

DEPARTMENT OF WORKS AND SUPPLY

MANUAL FOR THE DESIGN OF
DRAINAGE STRUCTURES FOR
RURAL ROADS

VOLUME 2
DESIGN CHARTS

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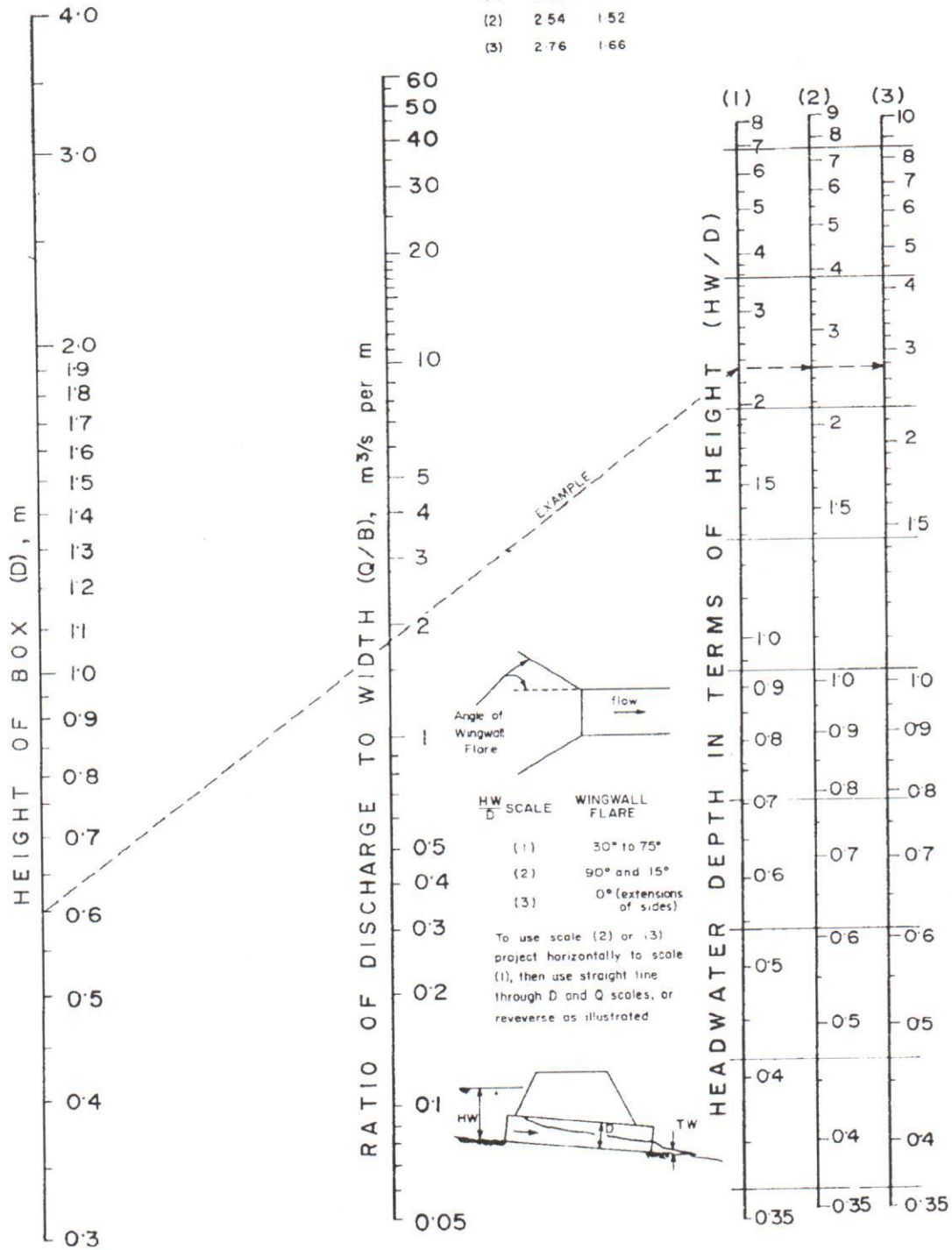
EXAMPLE

