



## **APPENDIX 1**

### **Standard Detail Drawings**

**Township of King  
Design Criteria and Standard Detail Drawings**

**APPENDIX 1 – STANDARD DETAIL DRAWINGS**

<b><u>Drawing No.</u></b>	<b><u>Title</u></b>	<b><u>Revision Date</u></b>
KS-171	Typical Drop Structure for Storm Manhole	Feb. 2017
KS-174	Beehive Catchbasin - Frame and Cover	April 2015
KS-175	Service Location Single Family Residential	Oct. 2016
KS-176	Service Location Semi-Detached Residential	Oct. 2016
KS-177	Storm Sewer Service Connection	Sep. 2016
KS-178	Storm Sewer Riser Connection	Nov. 2009
KS-179	Townhouse Service Connections	April 2015
KS-180	Bedding Detail for Plastic Sanitary Service Connections	Nov. 2009
KS-190	Sanitary Sewer House Connections	Nov. 2015
KS-191	Sanitary Sewer Riser Connections for Residential Developments	Mar. 2012
KS-193	Sanitary Sewer Cleanouts	June 2016
KS-194	Sanitary Sewer Connections	June 2016
KS-202	20.0m Estate Residential Roadway	Feb. 2017
KS-205	20.0m Local Roadway	Feb. 2018
KS-210	26.0m Collector Roadway (incl. Bike Lanes)	Mar. 2017
KS-218	Typical Cul-De-Sac for Residential Streets	Feb. 2018
KS-219	Typical Cul-De-Sac for Industrial Streets	Nov. 2009
KS-220	Temporary Turning Circle for Residential Streets	Nov. 2009
KS-224	Typical Bulb Detail for Residential Crescents	Mar. 2016
KS-231	Concrete Sidewalk	May 2018
KS-302	Precast Concrete Splash Pad Detail	Nov. 2009
KS-313	Wood Privacy Fence	Nov. 2015
KS-320	Pedestrian Walkway In Urban Setting	Nov. 2009
KS-331	Traffic Sign Details and Pavement Markings	Mar. 2016
KS-332	Street Sign Details	May 2018
KS-335	Stormwater Management Facility Warning Sign	May 2016
KS-340	Standard Driveway Culvert	Nov. 2009
KS-341	Driveway Approach Paving for Residential Driveways	May 2018
KS-342	Driveway Approach Paving Commercial, Industrial & Apartments	May 2018
KS-346	Joint Use Utility Trench	Dec. 2015
KS-400	Typical Legend for Lot Grading Plan	Nov. 2015
KS-401	Front Lot Drainage	Nov. 2009
KS-402	Rear Lot Drainage	Nov. 2009
KS-403	Rear Lot Drainage for Walkout or Back Split House	Nov. 2009
KS-404	Front Lot Drainage for Front Split House	Nov. 2009
KS-500	Drawing Title Block	Nov. 2009
KS-701	Typical Pole and Luminaire (Decorative)	Feb. 2017

**APPENDIX 1 – STANDARD DETAIL DRAWINGS**

<b><u>Drawing No.</u></b>	<b><u>Title</u></b>	<b><u>Revision Date</u></b>
KS-801	Watermain Trench and Bedding Details	Nov. 2015
KS-802	Watermain Trench Detail Under Watercourse	Nov. 2009
KS-803	50mm Blow-off for Watermain with Restrained Joints	Oct. 2016
KS-804	Methods of Insulating Watermains	Nov. 2009
KS-805	Supports for Watermains and Sewers Crossing Watermain Trenches	Nov. 2009
KS-820	19mm to 25mm Water Meter Installation in Building	Jan. 2017
KS-830	Joint Restraining Length for P.V.C Pipe	Nov. 2015
KS-840	150mm to 250mm Gate Valve & Box	Nov. 2009
KS-841	Semi-precast Concrete Valve Chamber for 300mm Pipe or Larger	Jan. 2017
KS-843	Air Release Chamber	Feb. 2015
KS-844	Combination Air & Valve Chamber-Model	Nov. 2015
KS-845	Water Meter Installation in Chamber (For Combined Fire & Domestic)	May 2018
KS-846	Water Service Connections for Single ICI Building	Feb. 2018
KS-847	Water Meter Chamber Details (50 mm Service Line)	Feb. 2018
KS-851	Water Service (20 mm to 50 mm)	Oct. 2016
KS-854	Corrosion Protection for Hydrant Cut Into an Existing D.I. or C.I Watermain	Nov. 2015
KS-860	Tracer Wire Arrangement at Valve Box for P.V.C. or C.P.P Watermain	Nov. 2009
KS-870	Corrosion Protection for Tracer Wires on P.V.C. or C.P.P Watermain	Nov. 2009
KS-871	Corrosion Protection for Valves & Fittings on Non-ferrous Pipe	Nov. 2009
KS-873	Corrosion Protection for Existing Ferrous Watermain Connected to Proposed Non-Ferrous Watermain	Nov. 2009
KS-874	Corrosion Protection for Hydrant Assembly on Non-Ferrous Pipe	Nov. 2015
KS-875	Corrosion Protection for Hydrants Off of New D.I Watermain	Nov. 2015
KS-877	Watermain Configuration for Dead End Cul-De-Sacs	Sep. 2016
KS-878	Side View of Sampling Station Installation	Oct. 2016
KS-900	Benchmark Monument Details	Jan. 2017

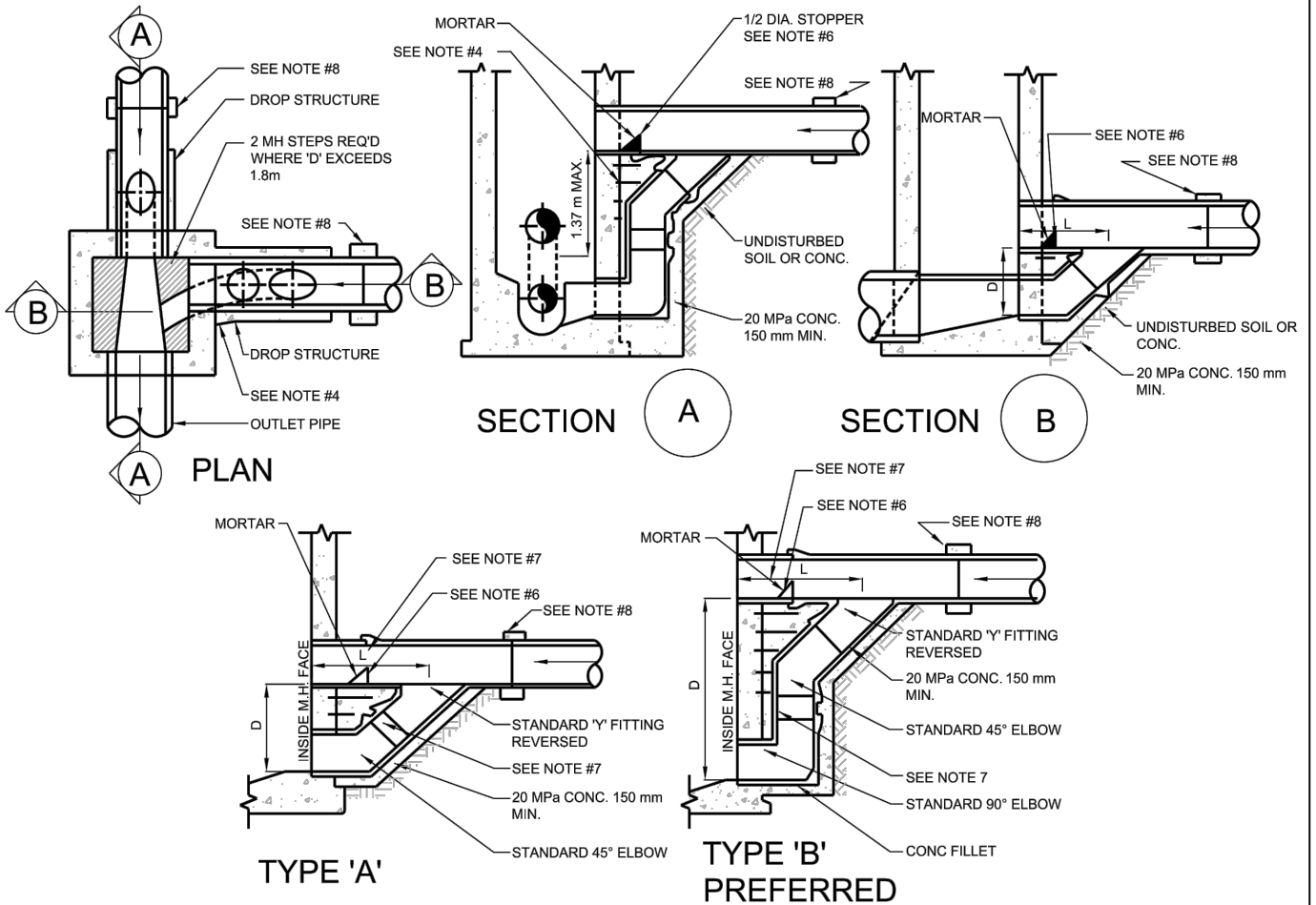


TABLE OF MINIMUM DIMENSIONS AND MAXIMUM VELOCITIES						
DROP PIPE (mm)	TYPE 'A'		TYPE 'B'		MAX. VELOCITY m/sec	
	'D'	'L'	'D'	'L'	NO STOPPER	STOPPER
200	.610	.760	1.22	1.07	1.42	3.78
250	.650	.815	1.30	1.07	1.55	4.05
300	.710	.915	1.45	1.14	1.71	4.11
375	.915	1.14	1.91	1.22	1.92	4.18
450	.990	1.22	2.06	1.30	2.16	4.27
525	1.07	1.30	2.21	1.45	2.35	4.45
600	1.14	1.37	2.44	1.52	2.53	4.60
675	1.22	1.45	2.51	1.60	2.70	4.72
750	1.30	1.52	2.67	1.68	2.83	5.00

DIMENSIONS IN METRES

**NOTES:**

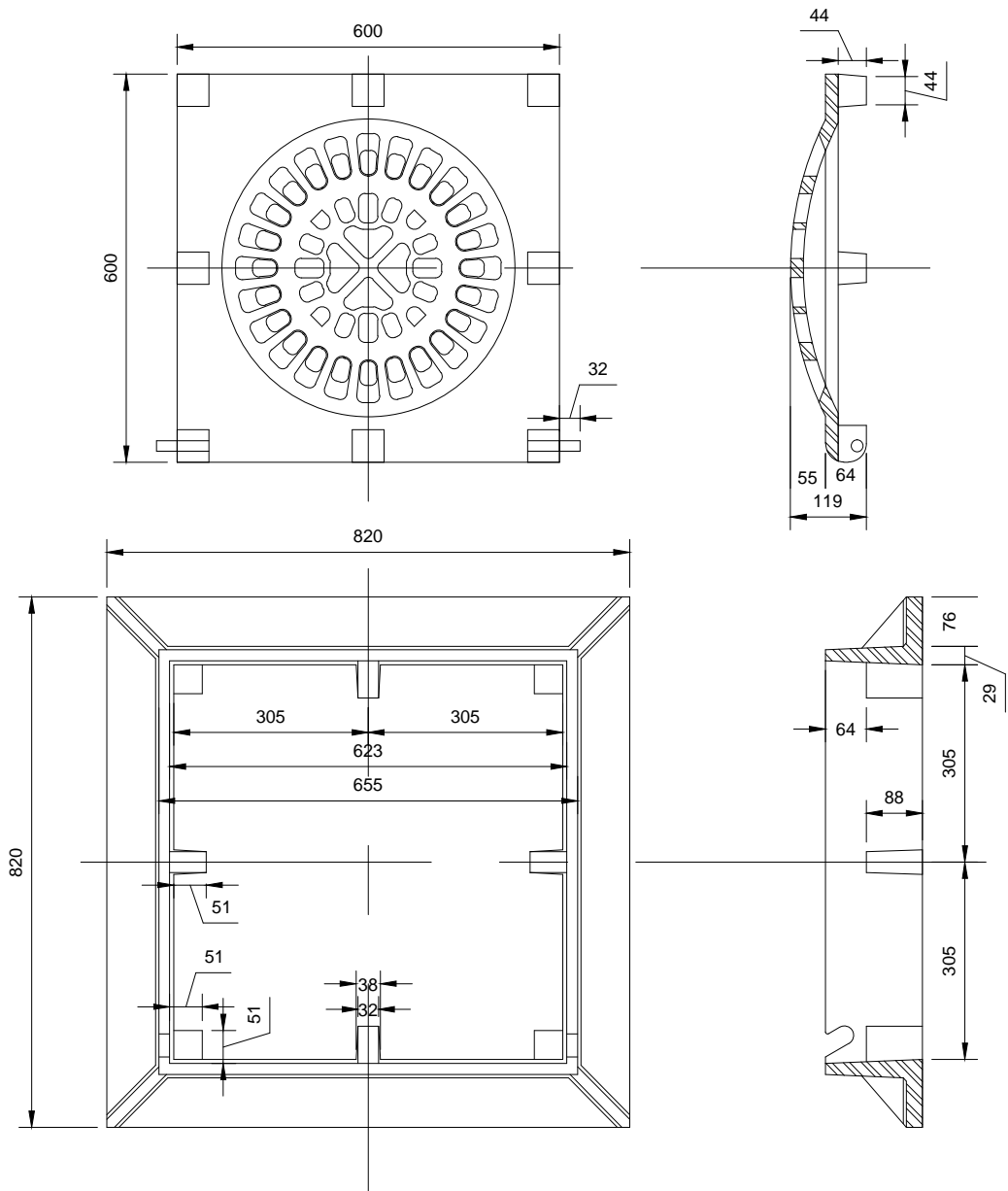
- DROP PIPE TO BE ONE SIZE SMALLER THAN INLET UNLESS OTHERWISE NOTED. MIN= 200mm; MAX= 750mm
- DROP PIPE TO HAVE CROWN LEVEL WITH OUTLET PIPE AND BENCHED TO CROWN.
- DROP PIPE TO BLEND WITH FLOW.
- DROP STRUCTURE TO BE ENCASED IN A MINIMUM OF 150mm OF 20 MPa CONCRETE AND DOWELLED TO MAINTENANCE HOLE WITH 12mm DIA. DOWELS, 450mm LONG, EITHER SIDE OF DROP PIPE AND AT 300mm C TO C.
- MAXIMUM VELOCITIES SHOWN IN TABLE INDICATE MAXIMUM VELOCITY IN INCOMING PIPE WITH NO OVERSHOOTING.
- WHEN USED ON STORM SEWERS 375mm DIA. OR LARGER, A 1/2 DIA. CONCRETE STOPPER MAY BE INSERTED IN THE INVERT OF THE MAIN LINE AS INDICATED.
- ADJUSTMENT IN 'D' AND 'L' TO BE MADE WITH PLAIN END STRAIGHT PIPE.
- WHERE 'Y' FITTING JOINS FIRST PIPE, A 300mm WIDE BY 15mm THICK 20 MPa CONCRETE COLLAR IS TO BE CONSTRUCTED.
- ALL CONCRETE IN DROP STRUCTURE TO BE 20 MPa AT 28 DAYS.
- MINIMUM DIMENSIONS BASED ON USE OF STANDARD CONCRETE FITTINGS.
- ALL DIMENSIONS ARE SUBJECT TO MANUFACTURER'S PERMISSIBLE VARIATIONS.



**TOWNSHIP OF KING**

**TYPICAL DROP STRUCTURES FOR  
STANDARD STORM MANHOLES**

APPROVED M.C.	DATE OF ISSUE FEB. 2017
REVISION	DRAWING No.
DATE OF REVISION	<b>KS-171</b>



NOTES:

1. ALLOWABLE TOLERANCE: DIMENSIONS 300mm OR LESS + 3mm  
DIMENSIONS OVER 300mm UP TO AND INCLUDING 900mm +6mm
- 2.. THE INITIALS OR MARK OF THE MANUFACTURER ARE TO BE DISTINCTLY CAST IN RAISED LETTERS ON BOTH FRAME AND COVER
3. STEEL FOR HINGE PINS TO BE AS ASTM DESIGNATION A-7 OR EQUIVALENT
4. CAST IRON TO CONFORM TO ASTM DESIGNATION A-48-74 CLASS 30-C
5. DIMENSIONS IN mm EXCEPT AS NOTED



**TOWNSHIP OF KING**

**BEEHIVE CATCHBASIN  
FRAME and COVER**

APPROVED

M.C.

REVISION

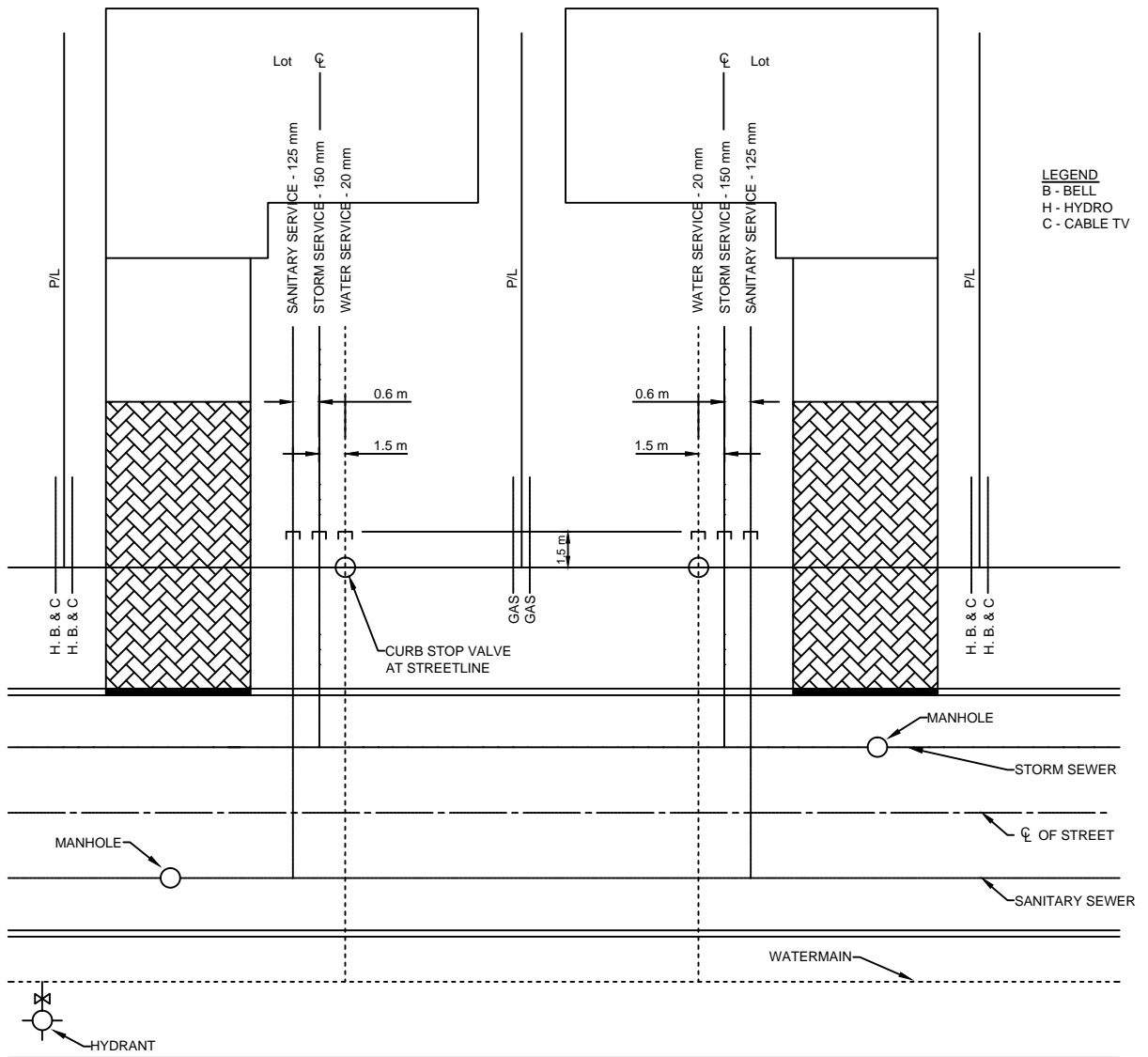
DATE OF REVISION

DATE OF ISSUE

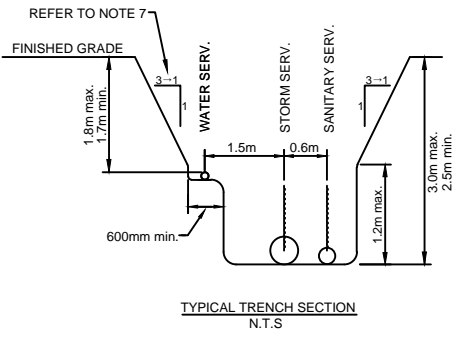
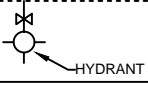
APRIL 2015

DRAWING No.

**KS-174**



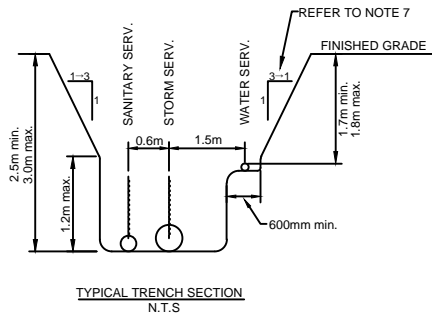
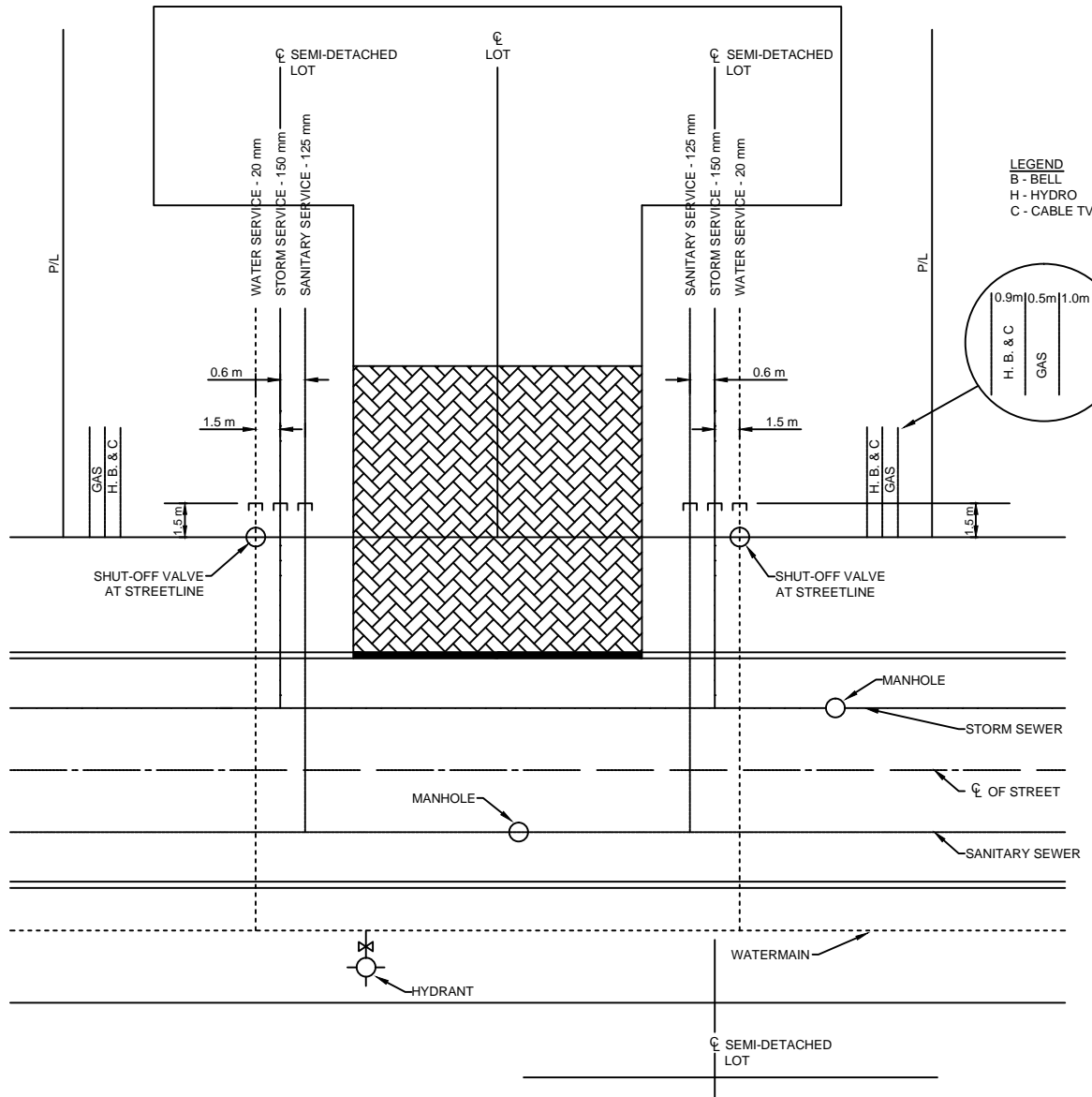
**LEGEND**  
 B - BELL  
 H - HYDRO  
 C - CABLE TV



**NOTES:**

1. SERVICES TO EXTEND 1.5m INSIDE PROPERTY LINE AND CAPPED.
2. UNDER NO CIRCUMSTANCES SHALL SERVICES CROSS ONE ANOTHER.
3. THE MINIMUM SIZE FOR STORM DRAIN CONNECTIONS SHALL BE 150mm Ø INSTALLED AT A MINIMUM GRADE OF 2% FROM THE STORM SEWER TO THE BUILDING ENVELOPE.
4. THE MINIMUM SIZE FOR SANITARY LATERALS SHALL BE 125mm Ø INSTALLED AT A MINIMUM GRADE OF 2% FROM THE SANITARY SEWER TO THE BUILDING ENVELOPE.
5. ALL UNDERGROUND SERVICE CABLES TO BE PLACED A MINIMUM 1.0m BELOW FINISHED GRADE OF LOTS.
6. ALL DIMENSIONS ARE IN METRES EXCEPT WHERE NOTED.
7. TRENCH DIMENSIONS AND SLOPING OF WALLS TO BE UNDERTAKEN IN ACCORDANCE WITH REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, AS AMENDED.
8. CURB STOPS SHALL NOT BE LOCATED WITHIN DRIVEWAYS (0.6m MINIMUM OFFSET).

	<b>TOWNSHIP OF KING</b>	APPROVED M.C.	DATE OF ISSUE JAN. 1990
	SERVICE LOCATION SINGLE FAMILY RESIDENTIAL	REVISION	DRAWING No.
		DATE OF REVISION OCT. 2016	<b>KS-175</b>



**NOTES:**

1. SERVICES TO EXTEND 1.5m INSIDE PROPERTY LINE AND CAPPED
2. UNDER NO CIRCUMSTANCES SHALL SERVICES CROSS ONE ANOTHER.
3. THE MINIMUM SIZE FOR STORM DRAIN CONNECTIONS SHALL BE 150mm Ø INSTALLED AT A MINIMUM GRADE OF 2% FROM THE STORM SEWER TO THE BUILDING ENVELOPE.
4. THE MINIMUM SIZE FOR SANITARY LATERALS SHALL BE 125mm Ø INSTALLED AT A MINIMUM GRADE OF 2% FROM THE SANITARY SEWER TO THE BUILDING ENVELOPE.
5. ALL UNDERGROUND SERVICE CABLES TO BE PLACED A MINIMUM 1.0m BELOW FINISHED GRADE OF LOTS.
6. ALL DIMENSIONS ARE IN METRES EXCEPT WHERE NOTED.
7. TRENCH DIMENSIONS AND SLOPING OF WALLS TO BE UNDERTAKEN IN ACCORDANCE WITH REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, AS AMENDED.
8. CURB STOPS SHALL NOT BE LOCATED WITHIN DRIVEWAYS (0.6m MINIMUM OFFSET).



**TOWNSHIP OF KING**

**SERVICE LOCATION  
SEMI DETACHED RESIDENTIAL**

APPROVED

M.C.

DATE OF ISSUE

JAN. 1990

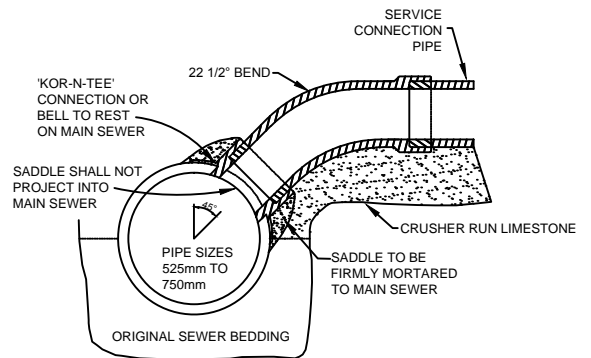
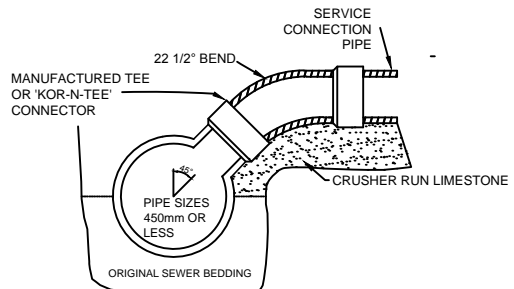
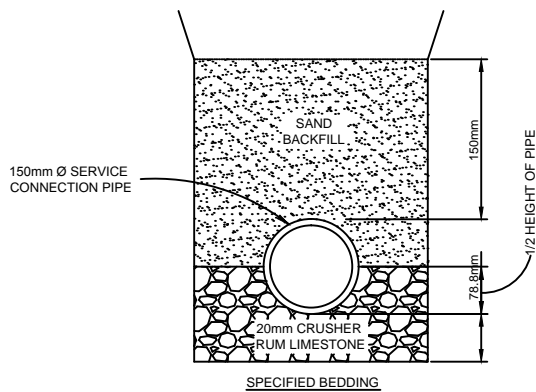
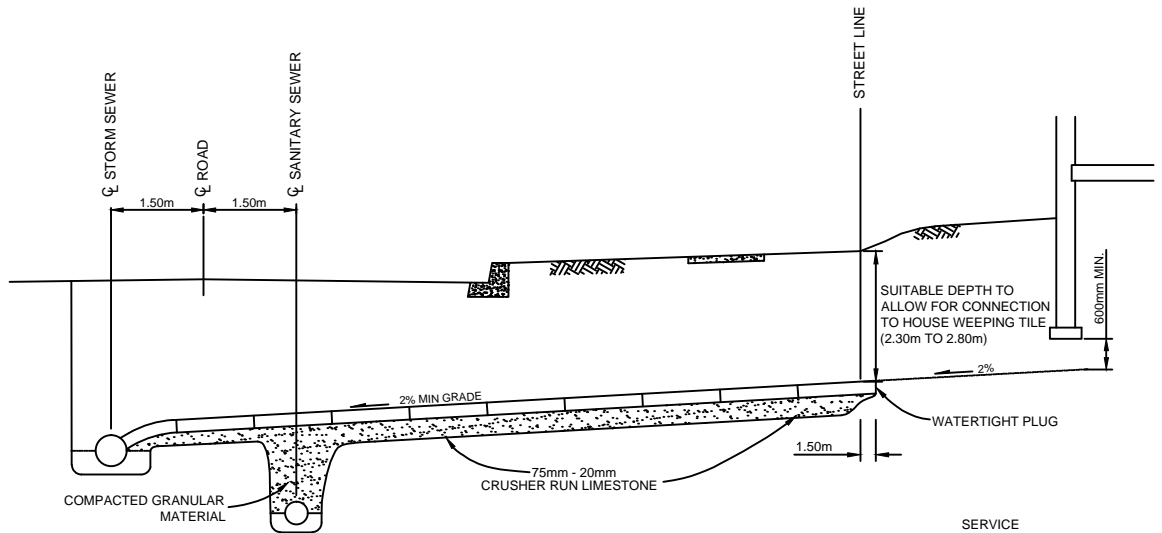
REVISION

DRAWING No.

DATE OF REVISION

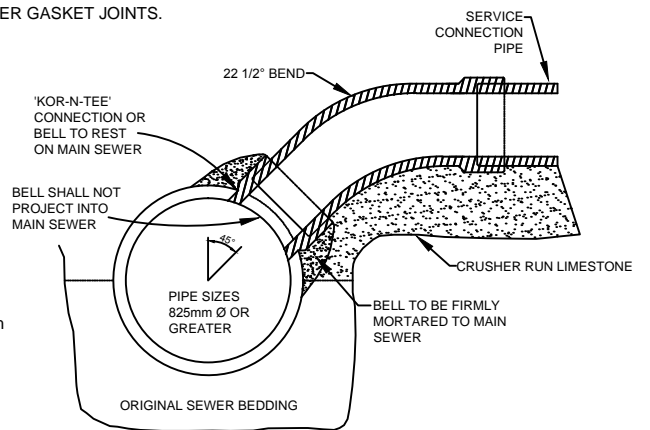
OCT. 2016

**KS-176**



**NOTES:**

1. STORM SERVICE CONNECTION PIPE TO BE FITTED WITH APPROVED RUBBER GASKET JOINTS.
2. IF CONTRACTOR TUNNELS UNDER WATERMAIN, MINIMUM LENGTH OF TUNNEL TO BE 1.8m AND ALL VOIDS TO BE FILLED WITH H.L.8 BLEND CLEAR STONE.
3. RISERS TO BE INSTALLED WHERE SPECIFIED ON THE ENGINEERING DRAWINGS OR WHEN DEPTH TO TOP OF SEWER EXCEEDS 4.5m. (SEE KS-178)
4. SERVICE CONNECTION TO BE INSTALLED IN A STRAIGHT LINE FROM SEWER TO STREETLINE.
5. ALL DIMENSIONS ARE IN MILLIMETRES OR METRES.
6. FLOOR DRAIN CONNECTIONS WITHIN BUILDING ENVELOPE SHALL NOT BE CONNECTED TO STORM SEWER SERVICE.
7. AS AN ALTERNATIVE 'KOR-N-TEE' CONNECTORS MAY BE USED FOR 150mm AND 200mm Ø STORM DRAIN CONNECTIONS.
8. TRENCH DIMENSIONS AND SLOPING OF WALLS TO BE UNDERTAKEN IN ACCORDANCE WITH REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, AS AMENDED.



**TOWNSHIP OF KING**

**STORM SEWER SERVICE CONNECTION**

APPROVED

M.C.

DATE OF ISSUE

FEB. 1980

REVISION

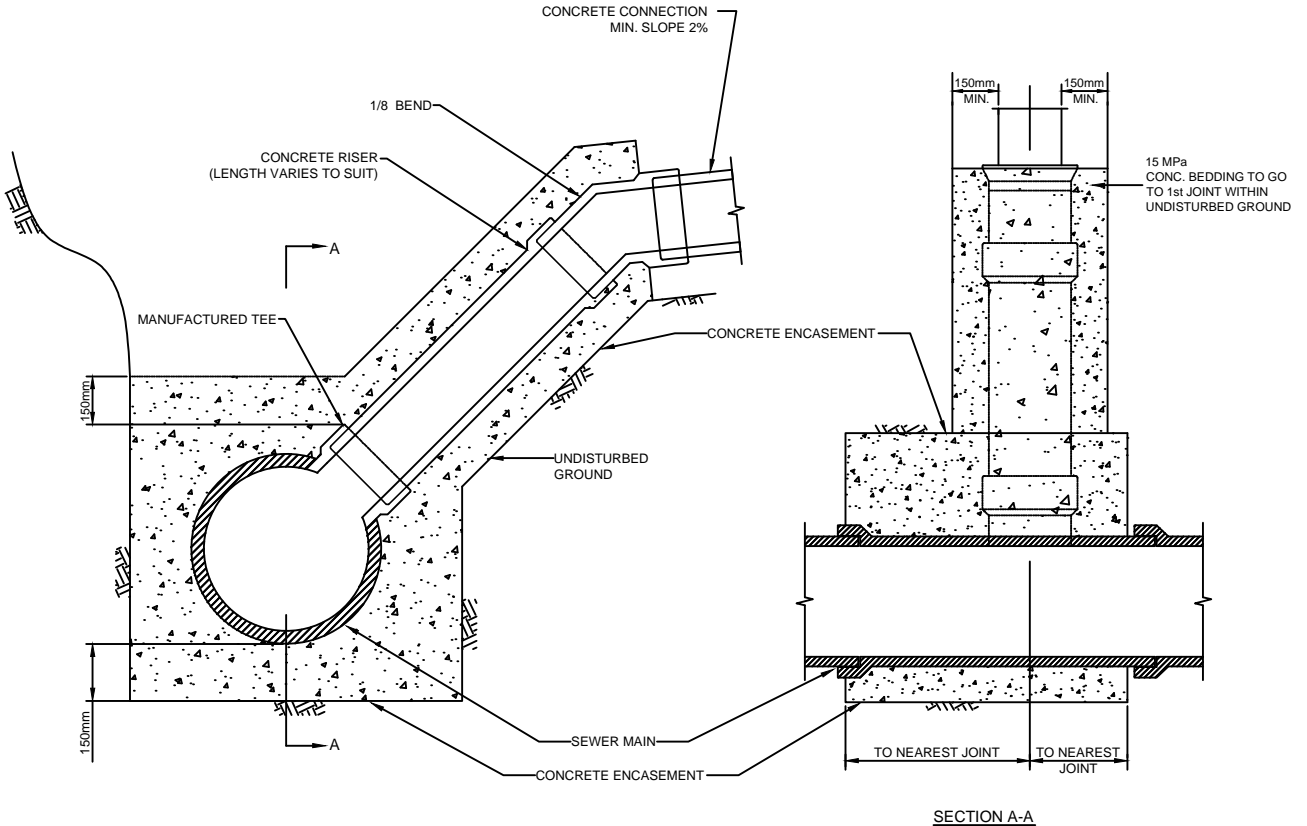
DRAWING No.

