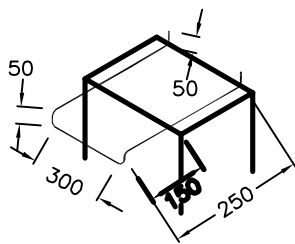


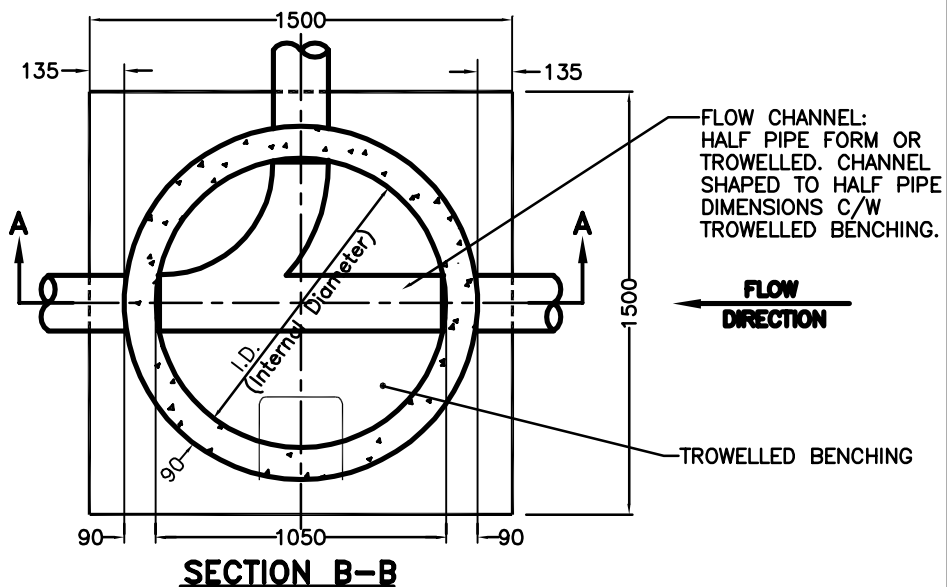


# *City of Estevan*

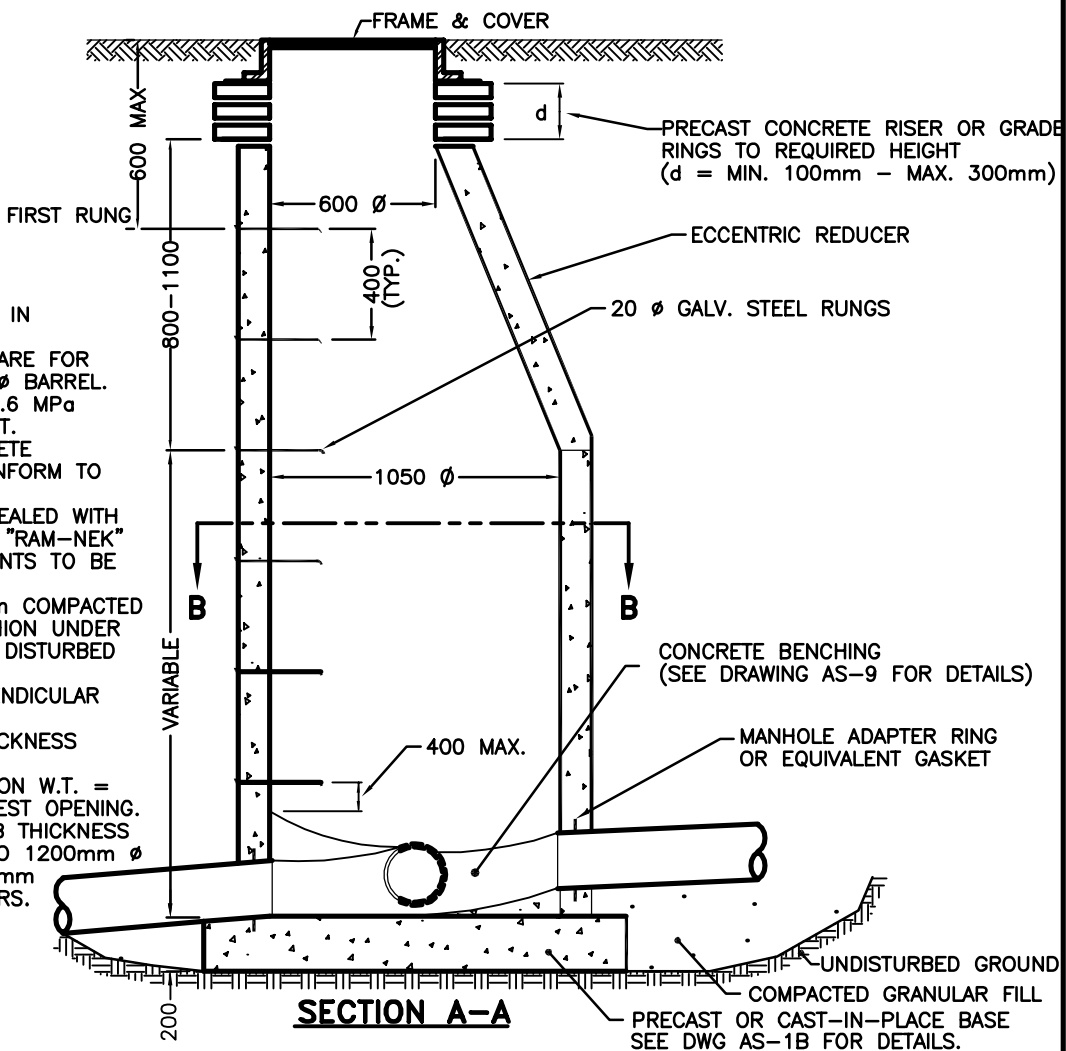
Standard Details



**RUNG DETAIL**



**SECTION B-B**



**SECTION A-A**

**NOTES:**

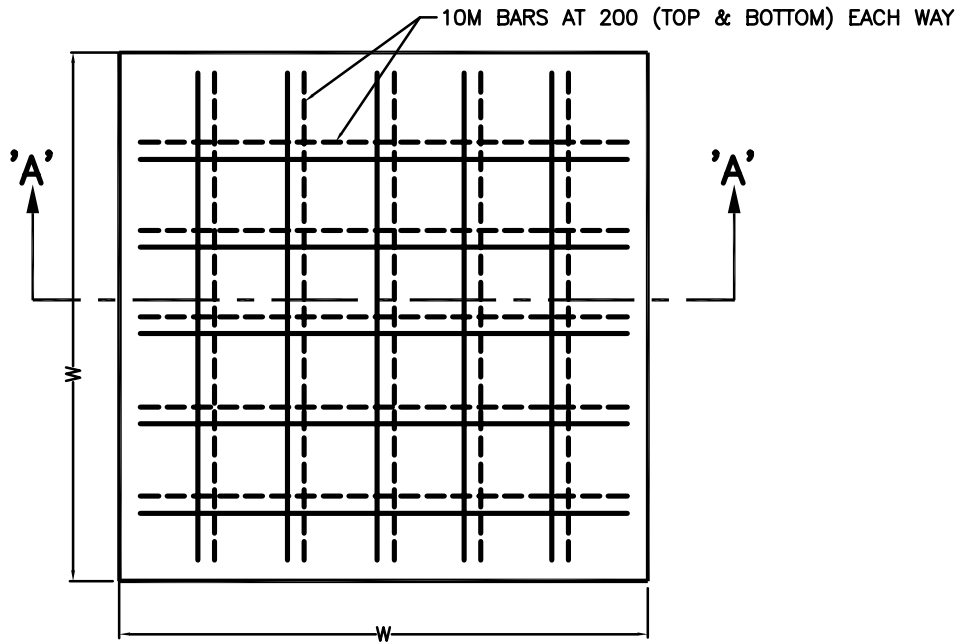
- 1) ALL DIMENSIONS ARE IN MILLIMETERS.
- 2) DIMENSIONS SHOWN ARE FOR STANDARD 1050mm Ø BARREL.
- 3) CONCRETE TO BE 27.6 MPa & SULFATE RESISTANT.
- 4) ALL PRECAST CONCRETE COMPONENTS TO CONFORM TO ASTM C478.
- 5) ALL JOINTS TO BE SEALED WITH PREFORMED GASKET "RAM-NEK"
- 6) ALL SPACES AND JOINTS TO BE MORTAR FILLED.
- 7) PROVIDE MIN. 100mm COMPACTED GRANULAR FILL CUSHION UNDER BASE IF PLACED ON DISTURBED GROUND.
- 8) PLACE RUNGS PERPENDICULAR TO FLOW DIRECTION.
- 9) MIN. RISER WALL THICKNESS (W.T.) = 1/12 x I.D.
- 10) MIN. CONICAL SECTION W.T. = 1/12 x I.D. OF LARGEST OPENING.
- 11) MIN. FLAT TOP SLAB THICKNESS -150mm FOR UP TO 1200mm Ø -200mm FOR 1350mm & LARGER DIAMETERS.

No.	Date	Revision	App'd
1	7/03	DETAIL	GJW

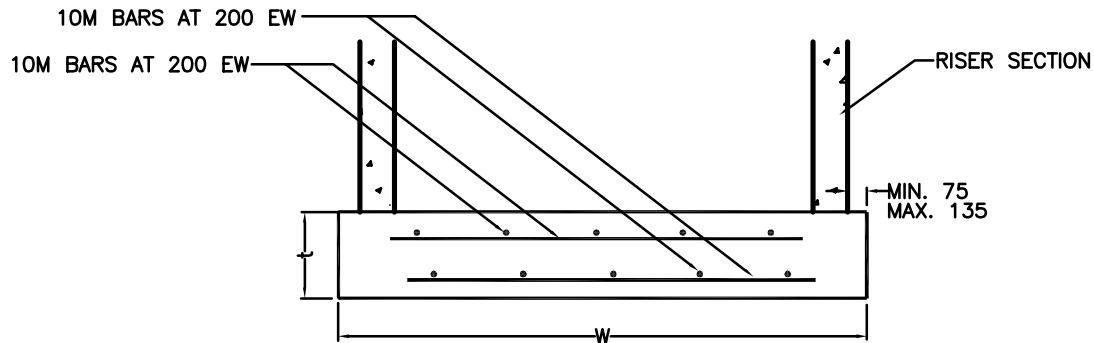
Drawn By : S.B.F.  
 Checked By : F.N.K.  
 Date : JUNE 19, 1998  
 Scale : N.T.S.  
 Approved By:  
 City Engineer

**CITY OF ESTEVAN**  
 ENGINEERING & PUBLIC WORKS DEPARTMENT  
**STANDARD PRECAST CONCRETE MANHOLE**

Detail Drawing No.  
**AS-1**



**BASE SLAB**



**SECTION 'A-A'**

**NOTES:**


- 1) COVER FOR REINFORCING STEEL SHALL BE 50mm EXCEPT FOR BOTTOM ROW OF BARS IN BASE SLAB WHERE 75mm COVER SHALL BE USED.
- 2) CONCRETE TO BE SULPHATE RESISTANT AND STRENGTH TO BE 27.6 MPa IN 28 DAYS.
- 3) REINFORCING STEEL TO BE INTERMEDIATE GRADE, DEFORMED BARS  $f_y=300$  MPa (CONFORM TO C.S.A. SPEC. G30-12M LATEST EDITION.)
- 4) ALL LAPS TO BE 30 BAR DIAMETERS.
- 5) ASTM APPROVED BASES OF CIRCULAR DIMENSIONS AND ALTERNATE DIMENSIONS, THICKNESS AND REINFORCING MAY BE SUBSTITUTED PROVIDED THAT EVIDENCE OF SUCH APPROVAL IS SUBMITTED PRIOR TO USE.
- 6) WELDED WIRE FABRIC OF EQUIVALENT REINFORCEMENT AREA MAY BE SUBSTITUTED PROVIDED THAT PRIOR WRITTEN APPROVAL OF THE ENGINEER HAS BEEN OBTAINED.

