

MULTIPLE-CELL BOX CULVERT ANALYSIS AND DESIGN

IDENTIFICATION

1		BEG. FILL HT.		PROJECT NUMBER, COUNTY, NAME, DATE, REMARKS												51	61	65
1	PROG	PROB. NO.																
*	B,0,7																	

66 80

NUMBER OF CELLS.

"1" THICKNESS OF MEMBERS REMAIN CONSTANT (REVIEW).
"0" THICKNESS OF MEMBERS DETERMINED BY ALLOWABLE STRESSES (DESIGN).

"1" ALLOWABLE SHEAR STRESS = 90 P.S.I.
"0" ALLOWABLE SHEAR STRESS = 225 P.S.I.

CULVERT DATA

1	5	Lc	9	Hc	14	Te	18	Tt	22	Tb	26	Ti	30	Dh	FFH	Ws	Wsp	Ktl	Ktr	Ksl	Ksr	Kbl	Kbr	41	51	61	65
1																											

FILL HT'S. ARE GIVEN IN FEET.
CULVERT DIMENSIONS ARE GIVEN IN INCHES.
 $n = E_s/E_c = 10$

DH - INCREMENT OF FILL HT.
FFH - FINAL FILL HT.
Ws - WT. OF SOIL, LBS/FT.³
Wsp - SIDE PRESSURE PER FOOT OF FILL HT. LBS/FT.²/FT.
Kxx - INPUT DATA ARE RATIOS OF DISTANCES TO DESIGN POINTS AND MEMBER THICKNESS.

$$K_{TL} = X_{TL} / T_E$$

$$K_{TR} = X_{TR} / T_I$$

$$K_{SL} = X_{SL} / T_B$$

$$K_{SR} = X_{SR} / T_T$$

$$K_{BL} = X_{BL} / T_I$$

$$K_{BR} = X_{BR} / T_E$$

NUMBER OF CELLS CANNOT EXCEED FOUR (4).
ALLOWABLE STRESSES:

$$f_c = 1,200 \text{ P.S.I.}$$

$$f_s = 20,000 \text{ P.S.I.}$$

$$f_v = 90 \text{ P.S.I. IN WALLS, 90 OR 225 P.S.I. IN TOP AND BOTTOM SLAB.}$$

$$f_b = 180 \text{ P.S.I. TOP BAR}$$

$$300 \text{ P.S.I. BOTTOM BAR}$$