DATE OF REVISION

SEP. 2016

**KS-177**





**NOTES:**

1. ALL CONCRETE BEDDING TO BE MINIMUM 15 MPa.
2. FOR SEWER SIZES UP TO AND INCLUDING 450mm Ø, THE CONNECTION TO THE MAIN IS TO BE MADE BY MEANS OF A MANUFACTURED TEE.
3. RISERS MUST NOT EXCEED 3.0m IN DEPTH.
4. RISER CONNECTION DETAIL MUST BE USED WHEN DEPTH TO INVERT OF SEWER MAIN EXCEEDS 4.5m.
5. ALL DIMENSIONS ARE IN MILLIMETRES AND METRES.
6. POLYVINYL CHLORIDE (SDR 28) IS AN APPROVED EQUIVALENT TO CONCRETE PIPE FOR SERVICE CONNECTIONS. WHERE P.V.C. PIPE IS USED, BEDDING MATERIAL SHALL BE HL 8 BLEND CLEAR STONE.
7. TRENCH DIMENSIONS AND SLOPING OF WALLS TO BE UNDERTAKEN IN ACCORDANCE WITH REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, AS AMENDED.



**TOWNSHIP OF KING**

**STORM SEWER RISER CONNECTION**

APPROVED

M.C.

DATE OF ISSUE

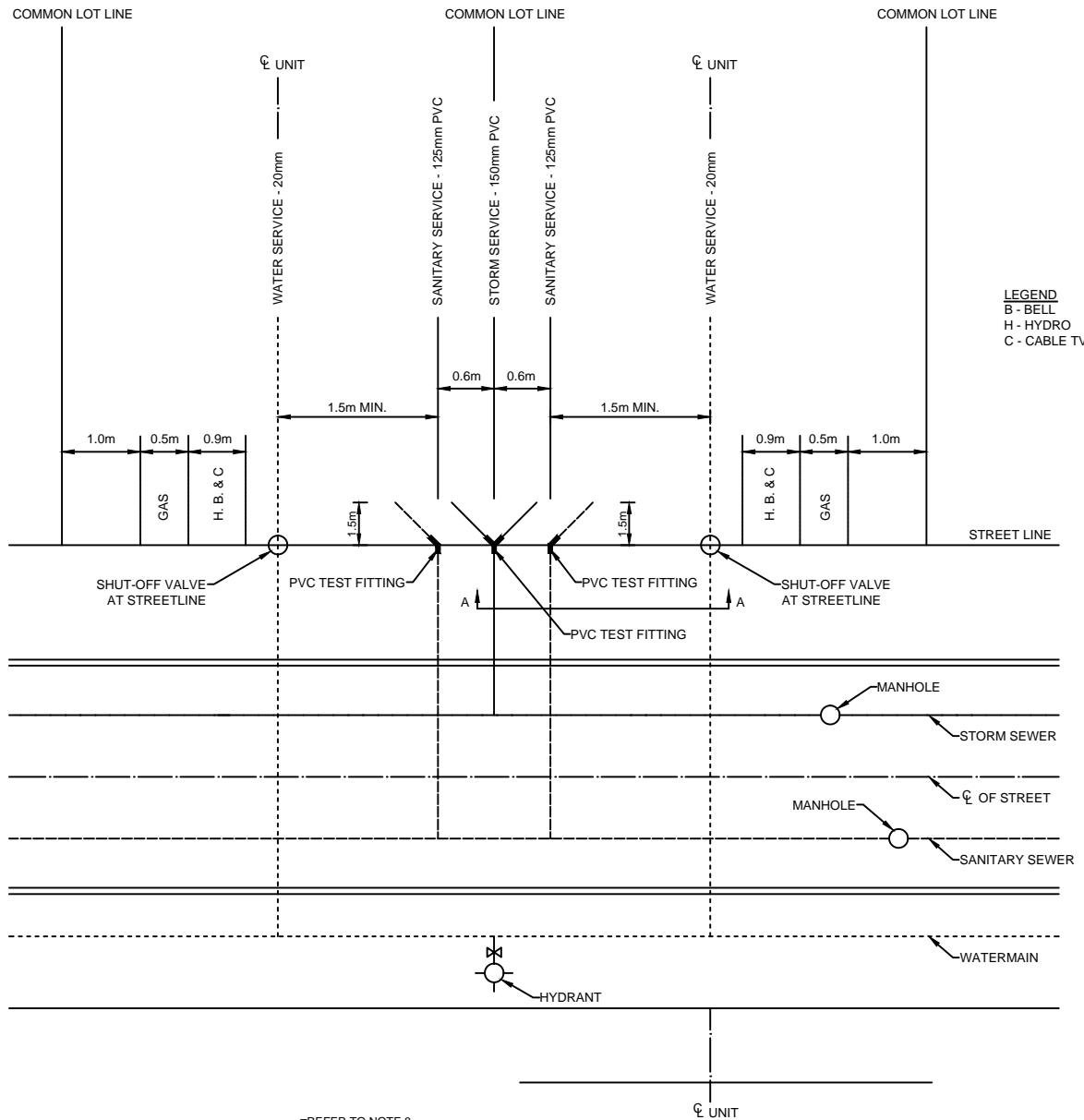
FEB. 1980

REVISION

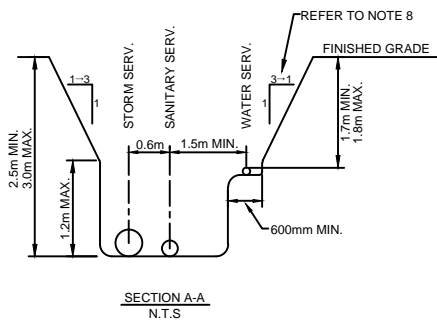
DRAWING No.

DATE OF REVISION  
NOV. 2009

**KS-178**



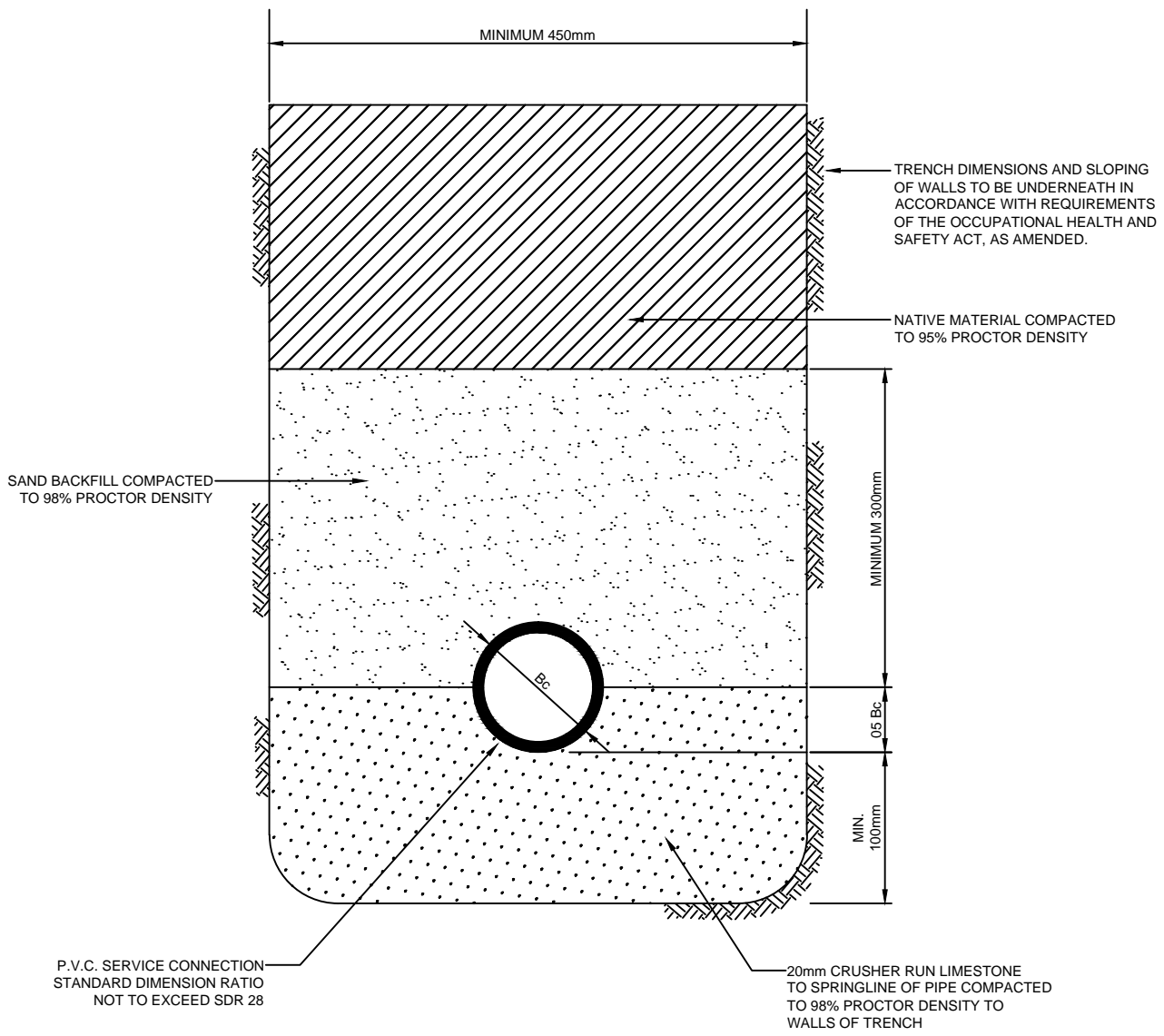
**LEGEND**  
 B - BELL  
 H - HYDRO  
 C - CABLE TV



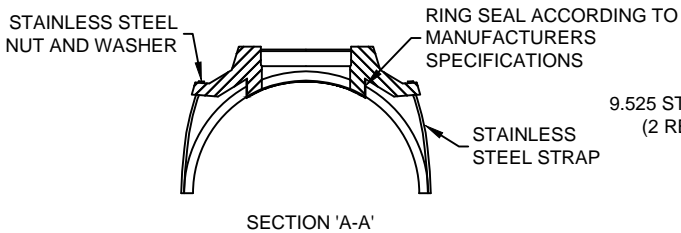
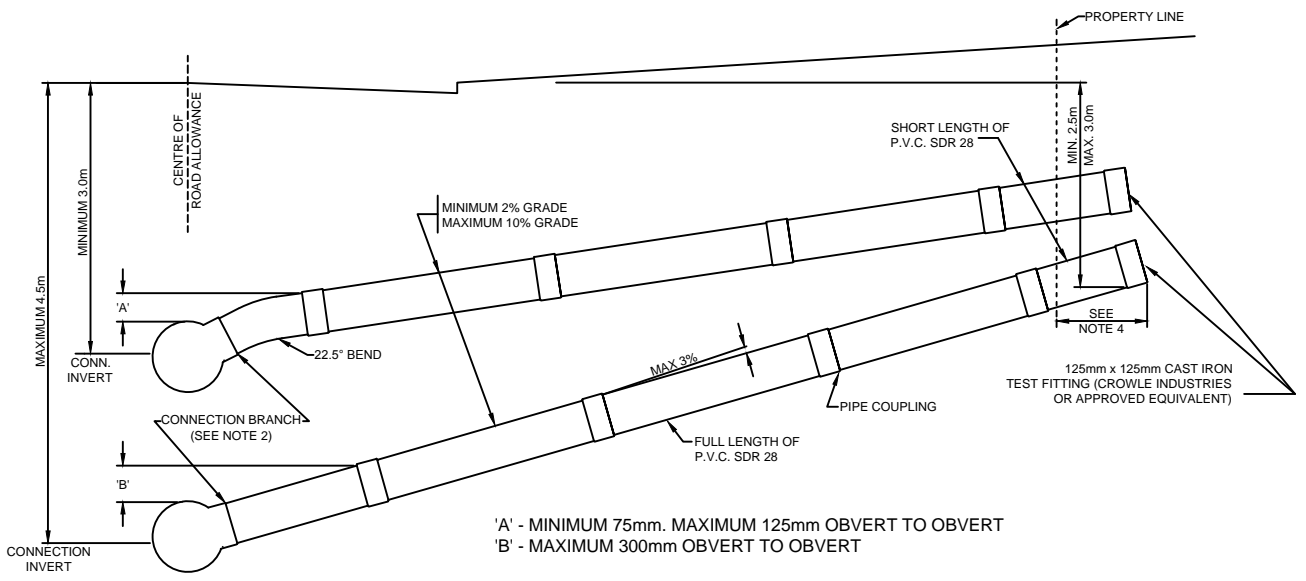
**NOTES:**

1. SERVICES TO EXTEND 1.5m INSIDE PROPERTY LINE.
2. UNDER NO CIRCUMSTANCES SHALL SERVICES CROSS ONE ANOTHER.
3. EACH HOUSE MUST BE SUPPLIED WITH A 150mm Ø STORM SEWER SERVICE LATERAL.
4. THE MINIMUM SIZE FOR STORM DRAIN CONNECTIONS SHALL BE 150mm Ø INSTALLED AT A MINIMUM GRADE OF 2% FROM THE STORM SEWER TO THE BUILDING ENVELOPE.
5. THE MINIMUM SIZE FOR SANITARY LATERALS SHALL BE 125mm Ø INSTALLED AT A MINIMUM GRADE OF 2% FROM THE SANITARY SEWER TO THE BUILDING ENVELOPE.
6. ALL UNDERGROUND SERVICE CABLES TO BE PLACED A MINIMUM 1.0m BELOW FINISHED GRADE OF LOTS.
7. ALL DIMENSIONS ARE IN METRES EXCEPT WHERE NOTED.
8. TRENCH DIMENSIONS AND SLOPING OF WALLS TO BE UNDERTAKEN IN ACCORDANCE WITH REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, AS AMENDED.

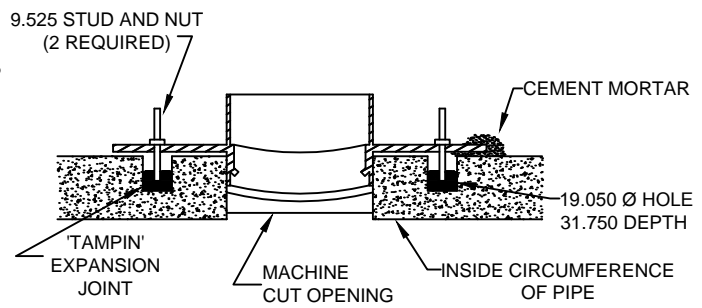
	<b>TOWNSHIP OF KING</b>	APPROVED M.C.	DATE OF ISSUE NOV. 2010
	SERVICE LOCATION MULTI / TOWN HOUSE SERVICE CONNECTION	REVISION	DRAWING No. <b>KS-179</b>
		DATE OF REVISION APRIL 2015	



	<b>TOWNSHIP OF KING</b>	APPROVED M.C.	DATE OF ISSUE JAN. 1990
	<b>BEDDING DETAIL FOR PLASTIC SANITARY SEWER SERVICE CONNECTIONS</b>	REVISION  DATE OF REVISION NOV. 2009	DRAWING No.  <b>KS-180</b>

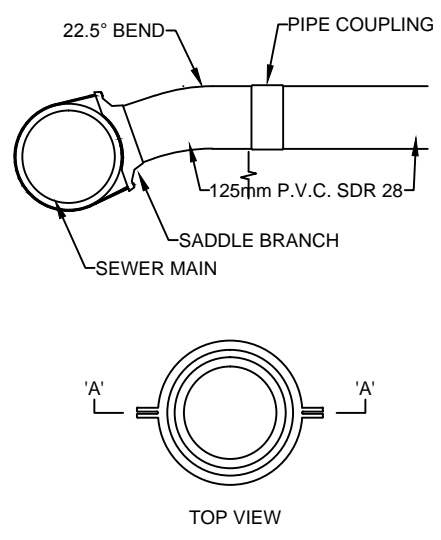



CAST IRON SADDLE BRANCH FOR CONNECTION TO EXISTING MAINS OTHER THAN P.V.C. OR A.B.S. TRUSS PIPE



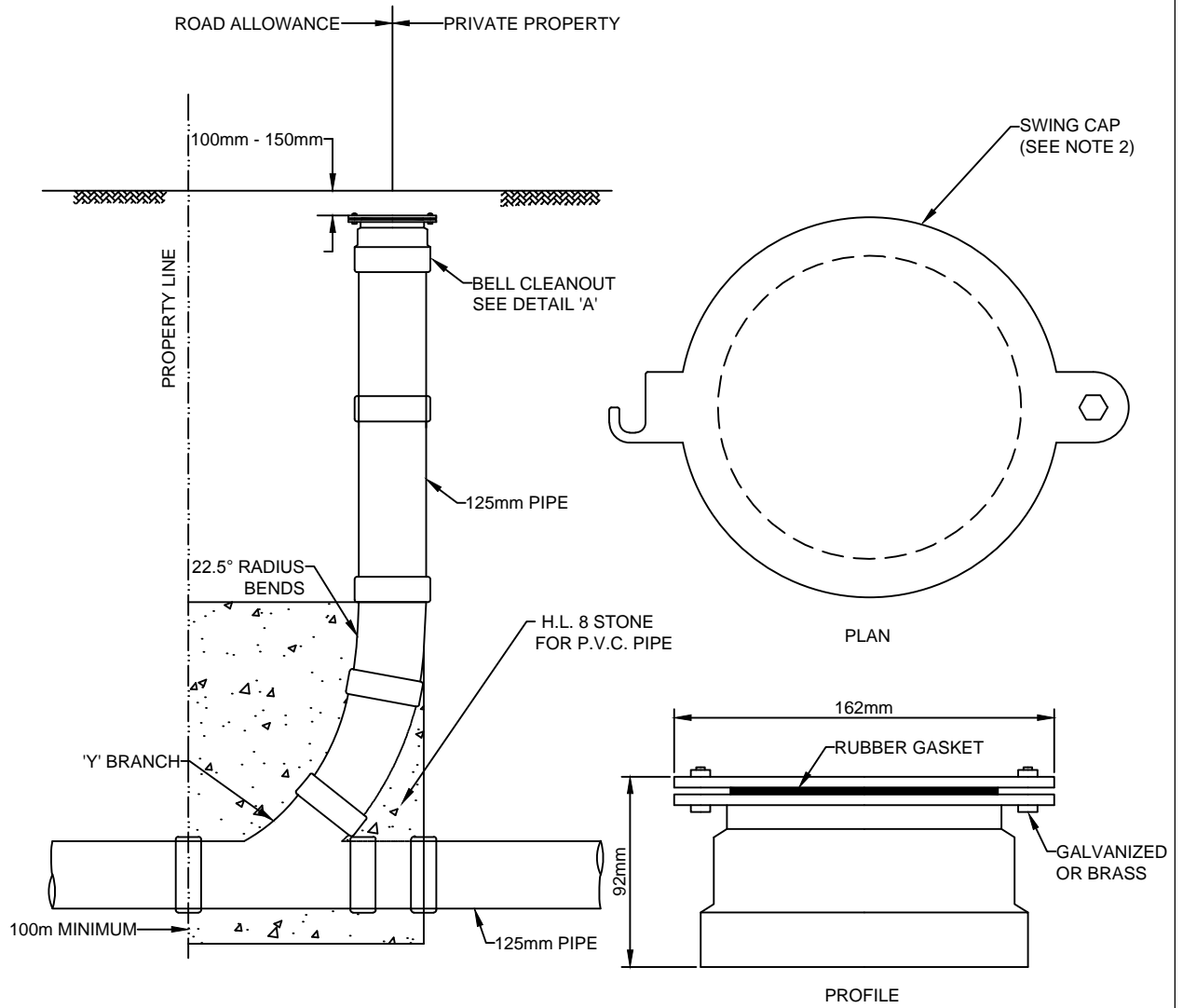
NOTES:

1. IN NEW SUBDIVISIONS THE SANITARY SEWER AND WATER SERVICE CONNECTIONS ARE TO BE INSTALLED IN COMMON TRENCHES AS PER STANDARD DETAILS KS-175 AND KS-176.
2. IN NEW SUBDIVISIONS ALL CONNECTIONS TO THE SEWERS ARE TO BE MADE WITH A FACTORY MANUFACTURED TEE. FOR CONNECTIONS TO EXISTING SANITARY SEWERS, OTHER THAN P.V.C. OR A.B.S. TRUSS PIPE, A SADDLE CONNECTION MAY BE USED. MORTAR-ON SADDLES TO BE USED ON CONCRETE PIPE GREATER THAN 450mm Ø. CONNECTIONS TO EXISTING P.V.C. SEWERS ARE TO BE MADE WITH A FACTORY MANUFACTURED TEE. CONNECTIONS TO EXISTING A.B.S. PIPE ARE TO BE MADE WITH A SOLVENT WELDED SADDLE.
3. 45° STRAP ON SADDLE TO BE USED ON SEWERS OTHER THAN P.V.C. OR A.B.S. TRUSS PIPE, WHEN LATERAL INTERSECTS SEWER MAIN AT AN ACUTE ANGLE.
4. THE SEWER CONNECTION SHALL BE LAID FROM THE MAIN TO 1.5m BEYOND THE PROPERTY LINE IN NEW SUBDIVISIONS ONLY.
5. THE ENDS OF ALL SEWER PIPE MUST BE MACHINED. ALL CUTTING AND MACHINING TO BE DONE BY THE CONTRACTOR.
6. A COUPLING SHALL BE INSTALLED AT DEAD ENDS AND SHALL BE PLUGGED USING A WATER TIGHT PLUG.
7. DEFLECTIONS AT PIPE JOINTS IS NOT TO EXCEED 3° IE.
8. PIPE COUPLING TO BE 'RING-TITE' OR EQUIVALENT P.V.C. BELL AND SPIGOT JOINT WITH RUBBER GASKETS.
9. REFER TO STANDARD KS-180 FOR BEDDING REQUIREMENTS FOR P.V.C. SERVICE CONNECTIONS.
10. WHEN MORTAR-ON SADDLES ARE USED, A MACHINE CUT OPENING IS TO BE MADE IN THE SANITARY SEWER WITH A CORING MACHINE.
11. ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT WHERE NOTED.

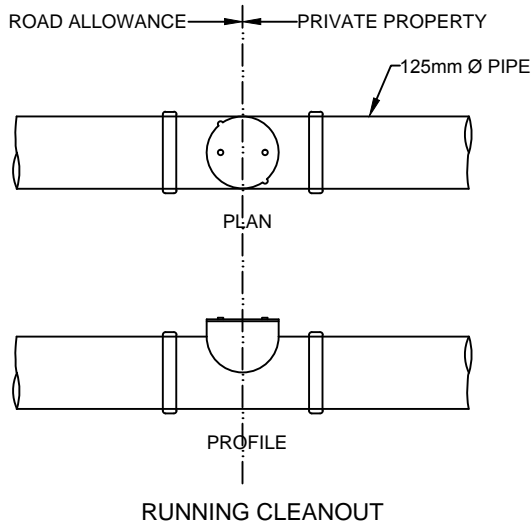


	<b>TOWNSHIP OF KING</b>	APPROVED M.C.	DATE OF ISSUE JAN. 1990
	SANITARY SEWER HOUSE CONNECTIONS (125 & 150mm PIPE)	REVISION	DRAWING No.
		DATE OF REVISION NOV. 2015	<b>KS-190</b>





**SURFACE CLEANOUT**



**NOTES:**

1. FITTINGS ARE TO BE CAST IRON (CROWLE) OR PVC EQUIVALENT (PER ROYAL INSPECTION CHAMBER).
2. LATERALS AND CLEAN-OUTS SHALL NOT BE LOCATED IN DRIVEWAYS.
3. METAL CAP, OR PVC CAP SUITABLE FOR THE RISER PIPE WITH A METALLIC MASS, IS ACCEPTABLE.
4. SURFACE CLEAN-OUTS SHALL BE USED ON SERVICE LATERALS 30 m LONG (OR GREATER), OR AS DIRECTED.
5. ALL DIMENSIONS IN MILLIMETRES EXCEPT WHERE NOTED.



**TOWNSHIP OF KING**

**SANITARY SEWER CLEANOUTS**

APPROVED

M.C.

DATE OF ISSUE

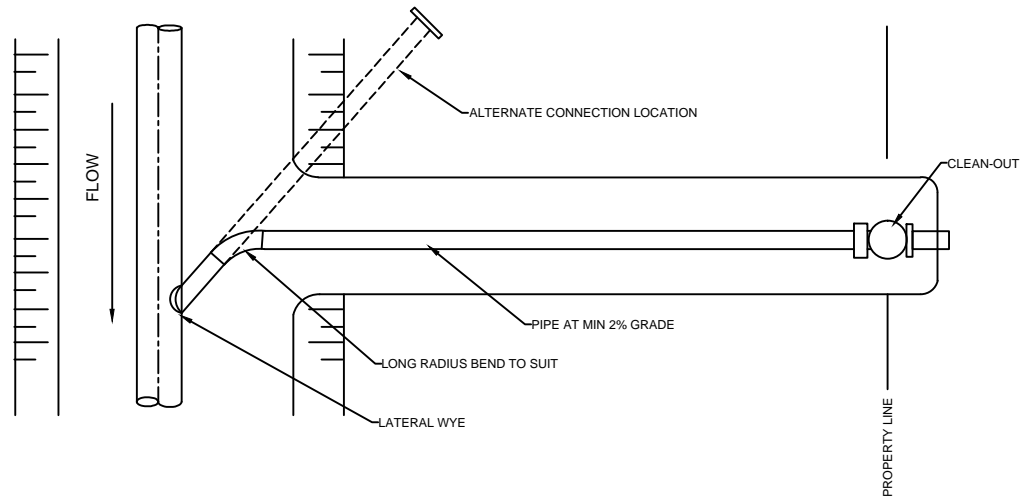
JAN. 1990

REVISION

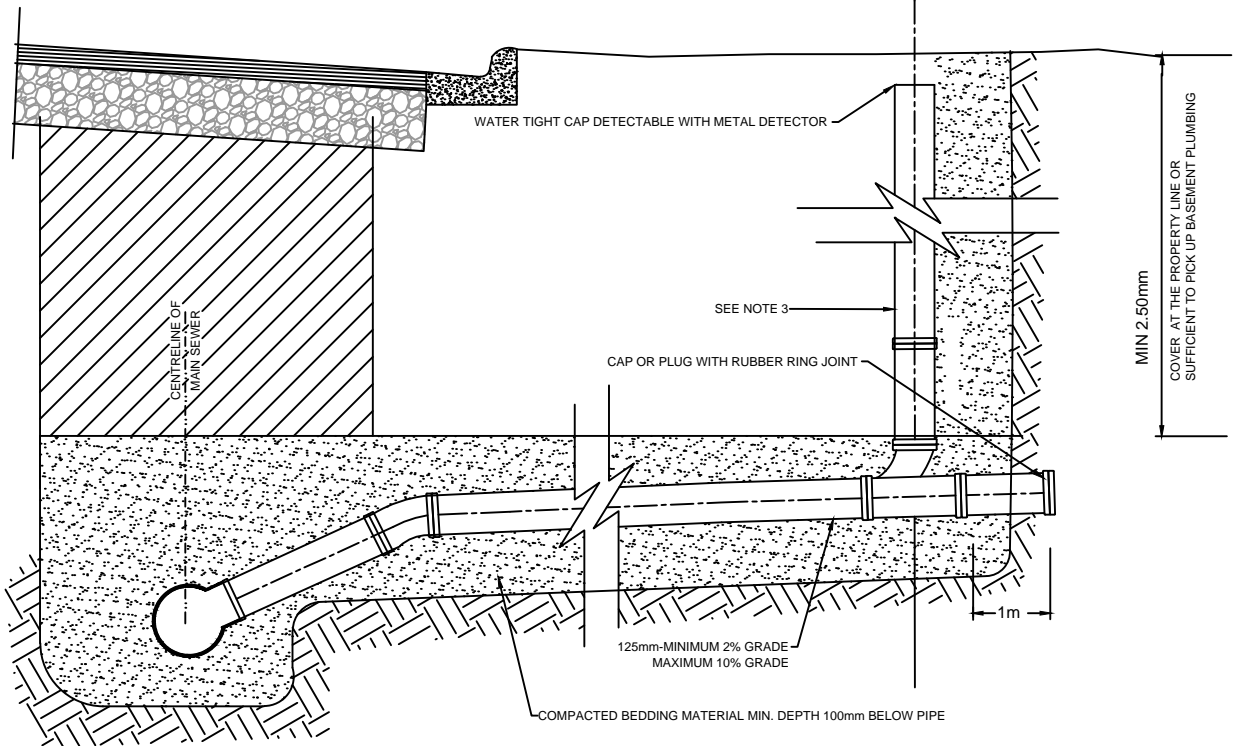
DRAWING No.

DATE OF REVISION  
JUNE 2016

**KS-193**



TYPICAL PLAN



ELEVATION

NOTES:

1. RISER CONNECTIONS TO BE USED ONLY WHERE SERVICE IS GREATER THAN 2M ABOVE WYE INVERT OR WHERE APPROVED
2. MINIMUM SERVICE CONNECTION TO BE 125mm IN DIAMETER.
3. ONLY THE SANITARY SERVICE REQUIRES A CLEANOUT AT THE PROPERTY LINE.
4. SEE KS-193 FOR DETAILS OF CLEAN-OUT.



**TOWNSHIP OF KING**

**SANITARY SEWER CONNECTIONS  
FOR RESIDENTIAL DEVELOPMENT**

APPROVED

M.C.

DATE OF ISSUE

JAN. 1990

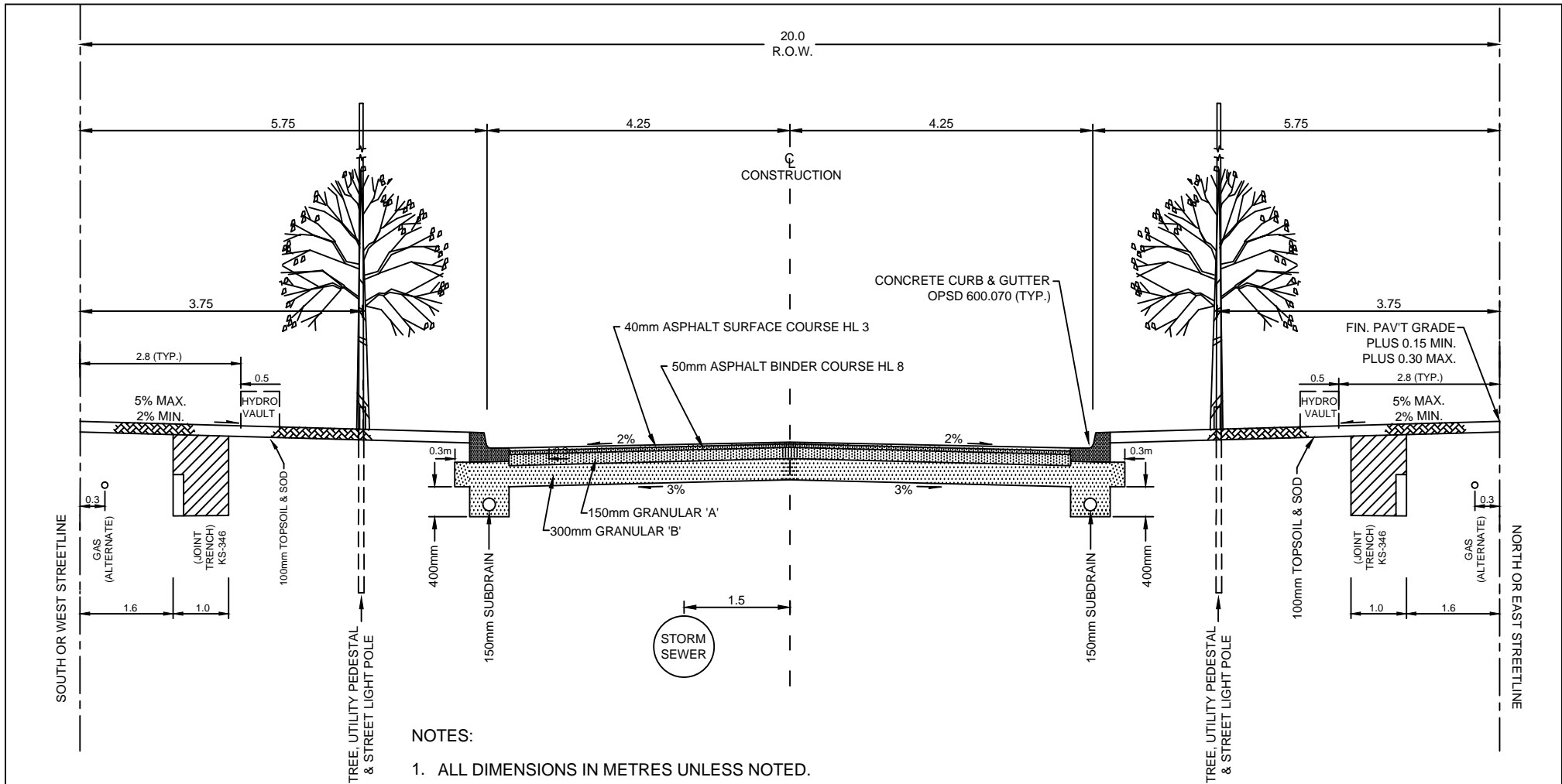
REVISION

DRAWING No.