STANDARD MANHOLE BASE DIMENSIONS			
MANHOLE OR CATCH BASIN RISER DIAMETER	RISER WALL THICKNESS (MIN.)	t	W
900	75	200	1400
1050	90	200	1500
1200	100	200	1600
1350	115	200	1750
1500	125	200	1900
1800	150	230	2300
2100	175	230	2600

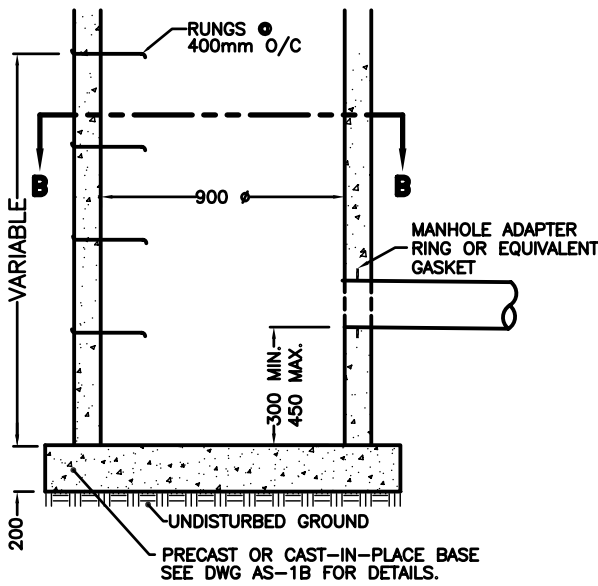
2	7/03	TEXT	GJW
1	07/98	TITLE	FNK
No.	Date	Revision	App'd

Drawn By : S.B.F.  
 Checked By : F.N.K.  
 Date : JUNE 25, 1998  
 Scale : N.T.S.  
 Approved By:  
 City Engineer

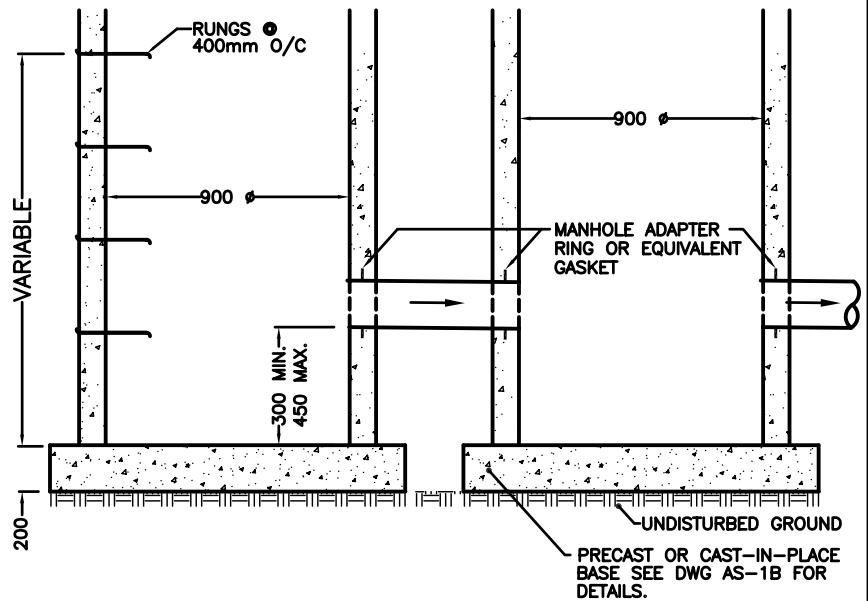
**CITY OF ESTEVAN**  
 ENGINEERING & PUBLIC WORKS DEPARTMENT  
 STANDARD PRECAST OR CAST-IN-PLACE BASES  
 FOR MANHOLES AND CATCH BASINS



Detail Drawing No.  
**AS-1B**



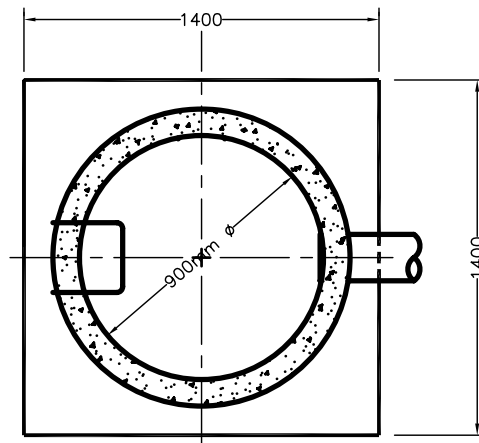
**SINGLE BARREL**



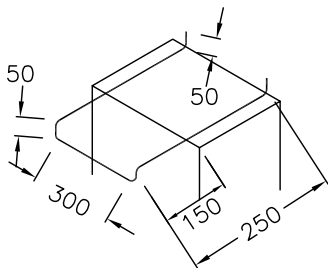
**TWIN BARREL**

**NOTES:**

- 1) ALL DIMENSIONS ARE IN MILLIMETERS.
- 2) DIMENSIONS SHOWN ARE FOR 900mm  $\phi$  BARREL.
- 3) CONCRETE TO BE 27.6 MPa & SULFATE RESISTANT.
- 4) ALL PRECAST CONCRETE COMPONENTS TO CONFORM TO ASTM C478.
- 5) ALL JOINTS TO BE SEALED WITH PREFORMED GASKET "RAM-NEK"
- 6) ALL SPACES AND JOINTS TO BE MORTAR FILLED.
- 7) PROVIDE MIN. 100mm COMPACTED GRANULAR FILL CUSHION UNDER BASE IF PLACED ON DISTURBED GROUND.
- 8) PLACE RUNGS PERPENDICULAR TO FLOW DIRECTION.
- 9) MINIMUM CATCHBASIN LEAD SIZE TO BE 250mm DIAMETER



**SECTION B-B**



**RUNG DETAIL**

Drawn By : S.B.F.  
 Checked By : F.N.K.  
 Date : JUNE 29, 1998  
 Scale : N.T.S.  
 Approved By:  
 City Engineer

