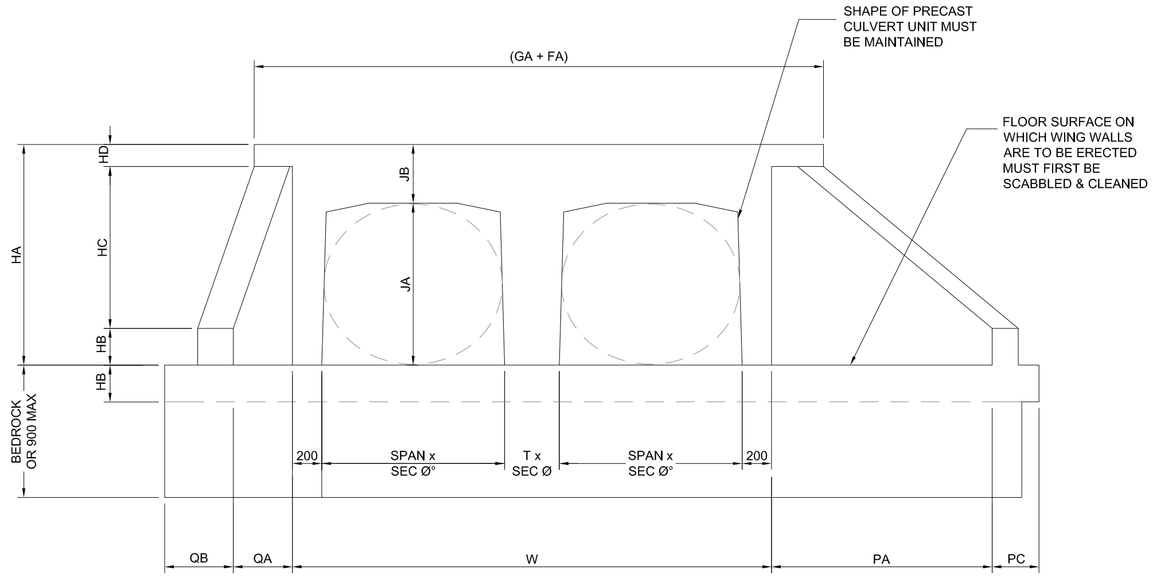
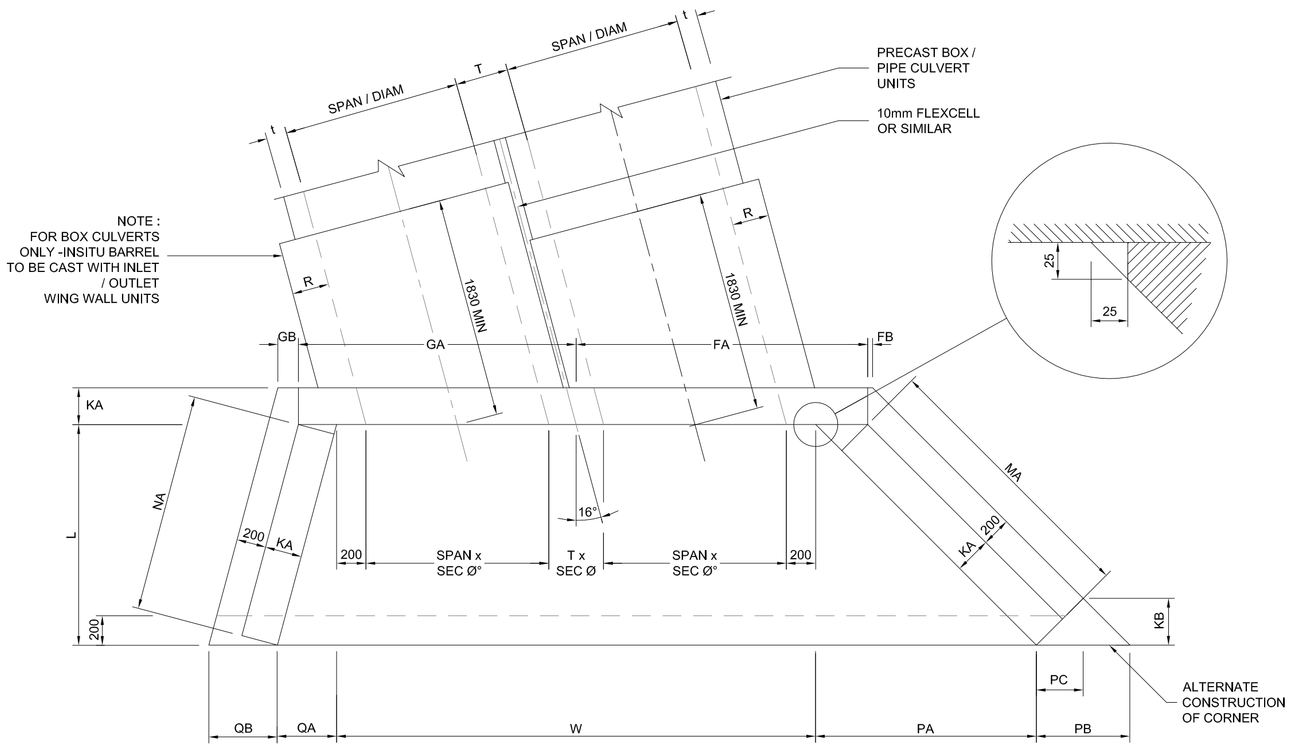



