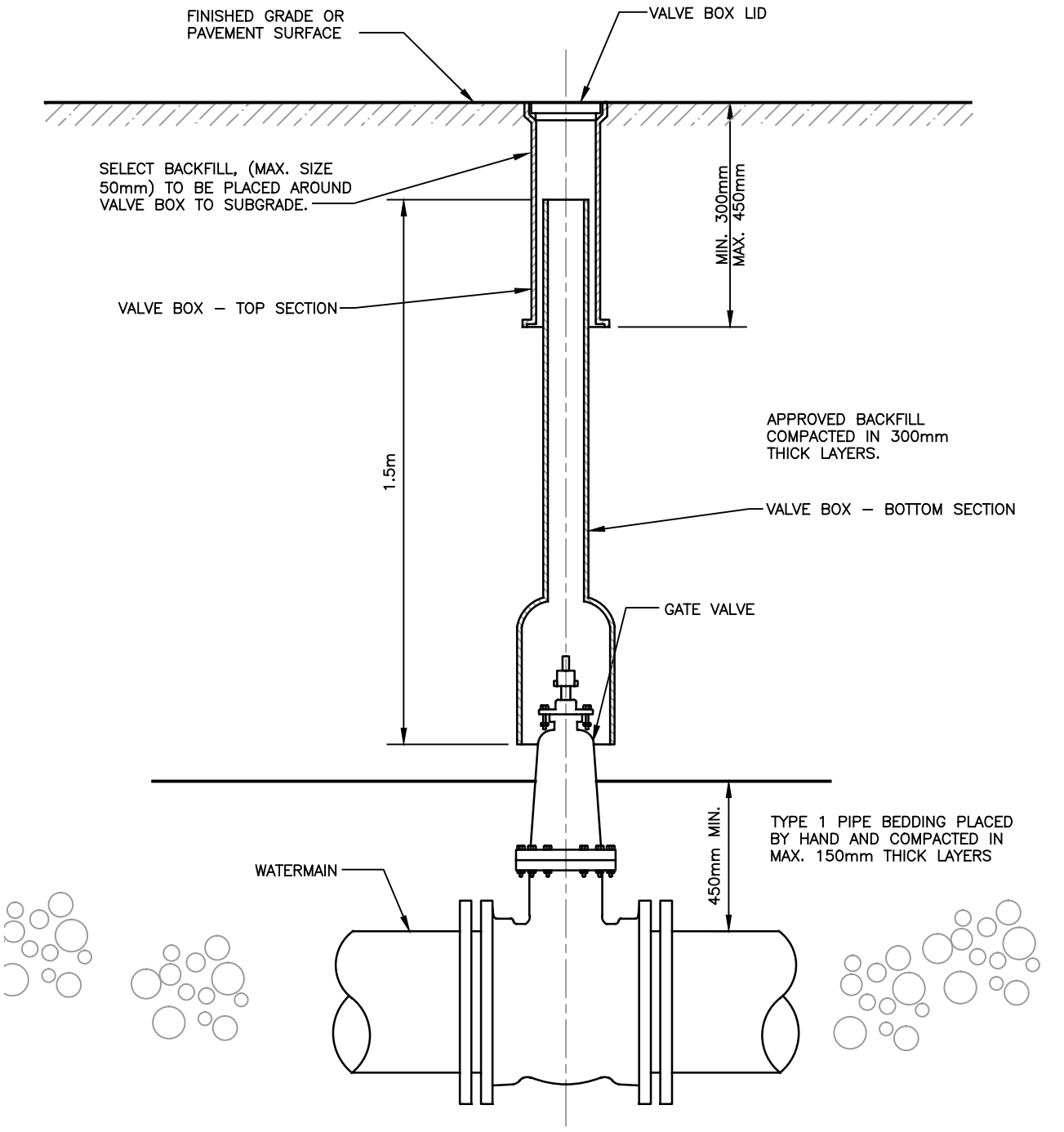


NOTES:

1. ANODE TO BE ZINC 24–48 TYPE INSTALLED PER DETAIL ON DWG. HWSD – 1040
2. ANODE CONNECTION TO GATE VALVE BY DOUBLE NUTTING ON ACCESSIBLE STUD.

No.	DESCRIPTION	DATE	BY	CHKD
1	NEW DRAWING	13|02|14	SS	

Halifax Water

ENGINEERING DEPARTMENT

PROJECT

STANDARD SLIDING TYPE VALVE BOX

DRAWN	JW	SCALE (PLAN)	N.T.S.
CHECKED	SS	SCALE (PROFILE)	
APPROVED	SS	DATE	FEB.. 13, 2014
PROJECT No.			
DWG. No.	HWSD – 1032		

SCALE PLOTTED: 1=1 DATE PLOTTED: 4/18/2008 NOTES: HWSD – 1032.DWG

HRWC–A4P.dwg DWG FILENAME:

MINIMUM CONTACT AREAS FOR HORIZONTAL CONCRETE THRUST BLOCKS

PIPE DIAMETER	AREA M^2 FOR SOIL SUPPORTING CAPACITY OF 100 kPa					
mm	CAP/PLUG	TEE	90° BEND	45° BEND	22.5° BEND	11.25° BEND
100	0.25	0.25	0.32	0.20	0.16	0.16
150	0.48	0.48	0.64	0.40	0.24	0.16
200	0.80	0.80	1.12	0.64	0.32	0.16
250	1.28	1.28	1.76	0.96	0.48	0.24
300	1.76	1.76	2.56	1.44	0.72	0.40

MINIMUM DISTANCE FROM FITTING TO UNDISTURBED GROUND

PIPE DIAMETER mm	mm
100	450
150	450
200	450
250	600
300	750

VERTICAL THRUST BLOCKS THRUST COMPENSATED FOR BY MASS OF CONCRETE (m^3)

PIPE DIAMETER mm	45° BEND	22.5° BEND	11.25 BEND
100	0.40	0.20	0.20
150	0.80	0.40	0.40
200	1.40	0.70	0.70
250	2.10	1.10	1.10
300	3.00	1.50	1.50

NOTES:

1. SEE HWSD–1080 FOR THRUST BLOCK CONFIGURATIONS
2. THESE TABLES ARE BASED ON SOIL SUPPORTING CAPACITIES OF 100kPa AND AN INTERNAL PIPE PRESSURE OF 1035kPa. WHERE DIFFERENT SUPPORTING CAPACITIES OR INTERNAL PRESSURES ARE ENCOUNTERED, CONTACT AREAS SHOULD BE CALCULATED. ACCORDINGLY. SAFE SUPPORTING CAPACITY SHOULD BE DETERMINED BY THE DESIGN ENGINEER, AND SHOULD INCLUDE AN APPROPRIATE FACTOR OF SAFETY.
3. FOR PIPE SIZES GREATER THAN 300mm – THE DESIGNER SHALL CALCULATE THE REQUIRED THRUST BLOCK SIZES BASED ON LOCAL SOIL CONDITIONS. THIS INFORMATION SHALL BE IDENTIFIED ON THE DRAWINGS.