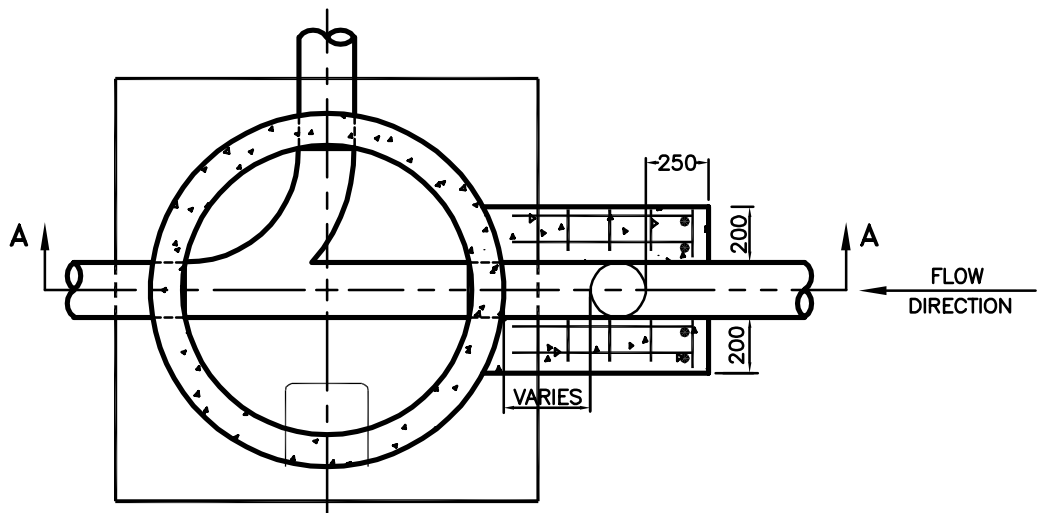
***CITY OF ESTEVAN***  
**ENGINEERING & PUBLIC WORKS DEPARTMENT**

**STANDARD PRECAST  
 CONCRETE CATCHBASIN**

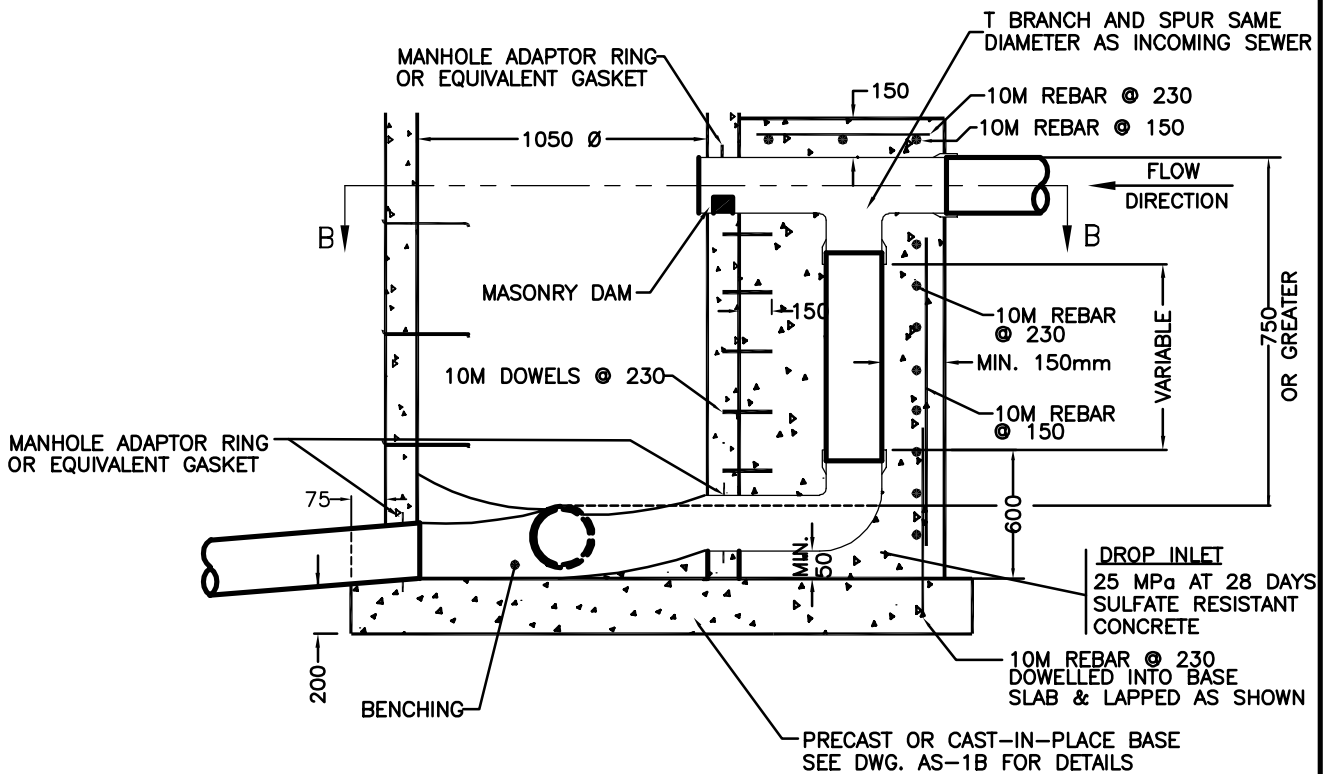


Detail Drawing No. **AS-1C**

No.	Date	Revision	App'd
1	4/22/09	Minimum Catchbasin Lead Size	ZH



**SECTION B-B**



**SECTION A-A**

**NOTES:**

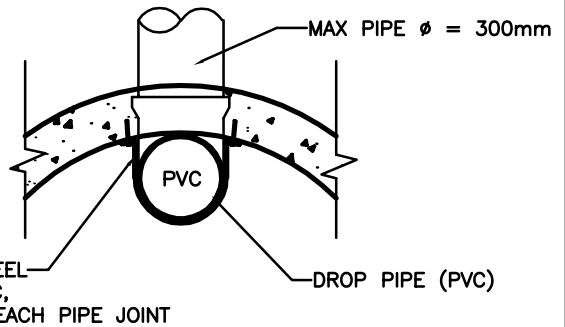
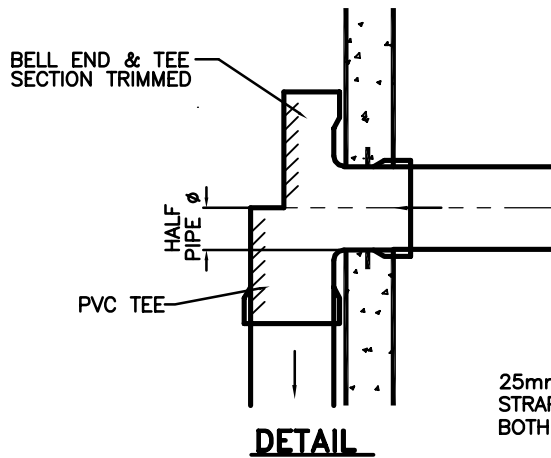
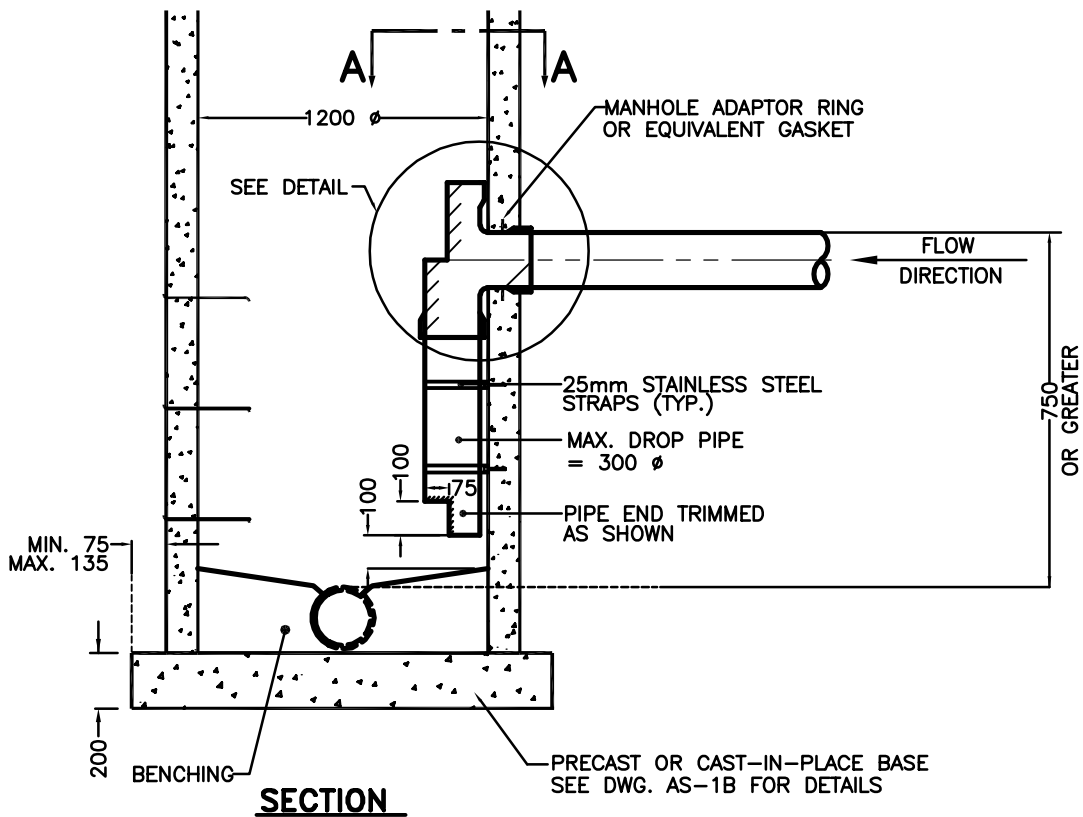
- 1) ALL DIMENSIONS ARE IN MILLIMETERS
- 2) DROP MANHOLE REQUIRED ONLY IF DIFFERENTIAL BETWEEN PIPE CROWNS IS 750mm OR GREATER.
- 3) FOR MANHOLE DETAILS SEE DWG AS-1
- 4) ALL PRECAST CONC. COMPONENTS TO CONFORM TO ASTM C478.
- 5) BEND REINFORCING

No.	Date	Revision	App'd City Engineer

**CITY OF ESTEVAN**  
 ENGINEERING & PUBLIC WORKS DEPARTMENT  
  
**PRECAST CONCRETE MANHOLE**  
**EXTERIOR DROP INLET DETAIL**



Detail Drawing No.  
**AS-2A**



**SECTION**

**DETAIL**

**SECTION A-A**

**NOTES:**

- 1) ALL DIMENSIONS ARE IN MILLIMETERS
- 2) DROP MANHOLE REQUIRED ONLY IF DIFFERENTIAL BETWEEN PIPE CROWNS IS 750mm OR GREATER.
- 3) FOR MANHOLE DETAILS SEE DWG AS-1
- 4) ALL PRECAST CONC. COMPONENTS TO CONFORM TO ASTM C478.
- 5) DROP PIPE & TEE TO BE SAME DIAMETER AS INLET SEWER.

- 6) INSTALL STRAPS TO MANHOLE WALL WITH ANCHOR BOLTS.

No.	Date	Revision	App'd

Drawn By : S.B.F.  
 Checked By : F.N.K.  
 Date : JUNE 20, 1998  
 Scale : N.T.S.  
 Approved By:  
 City Engineer

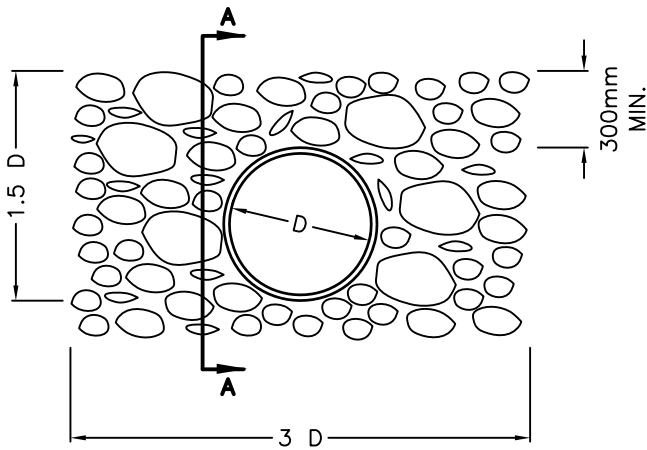
**CITY OF ESTEVAN**  
 ENGINEERING & PUBLIC WORKS DEPARTMENT

**PRECAST CONCRETE MANHOLE  
 INTERIOR DROP INLET DETAIL**

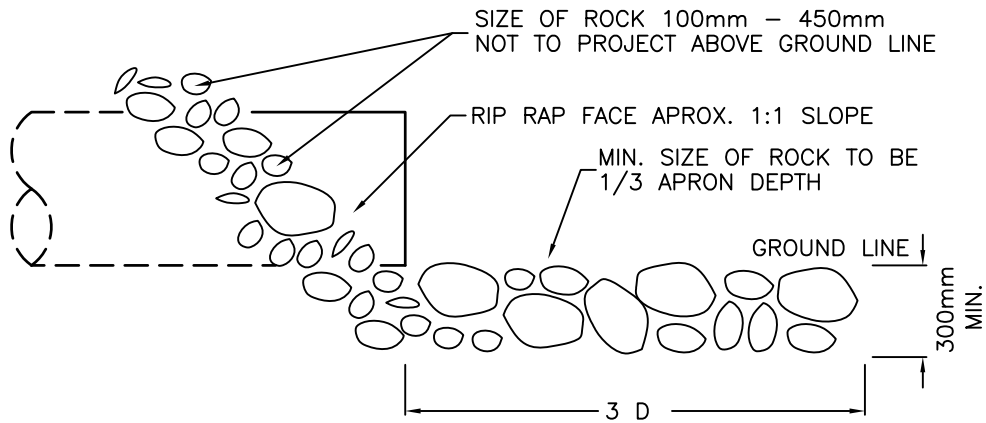
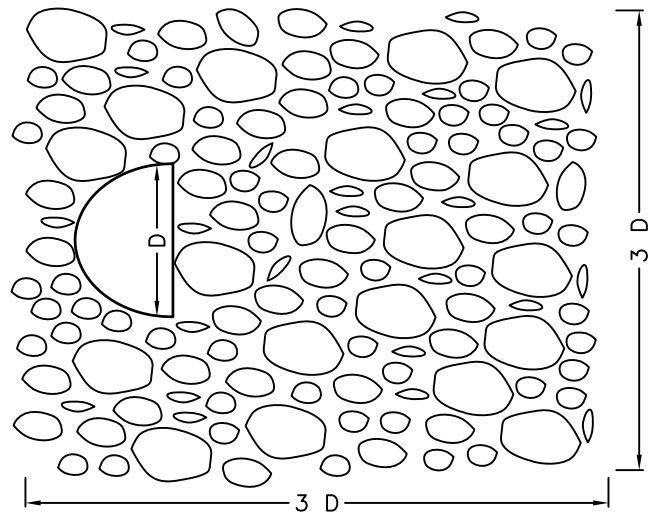


Detail Drawing No.  
**AS-2B**

**FRONT VIEW**



**TOP VIEW**



**SECTION A-A**

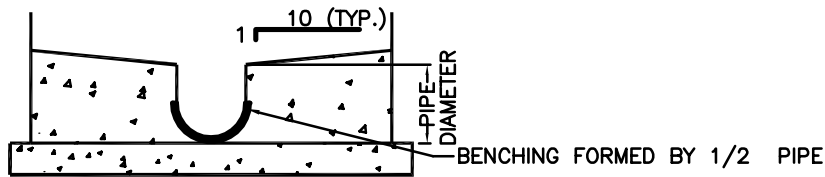
D (mm)	450	600	750	900	1050	1200	1350	1500	1650	1800
APRON DEPTH	450mm			600mm			750mm			

Drawn By : T.M.V.
Checked By : G.J.W.
Date : December 3, 1993
Scale : N.T.S.
Approved By:
City Engineer

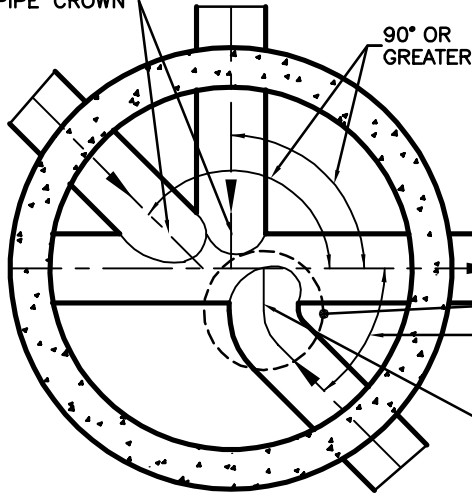
**CITY OF ESTEVAN**  
ENGINEERING & PUBLIC WORKS DEPARTMENT

HAND PLACED RIP RAP DETAIL





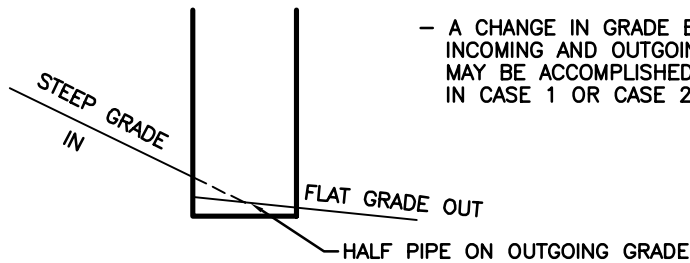
PIPE CROWN TO BE 25mm OR GREATER ABOVE OUTGOING PIPE CROWN



- LOWEST OR OUTGOING PIPE TO GO STRAIGHT THROUGH MANHOLE WITH FULL BENCHING AND 1/2 PIPE TO OPPOSITE WALL IN ALL CASES INCLUDING DEAD END MANHOLES.
- WHERE THE ANGLE BETWEEN THE DIRECTION OF FLOW IN THE INCOMING AND OUTGOING PIPES IS 90° OR GREATER, THEN THE INCOMING PIPE MUST COME STRAIGHT TO INTERSECT WITH THE OUTGOING PIPE WITH A HALF PIPE SET IN MAIN BENCHING; WHERE THIS ANGLE IS LESS THAN 90°, THEN A MINIMUM OF 50mm DROP IS REQUIRED BETWEEN INCOMING AND OUTGOING INVERTS.

