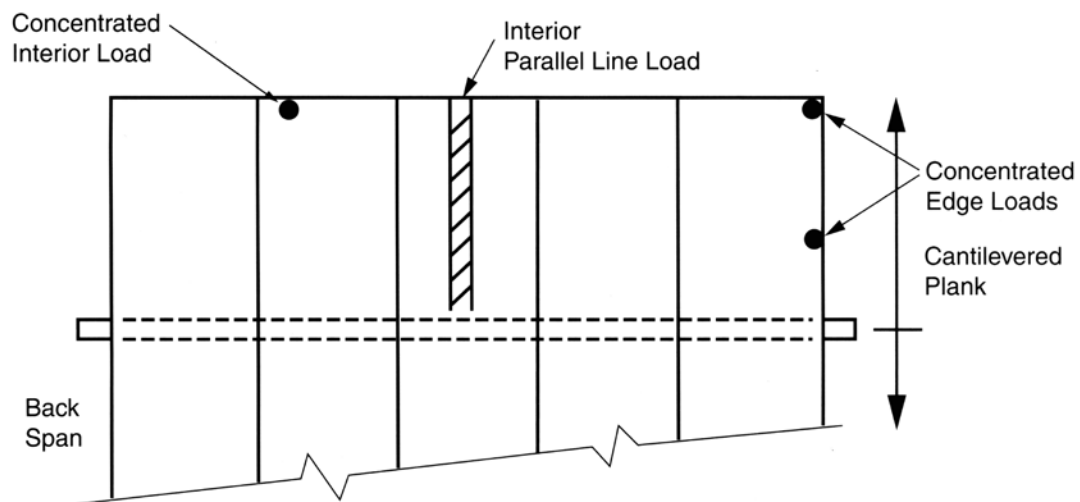


CANTILEVER LOAD DISTRIBUTION

The Spancrete Manufacturers Association has been conducting research and testing since the 1960's to further the technical development of Spancrete® hollowcore design and enhance its use throughout construction. Using the considerable data accumulated from full scale testing on simple spans, we developed a three-dimensional computer analysis technique to model recommended cantilever load distribution widths for non-uniform loads.



CANTILEVER LOAD TYPES

CONCLUSIONS:

Non-uniform loads applied to Spancrete cantilevers may be distributed over effective widths that are a function of the load location and the cantilever length. The recommended distribution widths for parallel line loads and point loads are:

1. Edge loads for moment $DW = 1 + 0.45 L \text{ ft}$
 for shear $DW = 1.5 \text{ ft}$
2. Interior loads for moment $DW = 1.6 + 0.8 L \text{ ft}$
 for shear $DW = 1.5 + 0.2 L \text{ ft}$

where L = distance from support to point load or to end of parallel line load.

CANTILEVER LOAD DISTRIBUTION

GIVEN:

An untopped 10" Spancrete® hollowcore layout as shown.

Assume plank weight = 75 psf,

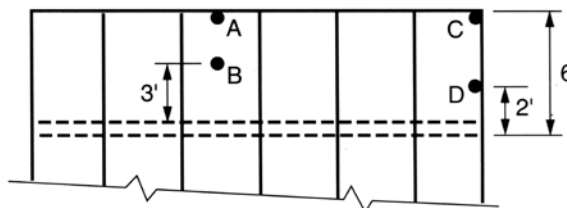
superimposed dead load = 10 psf and

live load = 80 psf. Concentrated loads:

(A) $P_d = 0.7$ k $P_L = 0.5$ k

(B) $P_d = 1.0$ k $P_L = 0.5$ k

(C) and (D) $P_d = 0.25$ k $P_L = 1.4$ k



PROBLEM:

Determine the unit design shears and moments for the interior and edge conditions.

SOLUTION:

INTERIOR LOAD CONDITION

Point load at end of cantilever

$$1.2(0.7) + 1.6(0.5) = 1.64 \text{ k}$$

$$1.6 + 0.8(6) = 6.4 \text{ ft}$$

$$1.5 + 0.2(6) = 2.7 \text{ ft}$$

Intermediate point load

$$1.2(1.0) + 1.6(0.5) = 2.00 \text{ k}$$

$$1.6 + 0.8(3) = 4 \text{ ft}$$

$$1.5 + 0.2(3) = 2.1 \text{ ft}$$

$$1.2(10 + 75) + 1.6(80) = 230 \text{ psf}$$

$$1.64(6)/6.4 + 2.00(3)/4 + .230 (6^2)/2 = 7.18 \text{ ft-k/ft}$$

$$1.64/2.7 + 2.00/2.1 + .230(6) = 2.94 \text{ k/ft}$$

P_u
 DW_{mom}
 DW_{shear}

P_u
 DW_{mom}
 DW_{shear}

W_u
 M_u
 V_u

EDGE LOAD CONDITION

Point load at end of cantilever

$$1.2(0.25) + 1.6(1.4) = 2.54 \text{ k}$$

$$1 + 0.45(6) = 3.7 \text{ ft}$$

$$1.5 \text{ ft}$$

Intermediate point load

$$1.2(0.25) + 1.6(1.4) = 2.54 \text{ k}$$

$$1 + 0.45(2) = 1.90 \text{ ft}$$

$$1.5 \text{ ft}$$

$$1.2(10 + 75) + 1.6(80) = 230 \text{ psf}$$

$$2.54(6)/3.7 + 2.54(2)/1.9 + .230(6^2)/2 = 10.93 \text{ ft-k/ft}$$

$$2.54/1.5 + 2.54/1.5 + .230 (6) = 4.77 \text{ k/ft}$$

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.

EAST

Oldcastle Precast, Inc.
 South Bethlehem, NY

Oldcastle Precast, Inc.
 Manchester, NY

Conewago Precast Building
 Systems
 Hanover, PA

MIDWEST
 Spancrete, Inc.
 Green Bay, WI

Spancrete Industries, Inc.
 Waukesha, WI

Hanson Structural Precast
 Midwest, Inc.
 Maple Grove, MN

Spancrete of Illinois, Inc.
 Arlington Heights, IL

WEST
 Hanson Structural Precast
 Pacific, Inc.
 Inwindale, CA

KIE-CON
 Div. of Kiewitt Pacific Co.
 Antioch, CA

Owell Precast
 Sandy, UT

SOUTHWEST
 Manco Structures, Ltd.
 Schertz, TX

SOUTH

Cement Industries, Inc.
 Fort Myers, FL

Florida Precast Industries, Inc.
 Sebring, FL

MC Precast, Inc.
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CANADA
 Burnco Concrete Products Ltd.
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 Samcrete Egypt
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MEXICO

ITISA
 Mexico City, Mexico

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TURKEY
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 Camlica-Istanbul, Turkey

CARIBBEAN
 Preconco Limited
 Barbados, West Indies

Spancrete Caribbean, Ltd.
 Trinidad, West Indies

UAE
 Hi-Tech Concrete Products, LLC
 Abu Dhabi, UAE

MACHINE MANUFACTURER

Spancrete Machinery
 Corporation
 Waukesha, WI

Spancrete is also manufactured in

Armenia	Denmark	Russia
Australia	Guatemala	South Korea
Belgium	Hungary	Spain
Brazil	Ireland	Switzerland
China	Israel	
Croatia	Japan	