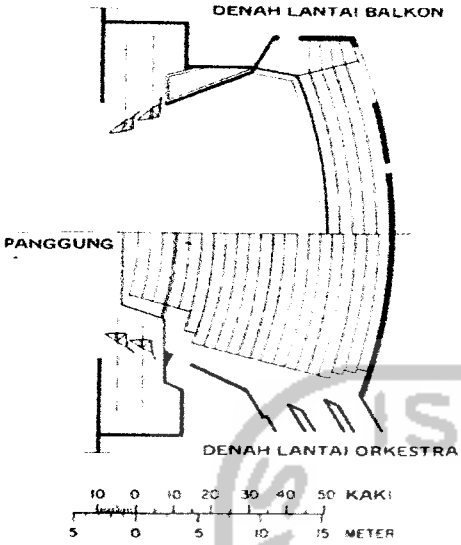
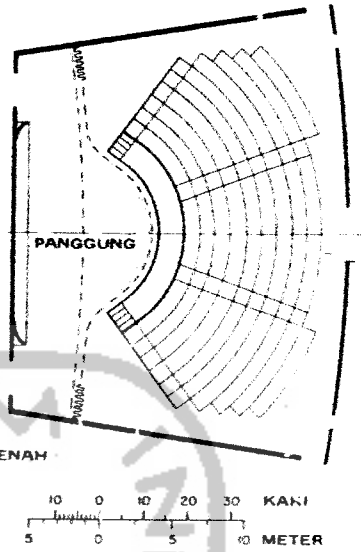
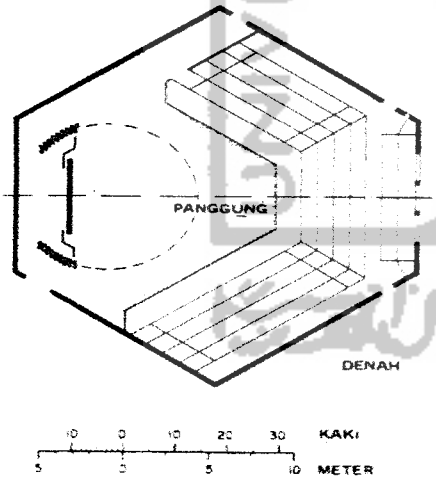


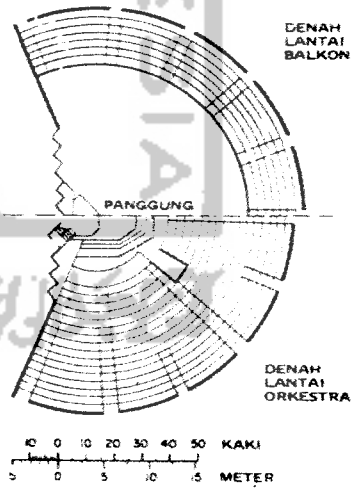
THEATRE MAISONNEUVE, MONTREAL (1967)
KAPASITAS: 1,300
DAVID BAROTT BOULVA, ARSITEK



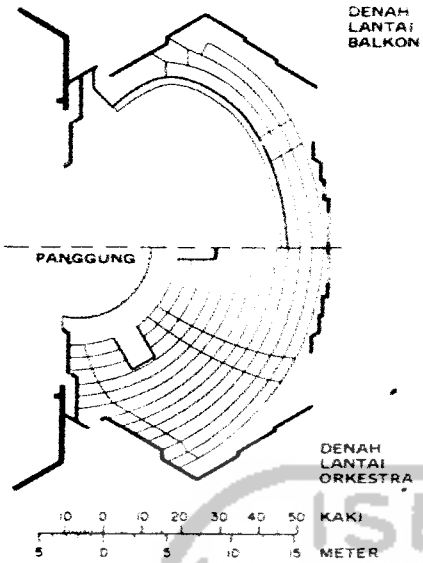
ROBERTS THEATER, GRINNEL, IOWA (1961)
KAPASITAS: 488
SKIDMORE OWINGS MERRILL, ARSITEK



