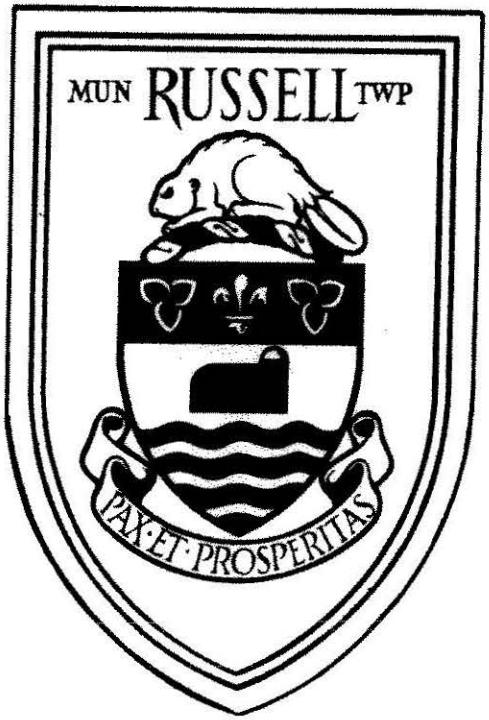
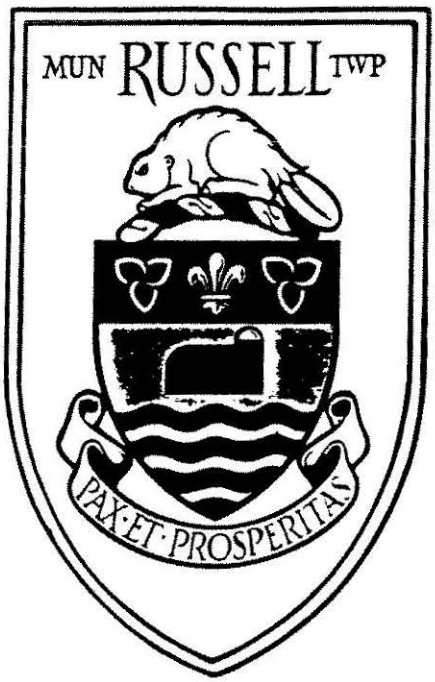
MUN RUSSELL TWP



STANDARD ENGINEERING DRAWINGS

LECOMPTE ENGINEERING LTD.

MUN RUSSELL TWP



ENGINEERING STANDARDS

PREPARED BY

LECOMPTE ENGINEERING LTD.

CONSULTING ENGINEERS
INGÉNIEURS CONSEILS

TOWNSHIP OF RUSSELL

STANDARD DRAWINGS

R-100 ROADS

R-101	TYPICAL ROADWAY CONSTRUCTION (WITH CONCRETE CURBS)
R-102	TYPICAL ROADWAY CONSTRUCTION (WITH OPEN DITCHES)
R-102A	TYPICAL ROADWAY CONSTRUCTION (WITH OPEN DITCHES) OPTION 1
R-102B	TYPICAL ROADWAY CONSTRUCTION (WITH OPEN DITCHES) OPTION 2
R-102B	TYPICAL ROADWAY CONSTRUCTION (WITH OPEN DITCHES) OPTION 3
R-103	CONCRETE BARRIER CURB
R-104	CONCRETE SIDEWALK
R-105	MONOLITHIC SIDEWALK
R-106	SIDEWALK RAMPS
R-107	JOINTS AT SIDEWALK OPENINGS
R-108	TURNING CIRCLES FOR RESIDENTIAL STREETS
R-109	FROST TAPERING FOR CULVERTS

S-200 SEWERS

S-201	MANHOLE FRAME AND COVER FOR SANITARY AND STORM SEWERS
S-202	STANDARD PRECAST MANHOLE
S-203	DROP MANHOLE DETAIL
S-204	SEWER SERVICE CONNECTIONS
S-205	STANDARD FRAME AND COVER FOR CATCH BASINS
S-206	STANDARD CATCH BASIN
S-207	STORM LEAD DETAILS
S-208	DITCH INLET MANHOLE (TYPE "A")
S-209	DITCH INLET MANHOLE (TYPE "B")

W-300 WATER WORKS

W-301	FRAME AND COVER FOR A WATERMAIN VALVE CHAMBER
W-302	GATE VALVE CHAMBER
W-303	GATE VALVE AND VALVE BOX INSTALLATION
W-304	HYDRANT INSTALLATION
W-305	STANDARD 20 & 25 MM DIAMETER WATER SERVICE CONNECTION
W-306	HOMEOWNER'S WATER CONNECTION

M-400 MUNICIPAL

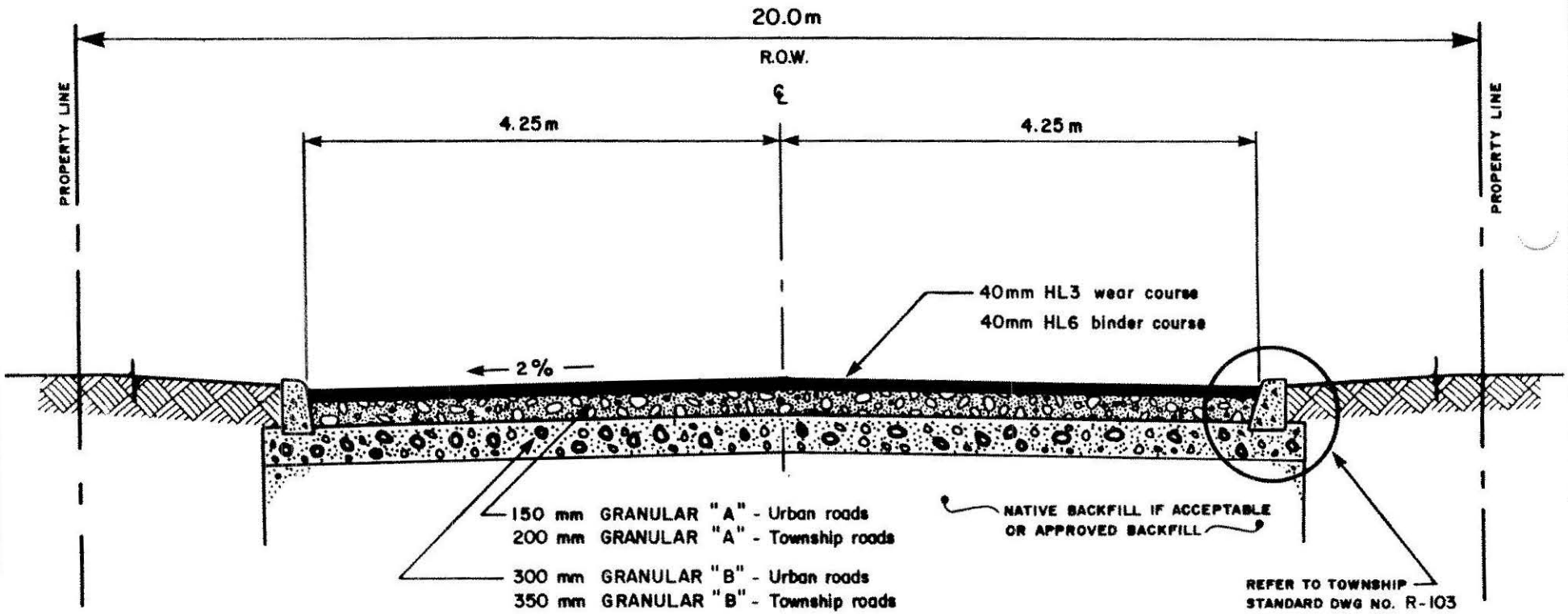
M-401	COMMON TRENCH FOR MUNICIPAL SERVICES
M-402	HOUSE SERVICE DETAILS AND INSULATING REQUIREMENTS
M-403	SINGLE TRENCH DETAIL
M-404	PRESSURIZED CONDUIT CROSSING ANOTHER MUNICIPAL PIPE
M-405	CONCRETE THRUST BLOCKS FOR TEES, PLUGS AND HORIZONTAL BENDS
M-406	CONCRETE THRUST BLOCKS FOR VERTICAL BENDS
M-407	LOT GRADING
M-408	RURAL RESIDENTIAL FRONT LOT DRAINAGE
M-409	RURAL RESIDENTIAL REAR LOT DRAINAGE

NOTES :

1) Many of these drawings are based on O.P.S.D. concepts and include their explanatory notes.

2) In most cases the dimensions are shown in millimeters unless otherwise shown.

\5124-STA.DRW



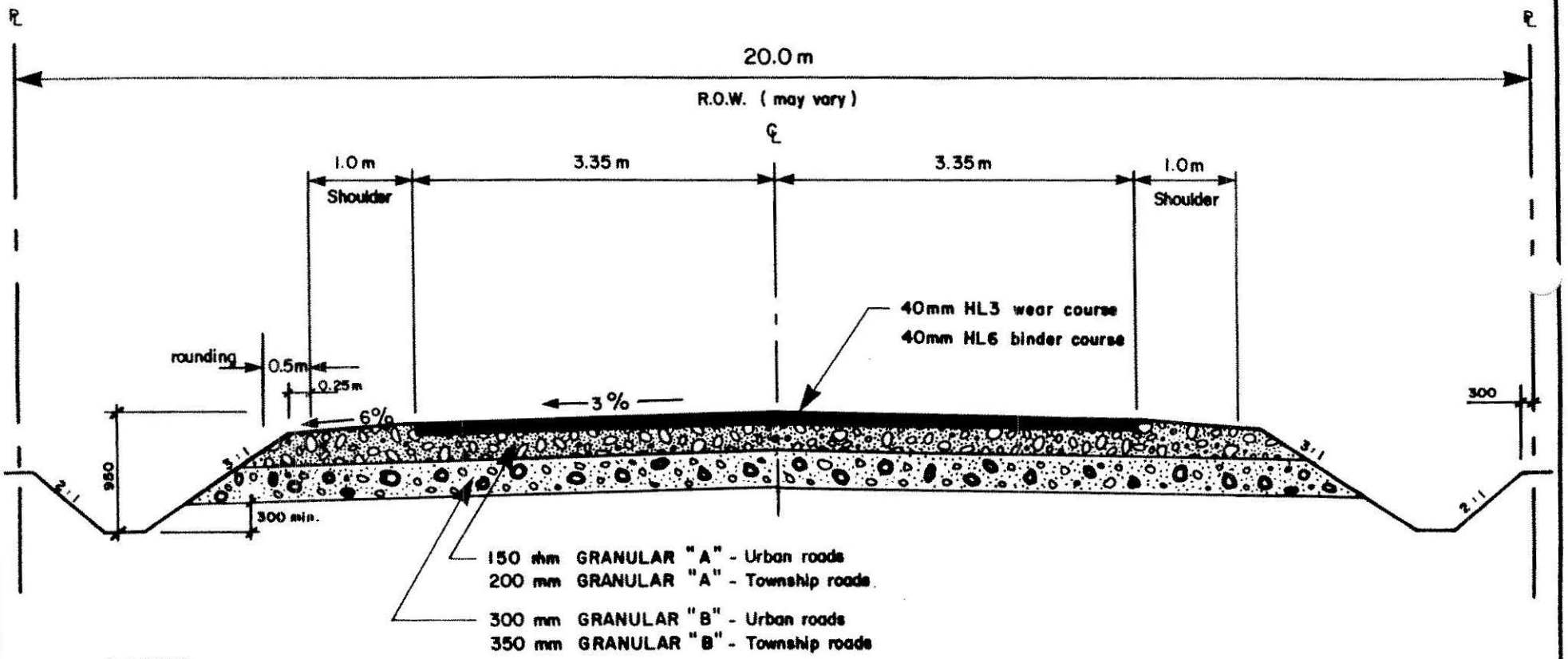
NOTES:

1. ROAD SECTION AS DESCRIBED BY THE TOWNSHIP OF RUSSELL
2. ALL MATERIALS USED SHALL BE AS PER MTO SPECIFICATIONS
3. GRANULAR "A" : 19mm minus from quarry source
   GRANULAR "B" : 50 mm minus from quarry source

TYPICAL ROADWAY CONSTRUCTION
(WITH CONCRETE CURBS)

MUN RUSSELL TWP

PREPARED BY: LECOMPTE ENG. LTD.	DATE: MARCH 1993
SCALE: N.T.S.	FIGURE: R-101



NOTES:

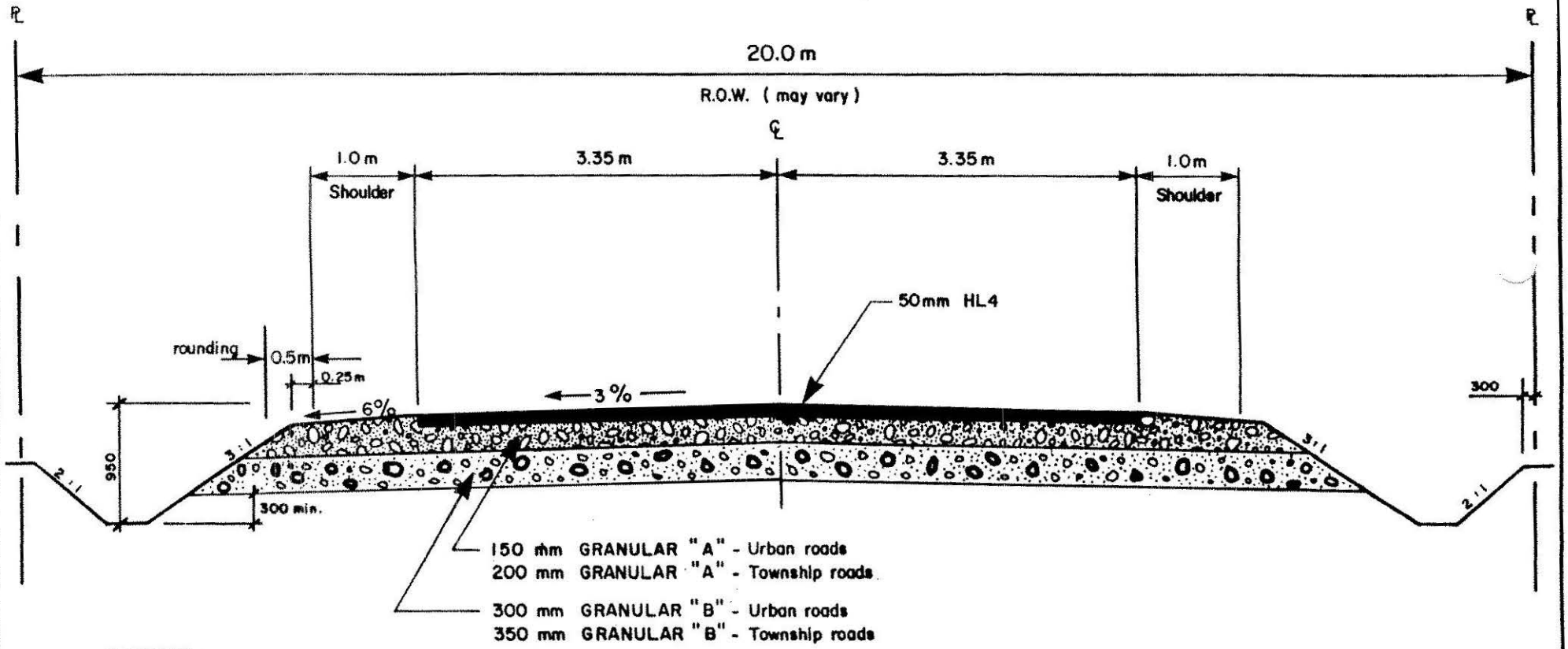
1. ROAD SECTION AS DESCRIBED BY THE TOWNSHIP OF RUSSELL
2. ALL MATERIALS USED SHALL BE AS PER MTO SPECIFICATIONS
3. GRANULAR "A" : 19mm minus from quarry source
   GRANULAR "B" : 50 mm minus from quarry source
4. MAXIMUM DEPTH OF DITCH = 1.2 m
5. DITCH SLOPES MAY VARY FROM 2:1 TO 3:1 DEPENDING ON DEPTH OF DITCH

REVISED FEB. 1994

TYPICAL ROADWAY CONSTRUCTION
(WITH OPEN DITCHES)

MUN RUSSELL TWP

PREPARED BY:	DATE:
LECOMPTE ENG. LTD.	MARCH 1993
SCALE: N.T.S.	FIGURE: R-102



NOTES:

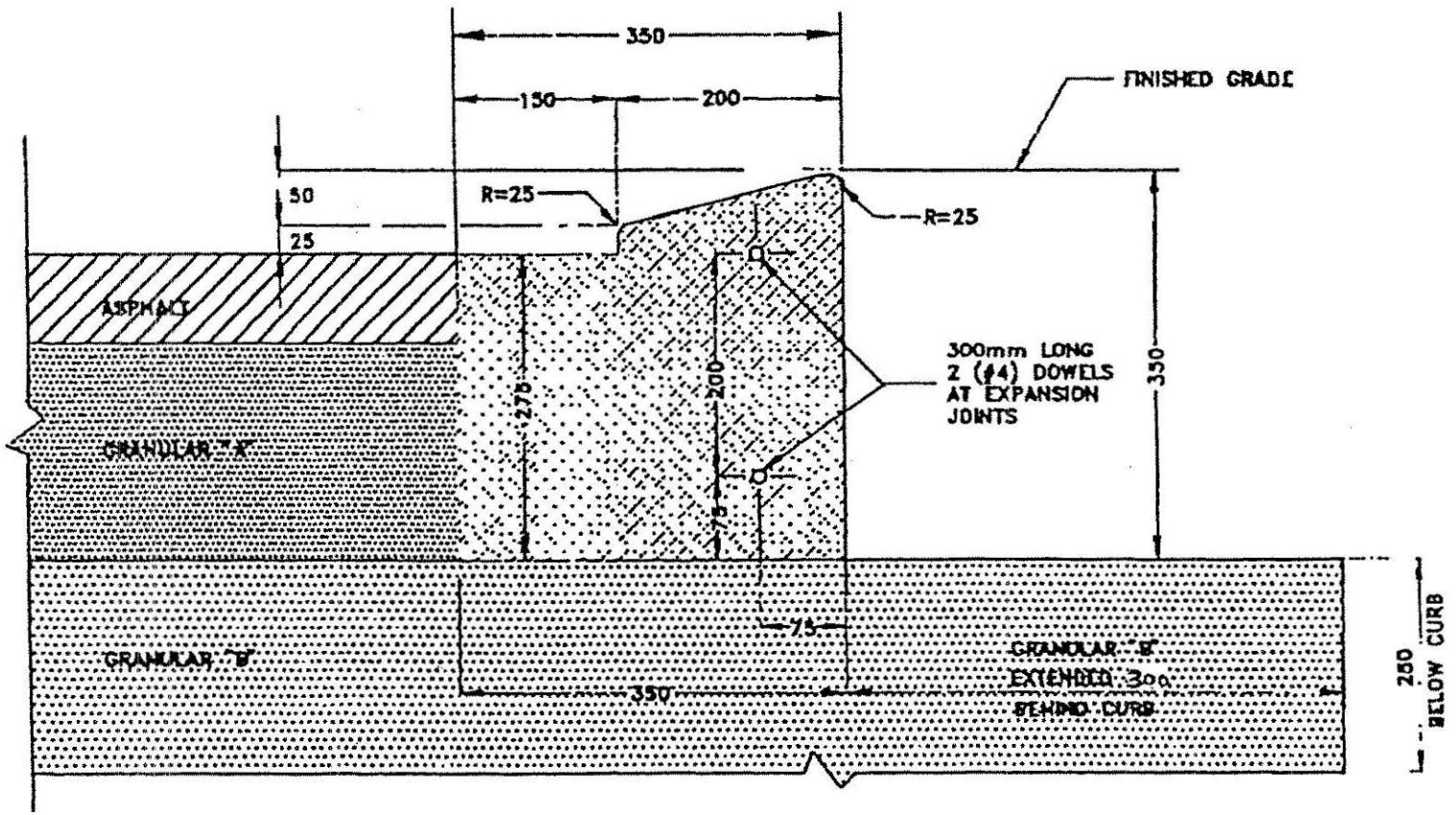
1. ROAD SECTION AS DESCRIBED BY THE TOWNSHIP OF RUSSELL
2. ALL MATERIALS USED SHALL BE AS PER MTO SPECIFICATIONS
3. GRANULAR "A" : 19mm minus from quarry source
   GRANULAR "B" : 50 mm minus from quarry source
4. MAXIMUM DEPTH OF DITCH = 1.2 m
5. DITCH SLOPES MAY VARY FROM 2:1 TO 3:1 DEPENDING ON DEPTH OF DITCH

REVISED FEB. 1994

TYPICAL ROADWAY CONSTRUCTION
(WITH OPEN DITCHES)

MUN RUSSELL TWP

PREPARED BY:	DATE:
LECOMPTE ENG. LTD.	MARCH 1993
SCALE: N.T.S.	FIGURE: R-102-A



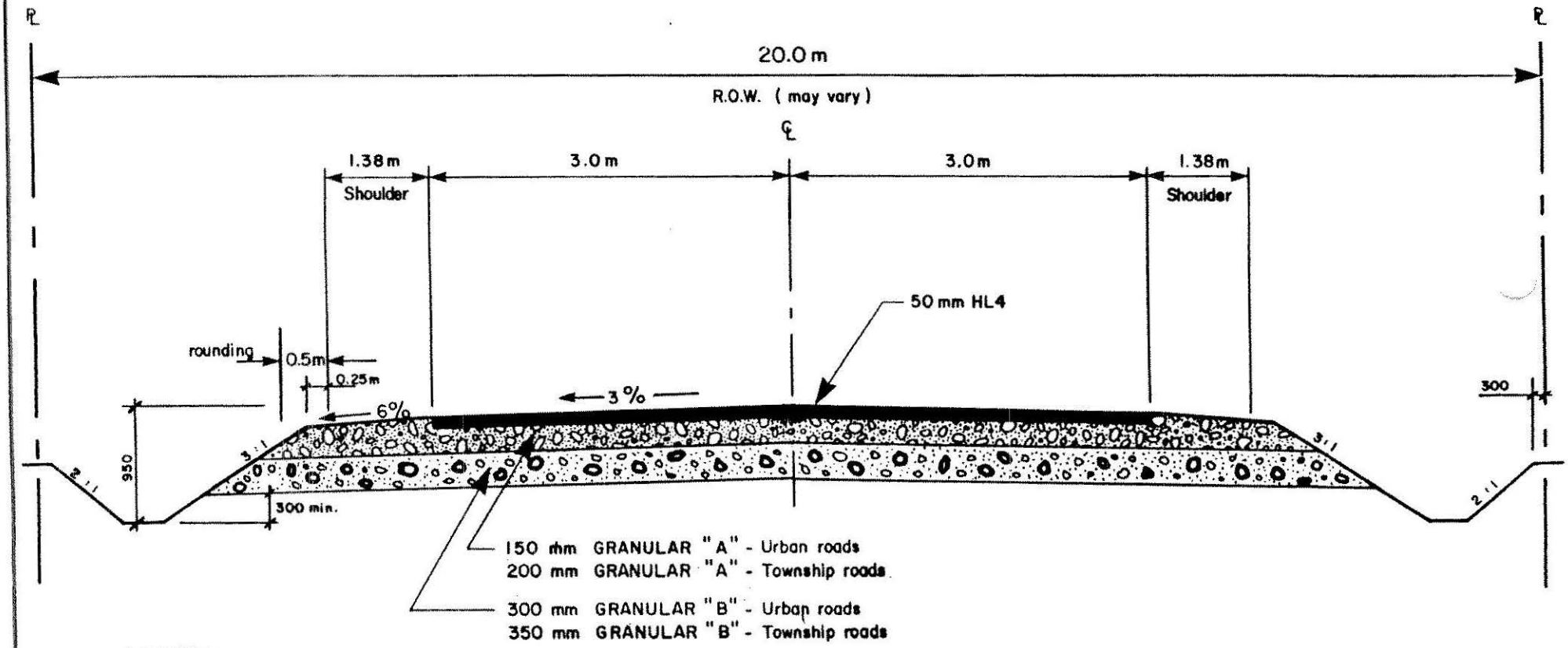
NOTES:

1. 13mm PREMOULDED BITUMINOUS MATERIALS FOR EXPANSION JOINTS AT 6.0m c/c AND EITHER SIDE OF DEPRESSED ACCESS CROSSINGS.
2. THIS DRAWING TO BE USED IN CONJUNCTION WITH DRAWING T.H.E.416.
3. ALL CONCRETE TO BE 30 Mpa. WITH 5 – 7% AIR ENTRAINMENT.
4. EXPANSION JOINTS TO BE PLACED 1m. ON EITHER SIDE OF ALL CATCH BASINS.
5. DOWELS TO BE GREASED AND COVERED WITH A CARDBOARD SLEEVE AND TO BE PLACED AT ALL EXPANSION JOINTS (6m INTERVALS.).
6. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.

