



# **City of Greater Sudbury**

## **Supplemental Drawings**

### **To the Ontario Provincial Standard Drawings**

**City of Greater Sudbury**  
**Standard Drawings**

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- **Ontario Provincial Standards Drawings [OPSD]**

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**Notes:**

1. **N/A - Denotes Non Applicable Divisions**
2. **OPSD's "not listed" require City approval prior to their use**

## Index

OPSD #	GSSD #	Rev #	Description	GSS CAD/File Name
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### Division 100 – Abbreviations and Signage

The table below shows Division 100 – Abbreviations and Signage.

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–	125.030	–	Standard Project Sign “ <b>Portable</b> ”	A1984
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–	126.011	–	Rainfall Intensity Duration Curves	A1985
–	127.000	–	Typical Sign Mounting	A2135
–	128.000	–	Standard Sidewalk Stamp	A2200

### Division 200 – Grading

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204.010	–	3	Boulder Treatment Cut Sections - Subgrade	–
205.010	–	2	Transition Treatment - Earth Cut to Earth Fill	–
205.020	–	2	Transition Treatment - Rock Cut to Rock Fill	–
205.030	–	2	Transition Treatment - Rock Cut to Earth Fill	–
205.040	–	2	Transition Treatment - Earth Fill to Rock Fill and Earth Fill to Granular Fill	–
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205.060	–	3	Frost Heave Treatment	–
–	206.010	–	Standard Road Section - Rural	A1952
217.050	–	2	Access to Hydrant Across Ditch	–
217.051	–	–	Maintenance Hole Access Entrance at Ditches	A1949
–	217.060	2	Utility Pole Setting Depth at Ditch Locations	–
–	218.010	–	Sodding of Side Slopes	A2019

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OPSD #	GSSD #	Rev #	Description	GSS CAD/File Name
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The table below shows Division 200 – Grading continued.

–	224.020	1	Minimum Vertical Clearances for Aerial Cable Systems	–
–	225.010	1	Standard Road Section - Urban	A1924
–	225.030	–	Utility Services - Location Plan	A1923
–	225.040	2	Utility Services - Location Section	A1986

### Division 300 – Entrances

The table below shows Division 300 – Entrances.

–	303.020	–	Typical Urban Private Entrance with Boulevard and Sidewalk	A1925
304.010	–	1	Shoulder Treatment at Side Road Intersections	–
–	310.010	4	Concrete Sidewalk	A1929
–	310.015	1	Monolithic Curb and Concrete Sidewalk	A1945
–	310.018	1	Monolithic Concrete Sidewalk and Retaining Wall	A1931
–	310.030	2	Curb Depressions for Sidewalks at Intersections	A1987
–	310.031	–	Tactile Warning Surface – Layout Detail	A2360
–	310.032	–	Concrete Sidewalk Ramps with Directional Lines at Intersections	A2390
–	310.040	1	Utility Isolation in Sidewalks	A1988
–	350.010	1	Urban, Industrial, Commercial, Institutional and Apartment Entrances	A1950
–	351.010	1	Driveway Entrance Sidewalk Depression	A1951

### Division 400 – Frames and Grates

The table below shows Division 400 – Frames and Grates.

400.020	–	2	Cast Iron, Square Frame with Square Flat Grate for Catch Basins, Herring Bone Openings	–
–	400.080	–	Catch Basin, Cast Iron, Side Inlet Frame	A2022

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OPSD #	GSSD #	Rev #	Description	GSS CAD/File Name
The table below shows Division 400 – Frames and Grates continued.				
401.010	–	3	Cast Iron, Square Frame with Circular Closed or Open Cover for Maintenance Holes	–
402.010	–	3	Cast Iron, Square Frame with Circular Cover and Plug for Valve Chambers	–
403.010	–	2	Galvanized Steel Honey Comb Grating for Ditch Inlet	–
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405.010	–	3	Maintenance Hole Steps Hollow - “Circular Aluminum”	–
406.010	–	2	Aluminum Ladder for Maintenance Holes	–
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–	500.020	1	Cul-De-Sac for Terminated Urban Roadways in Subdivisions	A2013
512.010	–	–	Concrete Steps - Slab on Grade with Footings	–
512.011	–	–	Concrete Steps - Slab on Grade	–
–	525.010	–	Transition Point Treatment - New Road to Existing Road	A1920
–	561.010	–	Interlocking Concrete Paver Sidewalk on Granular Base	A1946
–	570.010	1	Standard Asphalt Footpath	A1930
–	571.010	–	Steel Stairway	B1139
–	580.010	1	Concrete Parking Meter Base	A1948
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–	600.010	1	Concrete Barrier Curb with Wide Gutter	A1926
600.010	–	2	Concrete Barrier Curb with Wide Gutter	–

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OPSD #	GSSD #	Rev #	Description	GSS CAD/File Name
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–	600.030	2	Concrete Mountable Curb with Standard Gutter	A1927
601.010	–	2	Asphalt Curb and Asphalt Gutter	–
604.010	–	2	90° Concrete Outlet for Concrete Curb and Gutter	–
605.010	–	2	45° Concrete Outlet for Concrete Curb with Gutter	–
605.030	–	2	45° Concrete Outlet for Concrete Curb and Gutter at End of Run	–
605.040	–	2	Asphalt Spillways	–
608.010	–	2	Method of Termination for Concrete Curb and Gutter	–
–	610.010	2	Concrete Curb and Asphalt Gutter Treatment at Catch Basin	A1933

### Division 700 – Catch Basins and Maintenance Holes

The table below shows Division 700 – Catch Basins and Maintenance Holes.

–	700.030	3	Cast-in-Place Maintenance Hole or Maintenance Hole Catch Basin Max. Pipe Size 825 mm 1275 mm x 1275 mm Depth - 9.0 m Maximum	A1934
–	700.031	3	Storm Sewer Cast-in-Place Shallow Maintenance Hole or Maintenance Hole Catch Basin Max. Pipe Size 825 mm 1200 mm x 1200 mm Depth - 2.2 m Maximum	A1937
–	700.040	3	Cast-in-Place Maintenance Hole or Maintenance Hole Catch Basin Pipe Dia. from 900 mm to 1200 mm 1800 mm x 1800 mm Depth - 9.0 m Maximum	A1935
–	700.041	3	Cast-in-Place Maintenance Hole or Maintenance Hole Catch Basin For 1350 mm and Larger Pipes	A2016
701.010	–	5	Precast Maintenance Hole, 1200 mm Diameter	–

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OPSD #	GSSD #	Rev #	Description	GSS CAD/File Name
The table below shows Division 700 – Catch Basins and Maintenance Holes continued.				
701.011	–	5	Precast Maintenance Hole, 1500 mm Diameter	–
701.012	–	5	Precast Maintenance Hole, 1800 mm Diameter	–
–	701.017	2	Storm Sewer Precast Shallow Maintenance Hole or Maintenance Hole Catch Basin Max. Pipe Size 825 mm 1200 mm x 1200 mm Depth - 2.2 m Maximum	A1938
701.030	–	4	Precast Concrete Maintenance Hole Components 1200 mm Diameter	–
701.100	–	2	Frost Strap Installation	–
–	702.040	2	Cast-in-Place Ditch Inlet Maintenance Hole Catch Basin Max. Pipe Size 825 mm 1200 mm x 1200 mm Depth - 4.0 m Maximum	A1939
702.040	–	3	Precast Concrete Ditch Inlet Maintenance Hole - Type A 1200 mm x 1200 mm Depth - 3.6 m Maximum	–
705.010	–	3	Precast Concrete Catch Basin 600 mm x 600 mm Depth - 4.0 m Maximum	–
–	705.011	2	Poured Concrete Catch Basin 600 mm x 600 mm Depth - 4.0 m Maximum	A1932
705.020	–	3	Precast Concrete Twin Inlet Hole Catch Basin 600 mm x 1450 mm Depth - 4.0 m Maximum	–
–	705.021	2	Cast-in-Place Twin Inlet Catch Basin 600 mm x 1450 mm Depth - 4.0 m Maximum	A1936

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OPSD #	GSSD #	Rev #	Description	GSS CAD/File Name
The table below shows Division 700 – Catch Basins and Maintenance Holes continued.				
–	705.025	2	Cast-in-Place Twin Inlet Maintenance Hole Catch Basin 1200 mm x 1650 mm Depth - 3.7 m Maximum	A1940
705.030	–	3	Precast Concrete Ditch Inlet 600 mm x 600 mm Depth - 4.0 m Maximum	–
–	705.035	2	Cast-in-Place Ditch Inlet Catch Basin 600 mm x 600 mm Depth - 4.0 m Maximum	A1941
705.040	–	3	Precast Concrete Ditch Inlets 600 mm x 1200 mm Depth - 4.0 m Maximum	–

### Division 800 – Culverts and Drains

The table below shows Division 800 – Culverts and Drains.

802.010	–	3	Flexible Pipe Embedment and Backfill Earth Excavation	–
802.020	–	3	Flexible Pipe Arch Embedment and Backfill Earth Excavation	–
802.030	–	3	Rigid Pipe Bedding, Cover and Backfill Type 1 or 2 Soil - Earth Excavation	–
803.030	–	3	Frost Treatment - Pipe Culverts Frost Penetration Line Below Bedding Grade	–
804.040	–	–	Concrete Headwall for Sewer or Culvert Pipe	–
804.050	–	1	Grating for Concrete Endwall	–
809.010	–	3	Perforated Pipe Sub-Drain in Granular Trench, Main Storm Sewer Connection to Drainage Structures	–
–	820.010	1	Spacing for Multiple Culvert Installations	A1943

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OPSD #	GSSD #	Rev #	Description	GSS CAD/File Name
<b>Division 900 – Fencing, Guide Rails</b>				
The table below shows Division 900 – Fencing, Guide Rails.				
912.101	–	2	Guide Rail System, Steel Beam Rail, Component	–
912.102	–	1	Guide Rail System, Steel Beam, Channel Component	–
912.140	–	2	Guide Rail System, Steel Beam, Wood Post Assembly Installation - Single Rail	–
913.101	–	1	Guide Rail System, Cable, Three and Six Cable, Component - Cable Fittings	–
913.102	–	1	Guide Rail System, Cable, Three and Six Cable, Component - Concrete Anchor Blocks	–
913.130	–	1	Guide Rail System, Cable, Three Cable - Wood Post, Installation – Shoulder	–
922.401	–	2	Energy Attenuator, End Treatment, Eccentric Loader, Component - Loader Assembly	–
922.402	–	2	Energy Attenuator, End Treatment, Eccentric Loader, Component - Rail and Cable Attachment	–
922.410	–	2	Energy Attenuator, End Treatment, Eccentric Loader, Assembly – Loader	–
922.430	–	7	Energy Attenuator, End Treatment, Eccentric Loader, Installation Layout and Post	–
971.101	–	3	Fence, Highway, In Earth, Shale, Loose Rock, or Friable Rock, Installation	–
972.101	–	2	Fence, Chain Link - Component - Barbed Wire	–
972.102	–	2	Fence, Chain Link - Component - Gate	–
–	972.120	–	Site Gate Assembly and Details	B1128
–	972.121	–	Landfill Site Entrance Gate	B1131
972.130	–	2	Fence, Chain Link Installation - Roadway	–
–	980.101	–	Pedestrian Hand Rail	A1942
984.101	–	1	Post, Mounted Delineator - Installation	–

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OPSD #	GSSD #	Rev #	Description	GSS CAD/File Name
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### Division 1000 – Sanitary Sewer

The table below shows Division 1000 – Sanitary Sewer.

–	1001.030	1	Precast Test Maintenance Hole Sanitary Sewer Service Connection	A1953
–	1001.040	1	Maintenance Access Chamber Sanitary Sewer Service Connection	A2024
1003.010	–	2	Cast - In – Place, Maintenance Hole (Outside) Drop Structure Tee	–
–	1003.030	1	Internal Drop Structure for Service for Existing Maintenance Hole	A2017
–	1004.020	–	Dead End Maintenance Hole, Benching Details for Sanitary Service Connections and Outlet	A1919
–	1006.010	–	Sewer Service Connections for Rigid Main Pipe Sewer	A1954
–	1006.020	–	Sewer Service Connections for Flexible Main Pipe Sewer	A1955
–	1006.030	–	Dual Service Connections in a Common Trench (Sewer and Water)	A1956
–	1025.010	2	Standard Vertical Cleanout on a Sanitary Sewer Service	A1957

### Division 1100 – Watermains

The table below shows Division 1100 – Watermains.

–	1100.012	4	Cast-in-Place Valve Chamber for 400 mm Diameter Watermain	A1959
–	1100.013	4	Cast-in-Place Valve Chamber for 500 mm Diameter Watermain	A1960
–	1100.014	4	Cast-in-Place Valve Chamber for 600 mm Diameter Watermain	A1961
–	1100.015	4	Cast-in-Place Valve Chamber for 750 mm Diameter Watermain with PVC and DI Pipe	A1962

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<b>OPSD #</b>	<b>GSSD #</b>	<b>Rev #</b>	<b>Description</b>	<b>GSS CAD/File Name</b>
The table below shows Division 1100 – Watermains continued.				
–	1100.016	2	Cast-in-Place Valve Chamber for 750 mm Diameter Watermain with Concrete Pressure Pipe	A1963
–	1100.017	2	Cast-in-Place Valve Chamber for 900 mm Diameter Watermain with PVC and DI Pipe	A2014
–	1100.018	2	Cast-in-Place Valve Chamber for 900 mm Diameter Watermain with Concrete Pressure Pipe	A2015
–	1100.030	4	Valve and Swab Launching Station Watermain sizes 100 mm to 400 mm	A1964
–	1100.040	2	PVC to PE Pipe Transition and Concrete Anchor Block 200 PVC to 250 PE or 250 PVC to 315 PE	A1915
–	1100.041	2	PVC to PE Pipe Transition and Concrete Anchor Block 300 PVC to 400 PE	A1916
–	1100.042	2	PVC to PE Pipe Transition and Concrete Anchor Block 400 PVC to 500 PE or 500 PVC to 630 PE	A1917
–	1100.043	2	PVC to PE Pipe Transition and Concrete Anchor Block 600 PVC to 710 PE	A1918
–	1101.020	1	Sliding Valve Box	A1965
–	1103.010	1	Concrete Thrust Blocks for Tees, Plugs, Horizontal Bends and Dead Ends	A1966
–	1103.020	2	Concrete Thrust Blocks for Vertical Bends	A1967
–	1104.010	5	Water Service Connection Detail in Earth Trench for 20 mm to 50 mm Diameter Sizes	A1968
–	1104.011	5	Insulated Duct for Water Service Connection 20 mm to 50 mm Diameter Sizes	A1969
–	1104.020	4	Polyethylene Water Service Connection Detail for 25 mm to 50 mm Diameter Sizes	A1970
–	1105.010	4	Hydrant Installation	A1971
–	1105.030	6	Corrosion Protection on Hydrant Installations	A1972

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OPSD #	GSSD #	Rev #	Description	GSS CAD/File Name
The table below shows Division 1100 – Watermains continued.				
–	1106.030	2	Steel Casing for Pipe Installation	A1973
–	1107.010	1	Detail of 40 mm or 50 mm Water Meter Installation	A1981
–	1107.040	–	Detail - Water Connection with Meter Spacer up to 25 mm	A1974
–	1110.000	1	Tracer Wire Installation on PVC Watermain and Appurtenances	A2233
–	1115.000	1	Eclipse # 88 Watermain Sampling Station	A2199
–	1125.010	3	Test Stations for Cathodic Protection on Iron Watermains	A1975
<b>Division 1200 – Miscellaneous</b>				
The table below shows Division 1200 – Miscellaneous.				
–	1225.010	–	Dimensions for Payment of Rock Excavation in Trenches for Sewers, Watermains and Lateral Services	A1976
–	1226.010	–	Horizontal Control of Lateral Sewer and Water Connections in a Common Rock Trench with other Utilities	A1977
–	1227.010	3	Bedding Details Sanitary Sewers, Storm Sewers, Watermains and Lateral Services	A1944
–	1227.020	–	Rock Trench Details Rock Cut/Rock Fill	A2273
–	1228.010	–	Precast Concrete Hand Hole for Traffic Signal Ducts	A1928
–	1229.010	1	Frost Protection for Underground Round Structures	A1979
–	1229.020	–	Frost Protection for Underground Square Structures	A2018
–	1230.010	1	Reinforced Concrete Base for Traffic Signal Poles	A1980
–	1230.021	1	Unreinforced Concrete Base for 127 mm Diameter Traffic Signal Poles	A2276
–	1230.030	1	Unreinforced Concrete Base for Traffic Controller Cabinet	A2021
–	1231.000	1	Aluminum Traffic Signal Pole for Island, Pedestrian and Controller Cabinet	A2205

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<b>OPSD #</b>	<b>GSSD #</b>	<b>Rev #</b>	<b>Description</b>	<b>GSS CAD/File Name</b>
The table below shows Division 1200 – Miscellaneous continued.				
–	1231.100	–	Aluminum Traffic Signal Pole	A2204
–	1232.000	–	LED Pedestrian and LED Countdown Signal	A2206
–	1233.000	–	LED Vehicular Signal Head	A2207
–	1234.000	–	LED 5-Section Traffic Signal Displays	A2272

PANTONE: FOREST GREEN P147  
(WHITE BACKGROUND)  
PANTONE: TAN P158  
STAR & VERTICAL BAR

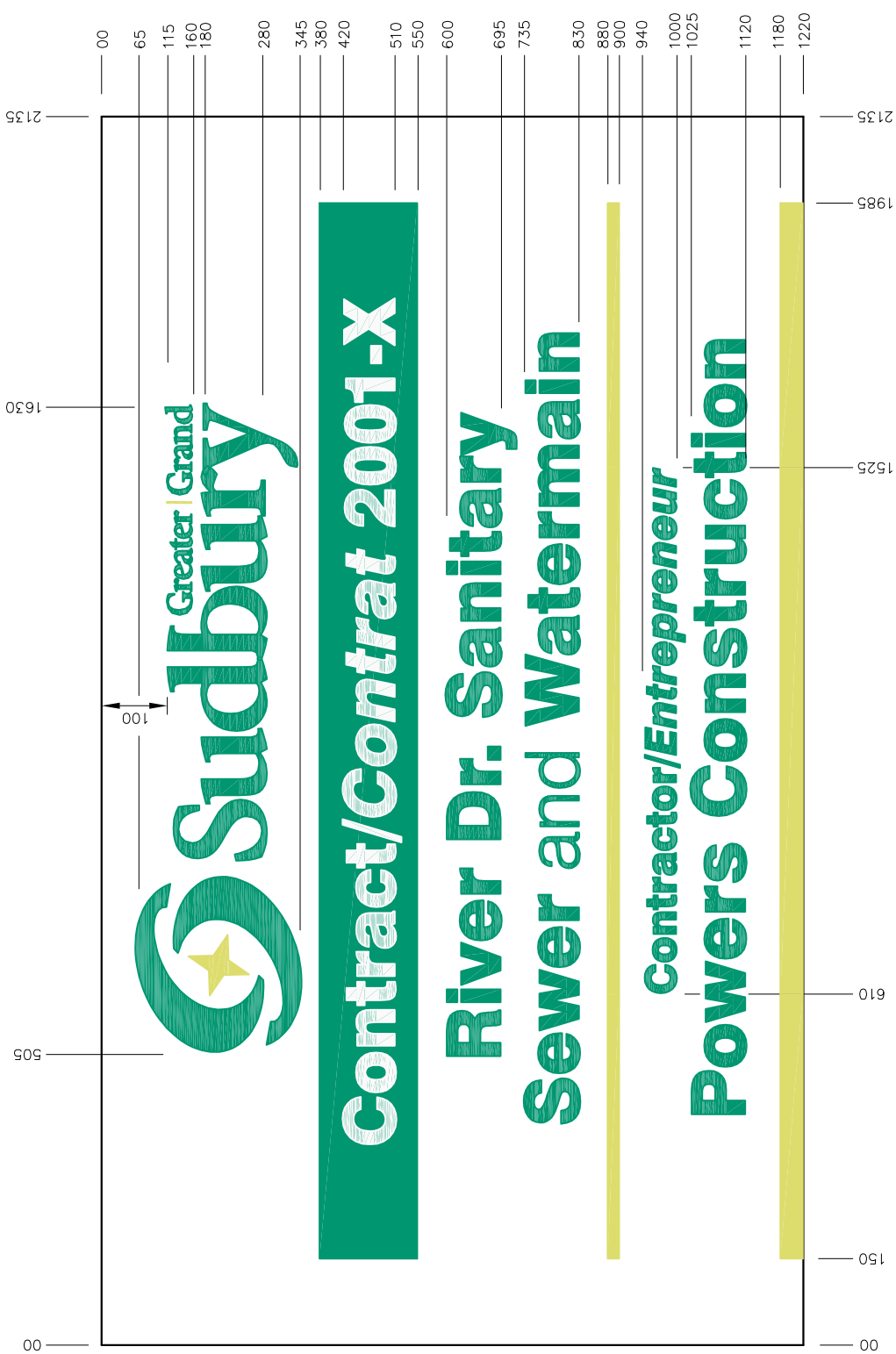
PANTONE: FOREST GREEN P147 BAR  
(WHITE LETTERING)

PANTONE: FOREST GREEN P147  
(WHITE BACKGROUND)

PANTONE: TAN P158

PANTONE: FOREST GREEN P147  
(WHITE BACKGROUND)

PANTONE: TAN P158



NOTES:

1. FONTS – GIOVANNI BOLD FOR UPPER LOGO  
– HELVETICA FOR ALL OTHER LOGO (NORMAL, BOLD AND ITALIC AS INDICATED)
2. ALL MEASUREMENTS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.

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STANDARD PROJECT SIGN		DRAWN BY: STS/RFRANK	REV No:
"FIXED"		DATE: 2003-03-03	REV DATE:
		SCALE: NTS	CAD/FILE No.: A1983-1 (1 OF 1)
		APP'D:	GSSD-125.020

PANTONE: FOREST GREEN P147  
(WHITE BACKGROUND)  
PANTONE: TAN P158  
STAR & VERTICAL BAR

PANTONE: FOREST GREEN P147 BAR  
(WHITE LETTERING)

PANTONE: FOREST GREEN P147  
(WHITE BACKGROUND)

PANTONE: TAN P158

PANTONE: FOREST GREEN P147  
(WHITE BACKGROUND)

PANTONE: TAN P158

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STANDARD PROJECT SIGN  
"PORTABLE"

DRAWN BY: STS/RFRANK REV No:

DATE: 2003-03-03

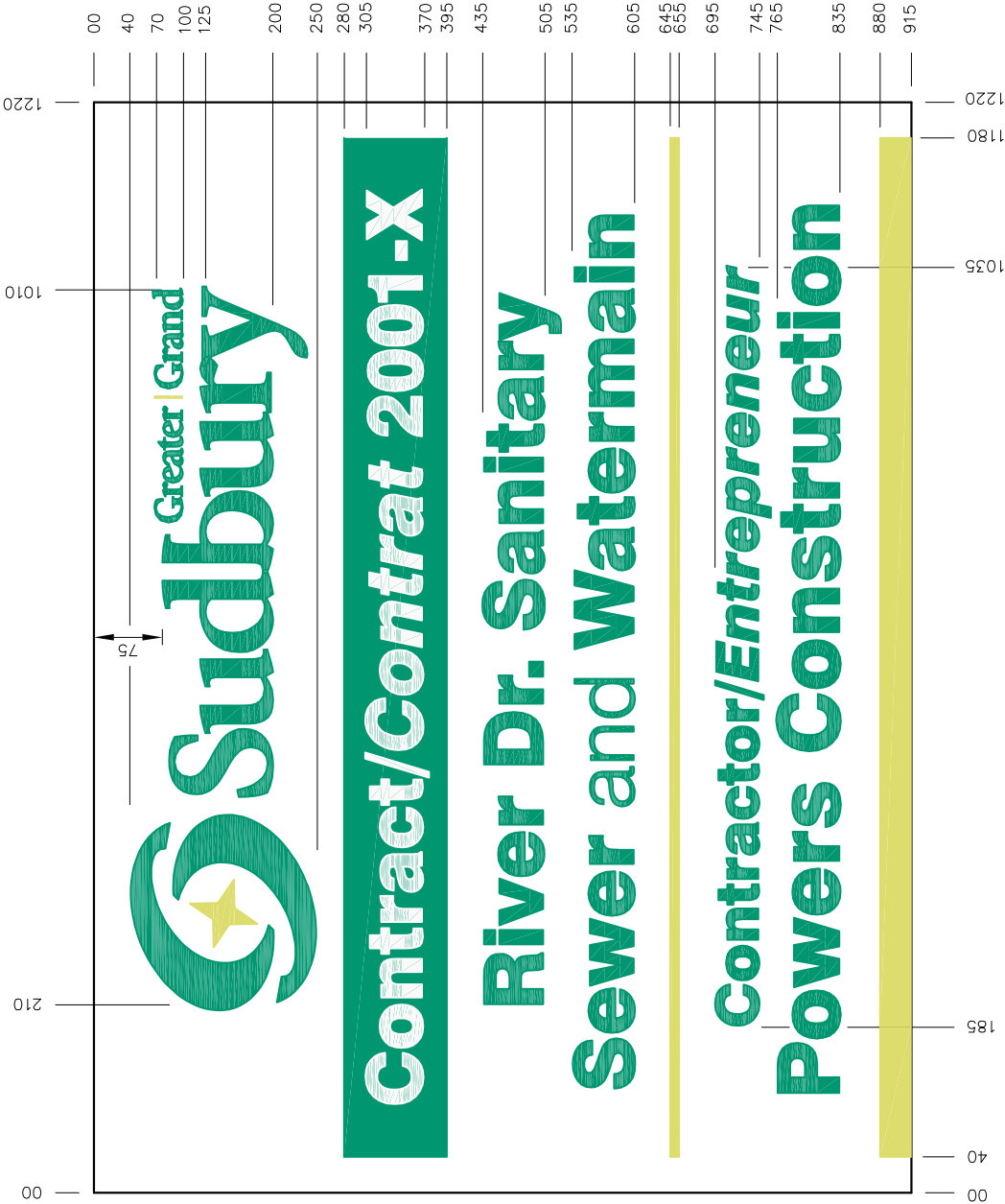
REV DATE:

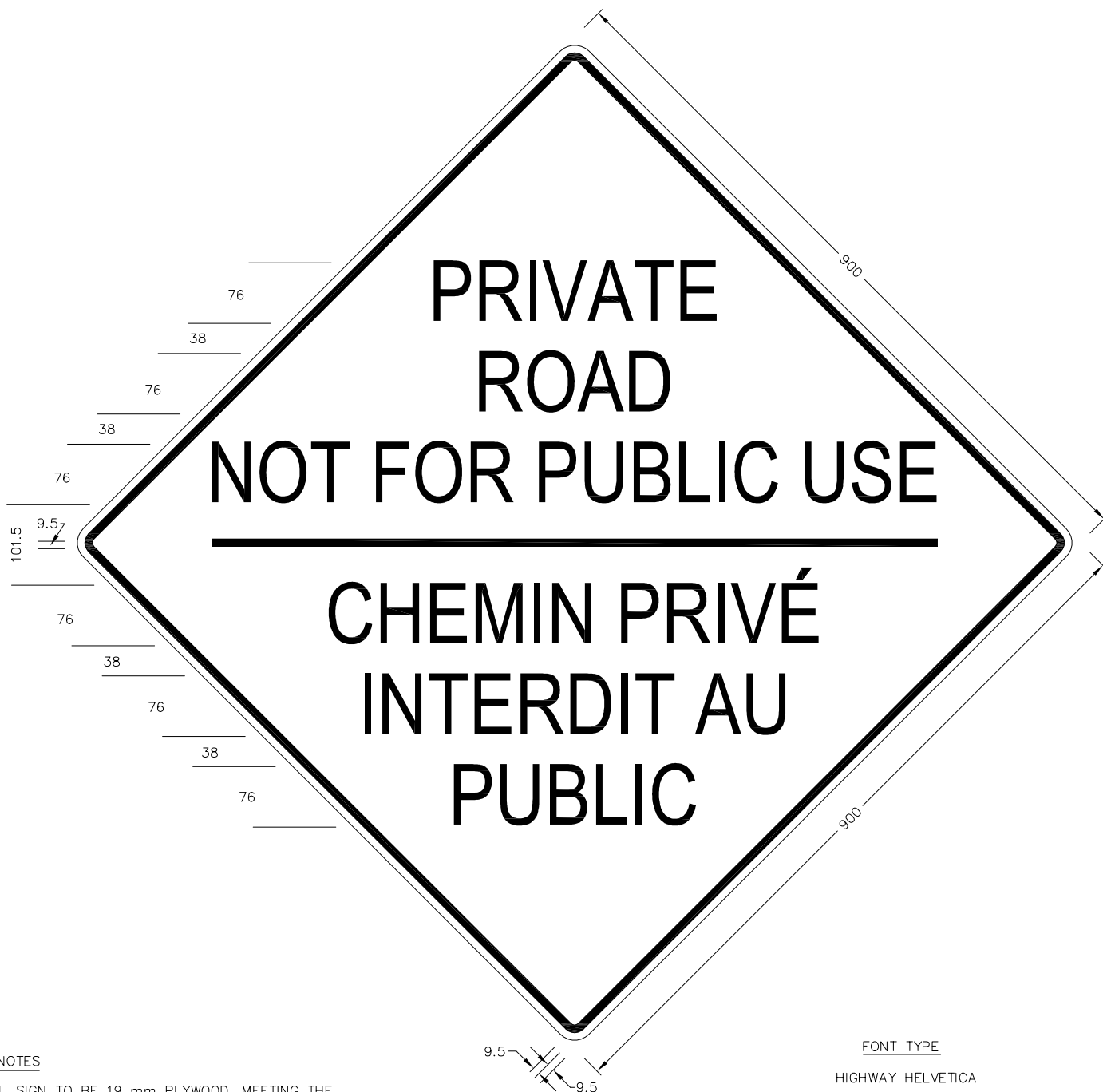
SCALE: NTS

CAD/FILE No.:  
A1984-1 (1 OF 1)

APP'D:

GSSD-125.030





#### NOTES

1. SIGN TO BE 19 mm PLYWOOD, MEETING THE REQUIREMENTS OF CSA SPECIFICATION 0121-M 1978 (DOUGLAS FIR) OR 0153M 1980 (POPLAR).
2. SIGN TO BE PAINTED YELLOW WITH BLACK LETTERS AS INDICATED AND BORDERS OF THE SAME COLOUR AS THE MESSAGE IN ACCORDANCE WITH THE CURRENT MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
3. SIGN TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
4. SIGN TO BE MOUNTED ON 100 mm x 100 mm WOOD POST SUPPLIED BY CONTRACTOR. THE WOOD POST SHALL BE PRESSURE TREATED WITH A WOOD PRESERVATIVE.
5. BOTTOM OF SIGN TO BE MOUNTED A MINIMUM OF 1.5 m AND MAXIMUM OF 2.5 m ABOVE GROUND.
6. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

#### FONT TYPE

HIGHWAY HELVETICA

#### FONT DIMENSIONS

LINE 1. 76 x 355.5  
2. 76 x 241.5  
3. 76 x 914.5  
4. 76 x 616  
5. 76 x 533.5  
6. 76 x 305

BORDER 9.5

DIVIDER 9.5 x 914.5



STANDARD SIGN  
"PRIVATE ROAD  
NOT FOR PUBLIC USE"

DRAWN BY: STS

REV No:

DATE: 2003-03-03

REV DATE:

SCALE: NTS

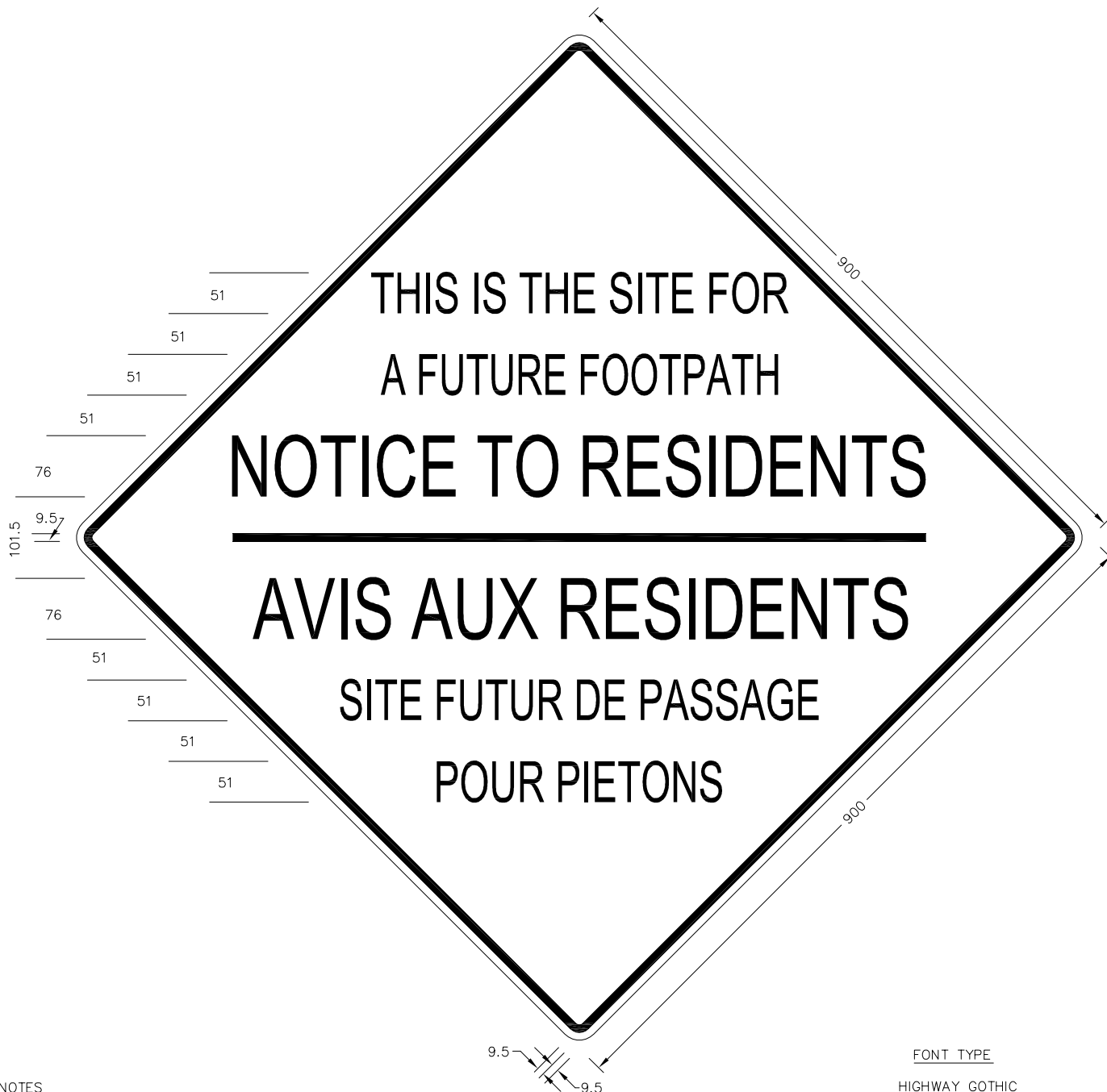
CAD/FILE No.:  
A1921-1 (1 OF 1)

APP'D:

GSSD-125.040

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#### NOTES

1. SIGN TO BE 19 mm PLYWOOD, MEETING THE REQUIREMENTS OF CSA SPECIFICATION 0121-M 1978 (DOUGLAS FIR) OR 0153M 1980 (POPLAR).
2. SIGN TO BE PAINTED YELLOW WITH BLACK LETTERS AS INDICATED AND BORDERS OF THE SAME COLOUR AS THE MESSAGE IN ACCORDANCE WITH THE CURRENT MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
3. SIGN TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
4. SIGN TO BE MOUNTED ON 100 mm x 100 mm WOOD POST SUPPLIED BY CONTRACTOR. THE WOOD POST SHALL BE PRESSURE TREATED WITH A WOOD PRESERVATIVE.
5. BOTTOM OF SIGN TO BE MOUNTED A MINIMUM OF 1.5 m AND MAXIMUM OF 2.5 m ABOVE GROUND.
6. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

#### FONT TYPE

HIGHWAY GOTHIC

#### FONT DIMENSIONS

- LINE 1. 51 x 520.5  
 2. 51 x 495.5  
 3. 76 x 863.5  
 4. 76 x 819  
 5. 51 x 597  
 6. 51 x 355.5

BORDER 9.5

DIVIDER 9.5 x 863.5



STANDARD SIGN  
 "FUTURE FOOTPATH"

DRAWN BY: STS

REV No:

DATE: 2003-03-03

REV DATE:

SCALE: NTS

CAD/FILE No.:

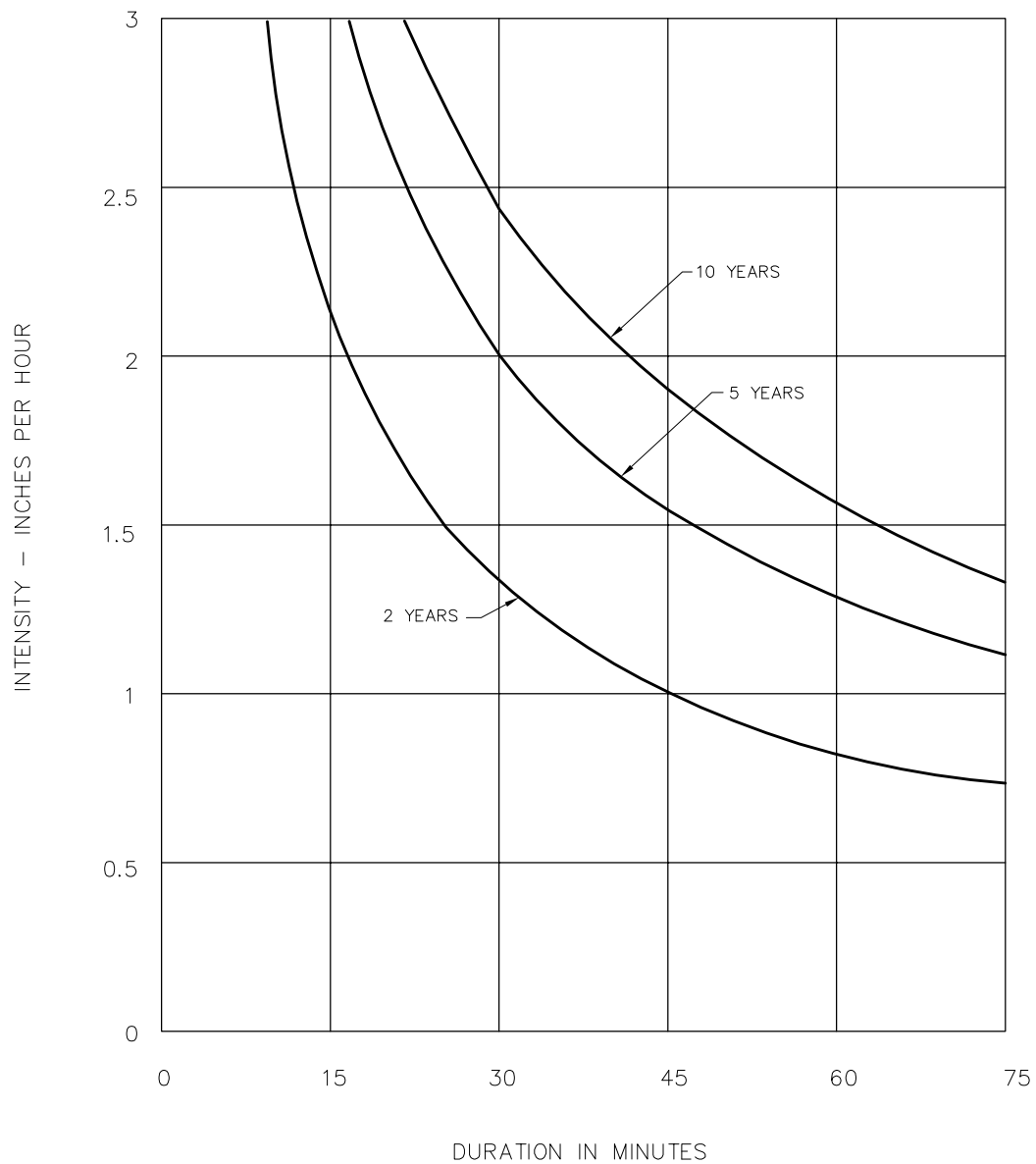
A1922-1 (1 OF 1)

APP'D:

GSSD-125.050

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NOTE:  
SEE CGS DWG B-886 FOR  
25 YEAR-RETURN PERIOD STORM.

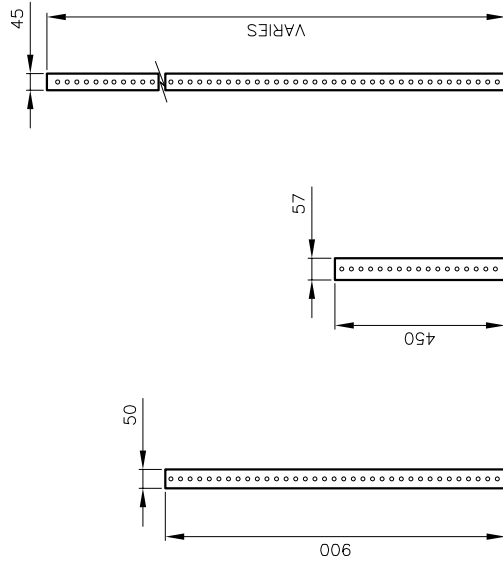


## RAINFALL INTENSITY DURATION CURVES

DRAWN BY: STS/RFRANK	REV No:
DATE: 2003-03-03	REV DATE:
SCALE: NTS	CAD/FILE No.: A1985-1 (1 OF 1)
APP'D:	GSSD-126.011

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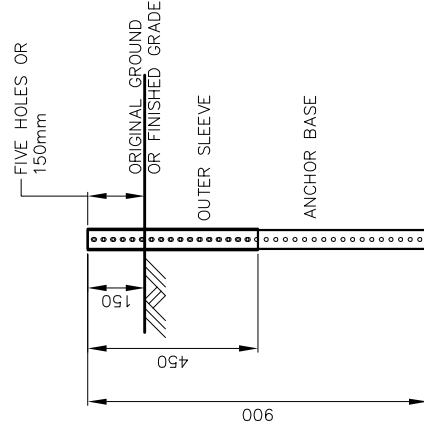


#### ANCHOR BASE

OUTER SLEEVE  
ONE SIZE LARGER  
THAN ANCHOR BASE

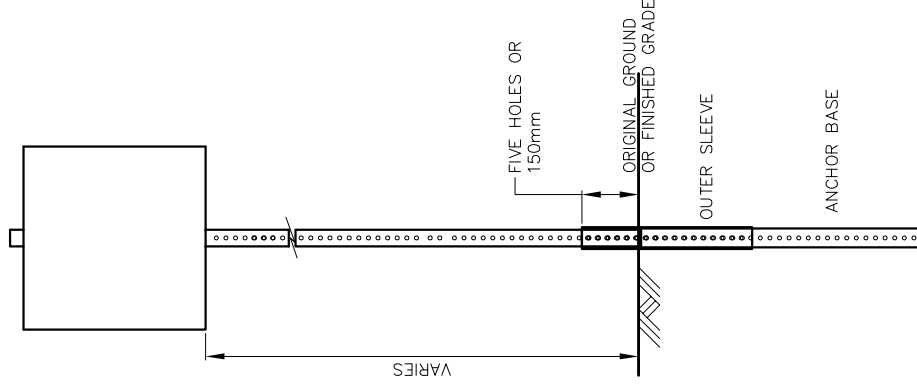
#### SINGLE POST

- 1) ALL METAL PARTS TO BE GALVANIZED.
- 2) METAL GAUGE SHALL BE 12 GAUGE.
- 3) ALL FITTINGS, ACCESSORIES, NUTS AND BOLTS FOR SIGN MOUNTING ARE AVAILABLE FROM MANUFACTURER.
- 4) ALL DIMENSIONS IN MILLIMETERS.



#### YIELDING BREAKAWAY

- 1) OUTER SLEEVE OVER ANCHOR BASE.
- 2) TOP OF OUTER SLEEVE TO BE FLUSH WITH TOP OF ANCHOR BASE.
- 3) OUTER SLEEVE AND ANCHOR BASE DRIVEN INTO GROUND TOGETHER
- 4) DRIVE CAP MUST BE USED FOR SLEDGE HAMMER USE.
- 5) FIVE HOLES OR 150mm ABOVE ORIGINAL OR FINISHED GRADE.



#### SIGN INSTALLATION

- 1) SIGN POST TO BE PLACED INSIDE YIELDING BREAKAWAY 5 HOLES OR 150mm
- 2) SIGN MOUNTING HEIGHT TO BE IN ACCORDANCE WITH THE ONTARIO TRAFFIC MANUAL.

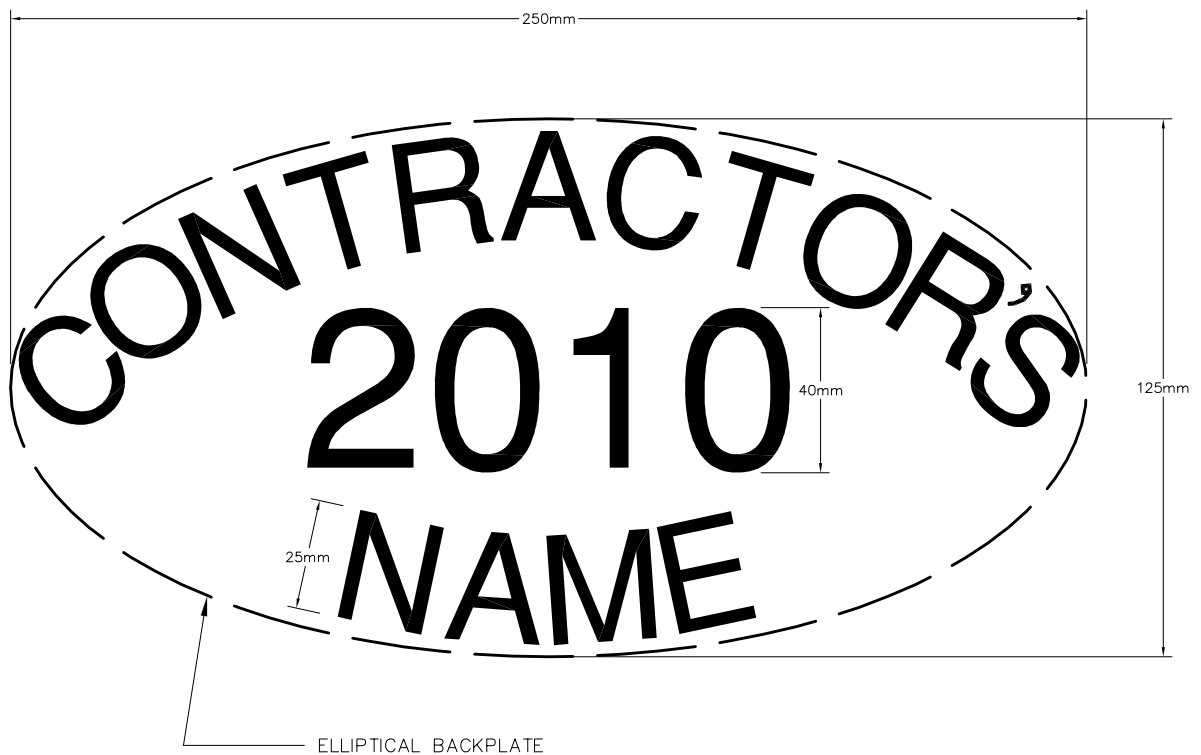
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### TYPICAL SIGN MOUNTING

DRAWN BY: R. TILSON	REV No:
DATE: 2006-10-03	REV DATE:
SCALE: 1:20	CAD/FILE No.: A2135-1 (1 OF 1)
APP'D:	GSSD-127.000



**NOTE**

CONTRACTOR TO USE SHARP GOTHIC LETTERS

	HEIGHT	WIDTH	THICKNESS
NUMBERS	40mm	20mm	6mm
LETTERS	25mm	20mm	5mm

**NOTES:**

1. CONCRETE STAMP IMPRESSION SHALL NOT BE PLACED IN DIRECTIONAL LINES.
2. CONCRETE STAMP IMPRESSION TO BE PLACED AT EXPANSION OR DUMMY JOINTS, BUT NOT WITHIN THE EDGING TOOL FINISH AND CENTERED IN SLAB.
3. CONCRETE STAMP IMPRESSION SHALL BE PLACED ON THE CONTINUOUS RUN OF NEW SIDEWALK AS FOLLOWS:
  - a) <50 METRES, IMPRESSION @ EACH END.
  - b) ≥50 METRES BUT ≤100 METRES, @ EACH END PLUS MIDPOINT.
  - c) >100 METRES, @ EACH END PLUS EQUALLY SPACED NOT TO EXCEED 50 METRE INTERVALS, (ROTATE STAMP EVERY 50 METRES).



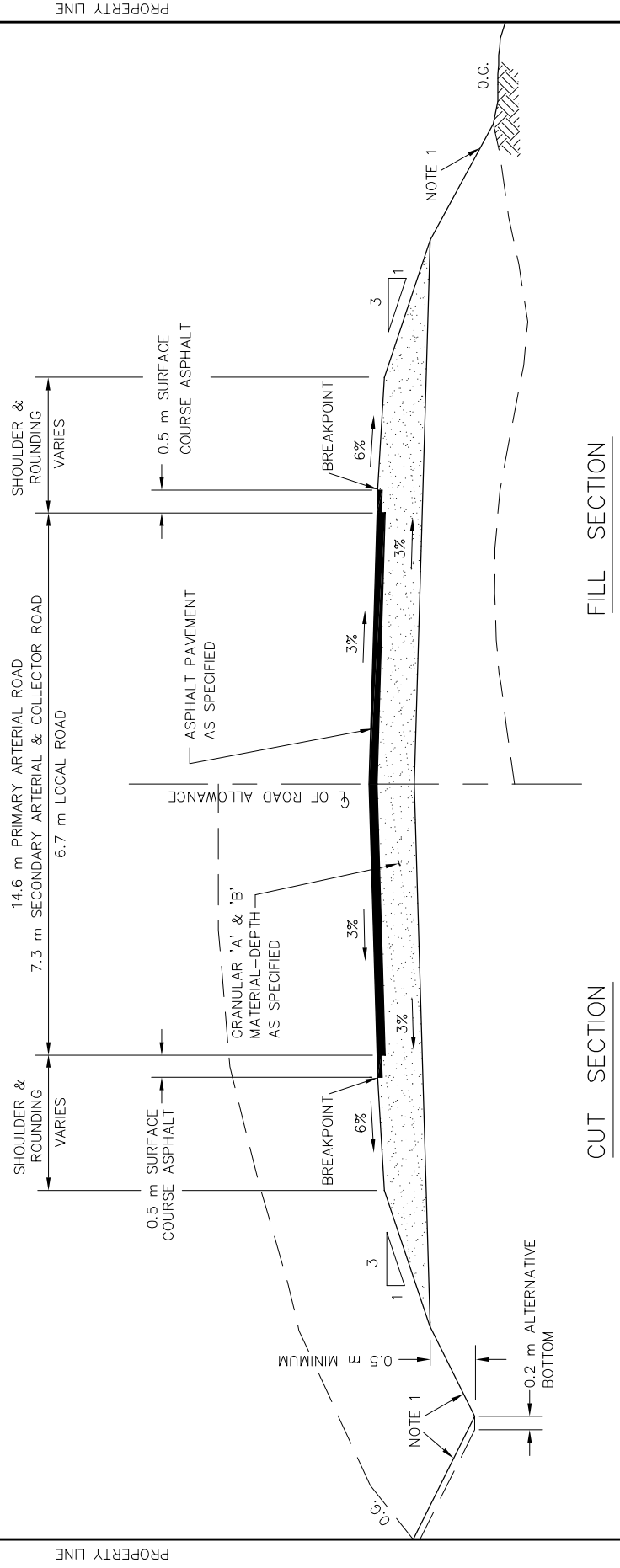
**STANDARD  
SIDEWALK STAMP**

DRAWN BY: BWK	REV No:
DATE: 2010-10-20	REV DATE:
SCALE: NTS	CAD/FILE No.: A2200-1 (1 OF 1)
APP'D: PETER CHIESA	GSSD-128.000

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PRIMARY ARTERIAL 37 m MINIMUM ROAD ALLOWANCE  
SECONDARY ARTERIAL 30 m MINIMUM ROAD ALLOWANCE  
COLLECTOR & LOCAL 20 m MINIMUM ROAD ALLOWANCE



NOTES :

1. SLOPES:
  - FOR HEIGHTS OF FILL OR DEPTHS OF CUT 1 m OR LESS, USE 3:1 SLOPE
  - FOR HEIGHTS OF FILL OR DEPTHS OF CUT OVER 1 m, USE 2:1 SLOPE
2. ALL TOPSOIL IS TO BE STRIPPED PRIOR TO GRANULAR MATERIAL BEING PLACED, IF DEPTH IS LESS THAN 1 m.

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STANDARD  
ROAD SECTION  
RURAL

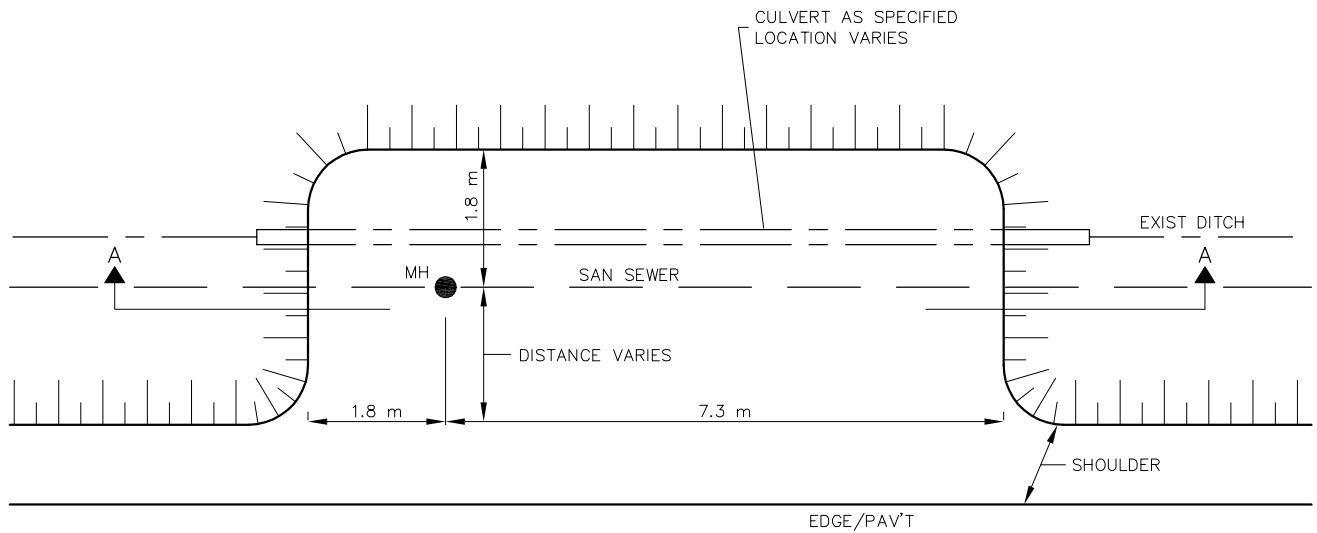
DRAWN BY: STS/RFRANK REV No:

DATE: 2003-03-03 REV DATE:

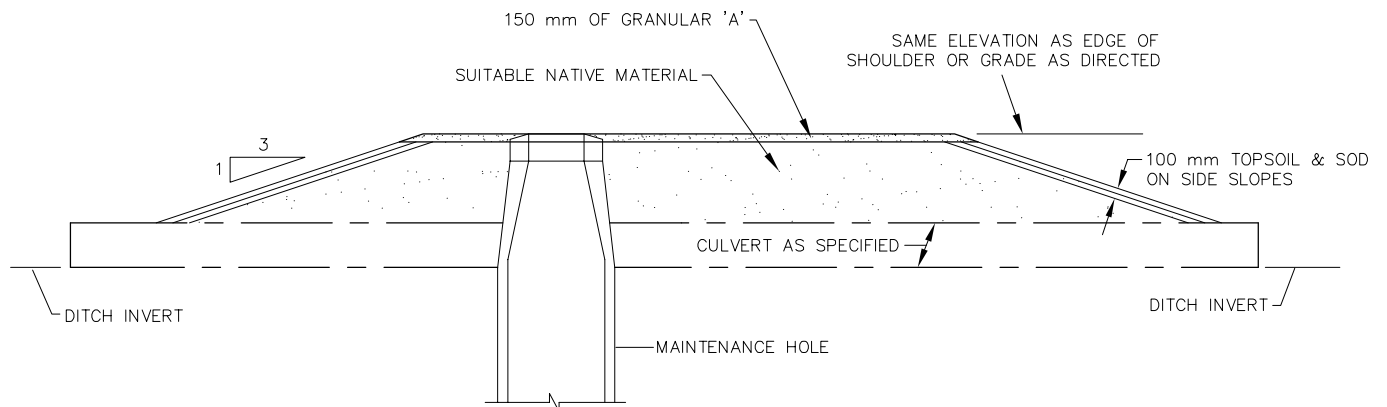
SCALE: NTS CAD/FILE No.: A1952-1 (1 OF 1)

APP'D:

GSSD-206.010



PLAN



SECTION A-A



## MAINTENANCE HOLE ACCESS ENTRANCE AT DITCHES

DRAWN BY: STS/RFRANK	REV No:
DATE: 2003-03-03	REV DATE:
SCALE: NTS	CAD/FILE No.: A1949-1 (1 OF 1)
APP'D:	GSSD-217.051

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STAKING (TYP), ON 2:1 SLOPES OR STEEPER,  
AND DRIVEN FLUSH WITH SOD SURFACE

MATCH TO EXISTING  
SURFACE GRADE LEVEL  
SEE NOTE 2

SEE NOTE 1

NOTED  
DIRECTION

SUBGRADE  
ELEVATION ON  
ROADWAY  
FRONTSLOPE

NOTES:

1. TOPSOIL TO A UNIFORM DEPTH OF 100 mm OR SOIL FROM SWAMP/MUSKEG AREAS BEING APPLIED TO A UNIFORM DEPTH OF 150 mm.
2. SODDING TO BE COUNTERSUNK TO EXISTING SURFACE GRADE LEVEL AT ALL MATCH-IN POINTS.
3. STAKES FOR PEGGING SHALL BE 19 mm x 19 mm x 300 mm IN LENGTH.
4. APPLY SOD TO DESIGNATED AREAS.
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

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SODDING OF SIDE SLOPES

DRAWN BY: STS/RFRANK REV No:

DATE: 2003-03-03

REV DATE:

SCALE: NTS

CAD/FILE No.:

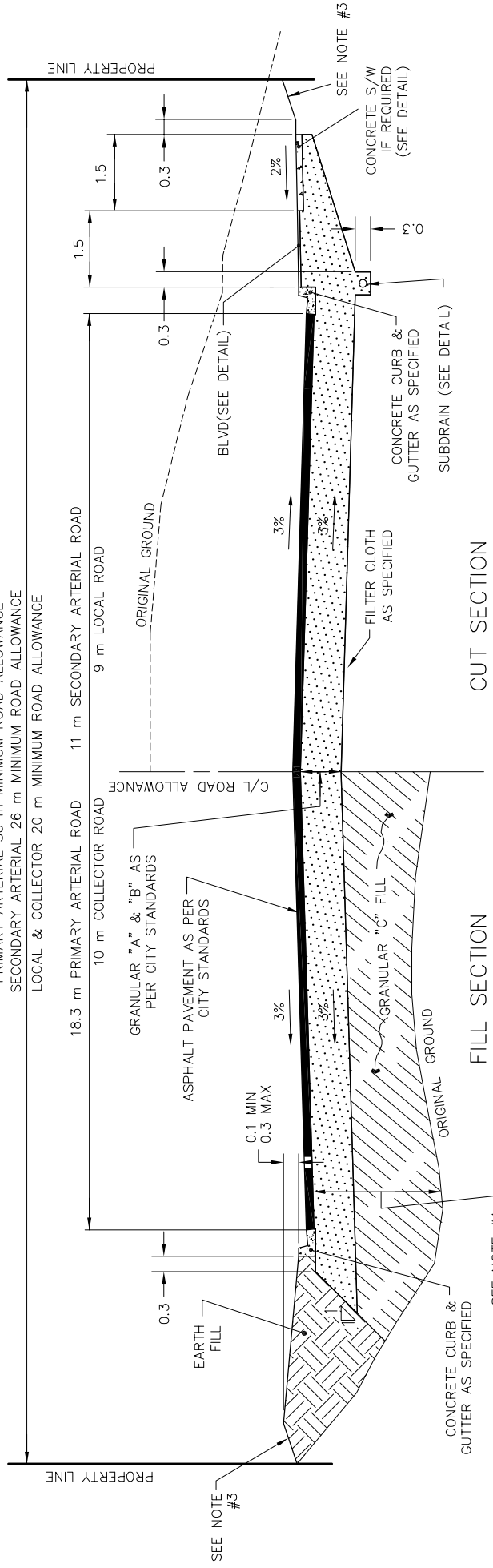
A2019-1 (1 OF 1)

APP'D:

GSSD-218.010

PRIMARY ARTERIAL 30 m MINIMUM ROAD ALLOWANCE  
SECONDARY ARTERIAL 26 m MINIMUM ROAD ALLOWANCE  
LOCAL & COLLECTOR 20 m MINIMUM ROAD ALLOWANCE

18.3 m PRIMARY ARTERIAL ROAD 11 m SECONDARY ARTERIAL ROAD  
10 m COLLECTOR ROAD 9 m LOCAL ROAD

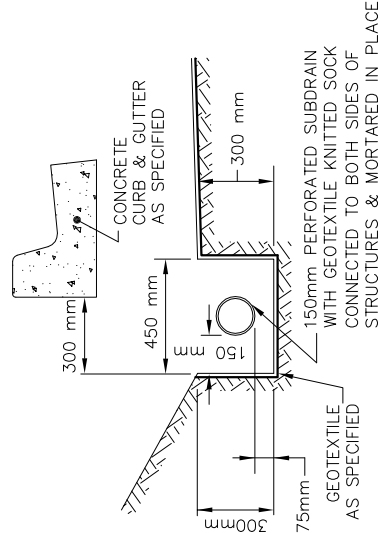


CUT SECTION

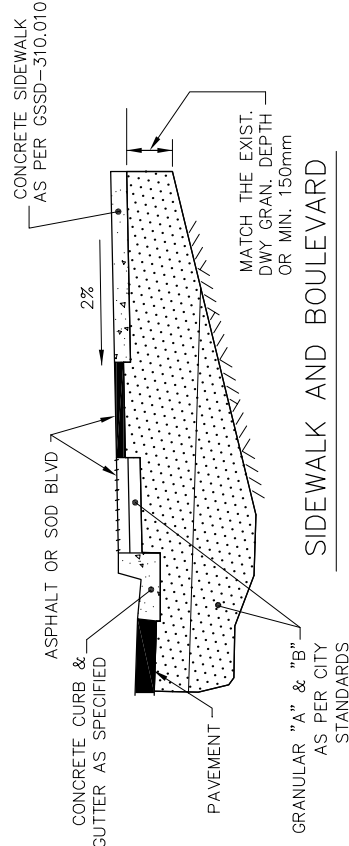
FILL SECTION

NOTES:

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE INDICATED.
2. DIMENSIONS SHOWN ARE TO BE USED UNLESS OTHERWISE SPECIFIED.
3. SLOPES : FOR HEIGHTS OF FILL OR DEPTHS OF CUT 1 m OR LESS, USE A 3 : 1 SLOPE.  
FOR HEIGHTS OF FILL OR DEPTHS OF CUT OVER 1 m, USE A 2 : 1 SLOPE.  
SLOPES TO BE SURFACE DRESSED AS SPECIFIED IN THE CONTRACT.
4. ALL TOPSOIL IS TO BE STRIPPED PRIOR TO GRANULAR MATERIAL BEING PLACED, IF DEPTH IS LESS THAN 1 m.
5. UTILITY LOCATIONS TO BE APPROVED BY THE CITY ENGINEER.
6. SEE GSSD-225.030 FOR TYPICAL SERVICE LOCATIONS.