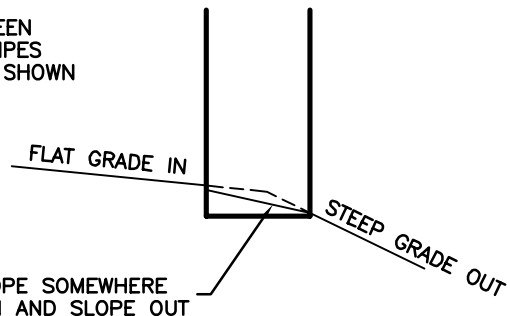
MOLDED 1/2 PIPE INVERT OR USE 1/4 BEND. BEND NOT TO EXTEND OUTSIDE OF MANHOLE.

CASE 1

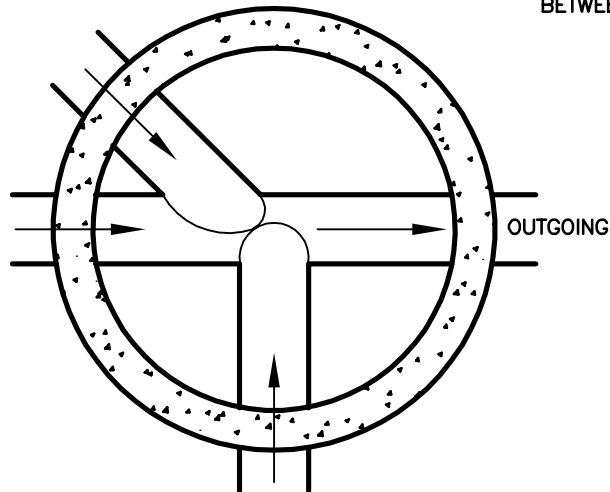


- A CHANGE IN GRADE BETWEEN INCOMING AND OUTGOING PIPES MAY BE ACCOMPLISHED AS SHOWN IN CASE 1 OR CASE 2.

CASE 2



HALF PIPE ON SLOPE SOMEWHERE BETWEEN SLOPE IN AND SLOPE OUT



SANITARY SEWERS:

- USE SANITARY EXTERIOR DROP CONNECTION AT MANHOLES WHEN INFLOW PIPE CROWN 750mm OR GREATER ABOVE OUTGOING PIPE CROWN. FOR DETAIL OF MANHOLE SEE DRAWING AS-2.
- HAVE INLET FLOW DROP INTO HALF PIPE SET IN MAIN BENCHING AND RUNNING STRAIGHT TO INTERSECTION WITH OUTGOING PIPE.
- HALF PIPE STRAIGHT THROUGH ON OUTGOING SLOPE.

No.	Date	Revision	App'd

Drawn By : S.B.F.  
 Checked By : F.N.K.  
 Date : JUNE 20, 1998  
 Scale : N.T.S.  
 Approved By:  
 City Engineer

**CITY OF ESTEVAN**  
 ENGINEERING & PUBLIC WORKS DEPARTMENT

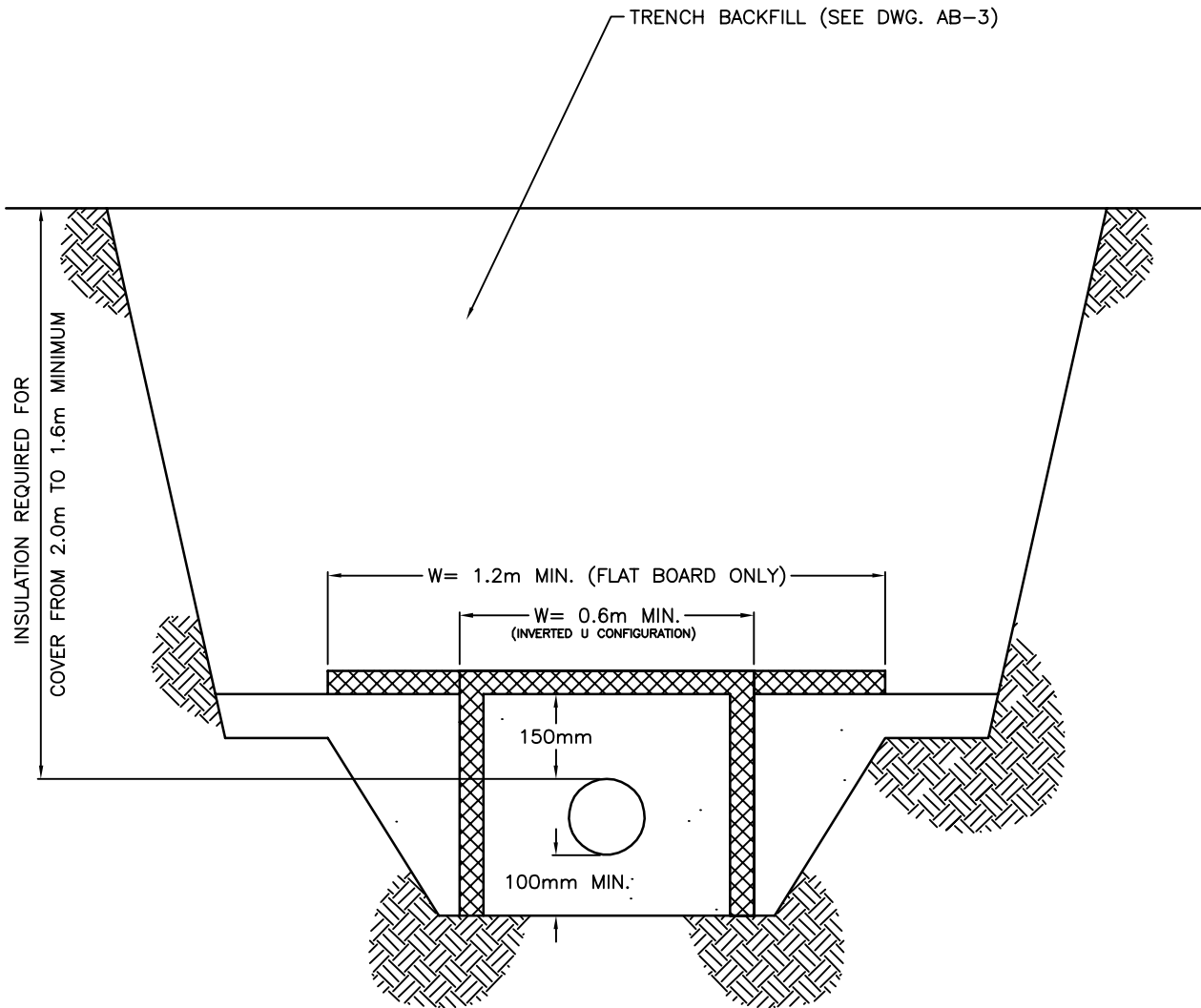
STANDARD MANHOLE BENCHING



Detail Drawing No.

AS-9





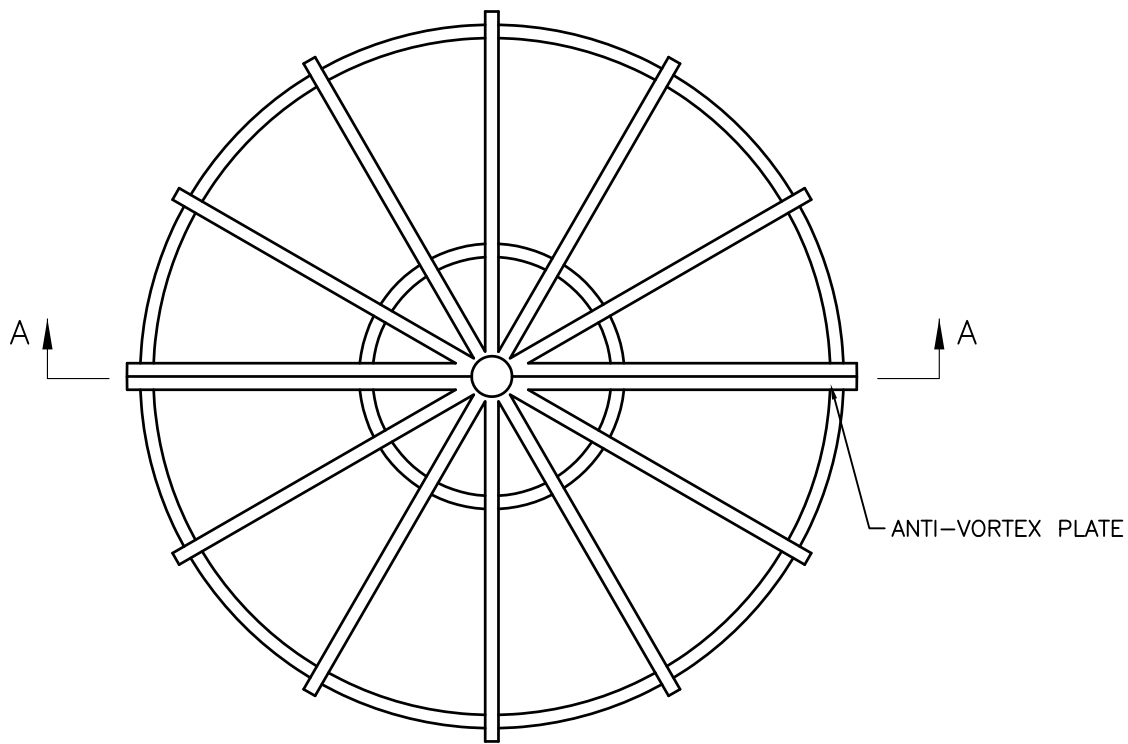
				Drawn By : T.M.V.
				Checked By : G.J.W.
				Date : December 1, 1993
				Scale : N.T.S.
				Approved By:
No.	Date	Revision	App'd	City Engineer

**CITY OF ESTEVAN**  
**ENGINEERING & PUBLIC WORKS DEPARTMENT**

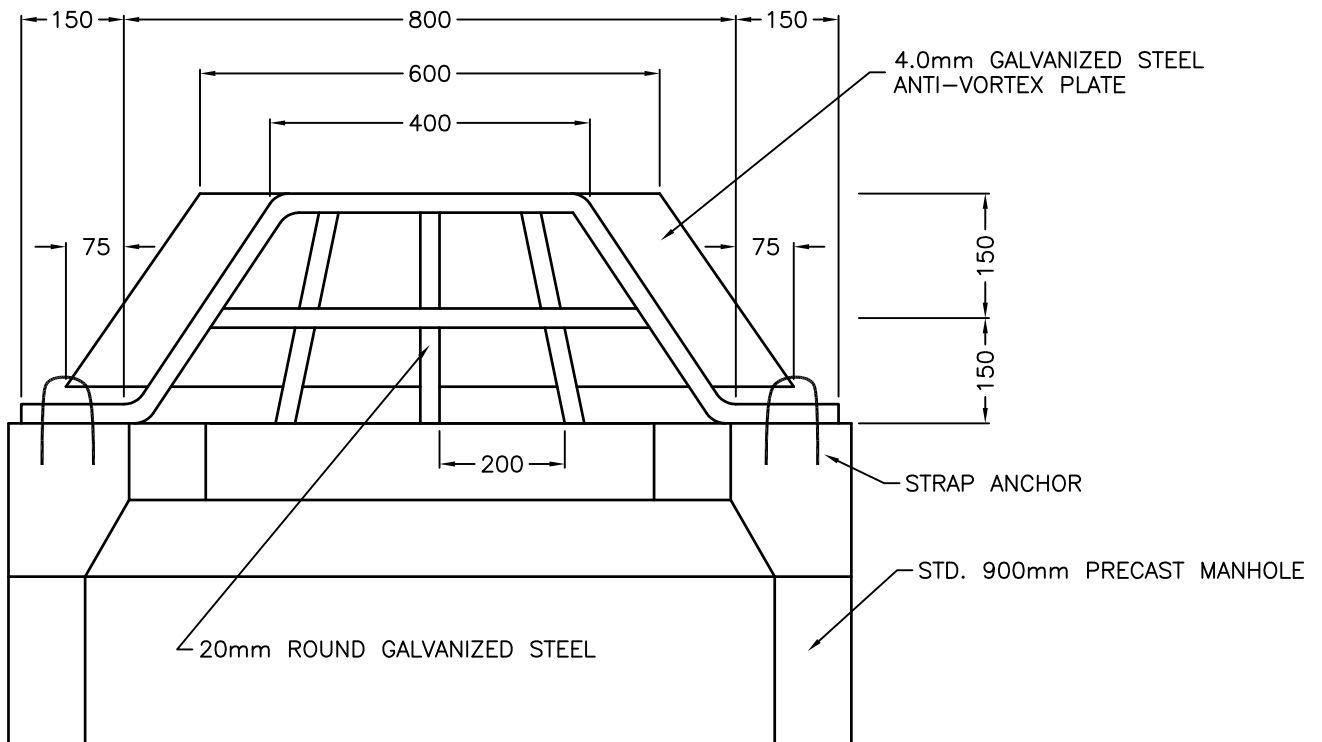
PIPE INSULATION DETAIL



Detail Drawing No. **AS-11**



**PLAN VIEW**




**SECTION A-A**

No.	Date	Revision	App'd

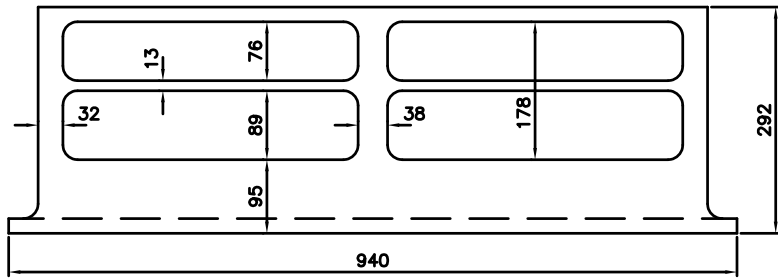
Drawn By : T.M.V.  
 Checked By : G.J.W.  
 Date : December 2, 1993  
 Scale : N.T.S.  
 Approved By:  
 City Engineer