## TYPICAL ELEVATION OF INLET / OUTLET WING WALLS - MAX Ø = 30°

N.T.S.




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

N.T.S.

## NOTES FOR INLET / OUTLET WING WALLS:

### 1. DESIGN CRITERIA

1.01 THE WING WALLS ARE DESIGNED AS CANTILEVERS FIXED TO THE BASE AND SUPPORTED BY THE HEADWALL.

1.02 THE WING WALLS ARE DESIGNED FOR A SURCHARGE OF 750mm AND A MAXIMUM SLOPE OF 1:1,5 FOR ANY FILL HEIGHT.

1.03 THE DENSITY OF SOIL = 20 kN/CUBIC METER

1.04 SOIL PRESSURES DETERMINED USING RANKIN'S THEORY.

1.05 CONCRETE:

| | WING WALL | INSITU BARREL |
|---|---|---|
| CHARACTERISTIC STRENGTH (MPa) | 30 | 30 |
| CLASS CONCRETE | 30 / 19 | 30 / 19 |

1.06 REINFORCEMENT ACCORDING TO SABS 920 - LATEST REVISION.
CHARACTERISTIC STRENGTH OF HIGH TENSILE STEEL = 450 MPa.
CHARACTERISTIC STRENGTH OF HIGH TENSILE STEEL MESH = 450 MPa.

1.07 A LINEAR SOIL PRESSURE DISTRIBUTION IS ASSUMED.

1.08 THE INSITU BARREL IS DESIGNED FOR SNABC TRAFFIC LOADING IN ACCORDANCE WITH TMH 7 PARTS 1,2&3 (AS AMENDED 1988) "CODE OF PRACTICE FOR THE DESIGN OF HIGHWAY BRIDGES AND CULVERTS IN SOUTH AFRICA".

### 2. GENERAL

2.01 THE REQUIRED CLASS OF SURFACE FINISH IS F2 FOR ALL VISIBLE SURFACES.

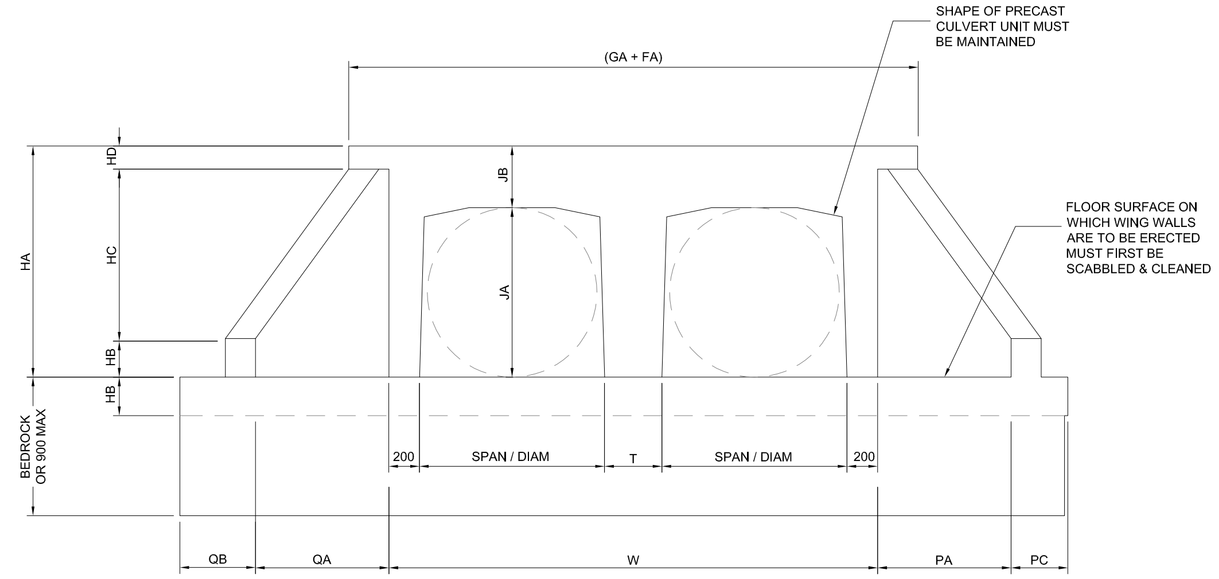
2.02 ALL VISIBLE CORNERS MUST HAVE A 25 x 25 mm CHAMFER.