SUBDRAIN DETAIL



DETAILS AT DRIVEWAYS

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STANDARD  
ROAD SECTION  
URBAN

DRAWN BY: WK/SS/RF/BK REV No: 1

DATE: 2003-03-03

REV DATE: OCT 2010

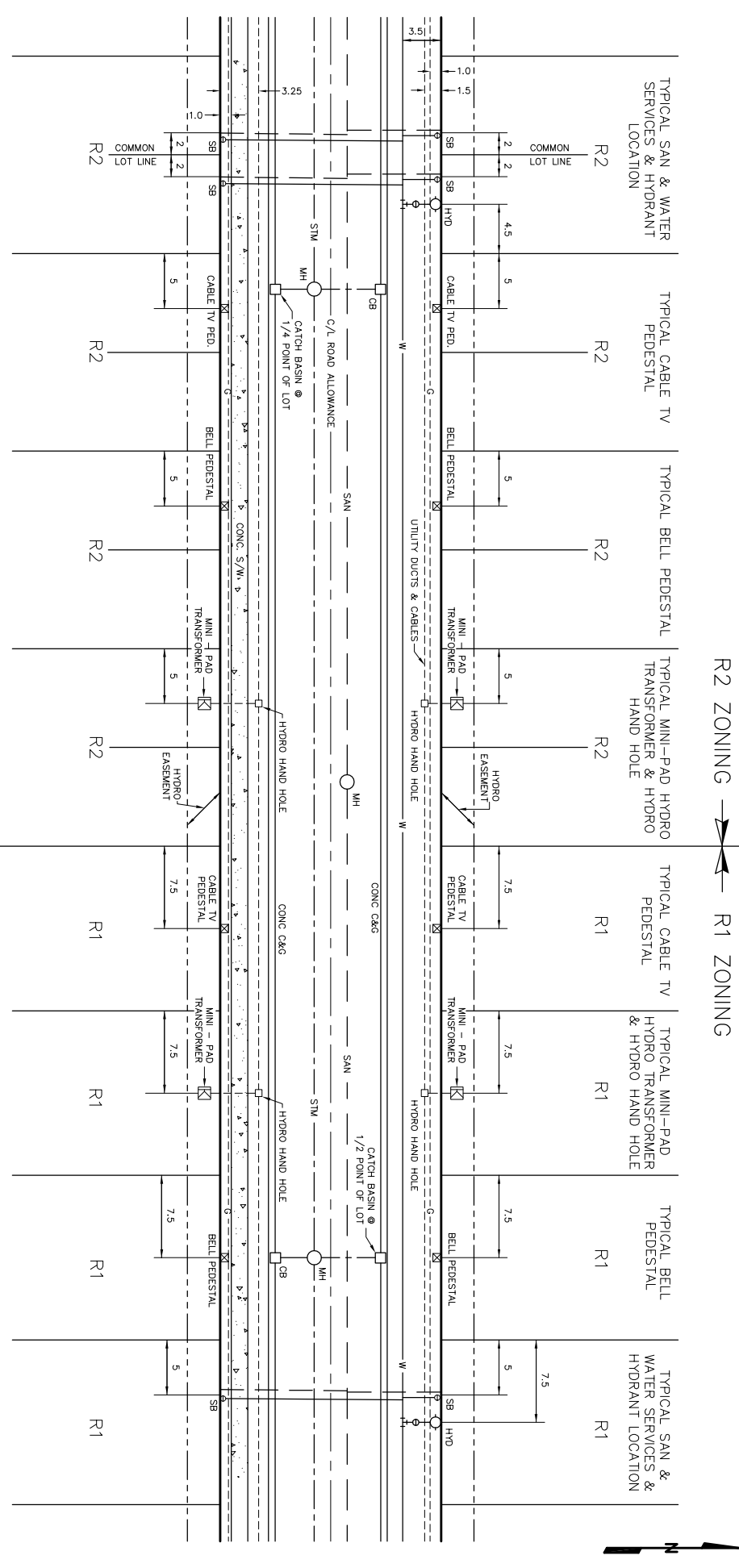
SCALE: NTS

CAD/FILE No.:  
A1924-1 (1 OF 1)

APP'D: PETER CHIESA

GSSD-225.010

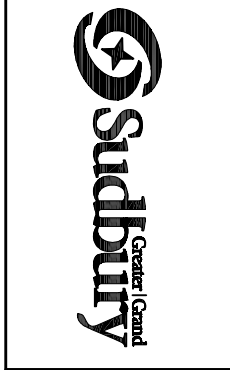
R2 ZONING — R1 ZONING



- NOTES:**
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE INDICATED.
  2. WHERE A MINI-PAD TRANSFORMER IS INSTALLED IN AN R2 LOT, THE SEWER & WATER SERVICE IS 1.5 m FROM LOT LINE RATHER THAN THE NORMAL LOCATION OF 2 m.
  3. REFER TO GSSD-1226.010 FOR INSTALLATION OF SERVICES IN A ROCK TRENCH.
  4. WHEN SIDEWALK IS ON THE NORTH OR EAST SIDE, THE LOCATION OF THE UTILITY DUCTS AND CABLES ARE REVERSED.
  5. IF IT IS PROPOSED TO HAVE A DRIVEWAY DOWN A COMMON LOT LINE, MINI-PAD TRANSFORMER TO BE INSTALLED 5 m FROM COMMON LOT LINE.
  6. SEE GSSD-225.010 FOR TYPICAL SECTION.
  7. SEE GSSD-1006.030 FOR STANDARD DUAL SERVICE CONNECTIONS IN A COMMON TRENCH (SEWER & WATER).

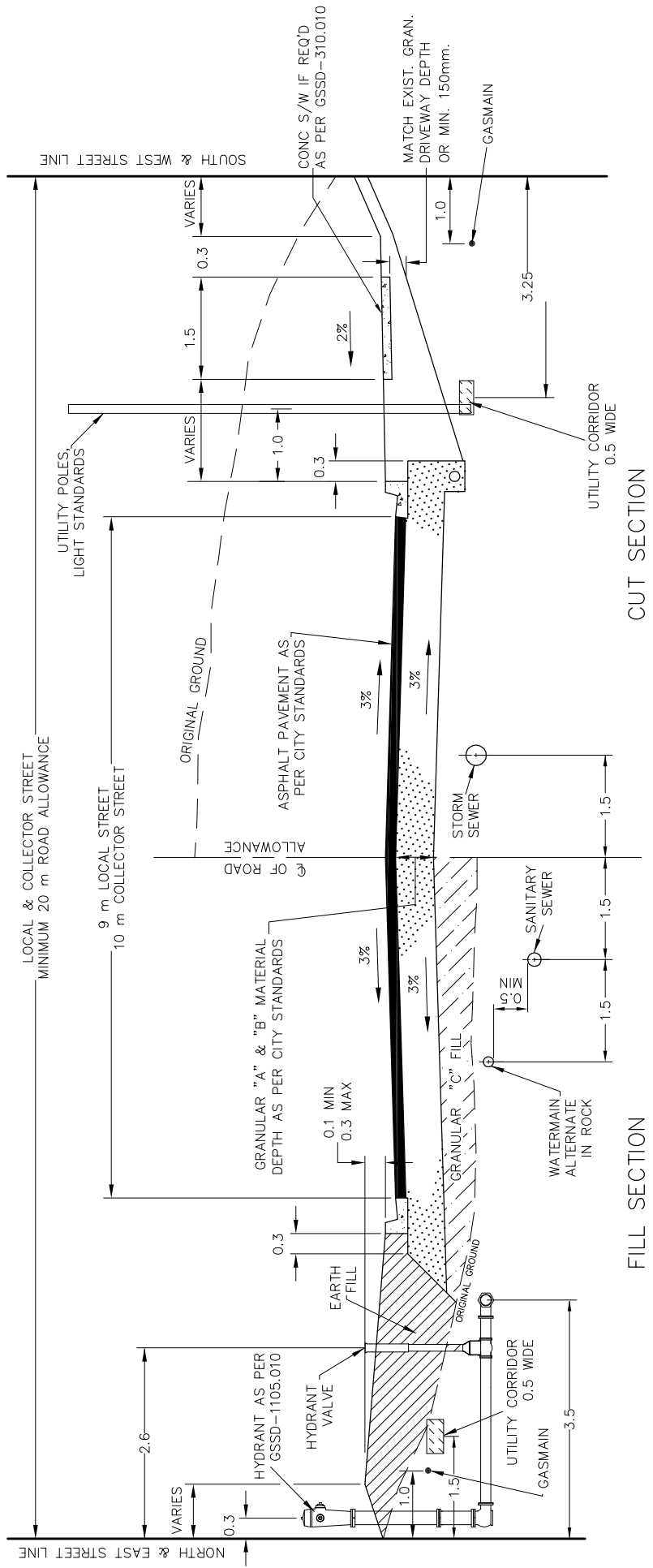
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UTILITY SERVICES  
LOCATION PLAN

DRAWN BY: RF	REV No:
DATE: 2003-03-03	REV DATE:
SCALE: NTS	CAD/FILE No.: A1923-1 (1 OF 1)
APP'D:	GSSD-225.030



NOTES:

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE INDICATED.
2. DIMENSIONS SHOWN ARE TO BE USED UNLESS OTHERWISE SPECIFIED.
3. UTILITY CONDUITS & CABLES WITHIN BOULEVARD TO HAVE 0.75 m MINIMUM COVER.
4. WHEN SIDEWALK IS ON NORTH OR EAST SIDE, UTILITY CORRIDOR LOCATION IS REVERSED.
5. SEE GSSD-225.030 FOR TYPICAL SERVICE LOCATIONS.

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UTILITY SERVICES  
LOCATION SECTION

DRAWN BY: SS/RF/MP/BK REV No: 2

DATE: 2003-03-03

REV DATE: OCT 2010

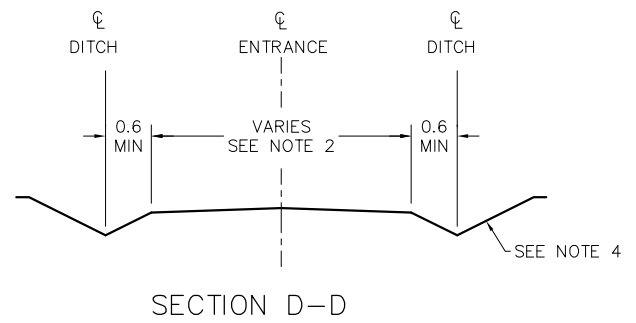
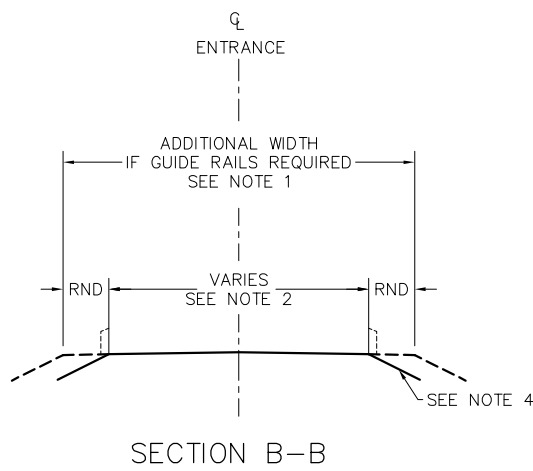
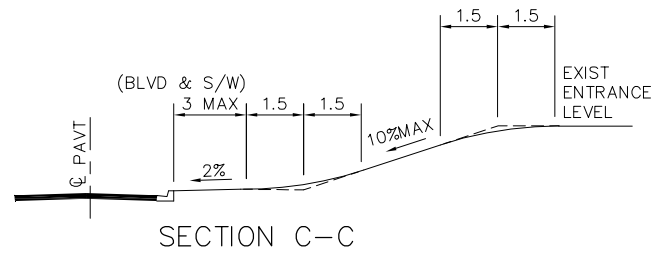
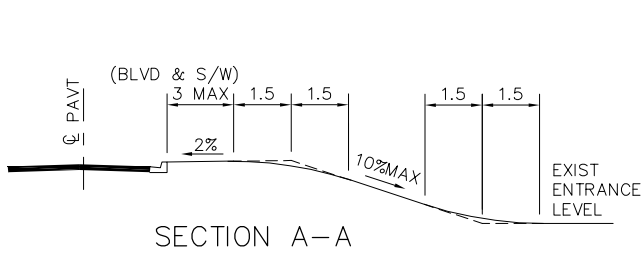
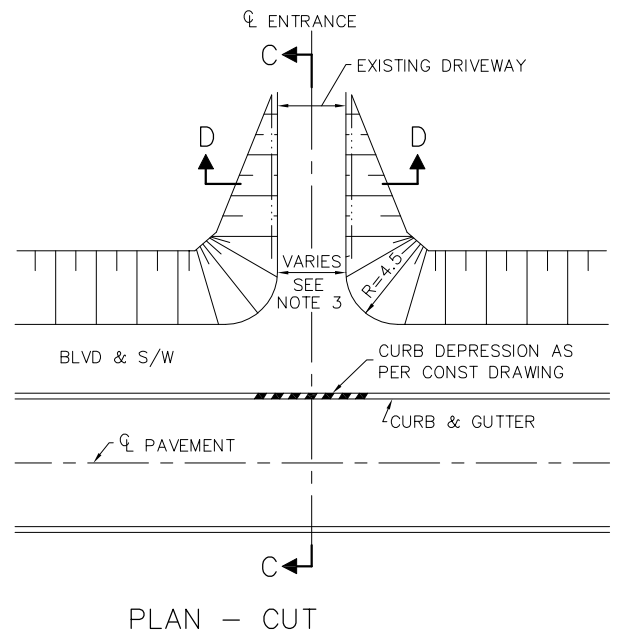
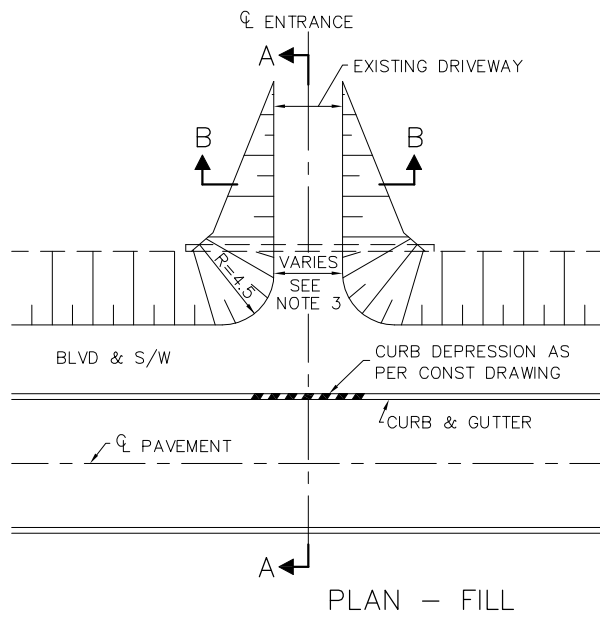
SCALE: NTS

CAD/FILE No.:

A1986-1 (1 OF 1)

APP'D: PETER CHIESA

GSSD-225.040



#### NOTES

1. GUIDE RAILS ARE REQUIRED ON FILLS 3 m IN HEIGHT OR MORE. WHERE STEEL BEAM GUIDE RAIL IS INDICATED WIDTH OF ROUNDING SHALL BE 1 m.
2. WIDTH OF DRIVEWAY TAPERS FROM END OF RADIUS TO MEET EXISTING DRIVEWAY.
3. DRIVEWAY WIDTH VARIES - MINIMUM 3 m, MAXIMUM 6.1 m.
4. SLOPES: FOR HEIGHTS OF FILL OR DEPTHS OF CUT 1 m OR LESS, USE 3:1 SLOPE.  
FOR HEIGHTS OF FILL OR DEPTHS OF CUT OVER 1 m, USE A 2:1 SLOPE.
5. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN.



## TYPICAL URBAN PRIVATE ENTRANCE WITH BOULEVARD & SIDEWALK

DRAWN BY: STS/RFRANK

REV No:

DATE: 2003-03-03

REV DATE:

SCALE: NTS

CAD/FILE No.:

A1925-1 (1 OF 1)

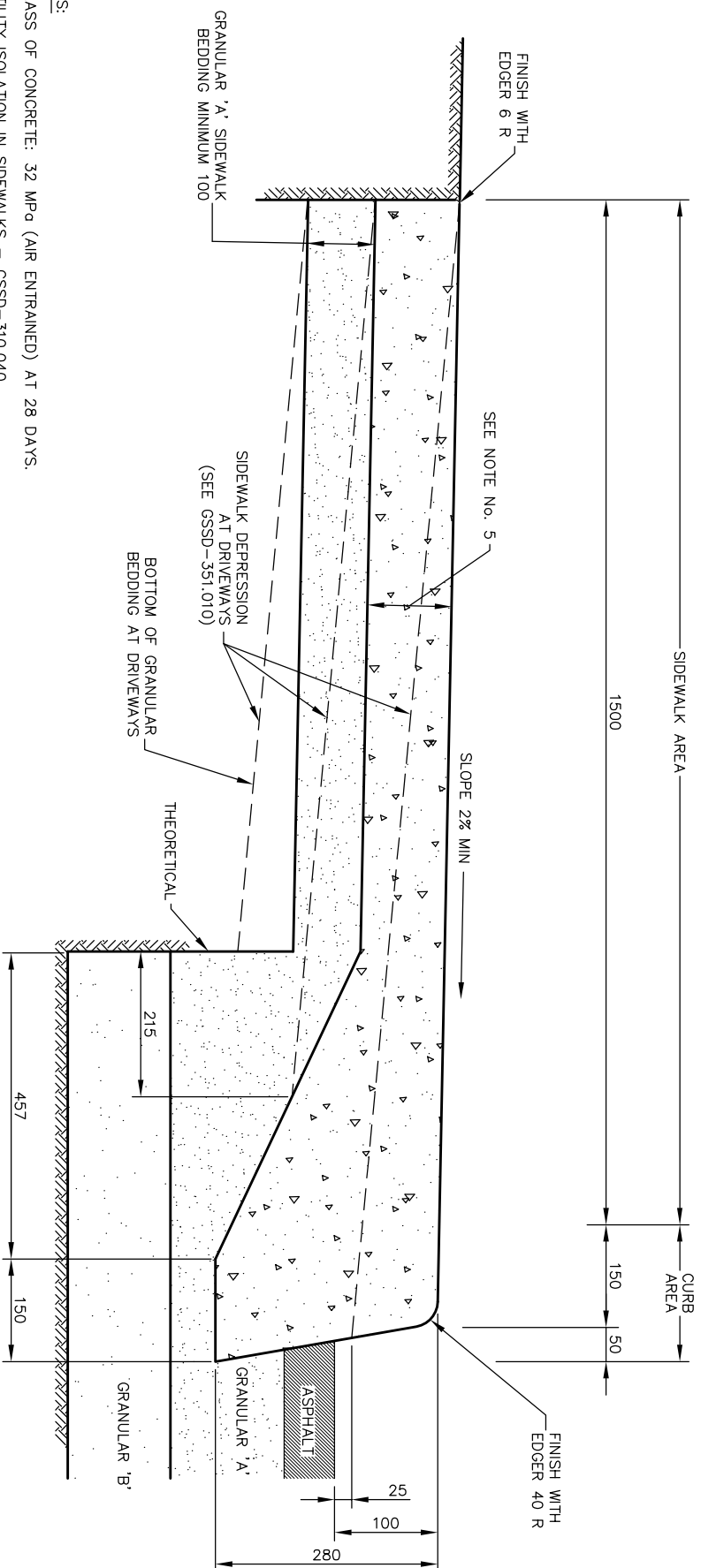
APP'D:

GSSD-303.020

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NOTES:

1. CLASS OF CONCRETE: 32 MPa (AIR ENTRAINED) AT 28 DAYS.
2. UTILITY ISOLATION IN SIDEWALKS – GSSD-310.040.
3. UNCOATED 150 mm SQUARE STEEL WIRE FABRIC (No. 3.8) FOR CONCRETE REINFORCEMENT CONFORMING TO CSA G30.5, 1998 SHALL BE PLACED IN THE SIDEWALK (40 mm FROM BOTTOM) AT ALL DRIVEWAY ENTRANCES.
4. EXPANSION JOINTS ARE REQUIRED AT BOTH SIDES OF THE DRIVEWAY. THESE JOINTS SHALL CONTINUE THROUGH THE CURB AREA IF THE DISTANCE FROM THE PREVIOUS JOINT IS LESS THAN 1.5 m. THIS DISTANCE SHALL BE ADDED TO THE NEXT BAY AND A DUMMY JOINT PLACED AT MID-SPAN. DUMMY JOINTS ARE REQUIRED IN DRIVEWAYS AT INTERVALS OF 1.5 m, BUT IN NO CASE LESS THAN 1 m.  
IF THE DRIVEWAY IS GREATER THAN 6 m IN WIDTH, AN EXPANSION JOINT WILL BE REQUIRED AT MID-SPAN AND CONTINUE THROUGH THE CURB AREA. DEPTH OF CONCRETE SHALL TAPER TO THE NORMAL DEPTH FOR A DISTANCE OF 1.5 m AT EACH SIDE OF DRIVEWAY.
5. SIDEWALK THICKNESS AT RESIDENTIAL DRIVEWAYS SHALL BE 125 mm. AT COMMERCIAL AND INDUSTRIAL DRIVEWAYS, THE THICKNESS SHALL BE 180 mm.
6. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

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MONOLITHIC CURB AND CONCRETE SIDEWALK

DRAWN BY: STS/RFRANK		REV No.: 1
DATE: 2003-03-03	REV DATE: JAN/2013	
SCALE: NTS	CAD/FILE No.: A1945-1 (1 OF 1)	
APP'D:	GSSD-310.015	



- 100 GRANULAR 'A' MATERIAL

1. EXPANSION JOINTS AS PER GSSD-310.010 FOR THE SIDEWALK AND

RETAINING WALL TO BE COMMON.

2. CLASS OF CONCRETE: 32 MPa AT 28 DAYS.

3. UNCOATED 150 mm SQUARE STEEL WIRE FABRIC (No.3,8) FOR CONCRETE REINFORCEMENT CONFORMING TO C.S.A. G30.5, 1998 SHALL BE PLACED IN THE SIDEWALK AND RETAINING WALL.

4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

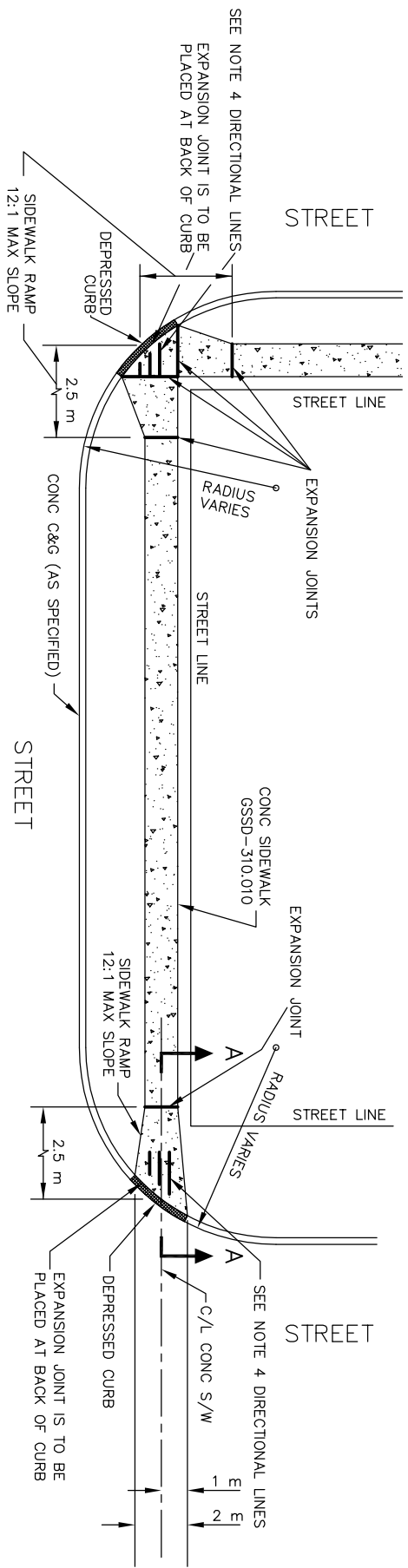
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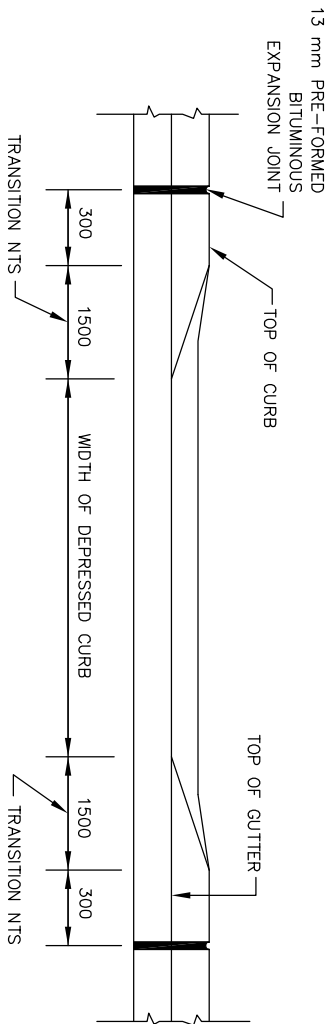


# MONOLITHIC CONCRETE SIDEWALK AND RETAINING WALL

DRAWN BY: STS/RFRANK	REV No.: 1
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1931-1 (1 OF 1)
APP'D:	GSSD-310.018



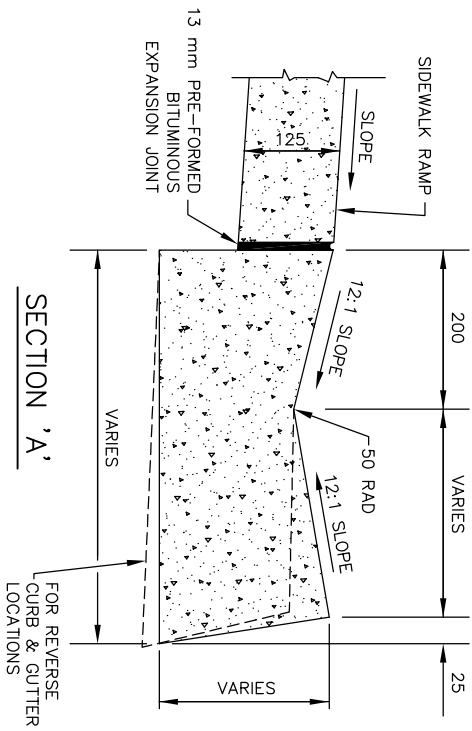
### PLAN



### TYPICAL ELEVATION

#### NOTES:

1. FOR DETAILS OF CONCRETE CURB & GUTTER REFER TO GSSD-600.010 & GSSD-600.030.  
NOTE THAT THE DROPPED CURB AT SIDEWALK ENTRANCES SHALL BE A STRAIGHT VEE AND SHALL NOT INCORPORATE THE 25 mm LP.
2. METRIC - ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
3. CONCRETE SIDEWALK AS PER GSSD-310.010.
4. FOR DIRECTIONAL LINES SEE GSSD-310.032  
FOR TACTILE WARNING SURFACE SEE GSSD-310.031



### SECTION 'A'

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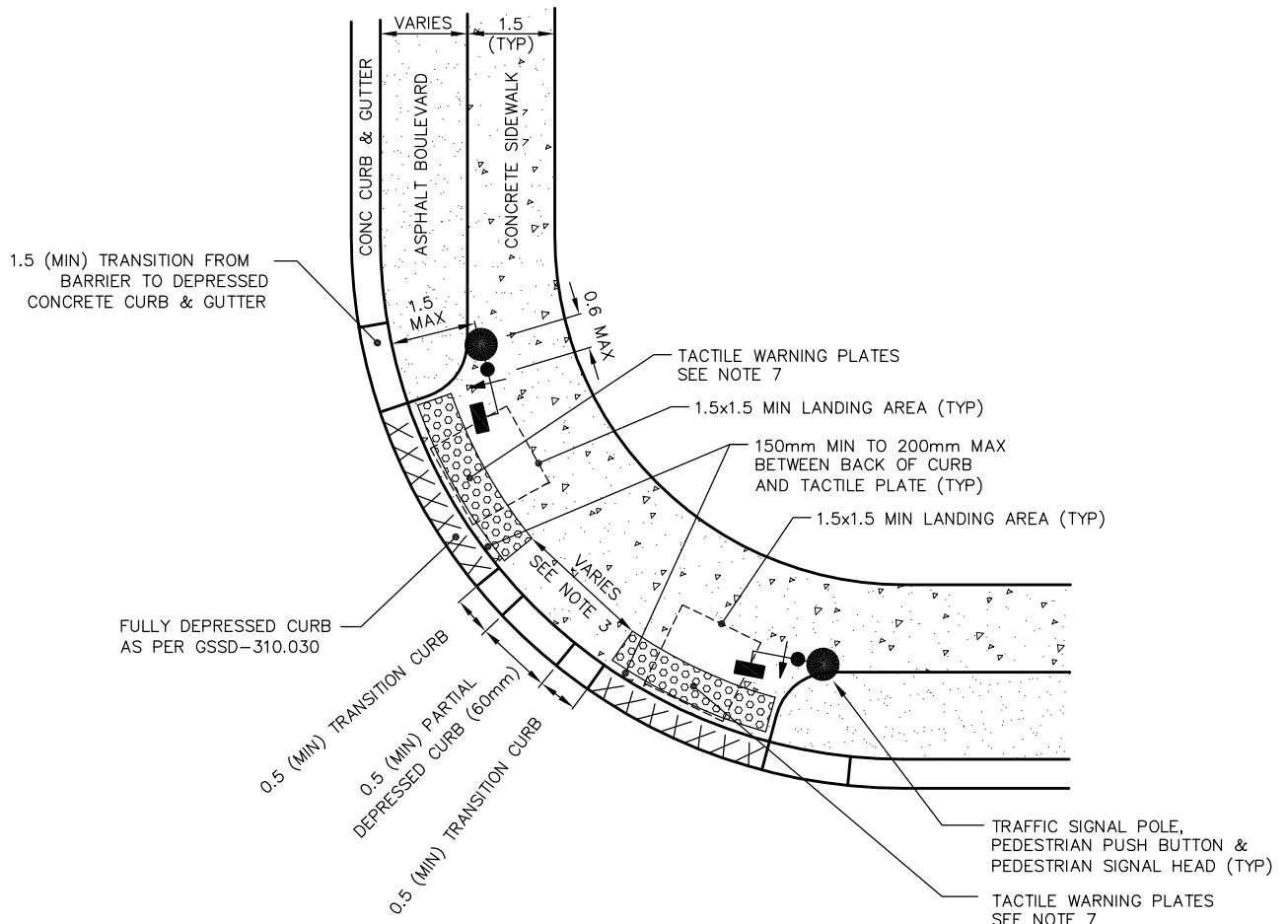
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## CURB DEPRESSIONS FOR SIDEWALKS AT INTERSECTIONS

DRAWN BY: BWK/KLR	REV No: 2
DATE: 2003-03-03	REV DATE: 2016-03-16
SCALE: NTS	CAD/FILE No.: A1987-1 (1 OF 1)
APP'D: PETER CHIESA	GSSD-310.030



**NOTES:**

1. ALL PEDESTRIAN CROSSINGS SHALL BE 3.0m WIDE UNLESS OTHERWISE SPECIFIED.
2. 1.5m FOR TRANSITIONS BETWEEN FULL HEIGHT CURB AND DEPRESSED CURB. REFER TO GSSD-310.030.
3. WHEN THE DISTANCE BETWEEN PEDESTRIAN CROSSINGS IS LESS THAN 1.5m USE A CONTINUOUS DEPRESSED CURB AT INTERSECTION CORNER. WHEN THE DISTANCE IS GREATER THAN OR EQUAL TO 1.5m USE TWO SEPARATED DEPRESSED CURBS AT INTERSECTION CORNER. MINIMUM 0.3m SEPARATION BETWEEN TACTILE WARNING SURFACES AT EACH CROSSING.
4. DEPRESSED CURBS ARE TO BE INSTALLED AT ALL PEDESTRIAN CROSSINGS.
5. TACTILE WARNING SURFACE PLATES SHALL BE INSTALLED ONLY WITHIN THE WIDTH OF THE PEDESTRIAN CROSSING.
6. TACTILE WARNING SURFACE PLATES SHALL BE INSTALLED AS PER MANUFACTURES RECOMMENDATIONS. REFER TO OPSD 310.030.
7. TACTILE WARNING PLATES SHALL BE 610mm x 610mm SQUARE OR RADIAL PLATES TO MATCH CURB RADIUS. REFER TO GSSS 351.
8. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.

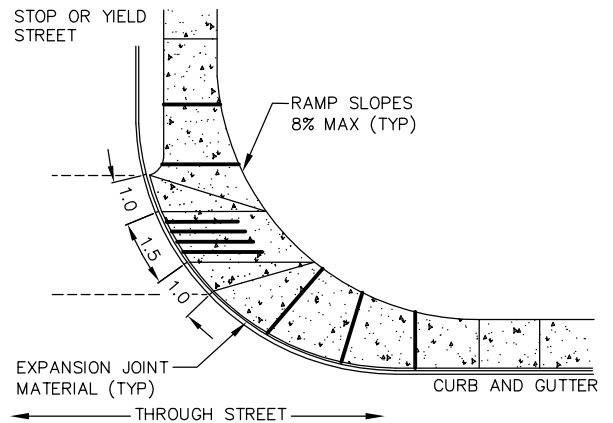
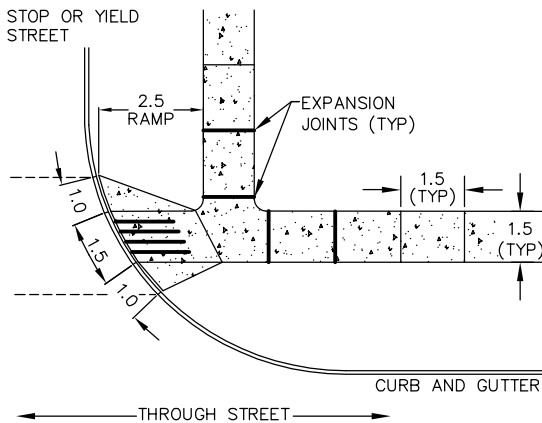


**TACTILE WARNING  
SURFACE  
LAYOUT DETAIL**

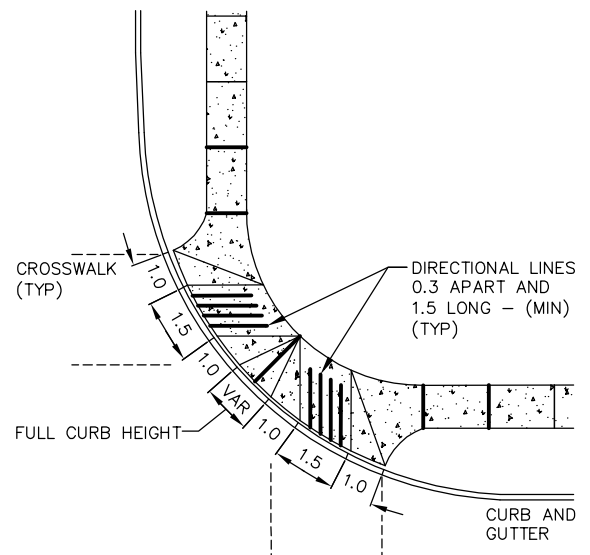
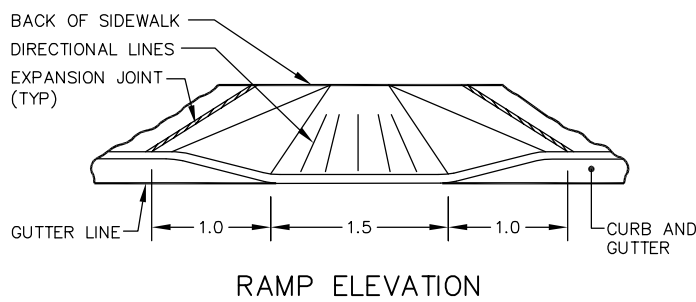
DRAWN BY: AC/BWK/KLR	REV No:
DATE: 2015-04-14	REV DATE: 2016-03-16
SCALE: N.T.S.	CAD/FILE No.: A2360-1 (1 OF 1)
APP'D:	<b>GSSD-310.031</b>

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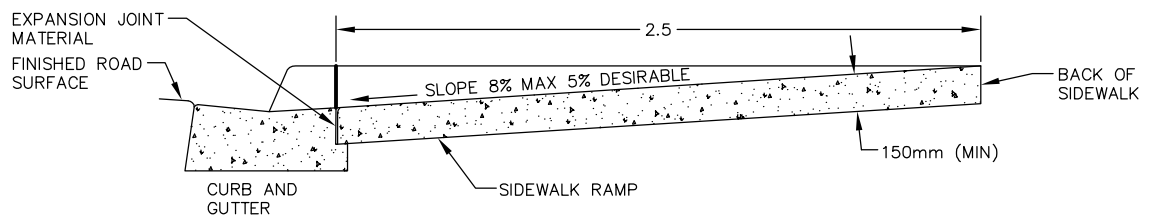
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## UNSIGNALIZED INTERSECTIONS



## SIGNALIZED INTERSECTIONS



## TYPICAL RAMP SECTION

### NOTES:

- DIRECTIONAL LINES SHALL BE 10mm x 10mm MADE WITH GROOVING TOOL HAVING A 5mm RADIUS
- ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED



## CONCRETE SIDEWALK RAMPS WITH DIRECTIONAL LINES AT INTERSECTIONS

DRAWN BY: KLR

REV No:

DATE: 2016-03-16

REV DATE: 2016-03-16

SCALE: N.T.S.

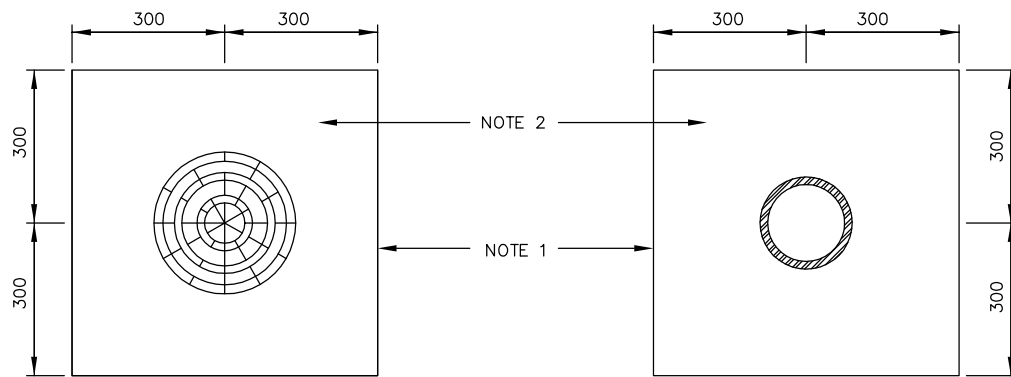
CAD/FILE No.:  
A2390-1 (1 OF 1)

APP'D:

GSSD-310.032

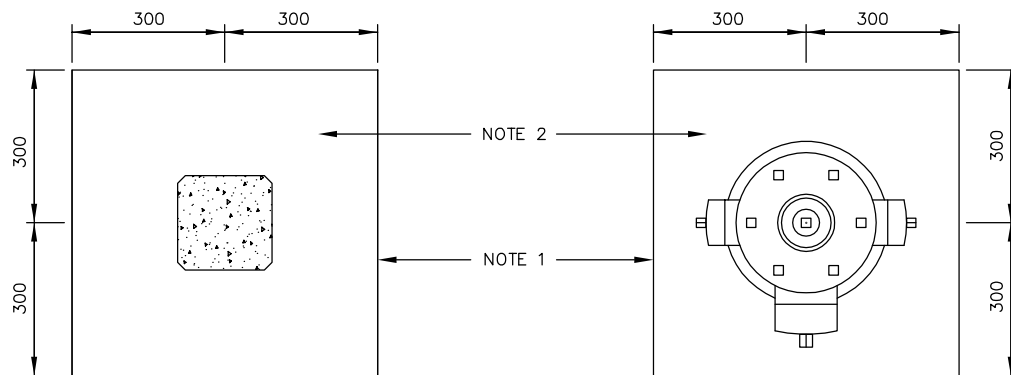
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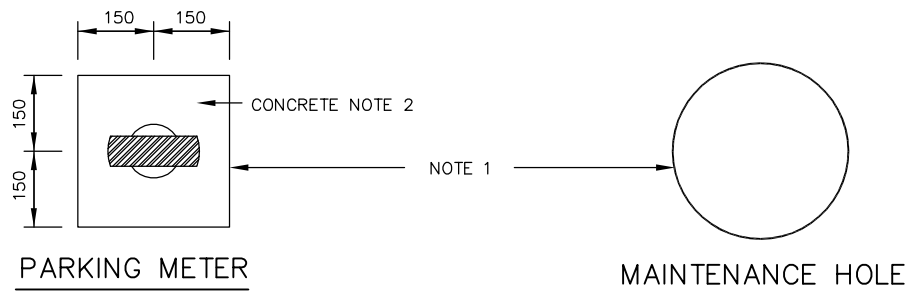
WOODEN POLE

STEEL POLE



CONCRETE POLE

HYDRANT



PARKING METER

MAINTENANCE HOLE

NOTES:

1. EXPANSION JOINT MATERIAL ALL AROUND.
2. 32 MPa (AIR ENTRAINED) CONCRETE AT 28 DAYS, UNLESS OTHERWISE STATED.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

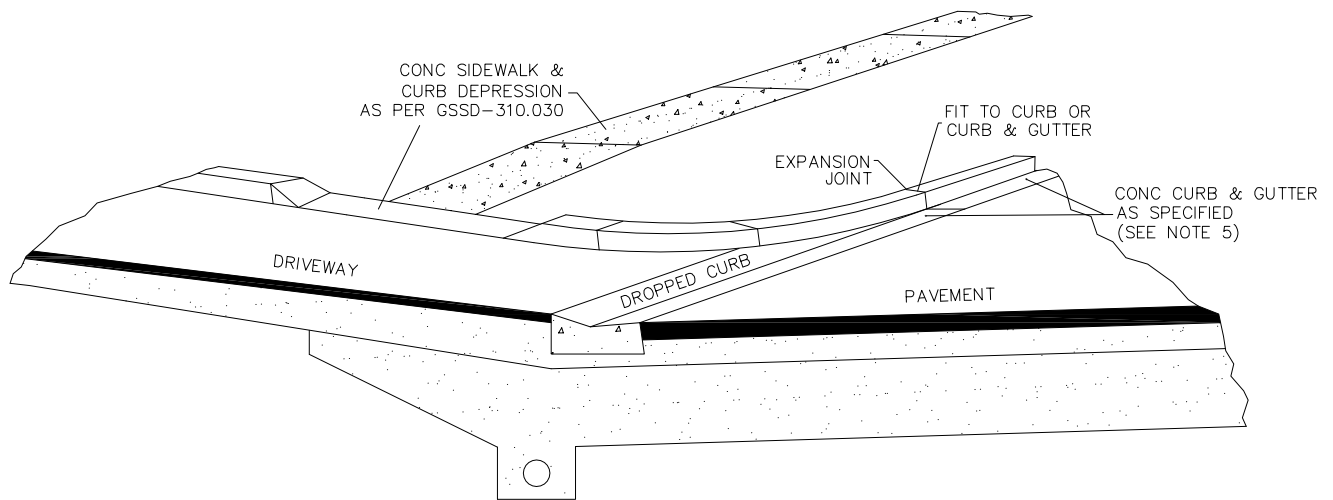
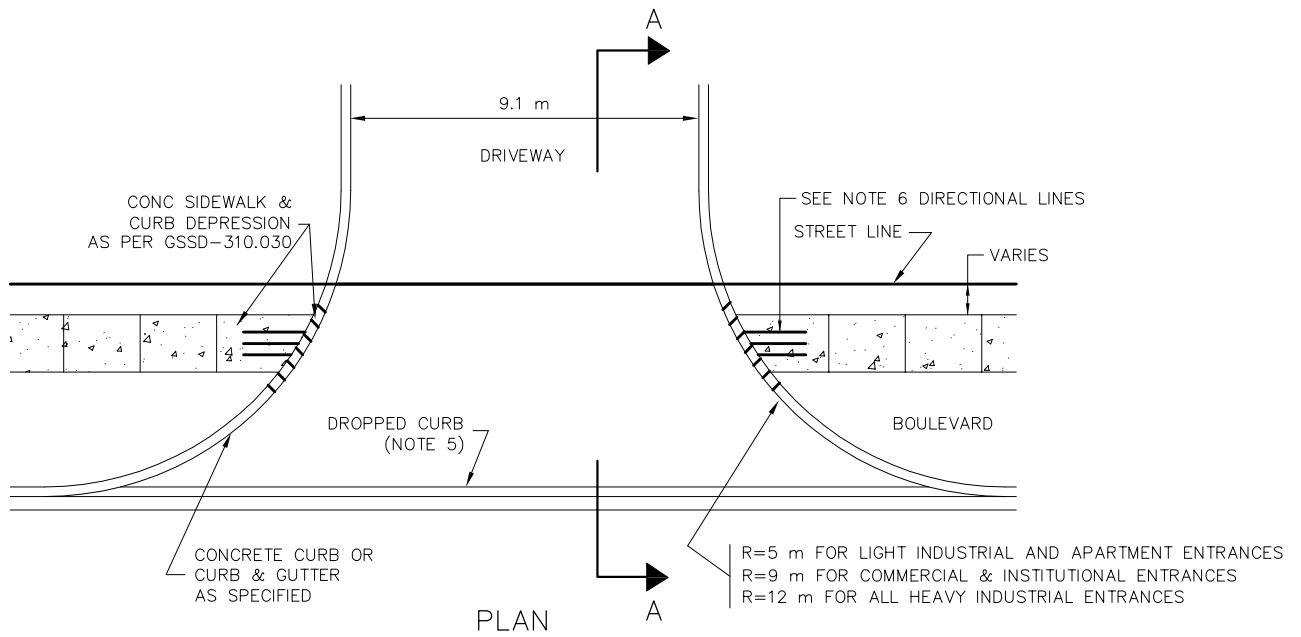


UTILITY ISOLATION  
IN SIDEWALKS

DRAWN BY: STS/RFRANK	REV No: 1
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1988-1 (1 OF 1)
APP'D:	<b>GSSD-310.040</b>

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SECTION A-A

NOTES:

1. MINIMUM DIMENSIONS ARE INDICATED. MAXIMUM DIMENSIONS AS PER SITE REQUIREMENTS.
2. PAVEMENT AND SIDEWALK STRUCTURE AT ENTRANCES SHALL BE CONSTRUCTED USING MATERIALS AND THICKNESSES AS SPECIFIED ELSEWHERE.
3. THIS STANDARD DOES NOT APPLY TO SIGNALIZED ENTRANCES.
4. THIS STANDARD MAY BE AMENDED AT THE DISCRETION OF ROADS & DRAINAGE ENGINEER.
5. THE DROPPED CURB THROUGH THE SIDE ENTRANCE SHALL BE A STRAIGHT VEE AND SHALL NOT INCORPORATE THE 25 mm LIP.
6. FOR DIRECTIONAL LINES SEE OPSD-310.030.

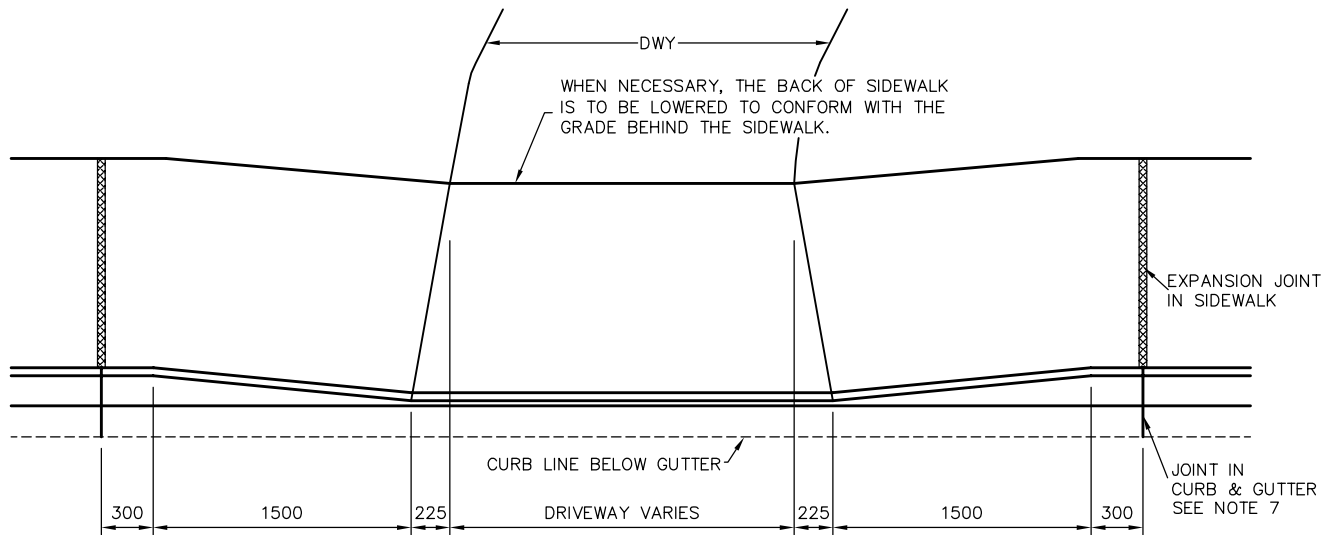


URBAN INDUSTRIAL,  
COMMERCIAL, INSTITUTIONAL &  
APARTMENT ENTRANCES

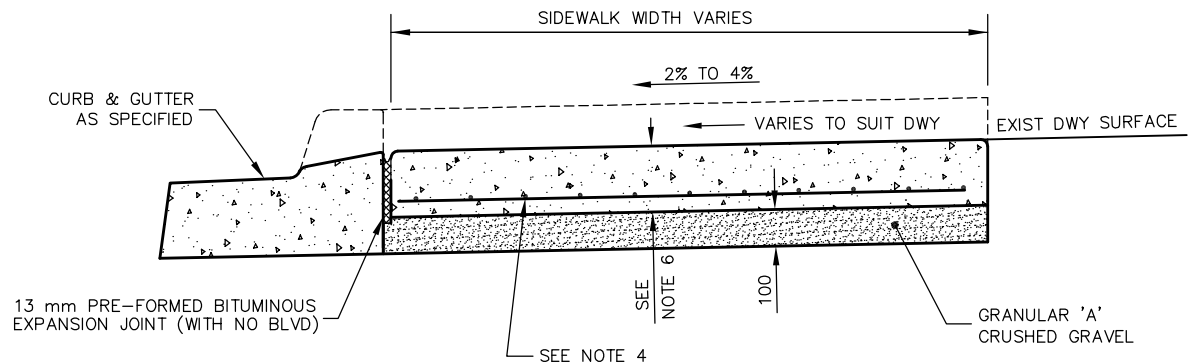
DRAWN BY: STS/RF/BWK	REV No: 1
DATE: 2003-03-03	REV DATE: OCT 2010
SCALE: NTS	CAD/FILE No.: A1950-1 (1 OF 1)
APP'D: PETER CHIESA	GSSD-350.010

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SCHEMATIC PLAN



TYPICAL SECTION AT DRIVEWAY

NOTES:

- AT DRIVEWAYS WHERE THE SIDEWALK ABUTS THE CURB, EXPANSION JOINTS ARE REQUIRED AT BOTH SIDES OF THE DRIVEWAY.  
DEPTH OF CONCRETE SHALL TAPER TO THE NORMAL DEPTH FOR A DISTANCE OF 1.5 m AT EACH SIDE TO THE DRIVEWAY.  
IF THE DISTANCE FROM THE PREVIOUS JOINT IS LESS THAN 1.5 m, THIS DISTANCE SHALL BE ADDED TO THE NEXT BAY AND A DUMMY JOINT PLACED AT MID-SPAN. DUMMY JOINTS ARE REQUIRED IN DRIVEWAYS AT INTERVALS OF 1.5 m BUT IN NO CASE LESS THAN 1 m.  
IF THE DRIVEWAY IS GREATER THAN 6 m IN WIDTH, AN EXPANSION JOINT WILL BE REQUIRED AT MID-SPAN.
- UTILITY ISOLATION IN SIDEWALKS - SEE GSSD-310.040.
- CLASS OF CONCRETE: 32 MPa (AIR ENTRAINED) AT 28 DAYS.
- UNCOATED 150 mm SQUARE STEEL WIRE FABRIC (No. 3.8) FOR CONCRETE REINFORCEMENT CONFORMING TO CSA G30.5, 1998 SHALL BE PLACED IN THE SIDEWALK (40 mm FROM BOTTOM) AT ALL DRIVEWAY ENTRANCES.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
- SIDEWALK THICKNESS AT RESIDENTIAL DRIVEWAYS SHALL BE 125 mm. AT COMMERCIAL AND INDUSTRIAL DRIVEWAYS THE THICKNESS SHALL BE 180 mm.
- A CONTRACTION JOINT SHALL BE SAWCUT WHEN UTILIZING A CONCRETE CURB MACHINE WHILE THE STANDARD BITUMINOUS EXPANSION JOINT SHALL BE CONTINUED ON THROUGH BOTH THE SIDEWALK AND CURB & GUTTER WHEN HAND PLACED FORM BOARDS ARE USED DURING CURB CONSTRUCTION.

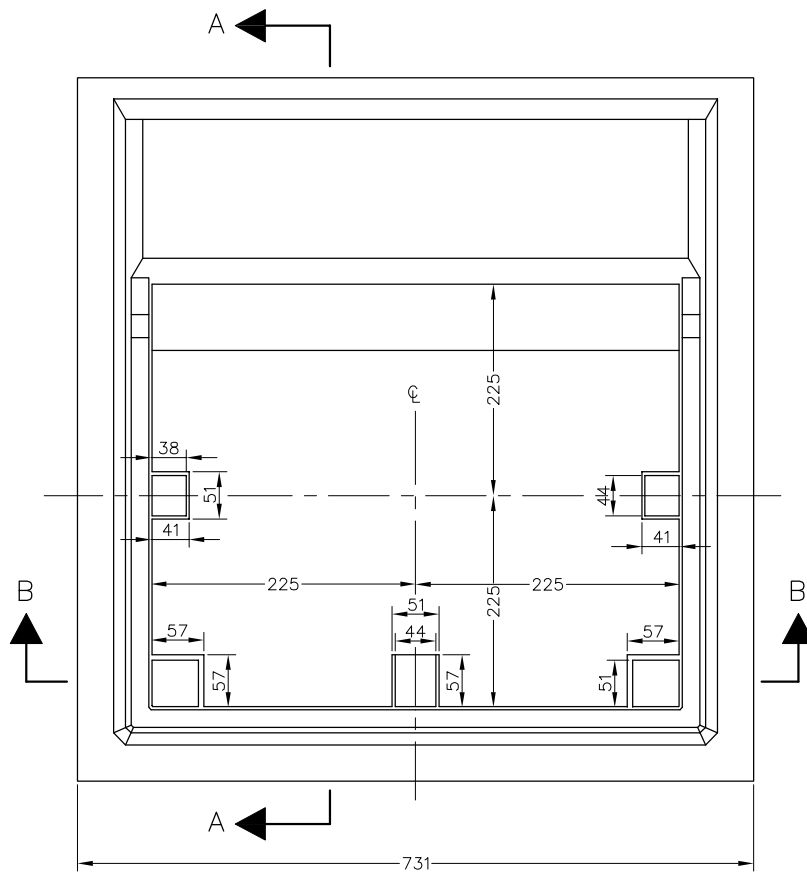


DRIVEWAY  
ENTRANCE  
SIDEWALK DEPRESSION

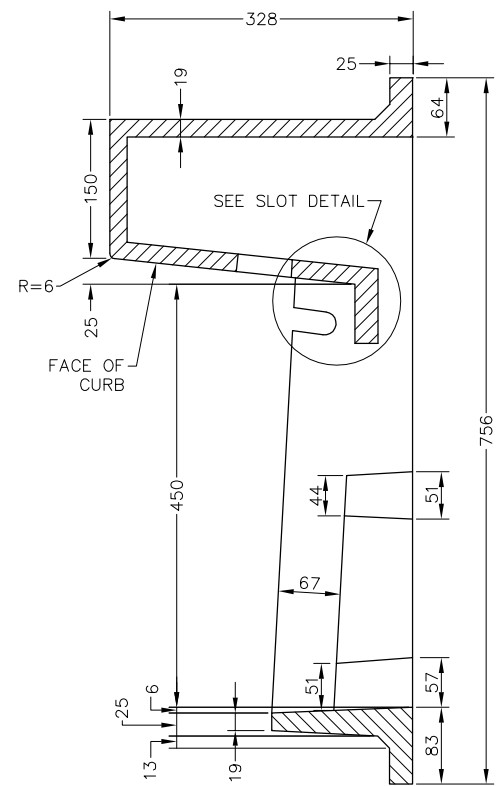
DRAWN BY: RF/STS	REV No: 1
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1951-1 (1 OF 1)
APP'D:	GSSD-351.010

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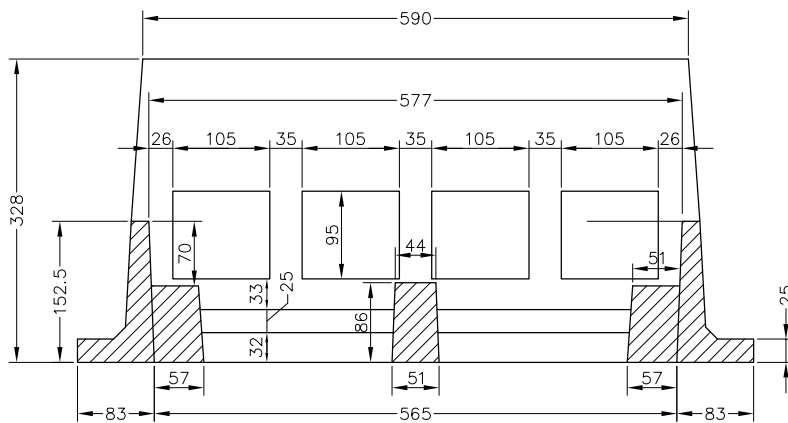
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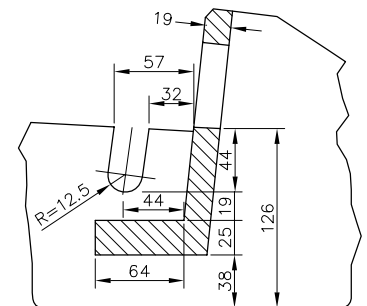
FRAME PLAN



SECTION A-A



SECTION B-B



SLOT DETAIL

NOTES:

1. FRAME AND GRATE, BICYCLE PROOF, AS FABRICATED BY H. IMBLEAU AND SON LTD.—RENFREW ONT.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.



