

**PACKAGE ID** - 001202IBMPC00 YLE

**KWIC TITLE** - Yield Line Evaluation Methodology for  
Reinforced Concrete Structures

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**LIMITATION CODE** -COPY           **AUDIENCE CODE** - LIM

**COMPLETION DATE** - 03/01/1994   **PUBLICATION DATE** - 08/01/1994

**DESCRIPTION** - Yield line theory is an analytical technique that can be used to determine the ultimate bending capacity of flat reinforced concrete plates subject to distributed and concentrated loadings. Alternately, yield line theory, combined with rotation limits can be used to determine the energy absorption capacity of plates subject to impulsive and impact loadings. Typical components analyzed by yield line theory are basemats, floor and roof slabs subject to vertical loads along with walls subject to out of plane loadings. One limitation of yield line theory is that it is computationally difficult to evaluate some mechanisms. This problem is aggravated by the complex geometry and reinforcing layouts commonly found in practice. The program has the capability to either evaluate a single user defined mechanism or to iterate over a range of mechanisms to determine the minimum ultimate capacity. The program is verified by comparison to a series of yield line mechanisms with known solutions.

**PACKAGE CONTENTS** - Media Directory; Software Abstract; WSRC-TR-94-334;  
Media Includes Source Code;

**SOURCE CODE INCLUDED?** - Yes

**MEDIA QUANTITY** - 1 CD Rom

**METHOD OF SOLUTION** - Energy Method

**COMPUTER** - IBM PC

**OPERATING SYSTEMS** - IBM AIX, Mac System 7, DOS

**PROGRAMMING LANGUAGES** - FORTRAN

**SOFTWARE LIMITATIONS** - NA

**SOURCE CODE AVAILABLE (Y/N)** - Y

**UNIQUE FEATURES** - This software can rapidly calculate the internal strain energy, external work, hinge rotations, and collapse mechanism for a postulated yield line mechanism. At the engineers option, the software can vary the geometry of the yield line

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**UNIQUE FEATURES - (CONT)** mechanism to search for yield line mechanisms with a lower collapse load.

**HARDWARE REQS** - Math co-processor, less than 1Mb Ram, less than 1 Mb disk.

**REFERENCES** - G.E. Mertz, A Yield Line Evaluation (YLE) Computer Program for Reinforced Concrete Structures, WSRC-TR-94-334, August 1994.

**ABSTRACT STATUS** - Released AS-IS 3/24/98

**SUBJECT CLASS CODE** - CIOQ

**KEYWORDS** -

COMPUTER PROGRAM DOCUMENTATION  
Y CODES  
CONCRETES  
YIELD STRENGTH  
STRESSES

**EDB SUBJECT CATEGORIES** -

990200 360600 360603

**SPONSOR** - DOE/ER

**PACKAGE TYPE** - AS - IS