1500 X 600 mm box culvert

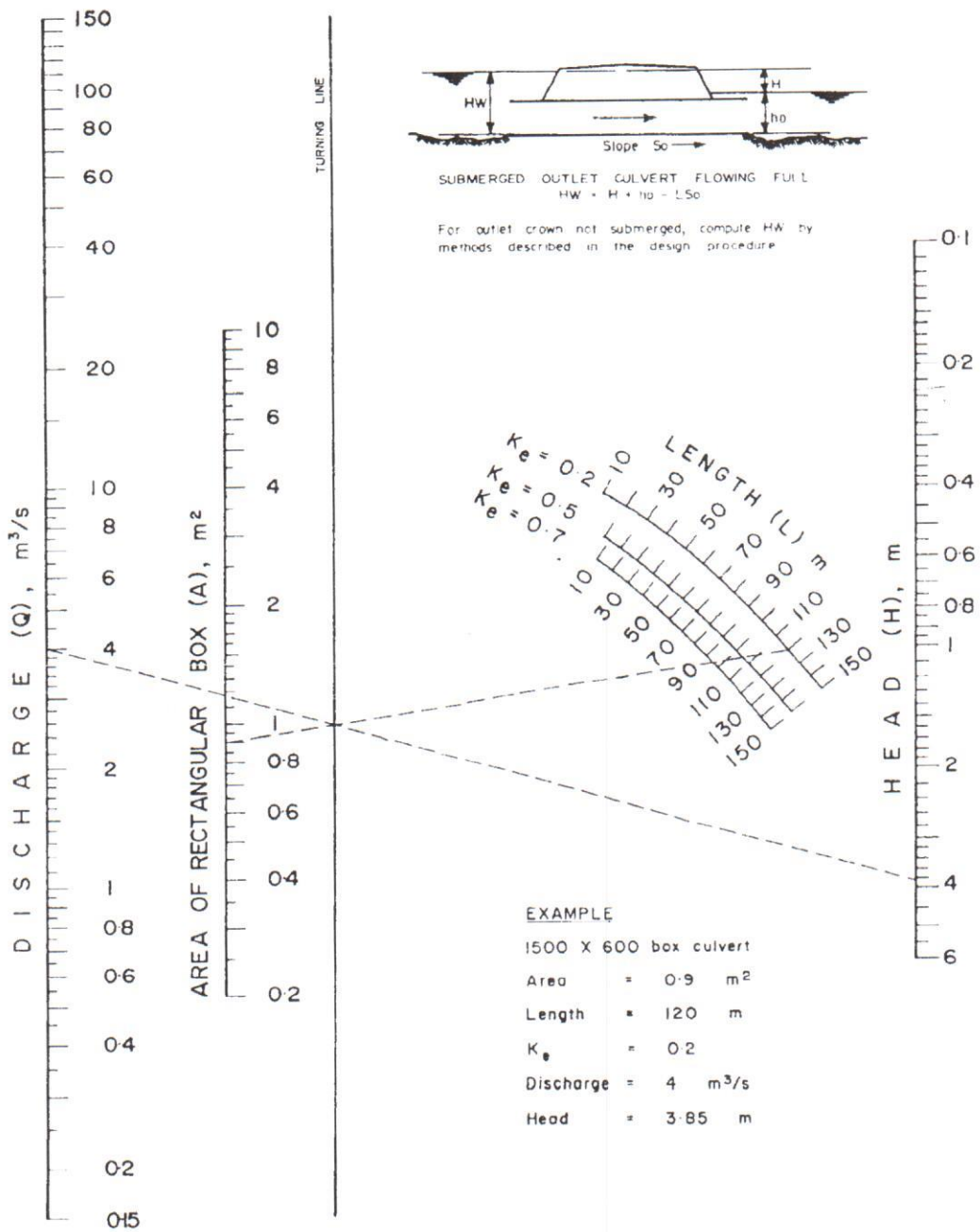
$Q = 2.40 \text{ m}^3/\text{s}$

$Q/B = 1.6 \text{ m}^3/\text{s per m}$

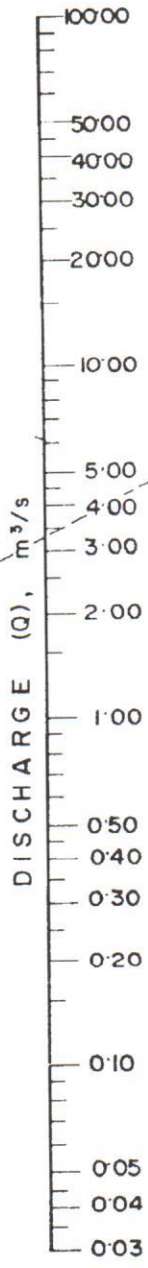
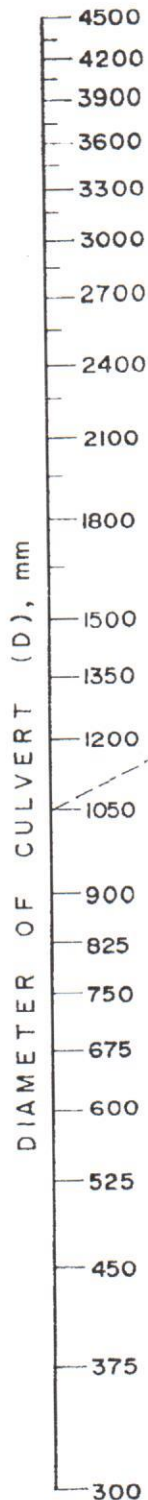
	$\frac{HW}{D}$	HW(m)
(1)	2.35	1.41
(2)	2.54	1.52