CATCHBASIN,  
CAST IRON SIDE INLET FRAME

DRAWN BY: STS/RFRANK

REV No:

DATE: 2003-03-03

REV DATE:

SCALE: NTS

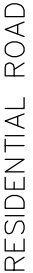
CAD/FILE No.:  
A2022-1 (1 OF 1)

APP'D:

GSSD-400.080

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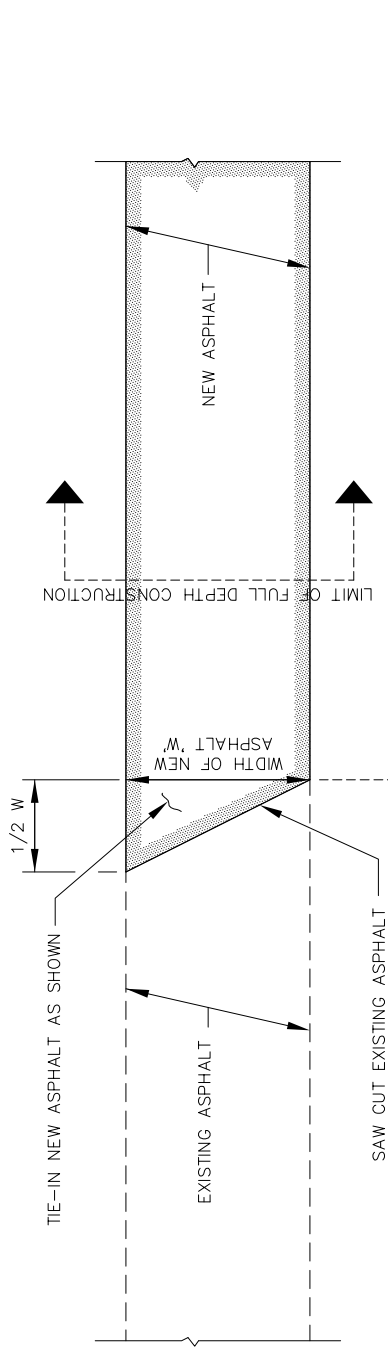
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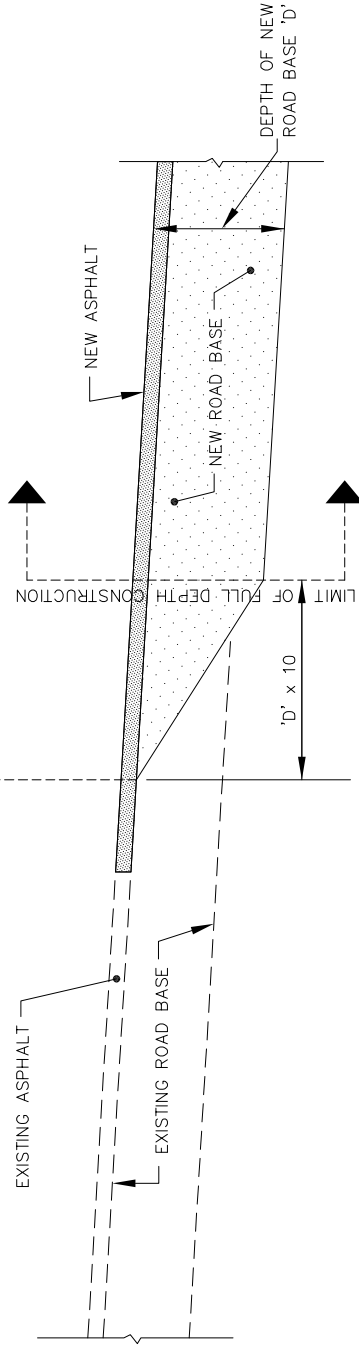
# FOR TERMINATED URBAN ROADWAYS IN SUBDIVISIONS

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APP'D: PETER CHIESA



PLAN



ELEVATION

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# TRANSITION POINT TREATMENT

NEW ROAD TO EXISTING ROAD

DRAWN BY: STS/RF

REV No:

DATE: 2003-03-03

REV DATE:

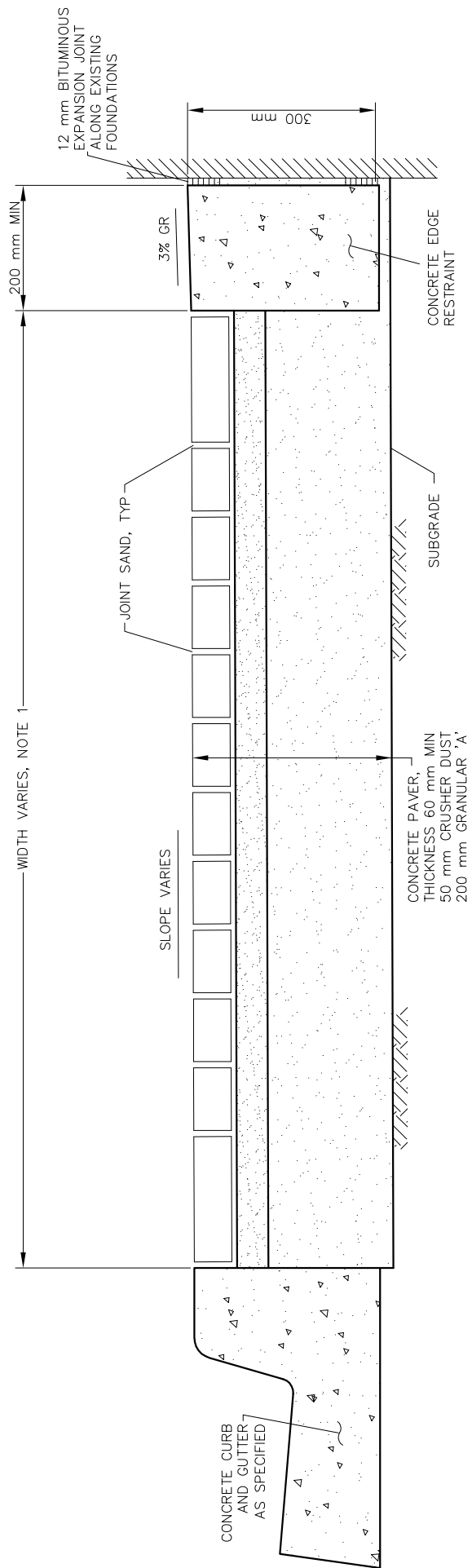
SCALE: NTS

CAD/FILE No.:

A1920-1 (1 OF 1)

APP'D:

GSSD-525.010



TYPICAL SECTION

- NOTE:
1. SIDEWALK WIDTH SHALL BE TO AN EVEN MULTIPLE OF 0.10 m PLUS JOINT SPACING ALLOWANCE OF 1.0 cm PER METRE OF CONCRETE PAVER.
  2. CONCRETE PAVERS SHALL CONFORM WITH CAN/CSA3-A231.2.
  3. CONCRETE PAVER COLOUR AND PATTERN AS DIRECTED BY THE ENGINEER.

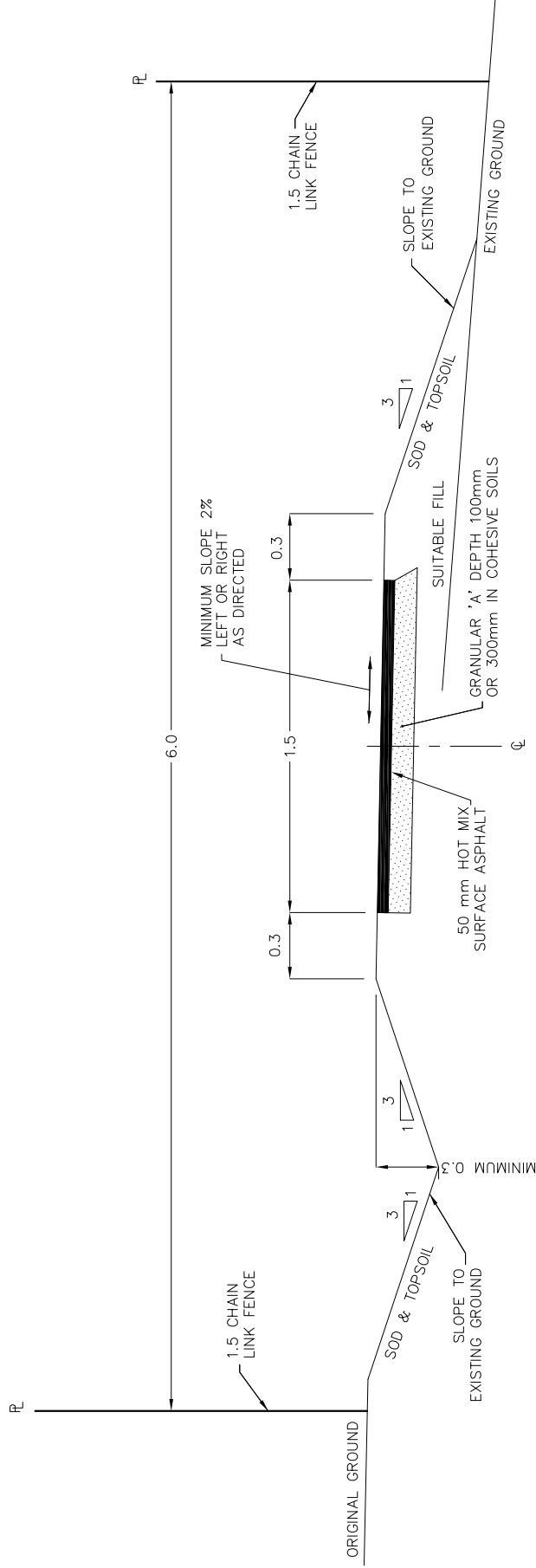
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INTERLOCKING  
 CONCRETE PAVER SIDEWALK  
 ON GRANULAR BASE

DRAWN BY: STS/RFRANK	REV No:
DATE: 2003-03-03	REV DATE:
SCALE: NTS	CAD/FILE No.: A1946-1 (1 OF 1)
APP'D:	GSSD-561.010



CUT SECTION

FILL SECTION

NOTES

- 1. LONGITUDINAL GRADE: MIN 1%, MAX 8%
- 2. FENCE SHALL BE 0.75 HIGH FROM ROAD ALLOWANCE TO BUILDING LINE.
- 3. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN.

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STANDARD  
ASPHALT FOOTPATH

DRAWN BY: STS/RFRANK	REV No: 1
DATE: 2003-03-03	REV DATE: 2005-07-29
SCALE: NTS	CAD/FILE No.: A1930-1 (1 OF 1)
APP'D:	GSSD-570.010

- NOTES:
1. ALL LANDINGS TO BE 32" x 4.8" WELDED GRATING BORDEN TYPE A #6 (1520 WIDE)
  2. ALL STEPS TO BE 38" x 4.8" BORDEN TYPE D1A #3 TREAD CHECKERED NOSING 1520 LONG
  3. ALL METAL TO BE 4.8" THICK
  4. ALL WELDS TO BE HOT DIPPED GALVANIZED,
  5. ALL CONCRETE SHALL BE 30 MPa
  6. MAX. RISERS BETWEEN LANDINGS IS 10.
  7. AFTER CONSTRUCTION ALL NUTS TO BE TACK WELDED TO BOLTS
  8. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED

NOTES:

1. ALL LANDINGS TO BE 32" x 4.8" WELDED GRATING BORDEN TYPE #A/6 (1520 LONG)
2. ALL STEPS TO BE 32" x 4.8" BORDEN TYPE #A/6/6 (1520 LONG)
3. ALL #10 TO BE CHECKED NOISING 1520 LONG
4. ALL METAL TO BE HOT DIPPED GALVANIZED,
5. ALL CONCRETE SHALL BE 30 MPa
6. MAX. RISERS BETWEEN LANDINGS IS 10.
7. AFTER CONSTRUCTION ALL NUTS TO BE TACK WELDED TO BOLTS
8. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED

-50x50 PATTERN  
10 GA. METAL SCREEN TO BE  
TACK WELDED TO EXTERIOR OF  
HANDRAIL AT LANDINGS

**DETAIL 'A'**  
(TYPICAL FOR ALL

**DETAIL A**  
(TYPICAL FOR ALL STEPS)

### DETAIL 'B'

SEE DETAIL 'D'  
FOR CONC. PIER,  
STEEL PLATE &  
ANCHORS

### DETAIL 'D'

**NUT & BOLT DETAIL**

**IMPERIAL**

DETAIL 'C'

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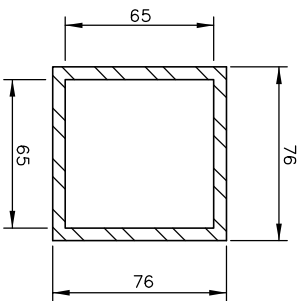
## STEEL STAIRWAY (HOT DIPPED GALVANIZED)

DRAWN BY: KEZ

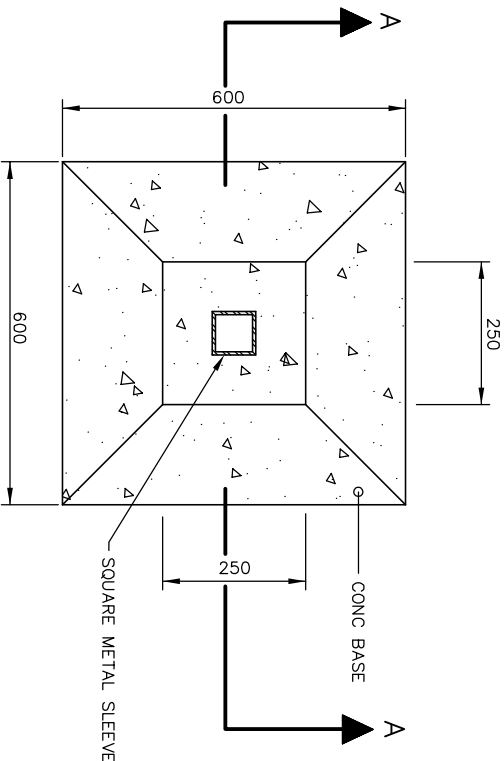
DATE: 2004-12-

CAD/FILE No.:	
SCALE:	NTC

B1139-1 (1 OF 1)  
GSSD-571.01



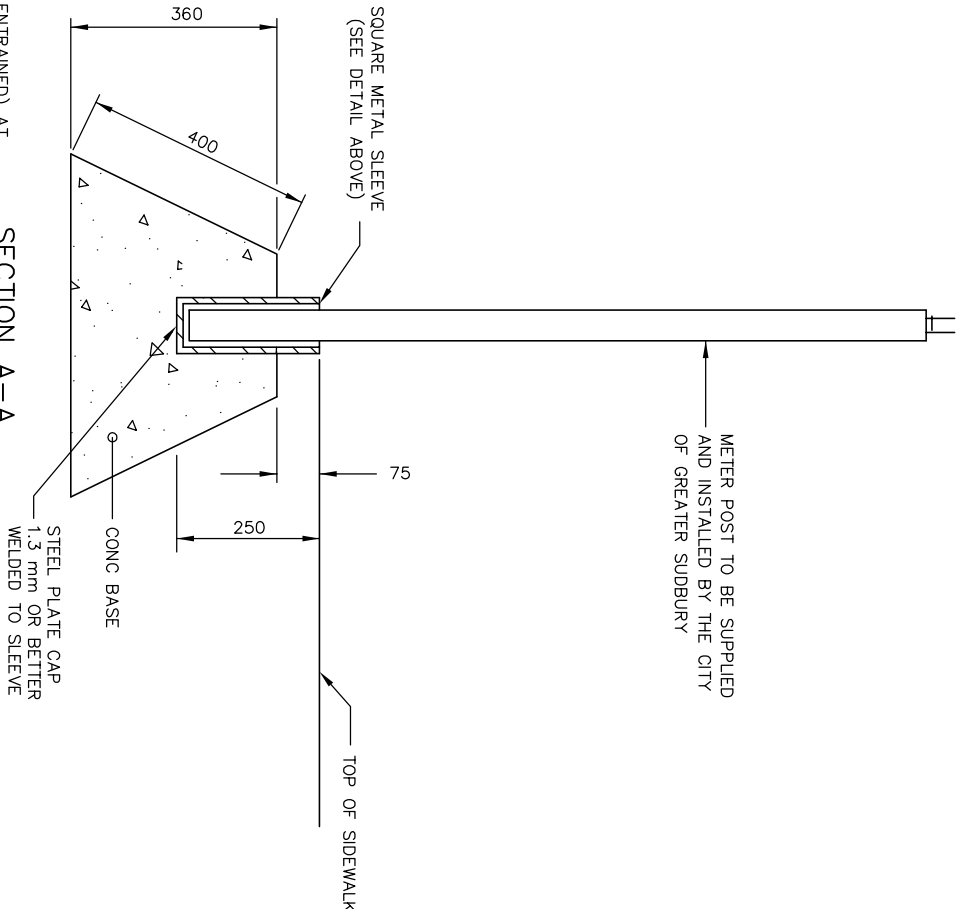
**SQUARE METAL SLEEVE DETAIL**



**PLAN**

- NOTES:**
1. CLASS OF CONCRETE: 32 MPa (AIR ENTRAINED) AT 28 DAYS.

2. 5.5mm THICK SQUARE METAL SLEEVE TO BE HOT-DIP GALVANIZED ACCORDING TO CSA G-164.
3. WELDING ACCORDING TO CSA W59.
4. ALL DIMENSIONS ARE IN MILLIMETRES.



**SECTION A-A**

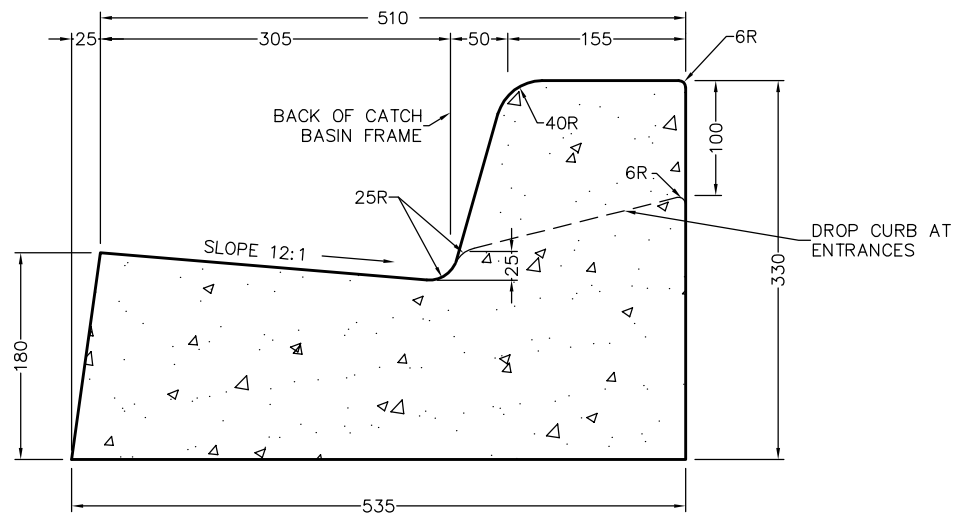
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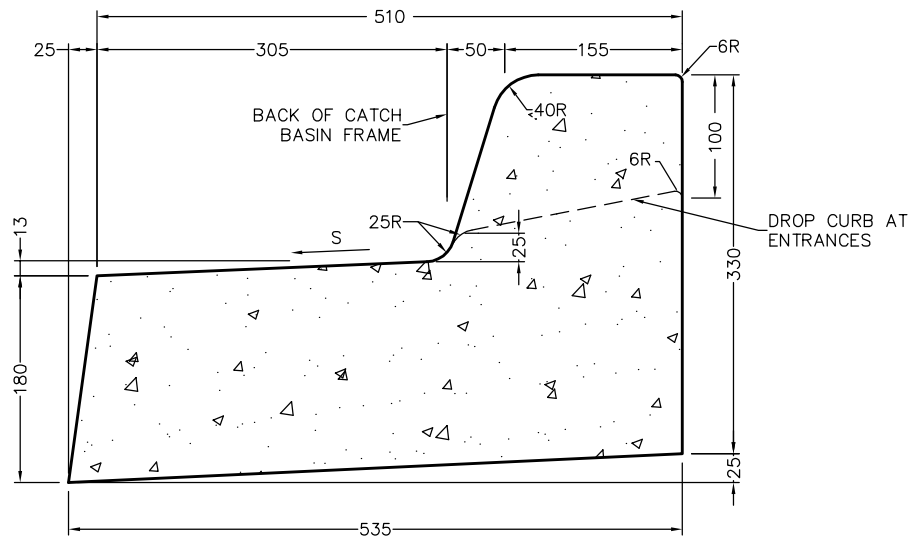


**CONCRETE PARKING  
METER BASE**

DRAWN BY: STS/RFRANK	REV No: 1
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1948-1 (1 OF 1)
APP'D:	GSSD-580.010



TANGENT



SUPERELEVATED

NOTES:

1. TOP EDGE OF BACK OF CURB & GUTTER TO BE ROUNDED WITH A 6 mm ROUNING TOOL.
2. CLASS OF CONCRETE 32 MPa (AIR ENTRAINED) AT 28 DAYS.
3. TOP OF EXPANSION JOINTS TO BE 6 mm LOWER THAN FINISHED CONCRETE SURFACE.
4. TREATMENT AT ENTRANCES SHALL CONFORM WITH GSSD-351.010.
5. THE LENGTH OF TRANSITION FROM ONE CURB TYPE TO ANOTHER SHALL BE 3.0 m.
6. VOLUME OF CONCRETE FOR:
  - FULL TANGENT CURB: 0.115 m<sup>3</sup> PER LINEAR METER.
  - FULL DROPPED TANGENT CURB: 0.093 m<sup>3</sup> PER LINEAR METER.
  - FULL SUPERELEVATED CURB: 0.118 m<sup>3</sup> PER LINEAR METER.
  - FULL DROPPED SUPERELEVATED CURB: 0.098 m<sup>3</sup> PER LINEAR METER.
7. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

LEGEND

S - RATE OF SUPERELEVATION IN %



CONCRETE BARRIER CURB  
WITH STANDARD GUTTER

DRAWN BY: STS/RFRANK

REV No: 1

DATE: 2003-03-03

REV DATE: JAN/2013

SCALE: NTS

CAD/FILE No.:  
A1926-1 (1 OF 1)

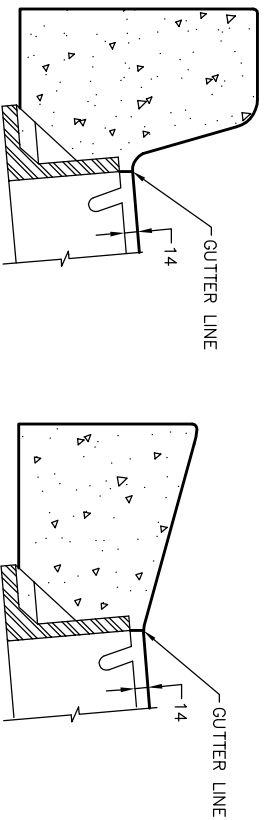
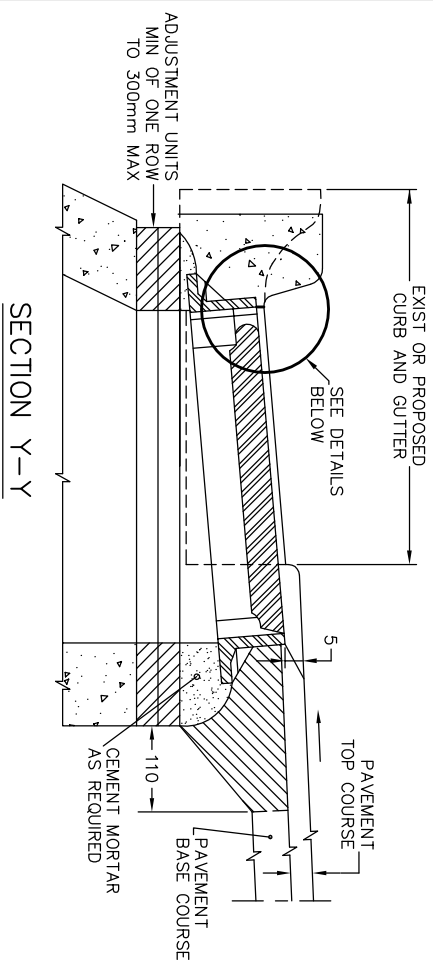
APP'D:

**GSSD-600.010**

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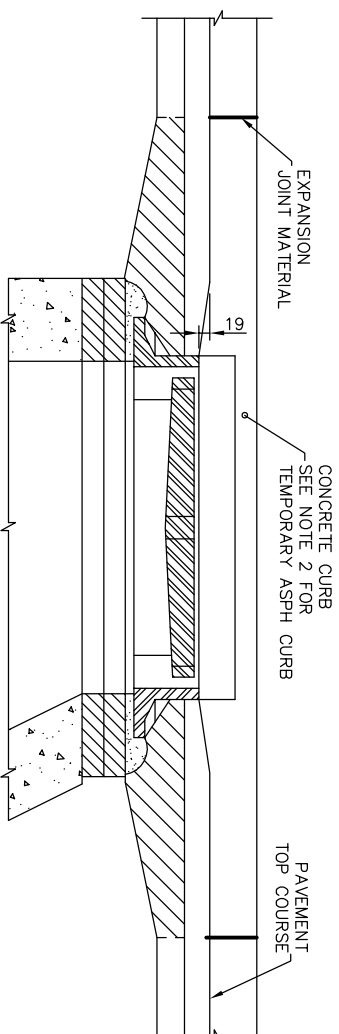
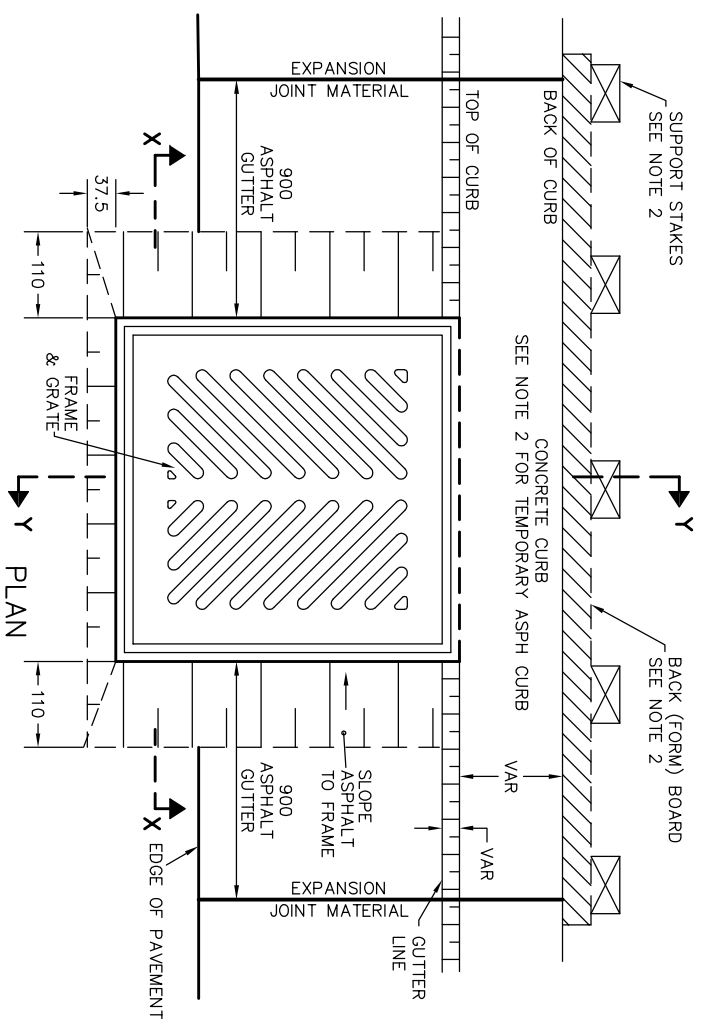




## DETAILS

### NOTES:

1. HATCHED AREAS (ZZZZ) : PAVEMENT BASE COURSE.
2. WHEN TEMPORARY ASPHALT CURB AND GUTTER IS TO BE CONSTRUCTED, 50 mm x 100 mm x 1 m LONG SUPPORT STAKES AND NECESSARY 50 mm THICK BACK (FORM) BOARD ARE TO BE LEFT IN PLACE AND THE CATCHBASIN GRATE SHALL BE SET TO BASE ASPHALT GRADE.
3. ADJUSTMENT UNITS TO BE PARGED ON OUTSIDE WITH 1:3 NON-SHRINK MORTAR MIX, APPLIED 15 mm THICK.
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
5. CLASS OF CONCRETE 32 MPa (AIR ENTRAINED) AT 28 DAYS.
6. ADJUSTMENT UNITS TO BE SET IN 12 mm MORTAR MIX.



## SECTION X-X

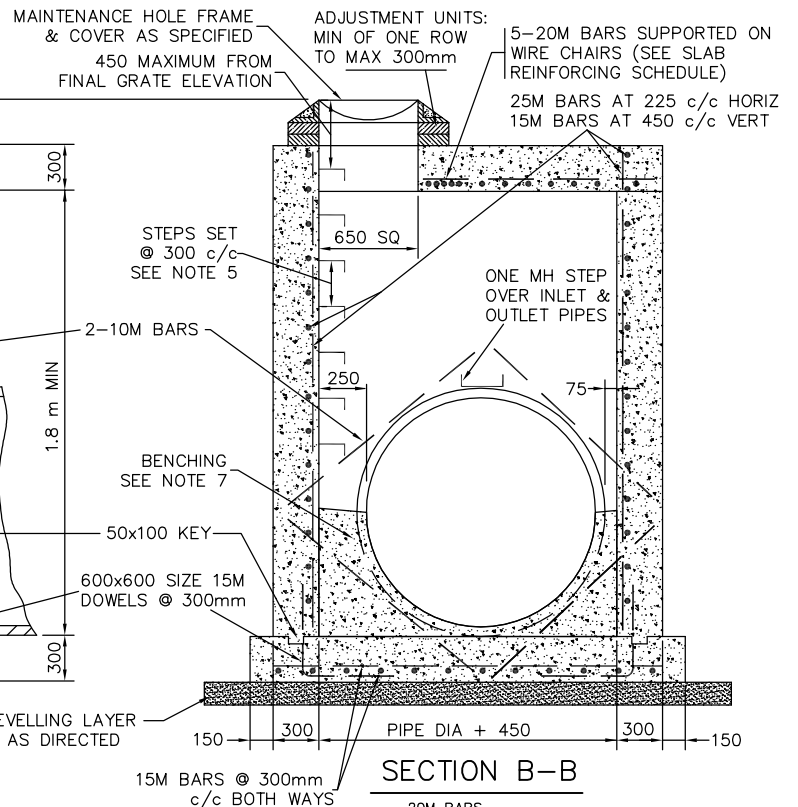
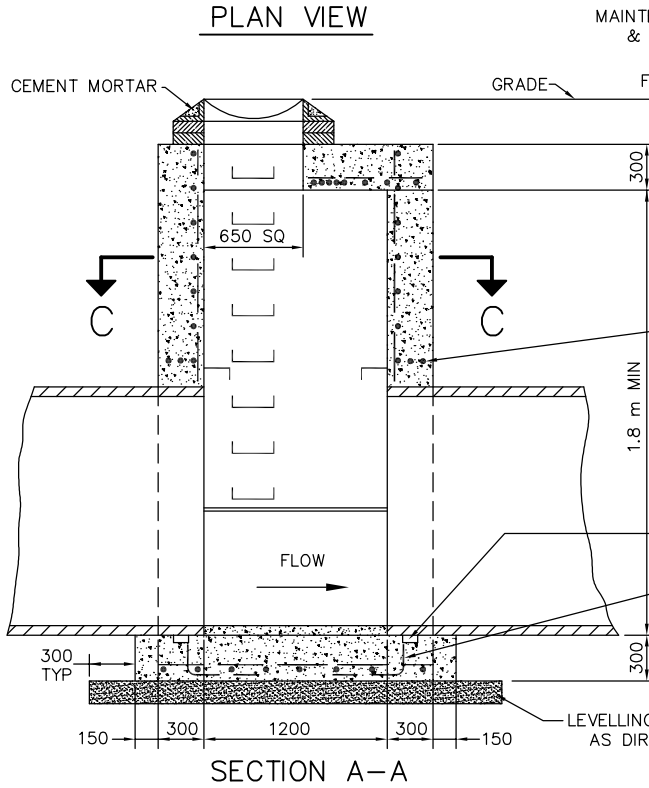
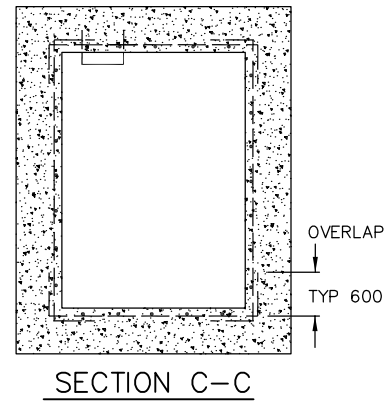
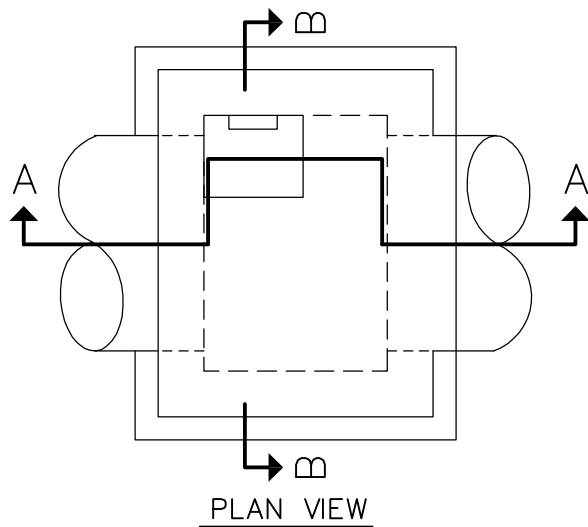
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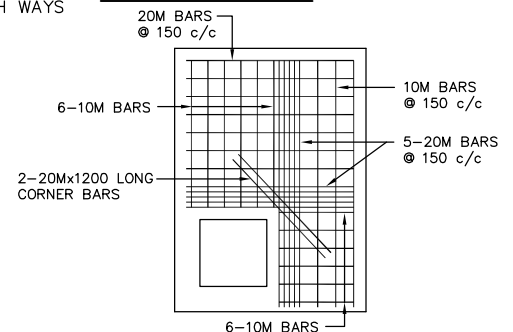
## CONCRETE CURB AND ASPHALT GUTTER TREATMENT AT CATCH BASIN

DRAWN BY: STS/RF/ADP	REV No: 2
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.:
APP'D:	A1933-1 (1 OF 1)
	GS5D-610.010



#### NOTES:

1. CLASS OF CONCRETE: 32 MPa (AIR ENTRAINED) AT 28 DAYS.
2. MINIMUM COVER TO REINFORCEMENT TO BE 50 mm.
3. ADJUSTMENT UNITS TO BE PARGED ON THE OUTSIDE WITH 1:3 NON-SHRINK MORTAR MIX, APPLIED 15 mm THICK.
4. STRUCTURES EXCEEDING 5m IN DEPTH TO INCLUDE SAFETY GRATE AS PER OPSD-404.020.
5. MAINTENANCE HOLE STEPS CIRCULAR HOLLOW ALUMINUM AS PER OPSD-405.010.
6. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
7. CONCRETE BENCHING: SLOPE 1:12 CLASS OF CONCRETE 20 MPa AT 28 DAYS.
8. 600 mm DEEP SUMP TO BE CONSTRUCTED ON MHC.B.
9. ADJUSTMENT UNITS TO BE SET IN 12 mm MORTAR MIX.

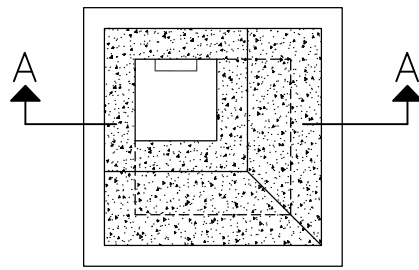


## CAST-IN-PLACE MAINTENANCE HOLE OR MAINTENANCE HOLE CATCHBASIN FOR 1350 mm AND LARGER PIPES

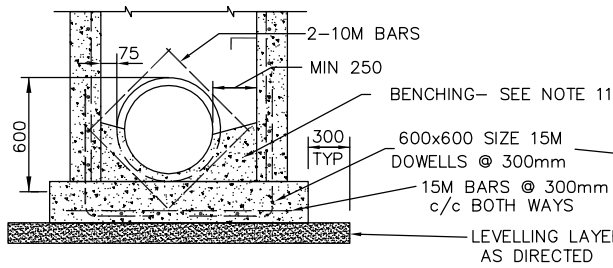
DRAWN BY: STS/RF/SGI	REV No: 3
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A2016-1 (1 OF 1)
APP'D:	<b>GSSD-700.041</b>

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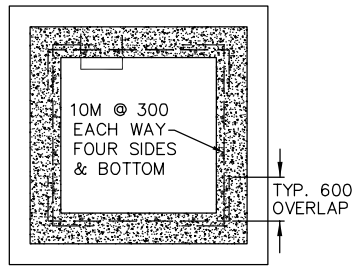
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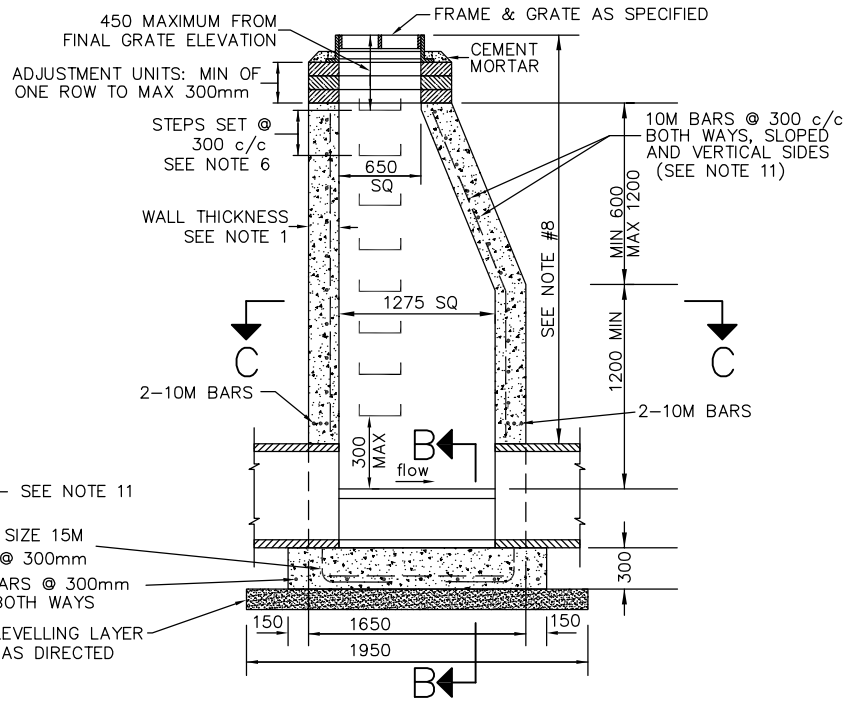
PLAN VIEW



SECTION B - B  
WITH BENCHING



SECTION C - C



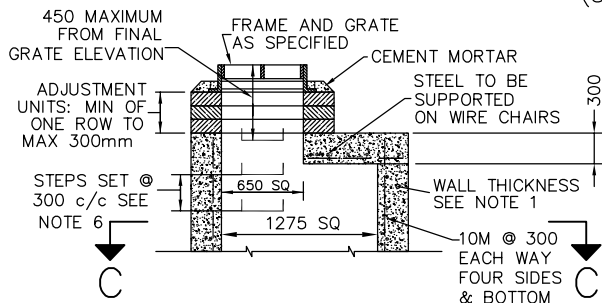
SECTION A - A

NOTES:

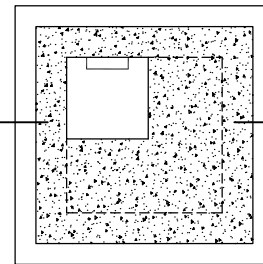
1. WALL THICKNESS: 230 mm TO 4 m DEPTH, 300 mm FOR 4 m TO 9 m DEPTH, SPECIAL DESIGN FOR DEPTH GREATER THAN 9 m.
2. CLASS OF CONCRETE: 32 MPa (AIR ENTRAINED) AT 28 DAYS.
3. MINIMUM COVER TO REINFORCEMENT TO BE 50 mm.
4. ADJUSTMENT UNITS TO BE PARGED ON THE OUTSIDE WITH 1:3 NON-SHRINK MORTAR MIX, APPLIED 15 mm THICK.
5. STRUCTURES EXCEEDING 5 m IN DEPTH TO INCLUDE SAFETY GRATE AS PER OPSD-404.020.
6. MAINTENANCE HOLE STEPS CIRCULAR HOLLOW ALUMINUM AS PER OPSD-405.010
7. ALTERNATIVE FLAT TOP SHALL BE USED WHEN DISTANCE FROM TOP OF PIPE TO FINISHED GRADE IS LESS THAN 2000 mm.
8. 600 mm DEEP SUMP TO BE CONSTRUCTED ON CB's AND MHCB's.
9. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
10. CONCRETE BENCHING: SLOPE 1:12 CLASS OF CONCRETE 20 MPa AT 28 DAYS.
11. TWO SEPARATE VERTICAL BARS HAVING A MINIMUM 600mm OVERLAP MAY BE USED IN LIEU OF THE ONE CONTINUOUS BENT VERTICAL BAR WHEN DIRECTED.
12. WHEN CURB INLET CB FRAME & GRATE IS SPECIFIED, THE INSIDE BACK WALL OF MHCB SHALL BE LOCATED DIRECTLY BELOW THE BACK OF CURB.
13. FOR LARGER DIAMETER PIPE SEE GSSD-700.040
14. ADJUSTMENT UNITS TO BE SET IN 12 mm MORTAR MIX.

ALTERNATIVE - FLAT TOP

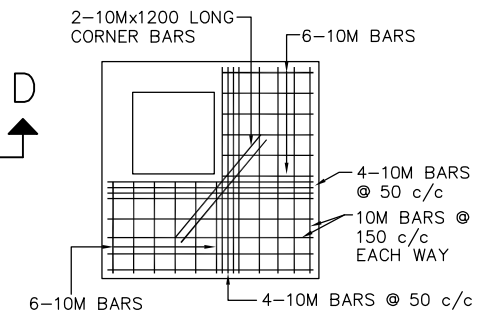
(SEE NOTE #8)



SECTION D - D



PLAN VIEW



SLAB REINFORCING SCHEDULE

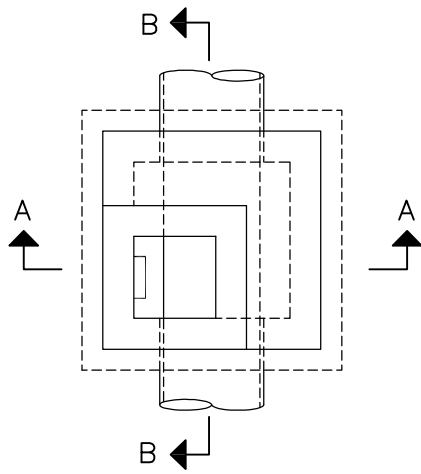


**CAST-IN-PLACE  
MAINTENANCE HOLE OR  
MAINTENANCE HOLE CATCHBASIN**  
MAX PIPE SIZE 825 mm  
1275 mm x 1275 mm  
DEPTH 9.0 m MAXIMUM

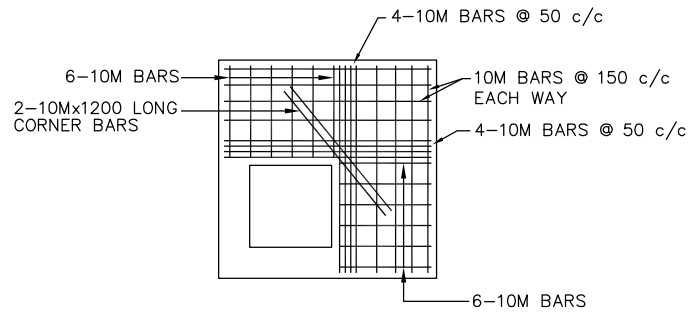
DRAWN BY: STS/RF/SGI	REV No: 3
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1934-1 (1 OF 1)
APP'D:	<b>GSSD-700.030</b>

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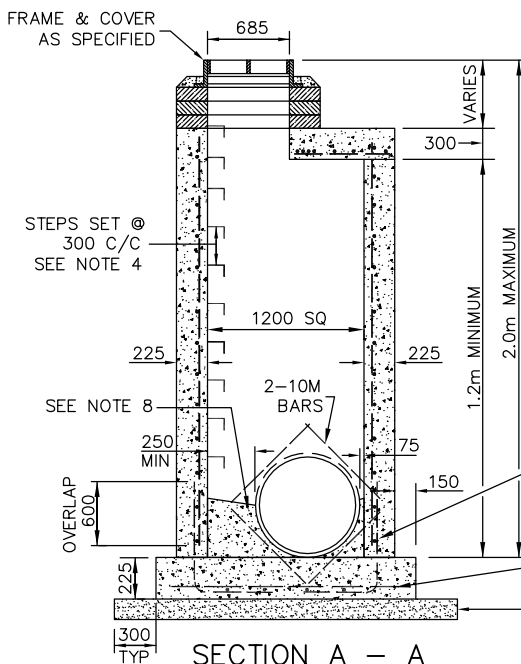
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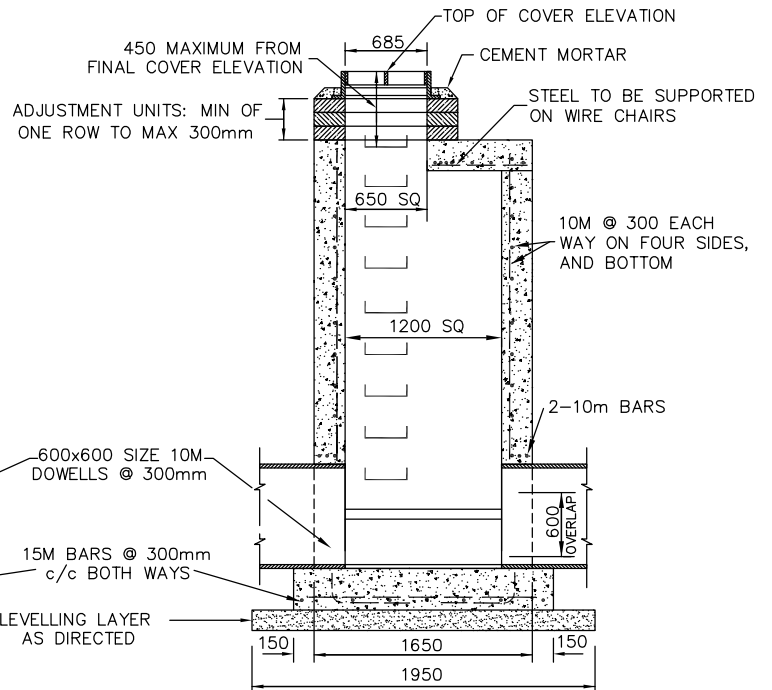
PLAN—COVER REMOVED



SLAB REINFORCING SCHEDULE



SECTION A — A  
WITH BENCHING



SECTION B — B

NOTES:

1. CLASS OF CONCRETE: 32 MPa (AIR ENTRAINED) AT 28 DAYS.
2. MINIMUM COVER TO REINFORCEMENT TO BE 50 mm.
3. ADJUSTMENT UNITS TO BE PARGED ON THE OUTSIDE WITH 1:3 NON-SHRINK MORTAR MIX, APPLIED 15 mm THICK.
4. MAINTENANCE HOLE STEPS CIRCULAR ALUMINUM AS PER OPSD-405.010.
5. 600 mm DEEP SUMP TO BE CONSTRUCTED ON MHCB.
6. WHEN STRUCTURE IS TO ACT AS A MAINTENANCE HOLE CATCHBASIN, THE CONCRETE GUTTER SHALL END 900 mm ON EITHER SIDE OF THE MHCB WITH AN ASPHALT GUTTER BEING CONSTRUCTED FROM END OF CONCRETE GUTTER TO MHCB FRAME, AS PER GSSD-610.010.
7. WHEN CURB INLET CB FRAME & GRATE IS SPECIFIED, THE INSIDE BACK WALL OF THE CB SHALL BE LOCATED DIRECTLY BELOW THE BACK OF CURB.
8. CONCRETE BENCHING:
  - SLOPE 1:12
  - CLASS OF CONCRETE: 20 MPa AT 28 DAYS
9. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
10. ADJUSTMENT UNITS TO BE SET IN 12 mm MORTAR MIX.



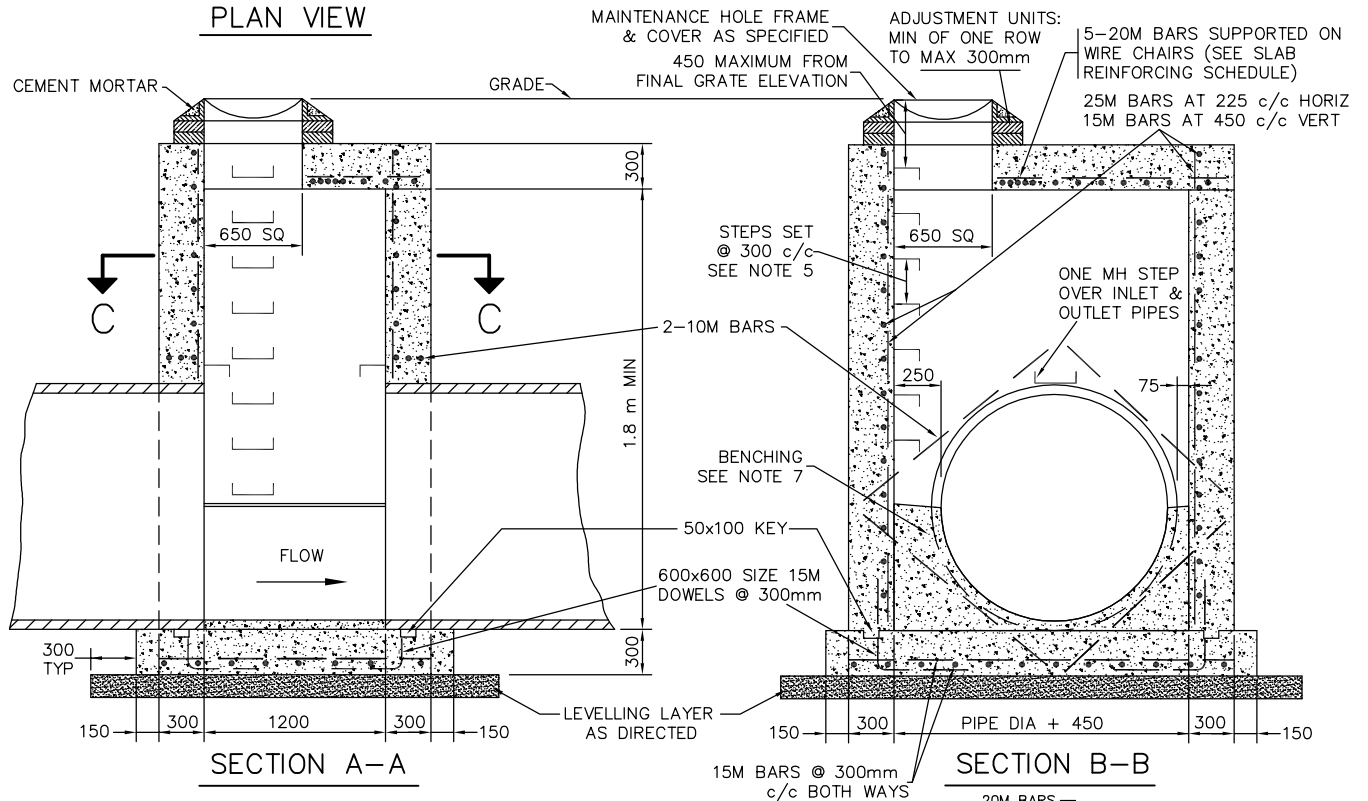
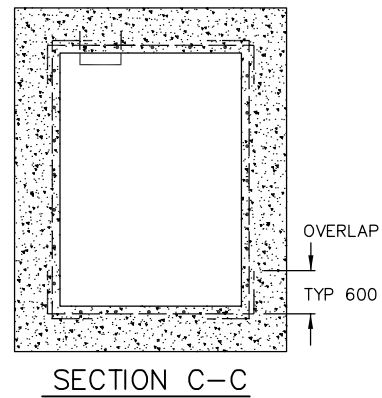
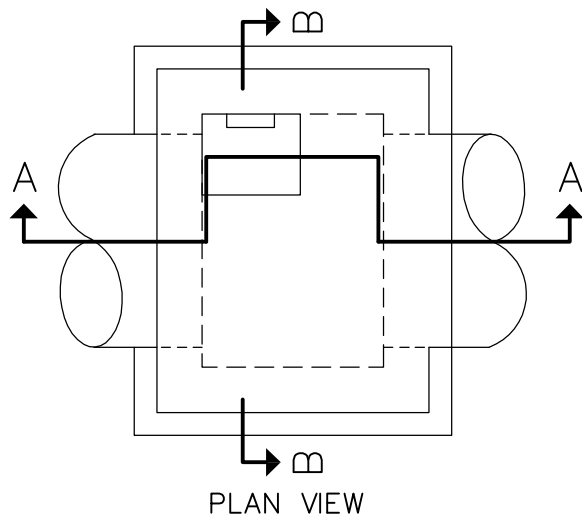
**STORM SEWER  
CAST-IN-PLACE  
SHALLOW MAINTENANCE HOLE OR  
MAINTENANCE HOLE CATCHBASIN**  
MAX PIPE SIZE 825 mm  
1200 mm x 1200 mm  
DEPTH 2.2 m MAX

DRAWN BY: RF/STS/SGI	REV No: 3
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1937-1 (1 OF 1)
APP'D:	<b>GSSD-700.031</b>

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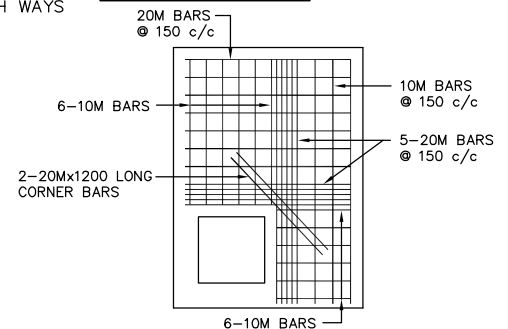
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**NOTES:**

1. CLASS OF CONCRETE: 30 MPa AT 28 DAYS.
2. MINIMUM COVER TO REINFORCEMENT TO BE 50 mm.
3. ADJUSTMENT UNITS TO BE PARGED ON THE OUTSIDE WITH 1:3 NON-SHRINK MORTAR MIX, APPLIED 15 mm THICK.
4. STRUCTURES EXCEEDING 5m IN DEPTH TO INCLUDE SAFETY GRATE AS PER OPSPD-404.020.
5. MAINTENANCE HOLE STEPS CIRCULAR HOLLOW ALUMINUM AS PER OPSPD-405.010.
6. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
7. CONCRETE BENCHING: SLOPE 1:12 CLASS OF CONCRETE 20 MPa AT 28 DAYS.
8. 600 mm DEEP SUMP TO BE CONSTRUCTED ON MHC.B.
9. ADJUSTMENT UNITS TO BE SET IN 12 mm MORTAR MIX.

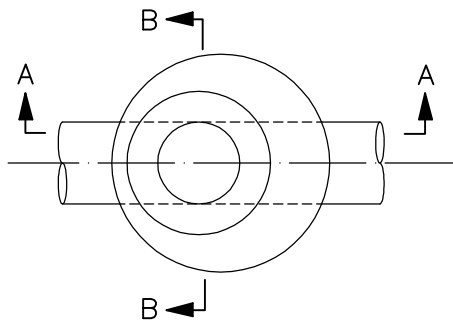


**CAST-IN-PLACE  
MAINTENANCE HOLE OR  
MAINTENANCE HOLE CATCHBASIN  
FOR 1350 mm AND LARGER PIPES**

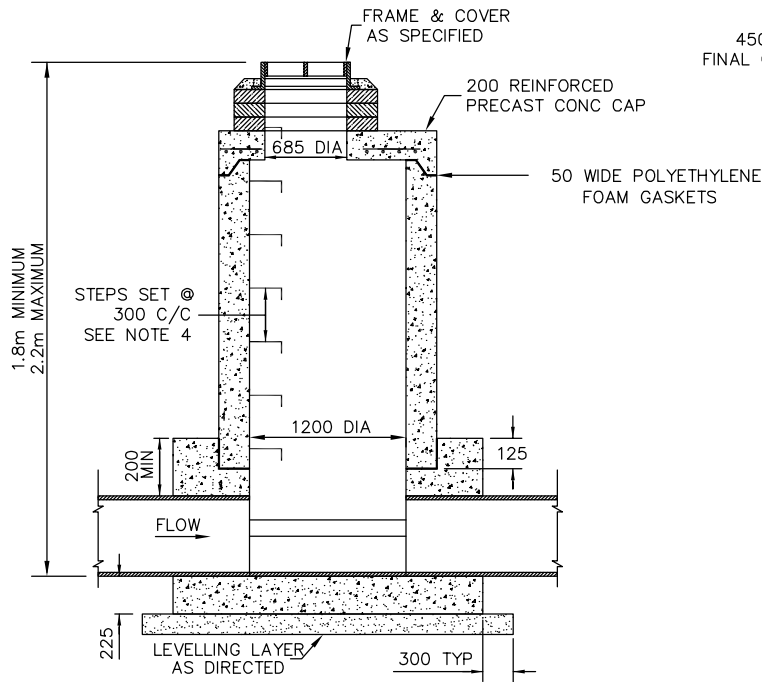
DRAWN BY: STS/RF/SGI	REV No: 2
DATE: 2003-03-03	REV DATE: 2012-02-01
SCALE: NTS	CAD/FILE No.: A2016-1 (1 OF 1)
APP'D:	<b>GSSD-700.041</b>

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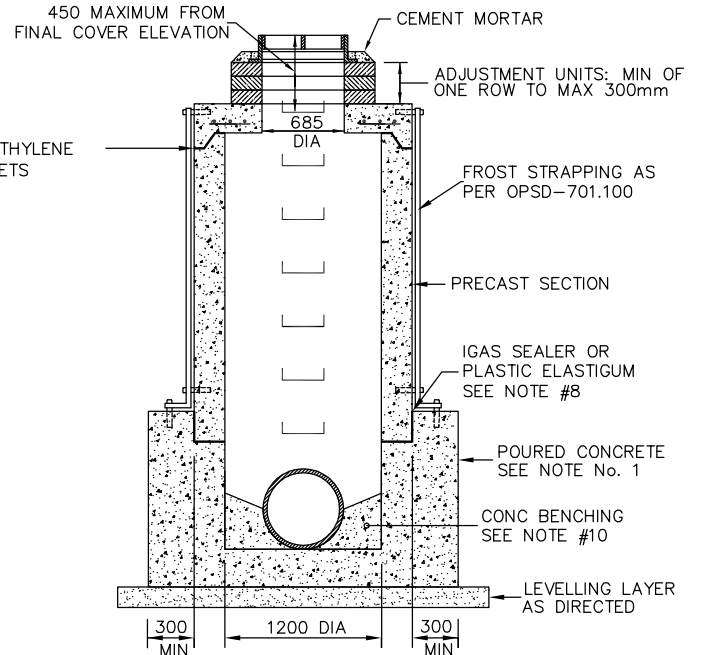
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PLAN—COVER REMOVED



SECTION A — A



SECTION B — B

#### NOTES:

- POURED CONCRETE BASE CLASS OF CONCRETE: 32 MPa (AIR ENTRAINED) AT 28 DAYS.
- MINIMUM COVER TO REINFORCEMENT TO BE 50 mm.
- ADJUSTMENT UNITS TO BE PARGED ON THE OUTSIDE WITH 1:3 NON-SHRINK MORTAR MIX, APPLIED 15 mm THICK.
- MAINTENANCE HOLE STEPS CIRCULAR HOLLOW ALUMINUM AS PER OPSD-405.010
- 600 mm DEEP SUMP TO BE CONSTRUCTED WHEN USED AS AN MHCB.
- WHEN STRUCTURE IS TO ACT AS A MAINTENANCE HOLE CATCHBASIN, THE CONC GUTTER SHALL END 900 mm ON EITHER SIDE OF THE MHCB WITH AN ASPHALT GUTTER BEING CONSTRUCTED FROM END OF CONC GUTTER TO MHCB FRAME, AS PER GSSD-610.010.
- WHEN CURB INLET CB FRAME & GRATE IS SPECIFIED, THE INSIDE BACK WALL OF THE CB SHALL BE LOCATED DIRECTLY BELOW THE BACK OF CURB.
- MIN 7 mm x 125 mm IGAS SEALER OR PLASTIC ELASTIGUM TO BE APPLIED TO FIRST SECTION OF MH BARREL BEFORE POURING CONCRETE BASE.
- FROST STRAP INSTALLATION, AS PER OPSD-701.100
- CONCRETE BENCHING:
  - SLOPE 1:12
  - CLASS OF CONCRETE: 20 MPa AT 28 DAYS
- ADJUSTMENT UNITS TO BE SET IN 12 mm MORTAR MIX.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.