No.	DESCRIPTION	DATE	BY	CHKD
2	ADDED NOTE 3.	10|05|11	ML	
2	GENERAL REVISIONS FOR 2009	09|06|08	ML	
1	TITLE BLOCK CLEANUP	03|04|08	BC	

Halifax Water

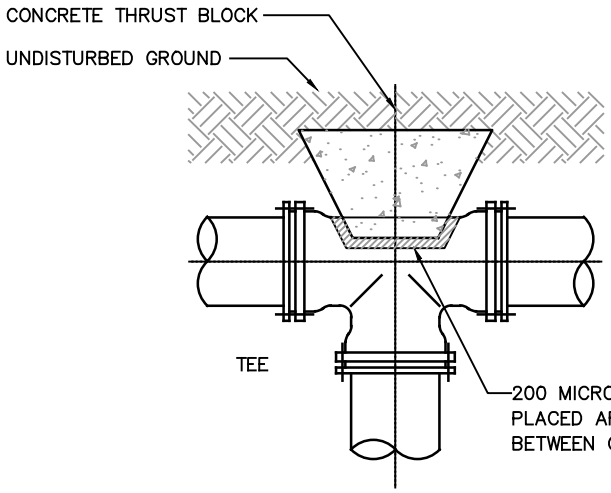
ENGINEERING DEPARTMENT

PROJECT: THRUST BLOCK REQUIREMENTS

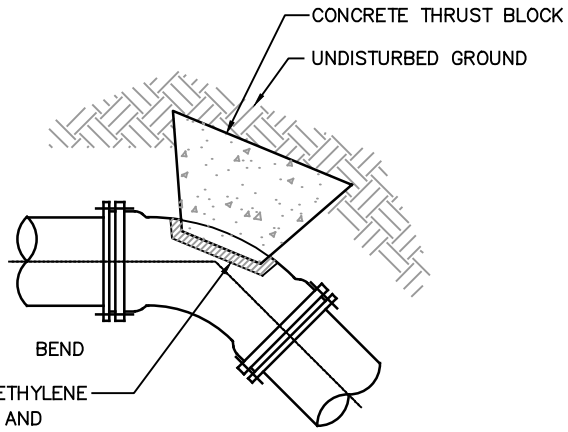
DRAWN MC	SCALE (PLAN) N.T.S.
CHECKED HM	SCALE (PROFILE)
APPROVED TG	DATE 02/03/26
PROJECT No.	
DWG. No. HWSD – 1070	

SCALE PLOTTED: 1=1 DATE PLOTTED: 4/18/2008 NOTES:

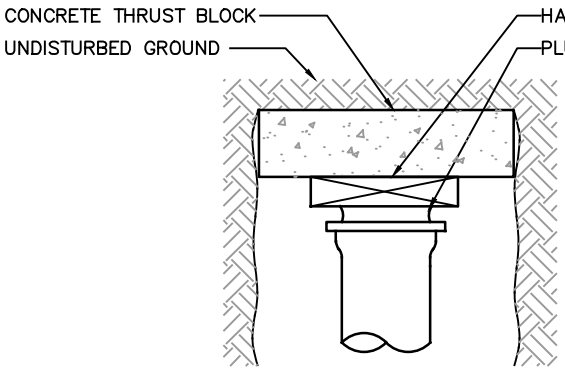
HRWC–A4P.dwg DWG FILENAME: HWSD – 1070.DWG



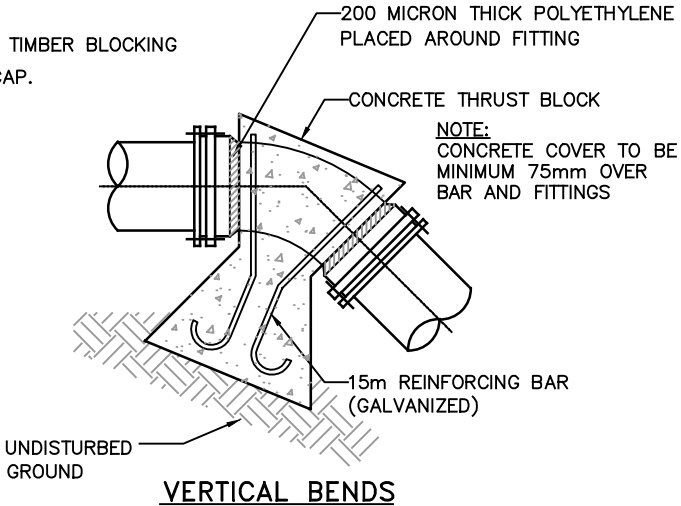
TEE



HORIZONTAL BENDS



TEMPORARY BLANK END



VERTICAL BENDS

NOTES:

1. ALL CONCRETE 25 MPa.
2. REINFORCING BARS ARE TO BE PRESHAPED PRIOR TO INSTALLATION.
3. GALVANIZED COATING TO BE COMPLETE PRIOR TO USE. REPAIR DAMAGED COATING AS NECESSARY ON SITE PRIOR TO USE.

No.	DESCRIPTION	DATE	BY	CHKD
5	ADDED NOTES 2 AND 3	16|01|28	SS	
4	ADDED GALVANIZED TO REBAR NOTE	12|12|05	JW	
3	GENERAL REVISIONS FOR 2009	09|06|08	ML	
2	TITLE BLOCK CLEANUP	03|04|08	BC	
1	BLANK END NOTED AS "TEMPORARY"	00|03|20	MC	

