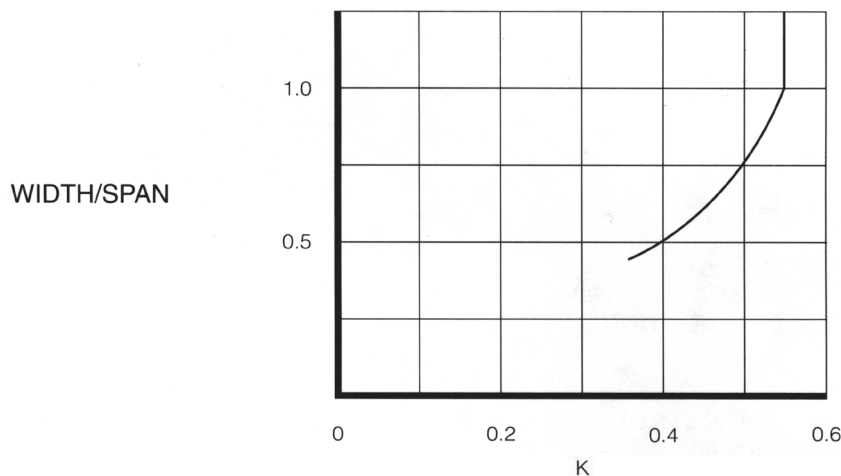


WIDTH TO SPAN RATIO EFFECT ON LOAD DISTRIBUTION

In the study of distribution of non-uniform loads*, it was found that the midspan distribution width was a function of the width to span ratio. In most situations, this ratio will be much greater than 1.0.

However, for the special cases where this ratio is less than 1.0, the basic distribution widths* must be expressed as KL , where K is determined from the figure below.

For edge loads, the factor K must be halved. Where central openings are present, a net width should be used for determining the width to span ratio.



*For further information, refer to the Research Notes entitled “LOAD DISTRIBUTION”.

A design example is given on the reverse side.

WIDTH TO SPAN RATIO EFFECT ON LOAD DISTRIBUTION

GIVEN:

8" Spancrete® hollowcore floor shown
 Superimposed live load = 40 psf
 Superimposed dead load = 10 psf Plank dead load = 64 psf

PROBLEM:

Determine the equivalent effective design loadings to enable the floor slabs within the allowable distribution widths to carry the loads shown.

SOLUTION:

$$\text{Width/Span} = \frac{16.67}{28} = 0.6$$

From chart, $K = 0.44$

Figure separately the distribution for the concentrated load, the wall load, and the uniform loads.

For flexural design:

$$P_u = \frac{1.2 (2800) + 1.6 (4400)}{0.44 \times 28} = 844 \text{ plf}$$

$$W_u = \frac{1.2 (700) + 1.6 (1100)}{0.44 \times 28} = 211 \text{ psf}$$

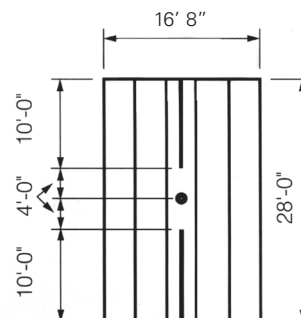
$$W_u = 1.2 (64 + 10) + 1.6 (40) = 153 \text{ psf}$$

For shear design:

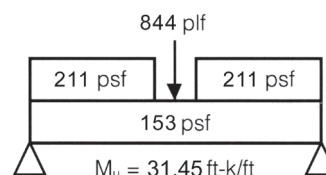
Width to span ratio does not affect design for shear.

See RESEARCH NOTE "LOAD DISTRIBUTION."

Note: Sample calculations are intended to illustrate the concept presented and do not represent all considerations necessary for the complete design. This research was done using 40" wide, 8" thick Standard Spancrete. However, this concept applies to all Spancrete cross sections.



WALL LOAD = 700 plf DL
 WALL LOAD = 1100 plf LL
 CONCENTRATED LOAD = 2800lb. DL
 CONCENTRATED LOAD = 4400lb. LL



FACTORED LOADS FOR FLEXURE

(Working stress conditions will also have to be checked.)

MIDWEST

Hanson Structural
 Precast Midwest, Inc.
 Maple Grove, Minnesota

Spancrete, Inc.
 Green Bay, Wisconsin

Spancrete Industries, Inc.
 Waukesha, Wisconsin

Spancrete of Illinois, Inc.
 Arlington Heights, Illinois

Wells Concrete
 Wells, Minnesota

WEST

Hanson Structural
 Precast Pacific, Inc.
 Irwindale, California

KIE-CON

Division of Kiewit Pacific Co.
 Anitoch, California

Owell Precast
 Sandy, Utah

SOUTHWEST

Manco Structures, Ltd.
 Schertz, Texas

SOUTH

Cement Industries, Inc.
 Fort Myers, Florida

Florida Precast Industries, Inc.
 Sebring, Florida

EAST

Mid-Atlantic Precast, LLC.
 King George, Virginia

EGYPT

Samcrete Egypt
 Ahram, Giza

MEXICO

ITISA
 Mexico City, Mexico

Spancrete Noreste
 Monterrey, Mexico

CROATIA

Mucic & Co
 Dugopolje, Croatia

CARIBBEAN

Preconco Limited
 Barbados, West Indies

TURKEY

Yapi-Merkezi
 Camlica-Istanbul, Turkey

UAE

Hi-Tech Concrete
 Products LLC
 Abu Dhabi, UAE

MACHINE

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China	Japan
Denmark	Russia
Guatemala	South Korea
Hungary	Switzerland

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