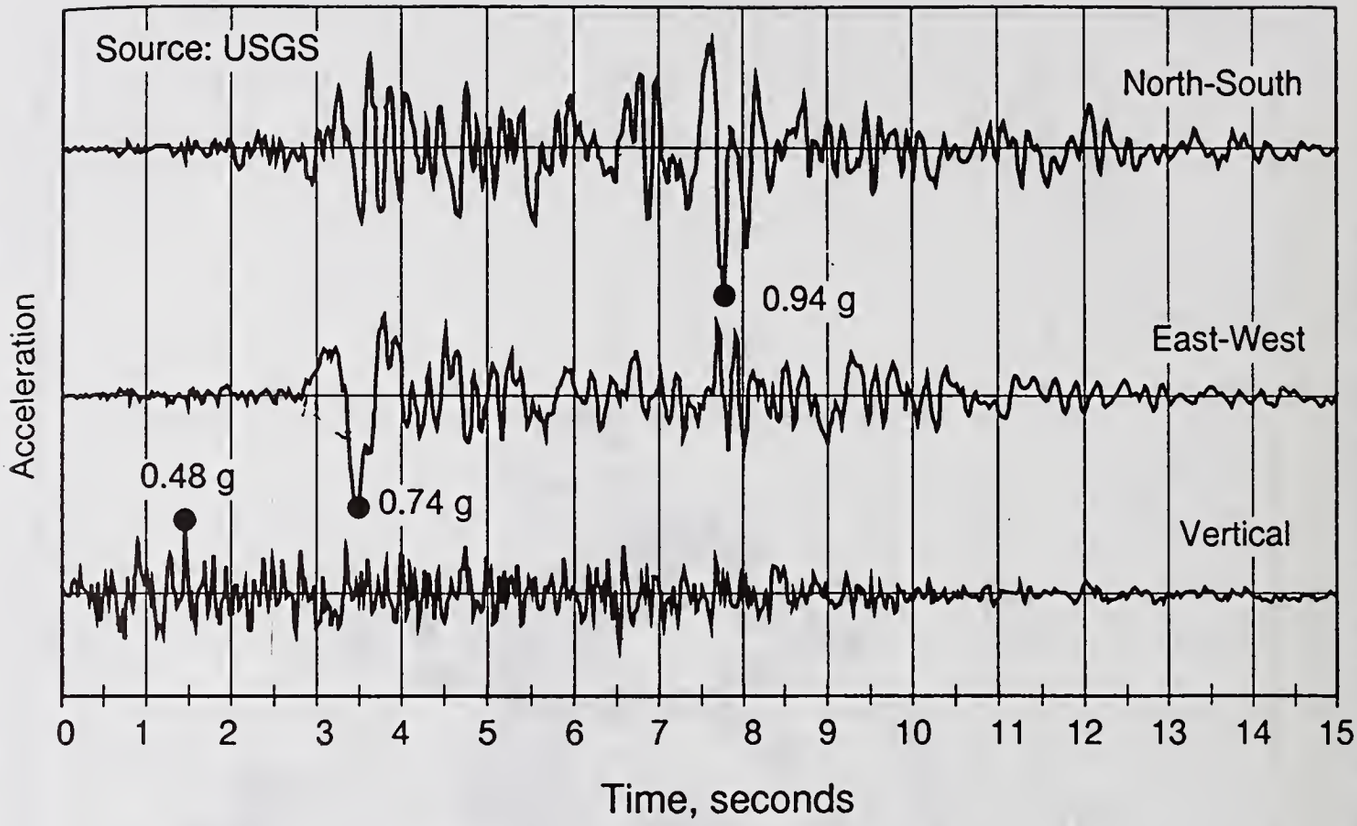


Figure 2.5 Accelerograph record from the grounds of the Sepulveda Veterans Affairs Hospital, 7 km from the epicenter.

How Earthquake Magnitude Is Measured

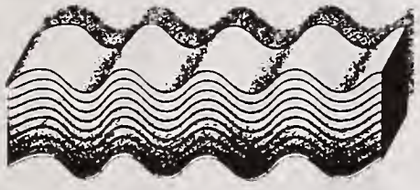
There are 270 seismometers positioned throughout Southern California. By examining the interval between waves of quakes, seismologists can identify the epicenter and the magnitude. A look at the three main types of waves, the sequence in which they occur, and how they are measured for magnitude:

How Quakes Travel Through Rock

When the earth's rock breaks and shifts, energy is released in vibrations called seismic waves. We feel the most impact during the secondary wave.

Primary wave

Travels through earth. When it hits the surface, it causes buildings and other structures to contract and expand.



Secondary wave

Travels through earth, moving rock back and forth, up and down. At earth's surface, it shakes structures violently.

Long waves

Love wave

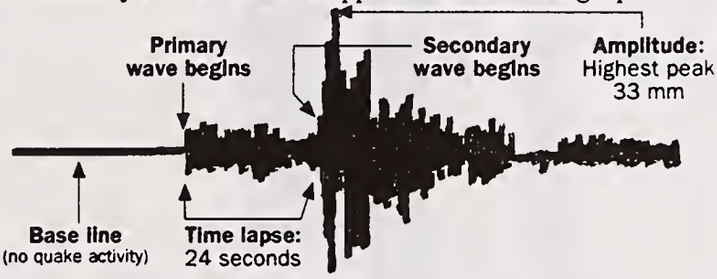
Originates and travels along earth's surface, shaking structures from side to side.

Rayleigh wave

Originates and travels along earth's surface, rolling like swells on the ocean.

How Magnitude Scale Works

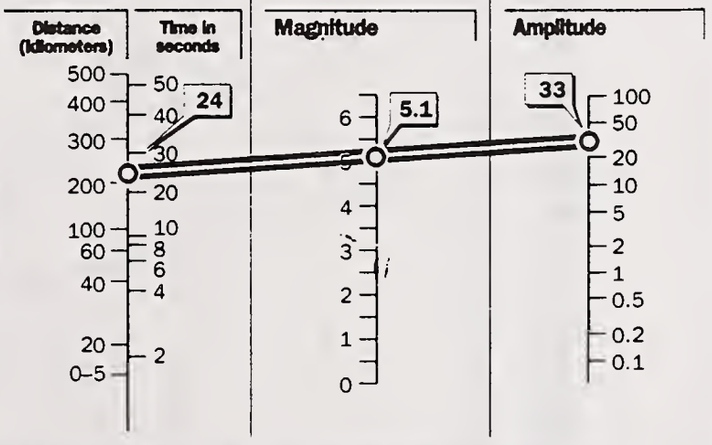
Seismologists determine the magnitude of an earthquake by measuring two factors: time and amplitude. How Wednesday's 5.1 aftershock appeared on a seismograph:



This chart measures time lapse between primary and secondary waves as well as distance in kilometers of that particular seismometer from the epicenter.

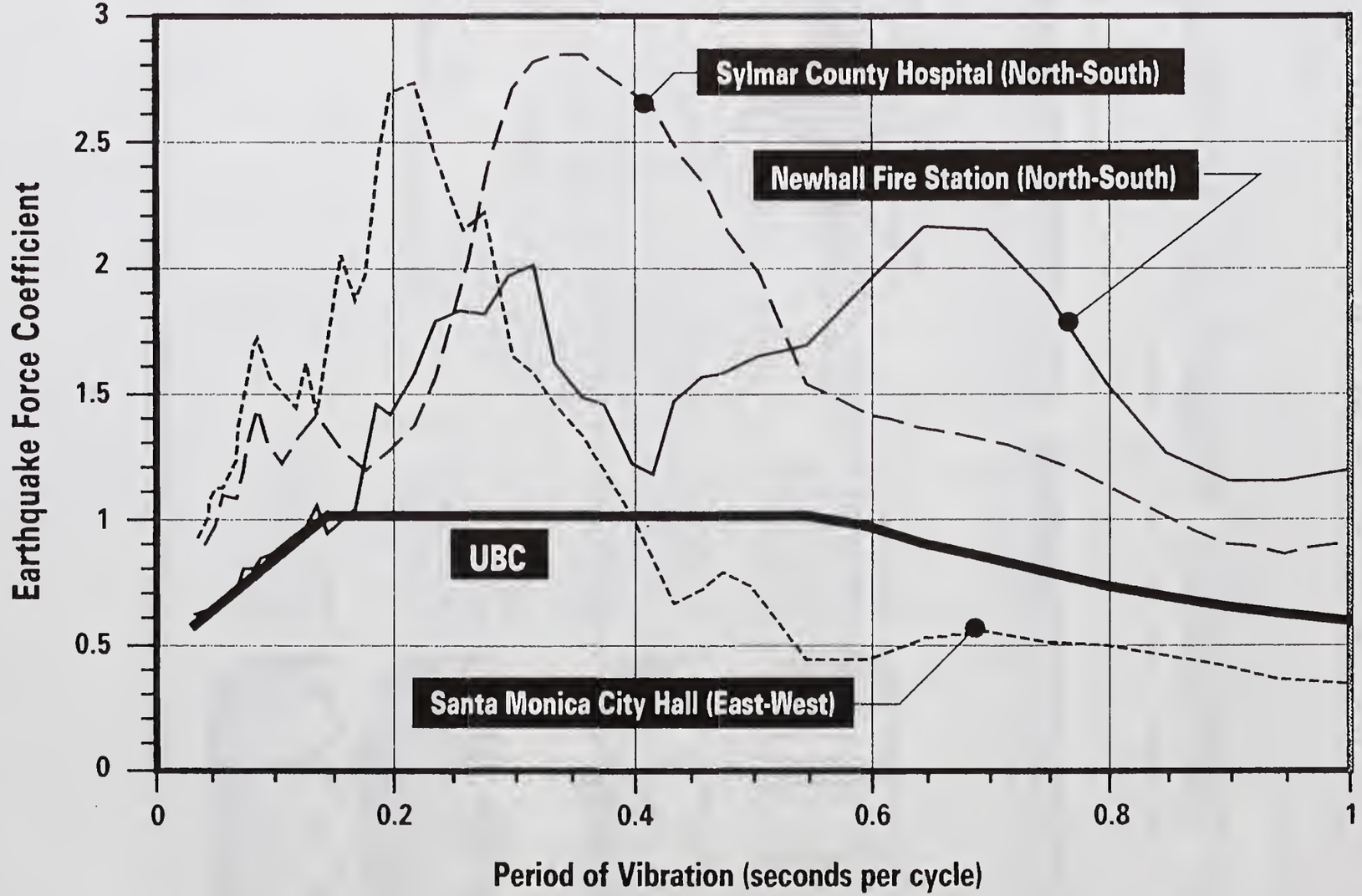
A straight line is drawn between the distance and amplitude charts to determine magnitude. Magnitude: 5.1.

This chart measures amplitude, or the highest peak from the base line.



Sources: The World Book Encyclopedia, Caltech, U.S. Geological Survey, Associated Press; Researched by APRIL JACKSON and CAROLINE LEMKE / Los Angeles Times

Comparison of Recorded Ground Motion Spectra with UBC Spectrum



APPENDIX D
Transit Bus Route Maps Post-Earthquake

LINE 640

MONDAY THROUGH FRIDAY SCHEDULE

EASTBOUND

UNIVERSAL CITY		BURBANK		GLENDALE	PASADENA		
Ventura & Lankershim	Riverside & Cahuenga	Buena Vista & Alameda	Metrolink Station (Arrive)	Metrolink Station (Leave)	134 Fwy (Sanchez Dr) Between Central & Brand	Orange Grove & Colorado	Colorado & Hill	Michillinda & Foothill
A.M. SERVICE								
....	....	....	....	600A	607A	619A	634A	647A
....	....	....	....	620	827	839	854	707
....	....	....	....	640	847	859	714	727
....	....	....	....	700	707	719	734	747
647A	656A	703A	716A	720	727	739	754	807
707	716	723	736	740	747	759	814	827
727	738	743	758	800	807	819	834	847
747	758	603	818	820	827	839	854	907
807	616	823	636	840	847	659	914	927
827	836	843	856	900	907	919	934	947
847	856	903	918	920	927	939	954	1007
917	926	933	946	950	957	1009	1024	1037
P.M. SERVICE								
222P	231P	238P	251P	255P	302P	314P	329P	342P
242	251	258	311	315	322	334	349	402
302	311	316	331	335	342	354	409	422
322	331	338	351	355	402	414	429	442
342	351	356	411	415	422	434	449	502
402	411	416	431	435	442	454	509	522
422	431	436	451	455	502	514	529	542
442	451	458	511	515	522	534	549	602
502	511	518	531	535	542	554	609	622
522	531	536	551	555	602	614	629	642
542	551	556	611	....	....	....	....	....
602	611	616	631	....	....	....	....	....
617	626	633	646	....	....	....	....	....

WESTBOUND

PASADENA			GLENDALE	BURBANK			UNIVERSAL CITY	
Michillinda & Foothill	Colorado & Hill	Orange Grove & Colorado	134 Fwy (Goode Av) Between Brand & Central	Metrolink Station (Arrive)	Metrolink Station (Leave)	Buena Vista & Alameda	Riverside & Cahuenga	Ventura & Lankershim
A.M. SERVICE								
....	....	....	....	....	600A	814A	820A	828A
....	....	....	....	....	820	834	840	848
....	....	....	....	....	840	854	700	708
....	....	....	....	....	700	714	720	728
827A	839A	653A	708A	718A	720	734	740	748
647	659	713	726	736	740	754	800	806
707	719	733	746	758	800	814	820	828
727	739	753	808	818	820	834	840	848
747	759	613	826	636	640	654	900	908
607	619	833	848	858	900	914	920	926
827	839	853	906	916	920	934	940	946
647	659	913	928	936	940	954	1000	1006
907	919	933	946	958	1000	1014	1020	1026
927	939	953	1008	1016	....	....	....	....
P.M. SERVICE								
242P	254P	308P	321P	331P	335P	349P	355P	401P
302	314	328	341	351	355	409	415	421
322	334	346	401	411	415	429	435	441
342	354	408	421	431	435	449	455	501
402	414	428	441	451	455	509	515	521
422	434	446	501	511	515	529	535	541
442	454	508	521	531	535	549	555	601
502	514	528	541	551	....	....	....	....
522	534	548	801	811	....	....	....	....
542	554	808	821	831	....	....	....	....
557	609	623	636	646	....	....	....	....

640

Emergency

Effective February 21, 1994
Subject to Change Without Notice

EMERGENCY SERVICE
MTA UNIVERSAL CITY-
BURBANK-GLENDALE-PASADENA
SPECIAL EXPRESS

NEW ROUTE AND SCHEDULE

All trips on this timetable are scheduled to be accessible to the disabled.

Information Available Daily
Se habla Español
5:30am to 11:30pm
(213) 626-4455
(818) 246-2593

Closed Holidays except New Year's Day

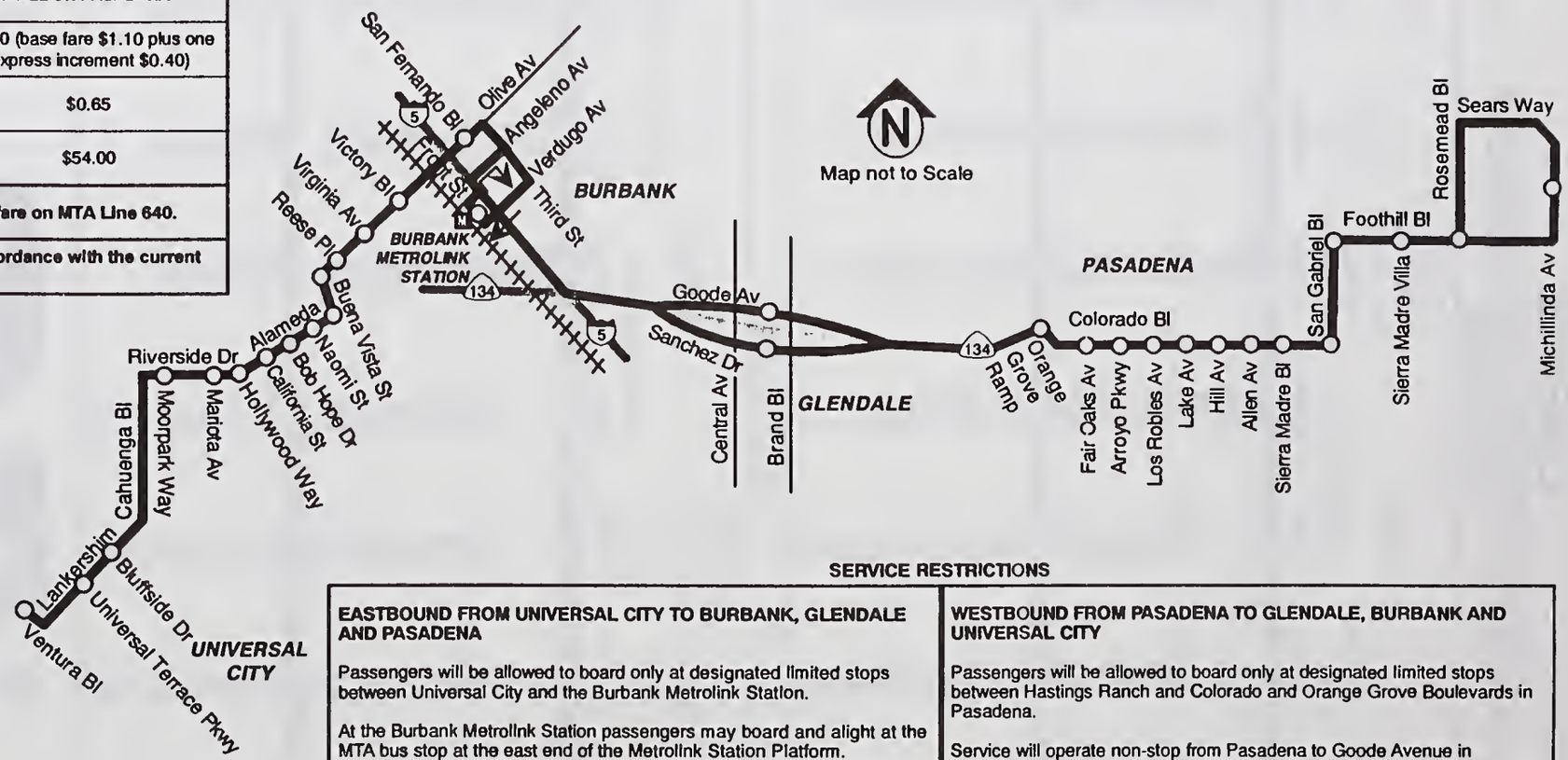
For the Hearing Impaired Call:
TTY (800) 252-9040

Los Angeles County Metropolitan Transportation Authority
425 South Main Street, Los Angeles, CA 90013-1393

LINE 640
MTA -UNIVERSAL CITY-BURBANK-GLENDALE-PASADENA SPECIAL EXPRESS

Metropolitan Transportation Authority

ONE - WAY FARE BETWEEN UNIVERSAL CITY, MEDIA DISTRICT AND BURBANK		
CASH	REGULAR FARE	$1.10
	SENIOR/DISABLED	$0.45
PASS		$42.00
ONE - WAY FARE BETWEEN BURBANK, GLENDALE OR PASADENA		
CASH	REGULAR FARE	$1.50 (base fare $1.10 plus one express increment $0.40)
	SENIOR/DISABLED	$0.65
PASS		$54.00
Metrolink media will be honored as base fare on MTA Line 640.		
Transfers will be issued and honored in accordance with the current transfer policy.		



SERVICE RESTRICTIONS

EASTBOUND FROM UNIVERSAL CITY TO BURBANK, GLENDALE AND PASADENA

Passengers will be allowed to board only at designated limited stops between Universal City and the Burbank Metrolink Station.

At the Burbank Metrolink Station passengers may board and alight at the MTA bus stop at the east end of the Metrolink Station Platform.