**STORM SEWER PRECAST  
SHALLOW MAINTENANCE HOLE OR  
MAINTENANCE HOLE CATCHBASIN**  
MAX PIPE SIZE 825 mm  
1200 mm x 1200 mm  
DEPTH 2.2 m MAX

DRAWN BY: RF/STS

REV No: 2

DATE: 2003-03-03

REV DATE: JAN/2013

SCALE: NTS

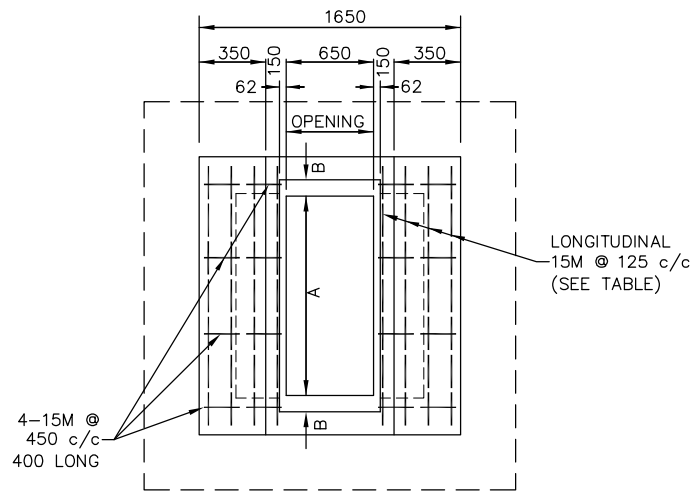
CAD/FILE No.:  
A1938-1 (1 OF 1)

APP'D:

**GSSD-701.017**

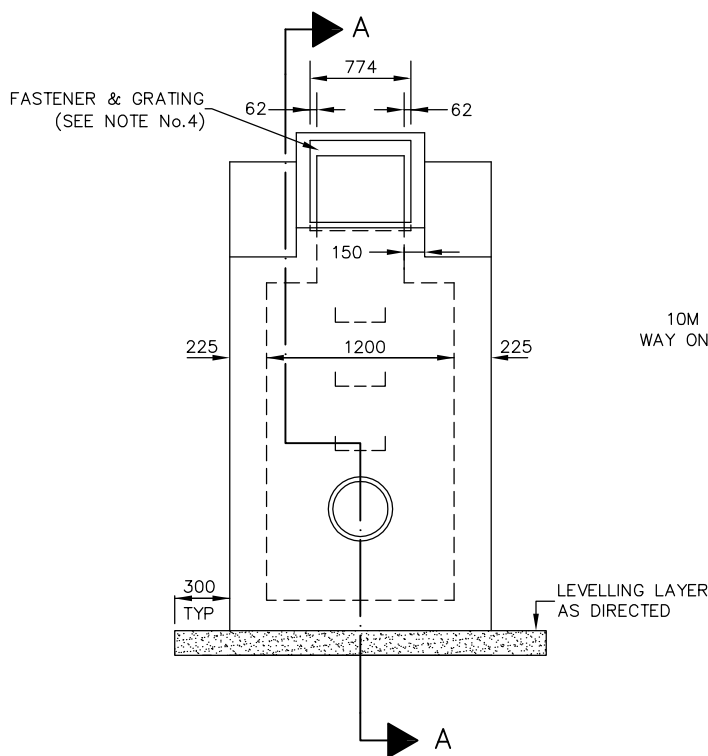
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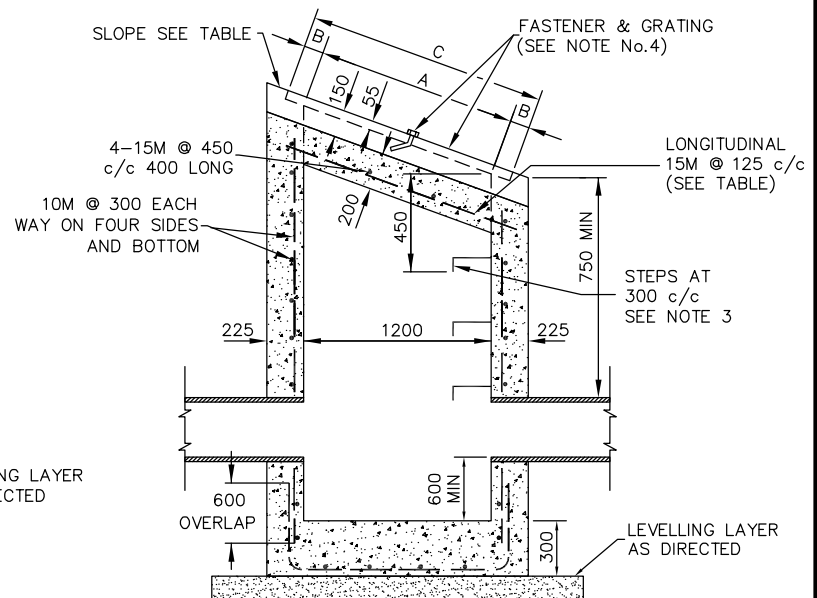


TOP VIEW

TABLE – SLOPE DIMENSIONS OPENING DIMENSIONS & BAR LENGTHS (mm) GRATE TYPE C				
SLOPE	A	B	C	LONGITUDINAL BAR LENGTHS
2:1	1341	66	1473	1732
3:1	1265	104	1473	1633
4:1	1237	118	1473	1597



FRONT VIEW



SECTION A - A

NOTES:

1. CLASS OF CONCRETE: 32 MPa (AIR ENTRAINED) AT 28 DAYS.
2. MINIMUM COVER TO REINFORCEMENT TO BE 50 mm.
3. MAINTENANCE HOLE STEPS CIRCULAR HOLLOW ALUMINUM AS PER OPSD-405.010.
4. GRATING AND FASTENER DETAILS AS PER OPSD-403.010.
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.



**CAST-IN-PLACE  
DITCH INLET MAINTENANCE  
HOLE CATCHBASIN**  
MAX PIPE SIZE 825 mm  
1200 mm x 1200 mm  
DEPTH 4.0 m MAX

DRAWN BY: RF/STS	REV No: 2
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1939-1 (1 OF 1)
APP'D:	<b>GSSD-702.040</b>

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- 
- Technical drawing of a floor drain assembly, showing a top view and a side elevation view.
- Top View Dimensions:**
- Overall width: 600 mm
  - Overall depth: 600 mm
  - Offset from left wall to centerline: 225 mm
  - Offset from top wall to centerline: 225 mm
  - Maximum length of the drain body: 4.0m MAXIMUM
- Side Elevation View Details:**
- LEVELLING LAYER AS DIRECTED:** Indicated by a hatched area on the left side of the top view.
  - 600 SUMP:** A rectangular area at the top of the drain body, 600 mm wide.
  - OUTLET PIPE:** A vertical pipe extending downwards from the sump area.
  - OUTLET HOLE NOTE 1:** A circular hole located within the drain body.
  - CEMENT MORTAR:** Indicated by a hatched area on the right side of the side elevation.
  - ADJUSTMENT UNITS MIN. OF ONE ROW TO 300mm MAX:** A section on the right side of the side elevation, indicating the range of adjustment units.
  - FRAME & GRATE AS SPECIFIED:** The topmost layer of the assembly, shown in cross-section on the right side of the side elevation.

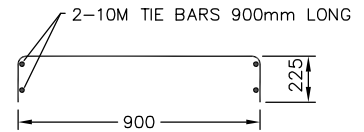
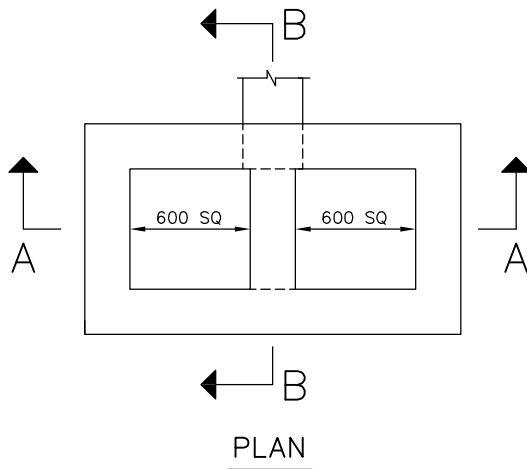
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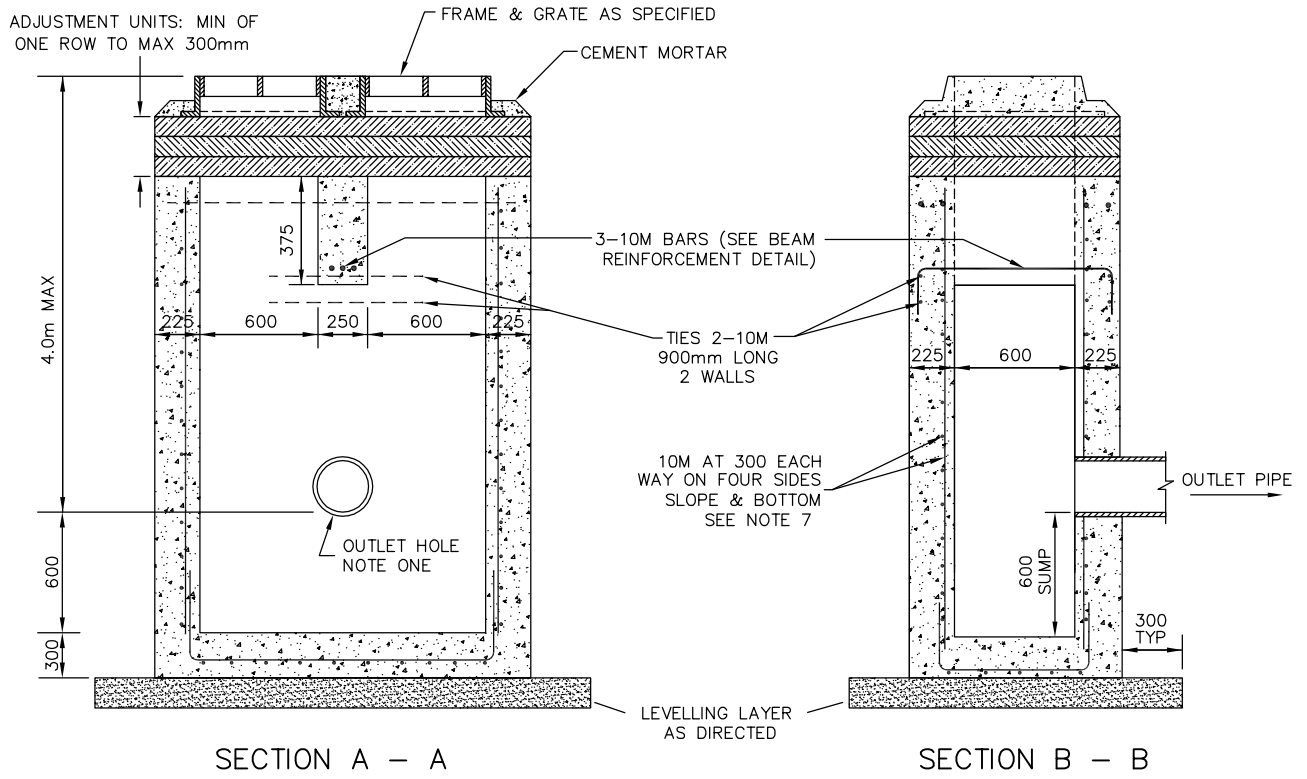
POURED CONCRETE  
CATCHBASIN

600 mm x 600 mm  
DEPTH 4.0 m MAX

DATE: 2003-03-03	REV No: 2
DRAWN BY: STS/RF	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1932-1 (1 OF 1)
APP'D:	GSSD-705.011



BEAM REINFORCEMENT DETAIL



NOTES:

1. OUTLET HOLE LOCATIONS AS REQUIRED.
2. CLASS OF CONCRETE: 32 MPa (AIR ENTRAINED) AT 28 DAYS.
3. CONCRETE GUTTER SHALL END 900 mm ON EITHER SIDE OF CATCH BASIN WITH AN ASPHALT GUTTER BEING CONSTRUCTED FROM END OF CONCRETE GUTTER TO CATCHBASIN FRAME, SEE GSSD-610.010.
4. WHEN CURB INLET CATCHBASIN FRAME AND GRATE IS SPECIFIED, THE INSIDE BACK WALL OF THE CATCHBASIN SHALL BE LOCATED DIRECTLY BELOW THE BACK OF CURB.
5. ADJUSTMENT UNITS TO BE PARGED ON THE OUTSIDE WITH 1:3 NON-SHRINK MORTAR MIX, APPLIED 15 mm THICK.
6. ADJUSTMENT UNITS TO BE SET IN 12 mm MORTAR MIX.
7. TWO SEPARATE VERTICAL BARS HAVING A MINIMUM 600 mm OVERLAP MAY BE USED IN LIEU OF THE ONE CONTINUOUS BENT VERTICAL BAR WHEN DIRECTED.
8. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

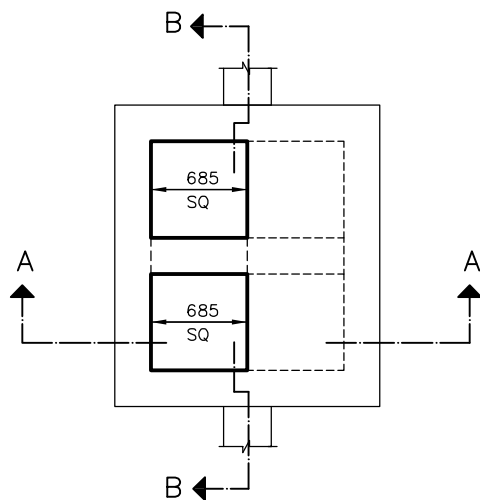


CAST-IN-PLACE  
TWIN INLET CATCHBASIN  
600 mm x 1450 mm  
DEPTH 4.0 m MAX

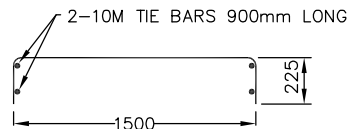
DRAWN BY: RF/STS	REV No: 2
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1936-1 (1 OF 1)
APP'D:	GSSD-705.021

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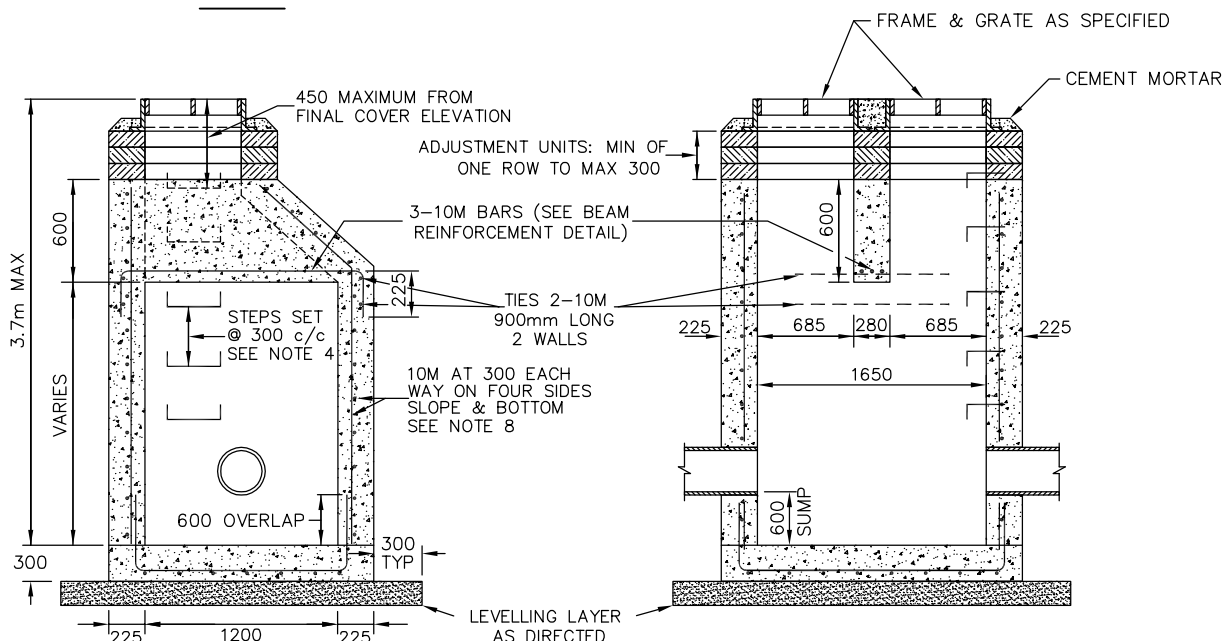
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PLAN



BEAM REINFORCEMENT DETAIL



SECTION A - A

SECTION B - B

NOTES:

1. CLASS OF CONCRETE: 32 MPa (AIR ENTRAINED) AT 28 DAYS.
2. MINIMUM COVER TO REINFORCEMENT IS TO BE 50 mm.
3. ADJUSTMENT UNITS TO BE PARGED ON THE OUTSIDE WITH 1:3 NON-SHRINK MORTAR MIX, APPLIED 15 mm THICK.
4. MAINTENANCE HOLE STEPS CIRCULAR HOLLOW ALUMINUM AS PER OPSD-405.010.
5. WHEN THE STRUCTURE IS TO ACT AS A MAINTENANCE HOLE CATCHBASIN THE CONCRETE GUTTER SHALL END 900 mm ON EITHER SIDE OF THE MAINTENANCE HOLE CATCHBASIN WITH AN ASPHALT GUTTER BEING CONSTRUCTED FROM END OF CONCRETE GUTTER TO MAINTENANCE HOLE CATCHBASIN FRAME, AS PER GSSD-610.010.
6. WHEN CURB INLET CATCHBASIN FRAME AND GRATE IS SPECIFIED, THE INSIDE BACK WALL OF THE CATCHBASIN SHALL BE LOCATED DIRECTLY BELOW THE BACK OF CURB.
7. CONCRETE BENCHING:
  - SLOPE 1:12
  - CLASS OF CONCRETE 20 MPa @ 28 DAYS
8. TWO SEPARATE VERTICAL BARS HAVING A MINIMUM 600 mm OVERLAP MAY BE USED IN LIEU OF THE ONE CONTINUOUS BENT VERTICAL BAR WHEN DIRECTED.
9. ADJUSTMENT UNITS TO BE SET IN 12 mm MORTAR MIX.
10. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.



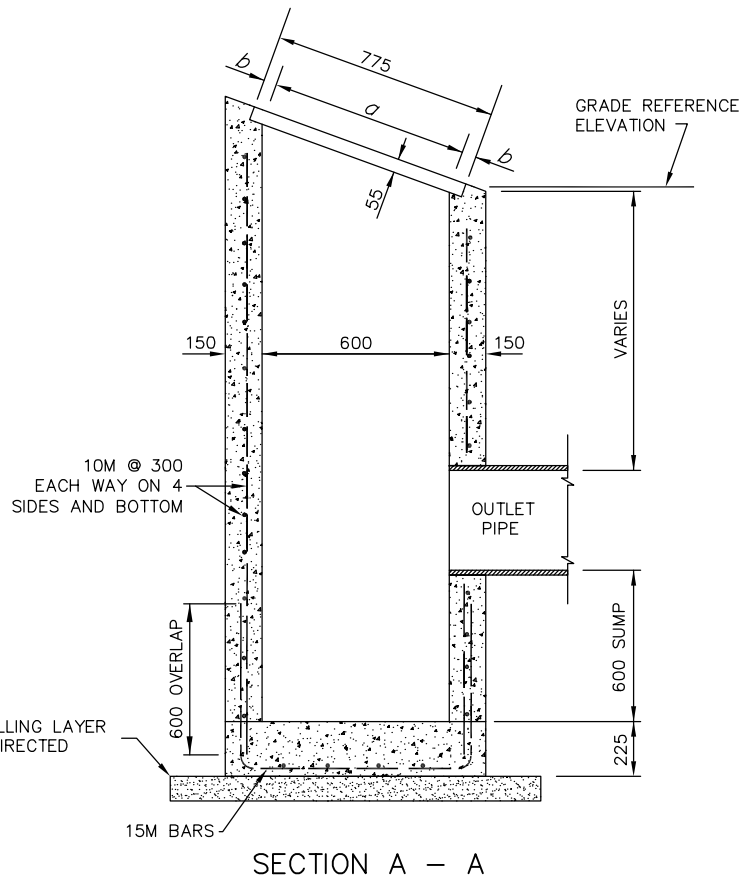
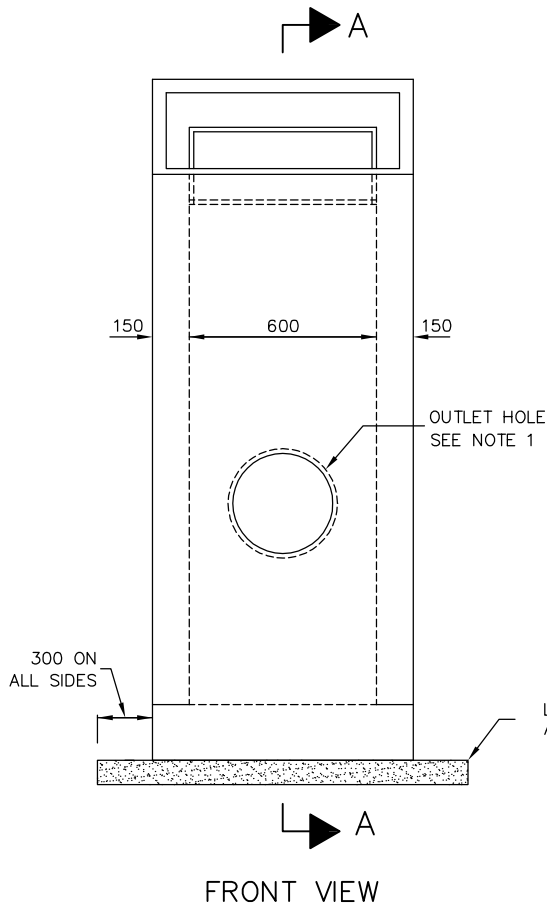
**CAST-IN-PLACE  
TWIN INLET  
MAINTENANCE HOLE CATCHBASIN**  
1200 mm x 1650 mm  
DEPTH 3.7 m MAX.

DRAWN BY: RF/STS	REV No: 2
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1940-1 (1 OF 1)
APP'D:	<b>GSSD-705.025</b>

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OPENING DIMENSIONS IN MILLIMETRES			
GRATE		$a$	$b$
TYPE	SLOPE		
A	2:1	670	52
	3:1	632	72
	4:1	618	79
	6:1	608	83
	8:1	605	85
	10:1	603	86
	HOR.	600	87



#### NOTES:

1. OUTLET HOLE SIZE 525 mm MAXIMUM DIAMETER, LOCATION AS REQUIRED.
2. WHERE THE INLET IS PLACED ACROSS DITCH AND IS ACCESSIBLE TO VEHICULAR TRAFFIC, GRATING SLOPE IS TO BE 6:1 OR BETTER.
3. MINIMUM COVER TO REINFORCEMENT TO BE 50 mm.
4. GRATING AND FASTENER DETAILS AS PER OPSD-403.010.
5. CLASS OF CONCRETE: 32 MPa (AIR ENTRAINED) AT 28 DAYS.
6. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

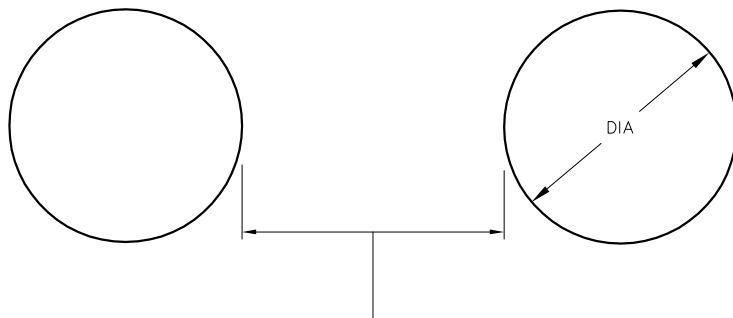


**CAST-IN-PLACE  
DITCH INLET CATCHBASIN**  
600 mm x 600 mm  
DEPTH 4.0 m MAX.

DRAWN BY: RF/STS	REV No: 2
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1941-1 (1 OF 1)
APP'D:	<b>GSSD-705.035</b>

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DIAMETER	MINIMUM SPACE BETWEEN PIPES
LESS THAN OR EQUAL TO 1000	600
1200 TO 2400 INCL	ONE-HALF (0.5) PIPE DIA
GREATER THAN OR EQUAL TO 2400	1200

NOTE

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

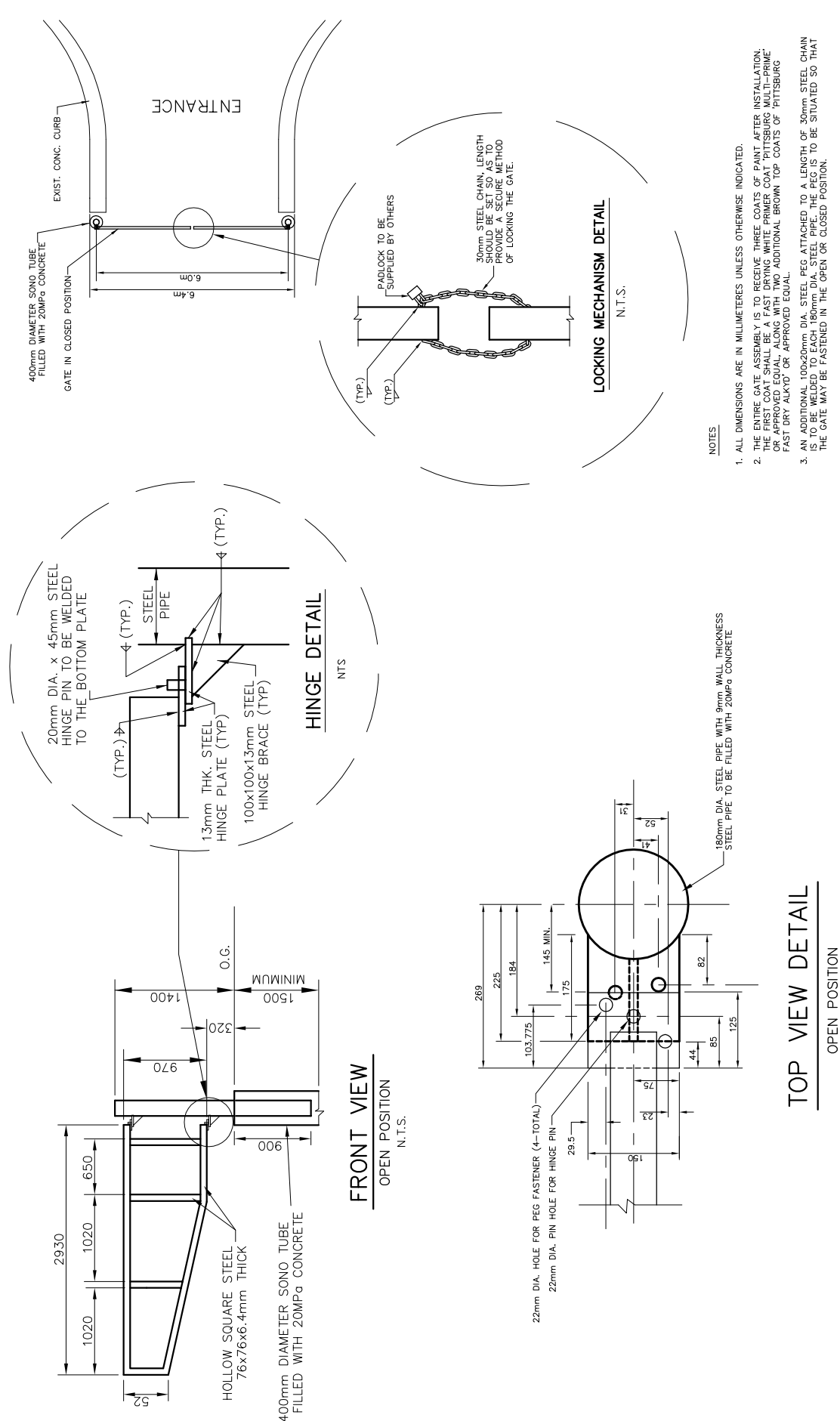


## SPACING FOR MULTIPLE CULVERT INSTALLATIONS

DRAWN BY: STS/RF/BWK	REV No: 1
DATE: 2003-03-03	REV DATE: OCT 2010
SCALE: NTS	CAD/FILE No.: A1943-1 (1 OF 1)
APP'D: PETER CHIESA	<b>GSSD-820.010</b>

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NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. THE ENTIRE GATE ASSEMBLY IS TO RECEIVE THREE COATS OF PAINT AFTER INSTALLATION. THE FIRST COAT SHALL BE A FAST DRYING WHITE PRIMER COAT 'PITTSBURG MULTI-PRIME' OR APPROVED EQUAL, ALONG WITH TWO ADDITIONAL BROWN TOP COATS OF 'PITTSBURG FAST DRY ALKYD' OR APPROVED EQUAL.
3. AN ADDITIONAL 100x20mm DIA. STEEL PEG ATTACHED TO A LENGTH OF 30mm STEEL CHAIN IS TO BE WELDED TO EACH 180mm DIA. STEEL PIPE. THE PEG IS TO BE SITUATED SO THAT THE GATE MAY BE FASTENED IN THE OPEN OR CLOSED POSITION.

TOP VIEW DETAIL

OPEN POSITION  
N.T.S.

FRONT VIEW

OPEN POSITION  
N.T.S.

HINGE DETAIL

N.T.S.

LOCKING MECHANISM DETAIL

N.T.S.



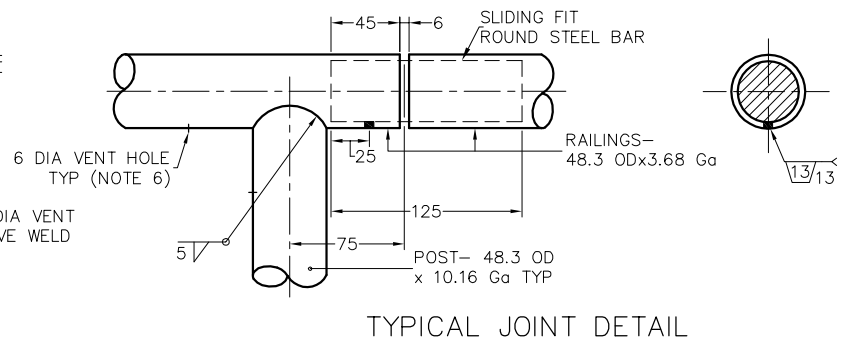
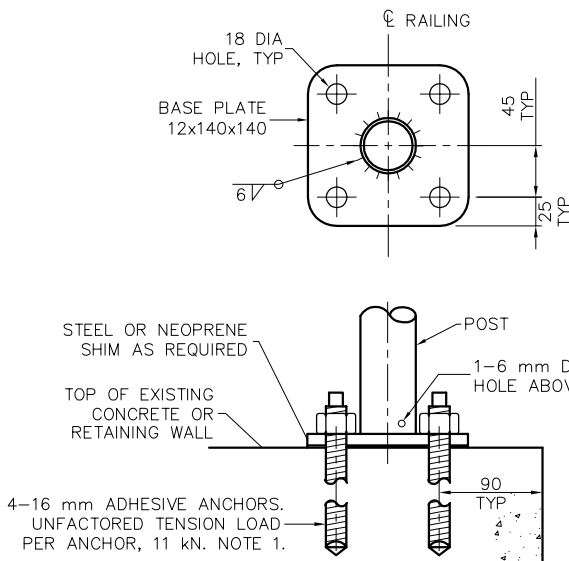
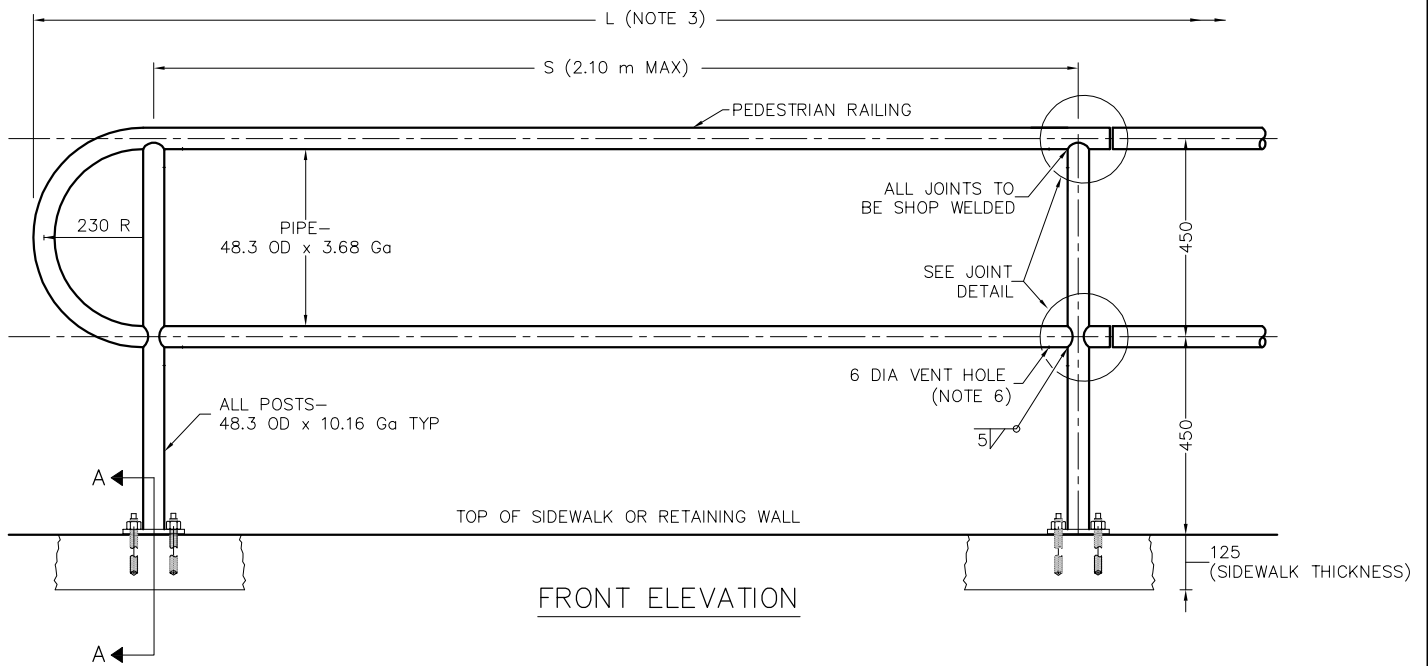
SITE GATE  
ASSEMBLY  
AND DETAILS

DRAWN BY: R. FRANK	REV No:
DATE: 2003-03-03	REV DATE:
SCALE: AS SHOWN	CAD/FILE No.: B128-1 (1 of 1)
APP'D:	GSSD-972.120

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**NOTES:**

1. ADHESIVE ANCHOR INSTALLATION AND EMBEDMENT DEPTH SHALL BE AS PER MANUFACTURER'S REQUIREMENTS. THE EMBEDMENT DEPTH SHALL NOT BE GREATER THAN 80% OF CONCRETE THICKNESS.
2. THREADED ROD ADHESIVE ANCHORS SHALL BE EQUIVALENT TO ASTM A325.
3. NUMBER OF PANELS =  $\frac{\text{TOTAL LENGTH ( L )} - 600 \text{ mm}}{\text{LENGTH OF PANELS ( S )}}$
4. ALL PIPE / POSTS SHALL BE ACCORDING TO ASTM SPECIFICATION A53, GRADE 'B' AND THEY ARE TO BE HOT DIPPED GALVANIZED AFTER FABRICATION IN CONFORMANCE WITH CSA G-164.
5. STEEL PLATE SHALL BE ACCORDING TO CSA G40.20 / G40.21-98, GRADE 300W.
6. 6 mm DIA VENT HOLES ARE TO PERMIT GASES TO ESCAPE DURING GALVANIZING.
7. POSTS SHALL BE VERTICAL AND ALL EXPOSED CORNERS TO BE GROUND SMOOTH.
8. WELDING SHALL CONFORM TO THE LATEST ISSUE OF CSA SPECIFICATION W59.
9. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.



**PEDESTRIAN HAND RAIL**

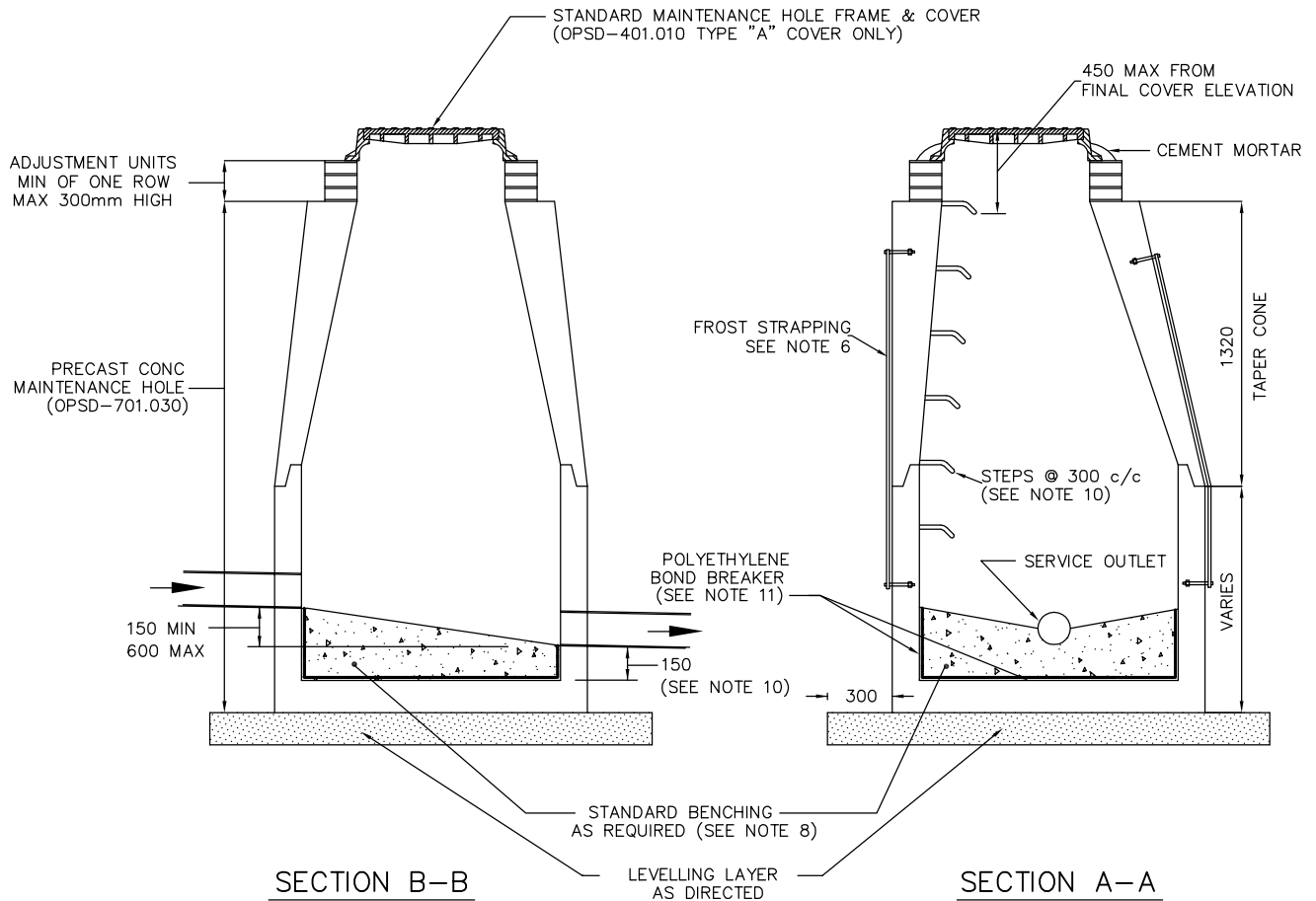
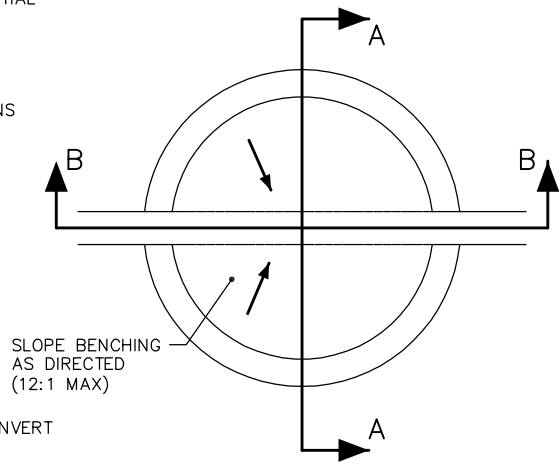
DRAWN BY: STS/RFRANK	REV No:
DATE: 2003-03-03	REV DATE:
SCALE: NTS	CAD/FILE No.: A1942-1 (1 OF 1)
APP'D:	GSSD-980.101

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**NOTES:**

1. THIS MAINTENANCE HOLE IS TO BE CONSTRUCTED ON ALL NON-RESIDENTIAL SERVICE CONNECTIONS.
2. ALTERNATES ARE NOT TO BE USED WITHOUT PRIOR APPROVAL FROM THE SEWER AND WATER ENGINEER.
3. MAINTENANCE HOLE INSTALLATION TO CONFORM WITH THE SPECIFICATIONS OUTLINED IN OPSS 407 AND GSSS 407.
4. FORM FOR THE INVERT SHALL BE MADE OF PVC.
5. FOR ELEVATION CHANGES, BETWEEN INLET & OUTLET, IN EXCESS OF 600 mm REFER TO OPSD-1003.010.
6. FOR STRAPPING DETAILS REFER TO OPSD-701.100.
7. ALL DIMENSIONS ARE GIVEN IN MILLIMETRES UNLESS OTHERWISE INDICATED.
8. CLASS OF CONCRETE: 20 MPa AT 28 DAYS.
9. MAINTENANCE HOLE STEPS CIRCULAR ALUMINUM AS PER OPSD-405.010.
10. MAINTENANCE HOLE BASE TO BE A MINIMUM OF 150 mm BELOW THE INVERT OF THE OUTLET PIPE.
11. 150 mm SUMP TO BE BENCHED WITH A POLYETHYLENE BOND BREAKER MATERIAL BETWEEN THE MAINTENANCE HOLE BASE AND THE BENCHING.
12. ADJUSTMENT UNITS TO BE SET IN 12 mm MORTAR MIX.



**PRECAST TEST  
MAINTENANCE HOLE  
SANITARY SEWER SERVICE  
CONNECTION**

DRAWN BY: STS/RF

REV No: 1

DATE: 2003-03-03

REV DATE: 2012-02-01

SCALE: NTS

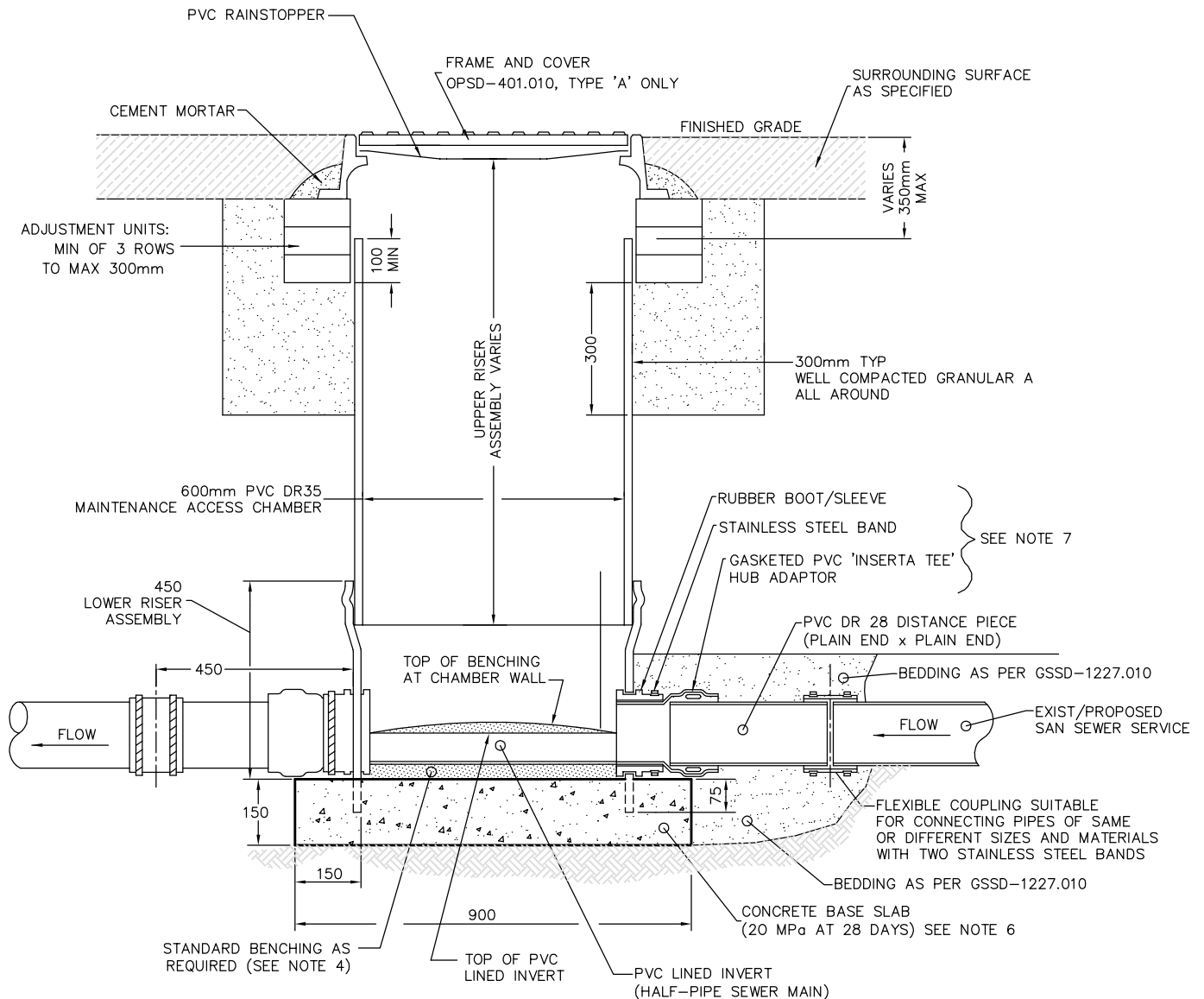
CAD/FILE No.:  
A1953-1 (1 OF 1)

APP'D:

**GSSD-1001.030**

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#### NOTES:

1. THIS MAINTENANCE ACCESS CHAMBER IS TO BE CONSTRUCTED ON ALL NON-RESIDENTIAL SERVICE CONNECTIONS.
2. ALTERNATES ARE NOT TO BE USED WITHOUT PRIOR APPROVAL FROM THE SEWER AND WATER ENGINEER.
3. MAINTENANCE ACCESS CHAMBER INSTALLATION TO CONFORM WITH THE SPECIFICATIONS OUTLINED IN OPSS 407 AND GSSS 407.
4. CONCRETE BENCHING SLOPE 1:12, CLASS OF CONCRETE 20 MPa AT 28 DAYS.
5. ADJUSTMENT UNITS TO BE PARGED ON THE OUTSIDE WITH 1:3 NON-SHRINK MORTAR MIX, APPLIED 15 mm THICK.
6. CONCRETE BASE SLAB: (20 MPa @ 28 DAYS)  
CONCRETE SHALL BE PLACED DIRECTLY AGAINST UNDISTURBED EARTH WALLS WHERE POSSIBLE.

#### 7. "INSERTA TEE" METHOD OF INSTALLATION:

- a) CORE/CUT REQUIRED HOLES (WITH HOLE SAW FOR PVC PIPE) INTO SIDES OF 600 mm ACCESS CHAMBER/PIPE.

INSERTA TEE SIZE	HOLE DIA
100 mm	112.5 mm
150 mm	162.5 mm
200 mm	218.8 mm

- b) INSERT RUBBER BOOT/SLEEVE INTO CORED HOLE
  - c) APPLY INSERTA TEE SOLUTION TO THE INSIDE OF THE RUBBER BOOT/SLEEVE AND TO THE OUTSIDE OF THE PVC HUB ADAPTOR. DO NOT USE OIL BASED LUBRICANT.
  - d) INSERT THE PVC HUB ADAPTOR INTO THE RUBBER BOOT/SLEEVE
  - e) TIGHTEN THE STAINLESS STEEL BAND
8. THIS CHAMBER IS NOT DESIGNED TO SUPPORT VEHICULAR LOADS. THIS CHAMBER TO BE CONSTRUCTED IN LANDSCAPED AREAS. GSSD 1001.030 SHALL BE USED IN AREA OF VEHICULAR LOADING.
  9. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

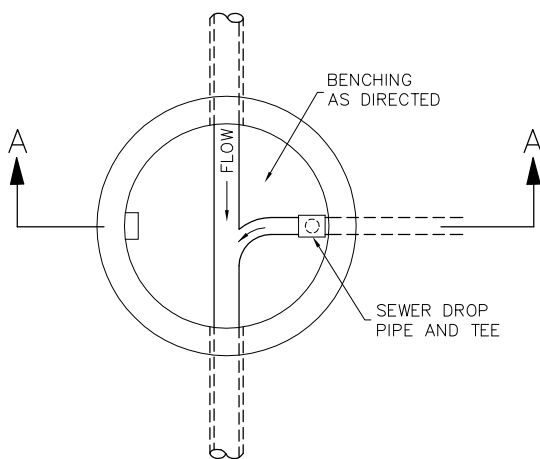


## MAINTENANCE ACCESS CHAMBER SANITARY SEWER SERVICE CONNECTION

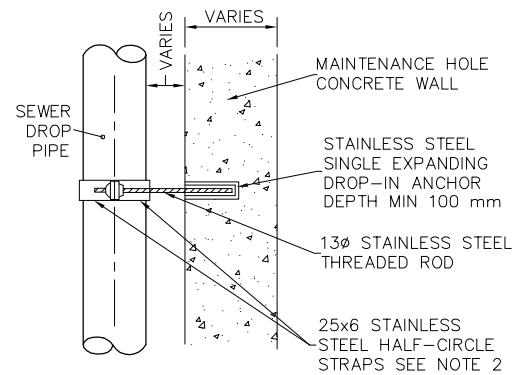
DRAWN BY: STS/WJK/RF	REV No: 1
DATE: 2003-03-03	REV DATE: 2012-02-01
SCALE: NTS	CAD/FILE No.: A2024-1 (1 OF 1)
APP'D:	GSSD-1001.040

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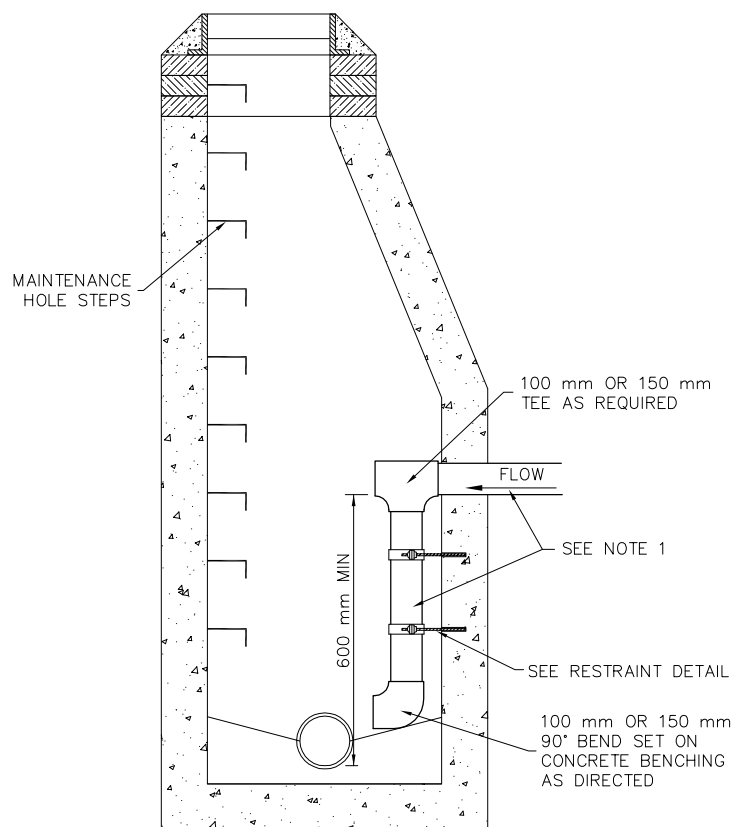
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PLAN VIEW



RESTRAINT DETAIL



SECTION A - A

NOTES:

1. MAXIMUM PIPE SIZE 150 mm.
2. MINIMUM TWO RESTRAINTS PER DROP PIPE.

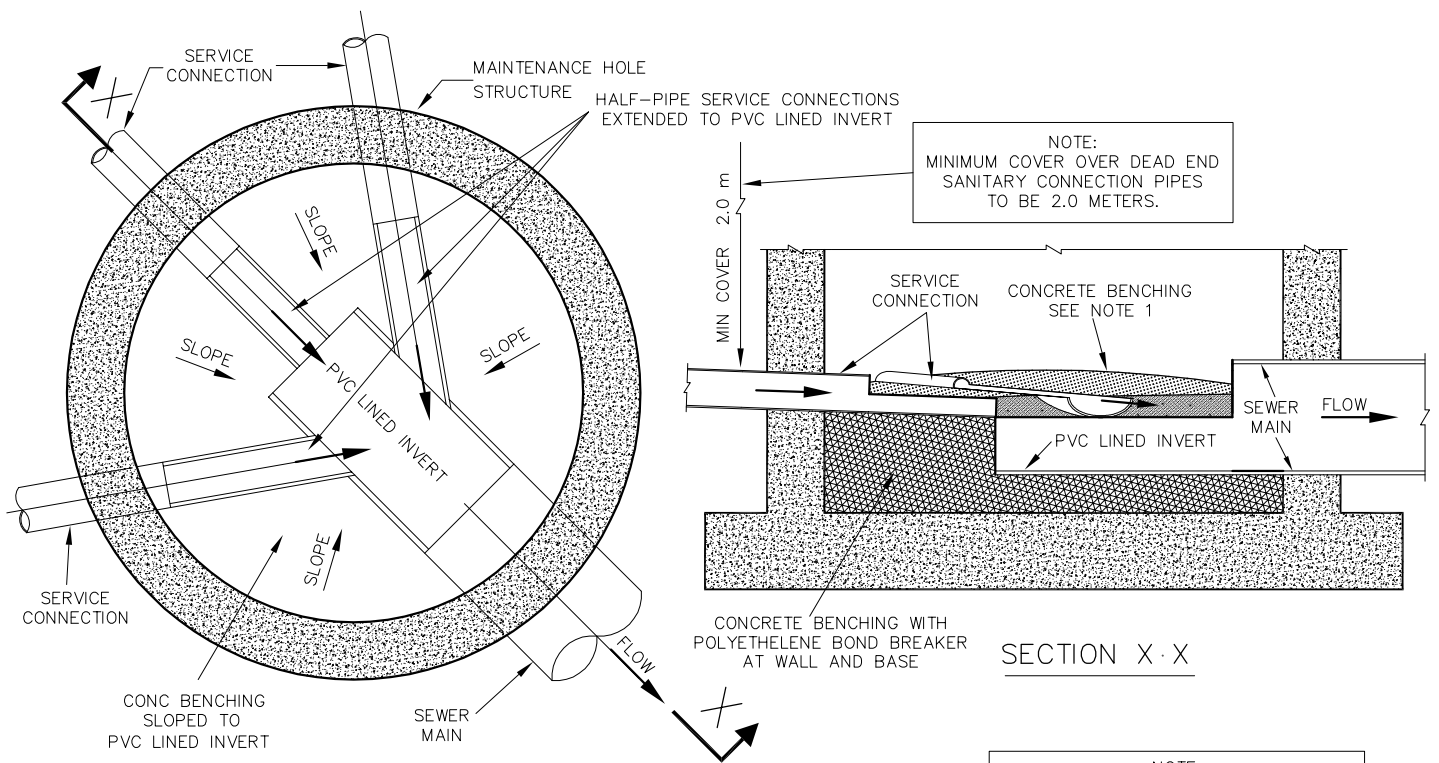


INTERNAL DROP STRUCTURE  
FOR SANITARY SEWER SERVICE  
FOR EXISTING  
MAINTENANCE HOLE

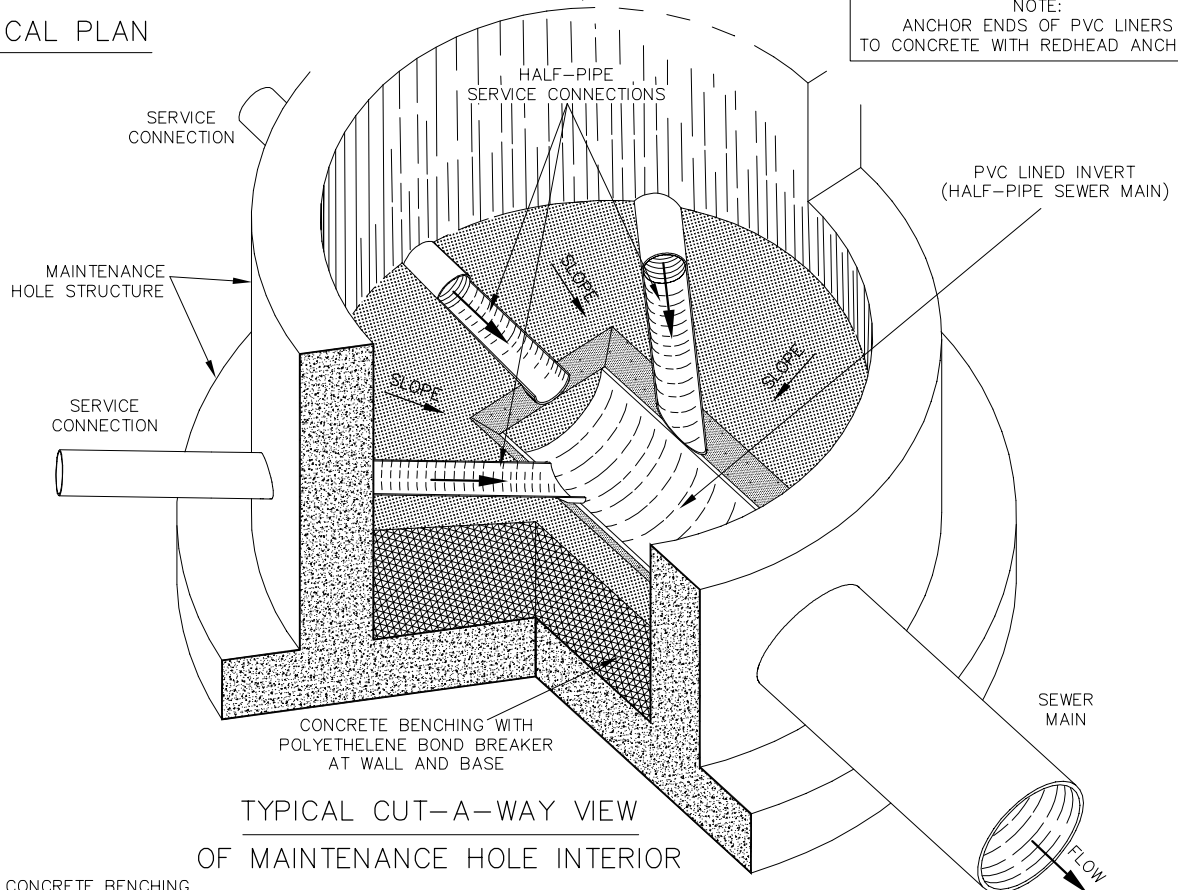
DRAWN BY: STS/RFRANK	REV No: 1
DATE: 2003-03-03	REV DATE: MAY/08
SCALE: NTS	CAD/FILE No.: A2017-1 (1 OF 1)
APP'D:	GSSD-1003.030

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TYPICAL PLAN



TYPICAL CUT-A-WAY VIEW  
OF MAINTENANCE HOLE INTERIOR

NOTES:

1. CLASS OF CONCRETE BENCHING  
20 MPa @ 28 DAYS.



DEAD END MAINTENANCE HOLE  
BENCHING DETAILS FOR  
SANITARY SERVICE  
CONNECTIONS & OUTLET

DRAWN BY: STS/RF

REV No:

DATE: 2003-03-03

REV DATE:

SCALE: NTS

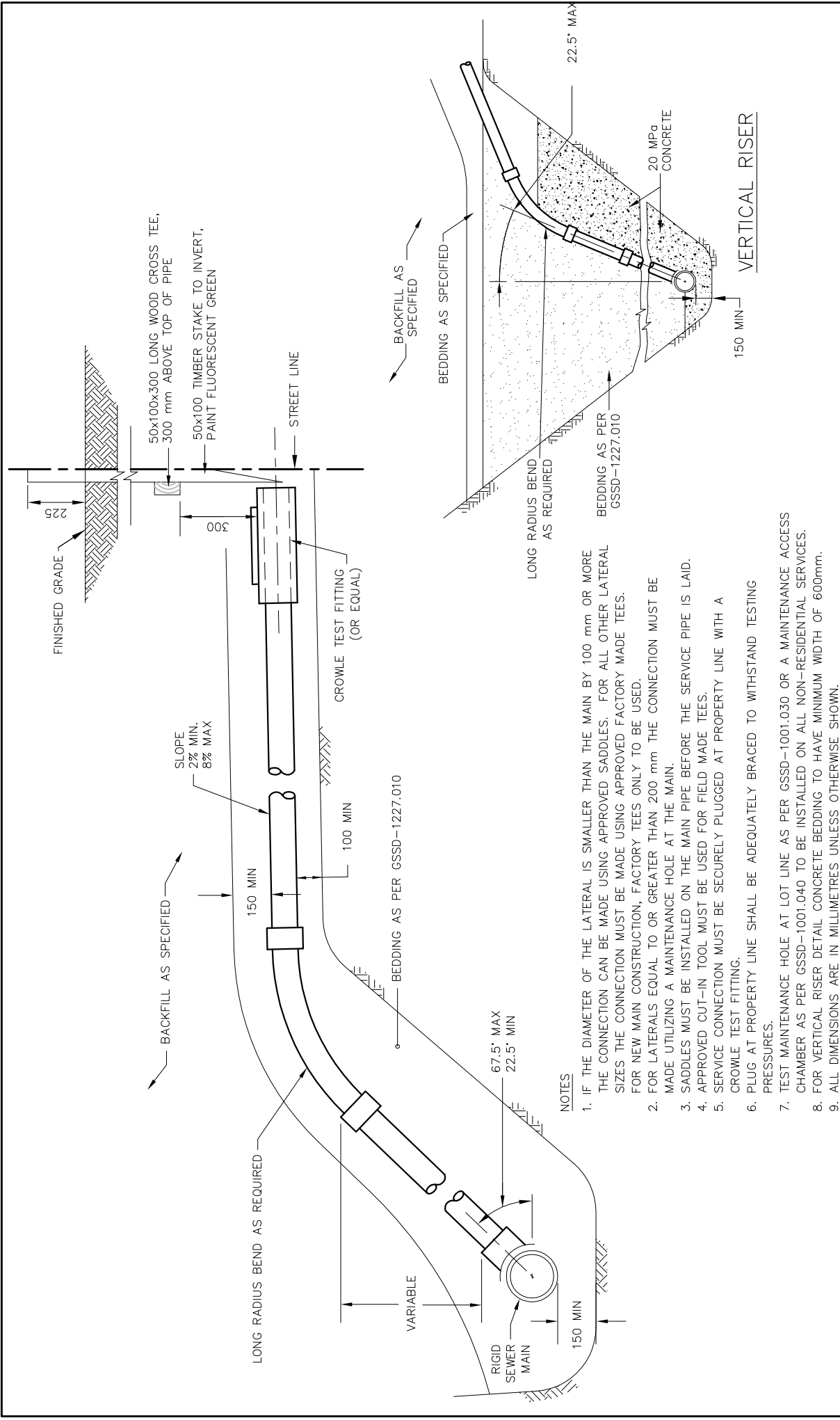
CAD/FILE No.:  
A1919-1 (1 OF 1)

APP'D:

GSSD-1004.020

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# NOTES

1. IF THE DIAMETER OF THE LATERAL IS SMALLER THAN THE MAIN BY 100 mm OR MORE THE CONNECTION CAN BE MADE USING APPROVED SADDLES. FOR ALL OTHER LATERAL SIZES THE CONNECTION MUST BE MADE USING APPROVED FACTORY MADE TEES. FOR NEW MAIN CONSTRUCTION, FACTORY TEES ONLY TO BE USED.
2. FOR LATERALS EQUAL TO OR GREATER THAN 200 mm THE CONNECTION MUST BE MADE UTILIZING A MAINTENANCE HOLE AT THE MAIN.
3. SADDLES MUST BE INSTALLED ON THE MAIN PIPE BEFORE THE SERVICE PIPE IS LAID.
4. APPROVED CUT-IN TOOL MUST BE USED FOR FIELD MADE TEES.
5. SERVICE CONNECTION MUST BE SECURELY PLUGGED AT PROPERTY LINE WITH A CROWLE TEST FITTING.
6. PLUG AT PROPERTY LINE SHALL BE ADEQUATELY BRACED TO WITHSTAND TESTING PRESSURES.
7. TEST MAINTENANCE HOLE AT LOT LINE AS PER GSSD-1001.030 OR A MAINTENANCE ACCESS CHAMBER AS PER GSSD-1001.040 TO BE INSTALLED ON ALL NON-RESIDENTIAL SERVICES.
8. FOR VERTICAL RISER DETAIL CONCRETE BEDDING TO HAVE MINIMUM WIDTH OF 600mm.
9. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

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## SEWER SERVICE CONNECTIONS FOR RIGID MAIN PIPE SEWER

DRAWN BY: STS/RFRANK REV No:

DATE: 2003-03-03

REV DATE:

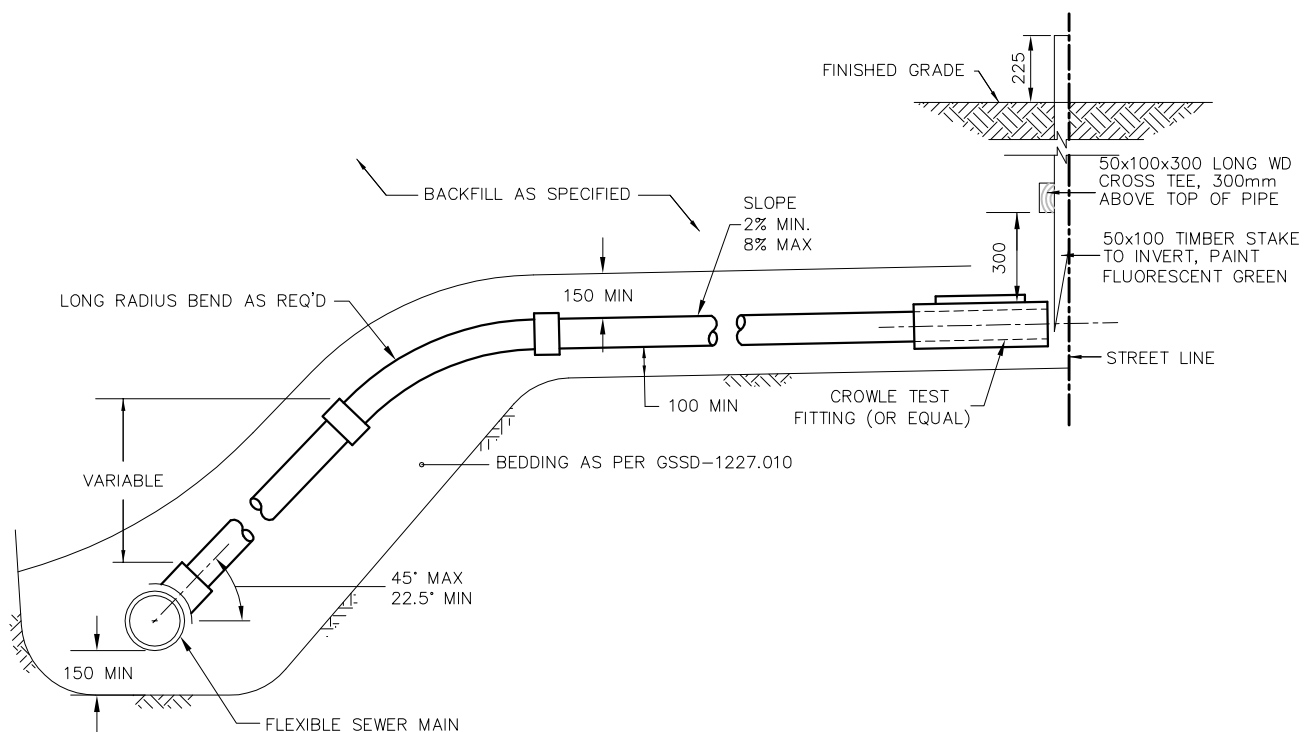
SCALE: NTS

CAD/FILE No.:

A1954-1 (1 OF 1)

APP'D:

GSSD-1006.010



#### NOTES

1. IF THE DIAMETER OF THE LATERAL IS SMALLER THAN THE MAIN BY 100 mm OR MORE THE CONNECTION CAN BE MADE USING APPROVED SADDLES. FOR ALL OTHER LATERAL SIZES THE CONNECTION MUST BE MADE USING APPROVED FACTORY MADE TEES. FOR NEW MAIN CONSTRUCTION, FACTORY TEES ONLY TO BE USED.
2. FOR LATERALS EQUAL TO OR GREATER THAN 200 mm THE CONNECTION MUST BE MADE UTILIZING A MAINTENANCE HOLE AT THE MAIN.
3. SADDLES MUST BE INSTALLED ON THE MAIN PIPE BEFORE THE SERVICE PIPE IS LAID.
4. APPROVED CUT-IN TOOL MUST BE USED FOR FIELD MADE TEES.
5. SERVICE CONNECTION MUST BE SECURELY PLUGGED AT PROPERTY LINE WITH A CROWLE TEST FITTING.
6. PLUG AT PROPERTY LINE SHALL BE ADEQUATELY BRACED TO WITHSTAND TESTING PRESSURES.
7. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
8. MAINTENANCE HOLE AT LOT LINE AS PER GSSD-1001.030 TO BE INSTALLED ON ALL NON-RESIDENTIAL SERVICES.



