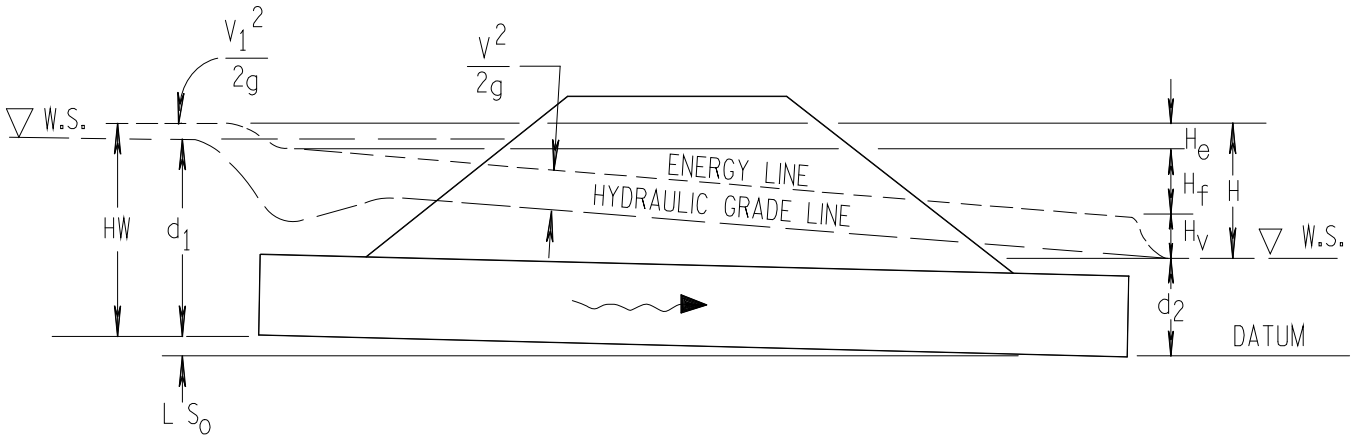
SCHEMATIC DEPICTION OF THE ENERGY LOSSES THROUGH A CONDUIT



Where;

H_e = entrance loss

H_f = friction loss

H_v = velocity head

INLET CONTROL PROBLEM

PROJECT: _____ DESIGNER: _____

DATE: _____

HYDROLOGIC AND CHANNEL INFORMATION

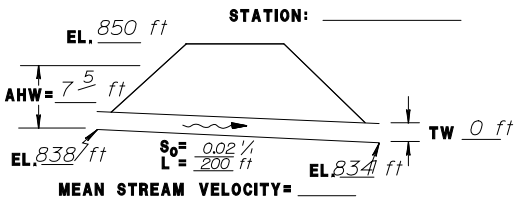
Q_1 = 190 cfs TW_1 = 0 ft

Q_2 = _____ TW_2 = _____

(Q_1 = DESIGN DISCHARGE, SAY Q_{25})
(Q_2 = CHECK DISCHARGE, SAY Q_{50} OR Q_{100})

SKETCH

STATION: _____



MEAN STREAM VELOCITY = _____

MAX. STREAM VELOCITY = _____

CULVERT DESCRIPTION (ENTRANCE TYPE)	Q	SIZE	HEADWATER COMPUTATION: INLET CONT. HW/D	INLET CONT. HW	OUTLET CONTROL K_e	H	d_c	$\frac{d_c+D}{2}$	TW	h_o	LS_o	HW=H + h_o -LS_o HW	CONTROLLING HW	OUTLET VELOCITY	COST	COMMENTS
Prog. C.M.P.	190	66	1.25	6.9										11		n = .024
Groove Conc	190	60	1.3	6.5										19		n = .013

SUMMARY & RECOMMENDATIONS:

OUTLET CONTROL PROBLEM

PROJECT: _____ DESIGNER: _____

DATE: _____

HYDROLOGIC AND CHANNEL INFORMATION

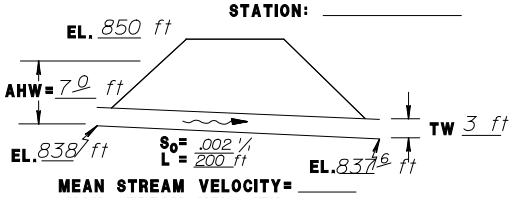
Q_1 = 190 cfs TW_1 = 3 ft

Q_2 = _____ TW_2 = _____

(Q_1 = DESIGN DISCHARGE, SAY Q_{25})
(Q_2 = CHECK DISCHARGE, SAY Q_{50} OR Q_{100})