TYPICAL MOUNTABLE CURB

MUN RUSSELL TWP

PREPARED BY:	DATE:
M.G.	June 1999
SCALE: N.T.S.	FIGURE: R-110



NOTES:

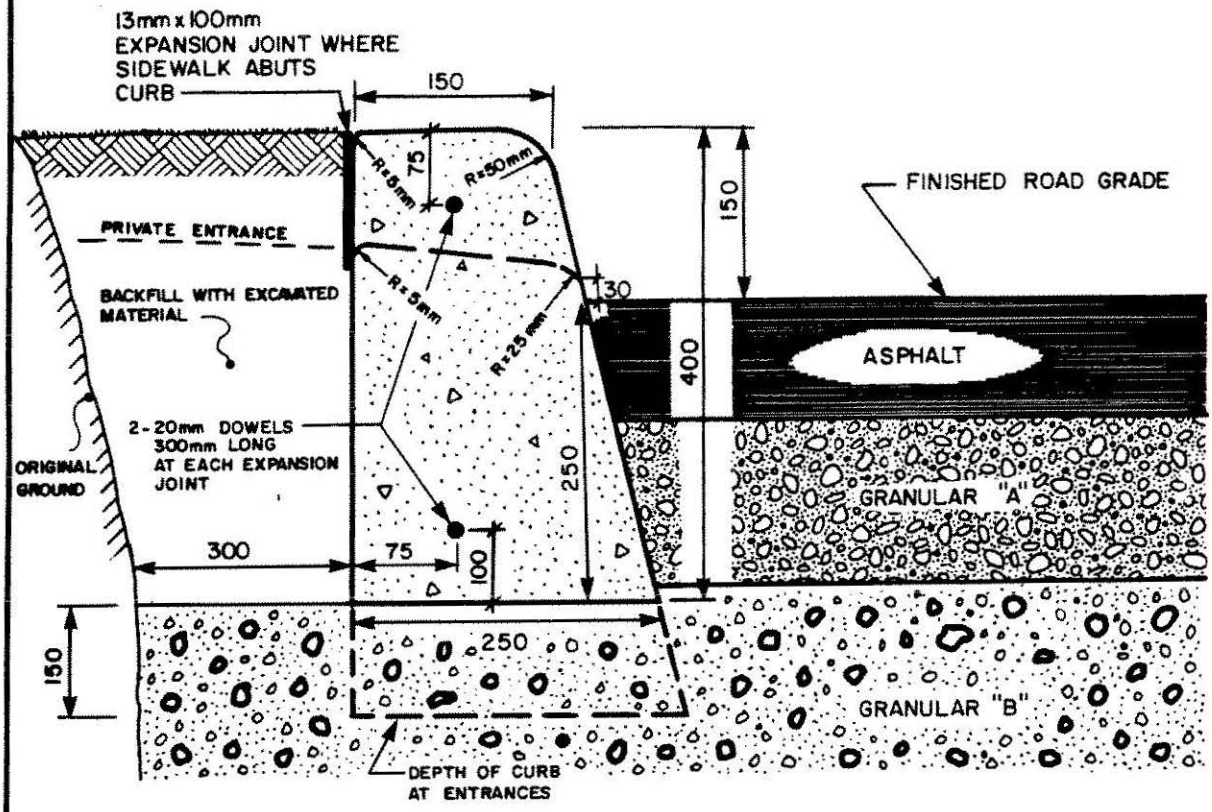
1. ROAD SECTION AS DESCRIBED BY THE TOWNSHIP OF RUSSELL
2. ALL MATERIALS USED SHALL BE AS PER MTO SPECIFICATIONS
3. GRANULAR "A" : 19mm minus from quarry source
   GRANULAR "B" : 50 mm minus from quarry source
4. MAXIMUM DEPTH OF DITCH = 1.2 m
5. DITCH SLOPES MAY VARY FROM 2:1 TO 3:1 DEPENDING ON DEPTH OF DITCH

REVISED FEB. 1994

TYPICAL ROADWAY CONSTRUCTION
(WITH OPEN DITCHES)

MUN RUSSELL TWP

PREPARED BY:	DATE:
LECOMPTE ENG. LTD.	MARCH 1993
SCALE: N.T.S.	FIGURE: R-102-B



NOTES:

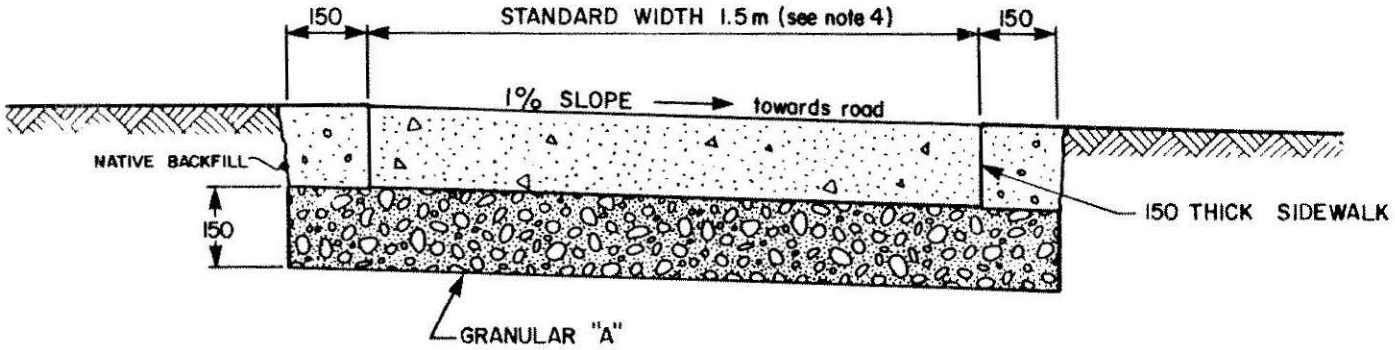
1. 13mm PREMOULDED BITUMINOUS MATERIALS FOR EXPANSION JOINTS AT 6.0m c/c AND EITHER SIDE OF DEPRESSED ACCESS CROSSINGS. (ASTM - D994)
2. DEPRESSED CURB SHALL BE CONSTRUCTED TO FULL DEPTH THROUGH ACCESS CROSSINGS.
3. ALL CONCRETE TO BE 30 Mpa. WITH 5 - 7% AIR ENTRAINMENT.
4. EXPANSION JOINTS TO BE PLACED 1m ON EITHER SIDE OF ALL CATCH BASINS.
5. DOWELS TO BE GREASED AND COVERED WITH A CARDBOARD SLEEVE AND TO PLACED AT ALL EXPANSION JOINTS (6m INTERVALS.). ACNOR TYPE G 30.12 CLASS 300
6. OUTLET TREATMENT SHALL CONFORM WITH OPSD-610 SERIES.
7. THE LENGTH OF TRANSITION FROM ONE CURB TYPE TO ANOTHER SHALL BE 3.0m, EXCEPT IN CONJUNCTION WITH GUIDE RAIL, IT SHALL CONFORM TO OPSD-900 SERIES.
8. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
9. LINSEED OIL TREATMENT TO ASTM - D 260 MIX 1:1 BY VOLUME LINSEED OIL & KEROSENE
   1st APPLICATION : 4,5 L/40 m^2
   2nd APPLICATION : 4,5 L/60 m^2
10. GRANULARS TO BE COMPACTED TO 95% STANDARD PROCTOR DENSITY

CONCRETE BARRIER CURB

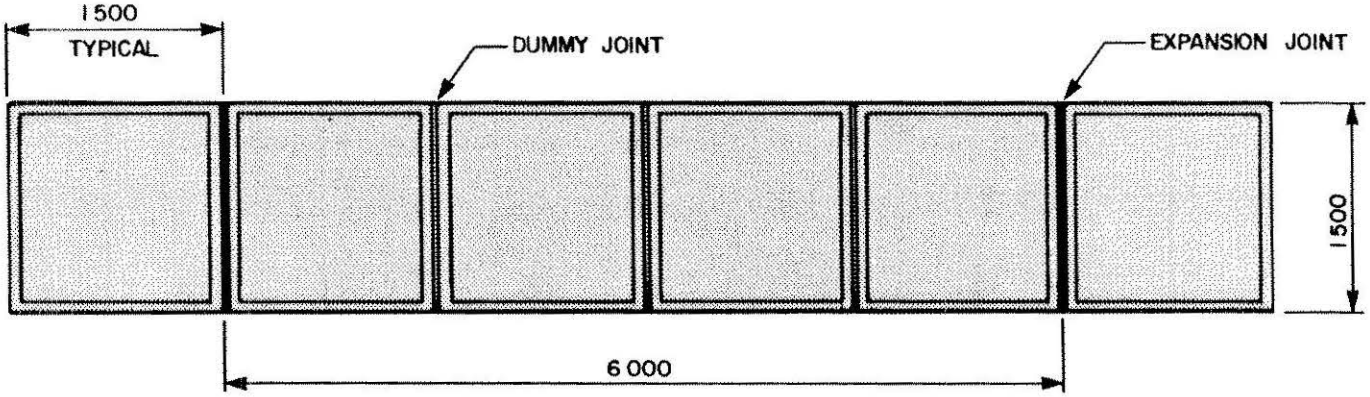
MUN RUSSELL TWP

DATE: MARCH 1993		FIGURE: R-103
DRAWN: M.L.	SCALE: N.T.S.	

SECTION

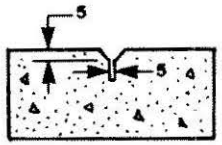


PLAN

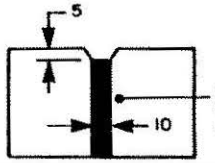


NOTES:

1. CONCRETE SHALL BE 30 Mpa. WITH 5 – 7% AIR ENTRAINMENT.
2. SIDEWALK DEPTH TO BE INCREASED TO 150mm. AT PRIVATE ENTRANCES. AT COMMERCIAL, INDUSTRIAL, INSTITUTIONAL AND CONDOMINIUM ENTRANCES CONCRETE TO BE INCREASED TO 180mm DEPTH WITH 150mm X 150mm X 6 mm GAUGE WWM
3. SIDEWALK TO SLOPE 1% TOWARDS STREET LINE UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
4. STANDARD SIDEWALK WIDTH IS 1.5m. THE VOLUME OF PEDESTRIAN TRAFFIC OR EXISTING PHYSICAL CONSTRAINTS MAY NECESSITATE VARIATIONS IN THE SIDEWALK WIDTH AS INDICATED ON THE CONTRACT DRAWINGS.
5. 13mm. PREMOULDED BITUMINOUS FIBERBOARD EXPANSION JOINTS ARE REQUIRED IN SIDEWALKS AT INTERVALS OF 6.0m. ALONG SIDEWALK, ALONG CURB WHERE SIDEWALK ABUTS, AT BOTH ENDS OF DEPRESSED SECTION OF ACCESS CROSSINGS, AND TO ISOLATE OBSTRUCTIONS FROM SIDEWALK, E.G. HYDRANTS, POLES, BUILDINGS, etc.
6. WHEN OVERALL SIDEWALK WIDTH EXCEEDS 2.5m., A CONSTRCTION JOINT SHALL BE PLACED AT MID POINT.



DUMMY JOINT DETAIL

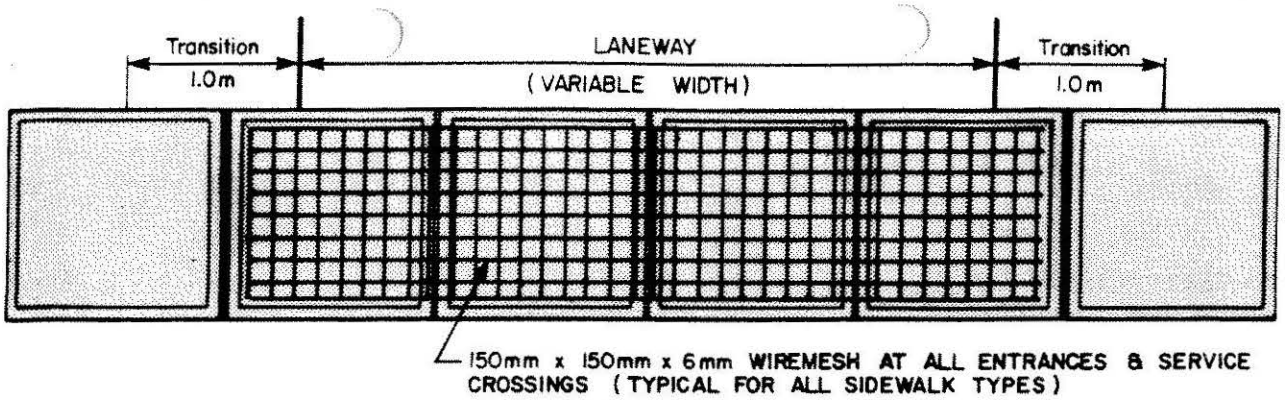


EXPANSION JOINT DETAIL

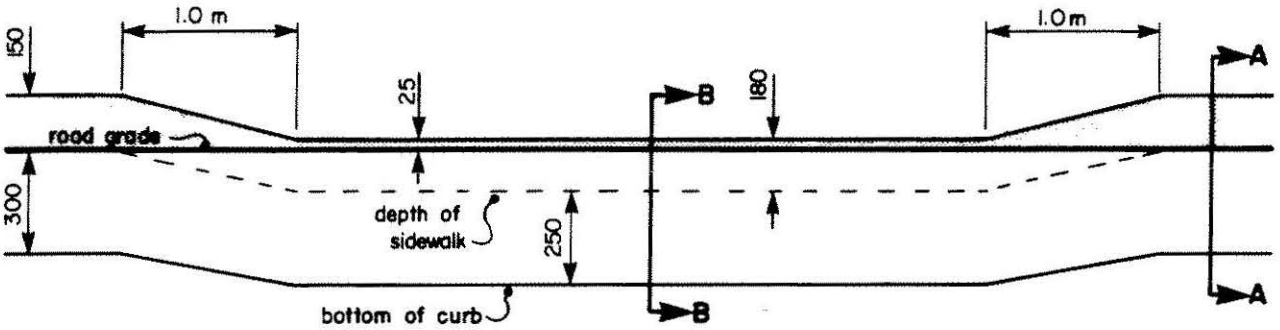
CONCRETE SIDEWALK

MUN RUSSELL TWP

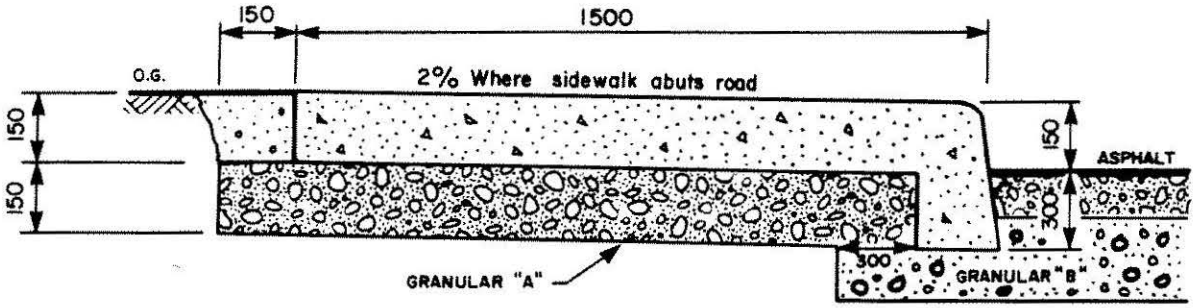
PREPARED BY:	DATE:
LECOMPTE ENG. LTD.	MARCH 1993
SCALE: N.T.S.	FIGURE: R-104



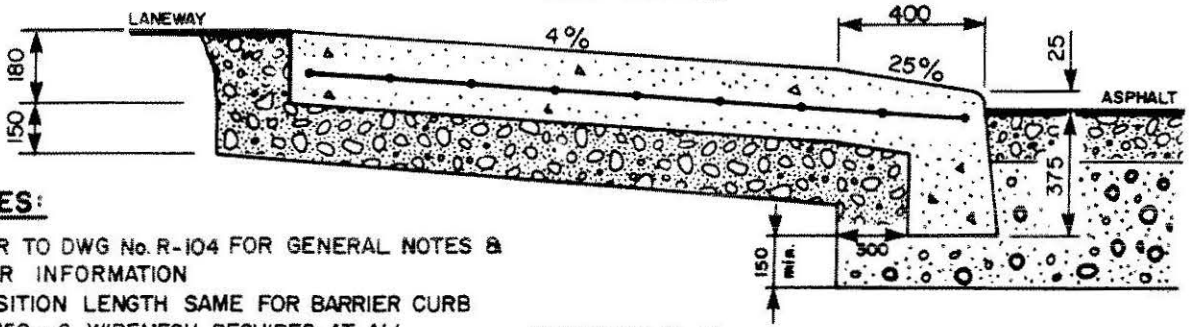
PLAN VIEW



ELEVATION



SECTION A-A



SECTION B-B

NOTES:

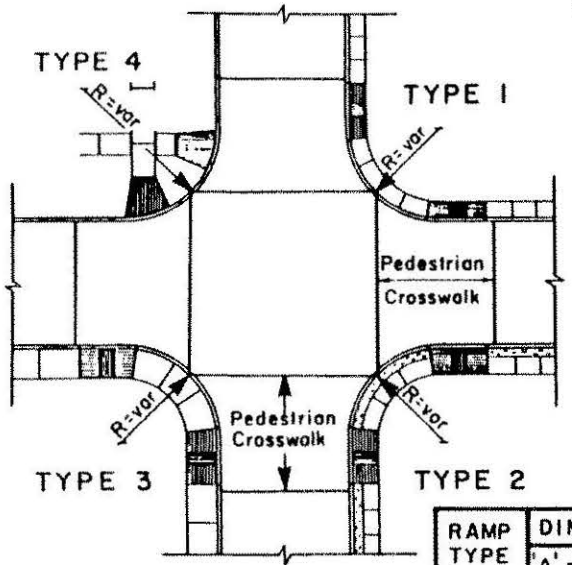
1. REFER TO DWG No. R-104 FOR GENERAL NOTES & OTHER INFORMATION
2. TRANSITION LENGTH SAME FOR BARRIER CURB
3. 150 x 150 x 6 WIREMESH REQUIRED AT ALL ENTRANCES & ALL SERVICE CROSSINGS

MONOLITHIC SIDEWALK

WITH LANEWAY ENTRANCE TREATMENT

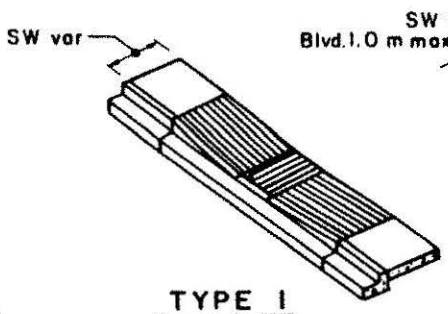
MUN RUSSELL TWP

DATE: MARCH 1993		FIGURE: R-105
DRAWN: M.L.	SCALE: N.T.S.	

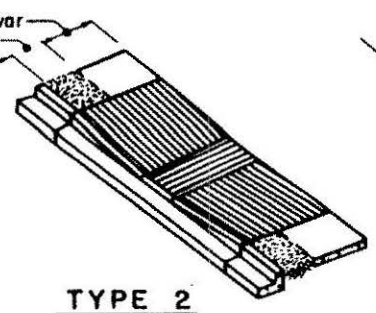


PLAN

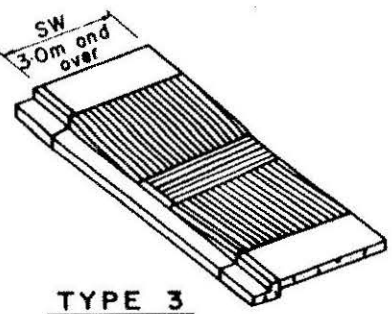
RAMP TYPE	DIMENSIONS	
	'A' mm	'B' m
1	75	1·50
2	25	2·45
3	0	3·00



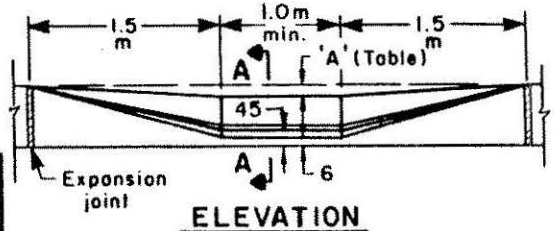
TYPE 1
(Sidewalk adjacent to curb)



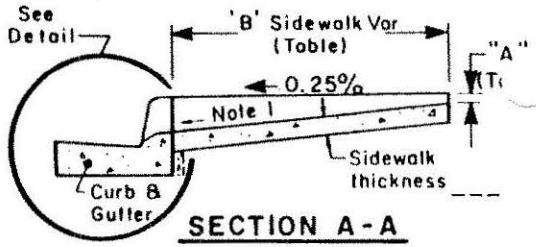
TYPE 2
(Sidewalk adjacent to Boulevard up to 1.0 m in width)



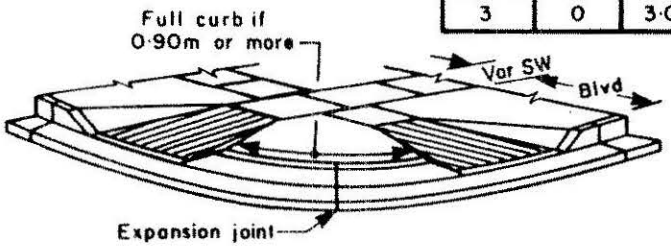
TYPE 3
(Sidewalk 3·0m and over adjacent to curb)



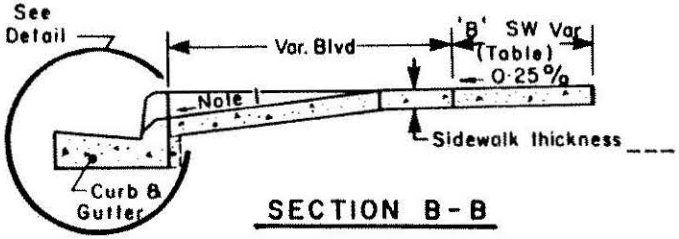
ELEVATION
(TYPES 1, 2 & 3)



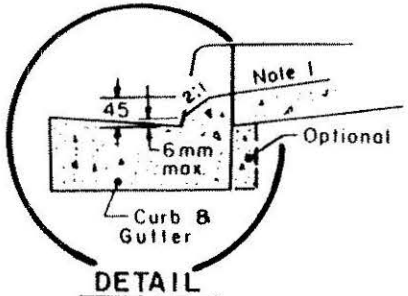
SECTION A-A



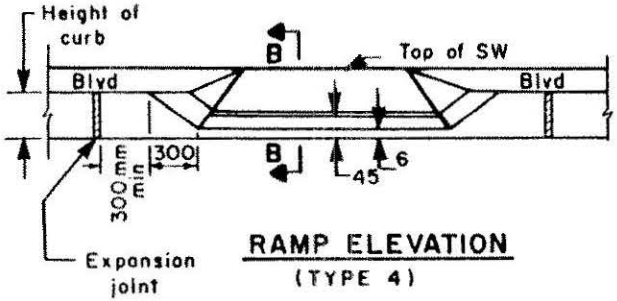
TYPE 4



SECTION B-B



DETAIL



RAMP ELEVATION
(TYPE 4)

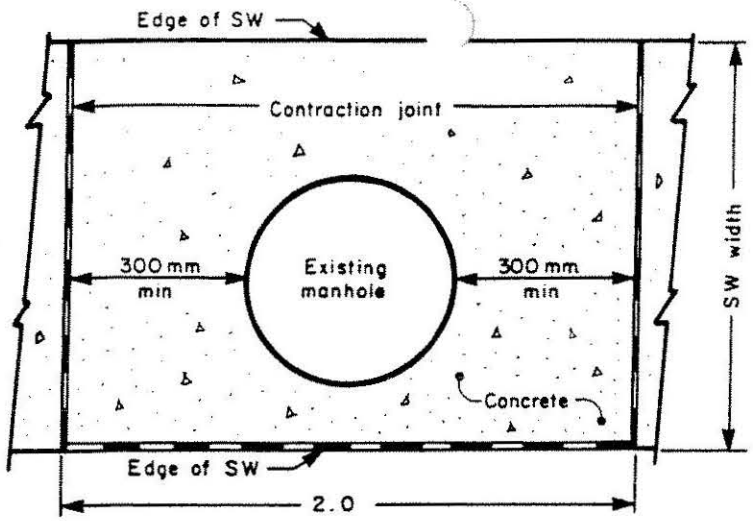
NOTES:

1. Maximum slope of ramp should be 12:1.
2. The texture of the ramp surface shall be rougher than the texture used on the surrounding sidewalk .
3. The standard to be read in conjunction with dwg no. R-104 Install 150 x 150 x 6 wwm at all corners under the direction of the township engineer