## SEWER SERVICE CONNECTIONS FOR FLEXIBLE MAIN PIPE SEWER

DRAWN BY: STS/RFRANK REV No:

DATE: 2003-03-03

REV DATE:

SCALE: NTS

CAD/FILE No.:  
A1955-1 (1 OF 1)

APP'D:

GSSD-1006.020

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1. THIS DRAWING TO BE READ IN CONJUNCTION WITH GSSD-1006.010, GSSD-1006.020, GSSD-1104.010 AND GSSD-1227.010.
2. GROWLE TEST FITTING TO BE SEALED WITH AN INTERNAL-EXPANDING PLUG (UPSTREAM END) AND METAL STRAPPED AROUND EXTERIOR WHEN BUILDING SEWERS ARE NOT CONNECTED.
3. PIPE SEPARATION WILL VARY FROM THAT SHOWN, WHEN THE SEWER MAIN EXCEEDS 300 mm in DIAMETER.

USE OF DUAL SERVICE CONNECTION REQUIRES WRITTEN APPROVAL OF THE SEWER AND WATER ENGINEER.

# DUAL SERVICE CONNECTIONS IN A COMMON TRENCH (SEWER & WATER)



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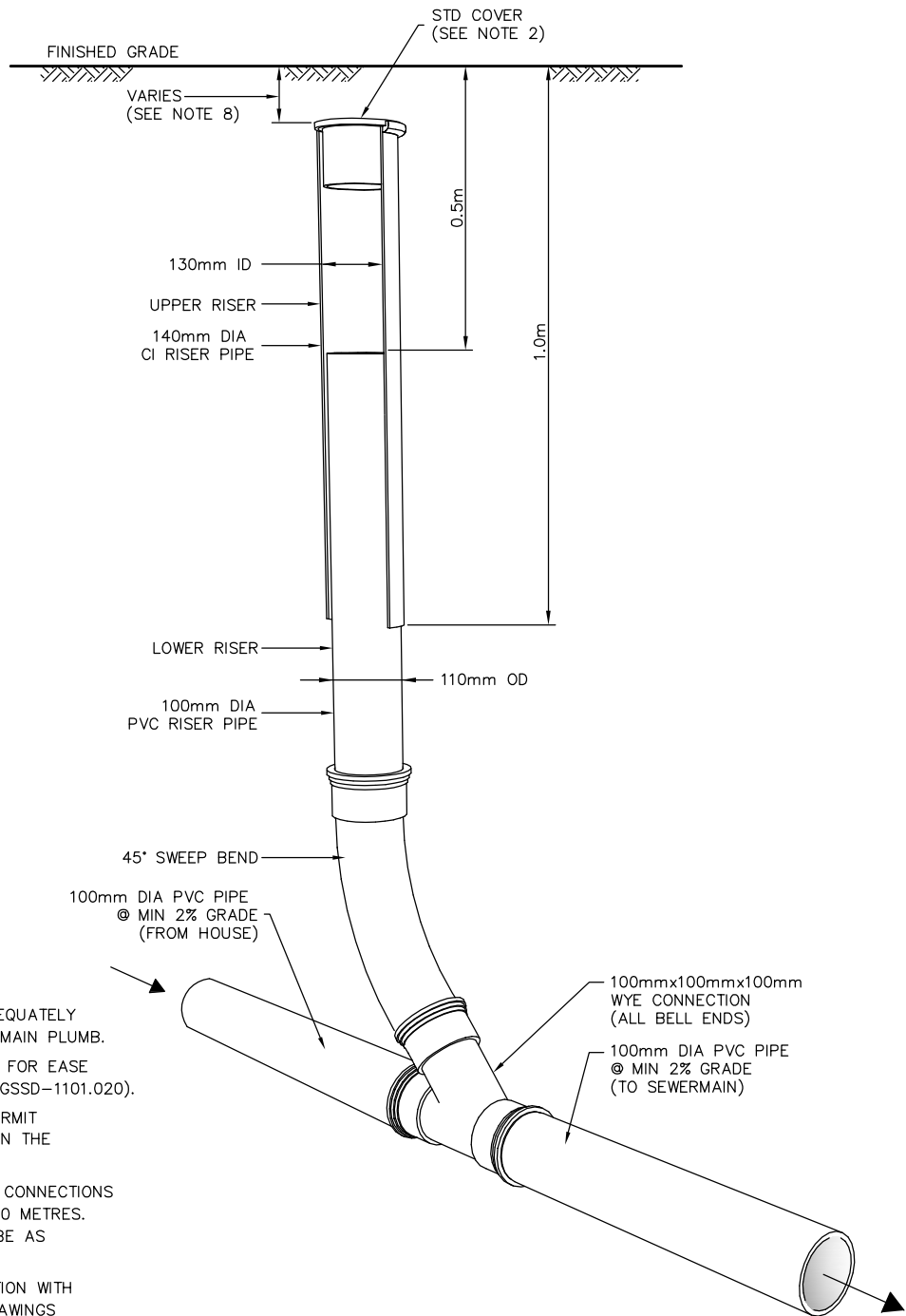
DATE: 2003-03-03

CAD/FILE No.:	
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A1956-1 (1 OF 1)

APP'D:

GSSD-1006.030



**NOTES:**

1. UPPER AND LOWER ASSEMBLIES TO BE ADEQUATELY BRACED WHILE BACKFILLING, AND MUST REMAIN PLUMB.
2. CLEANOUT COVER SHALL BE OF STD. IRON FOR EASE OF LOCATING WITH DIP NEEDLE (SEE STD. GSSD-1101.020).
3. DEPTH OF WYE MUST BE ADEQUATE TO PERMIT CONNECTION TO OUTLET PIPE AND MAINTAIN THE MINIMUM GRADE OF 2%.
4. THIS STANDARD SHALL APPLY FOR SEWER CONNECTIONS WHEN THE LENGTH OF SERVICE EXCEEDS 30 METRES. LOCATION OF VERTICAL CLEANOUT SHALL BE AS SPECIFIED BY THE ENGINEER.
5. THIS STANDARD TO BE READ IN CONJUNCTION WITH CITY OF GREATER SUDBURY STANDARD DRAWINGS GSSD-1006.030 AND GSSD-1227.010.
6. ALL PVC PIPE SHALL BE S.D.R. 28.
7. BACKFILL MATERIAL SHALL CONSIST OF COMPACTED SAND BEDDING IN 300 mm LAYERS.
8. COVER SHALL BE 100mm BELOW FINISHED GRADE IN SODDED OR GRAVEL AREAS. COVER SHALL BE FLUSH WITH FINISHED GRADE IF IN ASPHALT OR CONCRETE.



## STANDARD VERTICAL CLEANOUT ON A SANITARY SEWER SERVICE

DRAWN BY: SAG

REV No: 2

DATE: 2003-03-03

REV DATE: JAN/2013

SCALE: NTS

CAD/FILE No.:  
A1957-1 (1 OF 1)

APP'D:

**GSSD-1025.010**

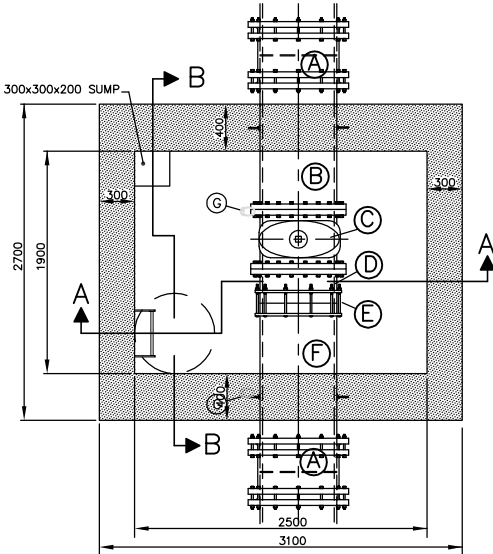
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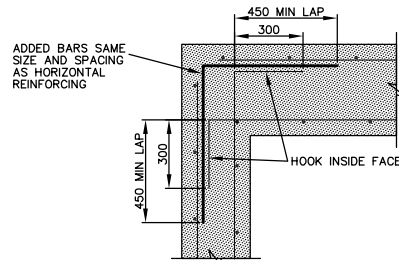
# CONSTRUCTION NOTES:

1. REINFORCING STEEL TO HAVE MINIMUM 50 mm CLEAR COVER.
2. CLASS OF CONCRETE TO BE 32 MPa (AIR ENTRAINED) AT 28 DAYS.
3. IN OFF ROAD AREAS, ORIGINAL GROUND IMMEDIATELY ABOUT CHAMBER SHALL BE SLOPED TO DIRECT SURFACE RUNOFF AWAY FROM STRUCTURE ACCESS.
4. ADJUSTMENT UNITS TO BE PARGED ON THE OUTSIDE WITH 1:3 NON-SHRINK MORTAR MIX APPLIED 15 mm THICK.
- 5a. REINFORCING STEEL FOR REMOVABLE TOP SLAB:  
TOP BARS TO BE SIZE 15M AT 300 mm c/c BOTH WAYS.  
BOTTOM BARS TO BE SIZE 15M AT 150 mm c/c BOTH WAYS.
- b. REINFORCING STEEL FOR WALLS AND BASE SLAB:  
ALL BARS TO BE SIZE 15M AT 300 mm c/c BOTH WAYS.
6. FOUR LIFTING RINGS TO BE INSTALLED IN ROOF SLAB IN POSITIONS AS TO PROVIDE A BALANCED REMOVAL OF SLAB SHOULD IT BE NECESSARY.
7. THE WALL SECTION OF THE VALVE CHAMBER IS TO BE POURED DIRECTLY AROUND BOTH ITEMS B & F WHICH SHALL BE IN PLACE PRIOR TO ANY CONCRETE BEING POURED.
8. PIECES 'B', 'D', AND 'F' SHALL BE MIN. CL 53 DUCTILE IRON CONFORMING TO AWWA C150/C151 HAVING A CEMENT LINING C104 AND EXTERIOR ASPHALTIC/BITUMINOUS COATING.
9. ALL FLANGES ARE TO BE FACTORY WELDED TO AWWA C207 CLASS D.
10. HEIGHT OF VALVE CHAMBER STRUCTURE AND DEPTH OF WATERMAIN WILL BE BASED ON AN OVERALL VALVE HEIGHT OF 1240 mm FROM THE CENTRELINE OF THE WATERMAIN TO THE TOP OF THE VALVE OPERATING NUT, IF THE VALVE IS TALLER THE CONTRACTOR IS TO INCREASE THESE DIMENSIONS.
11. AFTER CASTING IN CONCRETE, ALL METALLIC FITTINGS & METALLIC PIPE SHALL HAVE CORROSION PROTECTION.
12. TRACER WIRE TO BE ATTACHED TO WALL AND BOTTOM OF DECK USING APPROVED CABLE STRAPS AT 600 mm SPACING.
13. TRACER WIRE CONTINUES THROUGH CONCRETE WALL THROUGH 6 mm Ø DRILL HOLE. HOLE TO BE SEALED WITH EXTERIOR SILICONE CAULKING BOTH SIDES.
14. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

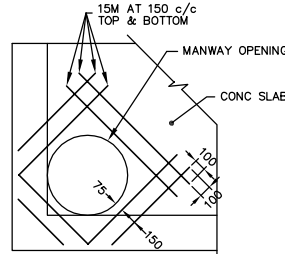
ITEM	DESCRIPTION (SEE SECTION B-B & NOTES)	ENDS	CORROSION PROTECTION
(A)	400 mm CAST IRON MECHANICAL JOINT SOLID SLEEVES	—	FULL
(B)	400 mm X 1350 mm DUCTILE IRON (CEMENT LINED) CL 53 c/w WALL SHEAR FLANGE	FLANGE & PLAIN	FULL
(C)	400 mm RESILIENT WEDGE GATE VALVE MEETING THE REQUIREMENTS OF AWWA C509	FLANGE & FLANGE	FULL
(D)	400 mm DUCTILE IRON JOINT ADAPTER DISTANCE PIECE (CEMENT LINED) CL 53	FLANGE & PLAIN	FULL
(E)	400 mm SMITH-BLAIR #411 STEEL COUPLING OR APPROVED EQUAL	—	FULL
(F)	400 mm X 1450 mm DUCTILE IRON (CEMENT LINED) CL 53 c/w WALL SHEAR FLANGE	PLAIN & PLAIN	FULL
(G)	50 mm CORPORATION MAIN STOPS AS PER GSSS 701	—	FULL



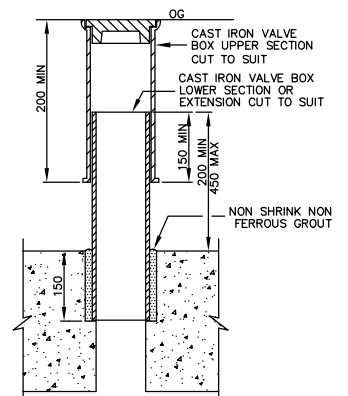
PLAN VIEW



PLAN VIEW - LAPPING  
DETAIL AT CORNERS

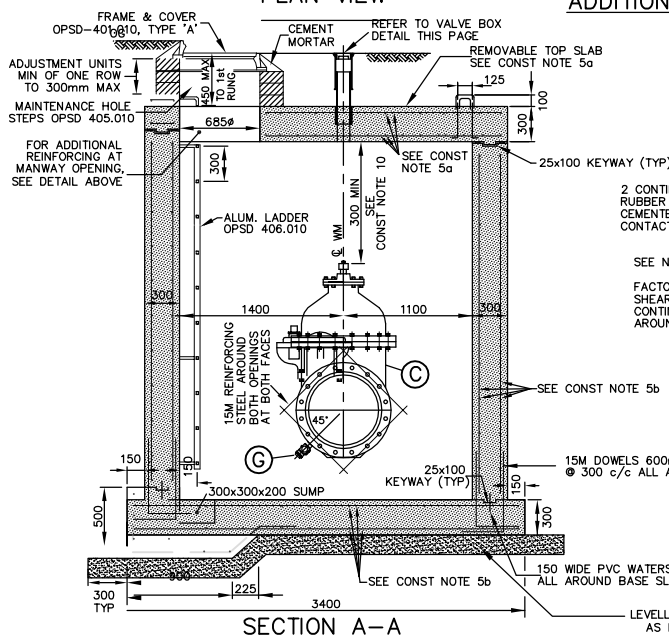


MANWAY OPENING

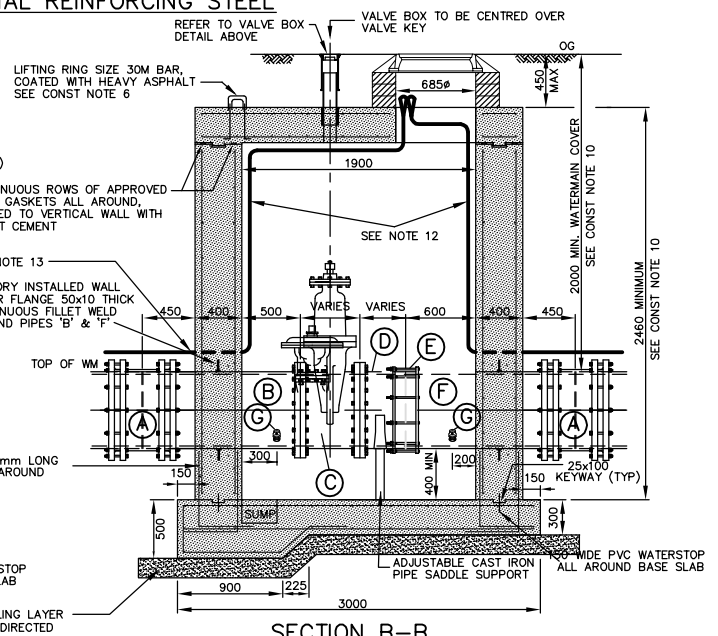


VALVE BOX DETAIL

ADDITIONAL REINFORCING STEEL



SECTION A-A



SECTION B-B



## CAST IN PLACE VALVE CHAMBER FOR 400 mmØ WATERMAIN

DRAWN BY: WK/SS/RF/BK	REV No: 4
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1959-1 (1 OF 1)
APP'D: PETER CHIESA	GSSD-1100.012

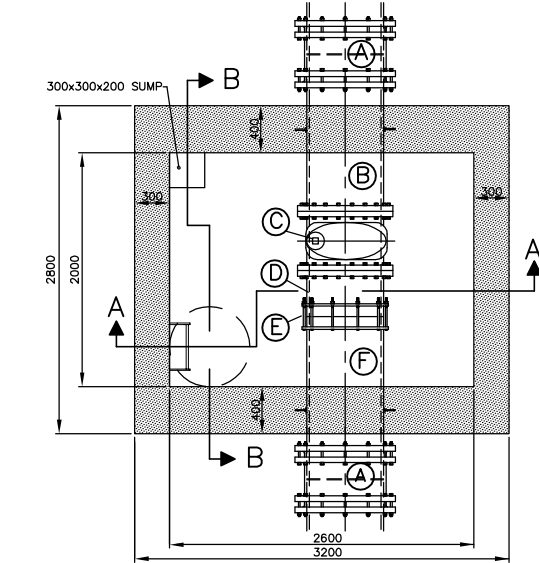
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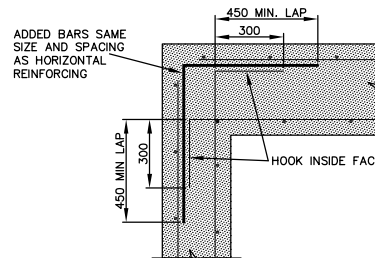
# CONSTRUCTION NOTES:

1. REINFORCING STEEL TO HAVE MINIMUM 50 mm CLEAR COVER.
2. CLASS OF CONCRETE TO BE 32 MPa (AIR ENTRAINED) AT 28 DAYS.
3. IN OFF ROAD AREAS, ORIGINAL GROUND IMMEDIATELY ABOUT CHAMBER SHALL BE SLOPED TO DIRECT SURFACE RUNOFF AWAY FROM STRUCTURE ACCESS.
4. ADJUSTMENT UNITS TO BE PARGED ON THE OUTSIDE WITH 1:3 NON-SHRINK MORTAR MIX APPLIED 15 mm THICK.
- 5a. REINFORCING STEEL FOR REMOVABLE TOP SLAB:  
TOP BARS TO BE SIZE 15M AT 300 mm c/c BOTH WAYS.  
BOTTOM BARS TO BE SIZE 15M AT 150 mm c/c BOTH WAYS.
- b. REINFORCING STEEL FOR WALLS AND BASE SLAB:  
ALL BARS TO BE SIZE 15M AT 300 mm c/c BOTH WAYS.
6. FOUR LIFTING RINGS TO BE INSTALLED IN ROOF SLAB IN POSITIONS AS TO PROVIDE A BALANCED REMOVAL OF SLAB SHOULD IT BE NECESSARY.
7. THE WALL SECTION OF THE VALVE CHAMBER IS TO BE POURED DIRECTLY AROUND BOTH ITEMS B & F WHICH SHALL BE IN PLACE PRIOR TO ANY CONCRETE BEING POURED.
8. PIECES 'B', 'D', AND 'F' SHALL BE MIN. CL 53 DUCTILE IRON CONFORMING TO AWWA C150/C151 HAVING A CEMENT LINING C104 AND EXTERIOR ASPHALTIC/BITUMINOUS COATING.
9. ALL FLANGES ARE TO BE FACTORY WELDED TO AWWA C207 CLASS D.
10. HEIGHT OF VALVE CHAMBER STRUCTURE AND DEPTH OF WATERMAIN WILL BE BASED ON AN OVERALL VALVE HEIGHT OF 1475 mm FROM THE CENTRELINE OF THE WATERMAIN TO THE TOP OF THE VALVE OPERATING NUT, IF THE VALVE IS TALLER THE CONTRACTOR IS TO INCREASE THESE DIMENSIONS.
11. AFTER CASTING IN CONCRETE, ALL METALLIC FITTING & METALLIC PIPE SHALL HAVE CORROSION PROTECTION.
12. TRACER WIRE TO BE ATTACHED TO WALL AND BOTTOM OF DECK USING APPROVED CABLE STRAPS AT 600 mm SPACING.
13. TRACER WIRE CONTINUES THROUGH CONCRETE WALL THROUGH 6 mm Ø DRILL HOLE. HOLE TO BE SEALED WITH EXTERIOR SILICONE CAULKING BOTH SIDES.
14. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

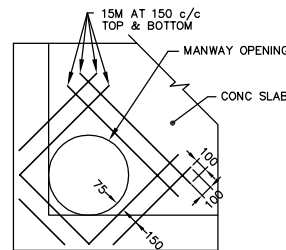
ITEM	DESCRIPTION (SEE SECTION B-B & NOTES)	ENDS	CORROSION PROTECTION
(A)	500 mm CAST IRON MECHANICAL JOINT SOLID SLEEVES	—	FULL
(B)	500 mm X 1350 mm DUCTILE IRON (CEMENT LINED) CL 53 c/w WALL SHEAR FLANGE	FLANGE & PLAIN	FULL
(C)	500 mm RESILIENT WEDGE GATE VALVE MEETING THE REQUIREMENTS OF AWWA C509	FLANGE & FLANGE	FULL
(D)	500 mm DUCTILE IRON JOINT ADAPTER DISTANCE PIECE (CEMENT LINED) CL 53	FLANGE & PLAIN	FULL
(E)	500 mm SMITH-BLAIR #411 STEEL COUPLING OR APPROVED EQUAL	—	FULL
(F)	500 mm X 1450 mm DUCTILE IRON (CEMENT LINED) CL 53 c/w WALL SHEAR FLANGE	PLAIN & PLAIN	FULL
(G)	50 mm CORPORATION MAIN STOPS AS PER GSSS 701	—	FULL



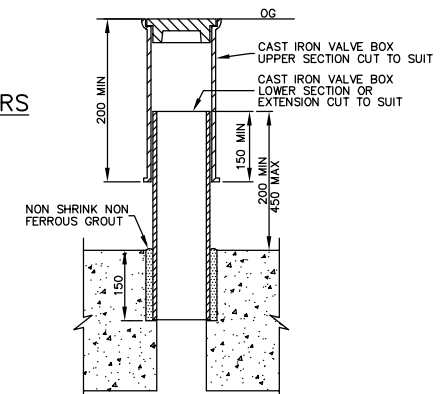
PLAN VIEW



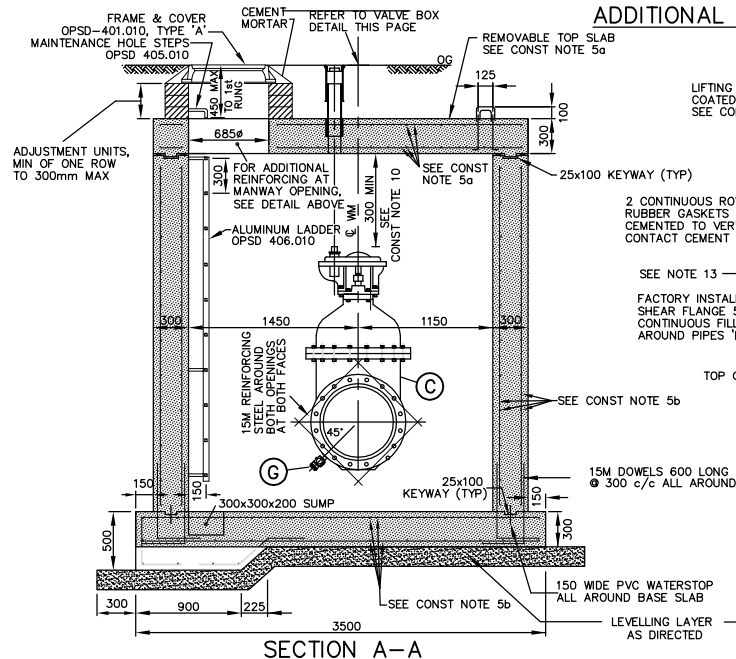
PLAN VIEW  
LAPPING DETAIL AT CORNERS



MANWAY OPENING

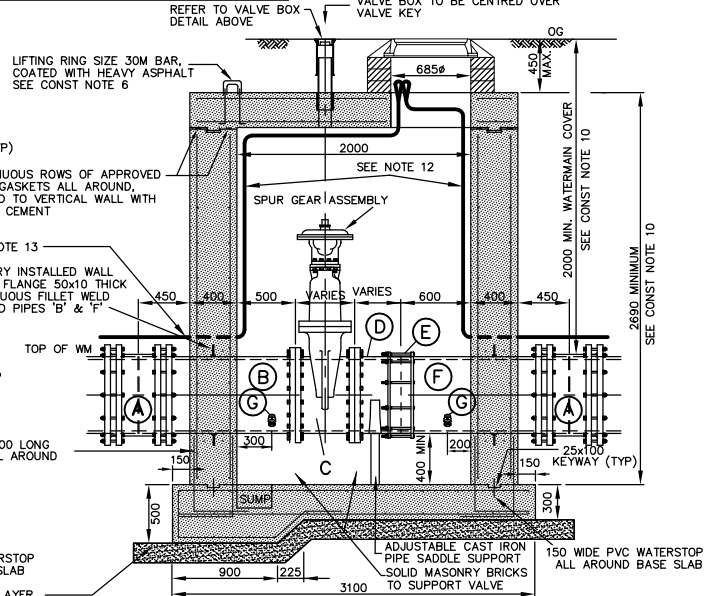


VALVE BOX DETAIL



SECTION A-A

## ADDITIONAL REINFORCING STEEL



SECTION B-B



## CAST IN PLACE VALVE CHAMBER FOR 500 mmØ WATERMAIN

DRAWN BY: WK/SS/RF/BK	REV No: 4
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1960-1 (1 OF 1)
APP'D: PETER CHIESA	GSSD-1100.013

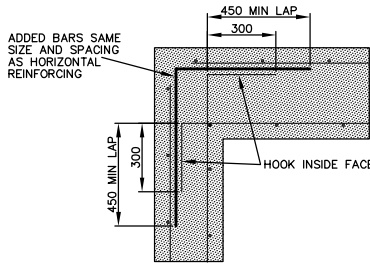
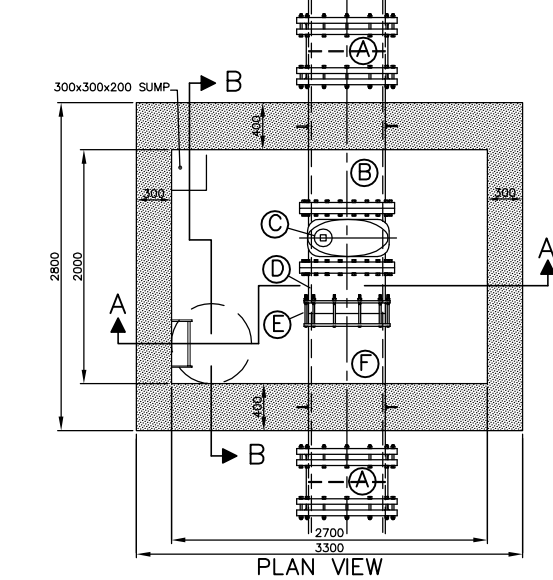
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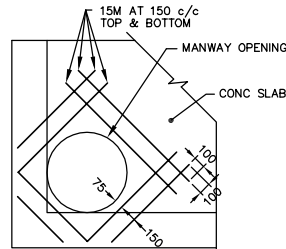
# CONSTRUCTION NOTES:

1. REINFORCING STEEL TO HAVE MINIMUM 50 mm CLEAR COVER.
2. CLASS OF CONCRETE TO BE 32 MPa (AIR ENTRAINED) AT 28 DAYS.
3. IN OFF ROAD AREAS, ORIGINAL GROUND IMMEDIATELY ABOUT CHAMBER SHALL BE SLOPED TO DIRECT SURFACE RUNOFF AWAY FROM STRUCTURE ACCESS.
4. ADJUSTMENT UNITS TO BE PARGED ON THE OUTSIDE WITH 1:3 NON-SHRINK MORTAR MIX APPLIED 15 mm THICK.
- 5a. REINFORCING STEEL FOR REMOVABLE TOP SLAB:  
TOP BARS TO BE SIZE 15M AT 300 mm c/c BOTH WAYS.  
BOTTOM BARS TO BE SIZE 15M AT 150 mm c/c BOTH WAYS.
- b. REINFORCING STEEL FOR WALLS AND BASE SLAB:  
ALL BARS TO BE SIZE 15M AT 300 mm c/c BOTH WAYS.
6. FOUR LIFTING RINGS TO BE INSTALLED IN ROOF SLAB IN POSITIONS AS TO PROVIDE A BALANCED REMOVAL OF SLAB SHOULD IT BE NECESSARY.
7. THE WALL SECTION OF THE VALVE CHAMBER IS TO BE POURED DIRECTLY AROUND BOTH ITEMS B & F WHICH SHALL BE IN PLACE PRIOR TO ANY CONCRETE BEING POURED.
8. PIECES 'B', 'D', AND 'F' SHALL BE MIN. CL 53 DUCTILE IRON CONFORMING TO AWWA C150/C151 HAVING A CEMENT LINING C104 AND EXTERIOR ASPHALTIC/BITUMINOUS COATING.
9. ALL FLANGES ARE TO BE FACTORY WELDED TO AWWA C207 CLASS D.
10. HEIGHT OF VALVE CHAMBER STRUCTURE AND DEPTH OF WATERMAIN WILL BE BASED ON AN OVERALL VALVE HEIGHT OF 1570 mm FROM THE CENTRELINE OF THE WATERMAIN TO THE TOP OF THE VALVE OPERATING NUT, IF THE VALVE IS TALLER THE CONTRACTOR IS TO INCREASE THESE DIMENSIONS.
11. AFTER CASTING CONCRETE, ALL METALLIC FITTINGS & METALLIC PIPE SHALL HAVE CORROSION PROTECTION.
12. TRACER WIRE TO BE ATTACHED TO WALL AND BOTTOM OF DECK USING APPROVED CABLE STRAPS AT 600 mm SPACING.
13. TRACER WIRE CONTINUES THROUGH CONCRETE WALL THROUGH 6 mm Ø DRILL HOLE. HOLE TO BE SEALED WITH EXTERIOR SILICONE CAULKING BOTH SIDES.
14. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

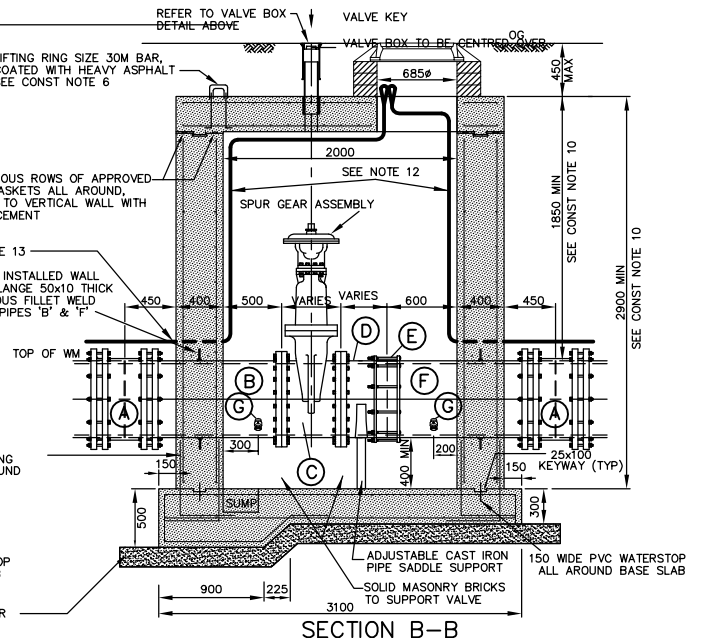
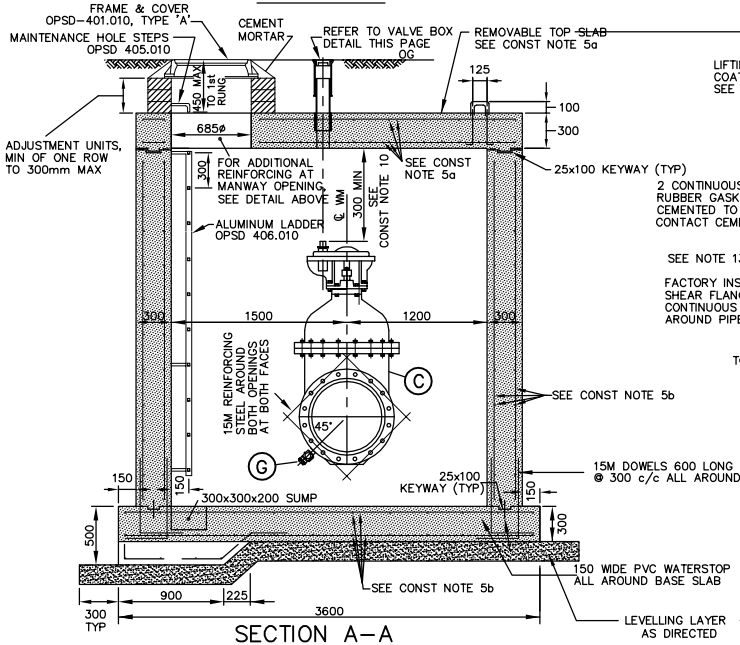
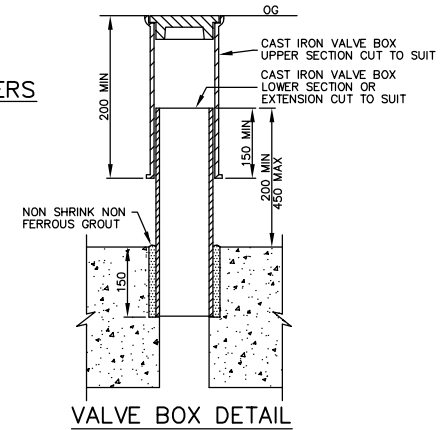
ITEM	DESCRIPTION (SEE SECTION B-B & NOTES)	ENDS	CORROSION PROTECTION
(A)	600 mm CAST IRON MECHANICAL JOINT SOLID SLEEVES	—	FULL
(B)	600 mm X 1350 mm DUCTILE IRON (CEMENT LINED) CL 53 c/w WALL SHEAR FLANGE	FLANGE & PLAIN	FULL
(C)	600 mm GATE VALVE MEETING THE REQUIREMENTS OF AWWA C500	FLANGE & FLANGE	FULL
(D)	600 mm DUCTILE IRON JOINT ADAPTER DISTANCE PIECE (CEMENT LINED) CL 53	FLANGE & PLAIN	FULL
(E)	600 mm SMITH-BLAIR #411 STEEL COUPLING OR APPROVED EQUAL	—	FULL
(F)	600 mm X 1450 mm DUCTILE IRON (CEMENT LINED) CL 53 c/w WALL SHEAR FLANGE	PLAIN & PLAIN	FULL
(G)	50 mm CORPORATION MAIN STOPS AS PER GSSS 701	—	FULL



PLAN VIEW  
LAPPING DETAIL AT CORNERS



MANWAY OPENING  
ADDITIONAL REINFORCING STEEL



## CAST IN PLACE VALVE CHAMBER FOR 600 mmØ WATERMAIN

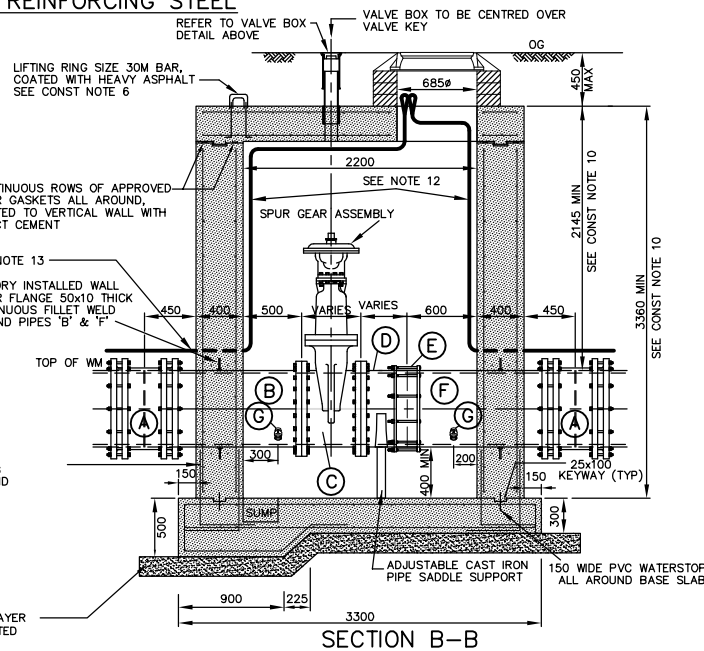
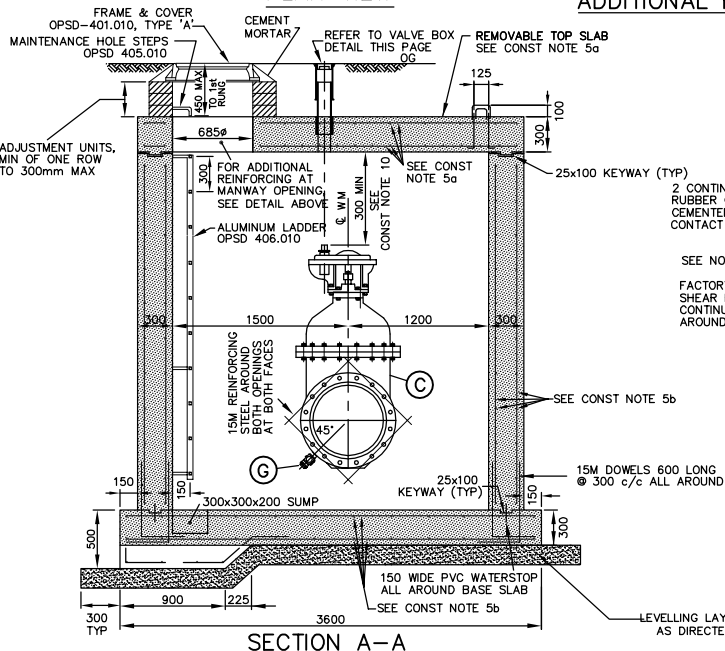
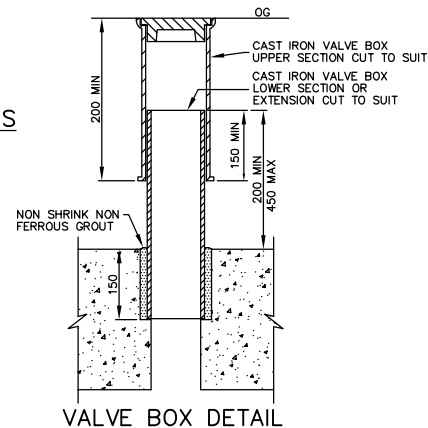
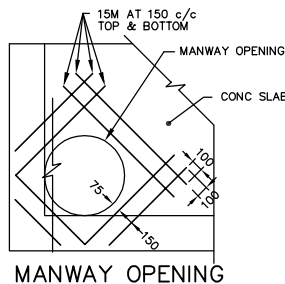
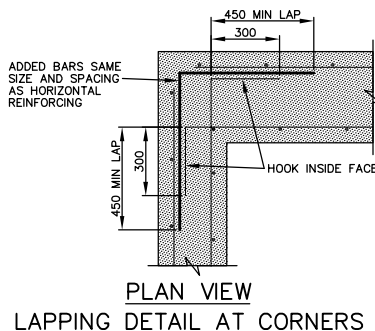
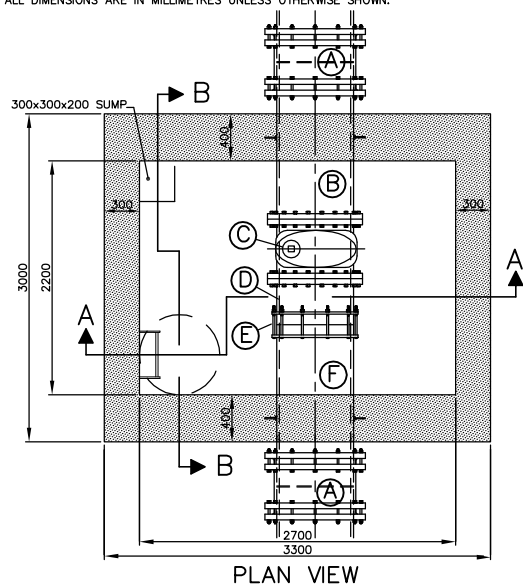
DRAWN BY: WK/SS/RF/BK	REV No: 4
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1961-1 (1 OF 1)
APP'D: PETER CHIESA	GSSD-1100.014

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1. REINFORCING STEEL TO HAVE MINIMUM 50 mm CLEAR COVER.
2. CLASS OF CONCRETE TO BE 32 MPa (AIR ENTRAINED) AT 28 DAYS.
3. IN OFF ROAD AREAS, ORIGINAL GROUND IMMEDIATELY ABOUT CHAMBER SHALL BE SLOPED TO DIRECT SURFACE RUNOFF AWAY FROM STRUCTURE ACCESS.
4. ADJUSTMENT UNITS TO BE PARGED ON THE OUTSIDE WITH 1:3 NON-SHRINK MORTAR MIX APPLIED 15 mm THICK.
- 5a. REINFORCING STEEL FOR REMOVEABLE TOP SLAB:  
TOP BARS TO BE SIZE 15M AT 300 mm c/c BOTH WAYS.  
BOTTOM BARS TO BE SIZE 15M AT 150 mm c/c BOTH WAYS.
- b. REINFORCING STEEL FOR WALLS AND BASE SLAB:  
ALL BARS TO BE SIZE 15M AT 300 mm c/c BOTH WAYS.
6. FOUR LIFTING RINGS TO BE INSTALLED IN ROOF SLAB IN POSITIONS AS TO PROVIDE A BALANCED REMOVAL OF SLAB SHOULD IT BE NECESSARY.
7. THE WALL SECTION OF THE VALVE CHAMBER IS TO BE POURED DIRECTLY AROUND BOTH ITEMS B & F WHICH SHALL BE IN PLACE PRIOR TO ANY CONCRETE BEING POURED.
8. PIECES "B", "D", AND "F" SHALL BE MIN. CL 53 DUCTILE IRON CONFORMING TO AWWA C150/C151 HAVING A CEMENT LINING C104 AND EXTERIOR ASPHALTIC/BITUMINOUS COATING.
9. ALL FLANGES ARE TO BE FACTORY WELDED TO AWWA C207 CLASS D.
10. HEIGHT OF VALVE CHAMBER STRUCTURE AND DEPTH OF WATERMAIN WILL BE BASED ON AN OVERALL VALVE HEIGHT OF 1950 mm FROM THE CENTRELINE OF THE WATERMAIN TO THE TOP OF THE VALVE OPERATING NUT, IF THE VALVE IS TALLER THE CONTRACTOR IS TO INCREASE THESE DIMENSIONS.
11. AFTER CASTING IN CONCRETE, ALL METALLIC FITTINGS & METALLIC PIPE SHALL HAVE CORROSION PROTECTION.
12. TRACER WIRE TO BE ATTACHED TO WALL AND BOTTOM OF DECK USING APPROVED CABLE STRAPS AT 600 mm SPACING.
13. TRACER WIRE CONTINUES THROUGH CONCRETE WALL THROUGH 6 mm Ø DRILL HOLE. HOLE TO BE SEALED WITH EXTERIOR SILICONE CAULKING BOTH SIDES.
14. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

ITEM	DESCRIPTION (SEE SECTION B-B & NOTES)	ENDS	CORROSION PROTECTION
(A)	750 mm CAST IRON MECHANICAL JOINT SOLID SLEEVES	————	FULL
(B)	750 mm X 1350 mm DUCTILE IRON (CEMENT LINED) CL 53 c/w WALL SHEAR FLANGE	FLANGE & PLAIN	FULL
(C)	750 mm GATE VALVE MEETING THE REQUIREMENTS OF AWWA C500	FLANGE & FLANGE	FULL
(D)	750 mm DUCTILE IRON JOINT ADAPTER DISTANCE PIECE (CEMENT LINED) CL 53	FLANGE & PLAIN	FULL
(E)	750 mm SMITH-BLAIR #411 STEEL COUPLING OR APPROVED EQUAL	————	FULL
(F)	750 mm X 1450 mm DUCTILE IRON (CEMENT LINED) CL 53 c/w WALL SHEAR FLANGE	PLAIN & PLAIN	FULL
(G)	50 mm CORPORATION MAIN STOPS AS PER GSSS 701	————	FULL



CAST IN PLACE  
VALVE CHAMBER  
FOR 750 mmØ WATERMAIN  
WITH PVC & DI PIPE

DRAWN BY: STS/RF/BWK	REV No: 4
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1962-1 (1 OF 1)
APP'D: PETER CHIESA	<b>GSSD-1100.015</b>

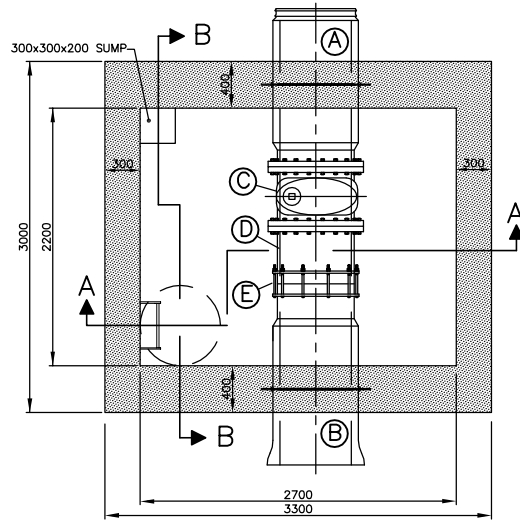
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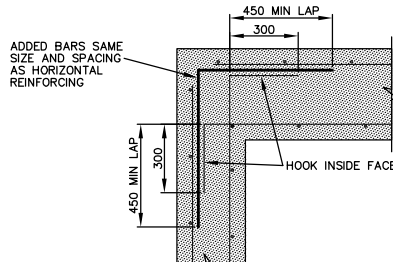
# CONSTRUCTION NOTES:

1. REINFORCING STEEL TO HAVE MINIMUM 50 mm CLEAR COVER.
2. CLASS OF CONCRETE TO BE 32 MPa (AIR ENTRAINED) AT 28 DAYS.
3. IN OFF ROAD AREAS, ORIGINAL GROUND IMMEDIATELY ABOUT CHAMBER SHALL BE SLOPED TO DIRECT SURFACE RUNOFF AWAY FROM STRUCTURE ACCESS.
4. ADJUSTMENT UNITS TO BE PARGED ON THE OUTSIDE WITH 1:3 NON-SHRINK MORTAR MIX APPLIED 15 mm THICK.
- 5a. REINFORCING STEEL FOR REMOVABLE TOP SLAB:  
TOP BARS TO BE SIZE 15M AT 300 mm c/c BOTH WAYS.  
BOTTOM BARS TO BE SIZE 15M AT 150 mm c/c BOTH WAYS.
- b. REINFORCING STEEL FOR WALLS AND BASE SLAB:  
ALL BARS TO BE SIZE 15M AT 300 mm c/c BOTH WAYS.
6. FOUR LIFTING RINGS TO BE INSTALLED IN ROOF SLAB IN POSITIONS AS TO PROVIDE A BALANCED REMOVAL OF SLAB SHOULD IT BE NECESSARY.
7. THE WALL SECTION OF THE VALVE CHAMBER IS TO BE POURED DIRECTLY AROUND BOTH ITEMS A & B WHICH SHALL BE IN PLACE PRIOR TO ANY CONCRETE BEING POURED.
8. PIECES 'A', 'B', AND 'D' SHALL BE CONCRETE PRESSURE PIPE TO AWWA C301 CLASS 18 HAVING AN EXTERIOR MORTAR COATING OF SULPHATE RESISTING CEMENT.
9. ALL FLANGES ARE TO BE FACTORY WELDED TO AWWA C207 CLASS D.
10. HEIGHT OF VALVE CHAMBER STRUCTURE AND DEPTH OF WATERMAIN WILL BE BASED ON AN OVERALL VALVE HEIGHT OF 1950mm FROM THE CENTRELINE OF THE WATERMAIN TO THE TOP OF THE VALVE OPERATING NUT, IF THE VALVE IS TALLER THE CONTRACTOR IS TO INCREASE THESE DIMENSIONS.
11. AFTER CASTING IN CONCRETE, ALL METALLIC FITTINGS & METALLIC PIPE SHALL HAVE CORROSION PROTECTION.
12. TRACER WIRE TO BE ATTACHED TO WALL AND BOTTOM OF DECK USING APPROVED CABLE STRAPS AT 600 mm SPACING.
13. TRACER WIRE CONTINUES THROUGH CONCRETE WALL THROUGH 6 mm Ø DRILL HOLE. HOLE TO BE SEALED WITH EXTERIOR SILICONE CAULKING ON BOTH SIDES.
14. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

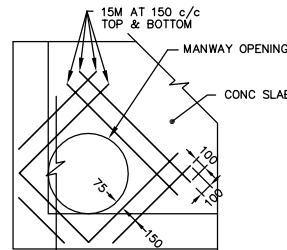
ITEM	DESCRIPTION (SEE SECTION B-B & NOTES)	ENDS	CORROSION PROTECTION
(A)	750 mm x 1400 mm CONC. PRESSURE PIPE C/W WALL FLANGE	SPIGOT & FLANGE END	FULL
(B)	750 mm x 1500 mm CONC. PRESSURE PIPE C/W WALL FLANGE	PLAIN STEEL END & BELL	FULL
(C)	750 mm GATE VALVE MEETING THE REQUIREMENTS OF AWWA C500	FLANGE & FLANGE	FULL
(D)	750 mm JOINT ADAPTER DISTANCE PIECE WITH INTERIOR CONCRETE CORE.	FLANGE & PLAIN	FULL
(E)	750 mm SMITH-BLAIR #411 STEEL COUPLING OR APPROVED EQUAL	—	FULL
(F)	50 mm CORPORATION MAIN STOPS AS PER GSSS 701	—	FULL



PLAN VIEW

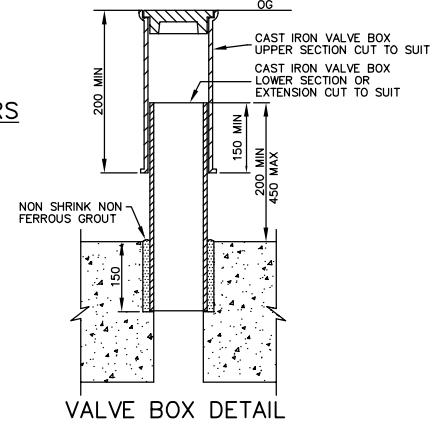


PLAN VIEW  
LAPPING DETAIL AT CORNERS

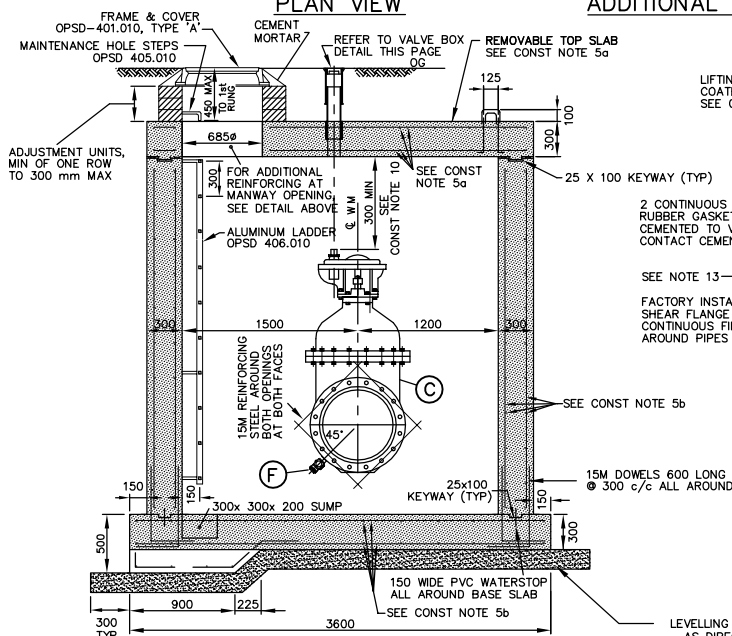


MANWAY OPENING

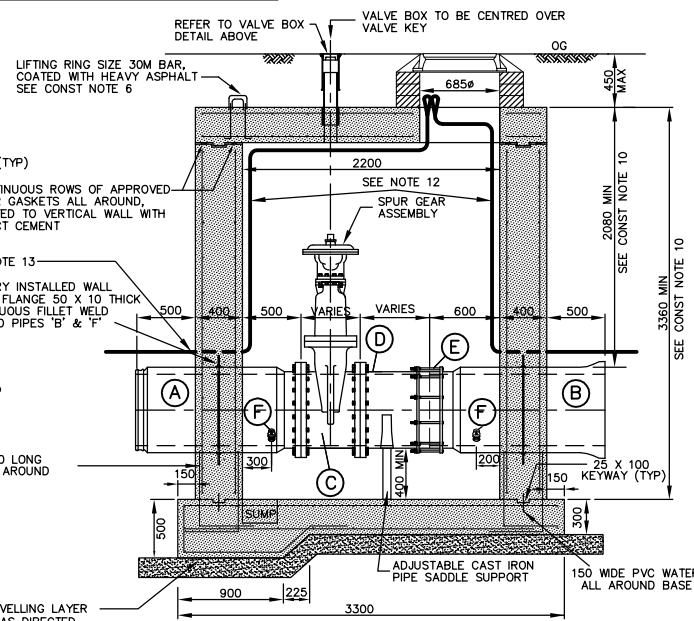
ADDITIONAL REINFORCING STEEL



VALVE BOX DETAIL



SECTION A-A



SECTION B-B



## CAST IN PLACE VALVE CHAMBER FOR 750 mmØ WATERMAIN WITH CONC PRESSURE PIPE

DRAWN BY: WJK/STS/RF	REV No: 2
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1963-1 (1 OF 1)
APP'D:	GSSD-1100.016