SKETCH

STATION: _____



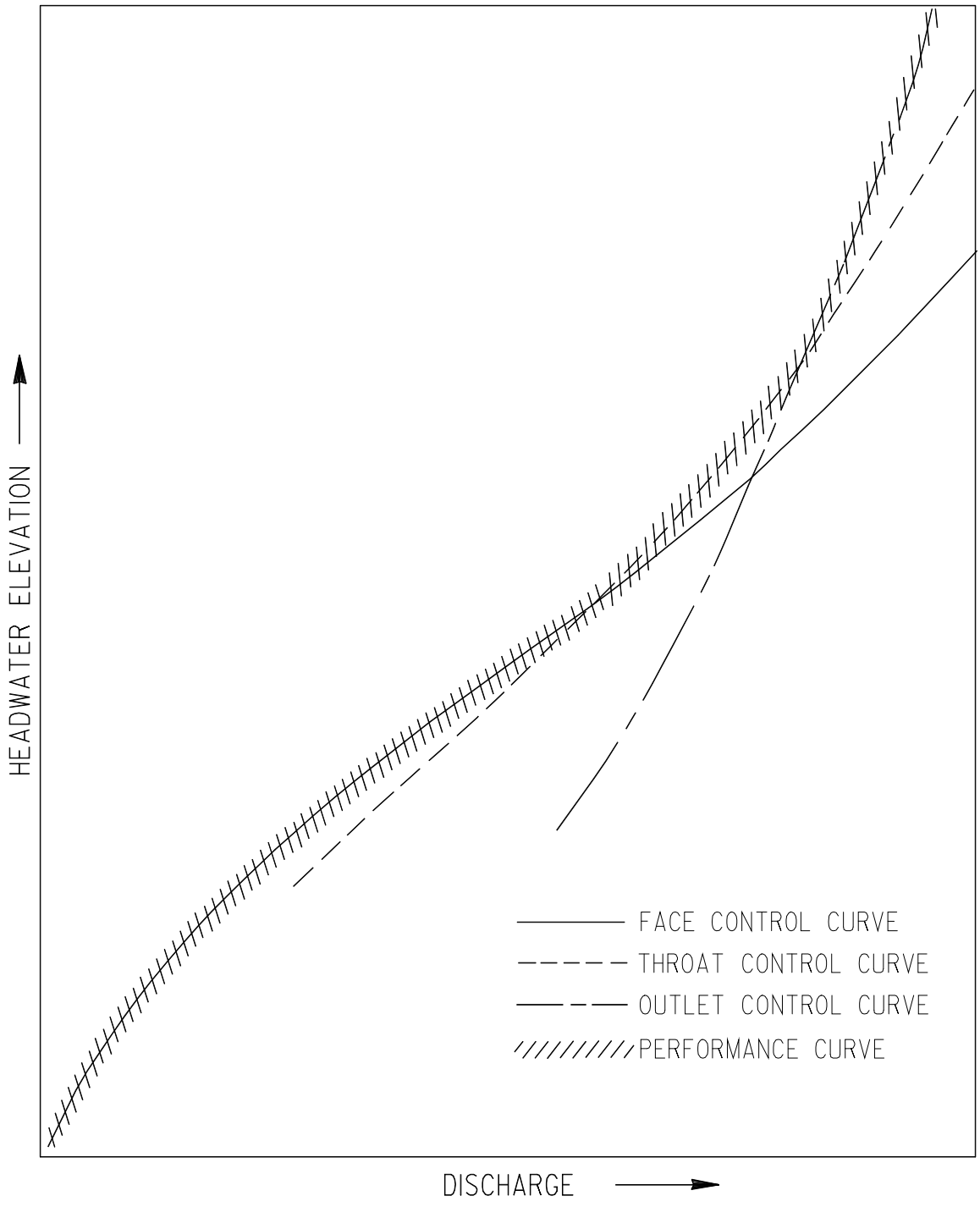
MEAN STREAM VELOCITY = _____

MAX. STREAM VELOCITY = _____

CULVERT DESCRIPTION (ENTRANCE TYPE)	Q	SIZE	HEADWATER COMPUTATION: INLET CONT. HW/D	INLET CONT. HW	OUTLET CONTROL K_e	H	d_c	$\frac{d_c+D}{2}$	TW	h_o	LS_o	HW=H + h_o -LS_o HW	CONTROLLING HW	OUTLET VELOCITY	COST	COMMENTS
Prog. C.M.P.	190	84			.9	1.4	3.6	5.3	3	5.3	.4	6.3		9.7		
Groove Conc	190	72			.2	1.25	3.9	4.95	3	4.95	.4	5.8		9.7		
" "	190	60			.2	2.8	3.9	4.45	3	4.45	.4	6.9		11.5		

SUMMARY & RECOMMENDATIONS:

h_o = The greater of $\frac{d_c+D}{2}$ or TW $\quad H = [1 + K_e + (29\, n^2 L)/R^{1.33}]\, V^2/2g$



SCHEMATIC PERFORMANCE CURVE

Source: HDS No. 5, "Hydraulic Design of Highway Culverts", FHWA Sept., 1985.