Service will operate non-stop from Burbank Metrolink Station to Glendale where passengers may board and alight at the LADOT Line 549 stop on Sanchez Drive.

Service then will operate non-stop from Glendale to Colorado Boulevard and Orange Grove Boulevard in Pasadena.

From Colorado Boulevard and Orange Grove Boulevard to Hastings Ranch stops will be made to discharge only at designated limited stops.

WESTBOUND FROM PASADENA TO GLENDALE, BURBANK AND UNIVERSAL CITY

Passengers will be allowed to board only at designated limited stops between Hastings Ranch and Colorado and Orange Grove Boulevards in Pasadena.

Service will operate non-stop from Pasadena to Goode Avenue in Glendale where passengers may board and alight at the LADOT Line 549 stop.

Service then will operate non-stop between Glendale and the Burbank Metrolink Station.

Passengers may board and alight at the MTA bus stop at the east end of the Burbank Metrolink Station Platform.

From the Burbank Metrolink Station to Universal City stops will be made to discharge only at designated limited stops.

LINE 641

MONDAY THROUGH FRIDAY SCHEDULE

WESTBOUND

Approximate Times					
Burbank Metrolink Station	Buena Vista & Alameda	Alameda & Hollywood Way	Ventura & Sepulveda	Topanga Cyn. & Burbank	Topanga Cyn. & Victory
A.M. SERVICE					
600A	615A	618A	636A	654A	707A
620	635	638	656	714	727
640	655	658	716	734	747
700	715	718	736	754	807
720	735	738	756	814	827
740	755	758	816	834	847
800	815	818	836	854	907
820	835	838	856	914	927
840	855	858	916	934	947
900	915	918	936	954	1007
920	935	938	956	1014	1027

EASTBOUND

Approximate Times					
Topanga Cyn. & Victory	Topanga Cyn. & Burbank	Ventura & Sepulveda	Alameda & Hollywood Way	Buena Vista & Alameda	Burbank Metrolink Station
P.M. SERVICE					
226P	246P	305P	324P	327P	340P
246	306	325	344	347	400
306	326	345	404	407	420
326	346	405	424	427	440
346	406	425	444	447	500
406	426	445	504	507	520
426	446	505	524	527	540
446	506	525	544	547	600
506	526	545	604	607	620
526	546	605	624	627	640
546	606	625	644	647	700

Los Angeles County Metropolitan Transportation Authority
425 South Main Street, Los Angeles, CA 90013-1393

Effective January 26, 1994
Subject to Change Without Notice

641

Emergency

POST QUAKE SERVICE
MTA BURBANK - WARNER CENTER
SPECIAL EXPRESS SERVICE

All trips on this timetable are scheduled to be accessible to the disabled.

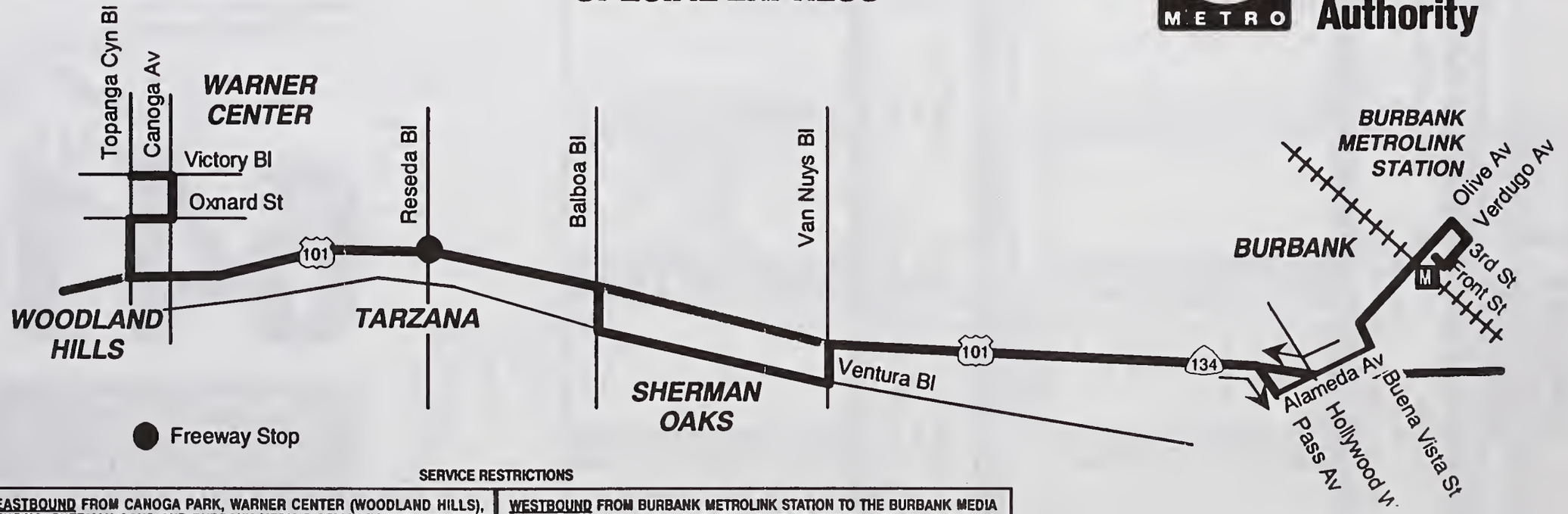
Information Available Daily
Se habla Español
5:30am to 11:30pm
(213) 626-4455
(818) 246-2593
(818) 781-5890

Closed Holidays except New Year's Day

For the Hearing Impaired Call:
TTY (800) 252-9040

LINE 641
MTA BURBANK - WARNER CENTER
SPECIAL EXPRESS

Metropolitan Transportation Authority



SERVICE RESTRICTIONS

EASTBOUND FROM CANOGA PARK, WARNER CENTER (WOODLAND HILLS), ENCINO, SHERMAN OAKS AND BURBANK MEDIA DISTRICT TO THE BURBANK METROLINK STATION:

From Victory and Topanga Canyon Boulevards to Topanga Canyon and Burbank Boulevards passengers will be allowed to board only at MTA Line 424-425 stops.

Service will operate non-stop from Topanga Canyon and Burbank Boulevards to the MTA Line 427 stop at Burbank Boulevard and Reseda Boulevard where passengers will be allowed to board only.

Service will operate non-stop from Burbank Boulevard and Reseda Boulevard to Balboa Boulevard and the Ventura Freeway off-ramp.

Passengers will be allowed to board only from Balboa Boulevard and the Ventura Freeway off-ramp to Ventura and Balboa Boulevards at MTA Line 236 stops; from Ventura and Balboa Boulevards to Ventura Boulevard and Vesper Avenue at MTA Line 424 stops; and from Van Nuys and Ventura Boulevards to Van Nuys Boulevard and Hortense Street at MTA Line 560 stops.

Service will operate non-stop from Van Nuys Boulevard and Hortense Street to Alameda Avenue and Pass Avenue.

Passengers will be allowed to board only from Alameda Avenue and Pass Avenue to Olive Avenue and San Fernando Boulevard at MTA Line 96 bus stops.

The last stop will be made at the Burbank Metrolink Station in the Line 152 bus zone to discharge passengers only.

WESTBOUND FROM BURBANK METROLINK STATION TO THE BURBANK MEDIA DISTRICT, SHERMAN OAKS, ENCINO, WARNER CENTER (WOODLAND HILLS) AND CANOGA PARK AREAS:

Passengers may board at the Burbank Metrolink Station in the Line 152 bus zone.

Passengers will be allowed to alight only from Olive Avenue and San Fernando Boulevard to Alameda Avenue and Hollywood Way at MTA Line 96 bus stops.

Service will operate non-stop from Alameda Avenue and Hollywood Way to Van Nuys Boulevard and Hortense Street.

Passengers will alight only from Van Nuys Boulevard and Hortense Street to Ventura and Van Nuys Boulevards at MTA Line 560 stops; from Ventura and Van Nuys Boulevards to Ventura and Balboa Boulevards at MTA Line 424 stops; and from Ventura and Balboa Boulevards to Balboa and Magnolia Boulevards at MTA Line 236 stops.

Service will operate non-stop from Balboa and Magnolia Boulevards to the MTA Line 427 stop at the Ventura Freeway on-ramp at Reseda Boulevard where passengers will be discharged only.

Service will operate non-stop from the Ventura Freeway on- ramp stop at Reseda Boulevard to Topanga Canyon and Burbank Boulevards.

Passengers will be discharged only from Topanga Canyon and Burbank Boulevards to Victory and Topanga Canyon Boulevards use all Line 424-425 bus stops.

ONE - WAY FARE BETWEEN BURBANK AND WARNER CENTER		
CASH	REGULAR FARE	$1.50 (base fare $1.10 plus one express increment $.40)
	SENIOR DISABLED	$.65
PASS		$54.00 (one step express pass)
Metrolink media will be honored as base fare on MTA Line 641.		
Transfers will be issued and honored in accordance with the current transfer policy.		

LINE 642

MONDAY THROUGH FRIDAY SCHEDULE

EASTBOUND

Burbank Metrolink Station	Hill & Walnut	Foothill & Michillinda
A.M. SERVICE		
600A	618A	632A
620	638	652
640	658	712
700	718	732
720	738	752
740	758	812
800	818	832
820	838	852
840	858	912
900	918	932
930	948	1002

WESTBOUND

Sears Way & Hastings Ranch Rd.	Foothill & Sierra Madre Villa	Hill & Walnut	Burbank Metrolink Station
P.M. SERVICE			
304P	307P	320P	340P
324	327	340	400
344	347	400	420
404	407	420	440
424	427	440	500
444	447	500	520
504	507	520	540
524	527	540	600
544	547	600	620
604	607	620	640
624	627	640	700

METRO

Foothill Transit

100 N. Barranca Avenue, West Covina, CA 91791-1600

Effective January 28, 1994

Subject to Change Without Notice

642

Emergency

EMERGENCY SERVICE
BURBANK METROLINK STATION
EAST PASADENA
SPECIAL EXPRESS

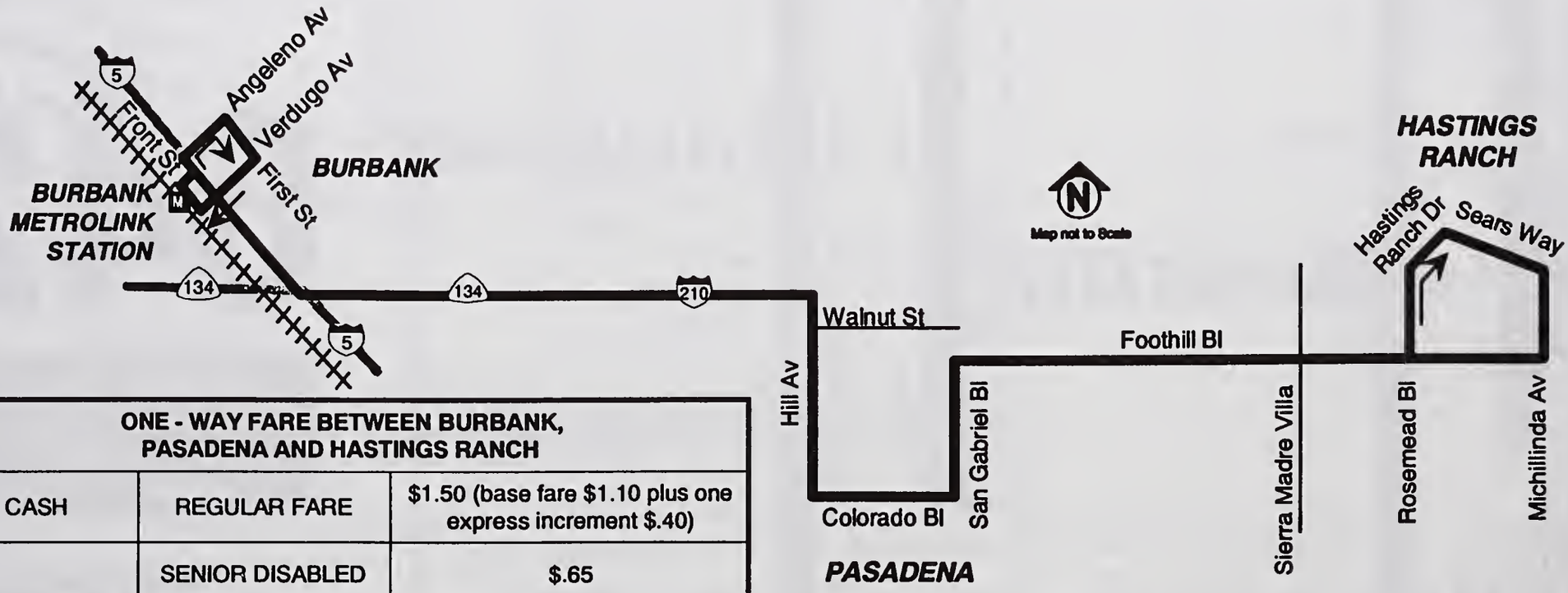
All trips on this timetable are scheduled to be accessible to the disabled.

Information Available Daily
Se habla Español
5:30am to Midnight
1-800/252-7433

Closed Holidays except
New Year's Day

For the Hearing Impaired Call:
1-800/252-9040

LINE 642
EMERGENCY SERVICE
BURBANK METROLINK STATION-
EAST PASADENA SPECIAL EXPRESS



ONE - WAY FARE BETWEEN BURBANK, PASADENA AND HASTINGS RANCH		
CASH	REGULAR FARE	$1.50 (base fare $1.10 plus one express increment $.40)
	SENIOR DISABLED	$.65
PASS		$54.00 (one step express pass)
Metrolink media will be honored as base fare and one $.40 express increment will be collected on Foothill Line 642.		
Transfers will be issued and honored in accordance with the current transfer policy.		

Foothill Transit

LINE 643

MONDAY THROUGH FRIDAY SCHEDULE

SOUTHBOUND

Approximate Times

Sylmar Metrolink Station	Van Nuys & Victory	Ventura & Sepulveda
A.M. SERVICE		
545A	608A	620A
605	628	640
630	653	705
645	708	720
800	823	835
920	943	955

NORTHBOUND

Approximate Times

Ventura & Sepulveda	Van Nuys & Victory	Sylmar Metrolink Station
P.M. SERVICE		
310P	325P	350P
345	400	425
355	410	435
510	525	550
540	555	620
610	625	650

Metrolink fare media only will be honored as full fare for this service.

LADOT
Keeping LA On The Move
METRO
SuperShuttle

Effective February 3, 1994
Subject to Change Without Notice

643

Emergency

EMERGENCY SERVICE
SYLMAR - VAN NUYS

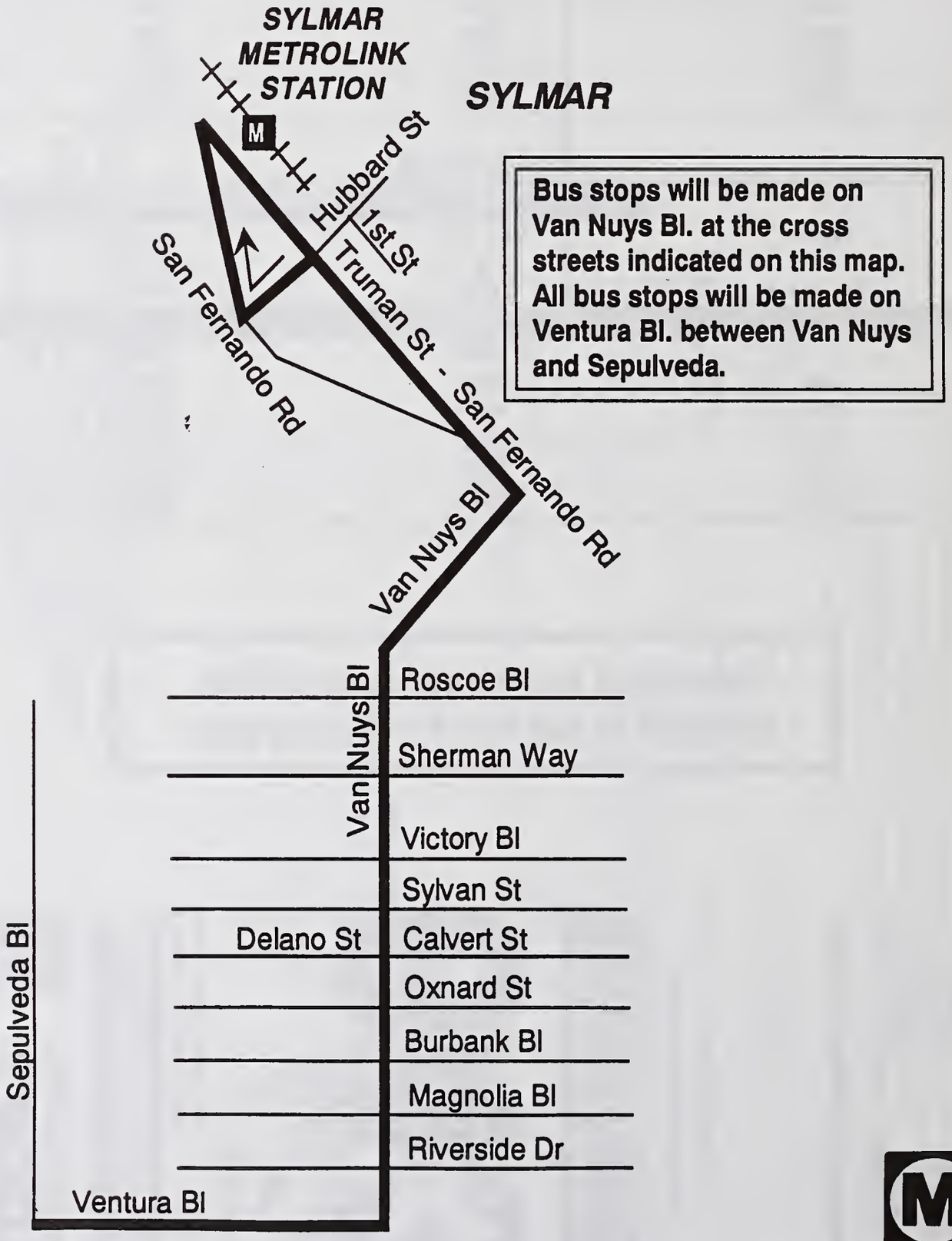
Operated by Super Shuttle for LADOT.

Information Available Daily
Se habla Español
5:30am to 11:30pm
(213) 626-4455
(818) 248-2593
(818) 781-5690

Closed Holidays except
New Year's Day

For the Hearing Impaired Call:
TTY (800) 252-9040

LINE 643
EMERGENCY SERVICE
SYLMAR - VAN NUYS



Bus stops will be made on Van Nuys Bl. at the cross streets indicated on this map. All bus stops will be made on Ventura Bl. between Van Nuys and Sepulveda.

METRO

HIGHWAY HUMMER

Sylmar – San Fernando – Chatsworth Express

MONDAY THROUGH FRIDAY SCHEDULE

NO SERVICE OPERATED ON SATURDAY, SUNDAY AND THE FOLLOWING HOLIDAYS: NEW YEAR'S DAY, MARTIN LUTHER KING DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY AND CHRISTMAS DAY.

SOUTHBOUND – WESTBOUND A.M. OPERATION

Sylmar METROLINK Station	Sepulveda & Brand	Nordhoff & Zelzah	Prairie & Winnetka	Nordhoff & Canoga	Topanga Cyn & Devonshire
515A	526A	543A	554A	602A	610A
550	601	618	629	637	645
* 625	636	653	704	712	720
700	711	728	739	747	755
735	746	803	814	822	830
810	821	838	849	857	905
845	856	913	924	932	940
915	926	943	954	1002	1010

NORTHBOUND – EASTBOUND P.M. OPERATION

Topanga Cyn & Devonshire	Nordhoff & Canoga	Prairie & Winnetka	Nordhoff & Zelzah	Sepulveda & Brand	Sylmar METROLINK Station
300P	308P	316P	327P	344P	355P
340	348	356	408	427	438
420	428	436	449	509	521
500	508	517	530	552	605
540	548	557	610	632	645
620	628	637	649	709	722
700	708	716	727	744	755

* — Will wait to receive transferring passengers from southbound Metrolink train due at approximately 626AM.