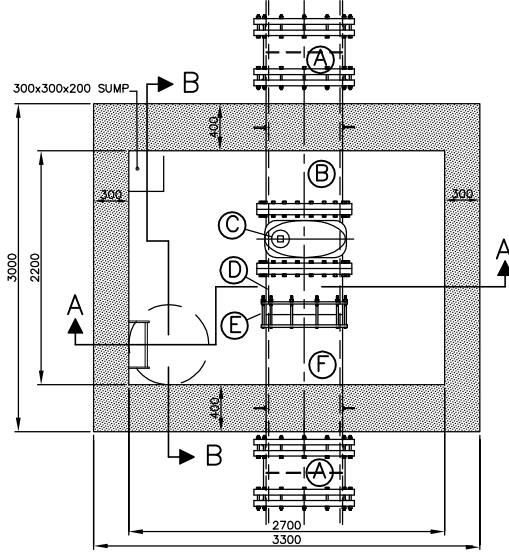
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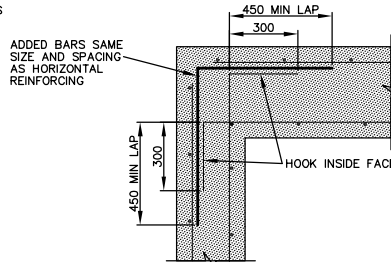
# CONSTRUCTION NOTES:

1. REINFORCING STEEL TO HAVE MINIMUM 50 mm CLEAR COVER.
2. CLASS OF CONCRETE TO BE 32 MPa (AIR ENTRAINED) AT 28 DAYS.
3. IN OFF ROAD AREAS, ORIGINAL GROUND IMMEDIATELY ABOUT CHAMBER SHALL BE SLOPED TO DIRECT SURFACE RUNOFF AWAY FROM STRUCTURE ACCESS.
4. ADJUSTMENT UNITS TO BE PARGED ON THE OUTSIDE WITH 1:3 NON-SHRINK MORTAR MIX APPLIED 15 mm THICK.
- 5a. REINFORCING STEEL FOR REMOVABLE TOP SLAB:  
TOP BARS TO BE SIZE 15M AT 300 mm c/c BOTH WAYS.  
BOTTOM BARS TO BE SIZE 15M AT 150 mm c/c BOTH WAYS.
- b. REINFORCING STEEL FOR WALLS AND BASE SLAB:  
ALL BARS TO BE SIZE 15M AT 300 mm c/c BOTH WAYS.
6. FOUR LIFTING RINGS TO BE INSTALLED IN ROOF SLAB IN POSITIONS AS TO PROVIDE A BALANCED REMOVAL OF SLAB SHOULD IT BE NECESSARY.
7. THE WALL SECTION OF THE VALVE CHAMBER IS TO BE POURED DIRECTLY AROUND BOTH ITEMS B & F WHICH SHALL BE IN PLACE PRIOR TO ANY CONCRETE BEING POURED.
8. PIECES 'B', 'D' & 'F' SHALL BE CL 53 DUCTILE IRON CONFORMING TO AWWA C150/151 HAVING A CEMENT LINING C104 AND EXTERIOR ASPHALT/ BITUMINOUS COATING
9. ALL FLANGES ARE TO BE FACTORY WELDED TO AWWA C207 CLASS D.
10. HEIGHT OF VALVE CHAMBER STRUCTURE AND DEPTH OF WATERMAIN WILL BE BASED ON AN OVERALL VALVE HEIGHT OF 2245mm FROM THE CENTRELINE OF THE WATERMAIN TO THE TOP OF THE VALVE OPERATING NUT, IF THE VALVE IS TALLER THE CONTRACTOR IS TO INCREASE THESE DIMENSIONS.
11. AFTER CASTING IN CONCRETE, ALL METALLIC FITTINGS & METALLIC PIPE SHALL HAVE CORROSION PROTECTION.
12. TRACER WIRE TO BE ATTACHED TO WALL AND BOTTOM OF DECK USING APPROVED CABLE STRAPS AT 600 mm SPACING.
13. TRACER WIRE CONTINUES THROUGH CONCRETE THROUGH 6 mm Ø DRILL HOLE. HOLE TO BE SEALED WITH EXTERIOR SILICONE CAULKING BOTH SIDES.
14. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

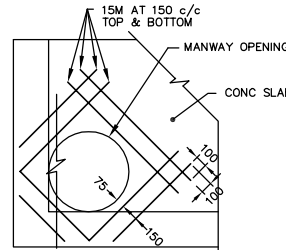
ITEM	DESCRIPTION (SEE SECTION B-B & NOTES)	ENDS	CORROSION PROTECTION
(A)	900 mm CAST IRON MECHANICAL JOINT SOLID SLEEVES	—	FULL
(B)	900 mm X 1350 mm DUCTILE IRON (CEMENT LINED) CL 53 c/w WALL SHEAR FLANGE	FLANGE & PLAIN	FULL
(C)	900 mm GATE VALVE MEETING THE REQUIREMENTS OF AWWA C500	FLANGE & FLANGE	FULL
(D)	900 mm DUCTILE IRON JOINT ADAPTER DISTANCE PIECE (CEMENT LINED) CL 53	FLANGE & PLAIN	FULL
(E)	900 mm SMITH-BLAIR #411 STEEL COUPLING OR APPROVED EQUAL	—	FULL
(F)	900 mm X 1450 mm DUCTILE IRON (CEMENT LINED) CL 53 c/w WALL SHEAR FLANGE	PLAIN & PLAIN	FULL
(G)	50 mm CORPORATION MAIN STOPS AS PER GSSS 701	—	FULL



PLAN VIEW

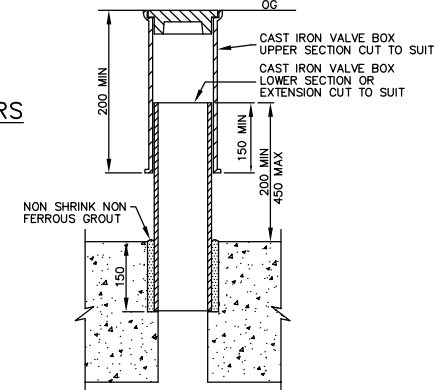


PLAN VIEW  
LAPPING DETAIL AT CORNERS

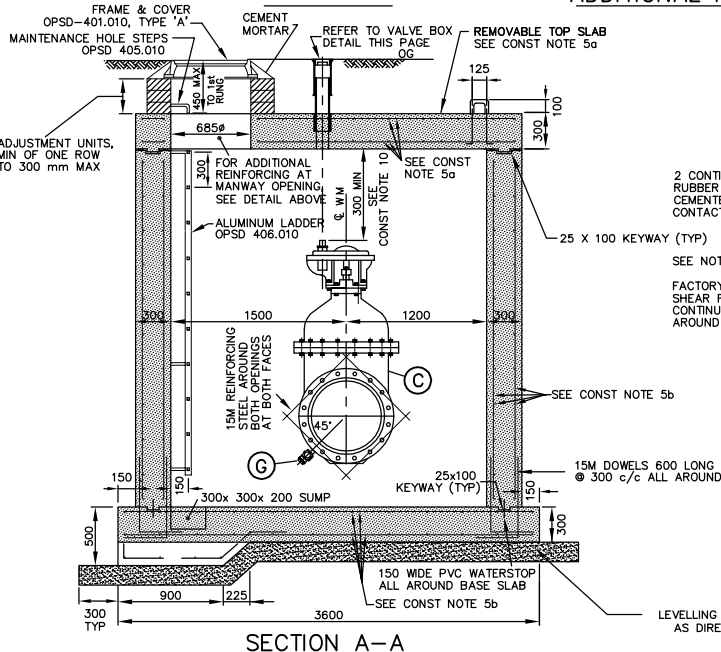


MANWAY OPENING

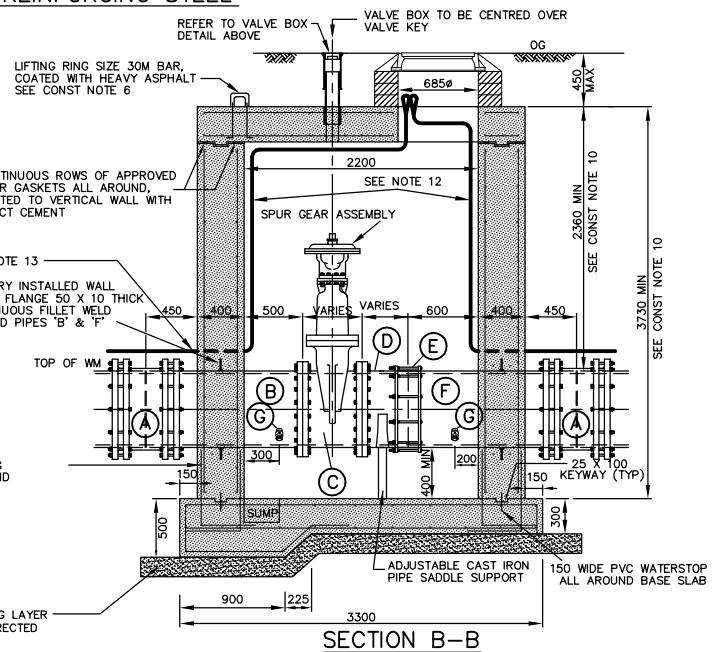
ADDITIONAL REINFORCING STEEL



VALVE BOX DETAIL



SECTION A-A



SECTION B-B



## CAST IN PLACE VALVE CHAMBER FOR 900 mmØ WATERMAIN WITH PVC & DI PIPE

DRAWN BY: STS/RF/BWK	REV No: 2
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A2014-1 (1 OF 1)
APP'D: PETER CHIESA	GSSD-1100.017

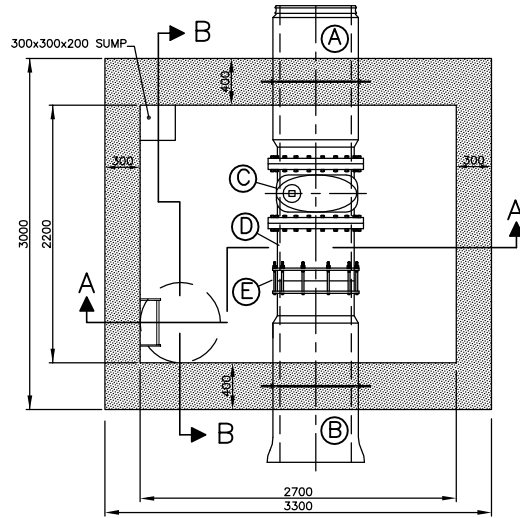
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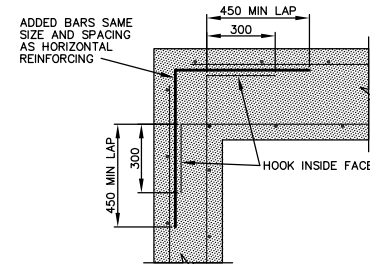
# CONSTRUCTION NOTES:

1. REINFORCING STEEL TO HAVE MINIMUM 50 mm CLEAR COVER.
2. CLASS OF CONCRETE TO BE 32 MPa (AIR ENTRAINED) AT 28 DAYS.
3. IN OFF ROAD AREAS, ORIGINAL GROUND IMMEDIATELY ABOUT CHAMBER SHALL BE SLOPED TO DIRECT SURFACE RUNOFF AWAY FROM STRUCTURE ACCESS.
4. ADJUSTMENT UNITS TO BE PARGED ON THE OUTSIDE WITH 1:3 NON-SHRINK MORTAR MIX APPLIED 15 mm THICK.
- 5a. REINFORCING STEEL FOR REMOVABLE TOP SLAB:  
TOP BARS TO BE SIZE 15M AT 300 mm c/c BOTH WAYS.  
BOTTOM BARS TO BE SIZE 15M AT 150 mm c/c BOTH WAYS.
- b. REINFORCING STEEL FOR WALLS AND BASE SLAB:  
ALL BARS TO BE SIZE 15M AT 300 mm c/c BOTH WAYS.
6. FOUR LIFTING RINGS TO BE INSTALLED IN ROOF SLAB IN POSITIONS AS TO PROVIDE A BALANCED REMOVAL OF SLAB SHOULD IT BE NECESSARY.
7. THE WALL SECTION OF THE VALVE CHAMBER IS TO BE POURED DIRECTLY AROUND BOTH ITEMS A & B WHICH SHALL BE IN PLACE PRIOR TO ANY CONCRETE BEING POURED.
8. PIECES 'A', 'B', AND 'D' SHALL BE CONCRETE PRESSURE PIPE TO AWWA C301 CLASS 18 HAVING AN EXTERIOR MORTAR COATING OF SULPHATE RESISTING CEMENT.
9. ALL FLANGES ARE TO BE FACTORY WELDED TO AWWA C207 CLASS D.
10. HEIGHT OF VALVE CHAMBER STRUCTURE AND DEPTH OF WATERMAIN WILL BE BASED ON AN OVERALL VALVE HEIGHT OF 2245mm FROM THE CENTRELINE OF THE WATERMAIN TO THE TOP OF THE VALVE OPERATING NUT, IF THE VALVE IS TALLER THE CONTRACTOR IS TO INCREASE THESE DIMENSIONS.
11. AFTER CASTING IN CONCRETE, ALL METALLIC FITTINGS & METALLIC PIPE SHALL HAVE CORROSION PROTECTION.
12. TRACER WIRE TO BE ATTACHED TO WALL AND BOTTOM OF DECK USING APPROVED CABLE STRAPS AT 600 mm SPACING.
13. TRACER WIRE CONTINUES THROUGH CONCRETE AWLL THROUGH 6 mm Ø DRILL HOLE. HOLE TO BE SEALED WITH EXTERIOR SILICONE CALKING BOTH SIDES.
14. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

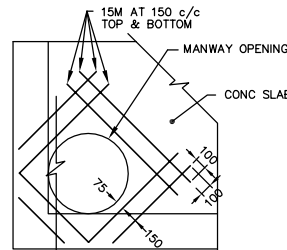
ITEM	DESCRIPTION (SEE SECTION B-B & NOTES)	ENDS	CORROSION PROTECTION
(A)	900 mm x 1400 mm CONC. PRESSURE PIPE C/W WALL FLANGE	SPIGOT & FLANGE END	FULL
(B)	900 mm x 1500 mm CONC. PRESSURE PIPE C/W WALL FLANGE	PLAIN STEEL END & BELL	FULL
(C)	900 mm GATE VALVE MEETING THE REQUIREMENTS OF AWWA C500	FLANGE & FLANGE	FULL
(D)	900 mm JOINT ADAPTER DISTANCE PIECE WITH INTERIOR CONCRETE CORE.	FLANGE & PLAIN	FULL
(E)	900 mm SMITH-BLAIR #411 STEEL COUPLING OR APPROVED EQUAL	—	FULL
(F)	50 mm CORPORATION MAIN STOPS AS PER GSSS 701	—	FULL



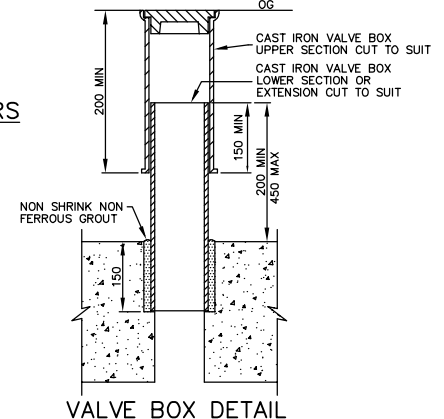
PLAN VIEW



LAPPING DETAIL AT CORNERS

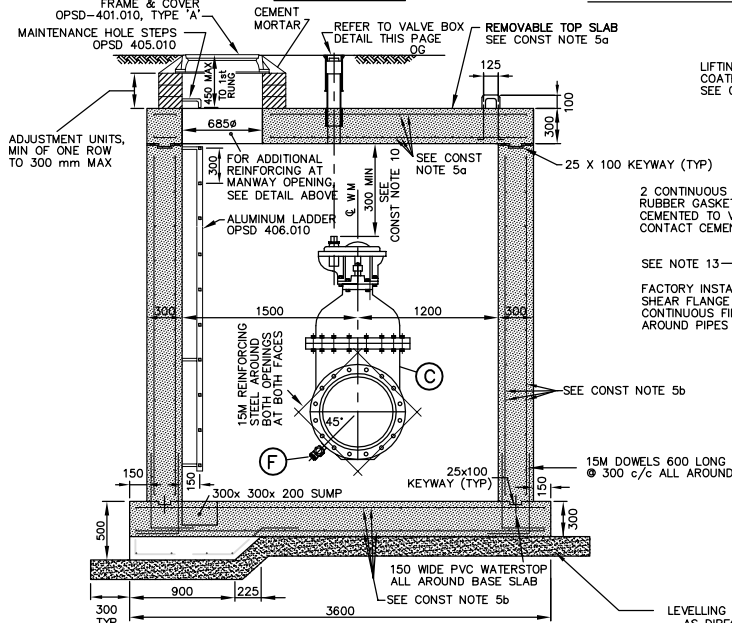


MANWAY OPENING

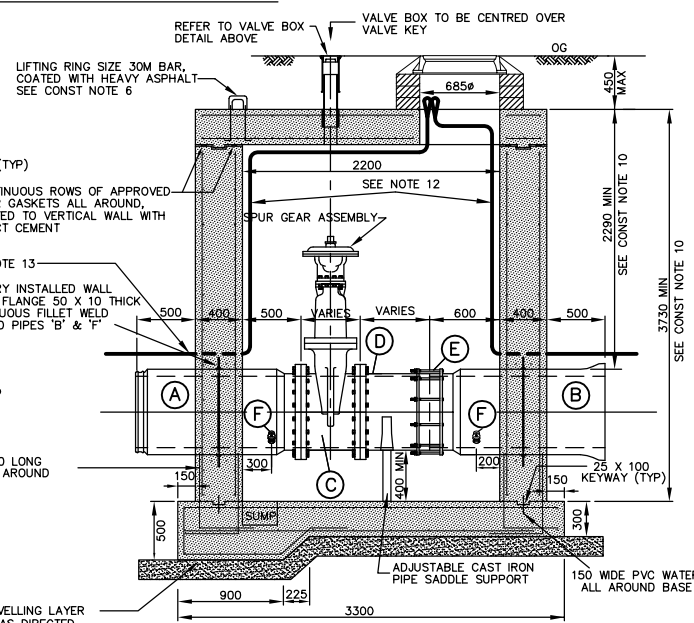


VALVE BOX DETAIL

ADDITIONAL REINFORCING STEEL



SECTION A-A



SECTION B-B

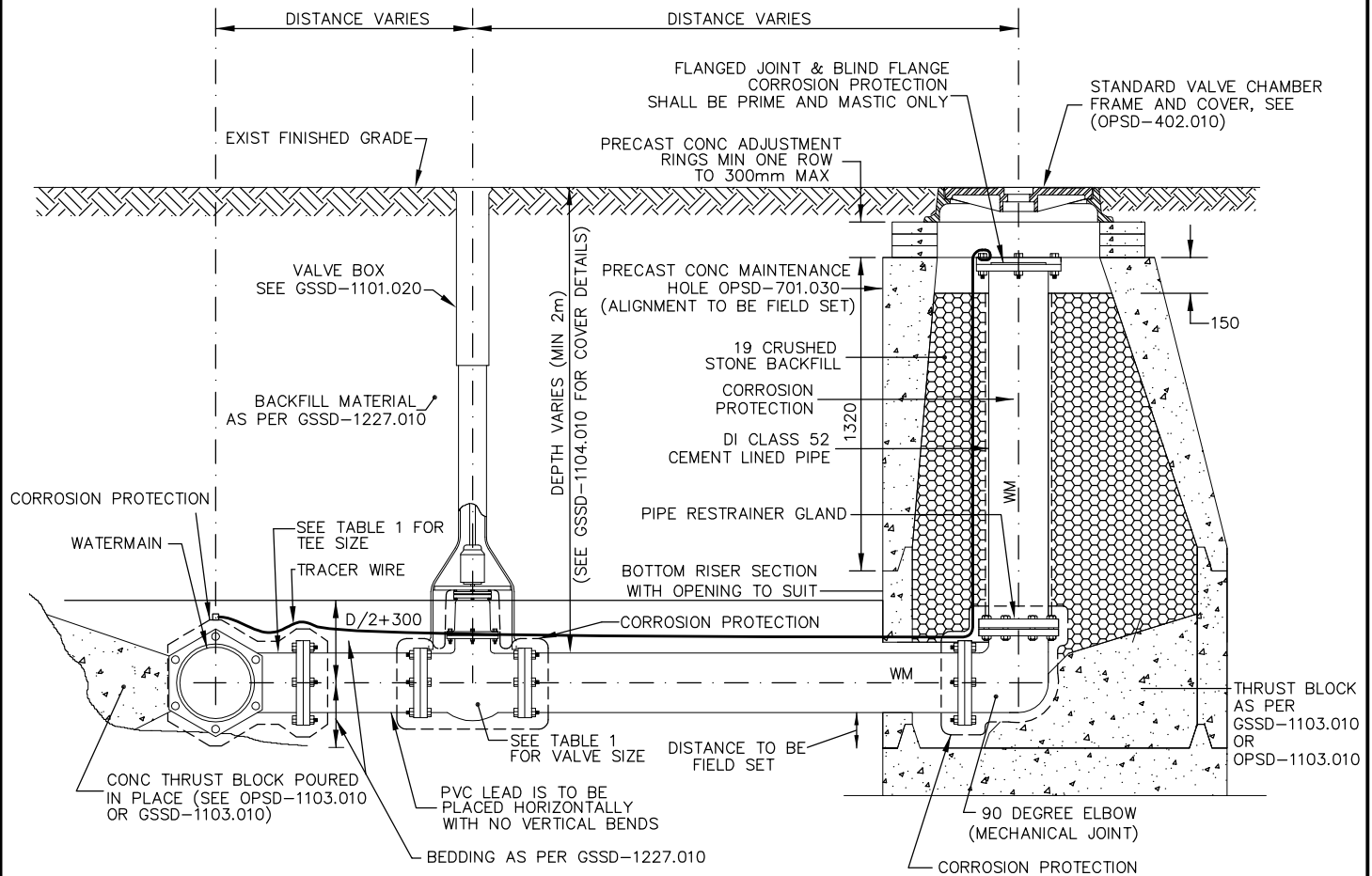


## CAST IN PLACE VALVE CHAMBER FOR 900 mmØ WATERMAIN WITH CONC PRESSURE PIPE

DRAWN BY: WJK/STS/RF	REV No: 2
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A2015-1 (1 OF 1)
APP'D:	GSSD-1100.018

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**NOTE:**

1. A POLYETHYLENE BOND BREAKER IS TO BE USED BETWEEN ALL CONCRETE THRUST BLOCKS AND FITTINGS.
2. ALL METALLIC FITTINGS & VALVES SHALL HAVE CORROSION PROTECTION
3. FROST STRAP INSTALLATION, AS PER OPSD-701.100.
4. ADJUSTMENT UNITS TO BE SET IN 12 mm MORTAR MIX.
5. TRACER WIRE AS PER GSSD-1110.000
6. ALL DIMENSIONS ARE SHOWN IN MILLIMETRES UNLESS OTHERWISE INDICATED.

**TABLE 1**

WM SIZE	SIZE OF TEE, PIPING, GATE VALVE AND FITTING
100	100
150	150
200	200
250	250
300	300
400	300



**VALVE AND SWAB  
LAUNCHING STATION  
WATERMAIN SIZES  
100 mm TO 400 mm**

DRAWN BY: BWK/MHD

REV No: 5

DATE: 2003-03-03

REV DATE: 2013-01-01

SCALE: NTS

CAD/FILE No.:

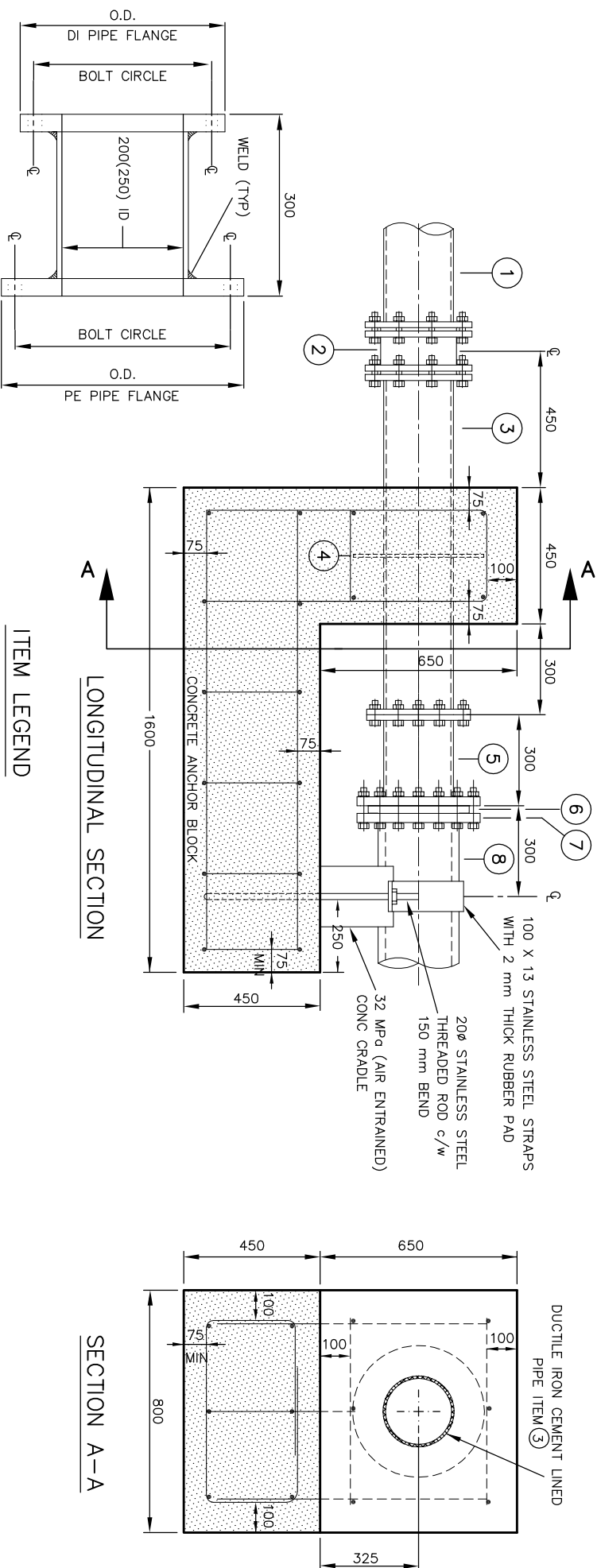
A1964-1 (1 OF 1)

APP'D: PETER CHIESA

**GSSD-1100.030**

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### ITEM ⑤ TRANSITION SPOOL PIECE

CONTRACTOR SHALL ENSURE THAT THE TRANSITION SPOOL FLANGES ARE MANUFACTURED TO MATCH THE FLANGED BOLT CIRCLE PATTERN FOR DI AND PE PIPE

#### NOTES:

1. PIPE SHALL BE 200 mm (250) DIA., MINIMUM STANDARD WEIGHT STEEL.
2. FLANGES SHALL BE 30 mm THICK STEEL WELDED TO PIPE ALL AROUND.
3. FLANGES SHALL CONFORM TO AWWA C110/A21.10
4. AFTER CASTING CONCRETE, ALL METALLIC FITTINGS & METALLIC PIPE SHAL HAVE CORROSION PROTECTION.
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

### ITEM LEGEND

- ① 200 (OR 250 mmø) PVC WATERMAIN
- ② 200 OR (250 mmø) CAST IRON MECHANICAL JOINT SOLID SLEEVE
- ③ PIPE (FLANGE X PLAIN), C/W FACTORY INSTALLED WALL FLANGE
- ④ 100 mm X 10 mm THICK WALL FLANGE
- ⑤ CONTINUOUS FILLET WELD ALL AROUND PIPE
- ⑥ 200 X 300 OR (250 X 300) TRANSITION SPOOL PIECE (SEE DETAIL THIS PAGE)
- ⑦ BUTT FUSE FLANGE ADAPTER C/W ITEM #7
- ⑧ SLIP METAL FLANGE
- ⑨ 250 OR (315 mmø) PE DRI1 WATERMAIN

#### NOTE:

- ANCHOR BLOCKS TO BE POURED AGAINST UNDISTURBED GROUND
- ALL REINF BARS TO BE SIZE 15M AT 300 mm CC
- CONCRETE STRENGTH TO BE 32 MPa (AIR ENTRAINED) AT 28 DAYS

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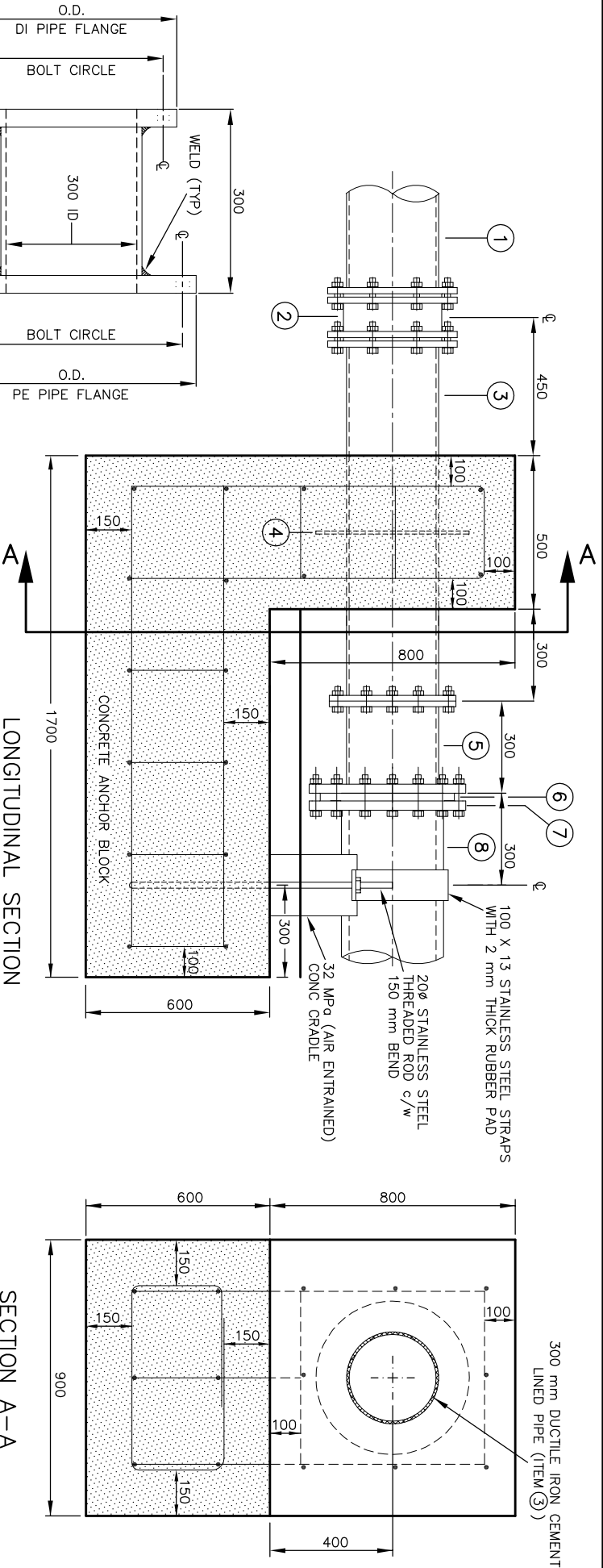
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## PVC TO PE PIPE TRANSITION & CONCRETE ANCHOR BLOCK

200 PVC TO 250 PE  
OR  
250 PVC TO 315 PE

DRAWN BY: STS/RFRANK	REV No: 2
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1915-1 (1 OF 1)
APP'D:	GSSD-1100.040



# ITEM ⑤ TRANSITION SPOOL PIECE

CONTRACTOR SHALL ENSURE THAT THE TRANSITION SPOOL FLANGES ARE MANUFACTURED TO MATCH THE FLANGED BOLT CIRCLE PATTERN FOR DI AND PE PIPES.

## NOTES:

1. PIPE SHALL BE 300 mm DIA., MINIMUM STANDARD WEIGHT STEEL.
2. FLANGES SHALL BE 30 mm THICK STEEL WELDED TO PIPE ALL AROUND.
3. FLANGES SHALL CONFORM TO AWWA C110/A21.10
4. AFTER CASTING IN CONCRETE, ALL METALLIC FITTINGS & METALLIC PIPE SHALL HAVE CORROSION PROTECTION.
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

## ITEM LEGEND

- ① 300 mmø PVC WATERMAIN
- ② 300 mmø CAST IRON MECHANICAL JOINT SOLID SLEEVE
- ③ 300 mmø CLASS 52 DUCTILE IRON CEMENT LINED PIPE (FLANGE X PLAIN), C/W FACTORY INSTALLED WALL FLANGE (SEE ITEM #4).
- ④ 100 mm X 10 mm THICK WALL FLANGE
- ⑤ CONTINUOUS FILET WELD ALL AROUND PIPE
- ⑥ 300 mm DIA TRANSITION SPOOL PIECE (SEE DETAIL THIS PAGE)
- ⑦ BUTT FUSE FLANGE ADAPTER C/W ITEM #7.
- ⑧ SLIP METAL FLANGE.
- ⑨ 400 mmø PE DR11 WATERMAIN

## NOTE:

- ANCHOR BLOCKS TO BE POURED AGAINST UNDISTURBED GROUND
- ALL REINF BARS TO BE SIZE 15M AT 300 mm CC
- CONCRETE STRENGTH TO BE 32 MPa (AIR ENTRAINED) AT 28 DAYS

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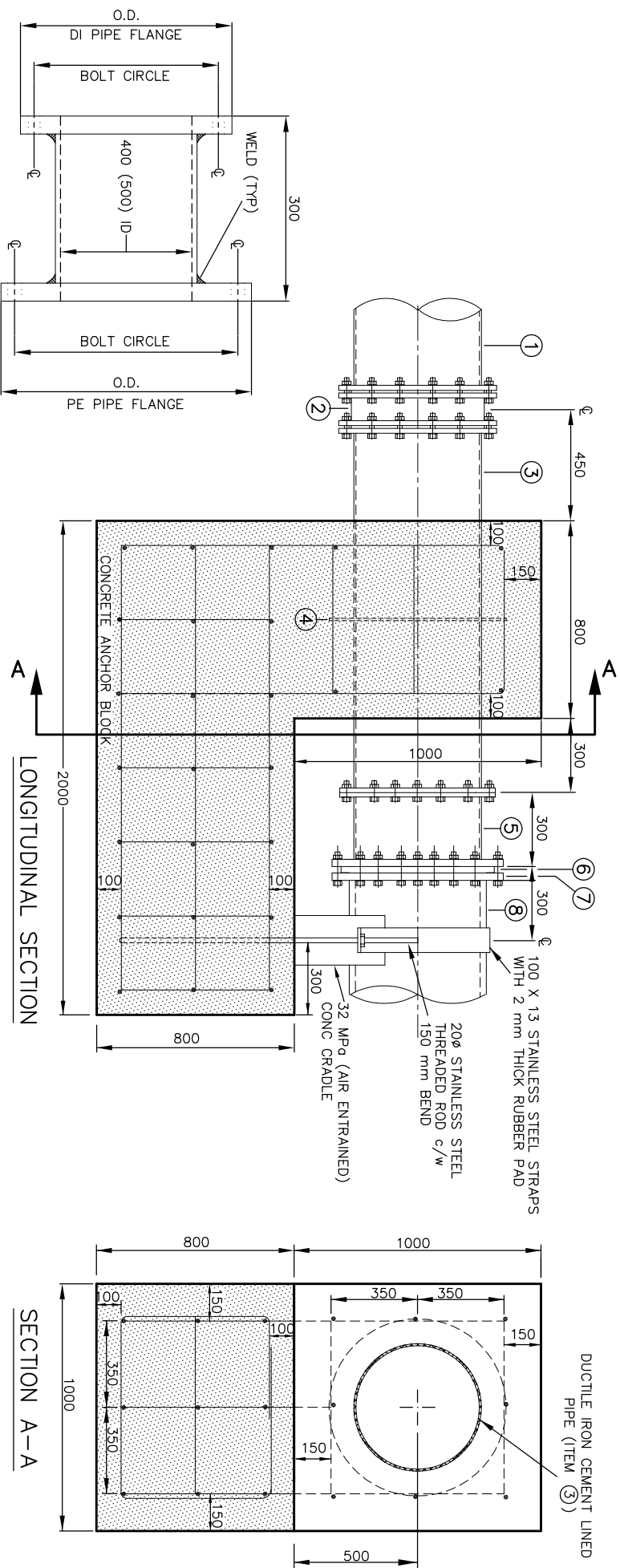
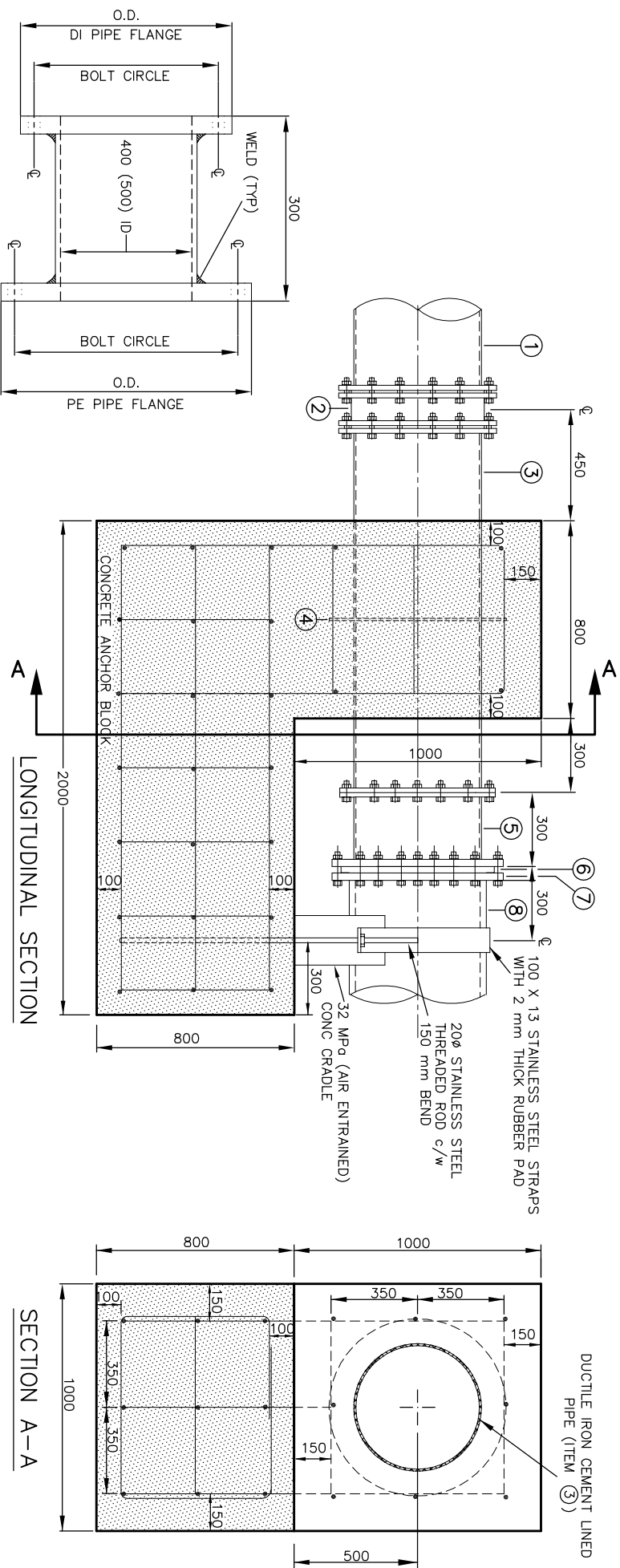
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**PVC TO PE PIPE TRANSITION  
& CONCRETE ANCHOR BLOCK**

300 PVC TO 400 PE

DRAWN BY: STS/R.FRANK	REV No.: 2
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1916-1 (1 OF 1)
APP'D:	GSSD-1100.041



ITEM ⑤ TRANSITION SPOOL PIECE

CONTRACTOR SHALL ENSURE THAT THE TRANSITION SPOOL FLANGES ARE MANUFACTURED TO MATCH THE FLANGED BOLT CIRCLE PATTERN FOR DI AND PE PIPES.

NOTES:

1. PIPE SHALL BE 400 mm (500) DIA., MINIMUM STANDARD WEIGHT STEEL.
2. FLANGES SHALL BE 30 mm THICK STEEL WELDED TO PIPE ALL AROUND.
3. FLANGES SHALL CONFORM TO AWWA C110/A21.10
4. AFTER CASTING IN CONCRETE, ALL METALLIC FITTINGS & METALLIC PIPE SHALL HAVE CORROSION PROTECTION.
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

### ITEM LEGEND

- ① 400 OR (500 mmø) PVC WATERMAIN
- ② 400 OR (500 mmø) CAST IRON MECHANICAL JOINT SOLID SLEEVE  
400 OR (500 mmø) CLASS 52 DUCTILE IRON CEMENT LINED  
PIPE (FLANGE X PLAIN), C/W FACTORY INSTALLED  
WALL FLANGE (SEE ITEM #4).
- ③ 100 mm x 10 mm THICK WALL FLANGE  
CONTINUOUS FILLET WELD ALL AROUND PIPE
- ④ 400 X 300 OR (500 X 300) TRANSITION SPOOL PIECE  
(SEE DETAIL THIS PAGE)
- ⑤ BUTT FLUSE FLANGE ADAPTER C/W ITEM #7.
- ⑥ SLIP METAL FLANGE.
- ⑦ 500 OR (630 mmø) PE DR11 WATERMAIN

**NOTE:**

- ANCHOR BLOCKS TO BE POURED AGAINST UNDISTURBED GROUND
- ALL REINF BARS TO BE SIZE 15M AT 300 mm CC
- CONCRETE STRENGTH TO BE 32 MPa (AIR ENTRAINED) AT 28 DAYS

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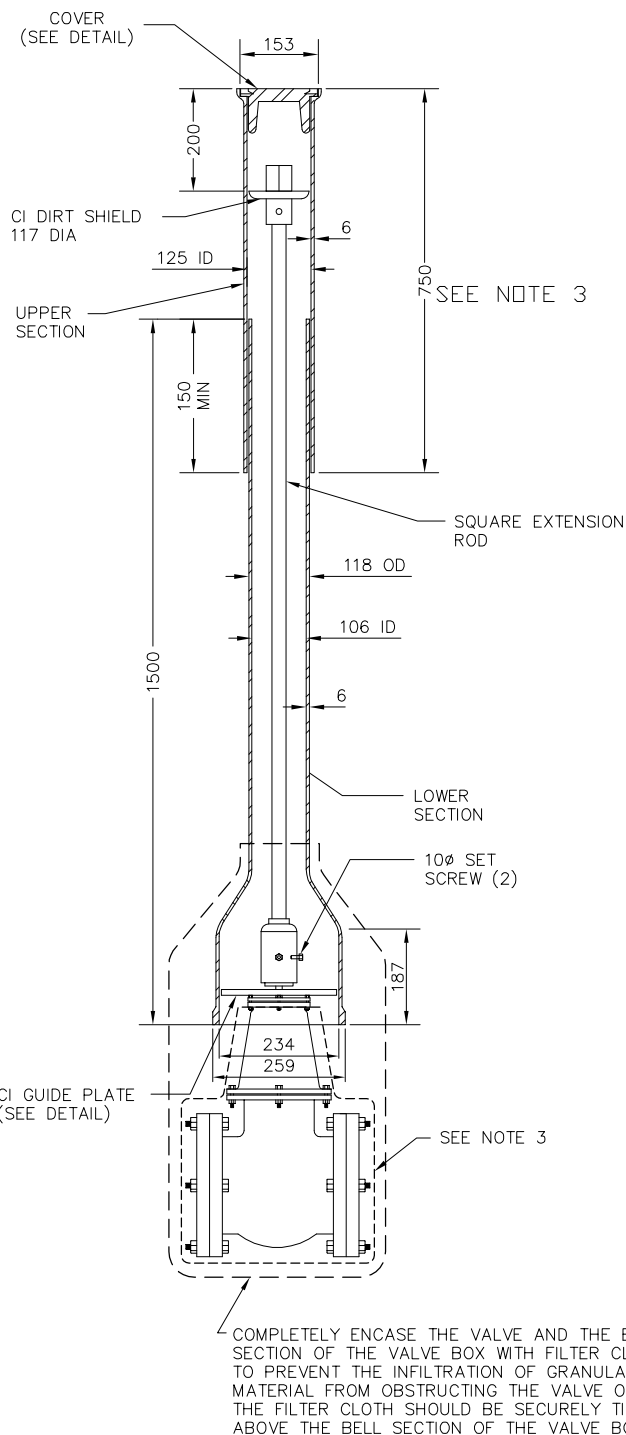


# PVC TO PE PIPE TRANSITION & CONCRETE ANCHOR BLOCK

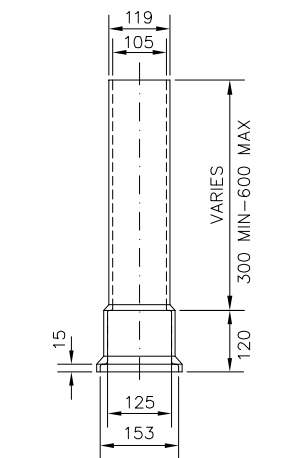
400 PVC TO 500 PE  
OR  
500 PVC TO 630 PE

DRAWN BY: STS/RF	REV No: 2
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1917-1 (1 OF 1)
APP'D:	GSSD-1100.042

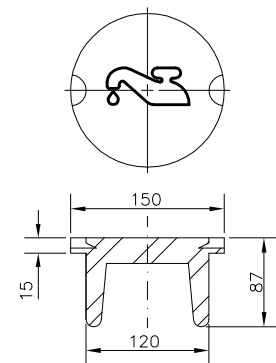




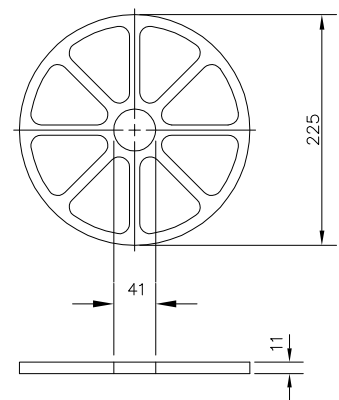
VALVE BOX SECTION



CENTRE EXTENSION



COVER



GUIDE PLATE

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED.
2. BEDDING DETAILS AS PER GSSD-1227.010
3. METALLIC FITTING & VALVE SHALL HAVE CORROSION PROTECTION.

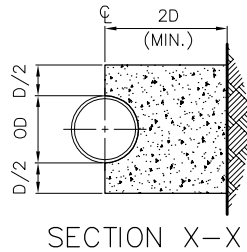
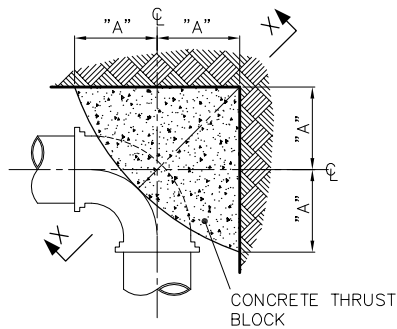
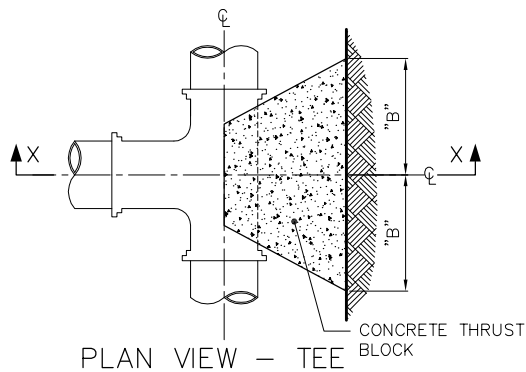


SLIDING VALVE BOX

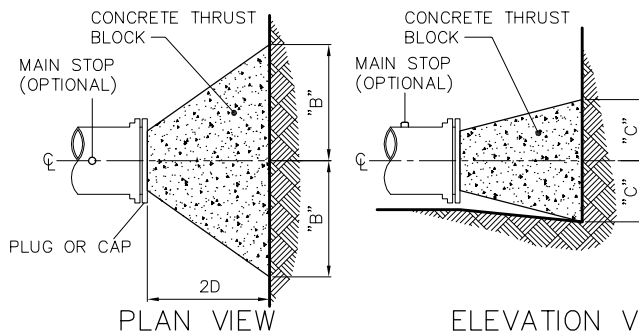
DRAWN BY: ROH/STS/RF	REV No: 1
DATE: 2003-03-03	REV DATE: MAY/08
SCALE: NTS	CAD/FILE No.: A1965-1 (1 OF 1)
APP'D:	GSSD-1101.020

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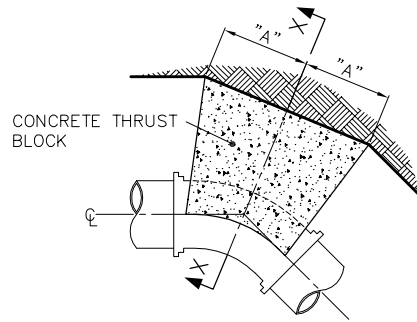


NOTE:  
D = INSIDE DIAMETER OF PIPE  
OD = OUTSIDE DIAMETER OF PIPE



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 CORROSION PROTECTION.
4. THIS BLOCKING DESIGN APPLIES ONLY WHERE 1100 kPa PRESSURE IS NOT EXCEEDED.
5. PRIOR TO POURING CONCRETE, ALL METALLIC FITTINGS SHALL HAVE CORROSION PROTECTION.



ROCK, GRAVEL, COMPACT SAND

PIPE SIZE (mm)	BEND ANGLE				DEAD END/TEE		MINIMUM DIMENSIONS
	W I D T H		"A" (m)		"B" (m)	"C" (m)	
	11.25°	22.5°	45°	90°			
400	0.3	0.3	0.3	0.3	0.3	0.4	
450	0.3	0.3	0.3	0.3	0.3	0.5	
500	0.3	0.3	0.3	0.3	0.3	0.5	
600	0.3	0.3	0.3	0.3	0.3	0.7	
750	0.3	0.3	0.3	0.3	0.4	0.8	
900	0.3	0.3	0.3	0.3	0.4	1.0	
1050	0.3	0.3	0.4	0.3	0.5	1.1	
1200	0.3	0.3	0.4	0.4	0.6	1.3	

HARD DRY CLAY, COMPACT SAND

PIPE SIZE (mm)	BEND ANGLE				DEAD END/TEE		MINIMUM DIMENSIONS
	W I D T H		"A" (m)		"B" (m)	"C" (m)	
	11.25°	22.5°	45°	90°			
400	0.3	0.3	0.3	0.3	0.4	0.4	
450	0.3	0.3	0.3	0.3	0.4	0.5	
500	0.3	0.3	0.4	0.3	0.5	0.5	
600	0.3	0.3	0.4	0.4	0.6	0.7	
750	0.3	0.3	0.5	0.5	0.7	0.8	
900	0.3	0.3	0.6	0.6	0.8	1.0	
1050	0.3	0.4	0.7	0.7	1.0	1.1	
1200	0.3	0.4	0.8	0.8	1.0	1.3	

FIRM OR STIFF CLAY, MEDIUM COMPACT SAND/SILT

PIPE SIZE (mm)	BEND ANGLE				DEAD END/TEE		MINIMUM DIMENSIONS
	W I D T H		"A" (m)		"B" (m)	"C" (m)	
	11.25°	22.5°	45°	90°			
400	0.3	0.3	0.6	0.6	0.8	0.4	
450	0.3	0.3	0.7	0.6	0.9	0.5	
500	0.3	0.4	0.7	0.7	0.9	0.5	
600	0.3	0.4	0.9	0.8	1.1	0.7	
750	0.3	0.6	1.1	1.0	1.4	0.8	
900	0.3	0.7	1.3	1.2	1.7	1.0	
1050	0.4	0.8	1.5	1.4	1.9	1.1	
1200	0.4	0.9	1.7	1.6	2.2	1.3	

MEDIUM SOFT CLAY, LOOSE SATURATED SAND/CLAY

PIPE SIZE (mm)	BEND ANGLE				DEAD END/TEE		MINIMUM DIMENSIONS
	W I D T H		"A" (m)		"B" (m)	"C" (m)	
	11.25°	22.5°	45°	90°			
400	0.5	0.9	1.8	1.6	2.3	0.4	
450	0.5	1.0	2.0	1.8	2.6	0.5	
500	0.6	1.1	2.2	2.0	2.8	0.5	
600	0.7	1.3	2.6	2.4	3.4	0.7	
750	0.8	1.6	3.2	3.0	4.2	0.8	
900	1.0	2.0	3.8	3.6	5.0	1.0	
1050	1.1	2.2	4.4	4.1	5.8	1.1	
1200	1.3	2.6	5.0	4.7	6.6	1.3	

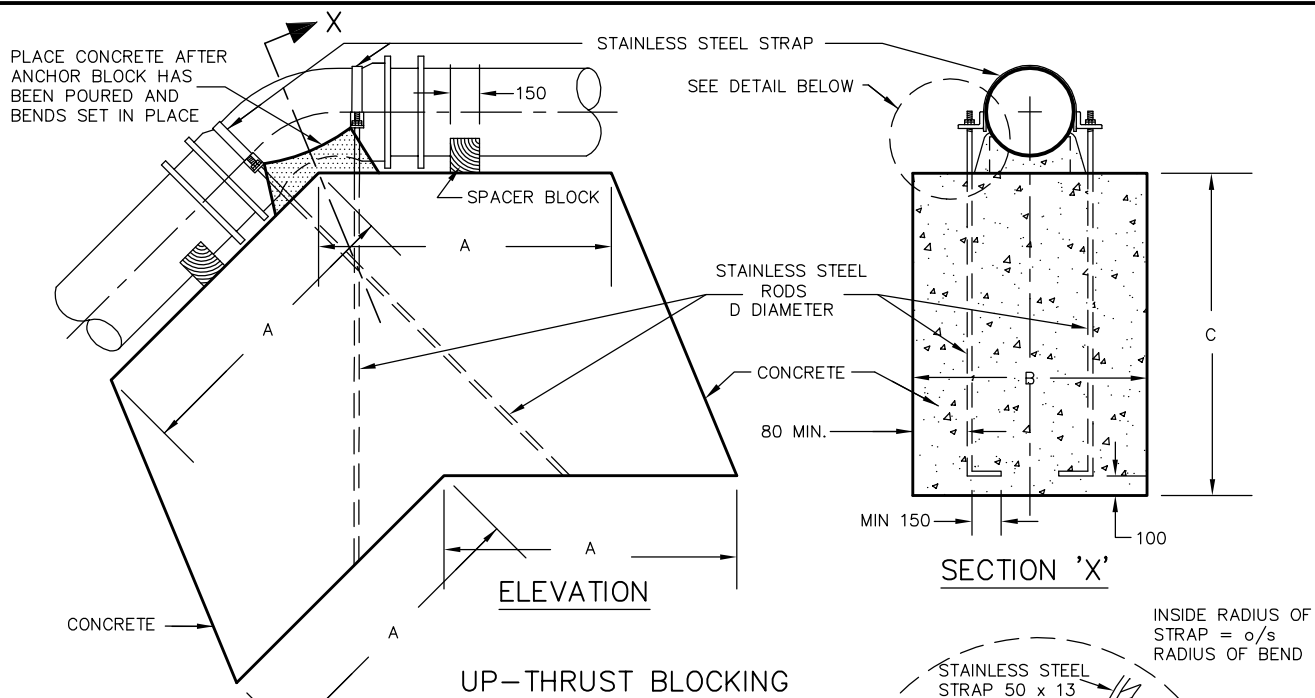


CONCRETE THRUST BLOCKS  
FOR TEES, PLUGS,  
HORIZONTAL BENDS,  
AND DEAD ENDS

DRAWN BY: WJK/STS/RF	REV No: 1
DATE: 2003-03-03	REV DATE: MAY/08
SCALE: NTS	CAD/FILE No.: A1966-1 (1 OF 1)
APP'D:	GSSD-1103.010

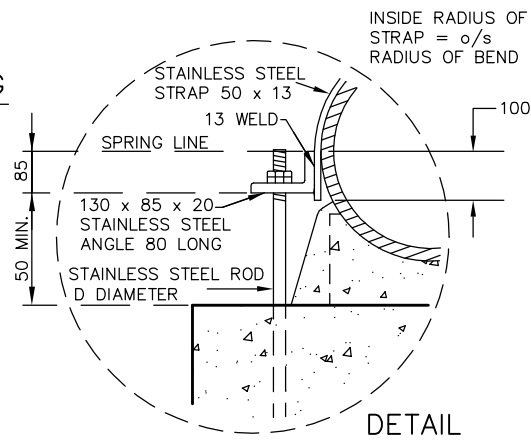
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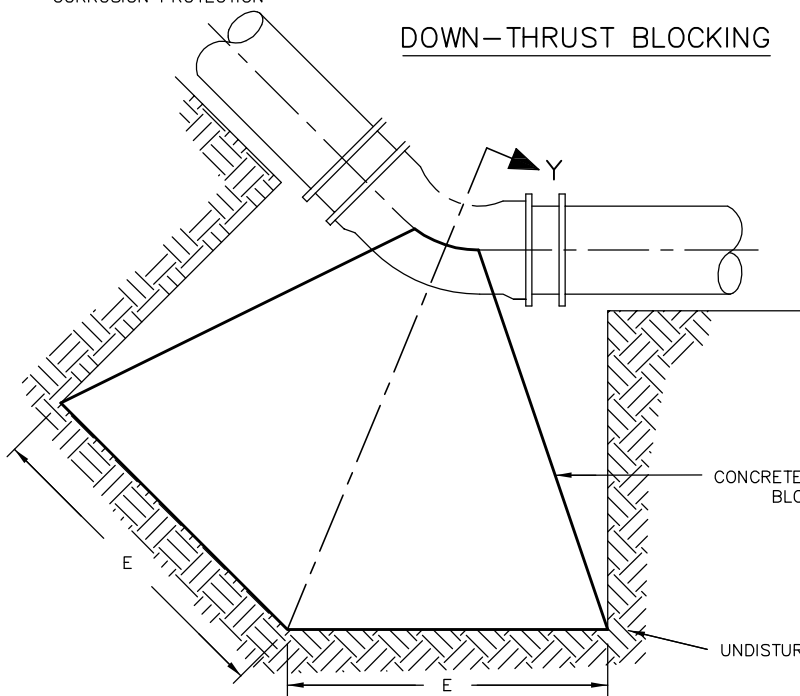


NOTES:

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 1100 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 50 kPa.
7. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
8. CLASS OF CONCRETE: 32 MPa (AIR ENTRAINED) AT 28 DAYS.
9. PRIOR TO POURING OF CONCRETE, ALL METALLIC FITTINGS SHALL HAVE CORROSION PROTECTION

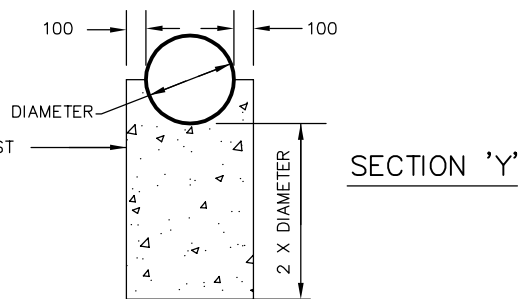


DOWN-THRUST BLOCKING



MINIMUM DIMENSIONS					
PIPE SIZE (mm)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
400	1300	1200	1650	25	1650
450	1500	1200	1650	25	2050
500	1500	1500	1650	25	2100
600	2000	1650	1650	2-25*	3000

\*USE DOUBLE WIDTH STRAPS (100 mm x 13 mm)

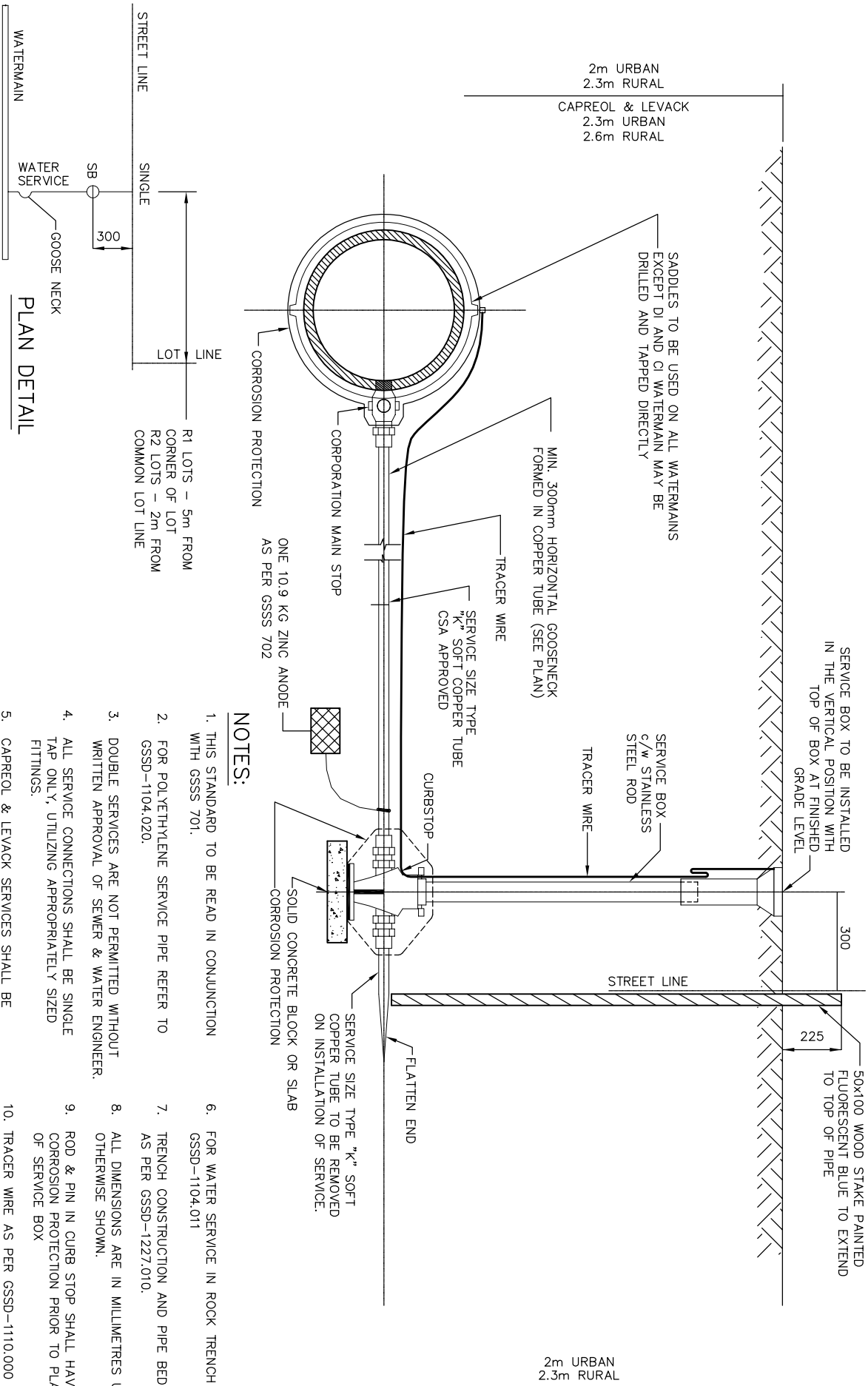


CONCRETE THRUST BLOCKS FOR VERTICAL BENDS

DRAWN BY: STS/RFRANK	REV No: 2
DATE: 2003-03-03	REV DATE: JAN/2013
SCALE: NTS	CAD/FILE No.: A1967-1 (1 OF 1)
APP'D:	GSSD-1103.020

