

Case Study of the Use of Partial Partitions at LIC Office, New Delhi

by P. S. Bhandari, R. K. Srivastava and L. B. Yadava

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Due to scarcity of office accommodation best utilisation of office spaces should be made. Consequently the open plan offices have become popular in metropolitan cities. Acoustical privacy is however necessary in these spaces which depends mainly on the importance function i. e. weighting of different audible frequencies rather than on the overall noise reduction at a particular point. A study had been conducted at Central Building Research Institute to find the noise reductions required and the methods of their achievement in the field.

Laboratory investigations¹ were carried out under controlled conditions in a test chamber, on (a) probable acoustical conditions in office buildings (b) the height of the partition (c) noise reduction of partition. The evaluation of the results of the above experiments was based on our earlier² conclusion that the optimum intruding speech articulation index is 0.16.

Field measurements³ were also made of the existing noise levels and the speech privacy requirements in large office halls under a programme of "noise survey" in a 12 storey building at New Delhi. An attempt was made to determine the level of background noise which would give the desired intruding speech articulation index of 0.16⁴. Therefore, a few absorbing type of partial partitions were designed, fabricated and used in an office building at New Delhi.

Design and Application of Partial Partition:

Fibreglass blanket sandwiched

between two layers of tapestry produce high degree of sound absorption as compared with perforated acoustical boards used in identical situations⁵. Because of high sound absorption and light weight structure, these screens were chosen for use in the field. In order to make them portable, the screens were made from two identical pieces. Each of fibreglass tapestry was 1.5 m long and 1.6 m high. Two such units were joined, edge to edge, and then mounted on two stands with a gap of 10 cm at the bottom as shown in photographs 1 and 2.

Three such screens were installed in each of the two halls, 14.7 m x 4.7 m x 3m and 12m x 9 m x 3m accommodating about 35 and 30 persons. The layout of the screens in the halls are shown in Fig. 1 and 2.

Measurements

(i) Objective Measurements:

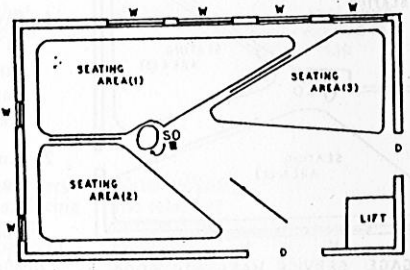
Before putting the partitions in the halls the reverberation time (empty) was measured and found to be 0.92 and 0.85 sec. When the partitions were introduced, reverberation time reduced to 0.75 sec. and 0.70 sec. The optimum Reverberation Time of these halls are 0.76 and 0.72 sec. respectively. The use of partial partitions reduced the intruding speech articulation index from 0.21 to the permissible level of 0.16.

(ii) Subjective Measurements:

A questionnaire was prepared for the staff seated in the two halls for assessing their subjective reaction to the use of these partitions. It also included questions asking for the subjective reaction on architectural aspects like colour of the

partitions, height of the partition, their function as display boards etc.

The results obtained in this case study have been shown in Table I. From the Table it is clear that most of the people have liked the installed partitions as it is evident from the answers of questions on height of the partition, colour of the partitions, transportability and stability of the screens etc. Answers to questions of the type whether the screens provided comfortable and quiet atmospheres of working in the office and whether their working efficiency had improved after putting these screens in their working space, show that most of the workers acknowledged a feeling of calm and comfort and also admitted an improvement in their working efficiency. However, most of the staff members suggested that the use of these screens would have been more effective if they were used in a still larger halls. As the floor area per person was found to be rather small, lack of space for movement was observed. Some people reported that although the space for movement was restricted the acoustical privacy on the seats had definitely improved.