Los Angeles County Metropolitan Transportation Authority
425 South Main Street, Los Angeles, CA 90013-1393

Effective February 21, 1994
Subject to Change Without Notice

Highway Hummer
Sylmar – San Fernando – Chatsworth Express

NEW ROUTE AND SCHEDULE

All trips on this timetable are scheduled to be accessible to the disabled.

This route serves the Sylmar Station.

METROLINK

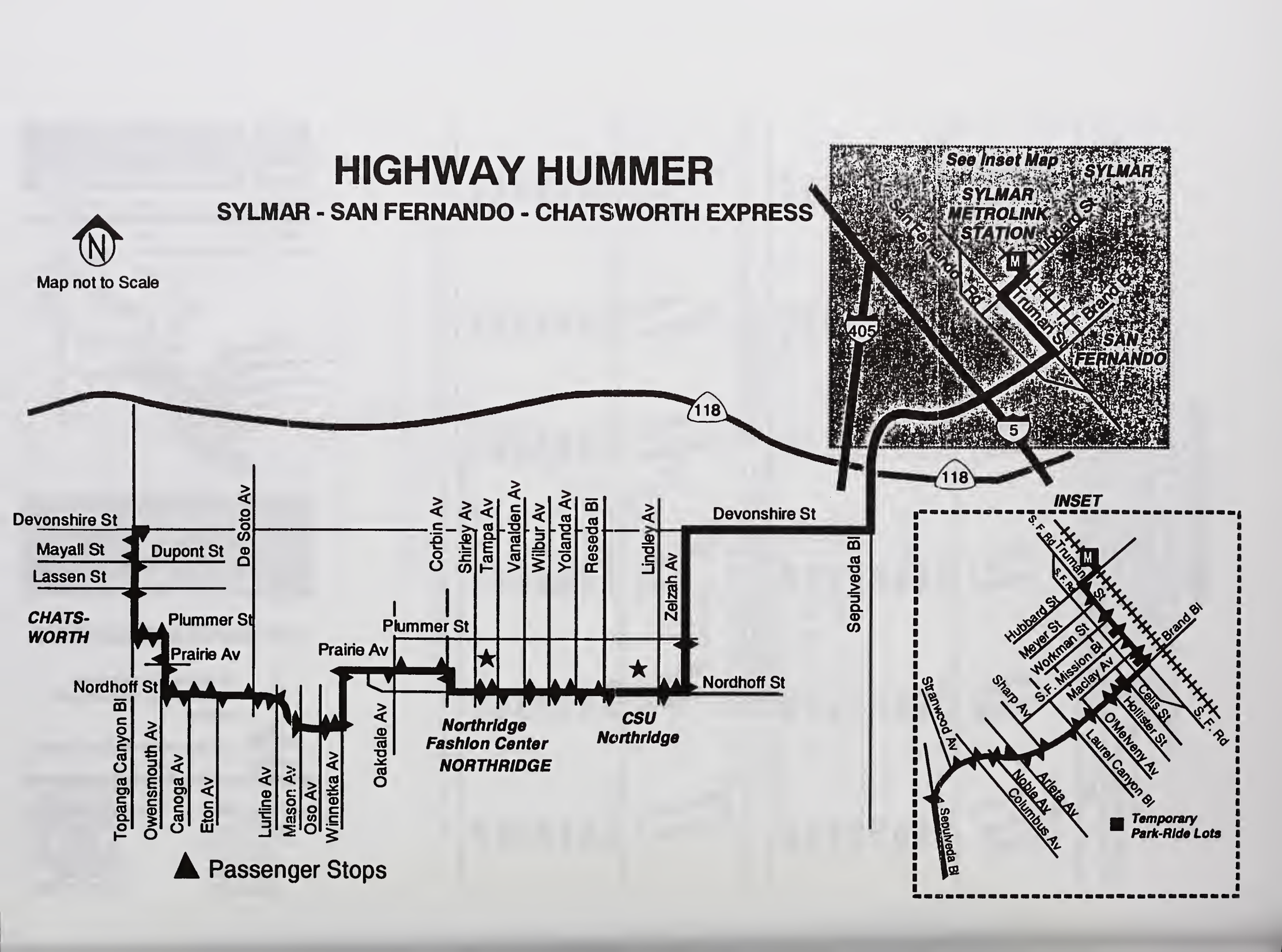
Information Available Daily
Se habla Español
5:30am to 11:30pm
(213) 626-4455
(818) 781-5890
(818) 246-2593

Closed Holidays except New Year's Day

For the Hearing Impaired Call:
TTY (800) 252-9040

HIGHWAY HUMMER

SYLMAR - SAN FERNANDO - CHATSWORTH EXPRESS



COMMUTER EXPRESS

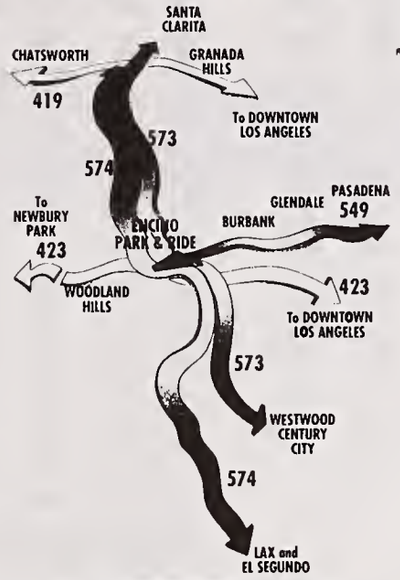
LADOT offers stress free, reliable service between the San Fernando Valley and:

Burbank - Glendale - Pasadena	Route 549
Westchester - LAX - El Segundo	Route 574
Simi Valley - Warner Center	Route 575

Service is also available between Downtown Los Angeles and:

Sylmar - Tujunga - Glendale	Route 409
Van Nuys - North Hollywood - Burbank	Route 413
Chatsworth - Granada Hills - Mission Hills	Route 419
Newbury Park - Thousand Oaks - Woodland Hills - Encino	Route 423
Pacific Palisades - Brentwood	Route 430
Westwood - Rancho Park - Palms	Route 431
Marina Del Rey - Venice	Route 437
Hermosa Beach - Playa del Rey Culver City	Route 438
Rancho Palos Verdes - Lomita - Wilmington - Harbor City	Route 448
Mid-City - Century City - Westwood	Route 534

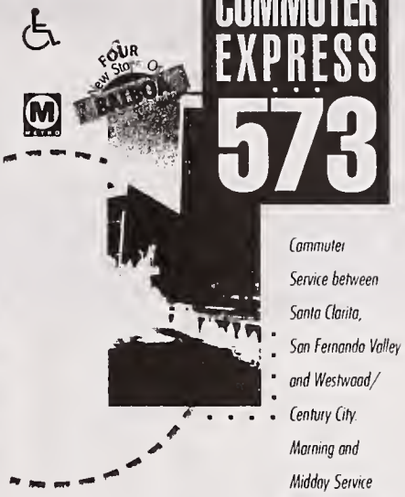
ENCINO PARK & RIDE



Your COMMUTER EXPRESS connection to North San Fernando Valley, Westside, South Bay and the San Gabriel Valley.

LADOT Keeping LA On The Move

COMMUTER EXPRESS



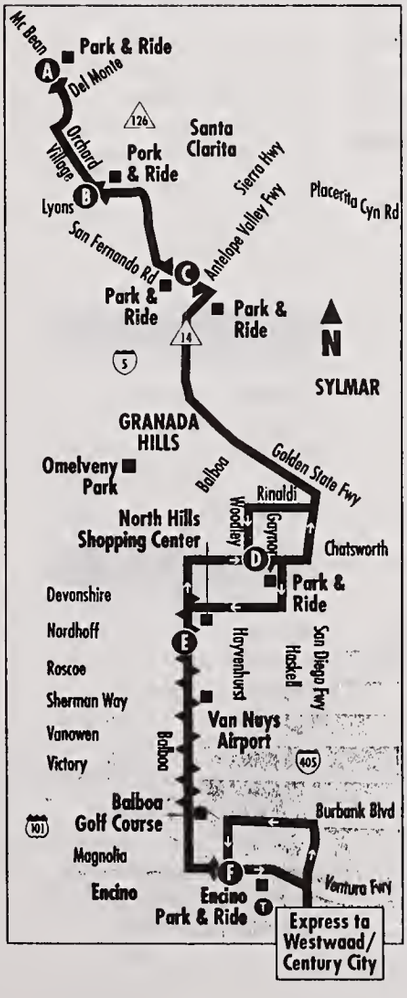
COMMUTER EXPRESS 573

Commuter Service between Santa Clarita, San Fernando Valley and Westwood/ Century City. Morning and Midday Service from Westside to San Fernando Valley.

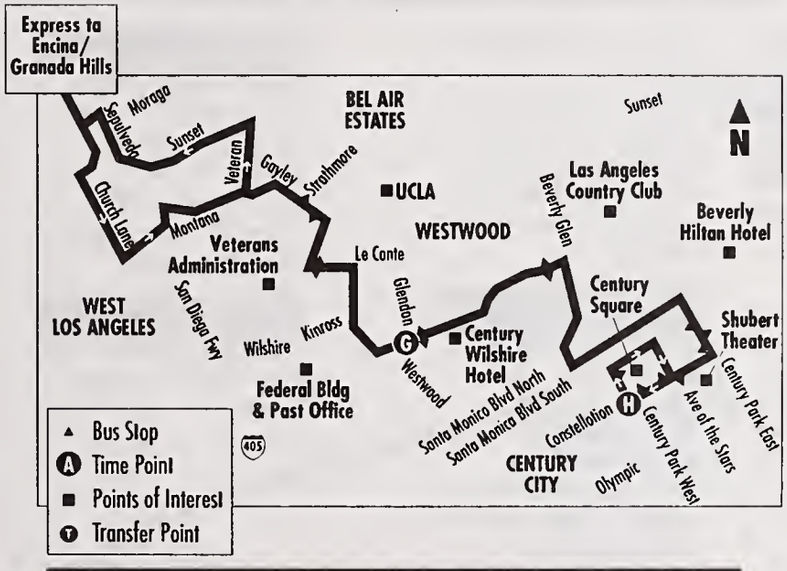
COMMUTER EXPRESS

LADOT Keeping LA On The Move

ENCINO/SANTA CLARITA



WESTWOOD/CENTURY CITY



FARES	One Way - Cash	MTA Monthly Pass
Santa Clarita◄►Westwood/Century City	$2.30	$78 (3 Zones)
Santa Clarita◄►San Fernando Valley	$1.90	$66 (2 Zones)
San Fernando Valley◄►Westwood/Century City	$1.50	$54 (1 Zone)
San Fernando Valley◄►Encino Park & Ride	$1.10	$42 (Base)
College/Vocational Students	Listed Above	$25
High School Students	Listed Above	$18
Seniors/Persons with Disabilities	1/2 of Fares Listed Above	$10
Children, 4 years of age or younger	Free	Free

A valid Interagency Transfer will be accepted as a $1.10 payment toward any cash fare. Discount fare: You can use one MTA token to pay $1.10 of any cash fare.
COMMUTER EXPRESS fares are calculated on a flat fare plus a zone fare based on the distance traveled on a freeway.

MTA (formerly RTD) Monthly Passes are available from MTA Customer Service Centers and Pass Sale Outlets throughout the area. Call 1-800-COMMUTE for the location nearest you.

TO WESTWOOD/CENTURY CITY

McBean & Del Monte (A)	Lyons & Orchard Village (B)	San Fernando & Sierra Hwy (C)	Chatsworth & Gaynor (D)	Balboa & Nordhoff (F)	Encino Park & Ride (F)	Wilshire & Glendon (G)	Constellation & Century Park W (H)
—	—	—	5:50	5:59	6:12	6:36	6:46
5:42	5:47	5:52	6:10	6:19	6:32	6:56	7:06
6:02	6:07	6:12	6:30	6:40	6:54	7:21	7:31
6:17	6:22	6:27	6:45	6:55	7:09	7:36	7:46
—	—	—	7:00	7:10	7:24	8:00	8:13
6:47	6:52	6:57	7:15	7:25	7:39	8:15	8:28
—	—	—	7:30	7:40	7:54	8:30	8:43
—	—	—	7:45	7:55	8:09	8:45	8:58
—	—	—	8:05	8:15	8:29	9:05	9:18
—	—	—	8:45	8:55	9:09	9:45	9:58
—	—	—	9:30	9:39	9:53	10:28	10:38
—	—	—	**4:50**	**5:00**	**5:14**	**5:39**	**5:50**
—	—	—	**5:30**	**5:40**	**5:54**	**6:19**	**6:30**

PM times are indicated in bold type.
Passengers boarding within the San Fernando Valley cannot alight within the Valley, except Encino Park & Ride.
No local service between Century City and Westwood. Use MTA.

TO ENCINO/GRANADA HILLS/SANTA CLARITA

Constellation & Century Park W (H)	Wilshire & Glendon (G)	Encino Park & Ride (F)	Balboa & Nordhoff (F)	Chatsworth & Gaynor (D)	San Fernando & Sierra Hwy (C)	Lyons & Orchard Village (B)	McBean & Del Monte (A)
7:00	7:12	7:32	7:43	7:51	—	—	—
7:40	7:52	8:16	8:29	8:37	—	—	—
8:25	8:37	9:01	9:14	9:22	—	—	—
10:10	10:22	10:46	10:59	11:07	—	—	—
12:10	**12:26**	**12:46**	**1:00**	**1:09**	—	—	—
2:10	**2:26**	**2:51**	**3:04**	**3:13**	—	—	—
2:55	**3:11**	**3:36**	**3:49**	**3:58**	—	—	—
3:30	**3:46**	**4:11**	**4:24**	**4:33**	—	—	—
4:00	**4:16**	**4:47**	**5:01**	**5:09**	—	—	—
4:25	**4:41**	**5:12**	**5:26**	**5:34**	—	—	—
4:40	**4:56**	**5:27**	**5:41**	**5:49**	**6:09**	**6:14**	**6:19**
4:55	**5:11**	**5:42**	**5:56**	**6:04**	**6:24**	**6:29**	**6:34**
5:10	**5:30**	**6:01**	**6:15**	**6:23**	**6:43**	**6:48**	**6:53**
5:25	**5:45**	**6:16**	**6:30**	**6:38**	**6:58**	**7:03**	**7:08**
5:45	**6:05**	**6:36**	**6:50**	**6:58**	**7:18**	**7:23**	**7:28**
6:10	**6:30**	**7:01**	**7:15**	**7:23**	—	—	—
6:45	**7:01**	**7:30**	**7:42**	**7:50**	—	—	—

PM times are indicated in bold type.
Passengers boarding in Century City or Westwood cannot alight within Century City/Westwood. No local service within the San Fernando Valley. Use MTA.

INFORMATION

If you need further information, please call one of the following numbers:

LADOT Information	(213) 485-7201
COMMUTER EXPRESS and DASH	
Connecting Transit Services	
Santa Clarita	(805) 294-1BUS
San Fernando Valley and West Side	1-800-COMMUTE
Hearing Impaired	1-800-252-9040
Comments/Complaints	(213) 485-7433
Lost & Found	(213) 972-6208

PARK & RIDE LOCATIONS

Santa Clarita Transit Park & Ride
24061 Del Monte Dr, Santa Clarita

Santa Clarita Transit Park & Ride
23253 Lyons Ave, Santa Clarita

Caltrans Park & Ride
20100 & 20516 San Fernando Rd, Santa Clarita

St. Stephans Lutheran Church
15950 Chatsworth St, Granada Hills

Encino Transit Center
4100 Hayvenhurst Ave, Encino

How to Read Your COMMUTER EXPRESS Pocket Schedule

Locate a time point (A) on the map that is near where you want to board the bus. Find the same time point on the schedule under the direction you want to go. Listed below it are the times that the bus will be at that location.

DAYS OF SERVICE

COMMUTER EXPRESS operates Monday through Friday. No service on Saturdays, Sundays, or the following holidays:
New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.

TRANSFERS

Transfers between COMMUTER EXPRESS Routes can be made using your monthly pass or a 25¢ interagency transfer. Some trips may require an additional cash fare.

METRO

COMMUTER EXPRESS is a project of the City of Los Angeles Department of Transportation, and is a component of the Metro System, the region's integrated transportation system.

ACCESSIBILITY

All COMMUTER EXPRESS and DASH buses are wheelchair accessible.

Look For These LADOT Services

The City of Los Angeles Department of Transportation offers a variety of services tailored to the specific needs of the City's residents. Funded by Proposition A and C sales tax revenues, here are some ways LADOT is keeping LA on the move.

DASH

DASH shuttles operate in Downtown Los Angeles, Pacific Palisades, Watts, Fairfax, Hollywood, Midtown, Crenshaw, Warner Center, Van Nuys/Studio City, and Southeast Los Angeles.

CITYRIDE

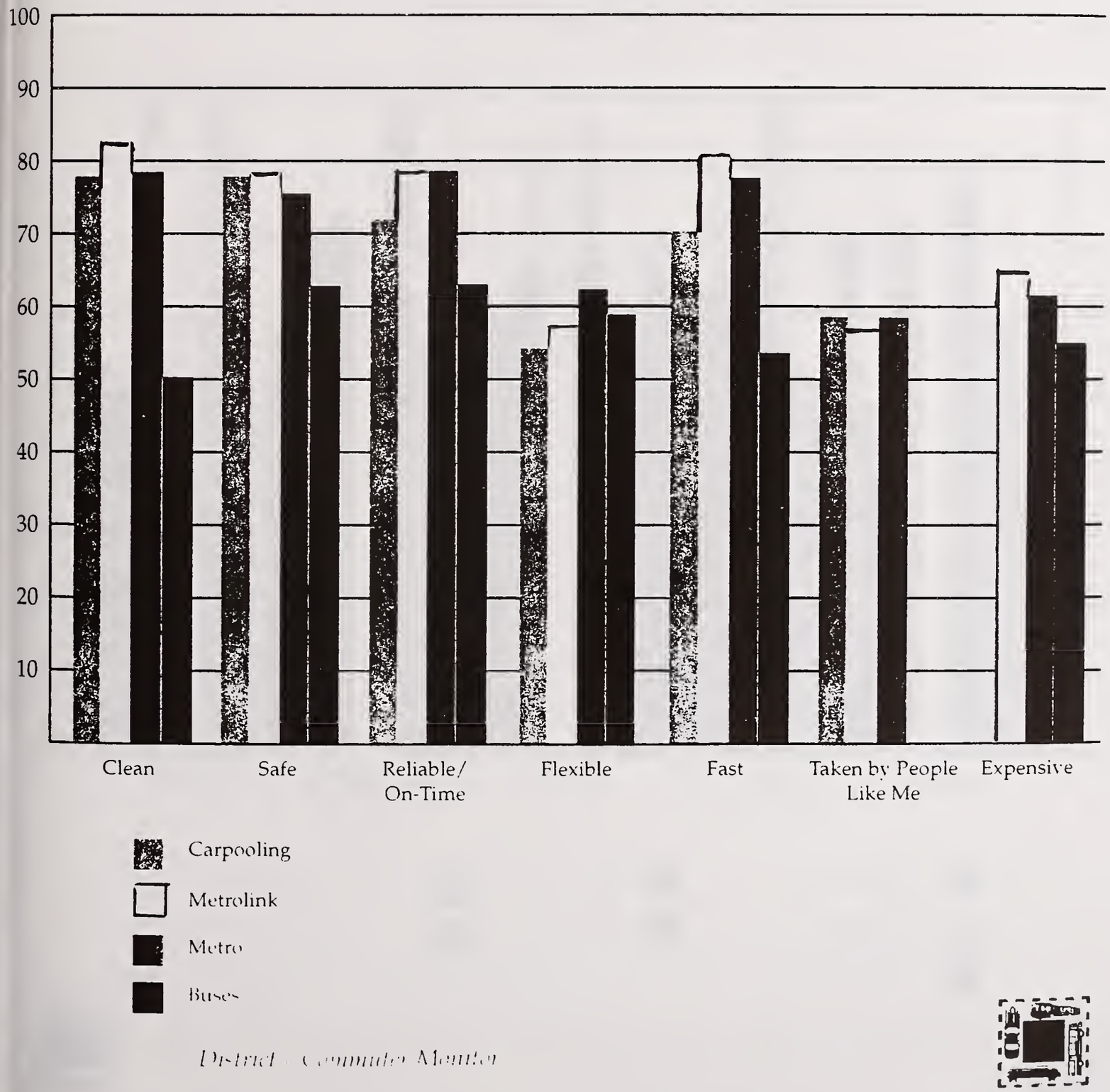
Transit scrip for the purchase of MTA (formerly RTD) bus passes, taxi rides, dial-a-ride services and private lift van services is available at a low cost to seniors and persons with mobility impairments in the City of Los Angeles who register in the CITYRIDE Program. Seniors and persons with disabilities can use their MTA pass to ride DASH and COMMUTER EXPRESS.

APPENDIX E
Rating of Metrolink Service Attributes

Perceptions of Modes

Key Findings (Cont.)

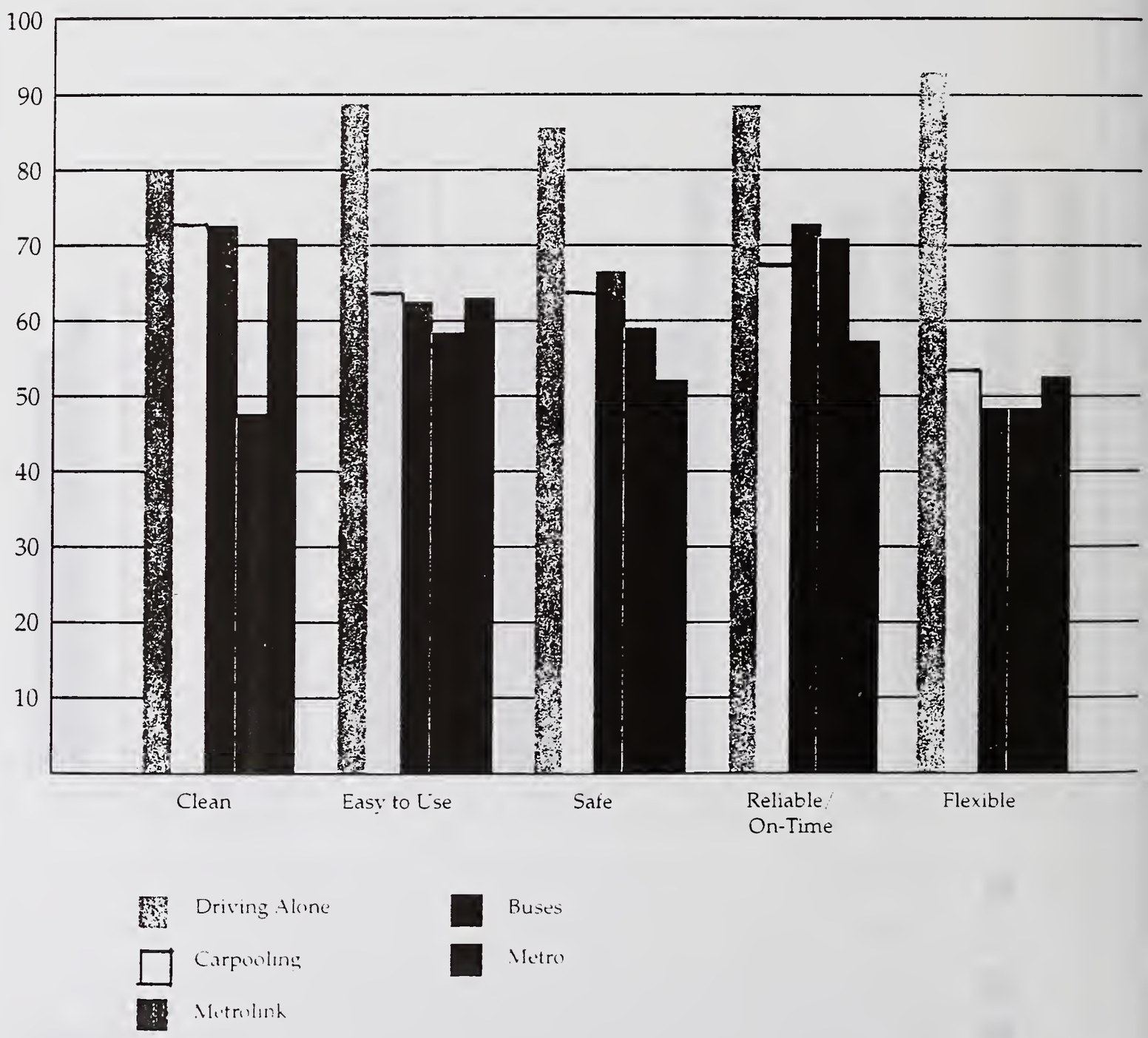
Ratings of Attibutes
Baseline Evaluation
January, 1994



Perceptions of Modes

Key Findings

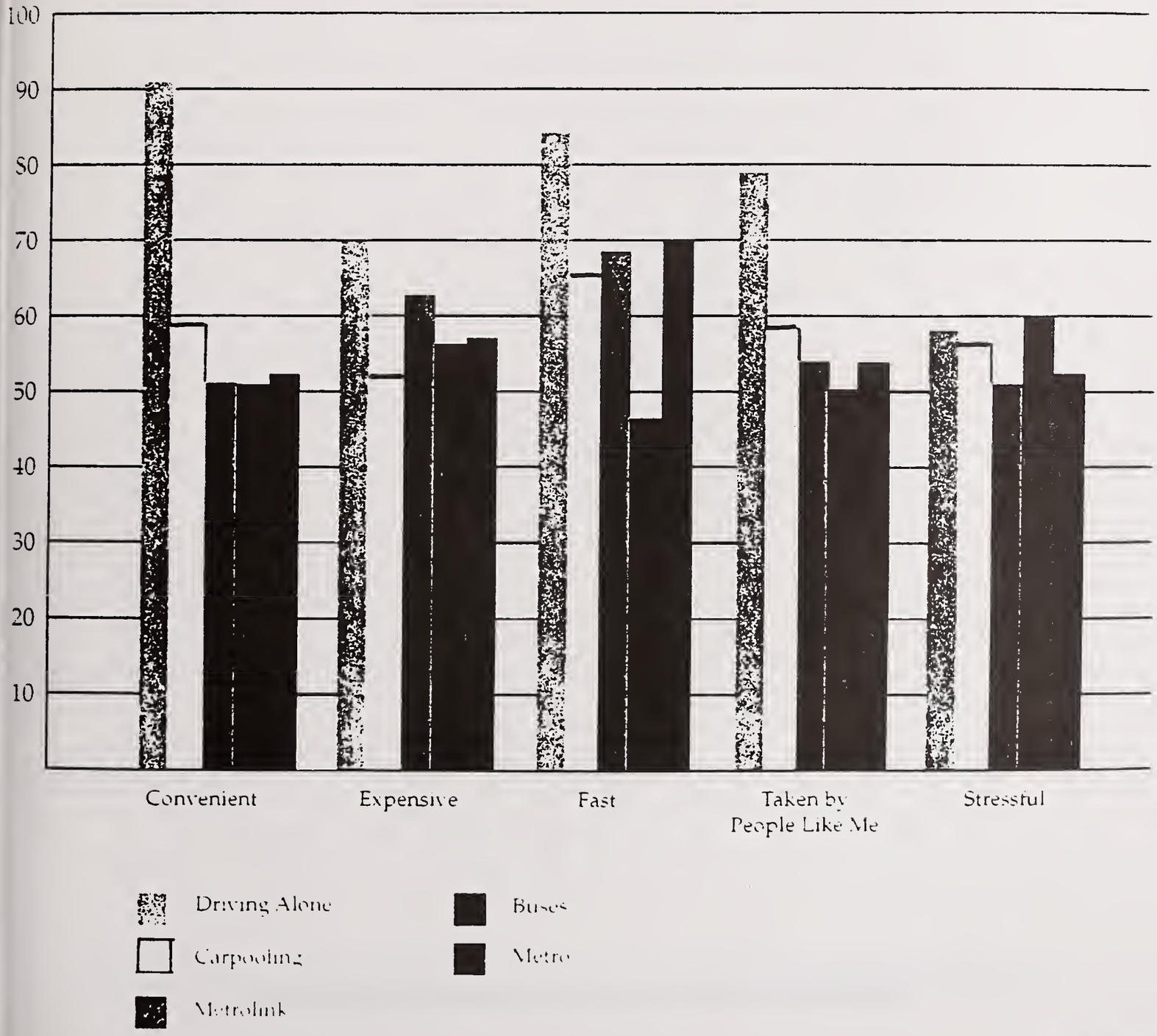
Ratings of Attibutes
District 7 Post-Earthquake
August, 1994



Perceptions of Modes

Key Findings (Cont.)

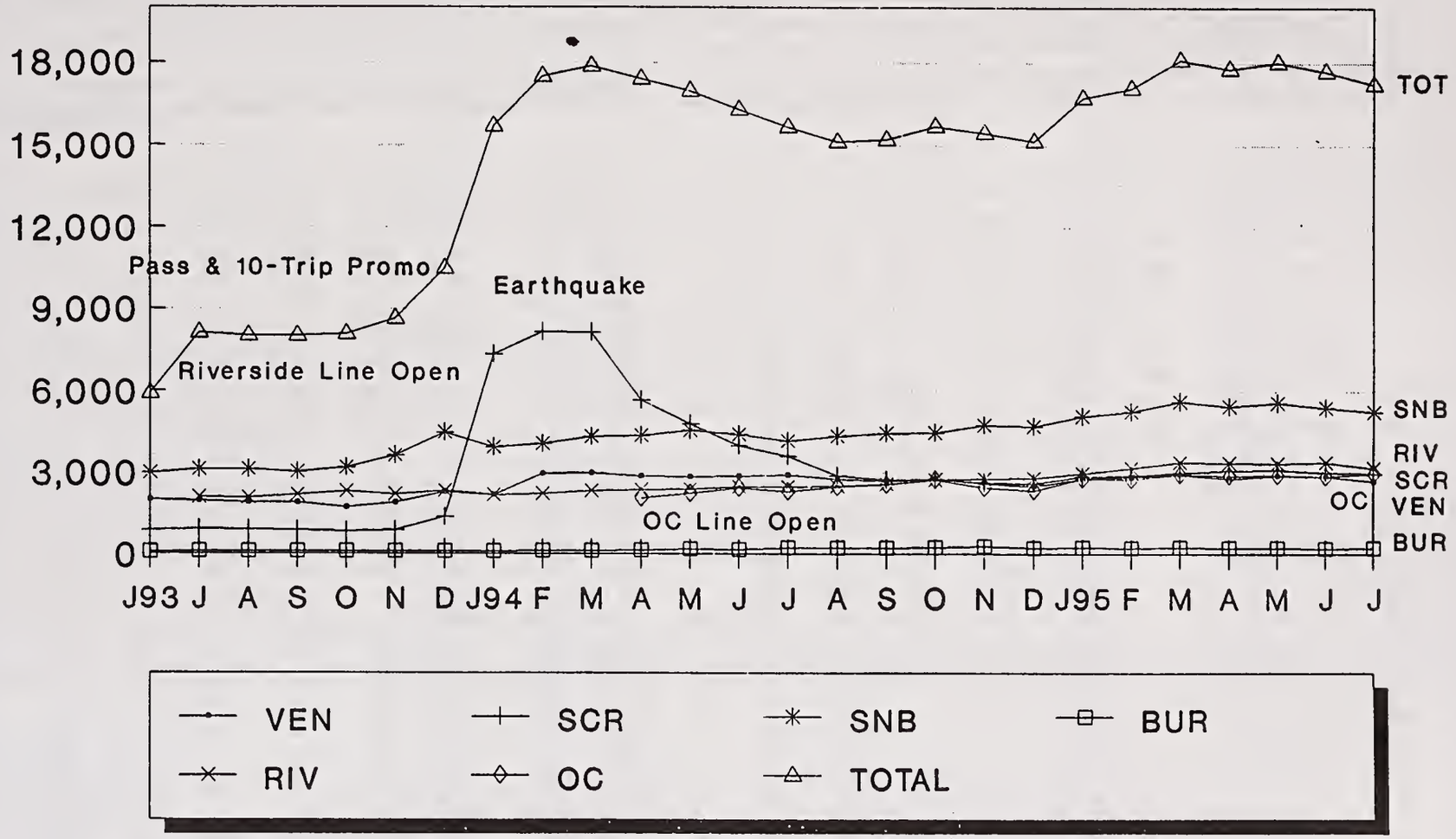
Ratings of Attibutes (Cont.)
District 7 Post-Earthquake
August, 1994



APPENDIX F
Metrolink's Ridership History

AVERAGE DAILY RIDERSHIP BY ROUTE

Adjusted to Remove Free Rides Associated with New Stations & Lines



METROLINK RIDERSHIP
AVERAGE DAILY TOTALS INCEPTION TO DATE

ROUTE= MO/YR	Days Oper	VENTURA COUNTY IN	OUT	VEN TOT	SANTA CLARITA IN	OUT	SCL TOT	SAN BERNARDINO IN	OUT	SB TOT	BURBANK IN	OUT	BUR TOT	RIVERSIDE IN	OUT	RIV TOT	ORANGE COUNTY IN	OUT	ORG TOT	TOTAL ALL ROUTES IN	OUT	TOTAL
Oct 92	5	2,186	1,883	4,069	957	718	1,673	2,573	2,483	5,056	0	0	0	0	0	0				5,717	5,082	10,799
Nov 92	20	573	507	1,080	176	175	351	483	483	988	0	0	0	0	0	0				1,232	1,185	2,397
Dec 92	22	623	609	1,232	199	218	417	582	656	1,238	0	0	0	0	0	0				1,404	1,484	2,888
Jan 93	20	859	792	1,650	257	256	513	767	746	1,513	0	0	0	0	0	0				1,883	1,794	3,677
Feb 93	20	948	845	1,793	310	307	617	980	996	1,976	0	0	0	0	0	0				2,237	2,148	4,385
Mar 93	23	982	924	1,908	345	345	690	1,107	1,121	2,228	5	5	10	0	0	0				2,440	2,395	4,835
Apr 93	22	958	869	1,828	369	377	746	1,184	1,153	2,337	8	9	17	0	0	0				2,520	2,409	4,928
May 93	20	1,006	999	2,005	388	395	784	1,829	1,884	3,712	19	19	37	0	0	0				3,241	3,298	6,538
Jun 93	22	991	1,008	1,999	417	445	862	1,499	1,475	2,974	38	28	64	5,153	5,053	10,206				8,097	8,009	16,106
Jul 93	21	983	967	1,949	425	485	910	1,594	1,510	3,104	48	34	82	1,033	1,051	2,084				4,083	4,047	8,130
Aug 93	22	958	934	1,892	409	475	884	1,618	1,485	3,103	51	33	84	1,029	1,031	2,060				4,085	3,958	8,022
Sep 93	21	930	953	1,883	413	445	858	1,538	1,488	3,024	58	29	88	1,100	1,073	2,173				4,040	3,987	8,027
Oct 93	21	873	840	1,712	383	449	832	1,594	1,566	3,160	58	36	94	1,150	1,143	2,293				4,058	4,034	8,091
Nov 93	21	953	935	1,889	405	462	867	2,021	1,948	3,967	47	35	82	1,084	1,115	2,199				4,511	4,492	9,003
Dec 93	23	1,136	1,139	2,275	705	855	1,360	2,272	2,196	4,468	40	39	79	1,176	1,138	2,312				5,328	5,168	10,494
Jan 94	20	1,043	1,128	2,171	3,664	3,880	7,344	1,976	1,950	3,928	51	47	97	1,107	1,052	2,159				7,840	7,857	15,697
Feb 94	20	1,445	1,513	2,958	4,162	4,012	8,173	1,928	2,128	4,055	49	55	103	1,135	1,089	2,204				8,717	8,776	17,494
Mar 94	23	1,498	1,477	2,975	4,031	4,122	8,153	2,129	2,196	4,325	39	62	101	1,190	1,124	2,314	438	428	884	9,324	9,408	18,732
Apr 94	21	1,414	1,448	2,862	2,794	2,864	5,658	2,185	2,188	4,353	45	77	123	1,198	1,156	2,353	1,021	1,038	2,057	8,657	8,749	17,406
May 94	21	1,384	1,450	2,834	2,438	2,362	4,801	2,286	2,282	4,548	69	99	168	1,207	1,189	2,376	1,098	1,145	2,243	8,483	8,487	16,970
Jun 94	22	1,417	1,449	2,886	1,978	2,017	3,992	2,170	2,228	4,396	55	98	153	1,252	1,218	2,470	1,155	1,288	2,424	8,025	8,276	16,301
Jul 94	20	1,467	1,446	2,913	1,793	1,807	3,600	2,139	2,025	4,164	109	116	224	1,279	1,193	2,472	1,121	1,175	2,295	7,908	7,760	15,668
Aug 94	23	1,362	1,395	2,756	1,424	1,453	2,877	2,194	2,133	4,327	85	131	218	1,258	1,238	2,494	1,269	1,195	2,465	7,591	7,545	15,136
Sep 94	21	1,363	1,327	2,690	1,340	1,399	2,739	2,205	2,233	4,439	101	128	228	1,288	1,289	2,574	1,325	1,226	2,550	7,620	7,602	15,221
Oct 94	21	1,481	1,302	2,783	1,344	1,408	2,752	2,247	2,216	4,463	104	140	245	1,359	1,366	2,725	1,398	1,324	2,722	7,933	7,756	15,690
Nov 94	21	1,347	1,249	2,596	1,291	1,339	2,630	2,461	2,476	4,937	119	159	277	1,404	1,365	2,769	1,241	1,203	2,444	7,862	7,791	15,653
Dec 94	21	1,288	1,200	2,488	1,282	1,310	2,591	2,360	2,343	4,703	100	125	225	1,418	1,385	2,803	1,224	1,114	2,338	7,672	7,477	15,148

AVERAGE DAILY RIDERSHIP BY FISCAL YEAR:

FY 92/93	174	1,014	937	1,951	380	360	739	1,223	1,222	2,445	8	7	14	573	561	1,134	0	0	0	3,197	3,087	6,284
FY 93/94	256	1,169	1,186	2,356	1,817	1,836	3,653	1,943	1,927	3,869	51	54	104	1,138	1,111	2,250	928	969	1,897	6,427	6,436	12,864
FY 94/95	127	1,385	1,320	2,704	1,412	1,453	2,865	2,268	2,238	4,505	103	133	238	1,334	1,306	2,640	1,263	1,206	2,469	7,764	7,855	15,419

Source: Metrolink Morning Reports; daily conductor counts.

