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Sensory analysis — General guidance for the design of test rooms

Analyse sensorielle — Directives générales pour la conception de locaux destinés à l'analyse

Reference number
ISO 8589 : 1988 (E)

Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

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Sensory analysis — General guidance for the design of test rooms

1 Scope

This International Standard gives general guidance for the design of test rooms intended for the sensory analysis of food products.

It describes the requirements to set up a test room comprising a testing area, a preparation area and an office, specifying those that are essential or those that are merely desirable.

2 Principle

Design of test rooms used to conduct sensory evaluations under constant, controlled conditions with a minimum of distractions, to reduce the effects that psychological factors and physical conditions can have on human judgement.

3 Creation of test rooms

The creation of test rooms intended for sensory analysis differs depending on whether a new building or whether an existing facility is used.

A typical test room comprises

- a testing area in which work may be carried out individually in testing booths and in groups,
- a preparation area,
- an office,
- a cloak-room,
- a rest-room, and
- toilets.

The minimum requirements are

- a testing area in which work may be carried out individually in testing booths and in groups, and
- a preparation area.

The test room shall be easily accessible to the assessors and shall not be located in an area where there is heavy traffic flow, in order to avoid noise and distraction (for example, near a cafeteria).

See the examples given in figures 1 to 4.

4 Testing area

4.1 General requirements

4.1.1 Location

The testing area shall be located in the immediate vicinity of the preparation area. It is convenient if these two areas are adjacent, but they shall be separated.

The assessors shall not enter or leave the testing area through the preparation area as this could result in bias in the test results.

4.1.2 Temperature and relative humidity

The temperature and relative humidity in the testing area shall be constant, controllable and shall be perceived as comfortable by the assessors.

4.1.3 Noise

The noise level shall be kept to a minimum during the tests. Therefore, it is desirable for the room to be sound-proof.

4.1.4 Odours

The testing area shall be kept free from odours. This can be achieved by installing an air conditioner with activated carbon filters. If necessary, a slight positive pressure may be created in the testing area to reduce the inflow of air from other areas. The testing area shall be constructed from material which is easy to clean and is both odour free and impervious to odours. Furnishings and equipment such as carpets, chairs, etc. shall not emit odours.

It is also necessary to ensure that the cleaning agents used do not leave odours in the testing area.

4.1.5 Decoration

The colour of the walls and furnishings of the testing area shall be neutral so that the colour of samples is not modified. Matt off-white or light neutral grey are recommended colours.

4.1.6 Lighting

Lighting is very important in all sensory testing. It is especially important in the case of colour assessment. The ambient

lighting in the testing area shall be uniform, shadow free and controllable. In most cases, lights having a correlated colour temperature of 6 500 K are recommended. In consumer testing, lighting which most closely resembles lighting found in the home should be considered.

4.2 Testing booths

4.2.1 General requirements

In most cases, assessors are required to make independent personal judgements. To limit distractions and to avoid communication between the assessors, they are located in individual testing booths.

4.2.2 Number

The number of booths that can be installed depends on the space available and the tests usually carried out in the testing area. The minimum number of booths is three, but normally there will be between five and ten. This number shall be chosen to allow for sufficient space for movement and for the serving of samples from the serving area.

4.2.3 Set-up

Although permanent testing booths are recommended, the use of temporary, portable, testing booths may be necessary. (See figures 5 and 6.)

If the testing booths are constructed along a wall dividing the testing area from the preparation area, it is recommended that there be openings to allow samples to be passed from the preparation area to the testing booths (see figures 7 and 8). The openings should be flush with the countertop to allow the easy sliding of materials into and out of the booths. These openings shall be covered by sliding doors or hatches which close quietly (see figure 9). The openings shall be sufficiently wide for easy passage of samples, the size of the opening depending on the material being assessed. A counter on the serving area side of the wall is convenient.

It is recommended that a system be devised for the assessor to signal to the operator when he is ready for a sample. This is especially necessary when a wall separates the preparation area from the testing area. A switch to turn on a light on the preparation side, movement of the hatch itself, or a system in which a card is simply slipped under the serving door may be used.

The booths shall have a number or a sign to permit their identification and the location of the assessors.

In some situations, a panel chairman may wish to oversee the panel. If this is required, an arrangement such as that shown in figure 10 may be used.

4.2.4 Layout and size

The working area in each testing booth shall be sufficiently large to be able to accommodate easily

- the samples,
- the utensils,
- the expectoration cups or a sink,
- the rinsing agents, and
- the answer forms and pens,

and shall provide adequate space to enable the completion of the answer forms or to accommodate computerized equipment for the transmission of the responses.

It is recommended that the working area be 0,9 m wide and 0,6 m deep. The working surface of the testing booths shall be of an appropriate height to allow sample evaluation to be carried out in comfort.

The lateral dividers between the testing booths should extend beyond the counter surface, so as to screen partially the assessors. An extension of 0,3 m beyond the counter is recommended.

If the assessors are to be seated, comfortable seats of a height compatible with the working surface shall be provided. A distance of 0,35 m between the seat and the working surface is recommended. If the seats are not fixed in place, it shall be possible to move them quietly.

The testing booths may be equipped with sinks. In this case, the quality and temperature of the water shall be controlled and there shall be provision for sanitation and odour control. Suction-type sinks ensure waste disposal but they are somewhat noisy.

See the dimensional layout of a testing booth given in figure 11.

4.2.5 Lighting

The lighting in or above the testing booths shall be uniform, shadow free, controllable and of sufficient intensity to permit effective evaluation of the appearance characteristics of the samples. Lights having a correlated colour temperature of 6 500 K are recommended. In order to mask differences in colour and other appearance characteristics, special lighting devices may be provided. These may be

- a dimmer device,
- coloured light sources,
- coloured filters, or
- monochromatic light sources such as sodium vapour lamps.

Red and green are the colours most commonly used to mask colour differences. In consumer testing, lighting which most closely resembles lighting found in the home should be considered.

4.3 Area for group work

4.3.1 General requirements

An area for group work shall be provided to allow discussion among the assessors and the operator. This area would be used during the initial training sessions and at any time when discussion among the assessors is required.

The area shall be large enough to contain a table that can accommodate comfortable chairs for five to ten assessors. (See figures 1, 2, 3, 4 and 6.)

The table shall be large enough to hold a tray for each assessor and extra materials such as reference samples. A movable centre in the table is helpful for passing samples. The table may also be equipped with removable panels which separate the assessors for individual work. (See figures 5 and 6.)

It is recommended that a chalkboard or flip-chart be available for recording discussion points.

4.3.2 Lighting

See 4.1.6 if the area intended for group work is located inside the testing area. If it is located in a separate room, the ambient lighting shall be uniform, shadow free, controllable and of sufficient intensity to permit effective evaluation of the appearance characteristics of samples. Lights having a correlated colour temperature of 6 500 K are recommended. In order to mask differences in colour and other appearance characteristics, special lighting devices identical to those described in 4.2.5 may be provided.

5 Preparation area

5.1 General requirements

A laboratory (or kitchen) for the preparation of samples shall be located in the immediate vicinity of the testing area.

Its location shall be such that the assessors do not have to pass through the preparation area to gain access to the testing area.

Efficient work-flow arrangements in and between these functional areas are essential.

The area shall be well ventilated so that food preparation odours and foreign odours are removed.

The materials selected for the floors, walls, ceilings and furnishings shall be easy to maintain and be both odour free and impervious to odours.

It is necessary to provide for a certain amount of flexibility in the plumbing and gas and electricity services during the construction of this area to allow for future changes in the location of equipment.

5.2 Equipment

The type of equipment required in the preparation area depends on the range of products which will be processed there.

The principal elements are

- a working surface,
- a sink,
- equipment necessary for the preparation and presentation of samples (containers, dishes, balance, etc.),
- electrical kitchen equipment necessary for cooking, control of the cooking and the conservation of samples (e.g. cooker, oven, stove, thermostat, refrigerator, freezer), and for cleaning (dishwasher, waste disposal equipment), and
- storage facilities.

Additional equipment may also be necessary.

Containers for sample preparation shall be manufactured from inert materials. Utensils and cutlery used in sample preparation shall be manufactured from materials which will not impart any odour or taste to the product.

Containers for sample storage shall be made of materials which prevent adulteration and/or contamination of samples during storage.