Halifax Water

ENGINEERING DEPARTMENT

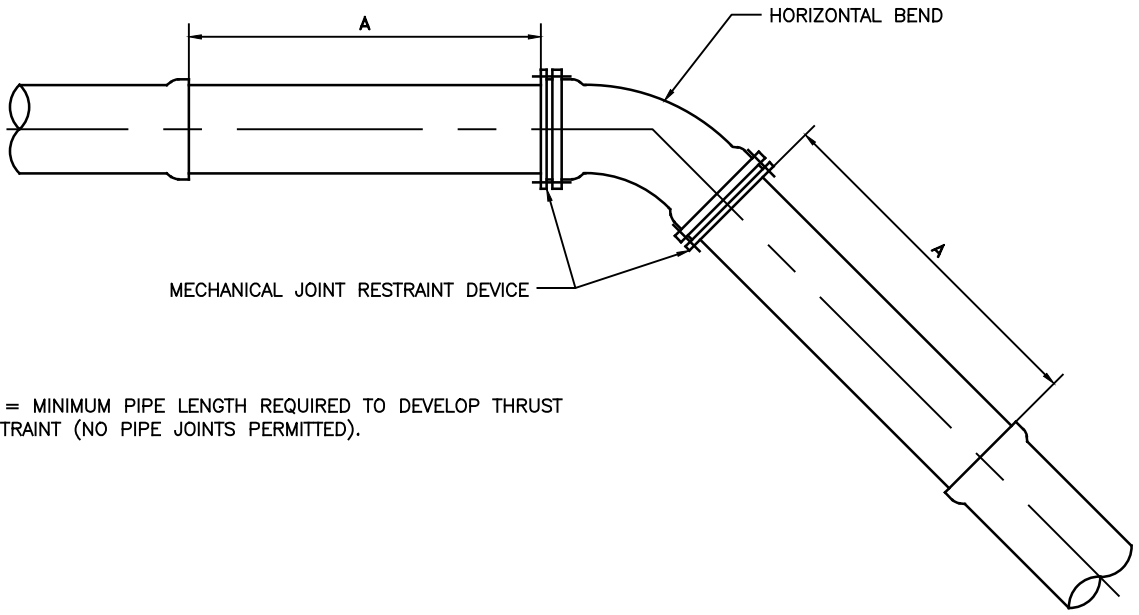
PROJECT

CONCRETE THRUST BLOCK

DRAWN	MC	SCALE (PLAN)	N.T.S.
CHECKED	HM	SCALE (PROFILE)	N.T.S.
APPROVED	TG	DATE	02/03/26
PROJECT No.			
DWG. No.	HWSD – 1080		

SCALE PLOTTED: 1=1 DATE PLOTTED: 4/18/2008 NOTES:

HRWC–A4P.dwg DWG FILENAME: HWSD – 1080.DWG



"A" = MINIMUM PIPE LENGTH REQUIRED TO DEVELOP THRUST RESTRAINT (NO PIPE JOINTS PERMITTED).

PIPE DIAMETER	BEND	MINIMUM PIPE LENGTH REQUIRED TO DEVELOP THRUST RESTRAINT*
200mm (8")	11.25° 22.5° 45°	0.6m (2 ft) 1.2m (4 ft) 2.4m (8 ft)
250mm (10")	11.25° 22.5° 45°	0.6m (2 ft) 1.5m (5 ft) 2.7m (9 ft)
300mm (12")	11.25° 22.5° 45°	0.9m (3 ft) 1.5 (5 ft) 3.3m (11 ft)

*BASED ON HRWC SPECIFIED BURY AND BEDDING CONDITIONS. MAXIMUM TEST PRESSURE 1035kPa. WHERE CONDITIONS VARY "A" SHALL BE CALCULATED BY THE DESIGN ENGINEER.

NOTES:

DATE PLOTTED: 4/29/2008

SCALE PLOTTED: 1=1

No.	DESCRIPTION	DATE	BY	CHKD
3	GENERAL REVISIONS FOR 2009	09|06|09	ML	
2	TITLE BLOCK CLEANUP	03|04|08	BC	
1	FOOT–NOTE MODIFIED	01|01|10	MC	SS

Halifax Water

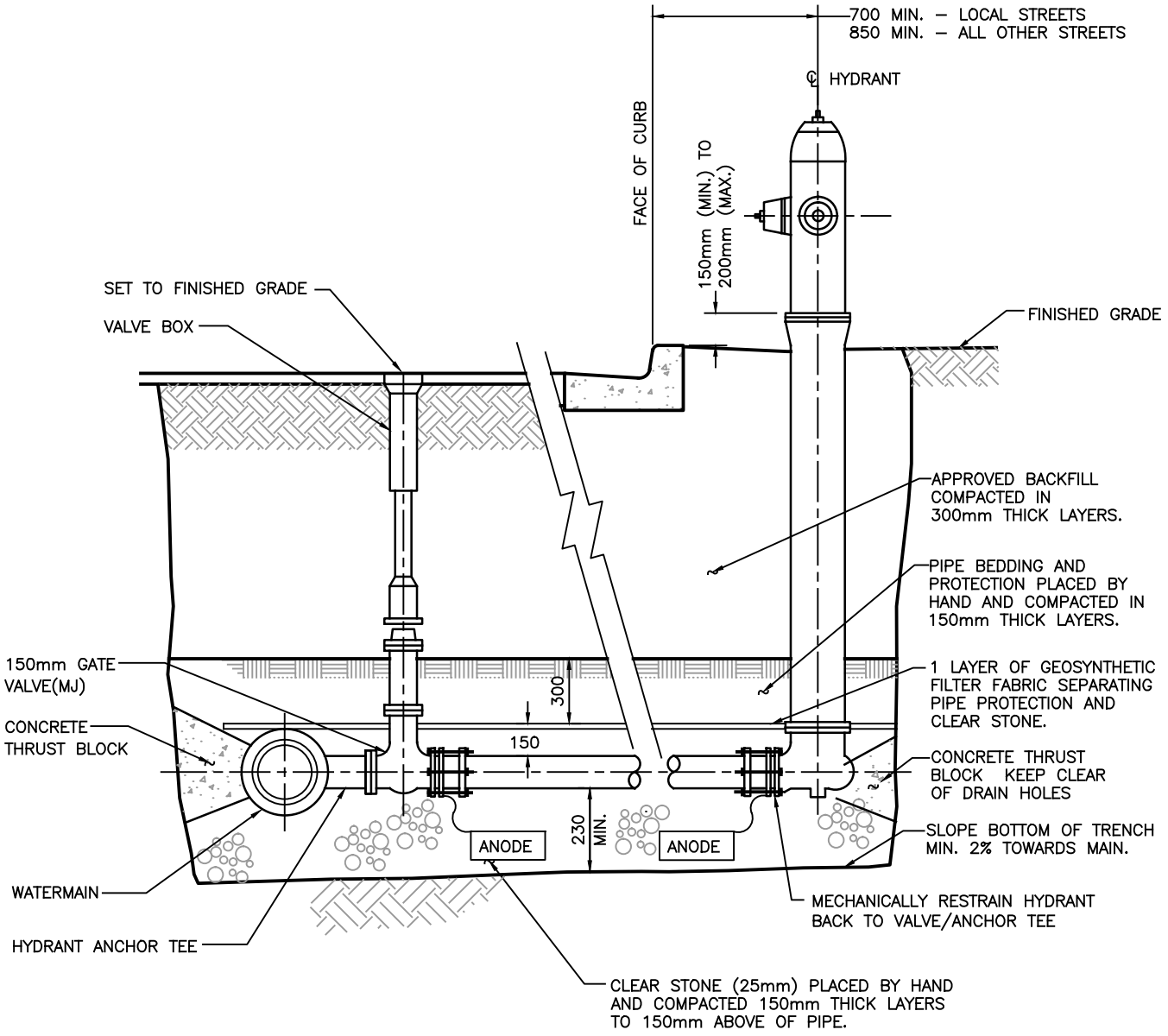
ENGINEERING DEPARTMENT

PROJECT

MECHANICAL JOINT RESTRAINT

DRAWN M.C.	SCALE (PLAN) NTS
CHECKED H.M.	SCALE (PROFILE) NTS
APPROVED	DATE 99/02/22
PROJECT No.	
DWG. No. HWSD – 1090	

HRWC–A4P.dwg DWG FILENAME: HWSD – 1090.DWG



NOTES:

1. ANODE TO BE ZINC 24–48 TYPE INSTALLED BY USE OF DOUBLE NUT PER DETAIL ON DWG. HWSD – 1040
2. USE ONLY HRWC APPROVED PRODUCTS FOR MECHANICAL RESTRAINT.

No.	DESCRIPTION	DATE	BY	CHKD
7	GENERAL REVISIONS FOR 2009	09|06|08	ML	
6	ADDED NOTE #2	07|04|27	BC	
5	MECH. RESTRAINT ADDED	06|03|22	BC	
4	TITLE BLOCK CLEANUP	03|04|08	BC	
3	HYDRANT FLANGE/FINISHED GRADE REVISED	02|03|13	PSP	
2	HYDRANT/CURB DIMENSION REVISED	00|03|20	MC	
1	ANODES RELOCATED	00|03|20	MC	

Halifax Water

ENGINEERING DEPARTMENT

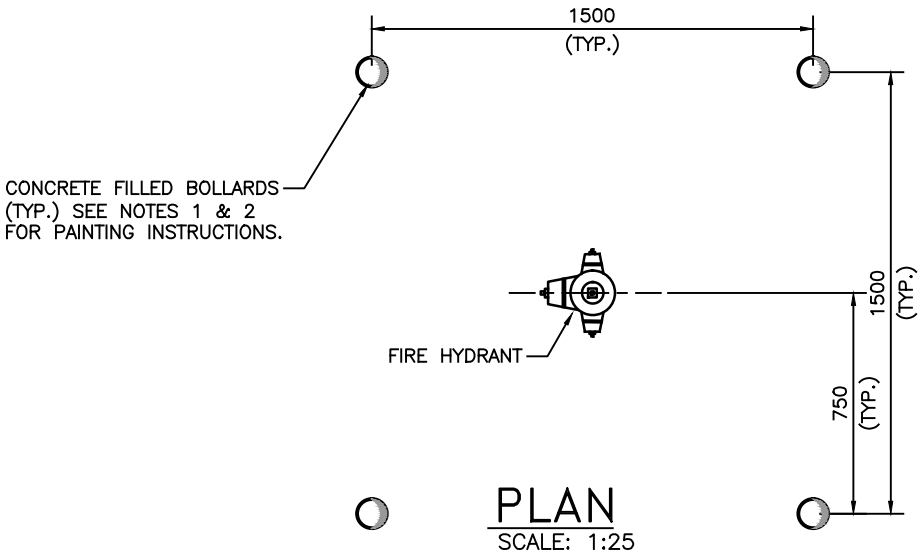
PROJECT

STANDARD HYDRANT INSTALLATION
URBAN STREET

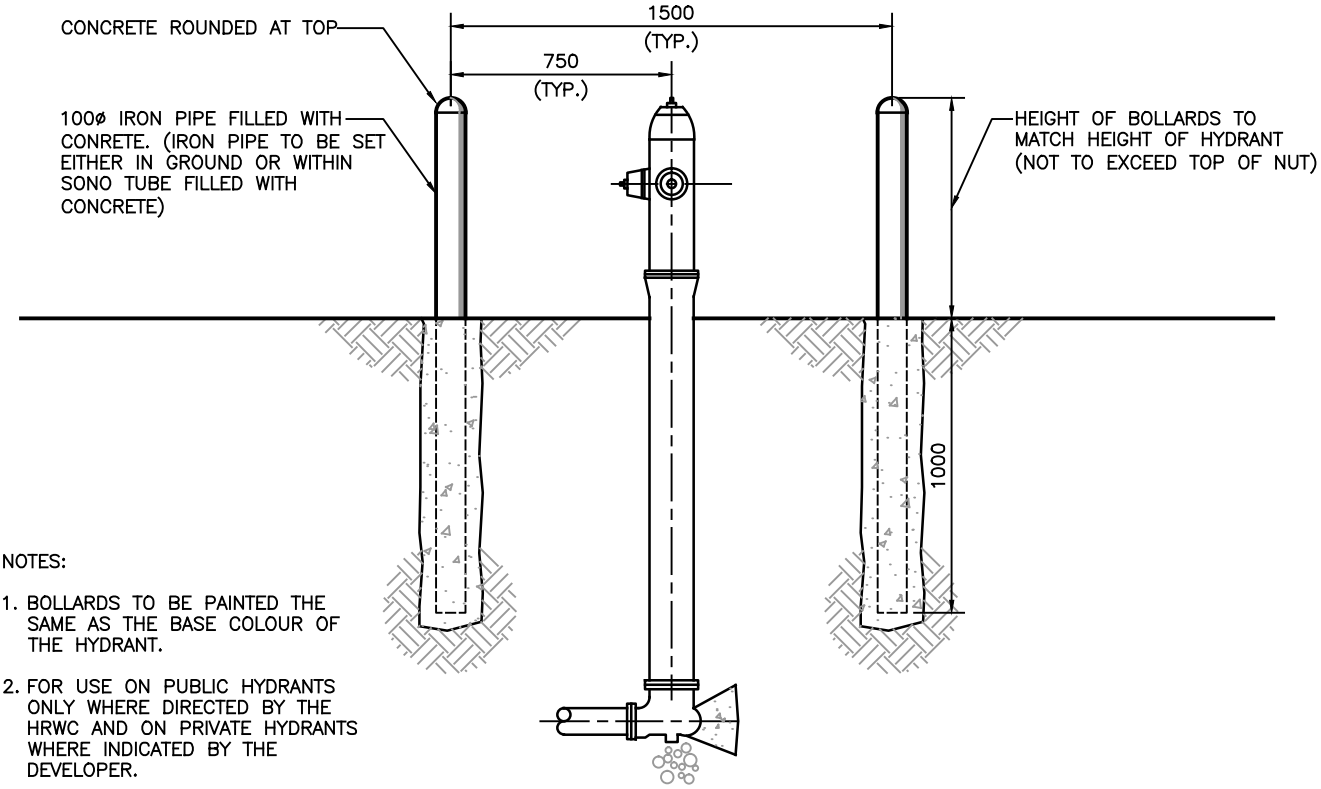
DRAWN BC	SCALE (PLAN) N.T.S.
CHECKED JB	SCALE (PROFILE)
APPROVED TG	DATE 02/03/26
PROJECT No.	
DWG. No. HWSD – 1110	