SIDEWALK RAMPS

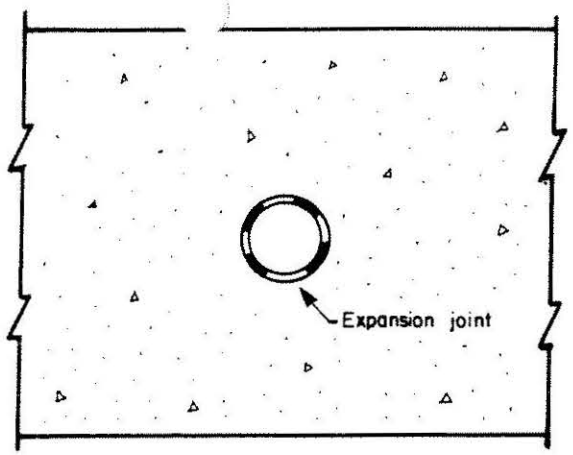
MUN RUSSELL TWP

PREPARED BY:	DATE:
LECOMPTE ENG. LTD.	MARCH 1993
SCALE: N.T.S.	FIGURE: R-106



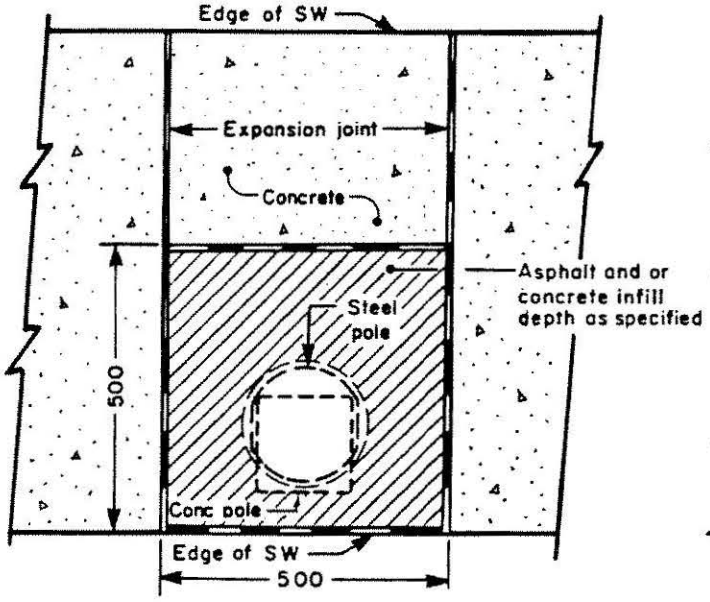
TYPE 'A'

ISOLATION OF CATCHBASIN CHAMBERS
MANHOLE AND CHAMBERS
WITHIN THE SIDEWALK

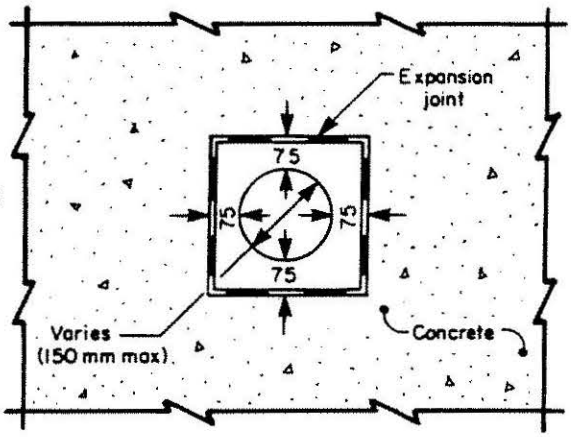


TYPE 'B'

POLE HYDRANT AND SERVICES
WITH CIRCULAR EXPANSION MATERIAL



TYPE 'C'



TYPE 'D'

ISOLATION OF POLE HYDRANT AND SERVICES

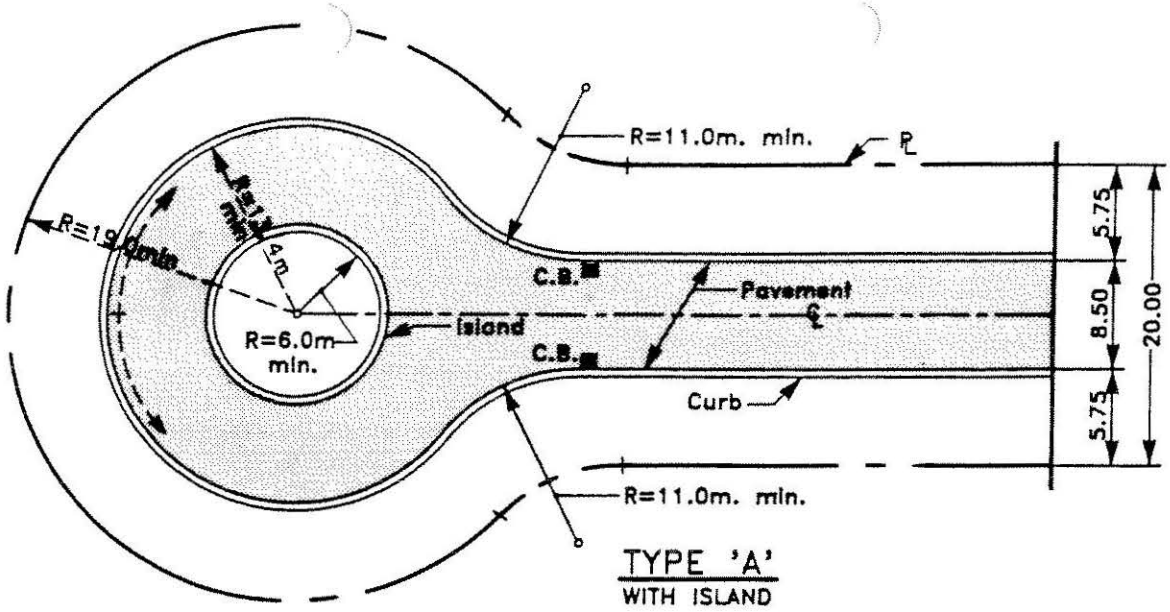
NOTES:

1. For dummy and expansion joint refer to dwg no. R-104

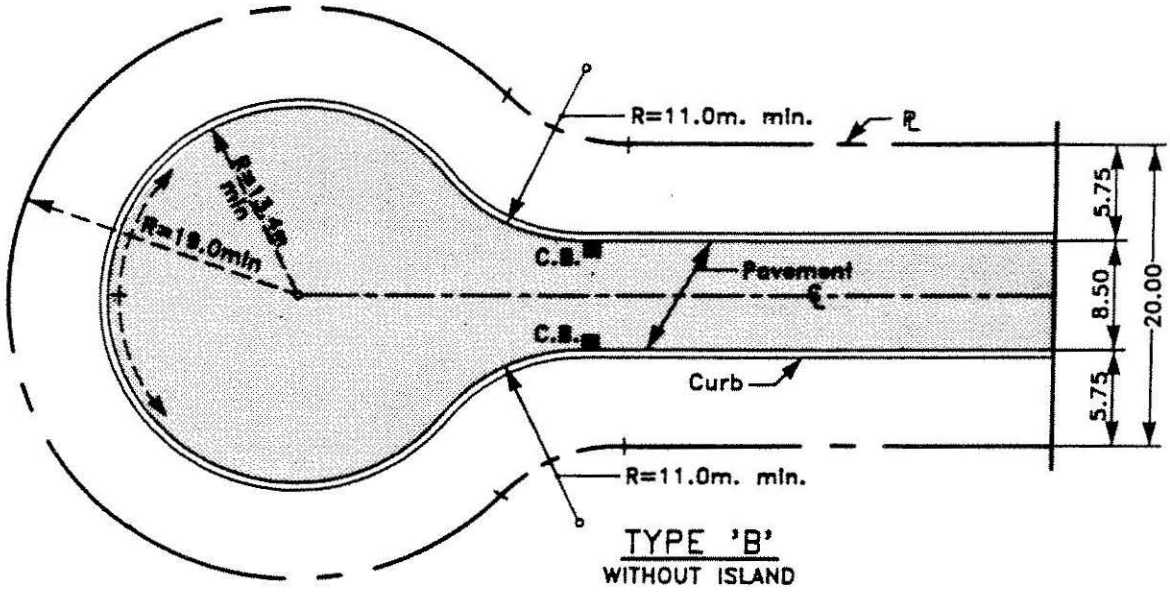
JOINTS AT SIDEWALK OPENINGS

MUN RUSSELL TWP

DATE: APRIL 1993		FIGURE: R-107
DRAWN: L.E.L.	SCALE: N.T.S.	



TYPE 'A'
WITH ISLAND



TYPE 'B'
WITHOUT ISLAND

NOTES:

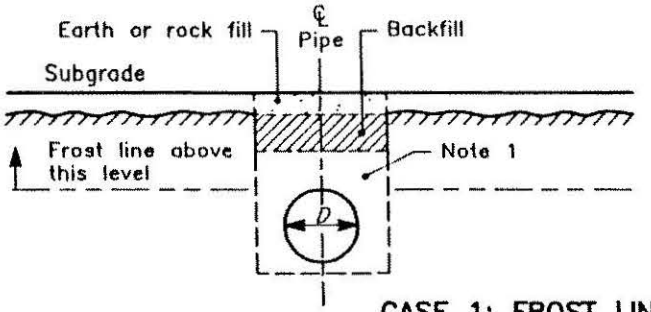
1. MINIMUM SLOPE ALONG GUTTER LINE 0.6%
2. MINIMUM SLOPE FROM CENTRE OF BULB TO GUTTER LINE 1.0%
3. SV DESIGN VEHICULE

TURNING CIRCLES FOR RESIDENTIAL STREETS

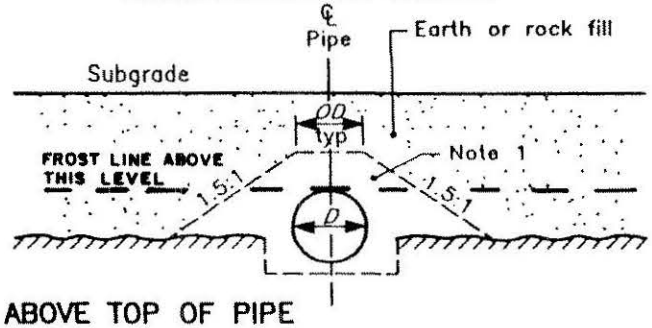
MUN RUSSELL TWP

DATE: MARCH 1993		FIGURE:
DRAWN: L.E.L.	SCALE: N.T.S.	R-108

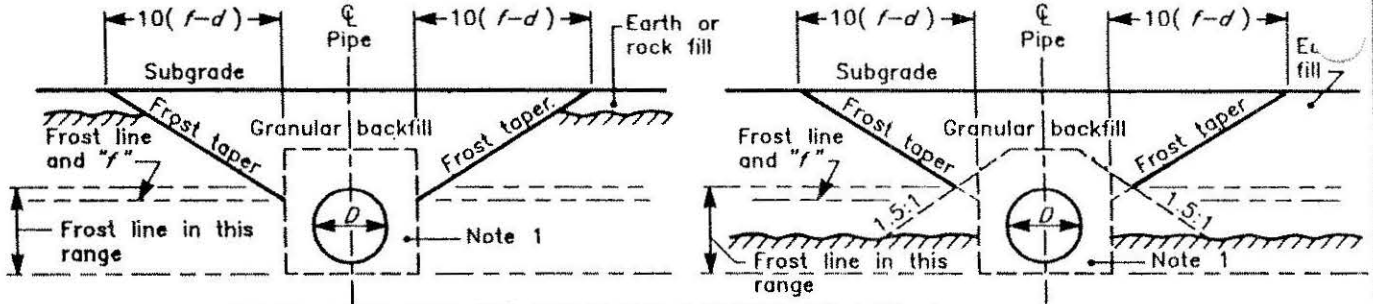
PIPE IN TRENCH



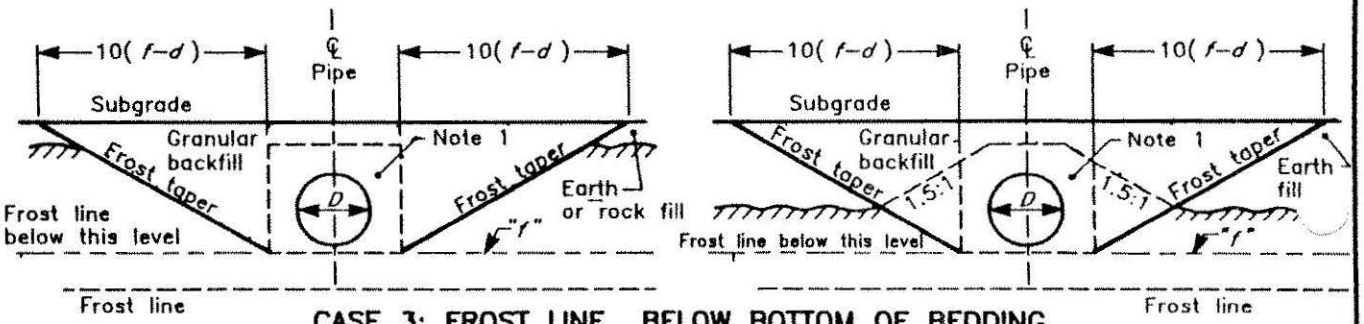
PIPE IN EMBANKMENT



CASE 1: FROST LINE ABOVE TOP OF PIPE



CASE 2: FROST LINE AND "f" BETWEEN BOTTOM OF BEDDING AND TOP OF PIPE



CASE 3: FROST LINE BELOW BOTTOM OF BEDDING "f" AT BOTTOM OF BEDDING

NOTES:

1. FROST TAPERS ARE NOT REQUIRED IN ROCK EMBANKMENTS
2. CASE I APPLIES IN ALL ROCK EMBANKMENTS
3. THIS STANDARD APPLIES FOR ALL TYPES OF PIPE

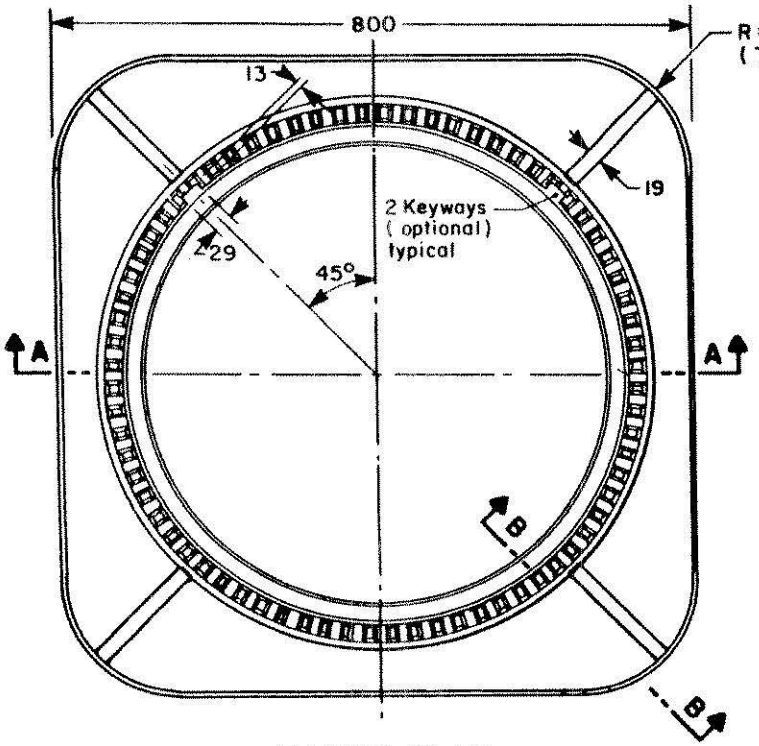
LEGEND:

- *d* – Depth of granular (roadbed).
- *f* – Depth of frost treatment measured from profile grade or top of pavement (as specified in the contract).
- *OD* – Outside diameter.
- *D* – Inside diameter.

FROST TAPERING FOR CULVERTS

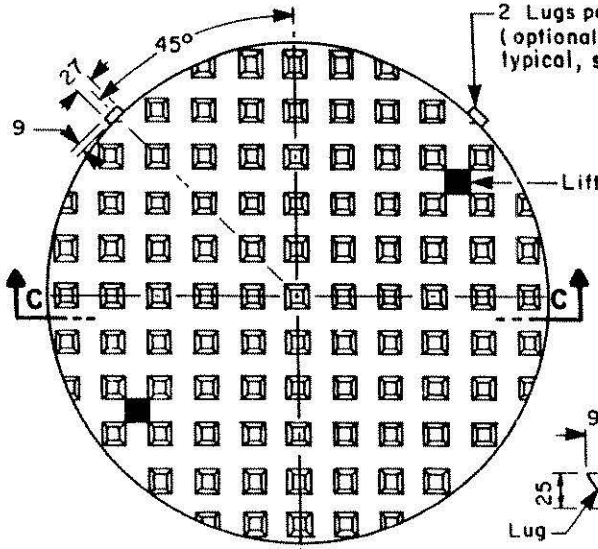
MUN RUSSELL TWP

PREPARED BY:	DATE:
LECOMPTE ENG. LTD.	JUNE 1993
SCALE: N.T.S.	FIGURE: R-109

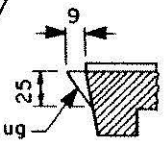


FRAME PLAN

SANITARY COVER

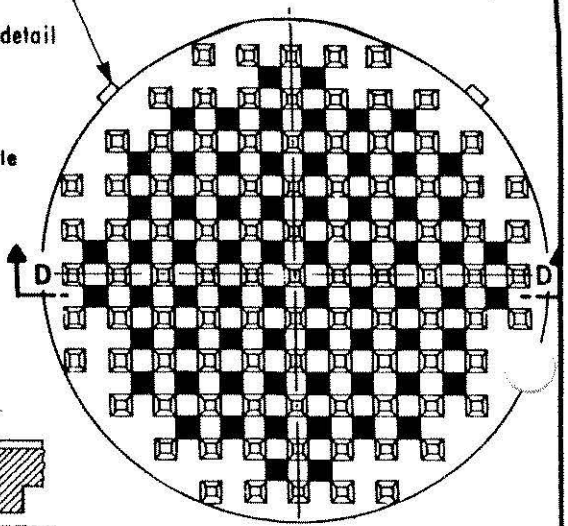


PLAN

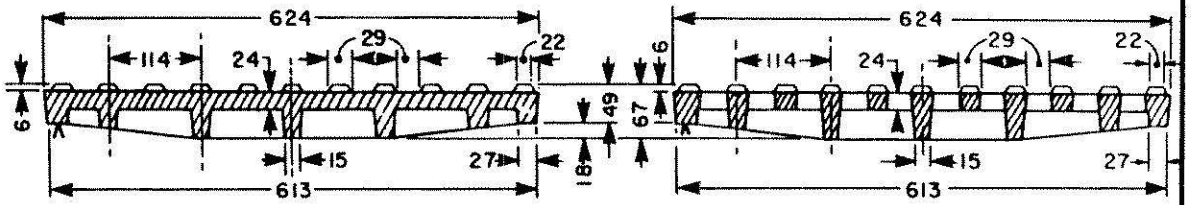


LUG DETAIL

STORM COVER

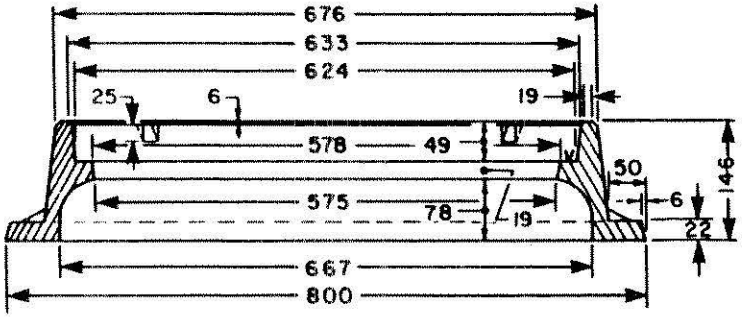


PLAN

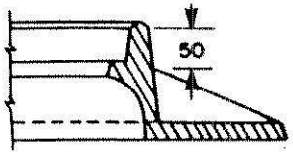


SECTION C-C

SECTION D-D



SECTION A-A

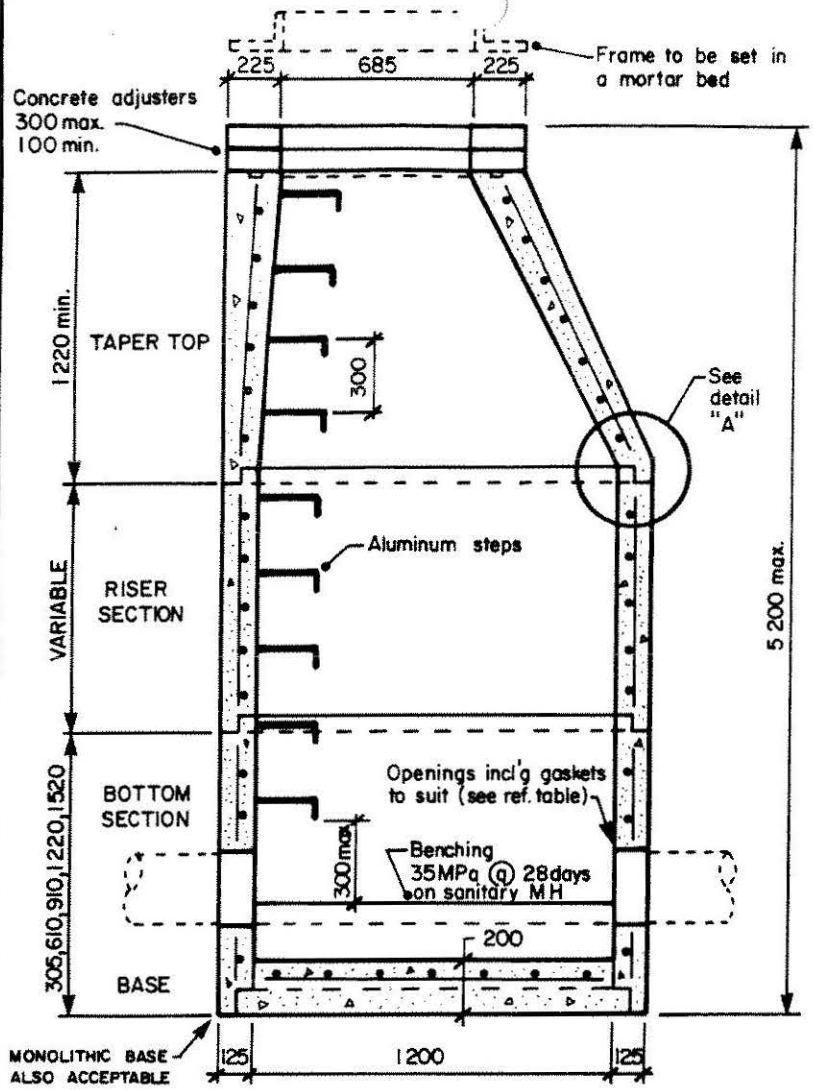


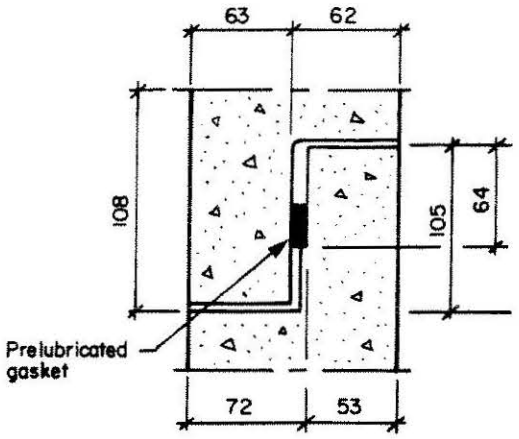
SECTION B-B

MANHOLE FRAME & COVER FOR SANITARY & STORM SEWERS

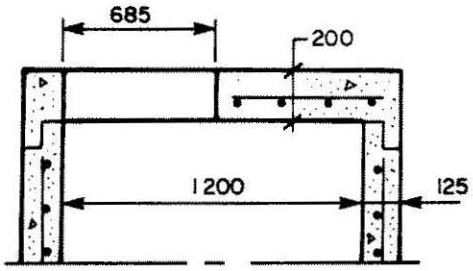
MUN RUSSELL TWP

PREPARED BY: LECOMPTE ENG. LTD.	DATE: APRIL 1993
SCALE: N.T.S.	FIGURE: S-201



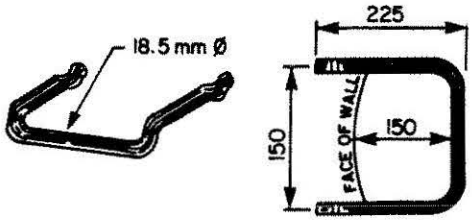


DETAIL "A"



FLAT TOP ALTERNATIVE

(WHERE SPECIFIED)



MANHOLE STEP

Max. Openings in mm	MH Diameter in mm	Wall Thickness in mm
600 @ 180° 450 @ 45°	1200 1200	125 125
825 @ 180° 600 @ 45°	1520 1520	150 150
1050° @ 180° 825° @ 45°	1830 1830	175 175