6 Office

6.1 General requirements

The office is a working area where paperwork involved with sensory analysis is carried out. It is essential that the office be separate from but adjacent to the testing area.

6.2 Size

Adequate space is required for planning tests, devising answer forms, sorting and decoding answer forms, statistical analysis of data, writing reports, and, if necessary, for meeting with clients to discuss tests and results.

6.3 Fittings

It is recommended that the office contain the following equipment: desk or work table, filing cabinet, bookshelf, chairs, telephone, calculator and computer facilities to carry out statistical analysis of data. The computer shall be equipped with a screen and printer.

Typing and photocopying services shall be available but they do not need to be in this office.

7 Additional areas

When possible, and particularly in the case where test rooms for sensory analysis are being constructed, it is useful to provide a rest-room, a cloak-room and toilets near the testing area.

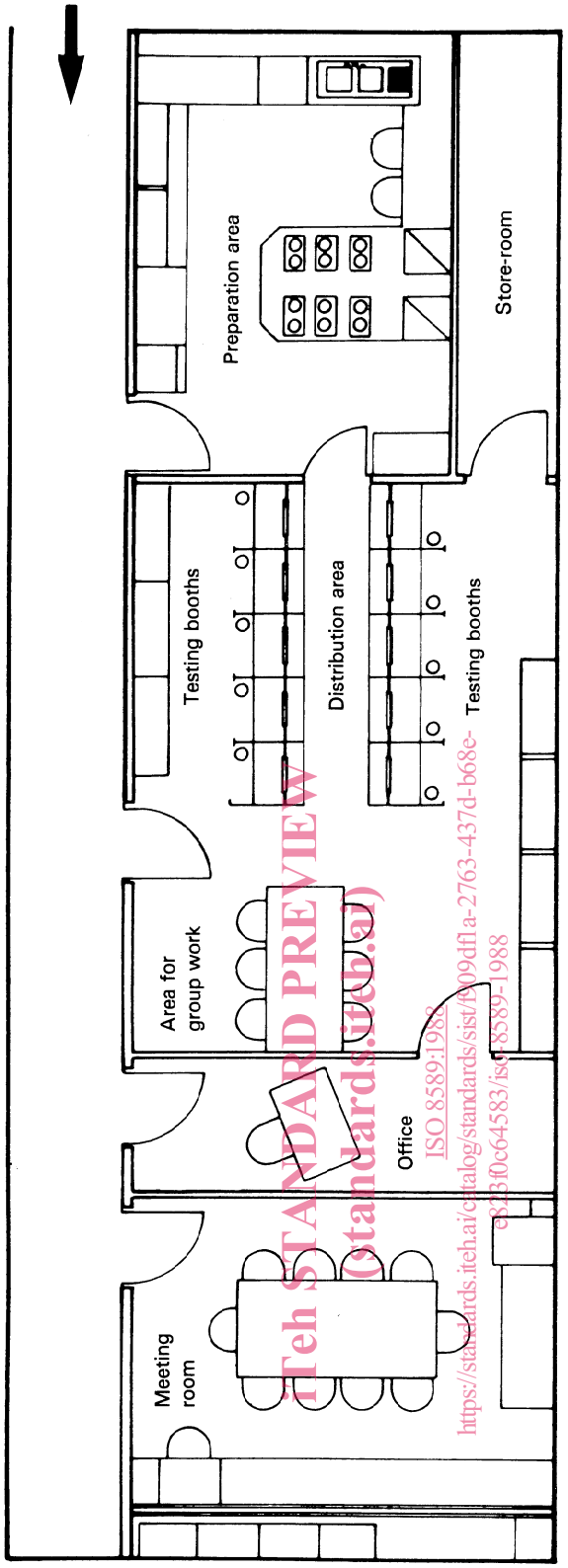

Figure 1 — Example of a floor plan for a test room

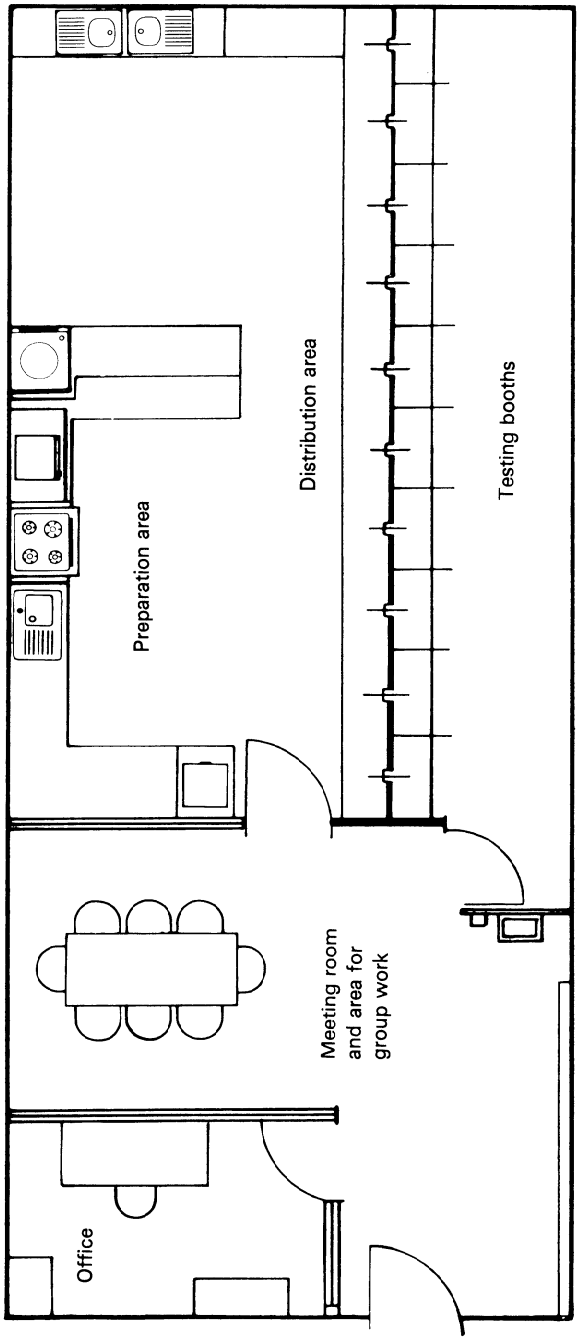

Figure 2 — Example of a floor plan for a test room

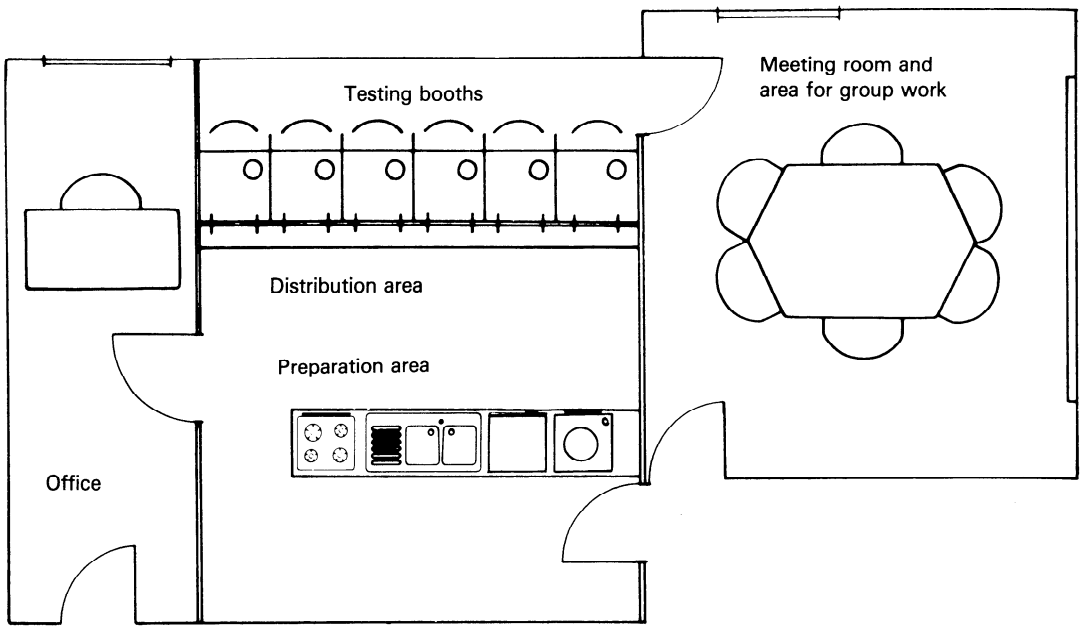

Figure 3 — Example of a floor plan for a test room

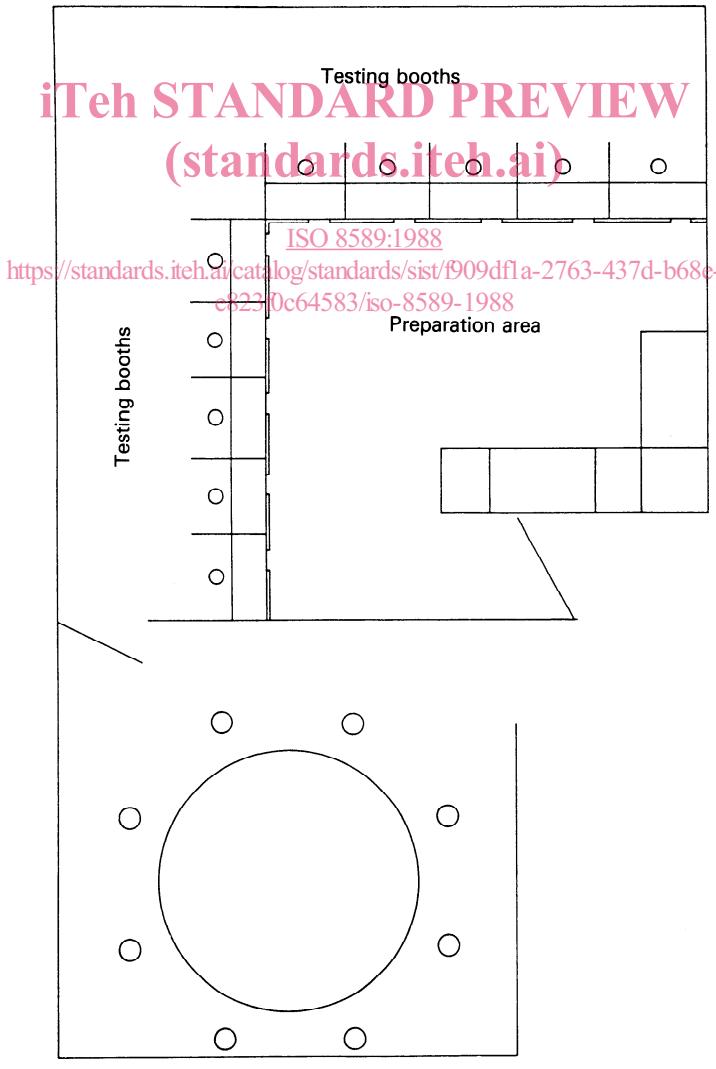

Figure 4 — Example of a floor plan for a test room

