



MAY 12, 2000

TO: BOARD OF DIRECTORS

FROM: CHARLES W. STARK *CWS*
EXECUTIVE OFFICER, CONSTRUCTION

SUBJECT: UNIVERSAL CITY BRIDGE DEMOLITION STATUS

Metropolitan
Transportation
Authority

One Gateway Plaza
Los Angeles, CA
90012-2952

ISSUE

Director Yaroslavsky, when serving on the Construction Committee, requested that staff keep the committee informed on the status of plans for demolition of the Ventura Boulevard northbound off-ramp for the 101 Freeway. As part of the work, the Contractor plans to demolish the off-ramp on the weekends of May 20 and June 3, 2000. The noise from demolition is higher than the limits MTA adopted in the previous environmental documents for the project in 1983 and 1989. Some of the demolition work will be done at night and could disturb the sleep of some residents of the area. Staff has investigated the levels of noise and the standards for exposure to ensure that no health hazards are created.

BACKGROUND

In the spring of 1999, staff prepared a Supplemental Environmental Impact Report and Environmental Assessment on the impacts that construction methods would have on the environment, especially noise. The main impact of the project was to cause late-night noise levels in excess of project criteria. To build a new road and bridge over the 101 Freeway, the old Ventura Boulevard off-ramp would have to be demolished. Because of safety considerations the freeway must be closed when work starts to weaken the bridge. To minimize impacts on traffic, Caltrans only allows freeway closures late at night, with longer closures allowed from Saturday midnight until 9:00 AM Sunday. These Caltrans time constraints meant that relatively quiet methods of demolition, such as chemical or mechanical splitting, saw cutting, or crushing, could not be used because they take too long. The methods that were considered to be fast enough to meet Caltrans' closure limits were controlled implosion by explosives, and demolition by hydraulic hammer. Even though both methods would create noise in excess of MTA project criteria, (see Attachment A) the Board adopted the SEIR/EA and a Statement of Overriding Consideration for either method. Background noise levels in the vicinity are dominated by the 101 Freeway traffic noise. Maximum levels from 101 Freeway traffic at Level of Service C were measured at 83 dBA at the property line of the nearest multi-family dwellings facing the 101 Freeway.

Demolition methods

The Contractor has submitted a plan for demolition of the old northbound off-ramp using a hydraulic hammer. See Attachment B. Our understanding is that explosive implosion would have been more complicated, would have required longer to prepare the bridge for implosion than was available for freeway closure, and would have attracted much higher levels of regulatory attention than demolition by hydraulic hammer. For these reasons, the Contractor chose to propose demolition by hydraulic hammer. Even though this method of demolition will take longer than explosive demolition, it will be lower in intensity. The Contractor is required to obtain necessary approvals of the demolition plan, including Caltrans'.

Part of the demolition will require closure of the freeway and must be done at night, between midnight Saturday and 9:00 AM Sunday. The Contractor's plan calls for demolishing the northern half of the off-ramp on the first weekend, now scheduled for May 20/21, 2000. On another weekend, probably June 3/4, 2000, the Contractor would finish demolishing the southern half of the off-ramp. The bridge is made of reinforced concrete with longitudinal beams, cross braces, and top and bottom decks. See Attachment C for a detailed description of the bridge and the demolition method.

Noise impacts

Most of the noise impacts from the demolition will come from the hydraulic hammer to be used by the subcontractor, Penhall Co. Their hammer is a new model that has been extensively re-engineered, and generates only 83 dBA at 50 feet compared to the 95 dBA predicted from older equipment referenced in the April 1999 SEIR/EA. Noise levels would be about 74 dBA at the east side of the construction noise barrier that surrounds the triangular apartment building at 10840 Bluffside Drive. The apartment building is 150 feet or more from the hydraulic hammer. There are 13 apartment units in this building. At the east end of the second apartment building at 3925 Riverton Avenue, noise levels will have dropped to about 68.3 dBA at 290 feet from the source. There are six apartment units on the east end of this second building that face the demolition area. See Attachment D for contour lines of noise expected from the hammer at various distances from the source. Attachment E shows typical sound levels from various activities.