SCALE PLOTTED: 1=1 DATE PLOTTED: 4/18/2008 NOTES:

HRWC–A4P.dwg DWG FILENAME: HWSD – 1110.DWG



PLAN
SCALE: 1:25



NOTES:

1. BOLLARDS TO BE PAINTED THE SAME AS THE BASE COLOUR OF THE HYDRANT.
2. FOR USE ON PUBLIC HYDRANTS ONLY WHERE DIRECTED BY THE HRWC AND ON PRIVATE HYDRANTS WHERE INDICATED BY THE DEVELOPER.
3. THIS DETAIL IS FOR USE IN PARKING LOTS, EASEMENTS, AND BOULEVARDS. (NUMBER OF BOLLARDS TO BE DETERMINED BY LOCATION OF HYDRANT)

ELEVATION
SCALE: 1:25

No.	DESCRIPTION	DATE	BY	CHKD
3	GENERAL REVISIONS FOR 2009	09|06|09	ML	
2	TITLE BLOCK CLEANUP	03|04|08	BC	
1	NEW DETAIL FOR 2001 SPEC.	01|01|10	MC	SS

Halifax Water
ENGINEERING DEPARTMENT

PROJECT
BOLLARD INSTALLATION DETAIL

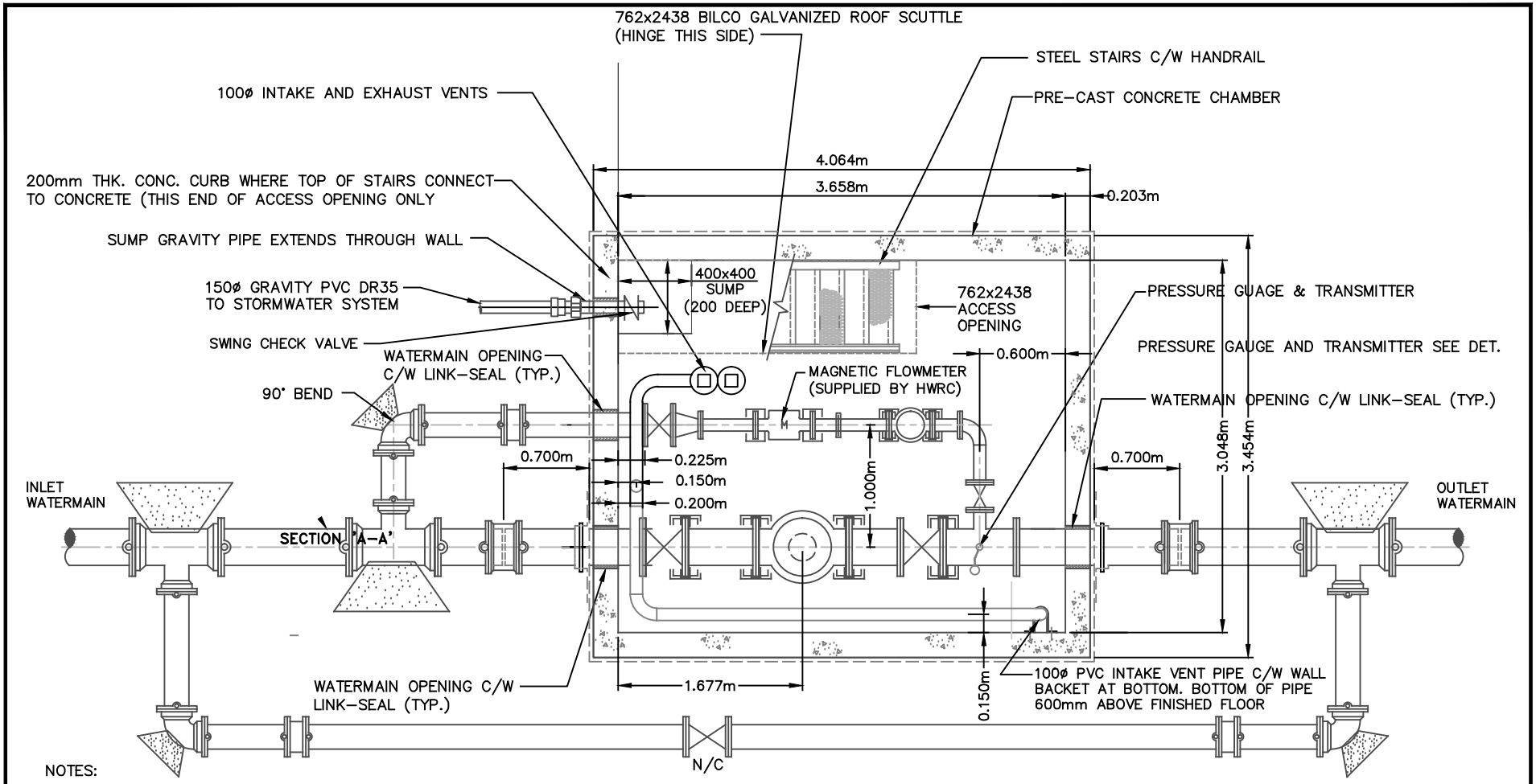
DRAWN	M.C.	SCALE (PLAN)	1:25
CHECKED	S.S.	SCALE (PROFILE)	1:25
APPROVED	R.C.	DATE	01/01/10
PROJECT No.			
DWG. No.	HWSD – 1130		

SCALE PLOTTED: 1=1 DATE PLOTTED: 4/29/2008 NOTES:

HRWC–A4P.dwg DWG FILENAME: HWSD – 1130.DWG

SCALE PLOTTED: 1:1 DATE PLOTTED: 12/14/2012 DWG FILENAME: HWSD – 1290.DWG NOTES:

HRWC–A4L.dwg



NOTES:

1. PRV BYPASS PIPING IS TYPICALLY INSTALLED IN STREET.
2. HALIFAX WATER WILL ADVISE ON PIPE / VALVE SIZING DEPENDING ON PROJECT REQUIREMENTS.
3. SEE DWG. HWSD – 1292 FOR SECTION VIEW.
4. ALL INTERNAL PIPING WITHIN THE CHAMBER SHALL BE STAINLESS STEEL.

