DRAFT ENVIRONMENTAL AND INITIAL STUDY
CONSOLIDATED EXCAVATION SITE

Prepared For
LOS ANGELES COUNTY
RAIL CONSTRUCTION CORPORATION

Rail
Construction
Corporation

METRO

Prepared by
Rail Construction Corporation
Metro Rail Transit Consultants
Myra L. Frank & Associates, Inc.
Harris, Miller, Miller, and Hanson Inc.
Kaku Associates

October 21, 1991

Study produced with federal funds from the Urban Mass Transportation Administration, state funds from the California Transportation Commission, and local funds

DRAFT ENVIRONMENTAL AND INITIAL STUDY
CONSOLIDATED EXCAVATION SITE

Prepared For
LOS ANGELES COUNTY
RAIL CONSTRUCTION CORPORATION

Prepared by
Rail Construction Corporation
Metro Rail Transit Consultants
Myra L. Frank & Associates, Inc.
Harris, Miller, Miller, and Hanson Inc.
Kaku Associates

October 21, 1991

Study produced with federal funds from the Urban Mass Transportation Administration, state funds from the California Transportation Commission, and local funds.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION

1.1 LOS ANGELES METRO RAIL

The Red Line of the Los Angeles Metro Rail System currently consists of a 17.3-mile, 16-station subway alignment from Union Station through downtown Los Angeles to a station at Wilshire Boulevard and Vermont Avenue. At this location, the system continues in two directions: (1) north on Vermont Avenue, west on Hollywood Boulevard through Hollywood, and north through the Santa Monica mountains to North Hollywood, and (2) west from Wilshire/Vermont to a station at Wilshire Boulevard and Western Avenue (Figure 1). This current Red Line system is called the Locally Preferred Alternative (LPA), which was adopted in 1988 by the Southern California Rapid Transit District (SCRTD) Board of Directors.

The first construction segment of the LPA, from Union Station to a station at Wilshire/Alvarado, is currently under construction and is scheduled to open in September 1993. The second and third construction segments include the remainder of the Red Line (Figure 1). This document focuses on activities that would occur in relation to the site-specific removal of soil from the tunneling effort associated with the second construction segment and a portion of the third construction segment.

1.2 CURRENT PLAN FOR SOIL REMOVAL

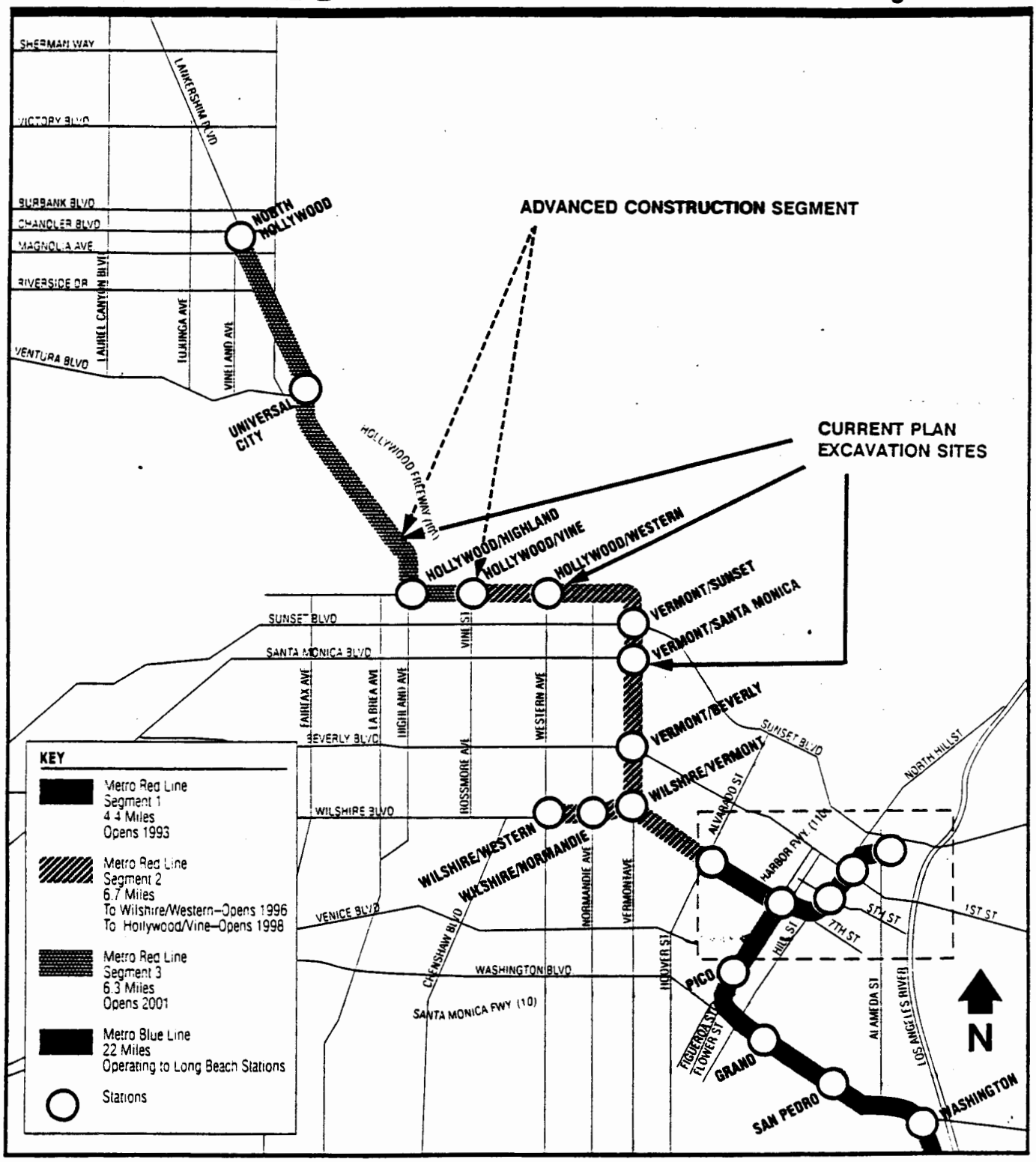
The current plan for construction of Segment 2 of the Metro Red Line proposes to construct five stations along Vermont Avenue and Hollywood Boulevard from a station at Wilshire Boulevard and Vermont Avenue to a station at Hollywood Boulevard and Vine Street. Removal of soil for the tunneling operations for this Segment would require access from two locations.

The current plan for construction of Segment 3 includes three stations from the Hollywood/Vine terminus of Segment 2 to a North Hollywood Station. It is recommended that a portion of Segment 3 to be excavated concurrently with Segment 2 (Figure 1). Advanced construction of this segment would serve several purposes. First, the soil characteristics (regarded as soft ground) are similar along Hollywood Boulevard to the foot of the Santa Monica Mountains. Second, advance construction of this segment would prevent disturbing Hollywood Boulevard twice. This additional sub-segment would require one more construction access point for soil removal, for a total of three sites. Under the current plan, these three access sites would be located at approximately the cross-streets of Vermont/Santa Monica, Hollywood/Western, and at an undetermined location west of the Hollywood/Highland Station (Figure 1).

Under the current plan, all above ground construction activities related to soil removal from tunneling operations would take place at these three locations. At each site, access shafts would be excavated, providing an entryway for tunneling machines (shields), workers, materials, and equipment. These sites would also be the locations for the removal and transportation off-site of excavated material.

The Los Angeles METRO RED LINE

Figure 1



1.3 PURPOSE AND USES OF THE REPORT

The Rail Construction Corporation (RCC), a subsidiary of the Los Angeles County Transportation Commission (LACTC), is proposing to change the above project/construction scenario which has already received environmental clearance. The purpose of this report is to inform involved agencies, government officials, and interested parties of these changes, and to allow for comments regarding associated environmental and historic preservation issues.

As required under the federal Urban Mass Transportation Administration (UMTA) regulations issued under the National Environmental Policy Act (NEPA), this environmental report will be forwarded to the Urban Mass Transportation Administration for its review and approval.

Section 106 of the National Historic Preservation Act directs federal agencies to assess the effects of their project on any district, site, structure or object included in or eligible for the National Register. Effects of the project on these properties near the project sites are reviewed in this environmental study. As noted in 36 CFR 800.9(a):

> "An undertaking has an effect on a historic property when the undertaking may alter characteristics of the property that qualify the property for inclusion in the National Register. For the purpose of determining effect, alteration to features of a property's setting or use may be relevant depending on a property's significant characteristics and should be considered."

Coordination has occurred with the City of Los Angeles Department of Recreation and Parks, the State Historic Preservation Officer (SHPO), the Los Angeles Conservancy, the Hollywood Heritage, and the Los Angeles Cultural Heritage Board. Concurrence on the Section 106 findings (Section 4.16) will be required from UMTA, the SHPO, and the Advisory Council on Historic Preservation (ACHP).

Consistent with Section 4(f) of the Department of Transportation Act of 1966, it is also necessary to review and evaluate all feasible and prudent alternatives to the use of parklands for this project. To comply with this requirement, two engineering alternatives have been defined and evaluated. Coordination has occurred with the Los Angeles Department of Recreation and Parks. Findings from the Section 4(f) analysis (Section 4.17) will be discussed with UMTA and with the United States Department of the Interior for their review and concurrence.

This report constitutes an Initial Study under the California Environmental Quality Act (CEQA) and will be used as the basis for a Negative Declaration to be considered by the RCC and the LACTC boards. Appendix A includes the Initial Study Checklist for this project.

This report provides a more site-specific analysis of impacts that already have been generally addressed in a 1983 Final Environmental Impact Statement and a 1989 Final Supplemental Environmental Impact Statement/Subsequent Environmental Impact Report for the Metro Rail project (See Section 1.4).

The following sections describe the prior environmental documents, the proposed project, alternatives to the project, and environmental impacts and mitigation for the proposed project.

1.4 BACKGROUND AND PRIOR ENVIRONMENTAL DOCUMENTS

In 1983, a Final Environmental Impact Statement (FEIS) for the Los Angeles Rail Transit Project was published, followed shortly by a Final Environmental Impact Report (FEIR). These documents evaluated the original Metro Rail Locally Preferred Alternative (original LPA), an 18.6-mile subway with 18 stations. The original LPA traveled west along Wilshire Boulevard, north on Fairfax Avenue, east along Sunset Boulevard serving Hollywood, and north to North Hollywood. The original LPA was selected to serve the Regional Core of Los Angeles, a 75-square mile financial, retail, cultural and entertainment center for Southern California. Funding was not available for the full original LPA at this point, so an Environmental Assessment was circulated in 1984 for the first 4.4-mile segment of the original LPA. Federal funding was approved for this segment, and construction began in 1986.

In 1985, a fire occurred at the Ross Dress-for-Less store in the Wilshire Corridor. The source of this fire was determined to be underground methane gas. The United States Congress later passed a law stipulating that federal funds could not be used to tunnel in any area identified in a City of Los Angeles study as a "risk zone." The study was prepared by the City following the methane fire. Congress also directed the SCRTD to identify and study candidate Metro Rail alignments that avoid the "risk zone."

In compliance with the Congressional mandate, the SCRTD initiated in 1986 the Congressionally Ordered Re-Engineering (CORE) Study. Over 40 candidate alignments were reviewed during this effort, which included extensive public outreach efforts. Detailed environmental reports were written for six alignments, including a 1987 Draft Supplemental Environmental Impact Statement/ Subsequent Environmental Impact Report (SEIS/SEIR) and a 1988 Addendum.

In 1988, the SCRTD Board of Directors selected the new LPA described above to serve the Regional CORE. The LACTC became the grantee for federal funds for the new LPA also in that year. In 1989, a Final SEIS/SEIR for the LPA was certified locally by the SCRTD and the LACTC, and was signed by UMTA.

The 1989 Final SEIS/SEIR addresses in Chapter 3, Section 15 the impacts that can be expected from the construction of Metro Rail. Reference is also made to the 1983 Final EIS, Chapter 3, Section 13. Sections pertaining to removal of excavation materials in both documents are incorporated herein by reference. Subjects that are discussed include: staging areas, use of shafts to hoist excavated materials from the tunnel to the surface, and the loading of excavation materials onto trucks. Types of impacts discussed include: traffic, disruption to community life, economics, utilities, noise and vibration, air quality, geology, hydrology, and water resources. The 1989 Final SEIS/SEIR notes that: "Mitigation techniques have been identified for all the construction impacts of the New LPA. However, no combination of mitigation techniques will completely offset all of these impacts. Therefore, for each of the construction impacts discussed in this chapter, some residual, unmitigated impacts will occur." (Chapter 3, Section 15.10.) Types of impacts included in this list include: business disruption, dust, noise, traffic congestion, and temporary loss of parking.

As stated in the Statement of Findings and Overriding Considerations adopted under CEQA by the SCRTD Board of Directors and the LACTC Board for the 1989 Final SEIS/SEIR:

> "Most physical impacts from construction will occur within one block of the construction site and include modified pedestrian and vehicular access, temporary disturbances from noise and dust, reduced visibility for storefronts and signs, and reduced on-street parking... Tunneling will create no significant impacts except at tunnel access shafts where debris must be removed and where materials and equipments are introduced."
>
> "Construction impacts cannot be completely offset. Some residual, unmitigable impacts will occur such as the disruption of daily routines with regard to circulation and commercial access, temporary increases in dust and noise associated with construction, increases in vehicular congestion, and some reduction of on-street parking in and around the construction sites. Impacts include temporary disruption of normal community activities and access to local facilities... Most impacts will be short-term and occur during the construction period."

2. ALTERNATIVE PLANS

2.1 INTRODUCTION

The proposed alternative plan is for the RCC to consolidate into one site all above ground construction activities related to the removal of excavated materials from the tunneling operation for Segment 2 and the soft ground tunneling for Segment 3 (Figure 1). This site would be located approximately midway through the tunnel segments under construction, near the intersection of Hollywood Boulevard and Vermont Avenue. It is anticipated that construction would begin approximately in the Spring of 1996.

This consolidation and location were selected for several reasons:

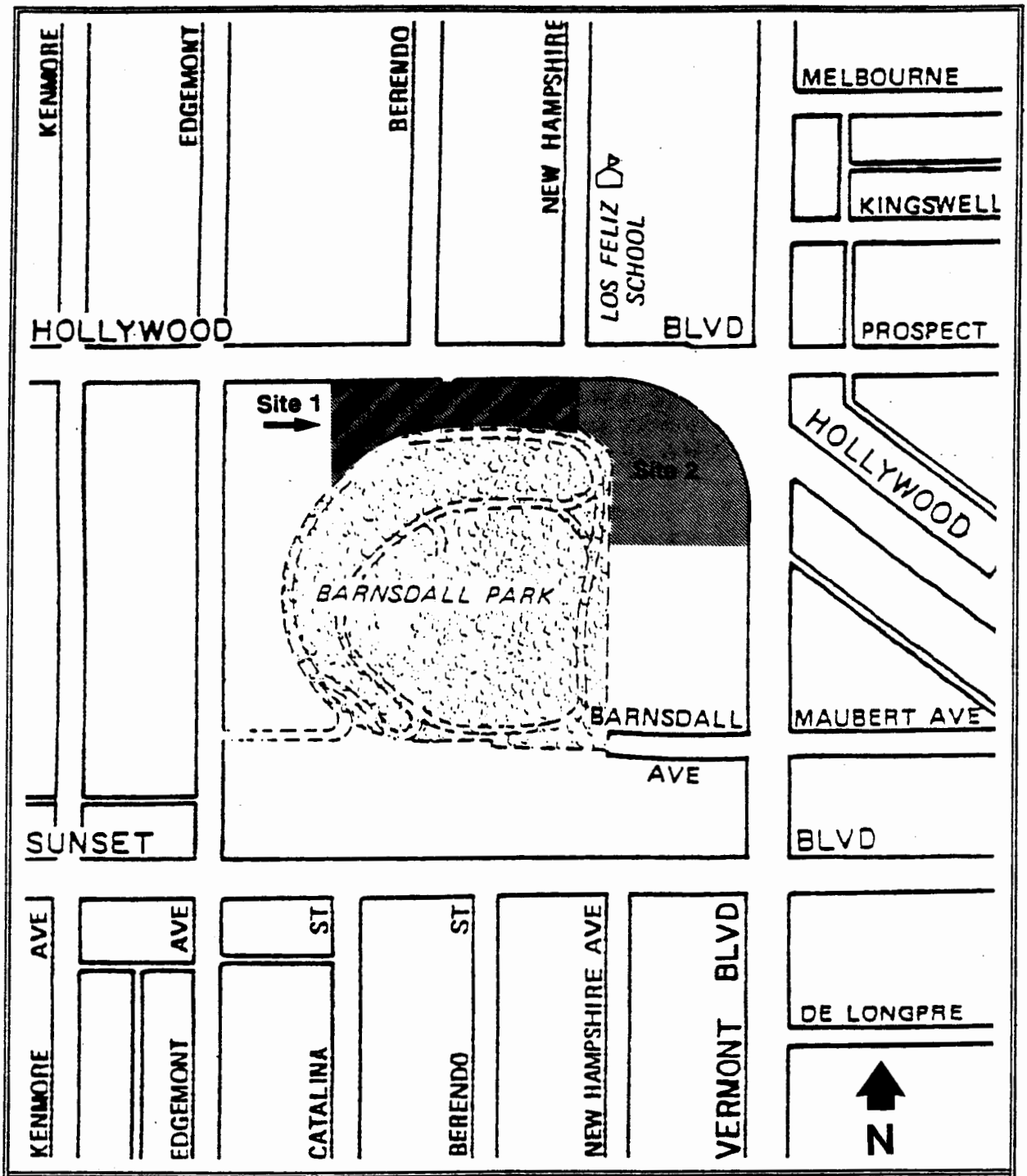
- Inconvenience to the community would be limited to one area instead of three.
- Access to the tunnel and removal of excavation material would occur off-street.
- The area under consideration is near the interface of two geologic formations. The Puente formation extends south along Vermont Avenue, and the alluvial soils extend west along Hollywood Boulevard. These two formations require different shield configurations for excavation. By starting construction with the proper equipment for the specific soil type, the time and expense of changing equipment midway through the project is saved.
- Economies of scale are realized. Cost savings would be realized through: (1) use of four shields instead of ten, (2) excavation of one shaft rather than three, (3) application of mitigation at one site rather than three, (4) elimination in the redundancy of equipment at three sites. In addition, by consolidating this portion of segment 3 into one contract with segment 2, the cost and time of the competitive bid process is reduced.
- Mitigation possibilities at the proposed site appear to be more feasible and effective than for the current three-site plan.

2.2 ALTERNATIVE SITES

There are two sites being considered for the consolidated excavation project. Both are located on the south side of Hollywood Boulevard, approximately between Vermont and Edgemont Avenues (Figure 2).

2.2.1 Site 1

Site 1 is located mid-block, and encompasses the length of the Barnsdall Park parking lot, a car wash, and a vacant lot southwest of the car wash (Figure 2). It is approximately 600 feet long and 100 feet wide. Use of this site would require the condemnation and demolition of the car wash, and acquisition of a construction easement for the vacant lot. A temporary easement from the City of Los Angeles Department of Recreation and Parks would be required for the Barnsdall Park parking area for the duration of the project.



Myra L. Frank & Associates, Inc.

ALTERNATIVE CONSOLIDATED EXCAVATION SITE LOCATIONS

Figure 2

Barnsdall Park is listed on the National Register of Historic Places. Both the structures and landscaping were originally designed by Frank Lloyd Wright for Aline Barnsdall. Central to the park is the Hollyhock house, which was designed and constructed from 1917 to 1922. This was Mrs. Barnsdall's residence. Another structure, referred to as the "Arts and Crafts Center" is also located in the park. It was also designed by Wright, but with substantial design elements and supervision attributed to Rudolph Schindler. This building was constructed in 1920-21.

The 95-foot deep excavation shaft would be constructed in the park's parking lot, approximately 200 feet from the nearest structure in the Park, the Arts and Crafts Center. The parking lot was acquired by the City of Los Angeles in 1961 and was not part of the original Wright plan. Nor is the parking lot apparently part of the park nominated to the National Register of Historic Places. Access to Barnsdall Park is reached by driving through the parking lot and then ascending on a driveway to the top of the hill.

Construction activities would not be visible from most of the upper portion of the park, which is a plateau some 60 feet above the subject site.

Unlike the 3-site plan discussed in Section 1.2, the excavation shaft under this proposal would straddle the proposed alignment for the inbound and outbound tunnels. The shaft would be as large as 66 feet wide and 120 feet long. Four shields would be lowered into the shaft and launched from the bottom, two tunnelling south under Vermont Avenue and the other two tunneling west under Hollywood Boulevard. The site offers enough room for construction offices and the storage of equipment and excavated material. There is also the possibility for the construction of an underground facility to store concrete rings used to line the subway tunnels.

2.2.2 Site 2

Site 2 is slightly east of Site 1, in the shopping center at the southwest corner of Vermont Avenue and Hollywood Boulevard (Figure 2). This site would offer all the advantages of Site 1, with the additional benefit of being approximately twice as large. This would provide room for more storage and movement of material and equipment; however, there are several disadvantages to this site. First, this option would require the condemnation of 17 separate businesses in a shopping center and the demolition of these structures. This could produce localized impacts for the community. Access to this site by trucks entering and leaving would be more complex and disruptive for local traffic, because it would be located very near a five-way intersection. Real estate acquisition would take longer for this site than for the Park, particularly given the Los Angeles Department of Recreation and Parks' willingness to work with the LACTC on this project. Thus, selection of Site 2 would lead to additional delay in the construction of the system and a corresponding increase in system costs.

Given the additional time necessary for acquisition and potential condemnation of these properties, it is unlikely that this site could be acquired quickly enough to be usable for Segment 2 construction. This site is being considered because it is an alternative to temporarily using land from the Barnsdall Park Parking lot area.