**CITY OF ESTEVAN**  
**ENGINEERING & PUBLIC WORKS DEPARTMENT**

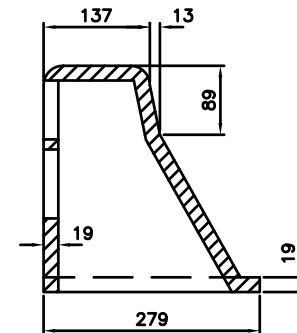
**STORM INLET STRUCTURE  
 AND TRASH RACK DETAILS**



Detail Drawing No.  
**AS-14A**



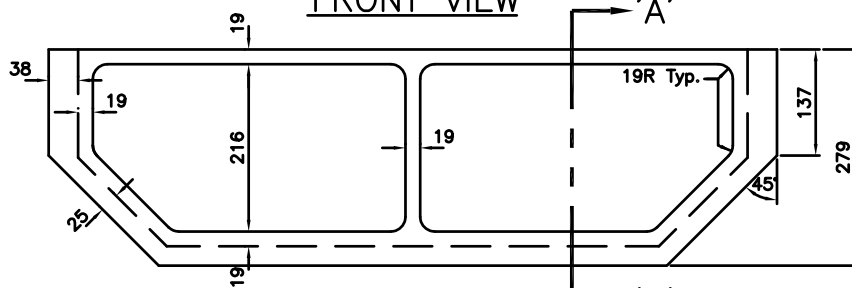
FRONT VIEW



SECTION 'A-A'

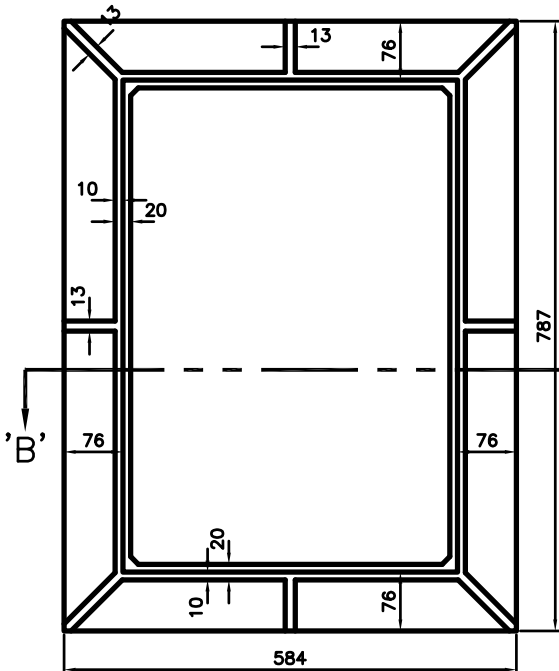
GREY CAST IRON CONFORM TO CLASS 20  
A.S.T.M. A48 (LATEST EDITION)

MASS = 86 KILOGRAM +/- 5%

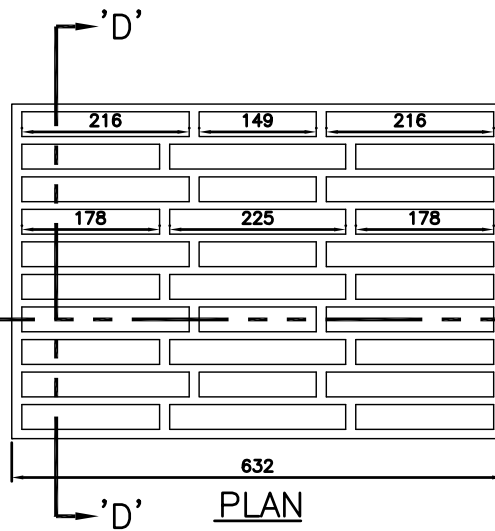


BOTTOM VIEW

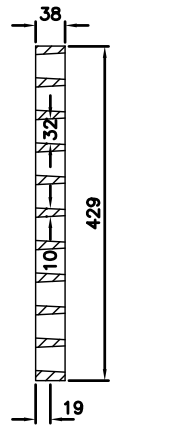
# CURB OR BACK INLET



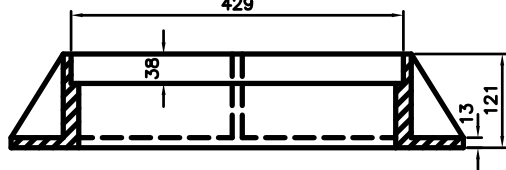
PLAN



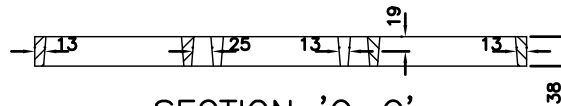
PLAN



SECTION 'D-D'



SECTION 'B-B'



SECTION 'C-C'

# GRATE

CAST STEEL TO CONFORM TO GRADE  
60-90 A.S.T.M. A148 (LATEST EDITION)

OR DUCTILE IRON TO CONFORM TO  
A.S.T.M. A536 (LATEST EDITION) GRADE 60-40-18

MASS = 24 KILOGRAM +/- 5%

NOTE  
ALL DIMENSIONS ARE IN MILLIMETRES  
UNLESS NOTED OTHERWISE.

# FRAME

GREY CAST IRON CONFORM TO CLASS 20  
A.S.T.M. A48 (LATEST EDITION)

MASS = 57 KILOGRAM +/- 5%

Drawn By : G.J.W.

Checked By : F.N.K.

Date : DEC 14, 1992

Scale : N.T.S.

Approved By:

City Engineer

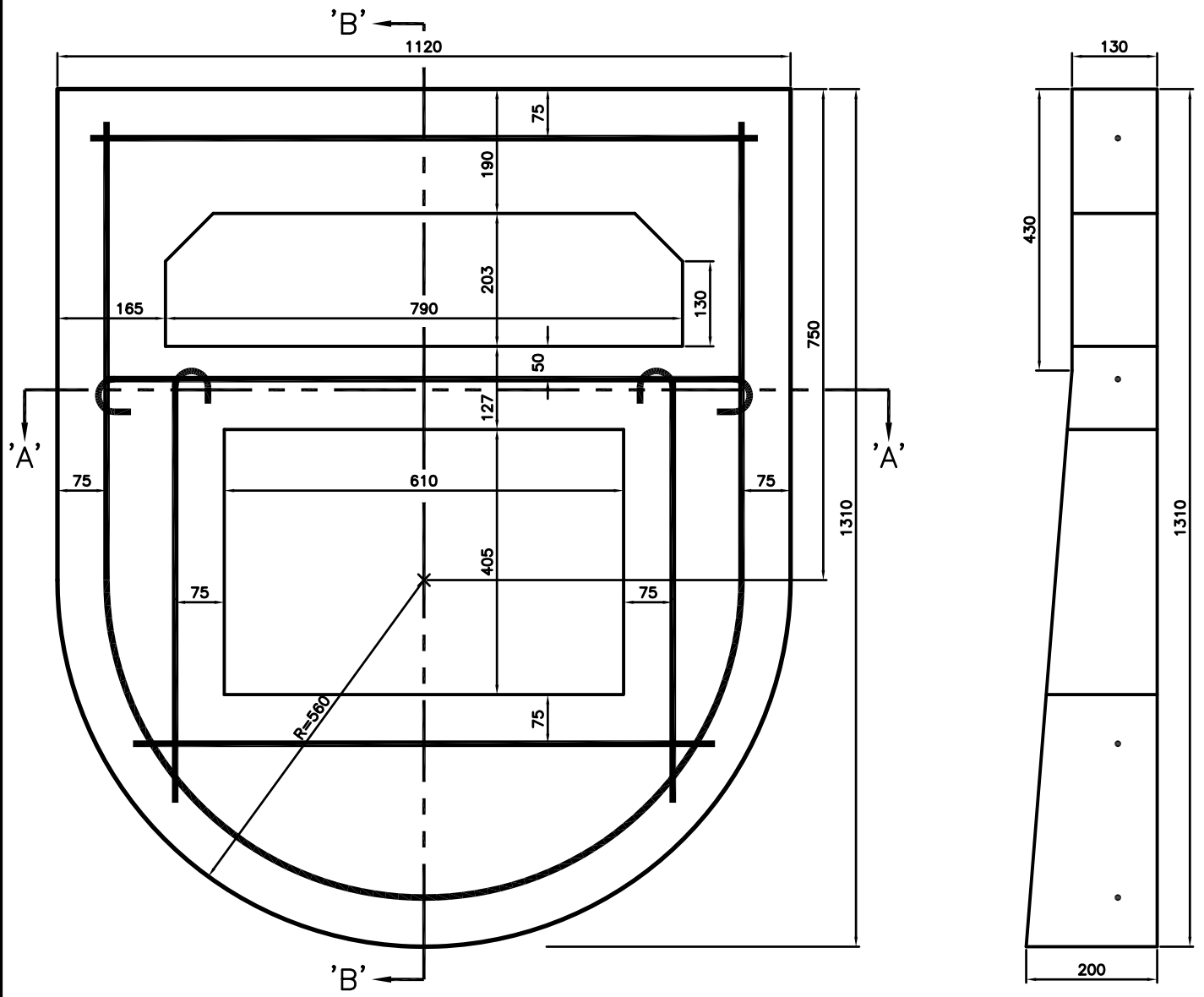
**CITY OF ESTEVAN**  
ENGINEERING & PUBLIC WORKS DEPARTMENT

TYPE 'K' CATCH BASIN  
(NORWOOD FOUNDRY TYPE 51 C/W STORMBACK)



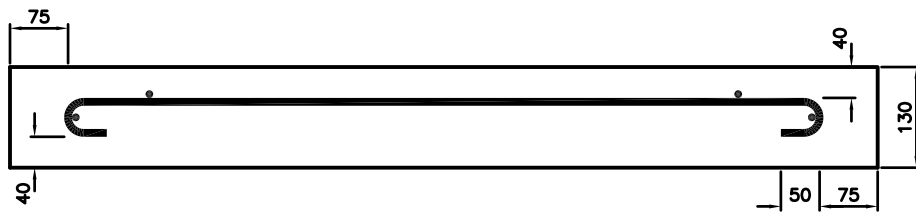
Detail Drawing No. AS-15

No.	Date	Revision	FNK	App'd
1	06/98			



PLAN

SECTION 'B-B'



SECTION 'A-A'

**NOTES:**

- CONCRETE STRENGTH TO BE 27.6 MPa IN 28 DAYS AND TO BE SULPHATE RESISTANT
- REINFORCING STEEL TO BE INTERMEDIATE GRADE DEFORMED BARS ( $f_y=300$  MPa) TO CONFORM TO C.S.A. SPEC G30.12M (LATEST EDITION)
- REINFORCING BARS TO BE 15M BARS WITH COLD BENDS, INSIDE RADIUS 30mm & SLANTED