CONCRETE PRV CHAMBER IS A 3048x3658x2134 UTILITY VAULT AS MANUFACTURED BY "SHAW PIPE"

No.	DESCRIPTION	DATE	BY	CHKD
2	GENERAL REVISIONS FOR 2016	16|03|01	SS	
1	REVISED VALVE, REDUCER SEQUENCE INSIDE CHAMBER	15|02|17	SS	.
0	REVISION DETAILS	YY|MM|DD	XX	.

Halifax Water

ENGINEERING DEPARTMENT

PROJECT

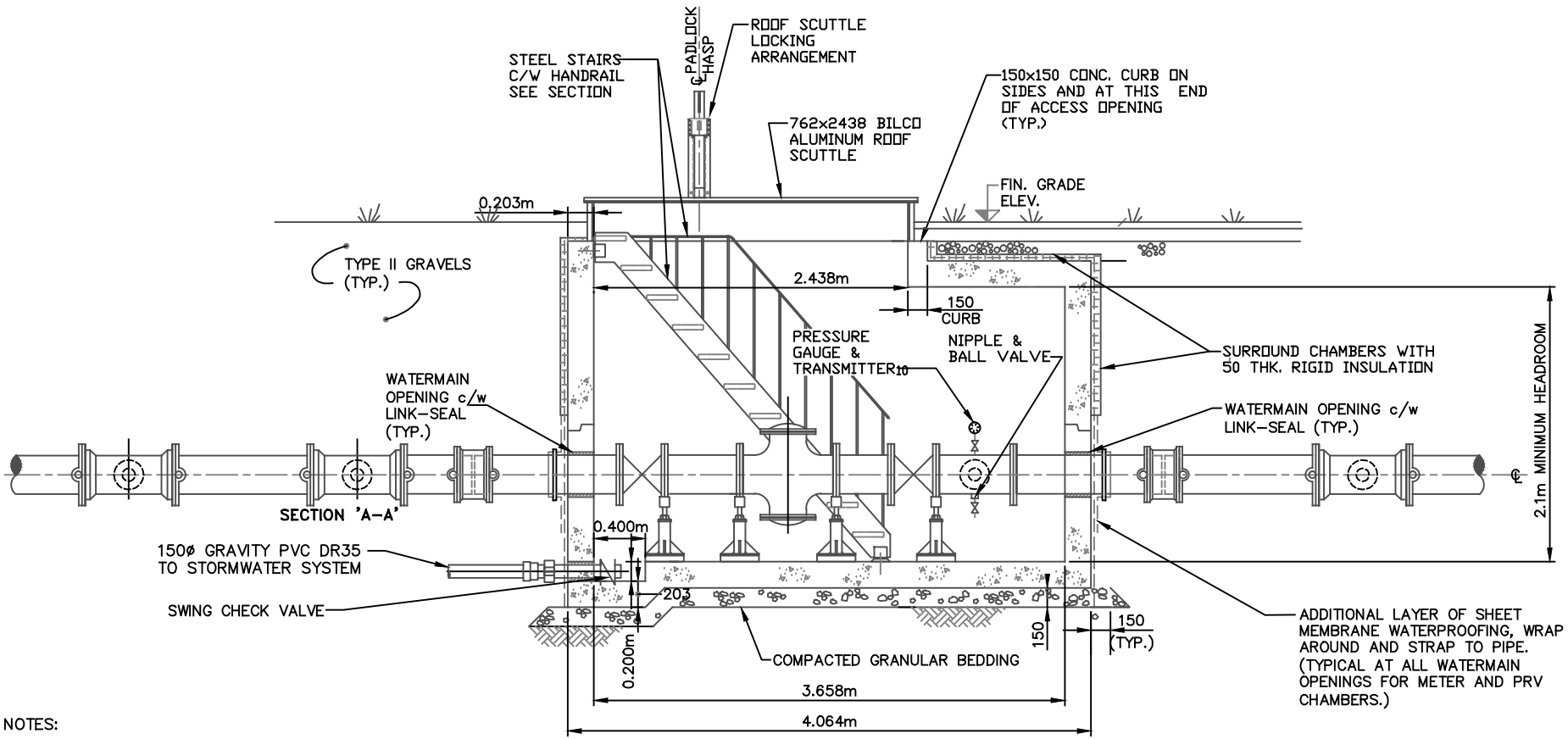
PRV CHAMBER

PLAN

DRAWN	JW	SCALE (PLAN)	N.T.S.
CHECKED	SS	SCALE (PROFILE)	N/A
APPROVED	SS	DATE	14/02/04
PROJECT No.			
DWG. No.	HWSD – 1290		

SCALE PLOTTED: 1:1 DATE PLOTTED: 12/14/2012 DWG FILENAME: HWSD – 1292.DWG NOTES:

HRWC–A4L.dwg



NOTES:

1. PRV BYPASS PIPING IS TYPICALLY INSTALLED IN STREET.
2. HALIFAX WATER WILL ADVISE ON PIPE / VALVE SIZING DEPENDING ON PROJECT REQUIREMENTS.
3. SEE DWG. HWSD – 1290 FOR PLAN VIEW.
4. 2% SLOPE ON FLOOR TO SUMP
5. ALL INTERNAL PIPING WITHIN THE CHAMBER SHALL BE STAINLESS STEEL.

SUMP AND ACCESS OPENING SHOWN IN FOREGROUND FOR CLARITY

CONCRETE PRV CHAMBER IS A 3048x3658x2134 UTILITY VAULT AS MANUFACTURED BY "SHAW PIPE"

No.	DESCRIPTION	DATE	BY	CHKD
2	GENERAL REVISIONS FOR 2016	16|03|01	SS	
1	ADDED NOTE 4, HEADROOM DIMENSION	15|03|02	SS	
0	NEW DRAWING	14|02|04	SS	.