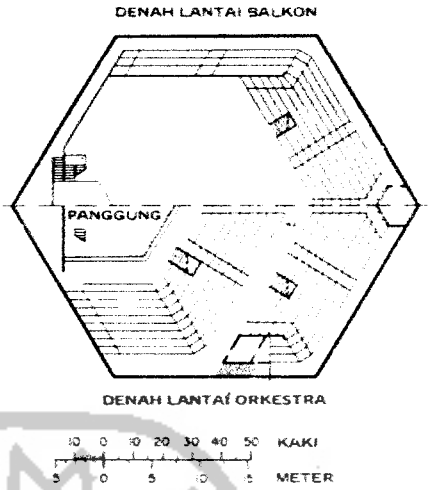
THEATER, OLATHE, KAN. (1964)
KAPASITAS: 265
J. SHAVER, ARSITEK



FESTIVAL THEATER, STRATFORD, ONT (1957)
KAPASITAS 2,258
ROUNTHWAITE FAIRFIELD, ARSITEK



THEATER, NATIONAL ARTS CENTER, OTTAWA (1969)
KAPASITAS: 800
AFFLECK DESBARATS DIMAKOPOULOS LEBENSOLD SISE, ARSITEK



FESTIVAL THEATER, CHICHESTER, ENGLAND (1962)
KAPASITAS: 1.360
POWELL MOYA STEVENS, ARSITEK

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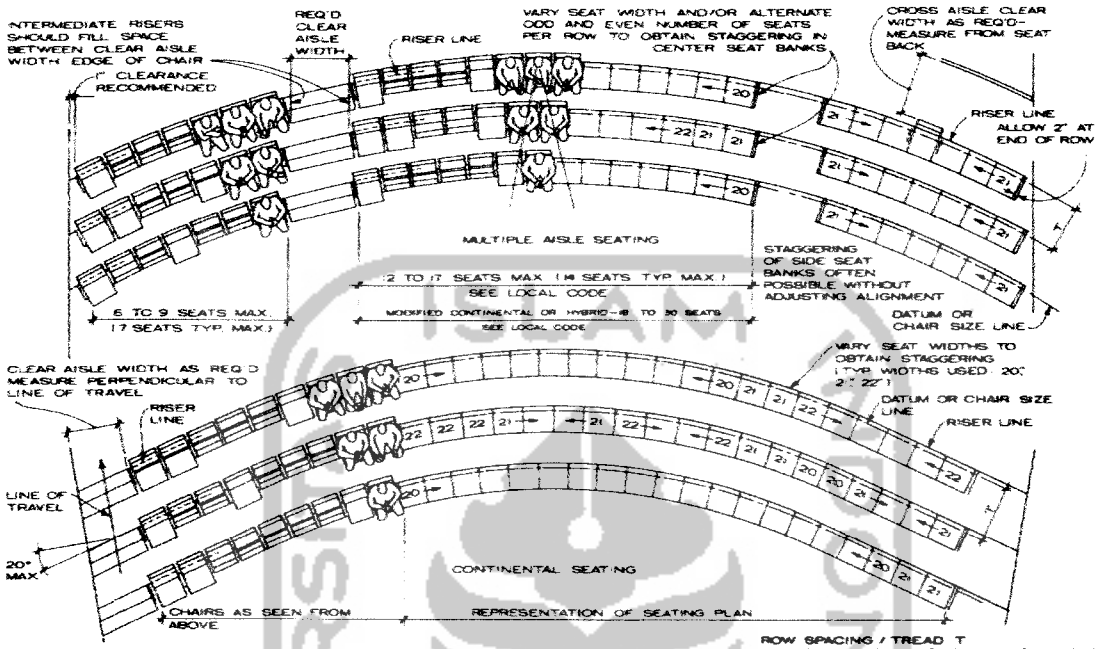
2. Bentuk susunan standart tempat duduk



CHAIR STANDARDS: Cast iron, steel, riser mounted and floor mounted. Also pedestal mounting using continuous beam support or cantilevered standards. Folding tablet arms usually available.

CHAIR ARMS: Upholstered fabric, wood, plastic, metal.

CHAIR BACKS: Plastic, molded plywood, rolled stamped metal, upholstered front, rear. Higher backs and bottom extension for scuff protection also available

CHAIR SEATS: Upholstered, plywood, plastic, metal pan, coil or serpentine springs, polyurethane foam.

ROW SPACING / TREAD T

LEGAL CRITERIA. See local code for required minimum spacing. Codes typically stipulate a minimum clear plumbline distance measured between the occupied chair and the rear of the back of the chair front.

- 32"-33": typical minimum for multiple aisle seating
- 34"-37": typical minimum for modified continental seating
- 38"-42": typical minimum for continental seating

COMFORT FOR THE SEATED PERSON:

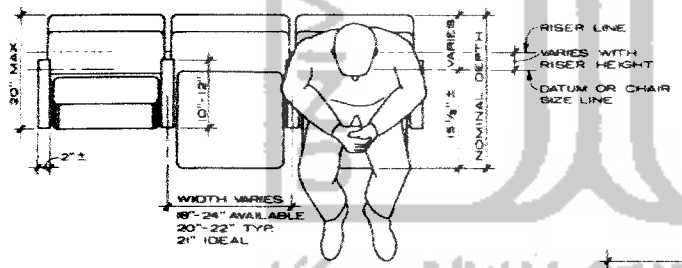
- 32": knees will touch chair back; uncomfortable
- 34": minimum spacing for comfort
- 36": ideal spacing for maximum comfort
- 38" and up: audience cohesiveness may suffer