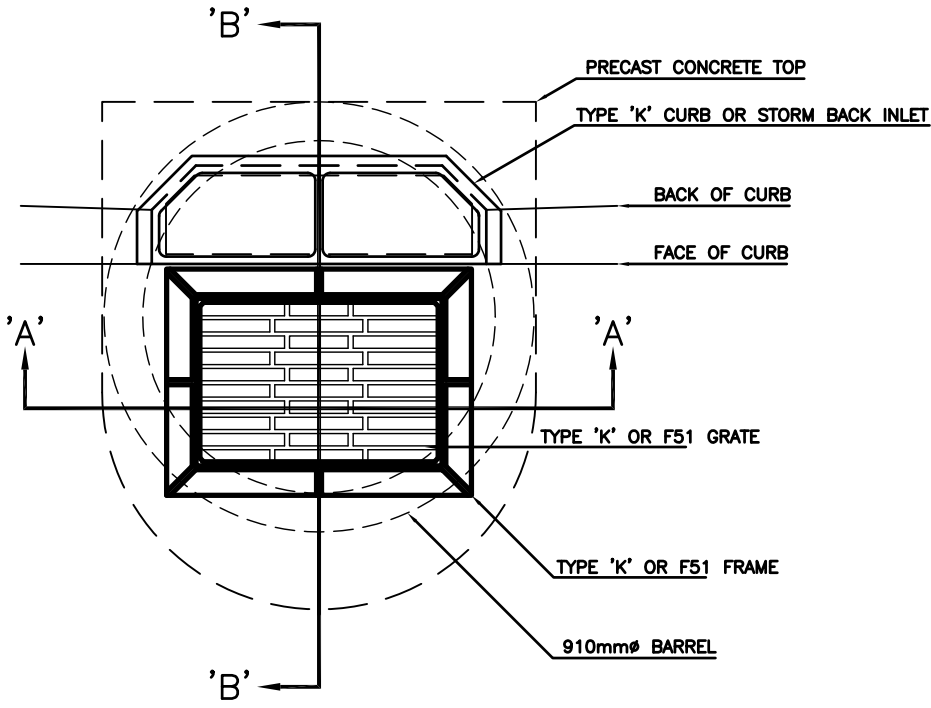
No.	Date	Revision	App'd
4	7/03	TEXT	GJW
3	07/98	TITLE	FNK
2	06/98	CONCRETE - 28 DAY STRENGTH	FNK
1	06/98	TITLE	FNK

Drawn By : G.J.W.  
 Checked By : F.N.K.  
 Date : DEC 14, 1992  
 Scale : N.T.S.  
 Approved By:  
 City Engineer

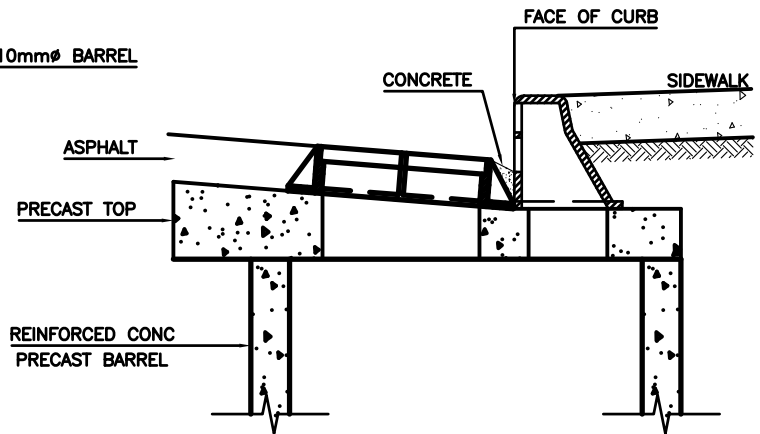
**CITY OF ESTEVAN**  
 ENGINEERING & PUBLIC WORKS DEPARTMENT

**PRECAST CONCRETE TOP FOR  
 TYPE 'K' CATCH BASIN INLET  
 (NORWOOD TYPE 51 C/W STORM BACK)**

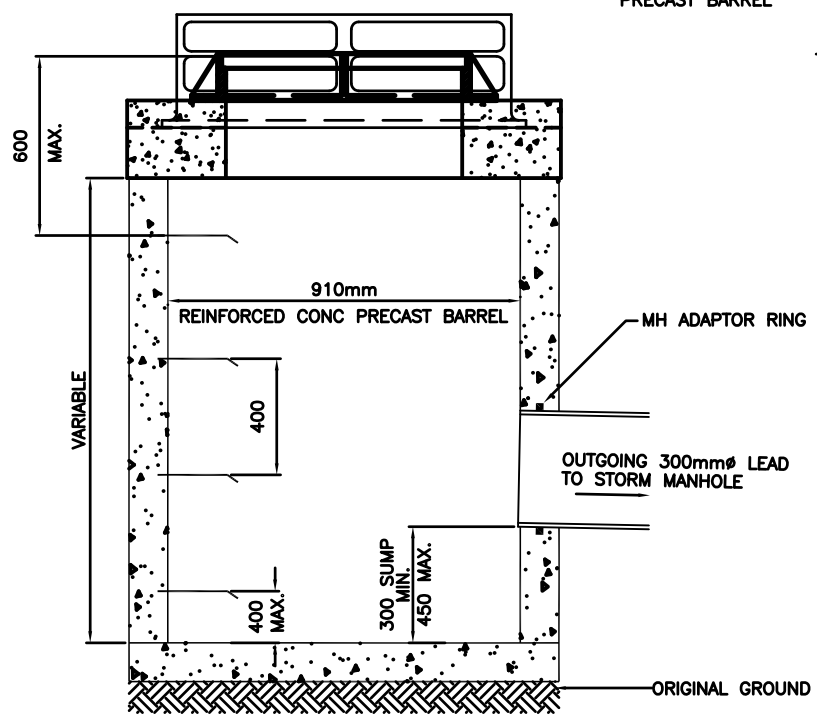




PLAN



SECTION 'B-B'



SECTION 'A-A'

**NOTES:**

- 1) ALL DIMENSIONS ARE IN MILLIMETERS.
- 2) CONCRETE TO BE 27.6 MPa & SULFATE RESISTANT.
- 3) ALL PRECAST CONCRETE COMPONENTS TO CONFORM TO ASTM C478.
- 4) ALL JOINTS TO BE SEALED WITH PREFORMED GASKET "RAM-NEK"
- 5) ALL SPACES AND JOINTS TO BE MORTAR FILLED.
- 6) PROVIDE MIN. 100mm COMPACTED GRANULAR FILL CUSHION UNDER BASE IF PLACED ON DISTURBED GROUND.

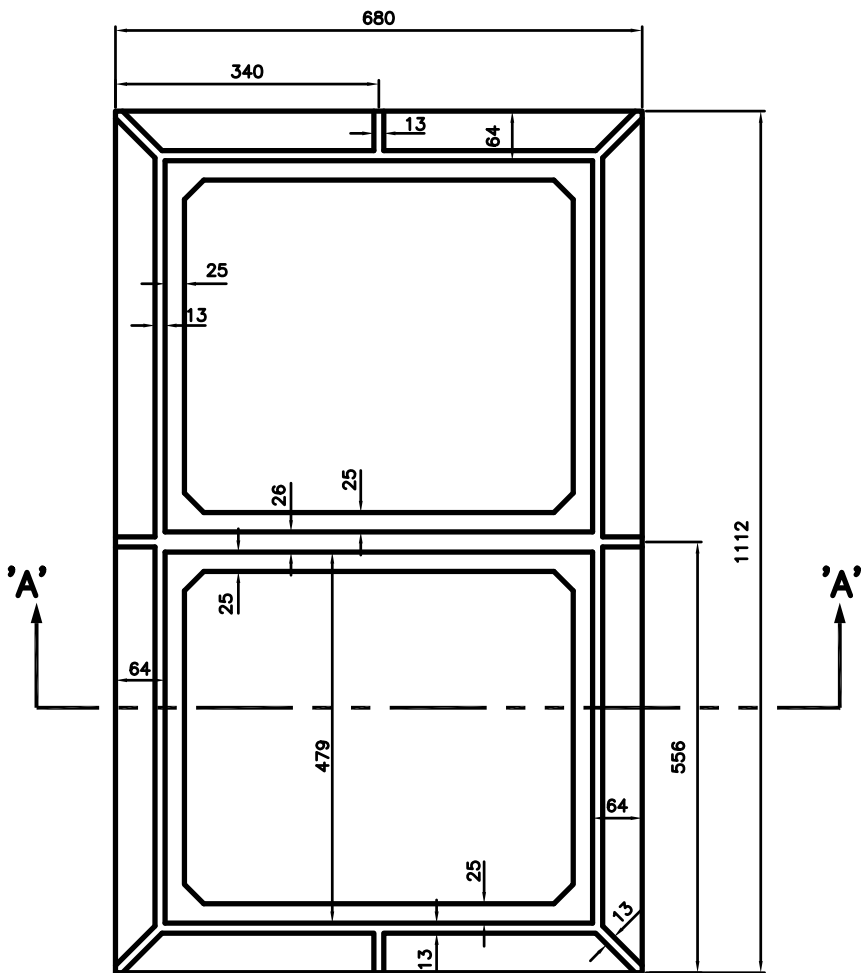
No.	Date	Revision	App'd

Drawn By : G.J.W.  
 Checked By : F.N.K.  
 Date : DEC. 14, 1992  
 Scale : N.T.S.  
 Approved By :  
 City Engineer

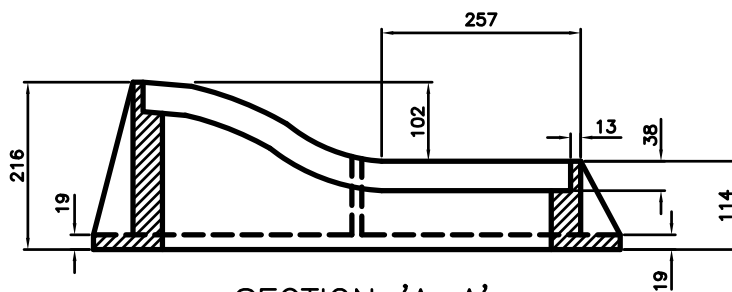
**CITY OF ESTEVAN**  
 ENGINEERING & PUBLIC WORKS DEPARTMENT  
**STORM CATCH BASIN INLET, TYPE 'K' ASSEMBLY**  
 (NORWOOD, TYPE 51 c/w STORM BACK)



Detail Drawing No. **AS-17**



PLAN



SECTION 'A-A'

NOTE  
ALL DIMENSIONS ARE IN MILLIMETRES  
UNLESS SHOWN OTHERWISE.

