

ROUTE: _____ DES NO.: _____ PROJECT NO.: _____ PROJECT DESCRIPTION: _____		STATION: _____ SHEET _____ OF _____		CULVERT DESIGN FORM													
				DESIGNER _____ DATE _____ REVIEWER _____ DATE _____													
<p style="text-align: center;"><u>HYDROLOGICAL DATA</u></p> METHOD: _____ DRAINAGE AREA: _____ km ² STREAM SLOPE: _____ CHANNEL SHAPE: _____ ROUTING: _____ OTHER: _____																	
<p style="text-align: center;"><u>DESIGN FLOWS / TAILWATER</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">R.I. (years)</td> <td style="width: 33%;">FLOW (m³/s)</td> <td style="width: 33%;">TW (m)</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </table>								R.I. (years)	FLOW (m ³ /s)	TW (m)	_____	_____	_____	_____	_____	_____	_____
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_____	_____	_____															
_____	_____	_____															
_____	_____	_____															
CULVERT DESCRIPTION: MATERIAL-SHAPE-SIZE-ENTRANCE		TOTAL FLOW Q (m ³ /s)	FLOW PER BARREL Q/N (1)	HEADWATER CALCULATIONS										CONTROL HEAD- WATER ELEV.	OUTLET VELO- CITY	COMMENTS	
				INLET CONTROL				OUTLET CONTROL									
				<u>HW_i/D</u> (2)	HW _i (3)	FALL (3)	EL _{hi} (4)	TW (5)	d _c	$\frac{d_e + D}{2}$	h _o (6)	k _e	H (7)	EL _{ho} (8)			

TECHNICAL FOOTNOTES:

(1) USE Q/NB FOR BOX CULVERTS

(2) HW_i/D = HW/D OR HW_i/D FROM DESIGN CHARTS

(3) FALL = HW_i - (EL_{hd} - EL_{sf}); FALL IS ZERO FOR CULVERTS ON GRADE
 EL_{hi} = HW_i + EL_i

(4) INVERT OF INLET CONTROL SECTION

SUSCRIPT DEFINITIONS:
 a Approximate
 f Culvert Face
 h_d Design Headwater
 h_i Headwater in Inlet Control
 h_o Headwater in Outlet Control
 i Inlet Control Section
 o Outlet
 s_f Streambed at Culvert Face
 TW Tailwater

(5) TW BASED ON DOWNSTREAM CONTROL OR FLOW DEPTH IN CHANNEL

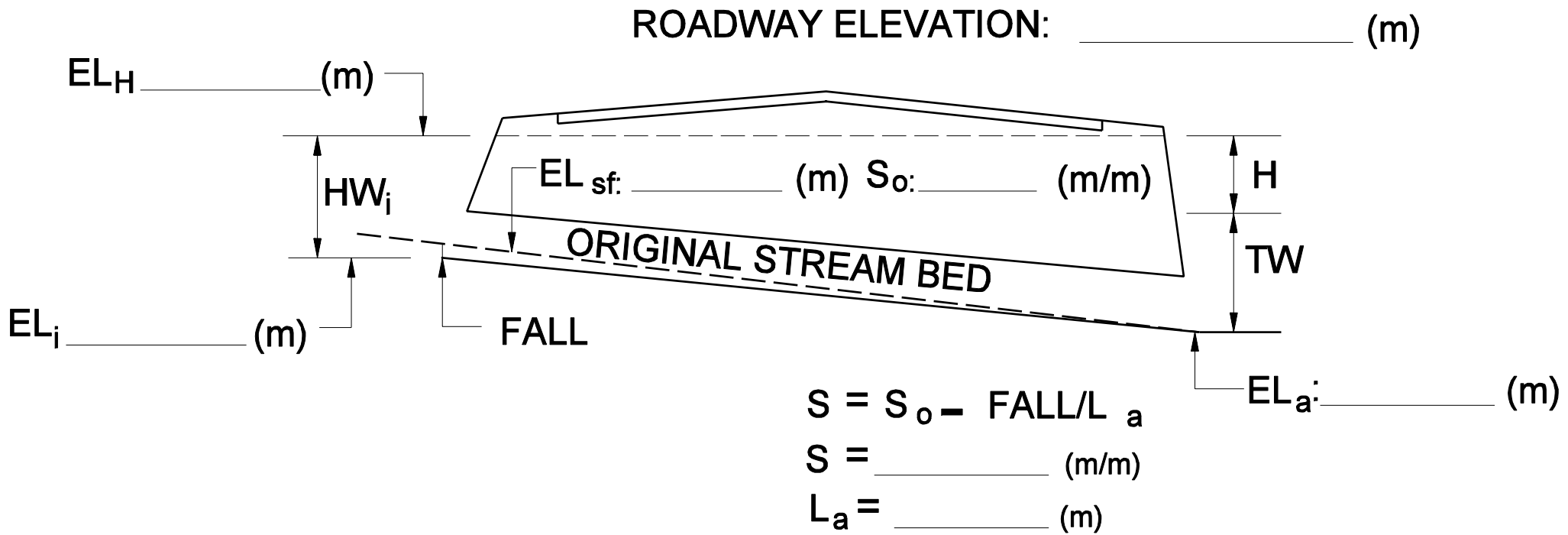
(6) h_o = TW or (d_c + D)/2 (WHICHEVER IS GREATER)

(7)
$$H = \frac{V}{2g} \left[1 + k_e + \left(\frac{19.63n^2 L}{R^{1.33}} \right) \right]$$

(8) EL_{ho} = EL_o + H + h_o

COMMENTS / DISCUSSION:

<u>CULVERT BARREL SELECTED:</u> SIZE: _____ SHAPE: _____ MATERIAL: _____ n: _____ ENTRANCE: _____	
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CULVERT DESIGN DETAILS (Conventional End Treatment)