DATE OF REVISION

JUNE 2016

**KS-194**

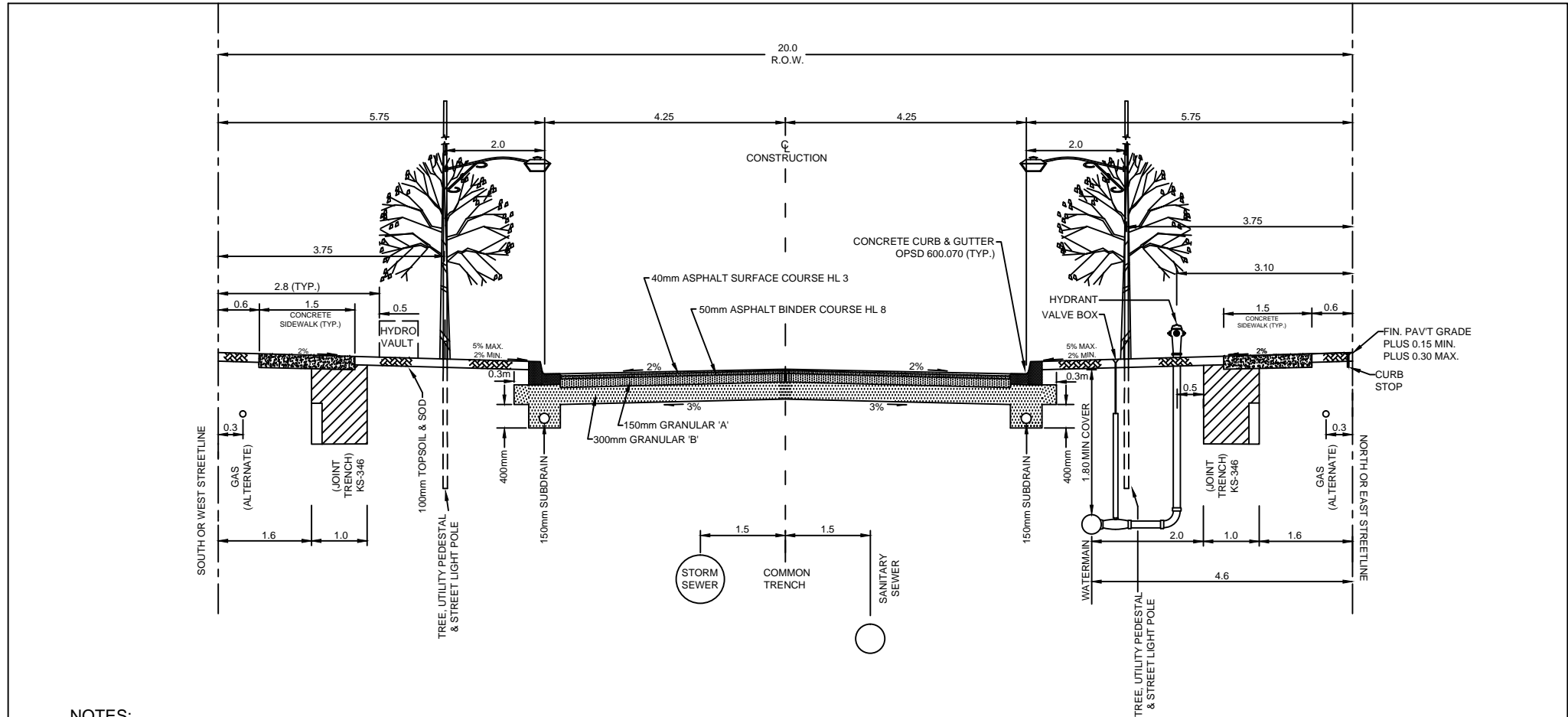


**NOTES:**

1. ALL DIMENSIONS IN METRES UNLESS NOTED.
2. ALL GRANULAR MATERIALS TO BE COMPACTED TO 100% STANDARD PROCTOR DENSITY.
3. ALL ASPHALT AND GRANULAR DEPTHS SPECIFIED ARE MINIMUM DEPTHS AND ARE SUBJECT TO INCREASE BASED ON SOIL CONDITIONS.
4. BELL, HYDRO, COAXIAL, AND GASMAIN TO BE LOCATED IN COMMON TRENCH. (SEE KS-346)

	TOWNSHIP OF KING	APPROVED M.C.	DATE OF ISSUE FEB. 1980
	20.0m ESTATE RESIDENTIAL ROADWAY 8.5m PAVEMENT WIDTH	REVISION	DRAWING No. <b>KS-202</b>
		DATE OF REVISION JAN. 2017	





**NOTES:**

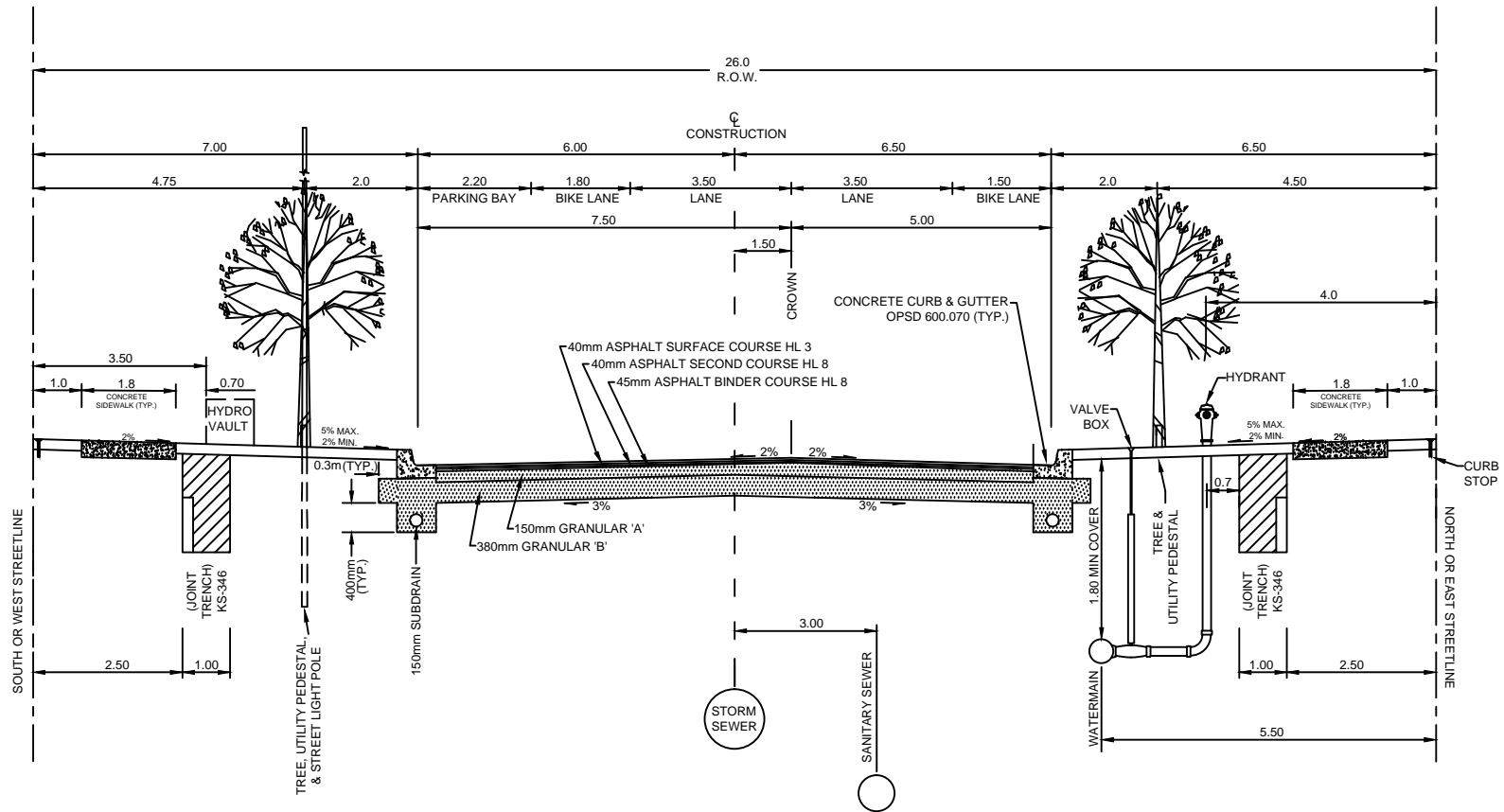
1. ALL DIMENSIONS IN METRES UNLESS NOTED.
2. ALL GRANULAR MATERIALS TO BE COMPACTED TO 100% STANDARD PROCTOR DENSITY.
3. ALL ASPHALT AND GRANULAR DEPTHS SPECIFIED ARE MINIMUM DEPTHS AND ARE SUBJECT TO INCREASE BASED ON SOIL CONDITIONS.
4. BELL, HYDRO, COAXIAL, AND GASMAIN TO BE LOCATED IN COMMON TRENCH. (SEE KS-346)



**TOWNSHIP OF KING**

20.0m LOCAL R.O.W.  
8.5m PAVEMENT, SIDEWALK ONE SIDE

APPROVED M.C.	DATE OF ISSUE FEB. 1980
REVISION	DRAWING No. <b>KS-205</b>
DATE OF REVISION FEB. 2018	



**NOTES:**

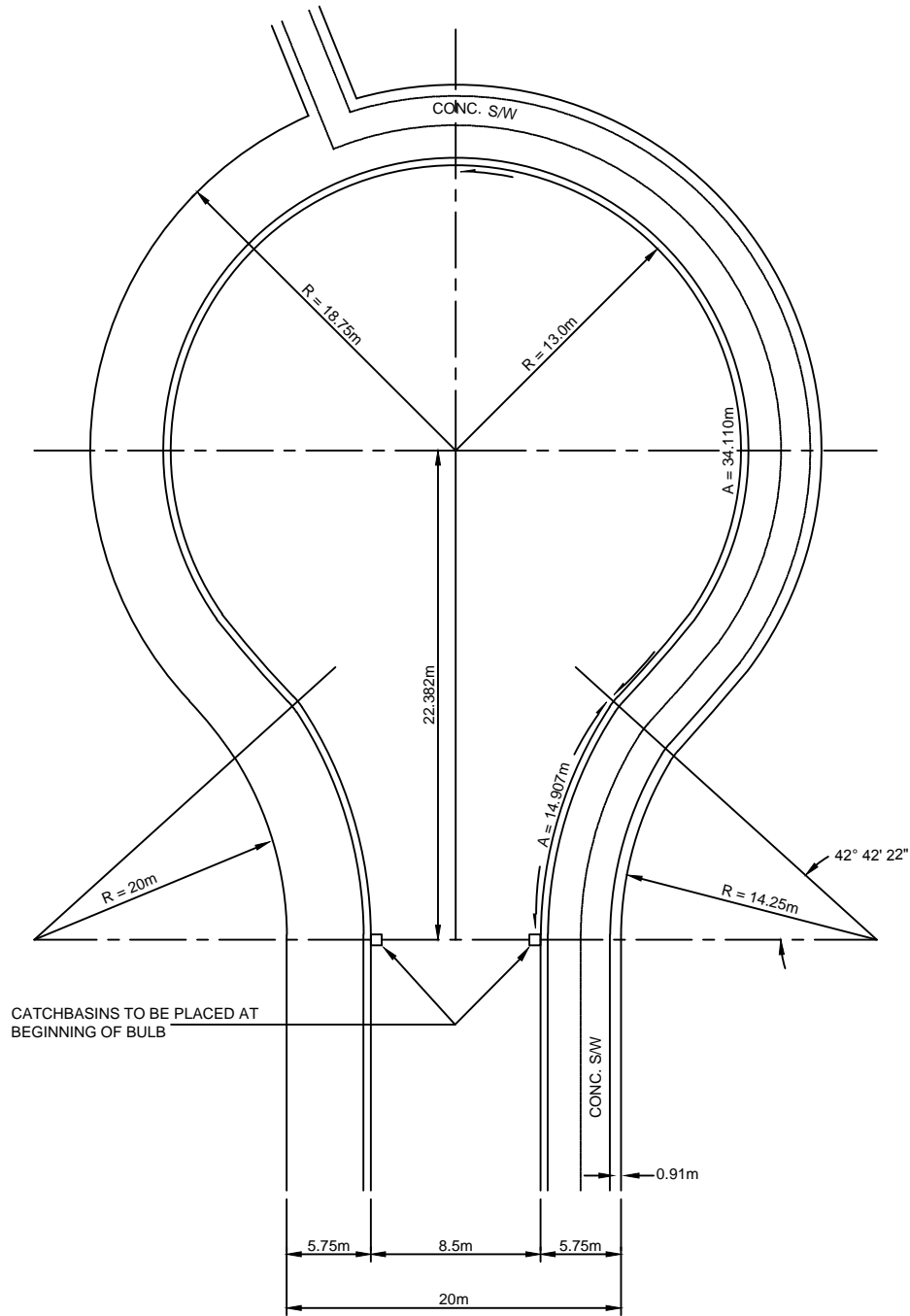
1. ALL DIMENSIONS IN METRES UNLESS NOTED.
2. ALL GRANULAR MATERIALS TO BE COMPACTED TO 100% STANDARD PROCTOR DENSITY.
3. ALL ASPHALT AND GRANULAR DEPTHS SPECIFIED ARE MINIMUM DEPTHS AND ARE SUBJECT TO INCREASE BASED ON SOIL CONDITIONS.
4. BELL, HYDRO, COAXIAL, AND GASMAIN TO BE LOCATED IN COMMON TRENCH. (SEE KS-346)



**TOWNSHIP OF KING**

26.0m COLLECTOR ROADWAY  
12.5m PAVEMENT WIDTH (BIKE LANES)

APPROVED M.C.	DATE OF ISSUE FEB. 2017
REVISION	DRAWING No. <b>KS-210</b>
DATE OF REVISION MAR. 2017	



NOTES:

1. MINIMUM GUTTER SLOPE TO BE 1.00%
2. DETAIL OF GRADING OF BULB AREAS OF CUL-DE-SACS TO BE SHOWN ON PROFILE DRAWINGS.
3. CUL-DE-SAC DRAINAGE TO BE DIRECTED TOWARDS THE BEGINNING OF THE BULB.
4. SIDEWALKS PROVIDED FOR WALKWAY CONNECTIONS AND/OR WHERE 25 UNITS OR MORE.
5. ALL DIMENSIONS ARE IN METRES.



**TOWNSHIP OF KING**

**TYPICAL CUL-DE-SAC  
FOR RESIDENTIAL STREETS**

APPROVED

M.C.

DATE OF ISSUE

FEB. 1980

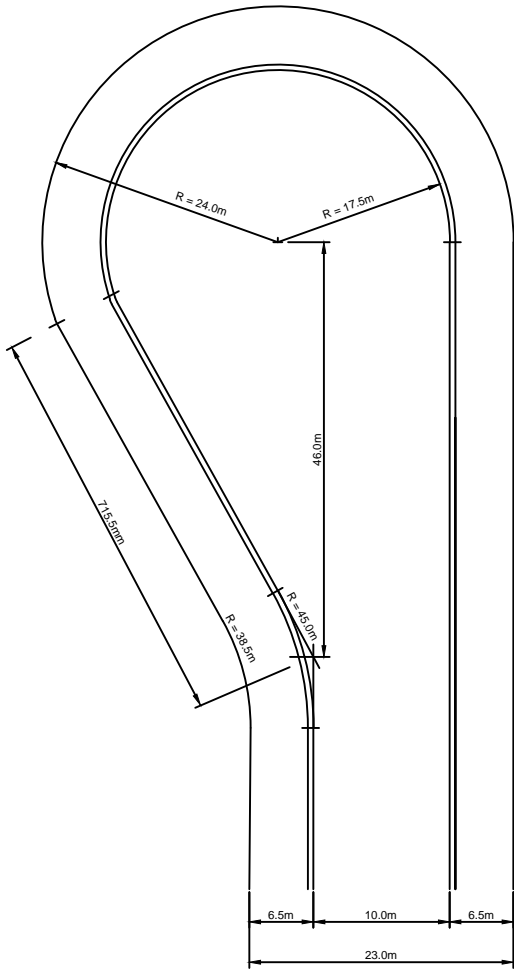
REVISION

DRAWING No.

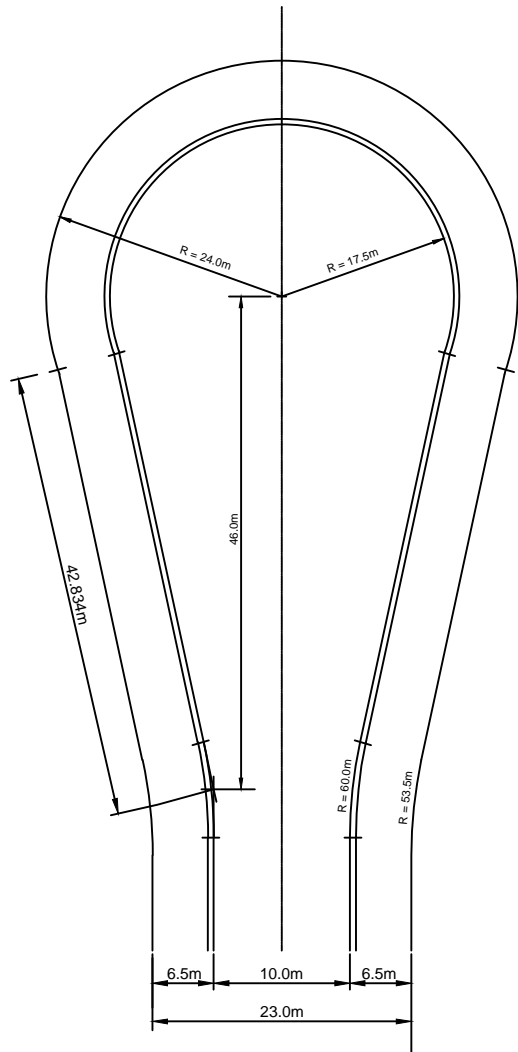
DATE OF REVISION

FEB. 2018

**KS-218**



OFFSET



SYMMETRICAL

NOTES:

1. MINIMUM GUTTER SLOPE TO BE 1.00%
2. DETAIL OF GRADING OF BULB AREAS OF CUL-DE-SACS TO BE SHOWN ON PROFILE DRAWINGS.
3. CUL-DE-SAC DRAINAGE TO BE DIRECTED TOWARDS THE BEGINNING OF THE BULB.
4. ALL DIMENSIONS ARE IN METRES.



**TOWNSHIP OF KING**

TYPICAL CUL-DE-SAC  
FOR INDUSTRIAL STREETS

APPROVED

M.C.

DATE OF ISSUE

FEB. 1980

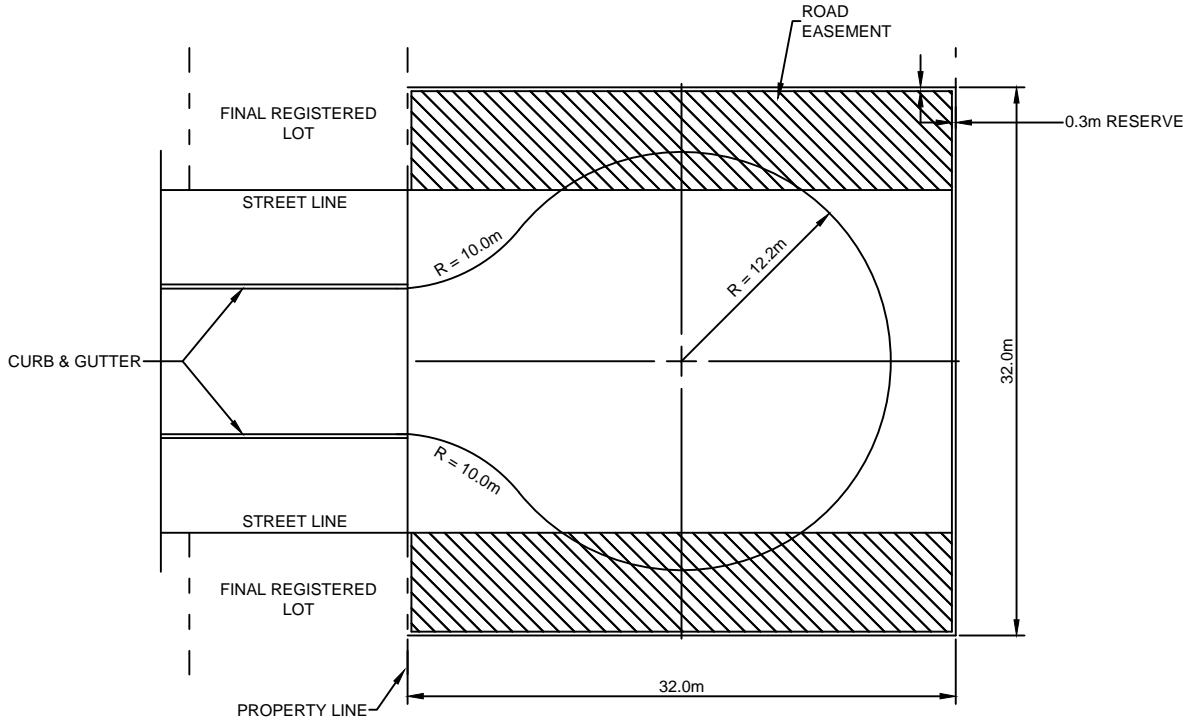
REVISION

DRAWING No.

DATE OF REVISION  
NOV. 2009

**KS-219**

TURNING CIRCLE PAVEMENT DESIGN: 32mm HL3 ASPHALT SURFACE COURSE  
 50mm HL8 ASPHALT BINDER COURSE  
 150mm GRANULAR 'A'  
 300mm GRANULAR 'B'



NOTES:

1. TEMPORARY TURNING CIRCLES SHALL BE USED ONLY FOR PHASING OF RESIDENTIAL SUBDIVISIONS, SUBJECT TO THE TOWNSHIP ENGINEER'S APPROVAL.
2. ALL DIMENSIONS ARE IN MILLIMETRES OR METRES.
3. THE SUBDIVIDER WILL DEPOSIT WITH THE TOWNSHIP AN AMOUNT WHICH THE TOWNSHIP ENGINEER CALCULATES TO BE THE COST OF REMOVING THE TURNING CIRCLE AND CONSTRUCTING THE STANDARD ROAD FROM THE START OF THE TURNING CIRCLE TO THE LIMIT OF THE SUBDIVISION.



**TOWNSHIP OF KING**

**TEMPORARY TURNING CIRCLE  
 FOR RESIDENTIAL STREETS**

APPROVED

M.C.

DATE OF ISSUE

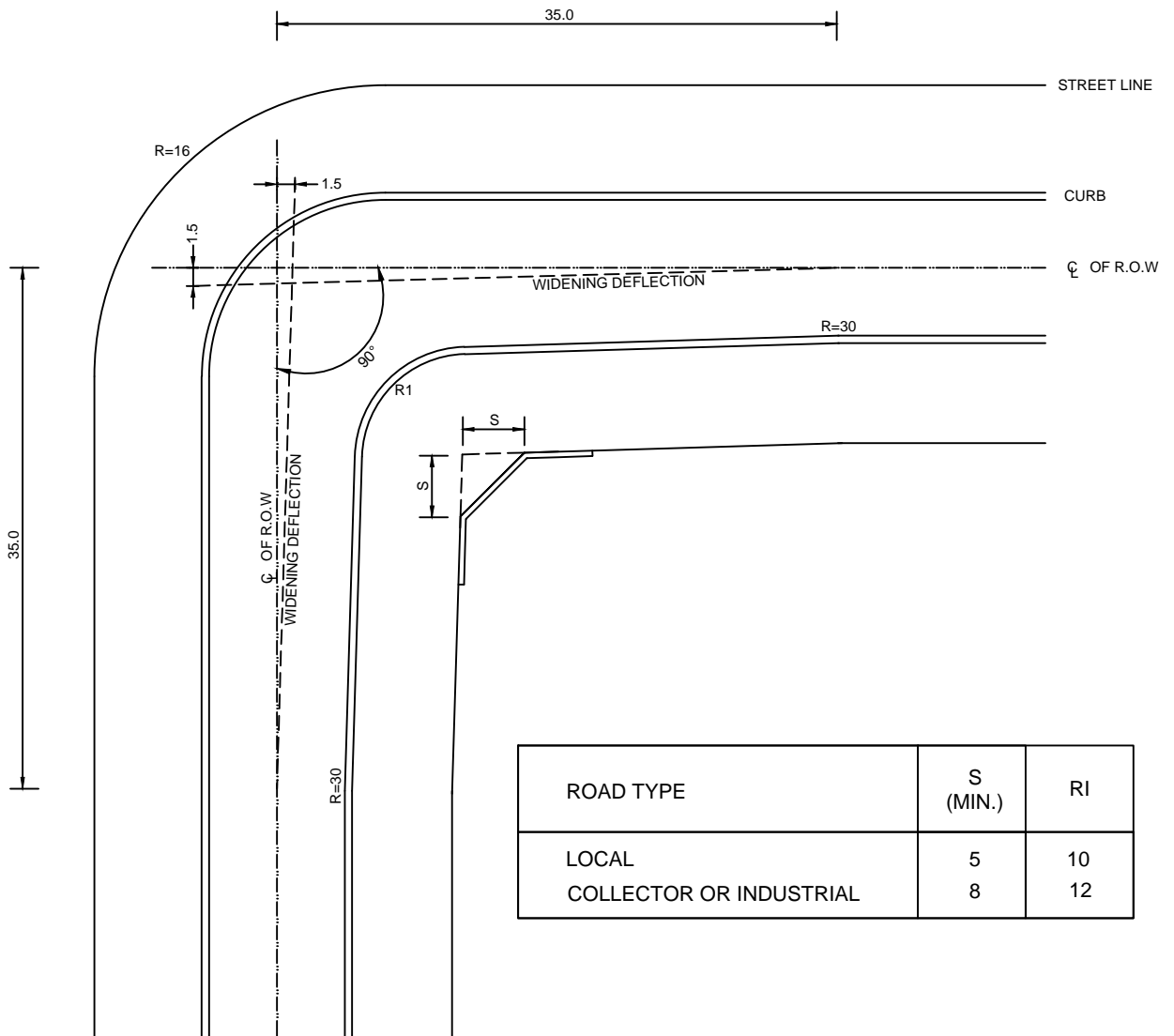
FEB. 1980

REVISION

DRAWING No.

DATE OF REVISION  
 NOV. 2009

**KS-220**

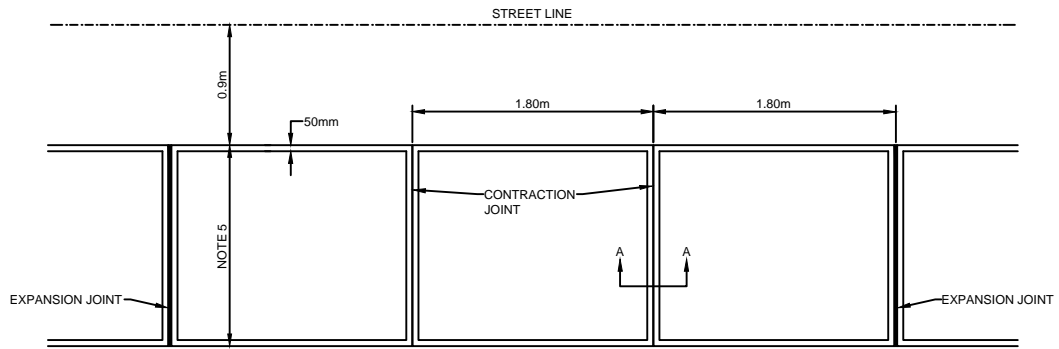


ROAD TYPE	S (MIN.)	R1
LOCAL	5	10
COLLECTOR OR INDUSTRIAL	8	12

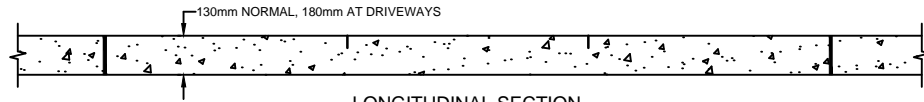
**NOTES:**

1. CHAINAGE TO BE CALCULATED USING A CENTRELINE RADIUS OF 15m.
2. GUTTER GRADES TO BE DETAILED ON THE ENGINEERING DRAWINGS. MINIMUM GRADE ALONG GUTTER TO BE 0.50%.
3. THE LOCATION OF ANY SIDEWALK IS TO BE DETAILED IN THE ENGINEERING DRAWINGS.
4. ALL CURB RADII ARE TO FACE OF CURBS.
5. BOULEVARD WIDTHS ARE TO BE MAINTAINED.
6. ALL DIMENSIONS ARE IN MILLIMETRES OR METRES.

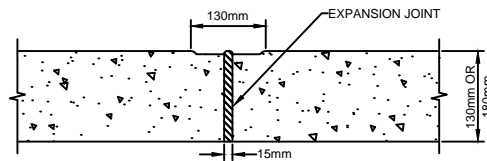
	<b>TOWNSHIP OF KING</b>	APPROVED M.C.	DATE OF ISSUE FEB. 1980
	TYPICAL ROAD BEND	REVISION	DRAWING No. <b>KS-224</b>
		DATE OF REVISION MAR. 2016	



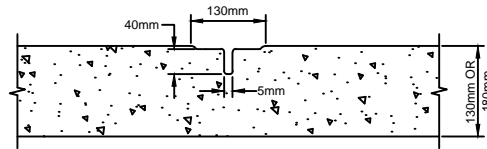
PLAN VIEW



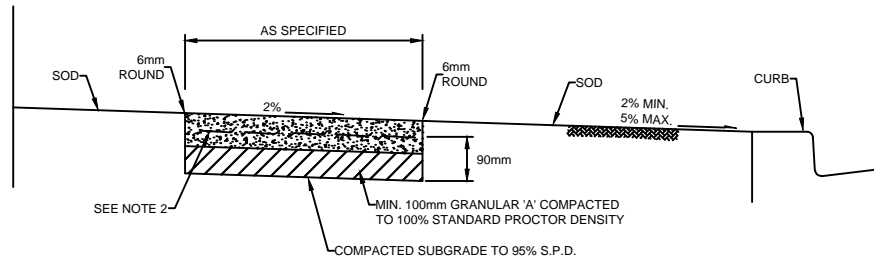
LONGITUDINAL SECTION



SECTION B-B  
EXPANSION JOINT DETAIL



SECTION A-A  
CONTRACTION JOINT DETAIL



BOULEVARD SECTION

NOTES:

1. CONCRETE TO BE 30 MPa; 5-7% AIR ENTRAINED WITH A 20mm MAX. AGGREGATE SIZE.
2. FOR COMMERCIAL, INDUSTRIAL, AND APARTMENT DRIVEWAYS, SIDEWALK TO BE REINFORCED WITH 152 x 152 MW 18.7 x MW 18.7 METRIC WELDED WIRE.
3. EXPANSION JOINTS ARE ALSO REQUIRED WHERE THE SIDEWALK ABUTS OTHER CONCRETE STRUCTURE, WALKS, CURBS, UTILITY POLES, HYDRANTS, MANHOLES, AND AT CERTAIN LOCATIONS AT DISCRETION OF THE ENGINEER.
4. CONTRACTION JOINTS TO BE FORMED AFTER THE CONCRETE HAS RECEIVED ITS INITIAL SET.
5. SIDEWALKS 1.5m WIDE ON LOCAL; 1.8m WIDE ON ARTERIAL AND COLLECTOR ROADS.
6. ALL DIMENSIONS ARE IN MILLIMETRES OR METRES



**TOWNSHIP OF KING**

CONCRETE SIDEWALK

APPROVED

M.C.

DATE OF ISSUE

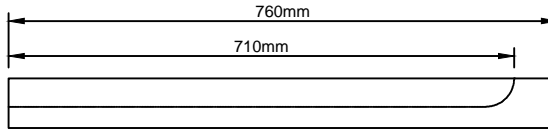
FEB. 1980

REVISION

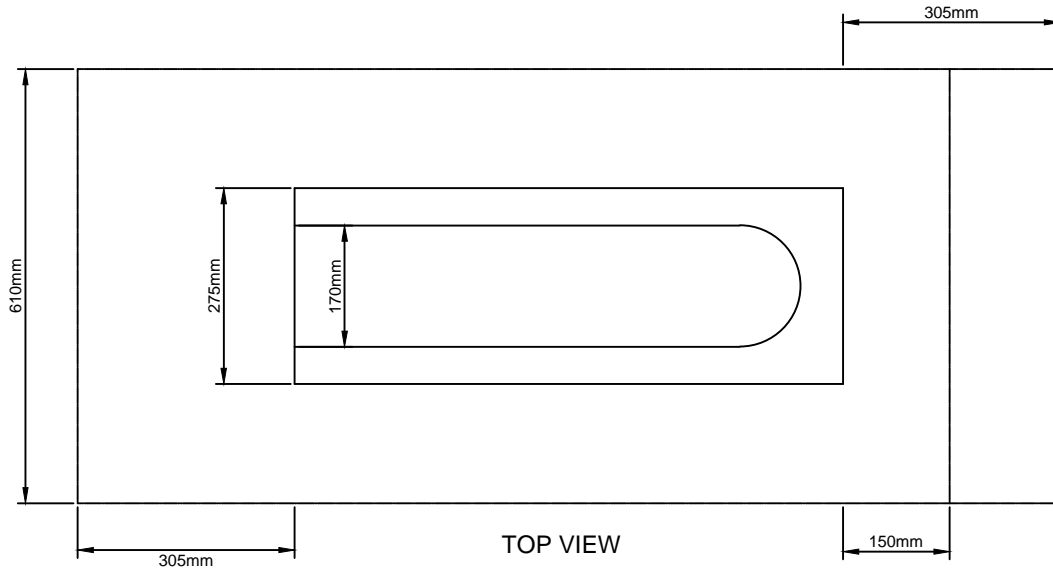
DRAWING No.

DATE OF REVISION  
FEB 2018

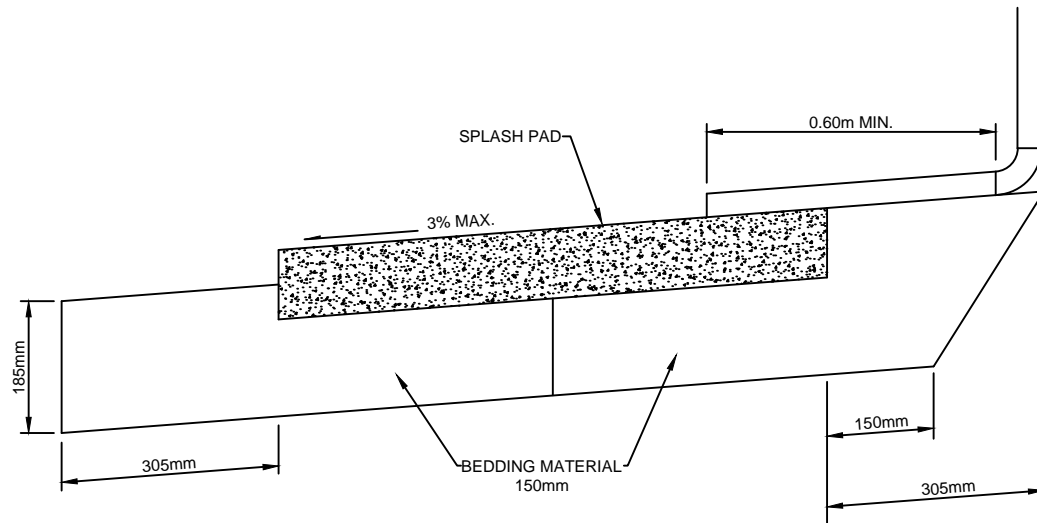
KS-231



SIDE VIEW



TOP VIEW



TOP VIEW

NOTES:

1. MINIMUM CONCRETE STRENGTH SHALL BE 20 MPa.
2. BEDDING MATERIAL SHALL BE 19mm CLEAR STONE OR EQUIVALENT.
3. SPLASH PADS TO BE USED TO DIRECT DRAINAGE FROM ALL RAINWATER DOWNSPOUTS.
4. ALL DIMENSIONS ARE IN MILLIMETRES OR METRES UNLESS OTHERWISE SPECIFIED.



**TOWNSHIP OF KING**

**PRECAST CONCRETE  
SPLASH PAD DETAIL**

APPROVED  
M.C.

DATE OF ISSUE  
FEB. 1980

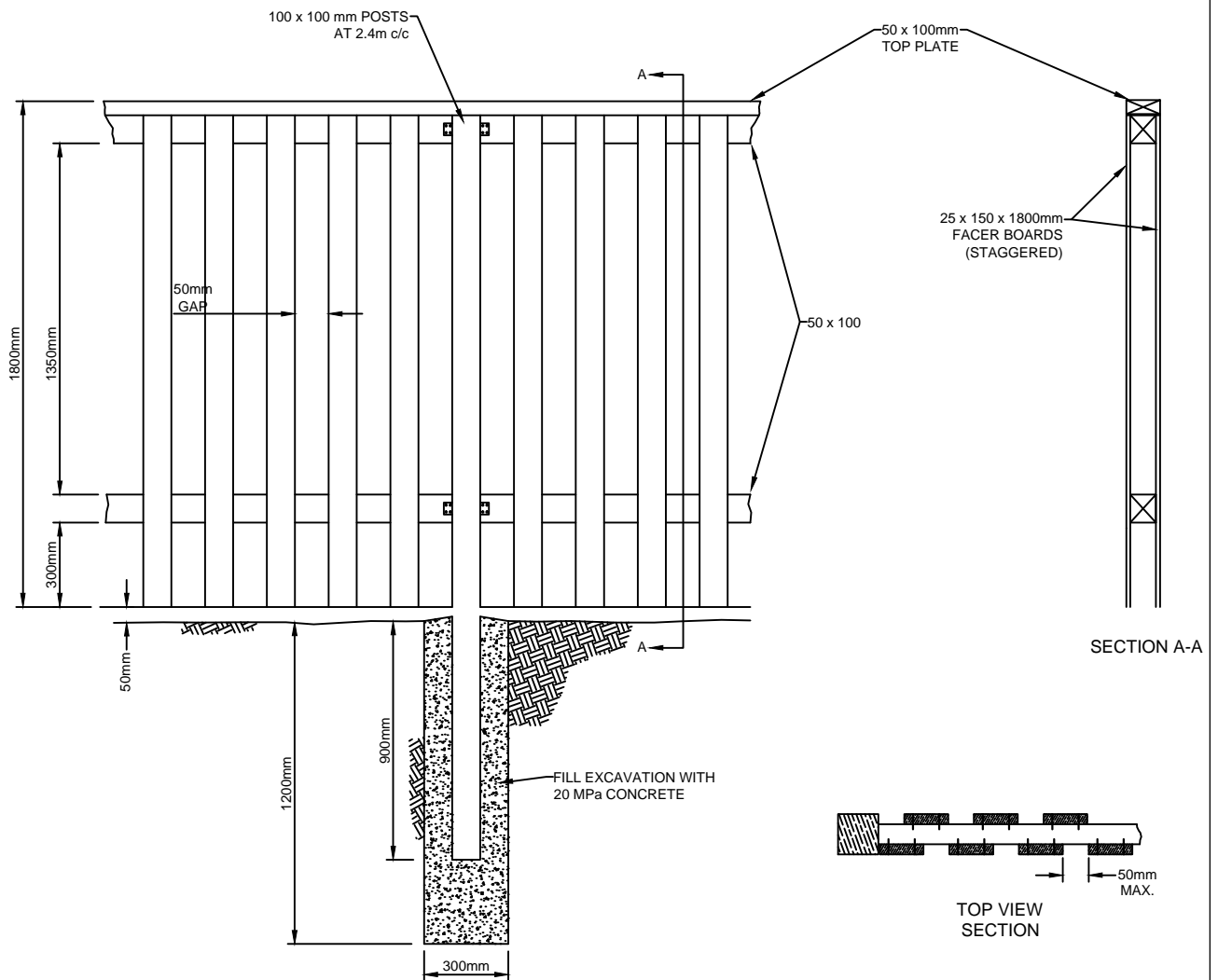
REVISION

DRAWING No.