**MATERIAL SPECIFICATIONS**

GREY CAST IRON CONFORM TO CLASS 40  
A.S.T.M. A48 (LATEST EDITION)

MASS = 186 KILOGRAMS +/- 5%

Drawn By : S.B.F.
Checked By : F.N.K.
Date : JUNE 27, 1998
Scale : N.T.S.
Approved By:
City Engineer

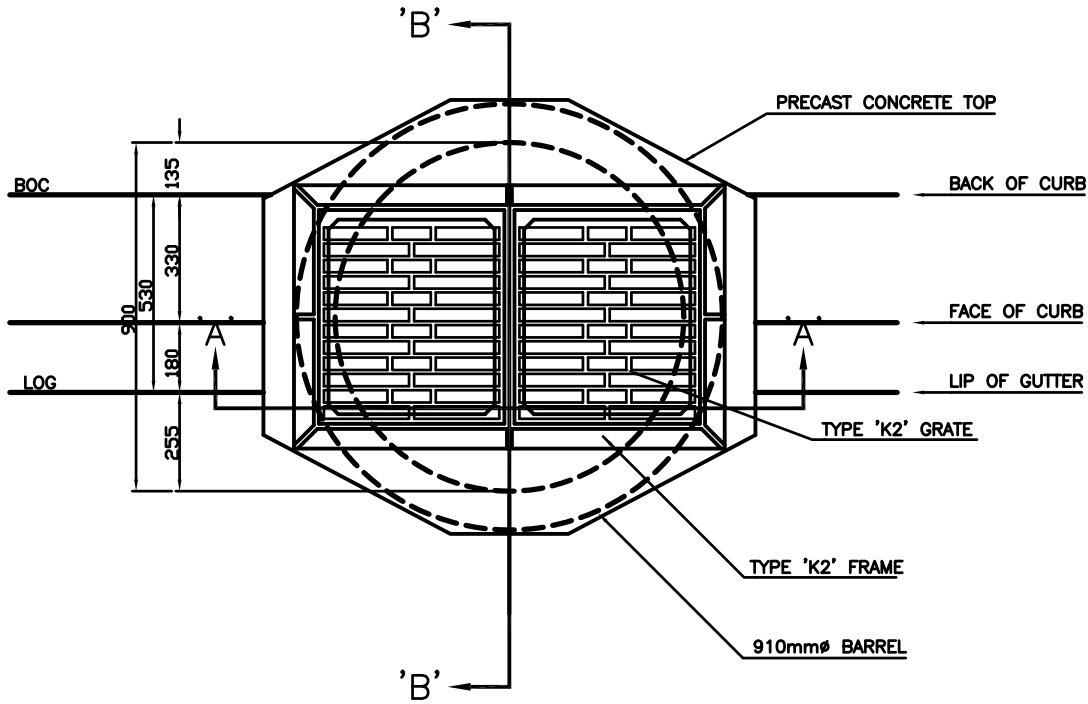
**CITY OF ESTEVAN**  
ENGINEERING & PUBLIC WORKS DEPARTMENT

CATCH BASIN FRAME  
TYPE 'K-2'

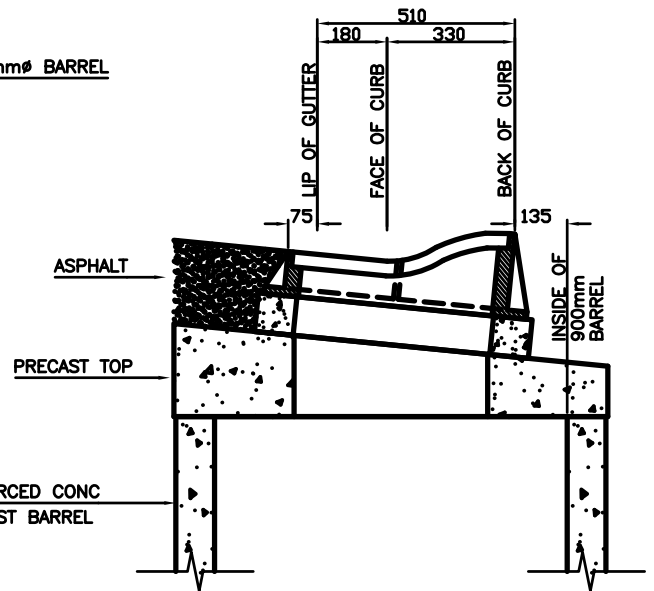


Detail Drawing No. AS-18

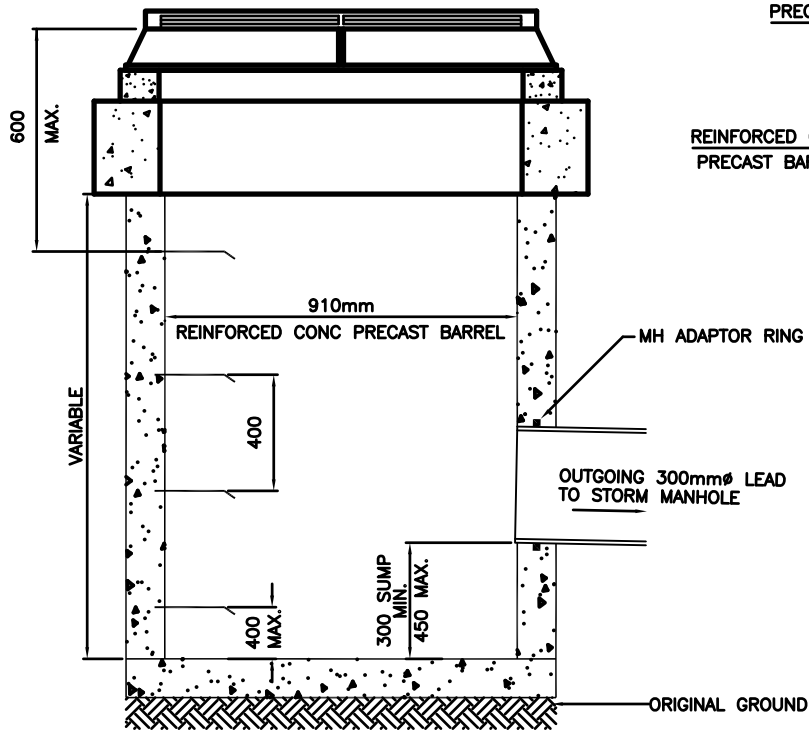
No.	Date	Revision	App'd



PLAN



SECTION 'B-B'



SECTION 'A-A'

**NOTES:**

- 1) ALL DIMENSIONS ARE IN MILLIMETERS.
- 2) CONCRETE TO BE 27.6 MPa & SULFATE RESISTANT.
- 3) ALL PRECAST CONCRETE COMPONENTS TO CONFORM TO ASTM C478.
- 4) ALL JOINTS TO BE SEALED WITH PREFORMED GASKET "RAM-NEK"
- 5) ALL SPACES AND JOINTS TO BE MORTAR FILLED.
- 6) PROVIDE MIN. 100mm COMPACTED GRANULAR FILL CUSHION UNDER BASE IF PLACED ON DISTURBED GROUND.

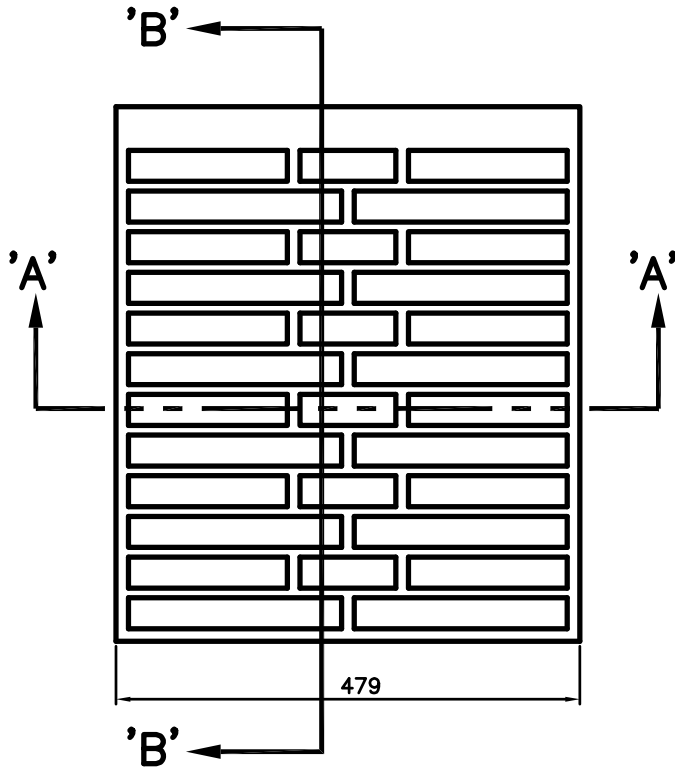
No.	Date	Revision	App'd

Drawn By : G.J.W.  
 Checked By : F.N.K.  
 Date : JULY 14, 1998  
 Scale : N.T.S.  
 Approved By:  
 City Engineer

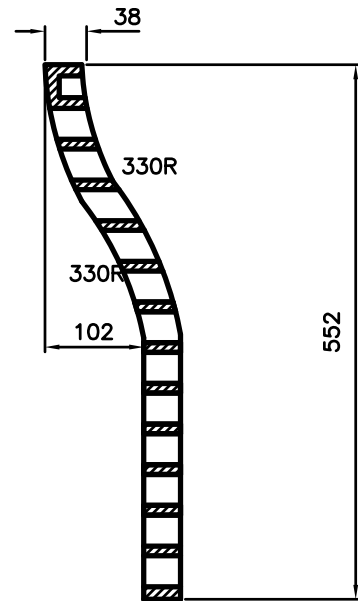
**CITY OF ESTEVAN**  
 ENGINEERING & PUBLIC WORKS DEPARTMENT

**STORM CATCH BASIN INLET**  
**TYPE K2 ASSEMBLY**

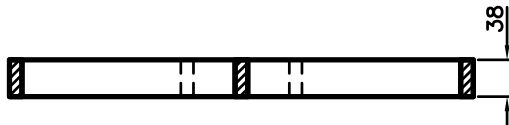




PLAN



SECTION 'B-B'



SECTION 'A-A'

**NOTE**  
ALL DIMENSIONS ARE IN MILLIMETRES  
UNLESS SHOWN OTHERWISE.

**MATERIAL SPECIFICATIONS**

\* CAST STEEL TO CONFORM TO GRADE 90-60  
A.S.T.M. A148 (LATEST EDITION) OR DUCTILE IRON TO CONFORM  
TO A.S.T.M. A536 (LATEST EDITION) GRADE 60-40-18

\* MASS = 23 KILOGRAMS +/- 5%

Drawn By : S.B.F.  
Checked By : F.N.K.  
Date : JUNE 27, 1998  
Scale : N.T.S.  
Approved By:  
City Engineer

**CITY OF ESTEVAN**  
ENGINEERING & PUBLIC WORKS DEPARTMENT

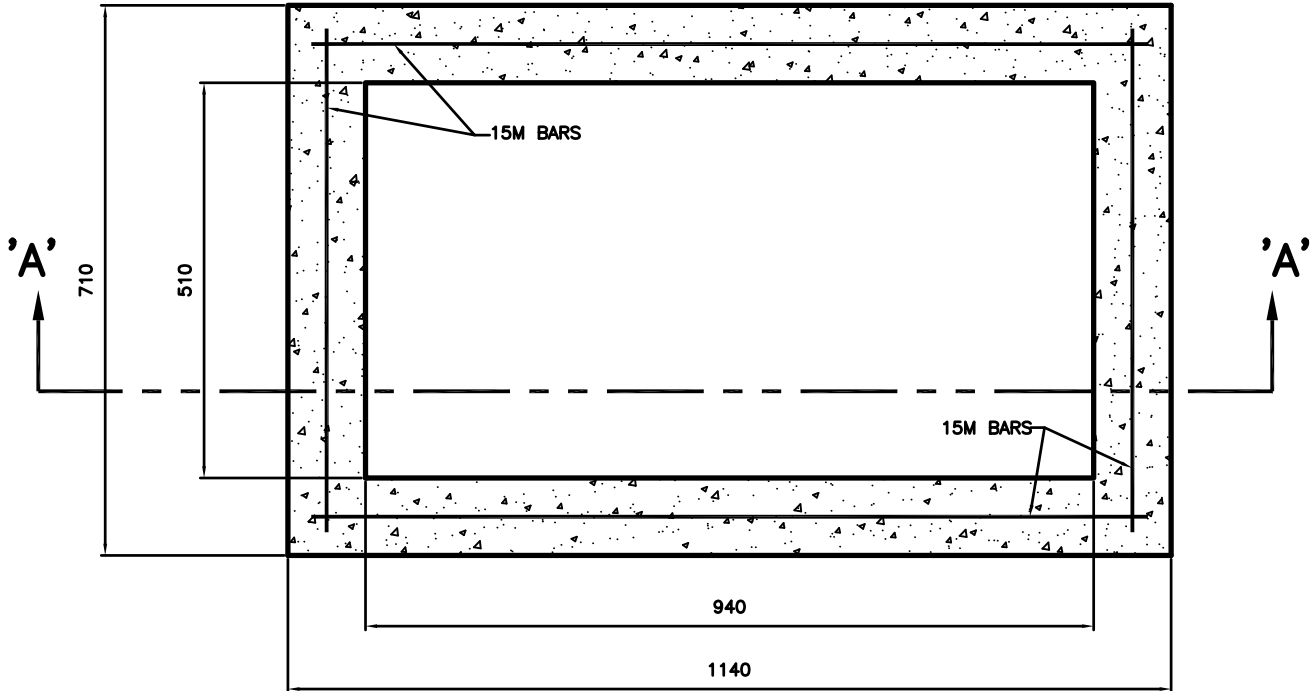
**CATCH BASIN GRATE  
TYPE 'K-2'**



Detail Drawing No. **AS-19**

No.	Date	Revision	App'd
2	06/98	CONCRETE - 28 DAY STRENGTH	FNK
1	06/98	TITLE	FNK





PLAN



SECTION 'A-A'