REFERENCE TABLE

NOTES:

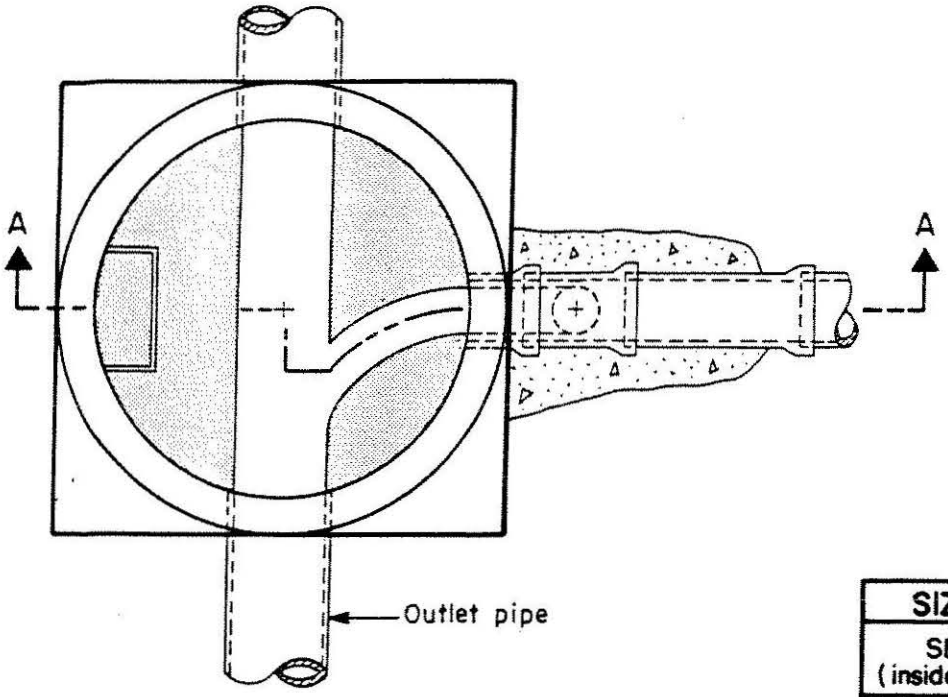
1. CONCRETE STRENGTH: 35 MPa @ 28 DAYS
2. FOR USE WITH SANITARY AND STORM SEWERS
3. GRANULAR BACKFILL TO BE PLACED TO A MIN. THICKNESS OF 300mm ALL AROUND AND UNDERNEATH MANHOLE
4. FILL LIFTING HOLES AND PIPE CONNECTIONS AND PARGE ADJUSTMENT UNITS ON OUTSIDE & INSIDE WITH A NON-SHRINK MORTAR MIX

STANDARD PRECAST MANHOLE

(CIRCULAR)

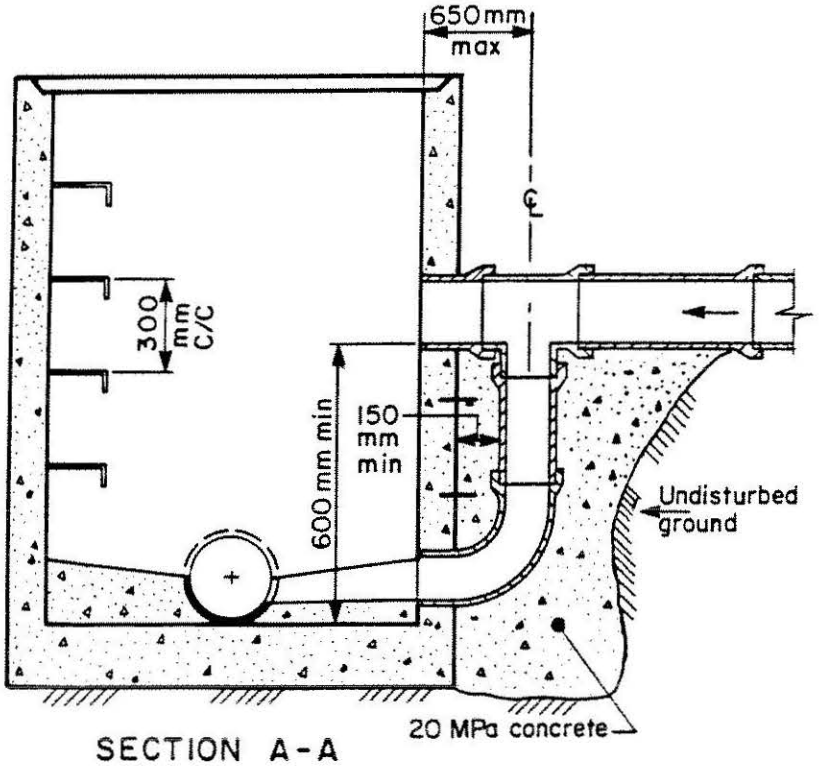
MUN RUSSELL TWP

DATE: JUNE 1993	FIGURE: S-202
DRAWN: M.L.	SCALE: N.T.S.



PLAN

SIZE OF DROP PIPE	
SEWER (inside Ø in mm)	DROP PIPE (inside Ø in mm)
200	200
250	200
300	250
375	300



SECTION A-A

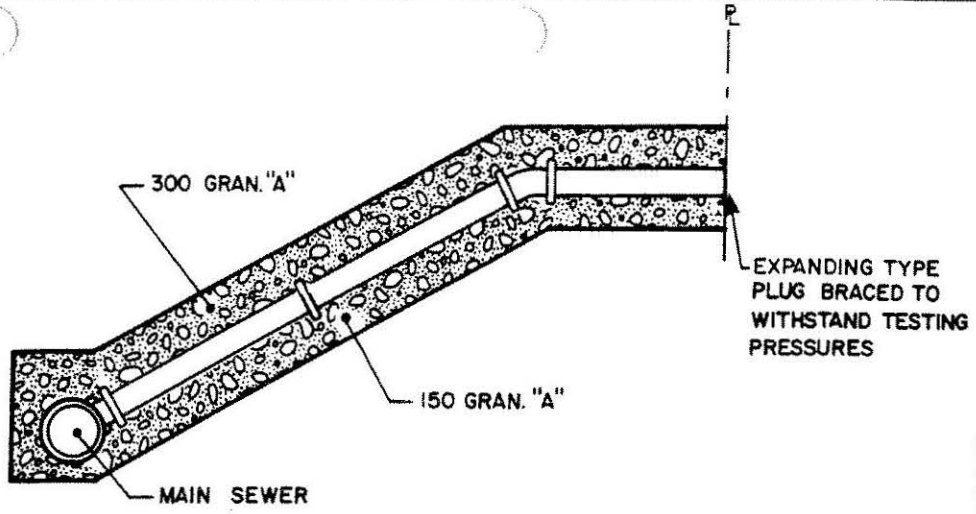
NOTES:

1. Drop structure to be completely encased in 150 mm of 20 MPa concrete and secured to the manhole with 450 mm long, 13 mm dia threaded rods and drilled expansion anchors down both sides of the drop pipe at 300 mm c/c.

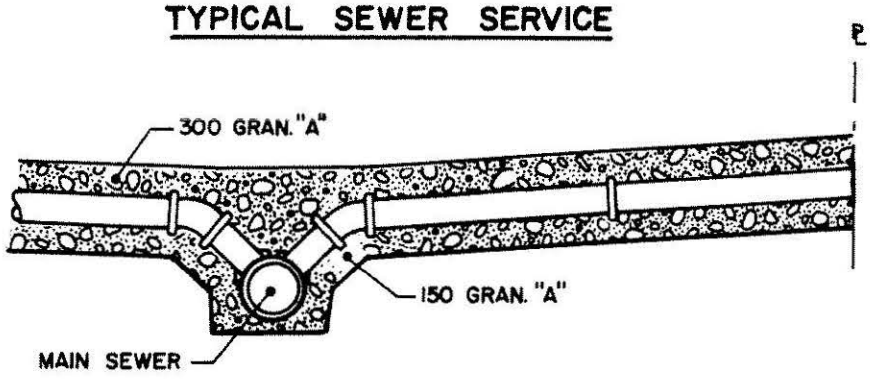
DROP MANHOLE DETAIL

MUN RUSSELL TWP

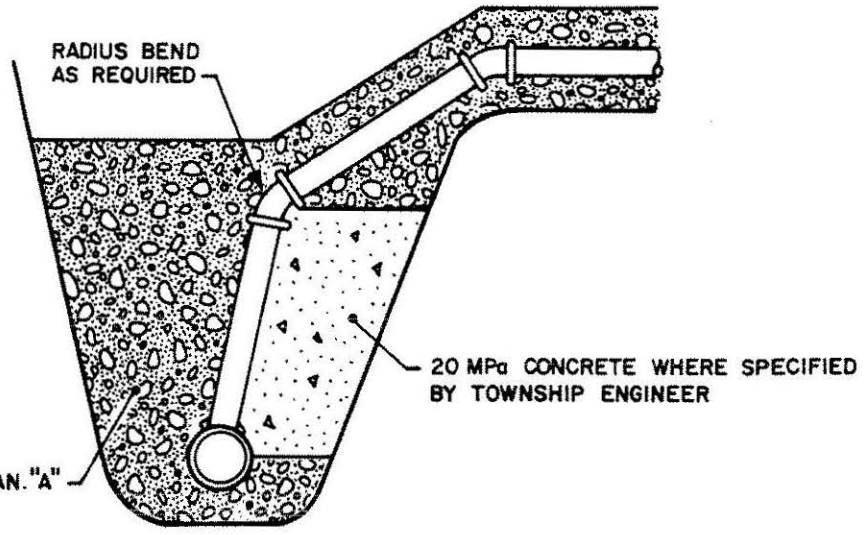
DATE: APRIL 1993		FIGURE: S-203
DRAWN: L.E.L.	SCALE: N.T.S.	



TYPICAL SEWER SERVICE



SHALLOW SEWER SERVICE



DEEP SEWER SERVICE WITH VERTICAL RISER

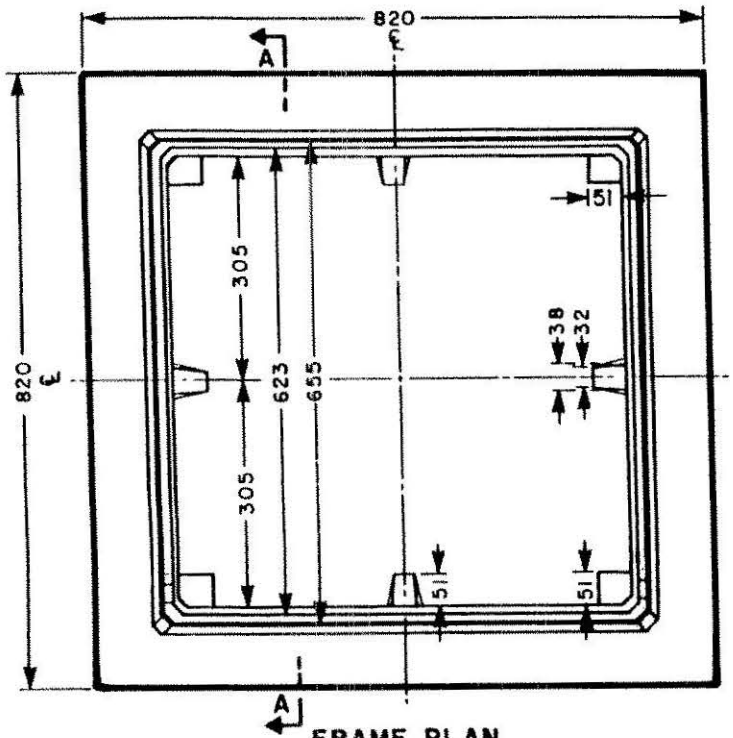
NOTES:

1. FOR CONNECTION INTO MAIN SEWER, USE A TEE BRANCH OR A STRAP-ON SADDLE WITH GASKET PLACED IN MACHINE CUT HOLE
2. MINIMUM SERVICE SIZE:
   SANITARY = 125mm Ø PVC SDR 28
   STORM = 100mm Ø PVC SDR 28
3. MINIMUM SLOPE = 1%
4. GRANULAR "A" SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY

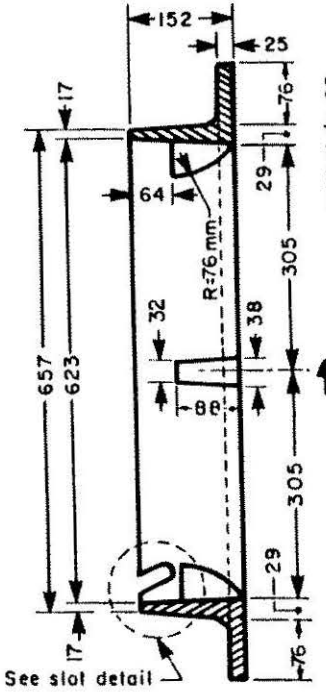
SEWER SERVICE CONNECTIONS

MUN RUSSELL TWP

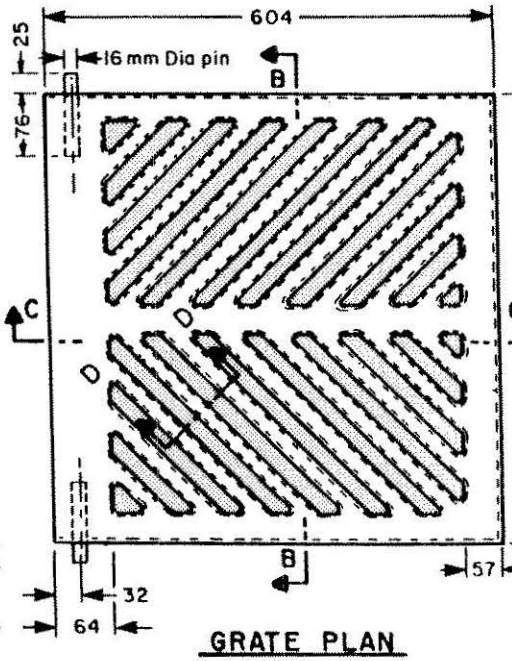
DATE	JUNE 1993	FIGURE:
DRAWN: M.L.	SCALE: N.T.S.	S-204



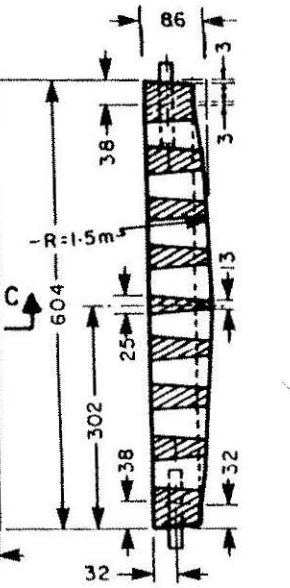
FRAME PLAN



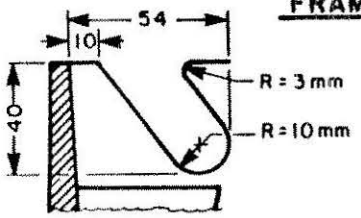
SECTION A-A



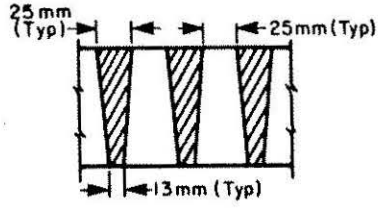
GRATE PLAN



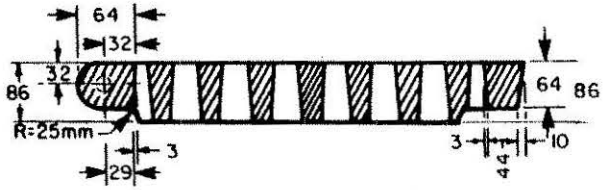
SECTION B-B



SLOT DETAIL



SECTION D-D

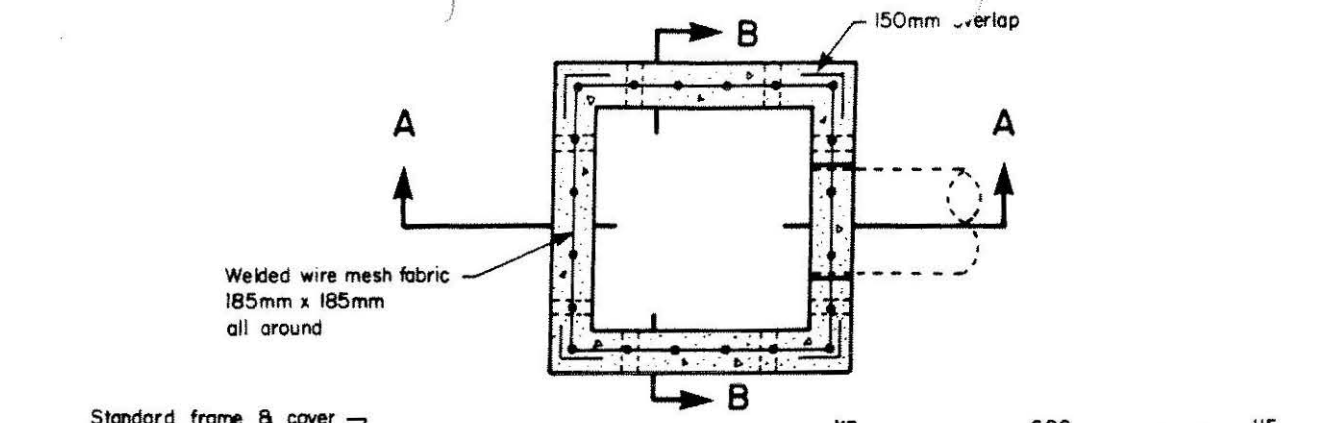


SECTION C-C

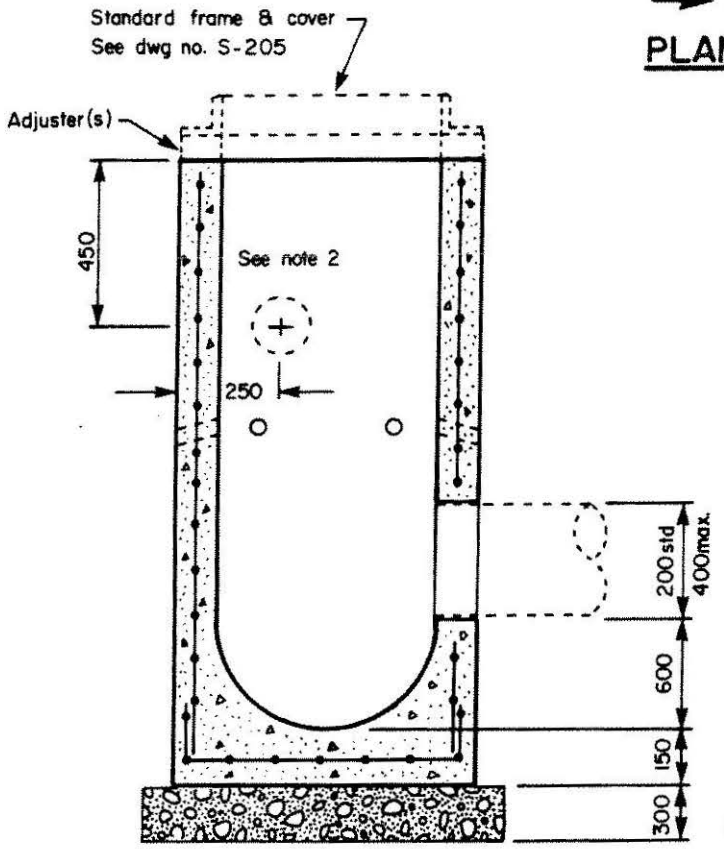
STANDARD FRAME & COVER FOR CATCH BASINS

MUN RUSSELL TWP

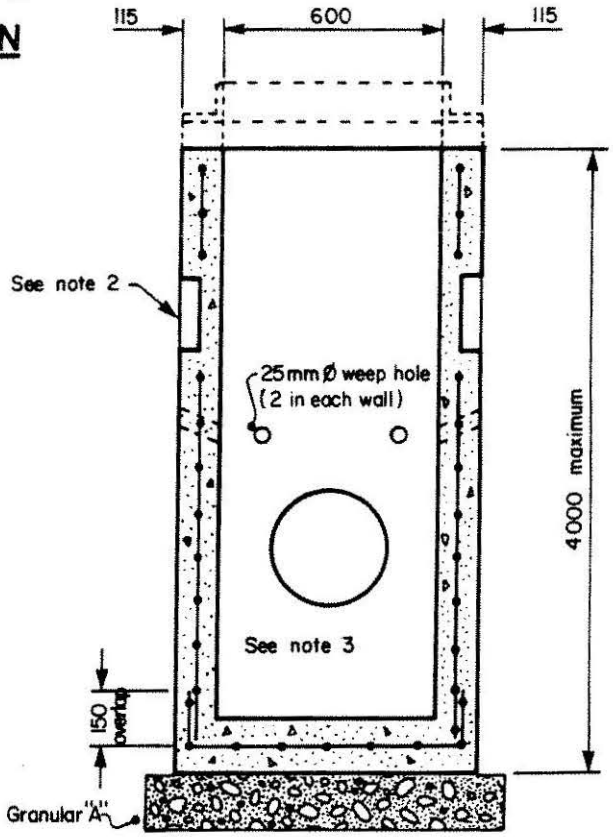
PREPARED BY: LECOMPTE ENG. LTD.	DATE: APRIL 1993
SCALE: N.T.S.	FIGURE: S-205



PLAN



SECTION A-A



SECTION B-B

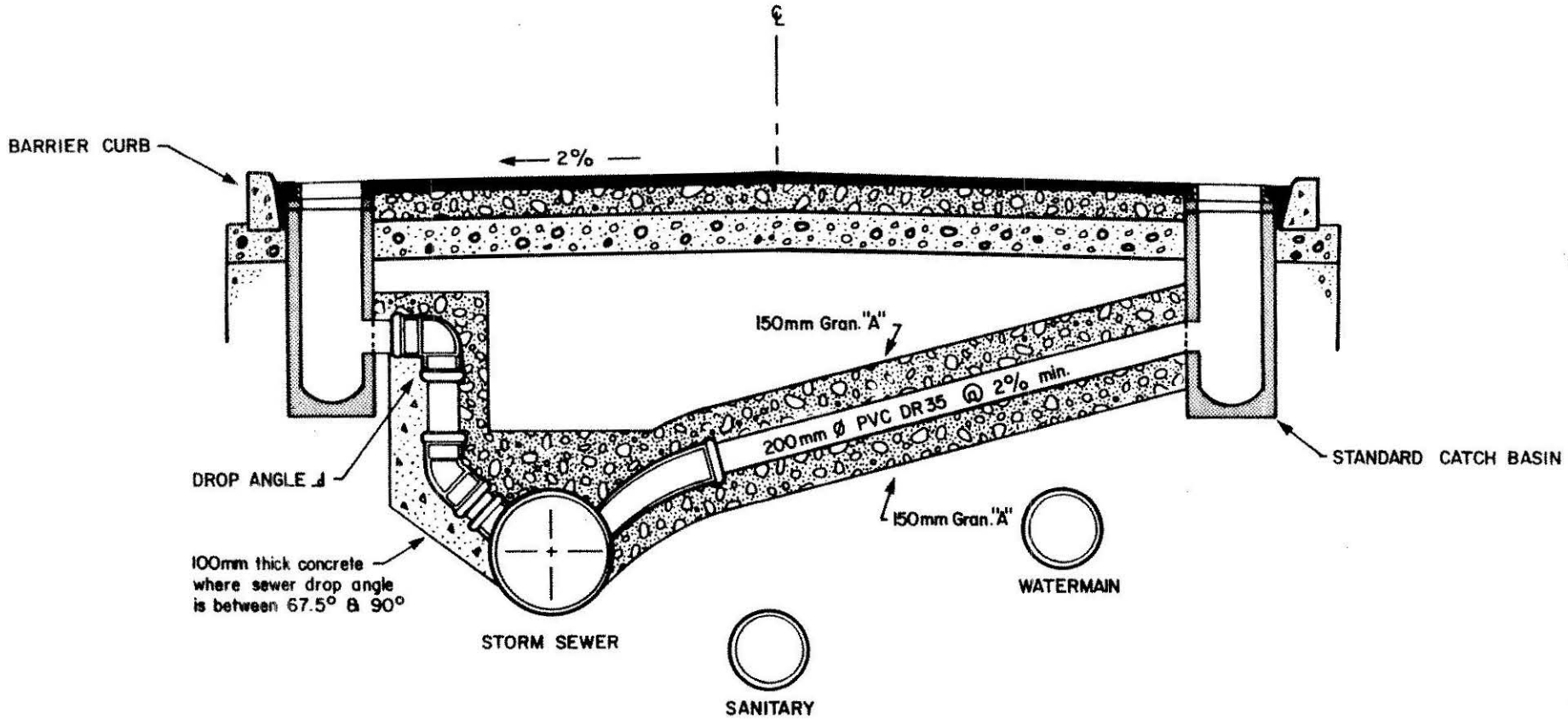
NOTES:

1. M-Con or approved equivalent
2. 200mm dia knockout to accommode subdrain when required. Knockout to be half wall thickness from the outside.
3. Outlet hole size 400mm dia max., location and size as required.
4. All reinforcing steel to be welded wire mesh and shall have 25mm min. cover.
5. Concrete strength 35MPa @ 28 days
6. Granular backfill to be placed to a min thickness of 300mm all around.
7. Conseal or approved sealant to be laid between each section

STANDARD CATCH BASIN

MUN RUSSELL TWP

DATE: MAY 1993		FIGURE: S-206
DRAWN: M.L.	SCALE: N.T.S.	