3. PROJECT DESCRIPTION

3.1 CONSTRUCTION METHODS AND PROCESS

Once a site has been selected, construction would occur in three basic phases: (1) preparation of the site, (2) tunneling activities, and (3) post tunneling, which would include the construction of stations. It is assumed for the purposes of this section that Site 1 is the project site. Figure 3 provides a construction site layout for this site. Alternative Site 2 is discussed in Section 4.17, Parklands (4[(f]).

It should be noted that the following construction description is what would be considered typical for this kind of operation. There may be variations as a result of changing circumstances or contractor preference. It should also be noted that public access to the park will be maintained at all times during the construction period. During the peak period of construction activities, approximately 250 persons will work daily on site or in the tunnels, with a possible peak employment of 400 daily workers.

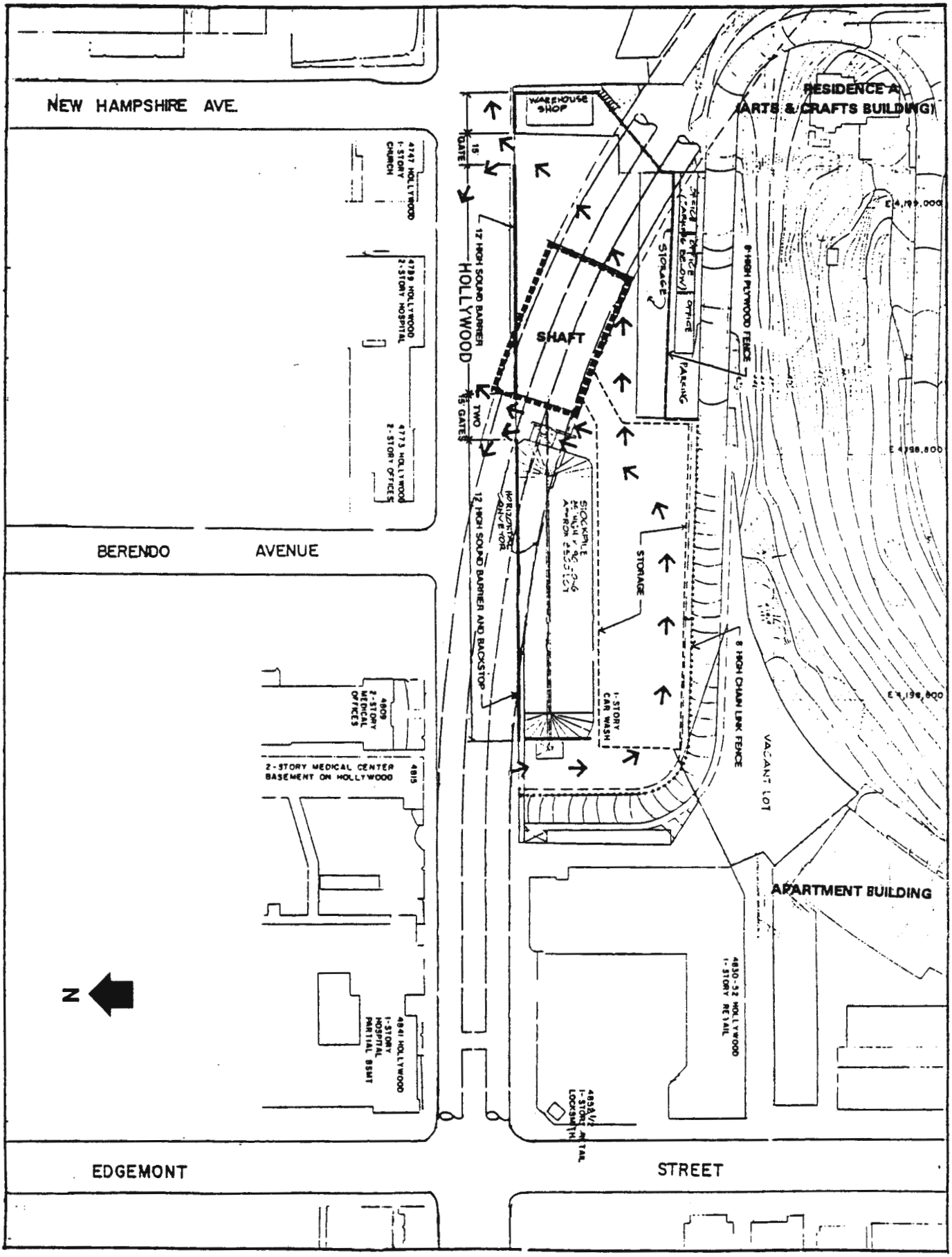
3.1.1 Site Preparation

After acquisition by RCC of a construction easement from the City of Los Angeles Department of Recreation and Parks, the contractor would remove existing structures and grade the site level, providing the space needed for construction of the shaft. Grading is expected to cut into the slope in the southern portion of the construction site north of the current Park access road. This slope would be stabilized using soldier piles or similar method. If piles are used, they would be augured into place. No pile driving will occur.

A 12 foot high sound/retaining wall would be constructed on the Park portion of the site adjacent to the sidewalk on Hollywood Boulevard. A ten foot high wall is also proposed along the northern boundary of the site access road. These walls would be solid with the exception of two driveways onto Hollywood Boulevard for truck traffic, and would provide a partial sound barrier to contain noise generated at the site. The walls would also act as a visual barrier for project activities.

At this point, the approximately 66 foot wide by 120 foot long shaft can be excavated. This phase of the project would require the use of a track-type backhoe, a crane, and an excavation loading machine. The first 25 feet of earth would likely be removed with a backhoe and the rest with an above-ground crane and an excavation loading machine stationed at the bottom of the shaft. Construction of this shaft would remove approximately 28,000 cubic yards of earth. Removal of material from the shaft would require 20 to 25 20-cubic yard dump trucks per day for an anticipated seven to eight months of excavation. For this portion of the project, construction would be limited to daylight hours -- approximately one to one and one-half shifts. It is possible that excavation of the shaft could extend into the southernmost eastbound travel-lane on Hollywood Boulevard. If this occurs, disruptions to this lane would last approximately four weeks. A deck would then be placed over the shaft for this lane to allow for continued traffic operation during the construction period.

FIGURE 3: CONSOLIDATED EXCAVATION CONSTRUCTION SITE PLAN



The shaft would be constructed in the Puente geologic formation, which offers more wall stability than the Alluvial deposits. The walls would be stabilized and strengthened by the use of soldier piles or other appropriate method. If piles are used, they will be augured into place. No pile driving will occur. After excavation, the shaft would be outfitted with utilities, a sump, a dewatering silt tank, a manhoist, and a stairway. Other equipment to be installed on site would be an industrial duty compressor and four, 75-100 horsepower ventilation fans -- one for each tunnel. These would be silencer-equipped and would operate 24 hours a day, seven days a week. An approximately 75-ton capacity, hydraulic crane would be positioned at the side of the shaft for lowering equipment and materials to the shaft floor.

3.1.2 Tunneling and Auxiliary Activities

Once the car wash site is acquired by the RCC, structures on the site would be demolished and the remainder of the full site would be graded. A new access road to the Park would be built along the western and southern portions of the site (Figure 3). Additional sound walls would be constructed along the northern portion of the access road and along Hollywood Boulevard. An additional driveway would be provided at the western end of the site for trucks and access to the Park.

For removal of material excavated from the tunnels, a Flexowall-type vertical conveyor is recommended. This type of conveyor has been shown to be quiet, and has been used directly in front of John Hopkins Hospital in Baltimore, Maryland. However, the contractor could use a crane or other type of hoist if such equipment meets noise criteria established for the project.

Shields would be lowered into position in preparation for tunneling south along Vermont Avenue. Shields are electrically powered tunneling machines, which appear much as a huge food processor with a circular grating blade attached, turned horizontally. As the blade turns, the machine advances and grinds away the material in front of it. The blade is 22 feet, 2 inches in diameter and tipped with tungsten carbide "teeth." For other types of soil, different types of machines would be used to remove material from the tunnel face.

Twin tunnels will be excavated under Vermont Avenue. Each tunnel will be approximately 22 feet in diameter, 16,000 feet long and terminate at the site of the Wilshire/Vermont Metro Rail Station. Progress is anticipated to be as much as 100 feet per day, with an anticipated average of about 80. This rate of activity would generate slightly more than 1,400 cubic yards (yards) of excavated material per day, per tunnel for an estimated total of over 2,800 yards per day. Tunneling will proceed about 18 hours per day, with six hours of downtime for maintenance.

Approximately one month after excavations begin underneath Vermont Avenue, two more shields would be launched for tunneling under Hollywood Boulevard. These two tunnels would also be approximately 16,000 feet in length, with maximum expected progress to be about 100 feet per day. These tunnels would extend west of the proposed Hollywood/Highland station and continue along the alignment to the soil/rock interface at the southern edge of the Santa Monica Mountains.

It is anticipated that tunnel excavation under Vermont Avenue and Hollywood Boulevard would take approximately one year to complete. The tunnels are discussed here to provide a context

for the excavation site. The excavation site and activities on and under this site are the subject of this report.

3.1.3 Transport of Excavated Material

As material is excavated, it would be transferred by rail to the shaft, where it would be lifted out by the vertical conveyor. This conveyer would lift the excavated material up through the shaft to some 50 feet above the construction site, where the excavation material would be dumped onto a horizontal conveyor. This elevated conveyor would deposit the excavated earth along a pile that is anticipated to be about 190 feet long, 35 feet high, and about 60 feet wide at its maximum. This size pile would accommodate about one day's worth of excavated material. The pile would be located along the retaining/sound wall adjacent to the sidewalk on Hollywood Boulevard. The pile would serve as storage for excavated earth and as a partial sound shield for construction activities.

Transportation of the excavated material from the site would occur on an 18-hour per day, six-day per week basis. The only time which trucks would not be entering or exiting the site is during peak travel times, from 6 to 9 a.m., and 3 to 6 p.m. The Los Angeles Department of Transportation has indicated that the peak periods may be encroached upon, but only to a limited degree. It is anticipated that one 20-cubic-yard truck would enter and exit the site every 4.5 to 5 minutes, representing approximately 300 to 350 trucks per day. Routing for the vehicles is under study. The excavation site is located one and one-half miles from the Hollywood Freeway (101), via either Vermont Avenue or Hollywood Boulevard. Other possible routes include Los Feliz to the Golden State (5) Freeway or Sunset Boulevard southeast to Alvarado Boulevard, where the trucks could travel south to the 101 or north to Glendale Boulevard and the Glendale Freeway (2). Haul routes are discussed in more detail in Section 4.4, Transportation/Parking.

Filling the trucks would occur by one of several available methods. The most likely and flexible method is by front-end loader. The loader would likely be a Caterpillar 966, 980 or something similar with a six cubic-yard bucket. As trucks enter the site, they would "queue," or wait in line. There would be room to accommodate five to six waiting trucks. At no time would trucks be allowed to queue onto Hollywood Boulevard. As full trucks exit, empty trucks would pull up and be filled by the loader with material taken from the excavation pile. This process would take approximately three minutes, and several trucks could be filled at once. Another option would be for the overhead conveyor to continuously fill several 60 to 100 cubic yard hoppers that the trucks would drive under to obtain their load.

Once filled, the load would be covered to prevent blowing dust. In addition, the wheels of the trucks exiting the site would be washed to prevent the scattering of fugitive dust on city streets.

3.1.4 Installation of Precast Rings

An activity that would take place simultaneously with the excavation material removal is the installation of the precast concrete tunnel liners and supports, referred to as "rings." A complete ring consists of four, four-foot wide quarter cylinders of precast concrete. The four sections are assembled in the tunnel forming tunnel support. Two complete rings (eight sections) can be

transported at a time on a semi-trailer truck. Because there is little room on the subject site for storage, the delivery of rings is anticipated to be a continuous operation, with trucks arriving at 15 to 30 minute intervals, 18 hours per day.

3.2 POST EXCAVATION

At this point, the project would consists of four lined tunnels -- two under Vermont Avenue and two under Hollywood Boulevard. The shields would have been dismantled and removed, and all unnecessary equipment would have been removed from the site. During the post excavation phase of construction, the tunnels would be outfitted with utilities and the support systems necessary to operate a subway system.

A relocatable concrete batch plant would be erected on the project site which would supply materials for rail stations and additional in-tunnel construction. The tunnel would be lined with a gas impervious high density poly-ethylene membrane, and an inner concrete tunnel liner can then be poured in place. Other concrete structures to be fabricated in the tunnels include the bed for the rails, walkways, emergency exits, and air blast shafts. Utility type installations include electrical lines, water pipes, drainage lines, lighting, and ventilation.

The batch plant would operate approximately 12 hours per day, or one and one-half shifts, producing both wet and dry mixes, depending on destination and use. Wet mixes would be transported through the tunnels using either a "slick line" or a rail vehicle. Dry mixtures would be mixed en-route in redimix trucks for more distant destinations.

At the conclusion of construction activities, improvements are to be made to the site. As part of the compensation for the use of the Barnsdall Park parking lot, the RCC will donate the parcel which contained the car wash to the Los Angeles Department of Recreation and Parks. This is in lieu of payment for the permanent underground easement. In addition, there would be a fund established for the City of Los Angeles to compensate for the use of the Park during construction. The City of Los Angeles will determine the ultimate use of the compensation it receives. To date, the City has discussed using such funds for:

- Construction of a library on the site,
- Some portion of the associated staff and administrative costs of the library,
- Construction of a new parking lot,
- Construction of a gateway/monument for the park entrance, and
- Cleaning and rehabilitation of the major Barnsdall Park cultural structures, and other improvements.

This document is not designed to environmentally clear these possible uses of the subject site by the City of Los Angeles Department of Recreation and Parks or other departments or agencies of the City.

4. ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION

This Chapter discusses the environmental setting, impacts, and mitigation measures for the following subject areas: land use, acquisitions/displacements, economics/fiscal, traffic/parking, noise/vibration, aesthetics/visual, light/glare, air quality, subsurface gas, geology, hydrology/groundwater, preexisting or other hazardous materials, utilities, flora, fauna, historic/cultural (Section 106), parklands (Section 4[(f]), and safety/security. It should be noted that the impacts discussed here would, in many cases, involve a lesser level of impacts than those associated with the current three-site plan discussed in Section 1.2 above. In addition, it should be noted that these impacts are discussed on a more general level in the 1983 Final EIS and the 1989 Final SEIS/SEIR, as discussed in Section 1.4 above.

4.1 LAND USE

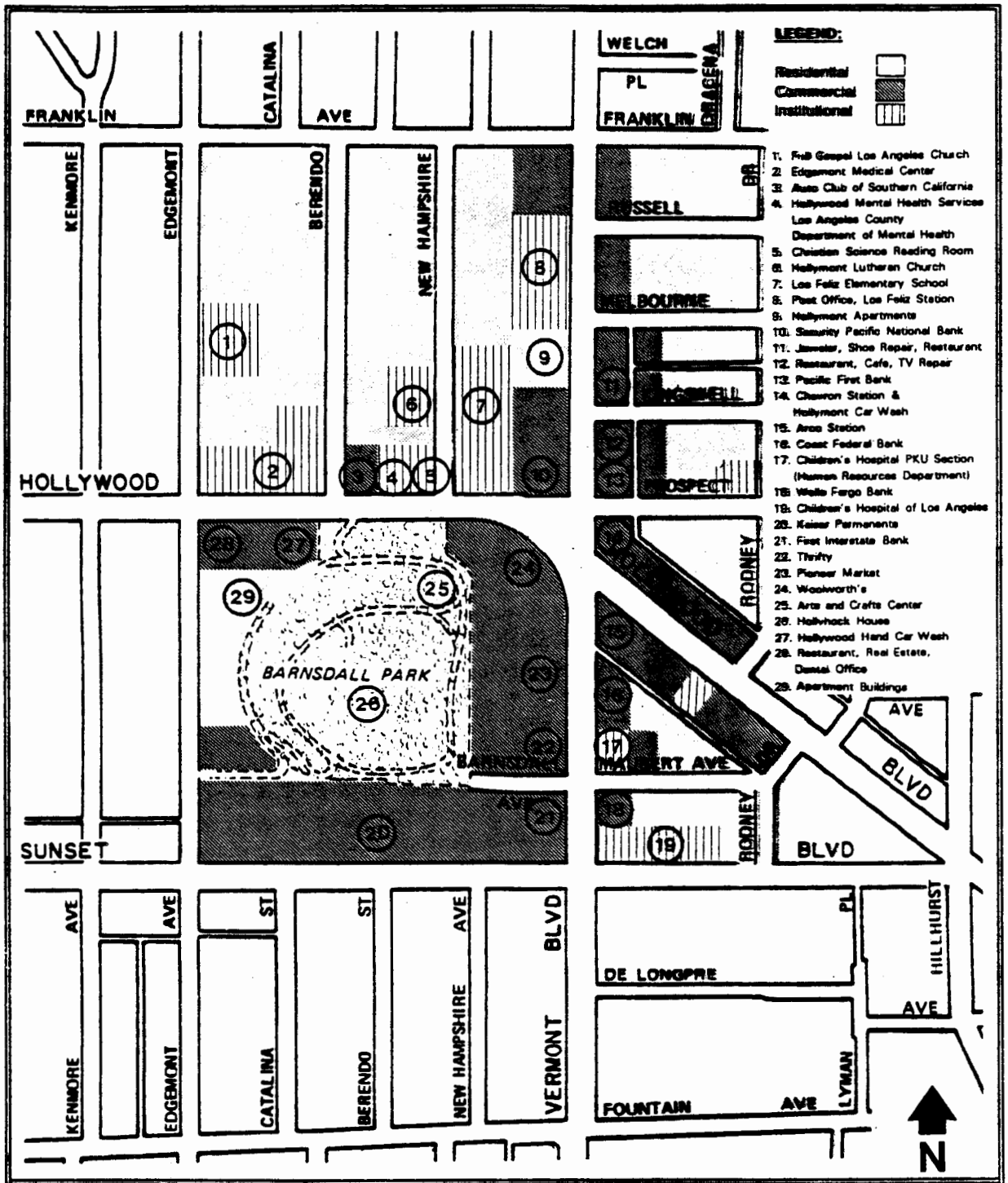
A review of current nearby land uses provides a framework for determining potential project-related impacts on the surrounding built environment and for assessing overall project compliance with policy objectives in relevant local land use plans. Figure 4 shows existing land uses in the vicinity of the project. A shopping center consisting of a bank, two retail department stores, a supermarket and other smaller convenience retail stores, flanks the eastern edge of Barnsdall Park, between Hollywood and Sunset Boulevards. Fronting onto Sunset Boulevard, the Kaiser Permanente hospital and ancillary parking structures occupy nearly the entire remaining area south of Barnsdall Park between Edgemont Avenue and Vermont Boulevard.

Multi-family apartments are situated adjacent to the western edge of Barnsdall Park at approximately mid-block on Edgemont Avenue. Immediately west of the site is a mini-mall containing a restaurant, a dental office, and a real estate office. Single-family residential units predominate behind commercial and institutional uses that front on the north side of Hollywood Boulevard and the eastern side of Vermont Avenue.

Institutional land uses predominate on the north side of Hollywood Boulevard, including: two churches, two medical centers, and one elementary school. Structures associated with a children's hospital are located in the southeastern portion of the area, roughly at the intersection of Vermont and Sunset Boulevards. Community-oriented retail commercial activities are the principal land uses along the east side of Vermont Avenue, including three banks, two gas stations, and a car wash.

The project site is contained within the Hollywood Community Plan Area. The car wash portion of the project is located on land designated for highway-oriented commercial uses, while the Barnsdall Park portion of the site is designated as public land for recreational uses.

Land designated for highway-commercial uses also fronts on the north side of Hollywood Boulevard, between Edgemont and New Hampshire Streets. Land extending to the south and east of the area is designated principally for community-oriented commercial activities. Land designated for high-density (60-80 dwelling units/acre) and high-medium (40-60 dwelling units/acre) housing is located directly behind structures fronting on the north side of Hollywood Boulevard and extends in back of commercial buildings on Vermont Avenue north of Prospect Street.



Myra L. Frank & Associates, Inc.

LAND USES IN THE CONSOLIDATED EXCAVATION PROJECT AREA

Figure 4

In the vicinity of the project site, the Hollywood Community Plan proposes a 100-acre area comprised of office buildings, supermarkets, and other retail facilities at the intersection of Hollywood and Sunset Boulevards. It is envisioned that the area will be provided with adequate public transportation facilities, parking structures, plazas and parks.

An expanded medical center complex is planned south of the intersection of Vermont Avenue and Sunset Boulevards on a 150-acre site. The complex would contain a hospital, medical office buildings, and medical research laboratories linked by pedestrian walkways, open malls, and underground parking structures.

The Community Plan also emphasizes the need to construct a new community library in the East Hollywood area north of an the existing library facility near Santa Monica Boulevard and Virgil Avenue. The Community Plan urges the preparation of a Specific Plan in the Medical Center area, providing off-street parking, pedestrian walk-ways, landscaping and site planning amenities.

Construction impacts related to the project could be potentially adverse on the overall mix of surrounding residential and institutional land uses. This issue may be particularly relevant in terms of the way project-related construction activities affect the nearby residential apartments, the Park, and the institutional uses located directly across the street from the project site. Noise, vibration, traffic, light and glare, and other impacts on these facilities are reviewed in other sections of this Chapter. Associated mitigation measures that will be required during the construction phases of the project are also discussed in these sections.

Once project-related construction has ceased, the subject property will be provided to the City for various recreational- or educational-related activities (park use, library, parking). Establishment of a library on the subject site would be consistent with the policy objective of the Hollywood Community Plan to construct a new community library in the East Hollywood area. Such a use would also serve to reinforce the presence of Barnsdall Park within the greater Hollywood community.