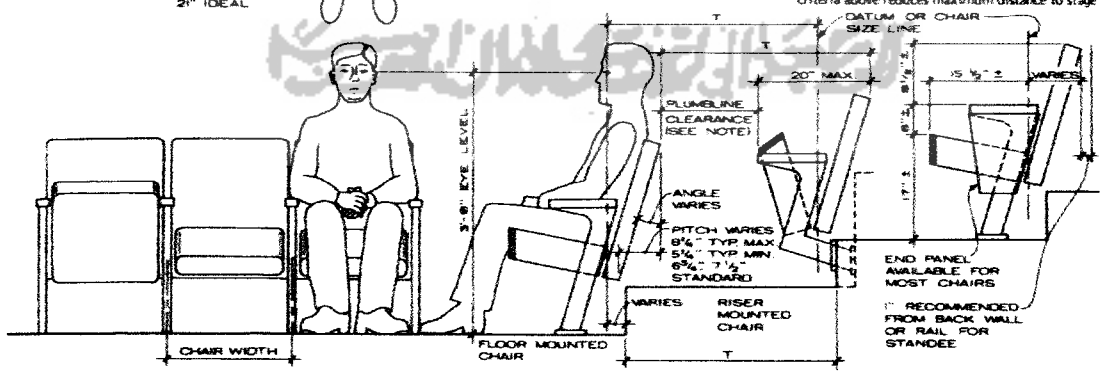
EASE OF PASSAGE IN FRONT OF SEATED PERSONS:

- 32"-34": seated person must rise to allow passage
- 36"-38": some seated persons will rise
- 40" and up: passage in front of seated persons possible

SAFETY: Excessive plumbline distance may encourage exiting persons to squeeze ahead and cause jam

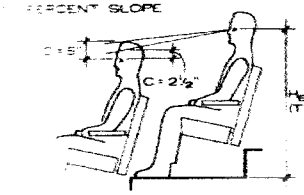
EFFICIENCY: Choice of minimum spacing satisfying criteria above reduces maximum distance to stage

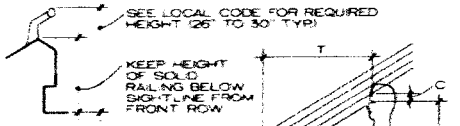




Peter H. Frink, Frink and Beuchat Architects, Philadelphia, Pennsylvania

ARRIVAL POINT OF SIGHT (FOCAL POINT OR INTERSECTION OF HIGHEST SIGHTLINE WITH FOCAL PLANE)
NUMBER OF ROWS IN SEAT BANK
NUMBER FOR WHICH COMPUTATIONS ARE BEING MADE
HORIZONTAL DISTANCE FROM APS TO FIRST ROW EYE POSITION
HORIZONTAL DISTANCE FROM APS TO EYE POSITION AT ROW n
HORIZONTAL DISTANCE FROM APS TO EYE POSITION AT FRONT ROW OF BALCONY
HORIZONTAL DISTANCE FROM FIRST ROW EYE POSITION TO A VERTICAL FOCAL PLANE
ELEVATION OF EYE LEVEL AT FIRST ROW ABOVE APS
ELEVATION OF EYE LEVEL AT ROW n ABOVE APS
ELEVATION OF EYE LEVEL AT FRONT ROW OF BALCONY ABOVE APS
EYE HEIGHT OF SEATED PERSON (44 IN. TYPICAL)
HEIGHT OF APS ABOVE FIRST ROW FLOOR LEVEL
SIGHTLINE HEAD CLEARANCE, 2½" TO SEE OVER 2 ROWS IN FRONT, 5" TO SEE OVER 1 IN FRONT
ROW TO ROW SPACING (TREAD)
RISER HEIGHT BETWEEN ROWS
RISER HEIGHT AT FRONT OF ROW n
PERCENT SLOPE