Halifax Water

ENGINEERING DEPARTMENT

PROJECT

PRV CHAMBER

SECTION

DRAWN	JW	SCALE (PLAN)	N.T.S.
CHECKED	SS	SCALE (PROFILE)	N/A
APPROVED	SS	DATE	14/02/04
PROJECT No.			
DWG. No.	HWSD – 1292		

SCALE PLOTTED: 1=1 DATE PLOTTED: 4/17/2008 DWG FILENAME: HWSD – 1450.dwg

HRWC–A4L.dwg

MIN. ALLOWABLE DEFLECTION ANGLES FOR CONCRETE PIPE

PIPE SIZE (mm)	MINIMUM ALLOWABLE DEFLECTION ANGLE					
	1050 M.H.	1200 M.H.	1500 M.H.	1800 M.H.	2100 M.H.	2400 M.H.
200	90	90	90	90	90	90
250	90	90	90	90	90	90
300	90	90	90	90	90	90
375	100	90	90	90	90	90
450	115	100	90	90	90	90
525	135	115	90	90	90	90
600	n/a	130	105	90	90	90
750	n/a	n/a	n/a	n/a	95	90
900	n/a	n/a	n/a	n/a	115	100
1050	n/a	n/a	n/a	n/a	130	110

MIN. ALLOWABLE DEFLECTION ANGLES FOR P.V.C. PIPE

PIPE SIZE	1050 M.H.	1200 M.H.	1500 M.H.	1800 M.H.	2100 M.H.	2400 M.H.
(mm)	MIN. ANGLE	MIN. ANGLE	MIN. ANGLE	MIN. ANGLE	MIN. ANGLE	MIN. ANGLE
200	90	90	90	90	90	90
250	90	90	90	90	90	90
300	90	90	90	90	90	90
375	90	90	90	90	90	90
450	95	90	90	90	90	90
525	110	95	90	90	90	90
600	n/a	110	90	90	90	90
750	n/a	n/a	n/a	n/a	95	90
900	n/a	n/a	n/a	n/a	110	90
1050	n/a	n/a	n/a	n/a	105	95

NOTES:

1. PRECAST SECTIONS MUST CONFORM TO SECTION 33 39 00 OF THE STANDARD SPECIFICATIONS FOR MUNICIPAL SERVICES.
2. CHANNELS IN DEAD END MANHOLES TO FINISH 225mm FROM UPSTREAM WALL.
3. LIFT HOLES IN PRECAST SECTIONS TO BE GROUTED WITH CEMENT MORTAR PRIOR TO PLACING WATERPROOF MEMBRANE AND GRANULAR BACKFILL.
4. TABLES ARE ONLY PROVIDED AS A GUIDE AND NOT INTENDED FOR DESIGN PURPOSES. ALL SYSTEMS MUST BE APPROVED BY HRWC STAFF.
5. IN ADDITION TO O–RING GASKETS, JOINTS IN PRECAST SECTIONS BELOW THE CONCRETE MANHOLE COVER SHALL BE SEALED WITH 25mm BUTYL RESIN CORD. THE CORD SHALL BE PLACED ON THE UPPER INSIDE LEDGE OF THE JOINT PRIOR TO PLACEMENT OF THE SUBSEQUENT SECTION. ALL WASTEWATER MANHOLES TO BE WRAPPED IN WATERPROOFING MEMBRANE.
6. PRECAST ECCENTRIC CONE SECTIONS NOT PERMITTED.
7. BACKFILL AROUND MANHOLES SHALL BE TYPE 2 GRAVEL EXTENDING A MIN. OF 300mm OUTWARD FROM MANHOLE AND VERTICALLY FROM BEDDING MATERIAL TO UNDERSIDE OF ROADBED GRAVELS.
8. "A–LOK" OR APPROVED "O" RING GASKETS SHALL BE THOROUGHLY CLEANED, THEN COVERED GENEROUSLY WITH LUBRICANT SPECIFIED BY THE PIPE MANUFACTURER.

NOTES:

FINISHED SURFACE TO BE LEVEL WITH TOP OF FRAME AND COVER

FINAL GRADE ADJUSTMENT SHALL BE COMPLETED UTILIZING ONE OF THE FOLLOWING TWO OPTIONS:

- AIR ENTRAINED 35 MPa CONCRETE OR AN APPROVED NON–SHRINK GROUT. IF FINAL GRADE ADJUSTMENT EXCEEDS 150mmm IN HEIGHT THAN CIRCULAR 15M REBAR MUST BE INCORPORATED IN THE RAISED SECTION.
- PRE–CAST CONCRETE GRADE RINGS (MAX. 2 RINGS), WITH A MINIMUM GRADE RING SIZE OF 150mm.

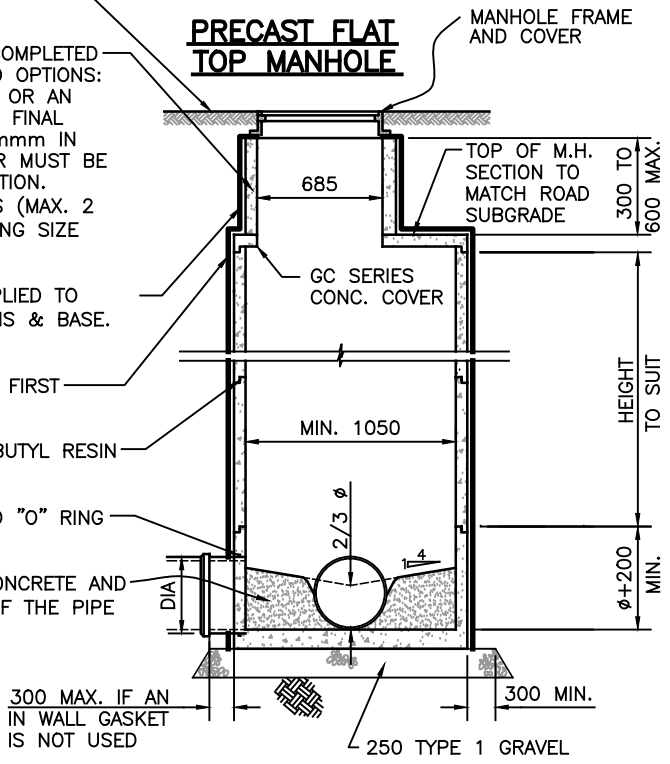
WATERPROOFING MEMBRANE TO BE APPLIED TO GRADE RINGS/SHAFT, PRECAST SECTIONS & BASE. (BAKOR BLUESKIN)

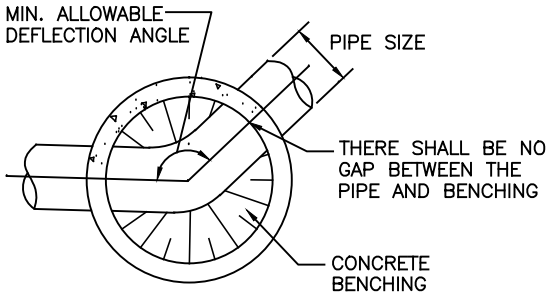
FULL BLUESKIN COVERING TO FIRST JOINT OF MANHOLE.