4.2 ACQUISITIONS AND DISPLACEMENTS

In the course of this project, it will be necessary for the RCC to acquire several pieces of property. As part of the right and authorization to use eminent domain, the RCC must comply with several procedural laws which are designed to safeguard the rights of landowners and public agencies, and ensure just compensation for acquired properties. The California Eminent Domain Law (Code of Civil Procedure Section 1230.010, et seq.) and the Federal Uniform Relocation and Real Property Acquisition Policies Act of 1970 (Uniform Relocation Act) convey these requirements.

Site 1 would require the use of three parcels: (1) the Barnsdall Park parking lot, (2) the parcel to the west containing a car wash, and (3) a vacant lot southwest of the car wash (Figure 2). Use of this site would require the acquisition of the parcel containing the car wash, and obtaining a construction easement for the vacant lot and for the Barnsdall Park parking lot for the duration of the project.

Mitigation for acquisition of the car wash includes just compensation according to "fair market value" and relocation assistance. This is in accordance with the Surface Transportation and Uniform Relocation Assistance Act of 1987, and the California Relocation Act (Government Code Section 7260). Fair market value is measured by the:

> "highest price on the date of valuation that would be agreed to by the seller, being willing to sell, but under no particular or urgent necessity for so doing, nor obliged to sell, and a buyer, being ready, willing and able to buy, but under no particular necessity for so doing, each dealing with the other with full knowledge of all the uses and purposes for which the property is reasonably adaptable and available." (Code of Civil Procedure Section 1263.320a)

Compensation for the construction easement on the vacant lot would essentially consist of renting or leasing the property, according to comparable rates, for the duration of the project. At the conclusion of the project, the RCC will return the Barnsdall Park parking lot and the car wash site to the Los Angeles Department of Recreation and Parks.

4.3 ECONOMIC AND FISCAL

Economic impacts of the project include the future employment generated by the project as well as the possible unemployment resulting from business displacement.

Although the displacement of the car wash might result in the loss of an estimated 25-30 unskilled labor jobs, the construction activities discussed for this project would create approximately 250 to 400 jobs. Moreover, if the car wash could be relocated elsewhere in the city, the project would result in no job losses, but rather an increase in jobs.

Fiscal impacts from this project involve the city and county's loss of tax revenues due to the displacement of the Hollywood Hand car wash (located at 4819-4820 Hollywood Blvd), the only private property taken by the proposed project. Since only one private property would be displaced, the projected tax losses are given in absolute numbers rather than percentage of the City's totals.

Property tax is collected by the Los Angeles County Tax Collector and then redistributed to the city and other designated agencies within the city. As recorded in the Real Estate Data, Incorporation's report, the Hollywood Hand car wash property tax in 1990 was approximately $3,000. The business license for a professional car wash operation, according to the Tax and Permit Division of the City Clerk's Office, costs $106.43 per calendar year. Business tax is computed based on the annual gross receipts in the previous year. The car wash business tax is estimated at $106.43 per year minimum, or $5.91 per $1,000 gross receipts, whichever is higher.

Assuming that the business could be relocated elsewhere in the city, the fiscal impact would only be temporary. However, a permanent tax loss of at least $3,000 per year could result if the business cannot be relocated within the city or county. This loss is considered insignificant in light of the tax collected city- and count-wide.

4.4 TRAFFIC/PARKING

4.4.1 Traffic

The highest level of traffic generated during the full construction period would be during the material excavation phase. Transportation of the excavated material from the site would occur on an 18-hour per day, six-day per week basis. The only time which trucks would not be entering or exiting the site would be during peak travel times, i.e., from 6 to 9 a.m. and from 3 to 6 p.m. The Los Angeles Department of Transportation has indicated that the peak periods may be encroached upon, but only to a limited degree. It is anticipated that one 20-cubic-yard truck would enter and exit the site every 4.5 to 5 minutes, representing approximately 300 to 350 trucks per day.

In addition to removing excavated material, the delivery of rings would be a continuous operation during this construction phase. It is expected that loaded trucks would arrive at 15 to 30 minute intervals, also on an 18-hour per day schedule. This would represent approximately 36 to 72 trucks per day. The largest number of workers would also be present during this phase of the construction project. Between 250 and 400 daily workers would be arriving at and departing the site in three shifts.

The other construction phases would involve one and one-half shifts. Trucks would arrive and depart during these other phases, but with less frequency and over a shorter period of time during the day. For example, after tunnel excavation is complete, a relocatable concrete batch plant will be erected. This will supply the concrete needed for station construction and the forming of additional structures inside the tunnels, such as walkways and emergency exits. Redimix trucks will enter and exit the site, along with trucks needed to supply the plant with materials.

The site is located one and one-half miles from the Hollywood Freeway (101), via either Vermont Avenue or Hollywood Boulevard. Both of these thoroughfares are heavily travelled, particularly during the peak traffic periods; however, since trucks will be prohibited from entering or exiting the site during these traffic peaks, other factors must be taken into consideration regarding the routes that these trucks might travel.

Four haul routes have been preliminarily reviewed: (1) Vermont Avenue south to the Hollywood Freeway [101], (2) Hollywood Boulevard west to the Hollywood Freeway [101], (3) Vermont Avenue north to Los Feliz Boulevard and west to the Golden State [5] Freeway, and (4) Sunset Boulevard southeast to Alvarado Boulevard [where the trucks could travel south to the 101 or north to Glendale Boulevard and the Glendale Freeway [2]]. The shortest route to a freeway from the project site would be west along Hollywood Boulevard or south along Vermont Avenue to the Hollywood Freeway, each of which is approximately one and one-half miles.

The selected contractor will be required to file a Work Control Traffic Plan (WCTP) with the City of Los Angeles Department of Transportation. The following paragraphs provide discussion and recommendations that the RCC and the contractor should consider during the formulation of the project's WCTP.

Information has not been developed regarding the off-peak travel patterns on the streets and highways in the project area; however, certain traffic and street characteristics appear to be clearly evident, based on field observation:

- The complex configuration of the intersection at Hollywood Boulevard and Vermont Avenue reduces the ability of this intersection to function effectively.

- Traffic levels appear to be heavy throughout the course of the day at the intersection of Vermont Avenue and Sunset Boulevard.

- Traffic pulling into and out of the shopping center at the corner of Hollywood Boulevard and Vermont Avenue adds to the congestion levels along Vermont Avenue.

- Access to the Hollywood Freeway is easier westbound on Hollywood Boulevard than it is southbound on Vermont Avenue.

When considering the possible haul routes, adjoining land uses must also be reviewed:

- Land uses along Hollywood Boulevard west to the Hollywood Freeway consist mainly of low-rise commercial, at times with second story residential. Some motels are present along this route, as are a few multi-story hotels.

- Land uses along Vermont Avenue south to the Hollywood Freeway consists of shopping centers, hospitals, schools, and low- to mid-rise commercial establishments.

- Vermont Avenue north to Los Feliz Boulevard and Los Feliz Boulevard east to the Golden State Freeway can best be categorized as highly residential in nature, with occasional commercial activities (e.g, small shopping areas on Vermont Avenue, gas stations, and restaurants).

- A mix of commercial and residential land uses are present along Hollywood Boulevard and along Sunset Boulevard to Alvarado Boulevard.

Based on these observations, Hollywood Boulevard west to the Hollywood Freeway would appear to be a preferred haul route. Reasons for this recommendation include:

- The distance to a freeway is shorter along this route than the Sunset Boulevard or Los Feliz Avenue routes, and it is equal to the distance for the Vermont Avenue option.

- Access to the Hollywood Freeway is easier westbound on Hollywood Boulevard than it is southbound on Vermont Avenue.

- Trucks would not have to travel through the complex configuration of the Vermont/Hollywood nor the Vermont/Sunset intersections nor past the access point for the shopping center at the corner of Hollywood Boulevard and Vermont Avenue.

- This route would not pass the primarily residential areas along Vermont Avenue north and Los Feliz west.

This route, however, would require a right-in and a left-out from the subject site. For this reason, it is recommended that a traffic-control signal be placed to control traffic along Hollywood Boulevard during the left-out traffic movements of the trucks from the two site driveways.

Since employee parking is anticipated to be off-site, this Section does not evaluate employee traffic patterns.

4.4.2 Parking

Two parking issues must be considered for this project: (1) replacement of the 44 Barnsdall Park parking spaces that would be temporarly eliminated during this project, and (2) parking for the construction workers.

Two options are currently under consideration for the temporary replacement of Barndall Park parking for the duration of the construction period: (1) leasing 44 spaces from the adjoining shopping center at Hollywood Boulevard and Vermont Avenue, or (2) temporarly leasing 44 spaces on the roof of the Kaiser Permanente parking garage immediately to the south of Barnsdall Park. The second option would require the construction of an access bridge from the parking stucture to the Park. Regardless of the option selected, the RCC fully intends to find at least 44 easily accessable parking spaces off-site for use by Barnsdall Park patrons.

The contractor will be required to provide off-street parking for construction employees. Because this will be required in the construction bid documents, impacts on street parking should be minimal.

4.5 NOISE AND VIBRATION

4.5.1 Noise

As noted above, Phase I of the construction involves the excavation of the work shaft. Primary noise sources during this phase are expected to be construction equipment and trucks used to haul away excavated material.

Phase II involves the removal of excavation material from the digging of four tunnels underneath Vermont Avenue and Hollywood Boulevard. Primary noise sources during this phase are expected to be the equipment used to load evacuated material onto trucks, and increased truck traffic, as many as 13 trucks per hour, 18 hours per day.

Noise level projections are based on assumptions about the equipment that will be used by the contractor, noise emission levels of typical construction equipment and trucks, and approximations of how construction equipment will be operated at the site. Evaluations of potential noise impact have been based on the estimated change in the overall community noise levels as characterized by the Community Noise Equivalent Level (CNEL) and daytime Equivalent

Sound Level (Leq).[1] Noise impact is considered *Generally Not Significant* when the activity is projected to increase noise levels by less than 3 dBA, *Possibly Significant* when the noise level during construction activities is projected to be 5 to 10 dBA greater than the existing level, and *Generally Significant* when the noise level during construction activities is projected to be more than 10 dBA greater than the existing level. Our general recommendation is that every effort be made to keep construction noise below the generally significant range.

Following is a summary of potential noise impact based on the projections:

1. The construction will result in worst case increases in noise levels (CNEL) at the nearest residence (an apartment building) of about 7 dBA during Phase I of the construction, and 15 dBA during Phase II. This is considered a significant increase according to UMTA standards. A 15 ft high noise barrier along the southern edge of the construction site could provide as much as a 5 to 14 dBA reduction in the noise levels, depending on both the location of the construction equipment on the site, and the location of the receiver (noise reduction from the barrier would be greater for residents on the lower floors of the apartment buildings). This is sufficient to reduce projected impact to *possibly significant* for the upper floor receivers, and *generally not significant* for receivers on the lower floors of the buildings.

2. At the Hollywood Mental Health Center, located directly across the street from the construction site on Hollywood Avenue, noise levels from both Phase I and Phase II construction are predicted to increase daytime Leq levels by 3 dBA. It will be difficult to reduce this noise since trucks hauling evacuation material from the site are projected to be the dominant noise source.

3. At Hollyhock House, a historical site located in Barnsdall Park, noise levels are not expected to increase above ambient levels. This is directly a result of the topography of the site: it is located on a hill approximately 70 feet above the level of the construction site. At the Barnsdall Art Park Arts & Crafts Building, average daytime Leq is predicted to increase approximately 9 to 11 dBA during Phase I and by 6 to 8 dBA during Phase II. The construction of a ten-foot high noise barrier along the access road to the Park could provide 5 to 6 dBA noise reduction from activities occurring on the construction site.

4. Along the proposed truck haul routes, the maximum projected increase in CNEL is 3 dBA along Vermont Avenue during Phase II.

General mitigation in the form of mufflers and silencers, reduction of the use of backup alarms and other noise reduction techniques is expected to produce some reduction in noise level. Specific additional mitigation measures, as discussed in this Section, could reduce noise at the nearest residence an additional 5 to 14 dBA, depending on location of the residence.

---

[1] See Appendix D for definitions of acoustical terms used in this Section.

Existing Noise

A noise survey was conducted to document existing community noise levels in areas that could be affected by noise from the construction activities. The noise measurements were conducted over two days, 7 to 8 October 1991. Measurements were conducted for 24 hours at one long term location (Site 1) and for shorter periods (less than one hour) at four short term locations (Sites 2 through 5). Measurement locations are shown in Figure 5. All noise measurements were made with Larson•Davis Model 870 community Sound Level Meters. These are battery-powered, self-contained portable monitors which store data internally; data are then downloaded to a computer. Simultaneous counts of traffic volumes on the closest major street were performed at all of the short term measurement sites except at site 2 (Hollyhock House) where, because of terrain, the streets were not visible.

A summary of the measured data is given in Table 1. The measured CNEL at Site 1 was 62.5 dBA; average measured Leqs at Sites 2, 3, 4 and 5 were 53 dBA, 70 dBA, 71 dBA and 63 dBA respectively. Table 2 and Figure 2 present hourly data for all 24 hours measured at Site 1. This figure shows that nighttime hourly levels are generally 7 to 10 dBA below daytime levels. An exception to this was during the hour between 3 a.m. and 4 a.m., when some unusual noise source raised noise levels for the hour (it is impossible to determine exactly what the noise source was, but it was a source which generated relatively long events with significant noise levels -- such as a distant siren, or nearby radio or sprinkler system).

The CNEL levels for the short term sites have been estimated based on the noise level variations observed at the 24-hour measurement site, excluding the unusual hour of 3 a.m. to 4 a.m. As discussed above, hourly noise levels for nighttime hours are 7 to 10 dBA lower than daytime noise levels, resulting in a CNEL which is 0 to 2 dBA higher than daytime hourly levels.

Traffic on Vermont Avenue and Hollywood Boulevard is the dominant source of existing noise in the immediate vicinity of the proposed construction site. At locations such as the Hollyhock house that are well shielded from the traffic, the dominant noise source is distant traffic on both Vermont Avenue and Hollywood Boulevard, as well as local traffic on the park grounds, and helicopter and other aircraft overflights.

Traffic currently is the dominant noise source at locations on potential truck haul routes such as Los Feliz Boulevard and Vermont Avenue.

FIGURE 5: NOISE SURVEY SITES

[To be completed for Final Report.]

TABLE 1. SUMMARY OF NOISE MEASUREMENT DATA

Site No.	Description	Date	Time	Leq (dBA)	CNEL (dBA)
1	1630 N. Edgemont St. Apt E-5	10/7-10/8	3:00 pm to 3:00 pm	62 (avg daytime)	62
2	Hollyhock House Barnsdall Park	10/7	4:00 pm to 4:30 pm	53	53-55 (est.)
3	3700 Los Feliz	10/8	10:30 am to 11:00 am	70	70-72 (est.)
4	4759 Hollywood Ave. Hollywood Mental Health Center	10/8	11:30 am to 12:00 pm	71	71-73 (est.)
5	1400 Vermont Ave. Presbyterian Hospital	10/8	2:20 pm to 2:50 pm	63	63-65 (est.)

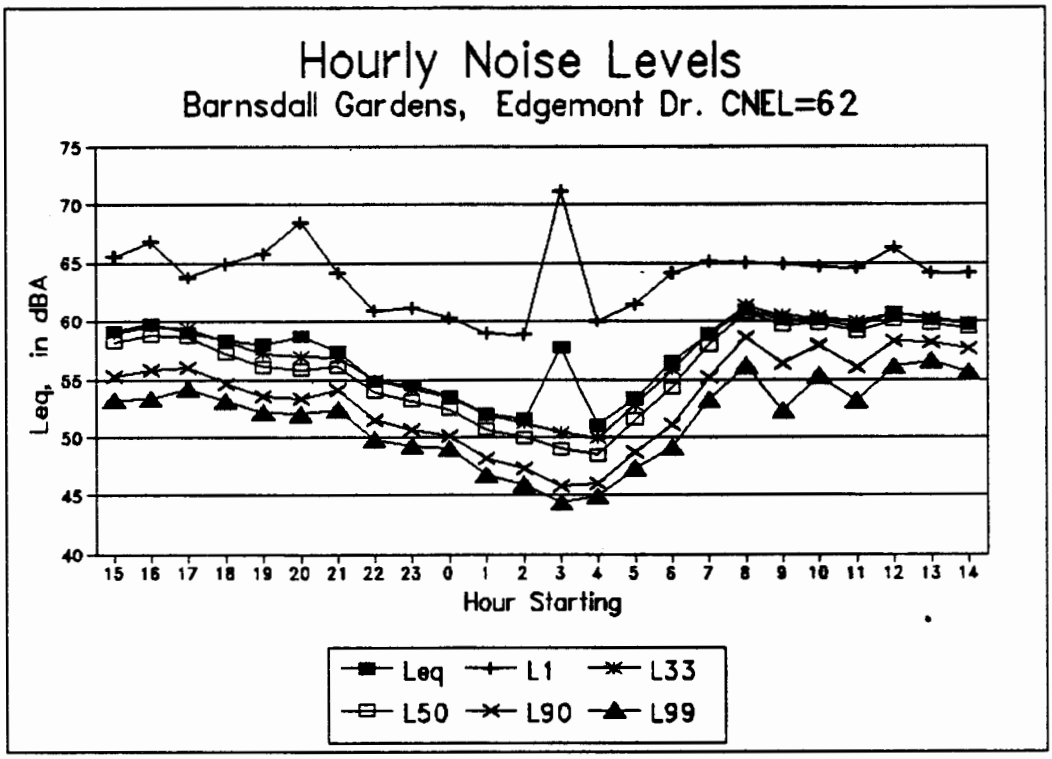


FIGURE 6: RESULTS OF 24-HOUR NOISE MEASUREMENT

TABLE 2. HOURLY NOISE MEASUREMENT DATA: SITE 1

Measured CNEL = 62.5 dBA

DATE	START TIME	Leq (dBA)	Lmax (dBA)	Lmin (dBA)	L1 (dBA)	L10 (dBA)	L30 (dBA)	L50 (dBA)	L90 (dBA)	L99 (dBA)
10/07/91	15:00:00	59.2	78.9	51.5	65.5	60.8	59.0	58.2	55.3	53.2
10/07/91	16:00:00	59.8	78.9	50.7	66.8	61.2	59.6	58.8	55.8	53.3
10/07/91	17:00:00	59.1	75.0	51.8	63.8	60.9	59.4	58.6	56.0	54.2
10/07/91	18:00:00	58.4	83.7	51.8	64.9	60.6	58.3	57.2	54.6	53.1
10/07/91	19:00:00	58.0	80.4	51.1	65.8	60.0	57.2	56.1	53.6	52.2
10/07/91	20:00:00	58.7	79.7	50.6	68.5	60.3	57.0	55.8	53.3	52.0
10/07/91	21:00:00	57.4	86.0	51.2	64.2	58.9	56.9	56.1	54.1	52.4
10/07/91	22:00:00	54.9	70.7	48.1	60.9	57.1	55.0	53.9	51.5	49.8
10/07/91	23:00:00	54.5	79.0	48.4	61.2	56.5	54.2	53.1	50.7	49.3
10/08/91	00:00:00	53.6	66.2	47.9	60.3	55.9	53.5	52.4	50.1	49.0
10/08/91	01:00:00	52.0	70.0	46.0	59.0	54.5	51.9	50.7	48.2	46.8
10/08/91	02:00:00	51.6	71.2	44.7	58.9	54.0	51.2	50.0	47.4	46.0
10/08/91	03:00:00	57.8	84.6	43.7	71.2	55.3	50.4	49.0	45.8	44.4
10/08/91	04:00:00	51.0	72.9	43.9	60.0	53.3	49.9	48.5	46.1	44.9
10/08/91	05:00:00	53.4	67.4	46.5	61.5	56.2	52.8	51.6	48.8	47.4
10/08/91	06:00:00	56.5	77.7	47.7	64.1	59.4	55.8	54.3	51.0	49.1
10/08/91	07:00:00	58.9	75.2	51.4	65.2	61.2	59.0	57.9	55.1	53.2
10/08/91	08:00:00	61.0	75.5	54.6	65.0	62.6	61.3	60.7	58.6	56.2
10/08/91	09:00:00	60.1	84.0	49.6	64.9	61.8	60.5	59.7	56.4	52.3
10/08/91	10:00:00	60.1	74.5	51.4	64.7	61.6	60.4	59.8	57.9	55.3
10/08/91	11:00:00	59.5	78.1	51.4	64.6	61.3	60.0	59.2	56.0	53.1
10/08/91	12:00:00	60.7	79.7	54.4	66.3	61.9	60.6	60.0	58.3	56.1
10/08/91	13:00:00	60.1	81.4	54.9	64.1	61.5	60.3	59.8	58.2	56.6
10/08/91	14:00:00	59.8	80.6	54.3	64.1	61.0	59.9	59.4	57.7	55.7

Impact Criteria

There are no generally accepted definitions of what constitutes noise impact from construction projects, although it is commonly accepted that some noise and community annoyance may be unavoidable when the construction is located in residential areas. It is not clear how applicable this is for this project since construction activities will continue for several years.

The criteria for noise impact are based on the existing UMTA criteria for noise impact that were defined in UMTA Circular 5620.1, which was published in 1978. These criteria are defined in Table 3. The criteria are based on the change in Leq and are equally applicable to CNEL and Ldn. The general interpretation is that:

- there is no impact if the project causes noise exposure (in terms of either Leq, Ldn or CNEL) to increase by 3 dBA or less,
- there is possible impact if the project causes a 3 to 5 dBA increase in noise exposure, although noise mitigation is often not warranted,
- an increase in noise exposure of 6 to 10 dBA usually sufficient for noise impact and investigation of noise mitigation, and
- noise exposure increases greater than 10 dBA are almost always sufficient to warrant noise mitigation.

TABLE 3. UMTA NOISE IMPACT DEFINITIONS

Generally Not Significant	Possibly Significant	Generally Significant
1. No noise-sensitive sites are located in the project area. 2. Increases in noise levels with implementation of the project are projected to be 3 dBA (Leq) or less at noise-sensitive sites and proposed project would not result in violations of noise ordinances or standards.	Increases in noise levels with implementation of the project are expected to be no greater than 5 dBA (Leq). Determination of significance must consider existing noise levels and the presence of noise-sensitive sites.	1. Proposed project would cause noise standards or ordinances to be exceeded. 2. Proposed project would cause an increase in noise levels of 6-10 dBA (Leq) in built-up areas. 3. Proposed project would cause an increase in noise levels of 10 dBA (Leq).

As indicated in the UMTA noise impact definitions, avoiding noise impact also requires that local noise ordinances not be violated. Chapter IV, Article 1, Section 41.40 of the City of Los Angeles Municipal Code titled "Noise Due to Construction, Excavation Work -- When Prohibited," limits construction noise affecting residential areas between the hours of 9 pm to 7 am. Unfortunately, the Code does not include specific limits on the noise levels; it simply states activities creating "... loud noises to the disturbance of persons occupying sleeping quarters in any dwelling hotel or apartment or other place of residence" are prohibited. Also, job site delivery of "... construction materials in such areas shall be prohibited during the hours herein specified." The intent is to minimize interference during the hours when most people are sleeping. This general intent can be achieved through the use of CNEL as a measure of noise exposure since it incorporates a penalty for noises during the evening and nighttime hours. The effect of this penalty is that a single event in the nighttime hours (10 p.m. to 7 a.m.) contributes the same to the overall CNEL as ten similar events during the daytime hours.

Based on the existing UMTA noise impact criteria and the existing City of Los Angeles Municipal Code, we have used the following definitions of noise impact for this project:

1. When the noise projections indicate that the construction activity will cause less than a 5 dBA increase in average noise exposure as measured by CNEL or Leq, impact is *generally not significant* and there is no need noise mitigation measures.

2. If the projected noise exposure will create a 5 to 10 dBA increase in noise level, impact is considered *possibly significant*. In this case, noise mitigation should be evaluated and if, practical and cost effective, made part of the construction project.

3. When average long term noise exposure is projected to increase more than 10 dBA, impact is considered *generally significant* and every effort should be made to include effective noise mitigation measures into the construction project.

Because sensitivity to nighttime noise is only relevant for places where people sleep, we have chosen CNEL as the most appropriate metric for residential land uses, and daytime Leq as the most appropriate for non-residential uses.

It should be recognized that maintaining long term average noise levels below the *generally significant* level will not guarantee that there will be no noise complaints from the community. Some examples: there may be occasional periods with higher than normal noise levels that will cause sleep interference; specific noises such as backup alarms can be very annoying even though the noise level barely exceeds the background noise level; and some people are very sensitive to noise and will have trouble concentrating or getting to sleep whenever the construction noise is audible. Such difficulties must be handled on a case-by-case basis by the community liaison for the project.

Noise Predictions

Projections of noise from the various construction activities have been developed using standard acoustical models and reasonable assumptions about the equipment and procedures that will be used by the contractor. Projections of construction noise have inherent uncertainty because

of contractor discretion about the specific procedures and equipment that will be employed on the project. The noise projections are based on conservative assumptions about noise source levels and operating procedures, which means that the actual noise impact is more likely to be lower than estimated than higher than estimated. As discussed in Section 5, Noise Mitigation, one of the primary procedures for controlling noise impact from construction projects is to include in the construction bid documents specific noise limits and limitations on noisy procedures such as pile driving.

Prediction Methods

This section outlines the assumptions and procedures used for developing estimates of the noise levels that will be created during each phase of the project. The results of the projections are discussed in Section 4.2.

Near Construction Site

Noise predictions for the three sites located near the construction site were developed assuming that each major noise source is a monopole point source. The following formula was used to estimate hourly L_{eq} at each receiver for each noise source:

$$L_{eq}(\text{equip}) = \text{E.L.} + 10\log(\text{U.F.}) - 20\log(\text{D}/50)$$

Where:

L_{eq}(equip)	=	L_{eq} at a receiver resulting from the operation of a single piece of equipment over a specified period.
E.L.	=	noise emission level of the particular piece of equipment at the reference distance of 50 feet.
D	=	distance from the receiver to the piece of equipment.
U.F.	=	usage factor that accounts for the fraction of time that the equipment is in use over the specified time period.

For each noise source, the contribution to an hourly Leq was calculated assuming worst noise case conditions (i.e., highest volume peak traffic flow).

The combination of noise from all significant noise producing equipment operating during the same time period is obtained from decibel addition of the projected Leq for each single piece of equipment. Table 4 presents emission levels assumed for various noise sources at the construction site.

TABLE 4. TYPICAL NOISE EMISSION LEVELS

Equipment Type	Typical Location at Construction Site	Typical Noise Level (dBA) 50 ft from Source
Trucks, entering site	Entrance gate	75
Trucks, idling	Along southern fence, and at loading location	75
Trucks, leaving site	Exit gate(s)	91
Backhoe	Stockpile location	85
Crane	Work Shaft	83
Front end loader	Stockpile location	79

This hourly Leq was then summed over the appropriate time period (depending on the land use) according to the projected work schedule: Phase I construction is expected to occur twelve hours per day (we assumed 6 a.m. to 6 p.m.), and Phase II construction is expected to occur 18 hours per day, from 9 a.m. to 3 p.m. and then again from 6 p.m. to 6 a.m. These future construction noise levels can then be compared with existing CNEL or Leq values estimated from the noise survey results.[2] As discussed in Section 3, impact is based on projected change in CNEL or Leq.

Along Haul Routes

Estimates of noise impact created by additional truck traffic along truck haul routes was predicted using methods prescribed by the Federal Highway Administration (FHWA)[3]. The method takes into account traffic speed and volumes for both automobiles and trucks, as well as roadway geometry, shielding, and ground absorption characteristics. Assumptions regarding existing traffic and ground propagation characteristics were confirmed by predictions of existing noise levels. For daytime noise levels, future truck volumes were added to existing daytime traffic volumes to predict future traffic noise levels, and predictions were made with these construction scenario traffic levels. Because nighttime traffic volumes were not available, the following steps were taken to estimate existing and future nighttime noise:

1. Existing nighttime noise was estimated to be 7 dBA lower than the daytime noise.

2. Noise due to the trucks hauling material during the nighttime hours was estimated using the FHWA projection procedures.

---

[2] CNEL values were estimated from measured short term Leq for the four short term measurement locations.

[3] T.M. Barry, J.A. Reagan, "FHWA Highway Traffic Noise Prediction Model", Report FHWA-RD-77-108, December 1978.

3. Overall nighttime noise during the period of construction was estimated by combining the estimated truck noise and the estimated existing nighttime noise.

Overall CNEL or daytime Leq was then estimated by combining the projected daytime and nighttime noise levels.

Near the construction site location, CNEL was calculated from hourly Leq, according to expected work construction schedules.

Noise Projection and Impact Results

Projections of noise during Phase I and II of construction were developed for each measurement location. The projection results are summarized in Table 5. The following sections discuss the noise projections and potential for noise impact near the construction site and along the haul routes.

Impact Near Construction Site

The most significant predicted impact is in Barnsdall Gardens, the apartment complex located on Edgemont Ave nearest the construction site. Noise levels (CNEL) at the measurement site in the complex during Phase I of the construction (site preparation) are projected to be approximately 9 dBA higher than existing noise levels. This is considered generally significant according to UMTA criteria. The dominant noise source during Phase I will be trucks idling on the south side while waiting to be loaded; it is estimated that as many as three trucks could be waiting at any time. During Phase II of the construction, the predicted noise level at this site is 77 dBA, 15 dBA higher than existing levels. This also is considered significant impact and is sufficient to require noise mitigation if at all feasible. Dominant noise during this phase is also expected to be idling trucks, but during Phase II, as many as six trucks could be waiting at any time, and construction is expected to occur around the clock.

At the Hollywood Mental Health Center, noise levels (Leq day) during Phase I are predicted to be about 76 dBA, a 3 dBA increase over current noise levels. This is considered possibly significant, according to the criteria discussed earlier. The dominant noise source at this location is expected to be trucks leaving the facility; both exit gates are within a few hundred feet of the location, and it is expected that trucks will generate significant noise as they accelerate onto Hollywood Boulevard. During Phase II, predicted levels also are expected to be approximately 76 dBA.

At the Hollyhock House in Barnsdall Art Park, noise levels from the construction are not predicted to be significant. This is a result of the steep embankment/hill which acts as a noise barrier for this location. Noise levels from the project are predicted to be 39 dBA during Phase I and 40 dBA during Phase II; neither of these levels is high enough to add noticeably to existing levels.

TABLE 5: PREDICTED NOISE LEVELS

Site No.	Description	Noise Exposure, CNEL or Leq(daytime), dBA						
		Exist/ Metric	Projected, Phase I			Projected, Phase II		
			Const'n only[a]	Total[b]	Change[c]	Const'n only[a]	Total[b]	Change[c]
1	1630 N. Edgemont St. Apt E-5	62 CNEL	70	71	9	77	77	15
2	Hollyhock House Barnsdall Art Park	53 Leq(day)	40	53	0	39	~~54~~ 53	~~1~~ 0
–	Arts & Crafts Building Barnsdall Art Park	60-62 Leq(day)	70	71	9-11	67	68	6-8
3	3700 Los Feliz	72 CNEL	–	73	1	–	74	2
4	4759 Hollywood Ave. Hollywood Mental Health Center	73 Leq(day)	73	76	3	73	76	3
5	1400 Vermont Ave. Presbyterian Hospital	65 CNEL	–	65	0	–	68	3

Notes, Table 4:

[a]Projected noise level due to the construction equipment only.

[b]Projected total noise level during construction combining the existing noise levels and projected construction noise.

[c]Projected change in noise level due to construction activities. This number is compared to the impact criteria discussed in Section 3 to determine the degree of impact.

Noise Levels at the Arts & Crafts Building in Barnsdall Art Park will also increase significantly during the construction project: during Phase I, the daytime Leq at this building is predicted to be about 71 dBA; during Phase II, the predicted daytime Leq level is 68 dBA. While noise measurements were not made at this location, predictions of noise from traffic count of Hollywood Boulevard combined with ambient measurements made at Site 1 suggest a daytime Leq at this site in the range of 60 to 62 dBA. This implies a 9 to 11 dBA increase over existing levels for Phase I and a 6 to 8 dBA increase during Phase II. These are both considered significant increases, according to the criteria.

Impact along Haul Routes

Along Los Feliz, overall noise levels during Phase I are expected to increase by 1 dBA, assuming a maximum of six round truck trips per hour (twelve trucks) will pass this location on their way to and from the construction site. The change in CNEL is generally not significant, according to the criteria. During Phase II, overall noise levels are expected to increase by 2 dBA, assuming

twelve truck trips per hour (24 total passbys), during 18 hours of construction per day. This is also generally not significant according to the criteria.

Similarly, along Vermont Avenue, predicted increase in noise levels during both phases of construction are generally not significant: levels are not projected to increase at all during Phase I, and only 3 dBA during Phase II.

Mitigation

The noise impact evaluation indicates several sites where noise impact may be significant. There are a number of general procedures that can be used to minimize noise levels; the noise analysis assumes that these measures will be implemented by the contractor. Following is a list of some of these general measures:

1. Only use equipment with effective mufflers installed. Often there are several mufflers available for construction equipment; the most effective mufflers should be used. A corollary is that equipment and mufflers should always be maintained in good condition.

2. Eliminate, or at least minimize, use of backup alarms during nighttime hours. Backup alarms are designed to catch people's attention and can be annoying to some people even when they are barely audible.

3. Configure the construction site such that noise activities are as far as possible from the most sensitive receptors. In addition, it is sometimes possible to arrange stored materials, such as tunnel liners, such that they act as noise barriers for noisy activities.

4. Construct temporary barriers out of 3/4" plywood or similar material around stationary equipment such as generators and compressors.

5. Minimize the use of heavy equipment during the nighttime hours when people are most sensitive to noise.

6. Include specific noise limits in the construction documents and supply the Resident Engineer with a sound level meter so compliance checks can be made at any time. In particularly sensitive cases, noise monitoring by a qualified acoustical consultant may be warranted.

7. Select haul routes along major arterials and freeways and minimize use of residential streets.

These general measures will not be sufficient to eliminate noise impact at several areas. Mitigation options for each of these areas are discussed below:

Barnsdall Apartments: The apartment buildings are located above the proposed construction site with a clear view of the site. The noise projections indicate that CNEL will increase by 9 dBA during Phase I and 15 dBA during Phase II. The most effective method of controlling the noise level increase would be to construct a sound barrier wall along the south side of the construction site along the new access road to Barnsdall Park. The approximate location for the barrier is shown in Figure 3. With a 15 foot high barrier, noise from the construction site will be reduced by as much as 14 dBA at the apartments on the lower floors and 5 dBA at apartments on the higher floors. At this point we have performed preliminary estimates of required barrier height and length; a more detailed evaluation is required before final design and construction of the barrier.

Barnsdall Park Arts & Crafts Building: An extension of the proposed barrier along the southern fenceline (discussed above) could provide significant noise reduction at this location. A ten foot barrier which extends along the access road to the Park is estimated to provide 5 dB noise reduction from trucks leaving the constructions site and 6 dB noise reduction from activity in the work shaft area of the site.

Hollywood Mental Health Center: During both Phase I and Phase II, the daytime Leq at this site is projected to increase 3 dBA which represents *generally not significant* noise impact. The Mental Health Center is located directly across Hollywood Boulevard from the exit from the construction site. Because the planned sound barrier along the north side of the construction site will control noise from activities on the construction site, the major noise source is expected to be heavily loaded trucks accelerating away from the site. Several methods of reducing this noise which may be practical are:

1. Modify the layout of construction site such that accelerating trucks will be farther from the Mental Health Hospital.

2. Use a flagman or traffic light to help trucks merge with traffic on Hollywood Boulevard.

3. Improve the noise insulation of the Mental Health Hospital. Depending on the construction, improved noise insulation usually can be achieved with improved windows and weather sealing of doors.

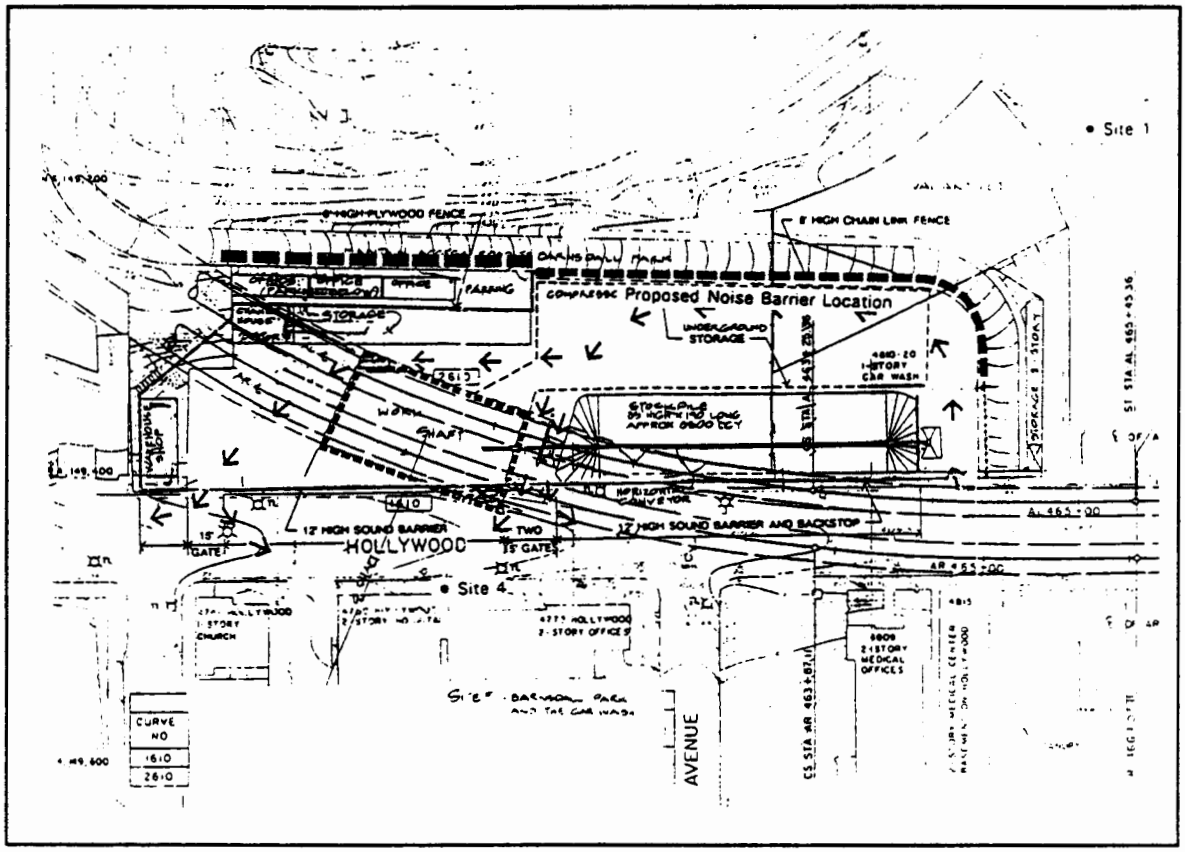


FIGURE 7. NOISE BARRIER LOCATION AT SOUTH SIDE OF CONSTRUCTION SITE

4.5.2 Vibration

Sources of vibration at and near the project site include mobile construction equipment and the excavated material hauling system. Mobile construction equipment includes tracked equipment, (e.g., bulldozers) and rubber tired equipment (e.g., cranes, front-end loaders, and trucks). In most cases, vibration isolation provided by the rubber tires keeps vibration levels below human perception at distances beyond 50 feet from the operating vehicle. Exceptions usually can be traced to such circumstances as an irregularity in the road (e.g., a pothole or a loose manhole cover) or unique geologic conditions. Tracked vehicles create higher vibration levels; however, use of tracked vehicles is not anticipated at this construction site. Compaction equipment, in particular those using vibration to aid in compaction, are common sources of complaints regarding ground-borne vibration near construction sites; however, this type of equipment will not be used at the excavation storage site. Most problems with building damage from ground-borne vibration near construction sites are caused by either blasting or pile driving, neither of which will be used on the subject site.

The most probable method of moving excavated materials from the tunneling process to the storage area will be the use of steel-wheel excavated-material trains running on steel tracks that are laid as the subway tunnel is bored and the tunnel liner is installed. The levels of ground-borne vibration at buildings near the tunnel will depend on the type of excavated-material vehicles, the condition of the wheels on the rail cars, the type and conditions of the track system, geologic conditions, the speed of the vehicles, the condition of the track joints, and the location of crossover tracks. Recent experience with the construction of the Northern Outfall Replacement Sewer (NORS) in the Los Angeles area indicates that vibration from the excavation-material trains used in tunnelling can be a problem. Vibration levels would be lower with well-maintained equipment and track support systems that incorporate vibration isolation materials. Use of excavation-material vehicles with rubber tires or use of conveyer systems for hauling the excavation materials would eliminate most potential for perceptible vibration.

There are two distinctly different categories or ground-borne vibration criteria -- damage and annoyance. It is extremely rare for vibration from the types of construction activities anticipated for the subject site to be of a sufficient amplitude to cause damage to buildings, even fragile historic buildings; however, vibration amplitudes a fraction of what is required for damage are sufficient to be annoying to building occupants.

A common limit for preventing vibration damage to historic or fragile buildings is an rms vibration velocity level of 95 dB[4]. For vibration from a source such as excavation trains passing a residence, most people will not feel levels below 65 dB. Levels of approximately 70 dB usually will be noticeable, and vibration exceeding 75 dB often will cause complaints. A typical residential criterion for acceptable ground-borne vibration related to operation of a subway would be 72 dB. For institutional spaces such as the Barnsdall Park Arts and Crafts building, a typical criterion would be 75 dB.

Given the period of time that the excavation-material trains would be operating, it is reasonable to apply these criteria with an adjustment, taking into account the overall temporary nature of this activity. Therefore, it is recommended that the vibration impact levels of 75 dB for residential land uses and 78 dB for institutional land uses be used to evaluate this construction project. Note that achieving this limit would mean that vibration amplitudes would be, at most, 15 percent of the damage limit for fragile buildings.

Although the general experience with tunnel construction is that excavation-material trains rarely cause sufficient vibration to cause complaints from occupants of nearby buildings, recent experience with construction of the NORS is that vibration can cause problems at diagonal distances from the tunnel greater than 100 feet. Measurements of peak particle velocities as

---

[4] Vibration velocity level in decibels relative to 1 micro-inch/second. Vibration damage criteria are commonly expressed in terms of peak particle velocity (PPV) in inches/section. An rms velocity level of 95 dB is approximately equal to a peak particle velocity of 0.1 inch/second.

excavation-material trains passed were performed as part of the study of the NORS vibration problems.[5] The measurement indicate a 5 to 10 dB train to train variation in vibration levels.

Using a best-fit curve to estimate vibration level as a function of diagonal distance from the tunnel, and approximating rms velocity as 0.7 times PPV, indicates that:

- Residential impacts are possible when buildings are less than 150 feet from the tunnel, and

- Institutional impacts are possible when buildings are less than 80 feet from the tunnel.

Since the rail in the tunnel is 90 feet below the surface at the project site, neither of these conditions exist within or near the project site.