(3)	2.76	1.66



Headwater depth for box culverts with inlet control



**Head for concrete box culverts flowing full, $n = 0.012$
 with outlet control**



EXAMPLE

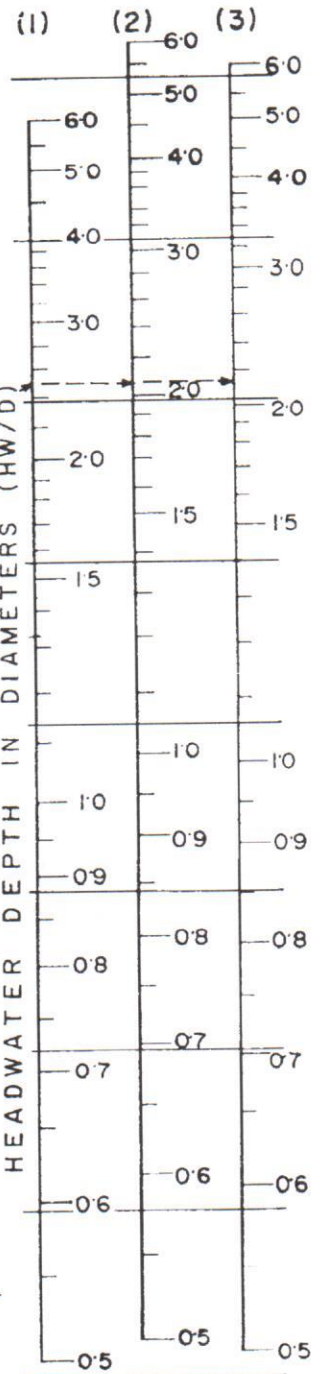
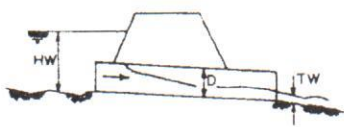
D = 1050 mm
Q = 338 m³/s

	$\frac{HW}{D}$	HW (m)
(1)	2.5	2.6
(2)	2.1	2.2
(3)	2.15	2.3

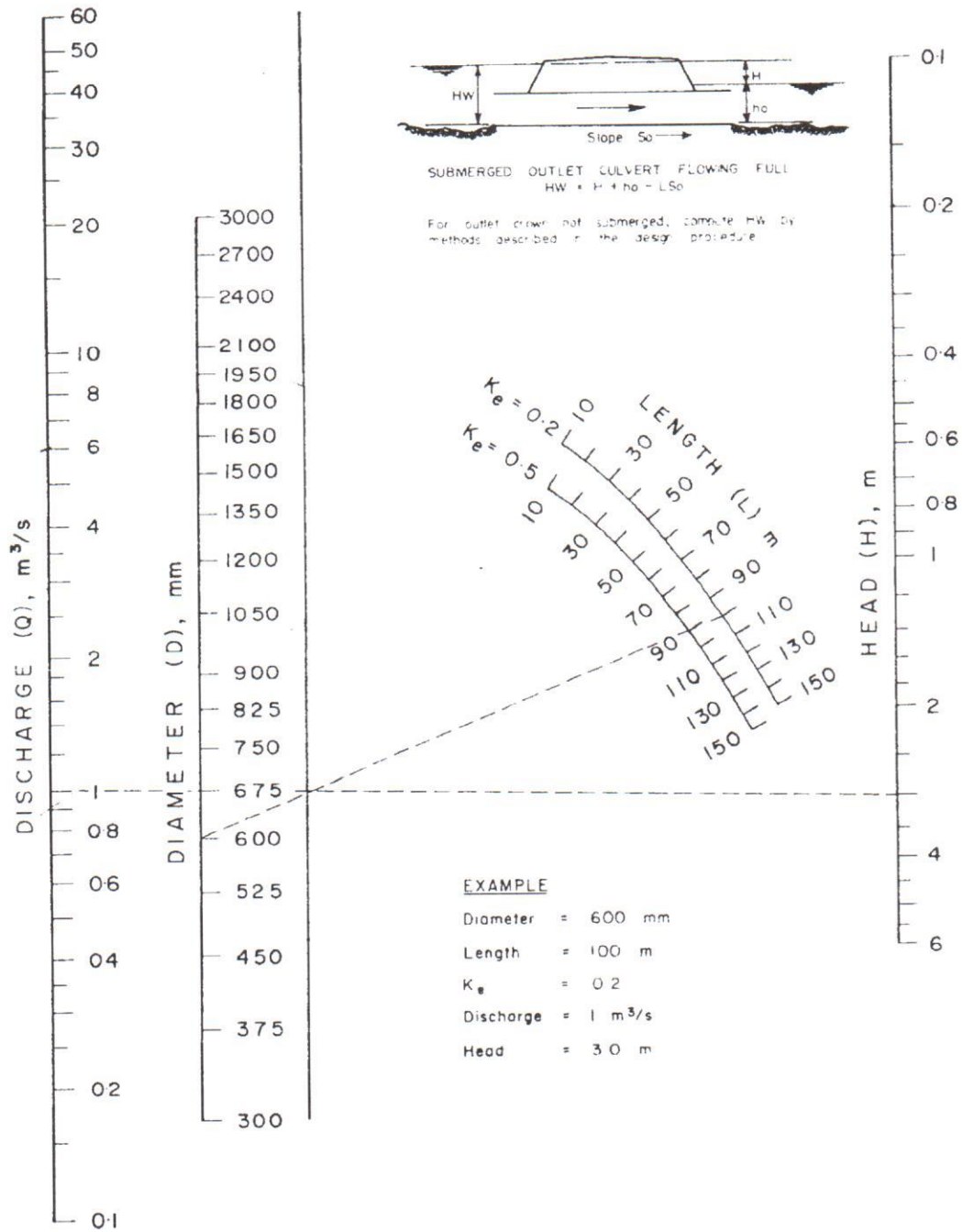
(D in metres)

$\frac{HW}{D}$ SCALE	ENTRANCE TYPE
(1)	Square edge with headwall
(2)	Groove end with headwall
(3)	Groove end projecting

To use scale (2) or (3) project horizontally to scale (1), then use straight inclined line through D and Q scales, or reverse as illustrated



Headwater depth for concrete pipe culverts with inlet control



Head for concrete pipe culverts flowing full, $n=0.012$ with outlet control