Other residences in the area are the multi- and single-family dwellings south of Ventura Boulevard and on Riverton Dr., and single-family dwellings in the "Island" community north of Valley Heart Dr. The closest apartment south of Ventura Blvd. is about 495 feet away, where the demolition noise contribution would be 63.5 dBA. The closest house in the "Island" community is about 650 feet away with a corresponding demolition noise contribution of 61.3 dBA.

The noise levels described above would be found at the exterior walls, and would be further reduced by at least 25 dBA for a reading inside a building with closed windows. Residents should be able to sleep with their windows closed in mid-May, since the range of nighttime low temperatures at Burbank has been from 50 to 64 degrees over the last six years. The resulting interior noise level would range from 49 dBA at 10840 Bluffside Dr. which is about the same as

a dishwasher, to 36.3 dBA at the nearest house in the "Island", which is much quieter than a refrigerator. Our Contractor has informed us that the hydraulic hammer is expected to be in operation for less than four hours on each of the two nights of demolition.

We understand that the noise from demolition is an impact noise and will be intrusive both by its nature and for its novelty. It may disrupt sleep for some people, however, residents can take additional measures to mask or further block the noise, as discussed in the Public Outreach section below.

Vibration impacts

There may be some vibration felt at the nearest properties, which could be annoying. The levels are expected to be well below the threshold of damage to buildings.

Mitigation

In the April 1999 SEIR/EA, MTA acknowledged that the noise levels from demolition will likely exceed the MTA project criteria, which are related to human annoyance. The project criteria for residential areas are set well below the levels that could cause any physical harm. MTA identified several mitigation measures to be used to reduce to a minimum the noise from demolition. Because the project would cause an unmitigable adverse effect on the environment, MTA's Board of Directors adopted a Statement of Overriding Considerations that explains why the agency will allow the project to go forward despite its adverse effects.

As part of its preparation for construction at the Universal City Station site, MTA required its construction contractor to build 20-foot-tall sound walls on the south side of the project, through the county Park-and-Ride lot north of Ventura Blvd. and around the east end of the apartment building at 10840 Bluffside Dr. The wall would provide at least 5 dBA reduction in noise from the demolition for the top floor of the apartment, and more to the lower floor, reducing the interior noise to not more than 44 dBA. The wall and apartment building will screen the three story apartment at 3925 Riverton Ave. They will provide more protection to the lower two stories than to the upper floor, where interior noise from demolition should not exceed 38.5 dBA.

To further mitigate the noise from demolition of the old northbound 101 Freeway Ventura Blvd. off-ramp, MTA will require the Contractor to submit Noise Control and Monitoring Plans which must address how the Contractor will meet the mitigation measures called for in the 1999 SEIR/EA. In that document, MTA expected the hydraulic hammer to generate noise levels of 95 dBA at 50 feet, and agreed to require the Contractor to install a noise attenuating jacket around the hammer and place additional temporary noise barriers around the project site or adjacent to the nearby sensitive receptors. The construction industry has long sought means to reduce the highly annoying sound levels created by impact hammers. Most of the shrouds, jackets, and other types of sound attenuating wrapping have not been feasible throughout the full range of motion that the equipment must achieve. While some have been effective in blocking noise, the wraps have also blocked operators vision, placement of the tool, or air flow. The equipment proposed for use by the subcontractor, Penhall Co., in lieu of a noise attenuating jacket, has been

extensively re-engineered and quieted by about 12 dBA. This was the expected benefit from placing a noise attenuating jacket on the older machinery. Depending on what control measures the Contractor submits in their Noise Control Plan, the re-engineered hammer and additional movable noise barriers may be adequate mitigation.

Attachment F shows the estimated noise levels at various sites with mitigation.