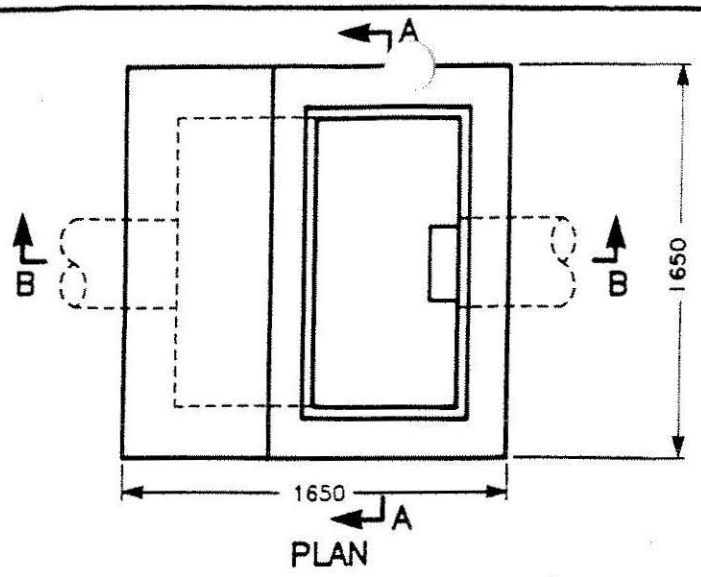
NOTES:

1. CONCRETE STRENGTH TO BE 20MPa AT 28 DAYS
2. MINIMUM SEPARATION BETWEEN WATERMAIN OR SANITARY AND STORM LEAD IS 450mm
3. GRANULAR "A" SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY
4. USE FACTORY MADE TEES FOR STORM SEWERS UP TO 450mm Ø OR MACHINE CUT HOLES WITH SADDLES AND RUBBER GASKETS

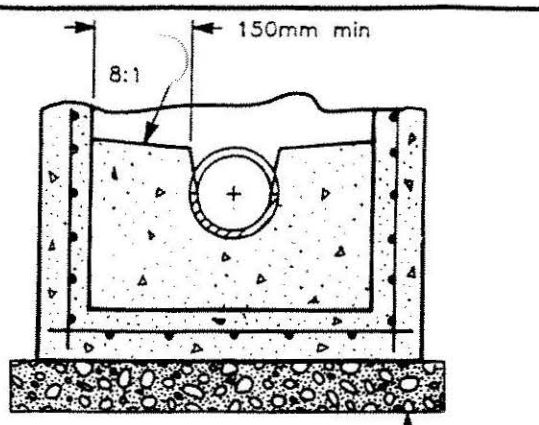
STORM LEAD DETAILS

MUN RUSSELL TWP

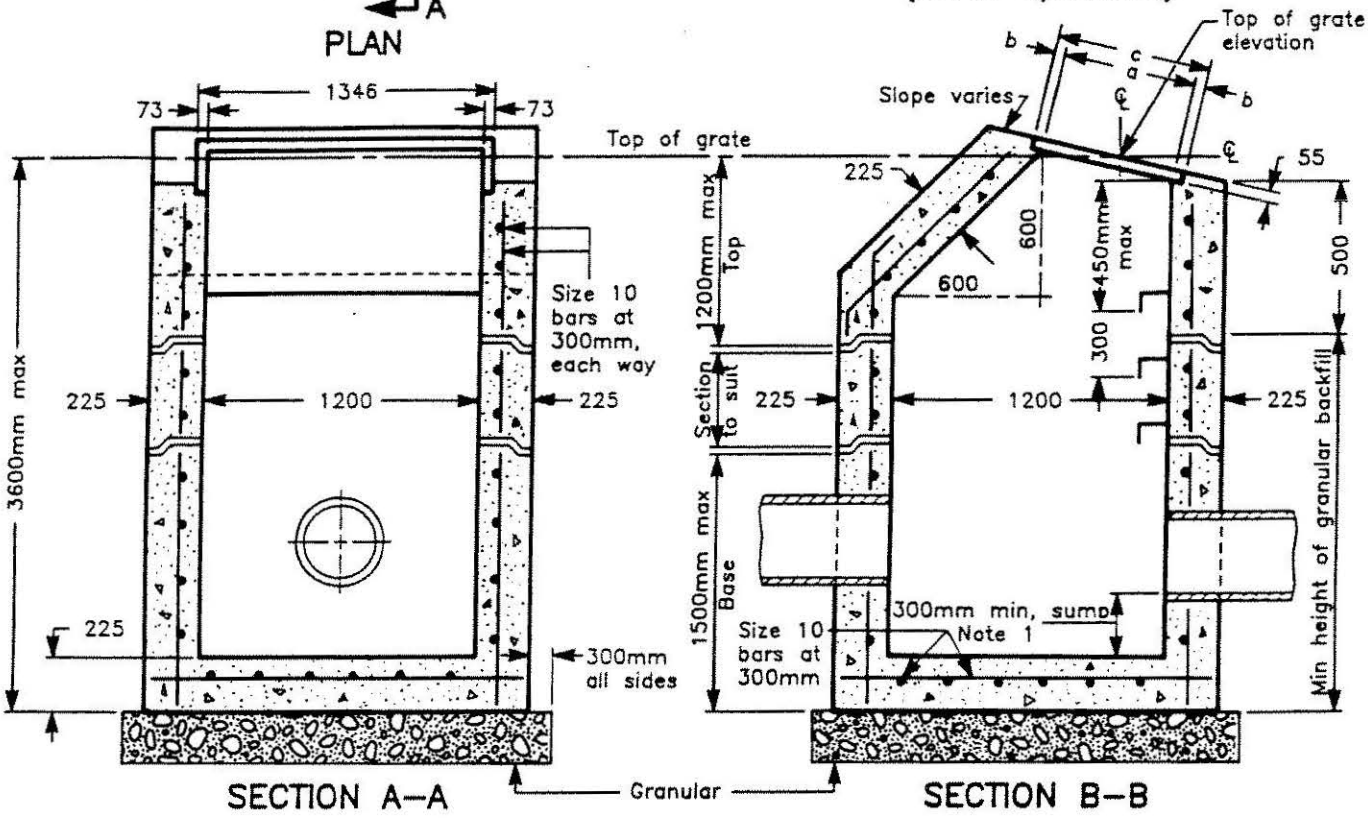
PREPARED BY:	DATE:
LECOMPTE ENG. LTD.	MAY 1993
SCALE: N.T.S.	FIGURE: S-207



PLAN



BENCHING DETAIL
(When specified)



SECTION A–A

SECTION B–B

NOTES:

1. The sump is measured from the lowest invert.
2. Where inlet is placed across ditch and is accessible to vehicular traffic, grating slope is to be 6:1 or flatter.
3. Granular backfill to be placed to a min thickness of 300mm on all sides.

TABLE
Opening Dimensions(mm)

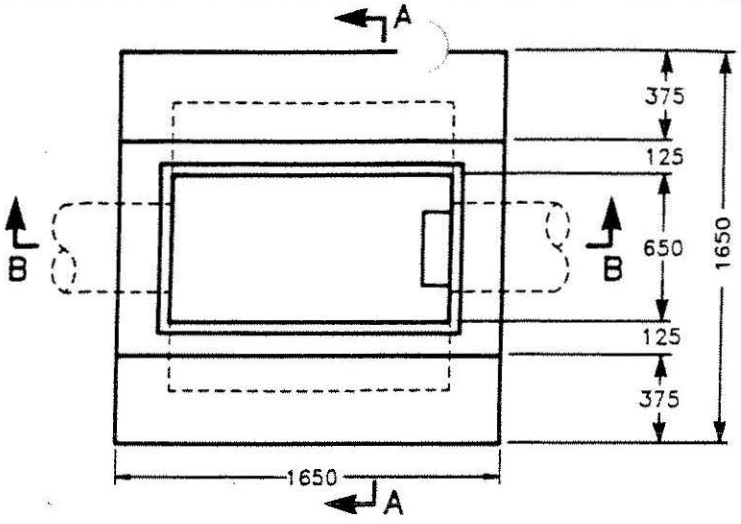
Grate Type	Slope	a	b	c
B	2:1	670	52	774
	3:1	632	71	774
	4:1	618	78	774
	6:1	608	83	774

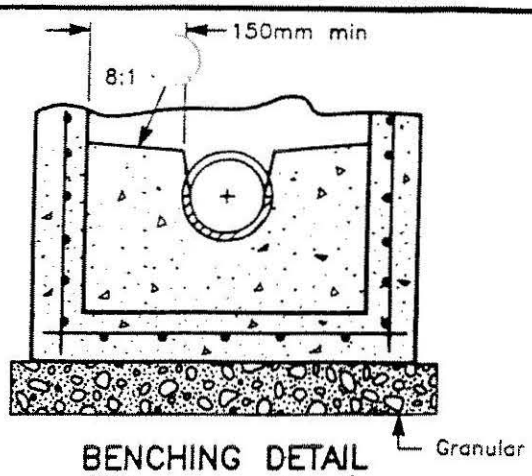
DITCH INLET MANHOLE
(TYPE 'A')

MUN RUSSELL TWP

DATE: MAY 1993 | FIGURE: S-208

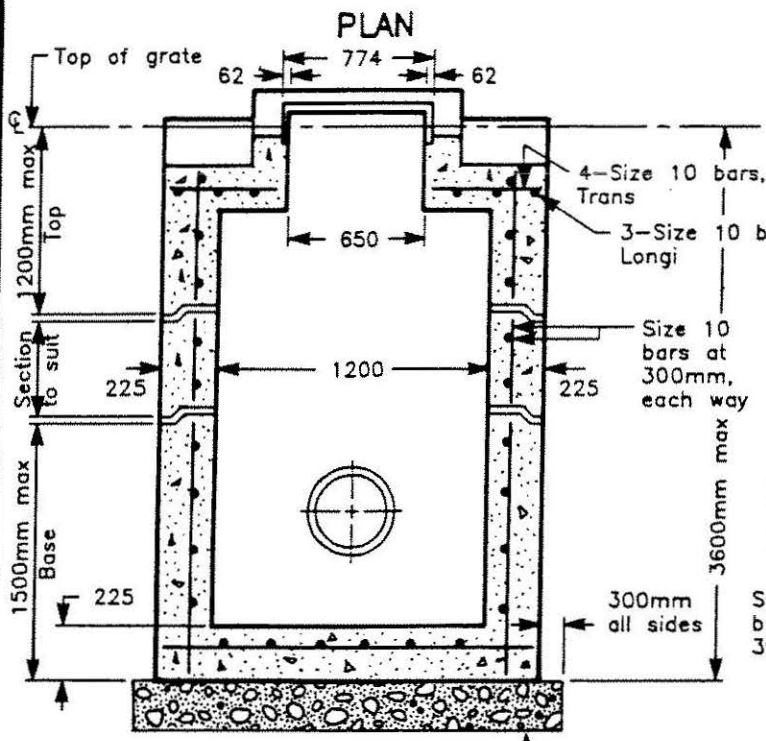
DRAWN: L.E.L. | SCALE: N.T.S.



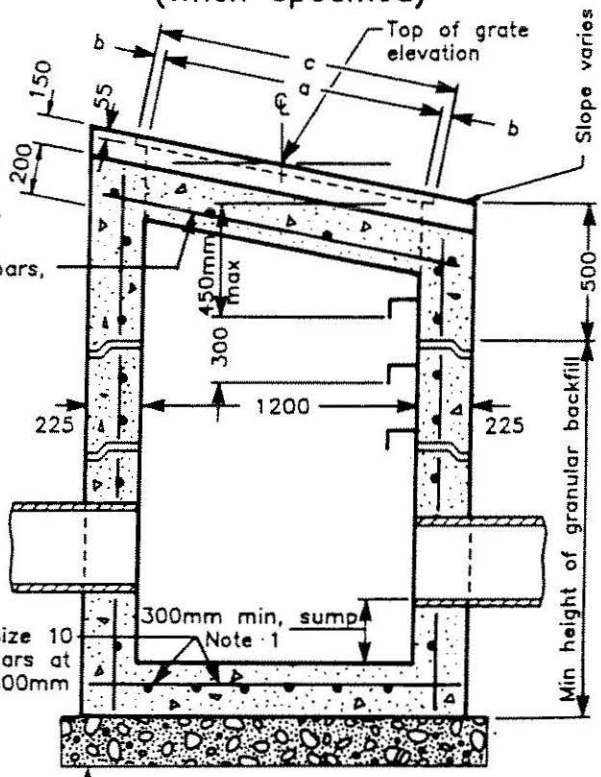


BENCHING DETAIL
(When specified)

PLAN



SECTION A–A



Granular

SECTION B–B

NOTES:

1. The sump is measured from the lowest invert.
2. Where inlet is placed across ditch and is accessible to vehicular traffic, grating slope is to be 6:1 or flatter.
3. Granular backfill to be placed to a min thickness of 300mm on all sides.

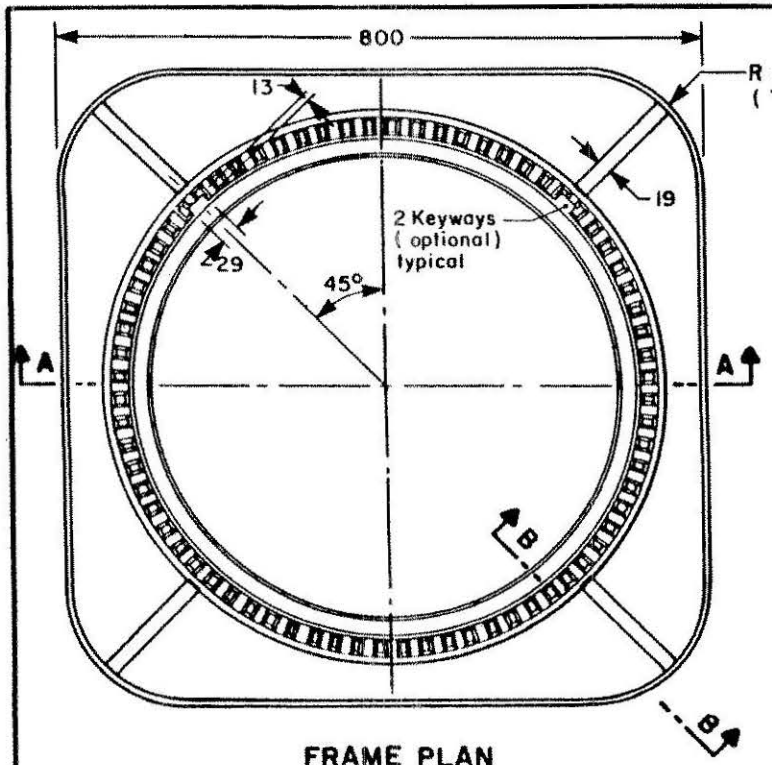
TABLE
Opening Dimensions(mm)

Grate Type	Slope	a	b	c
C	2:1	1341	66	1473
	3:1	1265	104	1473
	4:1	1237	118	1473
B	6:1	1216	65	1346
	8:1	1210	68	1346
	10:1	1206	70	1346
	Hor	1200	73	1346

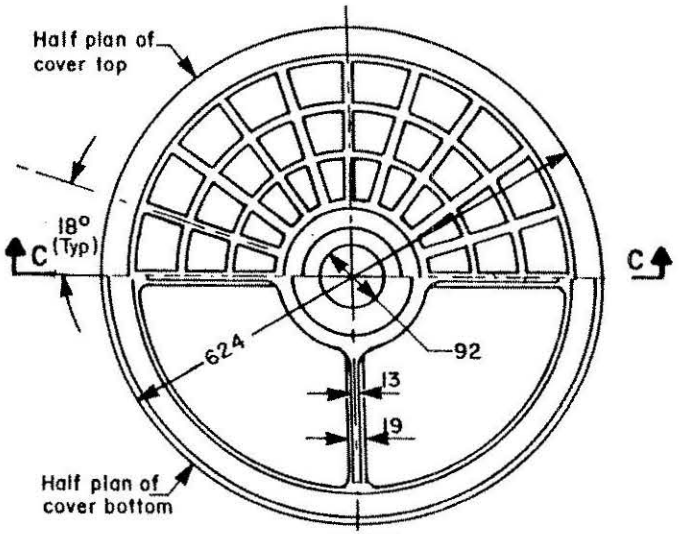
DITCH INLET MANHOLE
(TYPE 'B')

MUN RUSSELL TWP

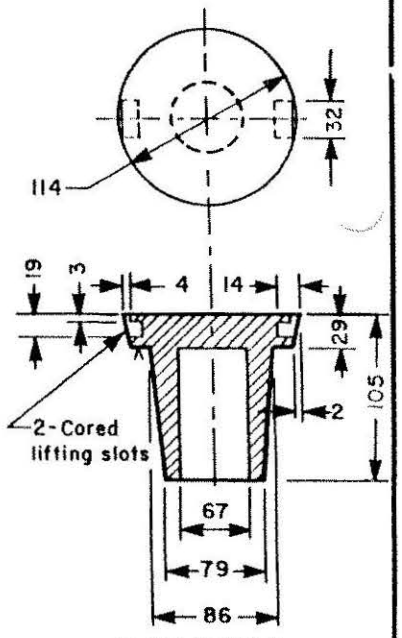
DATE: JUNE 1993 | FIGURE: S-209
DRAWN: L.E.L. | SCALE: N.T.S.