4.6 AESTHETICS/VISUAL

The consolidated excavation site would be located on three parcels: the Barnsdall Park parking lot area, the lot containing the Hollywood Car Wash, and a vacant lot behind the car wash. The Park parking lot is asphalt covered, and contains 44 spaces. The edges are landscaped with shrubs and flowers (see Section 4.14, Flora). West of the parking lot is the Hollywood Car Wash. This 1956 structure occupies most of the entirely paved lot. There is no landscaping on the site.

The use of these parcels for excavation purposes will change their appearance and will impose temporary visual impacts on the surrounding area. The parking lot will be graded, including most of the landscaped areas (Section 4.14). The car wash will be demolished and the pavement removed. The vacant lot will contain the temporary park access road. During the course of excavation, construction equipment will operate on the site, including tractors, trucks, a crane, etc.

The construction site is not visible looking down from most of the Barnsdall Park area, although it is visible from the northern ridge of the Park and from a few rooms in the Arts and Crafts Building. The site is also visible from the residential apartments southwest of the site, although the view is mainly from the parking access road.

During project activities, a 12-foot high wall will be constructed along Hollywood Boulevard in order to block the intrusive effect of the site. A sound wall will also be constructed along the northern boundary of the new access road, which will further block the view of the construction site for people entering the Park and for the apartment buildings southwest of the site.

At the completion of the project, the project site will be returned to the City of Los Angeles Department of Recreation and Parks. Currently, the City has expressed a desire to build a library with landscaping on the site, as well as a new entrance to the Park. It is anticipated that, once

---

[5] "North Outfall Replacement Sever Tunneling Shield and Muck Train Operations Noise and Vibration Measurement and Evaluation," prepared for the City of Los Angeles, Hyperion Construction Division by Hopper and Associates Engineers (April 18, 1991).

the City of Los Angeles has constructed its desired facilities on the site, the appearance of the project site and area will be considered more aesthetically pleasing to the community than does the current condition of this area.

4.7 LIGHT AND GLARE

The project site and the immediate area is currently lit at night by several sources including city street lights and commercial activities. Automotive traffic also contributes to ambient light levels. The principal land use which could be affected by changes in light levels around the site is the apartment building southwest of the site. All other uses are limited to daylight hours or are commercial in nature, and should not be affected.

During the tunnel excavation period, site activities are expected to continue 24 hours a day. The duration of this period is expected to be about 10 to 12 months. This around the clock schedule will require nighttime illumination of the excavation site. The contractor would be expected to use some form of outdoor lighting, which would be positioned around the site to maintain a safe working environment.

In order to avoid impacts to nearby receptors, only shielded lamps which would control the direction of the light would be used. By focusing these lights onto the work site, the light shining into surrounding areas would be minimized. In addition, the sound walls and excavation material pile along Hollywood Boulevard and the sound walls along the new access roads should reduce the amount of light leaving the construction site. Some light may escape, but this should not be expected to substantially increase ambient light levels over those produced by street lights and nearby businesses.

4.8 AIR QUALITY

Air emissions related to the project can be classified into three basic categories: those related to operation of stationary power equipment, mobile emissions from operating trucks and equipment, and fugitive dust as a result of material handling and hauling.

Stationary-equipment emissions would be minimal and can be controlled through the proper operation and maintenance of the equipment.

Mobile emissions would occur as a result of operating diesel or gasoline powered mobile equipment. These would include the trucks used to transport construction materials and excavated material, the crane, fork lifts, workers cars used for transportation, and miscellaneous equipment. During the first six to eight months of the project, 20 to 25 trucks per day would visit the site to haul excavated materials from the shaft. After the shaft is dug and tunneling begins, approximately 300 to 350 trucks will daily enter and exit the site to haul away excavated material. In addition, 36 to 72 additional trucks per day would be expected to deliver tunnel liner rings. After the tunneling phase of the project ends and the concrete batch plant is erected, it is anticipated that 70 to 100 redimix type concrete trucks per day, will enter and exit the site. This would last another 12 to 18 months.

Impacts due to mobile emissions are largely dependent on the distance travelled to deliver excavated material. The destination will not be determined until a contractor is selected. It is anticipated that the overall mileage for transport of materials and excavated material would remain about the same with this project as with the current three-site plan. The extent of impacts would not be anticipated to be substantially greater, and may, in fact, be less.

Dust generated as a result of earth handling and vehicle travel, would be controlled by several methods. First, the excavated material pile would have a sprinkler system over it, incorporated as part of the overhead conveyor. This would keep the pile damp and greatly reduce blowing dust. Dust generated on site as a product of truck and equipment movement would be reduced by using both water and soil binders on the surface of the site. As trucks leave the site, they would pass through a wheel washing station to remove excavated material and prevent its migration off site. In addition, all loads would be covered before transport.

Other specific construction air quality mitigation for construction activities are listed in the 1989 Final SEIS/SEIR.

4.9 SUBSURFACE GAS

Different strata in the geologic formations sometimes form impervious layers. It is under these layers that natural gas and petroleum form deposits. They are often under pressure due to the weight of the soil or rock above. In the course of tunneling operations, it is expected that pockets of natural gas would be encountered. Since gas or fires could migrate from excavation activities back to the shaft, precautions are planned as a matter of course; and safety measures will be built into operations.

Primary to operational safety is the ventilation of the shaft and the tunnels. Ventilation will be a constant operation using one 75 to 100 horsepower fan per tunnel. The fans will be installed in the shaft, at the entrance to each tunnel. Flexible ducting conveys fresh air along the length of the tunnel. These fans will run 24 hours a day, seven days a week.

In addition to ventilation, only equipment which would minimize the potential for sparks would be used. Safety features on the shields include "sniffers" which automatically shut the machine down in case specified levels of natural gas or petroleum are encountered. All motors and electrical equipment used at the excavation site will be rated "explosion proof." Cal/OSHA safety regulations will be observed at all times for the duration of the project.

Other specific mitigation for tunneling activities are listed in the 1989 Final SEIS/SEIR. These measures assure the minimal possibility of accident due to any encounter with natural gas.

4.10 GEOLOGY

The Puente formation and Alluvial soil deposits form an interface at the proposed site. The site lies near the approximate location of the Santa Monica Fault, one identified as potentially active (last known activity 11,000 to 750,000 years ago). It is not located in or near an Alquist-Priolo Special Study Zone. While no significant unstable earth conditions or changes in geologic

substructures are anticipated, excavation and tunneling techniques will be used that take into account the geologic formations and faults present at the site.

The project would require complete grading of the site as well as excavation activities. Grading is not considered to be a significant geological impact for this project.

No erosive effects on waterbodies or stream channels is anticipated. There are no such features nearby and measures to retain fugitive dust on-site will be enforced.

4.11 HYDROLOGY/GROUNDWATER

Groundwater is anticipated at several places along the tunnel routes. Generally, groundwater is "perched" above where the tunnels will be located. Geologic borings show, however, there will be some places where the water table dips to the level of excavation. At these locations, the tunnels will be "dewatered" by pumping the water back up the tunnel to a settling tank on the project site. Soil particles can then settle, and the water can be discharged into existing storm drains under a National Pollutant Discharge Elimination System (NPDES) permit obtained by the RCC. Discharges will be monitored for hazardous constituents and treated if necessary, as described in Section 4.12. Possible methods for treatment include adding hydrogen peroxide for sulfides and using activated charcoal filters for hydrocarbon removal.

The proposed site is not near any bodies of water, or within the 100-year floodplain as mapped by the Federal Emergency Management Agency (FEMA). There would be no effect on public water supplies, which are supplied to the area by the Los Angeles Department of Water and Power. In addition, no detectable change in surface runoff is anticipated due to the small area, urban nature, and present impervious covering of the site.

4.12 PREEXISTING OR OTHER HAZARDOUS MATERIALS

The consolidated excavation site is located in a highly urbanized area, and as such, is near areas where the groundwater or soil could be contaminated with hazardous materials. Sources of contamination could include leaking underground storage tanks or spills from commercial activities. The most common pollutants are various hydrocarbons from automotive related businesses and petroliferous deposits. There are several known locations of contaminated soils along the proposed tunneling alignment and it is possible there are others.

Water pumped from dewatering operations to the site will be monitored for possible contamination from such hazardous materials as petroleum products, hydrogen sulfides, and hydrocarbons. There are known sites along the tunnelling route that are contaminated from leaking underground tanks. The closest site to the excavation that is reported in the 1990 Office of Planning and Research Hazardous Waste and Substances Site List is a tank leak at Kaiser Permanente, 4867 Sunset Boulevard.

Monitoring procedures and requirements from the California Regional Water Quality Control Board will be adhered to. Excavated soil will be monitored from the outset of the project. The soil will be analyzed for composition, classified appropriately, and disposed of at an approved facility. If it is necessary to temporarily hold these soils at the site, a contingency plan will be

implemented that would prevent the migration of material off of the site and prevent contamination of storm runoff. Any hazardous soil or water that are encountered will be handled and disposed of in accordance with all federal, state, and local regulations.

All safety precautions will be taken for tunneling operations with regard to hazardous materials. Safety features on the shields include "sniffers" which automatically shut the machine down in case specified levels of natural gas or petroleum are encountered. All motors and electrical equipment on the machines are rated "explosion proof." This assures the minimal possibility of accident due to any encounter with flammable materials. At no time during any portion of this project will blasting be used. Cal/OSHA regulations will be observed at all times for the duration of the project.

4.13 UTILITIES

In the course of site grading and excavation of the shaft, it is expected that various utilities will be encountered. If excavation of the shaft extends into Hollywood Boulevard, as anticipated, there will be electrical, phone and other lines exposed. These utilities will be rerouted, or packaged and supported across the excavation, so that service would be maintained at all times.

4.14 FLORA

The site is currently occupied by parking for Barnsdall Park, a car wash, and the landscaping in and around these two activities. The road into the park extends uphill from the entrance and parking lot and is separated from the lot by a large berm. To the south of the road is a steep hill extending up to the park buildings. Barnsdall Park itself was originally covered in olive trees and, when landscaped by Lloyd Wright, many of these were preserved. The olive trees appear to have at one time extended to the present parking area but the areas north of the roadway have obviously been cleared or disturbed and replanted when the parking area and Hollywood Boulevard entrance was constructed. Street trees are present along Hollywood Boulevard and a vacant lot lies behind the car wash. A brief description of each of these areas follows and a list of plants observed is provided in Appendix B. No natural habitat or agricultural lands are present and the California Department of Fish and Game does not identify any sensitive species in or near the site on their Natural Diversity Data Base.

Along Hollywood Boulevard, the most notable street trees are three large Ficus trees located in front of the parking area, each approximately 30 feet tall and 18 inches in diameter. A small ficus (about 10 feet tall and 3 inches in diameter) and a few small pepper trees (about eight feet tall and two inches in diameter) are located further up and down the street. A bottlebrush is present in the car wash.

In and around the parking lot and entrance, on the western side of the entrance area, the landscaping includes two large (about 16 inches diameter) pine trees near Hollywood Boulevard, currant bush, oleander, and natal plum. On the western embankment, above the present curve in the road, is an elderberry tree and a groundcover of ivy, nasturtium, and honeysuckle. Along Hollywood Boulevard, between the sidewalk and the parking area is a grassy strip backed by gazanias and a row of silverberry and a large olive at the entrance sign (about 25 feet high, with three trunks each 12 inches in diameter). On the eastern side of the parking lot is a flat planted

area that continues up the hill east of the stairs in illdefined terraces. The lower part of this area has several rose bushes and a groundcover of ivy, bindweed, and other plants. Two medium sized trees (eight inches diameter), a natal plum, and a flowering fruit tree are planted here. The terraced area has a variety of plants, including cotoneaster, iceplant, agave, and two newly planted ginko trees (about five feet tall and two inches diameter). Some sprouted olive stumps are scattered throughout. Above this area, on the east side of the park entrance road, is a line of canary pine, each 16 inches in diameter and planted about 10-15 feet apart. Small decorative landscape groupings in various places in the parking area use heavenly bamboo, geraniums, japanese iris, and other flowering plants.

Along the berm between the parking lot and the entry road, a mixed variety of landscaping is present between the stairs at the eastern end and the entrance road curve. A large olive tree (24 inches diameter) is growing near the stairs and several sprouted olive stumps are present on the berm. Recently planted trees include three small ginkos, a corkscrew willow, and four pine trees approximately eight feet high. Other plants include sweet allysum, California poppy, hollyhocks, and asparagus fern.

The vacant lot area behind the car wash is highly disturbed and has weed species such as fennel, mustard, ivy, bindweed, and annual grasses growing in it. Trash has been dumped in several places. Some stumps are present and are presumed to be olive. A very large Ficus and an untended fruit tree hang over the western edge of the lot from the apartment building.

Clearing and leveling of the project site would require the removal of essentially all the landscaping described above with the possible exception of the street trees and the terraced area above and to the east of the stairs (including the line of pine trees along the roadway). In addition, there would be no impact to unique, rare, or endangered species (none is present) and it is assumed that the Ficus to the west of the vacant lot can be avoided.

Clearing would certainly include the removal of the vegetation on the berm, in the vacant lot, and at the park entrance. The embankment to the west of the entrance road would also be removed to construct the replacement road. This would include, at a minimum, the clearing of eight mature trees and eight smaller trees. Several stumps, shrubs, and groundcovers would also be cleared as would the row of bushes south of the sidewalk. The impacts of the project, while visually severe, are not significant from a biological viewpoint.

Mitigation for the removal of landscaping would be coordinated with the City of Los Angeles Bureau of Street Maintenance (Street Tree Division) and the City Recreation and Parks Department. Mitigation would include replacement landscaping planting in the new parking lot, at the library site, at the new park entrance, and elsewhere in Barnsdall Park as necessary. Detailed construction plans shall include the locations of existing mature trees and mark those that can and will be avoided.

4.15 FAUNA

No natural habitat is present on the site and the California Department of Fish and Game does not identify any sensitive species on or near the site in their Natural Diversity Data Base. The Barnsdall Park site is vegetated primarily with olive trees, plumbago, and other landscape

species. As described above, the parking area is surrounded by landscaping, both on the street and on the berms and stairway plantings. Urban wildlife, including squirrels, various birds, and butterflies and other insects, uses these areas and the park areas above. The project would require the removal of planted areas around the parking area and the disturbance of urban species using them. There would be no impact to unique, rare, or endangered species. Urban wildlife may be disturbed by the construction activities but can easily move up the hill and further into Barnsdall Park or into surrounding urban areas. This impact would not be significant. No mitigation is proposed.

4.16 HISTORIC/CULTURAL (SECTION 106)

4.16.1 Setting

Historic Properties Satisfying Section 106 Requirements

The proposed site would be located along the northern boundary and present entrance of Barnsdall Art Park. Barnsdall Art Park has been listed on the National Register of Historic Places (May 6, 1971) and was declared City of Los Angeles Historic-Cultural Monument No. 36 on February 26, 1965. Two of the structures within Barnsdall Park, the Hollyhock House and Residence "A", have been recorded in the Historic American Building Survey (HABS CA-356 and CA-357), and each has also been declared a City of Los Angeles Historic-Cultural Monument (No. 12 on January 4, 1963 and No. 33 on February 26, 1965, respectively). Outside of the park boundaries, the only other significant historic property within 200 feet of the proposed site is the Los Feliz School. The Los Feliz School is potentially eligible for inclusion in the National Register. All other structures more than 40 years of age within 200 feet of the proposed site have been substantially altered and do not appear eligible for inclusion in the National Register.

Historical Background

The initial development on the proposed project site occurred in the 1890's in the form of roadways intended for cultivation of olive trees. The olive trees were planted by owner J. H. Spires, and the property became known as "Olive Hill". The 36 acre tract was purchased on June 23, 1919 for $300,000 by Aline Barnsdall, an oil heiress and patron of the theatrical arts. Aline Barnsdall selected the property as the site of her own residence and as a theater arts community project. She had been seriously discussing this type of project with architect Frank Lloyd Wright since 1917. Of the original Wright plans for the complex, only the main residence and its associated features and two guest residences were constructed (1919-1922). Ms. Barnsdall deeded 11.56 acres of the site to the City of Los Angeles on December 23, 1926. The main residence was used by the California Art Club as a clubhouse from 1927 until 1942. From approximately 1946-1956 the main residence was headquarters for the Clune Memorial Research and Olive Hill Foundation under a lease agreement between the City and Mrs. Dorothy Clune Murray. All other structures on the original 36 acre tract were constructed after 1950. From 1956 to the present, activities in Barnsdall Art Park have been under the jurisdiction of the City of Los Angeles.

Specific Significance of Historic Properties

Barnsdall Park is one of Los Angeles most prominent historic properties, based on its architectural significance. The main residence, or Hollyhock House, was designed by master architect Frank Lloyd Wright, and is significant not only for the quality of its design but for Wright's use of hollow tile for exterior wall construction, and for its early use of sliding glass doors, considered the earliest such type in California. Other significant architects involved in the project included Wright's son Lloyd who supervised grading of the Hollyhock House site, construction of its foundations, and landscaping, and Rudolph Shindler who drafted the working drawings for the house, his first work in Los Angeles. Directly associated with the Hollyhock House are a long colonnade and kennels/ storage structure located to the north of the main edifice. Conceived during the period 1917-1919, the residence was actually built from 1920 to 1922. Although Frank Lloyd Wright originally referred to it as his "California Romanza" and continued to do so throughout his career, it is more familiarly known as Hollyhock House, named after Aline Barnsdall's favorite flowers which were found growing naturally on Olive Hill. Abstract hollyhocks were used by Wright as a theme for both interior and exterior ornamentation throughout the Pueblo/ Mayan Influence style building. Hollyhock House was renovated by Frank Lloyd Wright in the early 1950's ($150,000), underwent additional renovation from 1968-71, another renovation in 1974-75 ($500,000) under the direction of Lloyd Wright, and presently there are plans to again restore the structure.

Residence "A" (1920-21), commonly known as the "Arts and Crafts Building", was also designed by Frank Lloyd Wright but substantial design elements, and construction supervision are attributed to Rudolph Shindler. Residence "A" is the closest structure designed by Wright to the proposed project area. It is also significant for the use of "hollow tile" in its exterior wall construction.

Rudolph Shindler also designed the wading pool and pergola located west of the main residence. Built in 1924-25 with additional assistance by Richard Neutra, the wading pool and pergola are now in deteriorated condition. Residence "B" (1920-21), was originally built and located at 1600 Edgemont Street, but was demolished in 1954 for an apartment building. In 1953-54, Frank Lloyd Wright designed a temporary gallery to the north of the Hollyhock House, but this was demolished when the new gallery was constructed in 1971. The entrances to the original 36-acre tract were located at the four corners of the property, but all have been destroyed by newer development. The current entrance area is not associated with the Wright designs for the property. Original landscape features, including the Spires olive trees, and eucalyptus and pine trees planted by Lloyd Wright, are all generally located within the perimeter of the outer access road (or Los Angeles County Assessor's Parcel 5543-011-901).

In summary, specific historic features in Barnsdall Park include the Hollyhock House, its associated colonnade and kennels/ storage building, Residence "A", the wading pool and pergola area, 1920's street lamps along the original roadway, garden furniture, and original landscape features.

The Los Feliz School and Auditorium are located at 1740-1746 North New Hampshire Avenue. They were designed by architect Kenneth MacDonald, Jr. in the W. P. A. Moderne style of architecture and were built in 1936. The main school building has been altered by the

construction of a handicap access ramp in front of the main central entrance opening, and by replacement of the doors. Architect MacDonald practiced architecture in Los Angeles from the early 1920's until his death in 1937, and is best known for his designs of the Broadway Spring Arcade Building (1924) at 540 S. Broadway, the Spreckels Building (1922) at 710 S. Hill, the Insurance Exchange Building (1923-24), the Western Costume Building (1924) at 939 S. Broadway, and the Hill garage Building at 417 South Spring Street which used patented elevators with turntables to facilitate vehicle distribution. All of the above mentioned structures have been listed on or determined eligible to the National Register, indicating the quality of Kenneth MacDonald's designs.

4.16.2 Impacts

Impacts on historic resources have been assessed using criteria outlined in 36CFR.800, the Advisory Council on Historic Preservation's guidelines for the protection of historic resources.

Property Acquisition and Access

All work which would be associated with the proposed project would be undertaken within the present entrance area property boundary (Parcel No. 5543-009-900) adjacent to Barnsdall Art Park and would not occur within the boundaries of the Park property itself (Parcel No. 5543-011-901). The permanent easement necessary for operation of the project through the tunnel below the park has already been cleared in prior documentation. The Los Feliz School Property or access to it would not be affected if the project were undertaken.

None of the property where construction would occur contains any remnants of the original Wright plans including landscape features. There is, however, one street lamp which appears to date from the 1920's located just to the north of the present roadway. The street lamp is of a type generally used throughout metropolitan Los Angeles and is not unique to a design by Frank Lloyd Wright, but 4 other similar examples are also found along this access road. The street lamp should be removed from its present location, stored, and replaced when the construction period is over for use along the future park access road. There is also an olive tree near the entrance sign which probably dates back to the Spires' plantings of the 1890's. A preferred treatment of this tree would be relocation to a different park of the Park property where olive tree stumps are now present.

The present Hollywood Boulevard parking lot and entrance to Barnsdall Art Park, Hollyhock House, and Residence "A" will be removed and a temporary access road will be built to the west of its present location. Access to the Park will thus be maintained throughout the course of project construction. Acquisition of the present parking lot would remove 44 parking places from service for the Hollyhock House tours and Art Galleries maintained throughout the course of project construction. Acquisition of the present parking lot would remove 44 parking places from service for the Hollyhock House tours and Art Galleries. This lot is generally used for event parking overflow. Conveniently located replacement parking places will be provided during the length of the project. Proposed locations for these parking places will be at the shopping center or at Kaiser Hospital with an access bridge.

