ON THE APPROXIMATE ANALYSIS OF HYPERBOLIC PARABOLOID SHELL ROOFS

BY THE METHOD OF WEIGHTED RESIDUALS

(VOLUME II)

by

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SECTION 4

Doubly curved shell simply supported along the generating parabolas.
APPENDIX E
DESIGN TABLES

E.1 Types of Shells Covered
Design tables are presented here in four sections for the following cases.

Section 1. Rectangular hyperbolic paraboloid
   Clamped along the characteristics lines.

Section 2. Rectangular hyperbolic paraboloid simply supported along the characteristic lines.

Section 3. Doubly curved shell clamped along the generating parabolas.

Section 4. Doubly curved shell simply supported along the generating parabolas.

E.2 Non-dimensional Parameters
The tables are based on the non-dimensional parameters.

Poisson ratio = \( \mu \)
Span ratio = \( \frac{b}{a} \)
Shallowness ratio = \( \frac{h}{R} \frac{L^2}{I} \)
and Curvature ratio = \( \frac{k_{11}}{k_{22}} \)

where
\( b \) = half of the span in \( y \)-direction
\( a \) = half of the span in \( x \)-direction
\( h \) = Thickness of the shell
\( R \) = \( \frac{1}{k_{12}} = \frac{1}{k_{xy}} \) (if \( k_{22} = 0 \))
\( = \frac{1}{k_{22}} = \frac{1}{k_{yy}} \) (if \( k_{12} = 0 \))