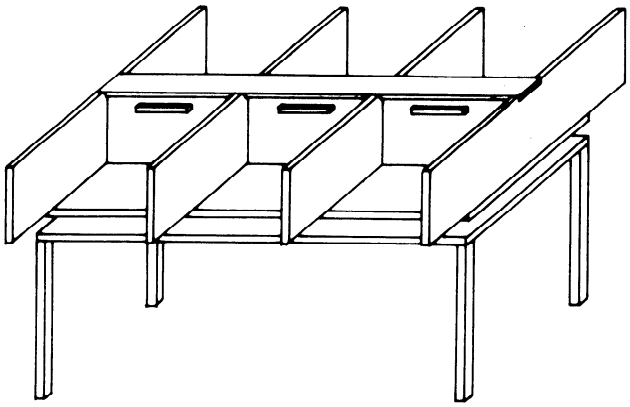

Figure 5 — Table equipped with removable dividers

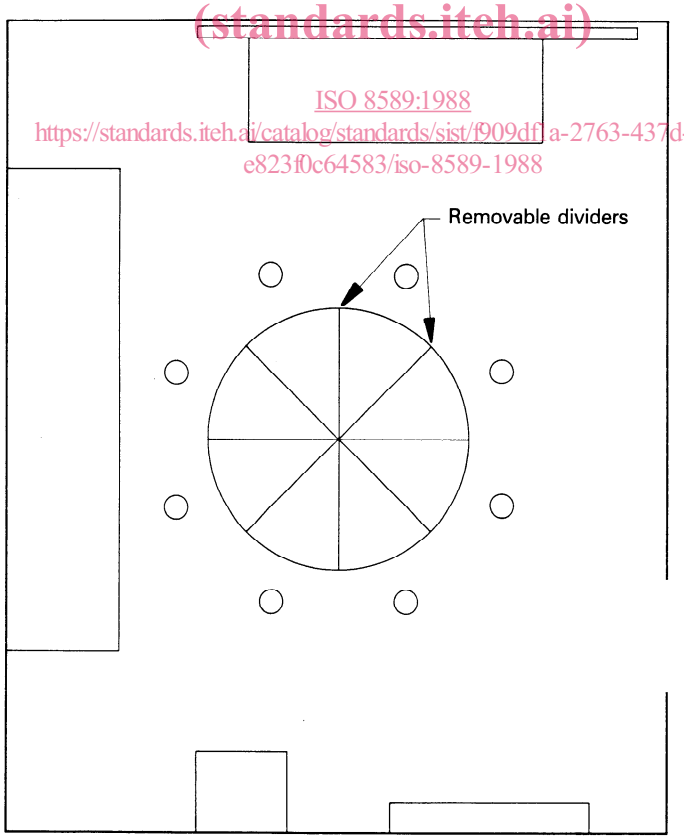

Figure 6 — Example of a floor plan for a testing area for working in testing booths or in groups

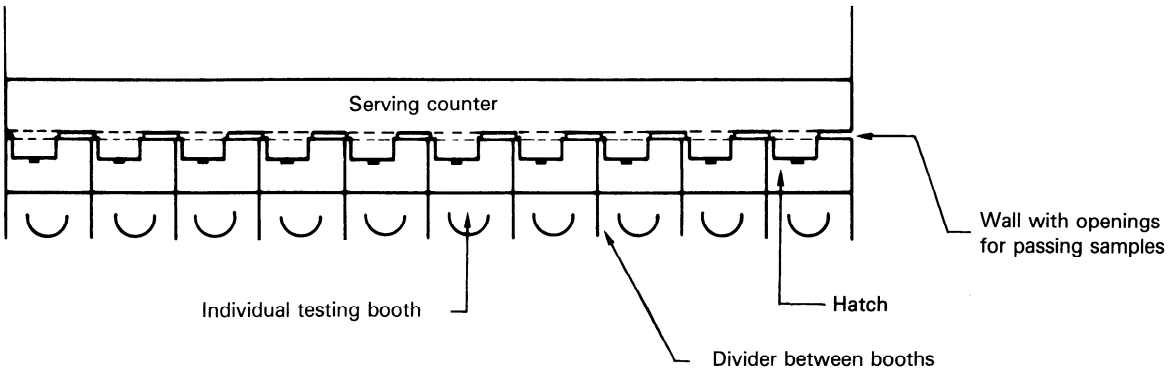

Figure 7 — Plan for testing booths and serving counter separated by a wall

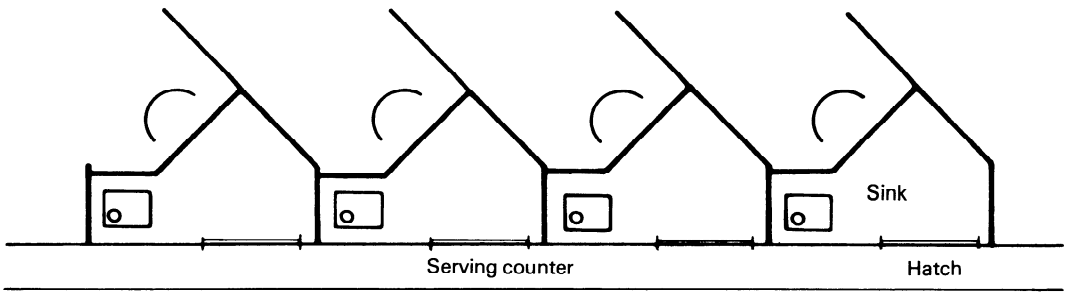

Figure 8 — Herring-bone layout of testing booths