BALCONY RAILING

BALCONY – CONSTANT RISE PER ROW

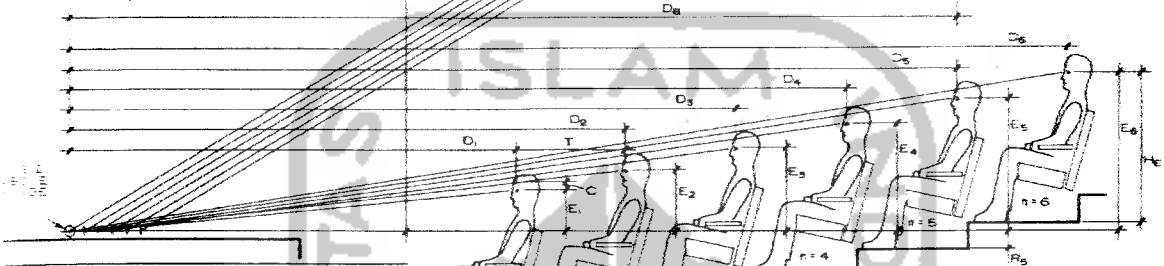
$$R = \frac{T}{D_B}\left[E_B + (N-1)C\right] + C$$

$$D_B = \frac{T}{R-C}\left[E_B + (N-1)C\right]$$

$$E_B = \frac{D_B}{T}(R-C) - C(N-1)$$

NOTE: BALCONY MAY ALSO BE DESIGNED WITH AN ISCIDOMAL SLOPE

30° MAX.

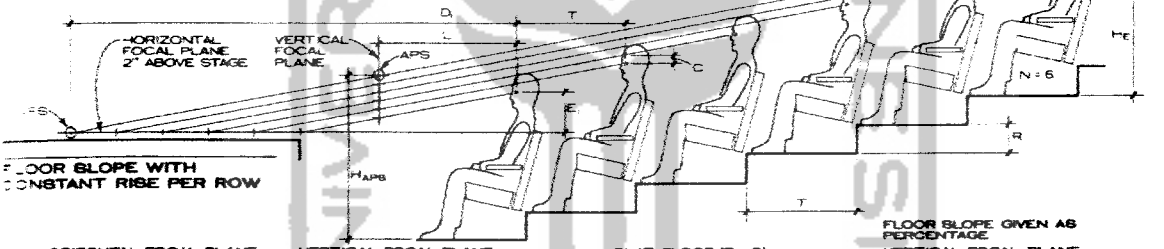


ISCIDOMAL (EQUAL SEEING) FLOOR SLOPE

$$E_n = D_n\left[\frac{E_1}{D_1} + C\left(\frac{1}{D_1} + \frac{1}{D_2} + \frac{1}{D_3} + \cdots + \frac{1}{D_{n-1}}\right)\right]$$

$$R_n = E_n - E_{n-1}$$

MAXIMUM STAGE HEIGHT FOR LIVE PERFORMANCE = 42" (E_1 = 0)



FLOOR SLOPE WITH CONSTANT RISE PER ROW

HORIZONTAL FOCAL PLANE

$$R = \frac{T}{D_1}\left[E_1 + (N-1)C\right] + C$$

$$D_1 = \frac{T}{R-C}\left[E_1 + (N-1)C\right]$$

$$E_1 = \frac{D_1}{T}(R-C) - C(N-1)$$

VERTICAL FOCAL PLANE

$$R = \frac{T}{L}\left[H_E - H_{APS} + (N-1)C\right] + C$$

$$L = \frac{T}{R-C}\left[H_E - H_{APS} + (N-1)C\right]$$

$$H_{APS} = H_E - \frac{L}{T}(R-C) + (N-1)C$$

FLAT FLOOR (R = 0)

VERTICAL FOCAL PLANE

$$L = \frac{T}{C}\left[H_{APS} - H_E - (N-1)C\right]$$

$$H_{APS} = H_E + \frac{LC}{T} + (N-1)C$$

FLOOR SLOPE GIVEN AS PERCENTAGE

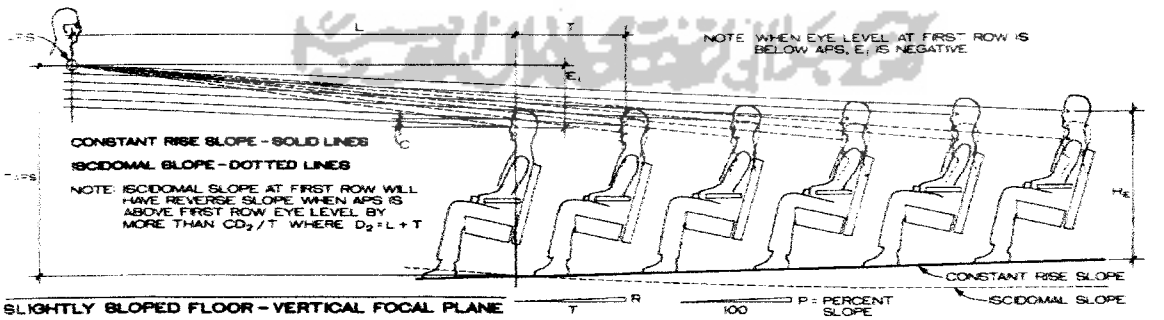
VERTICAL FOCAL PLANE

$$R = \frac{100}{L}\left[H_E - H_{APS} + (N-1)C\right] + \frac{100C}{T}$$

$$L = \frac{100T}{PT - 100C}\left[H_E - H_{APS} + (N-1)C\right]$$

$$H_{APS} = H_E - \frac{PL}{100} + \frac{LC}{T} + (N-1)C$$

NOTE: WHEN EYE LEVEL AT FIRST ROW IS BELOW APS, E_1 IS NEGATIVE.



