CURRENT DATE: 12-14-2006 FILE DATE: 12-14-2006
CURRENT TIME: 09:01:33 FILE NAME: 45TH_2

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULV NO.	SITE DATA: INLET ELEV. (ft)	SITE DATA: OUTLET ELEV. (ft)	SITE DATA: CULVERT LENGTH (ft)	CULVERT SHAPE, MATERIAL, INLET: BARRELS	SHAPE	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	1333.87	1333.65	183.00	1	RCB	8.00	3.00	.012	CONVENTIONAL
2									
3									
4									
5									
6									

SUMMARY OF CULVERT FLOWS (cfs) FILE: 45TH_2 DATE: 12-14-2006

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1333.87	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	1
1334.67	14.2	14.2	0.0	0.0	0.0	0.0	0.0	0.00	1
1335.12	28.4	28.4	0.0	0.0	0.0	0.0	0.0	0.00	1
1335.50	42.6	42.6	0.0	0.0	0.0	0.0	0.0	0.00	1
1335.84	56.8	56.8	0.0	0.0	0.0	0.0	0.0	0.00	1
1336.15	71.0	71.0	0.0	0.0	0.0	0.0	0.0	0.00	1
1336.45	85.2	85.2	0.0	0.0	0.0	0.0	0.0	0.00	1
1336.71	99.4	99.4	0.0	0.0	0.0	0.0	0.0	0.00	1
1336.89	108.0	108.0	0.0	0.0	0.0	0.0	0.0	0.00	1
1337.24	127.8	127.8	0.0	0.0	0.0	0.0	0.0	0.00	1
1337.49	142.0	142.0	0.0	0.0	0.0	0.0	0.0	0.00	1
1340.00	244.4	244.4	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 45TH_2 DATE: 12-14-2006

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
1333.87	0.000	0.00	0.00	0.00
1334.67	0.000	14.20	0.00	0.00
1335.12	0.000	28.40	0.00	0.00
1335.50	0.000	42.60	0.00	0.00
1335.84	0.000	56.80	0.00	0.00
1336.15	0.000	71.00	0.00	0.00
1336.45	0.000	85.20	0.00	0.00
1336.71	0.000	99.40	0.00	0.00
1336.89	0.000	108.00	0.00	0.00
1337.24	0.000	127.80	0.00	0.00
1337.49	0.000	142.00	0.00	0.00

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

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PERFORMANCE CURVE FOR CULVERT 1 - 1(8.00 (ft) BY 3.00 (ft)) RCB

DISCHARGE FLOW (cfs)	HEADWATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
0.00	1333.87	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
14.20	1334.67	0.71	0.80	3-M2t	0.62	0.46	0.56	0.56	3.14	1.46
28.40	1335.12	1.12	1.25	3-M2t	0.97	0.73	0.84	0.84	4.22	1.84
42.60	1335.50	1.47	1.63	3-M2t	1.27	0.96	1.06	1.06	5.04	2.10
56.80	1335.84	1.79	1.97	3-M2t	1.54	1.16	1.24	1.24	5.73	2.30
71.00	1336.15	2.08	2.28	3-M2t	1.79	1.35	1.40	1.40	6.33	2.46
85.20	1336.45	2.35	2.58	3-M2t	2.03	1.52	1.55	1.55	6.88	2.60
99.40	1336.71	2.61	2.84	2-M2c	2.26	1.69	1.69	1.68	7.35	2.72
108.00	1336.89	2.77	3.02	2-M2c	2.40	1.79	1.79	1.76	7.56	2.79
127.80	1337.24	3.13	3.37	2-M2c	3.00	2.00	2.00	1.92	8.00	2.93
142.00	1337.49	3.40	3.62	2-M2c	3.00	2.14	2.14	2.03	8.28	3.02

El. inlet face invert 1333.87 ft El. outlet invert 1333.65 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION	0.00 ft
INLET ELEVATION	1333.87 ft
OUTLET STATION	183.00 ft
OUTLET ELEVATION	1333.65 ft
NUMBER OF BARRELS	1
SLOPE (V/H)	0.0012
CULVERT LENGTH ALONG SLOPE	183.00 ft

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	8.00 ft
BARREL RISE	3.00 ft
BARREL MATERIAL	CONCRETE
BARREL MANNING'S n	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (30-75 DEG. FLARE)
INLET DEPRESSION	NONE

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******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH	15.00 ft
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (ft/ft)	0.003
MANNING'S n (.01-0.1)	0.035
CHANNEL INVERT ELEVATION	1333.65 ft
CULVERT NO.1 OUTLET INVERT ELEVATION	1333.65 ft

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
0.00	1333.65	0.000	0.00	0.00	0.00
14.20	1334.21	0.341	0.56	1.46	0.11
28.40	1334.49	0.354	0.84	1.84	0.16
42.60	1334.71	0.360	1.06	2.10	0.20
56.80	1334.89	0.363	1.24	2.30	0.23
71.00	1335.05	0.366	1.40	2.46	0.26
85.20	1335.20	0.368	1.55	2.60	0.29
99.40	1335.33	0.370	1.68	2.72	0.31
108.00	1335.41	0.371	1.76	2.79	0.33
127.80	1335.57	0.372	1.92	2.93	0.36
142.00	1335.68	0.373	2.03	3.02	0.38

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ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	85.00 ft
CREST LENGTH	2000.00 ft
OVERTOPPING CREST ELEVATION	1340.00 ft

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