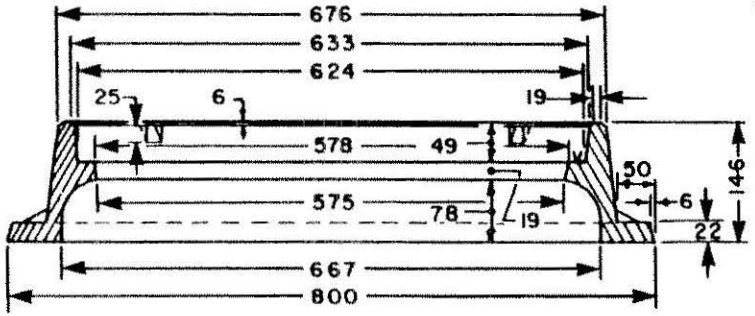
FRAME PLAN



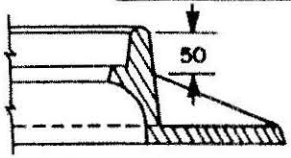
PLAN



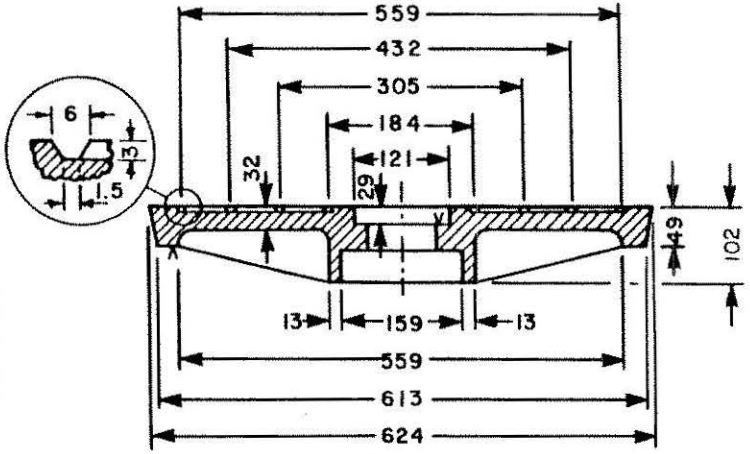
PLUG DETAIL



SECTION A-A



SECTION B-B

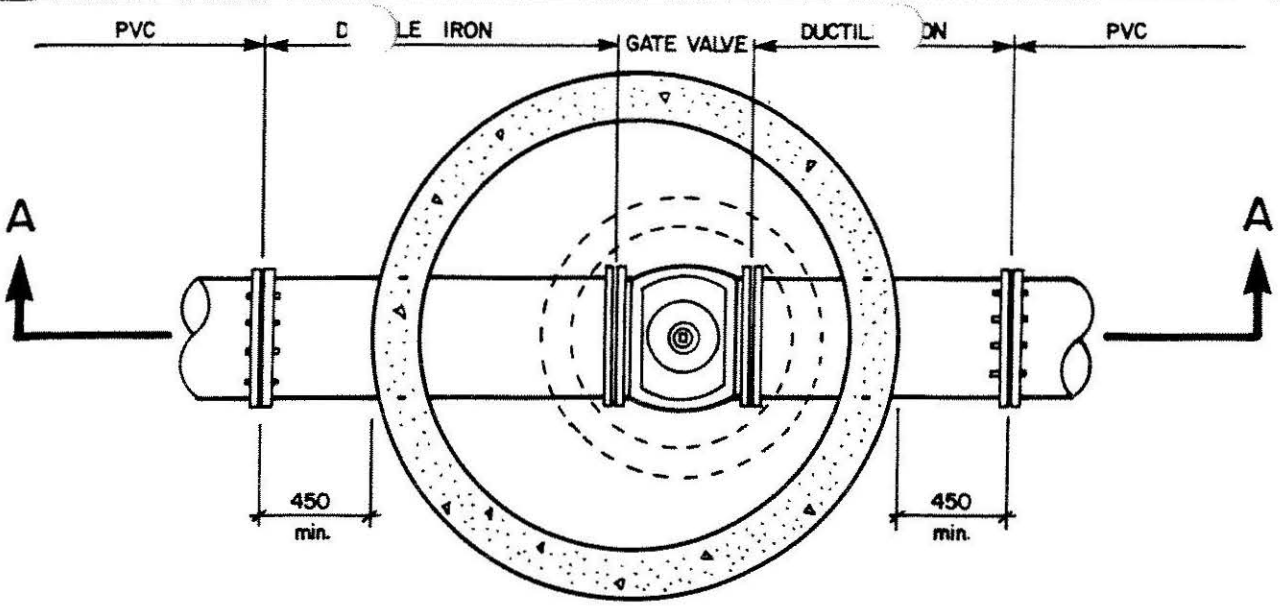


SECTION C-C

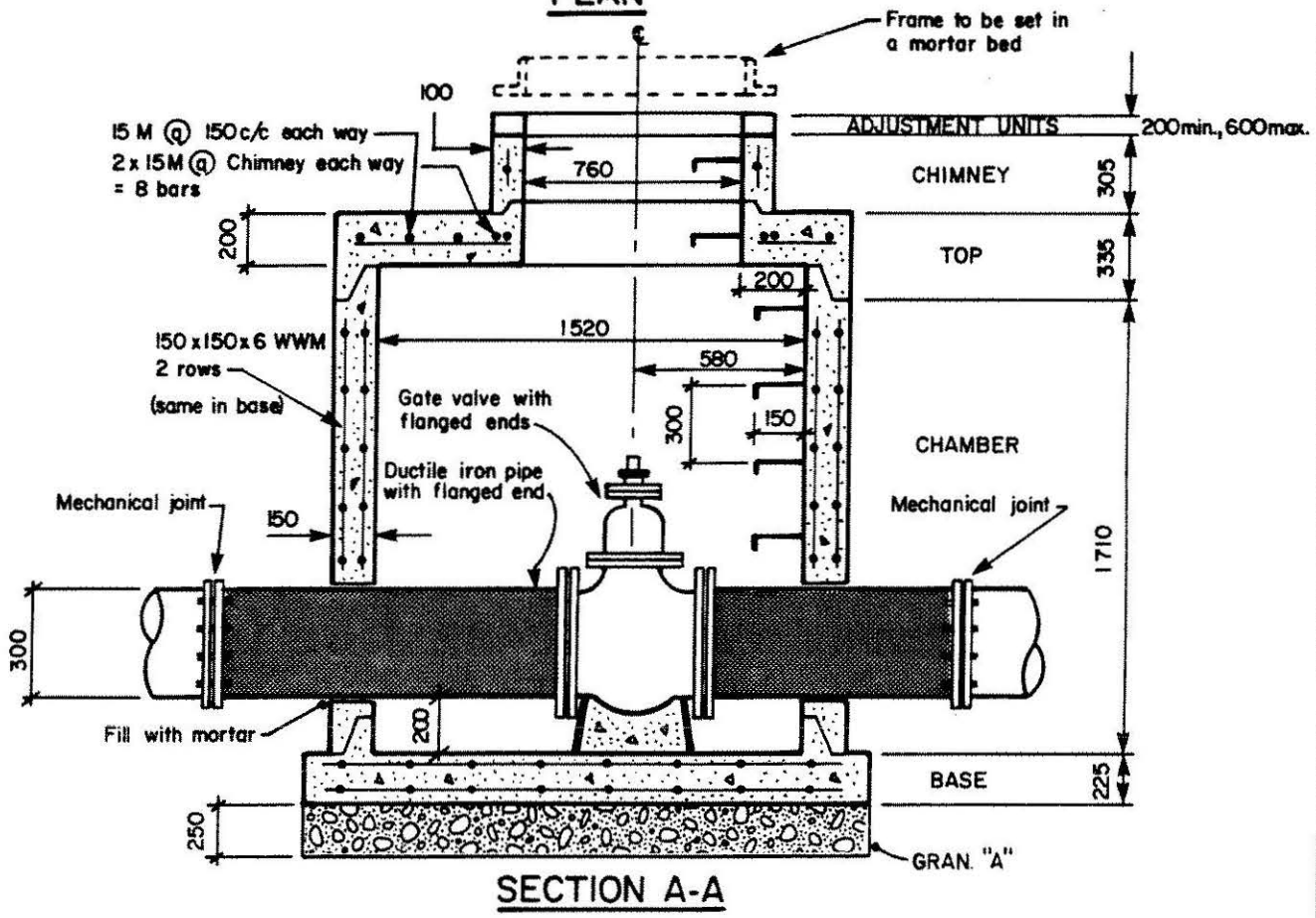
CAST IRON CIRCULAR COVER, PLUG AND SQUARE FRAME FOR A WATERMAIN VALVE CHAMBER

MUN RUSSELL TWP

PREPARED BY: L.ECOMPTE ENG. LTD.	DATE: APRIL 1993
SCALE: N.T.S.	FIGURE: W-301



PLAN



SECTION A-A

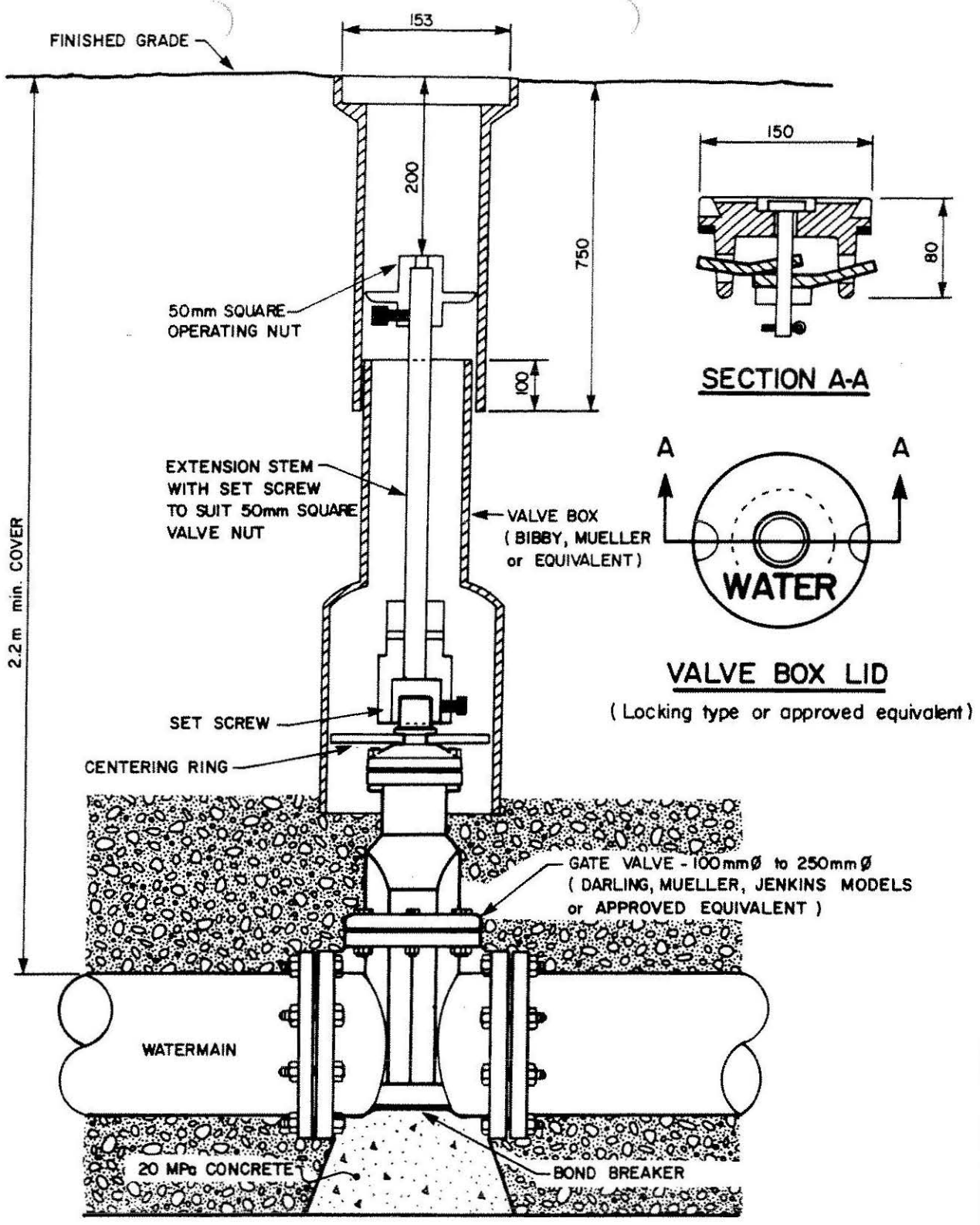
NOTES:

1. CONCRETE STRENGTH : 35 MPa @ 28 DAYS
2. THE CHAMBER ACCESS CHIMNEY SHALL BE CENTERED OVER THE OPERATOR OF THE VALVE
3. CHAMBER HEIGHT OF 1710 mm MAY VARY DEPENDING ON WATERMAIN SIZE
4. FOR STEP DETAIL SEE MANHOLE DWG S-202

GATE VALVE CHAMBER

MUN RUSSELL TWP

DATE: JUNE 1993	FIGURE: W-302
DRAWN: M.L.	SCALE: N.T.S.



NOTES:

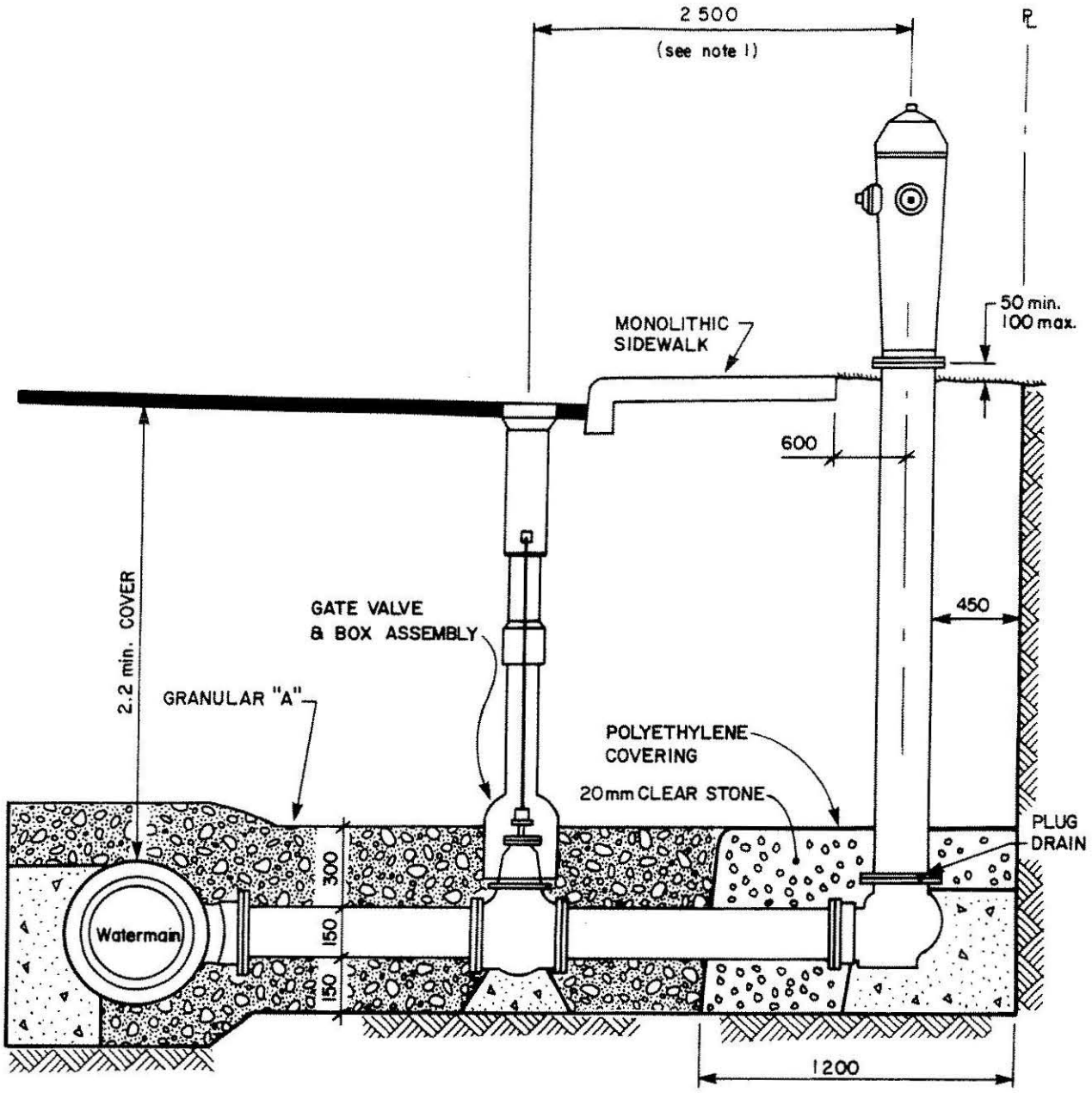
1. VALVE BOX TO BE ADEQUATELY BRACED WHILE BACKFILLING AND MUST REMAIN PLUMB

GATE VALVE AND VALVE BOX INSTALLATION

(FOR VALVES UP TO 250mm Ø)

MUN RUSSELL TWP

DATE: MAY 1993		FIGURE: W-303
DRAWN: M.L.	SCALE: N.T.S.	



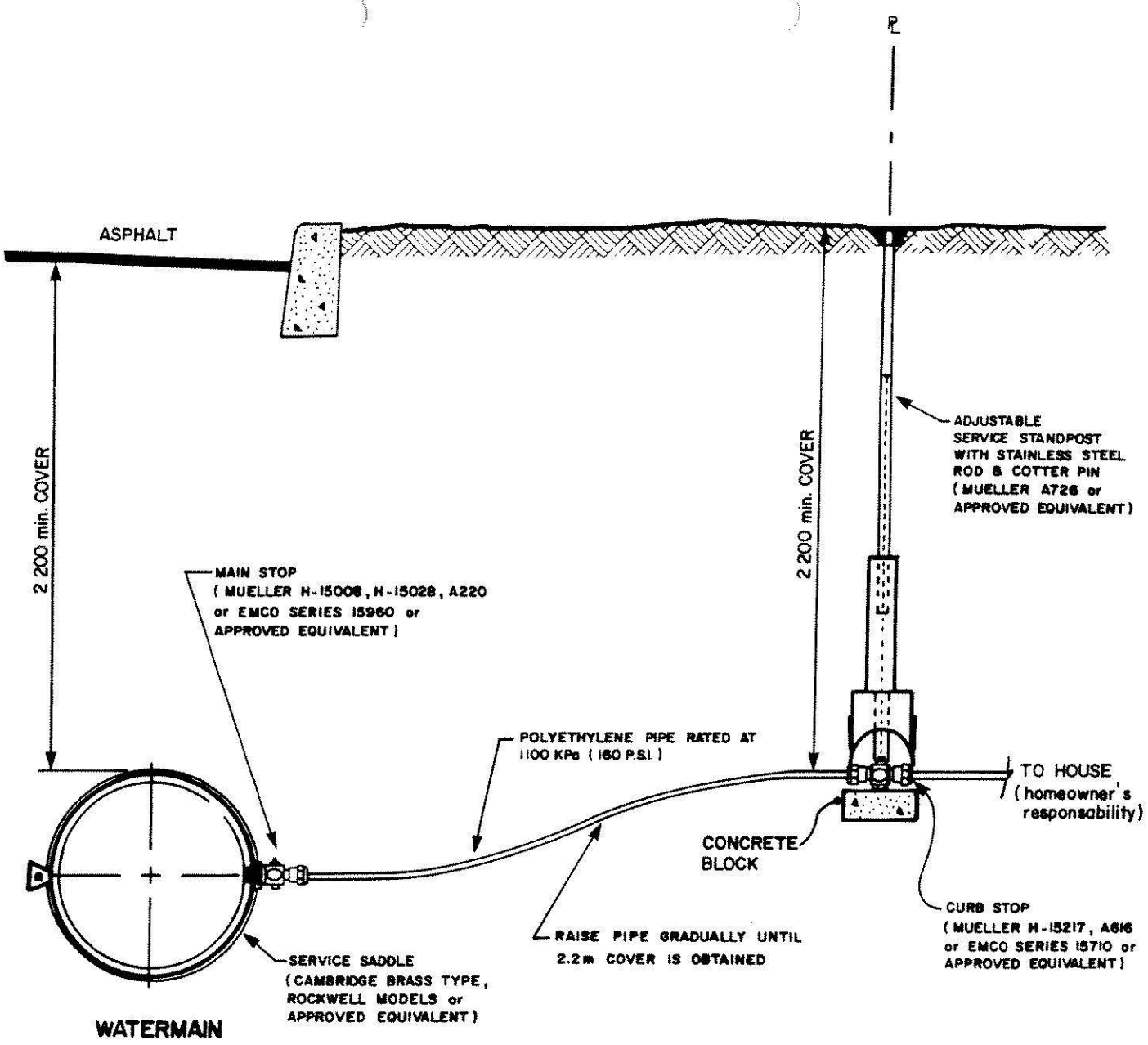
NOTES:

1. WHEN SIDEWALK IS PRESENT, INSTALL HYDRANT AT 2.5m FROM VALVE ; USE 1.5m AS STANDARD LENGTH IN ALL OTHER CASES UNLESS OTHERWISE SPECIFIED BY TOWNSHIP ENGINEER
2. USE CANADA VALVE CENTURY HYDRANT MODEL EXCLUSIVELY
3. ALL CONCRETE BLOCKING SHALL BE 20 MPa a 28DAYS & POURED AGAINST UNDISTURBED GROUND
4. INSTALL HYDRANT AT LATERAL PROPERTY LINE WHEN POSSIBLE & AT A MINIMUM OF 2.0 FROM ANY LANEWAY
5. HYDRANT LEAD TO BE 150mm Ø DUCTILE IRON PIPE (CLASS 50)
6. HYDRANT LEAD TRAVERSING OPEN DITCH TO COME WITH A 450mm Ø CSP (3.0m LONG MIN.), GRANULAR "A" & "C" BACKFILL AND INSULATION REQUIRED AS SHOWN IN CHART ON DWG M-402

HYDRANT INSTALLATION

MUN RUSSELL TWP

DATE: JUNE 1993		FIGURE: W-304
DRAWN: M.L.	SCALE: N.T.S.	



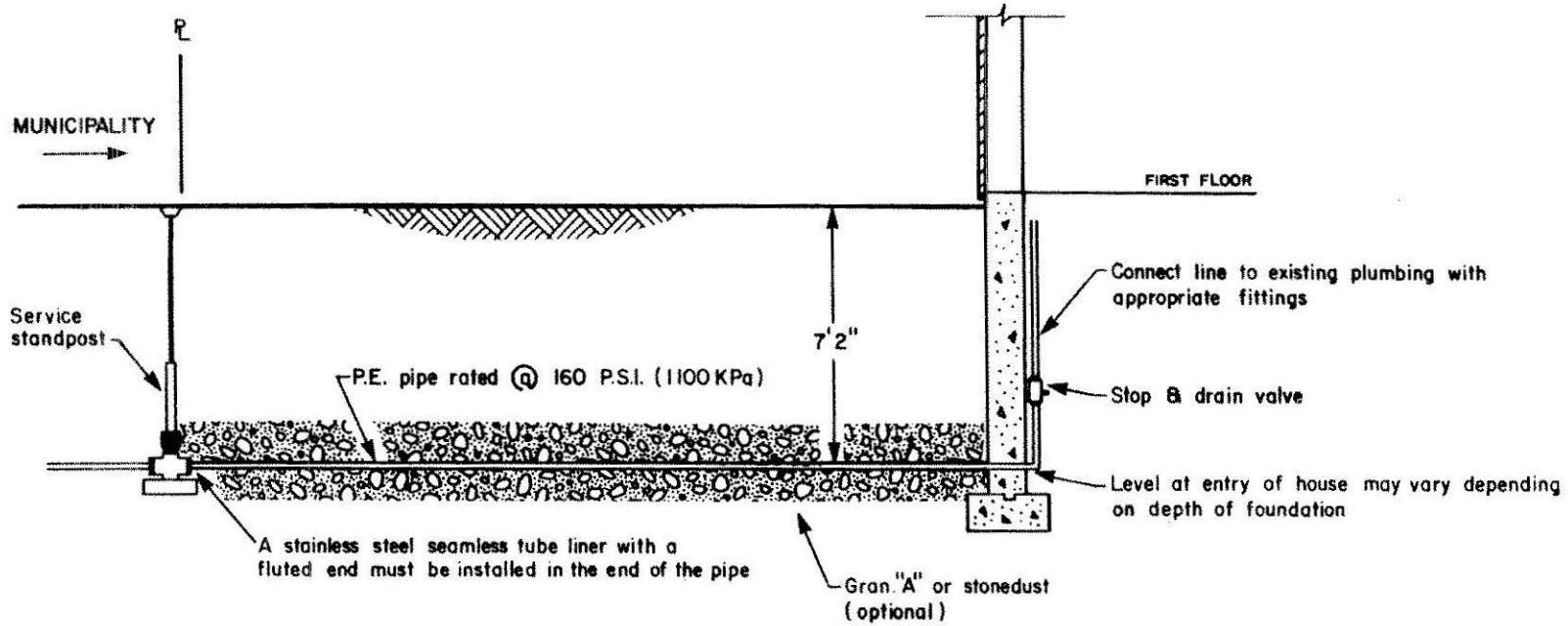
NOTES:

1. USE P.E. PIPE EXCLUSIVELY FOR 20 & 25mm SERVICES
2. INSTALL A STAINLESS STEEL SEAMLESS TUBE LINER WITH A FLUTED END IN THE P.E. PIPE AT ALL CURB & MAIN STOPS
3. GRAN. "A" BEDDING (150mm) & BACKFILL (300mm) COMPACTED TO 95% S.P.D. IN ROADWAYS
4. FOR 50mm SERVICE, USE COPPER PIPE TYPE 'K' & APPROPRIATE FITTINGS

STANDARD 20 & 25mm Ø WATER SERVICE CONNECTION

MUN RUSSELL TWP

DATE: APRIL 1993	FIGURE: W-305
DRAWN: M.L.	SCALE: N.T.S.



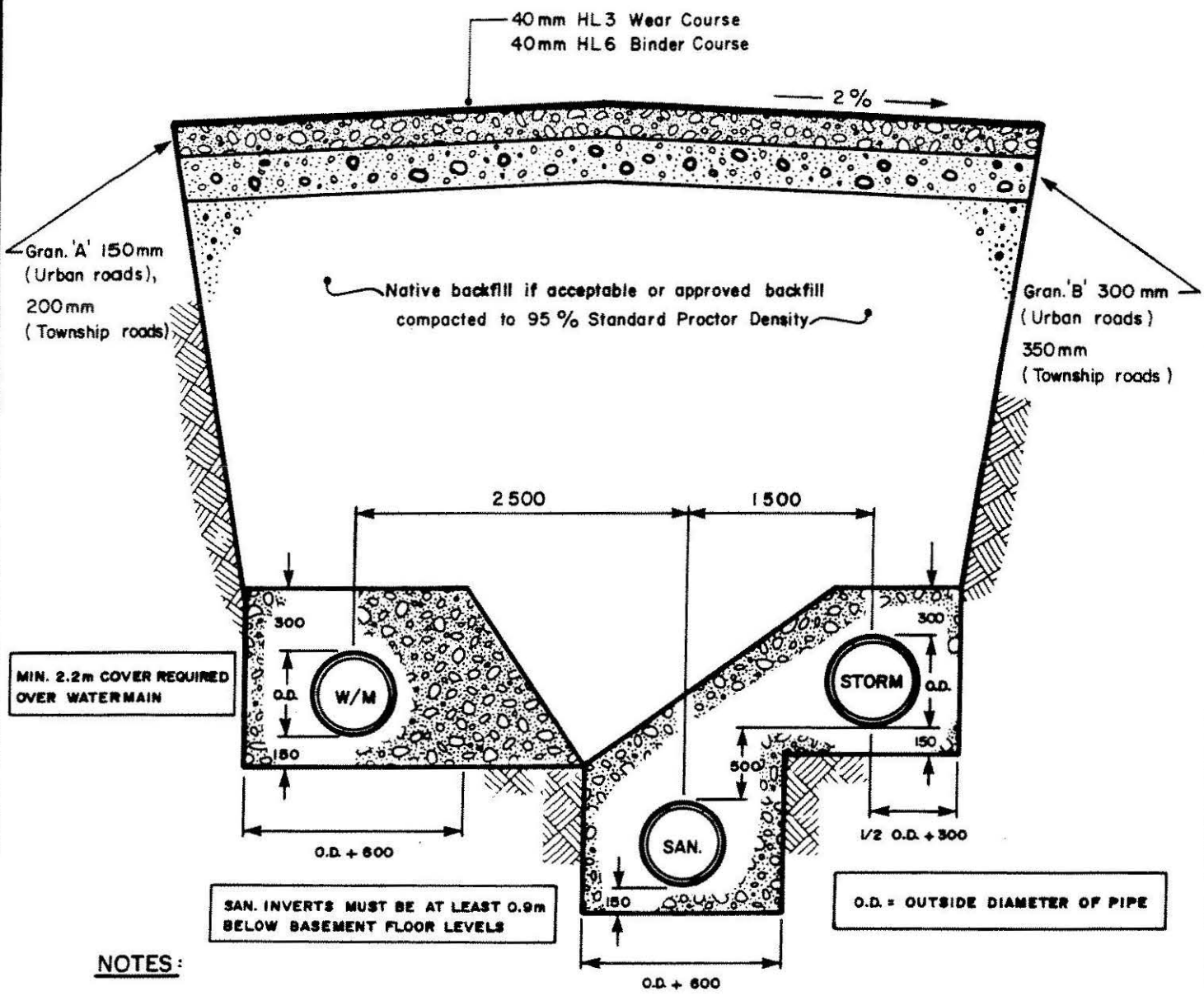
NOTES:

1. THE HOMEOWNER MUST OBTAIN A WATER CONNECTION PERMIT FROM THE TOWNSHIP OFFICE PRIOR TO CONNECTION
2. USE P.E. PIPE EXCLUSIVELY UP TO STOP & DRAIN VALVE
3. 2.2 m COVER (7' 2") SHOULD BE MAINTAINED OVER THE PIPE FOR FROST PROTECTION. INSULATE WITH STYROFOAM WHERE NECESSARY
4. A BEDDING OF 150mm (6") AND A COVER OF 300mm (12") OF GRAN. "A" OR STONE DUST SHOULD BE PLACED UNDER & OVER THE PIPE
5. PIPE TRENCH SHOULD BE COMPACTED, ESPECIALLY IF LOCATED IN A LANEWAY TO PREVENT SETTLING

HOMEOWNER's WATER CONNECTION

MUN RUSSELL TWP

PREPARED BY:	DATE:
LECOMPTE ENG. LTD.	JULY 1993
SCALE: N.T.S.	FIGURE: W-306



NOTES:

1: GRANULAR 'A' BEDDING SHALL BE USED THROUGHOUT THE WORKS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.

2: BEDDING SHALL BE COMPACTED IN LAYERS NOT EXCEEDING 300 mm.