CONSTANT RISE SLOPE – SOLID LINES

ISCIDOMAL SLOPE – DOTTED LINES

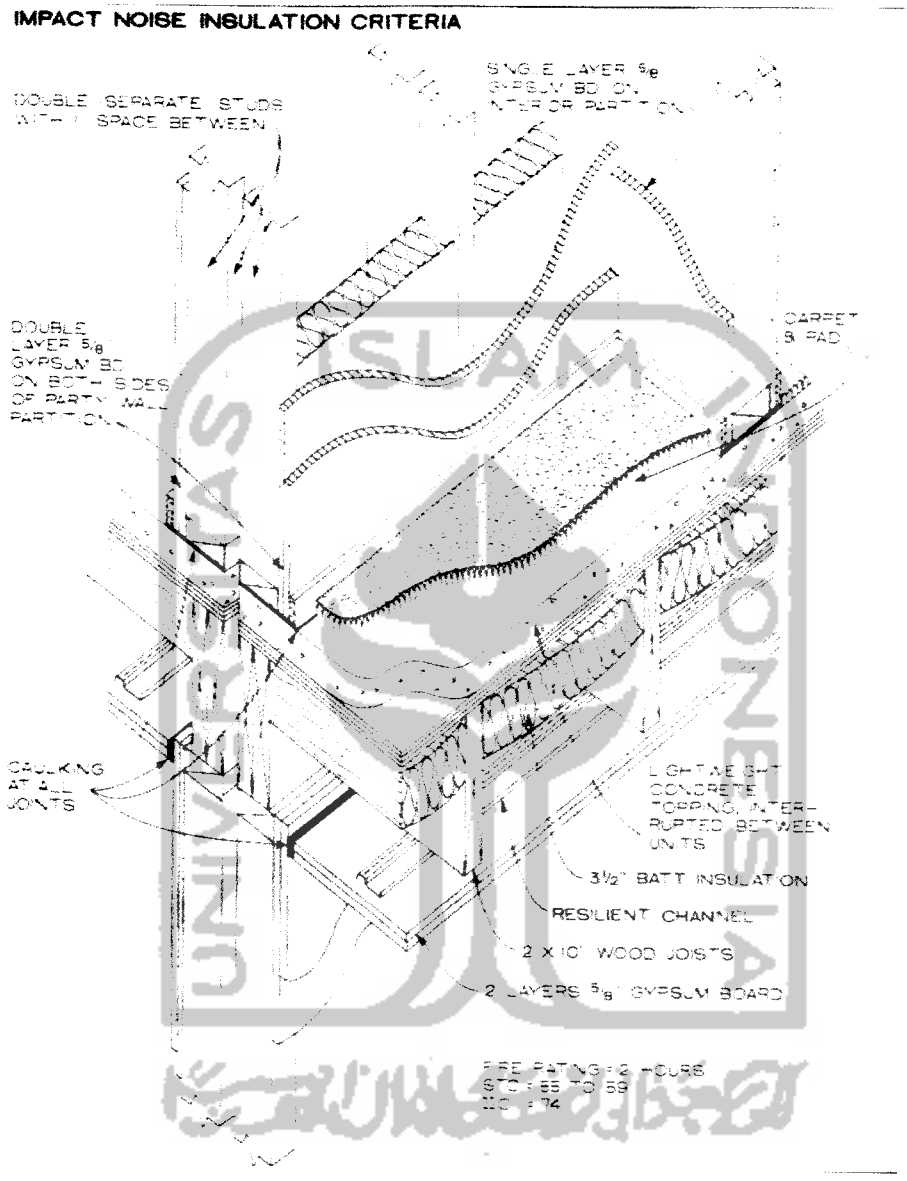
NOTE: ISCIDOMAL SLOPE AT FIRST ROW WILL HAVE REVERSE SLOPE WHEN APS IS ABOVE FIRST ROW EYE LEVEL BY MORE THAN CD_2/T WHERE $D_2 = L + T$