Following culevard frontage of the park by 1/2 acre. In addition, a fund will be established for the City of Los Angeles to be used for, among other things, construction of a new parking lot and construction of a gateway/ monument for the entrance. The increased park property and additional funds may be considered beneficial effects as a result of the project.

Visual

All construction associated with the proposed project would be temporary in nature. The heights of any structure associated with the project would all be below the lowest point of Residence "A", and thus would create minimal temporary visual effects to the Wright Structures and no permanent visual effect. The lowest point of Residence "A" is located at an elevation of 455 feet. The base of the 14' high temporary offices would be located at an elevation of 436 feet and a 10 foot sound wall along the access road would be at an elevation of 440 feet. Thus the lowest point of Residence "A" would be a minimum of 5 feet above the highest point of any temporary structure. The 35 foot high stockpile would be built on a 409 foot elevation, making it still more than 10 feet lower than Residence "A" at a horizontal distance of 295 feet. The 50 foot high vertical conveyor and 40 foot high hoppers would be over 310 feet from Residence "A". Views to Residence "A" may be obscured from traffic on Hollywood Boulevard by the 12 foot high sound wall and vertical conveyor, but this again should be considered a minor, temporary visual effect. Views to Residence "A" from any other vantage point would not be obscured even on a temporary basis by the project. Views from the northern elevation of Residence "A" would temporarily include the construction site, but this minor visual effect would be offset by permanent elimination of views to the unsightly rear of the car wash building, a beneficial visual effect. Views to and from all other elevations of Residence "A" will not be affected by the project in any way.

The Hollyhock House, at an elevation of more than 480 feet would not be visually affected in any way by undertaking the proposed project. It is set back far enough on the crown of the hill to be out of line of sight to the construction area. The Auditorium Building of the Los Feliz School, the closest portion of the school to the proposed project site, is located 205 feet from the temporary "Warehouse Shop" and would not be visually affected by the project.

Following completion of the project, part of the fund established for the City may be used for cleaning and rehabilitation of the major park cultural resources. In addition, views of the entrance area and general visibility of the park will be improved by removal of the incompatible car wash building. This funding and entrance area improvements would have a long term beneficial effect.

Noise and Vibration

All air-borne noise which would result from this project would be temporary in nature. Primary noise sources during Phase I activity are expected to be construction equipment and trucks used to haul away excavated material, and would last for a period of eight months. Primary noise sources during Phase II activity are expected to be the equipment used to load evacuated material on to trucks, and increased truck traffic. Phase II activity would have an estimated duration of up to 4 years.

The closest significant historic structure to construction activity is Residence "A". On a purely horizontal basis, disregarding elevation, Residence "A" is located approximately 180 feet from heavy truck traffic, 187 feet from the work shaft, and 295 feet from the stockpile area. Hollyhock House is a minimum of 240 feet from any of these construction areas, and the Los Feliz School Auditorium is a minimum of 220 feet away.

Air-borne noise between the loading area and Residence "A" will be reduced by construction of a temporary 10' sound wall along the north side of the access road, as well as 14' high office structures and 2-story "change house" on the construction site. Unmitigated air-borne noise which would result from Phase I of this project is estimated to increase approximately 9 to 11 dBA over current conditions. Unmitigated Phase II activity is anticipated to generate an increase of 6 to 8 dBA. Attenuation of these conditions by construction of the 10 foot sound wall and structures mentioned above are anticipated to reduce these noise levels by 5 to 6 dBA. The mitigated conditions would thus represent a maximum net increase of only 4 to 7 dBA over current conditions during Phase I, and only 1 to 3 dBA during Phase II. According to the noise analysis completed for this project, and based on the existing UMTA noise impact criteria and City of Los Angeles Municipal Code, mitigated Phase I activity would cause a "possibly significant" noise impact and mitigated Phase II activity would cause a "generally not significant" impact. The Phase I activity is expected to have a duration of only seven to eight months, far less than the complete construction scenario. The remaining three to four years of the construction activity will not result in any "generally significant" impacts, assuming proposed mitigation is implemented.

The Hollyhock House is approximately 60 feet higher in elevation than the construction area and is out of its direct line of sight. The noise analysis for this project concludes that noise levels are not predicted to be significant, due to the steep embankment/ hill which acts as a natural noise barrier. As a direct result of its topography, Hollyhock House would not expect to receive noise levels above ambient levels. Air-borne noise would be baffled on its way to the Los Feliz School and Auditorium by the 12 foot noise wall, thereby reducing noise effects to insignificant levels.

According to the vibration analysis, ground-borne vibration is expected to be at levels below human perception beyond 50 feet from the operating vehicles. This is due to vibration isolation provided by rubber tires. Use of tracked vehicles, compaction equipment, blasting, or pile driving is not anticipated at this construction site. According to the vibration analysis, ground-borne vibration during Phase I activity is not expected to reach the UMTA threshold of 95 dB for damage of fragile historic buildings.

Vibration may also originate from rail activity during the removal of excavated material during Phase II. Selection of this site would replace three other sites, meaning an increase in the total number of material excavation cars passing the park and the length of duration of excavation-material-car activity to the length of construction period. Hollyhock House, Residence "A", and the Los Feliz School are all used for institutional purposes. According to the vibration analysis, levels generated by Phase II activity would not affect institutional uses at a distance greater than 80 feet. Since the tunnel is 95 feet below the surface of the project site, none of the three historic structures would be affected by vibration during Phase II activity (See Section 4.5.2).

4.16.3 Mitigation

The removal of the 1920's street lamp may be properly mitigated by its storage and replacement following construction of the new permanent park access road. It is not architecturally unique and its historic purpose is to light the access road to the park.

Removal and replacement of the approximately 100 year old olive tree near the present park entrance sign to another location in the park area is proposed.

The temporary relocation of the park entrance to the west of its present location should not significantly affect the operation of the park. The temporary access should be provided with a well marked sign to minimize confusion to visitors.

The temporary loss of 44 parking spaces in the Hollywood Boulevard parking lot will be mitigated by provision of additional parking within convenient walking distance of the park facilities.

A 10 foot high sound wall will be constructed along the north edge of the present access road. in order to reduce predicted noise effects on Residence "A". "Possibly significant" noise impacts on Residence "A" during Phase I of the project are temporary in nature, lasting for approximately eight months. To further mitigate this impact, it is recommended that an additional sound wall be constructed close to the truck activity at the eastern end of the site during Phase I activity.

Vibration monitoring equipment should be placed between Residence "A" and the project site in order to ensure that levels remain well below the threshold for damage to fragile historic buildings of 95 dB during the entire duration of the project.

It is recommended that the rail-car vibration should be isolated in the vicinity of Residence "A" by use of ballast mats under the tracks or by using excavation cars equipped with some sort of suspension to reduce the amount of vibration. It is further recommended that, whenever possible, construction activity should be reduced or eliminated on the park's normally busiest days and scheduled special events.

Visual effects on historic properties which would result from this alternative site selection are temporary and considered negligible and would not require additional mitigation.

Archaeological and paleontological monitoring during Phase I site excavation should be undertaken, and a qualified archaeologist or paleontologist be notified in the event of any discoveries during construction.

Based on this analysis, no adverse effects are anticipated for cultural resources for this project.

4.17 PARKLANDS 4(f)

Section 4(f) of the Department of Transportation Act of 1966 (49 USC 1653, now 49 USC 303) declares a national policy that special effort be made to preserve the natural beauty of the countryside, including public park and recreation lands, wildlife and waterfowl refuges, and historic sites. Section 4(f) permits the Secretary of Transportation to approve a project for federal

funding that requires the use of publicly owned land from a park, recreation area, wildlife refuge or from a historic site of national, state or local significance only if the following determinations have been made: 1) there is no feasible or prudent alternative to using that land, and 2) the project includes all possible planning to minimize harm to the park, recreation area, wildlife refuge or historic site resulting from that use.

Description of the Use of the 4(f) Property: The proposed project would require the use of the north parking lot from Barnsdall Art Park for approximately three-four years. Barnsdall Art Park has been found eligible for the National Register of Historic Places, primarily for the significance of the structures designed by Frank Lloyd Wright, namely Hollyhock House and Residence A (commonly known as the Arts and Crafts Building). The north parking lot was not acquired by the City of Los Angeles until almost 40 years after the establishment of the park. Although owned by the City of Los Angeles Recreation and Parks Department, it is not part of the 11 acre park nominated to the National Register of Historic Places.

Use of the park would include alteration of the parking lot, temporary relocation of 44 parking spaces, temporary relocation of the access road to the park from Hollywood Boulevard, and potential noise, vibration, dust, and visual impacts on Residence A (the Arts and Crafts Building). These impacts are specifically discussed in the preceding section (4.16) of this report. None of these impacts will create permanent changes to the park or introduce elements that are out of keeping with the current ambiance of the park which is located in a dense urban area. The park's topography tends to isolate it from the urban noise and activities which take place on the streets and within the immediate block surrounding the park. The excavation site will temporarily intensify activities in the vicinity of the park for the duration of the construction period.

Alternatives that Avoid Use of the Park: The alternative excavation sites assumed in the 1989 Final SEIS/SEIR would avoid use of this site. However, this site is proposed to consolidate excavation activities from three sites to one site. The proposed site will also take advantage of a natural geologic discontinuity. The intersection of Hollywood Boulevard and Vermont Avenue is located near a natural plane between two geological formations, namely the Puente formation along Vermont Avenue and the alluvial deposit along Hollywood Boulevard. Each of these formations demands a different tunneling shield. Locating the excavation site at Vermont/Hollywood allows the opportunity to use different shields south and west of the site to respond to the different geologic strata. If the original sites were used, tunneling machinery would have to be changed midway along the tunneling alignment. The proposed location permits much more efficient tunneling procedures and some very substantial cost savings.

Another alternative that would avoid direct impacts on the parking lot at the park would be selection of Site 2, in the Hollywood/Vermont shopping center, just south and east of the parking lot. Use of the shopping center would require acquisition and relocation of 17 businesses in the shopping center. It would create noise, vibration, dust, visual and traffic impacts on Barnsdall Park, similar to those that would occur with Site 1. Instead of being on the north side of the park, this alternative would place the construction activities east of the park. Residence A would be approximately the same distance from the excavation in the shopping center as it would be from the parking lot. Mitigation measures similar to those proposed for Site 1 would reduce the noise, vibration, dust and visual impacts. Traffic impacts would be more difficult to mitigate in this location because the shopping center is located on a

curve at a five-way intersection. It would be more difficult to disperse the truck haul routes in at least three directions from this location because of the geometry of this intersection. Opportunities to direct the trucks west and east would be more constrained.

Acquisition and demolition of all, or most of, the shopping center would have an adverse effect on the neighboring community. The shopping center provides goods and services to a dense local population, by car and by bus. Given the cost of land, the traffic congestion management constraints being applied to new developments, and the pressures from adjacent institutional and hospital uses for more land, it is problematic whether this shopping center would be rebuilt after the end of the construction period.

Measures to Minimize Harm: The project as proposed is the product of extensive coordination among the RCC, local historic groups, and the Los Angeles Recreation and Parks Department. As outlined in Section 4.16, the following mitigation measures have been incorporated into the project to prevent permanent harm to the park and to the significant historic resources in the park:

- The 44 parking places that would be lost during the construction period will be replaced in the immediate vicinity, most likely either in the shopping center along Vermont Avenue or in the Kaiser Permanente parking structure on Sunset Boulevard.

- Auto access to the park will be maintained continuously throughout the construction period via the existing or relocated driveway from Hollywood Boulevard.

- Certain construction activities which have the potential to create permanent structural damage to fragile historic buildings have been prohibited, including pile driving and blasting in the vicinity of the park.

- Noise mitigation has been incorporated in project specifications including the use of noise walls on the south side of the site, location of construction facilities and trailers to reduce noise levels, and a noise wall along Hollywood Boulevard so that noise impacts will be below significant levels.

- Vibration mitigation includes vibration monitoring devices on Residence A.

- Every attempt will be made to relocate the 100 year old olive tree in the parking lot and to store and replace the 1920's era street lamp on the access driveway.

In addition the land acquired from the car wash will be donated to the City of Los Angeles Recreation and Parks Department after the construction period is over. This will increase the total area of the park by about .5 acres. A fund will also be established for the City of Los Angeles to be used for construction of a new parking lot, construction of a new entrance and driveway to the park, and for rehabilitation and maintenance of the historic structures in the park.

Coordination with Other Agencies: The Los Angeles Recreation Parks Department has agreed to the temporary use of the park for these purposes (see letter forthcoming). Local historic groups and homeowner groups have also been contacted and have not indicated opposition. A copy of this report is being forwarded to the State Historic Preservation Office and to the Urban Mass Transportation Administration.

Determination: There is no feasible and prudent alternative to the temporary use of this parking lot from Barnsdall Art Park. Extensive consultation with the Los Angeles Recreation and Parks Department and local community and historic groups has assured that all planning to minimize harm has been undertaken. The proposed project will not use portions of the park that are important to its identity as an Art park. The project will not alter or limit those qualities of the park or the significant historic structures that made the park eligible for the National Register of Historic Places. The project will not create significant adverse impacts on the park nor substantially impair the environment of the park.

4.18 SAFETY AND SECURITY

Prior section have discussed various aspects of safety and security, specifically, Sections 4.9 - Subsurface Gas, Section 4.11 - Hydrology/Groundwater, and Section 4.12 - Preexisting Hazardous Waste.

In addition, the selected contractor will provide a secure construction site through use of fencing and on-site security personnel. Graffiti will be removed expeditiously by the contractor.

5. PUBLIC PARTICIPATION

The Rail Construction Corporation continues the tradition of open processes for public involvement in the Metro Red Line decision making. As soon as the agency began considering the consolidated tunneling project, it began seeking public input from the groups and individuals that would be interested in or involved in the project. Input was sought from five major groups, elected officials, governmental agency staff, organizations representing the area or affected resources, business interests near the project, and members of the general public. The RCC provided a project information packet to members of these groups. The package contained an introductory letter, a project description, a site map, and a schedule of environmental clearance and real estate acquisitions. Copies of these materials are contained in Appendix C.

After the groups and individuals had received the information packets, RCC staff interviewed the group representatives and individuals to determine their concerns about the project and to determine which issues should be added to the impact categories to be analyzed in this Initial Study. The individuals contacted and their concerns are shown in Table 6. Some of the individuals that received information packets have not yet told RCC of their concerns. These are shown as a list pending responses in Table 7.

5.1 PUBLIC REVIEW OF NEGATIVE DECLARATION

RCC Staff will issue a Notice of Intent to Adopt a Negative Declaration under the requirements of the California Environmental Quality Act. This notice will be sent to the groups consulted under initial coordination mentioned above and to property owners owning the property in a band one parcel deep around the construction site.

5.2 COORDINATION UNDER SECTION 106 AND SECTION 4(f)

The RCC has informed three agencies with responsible roles in Section 106 of the National Historic Preservation Act and Section 4(f) of the Department of Transportation Act about the proposed project. These agencies are the State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation (ACHP), and the Urban Mass Transportation Administration (UMTA).

For Section 106, RCC will coordinate with these agencies about the areas of potential effect (APE), the identification of cultural resources that may be involved, the eligibility of these cultural resources to the National Register and the evaluation of the effects the undertaking may have on the properties.

For Section 4(f), RCC will coordinate with the appropriate agencies about the use of parkland for the project, the alternatives to using parkland that were considered, and measures taken to minimize harm to the parkland. Several of the groups from which public input was sought will be involved in the Section 106 and Section 4(f) reviews. They are Hollywood Heritage, Los Angeles Conservancy, and the Los Angeles Cultural Heritage Commission.

TABLE 6

METRO RED LINE CONSOLIDATED TUNNELLING SITE

Early Coordination

ISSUE	NAME	ORGANIZATION	SPECIFIC CONCERN
TRAFFIC	Diane Kravif	Los Feliz Improvement Assn.	
	Tom LaBonge	Councilman John Ferraro	Hauling route
	Ed Dario	Automobile Club of America	
	Tim Capuano	Hollywood Mental Health Center	
	Tim Ogata	Hollywood Presbyterian Queen of Angels Hospital	Emergency room entrance at hospital
	James Okazaki	L.A. DOT	
	Ken Lewis	Los Feliz Improvement Association	trucks on Los Feliz Blvd.
UTILITIES	Ed Dario	Automobile Club of America	
	Ted Capuano	Hollywood Mental Health Center	
HOMELESS	Ted Capuano	Hollywood Mental Health Center	
SAFETY	Diane Kravif	Los Feliz Improvement Assn.	School crossing at Los Feliz School
	Rev. John Wagner	Hollywood Lutheran Church	Children & trucks
	Ted Capuano	Hollywood Mental Health Center	school crossing
VANDALISM	Ted Capuano	Hollywood Mental Health Center	
MITIGATION	Rev. John Wanger	Hollywood Lutheran Church	Guarantee of library
	Frank Callender	Christian Science Reading Room	Cosmetic reconstruction
DUST & NOISE	Diane Kravif	Los Feliz Improvement Assn.	
	Paul Rovner	Dave's Flowerland	
	Rev. John Wagner	Hollywood Lutheran Church	Noise levels, Sunday services
PARKING	Rev. John Wagner	Hollywood Lutheran Church	Construction workers
	Richard Ellis	Barnedall Art Center	
GENERAL SUPPORT	Donna Matson	Los Feliz resident	
	Honorable Henry A. Waxman	U.S. House of Representatives	
	Honorable Michael Woo	City Council of Los Angeles	
COMMUNITY CONSTRUCTION INFO	Rev. John Wagner	Hollywood Lutheran Church	Educational films on Metro Rail, info updates

TABLE 7
PACKAGES MAILED - NO RESPONSES RECEIVED

NAME	ORGANIZATION
Anna Adzhabakyan	Security Pacific Bank
Nyla Arsianan	Hollywood Arts Council
Betty Casteneda	Los Feliz School
Rick Dunn	Senator David Roberti
Honorable Ed Edelman	Supervisor, County of Los Angeles
Jose Espinosa	H. Salt Fish/Chips
Assemblywoman Barbara Friedman	California State Assembly
Jim Gillespie	Woolworths
Wendy Gruel	Office of the Mayor
Harriet Hecht	Hollywood Mental Health Center
Barbara Hoff	Preservation Issues Ofcr., L.A. Conservancy
Raymond J. Nassief	Childrens Hospital Los Angeles
June Lee	Hollywood Cleaners
Christie McAvoy	Historic Resources Grp/Hollywood Heritage
Honorable Burt Margolin	California State Assembly
Hector Mondragon	"Dos Burritos" Taco Stand
Robbert Niccum	Los Angeles Unified School District
Kit Niemeyer	Kaiser Permanente Hospital
Glen Ogura	Los Angeles Department of Transportation
Honorable David Roberti	California State Senate
Jose Robledo	Los Angeles City College

TABLE 7 (CONT'D)
PACKAGES MAILED - NO RESPONSES RECEIVED

NAME	ORGANIZATION
Sam Salazar	Center for Neighborhood Watch
Chris Shable	Greater Hollywood Civic Association
Proprietor	Sandy's Barber Shop
Pompea Smith	Hollywood Economic Revitalization Effort
John Walsh	United Riders of L.A.

APPENDIX A - INITIAL STUDY CHECKLIST

CITY OF LOS ANGELES ENVIRONMENTAL IMPACT CHECKLIST

	YES	MAYBE	NO
1. EARTH. Will the proposal result in:			
a. Unstable earth conditions or in changes in geologic substructures?	( )	( )	(XXX)
THE PROJECT WILL RESULT IN THE EXCAVATION OF EARTH FROM THE SHAFT FOR TUNNELING ACTIVITIES BUT WOULD NOT RESULT IN UNSTABLE CONDITION OR CHANGES IN GEOLOGIC SUBSTRUCTURES			
b. Disruptions, displacements, compaction or overcrowding of the soil?	(XXX)	( )	( )
THE IMPLEMENTATION OF THE PROJECT WOULD REQUIRE THE EXCAVATION OF SOIL AND GRADING OF PORTIONS OF THE SITE. HOWEVER, SIGNIFICANT IMPACTS TO SOILS ARE NOT EXPECTED.			
c. Change in topography or ground surface relief features?	(XXX)	( )	( )
THE IMPLEMENTATION OF THE PROJECT WOULD NECESSITATE THE GRADING OF PORTIONS OF THE SITE. HOWEVER, CHANGES TO TOPOGRAPHY WOULD NOT BE SIGNIFICANT.			
d. The destruction, covering, or modification of any unique geologic or physical features?	( )	( )	(XXX)
NO UNIQUE GEOLOGIC OR PHYSICAL FEATURES HAVE BEEN IDENTIFIED ON THE SITE, THEREFORE, NO IMPACTS WOULD OCCUR.			
e. Any increase in wind or water erosion of soils, either on or off the site?	(XXX)	( )	( )
SHORT TERM INCREASES IN WIND AND WATER EROSION MAY OCCUR AS A RESULT OF GRADING AND OTHER ACTIVITIES ON THE SITE. ANY IMPACTS CAN BE REDUCED BY STANDARD MEASURES SUCH AS USING WATER AND SOIL BINDERS TO REDUCE WIND EROSION; AND THE USE OF PROPER GRADING TECHNIQUES TO REDUCE WATER EROSION.			
f. Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?	( )	( )	(XXX)
THE PROJECT IS NOT LOCATED IN AN AREA THAT WOULD BE LIKELY TO ALTER DEPOSITION OR EROSION OF BEACHES, OR CONTRIBUTE TO THE SILTATION OF ANY STREAMS, RIVERS, BAYS, INLETS, OR LAKES.			

g. Exposure of people or property to geologic hazards such as earthquakes, landslides, mudslides, ground failure, or similar hazards? ( ) (XXX) ( )

THE PROJECT SITE IS LOCATED IN A POTENTIALLY ACTIVE SEISMIC AREA AND COULD BE SUBJECT TO SEISMIC HAZARD. THE SITE IS NEAR THE POTENTIALLY ACTIVE (LAST KNOWN ACTIVITY WAS 11,000 TO 750,000 YEARS AGO) SANTA MONICA FAULT. IT IS NOT, HOWEVER, LOCATED IN OR NEAR AN ALQUIST-PRIOLO SPECIAL STUDY ZONE. AS A PRECAUTION AGAINST POSSIBLE HAZARDS, ALL CONSTRUCTION ACTIVITIES PERFORMED ON SITE WILL BE CONDUCTED IN ACCORDANCE WITH STATE AND CITY SEISMIC CODES. THIS WILL MINIMIZE RISKS ASSOCIATED WITH EARTHQUAKE ACTIVITY.