2.03 TWO 150 mm LAYERS OF APPROVED MATERIAL, COMPACTED TO 93% MODIFIED AASHTO DENSITY, ARE REQUIRED UNDER THE INLETS AND OUTLETS.

2.04 MINIMUM CONCRETE COVER TO REINFORCEMENT IS 40mm.

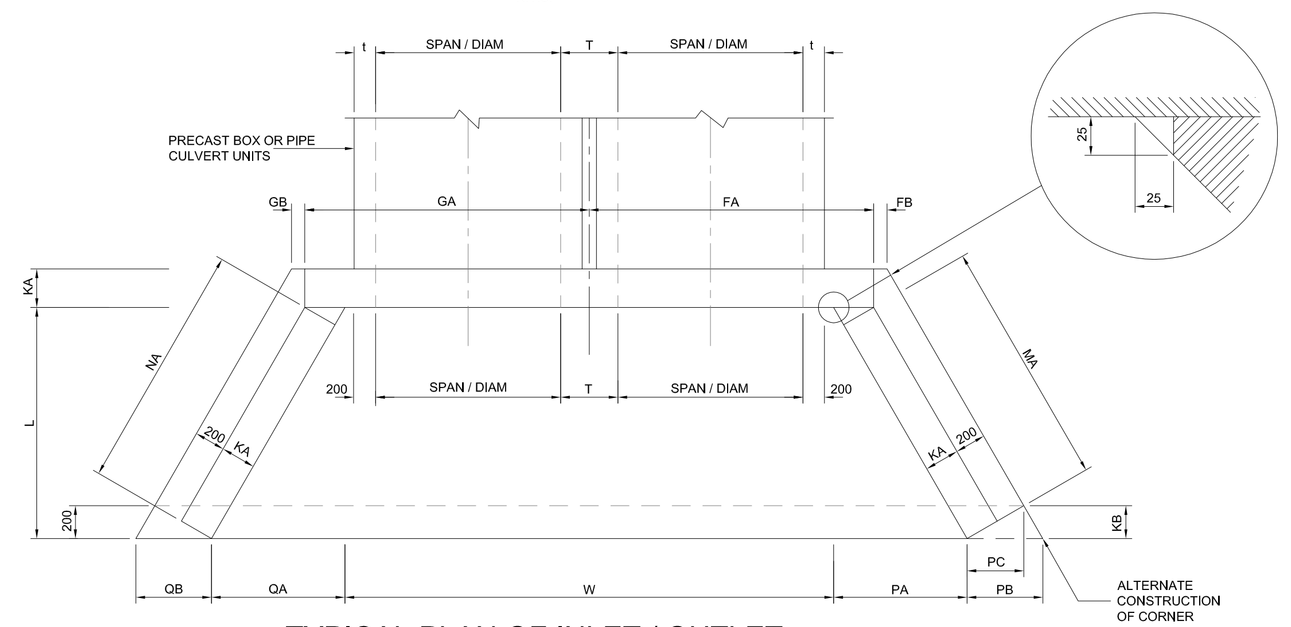
2.05 THE INLET AND OUTLET UNITS ARE DESIGNED TO ACT AS INDEPENDENT UNITS WHEN USED TOGETHER WITH PIPES, PRECAST BARRELS, AS WELL AS IN SITU BARREL UNITS.