SLIGHTLY SLOPED FLOOR – VERTICAL FOCAL PLANE

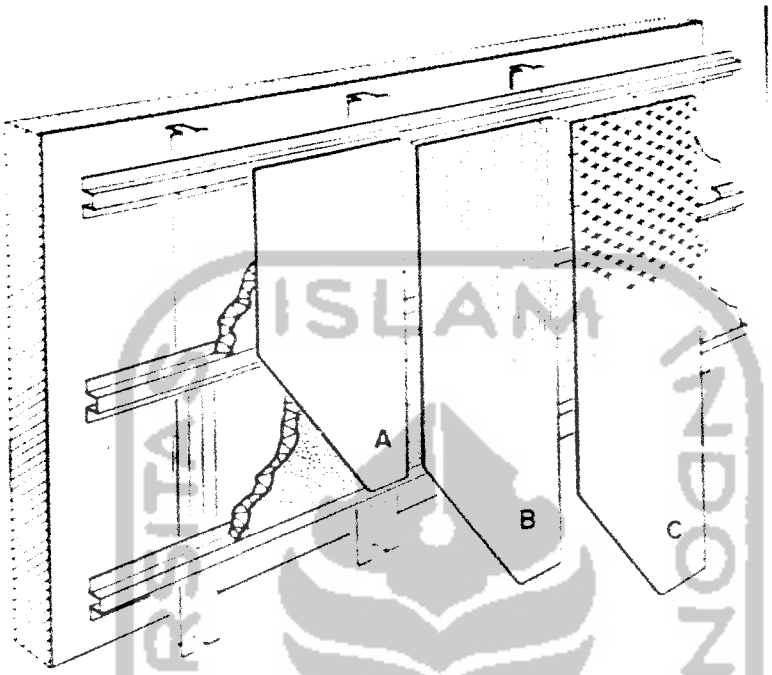
$\frac{R}{T}$ $\frac{P}{100}$ P = PERCENT SLOPE

Peter H. Frink; Frink and Beuchat; Architects; Philadelphia, Pennsylvania

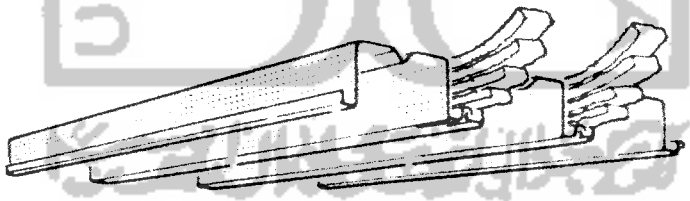
3. Bentuk-bentuk isolasi suara



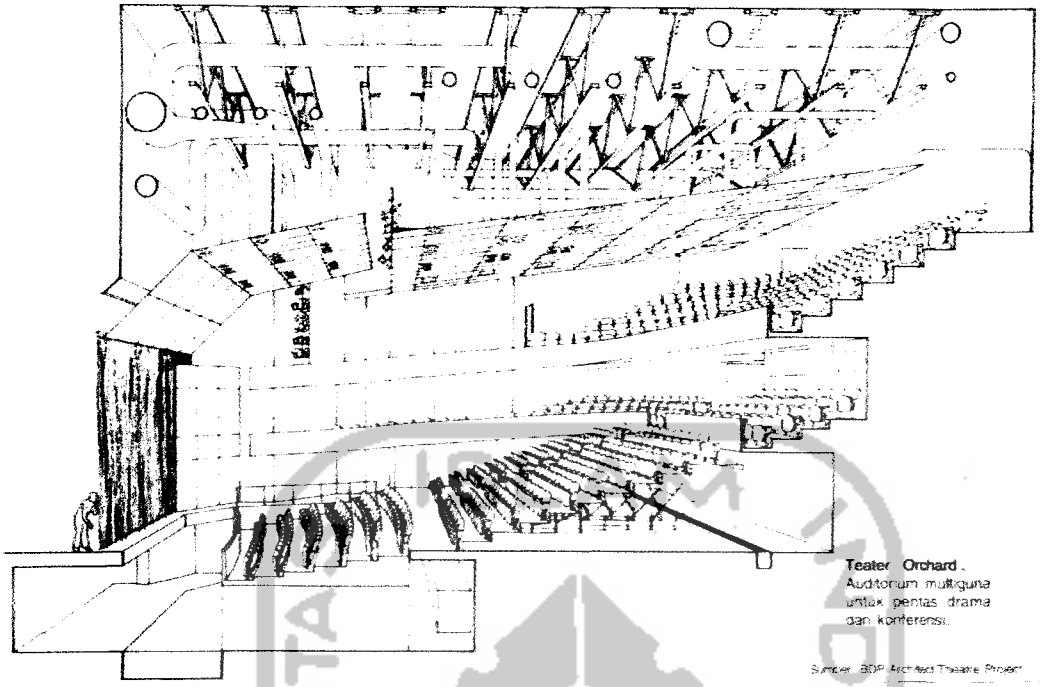
5. 4. bentuk-bentuk peredam suara



Gambar 5.13 Pemasangan resonator panel berlubang tertentu yang menggunakan bermacam-macam bentuk lubang dan dengan selimut isolasi dalam rongga udara: (A) papan berlubang; (B) hardboard bercelah di iris-iris; (C) logam atau plastik berlubang.