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METROLINK AVERAGE DAILY RIDERSHIP

THIRTEEN MONTH WINDOW

ROUTE =>	Ventura County	Santa Clarita	San Bernardino	Burbank Turns	Riverside	Orange County	**TOTAL SYSTEM**	% Change vs Prior Mo
Jul 94	2,913	3,600	4,164	224	2,472	2,295	**15,668**	-4%
Aug 94	2,756	2,877	4,327	216	2,494	2,465	**15,136**	-3%
Sep 94	2,690	2,739	4,439	228	2,574	2,550	**15,221**	1%
Oct 94	2,783	2,752	4,463	245	2,725	2,722	**15,690**	3%
Nov 94	2,596	2,630	4,937	277	2,769	2,444	**15,653**	-0%
Dec 94	2,488	2,591	4,703	225	2,803	2,338	**15,148**	-3%
Jan 95	2,771	2,871	5,084	246	2,976	2,785	**16,732**	10%
Feb 95	2,836	2,887	5,246	216	3,158	2,745	**17,087**	2%
Mar 95	2,937	2,982	5,622	230	3,383	2,936	**18,090**	6%
Apr 95	2,776	3,073	5,434	221	3,368	2,894	**17,765**	-2%
May 95	2,883	3,098	5,579	224	3,338	2,896	**18,019**	1%
Jun 95	2,854	3,005	5,393	203	3,373	2,853	**17,680**	-2%
Jul 95	2,681	2,964	5,247	212	3,157	2,961	**17,222**	-3%

% Change Jul95 vs Jun95	-6%	-1%	-3%	5%	-6%	4%	-3%

% Change Jul95 vs Jul94	-8%	-18%	26%	-5%	28%	29%	10%

These numbers represent raw passenger counts unadjusted for special promotions, holidays, or special events.

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METROLINK RIDERSHIP
Month of January 1994

YR-MO DAY	VENTURA COUNTY LINE			SANTA CLARITA LINE			SAN BERNARDINO LINE			BURBANK TURNS			RIVERSIDE LINE			TOTAL SYSTEM		
	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total
94-Jan 3	1,152	1,029	2,181	488	459	947	1,969	1,862	3,831	39	44	83	1,124	1,015	2,139	4,772	4,409	9,181
4	1,063	1,091	2,154	545	486	1,031	1,875	2,001	3,876	49	41	90	1,249	1,151	2,400	4,781	4,770	9,551
5	1,130	1,161	2,291	393	481	874	2,053	2,138	4,191	63	50	113	1,106	1,126	2,232	4,745	4,956	9,701
6	1,096	1,063	2,159	448	528	976	2,027	1,784	3,811	59	49	108	1,151	1,050	2,201	4,781	4,474	9,255
7	998	1,009	2,007	471	510	981	1,710	1,897	3,607	57	51	108	1,028	1,094	2,122	4,264	4,561	8,825
10	1,051	1,080	2,131	431	543	974	1,798	1,889	3,687	55	53	108	1,153	1,100	2,253	4,488	4,665	9,153
11	1,116	1,190	2,306	526	491	1,017	1,921	1,871	3,792	53	42	95	1,110	1,133	2,243	4,726	4,727	9,453
12	1,182	1,106	2,288	562	509	1,071	2,001	2,036	4,037	64	50	114	1,160	1,111	2,271	4,969	4,812	9,781
13	919	1,108	2,027	653	541	1,194	2,081	2,166	4,247	55	53	108	1,132	952	2,084	4,840	4,820	9,660
14	995	1,098	2,093	425	420	845	2,040	1,787	3,827	51	46	97	1,064	1,101	2,165	4,575	4,452	9,027
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	136	101	237	570	555	1,125	1,827	1,313	3,140	24	9	33	874	762	1,636	3,431	2,740	6,171
19	230	325	555	3,332	3,025	6,357	1,864	2,040	3,904	35	46	81	1,018	825	1,843	6,479	6,261	12,740
20	794	921	1,715	4,754	4,562	9,316	1,911	1,817	3,728	50	51	101	1,129	1,241	2,370	8,638	8,592	17,230
21	878	1,098	1,976	5,706	6,883	12,589	1,794	2,105	3,899	46	48	94	1,068	1,176	2,244	9,492	11,310	20,802
24	1,287	1,505	2,792	7,215	10,632	17,847	2,046	1,924	3,970	35	45	80	1,045	1,022	2,067	11,628	15,128	26,756
25	1,249	1,591	2,840	11,127	10,825	21,952	2,101	2,119	4,220	50	57	107	1,105	1,052	2,157	15,632	15,644	31,276
26	1,460	1,607	3,067	10,918	9,915	20,833	2,131	2,018	4,149	63	45	108	1,132	1,024	2,156	15,704	14,609	30,313
27	1,441	1,443	2,884	11,043	9,298	20,341	2,089	2,139	4,228	47	51	98	1,309	1,165	2,474	15,929	14,096	30,025
28	1,362	1,464	2,826	7,905	6,338	14,243	2,201	2,002	4,203	52	46	98	1,047	979	2,026	12,567	10,829	23,396
31	1,319	1,579	2,898	5,761	6,601	12,362	2,079	2,088	4,167	65	56	121	1,128	969	2,097	10,352	11,293	21,645
TOTAL	20,858	22,569	43,427	73,273	73,602	146,875	39,518	38,996	78,514	1,012	933	1,945	22,132	21,048	43,180	156,793	157,148	313,941
Avg Daily	1,043	1,128	2,171	3,664	3,680	7,344	1,976	1,950	3,926	51	47	97	1,107	1,052	2,159	7,840	7,857	15,697
Avg Daily Before EQ	1,070	1,094	2,164	494	497	991	1,948	1,943	3,891	55	48	102	1,128	1,083	2,211	4,694	4,665	9,359
Avg Daily After EQ	1,016	1,163	2,179	6,833	6,863	13,697	2,004	1,957	3,961	47	45	92	1,086	1,022	2,107	10,985	11,050	22,035

METROLINK RIDERSHIP
Month of February 1994

YR-MO DAY	VENTURA COUNTY LINE			SANTA CLARITA LINE			SAN BERNARDINO LINE			BURBANK TURNS			RIVERSIDE LINE			TOTAL SYSTEM		
	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total
94-Feb 1	1,257	1,502	2,759	6,714	6,329	13,043	1,789	2,091	3,880	44	62	106	1,103	1,095	2,198	10,907	11,079	21,986
2	1,451	1,500	2,951	5,221	5,005	10,226	2,029	2,150	4,179	74	58	132	1,139	1,055	2,194	9,914	9,768	19,682
3	1,369	1,587	2,956	4,996	4,823	9,819	1,760	2,114	3,874	53	57	110	1,183	1,065	2,248	9,361	9,646	19,007
4	1,267	1,535	2,802	4,036	4,248	8,284	1,922	2,050	3,972	58	54	112	1,137	1,010	2,147	8,420	8,897	17,317
7	1,599	1,593	3,192	4,887	4,085	8,972	1,874	2,138	4,012	66	59	125	1,202	1,106	2,308	9,628	8,981	18,609
8	1,541	1,509	3,050	4,702	4,480	9,182	1,819	2,229	4,048	81	61	142	1,138	1,039	2,177	9,281	9,318	18,599
9	1,494	1,489	2,983	3,562	4,311	7,873	2,021	1,976	3,997	59	60	119	1,203	1,139	2,342	8,339	8,975	17,314
10	1,456	1,570	3,026	4,029	3,596	7,625	2,120	2,062	4,182	45	69	114	1,148	1,062	2,210	8,798	8,359	17,157
11	1,445	1,346	2,791	4,306	3,718	8,024	1,970	1,962	3,932	23	58	81	1,152	1,065	2,217	8,896	8,149	17,045
14	1,567	1,599	3,166	3,814	4,158	7,972	2,221	2,295	4,516	48	57	105	1,103	1,119	2,222	8,753	9,228	17,981
15	1,395	1,486	2,881	4,114	4,293	8,407	2,088	2,180	4,268	48	49	97	1,274	1,126	2,400	8,919	9,134	18,053
16	1,806	1,638	3,444	3,925	3,605	7,530	2,240	2,099	4,339	70	40	110	1,043	1,202	2,245	9,084	8,584	17,668
17	1,701	1,831	3,532	3,708	3,723	7,431	2,003	2,416	4,419	49	59	108	1,280	1,102	2,382	8,741	9,131	17,872
18	1,394	1,519	2,913	3,783	3,546	7,329	2,145	2,255	4,400	40	54	94	1,265	1,099	2,364	8,627	8,473	17,100
21	659	715	1,374	1,750	1,683	3,433	608	1,154	1,762	20	27	47	357	358	715	3,394	3,937	7,331
22	1,582	1,757	3,339	3,772	4,285	8,057	1,922	2,303	4,225	47	53	100	1,299	1,132	2,431	8,622	9,530	18,152
23	1,708	1,807	3,515	3,815	3,757	7,572	2,075	2,489	4,564	40	65	105	1,207	1,142	2,349	8,845	9,260	18,105
24	1,486	1,416	2,902	3,687	3,455	7,142	2,145	2,278	4,423	40	60	100	1,244	1,170	2,414	8,602	8,379	16,981
25	1,328	1,422	2,750	4,256	3,405	7,661	1,933	2,369	4,302	30	37	67	1,082	1,105	2,187	8,629	8,338	16,967
28	1,392	1,440	2,832	4,154	3,727	7,881	1,873	1,941	3,814	35	55	90	1,133	1,195	2,328	8,587	8,358	16,945
26																		
TOTAL	28,897	30,261	59,158	83,231	80,232	163,463	38,557	42,551	81,108	970	1,094	2,064	22,692	21,386	44,078	174,347	175,524	349,871
Avg Daily	1,445	1,513	2,958	4,162	4,012	8,173	1,928	2,128	4,055	49	55	103	1,135	1,069	2,204	8,717	8,776	17,494
Avg Daily Last Month	1,043	1,128	2,171	3,664	3,680	7,344	1,976	1,950	3,926	51	47	97	1,107	1,052	2,159	7,840	7,857	15,697

Reference: Metrolink Morning Report

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METROLINK RIDERSHIP
Month of March 1994

YR-MO DAY	VENTURA COUNTY LINE			SANTA CLARITA LINE			SAN BERNARDINO LINE			BURBANK TURNS			RIVERSIDE LINE			ORANGE COUNTY LINE			TOTAL SYSTEM		
	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total
94-Mar 1	1,411	1,541	2,952	3,958	4,588.	8,548	1,983	2,236	4,219	40	59	99	1,151	1,282	2,413			0	8,543	9,686	18,229
2	1,428	1,519	2,947	4,229	4,324	8,553	2,238	2,113	4,351	40	57	97	1,160	1,200	2,360			0	9,095	9,213	18,308
3	1,557	1,594	3,151	3,832	4,018	7,850	2,191	2,383	4,574	40	51	91	1,185	1,103	2,288			0	8,805	9,149	17,954
4	1,387	1,393	2,780	4,000	4,025	8,025	2,156	2,204	4,360	40	56	96	1,241	1,155	2,398			0	8,824	8,833	17,657
7	1,450	1,493	2,943	4,283	4,278	8,541	1,888	2,235	4,123	40	54	94	1,182	1,124	2,308			0	8,823	9,184	18,007
8	1,495	1,488	2,983	4,774	4,335	9,109	2,132	2,181	4,313	40	54	94	1,193	1,118	2,311			0	9,634	9,176	18,810
9	1,384	1,422	2,788	4,700	4,580	9,280	2,118	2,103	4,221	40	70	110	1,215	1,184	2,399			0	9,437	9,359	18,796
10	1,481	1,537	3,018	4,006	3,935	7,941	2,172	2,330	4,502	40	84	104	1,238	1,254	2,490			0	8,935	9,120	18,055
11	1,593	1,433	3,026	3,493	4,256	7,749	2,109	2,018	4,127	40	83	103	1,247	1,088	2,335			0	8,482	8,858	17,340
14	1,385	1,294	2,679	3,983	4,318	8,299	2,142	2,139	4,281	40	50	90	1,193	1,050	2,243			0	8,743	8,849	17,592
15	1,625	1,527	3,152	4,114	3,728	7,840	1,950	2,183	4,133	40	82	102	1,281	1,117	2,378			0	8,990	8,615	17,605
16	1,598	1,537	3,135	4,241	4,417	8,858	2,290	2,372	4,862	37	50	87	1,152	1,119	2,271			0	9,318	9,495	18,813
17	1,598	1,572	3,170	3,889	3,923	7,812	2,524	2,428	4,952	38	58	98	1,233	1,145	2,378			0	9,282	9,126	18,408
18	1,530	1,519	3,049	3,710	4,380	8,070	2,182	2,091	4,273	42	58	100	1,188	1,123	2,311			0	8,652	9,151	17,803
21	1,308	1,305	2,613	3,993	4,325	8,318	2,343	1,995	4,338	42	47	89	1,174	1,064	2,238			0	8,860	8,736	17,596
22	1,507	1,460	2,987	4,321	4,209	8,530	2,182	2,259	4,421	44	80	124	1,158	1,068	2,224			0	9,192	9,074	18,266
23	1,520	1,603	3,123	3,979	3,894	7,873	2,102	2,146	4,248	39	70	109	1,144	1,064	2,208			0	8,784	8,777	17,561
24	1,435	1,665	3,100	3,992	4,030	8,022	2,074	2,298	4,372	40	68	108	1,219	1,130	2,349			0	8,760	9,191	17,951
25	1,508	1,255	2,783	3,917	3,899	7,816	1,904	2,142	4,046	25	55	80	1,202	1,098	2,298			0	8,556	8,447	17,003
28	1,553	1,507	3,060	3,694	4,019	7,713	1,928	1,965	3,893	35	71	106	1,139	1,058	2,195	1459	1838	3,297	9,808	10,456	20,264
29	1,530	1,415	2,945	3,737	3,860	7,597	2,150	2,255	4,405	35	82	117	1,143	1,112	2,255	1984	2006	3,990	10,579	10,730	21,309
30	1,527	1,487	3,014	4,198	4,096	8,292	2,021	2,187	4,208	38	78	118	1,135	1,044	2,179	3005	2335	5,340	11,922	11,227	23,149
31	1656	1408	3,082	3,690	3,398	7,088	2,207	2,252	4,459	42	89	111	1,224	1,180	2,404	3817	3620	7,237	12,436	11,925	24,361
TOTAL	34,446	33,972	88,418	92,711	94,811	187,522	48,988	50,515	99,481	897	1,426	2,323	27,375	25,854	53,229	10,085	9,799	19,884	214,460	216,377	430,837

This Month:

* Total Divided by # Op Days *

Avg Daily	1,498	1,477	2,975	4,031	4,122	8,153	2,129	2,196	4,325	39	82	101	1,190	1,124	2,314	2,518	2,450	4,966	9,324	9,408	18,732

Last Month:

Avg Daily	1,445	1,513	2,958	4,182	4,012	8,173	1,928	2,128	4,055	49	55	103	1,135	1,089	2,204	0	0	0	8,717	8,776	17,494

Reference: Metrolink Morning Report

METROLINK RIDERSHIP
Month of April 1994

YR-MO DAY	VENTURA COUNTY LINE			SANTA CLARITA LINE			SAN BERNARDINO LINE			BURBANK TURNS			RIVERSIDE LINE			ORANGE COUNTY LINE			TOTAL SYSTEM		
	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total
94-Apr 1	1,087	998	2,083	3,131	3,180	8,291	1,895	1,962	3,857	41	54	95	928	955	1,881	1,093	915	2,008	8,173	8,042	18,215
4	1,241	1,478	2,717	3,408	3,034	8,440	2,057	2,060	4,117	49	70	119	1,108	1,088	2,198	1,012	810	1,822	8,873	8,538	17,411
5	1,389	1,620	2,989	3,835	3,461	7,098	2,547	2,305	4,852	48	85	133	1,322	1,237	2,559	971	1,117	2,088	9,892	9,825	19,717
6	1,299	1,518	2,817	2,886	2,344	5,210	2,396	2,325	4,721	47	83	130	1,158	1,049	2,207	1,057	1,058	2,115	8,823	8,377	17,200
7	1,425	1,515	2,940	2,783	2,530	5,313	2,482	2,411	4,893	48	82	130	1,196	1,115	2,311	987	998	1,965	8,901	8,651	17,552
8	1,509	1,634	3,143	2,884	2,844	5,728	2,195	2,420	4,615	40	88	128	1,307	1,077	2,384	923	890	1,813	8,858	8,951	17,809
11	1,871	1,599	3,270	2,483	3,140	5,603	2,259	2,219	4,478	45	84	129	1,280	1,305	2,565	948	1,097	2,045	8,846	9,444	18,090
12	1,701	1,546	3,247	2,800	3,281	6,081	2,178	2,001	4,179	48	94	142	1,330	1,145	2,475	998	1,244	2,240	9,053	9,311	18,364
13	1,555	1,606	3,161	2,929	2,839	5,768	2,375	2,253	4,628	32	90	122	1,189	1,215	2,404	1,001	1,148	2,149	9,081	9,151	18,232
14	1,467	1,716	3,183	2,780	2,973	5,753	2,078	2,040	4,118	40	80	100	1,217	1,235	2,452	1,030	1,158	2,188	8,812	9,182	17,794
15	1,199	1,579	2,778	2,600	2,798	5,398	2,138	2,247	4,385	38	75	113	1,253	1,054	2,307	948	904	1,852	8,178	8,855	18,831
18	1,276	1,344	2,620	2,523	3,002	5,525	2,047	2,128	4,175	52	61	113	1,145	1,047	2,192	1,108	1,032	2,140	8,151	8,814	16,785
19	1,493	1,681	3,154	2,751	3,202	5,953	2,159	2,139	4,298	52	75	127	1,134	1,159	2,293	1,046	1,030	2,076	8,835	9,266	17,901
20	1,474	1,548	3,022	2,843	2,444	5,287	2,212	2,088	4,278	45	87	132	1,312	1,248	2,558	1,177	1,144	2,321	9,063	8,535	17,598
21	1,432	1,321	2,753	2,808	2,801	5,409	2,107	2,206	4,313	52	75	127	1,123	1,181	2,304	1,080	1,085	2,125	8,382	8,649	17,031
22	1,444	1,446	2,890	2,424	2,876	5,100	2,274	2,273	4,547	39	86	125	1,130	1,228	2,356	880	992	1,852	8,171	8,699	16,870
25	1,357	1,327	2,684	2,814	2,820	5,234	1,942	2,085	4,027	48	80	128	1,290	1,190	2,480	1,080	1,051	2,111	8,311	8,353	16,864
26	1,480	1,327	2,807	2,809	2,755	5,564	2,008	2,305	4,311	48	93	141	1,277	1,257	2,534	1,057	1,079	2,136	8,877	8,818	17,493
27	1,351	1,187	2,538	2,614	2,704	5,318	1,848	2,108	3,954	45	65	110	1,072	1,000	2,072	999	876	1,875	7,927	7,940	15,887
28	1,371	1,235	2,808	2,878	2,915	5,591	2,552	2,008	4,580	30	52	82	1,185	1,204	2,389	1,077	1,071	2,148	8,891	8,485	17,378
29	1,494	1,205	2,899	2,539	2,827	5,186	2,130	1,970	4,100	67	83	150	1,217	1,285	2,502	1,048	1,083	2,131	8,495	8,253	16,748
TOTAL	29,895	30,406	60,101	58,678	80,148	118,826	45,875	45,531	91,406	954	1,820	2,574	25,151	24,270	49,421	21,438	21,782	43,200	181,791	183,737	385,528

This Month:

Avg Daily	1,414	1,448	2,862	2,794	2,884	5,658	2,185	2,188	4,353	45	77	123	1,198	1,158	2,353	1,021	1,038	2,057	8,857	8,749	17,408

Last Month: * Avg of 23 Operating Days *

Avg Daily	1,498	1,477	2,975	4,031	4,122	8,153	2,129	2,198	4,325	39	82	101	1,190	1,124	2,314	438	30	884	9,324	9,408	18,732