DATE OF REVISION  
NOV. 2009

**KS-302**





NOTES:

1. USE CONSTRUCTION GRADE CEDAR, CALIFORNIA RED WOOD OR PRESSURE TREATED LUMBER ONLY. DO NOT USE SPRUCE OR HEMLOCK.
2. ALL FASTENERS AND HANGERS TO BE GALVANIZED.
3. ALL DIMENSIONS ARE IN MILLIMETRES OR METRES.



**TOWNSHIP OF KING**

**WOOD PRIVACY FENCE**

APPROVED

M.C.

DATE OF ISSUE

JUNE, 1993

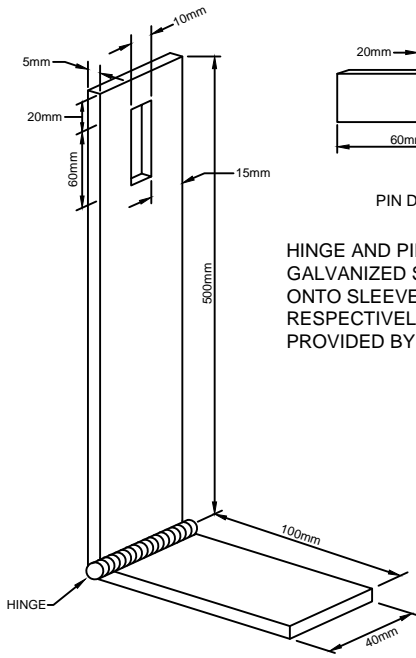
REVISION

DRAWING No.

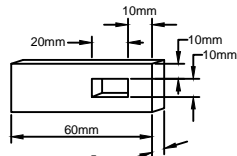
DATE OF REVISION

NOV. 2015

**KS-313**

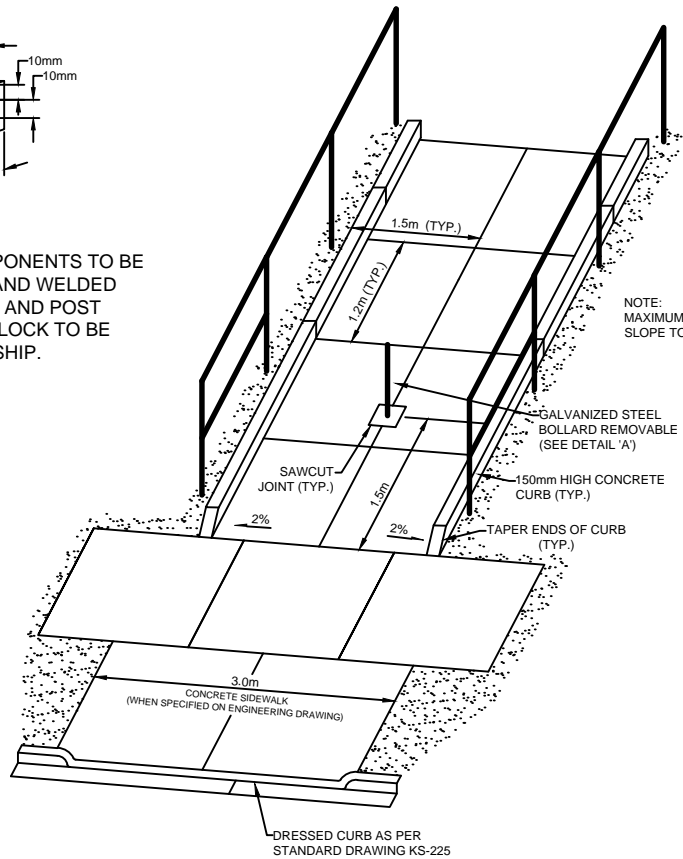


DETAIL 'A'



PIN DETAIL

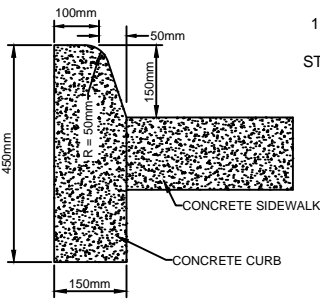
HINGE AND PIN COMPONENTS TO BE GALVANIZED STEEL AND WELDED ONTO SLEEVE PLATE AND POST RESPECTIVELY. PADLOCK TO BE PROVIDED BY TOWNSHIP.



NOTE: MAXIMUM LONGITUDINAL SLOPE TO BE 8%

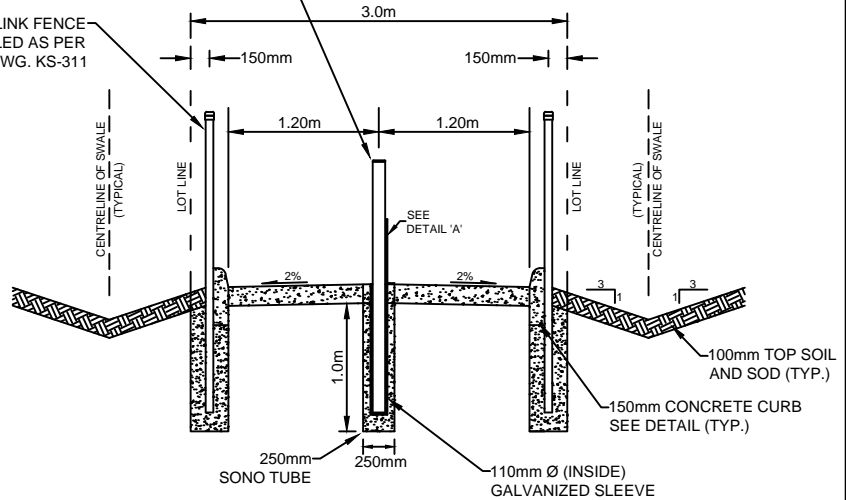
100mm DIAMETER GALVANIZED STEEL POST WITH GALVANIZED TOP. WHERE GRADES EXCEED 8%, A MAZE SHALL BE DESIGNED AND CONSTRUCTED SUBJECT TO THE TOWNSHIP ENGINEERS APPROVAL

CROSS SECTION



CONCRETE CURB DETAIL (TYPICAL)

1.5m CHAINLINK FENCE INSTALLED AS PER STANDARD DWG. KS-311



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES OR METRES.
2. SECURITY LIGHTING OF WALKWAYS TO BE PROVIDED. DESIGN OF LIGHTING WILL BE SUBJECT TO APPROVAL BY THE TOWNSHIP OF KING.
3. ALL CONCRETE WORK TO CONFORM TO REQUIREMENT OF OPSD-1350. CLASS OF CONCRETE: 25MPa, 5-7% AIR ENTRAINMENT, 20mm MAXIMUM AGGREGATE SIZE.
4. MAXIMUM SAW CUT JOINT SPACING TO BE 4.5m.
5. CONCRETE POST FOOTINGS TO BE SEPARATE FROM CURB.



TOWNSHIP OF KING

PEDESTRIAN WALKWAY IN URBAN SETTING

APPROVED

M.C.

DATE OF ISSUE

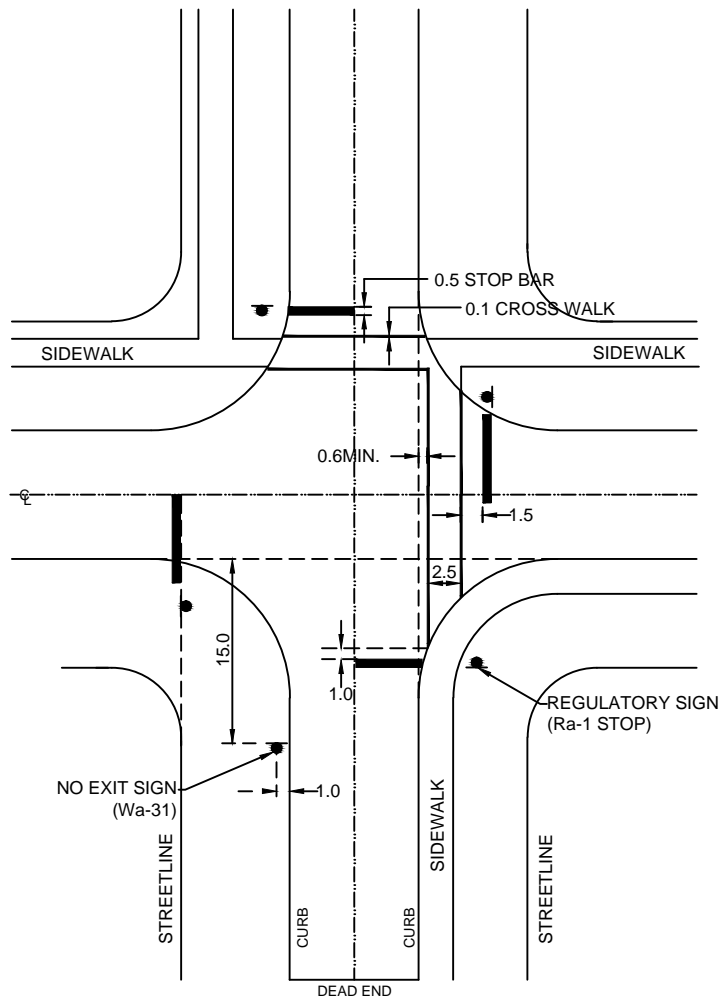
JUNE, 1993

REVISION

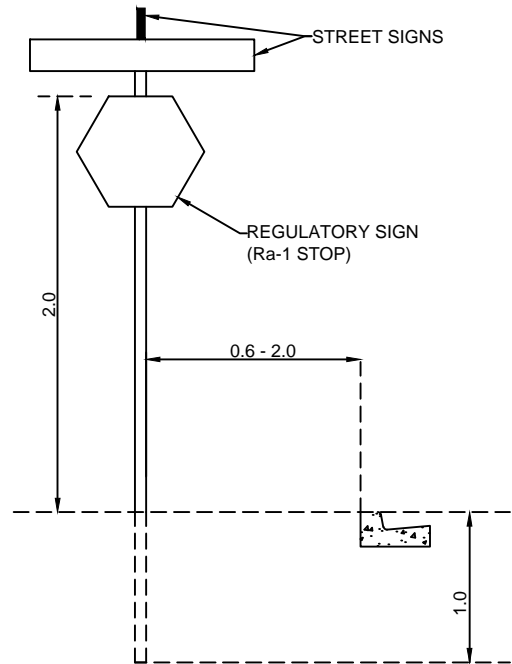
DRAWING No.

DATE OF REVISION  
NOV. 2009

KS-320



LOCATION PLAN



INSTALLATION DETAIL

NOTES:

1. REGULATORY/WARNING SIGNS AS PER OHTA REG. 615/616 OR AMENDMENTS THEREOF.
2. STOP SIGNS (Ra-1) POSTS SHALL BE 75mm x 3.66m ALUMINUM COMPLETE WITH TOP CAP.
3. STOP SIGNS SHALL BE BANDED TO THE POST WITH MINIMUM 12.7mm x .76mm STAINLESS STEEL BANDING AND FLARED LEG STAINLESS STEEL BRACKETS (BANDRIT BRACKETS OR EQUIVALENT).
4. ALL OTHER REGULATORY/WARNING SIGNS SHALL BE MOUNTED ON 3.66M 80,000psi U-FLANGE POSTS WHICH HAVE THE TOP 1200mm PUNCHED ON 50mm CENTRES WITH 11mm HOLES.
5. ALL REGULATORY SIGNS SHALL CONFORM WITH THE CURRENT VERSION OF THE ONTARIO TRAFFIC MANUAL (O.T.M).
6. ALL WARNING SIGNS AND INSTALLATIONS SHALL CONFORM WITH THE CURRENT VERSION OF THE O.T.M
7. ALL WARNING AND REGULATORY SIGNS SHALL BE MOUNTED A MINIMUM OF 2.0M ABOVE FINISHED GROUND ELEVATION.
8. ALL REGULATORY AND WARNING SIGN BLANKS SHALL BE ALUMINUM AND BE HIGH DENSITY REFLECTORIZED SURFACES.

ALL DIMENSIONS ARE EXPRESSED IN METRES (m) UNLESS OTHERWISE NOTES.



**TOWNSHIP OF KING**

**TRAFFIC SIGN DETAILS  
& PAVEMENT MARKINGS**

APPROVED	M.C.
REVISION	
DATE OF REVISION	MAR. 2016

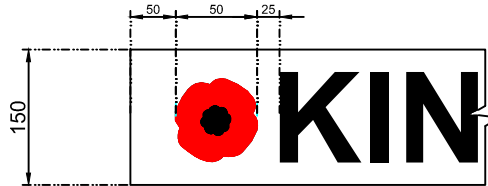
DATE OF ISSUE	FEB. 1980
DRAWING No.	<b>KS-331</b>



STREET SIGN INSTALLATION DETAIL



STREET NAME BLADE DETAIL



POPPY DESIGNATED STREET NAME BLADE DETAIL

**NOTES:**

1. SIGN BLADES SHALL BE 150mm WIDE EXTRUDED ALUMINUM. (200mm WIDTH AT INTERSECTION OF ARTERIAL ROADS).
2. SIGNS TO BE DOUBLE SIDED ON STANDARD EXTRUDED ALUMINUM BLANKS.
3. STANDARD BLANKS TO BE 6063-T6 ALODINE TREATED ALUMINUM ALLOY STREET NAME EXTRUSIONS.
4. TEXT TO BE 3M-3290 WHITE (OR EQUIVALENT) UPPER CASE HELVETICA MEDIUM LETTERING CORRECTLY SPOelled AND SPACED AS NEEDED.
5. STREET NAME LETTERING TO BE 100mm HIGH FOR LOCAL AND COLLECTOR ROADS, 150mm HIGH FOR ARTERIAL ROADS, ABBREVIATIONS (ST., RD., CR., DR., CT., Etc.) AND DIRECTIONAL DESIGNATIONS (NORTH, SOUTH, EAST, WEST) TO BE HALF THE STREET NAME LETTERING HEIGHT AND ALIGNED WITH THE BOTTOM OF THE STREET NAME LETTERING.
6. REFLECTIVE BACKGROUND TO BE 3M-3277 GREEN (OR EQUIVALENT) HIGH INTENSITY TYPE III MATERIAL.
7. SIGNS TO FIT STANDARD CAST ALUMINUM STREET NAME INSTALLATION CLAMPS WITH ALLEN KEY BOLTS ONLY.
8. SIGNS TO BE INSTALLED ON 75mm DIA. GALVANIZED STEEL POLE (UNLESS OTHERWISE APPROVED).

ALL DIMENSIONS ARE EXPRESSED IN MILLIMETRES (mm) UNLESS OTHERWISE NOTES.

	<b>TOWNSHIP OF KING</b>	APPROVED M.C.	DATE OF ISSUE MAY. 2018
	STREET NAME SIGNS	REVISION	DRAWING No.
		DATE OF REVISION MAY. 2018	<b>KS-332</b>



# WARNING

## HAZARDOUS CONDITIONS

THIS STORMWATER MANAGEMENT FACILITY POND  
CONTAINS FEATURES WHICH MAY BECOME  
HAZARDOUS UNDER CERTAIN CONDITIONS.  
HAZARDS CAN INCLUDE FLUCTUATING  
WATER LEVELS AND THIN ICE.  
PLEASE EXERCISE EXTREME CAUTION  
IN THIS AREA

TOWN SHIP OF KING  
905-833-5321

750mm

600mm

NOTE: CIRCLE AND STRIKETHROUGH TO BE RED.

ALL DIMENSIONS ARE EXPRESSED IN METRES (m) UNLESS OTHERWISE NOTES.



### TOWNSHIP OF KING

STORMWATER MANAGEMENT FACILITY  
WARNING SIGN

APPROVED

M.C.

DATE OF ISSUE

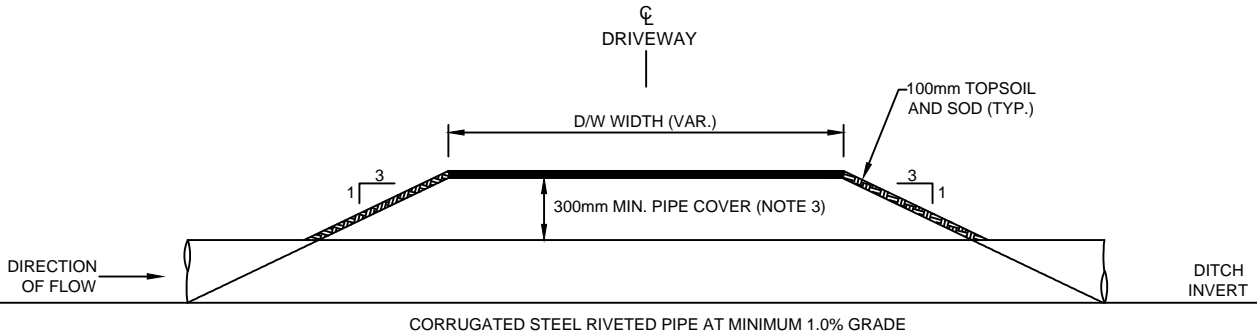
MAY 2016

REVISION

DRAWING No.

DATE OF REVISION

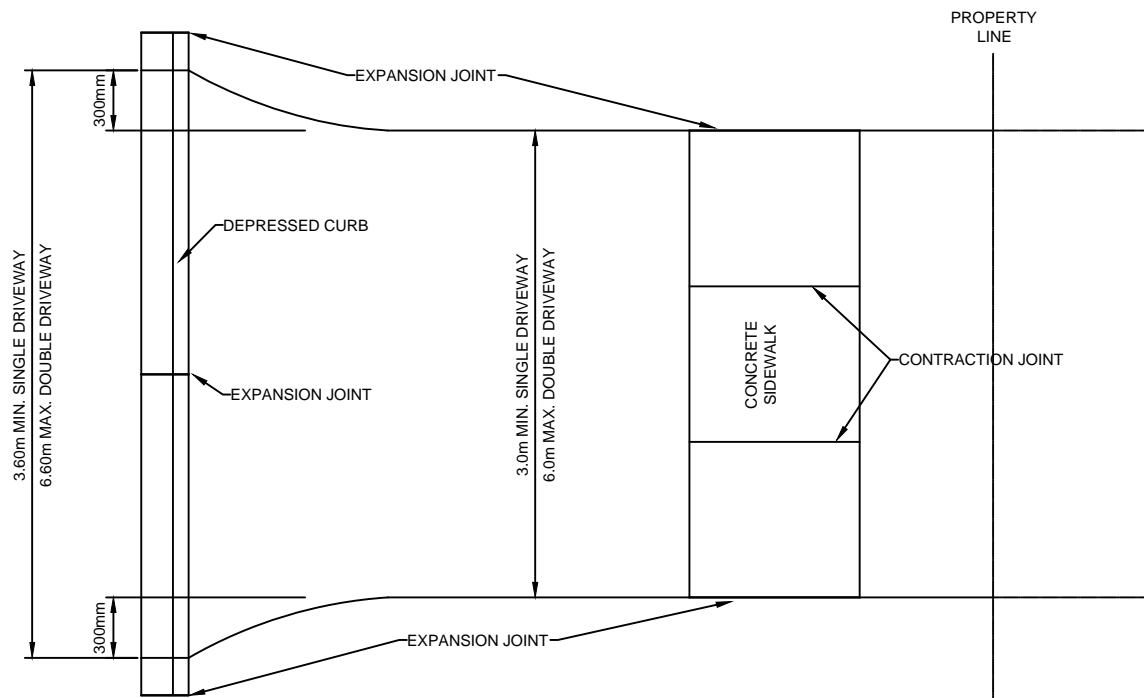
KS-335



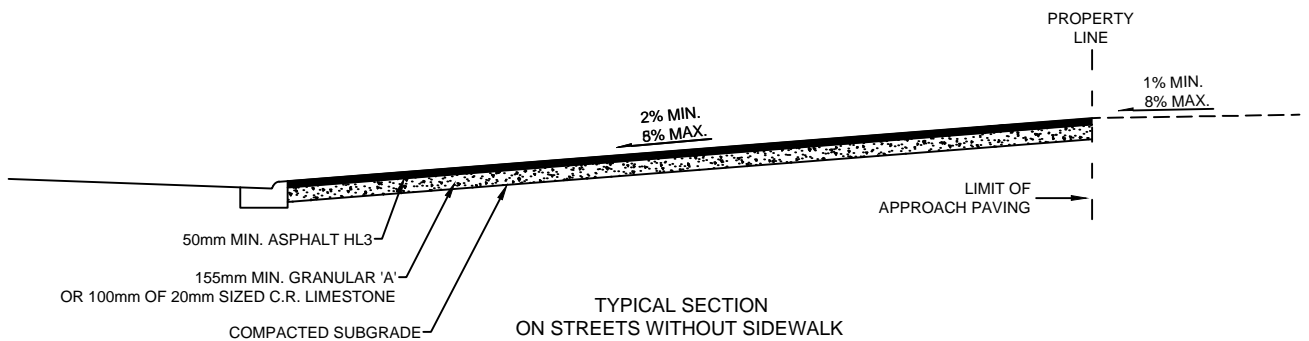
**NOTES:**

1. BARREL LENGTH TO BE D/W WITH PLUS 5.0m. MINIMUM LENGTH SHALL BE 8.5m.
2. MINIMUM DIAMETER SHALL BE 400mm AND THE MINIMUM METAL THICKNESS SHALL BE 1.6mm.
3. THE MINIMUM DEPTH OF COVER SHALL BE 300mm OR DIAMETER OF C.S.P. CULVERT DIVIDED BY 6.0, WHICHEVER IS GREATER.
4. BEDDING FOR C.S.P. CULVERTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH O.P.S.D. 802.04. GRANULAR 'A' BACKFILL SHALL BE PLACED AND COMPACTED TO 100% STANDARD PROCTOR DENSITY.
5. CORRUGATED STEEL PRODUCTS SHALL CONFORM WITH O.P.S.S. 1801 AND THE REQUIREMENTS OF CAN 3-G401.
6. HELICAL C.S.P. CULVERTS ARE NOT APPROVED FOR USE IN THE TOWNSHIP OF KING.
7. ALL NEW DRIVEWAYS ARE TO BE STAKED AS TO THEIR PROPOSED LOCATION AND APPORVED BY THE TOWNSHIP.
8. HOMEOWNERS ARE RESPONSIBLE TO LOCATE ALL UNDERGROUND SERVICE AND UTILITY PLANTS IN THE AREA OF THE DRIVEWAY ENTRANCES, PRIOR TO INSTALLATION.

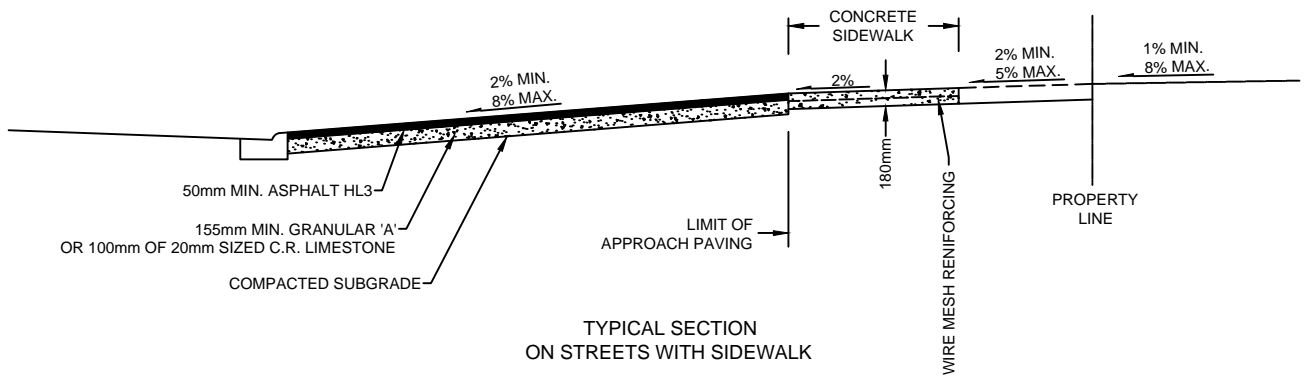
	<b>TOWNSHIP OF KING</b>	APPROVED M.C.	DATE OF ISSUE JAN. 1990
	STANDARD DRIVEWAY CULVERT	REVISION	DRAWING No.
		DATE OF REVISION	<b>KS-340</b>



PLAN VIEW



TYPICAL SECTION ON STREETS WITHOUT SIDEWALK



TYPICAL SECTION ON STREETS WITH SIDEWALK

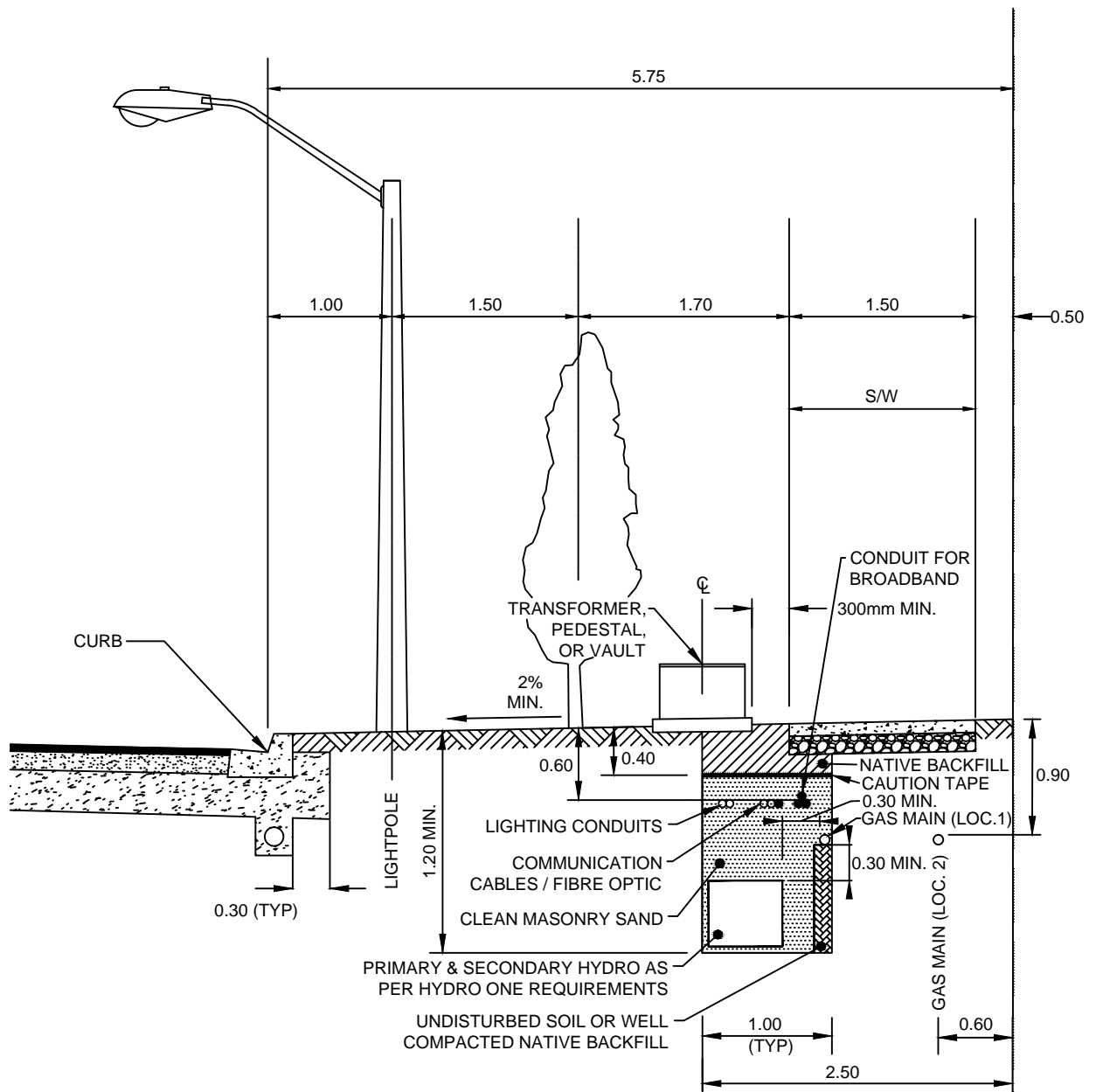
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES OR METRES.
2. FIRE HYDRANTS, TRANSFORMERS, AND UTILITY PEDESTALS TO BE LOCATED A MINIMUM OF 3.0m FROM ANY DRIVEWAY.
3. STREETLIGHTS TO BE LOCATED A MINIMUM OF 1.5m FROM ANY DRIVEWAY.

	<b>TOWNSHIP OF KING</b>	APPROVED M.C.	DATE OF ISSUE FEB. 1980
	DRIVEWAY APPROACH PAVING FOR RESIDENTIAL DRIVEWAYS	REVISION	DRAWING No.
		DATE OF REVISION MAY 2016	<b>KS-341</b>







**NOTES**

\*DENOTES 26m R.O.W. (REFER TO WS-103 & WS-104 FOR DIMENSIONS AND ROAD DETAILS).

1. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
2. ALL SEPARATIONS TO BE AS PER OPSD 2101.01.
3. STREETLIGHT WIRE DUCT MAY BE INSTALLED AT A REDUCED DEPTH UP TO A MINIMUM DEPTH OF 600mm.
4. GAS MAIN TO BE INSTALLED IN LOC. 1 SUBJECT TO AGREEMENT AND APPROVAL BY THE TOWNSHIP AND GAS UTILITY.
5. CONDUIT FOR FUTURE BROADBAND SHALL BE 75mm DIA. RIGID PVC WITH A WALL THICKNESS OF 5.5mm.



**TOWNSHIP OF KING**

JOINT USE UTILITY TRENCH  
Including conduit for broadband fibre

APPROVED  
M.C.

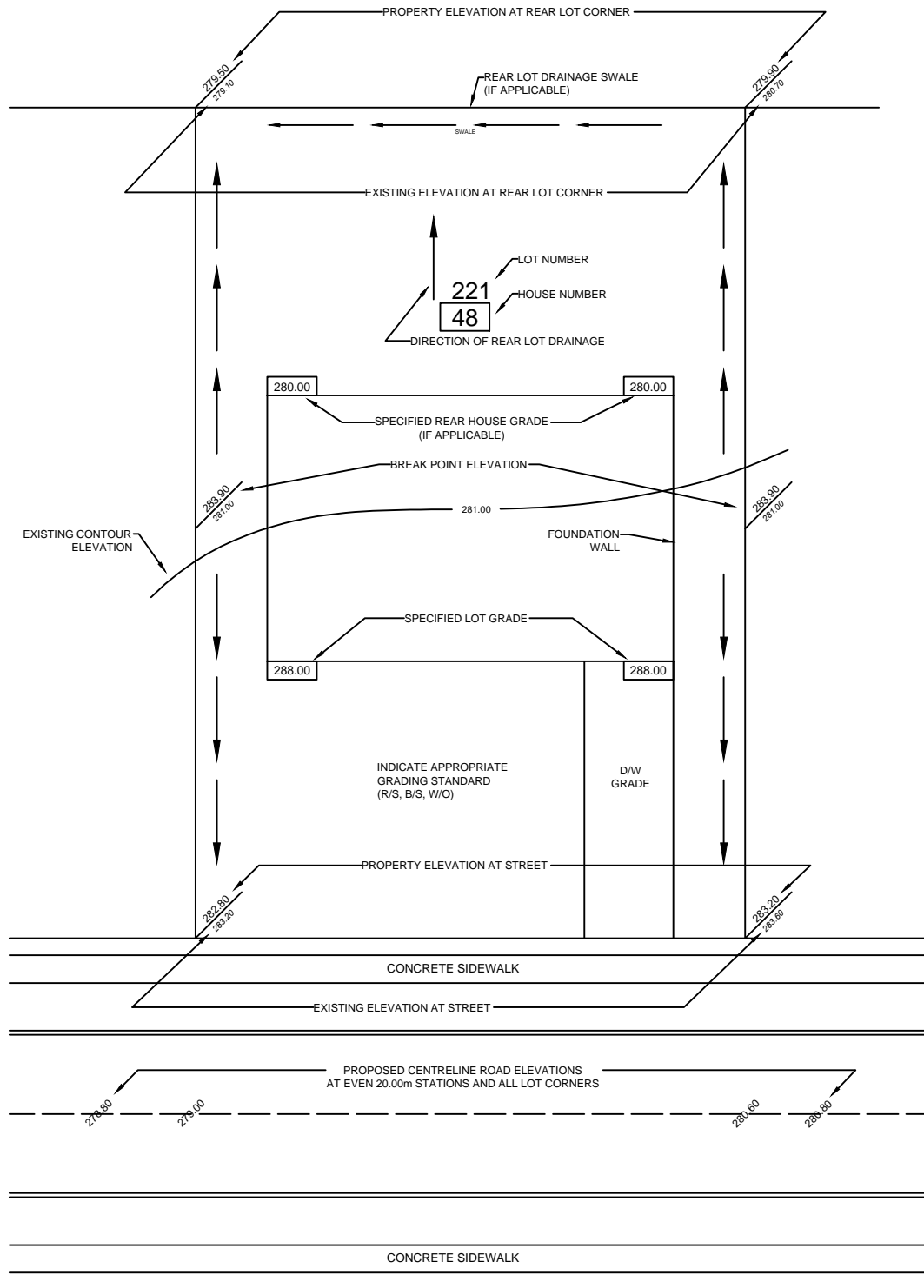
REVISION

DATE OF REVISION

DATE OF ISSUE  
DEC 2015

DRAWING No.

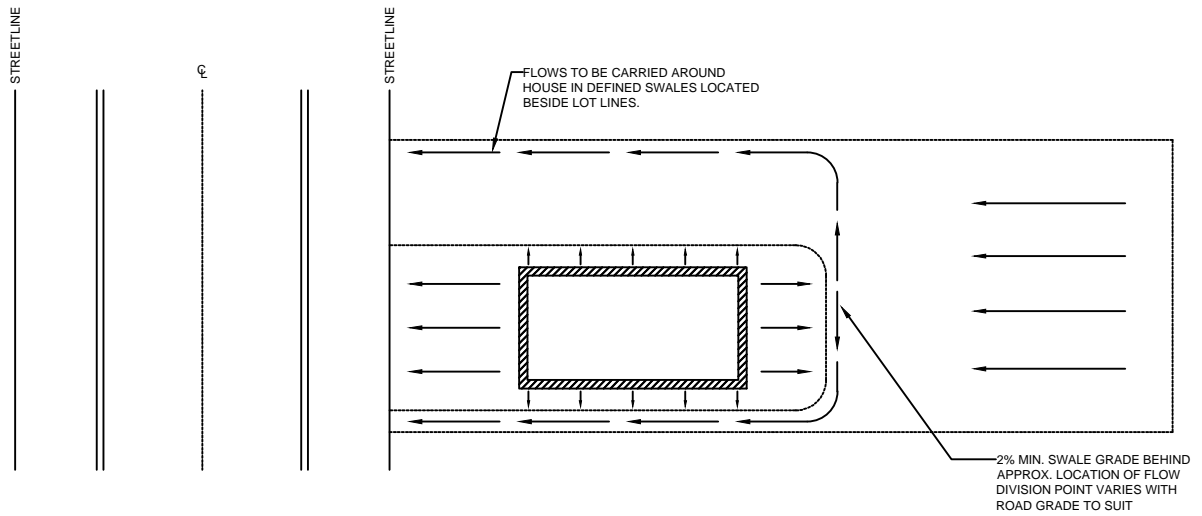
**KS-346**



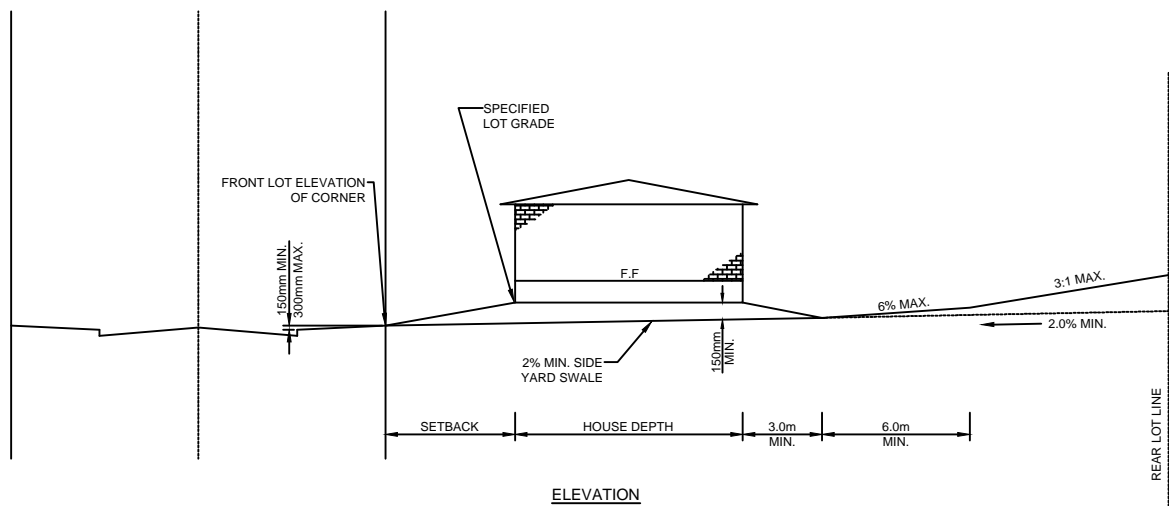
**NOTES:**

1. ALL CATCHBASINS LOCATIONS TO BE SHOWN ON GRADING PLAN.
2. ALL EASEMENTS MUST BE SHOWN ON GRADING PLAN.
3. THIS LEGEND MUST APPEAR ON ALL GRADING PLANS.
4. ALL DIMENSIONS ARE IN MILLIMETRES OR METRES UNLESS OTHERWISE SPECIFIED.
5. PROVIDE LOT GRADING CERTIFICATE BY DEVELOPER'S ENGINEER IN ACCORDANCE WITH SUBDIVISION AGREEMENT REQUIREMENTS.
6. PROVIDE MAIN FLOOR AND BASEMENT ELEVATIONS.
7. SPECIFY PROPOSED GRADES ON ALL SWALES.
8. IDENTIFY PROPOSED LOCATION AND DIMENSIONS OF PRIMARY AND RESERVE SEPTIC TILE BED AREAS AND APPROVAL CERTIFICATE OF YORK REGION HEALTH UNIT.
9. PROVIDE REGISTERED PLAN NUMBER ON GRADING PLAN.
10. REFER TO SECTION F FOR ALL OTHER REQUIREMENTS.