2. **AIR.** Will the proposal result in:

a. Air emissions or deterioration of ambient air quality? (XXX) ( ) ( )

SEE SECTION 4.8 OF THIS REPORT

b. The creation of objectionable odors? ( ) (XXX) ( )

EXCAVATION ACTIVITIES ON THE SITE WOULD RESULT IN TEMPORARY INCREASES IN DUST AND EXHAUST EMISSIONS. EXHAUST EMISSIONS MAY BE CONSIDERED BY SOME TO BE AN OBJECTIONABLE ODOR. IMPACTS ARE NOT EXPECTED TO BE SIGNIFICANT AS THEY WOULD BE TEMPORARY AND REVERSIBLE IN NATURE.

c. Alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally? ( ) ( ) (XXX)

THE NATURE AND SIZE OF THIS PROJECT ARE NOT SUFFICIENT TO ALTER METEOROLOGICAL OR CLIMATOLOGICAL CONDITIONS. NO SIGNIFICANT IMPACTS ARE ANTICIPATED.

d. Expose the project residents to severe air pollution conditions? ( ) (XXX) ( )

OVERALL IMPACTS TO AIR QUALITY ARE NOT ANTICIPATED TO BE SIGNIFICANT AS THE PROJECT IS TEMPORARY IN NATURE AND IT IS NOT EXPECTED THAT MOBILE SOURCES WILL BE LOCATED ON THE SITE IN SUFFICIENT NUMBERS TO CREATE EXCESSIVE EMISSIONS. SOME PEOPLE, HOWEVER, MAY BE MORE SENSITIVE TO MOBILE EMISSIONS THAN OTHERS, AND AS SUCH, MAY CAUSE VARYING DEGREES OF DISCOMFORT OR HEALTH PROBLEMS. ANY IMPACTS WOULD BE ANTICIPATED TO BE TEMPORARY IN NATURE.

3. **WATER.** Will the proposal result in:

a. Changes in currents, or the course or direction of water movements, in either marine or fresh waters? ( ) ( ) (XXX)

THE PROJECT IS NOT LOCATED ON ANY STREAMS OF BODIES OF WATER. THE PROJECT IS NOT OF SUFFICIENT SIZE, NOR WILL IT GENERATE SUFFICIENT DISCHARGE TO ALTER THE COURSE OR DIRECTION OF ANY MARINE OR FRESH WATERS.

	YES	MAYBE	NO
b. Changes in absorption rates, drainage patterns or the rate and amount of surface water runoff?	( )	( )	(XXX)

THE PROJECT SITE IS ALREADY LARGELY DEVELOPED AND PAVED. AS SUCH, NO CHANGES IN THIS AREA WOULD BE ANTICIPATED.

c. Alterations to the course or flow of flood waters?	( )	( )	(XXX)

THE PROJECT WOULD NOT INVOLVE CHANGE OR DISRUPTION TO ANY FLOOD CONTROL FACILITIES; THEREFORE NO IMPACTS ARE ANTICIPATED.

d. Change in the amount of surface water in any water body?	( )	( )	(XXX)

THE PROJECT IS NOT OF SUFFICIENT SIZE TO PRODUCE THE AMOUNT OF DISCHARGE TO CAUSE ANY CHANGES TO THE AMOUNT OF WATER IN ANY BODY OF WATER.

e. Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity?	( )	( )	(XXX)

SEE SECTION 4.11 OF THIS REPORT

f. Alteration of the direction or rate of flow of ground waters?	( )	( )	(XXX)

THOUGH GROUNDWATER IS EXPECTED TO BE ENCOUNTERED DURING EXCAVATION, IT IS NOT ANTICIPATED THAT ALTERATION IN ITS DIRECTION OR RATE OF FLOW WOULD OCCUR.

g. Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?	( )	( )	(XXX)

SEE SECTION 4.11 OF THIS REPORT

h. Reduction in the amount of water otherwise available for public water supplies?	( )	( )	(XXX)

THE GROUNDWATER WHICH IS EXPECTED TO BE ENCOUNTERED DURING THE COURSE OF THE PROJECT IS NOT USED AS PART OF THE PUBLIC WATER SUPPLY.

i. Exposure of people or property to water related hazards such as flooding or tidal waves?	( )	( )	(XXX)

SEE SECTION 4.11 OF THIS REPORT

	YES	MAYBE	NO
j. Changes in the temperature, flow or chemical content of surface thermal springs?	( )	( )	(XXX)

THERE ARE NO KNOWN SURFACE THERMAL SPRINGS LOCATED ON THE PROJECT SITE

4. **PLANT LIFE.** Will the proposal result in:

a. Change in the diversity of species or number of any species of plants (including trees, shrubs, grass, crops and aquatic plants)?	( )	( )	(XXX)

SEE SECTION 4.14 OF THIS REPORT

b. Reduction of the numbers of any unique, rare or endangered species of plants?	( )	( )	(XXX)

SEE SECTION 4.14 OF THIS REPORT

c. Introduction of new species of plants into an area, or is a barrier to the normal replenishment of existing species?	( )	( )	(XXX)

SEE SECTION 4.14 OF THIS REPORT

d. Reduction in acreage of any agricultural crop?	( )	( )	(XXX)

THE PROJECT SITE DOES NOT CONTAIN ANY AGRICULTURAL LANDS.

5. **ANIMAL LIFE.** Will the proposal result in:

a. Change in the diversity of species or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms or insects)?	( )	( )	(XXX)

SEE SECTIONS 4.14 AND 4.15 OF THIS REPORT

b. Reduction of the numbers of any unique, rare or endangered species of animals?	( )	( )	(XXX)

SEE SECTIONS 4.14 AND 4.15 OF THIS REPORT

c. Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals?	( )	( )	(XXX)

SEE SECTIONS 4.14 AND 4.15 OF THIS REPORT

	YES	MAYBE	NO
d. Deterioration of existing fish or wildlife habitat?	( )	( )	(XXX)

SEE SECTIONS 4.14 AND 4.15 OF THIS REPORT

6. **NOISE.** Will the proposal result in:

a. Increases in existing noise levels?	(XXX)	( )	( )

SEE SECTION 4.5 OF THIS REPORT

b. Exposure of people to severe noise levels?	( )	( )	(XXX)

SEE SECTION 4.5 OF THIS REPORT

7. **LIGHT AND GLARE.** Will the proposal:

a. Produce new light or glare from street lights or other sources?	( )	(XXX)	( )

SEE SECTION 4.7 OF THIS REPORT

b. Reduce access to sunlight of adjacent properties due to shade and shadow?	( )	( )	(XXX)

THERE WOULD BE NO STRUCTURES RELATED TO THIS PROJECT WHICH WOULD CAST SHADOWS WHICH WOULD AFFECT OTHER PROPERTIES

8. **LAND USE.** Will the proposal result in an alteration of the present or planned land use of an area?	(XXX)	( )	( )

SEE SECTION 4.1 OF THIS REPORT

9. **NATURAL RESOURCES.** Will the proposal result in:

a. Increase in the rate of use of any natural resources?	( )	( )	(XXX)

USE OF THE PROJECT SITE WILL RESULT IN ONLY AN INCREMENTAL USE OF NATURAL RESOURCES. AS THE END RESULT OF THE PROJECT IS TO PROVIDE THE PUBLIC WITH ACCESS TO RAIL TRANSIT, IT IS ANTICIPATED THAT OVERALL MILES DRIVEN WILL BE REDUCED, THUS CONSERVING NATURAL RESOURCES.

b. Depletion of any non-renewable resources?	( )	( )	(XXX)

SEE RESPONSE TO ITEM 9a ABOVE.

	YES	MAYBE	NO
10. RISK OF UPSET. Will the proposal involve:			
a. A risk of an explosion or the release of hazardous substances (including but not limited to oil, pesticides, chemicals or radiation) in the event of an accident or upset conditions?	( )	(XXX)	( )
SEE SECTIONS 4.9 AND 4.12 OF THIS REPORT			
b. Possible interference with an emergency response plan or an emergency evacuation plan?	( )	(XXX)	( )
THERE ARE SEVERAL HOSPITALS IN THE AREA WHICH PROVIDE EMERGENCY CARE SERVICES. IT IS POSSIBLE THAT INCREASED TRAFFIC DUE TO SITE ACTIVITIES COULD DELAY AMBULANCE ACCESS TO THESE HOSPITALS. OPERATIONAL PROCEDURES FOR THE TRUCK DRIVERS WILL BE ESTABLISHED TO REDUCE THIS POSSIBILITY.			
11. POPULATION. Will the proposal result in:			
a. The relocation of any persons because of the effects upon housing, commercial or industrial facilities?	(XXX)	( )	( )
SEE SECTION 4.2 OF THIS REPORT			
b. Change in the distribution, density or growth rate of the human population of an area?	( )	( )	(XXX)
THE TEMPORARY USE OF THIS SITE FOR EXCAVATION ACTIVITIES WILL NOT ALTER THE DISTRIBUTION, DENSITY, OR GROWTH RATE OF THE POPULATION IN THIS AREA.			
12. HOUSING. Will the proposal:			
a. Affect existing housing or create a demand for additional housing?	( )	( )	(XXX)
THE USE OF THIS SITE FOR EXCAVATION PURPOSES WILL NOT DELETE OR ADD TO THE HOUSING STOCK IN THE VICINITY; NOR WILL IT CREATE ADDITIONAL DEMAND.			
b. Have an impact on the available rental housing in the community?	( )	( )	(XXX)
SEE ANSWER TO ITEM 12a ABOVE.			
c. Result in demolition, relocation or remodeling of, residential, commercial, or industrial buildings or other facilities?	(XXX)	( )	( )
SEE SECTION 4.2 OF THIS REPORT			

	YES	MAYBE	NO
13. TRANSPORTATION/CIRCULATION. Will the proposal result in:			
a. Generation of additional vehicular movement?	(XXX)	( )	( )
SEE SECTION 4.4 OF THIS REPORT			
b. Effects on existing parking facilities, or demands for new parking?	(XXX)	( )	( )
SEE SECTION 4.4 OF THIS REPORT			
c. Impact upon existing transportation systems?	(XXX)	( )	( )
SEE SECTION 4.4 OF THIS REPORT			
d. Alterations to present patterns of circulation or movement of people and/or goods?	( )	(XXX)	( )
SEE SECTION 4.4 OF THIS REPORT			
e. Alterations to waterborne, rail or air traffic?	( )	( )	(XXX)
THE TEMPORARY USE OF THIS SITE IS UNLIKELY TO RESULT IN NEGATIVE IMPACTS TO THESE MODES OF TRANSPORTATION. ULTIMATELY, METRO RAIL IS EXPECTED TO PRODUCE POSITIVE IMPACTS WITH REGARD TO RAIL TRAFFIC.			
f. Increase in traffic hazards to motor vehicles, bicyclists or pedestrians?	( )	(XXX)	( )
THE ADDITION OF TRAFFIC ON LOCAL STREETS COULD TEMPORARILY INCREASE RISKS IN THE PROJECT AREA. SEE SECTION 4.4 OF THIS REPORT			
14. PUBLIC SERVICES. Will the proposal have an effect upon or result in a need for new or altered governmental services in any of the following areas:			
a. Fire protection?	( )	(XXX)	( )
IT IS POSSIBLE THAT SITE ACTIVITIES COULD REQUIRE FIRE DEPARTMENT RESPONSE, HOWEVER, ANY ADDITIONAL NEED WOULD BE CONSIDERED INSIGNIFICANT			
b. Police protection?	( )	( )	(XXX)
THE USE OF THIS SITE IS NOT EXPECTED TO GENERATE AN INCREASE IN ACTIVITIES WHICH WOULD REQUIRE POLICE RESPONSE. IN ADDITION, ON-SITE SECURITY WILL BE PROVIDED BY THE CONTRACTOR.			

	YES	MAYBE	NO
c. Schools?	( )	( )	(XXX)

THE TEMPORARY USE OF THIS SITE WOULD NOT REQUIRE AN INCREASE OR ALTERATION IN SCHOOL SERVICES.

d. Parks or other recreational facilities?	( )	( )	(XXX)

SEE SECTION 4.17 OF THIS REPORT

e. Maintenance of public facilities, including roads?	( )	(XXX)	( )

IT IS LIKELY THAT INCREASES IN TRUCK TRAFFIC WILL ACCELERATE WEAR ON PUBLIC STREETS.

f. Other government services?	( )	( )	(XXX)

NO SIGNIFICANT IMPACTS TO OTHER GOVERNMENT SERVICES ARE ANTICIPATED.

15. **ENERGY.** Will the proposal result in:

a. Use of exceptional amounts of fuel or energy?	( )	( )	(XXX)

THE CONSOLIDATED USE OF ONE SITE RATHER THAN THREE FOR EXCAVATION SHOULD RESULT IN INCREASED CONSTRUCTION EFFICIENCY AND A REDUCED DEMAND FOR ENERGY. TOTAL DEMAND IS NOT EXPECTED TO BE SIGNIFICANT.

b. Significant increase in demand upon existing sources of energy or require the development of new sources of energy?	( )	( )	(XXX)

SEE RESPONSE FOR ITEM 15a ABOVE.

16. **UTILITIES.** Will the proposal result in a need for new systems or alterations to the following utilities:

a. Power or natural gas?	( )	( )	(XXX)

POWER AND NATURAL GAS WILL BE USED IN THIS PROJECT. BECAUSE THE PROJECT IS A CONSOLIDATION OF THREE CONSTRUCTION SITES INTO ONE, IT IS NOT ANTICIPATED THAT MODIFICATION OR ADDITION TO POWER OR NATURAL GAS UTILITIES WILL BE REQUIRED.

b. Communications systems?	( )	( )	(XXX)

THIS PROJECT WILL USE COMMUNICATION SYSTEMS DURING THE COURSE OF OPERATIONS. IT IS NOT ANTICIPATED, HOWEVER, THAT THIS USE WILL BE OF A SUFFICIENT SCALE WHICH WOULD REQUIRE SIGNIFICANT MODIFICATION OR ADDITION TO THE SYSTEM.

	YES	MAYBE	NO
c. Water?	( )	( )	(XXX)

THIS PROJECT WILL USE WATER IN THE COURSE OF OPERATIONS, BUT IT IS NOT ANTICIPATED THAT THIS WOULD BE IN QUANTITIES SUFFICIENT TO CREATE A SIGNIFICANT IMPACT.

d. Sewer and septic tanks?	( )	( )	(XXX)

THIS PROJECT WILL USE THE CITY SEWER FOR SANITARY PURPOSES. THIS USE IS NOT ANTICIPATED TO BE IN SUFFICIENT QUANTITY TO GENERATE SIGNIFICANT IMPACTS.

e. Storm water drainage?	( )	( )	(XXX)

SEE SECTION 4.11 OF THIS REPORT

f. Solid waste disposal?	( )	( )	(XXX)

EXCAVATED MATERIALS FROM SITE OPERATIONS WILL BE SOLD AS CLEAN FILL TO ONE OR SEVERAL BUYERS. WITH REGARD TO CONTAMINATED WASTES, PLEASE SEE SECTION 4.12 OF THIS REPORT. QUANTITIES OF OTHER SOLID WASTES WILL BE INSIGNIFICANT.

17. **HUMAN HEALTH.** Will the proposal result in:

a. Creation of any health hazard or potential health hazard (excluding mental health)?	( )	(XXX)	( )

AS WITH ANY CONSTRUCTION PROJECT, THERE IS THE POTENTIAL FOR ACCIDENTS. THE IMPLEMENTATION OF STATE AND FEDERAL SAFETY STANDARDS WILL MINIMIZE THIS RISK. SEE SECTIONS 4.9, 4.11, 4.12, AND 4.18.

b. Exposure of people to potential health hazards?	( )	(XXX)	( )

SEE THE RESPONSE TO ITEM 17a ABOVE.

18. **AESTHETICS.** Will the proposed project result in:

a. The obstruction of any scenic vista or view open to the public?	( )	(XXX)	( )

SEE SECTION 3.6 OF THIS REPORT

b. The creation of an aesthetically offensive site open to public view?	( )	(XXX)	( )

SEE SECTION 3.6 OF THIS REPORT

	YES	MAYBE	NO
c. The destruction of a stand of trees, a rock outcropping, or other locally recognized desirable aesthetic natural feature?	( )	(XXX)	( )
SEE SECTION 4.14 OF THIS REPORT			
d. Any negative aesthetic effect?	( )	(XXX)	( )
SEE SECTION 4.6 OF THIS REPORT			
19. **RECREATION.** Will the proposal result in an impact upon the quality or quantity of existing recreational opportunities?	( )	( )	(XXX)
SEE SECTION 4.17 OF THIS REPORT			
20. Cultural Resources.			
a. Will the proposal result in the alteration of or the destruction of a prehistoric or historic archaeological site?	( )	( )	(XXX)
SEE SECTION 4.16 OF THIS REPORT			
b. Will the proposal result in adverse physical or aesthetic effects to a prehistoric or historic building, structure or object?	( )	(XXX)	( )
SEE SECTION 4.16 OF THIS REPORT			
c. Does the proposal have the potential to cause a physical change which would affect unique ethnic cultural values?	( )	( )	(XXX)
SEE SECTION 4.16 OF THIS REPORT			
d. Will the proposal restrict existing religious or sacred uses within the potential impact area?	( )	( )	(XXX)
THERE ARE NO KNOWN RELIGIOUS OR SACRED VALUES ASSOCIATED WITH THIS SITE.			

	YES	MAYBE	NO

21. MANDATORY FINDINGS OF SIGNIFICANCE.

a. **Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?** ( ) ( ) (XXX)

AS NO NATURAL HABITAT EXISTS ON THE SITE, THERE IS LITTLE CHANCE FOR THIS PROJECT TO AFFECT ANY POPULATIONS OF WILDLIFE. WITH REGARD TO HISTORIC RESOURCES, THE MITIGATION MEASURES LISTED IN SECTION 4.16 OF THIS REPORT WILL PROTECT THE RESOURCES OF BARNSDALL PARK.

b. **Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?** ( ) ( ) (XXX)

THE PROJECT IS PLANNED WITH LONG-TERM ENVIRONMENTAL GOALS IN MIND. THIS PROJECT IS A PART OF THE OVERALL METRO RAIL HEAVY RAIL TRANSIT PROJECT. THE GOALS OF METRO RAIL ARE LONG TERM IN NATURE, AND PLAN TO REDUCE TRAFFIC CONGESTION, IMPROVE AIR QUALITY, AND PROVIDE CITIZENS WITH A SAFE AND EFFICIENT MEANS OF TRANSIT. AS SUCH, LONG TERM BENEFITS WOULD OFFSET ANY SHORT TERM EFFECTS.

c. **Does the project have impacts which are individually limited but cumulatively considerable? (Incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)** ( ) ( ) (XXX)

SEE THE RESPONSE TO ITEM 21b ABOVE.

d. **Does the project have environmental effects which will cause substantial adverse effect on human beings, either directly or indirectly?** ( ) ( ) (XXX)

BECAUSE THE PROJECT IS TEMPORARY IN NATURE, IT IS NOT ANTICIPATED TO HAVE ANY PERMANENT ENVIRONMENTAL IMPACTS. AT THE CONCLUSION OF THE PROJECT, THE SITE WILL BE RESTORED TO ITS ORIGINAL CONDITION WITH THE IMPROVEMENTS LISTED IN THE REPORT. LOCAL CITIZENS AS WELL AS THE GENERAL POPULACE OF LOS ANGELES ARE EXPECTED TO ULTIMATELY BENEFIT FROM THIS PROJECT.

APPENDIX B - SPECIES LIST

Plants Observed

agave	Agave attenuata
annual grasses	
asparagus fern	Asparagus setaceus
bindweed	Convolvulus arvensis
bottle brush	Callistemon sp.
California poppy	Eschscholzia californica
cotoneaster	Cotoneaster sp.
currant	Ribes sp.
elderberry	Sambucus sp.
fennel	Foeniculum vulgare
fig	Ficus benjamina
gazania	Gazania sp.
geranium	Geranium sp.
ginko	Ginko biloba
heavenly bamboo	Nandina domestica
hollyhock	Alcea rosea
honeysuckle	Lonicera subspicata
iceplant	Carpobrotus edulis
ivy	Hedera sp.
japanese iris	Iris ensata
mustard	Brassica sp.
nasturtium	Tropaeolum majus
natal plum	Carissa macrocarpa
oleander	Nerium oleander
olive	Olea europaea
ornamental fruit tree	Prunus sp.
pepper tree	Schinus molle
pine	Pinus sp.
rose	Rosa sp.
silverberry	Elaeagnus pungens
sweet allysum	Lobularia maritima

Note: Species names are, for the most part, from the Sunset Western Garden Book, 1988.

APPENDIX C – MATERIALS PROVIDED FOR EARLY COORDINATION

October 1991

SUBJECT: Coordination on Environmental and Historic Preservation Impacts of Metro Red Line Consolidated Tunneling and Soil Removal Site at Barnsdall Park.