Public outreach

Staff reported to the Board of Directors on August 18, 1999 about the Public Affairs Outreach Program that has been implemented for the Universal City Station construction project. The Program includes identification and contact with stakeholders in June 1998, door-to-door pre-construction surveys of residents and businesses, holding meetings with homeowners groups and businesses, meeting with elected officials' staffs, and inviting over 20,000 residents and businesses to public meetings on the April 1999 SEIR/EA.

Eligibility for temporary lodging will be based on the predicted or actual noise levels at the residence and any medical or emotional conditions experienced by the resident. Staff has used as guidelines the Threshold Limit Values of noise exposure of the American Conference of Industrial Hygienists, which has determined that there would be no hearing damage to workers repeatedly exposed to sound levels of 90 dBA for up to four hours per day. We have chosen a much more conservative level of 80 dBA as the limit at which we will consider requests for temporary lodging. There would be no hearing damage to workers repeatedly exposed to this level for 16 hours daily, and it is below the peak noise from the 101 Freeway just north of the apartment buildings nearest to the demolition. However, with the quieter hammer that the Contractor proposes to use, the noise levels generated by demolition would not even reach the 80 dBA level. Also, most residents would be indoors where noise levels will be attenuated by at least 25 dBA by windows and walls. Therefore, MTA will not automatically provide temporary lodging to any nearby residents, but will consider individual requests based on medical or emotional conditions.

In the next construction notice for the demolition, Public Affairs will inform residents of additional steps they can take to reduce the levels of demolition noise they actually experience inside their homes. Impact noises can be masked by a source of "white" or broad spectrum noise such as an electric fan or air conditioning. They also can be blocked by the use of simple foam ear plugs, like the kind that MTA workers use to protect their ears in construction environments.

Conclusion

The Contractor has chosen a demolition method that will be simple to use, assures that the freeway will be reopened to traffic on schedule, and will produce considerably lower levels of noise than were anticipated in the 1999 SEIR/EA. Demolition noise and vibration will be well below levels that could cause physical harm, and the two-night duration of the bridge demolition program is near minimum for a major project. MTA has implemented, and is following, an

effective public outreach program that notifies the community of upcoming construction events through a combination of door-to-door flyer delivery, news releases, fax and telephone calls, MTA web site, and community meetings.

NEXT STEPS

MTA staff will be present during the demolition activity to assist the neighborhood. Public Affairs plans to continue the public outreach program through the construction phase by holding monthly construction status meetings, which started in March 2000, having Public Affairs staff on-call, meeting with individuals and groups of homeowners and interested businesses, briefing elected officials' staffs, and tracking and resolving complaints. Public Affairs staff will continue to promote businesses with banners and advertisements, distribute construction notices, newsletters, and news releases, and arrange for temporary lodging for a limited number of residents who are severely impacted by construction noise. Construction Division staff will use the Construction Committee meetings and Board Meetings to provide future status reports of construction issues.

Prepared by James L. Sowell, Manager, Environmental Compliance

Attachments

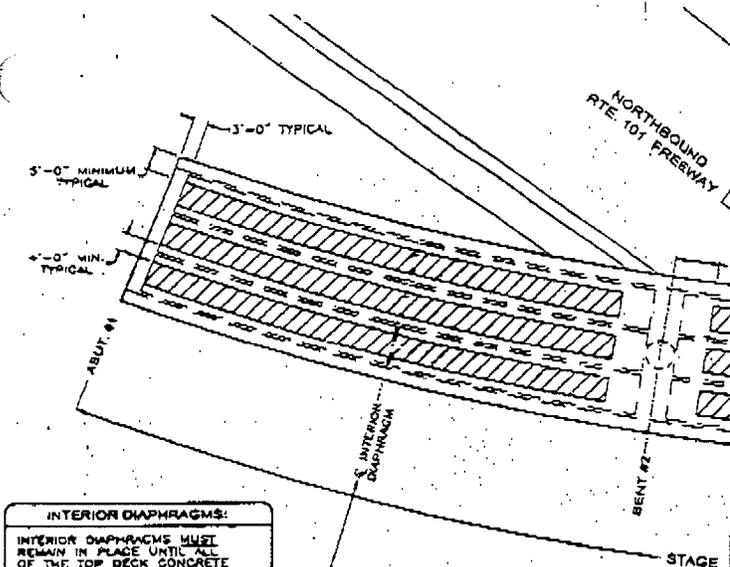
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ATTACHMENT A