	<b>TOWNSHIP OF KING</b>	APPROVED M.C.	DATE OF ISSUE FEB. 1980
	TYPICAL LEGEND FOR LOT GRADING PLAN	REVISION	DRAWING No. <b>KS-400</b>
		DATE OF REVISION NOV. 2015	



PLAN



ELEVATION

NOTES:

1. SPECIFIED LOT GRADE SHALL BE MIN. 300mm ABOVE THE HIGHEST FRONT LOT CORNER.
2. DRIVEWAYS ARE NOT TO BE USED AS AN OUTLET FOR ANY SIDE YARD SWALE.
3. ALL DIMENSIONS ARE IN MILLIMETRES OR METRES UNLESS OTHERWISE SPECIFIED.



TOWNSHIP OF KING

FRONT LOT DRAINAGE

APPROVED  
M.C.

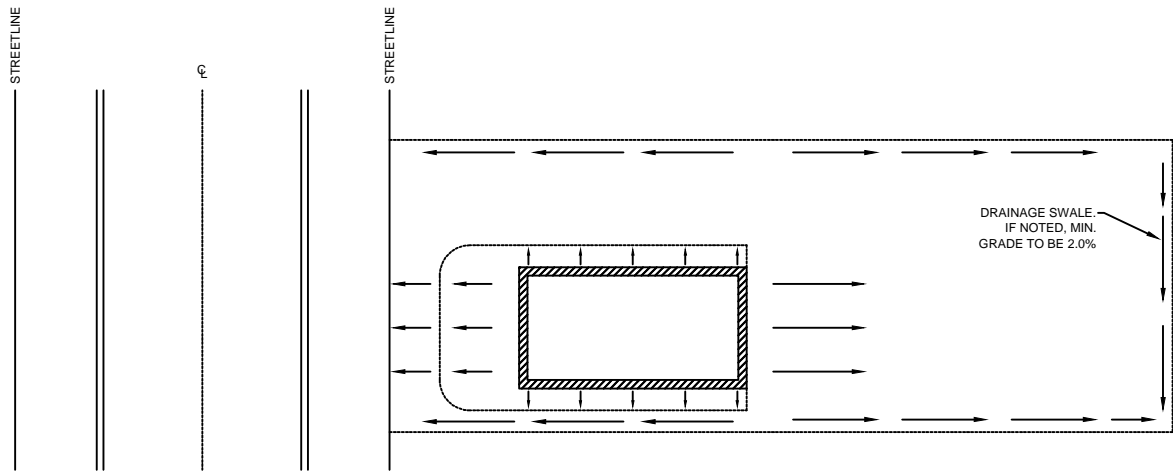
REVISION

DATE OF REVISION  
NOV. 2009

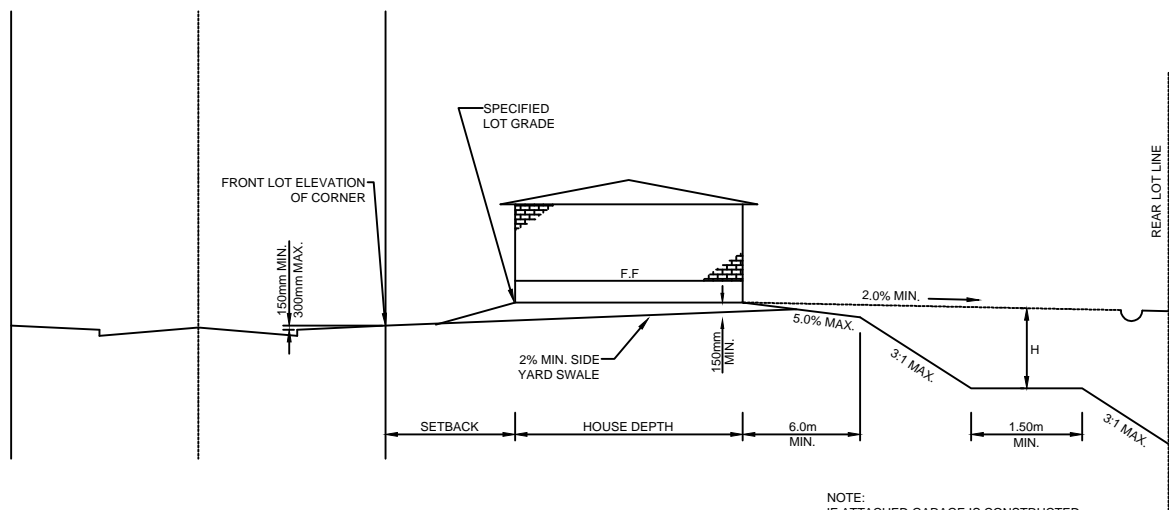
DATE OF ISSUE  
FEB. 1980

DRAWING No.

KS-401



PLAN



ELEVATION

NOTES:

1. SPECIFIED LOT GRADE SHALL BE MIN. 300mm ABOVE THE HIGHEST FRONT LOT CORNER.
2. DRIVEWAYS ARE NOT TO BE USED AS AN OUTLET FOR ANY SIDE YARD SWALE.
3. 'H' DIMENSION TO BE 1.80m MAX. UNLESS UNDISTURBED EXISTING SLOPE. TERRACE CAN BE ELIMINATED ON SLOPES OF 4:1 OR LESS.
4. ALL DIMENSIONS ARE IN MILLIMETRES OR METRES UNLESS OTHERWISE SPECIFIED.



**TOWNSHIP OF KING**

REAR LOT DRAINAGE

APPROVED

M.C.

DATE OF ISSUE

FEB. 1980

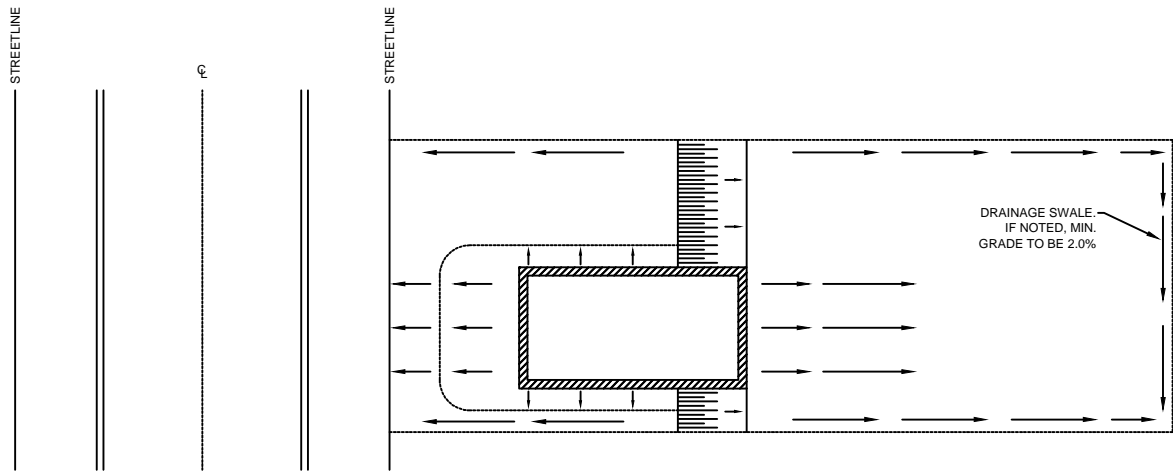
REVISION

DRAWING No.

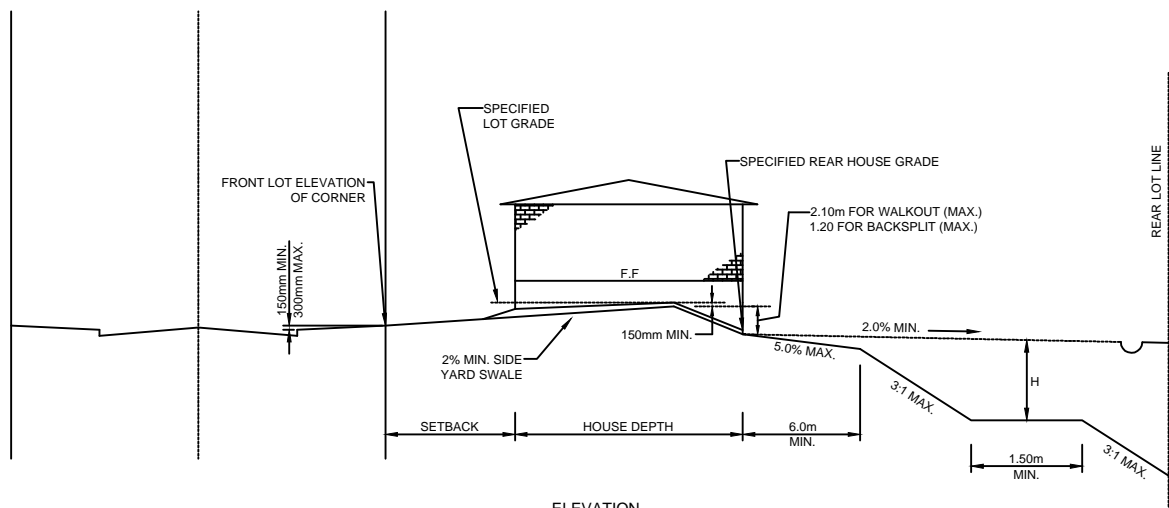
DATE OF REVISION

NOV. 2009

**KS-402**



PLAN



ELEVATION

NOTES:

1. SPECIFIED LOT GRADE SHALL BE MIN. 300mm ABOVE THE HIGHEST FRONT LOT CORNER.
2. 'H' DIMENSION TO BE 1.80m MAX. UNLESS UNDISTURBED EXISTING SLOPE. TERRACE CAN BE ELIMINATED ON SLOPES OF 4:1 OR LESS.
3. REAR HOUSE GRADE MUST ALSO BE SPECIFIED ON LOT GRADING PLANS WHEN THIS HOUSE TYPE IS PROPOSED.
4. ALL DIMENSIONS ARE IN MILLIMETRES OR METRES UNLESS OTHERWISE SPECIFIED.



**TOWNSHIP OF KING**

**REAR LOT DRAINAGE FOR  
WALKOUT OR BACKSPLIT OUT**

APPROVED

M.C.

DATE OF ISSUE

FEB. 1980

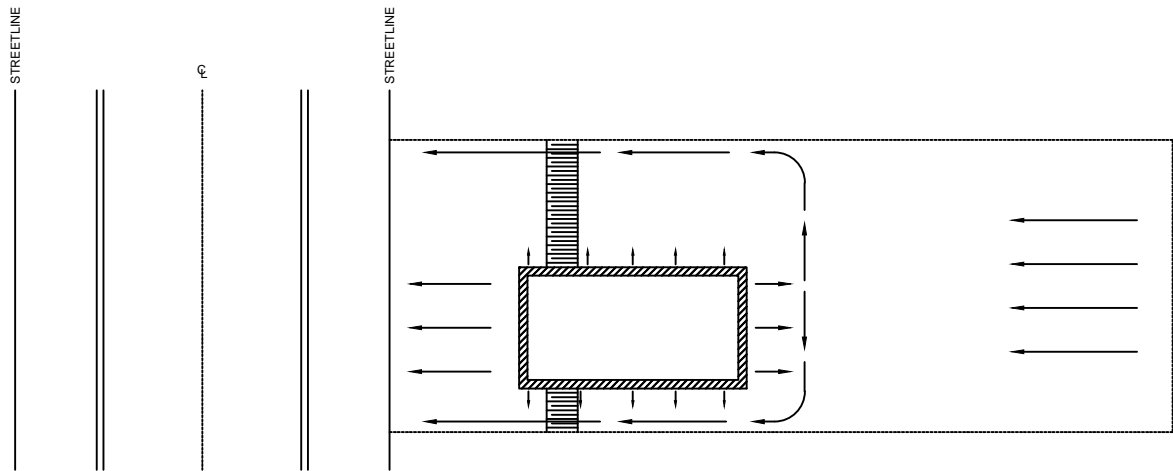
REVISION

DRAWING No.

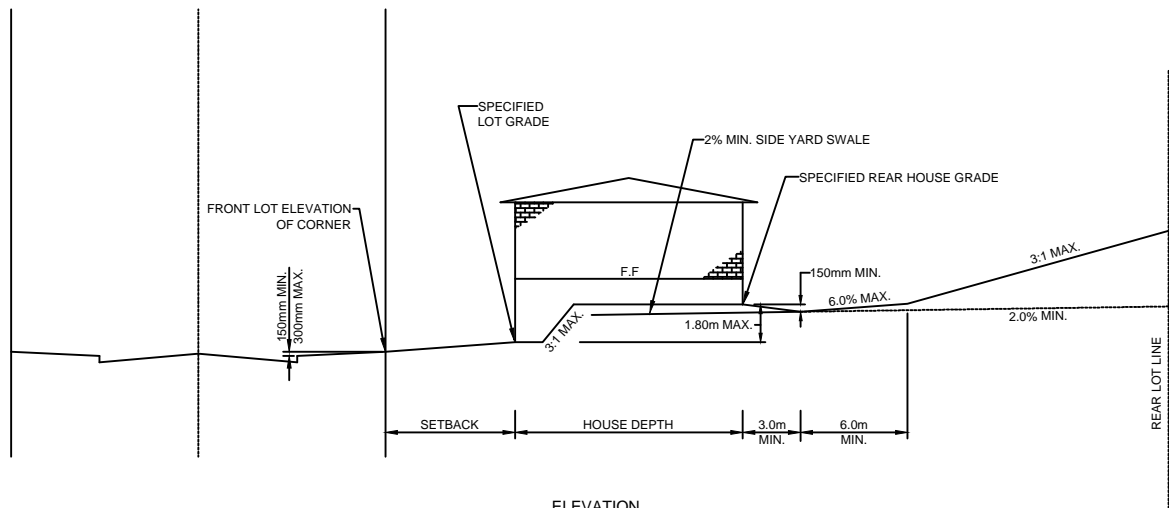
DATE OF REVISION

NOV. 2009

**KS-403**



PLAN



ELEVATION

NOTES:

1. SPECIFIED LOT GRADE SHALL BE MIN. 300mm ABOVE THE HIGHEST FRONT LOT CORNER.
2. DRIVEWAYS ARE NOT TO BE USED AS AN OUTLET FOR ANY SIDE YARD SWALE.
3. REAR HOUSE GRADE MUST ALSO BE SPECIFIED ON LOT GRADING PLANS WHEN THIS HOUSE TYPE IS PROPOSED.
4. ALL DIMENSIONS ARE IN MILLIMETRES OR METRES UNLESS OTHERWISE SPECIFIED.



**TOWNSHIP OF KING**

**FRONT LOT DRAINAGE  
FOR FRONT SPLIT HOUSE**

APPROVED

M.C.

DATE OF ISSUE

FEB. 1980

REVISION

DRAWING No.

DATE OF REVISION

NOV. 2009

**KS-404**

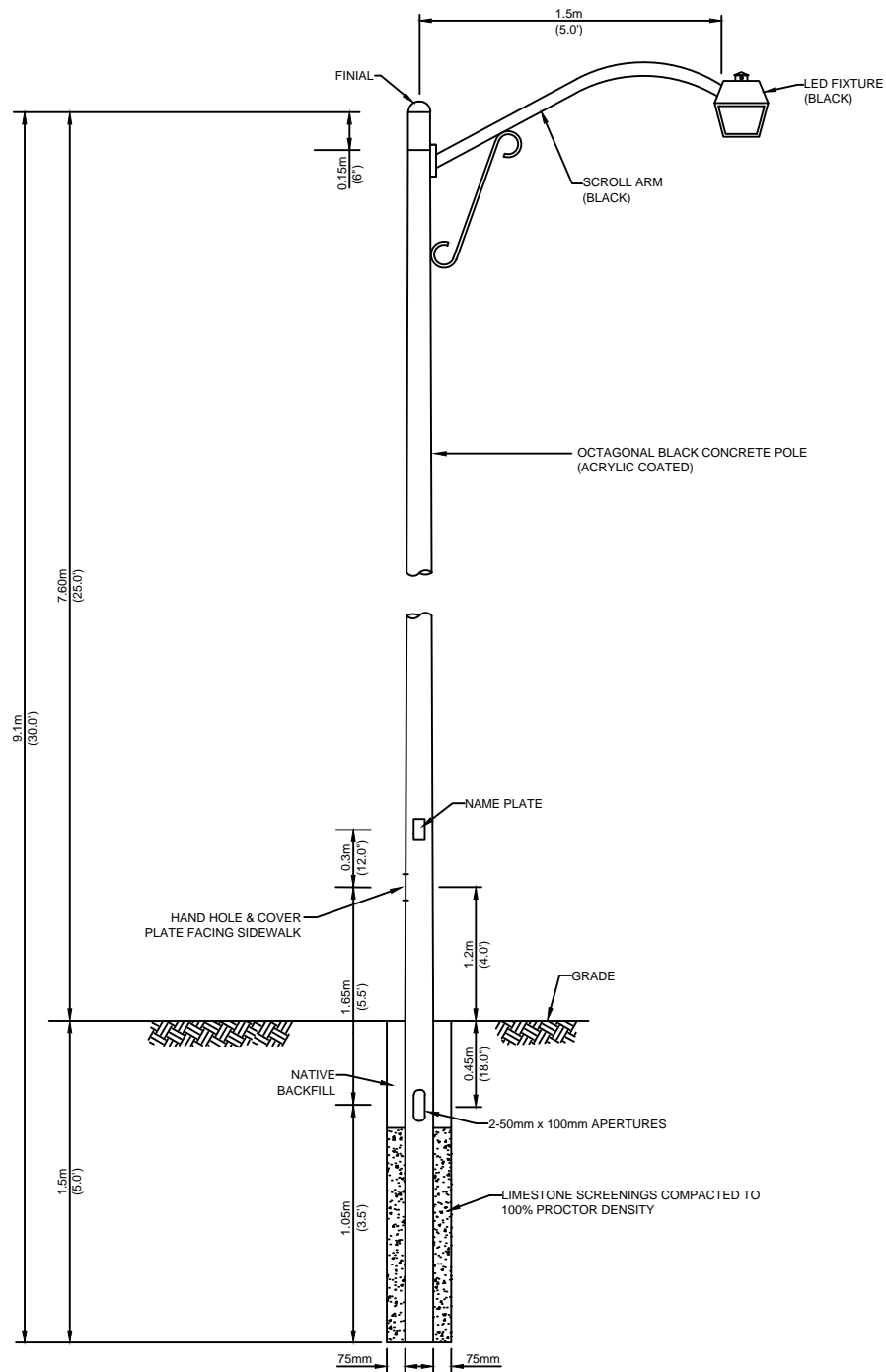
ACCEPTED TO BE IN GENERAL CONFORMANCE WITH THE TOWNSHIP OF KING STANDARDS THIS ACCEPTANCE IS NOT TO BE CONSTRUED AS VERIFICATION OF ENGINEERING CONTENT  _____ TOWNSHIP ENGINEER  DATE: _____	<b>APPROVED</b>  _____ Engineering Department  Region of York Date: _____
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REVISIONS				
No.	Revision	Date	By	Approved

<b>CORPORATION OF THE TOWNSHIP OF KING</b>		
SUBDIVISION NAME STREET OR EASEMENT LIMITS		
CONSULTANTS NAME, ADDRESS AND TELEPHONE No.		
ENGINEERS STAMP	Scale	Project No:
	Drawn By:	Drawing No:
	Designed By:	
	Checked By:	
	Date:	

- NOTES:
1. THE ABOVE TITLE BLOCK MUST APPEAR ON CONTRACT DRAWINGS.
  2. "APPROVED" BLOCKS MUST APPEAR ON DRAWINGS IN A POSITION WHICH WILL NOT RESTRICT REVISION TABLE.

	<b>TOWNSHIP OF KING</b>	APPROVED M.C.	DATE OF ISSUE FEB. 1980
	DRAWING TITLE BLOCK	REVISION	<b>KS-500</b>
		DATE OF REVISION NOV. 2009	



**NOTES:**

1. DIMENSIONS ARE TYPICAL AND SUBJECT TO ADJUSTMENT TO SUIT SPECIAL LIGHTING DESIGN.
2. SEE SECTION J FOR DETAILS AND SPECIFICATIONS



**TOWNSHIP OF KING**

**TYPICAL POLE & LUMINAIRE  
(DECORATIVE)**

APPROVED

M.C.

DATE OF ISSUE

AUG. 1981

REVISION

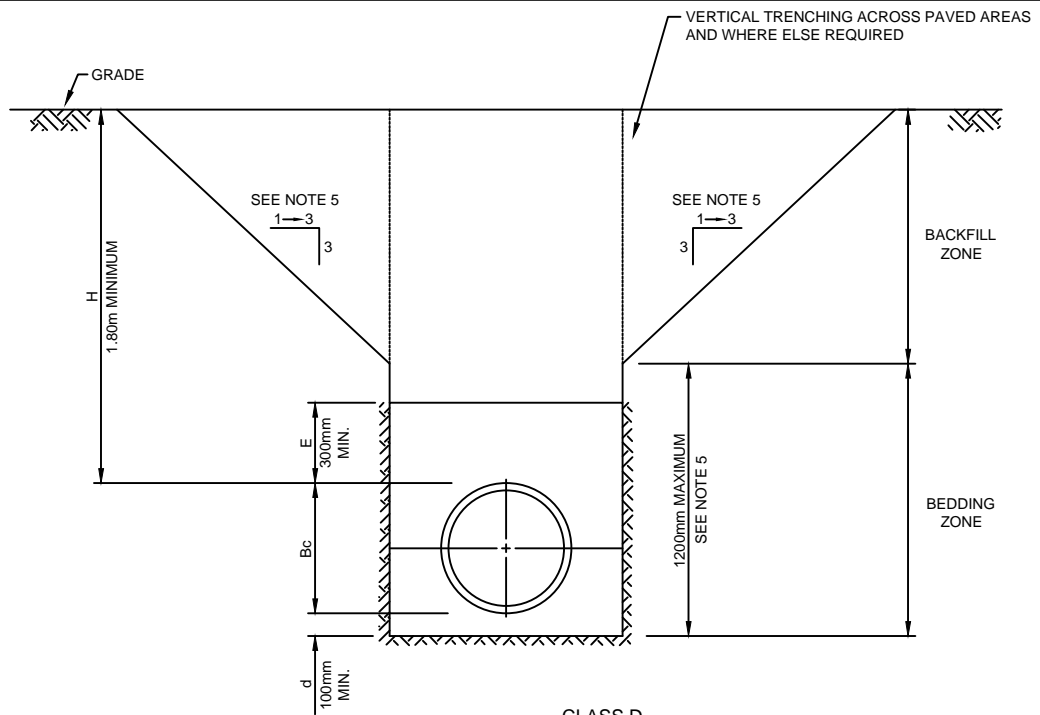
DRAWING No.

DATE OF REVISION

FEB. 2017

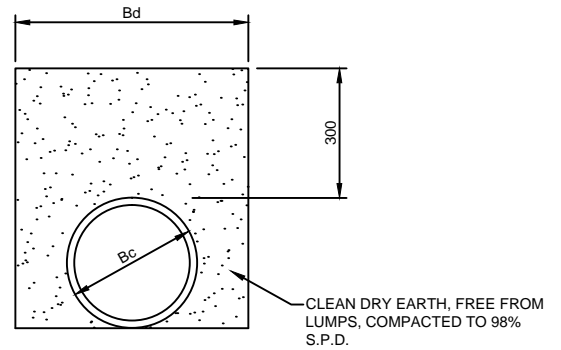
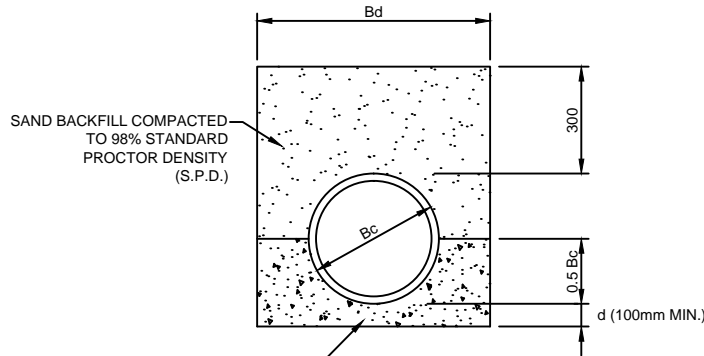
**KS-701**





**CLASS B**  
L<sub>f</sub> = 1.9  
(FOR CONCRETE PRESSURE PIPE WATERMAINS)

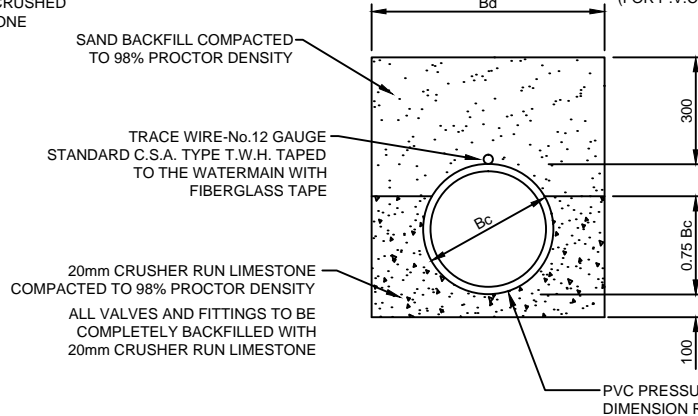
**CLASS D**



**DRY TRENCH**  
20mm CRUSHER RUN LIMESTONE  
COMPACTED TO 98% S.P.D.

**WET TRENCH**  
HL8 BLEND OF CRUSHED  
CLEAR STONE

**CLASS F**  
(FOR P.V.C. WATERMAINS ONLY)



**LEGEND**

- Bc = OUTSIDE DIAMETER
- Bd = WIDTH OF TRENCH
- = Bc + 0.60m WITH MINIMUM 0.90m
- = Bc + WIDTH OF SHORING + 0.60m
- d = DEPTH OF BEDDING MATERIAL BELOW PIPE
- H = BACKFILL COVER ABOVE TOP OF PIPE

**NOTES:**

1. ALL DIMENSIONS ARE IN MILLIMETRES OR METRES.
2. ALL BACKFILL MATERIAL TO BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
3. CONNECTORS USED FOR SPLICING TRACER WIRES SHALL BE WING NUT TYPE WITH NYLON SHELL AND NON-CORROSIVE STEEL WIRE SPRING.
4. TRENCH DIMENSIONS AND SLOPING OF WALLS TO BE UNDERTAKEN IN ACCORDANCE WITH REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, AS AMENDED.



**TOWNSHIP OF KING**

**WATERMAIN TRENCH  
AND BEDDING DETAILS**

**APPROVED**

M.C.

**DATE OF ISSUE**

FEB. 1980

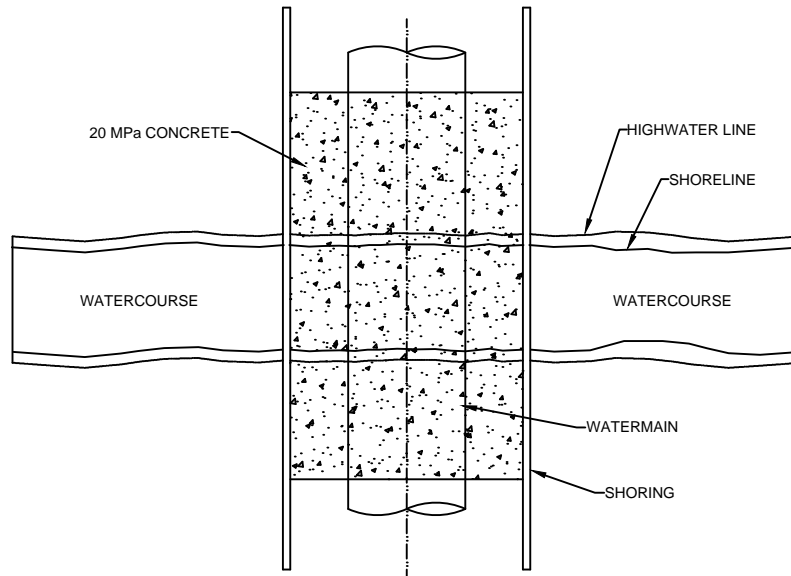
**REVISION**

**DRAWING No.**

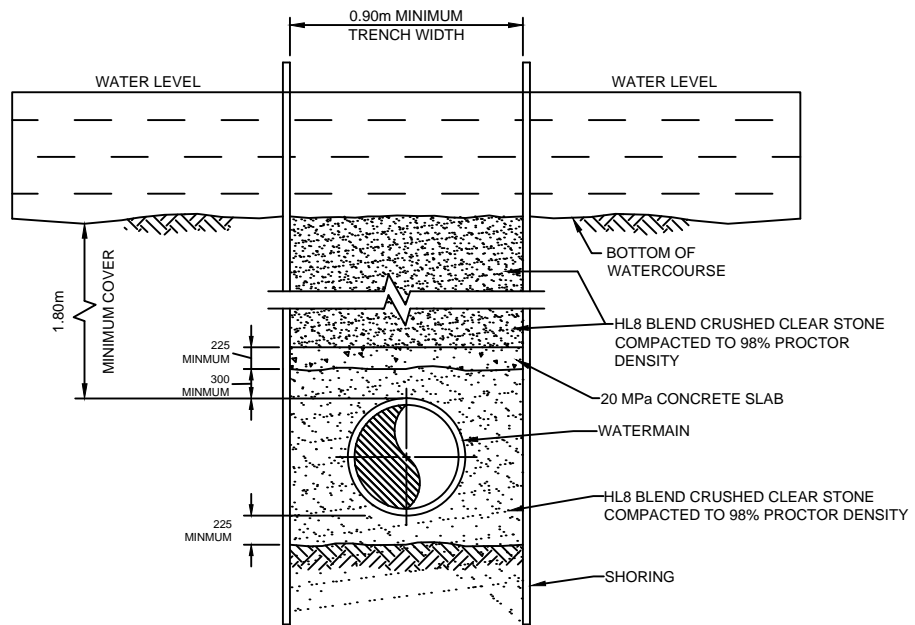
**DATE OF REVISION**

NOV. 2015

**KS-801**



PLAN



ELEVATION

NOTES:

1. ALL SLOPING MUST BE CUT OFF AT CREEK BED WHEN CONSTRUCTION IS COMPLETED.
2. VALVES WILL BE PROVIDED AT BOTH ENDS OF WATER CROSSING ABOVE THE HIGHWATER LINE AT THE DISCRETION OF THE TOWNSHIP ENGINEER.
3. ALL DIMENSIONS ARE IN MILLIMETRES OR METRES UNLESS OTHERWISE SPECIFIED.



**TOWNSHIP OF KING**

**WATERMAIN TRENCH DETAIL  
UNDER WATERCOURSE**

APPROVED

M.C.

DATE OF ISSUE

FEB. 1980

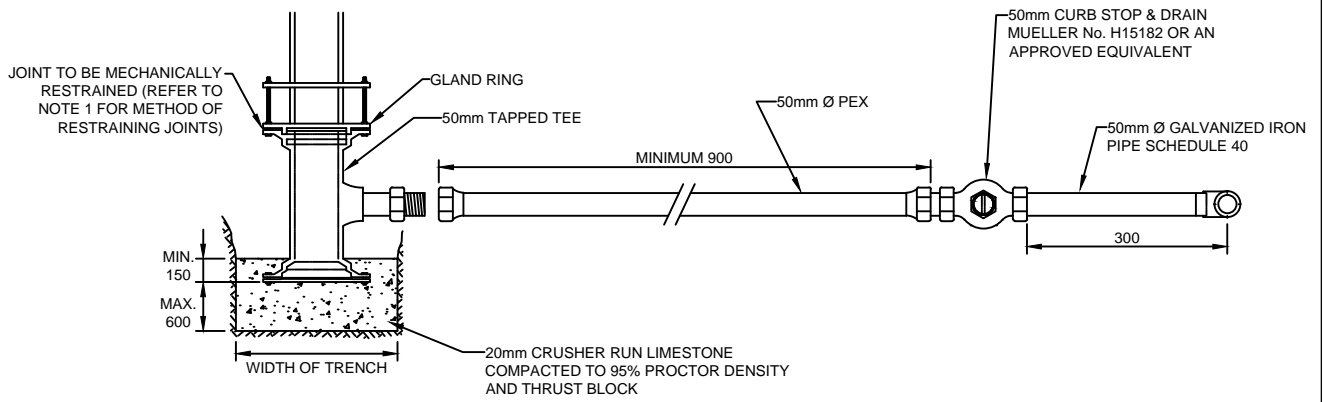
REVISION

DRAWING No.

DATE OF REVISION

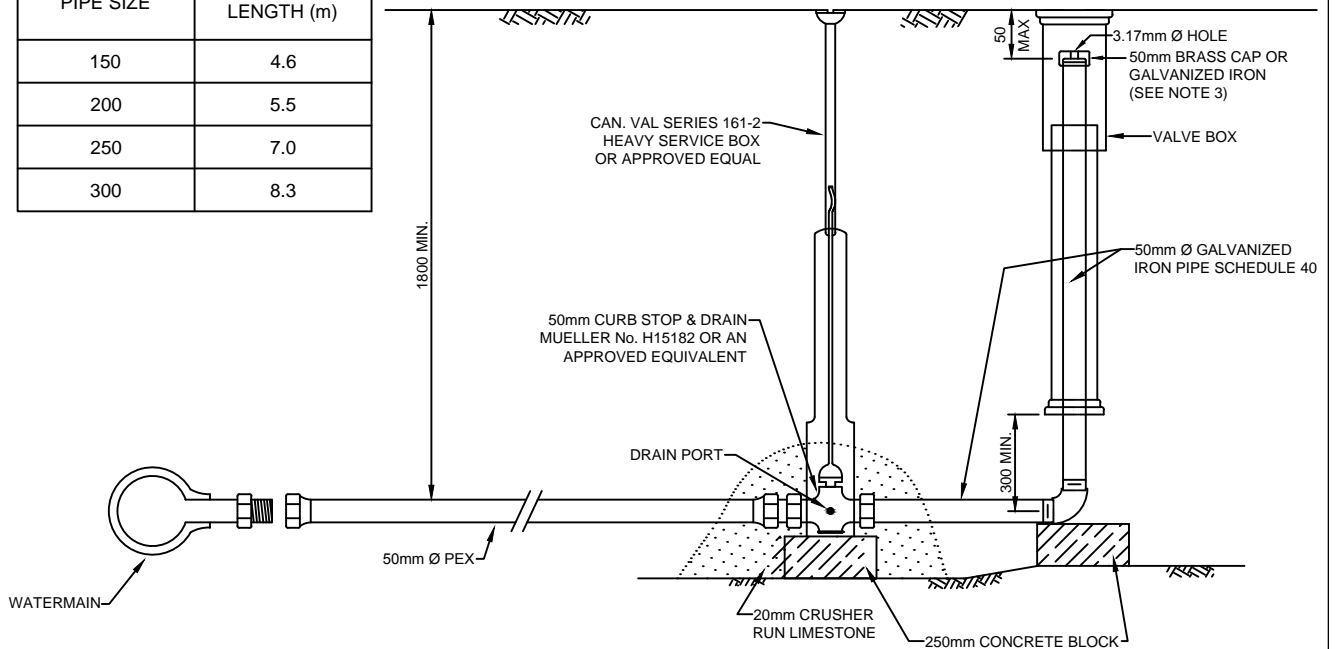
NOV. 2009

**KS-802**



PLAN

PIPE SIZE	MIN. RESTRAINED LENGTH (m)
150	4.6
200	5.5
250	7.0
300	8.3



ELEVATION

NOTES:

- JOINTS ON PVC MAIN ARE TO BE RESTRAINED USING UNI-FLANGE SERIES 1300 RESTRAINER (OR APPROVED EQUAL).
- ALL JOINTS ENCOUNTERED WITHIN THE SPECIFIED RESTRAINING LENGTH ON TABLE 1, FROM THE FIRST RESTRAINED JOINT SHALL BE RESTRAINED.
- THREADS ON CAP TO BE GREASED AND CAP TO BE INSTALLED LOOSELY.
- BLOW-OFF AND TAPPED TEE TO BE COMPLETELY BACKFILLED WITH HL8 STONE.
- ALL DIMENSIONS ARE IN MILLIMETRES.