3: WHERE 2 OR MORE PIPES ARE INSTALLED IN A COMMON TRENCH, GRANULAR BEDDING MATERIAL SHALL BE USED FROM 150mm BELOW LOWEST PIPE BARREL TO 300mm ABOVE HIGHEST PIPE BARREL AS SHOWN IN THE ABOVE DRAWING UNLESS OTHERWISE MODIFIED BY THE TOWNSHIP ENGINEER

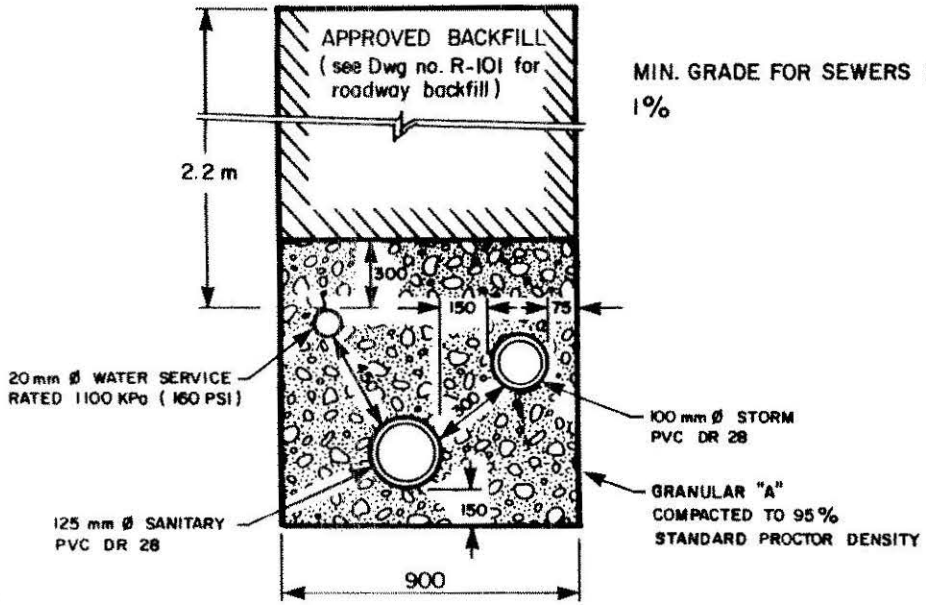
4: WHEN ONE PIPE CROSSES ANOTHER, THE MINIMAL VERTICAL SEPARATION IS 450mm.

5: NATIVE BACKFILL SHALL BE COMPACTIBLE TO 95% STD PROCTOR DENSITY OTHERWISE IMPORTED BACKFILL WILL BE REQUIRED AS DIRECTED BY THE TOWNSHIP ENGINEER.

COMMON TRENCH:
SEPARATION REQUIREMENTS & BEDDING DETAILS

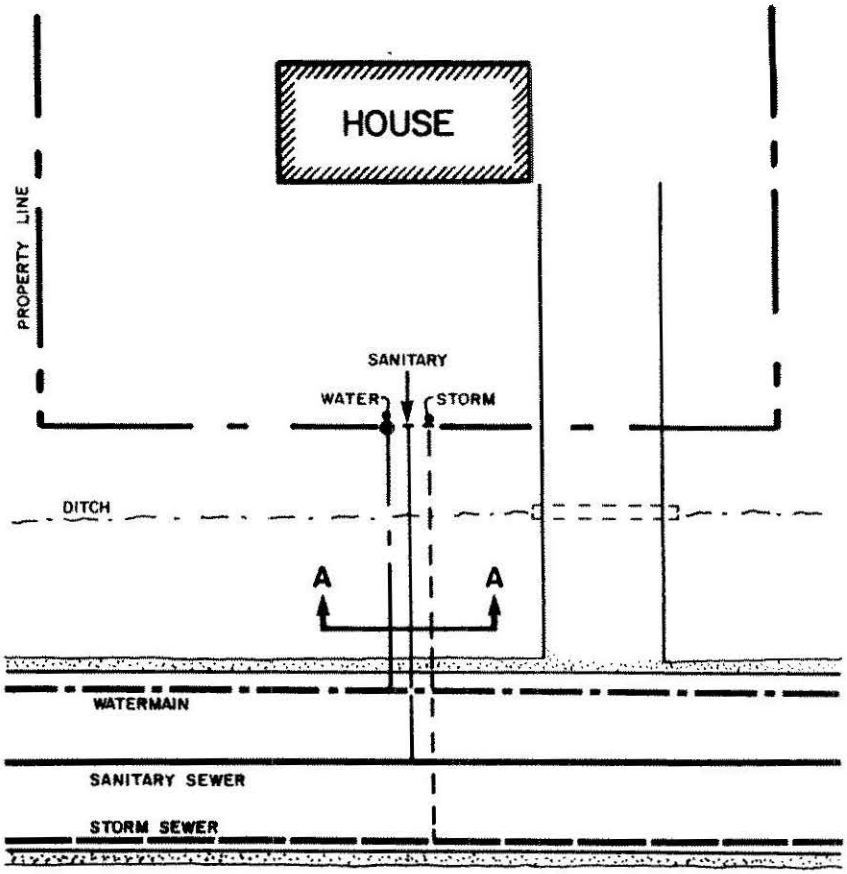
MUN RUSSELL TWP

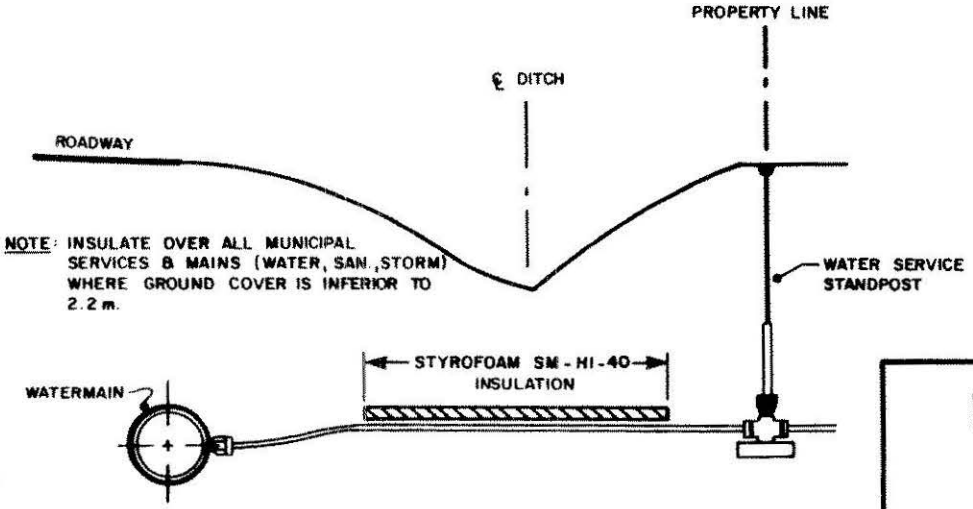
DATE: MARCH 1993		FIGURE: M-401
DRAWN: M.L.	SCALE: N.T.S.	



MIN. GRADE FOR SEWERS IS 1%

SECTION A-A





NOTE: INSULATE OVER ALL MUNICIPAL SERVICES & MAINS (WATER, SAN., STORM) WHERE GROUND COVER IS INFERIOR TO 2.2 m.

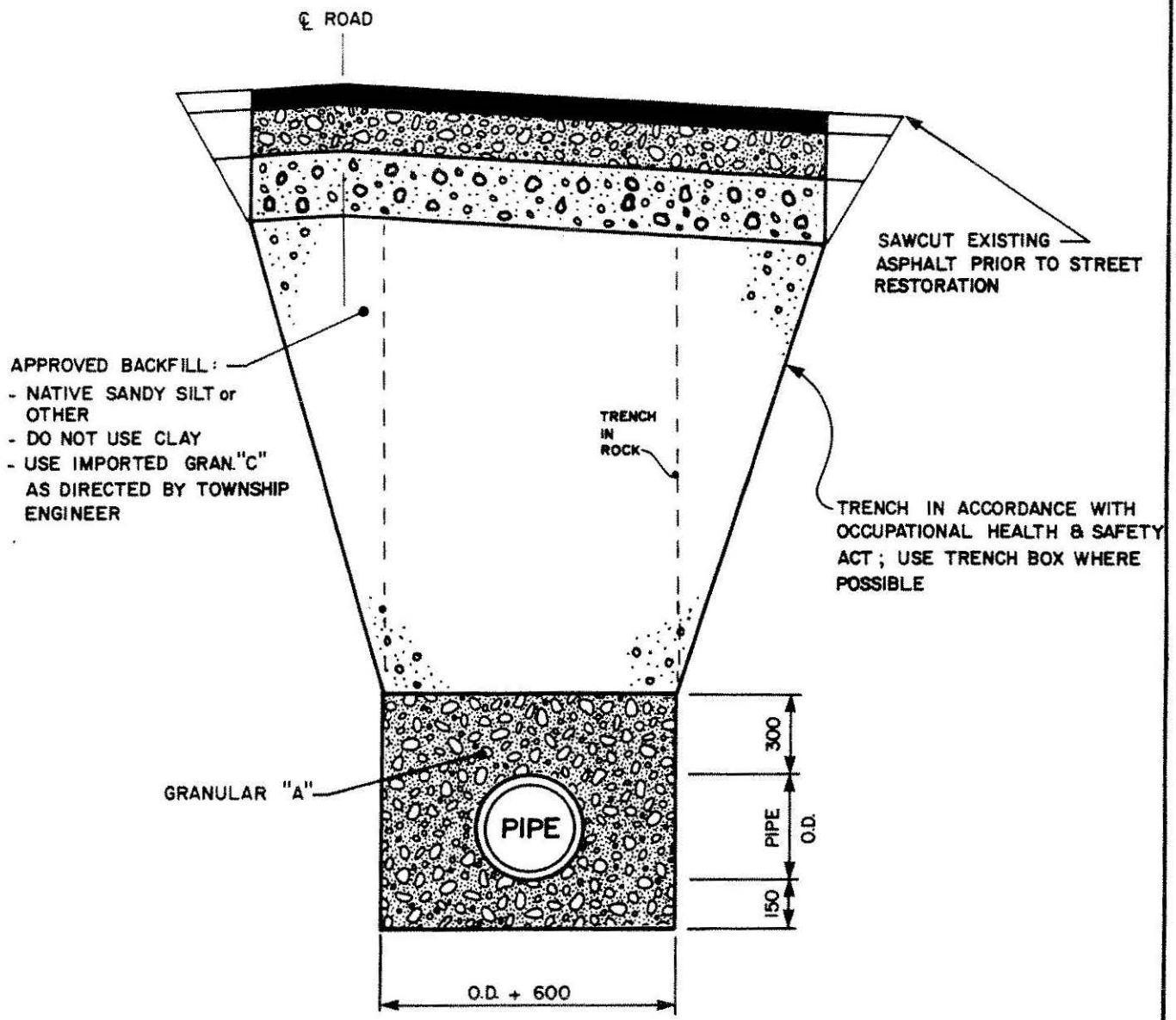
WATER SERVICE CROSS-SECTION (WITH INSULATION REQUIREMENTS)

INSULATION REFERENCE TABLE	
EARTH COVER	INSULATION THICKNESS
1500 - 2200 mm	50 mm
1200 - 1500 mm	75 mm
500 - 1200 mm	100 mm

HOUSE SERVICE DETAILS & GENERAL INSULATION REQUIREMENTS

MUN RUSSELL TWP

PREPARED BY:	DATE:
LECOMPTE ENG. LTD.	APRIL 1993
SCALE: N.T.S.	FIGURE: M-402



NOTES:

1. ROAD RECONSTRUCTION:

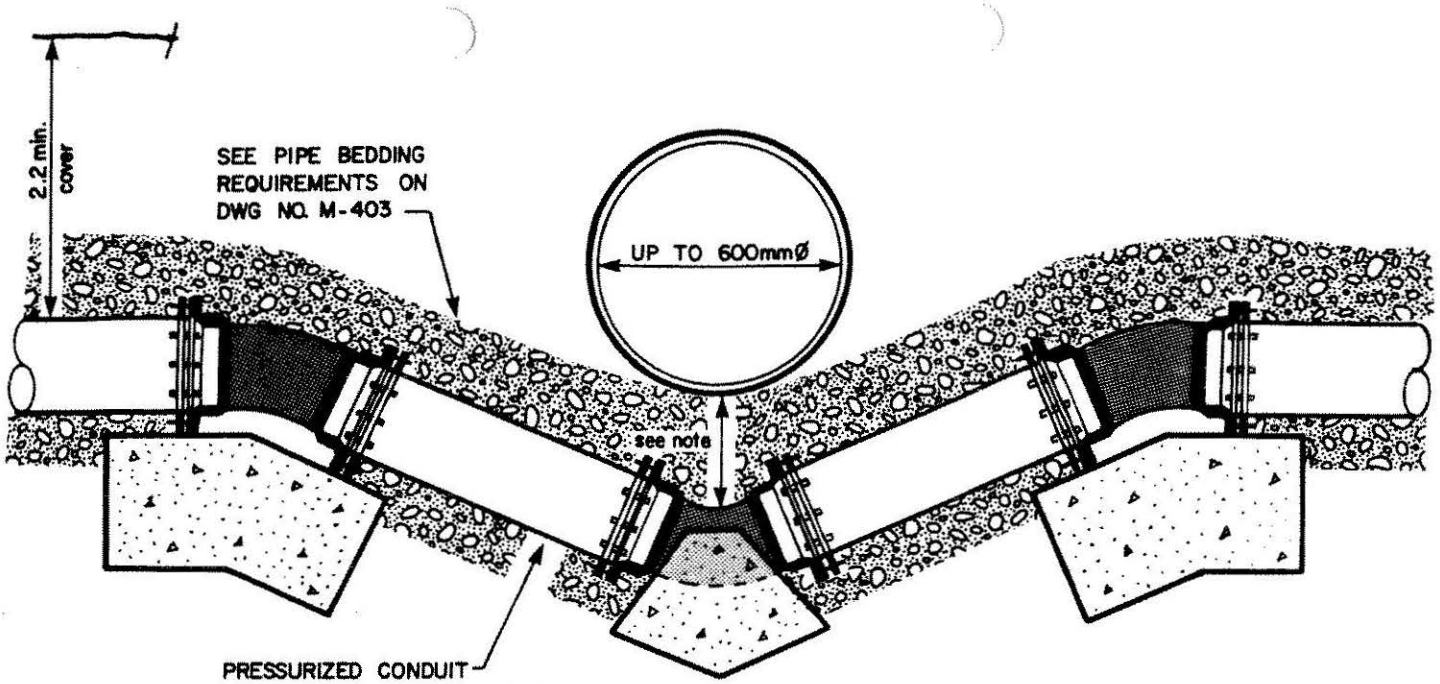
	URBAN ROADS:	TOWNSHIP ROADS:	COUNTY ROADS:
	40mm HL3	40mm HL3	50mm HL3
	40mm HL6	40mm HL6	50mm HL6
	150mm GRAN. "A"	200 GRAN. "A"	150 GRAN. "A"
	300mm GRAN. "B"	350 GRAN. "B"	550 GRAN. "B"

2. GRANULARS & BACKFILL TO BE PLACED IN MAX. LIFTS OF 300mm & COMPACTED TO 95% STANDARD PROCTOR DENSITY

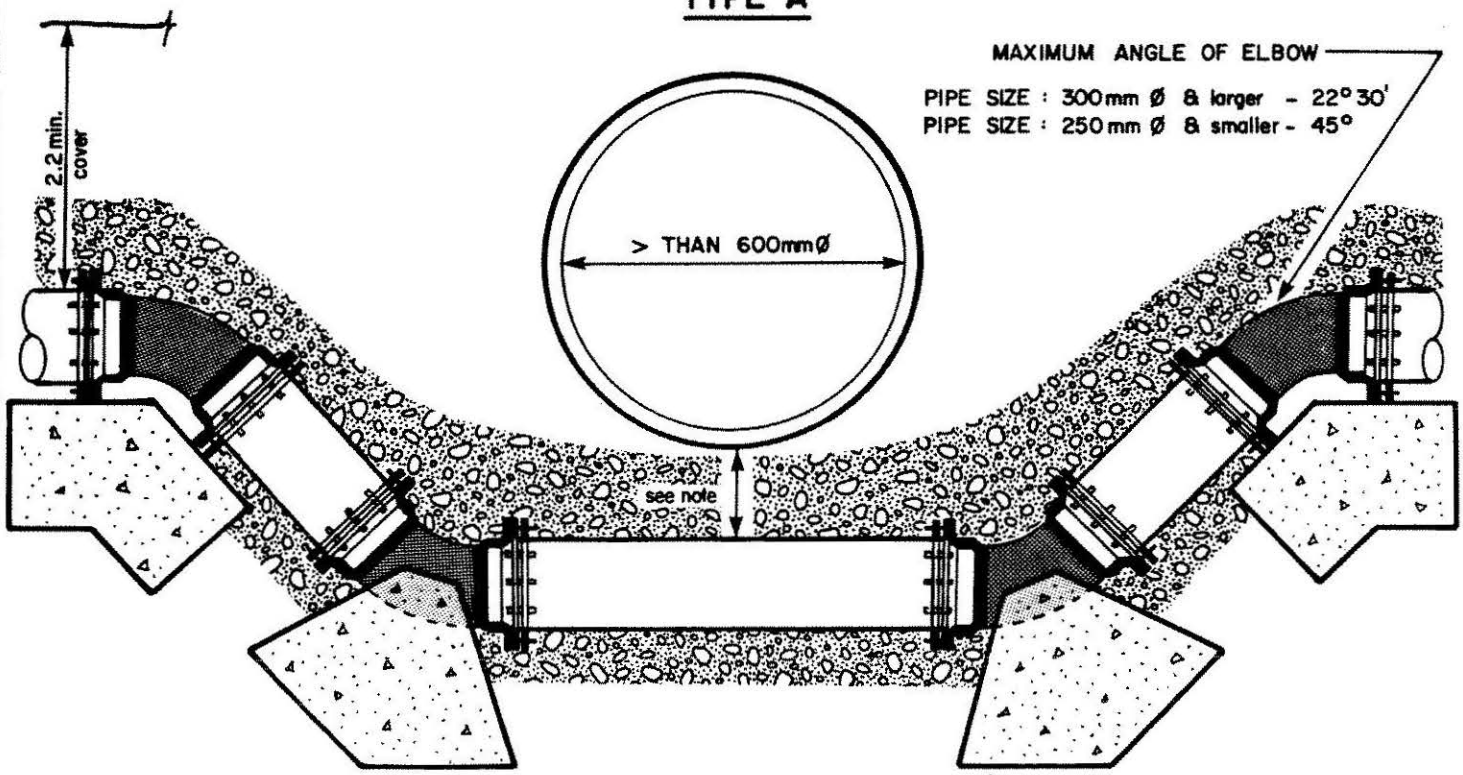
SINGLE TRENCH DETAIL

MUN RUSSELL TWP

DATE: JUNE 1993		FIGURE: M-403
DRAWN: M.L.	SCALE: N.T.S.	



TYPE 'A'



TYPE 'B'

NOTES:

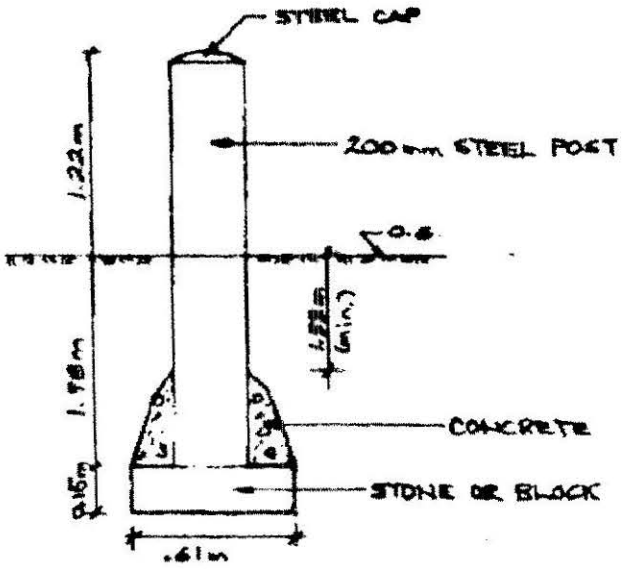
1. BARREL TO BARREL SEPARATION TO BE A MINIMUM OF 500mm. CONCRETE ENCASEMENT REQUIRED IF SEPARATION IS LESS THAN 500mm

PRESSURIZED CONDUIT CROSSING ANOTHER MUNICIPAL PIPE

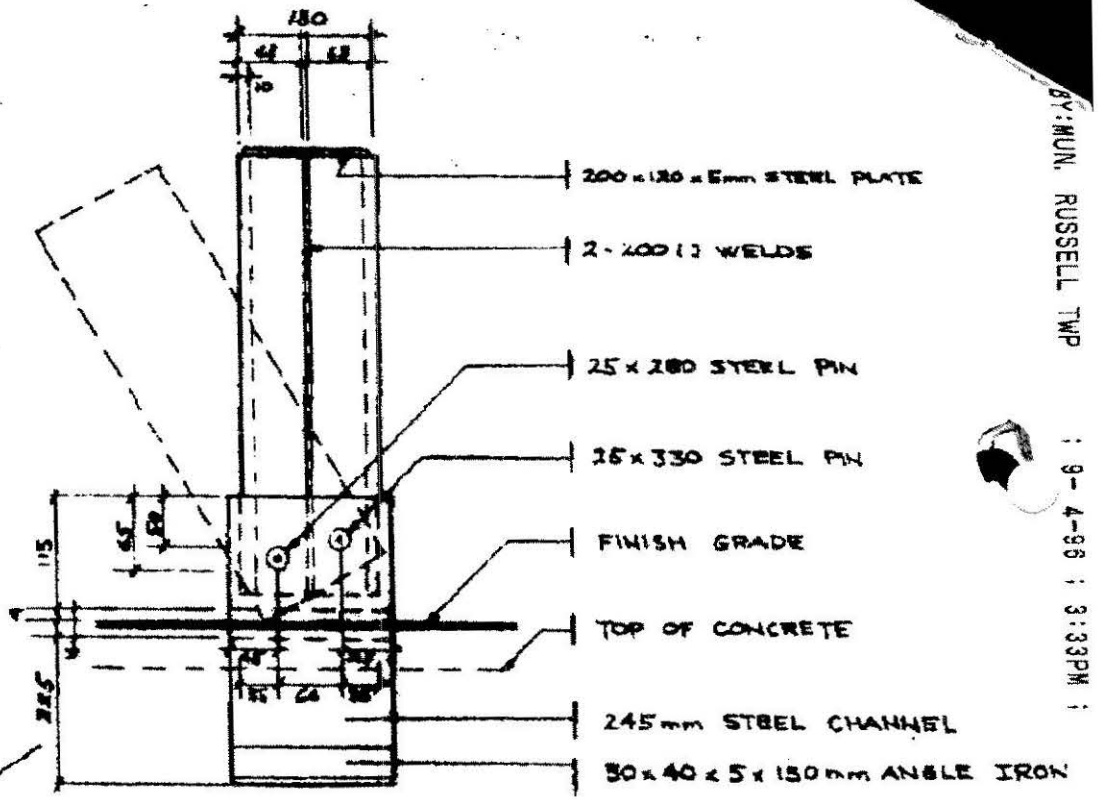
(SANITARY, STORM, C.S.P., PRESSURIZED PIPE or OTHER)

MUN RUSSELL TWP

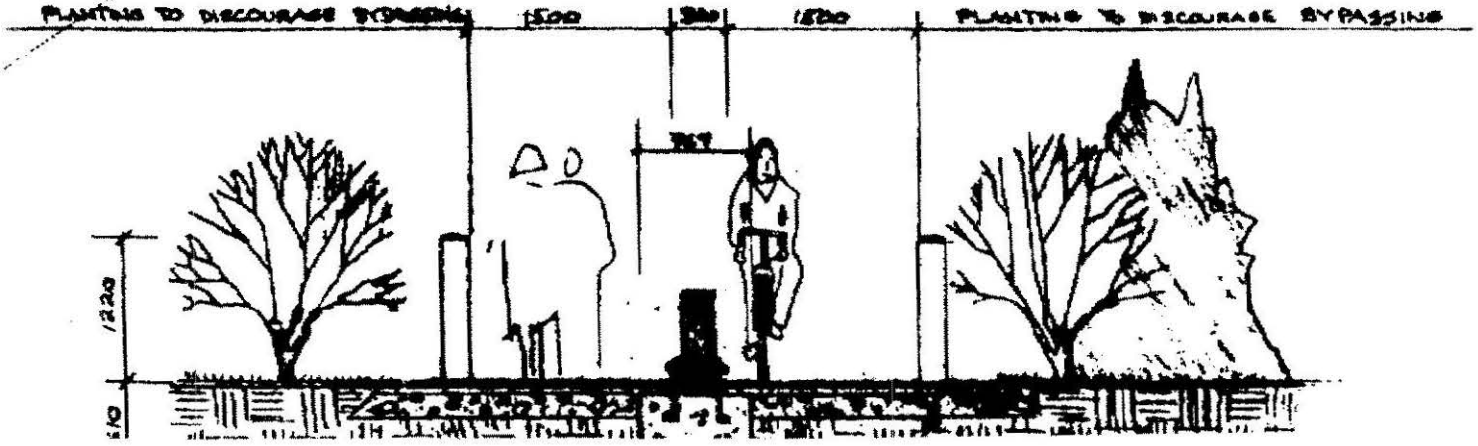
DATE: MAY 1993		FIGURE: M-404
DRAWN: M.L.	SCALE: N.T.S.	