TABLE 1
ALLOWABLE SOUND LEVELS OF TOTAL CONSTRUCTION SITE NOISE

<u>AFFECTED STRUCTURE OR LAND USE</u>		<u>MAXIMUM ALLOWABLE CONTINUOUS NOISE LEVEL, dBA (L_{max})</u>	
		<u>DAYTIME</u> 7:00 AM to 8:00 PM	<u>NIGHTTIME</u> All other periods including all day Sunday and legal holidays.
Residential	Single family residence not along major arterials	60	50
	Land uses along an arterial or in multifamily residential areas, including hospitals	65	55
	In commercial areas, including hotels	70	60
		<u>24 Hours</u>	
Commercial	In noise sensitive, semi-residential/ commercial areas, including schools, libraries, churches, etc.	70	
	In non-noise sensitive commercial areas with no nighttime residency	75	
Industrial	All locations	80	

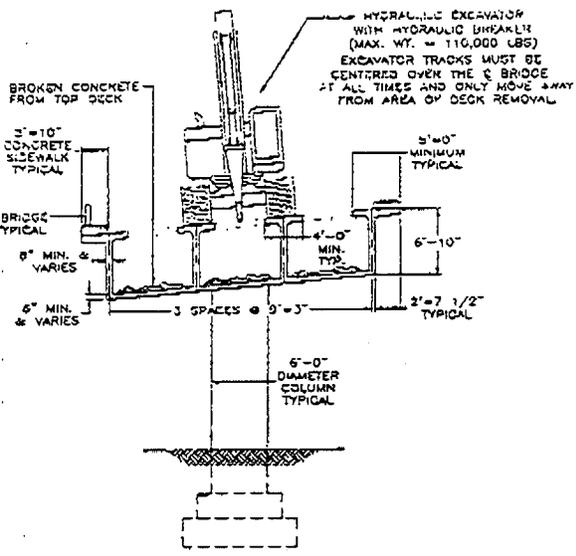
ATTACHMENT B



INTERIOR DIAPHRAGMS:
 INTERIOR DIAPHRAGMS MUST REMAIN IN PLACE UNTIL ALL OF THE TOP DECK CONCRETE IS REMOVED. THE DIAPHRAGMS MUST NOT BE REMOVED FROM THE TOP. THEY ARE TO BE REMOVED FROM DOWN BELOW WHEN THE BOTTOM DECK AND STEM WALLS ARE BEING REMOVED. THIS IS TYPICAL FOR ALL OF THE INTERIOR DIAPHRAGMS FOR BOTH STAGES OF DEMOLITION.

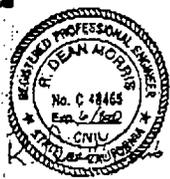
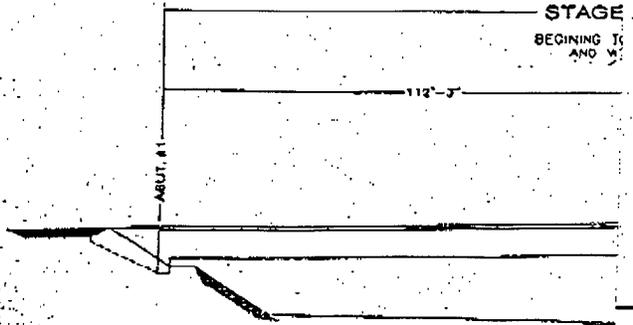
- PRE-DEMOLITION WORK:**
 AREA OF WORK: ENTIRE BRIDGE, FRAMES #1 AND #2.
- 1) SAW CUT OR BREAK ACCESS OPENINGS IN THE TOP DECK TO THE INTERIOR OF THE BRIDGE. DO NOT CUT OR BREAK ANY STEM WALLS OR THE INTERIOR DIAPHRAGMS.
 - 2) PLUG WEED HOLES IN THE SOFFIT OF THE BRIDGE.
 - 3) STRIP THE TOP DECK LUMBER FROM THE INTERIOR OF THE