TOWNSHIP OF KING

50mm BLOWOFF FOR WATERMAIN WITH MECHANICALLY RESTRAINED JOINTS

APPROVED  
M.C.

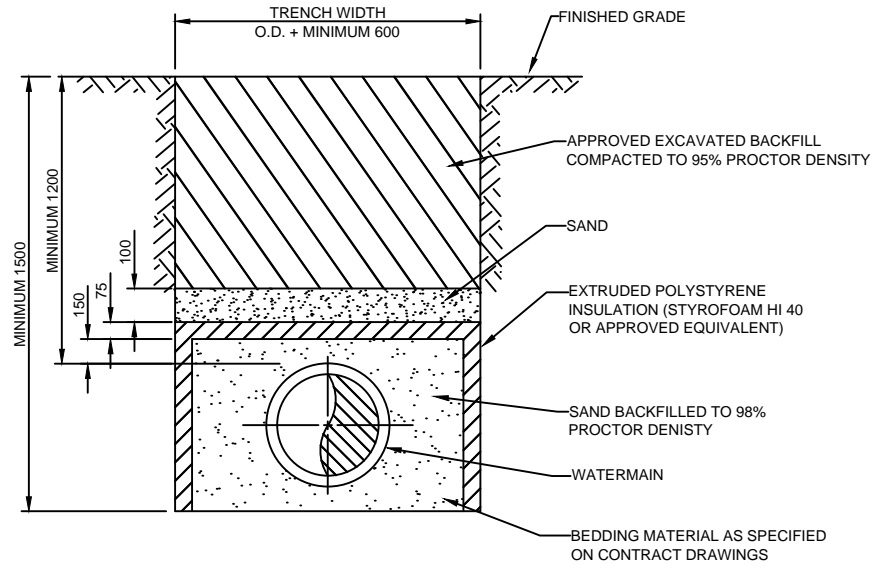
DATE OF ISSUE  
FEB. 1980

REVISION

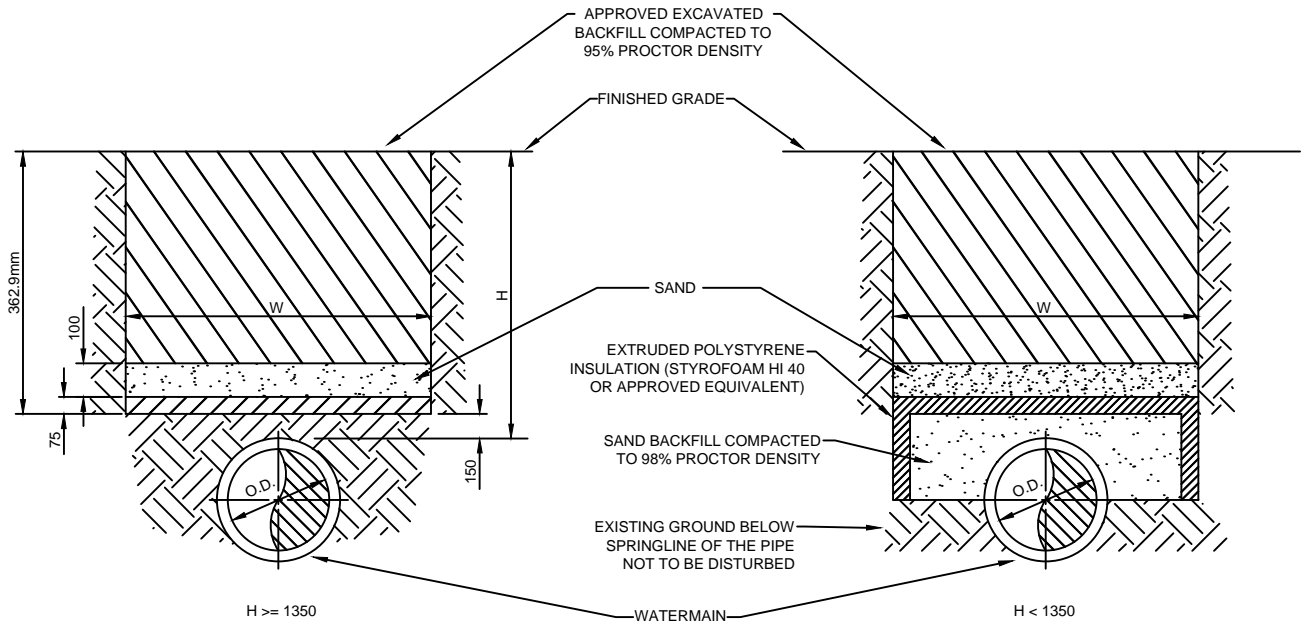
DRAWING No.

DATE OF REVISION  
OCT. 2016

KS-803



INSULATION OF NEW SERVICES



INSULATION OF EXISTING SERVICES

$W = O.D. + 2(1500-H)$  OR  $O.D. + 600\text{mm}$  WHICHEVER IS GREATER

WHERE: W = INSULATION WIDTH  
O.D. = OUTSIDE DIAMETER OF PIPE TO BE INSULATED  
H = DEPTH OF PIPE TO BE INSULATED  
(MINIMUM = 1200mm)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.



**TOWNSHIP OF KING**

**METHODS OF INSULATING  
WATERMAINS**

APPROVED

M.C.

DATE OF ISSUE

JAN. 1990

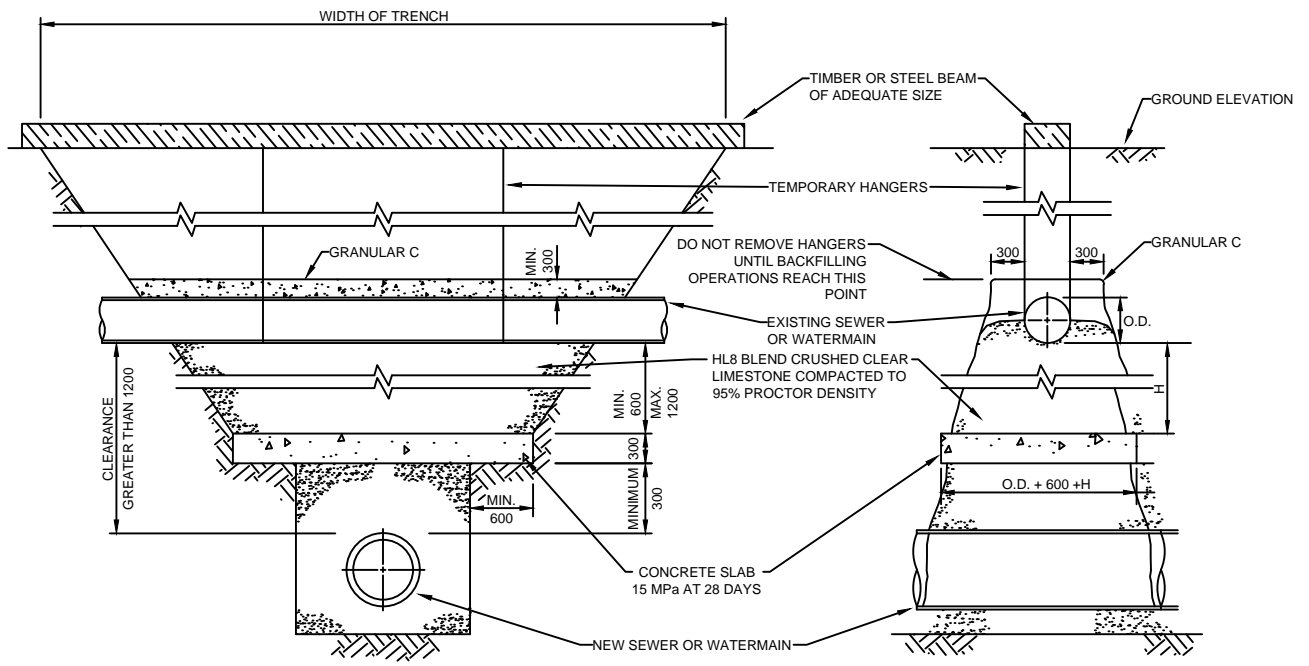
REVISION

DRAWING No.

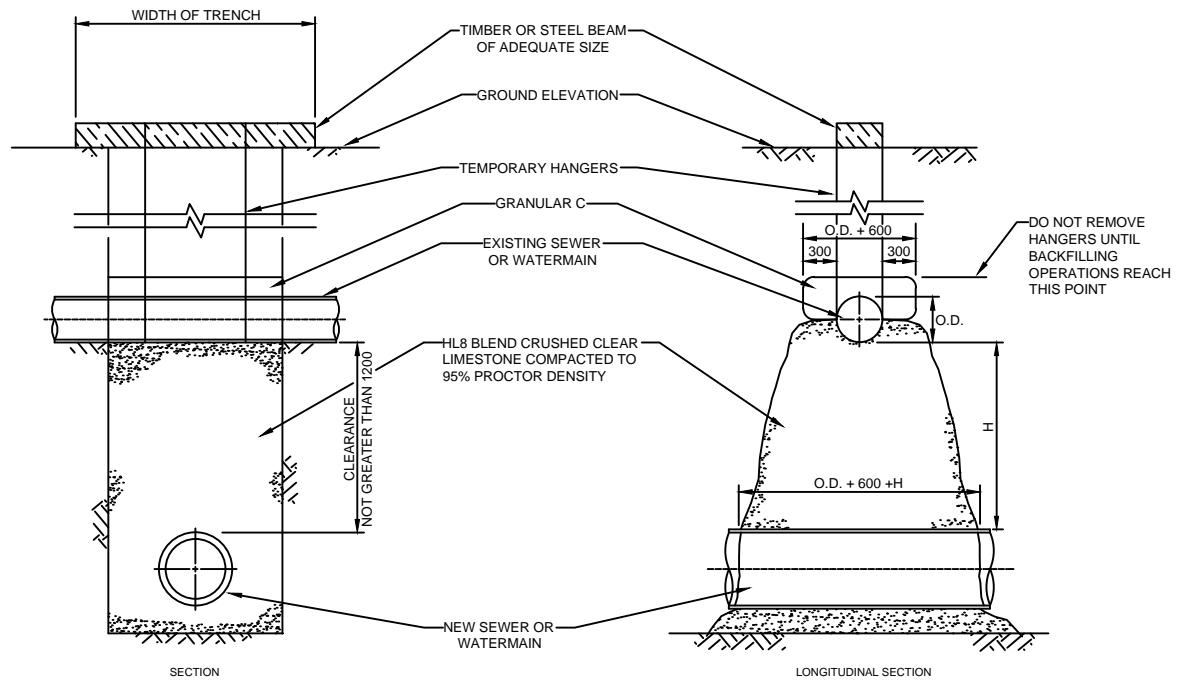
DATE OF REVISION

NOV. 2009

**KS-804**



CLEARANCE GREATER THAN 1200



CLEARANCE NOT GREATER THAN 1200

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.



**TOWNSHIP OF KING**

**SUPPORTS FOR WATERMAINS AND SEWERS  
CROSSING WATERMAIN TRENCHES**

APPROVED

M.C.

DATE OF ISSUE

JAN. 1990

REVISION

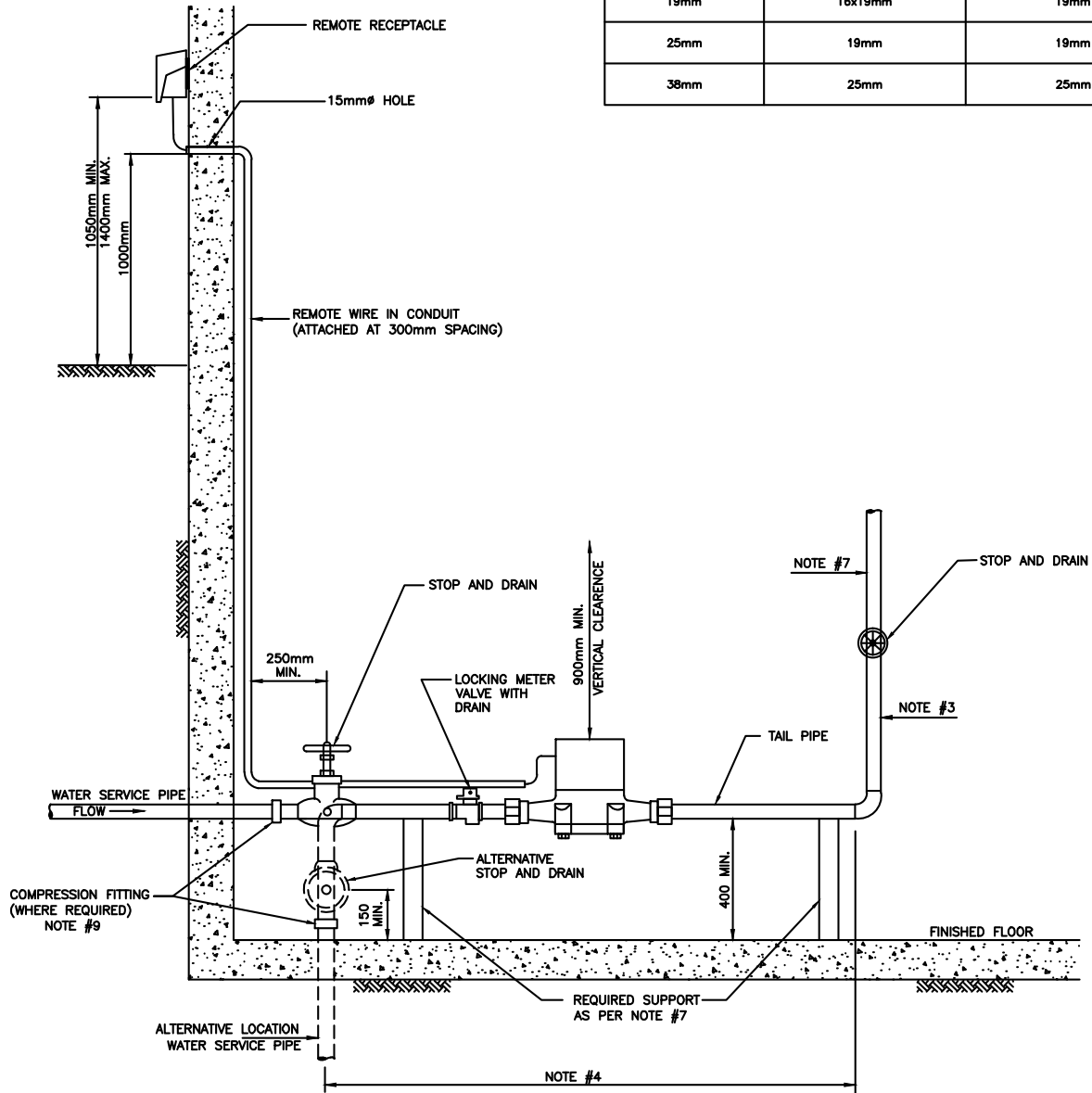
DRAWING No.

DATE OF REVISION

NOV. 2009

**KS-805**

TABLE		
PIPE SIZE IN	METER SIZE	PIPE SIZE OUT
19mm	16x19mm	19mm
25mm	19mm	19mm
38mm	25mm	25mm



**NOTES:**

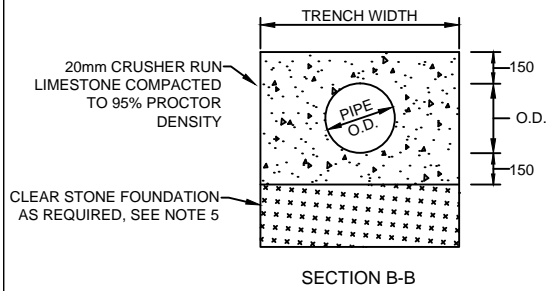
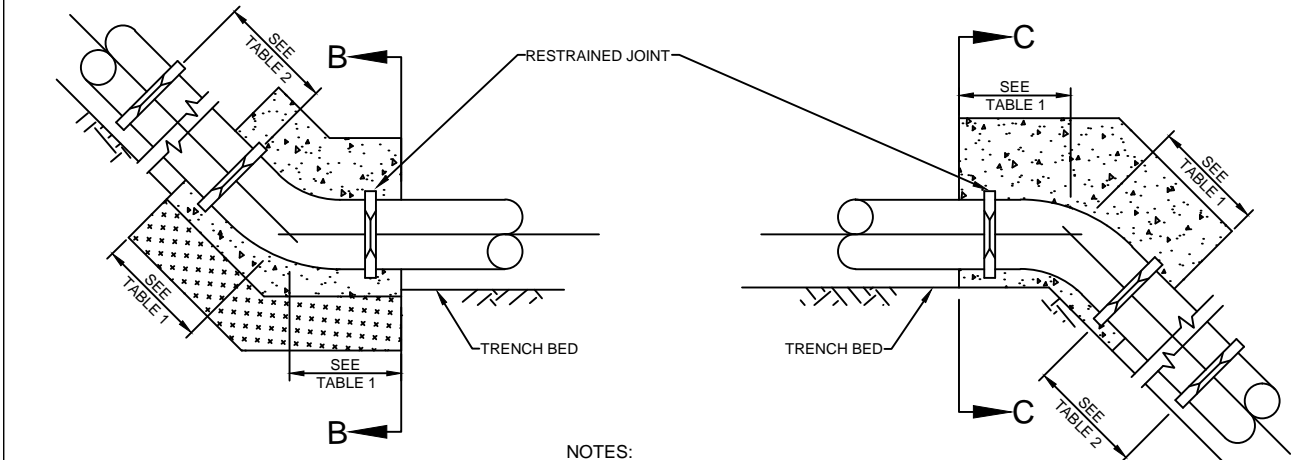
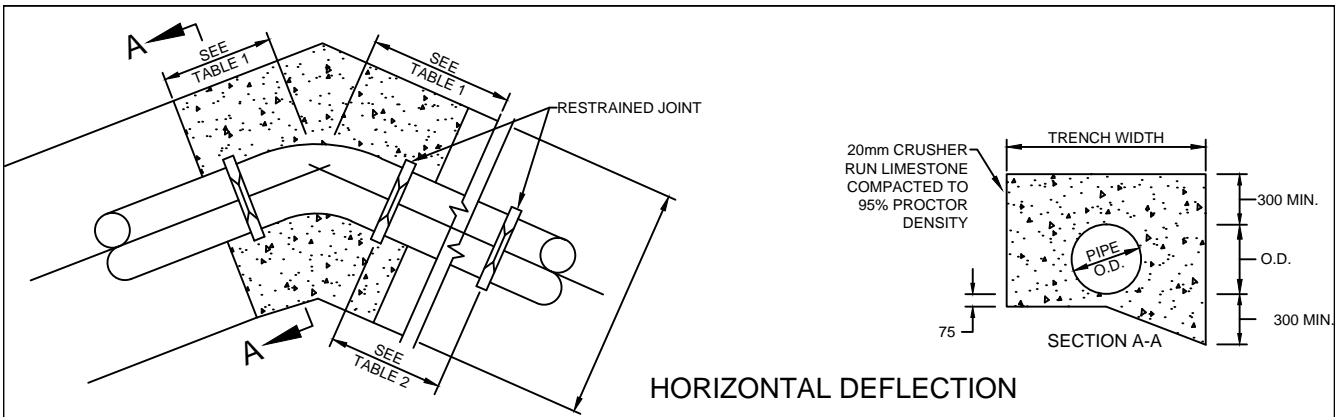
- 175mm MINIMUM CLEARANCE BETWEEN WALL AND C/L OF PIPE AND 75mm HORIZONTAL CLEARANCE BETWEEN WALL AND METER.
- STOP AND DRAIN TO BE THE SAME SIZE AS INCOMING PIPE; VALVE TO BE PER BUILDING CODE.
- MAINTAIN SERVICE PIPE DIAMETER TO CONNECTION AT HOT WATER TANK (OBC 7.6.3.4).
- ALL COPPER PIPING AFTER THE STOP AND DRAIN SHALL BE TYPE "L" COPPER. PIPING FOR METER TO BE RUN HORIZONTALLY & METER TO BE INSTALLED ON HORIZONTAL PIPING ONLY.
- METER MUST NOT BE LOCATED BEHIND FURNACES, PARTITION WALLS, WATER TANKS, ETC.
- WHERE REQUIRED, DUAL CHECK VALVE BACKFLOW PREVENTER IS TO BE INSTALLED DOWNSTREAM OF THE METER.
- IF PLUMBING RISER/WATER SERVICE IS PLASTIC, SUPPORTS SHALL BE REQUIRED FOR METER ASSEMBLY AREA. TO AVOID INSTALLING SUPPORTS, RISER SHALL BE COPPER AND ATTACHED TO LOWER FLOOR LEVEL JOISTS.
- METER AND TOUCHPAD TO BE SUPPLIED BY KING TOWNSHIP.
- COMPRESSION FITTING TO BE SUFFICIENTLY STAYED, CLAMPED, ANCHORED OR BUTTRESSED IN ACCORDANCE WITH 7.3.4.8 OF THE OBC.



**TOWNSHIP OF KING**

19mm to 25mm WATER METER  
INSTALLATION IN BUILDING

APPROVED M.C.	DATE OF ISSUE JAN. 2017
REVISION	DRAWING No. <b>KS-820</b>
DATE OF REVISION	



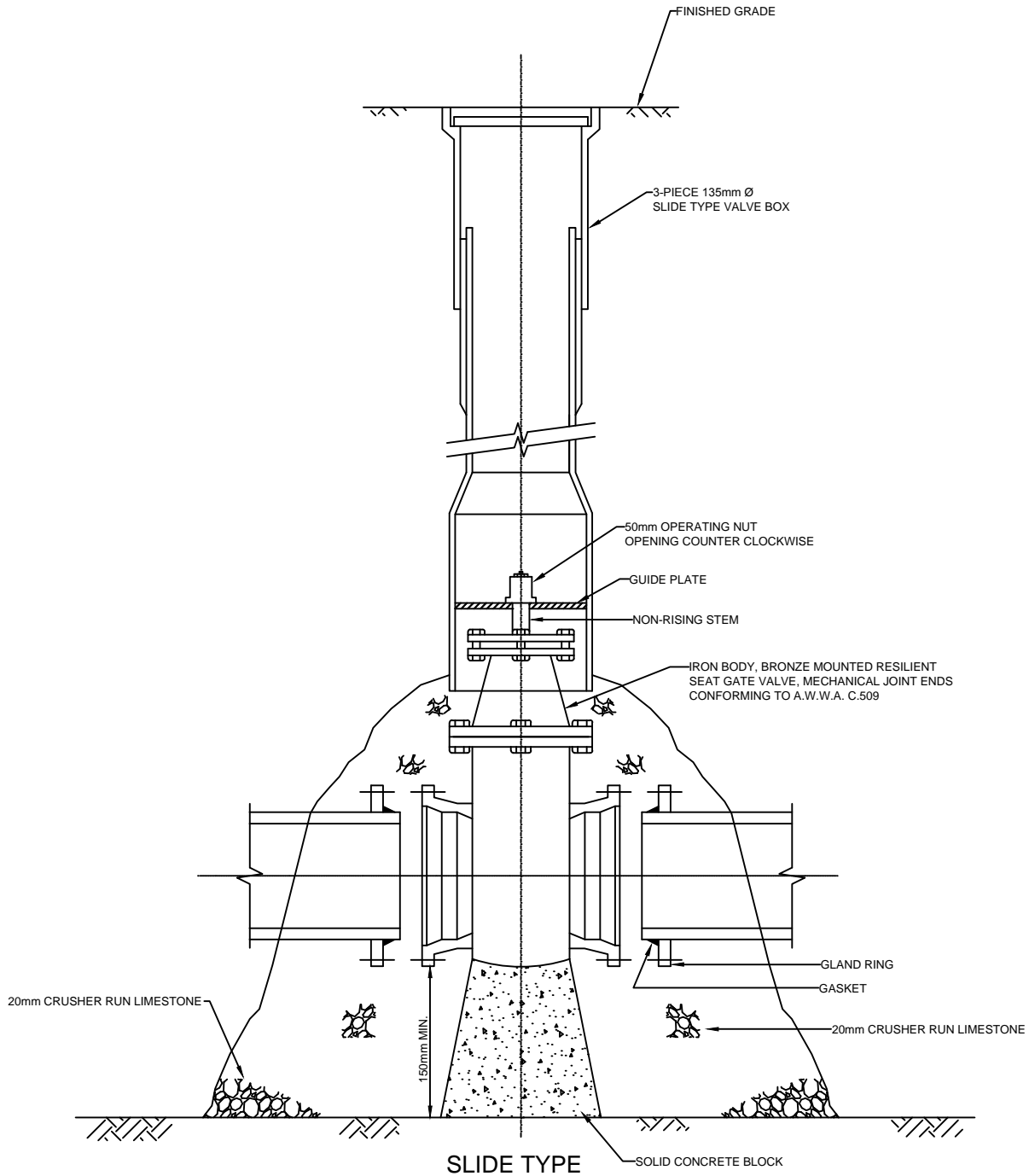
**NOTES:**

1. ALL JOINTS ENCOUNTERED WITHIN THE SPECIFIED RESTRAINING LENGTH OF BOTH SIDES OF DEFLECTION SHALL BE RESTRAINED.
2. REFER TO OPSD FOR JOINT RESTRAINING DETAIL.
3. GRANULAR THRUST BLOCKS SHALL BE FULLY EXTENDED AND COMPACTED AGAINST TRENCH WALLS.
4. GRANULAR THRUST BLOCKS SHALL BE ENCLOSED WITH FILTER FABRIC IF GROUND WATER TABLE IS ABOVE THE TRENCH BED OR IF GROUND WATER IS SEEPING THROUGH TRENCH WALLS.
5. IF THE BEARING CAPACITY OF TRENCH BED RESISTING DOWNWARD THRUST IS LESS THAN 100 KN/m<sup>2</sup>, CLEAR STONE FOUNDATION SHALL BE PROVIDED AS REQUIRED.
6. CORROSION PROTECTION SHALL ALSO BE PROVIDED.
7. ALL DIMENSIONS IN MILLIMETRES.

DEFLECTION ANGLE	PIPE DIAMETER			
	150	200	250	300
11.25°	400	500	550	600
22.5°	400	500	550	600
45°	450	550	600	650
90°	600	700	750	850

MINIMUM RESTRAINING LENGTH (m)										
PIPE DATA	VERTICAL DEFLECTION						HORIZONTAL DEFLECTION			
	DOWNWARD THRUST			UPWARD THRUST						
	11.25°	22.5°	45°	11.25°	22.5°	45°	11.25°	22.5°	45°	90°
150	1.2	2.1	4.0	4.8	7.6	9.2	1.2	2.1	4.0	6.0
200	1.5	3.0	4.9	6.7	9.7	11.3	1.5	3.0	4.9	7.9
250	1.8	3.6	6.4	9.0	12.2	14.0	1.8	3.6	6.4	9.0
300	2.1	4.3	7.3	10.9	14.7	16.6	2.1	4.3	7.3	11.9

	<b>TOWNSHIP OF KING</b>	APPROVED M.C.	DATE OF ISSUE JAN. 1990
	JOINT RESTRAINING LENGTH (IN COMBINATION WITH GRANULAR THRUST BLOCK) FOR P.V.C. PIPE	REVISION	DRAWING No. <b>KS-830</b>
		DATE OF REVISION NOV. 2015	



NOTES:

1. VALVE BOX TO BE ADEQUATELY BRACED WHILE BACKFILLING AND MUST REMAIN PLUMB.
2. VALVE BOX EXTENSION TO BE USED ONLY IF REQUIRED.
3. A 50x100x1500 MARKER STAKE PAINTED BLUE SHALL BE INSTALLED BESIDE EACH VALVE AT THE TIME OF INSTALLATION.
4. ALL DIMENSIONS ARE IN MILLIMETRES.
5. VALVE TO BE COMPLETELY BACKFILLED WITH 20mm CRUSHER RUN LIMESTONE.
6. CORROSION PROTECTION SHALL ALSO BE PROVIDED.



**TOWNSHIP OF KING**

150mm TO 250mm DIAMETER  
GATE VALVE & BOX

APPROVED

M.C.

DATE OF ISSUE

FEB. 1980

REVISION

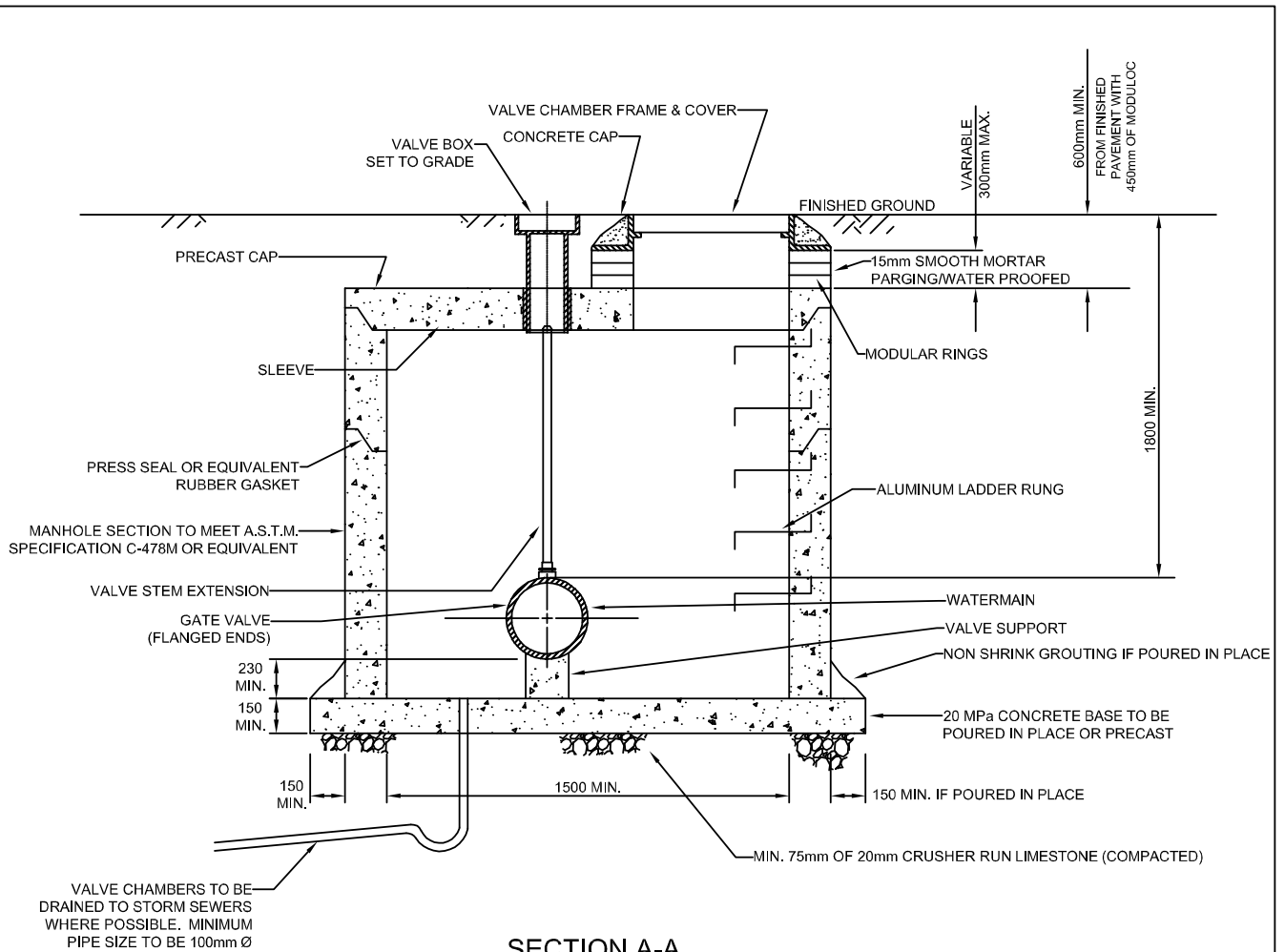
DRAWING No.

DATE OF REVISION

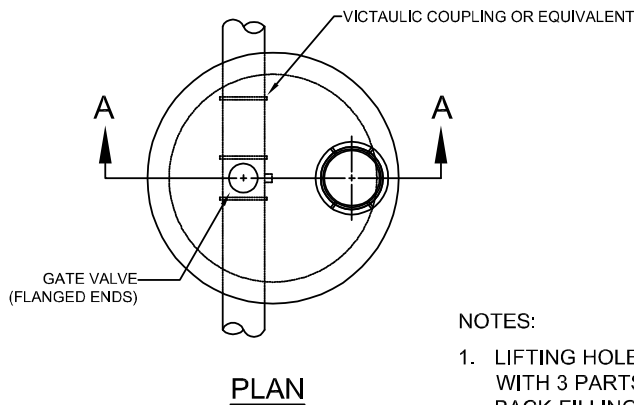
NOV. 2009

**KS-840**






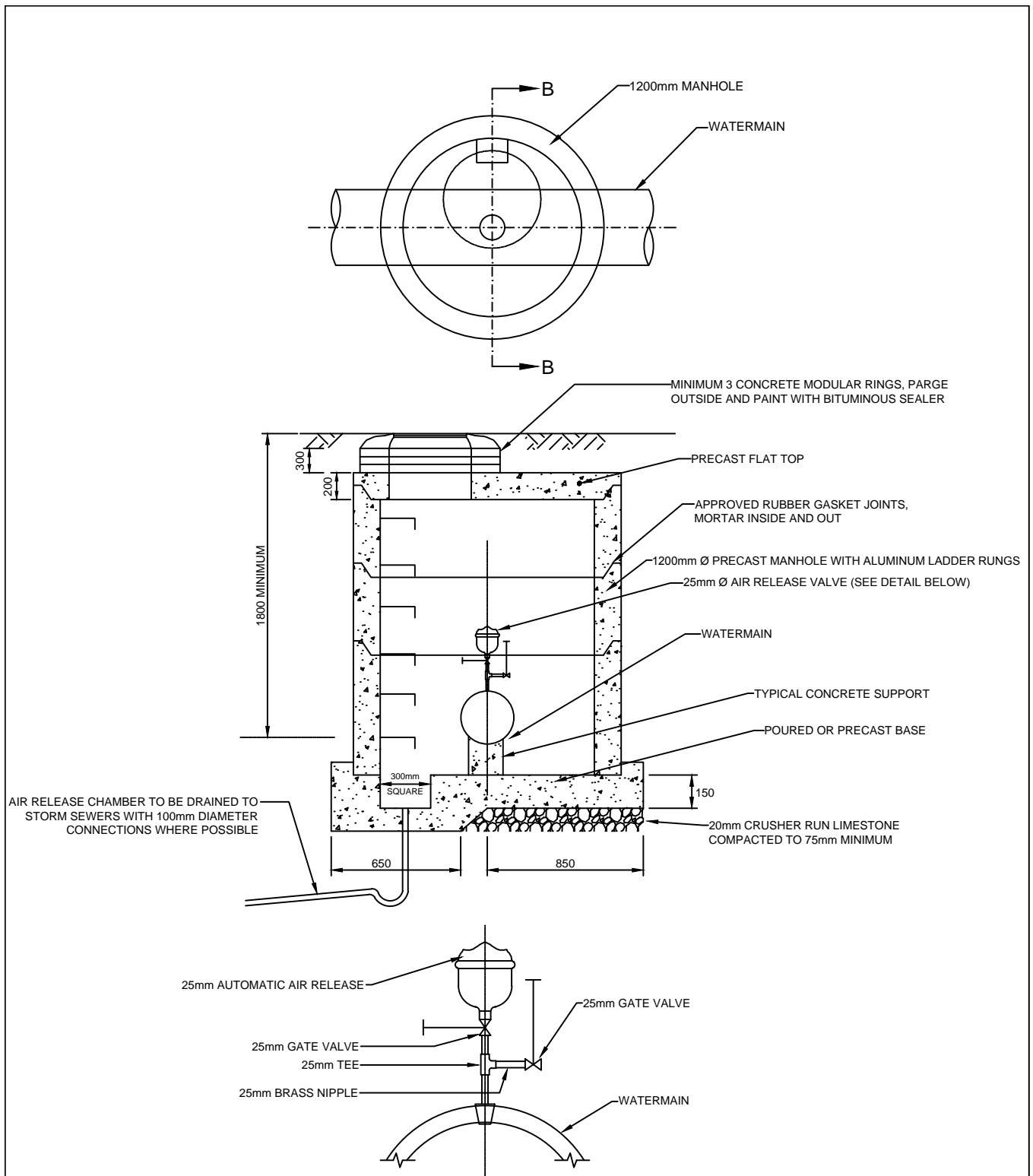
**SECTION A-A**



**NOTES:**

1. LIFTING HOLES IN PRECAST SECTIONS TO BE COMPLETELY FILLED WITH 3 PARTS SAND, 1 PART CEMENT MORTAR AND POINTED BEFORE BACK-FILLING.
2. FIRST MANHOLE STEP TO BE 75mm BELOW FRAME. LAST STEP TO BE 300mm ABOVE CHAMBER FLOOR.
3. GASKET TO BE PLACED AS PER SPECIFICATIONS.
4. VALVE CHAMBER TO HAVE A MAXIMUM OF 300mm MODULAR RINGS.
5. ALL DIMENSIONS ARE IN MILLIMETRES.
6. GRANULAR 'C' BACKFILL TO BE PLACED TO A MINIMUM THICKNESS OF 300mm ON ALL SIDES AND COMPACTED TO 100% STANDARD PROCTOR DENSITY.
7. ALL VALVE CHAMBERS ARE TO BE WATERPROOFED.