Dear Interested Party:

The Rail Construction Corporation is considering consolidating tunneling and soil removal activity for Segment 2 of the Metro Red Line at a single site. As this is a change in the Metro Red Line project, the RCC is required by the California Environmental Quality ACT (CEQA) to prepare an Initial Study under CEQA. The Study will include the provisions of the National Environmental Protection Act, Section 106 of the National Historic Preservation Act, and Section 4 (f) of the Department of Transportation Act.

Enclosed for your review are copies of a project description, a site map, and a schedule of the environmental clearance and real estate acquisition. When you receive this package, please call Lee Brayton at (213) 244-6109 to schedule a discussion of any concerns you may have regarding the Initial Study. If you wish, we will meet with you in person, but in the interest of brevity would like to schedule a telephone discussion.

Thank you for your cooperation in this matter, and for your continued support to improve mobility for Los Angeles.

Sincerely,

James L. Sowell

JAMES L. SOWELL
Environmental Affairs

JLS/gg

Enclosures

KAT\LETTERS\CEQA.GEN

Rail Construction Corporation
a Subsidiary of the Los Angeles County Transportation Commission
818 West Seventh Street
Suite 1100
Los Angeles, CA 90017
Tel 213 623-1194

METRO RED LINE SEGMENT 2
CONSOLIDATED TUNNEL LAUNCH AND SOIL REMOVAL SITE

PROJECT DESCRIPTION

CURRENT PLAN

The existing plans for construction of the Metro Red Line tunnel along Vermont Avenue and Hollywood Boulevard call for tunnel mining machines to be launched from shafts at three sites. To prevent Hollywood Blvd. from being disturbed a second time, it is proposed that the Hollywood/Highland station in Segment 3 be constructed along with Segment 2. It is also a good idea to have all the soft ground tunnel work in Segment 3 done along with the tunnel work in Segment 2. However, this would require as many as six complete shields and the loss of ten outer skins of the shield. At ten locations all of the internal parts of the shield must be burnt out and/or removed (for convenience this will be referred to as gutting the shield).

CONTRACT B-251

Under this contract two tunnel shields would be launched from two small work shafts adjacent to the last 100 ft. at the south end of the 330 ft. long cross over structure at the Vermont/Santa Monica station and proceed south on Vermont Ave. until it reaches the contract limit of the Wilshire/Vermont turnout structure. This will require two complete shields and their outer skins which will be abandoned, gutted and left in the ground.

CONTRACT B-271

Starting at the east end of the Hollywood/Western Station, two more shields are required to excavate to the north end of the Vermont/Santa Monica station and the shield's outer skin left in the ground. The internal parts will be installed in two new skins so that twin tunnels can be mined from the west end of the Hollywood/Western station west along Hollywood Blvd. to the Hollywood/Vine station and the outer skins left in the ground.

While the tunnels in Contract B-271 are being mined, two more shields and two extra outer skins are required to mine the soft ground tunnels in Segment 3 in order to meet the schedule. From a proposed shaft located at La Brea Ave. and Franklin Ave., these shields will advance east along Hollywood Blvd. to reach the Hollywood/Vine station where the shields will be gutted. The internal components will be welded back into the two additional skins and lowered down the shaft. The shields will finish the remaining soft ground tunnel work to the west up to the soil/rock interface under the Santa Monica Mountains where they will be gutted and the two skins left in place to support the ground.

IMPETUS FOR CHANGE

There is an opportunity for efficiency and improved productivity with larger contracts covering longer tunnel headings. This concept has led RCC and MRTC to consider the following changes in tunnel construction.

GENERAL DESCRIPTION OF THE ALTERNATE PLAN

The alternate plan is to combine all of the soft ground tunnel work in Segment 2 and Segment 3 to the soil/rock interface into a single construction contract.

Ideally, the tunnels will be mined from one large open cut shaft located near the midpoint of the tunnels. Near the intersection of Vermont Ave. and Hollywood Blvd. the tunnel alignment leaves Vermont Ave., enters a 1,000 ft. radius curve, and returns to Hollywood Blvd. At this location a 130 ft. long shaft, constructed by open cut, will straddle both tunnels. This shaft, located in the 600 ft. long by 100 ft. wide contractor's work area, will be located off Hollywood Blvd. in the parking lot for Barnsdall Park.

The shaft site will be near a natural plane between two different geological formations; namely, the Puente formation along Vermont Ave. and the Alluvial deposit along Hollywood Blvd. This affords the opportunity to use different type shields in the basically different geological formations.

The construction schedule provides for two shields to start mining two tunnels, each approximately 16,000 ft. long, south along Vermont Ave. until they reach the contract limit at the Wilshire/Vermont turnout structure. A month later, two more shields should start mining the two 16,000 ft. long tunnels west along Hollywood Blvd. These shields should advance through the soft ground tunnels in Segment 3 until they reach the soil/rock interface under the Santa Monica Mountains. This is the ideal direction to approach the soil/rock interface. The skin of the shields will be left in the ground to support the ground and the internal parts will be removed.

The work shaft and contractor's work area will be located inside the parking lot of Barnsdall Park. The existing Hollywood Car Wash adjacent to the parking lot and a small parcel of vacant land on the south side of the car wash are needed to develop this site and to relocate a portion of the existing access road to the upper level of the park. This will provide a 100 ft. wide by 600 ft. long contractor's work area parallel to the sidewalk along the south side of Hollywood Blvd. The RCC will acquire the car wash in fee, but will obtain a construction easement for the vacant parcel.

The work site is surrounded by a 60 ft. high hill in Barnsdall Park along the south side, and small retail stores on both the east and west sides of the site. An apartment building sits southwest of the work site. The nearest buildings inside Barnsdall Park are approximately 60 ft. higher in elevation than the street and are approximately 250 ft. and 350 ft. from the shaft. The Arts and Crafts Building is in line of sight from the work site while the Hollyhock House is out of sight atop the hill.

The building across the 80 ft. wide Hollywood Blvd. will be shielded from noise coming from the site by an elongated pile of clean tunnel soil 250 ft. long and 35 ft. high adjacent to the sidewalk. In addition, a 12 ft. high sound barrier will be constructed along the north and east sides of the site next to the sidewalk. Both the elongated soil pile and the sound barrier will hide the construction activities from the public, thereby eliminating many complaints. Construction documents will be developed to reflect the above concept and will also be reviewed by the Acoustic Consultant for any further changes or recommendations.

The excavated material from the four tunnel headings can be raised up the 85 ft. deep shaft and 45 ft. above ground level by a 500 c.y. per hour vertical conveyor. It will be transferred to a 250 ft. long horizontal conveyor for disposal into the elongated pile. The front end loaders will be operating from behind the elongated pile loading the material directly into 20 c.y. dump trucks. As a supplement, two 100 c.y. hoppers could be located along the horizontal conveyor for direct loading into the trucks. This system would eliminate the conventional way of hoisting the excavated material to the surface by large cranes. The conveyor system is more efficient and extremely quiet by comparison. At the present time, a similar system is being used on the twin soft ground tunnels at Shot Tower Station in Maryland. The open cut shaft is located directly in front of the Johns Hopkins Hospital where noise is a major concern to the community. The above concept is for planning purposes only and the final operational decisions will be made by the successful bidder and meet the specification requirements.

A system of sprayers will be built-in to wet the soil pile as required to abate dust. A washer will be set up on site to clean truck tires before they exit the site. Trucks hauling soil away will be covered to prevent dust and particles from escaping during transit.

In order for this plan to be successful, it is essential that the tunnel mining and soil removal operations be conducted in three shifts around the clock. The haul routes from the site will depend on the disposal sites selected by the Contractor. The trucks

required for the work can travel either 1.5 miles west along Hollywood Blvd. or north along Vermont & Los Feliz to the I-5 Golden State Freeway, or 1.5 miles south along Vermont Ave. to reach the Hollywood Freeway. Several disposal sites are being considered.

After the mining of tunnel soil is completed, the tunnels will be lined with concrete poured in place. To provide concrete for this task, a portable concrete batch plant will be installed on the work site. This will allow delivery and storage of bulk raw materials on site and reduce concrete delivery truck traffic to the project site.

BARNSDALL PARK ISSUES

Access Road

The existing access road to the upper level of Barnsdall Park will be relocated after the car wash and the adjacent parcels of land have been acquired by relocating a portion of the road to the extreme westerly end of the site. Access will be maintained throughout the construction period.

Existing Parking Lot

The existing parking lot consists of approximately 44 parking spaces in the lower level along the south curb line of Hollywood Blvd. It is seldom occupied by more than one or two cars at any one time. It is our understanding, however, that it is used for special events that the Park holds occasionally on weekends. The 44 spaces would not be available during construction, but would be restored at the completion of all work.

These spaces could be replaced temporarily during construction by one of several alternatives:

a) By providing the equivalent 44 spaces in the parking structures owned by Kaiser Permanente on the south side of Barnsdall Park on the days of special events.

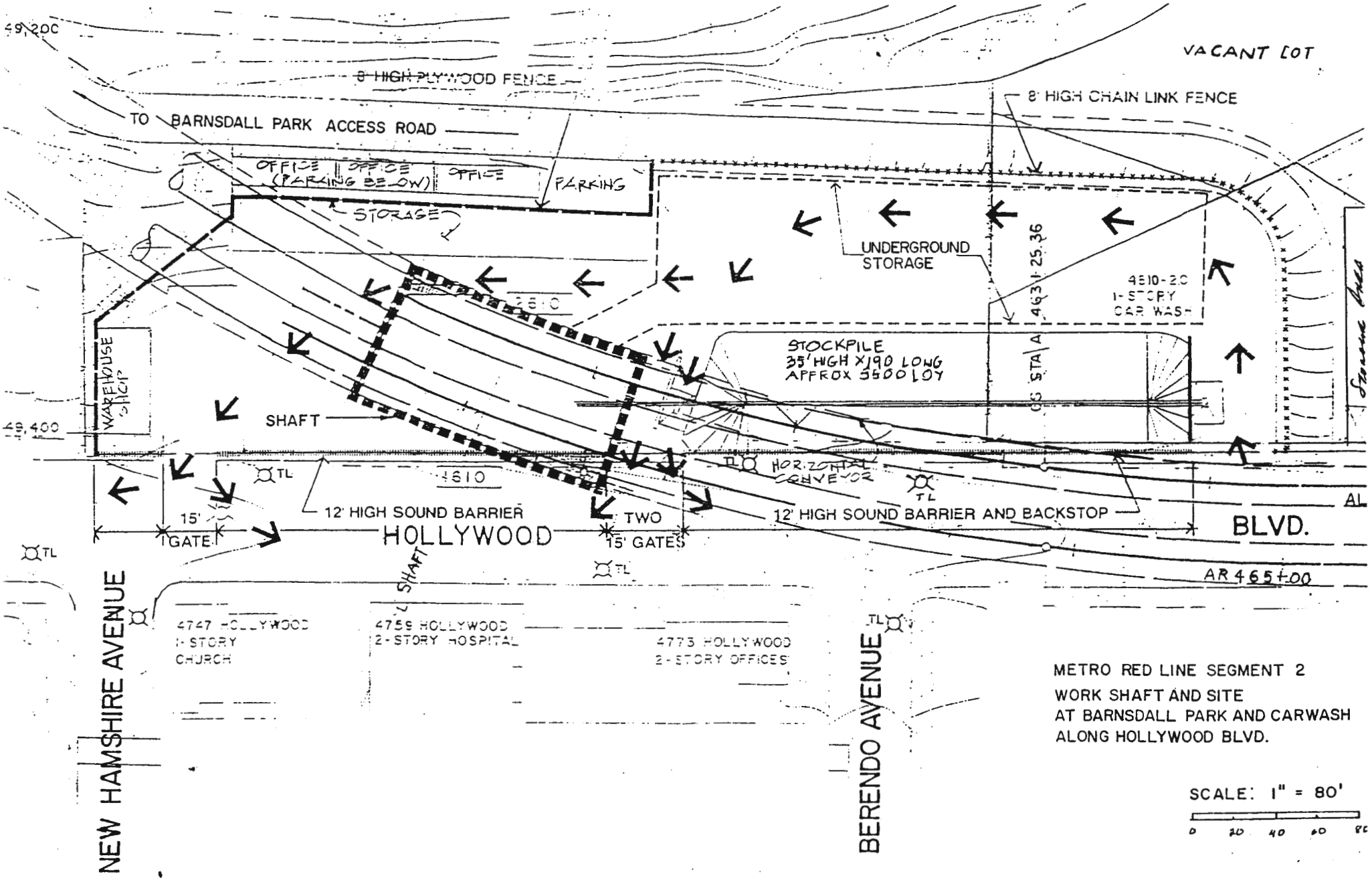
b) By arranging for free parking in the huge parking lot just east of the work site close to the intersection of Hollywood Blvd. and Vermont Ave. It appears that well over 50 parking spaces are available at any time and could be reserved on the weekends of special events.

E075	0	0	1	START TASK	27AUG91	26AUG91	8
E100	5	0	1	MAKE CONTRACT ARRANGEMENTS	27AUG91	02SEP91	8
E150	5	0	1	DEVELOP MAILING LIST	03SEP91	09SEP91	8
E175	2	0	1	SITE MAP & PLAN	27AUG91	28AUG91	11
E200	1	0	1	TECHNIQUES & HOURS OF OPN.	29AUG91	29AUG91	15
E225	1	0	1	EQUIPMENT & LIGHTING	29AUG91	29AUG91	15
E250	1	0	1	MUCK QUANTITY & HAUL ROUTES	29AUG91	29AUG91	15
E275	1	0	1	STAGING & STORING PLAN	29AUG91	29AUG91	15
E300	1	0	1	PARK ACCESS & PARKING	29AUG91	29AUG91	15
E325	5	0	1	REVIEW AND REFINE PROJECT DESCRI	29AUG91	04SEP91	11
E350	2	0	1	MAKE APPTS. FOR COORDINATION	29AUG91	30AUG91	14
E375	4	0	1	CONDUCT COORDINATION METTINGS /	10SEP91	13SEP91	8
E400	15	0	1	PRODUCE INITIAL STUDY	16SEP91	04OCT91	8
E425	2	0	1	PRODUCE DE MINIMUS ANALYSIS	16SEP91	17SEP91	33
E450	18	0	1	ARRANGE MITIGATION MEASURES	23SEP91	16OCT91	10
E475	10	0	1	UMTA REVIEW & COMMENT	07OCT91	18OCT91	8
E500	5	0	1	PRODUCE AGENDA ITEM	14OCT91	18OCT91	8
E525	1	0	1	RCC BOARD REVIEW	21OCT91	21OCT91	8
E550	1	0	1	LACTC APPROVAL	23OCT91	23OCT91	7
E575	1	0	1	ISSUE NOTICE OF INTENT TO ADOPT	24OCT91	24OCT91	7
E600	23	0	1	PUBLIC REVIEW PERIOD	25OCT91	26NOV91	7
E625	11	0	1	CONSIDER COMMENTS	27NOV91	11DEC91	7
E650	11	0	1	PREPARE AGENDA ITEM	27NOV91	11DEC91	7
E675	1	0	1	RCC BOARD CONSIDER ACTION	12DEC91	12DEC91	7
E700	1	0	1	LACTC ADOPT NEG DEC	18DEC91	18DEC91	4
E725	1	0	1	ISSUE NOTICE OF DETERMINATION	18DEC91	18DEC91	4
E750	21	0	1	STATUTE OF LIMITATIONS RUNS	19DEC91	16JAN92	271
E775	15	0	1	UMTA REVIEW AND APPROVAL	19DEC91	08JAN92	4
E800	23	0	1	DEPARTMENT OF INTERIOR REVIEW &	19DEC91	20JAN92	44
R100	2	0	1	ORDER TITLE REPORT ON CAR WASH &	27AUG91	28AUG91	84
R125	15	0	1	RECEIVE TITLE REPORT	29AUG91	18SEP91	84
R150	43	0	1	APPRAISE CAR WASH & PARK	09JAN92	09MAR92	4
R175	5	0	1	PREPARE RCC BOARD AGENDA ITEM	10MAR92	16MAR92	4
R200	1	0	1	RCC BOARD R&A OFFER JUST COMP.	23MAR92	23MAR92	0
R225	1	0	1	LACTC R&A OFFER JUST COMP.	25MAR92	25MAR92	0
R250	5	0	1	OFFER TO PURCHASE	26MAR92	01APR92	0
R275	23	0	1	OWNER CONSIDERS OFFER	02APR92	04MAY92	0
R350	15	0	1	PUBLIC HEARING ON RESOL OF NECES	05MAY92	25MAY92	0
R375	15	0	1	LACTC ADOPTS RESOLUTION OF NECES	05MAY92	25MAY92	0
R450	26	0	1	FILE FOR ORDER FOR IMMEDIATE POS	26MAY92	30JUN92	0
R475	10	0	1	SERVE OWNER & TENANT W/ NOTICE T	01JUL92	14JUL92	0
R500	67	0	1	ORDER FOR POSSESSION	15JUL92	15OCT92	0
R550	15	0	1	DEMOLITION PERMIT & MINOR REMEDI	16OCT92	05NOV92	0
R575	61	0	1	DEMOLISH STRUCTURES	06NOV92	29JAN93	0
R600	1	0	1	COMPLETE TASK	01FEB93	01FEB93	0

PRELIMINARY

9/17/91

11: AM



METRO RED LINE SEGMENT 2
WORK SHAFT AND SITE
AT BARNSDALL PARK AND CARWASH
ALONG HOLLYWOOD BLVD.

SCALE: 1" = 80'

0 20 40 60 80

APPENDIX D – DEFINITION OF ACOUSTICAL TERMS

This Appendix describes some of the acoustical terminology used in this report.

A-weighted Sound Level, dBA

Sound pressure level is a measure of the sound pressure of a given noise source relative to a standard reference value. The reference pressure is typical of the quietest sound that a young person with good hearing is able to detect. Sound pressure levels are measured in decibels (dB). Decibels are logarithmic quantities, relating the sound pressure level of a noise source to the reference pressure level.

An important characteristic of sound is frequency. This is the rate of repetition of the sound pressure oscillations as they reach our ears; frequency is expressed in Hertz (Hz). When analyzing the total noise of any source, acousticians often break the noise into frequency components to determine how much is low-frequency, how much is middle-frequency, and how much is high-frequency noise. This breakdown is important for two reasons:

- Our ear is better equipped to hear mid and high frequencies than lower frequencies. Thus, we find mid- and high-frequency noise to be more annoying. High frequency noise is also more capable of producing hearing loss.

- Engineering solutions to a noise problem are different for different frequency ranges. Low-frequency noise is generally harder to control.

The normal frequency range of hearing for most people extends from a low frequency of about 20 Hz to a high frequency of about 10,000 to 15,000 Hz. People respond to sound most readily when the predominant frequency is in the range of normal conversation, typically around 1,000 to 2,000 Hz. Psycho-acousticians have developed several filters which match this sensitivity of our ear and thus, help us to judge the relative loudness of various sounds made up of many different frequencies. The so-called "A" filter does this best for most environmental noise sources. Sound pressure levels measured through this filter are referred to as A-weighted levels (measured in A-weighted decibels, or dBA).

The A-weighted filter significantly de-emphasizes those parts of the total noise that occur at lower frequencies (those below about 500 Hz) and also at very high frequencies above 10,000 Hz where we do not hear as well. The filter has very little effect, or is nearly "flat", in the middle range of frequencies between 500 and 10,000 Hz where we hear just fine. Because this filter generally matches our ears' sensitivity, sounds having higher A-weighted sound levels are usually judged to be louder than those with lower A-weighted sound levels, a relationship which otherwise might not be true. It is for this reason that A-weighted sound levels are normally used to evaluate environmental noise sources.

It is often convenient to describe a particular noise "event" by its maximum sound level, abbreviated as L_{max}. This is the metric used in modeling source levels of construction equipment.

Equivalent Sound Level, Leq

The Equivalent Sound Level, abbreviated L_{eq}, is a measure of the exposure resulting from the accumulation of A-weighted sound levels over a particular period of interest -- for example, an hour, an eight hour school day, nighttime, or a full 24-hour day. However, because the length of the period can be different depending on the time frame of interest, the applicable period should always be identified or clearly understood when discussing the metric. Such durations are often identified through a subscript, for example $Leq_{(24)}$.

Conceptually, L_{eq} may be thought of as a constant sound level over the period of interest that contains as much sound energy as the actual time-varying sound level with its normal peaks and valleys. It is important to recognize, however, that the two signals (the constant one and the time-varying one) would sound very different from each other if compared in real life. Also, be aware that the "average" sound level suggested by L_{eq} is not an arithmetic value, but a logarithmic, or "energy-averaged" sound level. Thus, loud events clearly dominate any noise environment described by the metric.

Day Night Average Sound Level, Ldn

Ldn has been adopted formally by most public agencies dealing with noise exposure, including the Federal Aviation Administration (FAA), the Department of Defense, and the Department of Housing and Urban Development (HUD).

In relatively simple terms, Ldn is the energy average noise level over a 24-hour period except that noises occurring at night (defined as 10:00 p.m. through 7:00 a.m.) are artificially increased by 10 dB. This weighting reflects the added intrusiveness of nighttime noise events attributable to the fact that community background noise levels typically decrease about 10 dB at night.

Community Noise Equivalent Level, CNEL

The Community Noise Equivalent Level, CNEL, is metric very similar to the Day Night Average Sound Level. As with Ldn, noise at night (10 p.m. to 7 a.m.) is artificially increased by 10 dBA. In addition, noise during the evening (7 p.m. to 10 p.m.) is increased by approximately 5 dBA reflecting some increased noise sensitivity during this period. In practice, CNEL is always greater than Ldn, but rarely exceeds Ldn by more than 0.5 dBA.