- STAGE 1 DEMOLITION:**
 AREA OF WORK: ABUT. #1 TO BENT #3.
- 1) REMOVE THE TOP DECK CONCRETE DECK TO THE LIMITS 5' FROM BENT #3 AND WORK BACK TOWARDS THE ABUTMENT. THE BRIDGE ON THE PORTION OF THE BRIDGE WHERE NO TOP DECK CO. BREAK THE TOP DECK CONCRETE USING EITHER A WRECKING BALL OR A HYDRAULIC EXCAVATOR EQUIPPED WITH A HYDRAULIC EQUIPMENT OPERATING WEIGHT ALLOWED SHALL BE 110,000 EXCAVATOR AND HYDRAULIC HAMMER.
- THIS WORK MAY BE DONE OVER THE FREEWAY PRIOR TO THE BOTTOM DECK OF THE BRIDGE WILL ACT AS A PROTECT BELOW AND CONTAIN THE BROKEN CONCRETE RUBBLE.
- 2) CLOSE THE FREEWAY TO TRAFFIC.
 - 3) PLACE A PROTECTIVE COVER OVER THE NORTHBOUND FREEWAY 2 FT. OF DIRT FILL.
 - 4) AFTER THE EQUIPMENT IS DONE REMOVING THE TOP DECK COVER HAS BEEN PLACED OVER THE FREEWAY, THE REMAINING CONCRETE MAY BE DEMOLISHED USING EQUIPMENT WORKING
 - 5) THE COLUMN AT BENT #2 SHALL BE TOPPLED PRIOR TO OF FREEWAY TO TRAFFIC.
 - 6) REMOVE CONCRETE RUBBLE AND DEBRIS FROM THE FREEWAY
 - 7) REMOVE THE PROTECTIVE COVER FROM THE FREEWAY AND
 - 8) THE BENT #2 COLUMN FOOTING, ABUTMENT #1 AND ANY OF THE FREEWAY MAY BE REMOVED AT ANY TIME.



TYPICAL SECTION

SCALE: 1"=10'-0"



MORRIS ENGINEERING
 2071 E. 4th Street, Suite 1070, Santa Ana, California 92705 (714) 641-6674 Fax (714) 641-2878

PENHALL COMPANY

VENTURA BLVD. OFF RAMP DEMO PLAN

DATE: 3/20/00 SCALE: NOTED SHEET 1 OF 1

Attachment C

DESCRIPTION OF BRIDGE AND METHOD OF DEMOLITION

The bridge consists of a rectangular reinforced concrete box girder made up of four stem walls running the length of the bridge, reinforced by transverse interior diaphragms. The stem walls rest on a concrete bottom deck which in turn rests on supporting columns and abutments. The roadway and sidewalks are carried on a concrete top deck.

For the first phase of the demolition of the span over the northbound freeway, work may begin before the freeway is closed. The contractor will use a Hydra Hammer (a drop hammer that is quieter than the hydraulic hammer to be used on the rest of the structure) on top of the off-ramp to break up the traffic deck so that the debris falls into the interior cells of the box girder. Work will progress from the center of the span to the north abutment. Since the freeway does not have to be closed, this work could be done during the day or evening, when it would be less disruptive to nearby residents. When the deck is removed from the bridge, the Contractor and Caltrans will close the freeway at midnight Saturday, and the contractor will cover it with protective layers of steel plates or two feet of dirt. A hydraulic hammer working from the freeway level will demolish the remaining portions of the bridge, letting the debris fall onto the protective cover. The contractor will then topple the north support column, remove the rubble, debris, and the protective cover, and reopen the freeway to traffic before 9:00 AM Sunday. Having the major nighttime demolition done from freeway level will lower the source of the noise somewhat below that of a hammer working on top of the bridge structure. The noise also will be partially blocked by the bridge structure until it falls.