	<b>TOWNSHIP OF KING</b>	APPROVED M.C.	DATE OF ISSUE FEB. 1980
	SEMI-PRECAST CONCRETE VALVE CHAMBER FOR 300mm DIA. PIPE OR LARGER	REVISION	DRAWING No.
		DATE OF REVISION JAN. 2017	<b>KS-841</b>



**NOTES:**

1. ALL FITTINGS TO BE BRASS.
2. ALL DIMENSIONS ARE IN MILLIMETRES.
3. GRANULAR 'C' BACKFILL TO BE PLACED TO A MINIMUM THICKNESS OF 300mm ON ALL SIDES AND COMPACTED TO 100% STANDARD PROCTOR DENSITY.
3. SEE APPROVED MATERIAL LISTING FOR AIR RELEASE VALVE



**TOWNSHIP OF KING**

**AIR RELEASE CHAMBER**

APPROVED  
M.C.

DATE OF ISSUE  
JAN. 1990

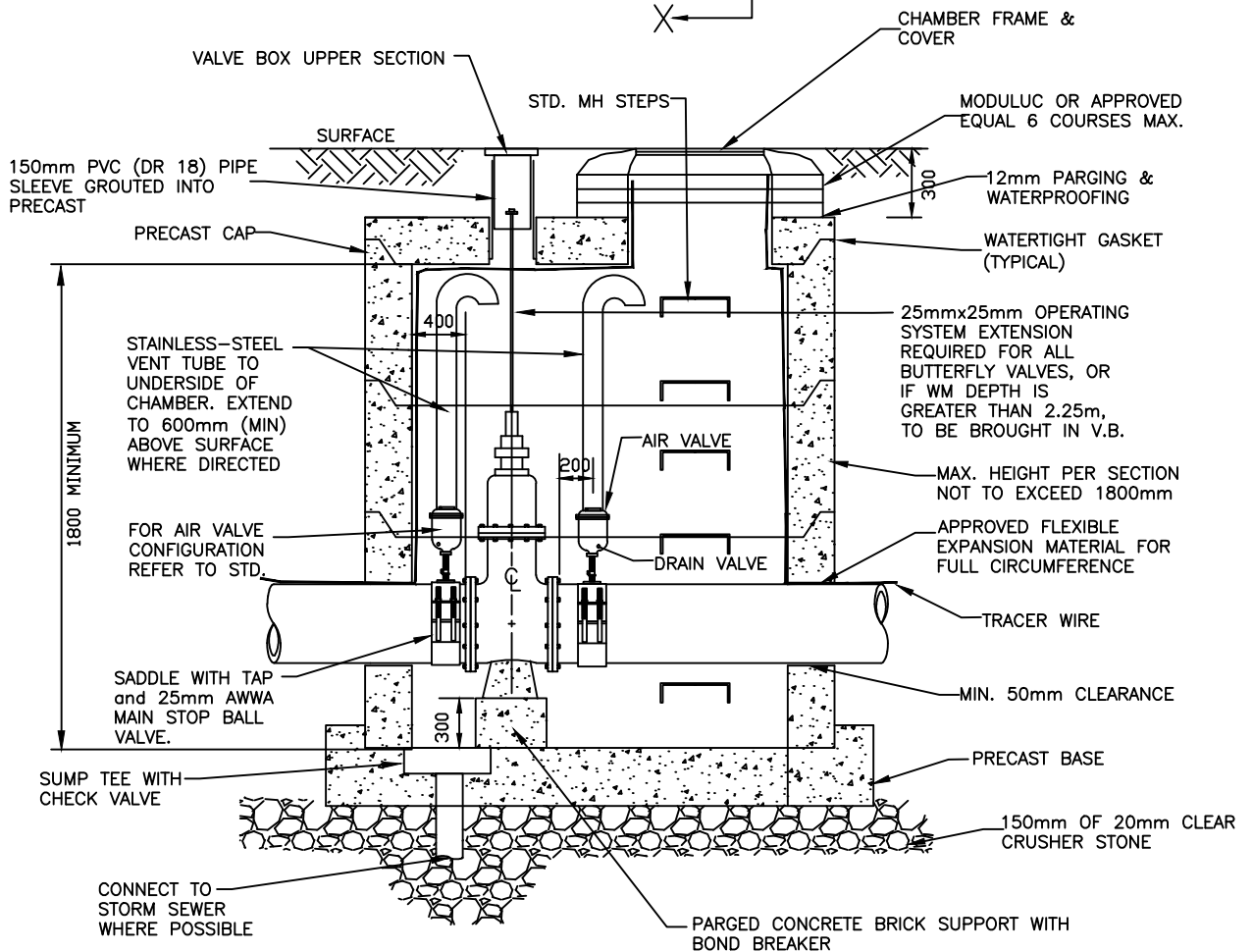
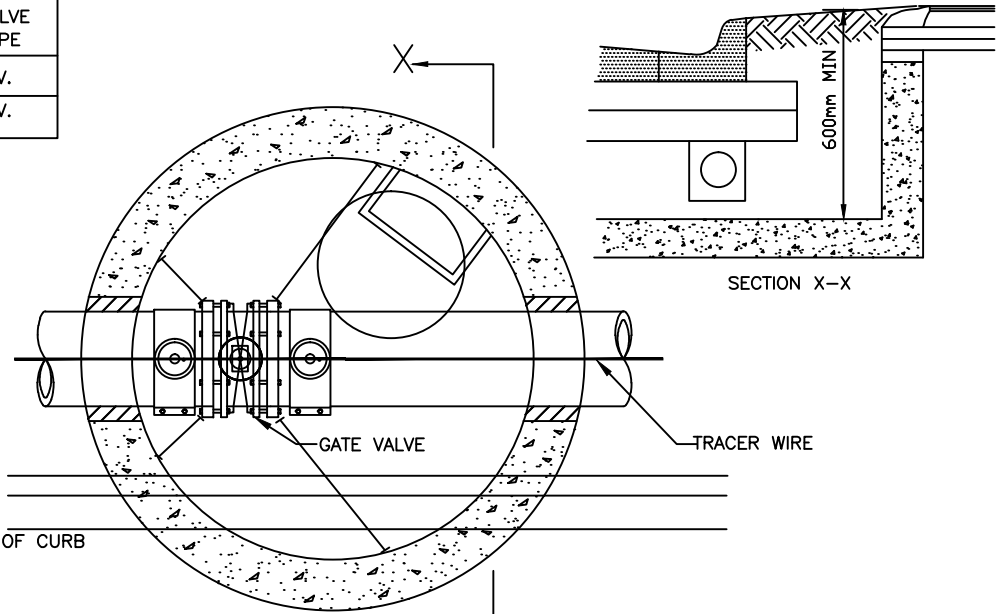
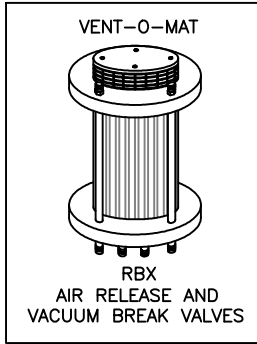
REVISION

DRAWING No.

DATE OF REVISION  
FEB. 2017

**KS-843**

VALVE SIZE	CHAMBER I.D.	VALVE TYPE
100-300	1500	G.V.
400	1800	G.V.



GENERAL NOTES:

ALL RESTRAINTS IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS

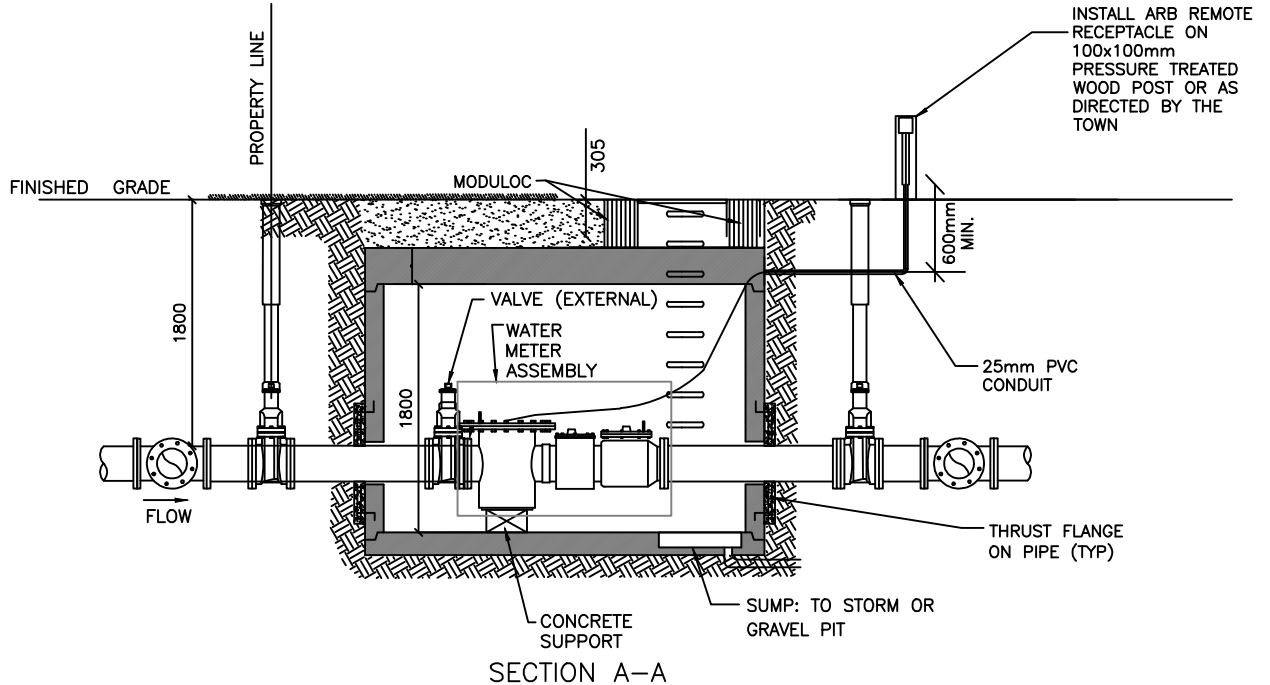
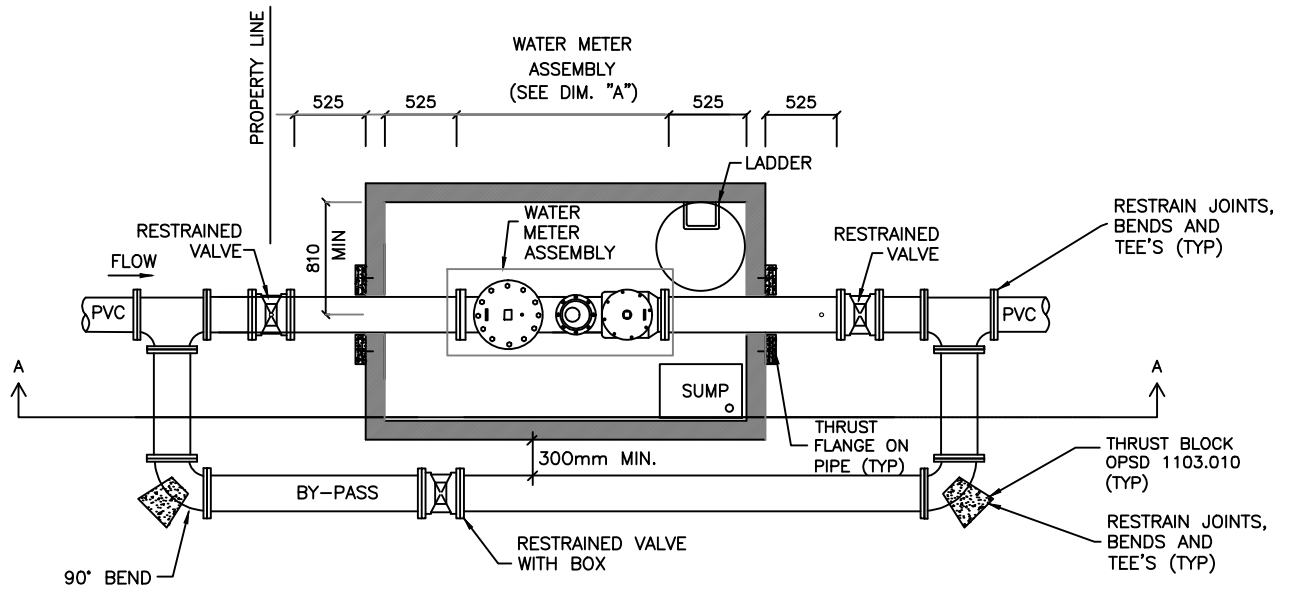
ALL DIMENSION ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN



TOWNSHIP OF KING

COMBINATION AIR AND VALVE CHAMBER

APPROVED M.C.	DATE OF ISSUE OCT. 2010
REVISION	DRAWING No.
DATE OF REVISION NOV. 2015	KS-844



**NOTES:**

1. CONCRETE TO BE 32MPa COMPRESSIVE STRENGTH.
2. COPPER PIPE TO BE TYPE K HARD UNLESS NOTED OTHERWISE.
3. 25mm PVC OR GALVANIZED METAL CONDUIT TO BE INSTALLED FROM WATER METER TO A SUITABLE LOCATION.
4. DIMENSIONS OF THE CHAMBER SHALL BE VERIFIED BEFORE INSTALLATION.
5. ALL VALVE CHAMBER CUT-OUTS TO BE FIELD WITH CONCRETE BRICKS AND MORTAR THEN PARGED INSIDE AND OUTSIDE WITH 1:3 MORTARS MIX.
6. POURED BASE SHOULD BE TROWEL FINISHED.
7. ALL PIPE JOINTS INSIDE METER CHAMBER SHALL BE FLANGE TO FLANGE FOR SIZES 100mm AND LARGER.
8. BACKFLOW PREVENTION SHALL BE BY DOUBLE CHECK VALVE ASSEMBLY (DCVA) MEETING REQUIREMENTS OF OBC AND CSA-B64.10, WITH ALL TEST PORTS PLUGGED.

CHAMBER OPSD	METER SIZE	DIM. A
1101.012 (1800 X 2400mm)	4"/100mm	33"/838mm
	6"/150mm	45"/1143mm
1101.016 (2400 X 3600mm)	8"/200mm	53"/1346mm
	10"/250mm	68"/1727mm



**TOWNSHIP OF KING**

**WATER METER INSTALLATION IN CHAMBER  
(FOR COMBINED FIRE & DOMESTIC)**

APPROVED  
M.C.

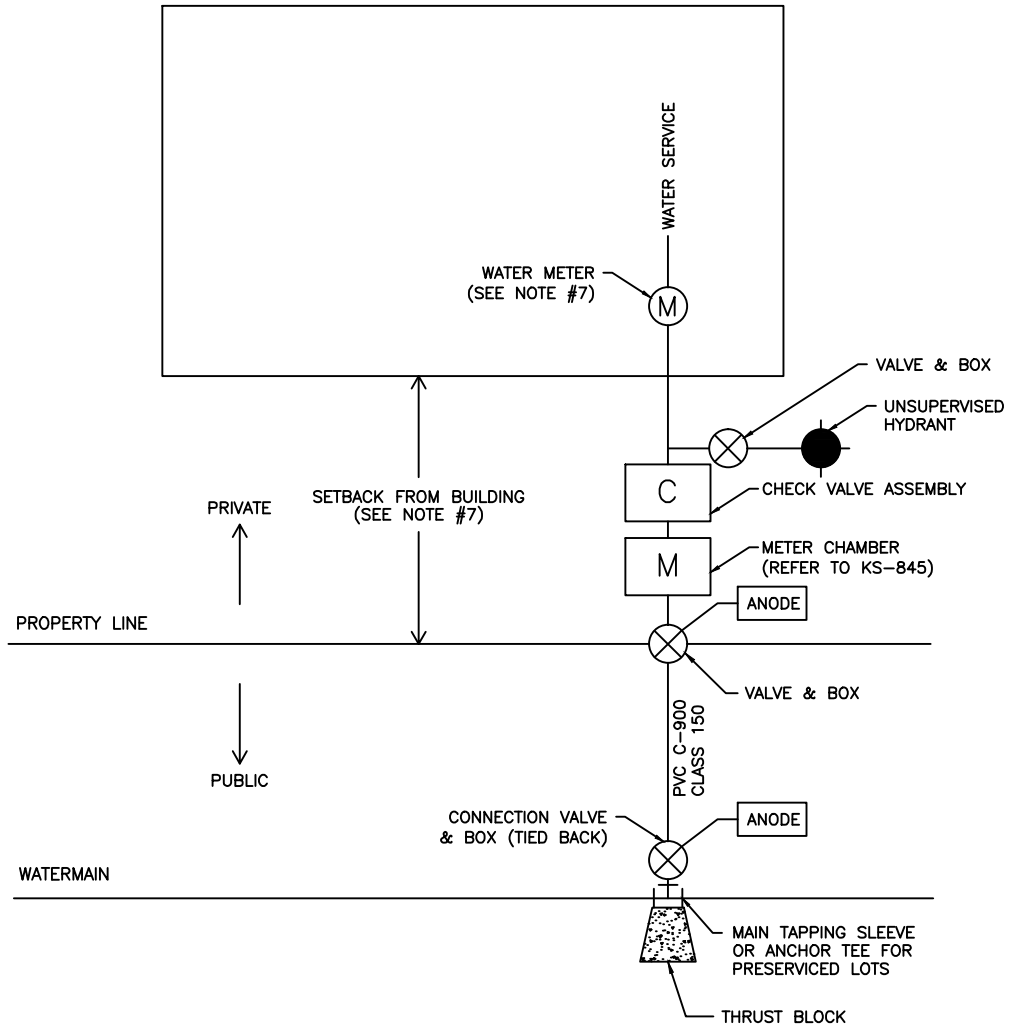
DATE OF ISSUE  
JULY 2012

REVISION

DRAWING No.

DATE OF REVISION  
FEB. 2018

**KS-845**



**NOTES:**

1. REFER TO WATERWORKS MATERIAL SPECIFICATIONS.
2. ANODES TO BE PROVIDED ON ALL IRON FITTINGS.
3. ALL FITTINGS TO BE PROTECTED WITH CORROSION COATINGS.
4. VALVE AT MAIN MUST BE RESTRAINED.
5. TRACER WIRE TO COME UP AT STREET LINE VALVE BOX/CHAMBER.
6. FOR APPROPRIATE WATER METER, REQUEST WATERWORKS DEPARTMENT.
7. FOR BUILDINGS WITH MINIMAL SETBACK, THE BACKFLOW PREVENTOR & METER MAY BE LOCATED INSIDE THE BUILDING ACCORDING TO THE BUILDING CODE, AT THE DISCRETION OF THE DIRECTOR.
8. WATER CONNECTIONS ON PRIVATE SIDE ARE GOVERNED BY BUILDING CODES AND ARE SUBJECT TO REQUIREMENTS FROM THE DIRECTOR.



**TOWNSHIP OF KING**

**WATER SERVICE CONNECTIONS FOR  
SINGLE ICI / COMMON ELEMENT  
CONDOMINIUM BUILDING**

APPROVED  
M.C.

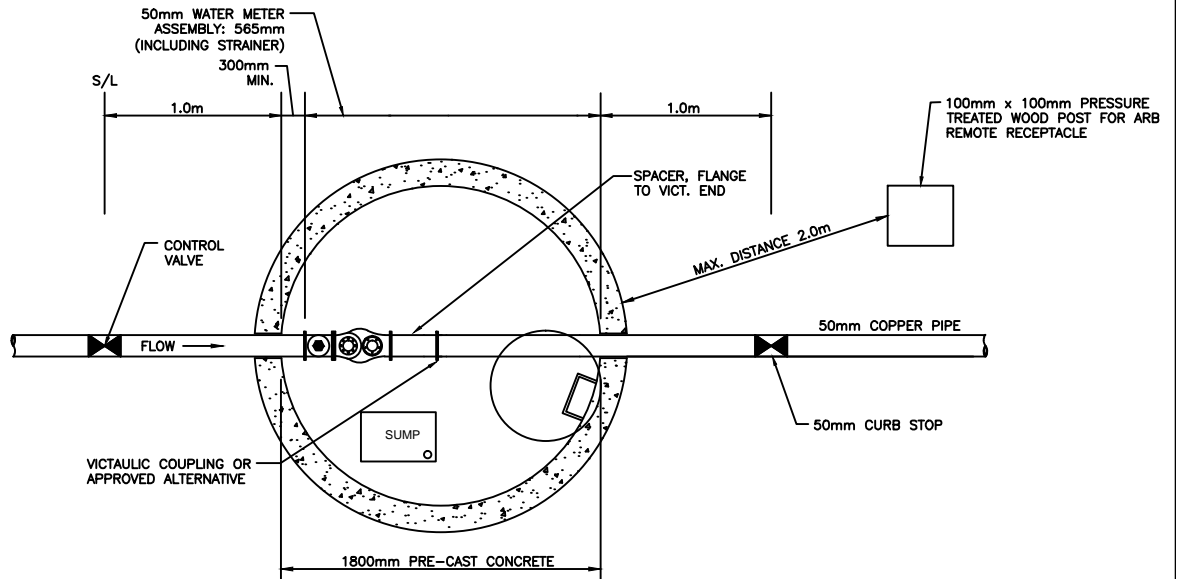
DATE OF ISSUE

REVISION

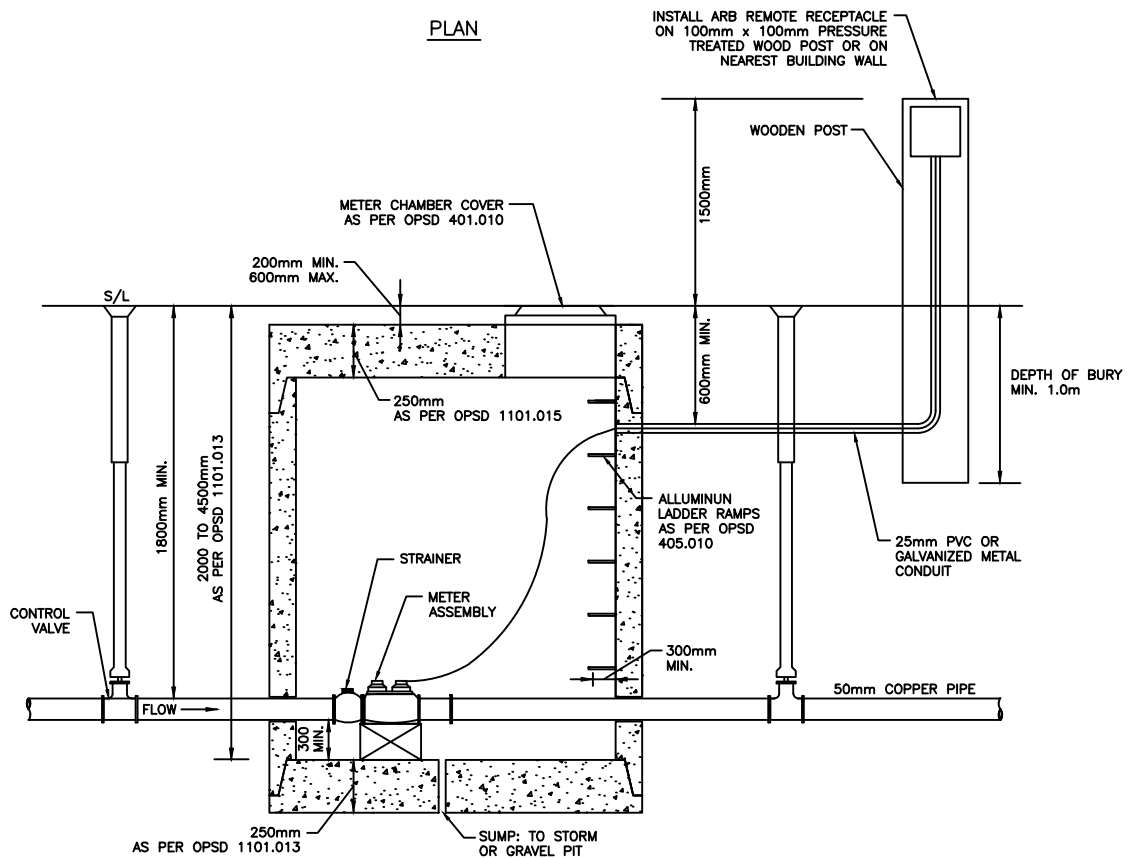
DRAWING No.

DATE OF REVISION  
FEB. 2018

**KS-846**



PLAN



SECTION

NOTES:

1. ALL PIPE JOINTS INSIDE THE METER CHAMBER SHALL BE FLANGE TO FLANGE UNLESS NOTED OTHERWISE.
2. AWWA CERTIFICATION ON ALL DOUBLE CHECK VALVE BACKFLOW PREVENTER.
3. ALL TEST COCKS ON THE DOUBLE CHECK VALVE BACKFLOW PREVENTER TO BE PLUGGED USING A MEAN THAT IS WATER-TIGHT.
4. CONCRETE TO BE 32MPa COMPRESSIVE STRENGTH.
5. POURED BASE SHOULD BE TROWEL FINISHED.
6. BACKFLOW PREVENTION SHALL BE BY DOUBLE CHECK VALVE ASSEMBLY (DCVA) MEETING REQUIREMENTS OF OBC AND CSA-B64.10, WITH ALL TEST PORTS PLUGGED.



TOWNSHIP OF KING

WATER METER CHAMBER DETAILS  
(50mm SERVICE LINE)

APPROVED

M.C.

DATE OF ISSUE

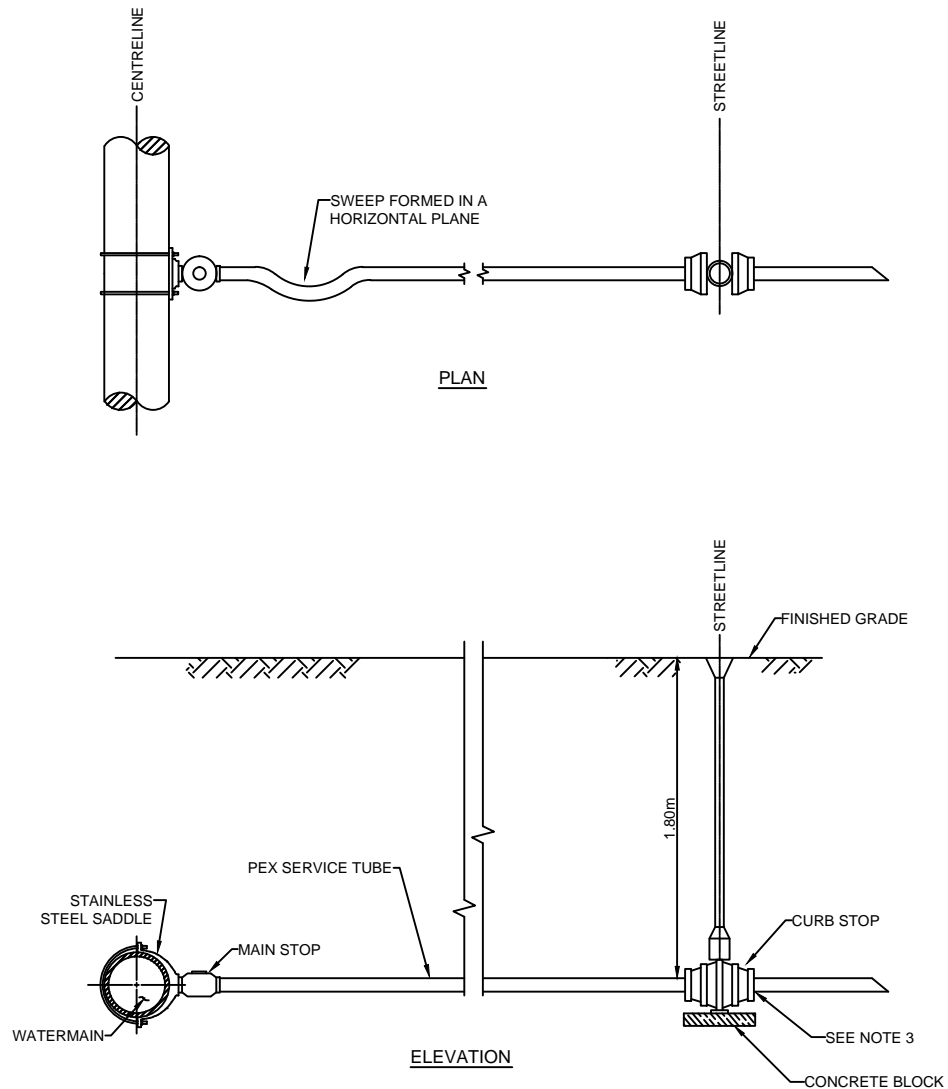
MAY 2015

REVISION

DRAWING No.

DATE OF REVISION  
FEB. 2018

KS-847



NOTES:

1. ALL SERVICES TO BE AT 90° TO WATER MAIN UNLESS OTHERWISE SPECIFIED.
2. SERVICE DEPTH TO MEET MINIMUM COVER AS SPECIFIED BY DESIGN STANDARDS.
3. INSTALL 'FORD' SERVICE INSULATOR OR APPROVED EQUAL BETWEEN THE CURB STOP AND THE STREET LINE ONLY IF THE SERVICED BUILDING IS LOCATED 7.6m OR MORE FROM THE STREETLINE.
4. NO DIRECT TAPPING OF PVC WATER MAINS. ALL CONNECTIONS TO PVC PIPE TO BE MADE USING AN APPROVED WIDE BAND SERVICE SADDLE.
5. TRACER WIRE AND CATHODIC PROTECTION TO BE PROVIDED PER SECTION D7 OF THE DESIGN CRITERIA.



**TOWNSHIP OF KING**

WATER SERVICE  
(20mm - 50mm DIAMETER)

APPROVED

M.C.

DATE OF ISSUE

JAN. 1990

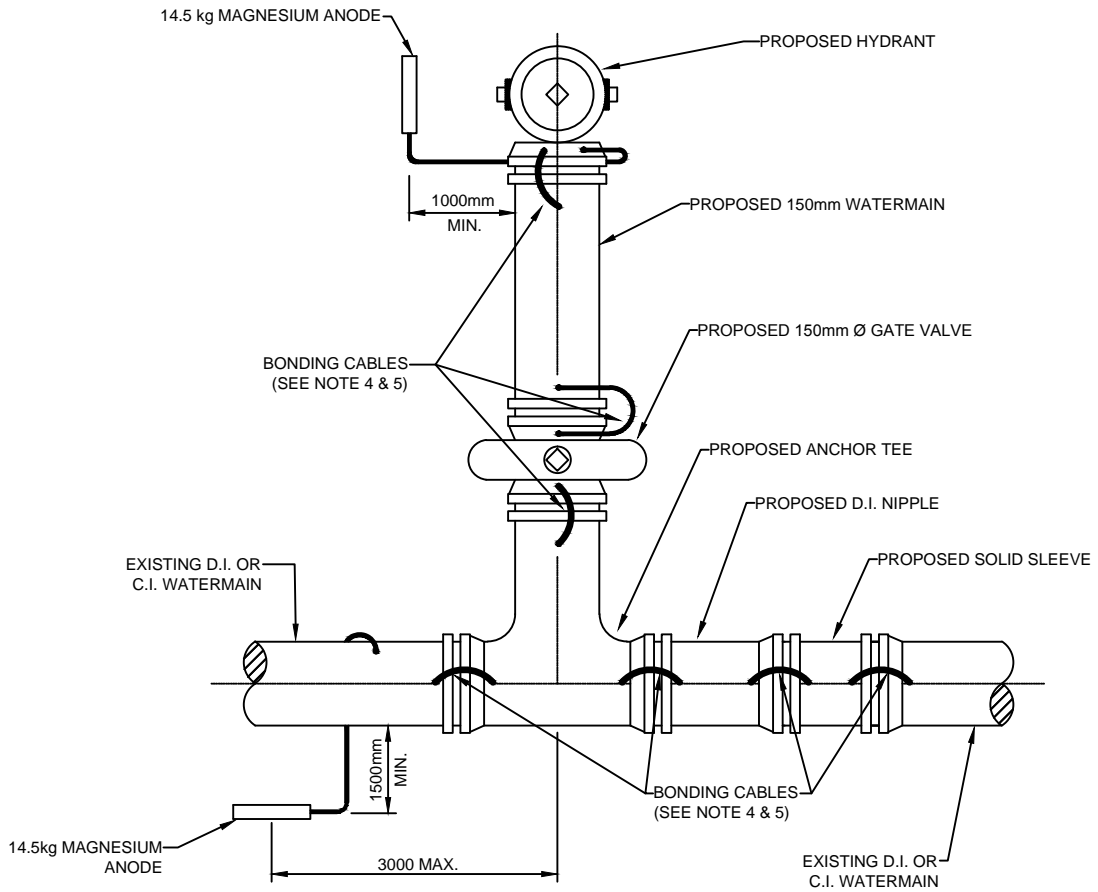
REVISION

DRAWING No.

DATE OF REVISION

OCT. 2016

**KS-851**



**NOTES:**

1. ANODE TO BE PLACED AT LEAST 1.0m AWAY FROM THE FITTINGS AND AS DEEP AS THE BOTTOM OF THE FITTINGS. MINIMUM DISTANCE BETWEEN ANODES TO BE 1.0m.
2. ALL FITTINGS TO BE COATED WITH BITUMINOUS SEALER ON SITE.
3. PROVIDE 0.20mm POLYETHYLENE BOND BREAKER BETWEEN CONCRETE AND FITTINGS.
4. ALL THERMITE WELD CONNECTIONS TO BE COATED WITH "ROYBOND 747" PRIMER AND ROYSTON "HANDY CAP" OR APPROVED EQUAL.
5. BONDING CABLE TO BE NO. 6, SEVEN STRAND COATED COPPER WIRE, CAD WELD TO FITTINGS.



**TOWNSHIP OF KING**

**CORROSION PROTECTION FOR HYDRANT CUT INTO AN EXISTING D.I. OR C.I. WATERMAIN**

APPROVED  
M.C.

DATE OF ISSUE  
JAN. 1990

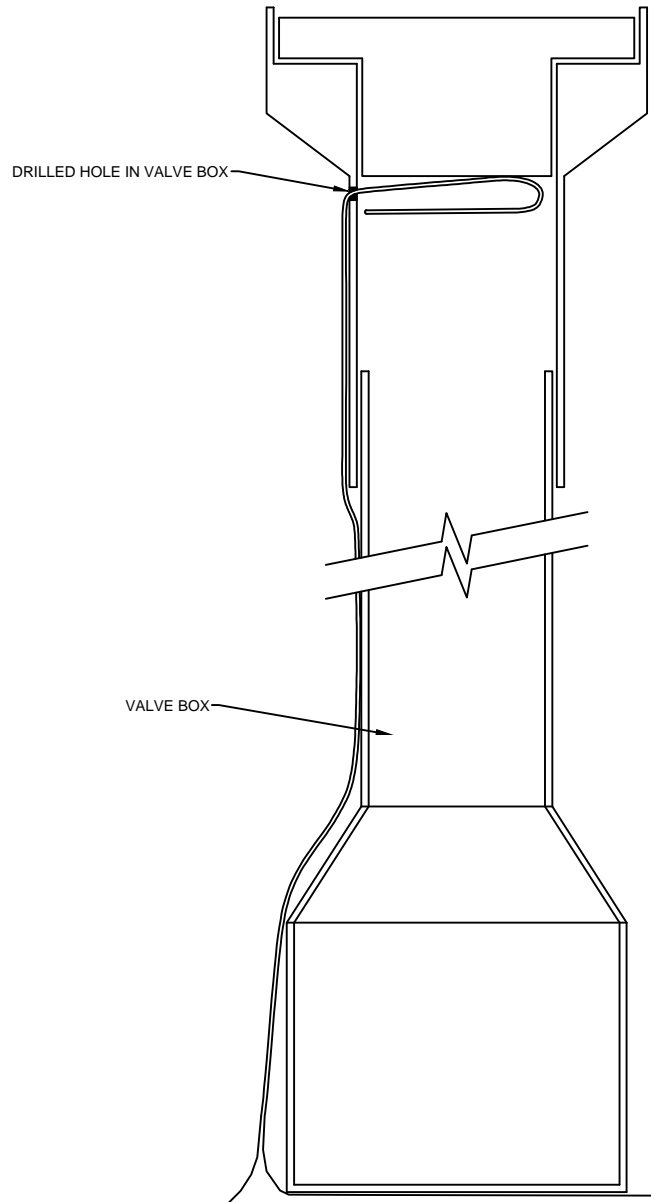
REVISION

DRAWING No.