**NOTES**

1. CONCRETE TO BE 27.6 MPa IN 28 DAYS.  
AND TO BE SULPHATE RESISTANT
2. STEEL TO BE INTERMEDIATE GRADE DEFORMED  
BARS  $f_y=300$  MPa (CONFORM TO C.S.A. SPEC.  
630-12M LATEST EDITION)
3. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

Drawn By : S.B.F.
Checked By : F.N.K.
Date : JUNE 28, 1998
Scale : N.T.S.
Approved By:
City Engineer

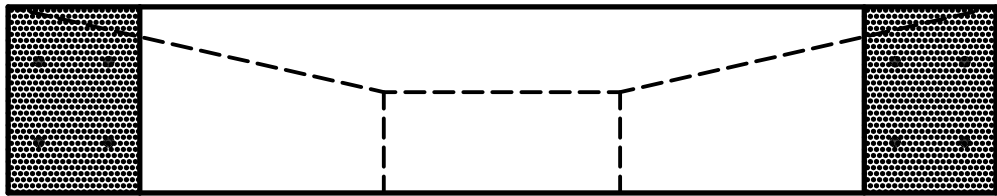
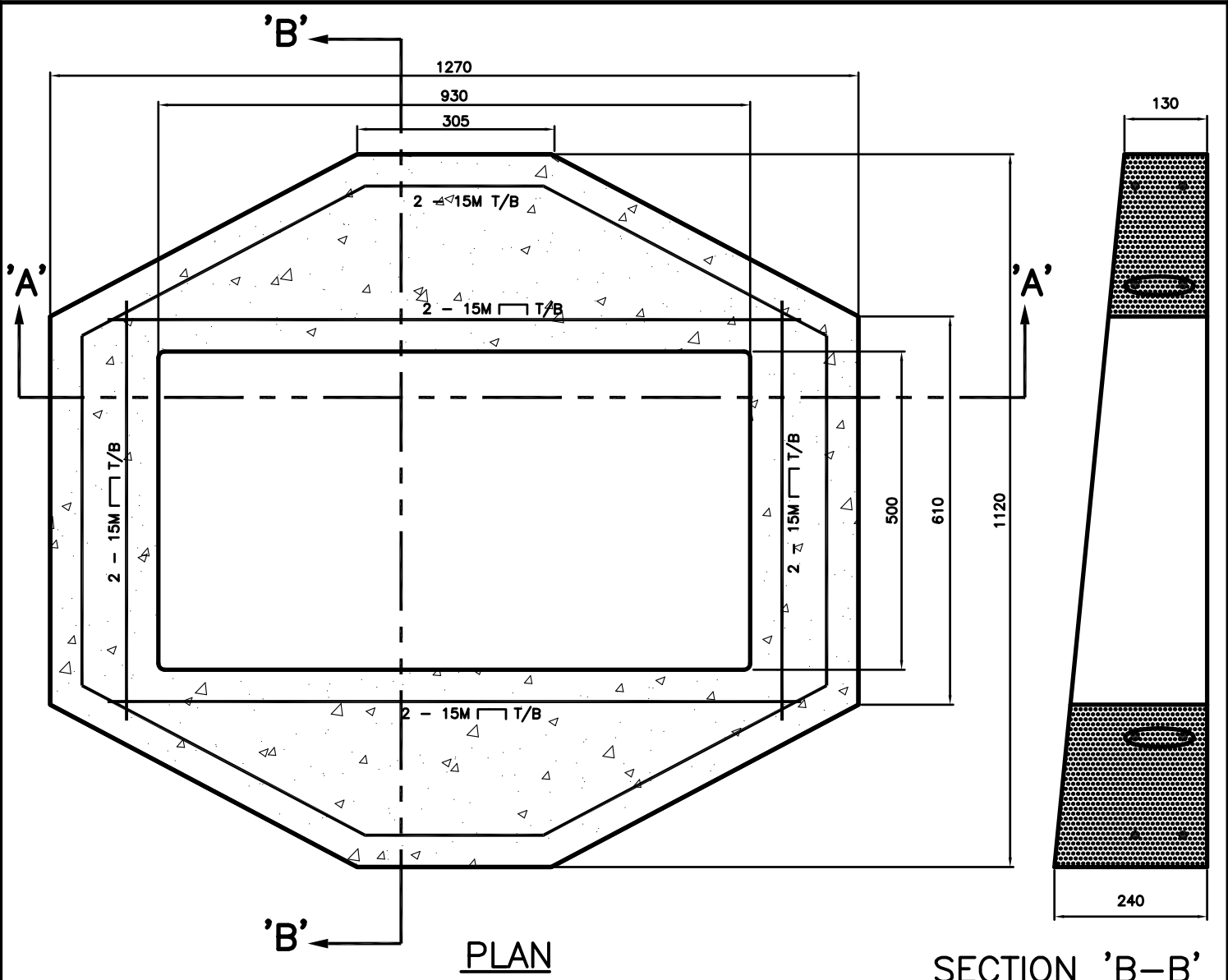
**CITY OF ESTEVAN**  
ENGINEERING & PUBLIC WORKS DEPARTMENT

PRECAST FILLER PIECE  
FOR TYPE 'K-2' CATCH BASIN



Detail Drawing No. **AS-20**

No.	Date	Revision	App'd



SECTION 'A-A'

**NOTES**


1. CONCRETE TO BE 27.6 MPa IN 28 DAYS.  
AND TO BE SULPHATE RESISTANT
2. STEEL TO BE INTERMEDIATE GRADE DEFORMED  
BARS  $f_y=300$  MPa (CONFORM TO C.S.A. SPEC.  
630-12M LATEST EDITION)
3. USE 40mm CLEAR COVER ON ALL STEEL.
4. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

No.	Date	Revision	App'd

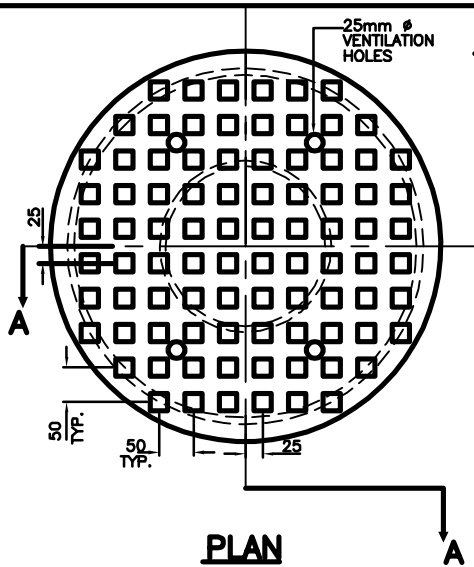
Drawn By : S.B.F.  
 Checked By : F.N.K.  
 Date : JUNE 28, 1998  
 Scale : N.T.S.  
 Approved By:  
 City Engineer

**CITY OF ESTEVAN**  
 ENGINEERING & PUBLIC WORKS DEPARTMENT

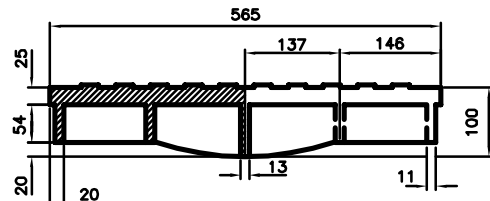
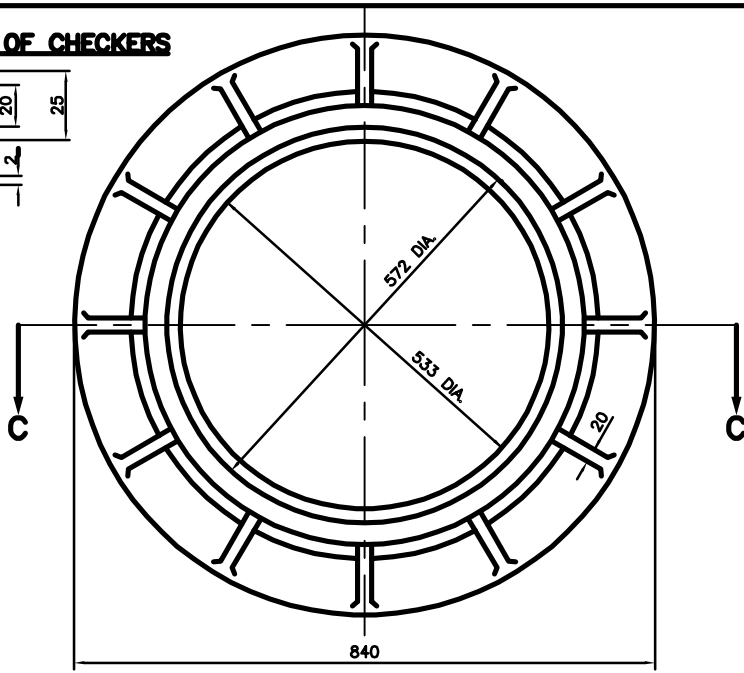
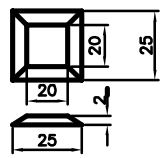
PRECAST SLAB TOP FOR  
 TYPE 'K-2' CATCH BASIN



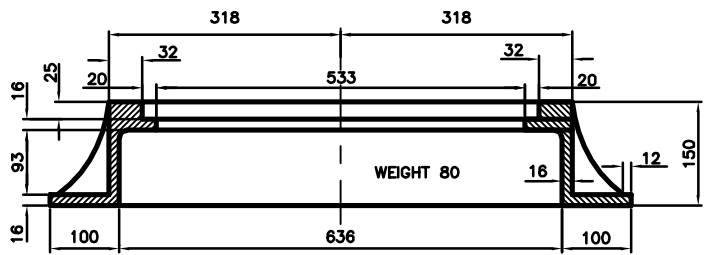
Detail Drawing No. **AS-21**



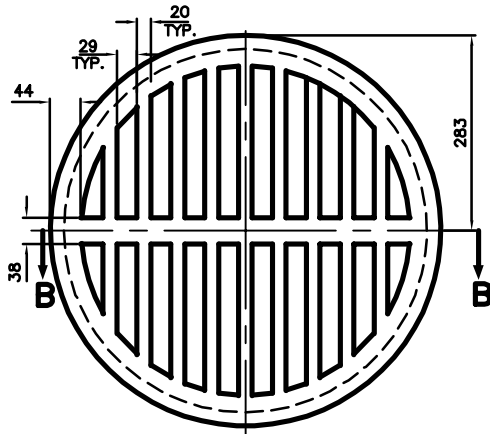
**DETAIL OF CHECKERS**



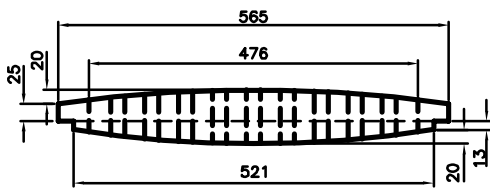
**SECTION 'A-A'**  
**MANHOLE COVER**



**SECTION 'C-C'**  
**FRAME**



**NF 49 INLET GRATE**



**SECTION 'B-B'**

**MATERIAL SPECIFICATIONS**

GREY CAST IRON CONFORM TO CLASS 40  
A.S.T.M. A48 (LATEST EDITION)  
MASS = 186 KILOGRAMS +/- 5%

**NOTES**

1. MACHINE OR GRIND FRAMES, COVERS AND GRATES TO EVEN NON-ROCKING BEARING SURFACES.
2. FRAME AND COVER SHALL BE NORWOOD F-39 OR APPROVED EQUAL.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

No.	Date	Revision	App'd	City Engineer

**CITY OF ESTEVAN**  
ENGINEERING & PUBLIC WORKS DEPARTMENT

**STANDARD MANHOLE FRAME & COVER  
FOR RESIDENTIAL TRAFFIC**



Detail Drawing No. **AS-23**