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WATER SERVICE CONNECTION

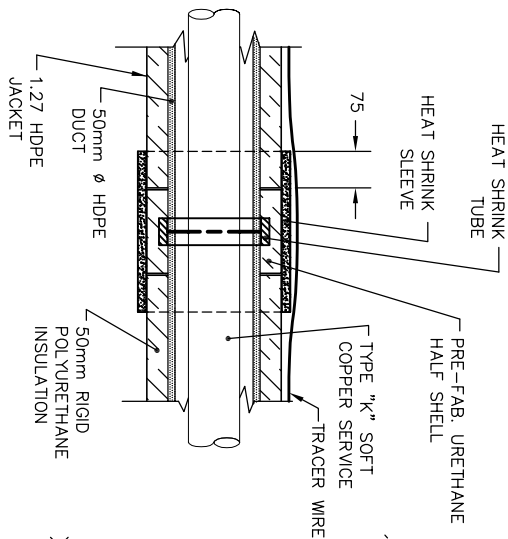
DETAIL IN EARTH TRENCH  
20 mm TO 50 mm DIA SIZES

DRAWN BY: STS/RF/MHD REV No: 4

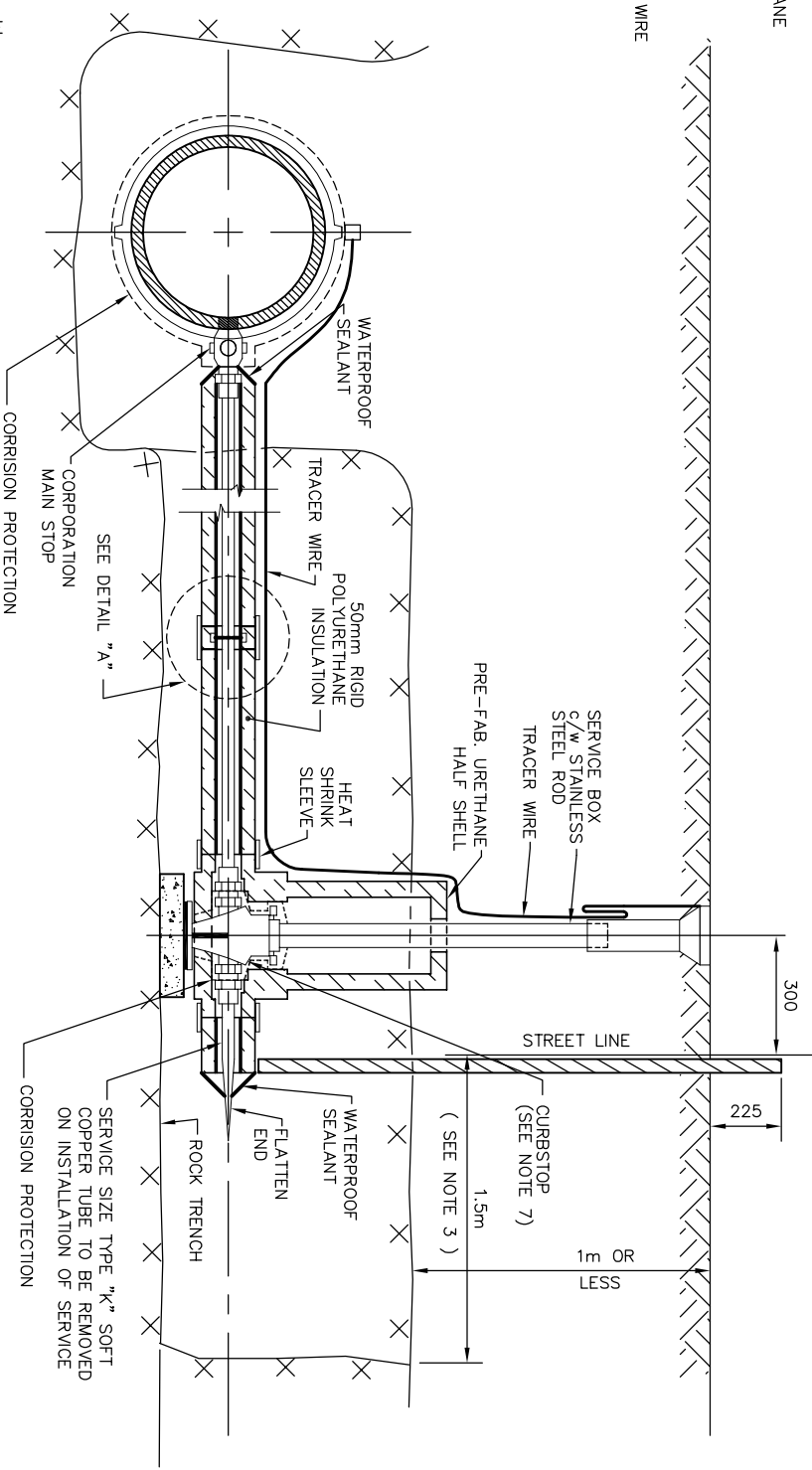
DATE: 2003-03-03 REV DATE: 2013-01-01

SCALE: NTS CAD/FILE No.: A1968-1 (1 OF 1)

APP'D: GSSD-1104.010



DETAIL "A"  
INSULATION JOINT



NOTE

1. THIS STANDARD TO BE READ IN CONJUNCTION WITH GSSS-701 & GSSD-1104.010.
2. FOR POLYETHYLENE SERVICE PIPE REFER TO GSSD-1104.020.
3. ROCK SHALL BE BLASTED AND REMOVED TO 1.5 m BEYOND STREET LINE.
4. DOUBLE SERVICES ARE NOT PERMITTED WITHOUT WRITTEN APPROVAL OF THE SEWER AND WATER ENGINEER.
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
6. THIS DRAWING TO BE USED IN CONJUNCTION WITH GSSD-1104.010.
7. ROD & PIN IN CURB STOP SHALL HAVE CORROSION PROTECTION PRIOR TO PLACEMENT OF SERVICE BOX.
8. TRACER WIRE AS PER GSSD-1110.000

PLAN DETAIL

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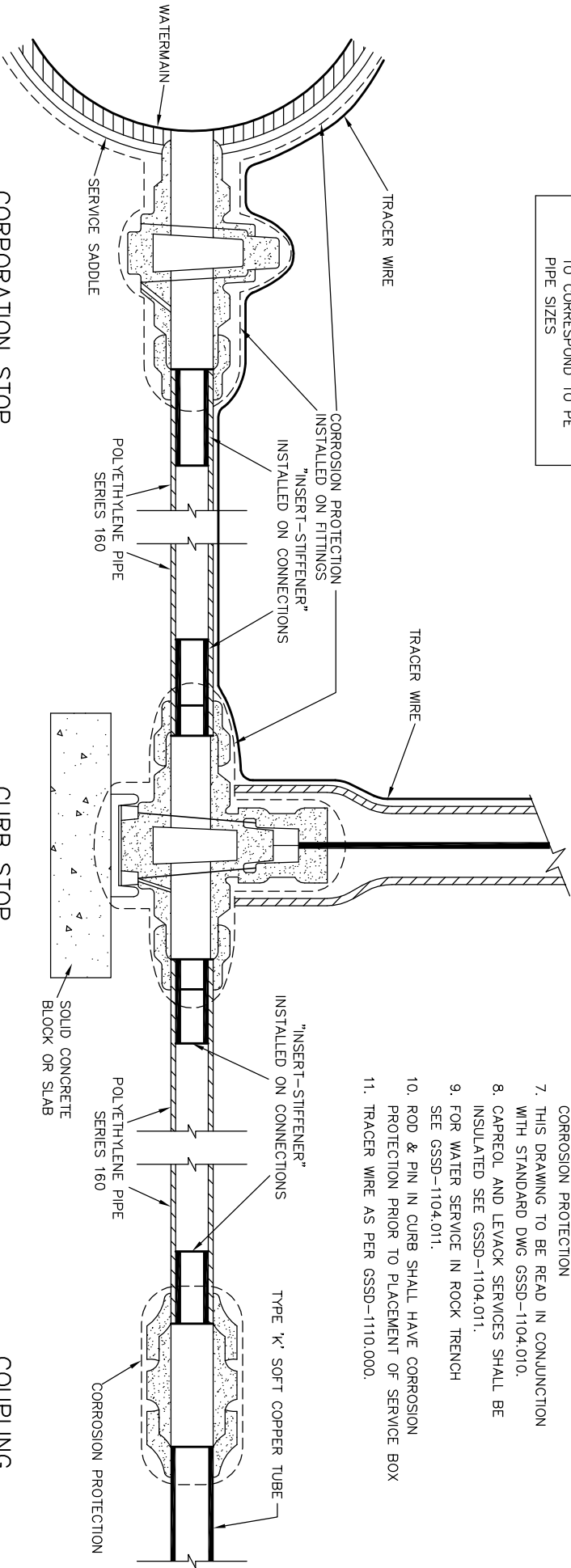
INSULATED DUCT FOR  
WATER SERVICE CONNECTION

20 mm TO 50 mm DIA SIZES

DRAWN BY: RF/BK/MHD	REV No: 4
DATE: 2003-03-03	REV DATE: 2013-01-01
SCALE: NTS	CAD/FILE No.: A1969-1 (1 OF 1)
APP'D: PETER CHIESA	GSSD-1104.011

ALLOWABLE SIZE FOR PE PIPE			
COPPER	POLYETHYLENE (PE)	I.D.	
SIZE	SIZE		
20 mm	25 mm	21 mm	
25 mm	40 mm	31 mm	
40 mm	50 mm	41 mm	
50 mm	50 mm	41 mm	

NOTE: SIZES OF STOPS (CURB &/OR CORPORATION) & FITTINGS TO BE INCREASED TO CORRESPOND TO PE PIPE SIZES



## SERVICE BOX

### NOTES:

- THIS STANDARD TO BE READ IN CONJUNCTION WITH GSSS 701.
- "INSERT-STIFFENERS" TO BE USED INSIDE POLYETHYLENE (PE) PIPE FOR WATER SERVICES.
- "INSERT-STIFFENERS" TO BE MADE OF QUALITY STAINLESS STEEL.
- "INSERT-STIFFENERS" TO BE USED AT ALL CORPORATION STOPS, CURB STOPS, COUPLINGS AND ADAPTERS.
- ALL CONNECTIONS TO BE MADE WITH COMPRESSION FITTINGS.
- ALL METALLIC COMPONENTS SHALL HAVE CORROSION PROTECTION
- THIS DRAWING TO BE READ IN CONJUNCTION WITH STANDARD DWG GSSD-1104.010.
- CAPREOL AND LEVACK SERVICES SHALL BE INSULATED SEE GSSD-1104.011.
- FOR WATER SERVICE IN ROCK TRENCH SEE GSSD-1104.011.
- ROD & PIN IN CURB SHALL HAVE CORROSION PROTECTION PRIOR TO PLACEMENT OF SERVICE BOX
- TRACER WIRE AS PER GSSD-1110.000.

## CORPORATION STOP

## CURB STOP

## COUPLING

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## POLYETHYLENE WATER SERVICE CONNECTION DETAIL FOR

25 mm TO 50 mm DIAMETER SIZES

DRAWN BY: STS/RF/MHD

REV No: 3

DATE: 2003-03-03

REV DATE: 2013-01-01

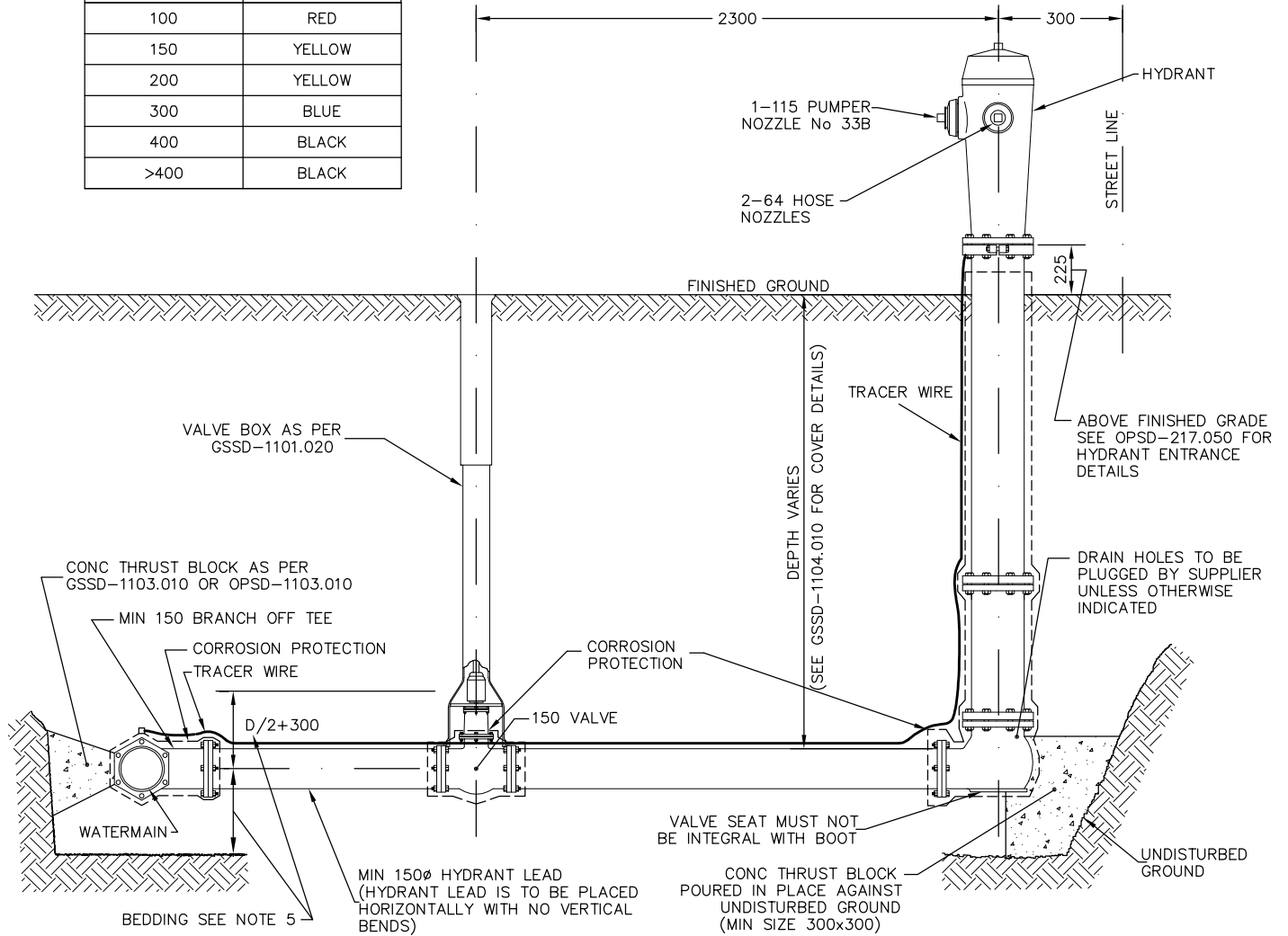
SCALE: NTS

CAD/FILE No.: A1970-1 (1 OF 1)

APP'D:

GSSD-1104.020

WATERMAIN SIZE	BONNET COLOUR
100	RED
150	YELLOW
200	YELLOW
300	BLUE
400	BLACK
>400	BLACK



**NOTE:**

1. ALL HYDRANTS TO CONFORM TO AWWA C502.
2. ALL HYDRANTS ARE TO BE INSTALLED WITH ONE FACTORY COAT OF YELLOW PAINT. AFTER INSTALLATION AN ADDITIONAL FAST DRYING WHITE PRIMER COAT (PITTSBURG PAINT "MULTIPRIME" OR APPROVED EQUAL) AND A FINAL YELLOW TOP COAT (PITTSBURG PAINT "FAST DRY ALKYD" OR APPROVED EQUAL) IS TO BE APPLIED TO ALL HYDRANTS. BONNET OF HYDRANT TO BE PAINTED AS PER GSSD-1105.030.
3. HYDRANT EXTENSIONS IF REQUIRED MUST BE PLACED AT THE BOOT OF THE HYDRANT (MAX. ONE EXTENSION PER HYDRANT). INTERNAL ROD EXTENSIONS ARE TO BE PLACED AT THE TOP OF THE HYDRANT SO THE VALVE BALL RUBBER REMAINS AT THE BOTTOM.
4. A POLYETHYLENE BOND BREAKER IS TO BE USED BETWEEN ALL CONCRETE THRUST BLOCKS AND CORROSION PROTECTION
5. BEDDING FOR HYDRANT INSTALLATION AS PER GSSD-1227.010.
6. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED.
7. CORROSION PROTECTION FOR HYDRANT AS PER GSSD-1105.030.
8. TRACER WIRE AS PER GSSD-1110.000



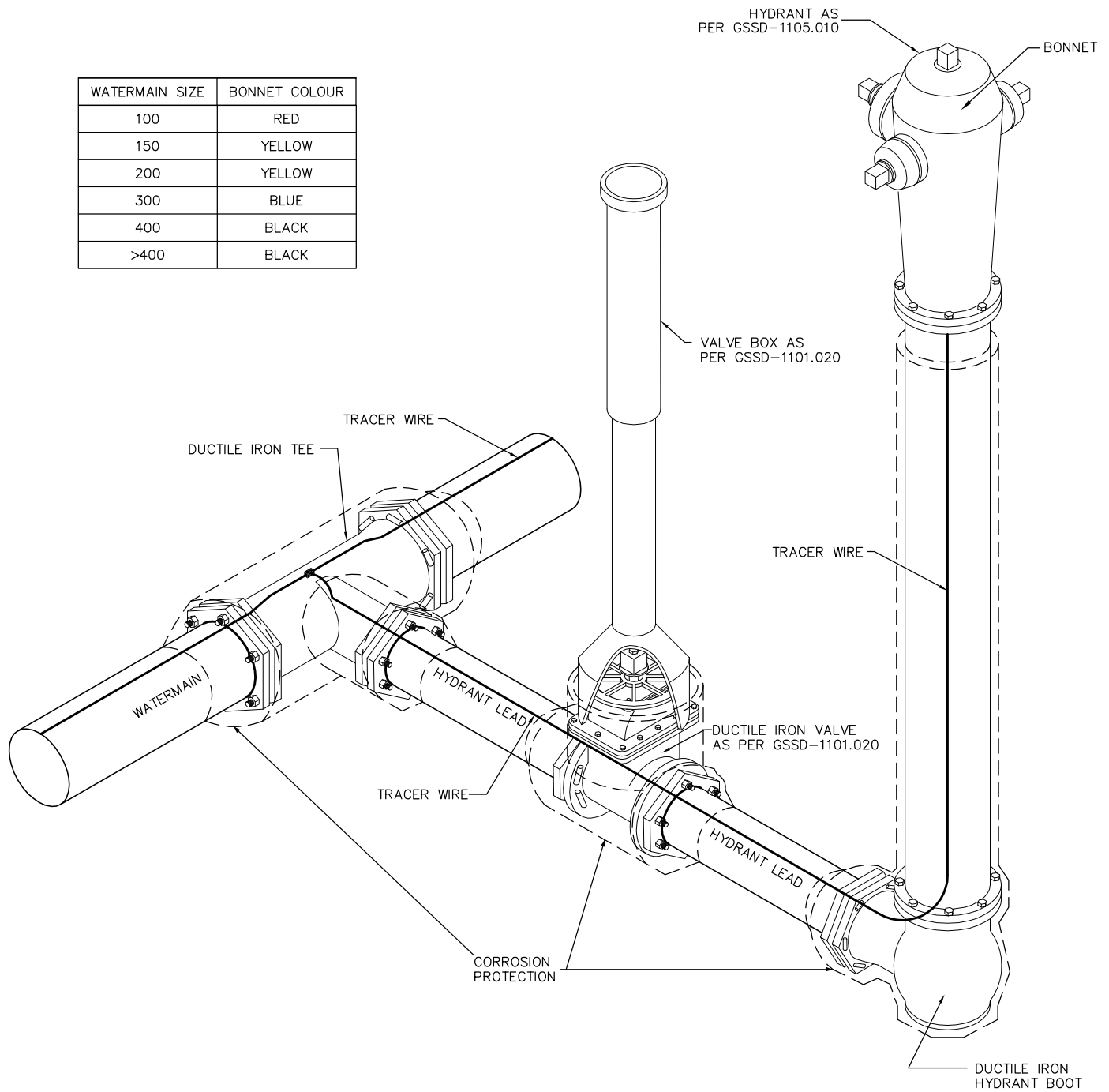
## HYDRANT INSTALLATION

DRAWN BY: RF/BK/MHD	REV No: 4
DATE: 2003-03-03	REV DATE: 2013-01-01
SCALE: NTS	CAD/FILE No.: A1971-1 (1 OF 1)
APP'D: PETER CHIESA	<b>GSSD-1105.010</b>

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WATERMAIN SIZE	BONNET COLOUR
100	RED
150	YELLOW
200	YELLOW
300	BLUE
400	BLACK
>400	BLACK



#### NOTES

1. ALL DIMENSIONS ARE SHOWN IN MILLIMETRES UNLESS OTHERWISE INDICATED.
2. THIS STANDARD DRAWING IS TO BE READ IN CONJUNCTION WITH GSSS 703.
3. TRACER WIRE AS PER GSSD-1110.000

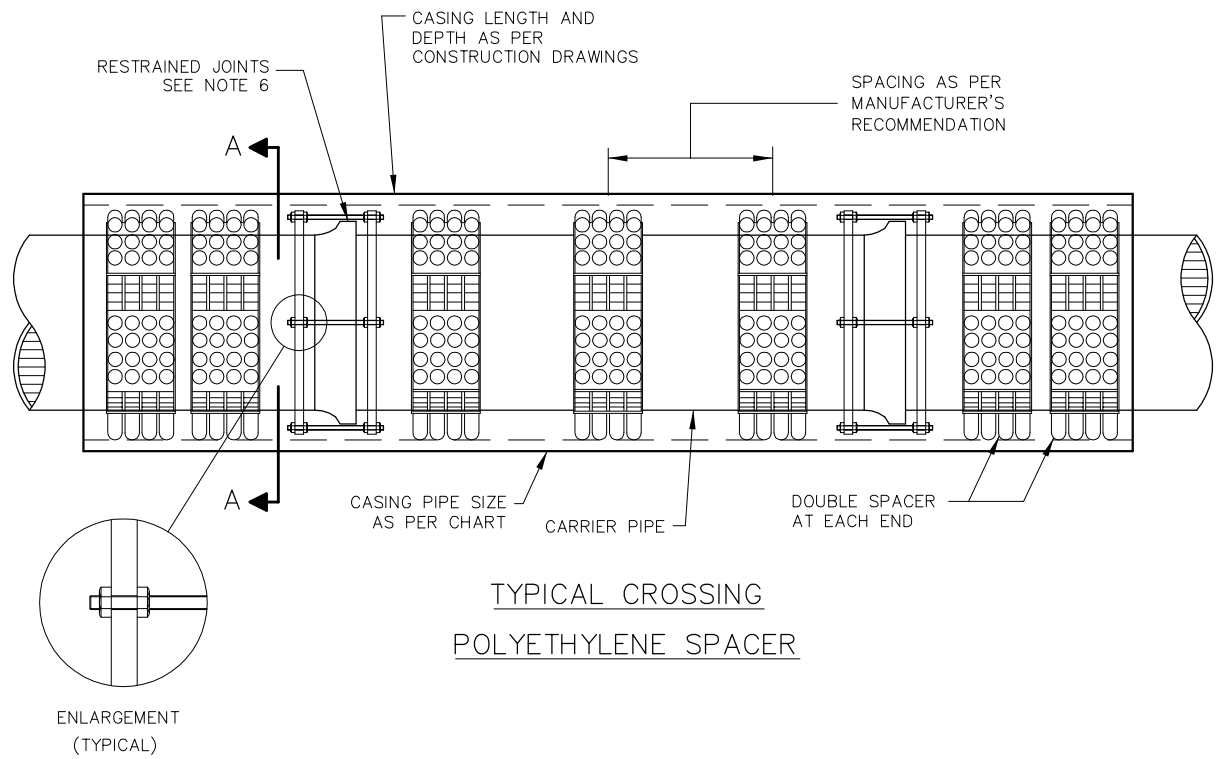


## CORROSION PROTECTION ON HYDRANT INSTALLATIONS

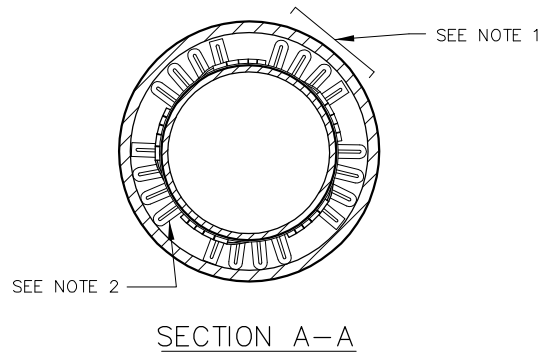
DRAWN BY: STS/RF/MHD	REV No: 5
DATE: 2003-03-03	REV DATE: 2013-01-01
SCALE: NTS	CAD/FILE No.: A1972-1 (1 OF 1)
APP'D:	<b>GSSD-1105.030</b>

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TYPICAL CROSSING  
POLYETHYLENE SPACER



RECOMMENDED CASING SIZE				
WATERMAIN DIAMETER (mm)		GRAVITY SEWERMAIN DIAMETER (mm)	CASING DIAMETER (mm)	CASING WALL THICKNESS (mm)
PVC	PE	PVC	STEEL	STEEL
N/A	200	N/A	400	9.53
200	250	200	450	9.53
250	300	250	500	9.53
300	350	300	550	9.53
350	400	375	650	9.53
400	N/A	N/A	750	9.53
450	N/A	450	800	9.53
500	N/A	525	900	9.53
600	N/A	600	1050	12.70
750	N/A	N/A	1230	12.70
N/A	N/A	675	1050	12.70

N/A = NOT APPLICABLE

NOTES:

1. NUMBER OF SPACER ELEMENTS REQUIRED TO COMPLETE ONE RING AS PER MANUFACTURER'S RECOMMENDATIONS.
2. ELEMENT SUPPORT HEIGHT VARIES FOR SMALL TO LARGE PIPE, AS PER MANUFACTURER'S RECOMMENDATIONS.
3. CASING END SEAL TO BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATION UNLESS OTHERWISE INDICATED.
4. CATHODIC PROTECTION ON STEEL CASING AS PER GSSS 702. (ONE 14.5 Kg PACKAGED MAGNESIUM ANODE AT EACH END OF THE CASING.)
5. FOR OTHER CARRIER PIPE MATERIAL, A SITE SPECIFIC CASING DESIGN WILL BE NECESSARY.
6. APPROVED RESTRAINED JOINTS TO BE INSTALLED ON WATERMAIN THROUGH CASING. RESTRAINTS TO HAVE 4 NUTS PER BOLT. (SEE ENLARGEMENT) CORROSION PROTECTION SHALL BE APPLIED.



STEEL CASING FOR  
PIPE INSTALLATION

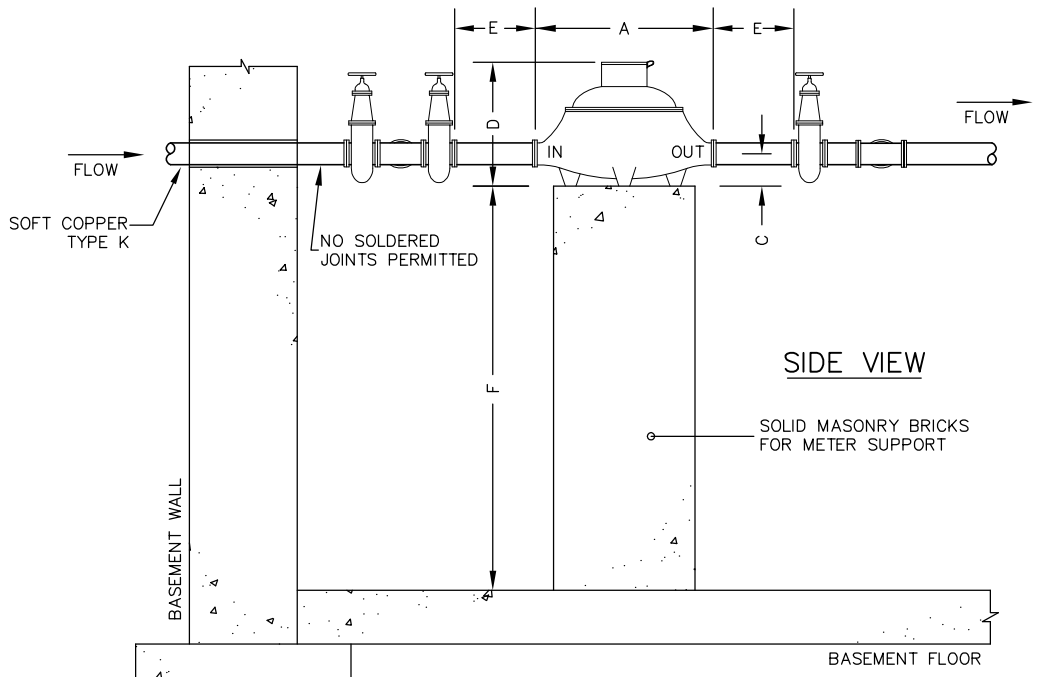
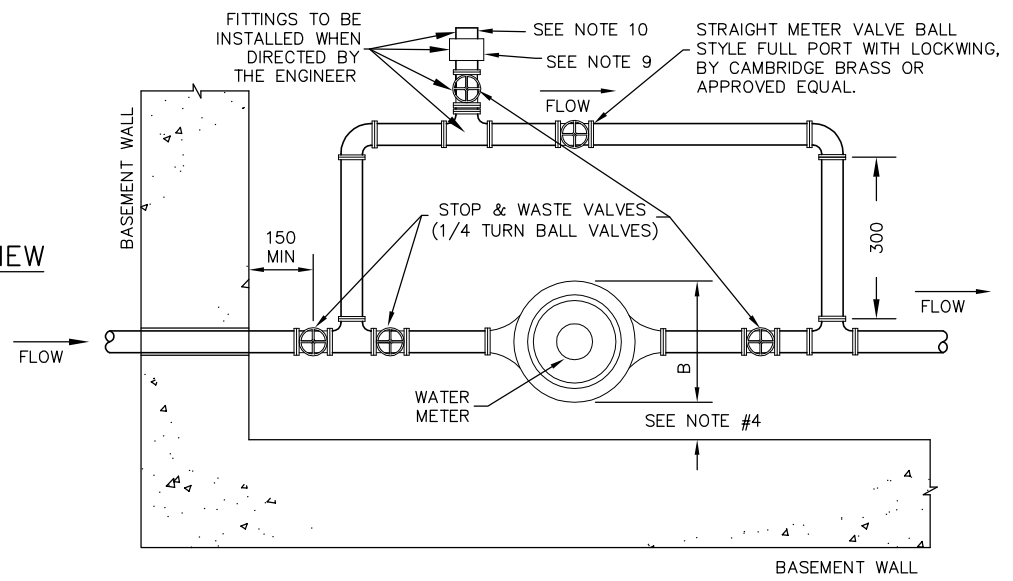
DRAWN BY: LRC/STS/RF	REV No: 1
DATE: 2003-03-03	REV DATE: MAY/08
SCALE: NTS	CAD/FILE No.: A1973-1 (1 OF 1)
APP'D:	GSSD-1106.030

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DIMENSIONS	METER SIZE	
	40	50
A	330	430
B	255	310
C	60	85
D	230	255
E	150	150
F	750	750
ENDS	FLANGED END	FLANGED END

TOP VIEW



SIDE VIEW

NOTES:

1. THE DIAMETER OF THE BY-PASS LINE SHALL BE OF THE SAME SIZE AS THE SERVICE LINE ON THE PRESSURE SIDE OF THE WATER METER AS IT IS USED TO GIVE ADEQUATE AND UNINTERRUPTED SERVICE ONLY DURING TEST OR REPAIR OF THE METER.
2. IF THE BY-PASS IS TO BE INSTALLED ABOVE THE METER, THE MINIMUM CLEARANCE REQUIRED FROM THE TOP OF THE METER TO THE BOTTOM OF THE BY-PASS IS 800 mm.
3. REQUEST DELIVERY OF THE NEPTUNE METER FOR THE SAME TIME THE PIPING IS TO BE INSTALLED.
4. MINIMUM CLEARANCE FROM WALL IS 300 mm.
5. NO SOLDERED JOINT IS PERMITTED ON THE STREET SIDE OF THE MAIN SHUT-OFF.
6. CONTRACTOR SHALL HAVE METER INSTALLED BY A LICENSED PLUMBER.
7. OPERATIONS METER SHOP IS TO BE CONTACTED FOR FINAL INSPECTION ONCE INSTALLATION IS COMPLETE.
8. BY-PASS VALVE TO BE TAGGED AND SEALED FOLLOWING FINAL INSPECTION.
9. 40 OR 50 mm N.P.T. MALE x 63.5 mm C.S.A. FEMALE (BRASS ONLY) SWIVEL SUITED FOR STANDARD 63.5 mm MALE END PUMPER HOSE CONNECTION.
10. 63.5 mm BRASS PLUG.
11. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.



DETAIL OF 40 OR 50 mm  
WATER METER  
INSTALLATION

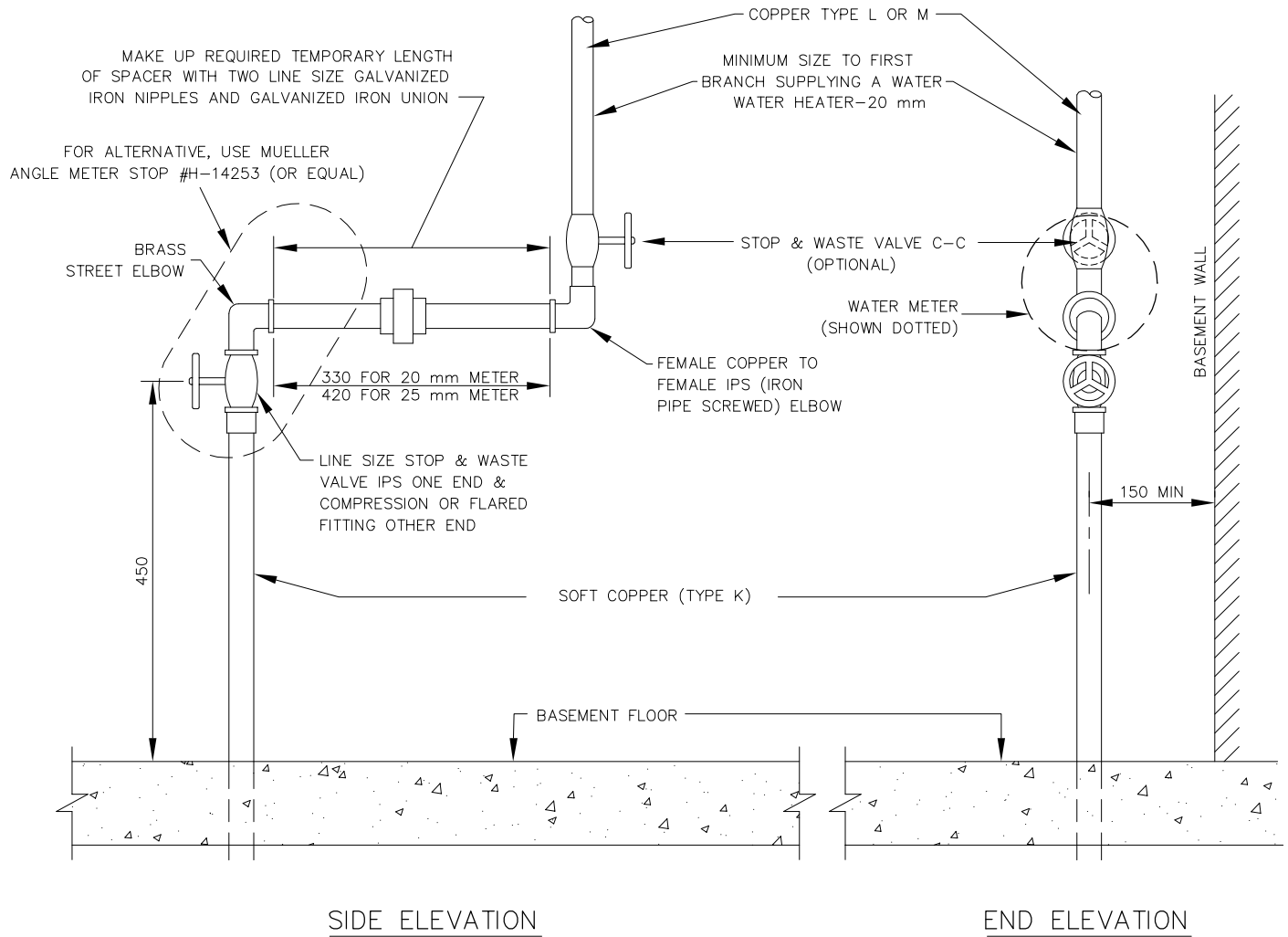
DRAWN BY: LRC/STS/RF	REV No: 1
DATE: 2003-03-03	REV DATE: 2012-02-01
SCALE: NTS	CAD/FILE No.: A1981-1 (1 OF 1)
APP'D:	GSSD-1107.010

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NOTE: METER SPACER TO BE LOCATED  
IN AREA THAT IS FULLY ACCESSIBLE  
AND WITH MIN 1.5 m HEADROOM

NO SOLDERED JOINTS PERMITTED ON  
THE STREET SIDE OF METER



NOTE: METRIC - ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN

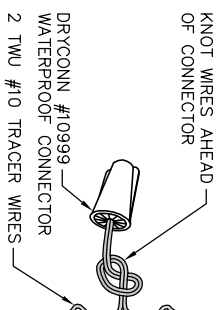
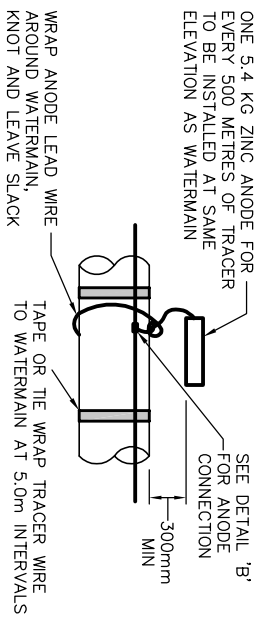
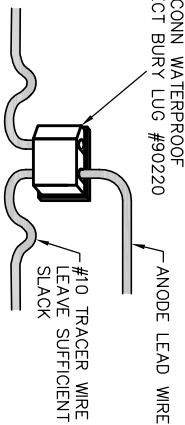
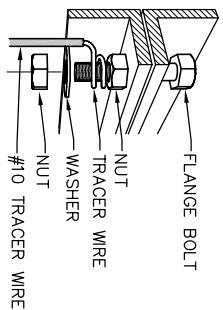


## DETAIL- WATER CONNECTION WITH METER SPACER UP TO 25 mm

DRAWN BY: STS/RFRANK	REV No:
DATE: 2003-03-03	REV DATE:
SCALE: NTS	CAD/FILE No.: A1974-1 (1 OF 1)
APP'D:	GSSD-1107.040

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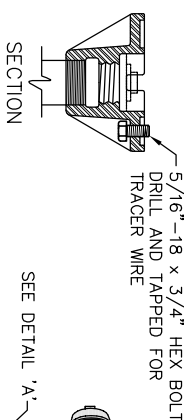
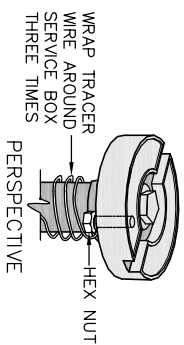
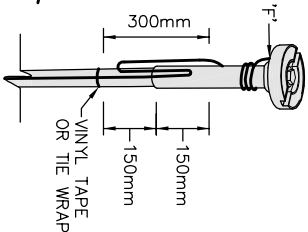
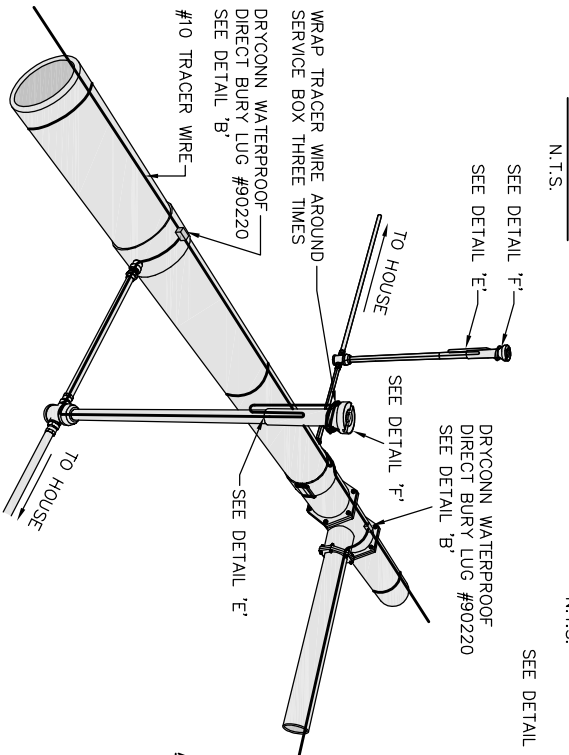


**DETAIL 'A'**  
**HYDRANT TRACER WIRE**  
**ATTACHMENT**  
N.T.S.

**DETAIL 'B'**  
**CONNECTION**  
N.T.S.

**DETAIL 'C'**  
**ANODE INSTALLATION**  
N.T.S.

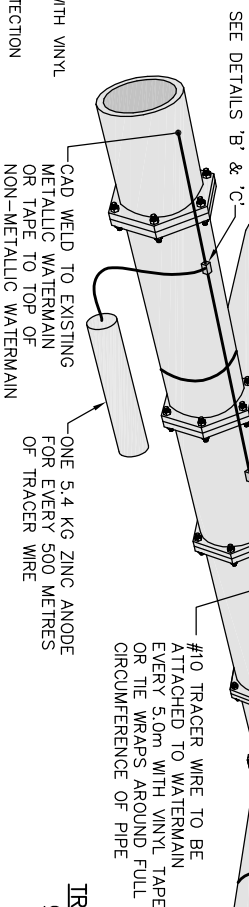
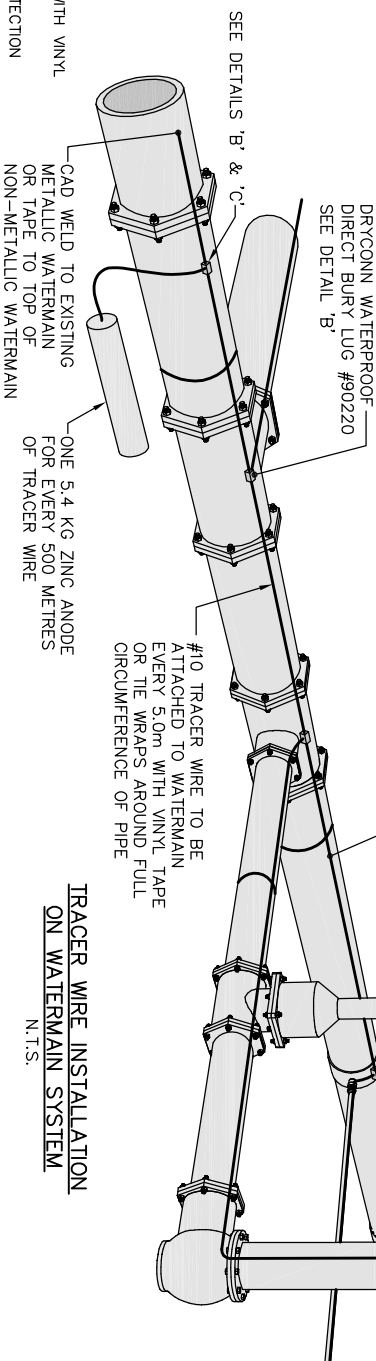
**DETAIL 'D'**  
**SPLICE CONNECTION**  
N.T.S.



**DETAIL 'E'**  
**LOOPING DETAIL**  
**AT SERVICE BOX**  
N.T.S.

**DETAIL 'F'**  
**SERVICE BOX TOP**  
N.T.S.

**TRACER WIRE**  
**ON SERVICE BOX INSTALLATIONS**  
N.T.S.



**TRACER WIRE INSTALLATION**  
**ON WATERMAIN SYSTEM**  
N.T.S.

**NOTES:**

1. THIS STANDARD DRAWING IS TO BE READ IN CONJUNCTION WITH GSSS 703 AND GSSD 1105.030
2. TRACER WIRE SHALL BE #10 RW 90 XLPE
3. #10 TRACER WIRE TO BE ATTACHED TO WATERMAIN EVERY 5.0 m WITH VINYL TAPE OR THE WRAPS AROUND FULL CIRCUMFERENCE OF PIPE
4. TRACER WIRE NOT TO BE PLACED IN OR THROUGH CORROSION PROTECTION

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**TRACER WIRE INSTALLATION**  
**ON PVC WATERMAIN AND**  
**APPURTENANCES**

DRAWN BY: SAG

REV No:

DATE: 2012-02-01

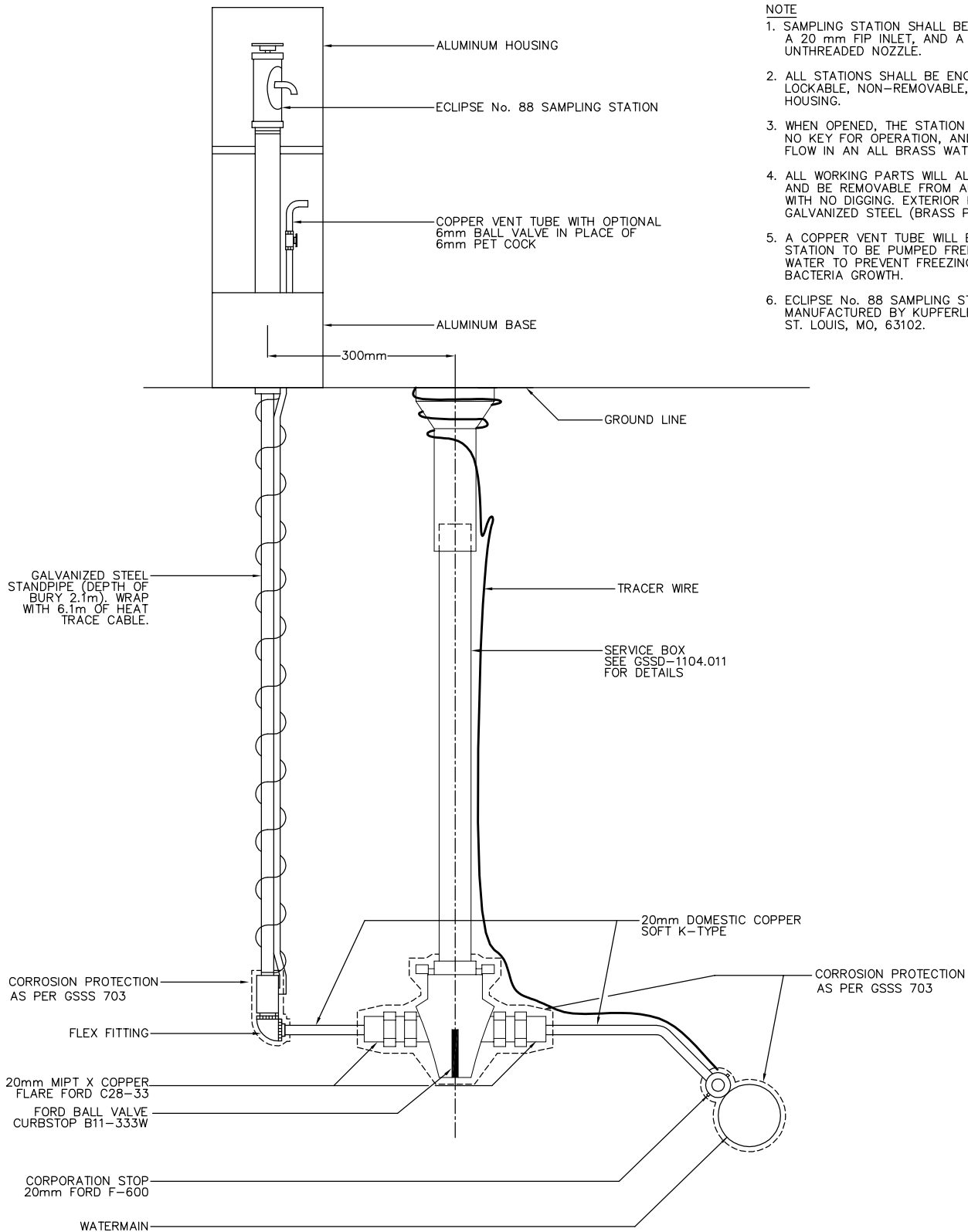
REV DATE:

SCALE: NTS

CAD/FILE No.:  
A2233-1 (1 OF 1)

APP'D:

GSSD-1110.000



#### NOTE

1. SAMPLING STATION SHALL BE 2.1 m BURY, WITH A 20 mm FIP INLET, AND A 20 mm HOSE OR UNTHREADED NOZZLE.
2. ALL STATIONS SHALL BE ENCLOSED IN A LOCKABLE, NON-REMOVABLE, ALUMINUM-CAST HOUSING.
3. WHEN OPENED, THE STATION SHALL REQUIRE NO KEY FOR OPERATION, AND THE WATER WILL FLOW IN AN ALL BRASS WATERWAY.
4. ALL WORKING PARTS WILL ALSO BE OF BRASS AND BE REMOVABLE FROM ABOVE GROUND WITH NO DIGGING. EXTERIOR PIPING SHALL BE GALVANIZED STEEL (BRASS PIPE ALSO AVAILABLE).
5. A COPPER VENT TUBE WILL ENABLE EACH STATION TO BE PUMPED FREE OF STANDING WATER TO PREVENT FREEZING AND TO MINIMIZE BACTERIA GROWTH.
6. ECLIPSE No. 88 SAMPLING STATION SHALL BE MANUFACTURED BY KUPFERLE FOUNDRY, ST. LOUIS, MO, 63102.



## ECLIPSE No. 88 WATERMAIN SAMPLING STATION

DRAWN BY: BWK/ADP

REV No: 1

DATE: 2012-02-01

REV DATE: JAN/2013

SCALE: NTS

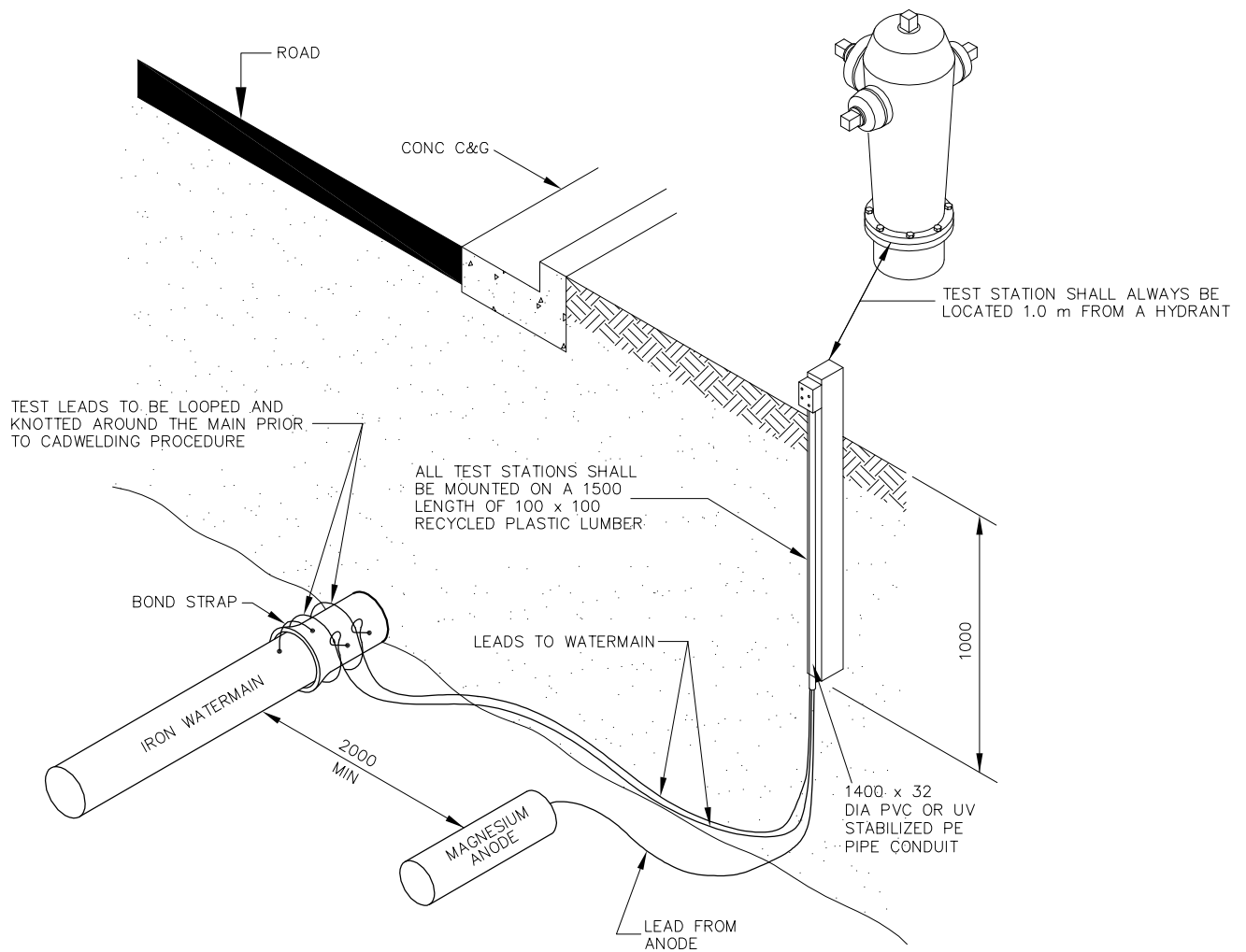
CAD/FILE No.:  
A2199-1 (1 OF 1)

APP'D:

GSSD-1115.000

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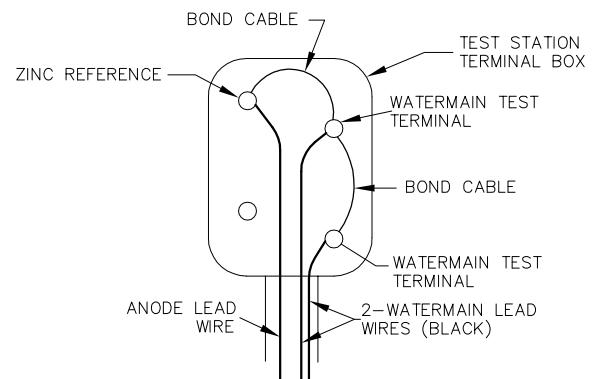
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TEST STATION INSTALLATION

NOTES

1. ALL DIMENSIONS ARE SHOWN IN MILLIMETRES UNLESS OTHERWISE INDICATED.
2. THIS STANDARD DRAWING IS TO BE READ IN CONJUNCTION WITH GSSS 702.
3. THE WATERMAIN LEAD WIRES ARE TO BE #10-7 STR TWB BLACK WIRES.
4. IN AREAS WHERE THE TEST STATION CANNOT BE LOCATED ADJACENT TO A UTILITY POLE OR HYDRANT, AN ALTERNATIVE POSITION CAN BE SELECTED ON APPROVAL OF THE ENGINEER.
5. THE APPROVED TEST STATION IS:  
COTT MANUFACTURING Co. "LITTLE FINK".



TEST STATION WIRING DIAGRAM

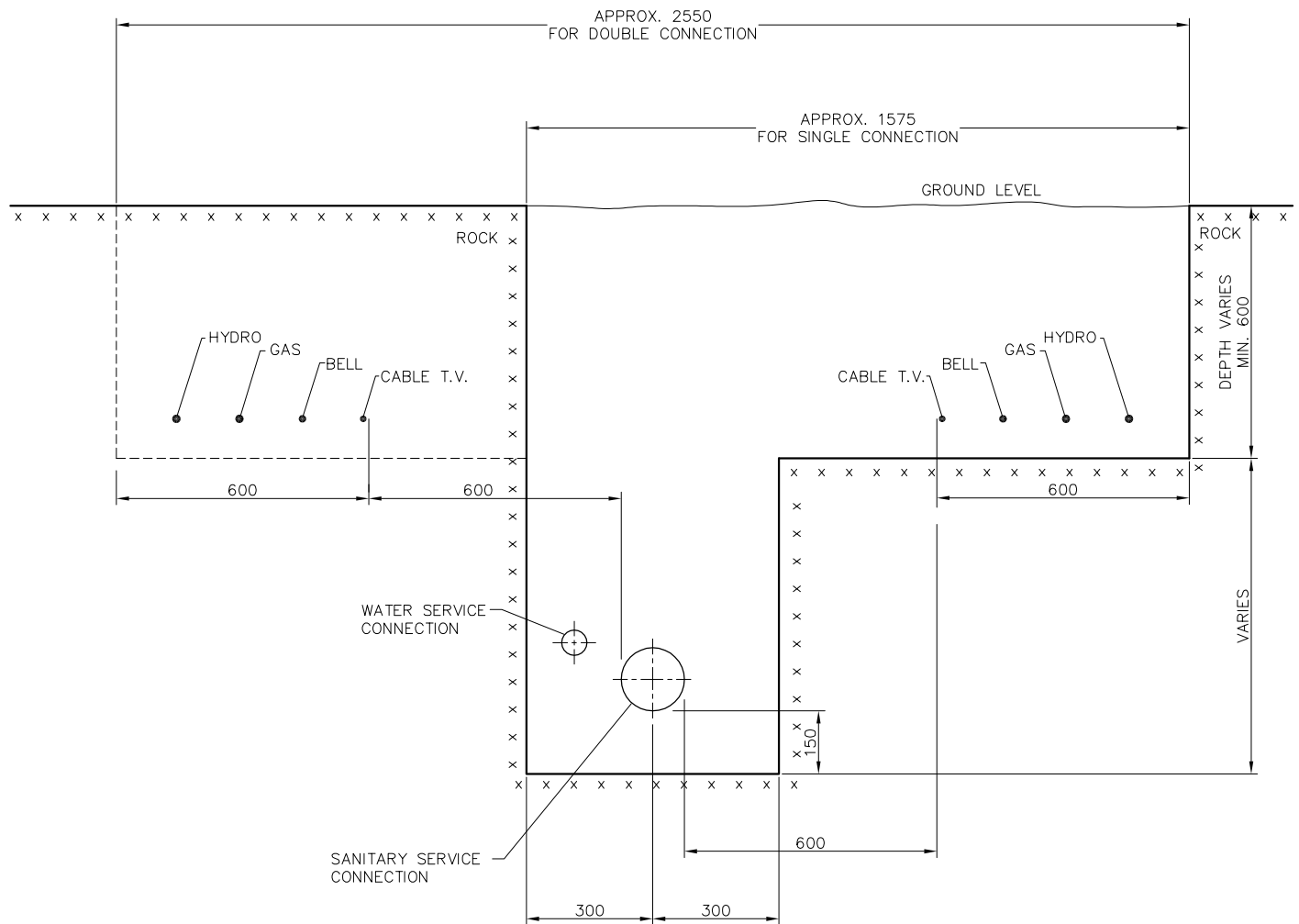


TEST STATIONS  
FOR CATHODIC PROTECTION  
ON IRON WATERMAINS

DRAWN BY: ROH/STS/RF	REV No: 2
DATE: 2003-03-03	REV DATE: MAY/08
SCALE: NTS	CAD/FILE No.: A1975-1 (1 OF 1)
APP'D:	GSSD-1125.010

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**NOTES:**

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. THIS STANDARD TO BE READ IN CONJUNCTION WITH APPLICABLE SPECIFICATIONS AND GSSD-1227.010.
3. MINIMUM HORIZONTAL DISTANCE BETWEEN SANITARY SERVICE AND FIRST UTILITY MUST BE 600 mm.
4. WATER SERVICE MUST BE INSTALLED ON THE OPPOSITE SIDE OF THE SANITARY SERVICE IN COMPARISON TO THE UTILITIES IN A SINGLE UTILITY TRENCH.
5. WHERE SERVICE CONNECTIONS ARE INSTALLED IN ROCK, THE ROCK SHALL BE BLASTED AND REMOVED TO 1.5 m BEYOND THE STREET LINE.