DATE OF REVISION  
NOV. 2015


**KS-854**

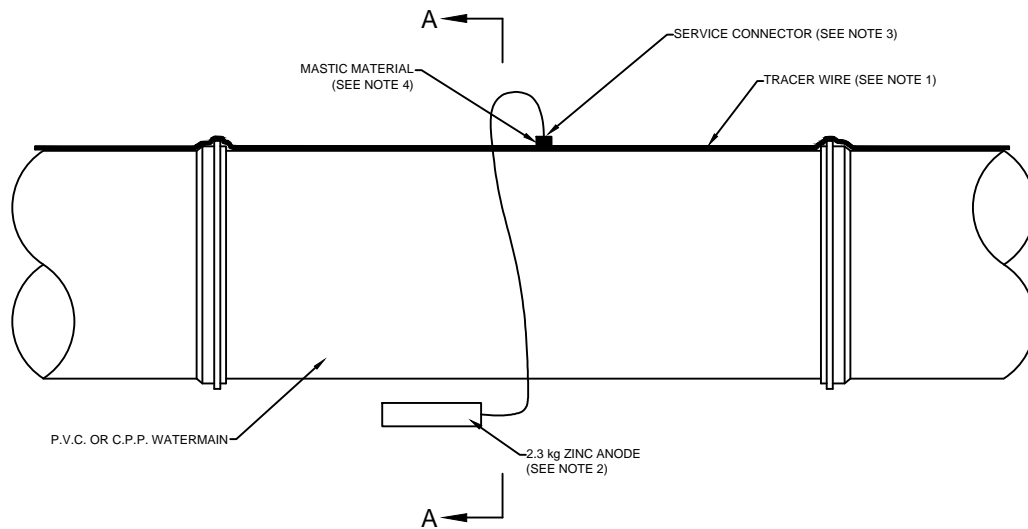




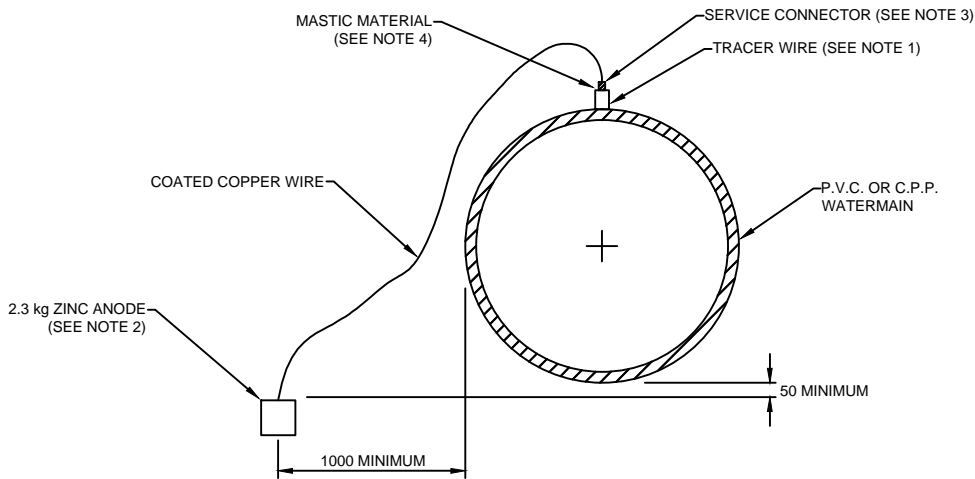
NOTES:

1. TRACER WIRE - #12 GAUGE STRANDED, C.S.A. TYPE T.W.H.
2. TRACER WIRE TO BE INSTALLED OUTSIDE LOWER VALVE BOX AND BROUGHT INTO UPPER SECTION OF VALVE BOX AND LOOPE AT TOP. LOOP TO BE A MINIMUM 450mm IN LENGTH.
3. CONNECTORS USED FOR SPLICING TRACER WIRE SHALL BE WING NUT TYPE, WITH NYLON SHELL AND NON-CORROSIVE STEEL WIRE SPRING.

	<b>TOWNSHIP OF KING</b>	APPROVED M.C.	DATE OF ISSUE JAN. 1990
	TRACER WIRE ARRANGEMENT AT VALVE BOX FOR P.V.C OR C.P.P. WATERMAIN	REVISION	DRAWING No.
		DATE OF REVISION NOV. 2009	<b>KS-860</b>



ELEVATION



SECTION A-A

NOTES:

1. TRACER WIRE - #12 GAUGE STRANDED, C.S.A. TYPE T.W.H.
2. ONE 2.3 kg ZINC ANODE TO BE SUPPLIED AND INSTALLED IN A MANNER APPROVED BY THE TOWNSHIP ENGINEER FOR EVERY 500m OF TRACER WIRE INSTALLED.
3. SERVICE CONNECTOR TO BE A 'BURNDY SERVIT' TYPE K.S. MODEL KS20 COPPER OR APPROVED EQUAL.
4. CONNECTOR SPLICE TO BE WRAPPED WITH 'SCOTCHFILL' ELECTRICAL PUTTY OR APPROVED EQUAL.
5. ALL DIMENSIONS ARE IN MILLIMETRES.
6. THE LOCATION OF EACH TRACER WIRE ANODE MUST BE DETAILED ON THE CONTRACT DRAWINGS.



**TOWNSHIP OF KING**

**CORROSION PROTECTION FOR TRACER WIRES ON P.V.C. OR C.P.P. WATERMAINS**

APPROVED  
M.C.

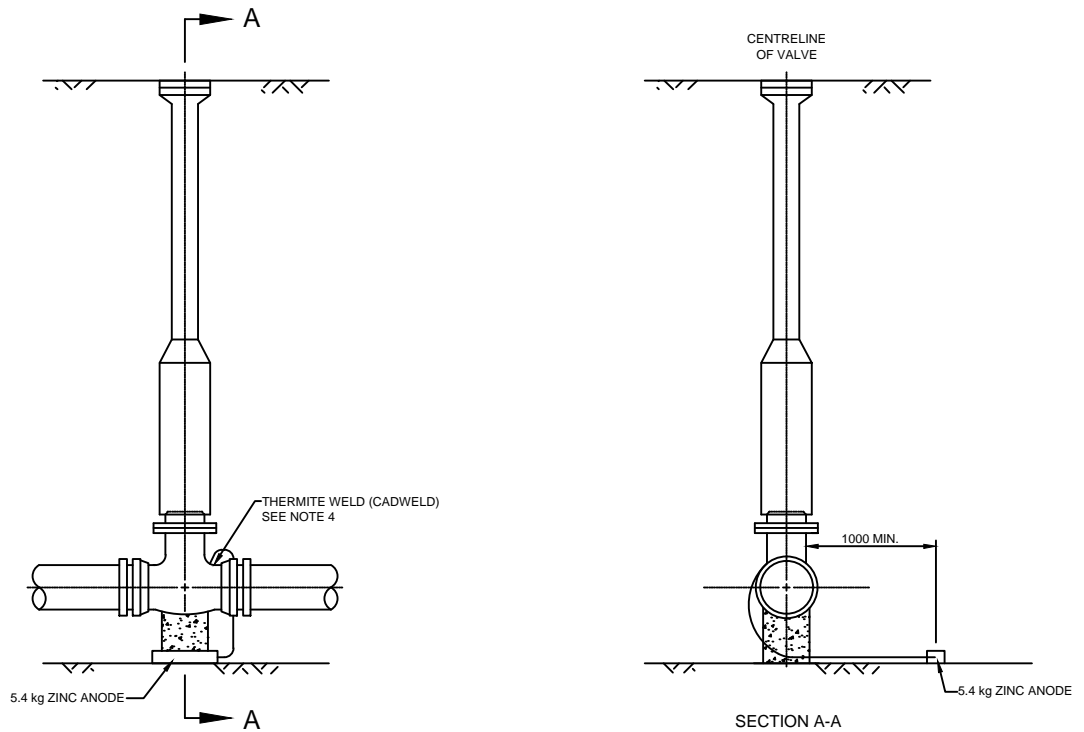
DATE OF ISSUE  
JAN. 1990

REVISION

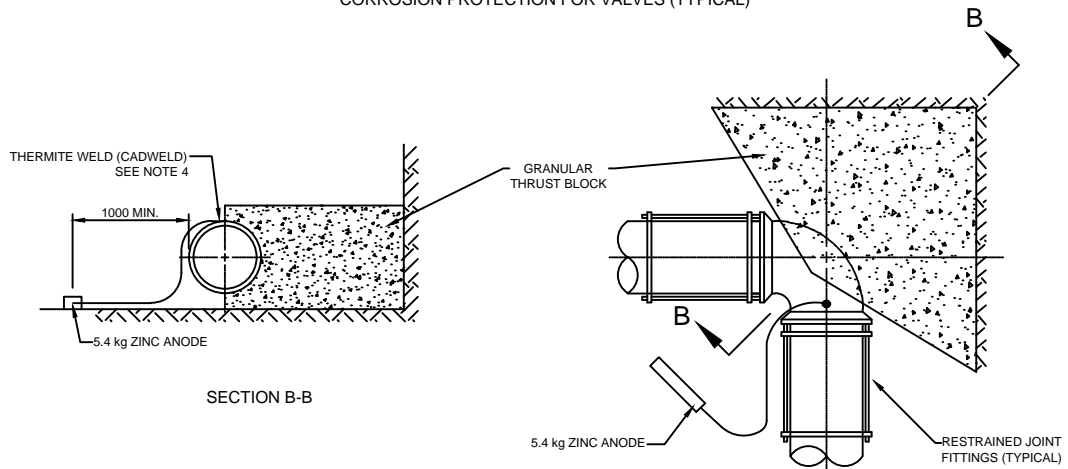
DRAWING No.

DATE OF REVISION  
NOV. 2009

**KS-870**



CORROSION PROTECTION FOR VALVES (TYPICAL)



CORROSION PROTECTION FOR FITTINGS (TYPICAL)

NOTES:

1. ANODE TO BE PLACED AT LEAST 1.0m AWAY FROM THE FITTING AND AS DEEP AS THE BOTTOM OF THE FITTINGS. MINIMUM DISTANCE BETWEEN ANODES TO BE 1.0m.
2. ALL VALVES AND FITTINGS TO BE COATED WITH BITUMINOUS SEALER PRIOR TO INSTALLATION ON SITE.
3. ALL DIMENSIONS ARE IN MILLIMETRES.
4. PROVIDE 0.2m POLYETHYLENE BOND BREAKER BETWEEN CONCRETE AND FITTINGS.
5. ALL THERMITE WELD CONNECTIONS TO BE COATED WITH 'ROYBOND 747' PRIMER AND ROYSTON 'HANDY CAP' OR APPROVED EQUAL.



**TOWNSHIP OF KING**

**CORROSION PROTECTION FOR VALVES & FITTINGS ON NON-FERROUS PIPE**

APPROVED  
M.C.

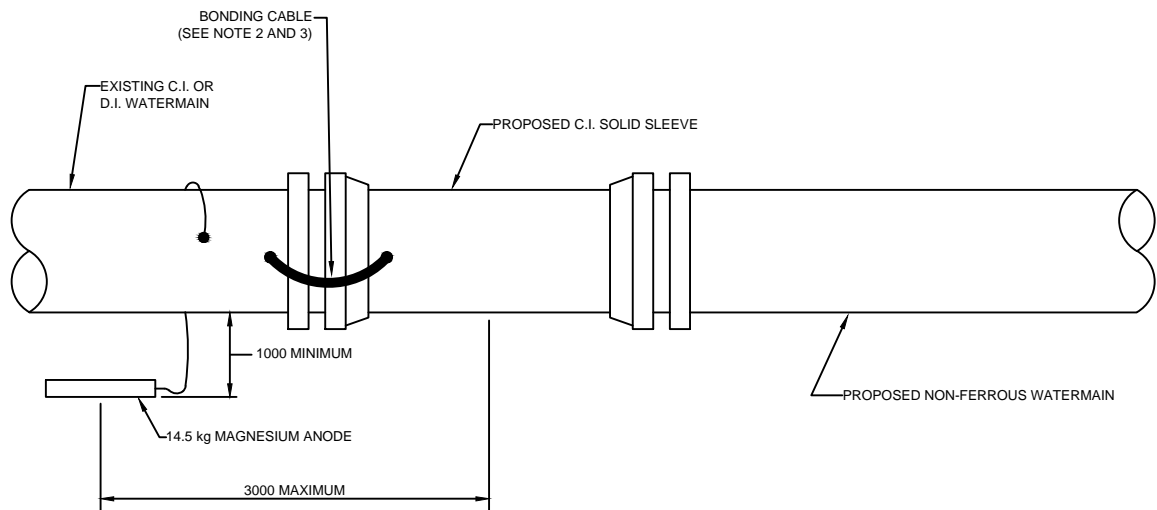
DATE OF ISSUE  
JAN. 1990

REVISION

DRAWING No.

DATE OF REVISION  
NOV. 2009

**KS-871**



**NOTES:**

1. ANODE TO BE PLACED AT LEAST 1.0m AWAY FROM THE FITTING AND AS DEEP AS THE BOTTOM OF THE FITTINGS. MINIMUM DISTANCE BETWEEN ANODES TO BE 1.0m.
2. ALL THERMITE WELD CONNECTIONS TO BE COATED WITH 'ROYBOND 747' PRIMER AND ROYSTON 'HANDY CAP' OR APPROVED EQUAL.
3. BONDING CABLE TO BE No. 6 SEVEN STRAND COATED COPPER WIRE, CADWELDED TO FITTINGS.
4. ALL DIMENSIONS IN MILLIMETRES.



**TOWNSHIP OF KING**

**CORROSION PROTECTION FOR EXISTING FERROUS WATERMAIN CONNECTED TO PROPOSED NON-FERROUS WATERMAIN**

APPROVED

M.C.

DATE OF ISSUE

JAN. 1990

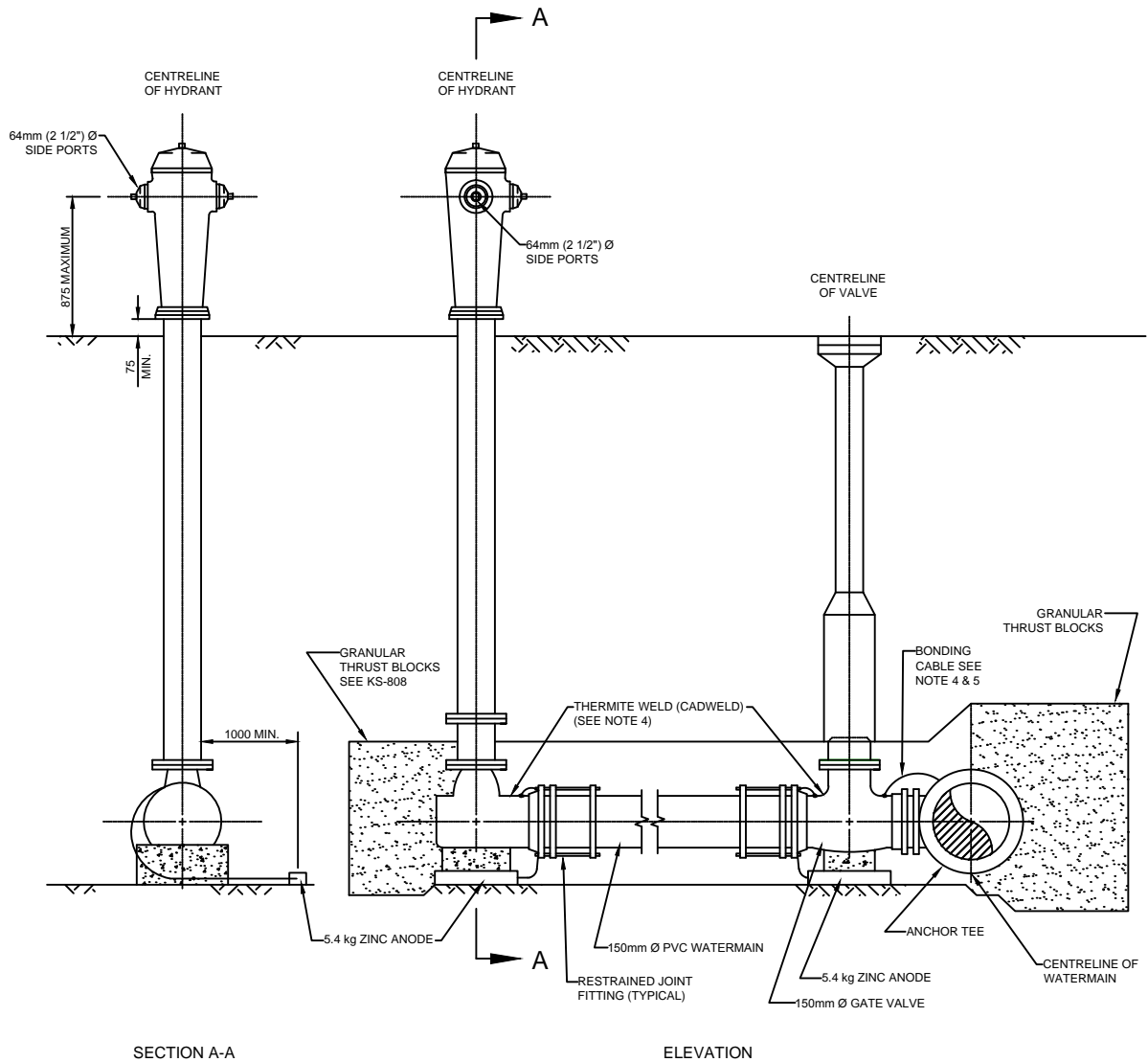
REVISION

DRAWING No.

DATE OF REVISION

NOV. 2009

**KS-873**



**NOTES:**

1. ANODE TO BE PLACED AT LEAST 1.0m AWAY FROM THE FITTINGS AND AS DEEP AS THE BOTTOM OF THE FITTINGS. MINIMUM DISTANCE BETWEEN ANODES TO BE 1.0m
2. ALL FITTINGS TO BE COATED WITH BITUMINOUS SEALER ON SITE.
3. ALL DIMENSIONS ARE IN MILLIMETRES.
4. ALL THERMITE WELD CONNECTIONS TO BE COATED WITH 'ROYBOND 747' PRIMER AND ROYSTON 'HANDY CAP' OR APPROVED EQUAL.
5. BONDING CABLE TO BE No. 6 SEVEN STRAND COATED COPPER WIRE, CADWELDED TO FITTINGS.



**TOWNSHIP OF KING**

**CORROSION PROTECTION FOR HYDRANT ASSEMBLY ON NON-FERROUS PIPE**

APPROVED

M.C.

DATE OF ISSUE

JAN. 1990

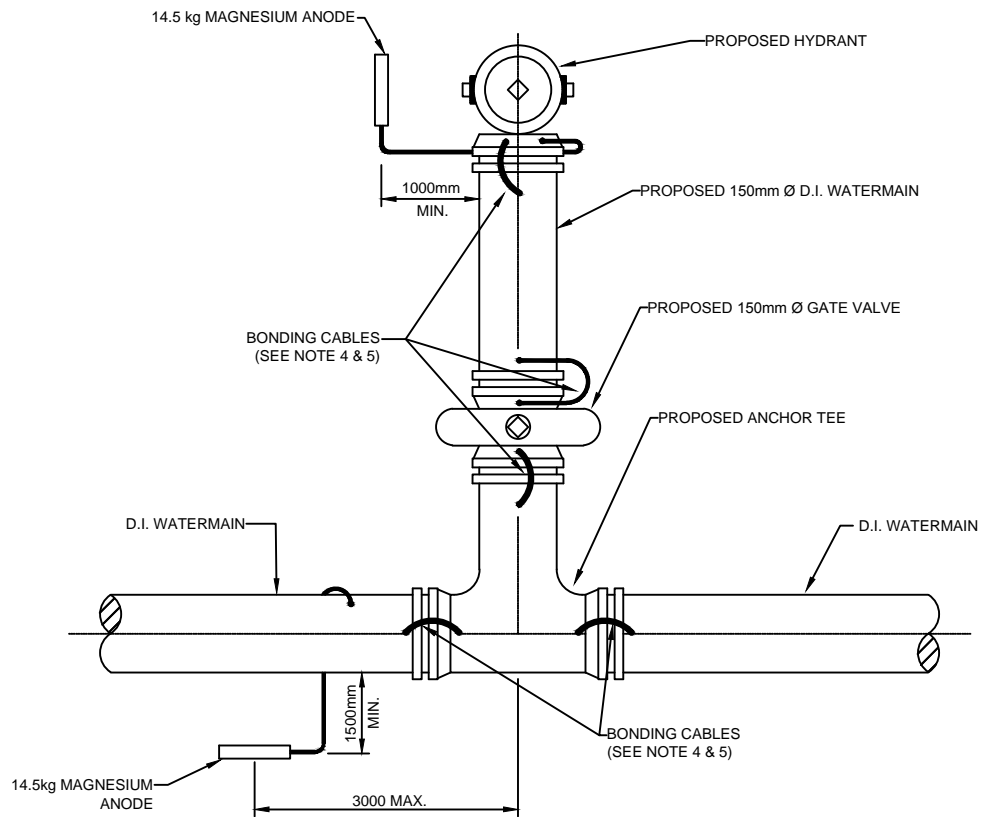
REVISION

DRAWING No.

DATE OF REVISION

NOV. 2015

**KS-874**



**NOTES:**

1. ANODE TO BE PLACED AT LEAST 1.0m AWAY FROM THE FITTINGS AND AS DEEP AS THE BOTTOM OF THE FITTINGS. MINIMUM DISTANCE BETWEEN ANODES TO BE 1.0m
2. ALL FITTINGS TO BE COATED WITH BITUMINOUS SEALER ON SITE.
3. PROVIDE 0.20mm POLYETHYLENE BOND BREAKER BETWEEN CONCRETE AND FITTINGS.
4. ALL THERMITE WELD CONNECTIONS TO BE COATED WITH "ROYBOND 747" PRIMER AND ROYSTON "HANDY CAP" OR APPROVED EQUAL.
5. BONDING CABLE TO BE No. 6, SEVEN STRAND COATED COPPER WIRE, CAD WELD TO FITTINGS.



**TOWNSHIP OF KING**

**CORROSION PROTECTION FOR HYDRANTS  
OFF OF D.I. WATERMANS**

APPROVED

M.C.

DATE OF ISSUE

JAN. 1990

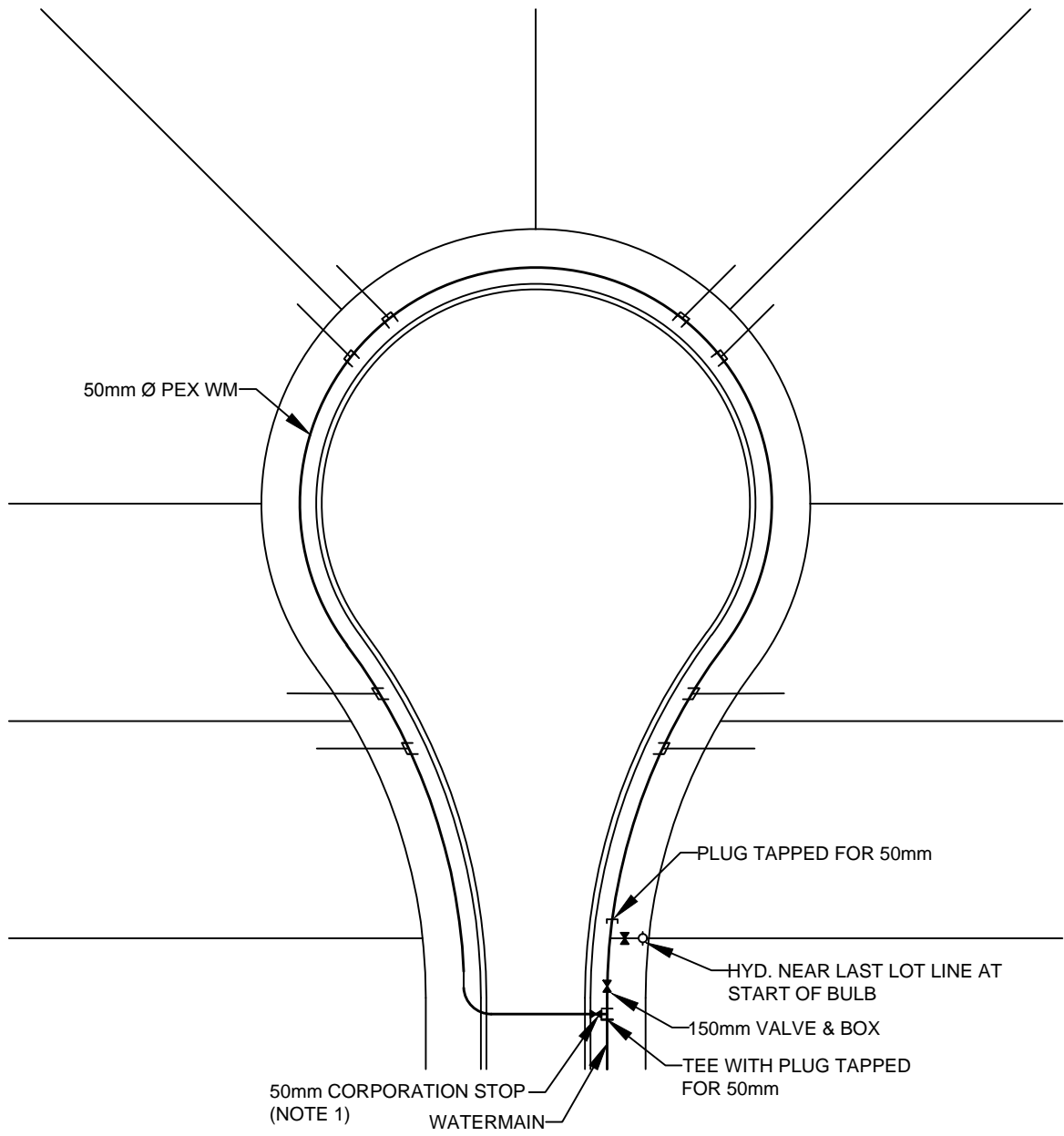
REVISION

DRAWING No.

DATE OF REVISION

NOV. 2015

**KS-875**



NOTES:

1. VALVE AND BOX IS NOT TO BE LOCATED WITHIN TRAVELED PORTION OR ROAD.



**TOWNSHIP OF KING**

**WATERMAIN CONFIGURATION FOR  
DEAD END CUL-DE-SACS**

APPROVED  
M.C.

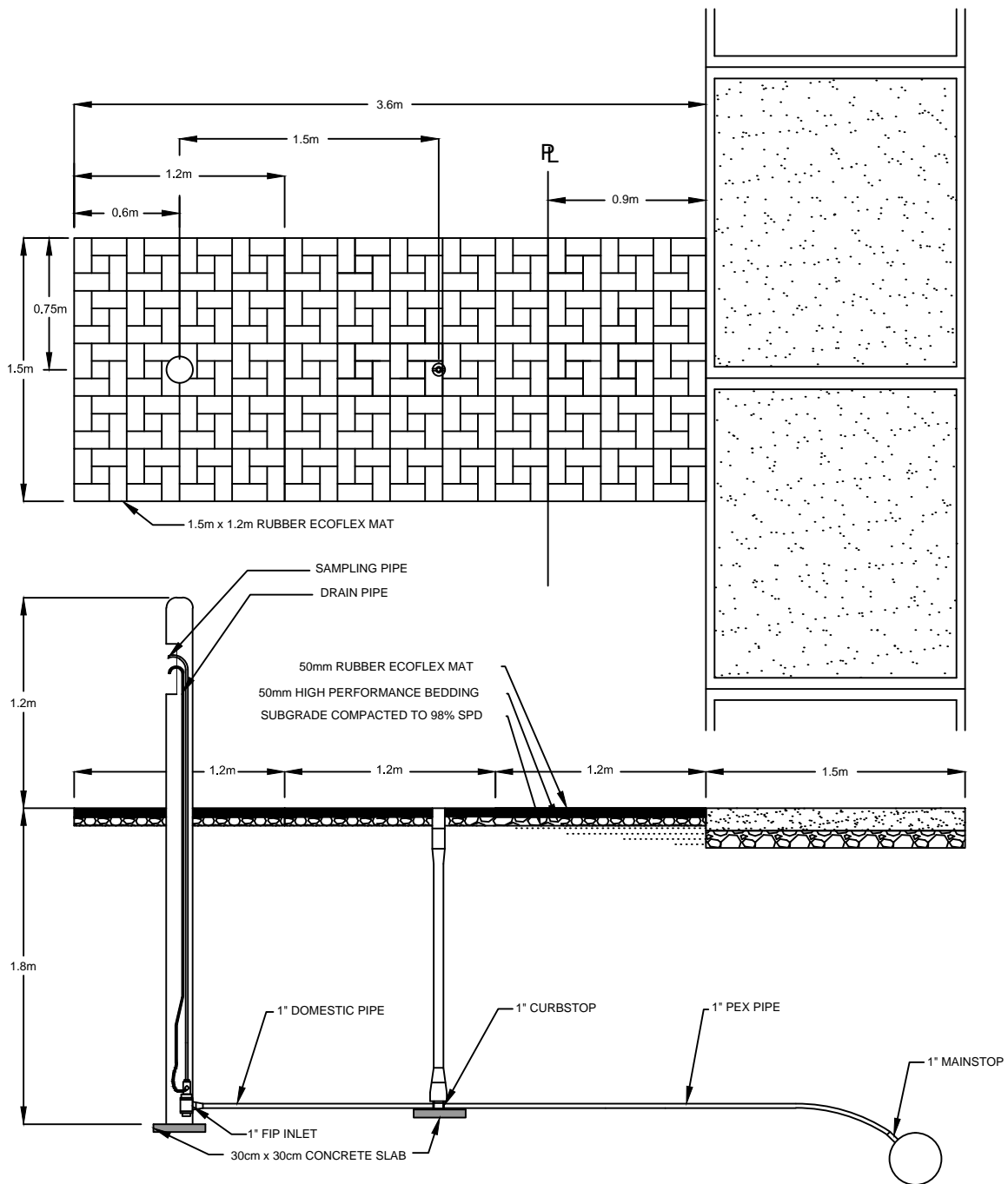
DATE OF ISSUE

REVISION

DRAWING No.

DATE OF REVISION  
SEP, 2016

**KS-877**



NOTES:

1. SAMPLING STATIONS TO BE WITH 'TEST TAP' (CROMER), OR EQUIVALENT.
2. SAMPLING STATIONS SHALL BE EQUIPPED WITH A 3/8" 316 STAINLESS STEEL VENT TUBE. THIS IS USED TO PUMP STANDING WATER FROM THE UNIT AFTER USE, PREVENTING FREEZING AND BACTERIA GROWTH
3. THE ENCLOSURE SHALL BE MADE FROM SCHEDULE 40 PVC PIPE WITH LOCKABLE ACCESS DOOR
4. THE ENCLOSURE SHALL PROTECT ALL COMPONENTS FROM CORROSIVE SOIL AND GROUND WATER
5. AFTER THE WATER IS TURNED OFF AT THE CURBSTOP, ALL WORKING PARTS SHALL BE REMOVABLE WITHOUT DIGGING OR USE OF ANY TOOLS
6. SAMPLING STATIONS WILL BE EQUIPPED WITH A 1" FIP INLET FOR THE CONNECTION TO THE WATERMAIN
7. STANDARD TEST TAP IS DESIGNED FOR A 1.8m (6 FEET) BURY AND AND 1.2m (4 FEET) PEDESTAL
8. TEST TAP AND CURBSTOP SHOULD REST ON CONCRETE SLAB. 30cm X 30cm PATIO SLAB IS ACCEPTIBLE
9. NO LEAD FITTINGS (MAINSTOP, CURBSTOP ETC.) ARE TO BE USED



**TOWNSHIP OF KING**

**SIDE VIEW OF SAMPLING  
STATION INSTALLATION**

APPROVED

M.C.

DATE OF ISSUE

FEB. 2010

REVISION

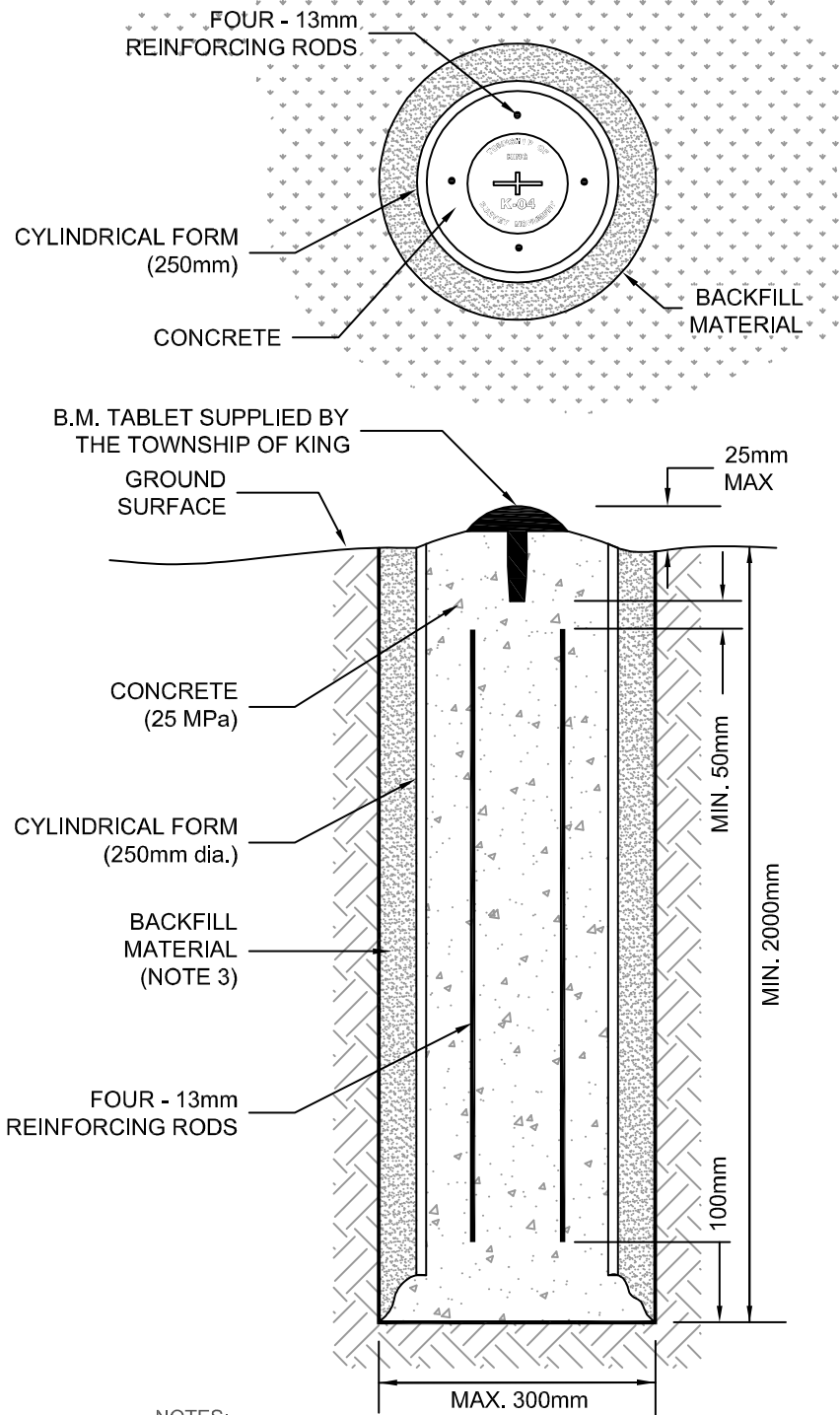
DRAWING No.

DATE OF REVISION

OCT, 2016

**KS-878**





NOTES:

- 1) CONTACT ENGINEERING & PUBLIC WORKS DEPARTMENT FOR SUBMISSION REQUIREMENTS AND FOR LOCATION OF BENCHMARK MONUMENT
- 2) NOTIFY THE OPERATIONS DEPARTMENT FOR INSPECTION PRIOR TO POURING OF CONCRETE.
- 3) BENCH MARK (B.M.) NUMBER MUST BE PUNCHED BY INSTALLER ON THE TABLET PRIOR TO INSTALLATION
- 4) BACKFILL MATERIAL TO BE LIMESTONE SCREENING OR FINE GRAVEL AND REQUIRED TO BE WELL TAMPED

	TOWNSHIP OF KING	APPROVED M.C.	DATE OF ISSUE NOV. 2007
	BENCHMARK MONUMENT DETAILS	REVISION	DRAWING No.
		DATE OF REVISION JAN. 2017	KS-900