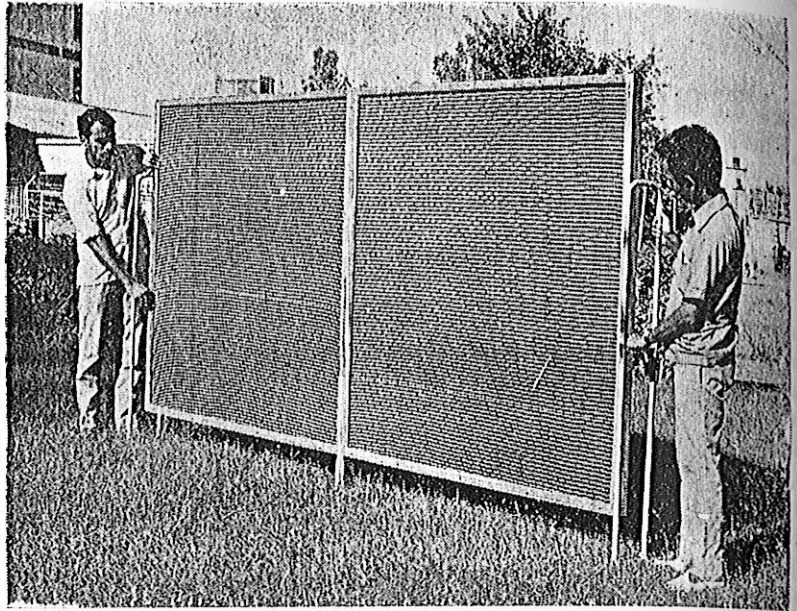


C S V HALL, LIC BLDG. A. ALI RD. DELHI
FIG-1

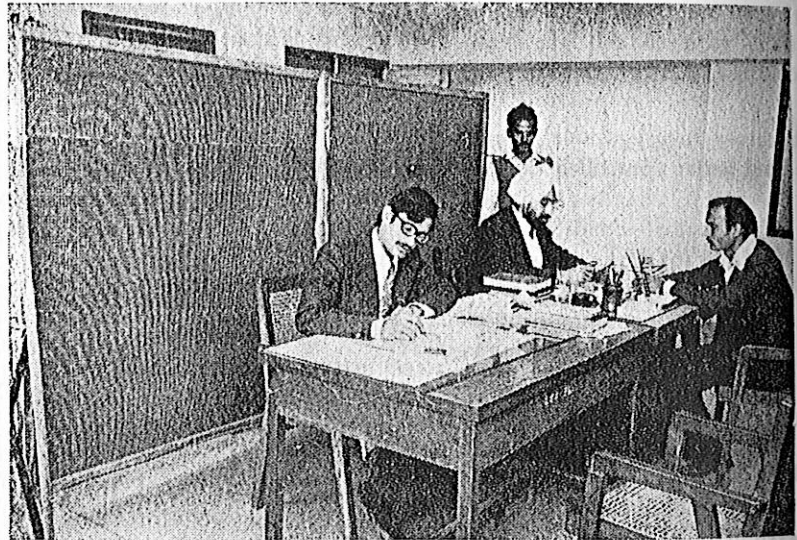
Table I

Percentage votes cast by the working staff in each hall for different questions of the questionnaire.

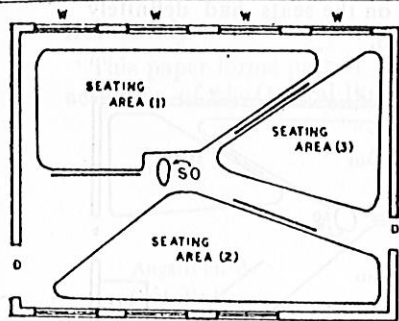
Question No.	% votes cast in Mortgage hall	CSU Hall
1. (i)	18	21
(ii)	70	31
(iii)	03	28
(iv)	10	11
(v)	00	04
2. (i)	25	03
(ii)	65	90
(iii)	10	07
3. (i)	20	60
(ii)	55	27
(iii)	00	03
(iv)	25	07
4. (i)	04	05
(ii)	65	60
(iii)	25	32
(iv)	00	03
(v)	04	—
5. (i)	25	15
(ii)	55	60
(iii)	10	22
(iv)	00	03
6. (i)	40	40
(ii)	60	60
7. (i)	04	10
(ii)	76	90
(iii)	10	—
8. (i)	00	03
(ii)	50	60
(iii)	46	37
9. (i)	05	30
(ii)	80	70
10. (i)	05	00
(ii)	25	15
(iii)	40	45
(iv)	20	40
(v)	05	00



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MORTGAGE SERVICE HALL, LIC BLDG.
A. ALI RD. DELHI
FIG-2

References

1. Investigation on the behaviour of partial partitions under controlled conditions - N. K. D. Choudhury, P. S. Bhandari; and R. K. Srivastava. Technical Report C. B. R. I.
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