Reference: Revised Metrolink Morning Report

METROLINK RIDERSHIP
Month of May 1994

	VENTURA COUNTY LINE			SANTA CLARITA LINE			SAN BERNARDINO LINE			BURBANK TURNS			RIVERSIDE LINE			ORANGE COUNTY LINE			TOTAL SYSTEM		
YR-MO DAY	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total
94-May 2	1,398	1,408	2,806	2,303	2,648	4,951	1,964	2,277	4,241	100	140	240	1,353	1,177	2,530	978	1,080	2,058	8,096	8,730	16,826
3	1,535	1,548	3,083	2,544	2,624	5,168	2,305	2,271	4,576	46	90	136	1,187	1,416	2,603	1,202	1,188	2,390	8,819	9,137	17,956
4	1,500	1,455	2,955	2,712	2,710	5,422	2,425	2,382	4,807	74	135	209	1,245	1,232	2,477	1,169	996	2,185	9,125	8,910	18,035
5	1,578	1,541	3,117	2,720	2,505	5,225	2,143	1,900	4,043	77	98	175	1,231	1,221	2,452	1,077	1,017	2,094	8,824	8,282	17,106
6	1,308	1,129	2,437	2,567	2,539	5,106	2,581	2,625	5,186	42	75	117	1,105	1,069	2,174	1,121	945	2,066	8,704	8,382	17,086
9	1,305	1,519	2,824	2,518	2,906	5,422	2,072	2,336	4,408	50	108	158	1,245	1,195	2,440	1,210	1,266	2,476	8,398	9,330	17,728
10	1,341	1,812	2,953	2,748	2,589	5,337	2,361	2,260	4,621	62	128	190	1,329	1,322	2,651	1,131	1,104	2,235	8,972	9,015	17,987
11	1,688	1,557	3,245	2,656	2,479	5,135	2,370	2,260	4,630	87	140	227	1,208	1,336	2,544	1,106	1,154	2,260	9,115	8,926	18,041
12	1,408	1,496	2,904	2,787	2,402	5,189	2,193	2,304	4,497	81	103	184	1,269	1,278	2,547	572	843	1,415	8,290	8,426	16,716
13	1,341	1,228	2,569	2,603	1,752	4,355	2,268	2,222	4,490	77	155	232	1,137	942	2,079	1,028	1,010	2,038	8,454	7,309	15,763
18	1,312	1,529	2,841	2,373	2,381	4,734	2,207	2,304	4,511	82	107	189	1,178	1,202	2,380	1,181	1,349	2,510	8,313	8,852	17,185
17	1,492	1,324	2,816	2,420	2,436	4,856	2,489	2,391	4,880	72	73	145	1,177	1,122	2,299	1,189	1,265	2,454	8,839	8,611	17,450
18	1,355	1,485	2,840	2,645	2,260	4,905	2,285	2,262	4,547	88	82	168	1,203	1,133	2,336	1,238	1,307	2,545	8,812	8,529	17,341
19	1,648	1,601	3,247	2,332	2,106	4,438	2,840	2,702	5,542	73	85	158	1,341	1,158	2,497	1,127	1,302	2,429	9,359	8,952	18,311
20	1,111	1,198	2,309	2,375	1,995	4,370	2,525	2,387	4,892	78	84	162	1,158	1,118	2,274	1,142	1,115	2,257	8,389	7,875	16,264
23	1,283	1,354	2,637	2,088	2,338	4,422	2,091	1,979	4,070	55	87	142	1,138	1,111	2,249	1,149	1,390	2,539	7,802	8,257	16,059
24	1,255	1,413	2,668	2,351	2,238	4,589	2,167	2,009	4,176	86	78	164	1,188	1,171	2,359	1,199	1,294	2,493	8,248	8,203	16,449
25	1,891	2,044	3,935	2,146	2,233	4,379	2,241	2,128	4,367	82	78	138	1,192	1,118	2,310	1,109	1,229	2,338	8,641	8,826	17,467
26	1,115	1,442	2,557	2,247	2,182	4,429	2,411	2,234	4,645	55	82	137	1,165	1,118	2,281	1,106	1,179	2,285	8,099	8,235	18,334
27	1,065	1,273	2,338	2,057	2,163	4,220	1,998	2,028	4,028	52	81	113	1,060	997	2,057	837	968	1,805	7,069	7,490	14,559
31	1,138	1,301	2,437	2,040	2,141	4,181	2,100	2,260	4,360	52	98	150	1,248	1,109	2,357	1,198	1,048	2,248	7,774	7,957	15,731
TOTAL	29,061	30,457	59,518	51,208	49,605	100,813	48,016	47,499	95,515	1,449	2,085	3,534	25,357	24,539	49,896	23,049	24,049	47,098	178,140	178,234	358,374

This Month:

Avg Daily	1,384	1,450	2,834	2,438	2,362	4,801	2,286	2,262	4,548	69	99	168	1,207	1,169	2,376	1,098	1,145	2,243	8,483	8,487	16,970

Last Month: * Avg of 21 Operating Days *

Avg Daily	1,414	1,448	2,862	2,794	2,864	5,658	2,185	2,168	4,353	45	77	123	1,198	1,158	2,353	1,021	1,038	2,057	8,657	8,749	17,406

Reference: Metrolink Morning Report

METROLINK RIDERSHIP
Month of June 1994

	VENTURA COUNTY LINE			SANTA CLARITA LINE			SAN BERNARDINO LINE			BURBANK TURNS			RIVERSIDE LINE			ORANGE COUNTY LINE			TOTAL SYSTEM		
YR-MO DAY	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total
94-Jun 1	1,482	1,392	2,874	1,895	2,000	3,895	2,137	2,292	4,429	55	85	140	1,214	1,122	2,336	1,202	1,241	2,443	7,985	8,132	16,117
2	1,270	1,462	2,732	1,830	1,966	3,796	2,451	2,384	4,835	50	88	118	1,192	1,099	2,291	1,187	1,238	2,423	7,980	8,215	16,195
3	1,124	1,225	2,349	1,902	1,848	3,748	2,213	2,277	4,490	54	79	133	1,218	1,148	2,368	1,004	1,049	2,053	7,515	7,624	15,139
8	1,192	1,361	2,553	1,813	1,937	3,750	2,022	2,218	4,240	55	95	150	1,253	1,258	2,511	1,141	1,275	2,418	7,476	8,144	15,620
7	1,306	1,474	2,780	1,939	1,977	3,918	2,186	2,391	4,577	52	90	142	1,197	1,155	2,352	1,166	1,340	2,506	7,846	8,427	16,273
8	1,384	1,565	2,949	1,896	2,086	3,982	2,311	2,351	4,662	55	129	184	1,279	1,209	2,488	1,196	1,285	2,481	8,121	8,625	16,746
9	1,168	1,439	2,607	2,155	1,943	4,098	2,039	2,369	4,408	57	91	148	1,298	1,302	2,598	1,194	1,261	2,455	7,909	8,405	16,314
10	1,298	1,360	2,658	2,115	1,933	4,048	1,946	1,953	3,899	47	87	134	1,139	1,272	2,411	1,040	1,058	2,096	7,585	7,661	15,246
13	1,286	1,560	2,848	1,727	1,941	3,668	2,135	2,165	4,300	69	96	165	1,189	1,138	2,327	1,132	1,289	2,421	7,538	8,189	15,727
14	1,507	1,387	2,894	1,938	1,927	3,865	2,435	2,245	4,680	62	68	130	1,243	1,250	2,493	1,187	1,238	2,423	8,372	8,113	16,485
15	1,570	1,459	3,029	1,769	1,851	3,620	2,241	2,034	4,275	60	84	144	1,278	1,248	2,526	1,237	1,403	2,640	8,155	8,079	16,234
16	1,409	1,439	2,848	1,783	1,878	3,661	2,271	2,291	4,562	52	87	139	1,336	1,170	2,506	1,107	1,322	2,429	7,958	8,187	16,145
17	1,494	1,367	2,861	1,773	1,682	3,455	2,002	2,188	4,190	47	130	177	1,317	1,195	2,512	1,035	1,239	2,274	7,668	7,801	15,469
20	1,466	1,518	2,984	1,838	2,208	4,046	2,034	2,100	4,134	55	101	156	1,245	1,330	2,575	1,178	1,298	2,474	7,814	8,555	16,369
21	1,621	1,496	3,117	2,244	2,160	4,404	2,210	2,415	4,825	60	101	161	1,280	1,258	2,538	1,214	1,268	2,482	8,629	8,698	17,327
22	1,631	1,811	3,242	2,049	2,059	4,108	2,334	2,275	4,609	53	124	177	1,362	1,217	2,579	1,156	1,394	2,550	8,585	8,680	17,265
23	1,698	1,565	3,263	2,296	2,312	4,608	2,296	2,291	4,587	54	145	199	1,353	1,182	2,515	1,174	1,257	2,431	8,871	8,732	17,603
24	1,372	1,553	2,925	2,342	2,138	4,480	2,032	2,108	4,140	45	90	135	1,233	1,213	2,446	1,133	1,179	2,312	8,157	8,281	16,438
27	1,454	1,351	2,805	1,812	2,031	3,843	2,107	2,094	4,201	55	122	177	1,280	1,230	2,510	1,104	1,288	2,390	7,812	8,114	15,928
28	1,492	1,401	2,893	2,222	2,098	4,320	2,088	2,300	4,388	59	101	180	1,107	1,259	2,366	1,137	1,348	2,485	8,105	8,507	16,612
29	1,509	1,492	3,001	1,959	2,264	4,223	2,057	2,080	4,137	65	87	152	1,329	1,265	2,594	1,347	1,383	2,730	8,266	8,571	18,837
30	1,447	1,405	2,852	2,187	2,129	4,296	2,191	2,156	4,347	44	91	135	1,211	1,292	2,503	1,150	1,261	2,411	8,210	8,334	16,544
TOTAL	31,180	31,882	83,062	43,464	44,366	87,830	47,738	48,977	96,715	1,205	2,151	3,356	27,551	28,792	54,343	25,419	27,908	53,325	176,557	182,074	358,631

This Month:

Avg Daily	1,417	1,449	2,866	1,976	2,017	3,992	2,170	2,226	4,396	55	98	153	1,252	1,218	2,470	1,155	1,268	2,424	8,025	8,276	16,301

Last Month:

* Avg of 21 Operating Days *

Avg Daily	1,384	1,450	2,834	2,438	2,362	4,801	2,286	2,262	4,548	69	99	168	1,207	1,169	2,376	1,098	1,145	2,243	8,483	8,487	16,970

Reference: Metrolink Morning Report

METROLINK RIDERSHIP
Month of July 1994

YR-MO DAY	VENTURA COUNTY LINE			SANTA CLARITA LINE			SAN BERNARDINO LINE			BURBANK TURNS			RIVERSIDE LINE			ORANGE COUNTY LINE			TOTAL SYSTEM		
	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total
94-Jul 1	1,459	1,285	2,744	2,184	1,841	4,025	2,055	2,065	4,120	65	84	149	1,169	1,006	2,175	941	1,150	2,091	7,873	7,431	15,304
5	1,236	1,294	2,530	1,732	1,831	3,563	2,113	2,027	4,140	60	100	160	1,354	1,069	2,423	1,157	1,203	2,360	7,652	7,524	15,176
6	1,415	1,244	2,659	1,978	1,973	3,951	1,957	1,971	3,928	60	103	163	1,153	1,248	2,401	1,099	1,310	2,409	7,662	7,849	15,511
7	1,464	1,492	2,956	2,019	2,094	4,113	2,150	2,155	4,305	75	93	168	1,271	1,173	2,444	837	1,084	1,921	7,816	8,091	15,907
8	1,449	1,283	2,732	1,849	1,752	3,601	2,039	2,137	4,176	175	81	256	1,334	1,058	2,392	1,172	1,159	2,331	8,018	7,470	15,488
11	1,584	1,563	3,147	1,623	1,769	3,392	2,138	1,945	4,083	80	118	198	1,194	1,104	2,298	1,205	1,189	2,394	7,824	7,888	15,512
12	1,583	1,610	3,193	1,851	1,930	3,781	2,220	2,157	4,377	61	141	202	1,180	1,135	2,315	1,191	1,147	2,338	8,086	8,120	16,206
13	1,569	1,729	3,298	2,027	1,952	3,979	2,043	1,991	4,034	60	110	170	1,301	1,267	2,568	1,180	1,118	2,298	8,180	8,167	16,347
14	1,584	1,763	3,347	1,822	1,846	3,668	2,099	1,977	4,076	64	105	169	1,353	1,309	2,662	1,099	1,106	2,205	8,021	8,106	18,127
15	1,532	1,555	3,087	1,683	1,778	3,461	2,197	2,113	4,310	60	86	146	1,339	1,236	2,575	1,081	1,009	2,090	7,892	7,777	15,669
18	1,326	1,345	2,671	1,706	1,670	3,376	2,094	2,121	4,215	75	138	213	1,323	1,188	2,511	1,259	1,465	2,724	7,783	7,927	15,710
19	1,430	1,292	2,722	1,712	1,805	3,517	2,105	1,888	3,993	35	98	133	1,394	1,256	2,650	1,045	1,188	2,233	7,721	7,527	15,248
20	1,455	1,299	2,754	1,740	1,659	3,399	2,204	2,080	4,284	130	104	234	1,400	1,279	2,679	1,028	1,169	2,197	7,957	7,590	15,547
21	1,341	1,350	2,691	1,638	1,705	3,343	2,389	1,856	4,245	60	121	181	1,338	1,253	2,591	1,199	1,209	2,408	7,965	7,494	15,459
22	1,241	1,357	2,598	1,657	1,765	3,422	2,254	2,136	4,390	52	98	150	1,336	1,304	2,640	1,080	1,081	2,161	7,620	7,741	15,361
25	1,357	1,331	2,688	1,595	1,614	3,209	2,027	1,931	3,958	197	133	330	1,198	1,178	2,376	1,173	1,171	2,344	7,547	7,358	14,905
26	1,647	1,646	3,293	1,828	1,854	3,682	2,163	2,089	4,252	203	147	350	1,254	1,236	2,490	1,262	1,200	2,462	8,357	8,172	16,529
27	1,636	1,448	3,084	1,782	1,619	3,401	2,194	2,059	4,253	221	151	372	1,292	1,226	2,518	1,178	1,227	2,405	8,303	7,730	16,033
28	1,558	1,513	3,071	1,792	1,882	3,674	2,241	2,071	4,312	206	143	349	1,227	1,191	2,418	1,131	1,229	2,360	8,155	8,029	16,184
29	1,482	1,517	2,999	1,641	1,796	3,437	2,098	1,722	3,820	235	157	392	1,169	1,136	2,305	1,096	1,081	2,177	7,721	7,409	15,130
TOTAL	29,348	28,916	58,264	35,859	36,135	71,994	42,780	40,491	83,271	2,174	2,311	4,485	25,579	23,852	49,431	22,413	23,495	45,908	158,153	155,200	313,353
This Month:																					
Avg Daily	1,467	1,446	2,913	1,793	1,807	3,600	2,139	2,025	4,164	109	116	224	1,279	1,193	2,472	1,121	1,175	2,295	7,908	7,760	15,668
Last Month:																					* Avg of 22 Operating Days *
Avg Daily	1,417	1,449	2,866	1,976	2,017	3,992	2,170	2,226	4,396	55	98	153	1,252	1,218	2,470	1,155	1,268	2,424	8,025	8,276	16,301
This Month vs Last Month:																					
% Change			1.8%			-9.8%			-5.3%			47.0%			0.1%			-5.3%			-3.9%

Reference: Metrolink Morning Report

METROLINK RIDERSHIP
Month of August 1994

	VENTURA COUNTY LINE			SANTA CLARITA LINE			SAN BERNARDINO LINE			BURBANK TURNS			RIVERSIDE LINE			ORANGE COUNTY LINE			TOTAL SYSTEM		
YR-MO DAY	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total
94-Aug 1	1,332	1,426	2,758	1,336	1,400	2,736	2,053	1,857	3,910	186	168	354	1,167	1,183	2,350	1,264	1,239	2,503	7,338	7,273	14,611
2	1,374	1,445	2,819	1,519	1,541	3,060	2,178	1,926	4,104	238	152	390	1,259	1,180	2,439	1,316	1,424	2,740	7,884	7,668	15,552
3	1,396	1,535	2,931	1,497	1,444	2,941	2,174	1,972	4,146	73	150	223	1,317	1,227	2,544	1,347	1,273	2,620	7,804	7,601	15,405
4	1,389	1,595	2,984	1,503	1,416	2,919	2,117	1,944	4,061	68	152	220	1,314	1,254	2,568	1,252	1,036	2,288	7,643	7,397	15,040
5	1,244	1,366	2,610	1,381	1,446	2,827	2,079	1,978	4,057	156	127	283	1,176	1,228	2,404	1,170	1,170	2,340	7,206	7,315	14,521
8	1,357	1,411	2,768	1,465	1,397	2,862	2,162	2,108	4,270	52	111	163	1,208	1,178	2,386	1,320	1,328	2,648	7,564	7,533	15,097
9	1,433	1,399	2,832	1,371	1,500	2,871	2,308	2,188	4,496	55	124	179	1,383	1,332	2,715	1,366	792	2,158	7,916	7,335	15,251
10	1,381	1,388	2,769	1,420	1,590	3,010	2,335	2,087	4,422	75	133	208	1,237	1,213	2,450	1,148	1,289	2,437	7,596	7,700	15,296
11	1,290	1,351	2,641	1,529	1,457	2,986	2,190	2,195	4,385	68	142	210	1,250	1,297	2,547	1,255	991	2,246	7,582	7,433	15,015
12	1,316	1,310	2,626	1,263	1,295	2,558	2,173	1,843	4,016	60	132	192	1,249	1,361	2,610	1,189	1,153	2,342	7,250	7,094	14,344
15	1,370	1,464	2,834	1,493	1,536	3,029	2,122	2,282	4,404	60	138	198	1,284	1,199	2,483	1,323	1,269	2,592	7,652	7,888	15,540
16	1,295	1,411	2,706	1,472	1,473	2,945	2,132	2,260	4,392	58	114	172	1,369	1,253	2,622	1,386	1,381	2,767	7,712	7,892	15,604
17	1,413	1,459	2,872	1,382	1,550	2,932	2,248	2,127	4,373	68	134	202	1,213	1,127	2,340	1,343	1,431	2,774	7,665	7,828	15,493
18	1,494	1,516	3,010	1,434	1,400	2,834	2,225	2,188	4,413	65	125	190	1,181	1,262	2,443	1,313	1,238	2,551	7,712	7,729	15,441
19	1,309	1,272	2,581	1,375	1,550	2,925	2,158	2,033	4,189	45	139	184	1,080	1,355	2,435	1,234	1,159	2,393	7,199	7,508	14,707
22	1,394	1,393	2,787	1,369	1,357	2,726	2,051	2,076	4,127	65	142	207	1,270	1,242	2,512	1,361	1,213	2,574	7,510	7,423	14,933
23	1,326	1,163	2,489	1,436	1,403	2,839	2,098	2,169	4,267	65	143	208	1,257	1,302	2,559	1,334	1,132	2,466	7,516	7,312	14,828
24	1,430	1,557	2,987	1,519	1,458	2,977	2,437	2,530	4,967	88	135	223	1,170	1,233	2,403	1,134	1,208	2,342	7,778	8,121	15,899
25	1,404	1,483	2,887	1,313	1,383	2,696	2,174	2,353	4,527	76	127	203	1,266	1,179	2,445	1,261	1,367	2,628	7,494	7,892	15,386
26	1,409	1,205	2,614	1,362	1,419	2,781	2,219	2,385	4,604	65	98	163	1,382	1,323	2,705	1,088	1,124	2,212	7,525	7,554	15,079
29	1,208	1,410	2,618	1,396	1,482	2,878	2,058	2,114	4,172	87	113	200	1,318	1,175	2,493	1,239	1,029	2,268	7,306	7,323	14,629
30	1,356	1,107	2,463	1,469	1,499	2,968	2,374	2,301	4,675	85	116	201	1,340	1,192	2,532	1,310	1,073	2,383	7,934	7,288	15,222
31	1399	1414	2,813	1,455	1,425	2,880	2,406	2,142	4,548	102	104	206	1,205	1,174	2,379	1,240	1,172	2,412	7,807	7,431	15,238
TOTAL	31,319	32,080	63,399	32,759	33,421	66,180	50,467	49,058	99,525	1,960	3,019	4,979	28,895	28,469	57,364	29,193	27,491	56,684	174,593	173,538	348,131