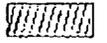
The second stage of demolition of the span over the southbound freeway will proceed in similar manner to the first stage. During daytime, a hydraulic hammer will break up the traffic deck of the bridge so the debris falls into the interior cells of the box girder, working from the center support column to the south abutment. The Contractor and Caltrans will close the freeway at midnight Saturday and the Contractor will cover it with protective layers of steel plates or two feet of dirt. Another hammer working from the freeway level will demolish the remaining portions of the bridge, allowing the debris to fall onto the protective cover. The Contractor will topple the center and south support columns, and remove the footing of the center column, then remove the rubble, debris, and protective cover, and reopen the freeway to traffic before 9:00 AM Sunday.

Both abutments and the footings of the north and south support columns lie outside the freeway and can be removed during daytime.



ATTACHMENT D

LEGEND



WORK TO BE PERFORMED IN THIS STAGE

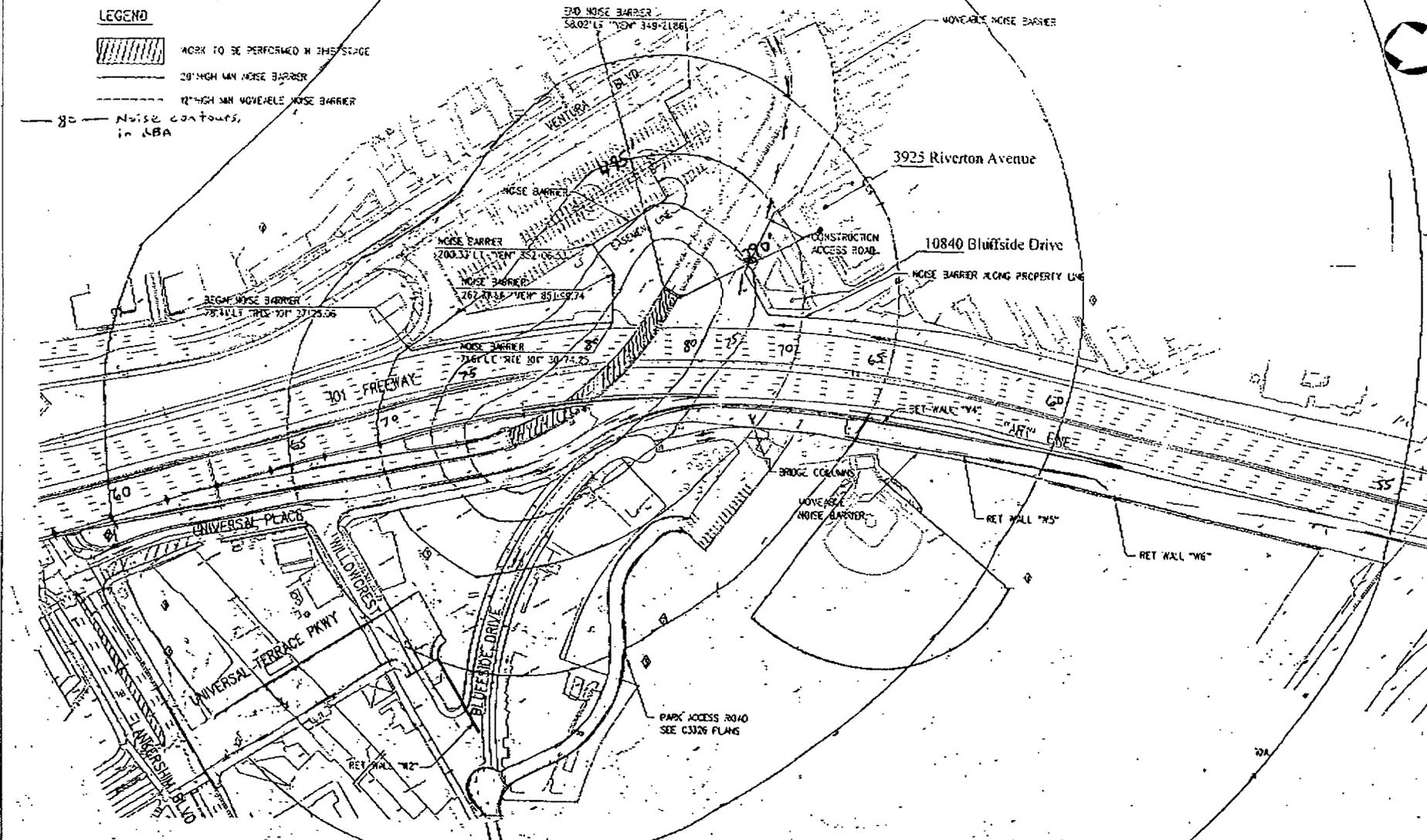


20" HIGH M/M NOISE BARRIER



12" HIGH M/M MOVEABLE NOISE BARRIER

— 80 — Noise contours, in dBA



THE ENGINEER OF THIS DRAWING HAS BEEN LICENSED IN THE STATE OF CALIFORNIA UNDER THE PROFESSIONAL ENGINEERING ACT OF 1927 AND IS A MEMBER OF THE CALIFORNIA BOARD OF PROFESSIONAL ENGINEERS AND ARCHITECTS. HIS OFFICE IS LOCATED AT 1000 WEST 10TH STREET, SUITE 100, LOS ANGELES, CALIFORNIA 90015.

NO.	DATE	BY	APP.	REV. NO.	DESCRIPTION	SCALE
1	01/23/99	SG	SK	2101 295/29/01	ADDITION NO.2 FOR CURS	
2	3/13/99	SG	SK	2101 295/29/01	ADDITION NO.4	
3	3/22/99	SG	SK	2101 295/29/01	ADDITION NO.2 - REVISED & REBUILT	
4	12/21/99	SG	SK	2101 295/29/01	ISSUED FOR SOLICITATION	
REV	DATE	BY	APP.	REV. NO.	DESCRIPTION	SCALE