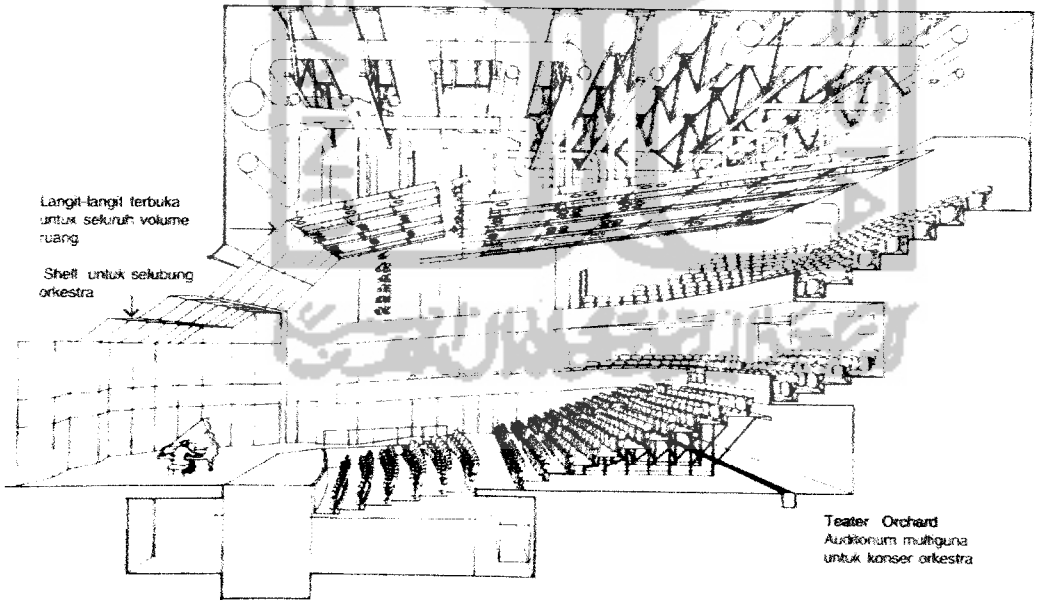
Gambar 5.15 Bungkus baja akustik, dapat diperoleh dengan ukuran berbeda-beda, dengan rapat massa selimut serat gelas 1,1 lb per ft kubik (18 kg per meter kubik) dalam jaringan bingkai berlubang, membuat resonator panel berlubang yang efisien. Mereka menyediakan penyerapan yang cukup merata pada jangkauan frekuensi standar.



Teater Orchard.
Auditorium multiguna untuk pentas drama dan konferensi.

Sumber: BDP Architect Theatre Project

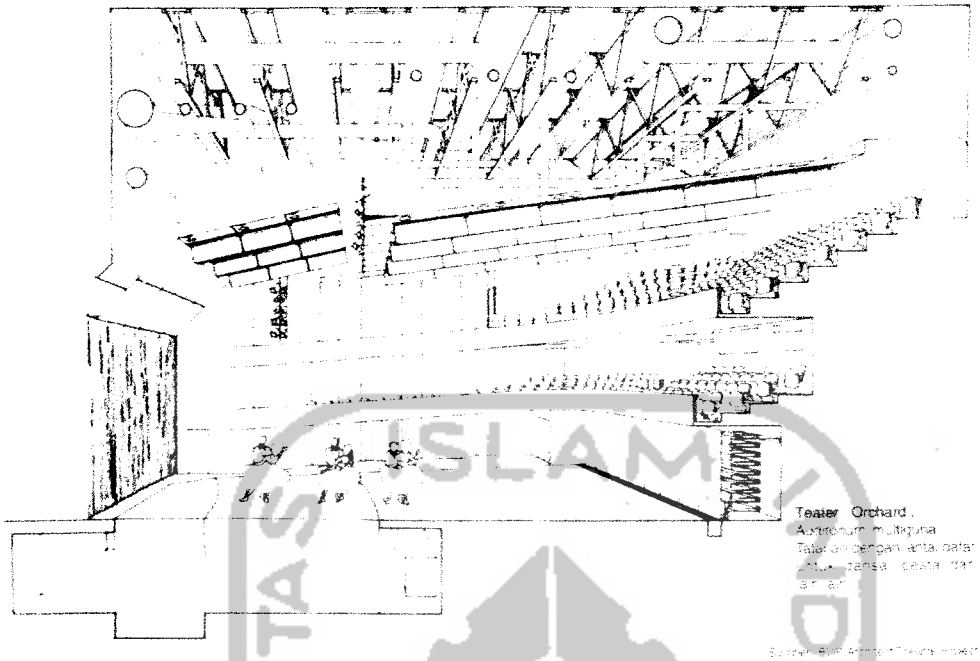
Langit-langit yang dapat disesuaikan dengan kebutuhan



