in executive offices and conference rooms was investigated in this survey. The results indicate a common shortcoming in most of these locations; a sound-absorbing ceiling and hard, parallel walls. The effectiveness of directional microphones in improving the situation was subjectively tested in simulated environments. The results give an indication of the limits of acceptability of the acoustic environment. A weighting system for ranking the audio quality of a conference room is proposed, taking into consideration the above mentioned factors and results. [Work supported by Bell Canada.]

11:00

D8. Acoustical design of a major international airport. R. E. Nugent, C. M. Salter, and J. C. Freytag (Bechtel Corporation, P.O. Box 3965, San Francisco, CA 94119)

The application of noise-control engineering during the design of a new international airport for a future population center presents unique challenges. This airport will be constructed on a site 25 km long and 12 km wide and is 22 km from any populated area. The airport facilities include two international terminals, two domestic terminals, a large mosque, a control tower, a royal facility, and many support buildings. This paper discusses the organization and procedures used to provide noise-control engineering support to the engineering and architectural firms designing these various facilities. Included is the methodology used in determining the acoustical criteria, the sound isolation and speech privacy requirements for the various spaces. Sound isolation details and unit cost comparisons are presented.

11:15

D9. Recent experience with the California Insulation Standards. John K. Hilliard and Gordon L. Bricken (Bio-Acoustical Engineering Corp. Tustin, CA 92680)

The California Noise Insulation Standards have been in effect for about two years. This unique piece of legislation has for the first time placed minimum requirements for noise insulation within all building codes in the state. Many such modifications of the building code takes time to filter down to the local governments. Lacking the acoustical expertise, local governments have varying responses to the Noise Insulation Code and varying approaches to responsibility for imposing requirements. One result of the code has been stricter reviews of current practices in constructing party walls and floor-ceiling assemblies in the field. This has revealed many difficulties in current designs and most particularly in practices in the building industry for the installation of such assemblies. This paper will address the experience of Bio-Acoustical Engineering Corp. as a consultant to builders and local building officials on this issue in over 500 different separate reports in the last two years. Some recommendations on the implementation of the code will be included.

11:30

D10. Simplified method of party-wall testing. John K. Hilliard and Gordon L. Bricken (Bio-Acoustics Engineering Corp., Tustin, CA 92680)

The California Noise Insulation Standards has for the first time imposed STC testing on a broad segment of the building industry. Local officials and builders, as well as consultants, find it increasingly burdensome to implement standard STC (ASTM) field testing because of costs and delays. Inspectors are reluctant to require testing because of the costs and delays, yet there seems to be no easy alternative available. This paper discusses the results of over 100 tests conducted in the Southern California area of party walls with the object of considering whether a screening method for party-wall checks can be used as a viable alternative to the ASTM method in field inspections. The paper will propose a possible technique for adoption as a supplement to ASTM methods currently employed.

TUESDAY, 16 NOVEMBER 1976 GOLDEN WEST ROOM, 9:00 A.M.

Session E. Speech Communication I: Automatic Speech Understanding

June E. Shoup-Hummel, Chairperson

Speech Communications Research Laboratory, Inc., Santa Barbara, California 93109

Contributed Papers

9:00

E1. Review of the ARPA speech understanding project. Dennis H. Klatt (Room 36-523, Massachusetts Institute of Technology, Cambridge, MA 02139)

After five years of research and development, the final three speech understanding systems funded by the Advanced Research Projects Agency of the Department of Defense were demonstrated in early September of this year. As a member of the ARPA Steering Committee and as a consultant for one of the research groups, I will offer a summary of the capabilities that were demonstrated, and also speculate on the scientific knowledge gained during the course of the program. The opinions to be expressed are entirely the author's.

9:10

E2. The Harpy Speech Recognition System: performance with large vocabularies. B. Lowerre and R. Reddy (Department of Computer Science, Carnegie—Mellon University, Pittsburgh, PA 15213)

The Harpy System [B. Lowerre and R. Reddy, Harpy, a connected speech recognition system, J. Acoust. Soc. Am. **59**, S 97 (A) (1976)] has been extended to run with large vocabularies. The system was recently tested with a 1011-word vocabulary language permitting about 10^{12} possible sentences for an Information Retrieval task using a computerized data base. The system achieved 93.77% word recognition accuracy (89.8% sentence recognition accuracy) on 284 connected speech sen-