DESIGNED BY
M. GRAMM
CHECKED BY
F. JACOBS
DRAWN BY
J. HIBER
IN CHARGE
S. DORRIS
DATE
6/2/20/95

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY
METRO RED LINE

DIVISION
SHELDON DORRIS

315 W. SAGINAW ST. SUITE 200
LOS ANGELES, CA 90012
TEL: 213-922-2000 FAX: 213-922-2000

Approved Investment Program
L. H. MURPHY

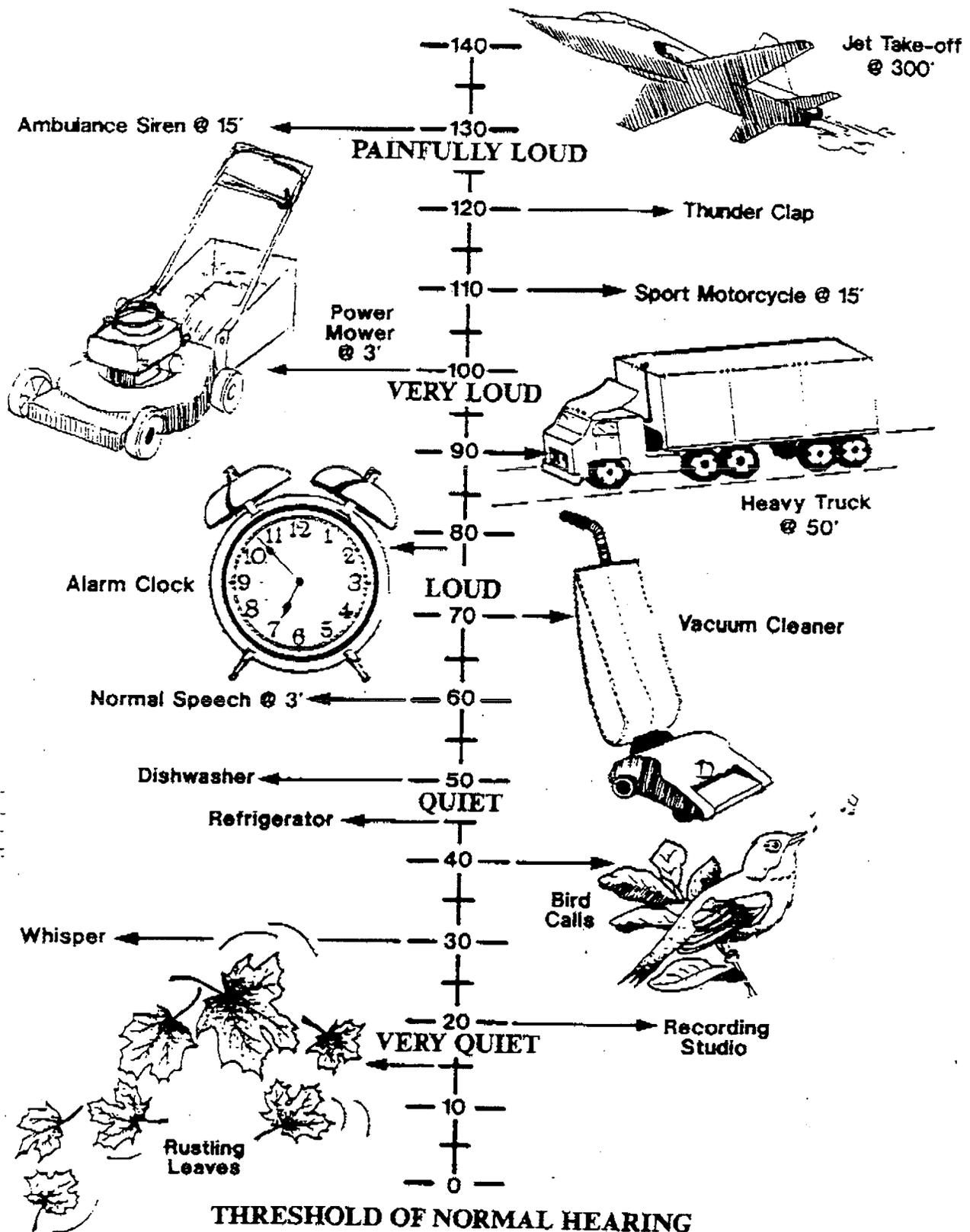
LA CBD TO NORTH HOLLYWOOD
UNIVERSAL CITY STATION
FREEWAY OVERCROSSING, RAMPS,
AND STATION ACCESS ROAD
STAGE CONSTRUCTION (STAGE 1)

CONTRACT NO. C1326
DRAWING NO. C-073
SCALE 1" = 80'
SHEET NO. B5

ATTACHMENT E

FIGURE III-1

TYPICAL SOUND LEVELS IN dBA



Attachment F

**NOISE LEVELS AT VARIOUS DISTANCES FROM
THE VENTURA OFF-RAMP STRUCTURE.**

Since noise is attenuated and dispersed over distance, we can calculate that noise levels drop 6 dBA for each doubling of distance. Therefore noise levels that are 83 dBA at 50 feet from the hammer will be 77 dBA at 100 feet, 71 dBA at 200 feet, 65 dBA at 400 feet, 59 dBA at 800 feet and so forth.

Estimated noise levels are shown below for different sensitive receptors, and with applied mitigation measures:

Receptor	Estimated Exterior Noise Level (dBA)	Interior Noise Level w/ Mitigation (dBA)	LAPD Exterior Measured Nighttime Ambient
10840 Bluffside Drive	74	44	Not Available
3925 Riverton Drive	68.3	43.3	Not Available
Apartments S. of Ventura	63.5	38.5	69
Residences in "Island"	61.3	36.3	61
Universal Studios Tower	58	28 *	65

* Windows in this office building would be more effective at blocking noise than usual residential windows and should provide about 30 dBA attenuation.