2.06 THE HEADWALLS MUST BE ALIGNED PARALLEL TO THE ROAD SHOULDER.



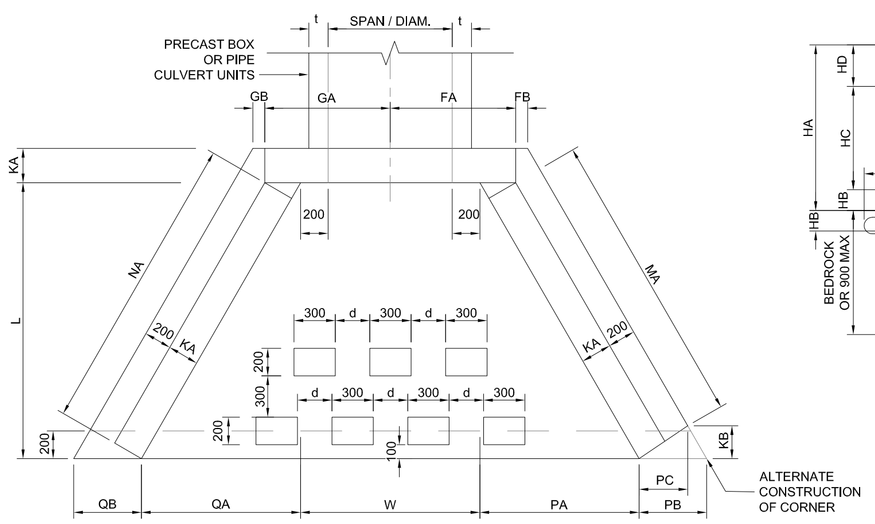

## TYPICAL ELEVATION OF INLET / OUTLET WING WALLS - Ø = 0° (SQUARE)

N.T.S.




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

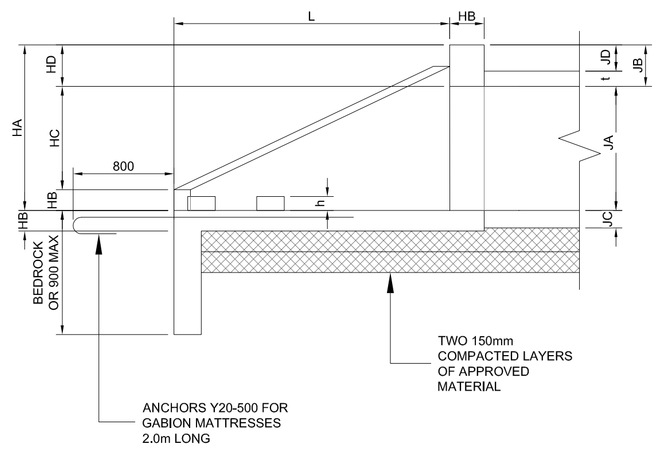
N.T.S.

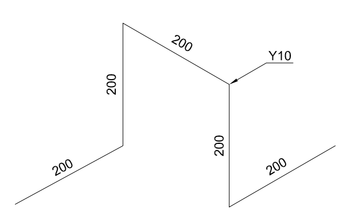



## TYPICAL PLAN OF INLET / OUTLET WING WALLS - MAX Ø = 30°

N.T.S.

| ENERGY BREAKER BLOCK DETAILS | | |
|---|---|---|
| Ø | d | h |
| 600 | 250mm | 110mm |
| 900 | 300mm | 150mm |




## FIXING BAR

(2 PER BLOCK)
SCALE 1:5

## 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

## FORMULA

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)

DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS: STD/2015/01/Dr/03

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NOTES

ISSUED FOR TENDER

LEGEND

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REG. NO. 2011/069299/23

PROJECT TITLE:

**CONSTRUCTION OF KAMADAKWA RING ROAD**

DRAWING TITLE:

PRECAST CULVERT WING WALLS : DIMENSIONS

| DESIGNED: | CHECKED: |
|---|---|
| P TSHABALALA | F BURGER PR.ENG. 20090094 |
| DRAWN: | SIGN: |
| R VAN ZYL | |

| SCALE: | DATE: |
|---|---|
| FEBRUARY 2023 | AS SHOWN |
| DRAWING NO: | CONTRACT NO: |
| NKP(p)432_DR02 | AS SHOWN |

REVISION: