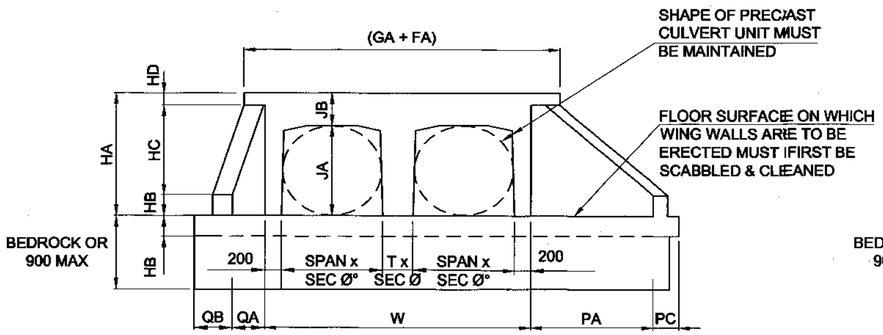
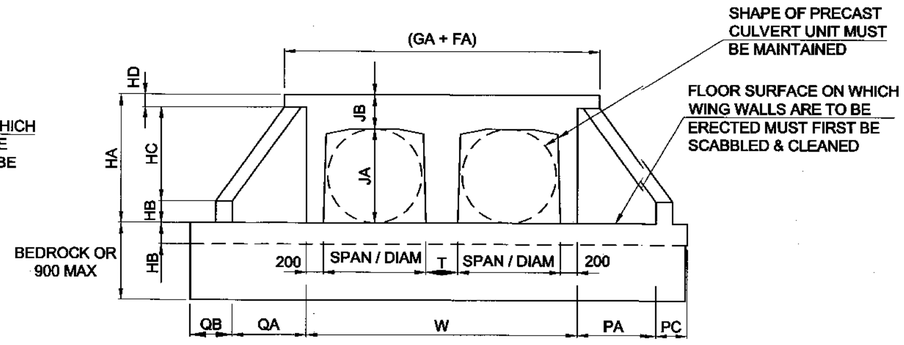


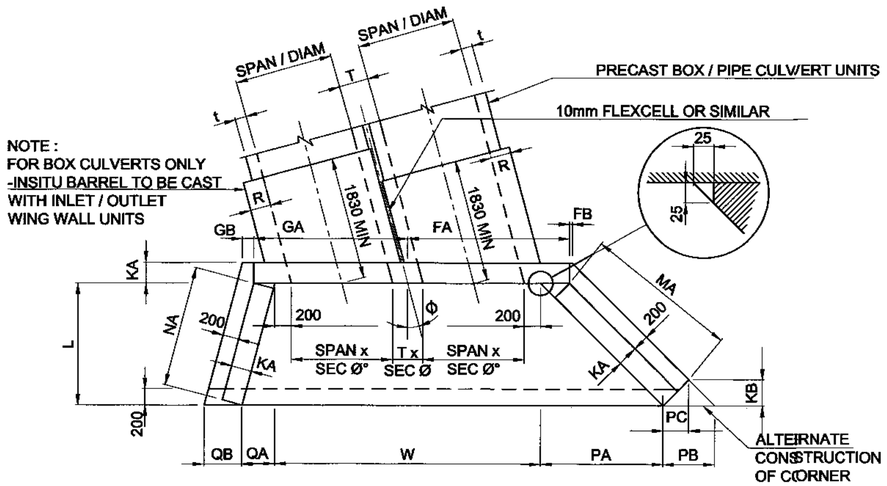
TYPICAL ELEVATION OF INLET / OUTLET WING WALLS - MAX Ø = 30°

N.T.S.



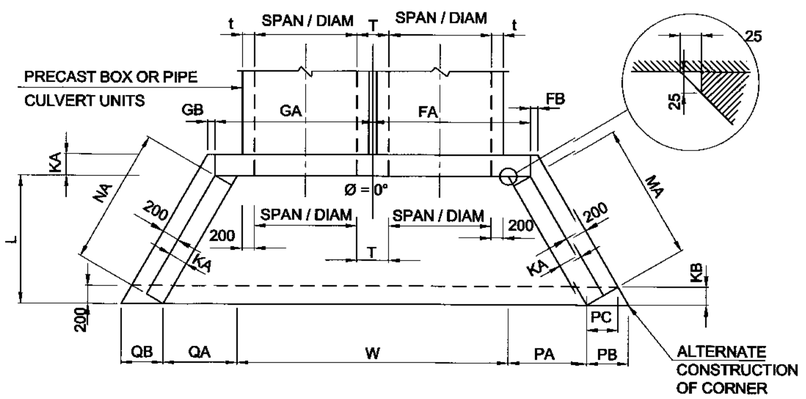
TYPICAL ELEVATION OF INLET / OUTLET WING WALLS - Ø = 0° (SQUARE)

N.T.S.



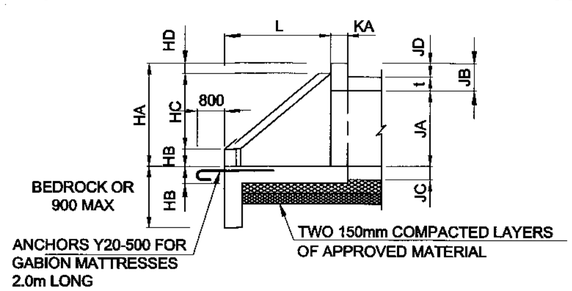
TYPICAL PLAN OF INLET / OUTLET WING WALLS - MAX Ø = 30°

N.T.S.



TYPICAL PLAN OF INLET / OUTLET WING WALLS - Ø = 0° (SQUARE)

N.T.S.



TYPICAL END-ELEVATION OF INLET / OUTLET WING WALLS - MAX Ø = 30°

N.T.S.

DATA SHEET AND FORMULAE

VERTICAL HEIGHT OF CULVERT	HB	HD	KA	JB
JA < 900	150	150	225	300
JA > 900	250	150	250	400

INSITU FLOOR SLAB (JC) AND PRECAST UNIT DECK THICKNESS (t)		
	JC	t
900mm SPAN	150mm	110mm
1200mm SPAN	160mm	125mm
1500mm SPAN	175mm	145mm
1800mm SPAN	190mm	150mm
2100mm SPAN	220mm	155mm
2400mm SPAN	260mm	170mm

All dimensions in mm

FORMULAE

L = HC x S (min.1500mm) S = BATTER SLOPE

QA = L x TAN(Ø-30) Ø = CULVERT SKEW ANGLE

PA = L x TAN(Ø+30) t = PRECAST WALL THICKNESS

NA = L x SEC(Ø-30) - KA x TAN(Ø-30)

MA = L x SEC(Ø+30) - KA x TAN(Ø+30)

T = t x 2 + 80

QB = (KA + 200) x SEC(Ø - 30)

PB = (KA + 200) x SEC(Ø + 30)

KB = (KA + 200) x SIN(Ø + 30)

PC = (KA + 200) x COS(Ø + 30)

GA = W/2 + KA x SEC(Ø -30)

GB = {[200 x COSEC(Ø - 30)] - KA} x TAN(Ø - 30)

FA = W/2 + KA x SEC(Ø +30)

FB = {[200 x COSEC(Ø + 30)] - KA} x TAN(Ø + 30)

R = t + 100 (INSITU BARREL SLAB THICKNESS)

FOR LATEST VERSION CHECK www.nra.co.za

No.	DATE	VERSION / REVISION	APPROVED
V1	SEPT 2014	ORIGINAL VERSION	

SANRAL TYPICAL DRAWINGS

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APPROVED

DATE: 2015/06/24

TYPICAL DRAWINGS - DRAINAGE

PRECAST CULVERT WING WALLS DIMENSIONS SHEET 1 OF 2

SANRAL DOC. No. (PDF) 1693909

SANRAL DOC. No. (DWG) 1797176

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