POST DETAIL
N.T.S



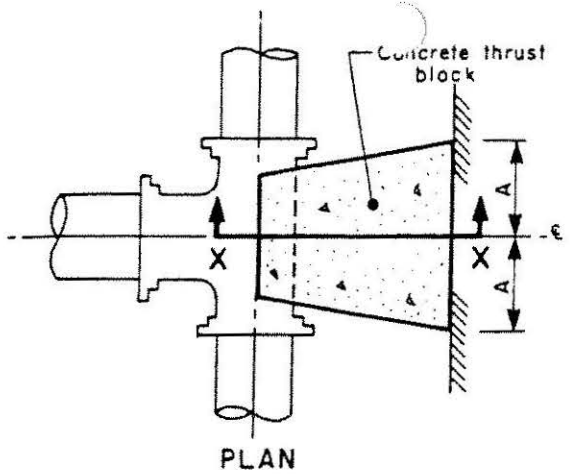
HINGED POST BARRIER
DETAIL 'A'
(N.T.S.)



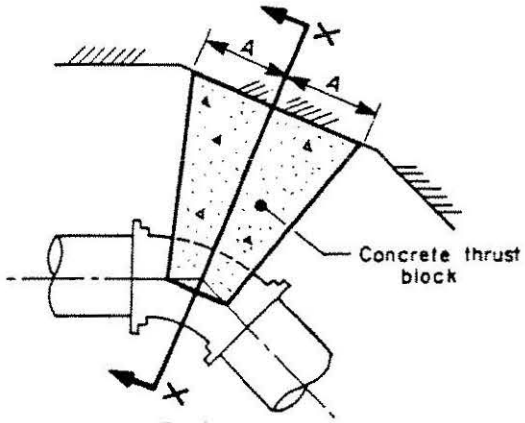
LOT 13

BY:MUN. RUSSELL TWP ; 9- 4-96 ; 3:33PM ;

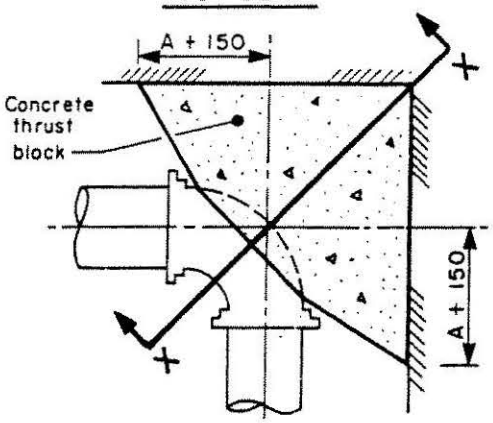
CCITT G3+ MUN. RUSSELL TWP:# 2



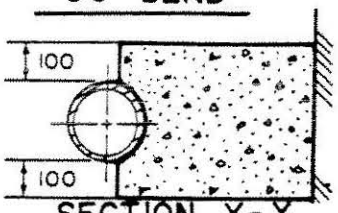
PLAN
TEE



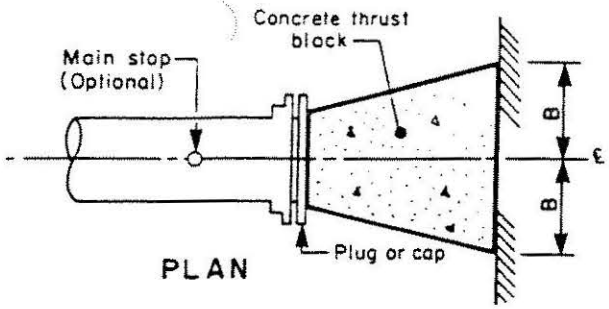
PLAN
45° BEND



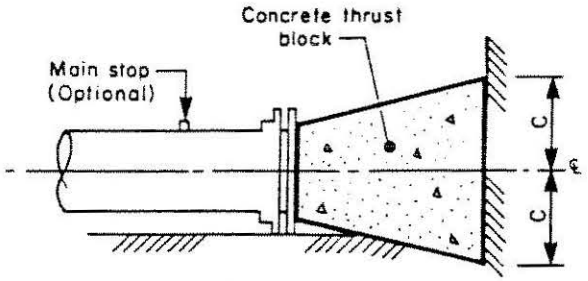
PLAN
90° BEND



SECTION X-X



PLAN



ELEVATION
DEAD END SECTION

MINIMUM DIMENSIONS			
PIPE SIZE (mm)	A (mm)	B (mm)	C (mm)
100	150	150	150
150	230	230	200
200	230	300	200
250	300	380	250
300	380	450	300
350	450	550	380

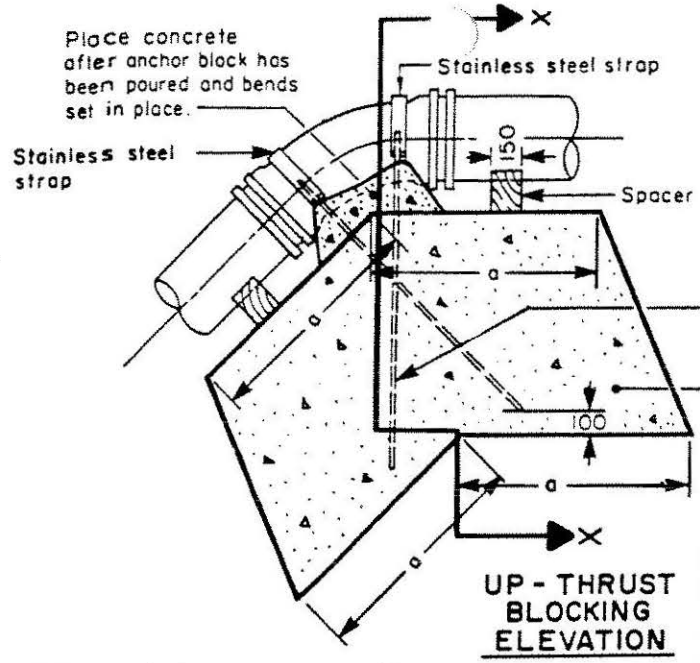
NOTES:

1. 2 x 45° bends are to be used instead of a 90° bend where possible
2. All concrete thrust blocks to be poured against undisturbed ground.
3. Clearance of 80 mm to be maintained from face of bell to concrete.
4. Polyethylene bond breaker to be used between concrete and fittings.
5. This blocking design applies only where 1035 kPa pressure is not exceeded.
6. This blocking design applies where the soil has a minimum soil bearing capacity of 200 kPa.
7. Concrete strength : 20 MPa at 28 days

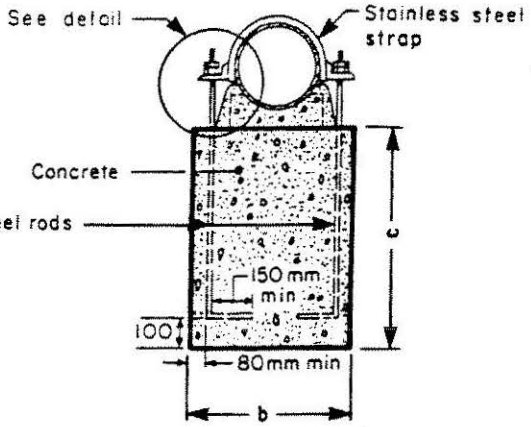
CONCRETE THRUST BLOCKS FOR TEES, PLUGS AND HORIZONTAL BENDS

MUN RUSSELL TWP

DATE: APRIL 1993		FIGURE: M-405
DRAWN: L.E.L.	SCALE: N.T.S.	

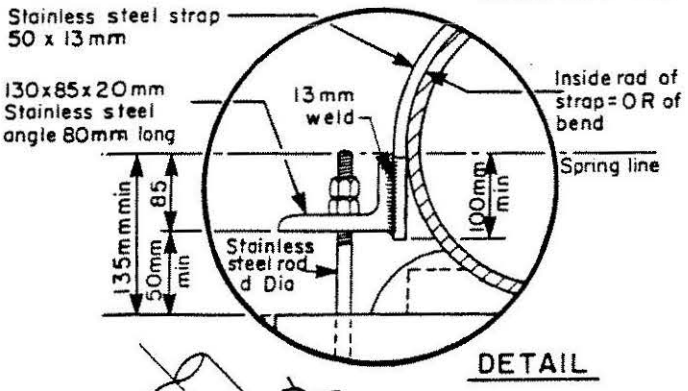


UP - THRUST BLOCKING ELEVATION

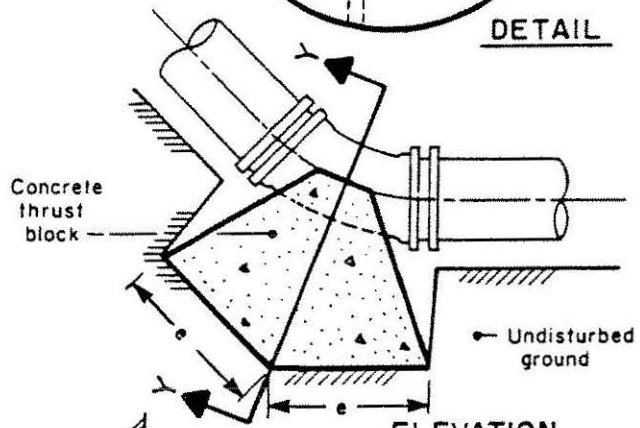


SECTION X-X

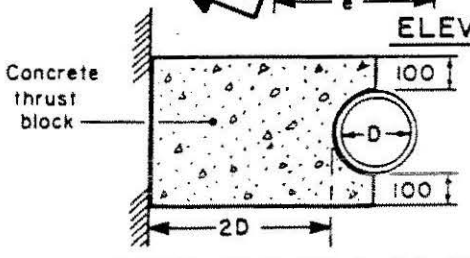
MINIMUM DIMENSIONS					
PIPE SIZE (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)
100	450	600	750	13	150
150	600	900	900	13	300
200	600	900	1500	13	450
250	900	900	1500	20	600
300	1200	900	1650	20	800
350	1200	1200	1650	25	1000



DETAIL



ELEVATION



DOWN - THRUST BLOCKING SECTION Y-Y

NOTES:

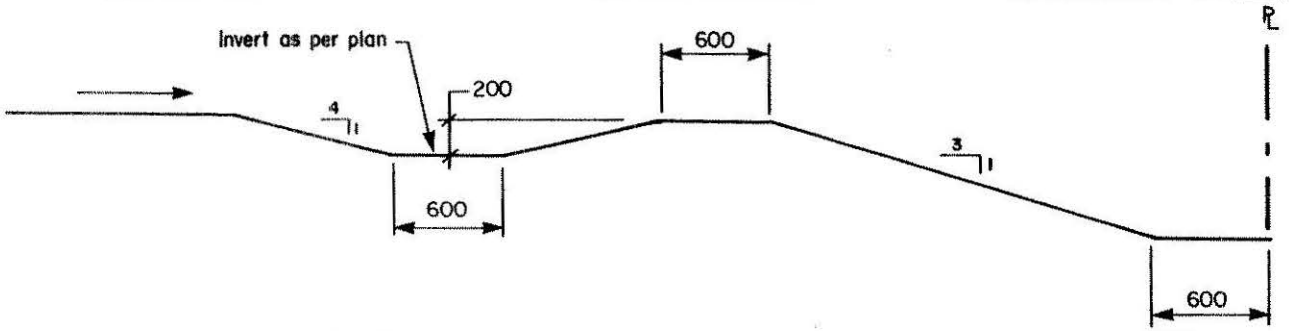
1. All concrete thrust blocks to be poured against undisturbed ground.
2. Clearance of 80 mm to be maintained from face of bell to concrete.
3. Polyethylene bond breaker to be used between concrete and fittings.
4. This blocking design applies only where 1035 kPa pressure is not exceeded.
5. This blocking is for bends up to 45° only.
6. This blocking design applies where the soil has a minimum soil bearing capacity of 200 kPa.
7. The maximum vertical bend is to be 45°.
8. Concrete strength : 20 MPa at 28 days

CONCRETE THRUST BLOCKS FOR VERTICAL BENDS ON WATERMAINS & FORCEMAINS

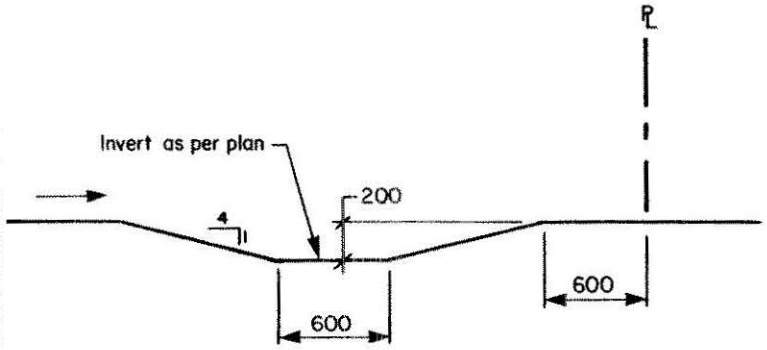
MUN RUSSELL TWP

DATE: APRIL 1993 | FIGURE: M-406

DRAWN: L.E.L. | SCALE: N.T.S.

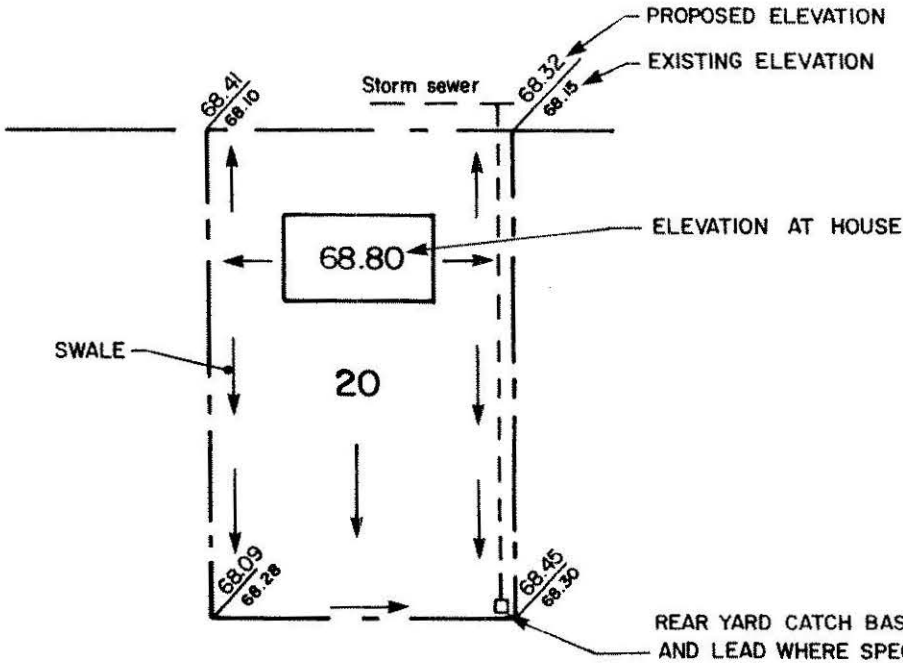


SWALE DETAIL



SWALE DETAIL

(SEE NOTE 1)



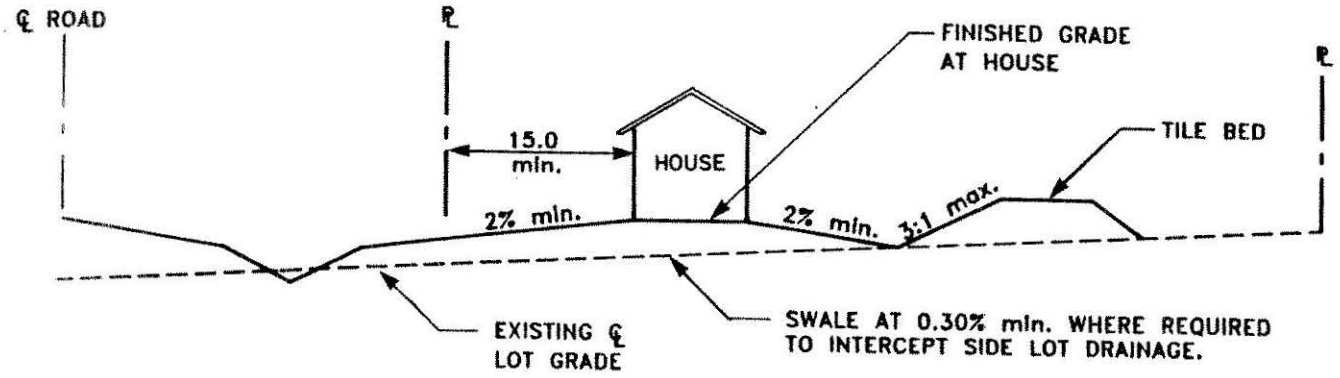
NOTES:

1. WHERE INDICATED ON THE PLAN, LOTS WHICH ABUT THE SUBDIVISION LIMIT SHALL BE GRADED TO PROVIDE A 600 mm WIDE STRIP ABUTTING THE SUBDIVISION LIMIT WHICH IS AT THE SAME GRADE AS THE ADJOINING EXTERNAL LANDS. ANY EMBANKMENT REQUIRED BY LOT GRADING REQUIREMENTS IS TO BE COMMENCED AT THE INSIDE EDGE OF THIS STRIP.

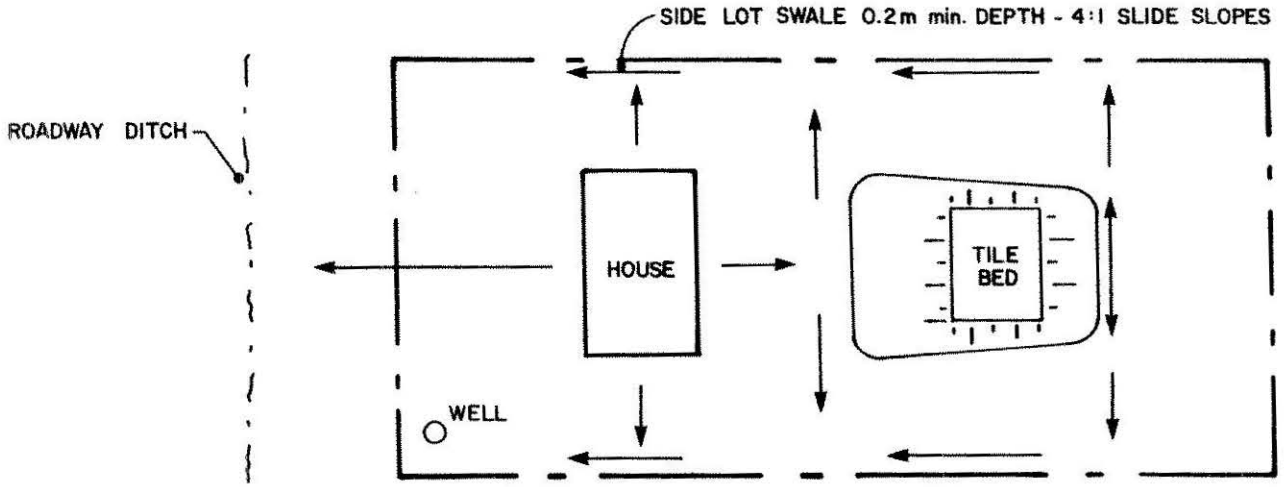
LOT GRADING

MUN RUSSELL TWP

PREPARED BY:	DATE:
LECOMPTE ENG. LTD.	JUNE 1993
SCALE: N.T.S.	FIGURE: M-407



ELEVATION



PLAN

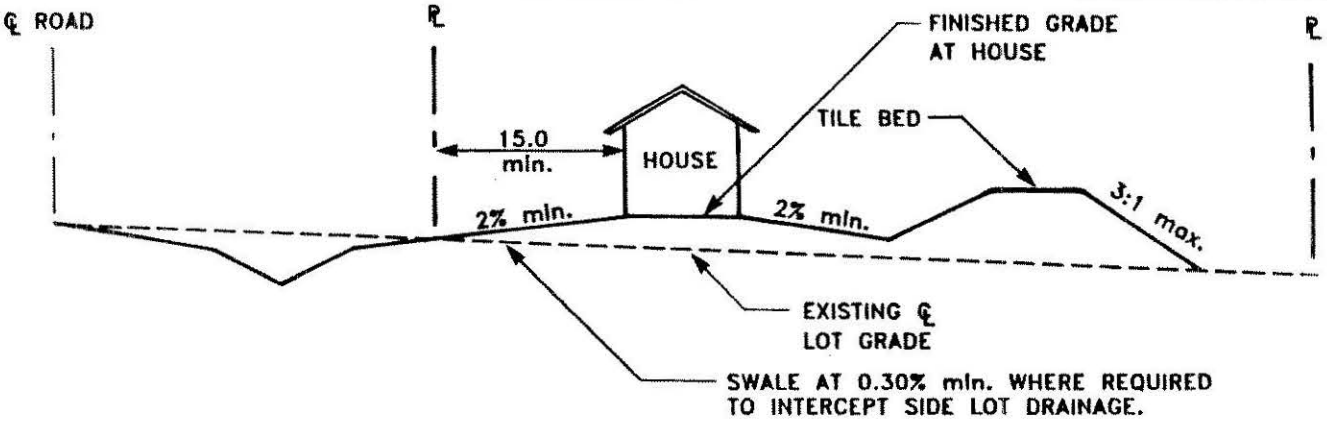
NOTES:

1. RAISED TILE BED TYPE IS OPTIONAL. REFER TO EASTERN ONTARIO HEALTH UNIT REQUIREMENTS

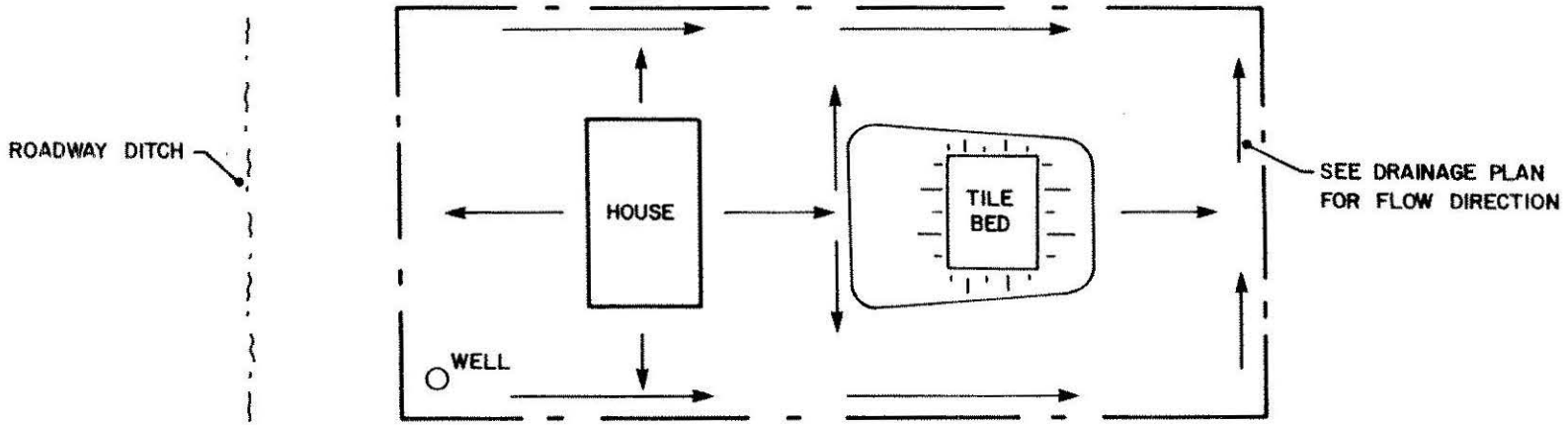
RURAL RESIDENTIAL FRONT LOT DRAINAGE

MUN RUSSELL TWP

PREPARED BY: LECOMPTE ENG. LTD.	DATE: JUNE 1993
SCALE: N.T.S.	FIGURE: M-408



ELEVATION



PLAN

NOTES:

1. RAISED TILE BED TYPE IS OPTIONAL. REFER TO EASTERN ONTARIO HEALTH UNIT REQUIREMENTS

RURAL RESIDENTIAL REAR LOT DRAINAGE

MUN RUSSELL TWP

PREPARED BY: LECOMPTE ENG. LTD.	DATE: JUNE 1993
SCALE: N.T.S.	FIGURE: M-409

SCHEDULE "V"

STREET LIGHTING

Light Spacing	-	as per Russell Hydro Electric Commission and/or Embrun Hydro and approved by the Township of Russell specifications (maximum 60 m)
Type of post	-	concrete
Luminaire	-	250 watt high pressure sodium at all street intersections
	-	150 watt high pressure sodium at other locations.
Brackets Engineer	-	3.5m steel or aluminum or as otherwise acceptable to the Township.

In accordance with the requirements of Ontario Hydro and/or Russell Hydro Electric Commission as per the following approved plans and specifications and as required by Ontario Hydro and/or Russell Hydro Electric Commission and the Township Engineer.