350 pax bussed 8/9/94

This Month:

Avg Daily	1,362	1,395	2,756	1,424	1,453	2,877	2,194	2,133	4,327	85	131	216	1,256	1,238	2,494	1,269	1,195	2,465	7,591	7,545	15,136

Last Month: * Avg of 20 Operating Days *

Avg Daily	1,467	1,446	2,913	1,793	1,807	3,600	2,139	2,025	4,164	109	116	224	1,279	1,193	2,472	1,121	1,175	2,295	7,908	7,760	15,668

This Month vs Last Month:

% Change			-5.4%			-20.1%			3.9%			-3.5%			0.9%			7.4%			-3.4%

Reference: Metrolink Morning Report

METROLINK RIDERSHIP
Month of September 1994

	VENTURA COUNTY LINE			SANTA CLARITA LINE			SAN BERNARDINO LINE			BURBANK TURNS			RIVERSIDE LINE			ORANGE COUNTY LINE			TOTAL SYSTEM		
YR-MO DAY	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total
94-Sep 1	1,335	1,406	2,741	1,383	1,490	2,873	2,136	2,205	4,341	110	139	249	1,211	1,179	2,390	1,320	1,288	2,608	7,495	7,707	15,202
2	1,229	1,141	2,370	1,281	1,330	2,611	2,140	2,335	4,475	95	121	216	1,154	1,320	2,474	1,111	1,141	2,252	7,010	7,388	14,398
6	1,335	1,381	2,716	1,330	1,523	2,853	1,997	2,202	4,199	98	125	223	1,278	1,259	2,537	1,231	1,256	2,487	7,289	7,746	15,015
7	1,460	1,539	2,999	1,328	1,399	2,727	2,211	2,199	4,410	107	126	233	1,361	1,303	2,664	1,405	1,274	2,679	7,872	7,840	15,712
8	1,465	1,429	2,894	1,335	1,499	2,834	2,242	2,017	4,259	106	140	246	1,278	1,228	2,506	1,302	1,194	2,496	7,728	7,507	15,235
9	1,467	1,448	2,915	1,358	1,355	2,713	2,167	2,171	4,338	99	99	198	1,277	1,225	2,502	1,216	1,088	2,304	7,584	7,386	14,970
12	1,392	1,283	2,675	1,340	1,504	2,844	2,234	2,114	4,348	95	123	218	1,241	1,246	2,487	1,386	1,391	2,777	7,688	7,661	15,349
13	1,438	1,274	2,712	1,410	1,404	2,814	2,185	2,370	4,555	112	123	235	1,368	1,285	2,653	1,412	1,186	2,598	7,925	7,642	15,567
14	1,380	1,432	2,812	1,387	1,426	2,813	2,206	2,093	4,299	112	128	240	1,342	1,340	2,682	1,362	1,273	2,635	7,789	7,692	15,481
15	1,351	1,146	2,497	1,344	1,429	2,773	2,099	2,336	4,435	101	119	220	1,227	1,243	2,470	1,311	1,143	2,454	7,433	7,416	14,849
16	1,280	1,051	2,331	1,289	1,268	2,557	2,127	2,221	4,348	100	107	207	1,229	1,204	2,433	1,249	906	2,155	7,274	8,757	14,031
19	1,341	1,489	2,830	1,142	1,354	2,496	2,218	2,342	4,560	70	119	189	1,217	1,307	2,524	1,362	1,300	2,662	7,350	7,911	15,261
20	1,354	1,369	2,723	1,338	1,464	2,802	2,231	2,177	4,408	101	132	233	1,288	1,381	2,649	1,430	1,386	2,816	7,742	7,889	15,631
21	1,375	1,417	2,792	1,354	1,461	2,815	2,207	2,253	4,460	102	129	231	1,415	1,396	2,811	1,450	1,276	2,726	7,903	7,932	15,835
22	1,387	1,310	2,697	1,334	1,429	2,763	2,221	2,268	4,489	101	132	233	1,361	1,374	2,735	1,402	1,395	2,797	7,806	7,908	15,714
23	1,332	1,193	2,525	1,269	1,286	2,555	2,146	2,108	4,254	175	132	307	1,226	1,383	2,609	1,316	1,148	2,464	7,464	7,250	14,714
26	1,257	1,327	2,584	1,527	1,374	2,901	2,292	2,131	4,423	56	125	181	1,315	1,063	2,378	1,343	1,291	2,634	7,790	7,311	15,101
27	1,309	1,396	2,705	1,374	1,335	2,709	2,382	2,332	4,714	79	181	260	1,391	1,506	2,897	1,284	1,319	2,603	7,819	8,069	15,888
28	1,474	1,251	2,725	1,337	1,446	2,783	2,329	2,493	4,822	102	139	241	1,268	1,302	2,570	1,353	1,221	2,574	7,863	7,852	15,715
29	1,399	1,243	2,642	1,243	1,263	2,506	2,365	2,391	4,756	102	122	224	1,305	1,307	2,612	1,430	1,238	2,688	7,844	7,564	15,408
30	1,265	1,344	2,609	1,438	1,347	2,785	2,180	2,143	4,323	90	117	207	1,247	1,234	2,481	1,144	1,023	2,187	7,364	7,208	14,572
TOTAL	28,625	27,869	58,494	28,141	29,386	57,527	46,315	46,901	93,218	2,113	2,678	4,791	26,999	27,065	54,064	27,819	25,737	53,556	180,012	159,638	319,648
This Month:																					
Avg Daily	1,363	1,327	2,690	1,340	1,399	2,739	2,205	2,233	4,439	101	128	228	1,286	1,289	2,574	1,325	1,226	2,550	7,620	7,602	15,221
Last Month:																					
Avg Daily	1,362	1,395	2,756	1,424	1,453	2,877	2,194	2,133	4,327	85	131	216	1,256	1,238	2,494	1,269	1,195	2,465	7,591	7,545	15,136
This Month vs Last Month:																					
% Change			-2.4%			-4.8%			2.6%			5.4%			3.2%			3.5%			0.6%

* Avg of 23 Operating Days *

Reference: Metrolink Morning Report

01-Nov-94

METROLINK RIDERSHIP
Month of October 1994

	VENTURA COUNTY LINE			SANTA CLARITA LINE			SAN BERNARDINO LINE			BURBANK TURNS			RIVERSIDE LINE			ORANGE COUNTY LINE			TOTAL SYSTEM		
YR-MO DAY	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total
94-Oct 3	1,477	1,361	2,838	1,215	1,320	2,535	2,257	2,321	4,578	117	125	242	1,343	1,395	2,738	1,461	1,485	2,946	7,870	8,007	15,877
4	1,414	1,440	2,854	1,371	1,385	2,756	2,255	2,543	4,798	78	111	189	1,411	1,331	2,742	1,338	1,359	2,697	7,867	8,169	16,036
5	1,771	1,345	3,116	1,370	1,458	2,828	2,280	2,410	4,690	110	139	249	1,416	1,421	2,837	1,379	1,342	2,721	8,326	8,115	16,441
6	1,592	1,444	3,036	1,406	1,469	2,875	2,170	2,227	4,397	101	140	241	1,371	1,396	2,767	1,485	1,265	2,750	8,125	7,941	16,066
7	1,394	1,127	2,521	1,310	1,431	2,741	2,316	2,304	4,620	102	122	224	1,262	1,274	2,536	1,260	1,103	2,363	7,644	7,361	15,005
10	1,078	884	1,962	1,226	1,394	2,620	1,807	1,866	3,673	91	124	215	946	1,055	2,001	1,052	934	1,986	6,200	6,257	12,457
11	1,598	1,380	2,978	1,325	1,456	2,781	2,505	2,222	4,727	83	142	225	1,410	1,408	2,818	1,457	1,326	2,783	8,378	7,934	16,312
12	1,630	1,335	2,965	1,477	1,580	3,057	2,173	2,216	4,389	109	141	250	1,349	1,408	2,757	1,465	1,458	2,923	8,203	8,138	16,341
13	1,582	1,447	3,029	1,380	1,611	2,991	2,048	2,218	4,266	107	134	241	1,379	1,340	2,719	1,439	1,431	2,870	7,935	8,181	16,116
14	1,343	1,189	2,532	1,488	1,541	3,029	2,214	2,218	4,432	96	136	232	1,415	1,345	2,760	1,194	1,117	2,311	7,750	7,546	15,296
17	1,493	1,313	2,806	1,358	1,397	2,755	2,165	2,217	4,382	101	141	242	1,407	1,327	2,734	1,252	1,438	2,690	7,776	7,833	15,609
18	1,514	1,192	2,706	1,358	1,408	2,766	2,238	2,218	4,456	102	166	268	1,367	1,350	2,717	1,399	1,537	2,936	7,978	7,871	15,849
19	1,288	1,255	2,543	1,315	1,307	2,622	2,353	2,164	4,517	110	139	249	1,383	1,471	2,854	1,453	1,342	2,795	7,902	7,678	15,580
20	1,272	1,377	2,649	1,346	1,278	2,624	2,275	2,249	4,524	110	133	243	1,389	1,516	2,905	1,677	1,400	3,077	8,069	7,953	16,022
21	1,380	1,196	2,576	1,156	1,235	2,391	2,183	2,129	4,312	98	131	229	1,430	1,515	2,945	1,364	1,142	2,506	7,611	7,348	14,959
24	1,562	1,268	2,830	1,290	1,410	2,700	2,296	2,209	4,505	76	227	303	1,257	1,154	2,411	1,447	1,427	2,874	7,928	7,695	15,623
25	1,566	1,278	2,844	1,402	1,358	2,760	2,245	2,040	4,285	183	154	337	1,397	1,544	2,941	1,580	1,538	3,118	8,373	7,912	16,285
26	1,618	1,379	2,997	1,522	1,379	2,901	2,491	2,106	4,597	105	145	250	1,426	1,411	2,837	1,414	1,380	2,794	8,576	7,800	16,376
27	1,529	1,365	2,894	1,394	1,531	2,925	2,283	2,364	4,647	110	153	263	1,380	1,379	2,759	1,609	1,328	2,937	8,305	8,120	16,425
28	1,474	1,290	2,764	1,320	1,303	2,623	2,392	2,224	4,616	97	120	217	1,367	1,353	2,720	1,275	1,226	2,501	7,925	7,516	15,441
31	1,522	1,479	3,001	1,200	1,320	2,520	2,231	2,075	4,306	102	127	229	1,436	1,289	2,725	1,364	1,219	2,583	7,855	7,509	15,364
TOTAL	31,097	27,344	58,441	28,229	29,571	57,800	47,177	46,540	93,717	2,188	2,950	5,138	28,541	28,682	57,223	29,364	27,797	57,161	166,596	162,884	329,480

This Month:

Avg Daily	1,481	1,302	2,783	1,344	1,408	2,752	2,247	2,216	4,463	104	140	245	1,359	1,366	2,725	1,398	1,324	2,722	7,933	7,756	15,690

Last Month: * Avg of 21 Operating Days *

Avg Daily	1,363	1,327	2,690	1,340	1,399	2,739	2,205	2,233	4,439	101	128	228	1,286	1,289	2,574	1,325	1,226	2,550	7,620	7,602	15,221

This Month vs Last Month:

% Change			3.4%			0.5%			0.5%			7.2%			5.8%			6.7%			3.1%

Reference: Metrolink Morning Report

METROLINK RIDERSHIP
Month of November 1994

YR-MO DAY	VENTURA COUNTY LINE			SANTA CLARITA LINE			SAN BERNARDINO LINE			BURBANK TURNS			RIVERSIDE LINE			ORANGE COUNTY LINE			TOTAL SYSTEM		
	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total
94-Nov 1	1,466	1,318	2,784	1,455	1,447	2,902	2,624	2,648	5,272	100	174	274	1,380	1,403	2,783	1,332	1,508	2,840	8,357	8,498	16,855
2	1,487	1,508	2,995	1,319	1,548	2,867	2,854	2,843	5,697	120	155	275	1,529	1,761	3,290	1,316	1,483	2,799	8,625	9,298	17,923
3	1,395	1,263	2,658	1,473	1,394	2,867	2,918	2,794	5,712	120	166	286	1,423	1,517	2,940	1,305	1,460	2,765	8,634	8,594	17,228
4	1,282	1,321	2,603	1,309	1,320	2,629	3,110	2,792	5,902	97	147	244	1,337	1,360	2,697	1,246	1,211	2,457	8,381	8,151	16,532
7	1,503	1,442	2,945	1,319	1,535	2,854	2,715	2,664	5,379	98	143	241	1,426	1,444	2,870	1,348	1,345	2,691	8,407	8,573	16,980
8	1,406	1,379	2,785	1,478	1,466	2,944	2,468	2,539	5,007	125	218	343	1,475	1,518	2,993	1,257	1,277	2,534	8,209	8,397	16,606
9	1,520	1,356	2,876	1,343	1,457	2,800	2,582	2,837	5,419	121	162	283	1,464	1,416	2,880	1,300	1,181	2,481	8,330	8,409	16,739
10	1,625	1,481	3,106	1,399	1,399	2,798	2,615	2,809	5,424	110	103	213	1,585	1,511	3,096	1,179	1,020	2,199	8,513	8,323	16,836
11	883	1,004	1,887	1,125	1,016	2,141	1,897	1,855	3,752	95	201	296	805	801	1,606	860	746	1,606	5,665	5,623	11,288
14	1,327	1,295	2,622	1,282	1,290	2,572	2,327	2,560	4,887	120	195	315	1,580	1,521	3,101	1,320	1,198	2,518	7,958	8,059	16,015
15	1,350	1,337	2,687	1,402	1,408	2,810	2,562	2,507	5,069	189	131	320	1,596	1,422	3,018	1,378	1,304	2,682	8,477	8,109	16,586
16	1,368	1,419	2,787	1,382	1,268	2,650	2,335	2,203	4,538	250	188	438	1,430	1,428	2,858	1,264	1,200	2,464	8,029	7,706	15,735
17	1,377	1,241	2,618	1,345	1,367	2,712	2,431	2,586	5,017	105	202	307	1,594	1,492	3,086	1,310	1,239	2,549	8,162	8,127	16,289
18	1,261	1,158	2,419	1,375	1,280	2,655	2,530	2,552	5,082	125	145	270	1,500	1,409	2,909	1,275	1,186	2,461	8,066	7,730	15,796
21	1,425	1,160	2,585	1,237	1,374	2,611	2,284	2,209	4,493	110	178	288	1,372	1,276	2,648	1,342	1,241	2,583	7,770	7,438	15,208
22	1,473	1,360	2,833	1,104	1,367	2,471	2,434	2,203	4,637	120	200	320	1,429	1,272	2,701	1,479	1,275	2,754	8,039	7,677	15,716
23	1,395	1,148	2,543	1,215	1,339	2,554	2,163	2,503	4,666	110	160	270	1,440	1,323	2,763	1,167	1,141	2,308	7,490	7,614	15,104
25	616	420	1,036	545	714	1,259	1,482	1,230	2,712	20	41	61	818	700	1,518	259	203	462	3,740	3,308	7,048
28	1,311	1,224	2,535	1,237	1,337	2,574	2,375	2,459	4,834	115	128	243	1,434	1,321	2,755	1,364	1,316	2,680	7,836	7,785	15,621
29	1,387	1,175	2,562	1,362	1,350	2,712	2,426	2,745	5,171	125	171	296	1,430	1,403	2,833	1,410	1,402	2,812	8,140	8,246	16,386
30	1,432	1,219	2,651	1,396	1,448	2,844	2,556	2,449	5,005	115	125	240	1,432	1,372	2,804	1,347	1,331	2,678	8,278	7,944	16,222
TOTAL	28,289	26,228	54,517	27,102	28,124	55,226	51,688	51,987	103,675	2,490	3,333	5,823	29,479	28,670	58,149	26,056	25,267	51,323	165,104	183,609	328,713

AVERAGE DAILY: CURRENT MONTH:

Avg Daily	1,347	1,249	2,596	1,291	1,339	2,630	2,461	2,476	4,937	119	159	277	1,404	1,365	2,769	1,241	1,203	2,444	7,862	7,791	15,653

Current Month Average Daily Adjusted for Holidays:

Avg Daily	1,410	1,305	2,715	1,339	1,389	2,728	2,543	2,574	5,116	125	163	288	1,466	1,430	2,896	1,312	1,280	2,592	8,195	8,141	16,336

Average Daily: Prior Month: * Avg of 21 Operating Days *

Avg Daily	1,481	1,302	2,783	1,344	1,408	2,752	2,247	2,216	4,463	104	140	245	1,359	1,366	2,725	1,398	1,324	2,722	7,933	7,756	15,690

Current Month (Adjusted) vs Prior Month:

% Change		-2.4%			-0.9%			14.6%			17.8%			6.3%			-4.8%			4.1%

Reference: Metrolink Morning Report

04-Jan-95

METROLINK RIDERSHIP
Month of December 1994

YR-MO DAY	VENTURA COUNTY LINE			SANTA CLARITA LINE			SAN BERNARDINO LINE			BURBANK TURNS			RIVERSIDE LINE			ORANGE COUNTY LINE			TOTAL SYSTEM		
	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total
94-Dec 1	1,516	1,314	2,830	1,264	1,538	2,802	2,398	2,567	4,965	120	133	253	1,531	1,480	3,011	1,074	1,299	2,373	7,903	8,331	16,234
2	1,128	1,154	2,282	1,363	1,375	2,738	2,349	2,272	4,621	88	108	196	1,462	1,380	2,842	1,177	1,142	2,319	7,567	7,431	14,998
5	1,210	1,187	2,397	1,519	1,437	2,956	2,383	2,414	4,797	115	130	245	1,578	1,390	2,968	1,598	1,291	2,889	8,403	7,849	16,252
6	1,337	1,306	2,643	1,322	1,500	2,822	2,482	2,343	4,825	122	158	280	1,713	1,407	3,120	1,565	1,291	2,856	8,541	8,005	16,546
7	1,402	1,302	2,704	1,425	1,470	2,895	2,695	2,541	5,236	143	152	295	1,573	1,401	2,974	1,444	1,255	2,699	8,682	8,121	16,803
8	1,260	1,233	2,493	1,355	1,432	2,787	2,520	2,831	5,351	57	109	168	1,804	1,681	3,485	1,493	1,308	2,801	8,489	8,594	17,083
9	1,372	1,265	2,637	1,354	1,300	2,654	2,477	2,330	4,807	102	119	221	1,324	1,329	2,653	1,290	1,164	2,454	7,919	7,507	15,426
12	1,540	1,302	2,842	1,371	1,451	2,822	2,364	2,460	4,824	120	161	281	1,578	1,474	3,052	1,345	1,305	2,650	8,318	8,153	16,471
13	1,541	1,493	3,034	1,202	1,370	2,572	2,662	2,580	5,242	120	125	245	1,580	1,533	3,113	1,399	1,232	2,631	8,504	8,333	16,837
14	1,461	1,357	2,818	1,389	1,398	2,787	2,854	2,526	5,180	122	176	298	1,559	1,408	2,965	1,348	1,293	2,641	8,533	8,156	18,689
15	1,463	1,346	2,809	1,402	1,394	2,796	2,617	2,483	5,100	119	121	240	1,525	1,427	2,952	1,358	1,280	2,638	8,484	8,051	16,535
16	1,218	1,203	2,421	1,328	1,142	2,470	2,338	2,334	4,672	110	124	234	1,401	1,448	2,849	1,297	1,188	2,483	7,692	7,437	15,129
19	1,329	1,223	2,552	1,112	1,279	2,391	2,420	2,562	4,982	104	113	217	1,502	1,480	2,982	1,370	1,381	2,751	7,837	8,038	15,875
20	1,384	1,239	2,623	1,257	1,424	2,681	2,202	2,493	4,695	98	144	242	1,467	1,281	2,748	1,152	1,348	2,500	7,560	7,929	15,489
21	1,293	1,227	2,520	1,240	1,351	2,591	2,261	2,469	4,730	101	119	220	1,380	1,365	2,745	1,133	931	2,064	7,408	7,462	14,870
22	1,141	1,131	2,272	1,320	1,202	2,522	2,604	2,478	5,082	98	129	227	1,250	1,258	2,508	1,017	896	1,913	7,430	7,094	14,524
23	768	788	1,556	884	821	1,705	1,559	1,582	3,141	29	106	135	859	1,101	1,960	614	343	957	4,713	4,741	9,454
27	1,354	1,285	2,839	1,154	1,163	2,317	1,934	1,961	3,895	97	83	180	1,268	1,364	2,632	1,034	1,183	2,217	6,841	7,039	13,880
28	1,168	1,085	2,251	1,190	1,211	2,401	2,140	2,070	4,210	96	113	209	1,266	1,411	2,677	1,035	894	1,929	6,893	6,784	13,677
29	1,135	996	2,131	1,321	1,255	2,576	2,476	2,263	4,739	99	117	216	1,143	1,437	2,580	1,088	925	2,013	7,262	6,993	14,255
30	1,023	773	1,796	1,145	991	2,136	2,021	1,642	3,663	40	88	128	1,019	1,031	2,050	880	438	1,318	6,128	4,963	11,091
TOTAL	27,041	25,209	52,250	26,917	27,504	54,421	49,556	49,201	98,757	2,100	2,628	4,728	29,782	29,084	58,866	25,711	23,385	49,096	161,107	157,011	318,118