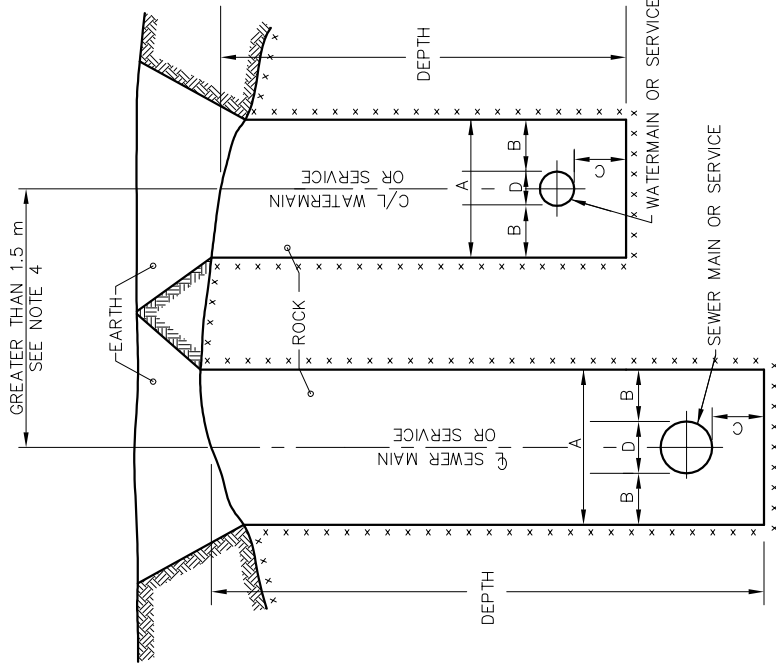


HORIZONTAL CONTROL OF LATERAL  
SEWER & WATER CONNECTIONS  
IN A COMMON ROCK TRENCH  
WITH OTHER UTILITIES

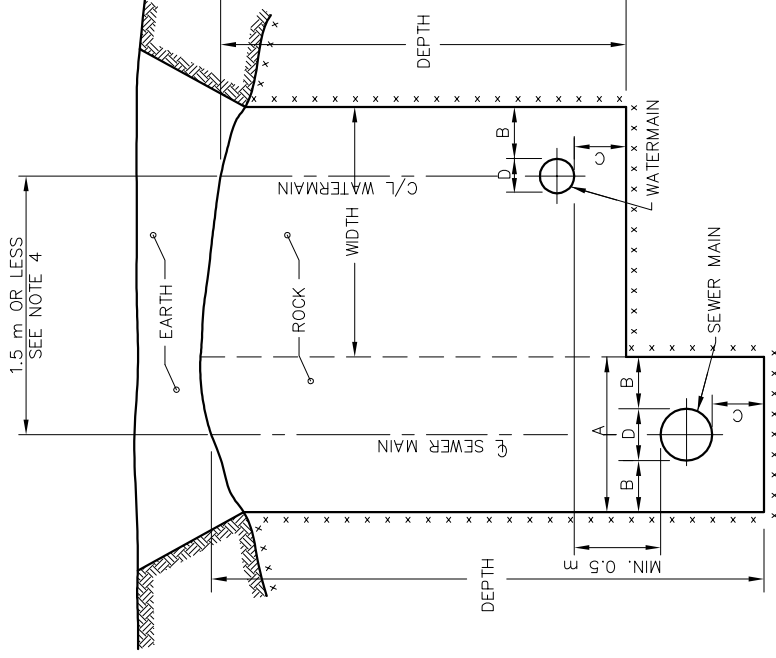
DRAWN BY: STS/RFRANK	REV No:
DATE: 2003-03-03	REV DATE:
SCALE: NTS	CAD/FILE No.: A1977-1 (1 OF 1)
APP'D:	GSSD-1226.010

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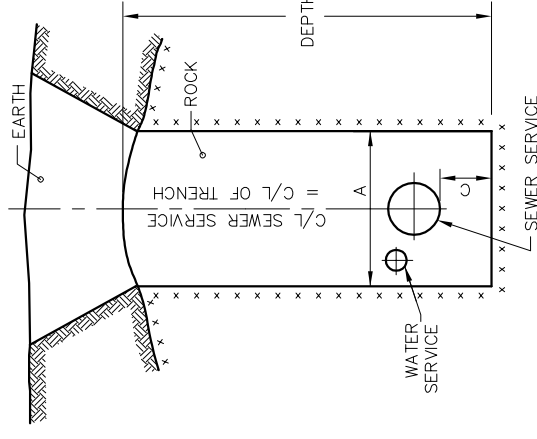
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# PAYMENT OF ROCK EXCAVATION, SEWER, WATERMAIN AND LATERAL SERVICES IN SEPARATE TRENCHES



# PAYMENT OF ROCK EXCAVATION, SEWER AND WATERMAIN IN A COMMON TRENCH



# PAYMENT OF ROCK EXCAVATION, SEWER AND WATER SERVICES IN A COMMON TRENCH

## NOTES:

1. D (O.D. OF PIPE) MEASUREMENT IS NOT TO INCLUDE PIPE BELL.
2. THIS STANDARD TO BE READ IN CONJUNCTION WITH APPLICABLE SPECIFICATIONS, PLUS GSSD-1227.010.
3. ALL TRENCHING SHALL BE DONE IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT.
4. ALL MAINS WITH A HORIZONTAL SEPARATION (CENTRE TO CENTRE) OF 1.5 METRE OR LESS, SHALL BE CONSIDERED TO BE IN A COMMON TRENCH. WHILE MAINS WITH A HORIZONTAL SEPARATION GREATER THAN 1.5 METRES, SHALL BE CONSIDERED TO BE IN SEPARATE TRENCHES.
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

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## DIMENSIONS FOR PAYMENT OF ROCK EXCAVATION IN TRENCHES FOR SEWERS, WATERMAINS & LATERAL SERVICES

## DIMENSIONS

SYMBOL	ROCK TRENCH	
	MAINS	SERVICES
A	D+600	600
B	300	--
C	300	150
D	O.D. OF PIPE	O.D. OF PIPE

DRAWN BY: STS/RFANK REV No:

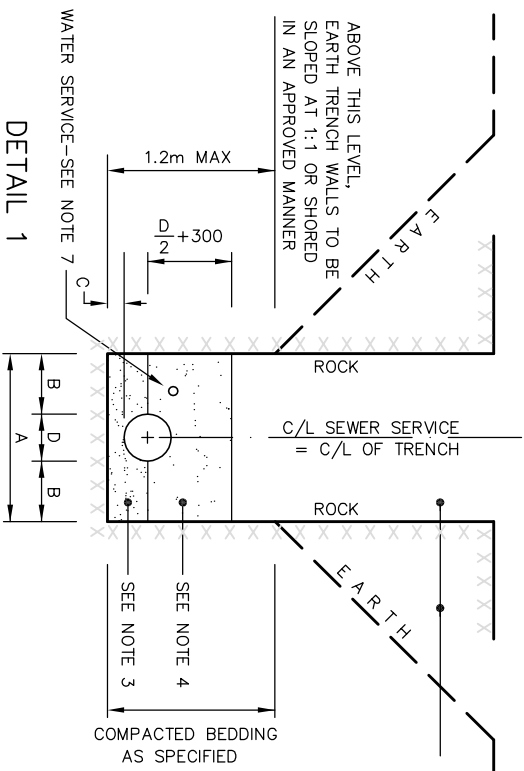
DATE: 2003-03-03 REV DATE:

SCALE: NTS CAD/FILE No.:

A1976-1 (1 OF 1)

APP'D:

**GSSD-1225.010**



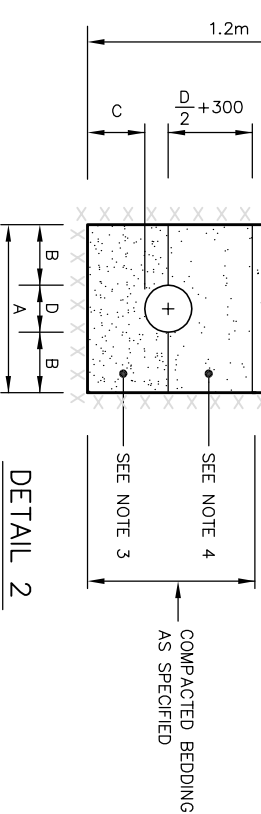
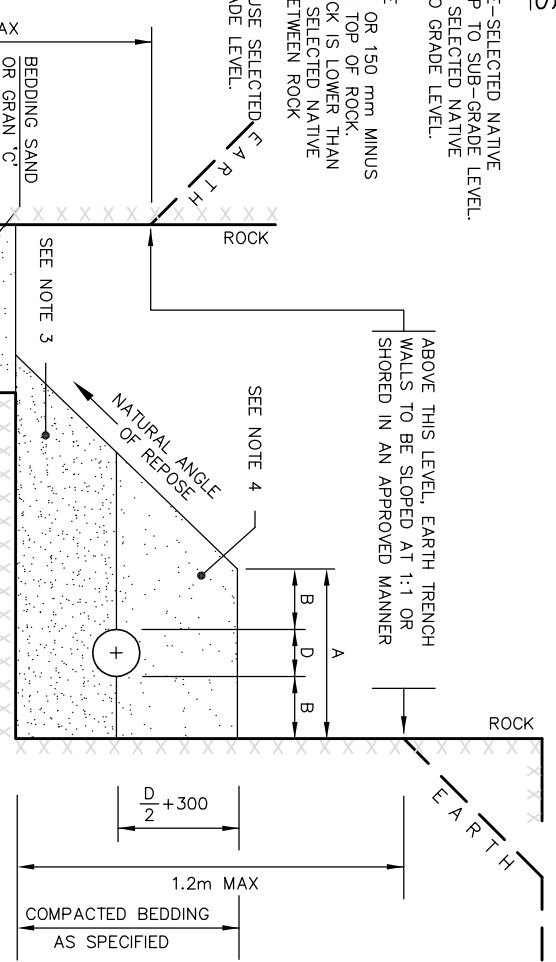
BEDDING FOR SANITARY SEWERS, STORM SEWERS, WATERMANS AND LATERAL SERVICES IN A SEPARATE TRENCH

BEDDING NOTES

1. D (O.D. OF PIPE) MEASUREMENT IS NOT TO INCLUDE PIPE BELL.
2. THIS STANDARD TO BE READ IN CONJUNCTION WITH APPLICABLE SPECIFICATIONS, PLUS STANDARD GSSD-1225.010.
3. TRENCH BEDDING MATERIALS TO SPRINGLINE OF PIPE SHALL CONSIST OF:
  - IN ROCK TRENCH -20 mm CLEAR STONE
  - IN EARTH TRENCH -UNDER DRY CONDITIONS -BEDDING SAND, GRANULAR 'A'
  - UNDER WET CONDITIONS -GRANULAR 'A'
4. UNLESS OTHERWISE DIRECTED, THE INITIAL BACKFILL MATERIAL FROM THE SPRINGLINE OF THE PIPE TO 500 mm ABOVE THE PIPE SHALL CONSIST OF:
  - IN ROCK TRENCH -BEDDING SAND, GRANULAR 'A'
  - IN EARTH TRENCH -BEDDING SAND, GRANULAR 'A'
5. THIS STANDARD IS TO BE APPLIED IN STABLE CONDITIONS, OR AFTER THE TRENCH HAS BEEN BROUGHT TO A STABLE CONDITION.
6. SLAG SHALL NOT BE USED FOR BEDDING OR BACKFILL MATERIAL.
7. DETAIL No. 1 SHALL ALSO APPLY FOR SEWER AND WATER SERVICE IN A COMMON TRENCH, WITH THE INVERT OF THE WATER SERVICE EQUALING THE OVERLET ELEVATION OF THE SEWER SERVICE, UNLESS OTHERWISE DIRECTED. THE WATER SERVICE SHALL HAVE A 75 mm CLEAR BEDDING COVER AROUND IT.
8. ALL MAINS WITH A HORIZONTAL SEPARATION (CENTER TO CENTER) OF 1.5 METRES OR LESS, SHALL BE CONSIDERED TO BE IN A COMMON TRENCH, WHILE MAINS WITH A HORIZONTAL SEPARATION GREATER THAN 1.5 METRES, SHALL BE CONSIDERED TO BE IN SEPARATE TRENCHES.
9. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

BACK FILL NOTES

- EARTH TRENCH
1. UNDER ROAD ALLOWANCE-SELECTED NATIVE MATERIAL TO BE USED UP TO SUB-GRADE LEVEL.
  2. OFF ROAD ALLOWANCE- SELECTED NATIVE MATERIAL TO BE USED TO GRADE LEVEL.
- ROCK TRENCH
1. UNDER ROAD ALLOWANCE
    - a) USE GRANULAR 'C' OR 150 mm MINUS CRUSHED ROCK TO TOP OF ROCK.
    - b) WHERE TOP OF ROCK IS LOWER THAN BOTTOM OF SUB-GRADE, SELECTED NATIVE MATERIAL TO BE USED BETWEEN ROCK AND SUB-GRADE.
  2. OFF ROAD ALLOWANCE-USE SELECTED NATIVE MATERIAL TO GRADE LEVEL.



BEDDING FOR SANITARY SEWERS, STORM SEWERS, AND WATERMANS IN A COMMON TRENCH

DIMENSIONS

SYMBOL	EARTH TRENCH		ROCK TRENCH	
	MAINS	SERVICES	MAINS	SERVICES
A	D + 600	600	D + 600	600
B	300	---	300	---
C	150	150	300	150
D	O.D. OF PIPE		O.D. OF PIPE	

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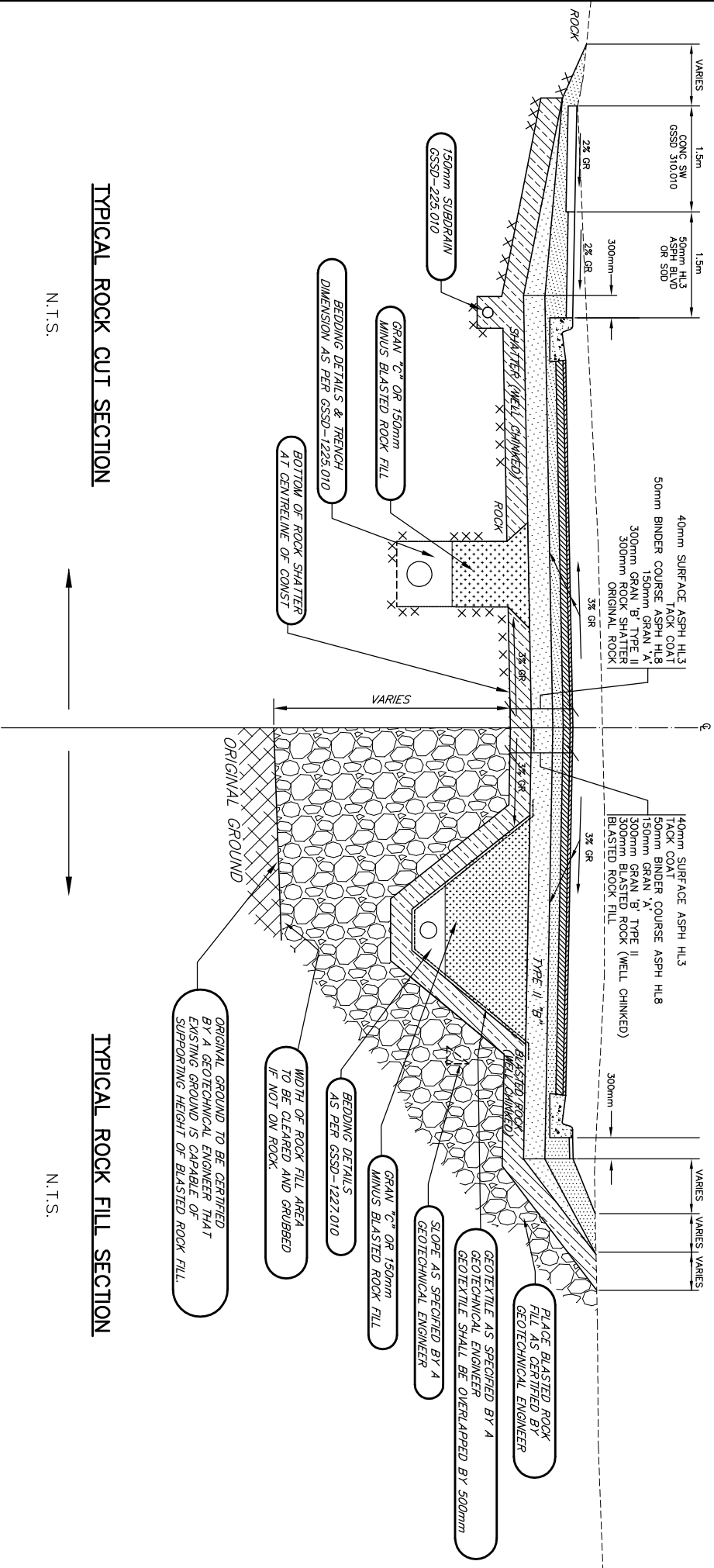
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BEDDING DETAILS

SAN SEWERS, STM SEWERS  
WM'S & LATERAL SERVICES

DRAWN BY: STS/RF/BWK	REV No: 3
DATE: 2003-03-03	REV DATE: 2012-02-01
SCALE: NTS	CAD/FILE No.: A1944-1 (1 OF 1)
APP'D. PETER CHIESA	GSSD-1227.010



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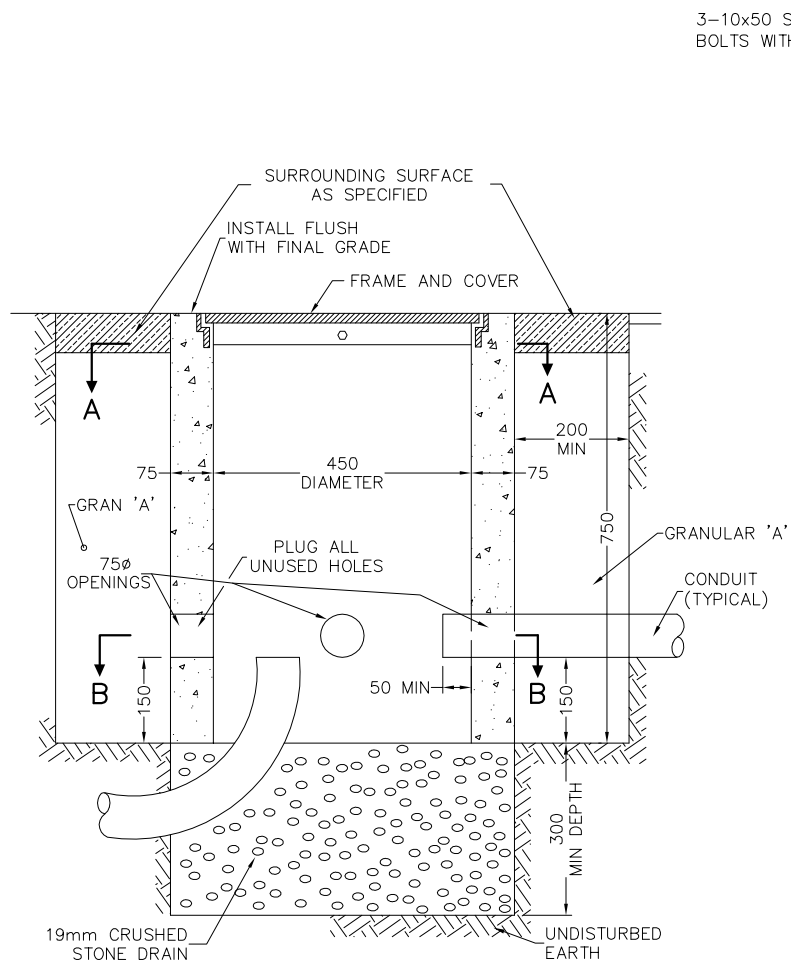
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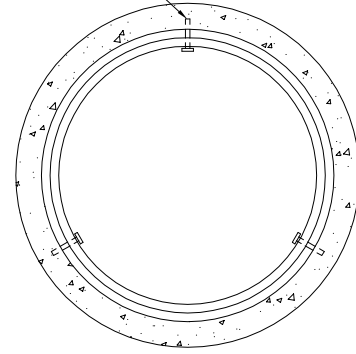
## ROCK TRENCH DETAILS ROCK CUT/ROCK FILL

DRAWN BY: MHD	REV No:
DATE: 2013-01-01	REV DATE:
SCALE: NTS	CAD/FILE No.:
APP'D:	A2273-1 (1 OF 1)
	GSSD-1227.020

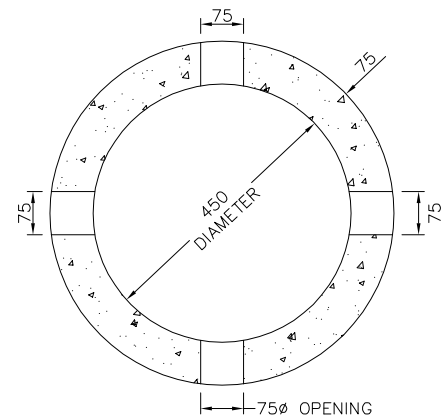


TYPICAL SECTION

3-10x50 STAINLESS STEEL  
BOLTS WITH SINGLE NUTS (TYP)



SECTION A-A



SECTION B-B

NOTES

1. ALL CONCRETE TO BE 20 MPa COMPRESSIVE STRENGTH AT 28 DAYS.
2. FRAME & COVER TO BE THAT SUPPLIED BY KONDU MFG. CO. LTD.  
PRESTON, ONT; OR EQUAL.
3. CONCRETE HANDHOLE SHOULD BE ORDERED WITH 2, 3, OR 4 OPENINGS  
AS REQUIRED.
4. A SEALANT ACCEPTABLE TO THE ENGINEER SHALL BE UTILIZED  
TO PROVIDE A WATERPROOF SEAL BETWEEN DUCTS AND HANDHOLE STRUCTURE.
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
6. OPENINGS NOT USED ARE TO BE PLUGGED TO PREVENT EARTH INFILTRATION.
7. GRANULAR 'A' AND 19 mm CRUSHED STONE TO BE WELL COMPACTED.

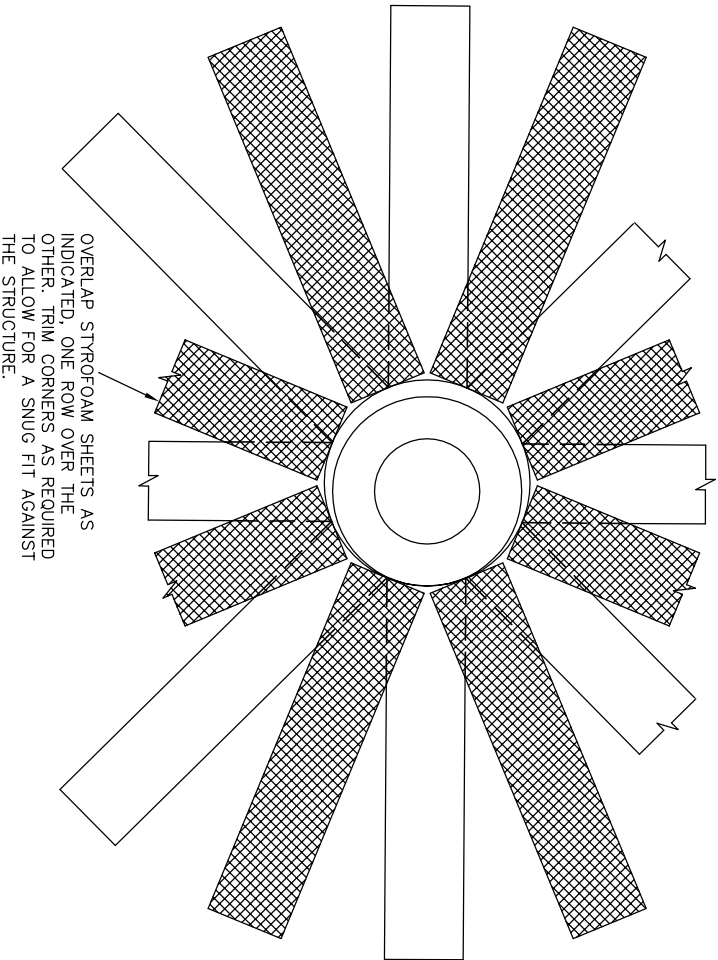


PRECAST CONCRETE HANDHOLE  
FOR TRAFFIC SIGNAL DUCTS

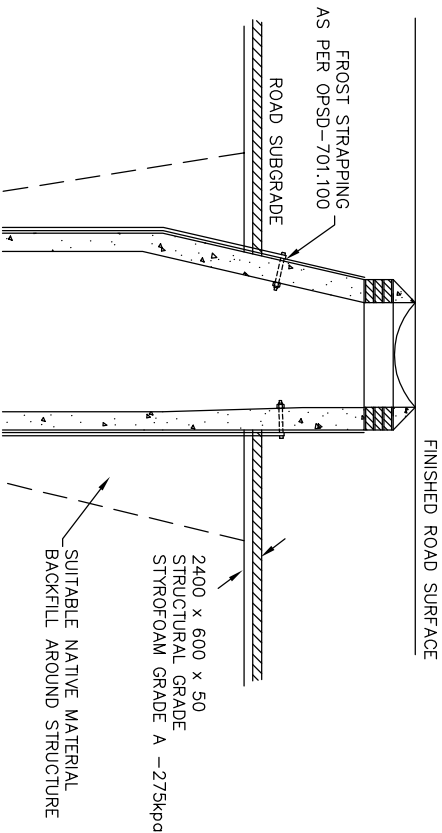
DRAWN BY: STS/RFRANK	REV No:
DATE: 2003-03-03	REV DATE:
SCALE: NTS	CAD/FILE No.: A1928-1 (1 OF 1)
APP'D:	GSSD-1228.010

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TOP VIEW  
COVER REMOVED



TYPICAL SECTION

STYROFOAM FROST PROTECTION

UNDER ROADS & SHOULDERS ONLY

NOTES

1. STYROFOAM TO BE INSTALLED ONLY AT LOCATIONS INDICATED IN THE CONTRACT DOCUMENTS OR WHEN DIRECTED BY THE ENGINEER.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

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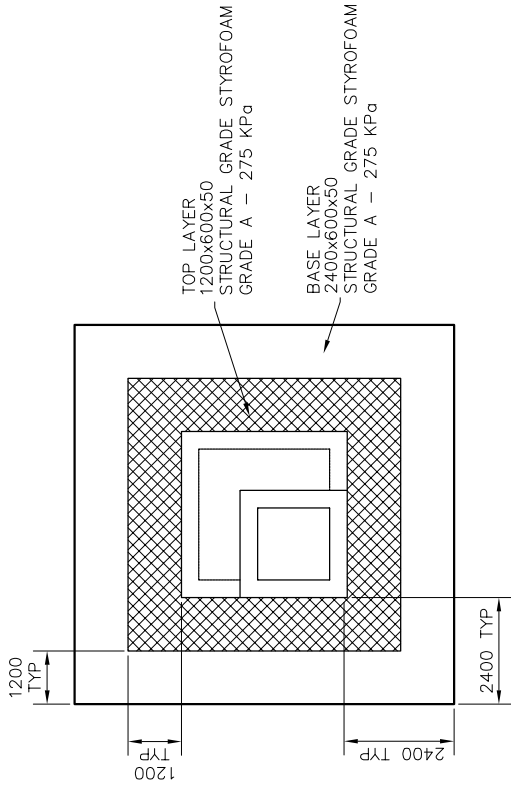
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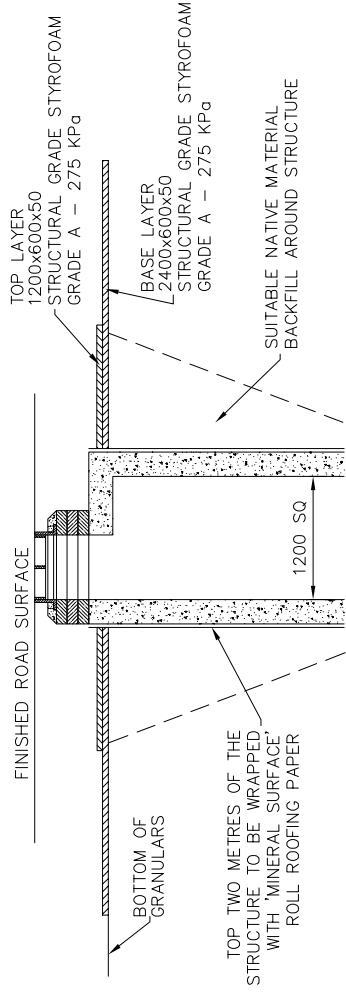


FROST PROTECTION FOR  
UNDERGROUND ROUND  
STRUCTURES

DRAWN BY: STS/KLR	REV No: 1
DATE: 2003-03-03	REV DATE: 2016-03-16
SCALE: NTS	CAD/FILE No.: A1979-1 (1 OF 1)
APP'D:	GSSD-1229.010



TOP VIEW  
COVER REMOVED



TYPICAL SECTION

## STYROFOAM FROST PROTECTION

UNDER ROADS & SHOULDERS ONLY

### NOTES

1. STYROFOAM TO BE INSTALLED ONLY AT LOCATIONS INDICATED IN THE CONTRACT DOCUMENTS OR WHEN DIRECTED BY THE ENGINEER.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

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## FROST PROTECTION FOR UNDERGROUND SQUARE STRUCTURES

DRAWN BY: STS/RFRANK REV No:

DATE: 2003-03-03 REV DATE:

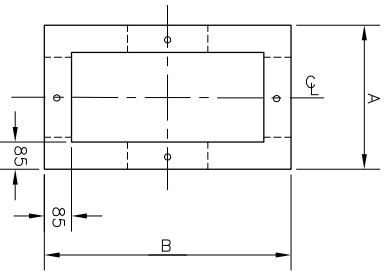
SCALE: NTS CAD/FILE No.:

A2018-1 (1 OF 1)

APP'D:

GSSD-1229.020

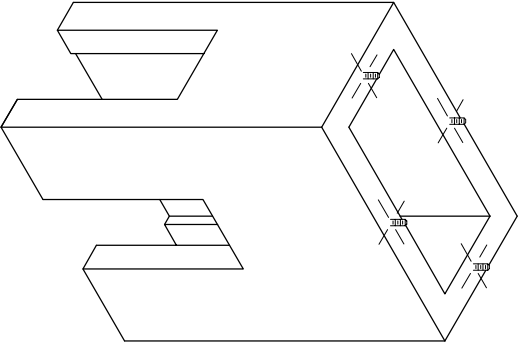




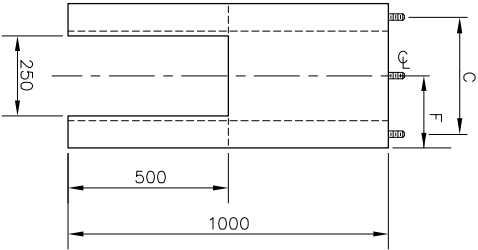
DIMENSION	CABINET TYPE	
	M1	P1
A	430	660
B	762	962
C	345	575
F	215	330
G	677	877
H	381	481

CABINET MANUFACTURER – TACEL

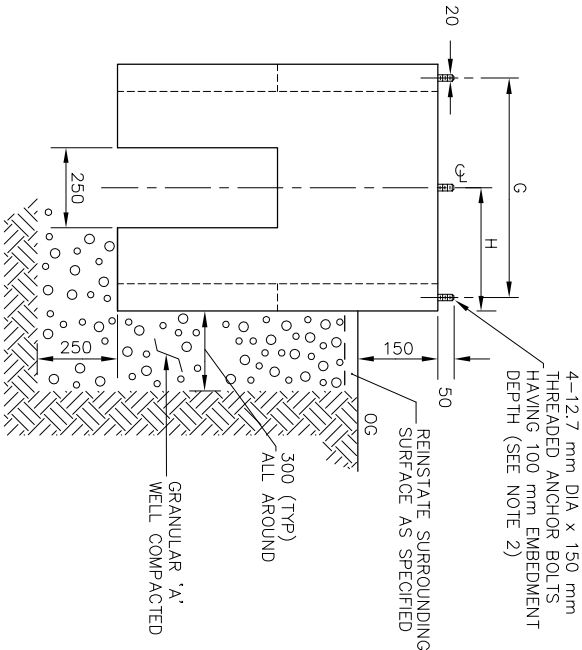
TOP VIEW



ISOMETRIC VIEW



END VIEW



SIDE VIEW

NOTES:

1. CLASS OF CONCRETE: 30 MPa AT 28 DAYS.
2. EXPOSED ANCHOR BOLTS TO BE GIVEN A LIBERAL COATING OF WHITE NON-STAINING GREASE.
3. ALL DIMENSIONS ARE IN MILLIMETRES.

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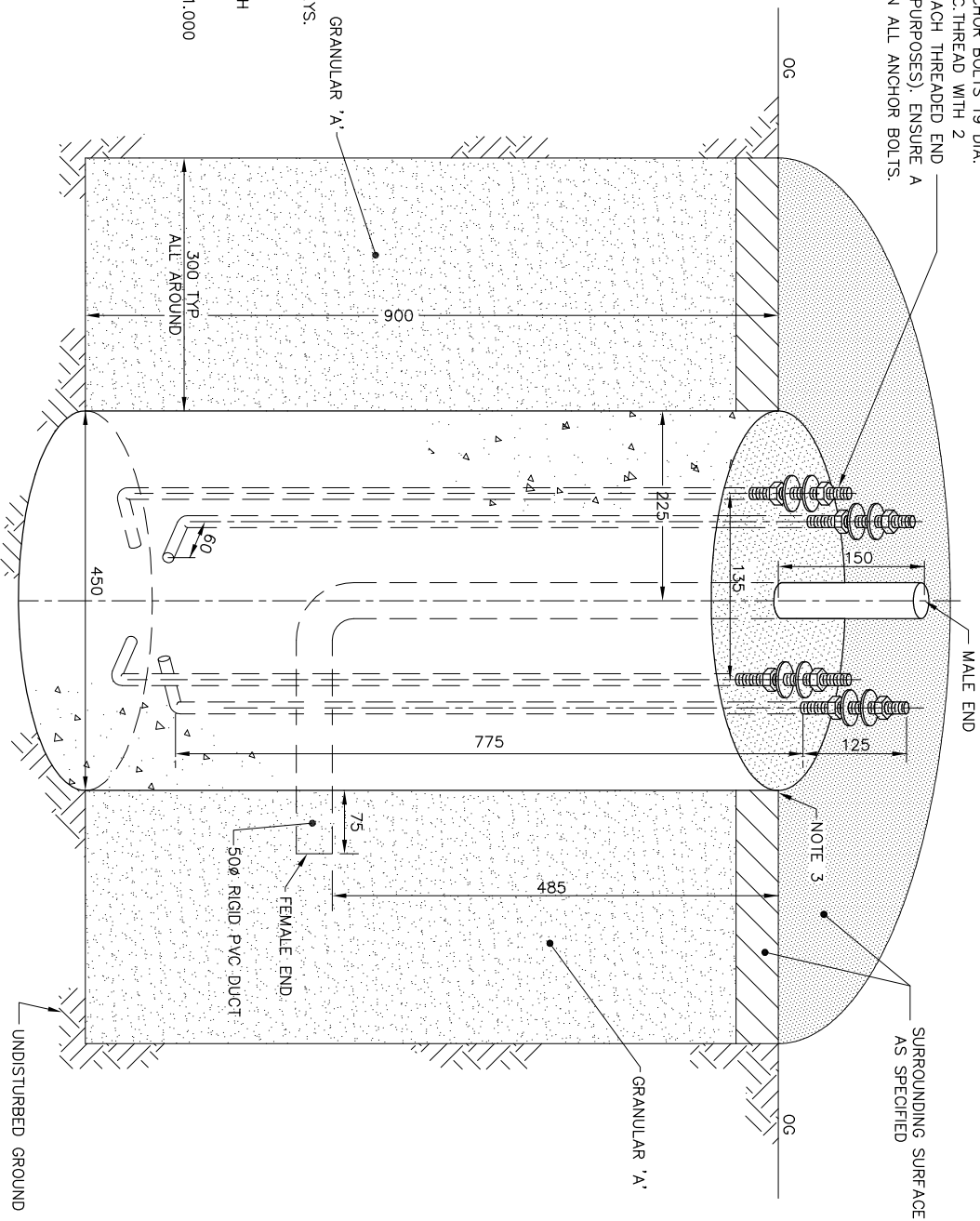
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UNREINFORCED CONCRETE  
BASE FOR  
TRAFFIC CONTROLLER  
CABINET

DRAWN BY: STS/RF/BWK	REV No.: 1
DATE: 2003-03-03	REV DATE: OCT 2010
SCALE: NTS	CAD/FILE No.: A2021-1 (1 OF 1)
APP'D: PETER CHIESA	GSSD-1230.030

FOUR (4) GALVANIZED ANCHOR BOLTS 19 DIA.  
x 610 WITH 130 OF 25 N.C. THREAD WITH 2  
WASHERS & 2 NUTS ON EACH THREADED END  
(ONE SET FOR LEVELLING PURPOSES). ENSURE A  
DISTANCE OF 135 BETWEEN ALL ANCHOR BOLTS.



**NOTES:**

1. CLASS OF CONCRETE: 30 MPa AT 28 DAYS.
2. ALL DIMENSIONS ARE IN MILLIMETRES.
3. TOP OF CONCRETE BASE SHALL BE FLUSH WITH SURROUNDING SURFACE.
4. FOR POLE DETAILS, REFER TO GSSD-1231.000
5. ALL EXPOSED ANCHORAGE ASSEMBLY TO BE GIVEN A LIBERAL COATING OF WHITE NON-STAINING GREASE.
6. THE COMPLETE ANCHORAGE ASSEMBLY INCLUDING BOLTS, NUTS AND WASHERS SHALL BE HOT DIPPED GALVANIZED ACCORDING TO CSA STD G164-M92.

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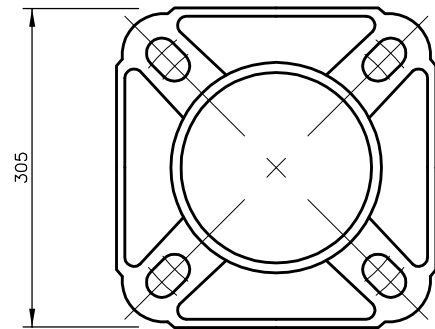
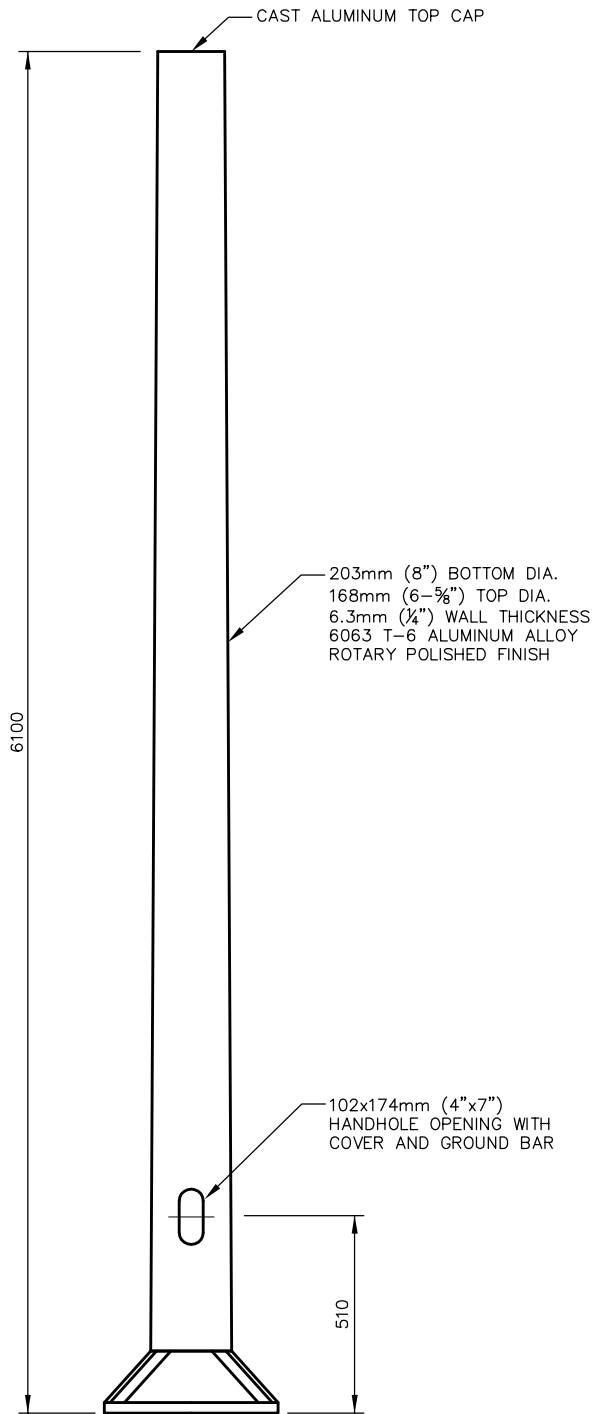
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**UNREINFORCED  
CONCRETE BASE**

FOR 127 mm DIA TRAFFIC  
SIGNAL POLES

DRAWN BY: MHD	REV No: 1
DATE: 2013-01-01	REV DATE: 2014-03-13
SCALE: NTS	CAD/FILE No.: A2276-1 (1 OF 1)
APP'D:	GSSD-1230.021



350T-6 CAST ALUMINUM ALLOY BASE FLANGE  
279-305mm (11"-12") BOLT CIRCLE DIAMETER  
FOR 25mm(1") ANCHOR HOLES

**NOTES:**

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
2. TRAFFIC SIGNAL POLE SHALL INCLUDE 4 - GALVANIZED ANCHOR BOLTS 25.4mm (1") DIA. x 762mm (30") LONG AND 8 - 25.4mm (1") GALVANIZED NUTS & WASHERS.
3. FOR CONCRETE BASE DETAILS, REFER TO GSSD-1230.010 REINFORCED CONCRETE BASE 203mm DIA TRAFFIC SIGNAL POLES.



**ALUMINUM TRAFFIC  
SIGNAL POLE**  
203mm (8") DIAMETER

DRAWN BY: SAG

REV No:

DATE: 2014-03-06

REV DATE:

SCALE: NTS

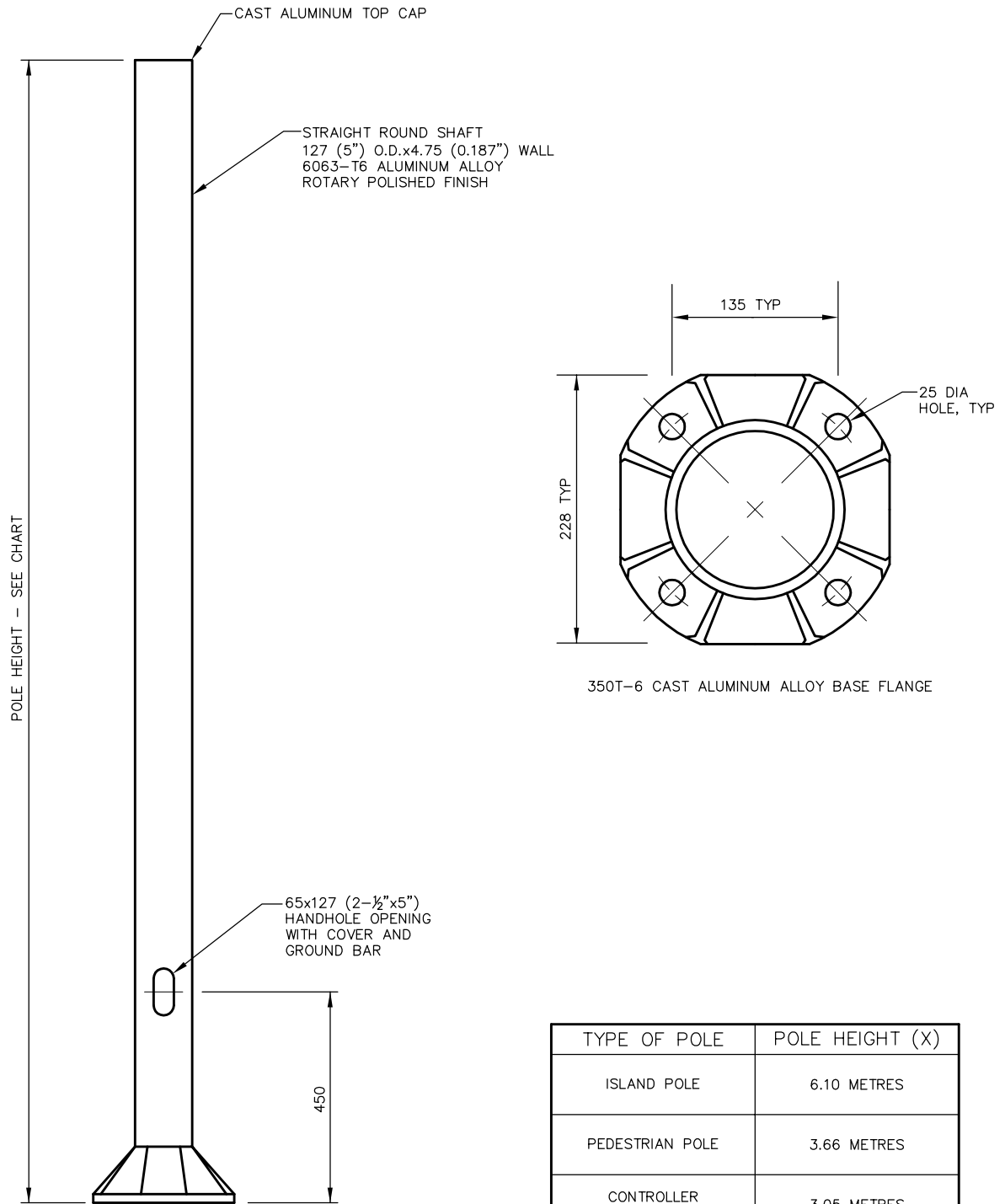
CAD/FILE No.:  
A2204-1 (1 OF 1)

APP'D:

**GSSD-1231.100**

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**NOTES:**

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
2. TRAFFIC SIGNAL POLE SHALL INCLUDE 4 - GALVANIZED ANCHOR BOLTS 19mm ( $\frac{3}{4}$ ") DIA. x 610mm (24") LONG AND 8 - 19mm ( $\frac{3}{4}$ ") GALVANIZED NUTS & WASHERS.
3. FOR CONCRETE BASE DETAILS, REFER TO GSSD-1230.021 UNREINFORCED CONCRETE BASE FOR 127mm DIA TRAFFIC SIGNAL POLES.

TYPE OF POLE	POLE HEIGHT (X)
ISLAND POLE	6.10 METRES
PEDESTRIAN POLE	3.66 METRES
CONTROLLER CABINET POLE	3.05 METRES



## ALUMINUM TRAFFIC SIGNAL POLE FOR ISLAND, PEDESTRIAN & CONTROLLER CABINET

DRAWN BY: SAG

REV No: 1

DATE: 2013-01-01

REV DATE: 2014-03-06

SCALE: NTS

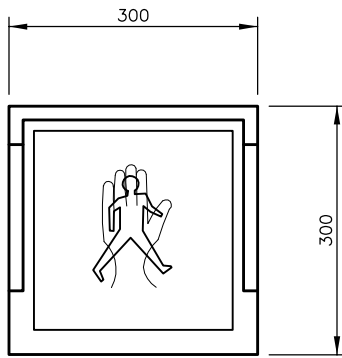
CAD/FILE No.:  
A2205-1 (1 OF 1)

APP'D:

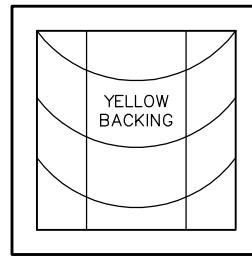
**GSSD-1231.000**

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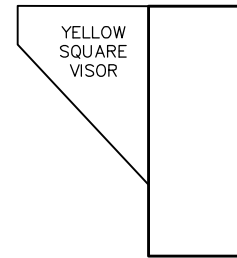
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FRONT VIEW

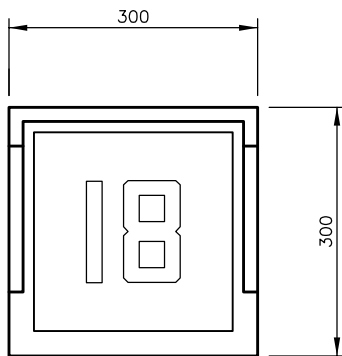


BACK VIEW

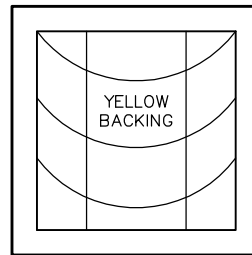


SIDE VIEW

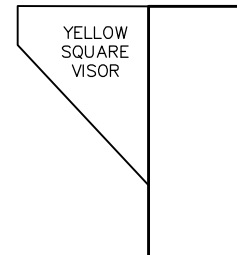
## PEDESTRIAN SIGNALS



FRONT VIEW



BACK VIEW



SIDE VIEW

## COUNT DOWN SIGNALS

### NOTES:

1. LED PEDESTRIAN SIGNAL IS TO BE BIMODAL. ALL LED MODULE AND HOUSINGS SHALL CONFORM TO THE SIZE, COLOUR AND DESIGN IDENTIFIED IN THE ONTARIO HIGHWAY TRAFFIC ACT (HTA) REGULATIONS AND THE ONTARIO TRAFFIC MANUAL (OTM), BOOK 12 – TRAFFIC SIGNALS.
2. THE COUNTDOWN MODULE MUST OPERATE IN THE CLEARANCE CYCLE COUNTDOWN MODE. THE MODULE WILL START COUNTING WHEN THE FLASHING DON'T WALK SIGNAL TURNS ON AND WILL COUNT DOWN TO "0" AND TURN OFF WHEN THE SOLID "HAND" SIGNAL TURNS ON.
3. BIRD STOPS SHALL COME WITH A RUBBER GASKET, BE FULLY THREADED AND HAVE THE SAME YELLOW COLOURED FINISH AS THE SIGNAL HEAD.
4. THE COUNT DOWN UNIT SHALL INCLUDE A POLY JOINER & NUT.
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.



## LED PEDESTRIAN AND LED COUNTDOWN SIGNALS

DRAWN BY: SAG

REV No:

DATE: 2013-01-01

REV DATE:

SCALE: NTS

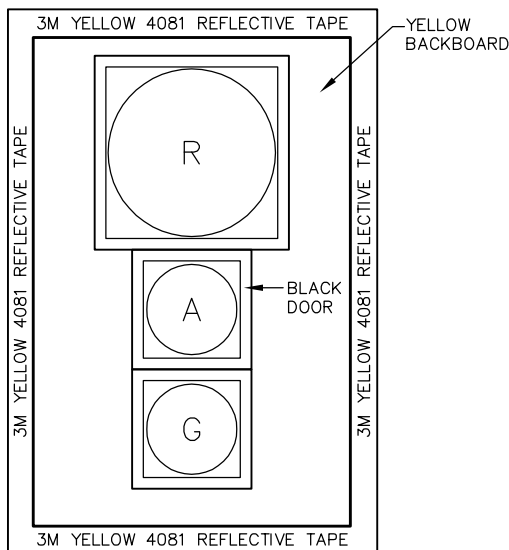
CAD/FILE No.:  
A2206-1 (1 OF 1)

APP'D:

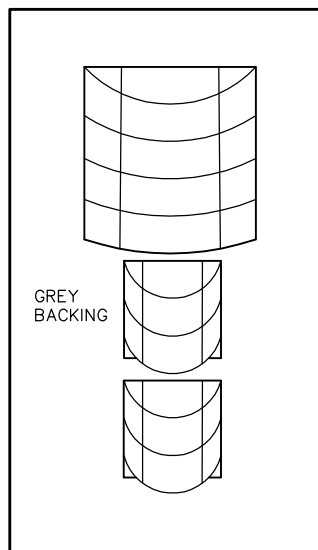
**GSSD-1232.000**

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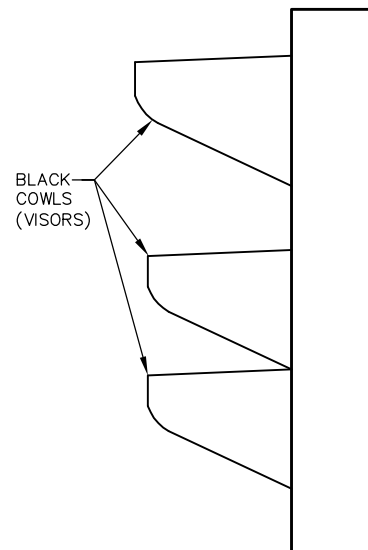
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FRONT VIEW



BACK VIEW



SIDE VIEW

TYPE (mm)	HOUSING	BACKBOARD	SPECIFICATION	APPROVAL
R-A-G 300x200x200	POLY MATERIAL	FLEXIBLE POLY PLUMBIZER ALLOWANCE	MEET OR EXCEEDS ITE SPECS	CSA OR ESA
R-A-G 300x300x300	POLY MATERIAL	FLEXIBLE POLY PLUMBIZER ALLOWANCE	MEET OR EXCEEDS ITE SPECS	CSA OR ESA
R-A-GA 300x300x300	POLY MATERIAL	FLEXIBLE POLY PLUMBIZER ALLOWANCE	MEET OR EXCEEDS ITE SPECS	CSA OR ESA
R-A-G-GA 300x300x300x300	POLY MATERIAL	FLEXIBLE POLY PLUMBIZER ALLOWANCE	MEET OR EXCEEDS ITE SPECS	CSA OR ESA

#### NOTES:

1. ALL LED VEHICLE TRAFFIC SIGNAL HEAD REQUIREMENTS SHALL CONFORM TO THE SIZE, COLOUR AND DESIGN IDENTIFIED IN THE ONTARIO HIGHWAY TRAFFIC ACT (HTA) REGULATIONS AND THE ONTARIO TRAFFIC MANUAL (OTM), BOOK 12 – TRAFFIC SIGNALS.
2. ALL VEHICLE TRAFFIC SIGNAL HEADS ON MAST ARMS SHALL BE MOUNTED WITH A PLUMBIZER ARM, UNLESS OTHER SPECIFIED. THE FULL SIZE STAINLESS STEEL REINFORCING PLATES WILL BE MOUNTED INSIDE AND OUTSIDE OF THE AMBER SECTION HOUSING.
3. IF A VEHICLE TRAFFIC SIGNAL HEAD ON MAST ARM IS SUPPORTED BY A CUSHION HANGER, FULL SIZE STAINLESS STEEL REINFORCING PLATES ARE REQUIRED PER MOUNTING INSIDE AND OUTSIDE OF THE RED SECTION HOUSING.
4. BACKBOARD SHALL BE POLY MATERIAL AND THE PAINT SHALL BE IMPREGNATED ON BOTH SIDES OF THE BACKBOARD YELLOW FRONT AND GREY BACK. PAINTED MATERIAL IS NOT ACCEPTABLE.
5. 3M BRAND DIAMOND GRADE VIP YELLOW 4081 REFLECTIVE MARKING TAPE TO BE PLACED AROUND THE PERIMETER OF ALL TRAFFIC SIGNAL BACKBOARDS.
6. BIRDS STOPS SHALL COME WITH A RUBBER GASKET, BE FULLY THREADED AND HAVE THE SAME YELLOW COLOURED FINISH AS THE SIGNAL HEAD.
7. DOOR MOUNTING HARDWARE: STAINLESS STEEL EYEBOLT AND WING NUT ASSEMBLIES.
8. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

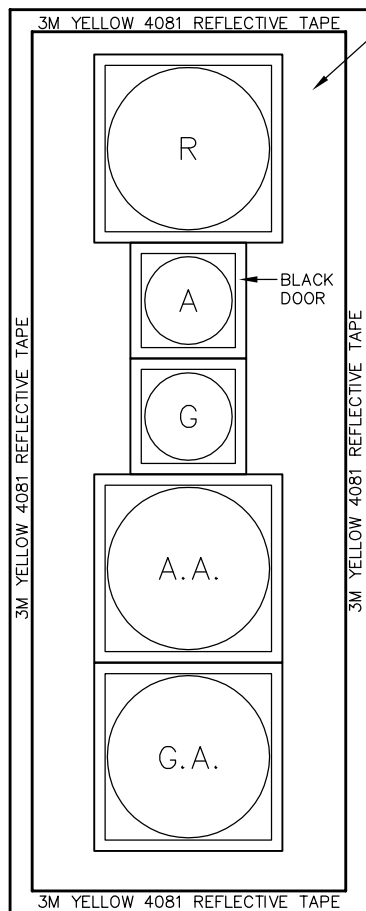


## LED TRAFFIC VEHICULAR SIGNAL HEADS

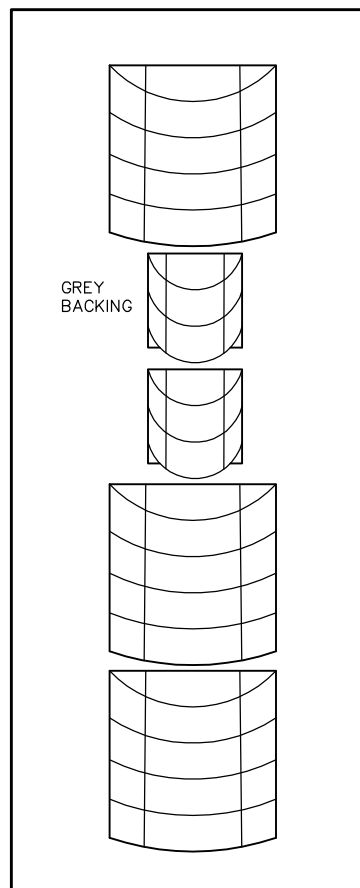
DRAWN BY: SAG	REV No:
DATE: 2013-01-01	REV DATE:
SCALE: NTS	CAD/FILE No.: A2207-1 (1 OF 1)
APP'D:	GSSD-1233.000

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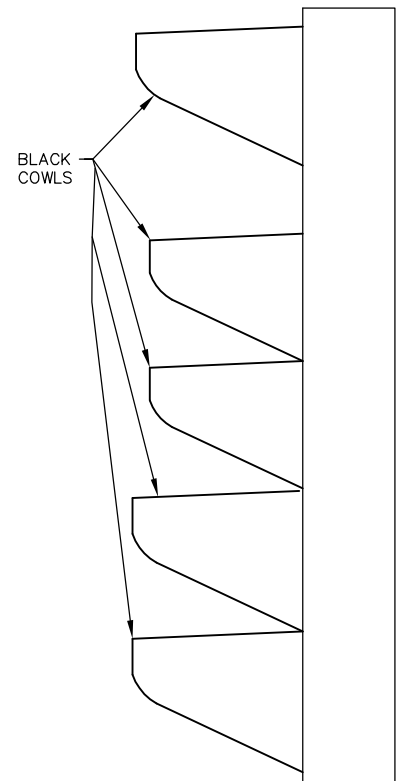
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FRONT VIEW



BACK VIEW



SIDE VIEW

NOTES:

1. 5-SECTION TRAFFIC SIGNAL DISPLAYS REQUIREMENTS SHALL CONFORM TO THE SIZE, COLOUR AND DESIGN IDENTIFIED IN THE ONTARIO HIGHWAY TRAFFIC ACT (HTA) REGULATIONS AND THE ONTARIO TRAFFIC MANUAL (OTM), BOOK 12 – TRAFFIC SIGNALS.
2. 5-SECTION TRAFFIC SIGNAL HEADS ON MAST ARMS SHALL BE MOUNTED WITH A PLUMBIZER ARM, UNLESS OTHER SPECIFIED. THE FULL SIZE STAINLESS STEEL REINFORCING PLATES WILL BE MOUNTED INSIDE AND OUTSIDE OF THE AMBER AND GREEN SECTION HOUSING.
3. IF A 5-SECTION TRAFFIC SIGNAL HEAD ON A MAST ARM IS SUPPORTED BY A CUSHION HANGER, FULL SIZE STAINLESS STEEL REINFORCING PLATES ARE REQUIRED PER MOUNTING INSIDE AND OUTSIDE OF THE RED SECTION HOUSING.
4. BACKBOARD SHALL BE POLY MATERIAL AND THE PAINT SHALL BE IMPREGNATED ON BOTH SIDES OF THE BACKBOARD, YELLOW FRONT AND GREY BACK. PAINTED MATERIAL IS NOT ACCEPTABLE.
5. 3M BRAND DIAMOND GRADE VIP YELLOW 4081 REFLECTIVE MARKING TAPE IS TO BE PLACED AROUND THE PERIMETER OF ALL TRAFFIC SIGNAL BACKBOARDS ACCORDING TO THE MANUFACTURER'S INSTRUCTION.
6. BIRD STOPS SHALL COME WITH A RUBBER GASKET, BE FULLY THREADED AND HAVE THE SAME YELLOW COLOURED FINISH AS THE SIGNAL HEAD.
7. DOOR MOUNTING HARDWARE: STAINLESS STEEL EYEBOLTS AND WING NUT ASSEMBLIES ARE TO BE USED.
8. RED DISPLAY–300mm(12"), AMBER DISPLAY–200mm(8"), GREEN DISPLAY–200mm(8"), AMBER ARROW DISPLAY–300mm(12") and GREEN ARROW DISPLAY–300mm(12").



## LED 5-SECTION TRAFFIC SIGNAL DISPLAYS

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DATE: 2013-01-01	REV DATE:
SCALE: NTS	CAD/FILE No.: A2272-1 (1 OF 1)
APP'D:	<b>GSSD-1234.000</b>

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