Teater Orchard
Auditorium multiguna untuk konser orkestra

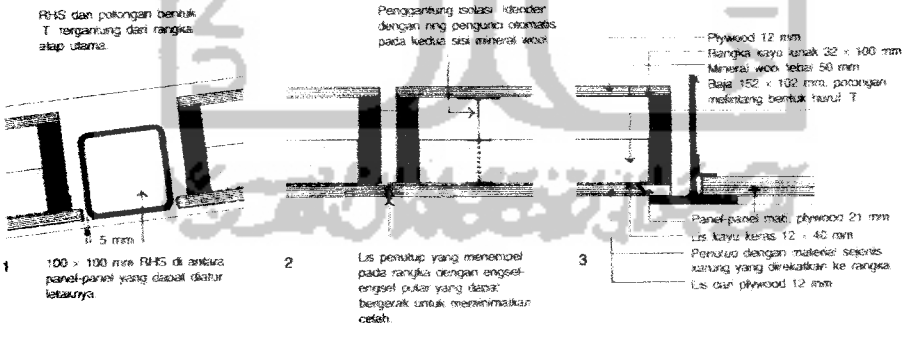
Sumber: BDP Architect Theatre Project

Langit-langit yang dapat disesuaikan dengan kebutuhan



Teater Orchard.
Auditorium multiguna
Tata letak dengan lantai datar untuk dansa, dan pameran

Langit-langit yang dapat disesuaikan dengan kebutuhan



Piranti untuk menyesuaikan tata letak dan akustik lantai datar untuk dansa, dan pameran.

Teater Orchard
Auditorium multiguna, detail potongan langit-langitnya.

Sumber: BDP Architect/Design Project

Langit-langit yang dapat disesuaikan dengan kebutuhan

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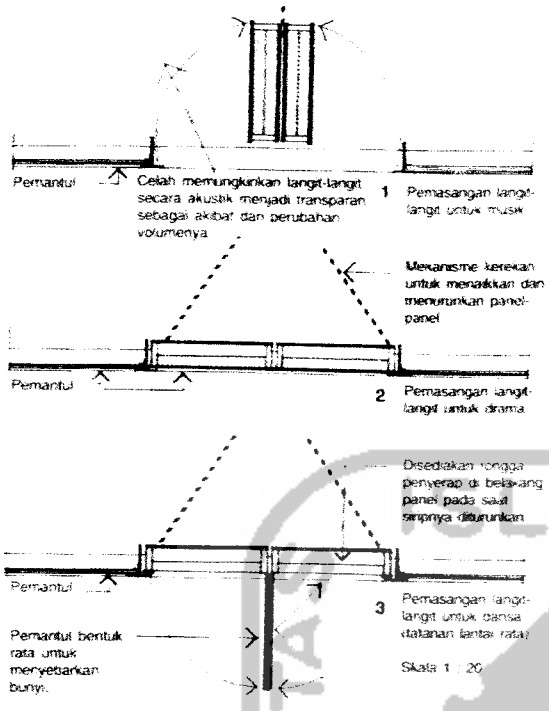

Waktu pantulan (RT) yang direncanakan pada studi-studi model adalah 1.50 detik untuk frekuensi tengah musik, 1.30 detik untuk lantai datar dan 1.00 detik untuk drama.

Refleksi awal yang berada di atas ketinggian manusia (di bawah 50 m) bermanfaat untuk memperkuat kerasnya suara dan kejelasan percakapan. Membran penyerap frekuensi rendah dipasang di salah satu tempat untuk mencegah getaran yang menutupi suara percakapan yang berfrekuensi tinggi.

Penyerapan dan penyebaran mengurangi kemungkinan memindah-mindahkan tempat duduk di bawahnya.

Teater Orchard
Auditorium multiguna, langit-langitnya dapat diubah-ubah.

Sumber: BDP Architect Theatre Project

Langit-langit yang dapat disesuaikan dengan kebutuhan

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