AVERAGE DAILY; CURRENT MONTH:

Avg Daily	1,288	1,200	2,488	1,282	1,310	2,591	2,360	2,343	4,703	100	125	225	1,418	1,385	2,803	1,224	1,114	2,338	7,672	7,477	15,148

Average Daily; Prior Month: * Avg of 21 Operating Days *

Avg Daily	1,347	1,249	2,596	1,291	1,339	2,630	2,461	2,476	4,937	118	159	277	1,404	1,365	2,769	1,241	1,203	2,444	7,862	7,791	15,653

Current Month vs Prior Month:

% Change			-4.2%			-1.5%			-4.7%			-18.8%			1.2%			-4.3%			-3.2%

Reference: Metrolink Morning Report

METROLINK RIDERSHIP
Month of January 1995

	VENTURA COUNTY LINE			SANTA CLARITA LINE			SAN BERNARDINO LINE			BURBANK TURNS			RIVERSIDE LINE			ORANGE COUNTY LINE			TOTAL SYSTEM		
YR-MO DAY	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total
95-Jan 3	1,549	1,253	2,802	1,474	1,474	2,948	2,483	2,400	4,883	107	147	254	1,277	1,414	2,691	1,383	1,355	2,738	8,273	8,043	16,316
4	1608	1,388	2,996	1,491	1,518	3,009	2,326	2,344	4,670	109	190	299	1,492	1,611	3,103	1,492	1,525	3,017	8,518	8,576	17,094
5	1410	1,239	2,649	1,399	1,419	2,818	2,703	2,683	5,386	110	176	286	1,468	1,369	2,837	1,391	1,195	2,586	8,481	8,081	16,562
6	1277	1,222	2,499	1,340	1,351	2,691	2,224	2,419	4,643	98	136	234	1,467	1,335	2,802	1,344	1,305	2,649	7,750	7,768	15,518
9	563	969	1,532	1,436	1,402	2,838	2,397	2,495	4,892	110	114	224	1,526	1,422	2,948	1,493	1,444	2,937	7,525	7,846	15,371
10	1,620	1,369	2,989	1,499	1,473	2,972	2,812	2,667	5,479	96	258	354	1,784	1,604	3,388	1,556	1,484	3,040	9,367	8,855	18,222
11	1,404	1,313	2,717	1,356	1,359	2,715	2,614	2,557	5,171	109	155	264	1,494	1,410	2,904	1,442	1,352	2,794	8,419	8,146	16,565
12	1,469	1,411	2,880	1,125	1,255	2,380	2,660	2,690	5,350	105	164	269	1,591	1,634	3,225	1,497	1,486	2,983	8,447	8,640	17,087
13	1,318	1,329	2,647	1,396	1,446	2,842	2,720	2,511	5,231	99	130	229	1,392	1,502	2,894	1,540	1,227	2,767	8,465	8,145	16,610
King Hldy 16	783	755	1,538	986	862	1,848	1,366	1,210	2,576	78	106	184	891	774	1,665	741	748	1,489	4,845	4,455	9,300
17	1,533	1,424	2,957	1,333	1,322	2,655	2,651	2,698	5,349	37	173	210	1,547	1,572	3,119	1,463	1,384	2,847	8,564	8,573	17,137
18	1,440	1,665	3,105	1,341	1,456	2,797	2,849	2,686	5,535	82	129	211	1,500	1,473	2,973	1,441	1,370	2,811	8,653	8,779	17,432
19	1,542	1,602	3,144	1,586	1,447	3,033	2,526	3,095	5,621	105	138	243	1,483	1,447	2,930	1,285	1,452	2,737	8,527	9,181	17,708
20	1,343	1,382	2,725	1,574	1,459	3,033	2,517	2,641	5,158	105	117	222	1,548	1,417	2,965	1,246	1,294	2,540	8,333	8,310	16,643
23	1,458	1,193	2,651	1,508	1,549	3,057	2,597	2,674	5,271	94	132	226	1,679	1,670	3,349	1,516	1,540	3,056	8,852	8,758	17,610
24	2,084	1,357	3,441	1,627	1,796	3,423	2,872	2,652	5,524	95	181	276	1,577	1,460	3,037	1,587	1,511	3,098	9,842	8,957	18,799
25	1,279	1,623	2,902	1,617	1,488	3,105	2,753	2,644	5,397	98	121	219	1,691	1,794	3,485	1,577	1,627	3,204	9,015	9,297	18,312
26	1,512	1,565	3,077	1,528	1,477	3,005	2,581	2,599	5,180	78	135	213	1,605	1,554	3,159	1,295	1,419	2,714	8,599	8,749	17,348
27	1,428	1,346	2,774	1,427	1,360	2,787	2,377	2,783	5,160	105	137	242	1,395	1,457	2,852	1,545	1,297	2,842	8,277	8,380	16,657
30	1,462	1,661	3,123	1,511	1,474	2,985	2,394	2,570	4,964	98	113	211	1,478	1,613	3,091	1,443	1,390	2,833	8,386	8,821	17,207
31	1,462	1,589	3,051	1,604	1,737	3,341	2,734	2,581	5,315	112	185	297	1,598	1,481	3,079	1,482	1,311	2,793	8,992	8,884	17,876
TOTAL	29,544	28,655	58,199	30,158	30,124	60,282	53,156	53,599	106,755	2,030	3,137	5,167	31,483	31,013	62,496	29,759	28,716	58,475	176,130	175,244	351,374

AVERAGE DAILY; CURRENT MONTH:

Avg Daily	1,407	1,365	2,771	1,436	1,434	2,871	2,531	2,552	5,084	97	149	246	1,499	1,477	2,976	1,417	1,367	2,785	8,387	8,345	16,732

Average Daily; Prior Month: * Avg of 21 Operating Days *

Avg Daily	1,288	1,200	2,488	1,282	1,310	2,591	2,360	2,343	4,703	100	125	225	1,418	1,385	2,803	1,224	1,114	2,338	7,672	7,477	15,148

Current Month vs Prior Month:

% Change		11.4%			10.8%			8.1%			9.3%			6.2%			19.1%			10.5%	

Reference: Metrolink Morning Report

Operating Days this mo 21

Operating Notes: Trains operated only to SIM on the evening of 1/9/95
Trains started from SIM on 1/10/95. Schedules normal in the evening.
SCR line flooded 1/11, 1/12, 1/13/95. Busses provided service in place of 212 & 214 between VPR and BUR.

METROLINK RIDERSHIP
Month of February 1995

		VENTURA COUNTY LINE			SANTA CLARITA LINE			SAN BERNARDINO LINE			BURBANK TURNS			RIVERSIDE LINE			ORANGE COUNTY LINE			TOTAL SYSTEM		
YR-MO	DAY	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total
95-Feb	1	1,543	1,513	3,056	1,424	1,355	2,779	2,667	2,799	5,466	107	114	221	1,521	1,468	2,989	1,433	1,411	2,844	8,695	8,660	17,355
	2	1390	1,415	2,805	1,552	1,487	3,039	2,642	2,758	5,400	73	132	205	1,753	1,751	3,504	1,430	1,397	2,827	8,840	8,940	17,780
	3	1268	1,289	2,555	1,393	1,467	2,860	2,614	2,554	5,168	105	114	219	1,480	1,383	2,863	1,466	1,274	2,740	8,324	8,081	16,405
	6	1400	1,420	2,820	1,466	1,491	2,957	2,653	2,562	5,215	105	116	221	1,600	1,645	3,245	1,601	1,552	3,153	8,825	8,786	17,611
	7	1,525	1,535	3,060	1,386	1,602	2,988	2,345	2,561	4,906	98	133	231	1,645	1,704	3,349	1,500	1,576	3,076	8,499	9,111	17,610
	8	1,609	1,465	3,074	1,504	1,495	2,999	2,545	2,463	5,008	132	126	258	1,567	1,828	3,395	1,447	1,435	2,882	8,804	8,812	17,616
	9	1,440	1,572	3,012	1,460	1,621	3,081	2,789	2,301	5,090	102	147	249	1,662	1,628	3,290	1,395	1,410	2,805	8,848	8,679	17,527
	10	1,295	1,303	2,598	1,480	1,412	2,892	2,583	2,422	5,005	61	123	184	1,507	1,440	2,947	1,373	1,313	2,686	8,299	8,013	16,312
	13	1,309	1,374	2,683	1,519	1,513	3,032	2,388	2,337	4,725	61	121	182	1,456	1,449	2,905	1,437	1,044	2,481	8,170	7,838	16,008
	14	1,656	1,623	3,279	1,583	1,573	3,156	2,723	2,698	5,421	76	132	208	1,870	1,803	3,673	1,570	1,658	3,228	9,478	9,487	18,965
	15	1,564	1,563	3,127	1,533	1,668	3,201	3,026	2,885	5,911	72	117	189	1,774	1,721	3,495	1,568	1,478	3,046	9,537	9,432	18,969
	16	1,342	1,583	2,925	1,590	1,411	3,001	3,040	2,888	5,928	105	132	237	1,757	1,789	3,546	1,493	1,418	2,911	9,327	9,221	18,548
	17	1,420	1,392	2,812	1,410	1,514	2,924	2,728	2,595	5,323	102	118	220	1,651	1,689	3,340	1,309	982	2,291	8,620	8,290	16,910
Pres. Day	20	589	397	986	592	638	1,230	1,065	1,190	2,255	26	44	70	442	597	1,039	355	393	748	3,069	3,259	6,328
	21	1,471	1,557	3,028	1,540	1,460	3,000	2,957	2,629	5,586	100	154	254	1,667	1,605	3,272	1,553	1,471	3,024	9,288	8,876	18,164
	22	1,634	1,585	3,219	1,543	1,507	3,050	2,964	2,869	5,833	104	139	243	1,708	1,631	3,339	1,492	1,464	2,956	9,445	9,195	18,640
	23	1,485	1,512	2,997	1,513	1,474	2,987	3,180	2,656	5,836	102	157	259	1,587	1,728	3,315	1,269	1,450	2,719	9,136	8,977	18,113
	24	1,368	1,214	2,582	1,484	1,489	2,973	2,996	2,696	5,692	101	121	222	1,502	1,540	3,042	1,357	1,154	2,511	8,808	8,214	17,022
	27	1,471	1,381	2,852	1,328	1,395	2,723	2,888	2,522	5,410	121	107	228	1,563	1,711	3,274	1,646	1,409	3,055	9,017	8,525	17,542
	28	1,787	1,463	3,250	1,372	1,499	2,871	2,938	2,796	5,734	102	113	215	1,558	1,772	3,330	1,493	1,417	2,910	9,250	9,060	18,310
TOTAL		28,564	28,156	56,720	28,672	29,071	57,743	53,731	51,181	104,912	1,855	2,460	4,315	31,270	31,882	63,152	28,187	26,706	54,893	172,279	169,456	341,735

AVERAGE DAILY; CURRENT MONTH:

Avg Daily	1,428	1,408	2,836	1,434	1,454	2,887	2,687	2,559	5,246	93	123	216	1,564	1,594	3,158	1,409	1,335	2,745	8,614	8,473	17,087

Average Daily; Current Month w/o President's Day Holiday:

Avg Daily	1,472	1,461	2,933	1,478	1,496	2,974	2,772	2,631	5,403	96	127	223	1,623	1,647	3,269	1,465	1,385	2,850	8,906	8,747	17,653

Average Daily; Prior Month: * Avg of 21 Operating Days *

Avg Daily	1,407	1,365	2,771	1,436	1,434	2,871	2,531	2,552	5,084	97	149	246	1,499	1,477	2,976	1,417	1,367	2,785	8,387	8,345	16,732

Current Month vs Prior Month:

% Change			2.3%			0.6%			3.2%			-12.3%			6.1%			-1.4%			2.1%

Reference: Metrolink Morning Report

Operating Notes:

Operating Days this mo [20]

METROLINK RIDERSHIP
Month of March 1995

		VENTURA COUNTY LINE			SANTA CLARITA LINE			SAN BERNARDINO LINE			BURBANK TURNS			RIVERSIDE LINE			ORANGE COUNTY LINE			TOTAL SYSTEM		
YR-MO	DA	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total	Inbd	Outbd	Total
95-Mar	1	1,139	1,226	2,365	1,419	1,518	2,937	2,912	2,765	5,677	104	126	230	1,582	1,806	3,388	1,591	1,492	3,083	8,747	8,933	17,680
	2	1177	1,216	2,393	1,541	1,424	2,965	2,816	2,691	5,507	106	121	227	1,541	1,659	3,200	1,485	1,348	2,833	8,666	8,459	17,125
	3	1171	1,340	2,511	1,452	1,393	2,845	2,979	2,653	5,632	75	110	185	1,554	1,560	3,114	1,394	1,277	2,671	8,625	8,333	16,958
	6	1533	1,578	3,111	1,533	1,532	3,065	3,021	2,985	6,006	99	106	205	1,737	1,684	3,421	1,638	1,510	3,148	9,561	9,395	18,956
	7	1,471	1,614	3,085	1,623	1,486	3,109	2,813	2,661	5,474	109	146	255	1,608	1,762	3,370	1,648	1,560	3,208	9,272	9,229	18,501
	8	1,527	1,584	3,111	1,444	1,514	2,958	2,847	2,287	5,134	106	135	241	1,785	1,874	3,659	1,559	1,490	3,049	9,268	8,884	18,152
	9	1,475	1,625	3,100	1,511	1,534	3,045	3,015	2,760	5,775	107	112	219	1,614	1,732	3,346	1,548	1,514	3,062	9,270	9,277	18,547
	10	1,324	1,520	2,844	1,413	1,555	2,968	2,962	2,792	5,754	86	135	221	1,593	1,936	3,529	1,460	1,416	2,876	8,838	9,354	18,192
	13	1,358	1,307	2,665	1,453	1,494	2,947	2,850	2,775	5,625	93	137	230	1,491	1,668	3,159	1,622	1,507	3,129	8,867	8,888	17,755
	14	1,507	1,633	3,140	1,691	1,571	3,262	2,917	2,802	5,719	109	106	215	1,610	1,721	3,331	1,481	1,501	2,982	9,315	9,334	18,649
	15	1,403	1,487	2,890	1,494	1,450	2,944	2,695	2,717	5,412	98	128	226	1,607	1,692	3,299	1,578	1,586	3,164	8,875	9,060	17,935
	16	1,447	1,505	2,952	1,551	1,525	3,076	2,953	2,801	5,754	106	118	224	1,542	1,685	3,227	1,468	1,431	2,899	9,067	9,065	18,132
	17	1,518	1,393	2,911	1,498	1,346	2,844	2,746	2,757	5,503	101	97	198	1,548	1,732	3,280	1,325	1,227	2,552	8,736	8,552	17,288
	20	1,486	1,646	3,132	1,477	1,400	2,877	2,991	2,650	5,641	109	159	268	1,597	1,786	3,383	1,394	1,335	2,729	9,054	8,976	18,030
	21	1,761	1,662	3,423	1,618	1,545	3,163	2,858	2,766	5,624	135	155	290	1,706	1,637	3,343	1,643	1,492	3,135	9,721	9,257	18,978
	22	1,468	1,617	3,085	1,522	1,545	3,067	2,710	2,703	5,413	109	111	220	1,779	1,807	3,586	1,547	1,357	2,904	9,135	9,140	18,275
	23	1,453	1,597	3,050	1,561	1,509	3,070	3,036	2,920	5,956	107	125	232	1,647	1,773	3,420	1,674	1,408	3,082	9,478	9,332	18,810
	24	1,655	1,313	2,968	1,353	1,232	2,585	2,650	2,746	5,396	93	110	203	1,788	1,912	3,700	1,333	1,258	2,591	8,872	8,571	17,443
	27	1,452	1,621	3,073	1,203	1,454	2,657	2,861	2,689	5,550	78	157	235	1,680	1,725	3,405	1,564	1,518	3,082	8,838	9,164	18,002
	28	1,465	1,613	3,078	1,478	1,552	3,030	2,681	2,829	5,510	130	129	259	1,627	1,709	3,336	1,543	1,339	2,882	8,924	9,171	18,095
	29	1,653	1,488	3,141	1,662	1,618	3,280	2,871	2,878	5,749	108	114	222	1,658	1,717	3,375	1,558	1,417	2,975	9,510	9,232	18,742
	30	1,403	1,547	2,950	1,484	1,513	2,997	3,037	2,710	5,747	108	172	280	1,690	1,769	3,459	1,518	1,313	2,831	9,240	9,024	18,264
	31	1,221	1,349	2,570	1,503	1,394	2,897	2,893	2,849	5,742	106	107	213	1,612	1,870	3,482	1,489	1,169	2,658	8,824	8,738	17,562
TOTAL		33,067	34,481	67,548	34,484	34,104	68,588	66,114	63,186	129,300	2,382	2,916	5,298	37,596	40,216	77,812	35,060	32,465	67,525	208,703	207,368	416,071

AVERAGE DAILY; CURRENT MONTH:

Avg Daily		1,438	1,499	2,937	1,499	1,483	2,982	2,875	2,747	5,622	104	127	230	1,635	1,749	3,383	1,524	1,412	2,936	9,074	9,016	18,090

Average Daily; Prior Month: Avg of 20 Operating Days *

Avg Daily		1,428	1,408	2,836	1,434	1,454	2,887	2,687	2,559	5,246	93	123	216	1,564	1,594	3,158	1,409	1,335	2,745	8,614	8,473	17,087

Current Month vs Prior Month:

% Change			3.6%			3.3%			7.2%			6.8%			7.1%			7.0%			5.9%	

Reference: Metrolink Morning Report

Operating Notes:

Operating Days this mo 23

X. CREDITS

This report documents research conducted under Contract No. DTUM60-93 C-41001, Task Order No. 6, with the Federal Transit Administration's Office of Technical Assistance and Safety, Project No. CA-26-0005-03, known as **The Los Angeles (Northridge) 1994 Earthquake Transportation Study**. The research staff and associates who participated in the research, analysis and preparation of this study include:

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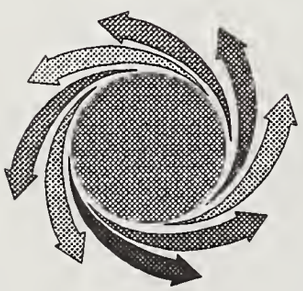

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