O–RING GASKET & 25 mm BUTYL RESIN CORD (SEE NOTE 6)

A–LOK GASKET OR APPROVED "O" RING GASKETS (TYPICAL)

BENCHING TO BE 30 MPa CONCRETE AND START AT 2/3 THE HEIGHT OF THE PIPE AND SLOPE UPWARDS AT 4:1





No.	DESCRIPTION	DATE	BY	CHKD
5	REVISED SECTIONS FOR BLUESKIN WATERPROOFING.	15|02|27	SS	
4	REVISED NOTE FOR GRADE RINGS AND NO GAP BETWEEN PIPE & BENCHING	14|02|13	SS	
3	GENERAL REVISIONS FOR 2010	10|05|11	ML	
2	GENERAL REVISIONS FOR 2009	09|06|09	ML	
1	REVISION DETAILS	YY|MM|DD	XX	

Halifax Water

ENGINEERING DEPARTMENT

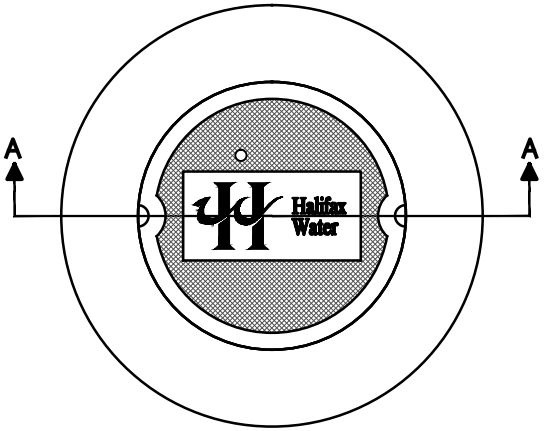
PROJECT

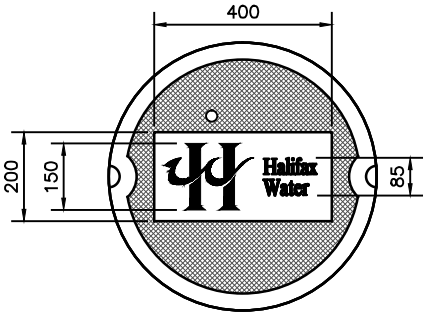
PRECAST MANHOLE

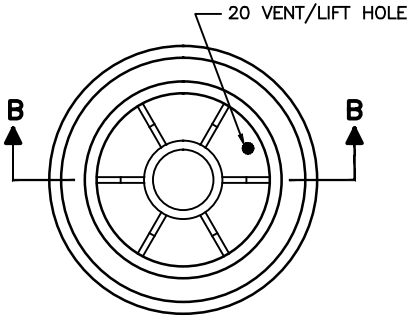
DRAWN		SCALE (PLAN)	NTS
CHECKED		SCALE (PROFILE)	NTS
APPROVED		DATE	04/17/08
PROJECT No.			
DWG. No.	HWSD – 1450		

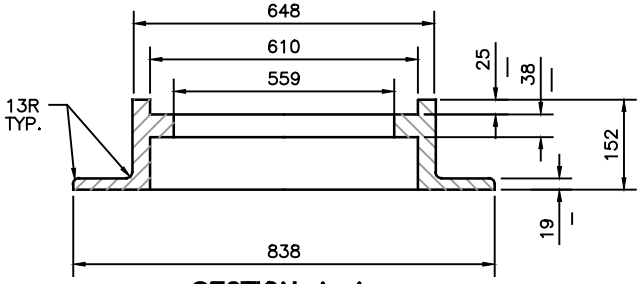
SCALE PLOTTED: 1=1 DATE PLOTTED: 4/17/2008 DWG FILENAME: HWSD – 1460.dwg NOTES:

HRWC–A4L.dwg



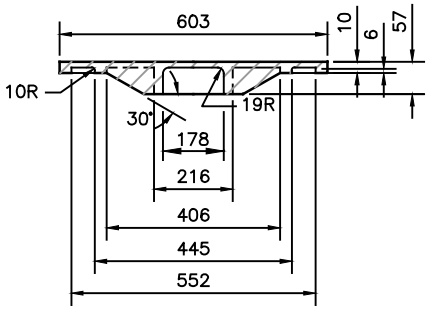






SECTION A–A

VIEW SHOWING PATTERN ON COVER



SECTION B–B

NOTES:

1. ALL MANHOLES ARE TO HAVE AN HRWC LOGO.
2. STANDARD MANHOLE FRAME AND COVER TO BE IMP R–10 OR EQUIVALENT.
3. MATERIAL – GRAY CAST IRON, A.S.T.M. A48/ A48M (2008).
   LOAD CAPACITY – 7250Kg.
   FRAME WEIGHT – 77.1 Kg.
   COVER WEIGHT – 68.0 Kg.
4. ALL MANHOLES NOT LOCATED IN THE STREET ARE TO HAVE AN *IMP R12 FRAME* AND COVER (WITH LOCKING SYSTEM) OR EQUIVALANT.
5. MANHOLES LOCATED ON PRIVATE PROPERTY ARE TO HAVE A PLAIN COVER WITH NO HALIFAX WATER LOGO.
6. IN PARK AREAS AND AREAS SUBJECT TO FLOODING, THE FRAME AND COVER SHALL HAVE THE SAME GENERAL DIMENSIONS OF AN IMP R10, A WATERTIGHT GASKET BETWEEN THE FRAME AND COVER (INTEGRAL WITH THE COVER), AND THE VENT HOLE IS TO BE PLUGGED WITH A REMOVABLE, WATERTIGHT PLUG.
7. ADJUSTABLE MANHOLE FRAMES AND R10 COVERS AS PER HRWC SPECIFICATIONS SHALL BE USED IN ASPHALT SURFACES.

No.	DESCRIPTION	DATE	BY	CHKD
5	ADDED NOTE 5 (NO HW LOGO ON PRIVATE PROPERTY)	12|12|11	JW	
4	REVISED HALIFAX WATER LOGO ON COVER	12|04|02	JW	
3	GENERAL REVISIONS FOR 2010	10|05|13	ML	
2	GENERAL REVISIONS FOR 2009	09|06|09	ML	
1	REVISION DETAILS	YY|MM|DD	XX	

Halifax Water

ENGINEERING DEPARTMENT

PROJECT

MANHOLE FRAME AND COVER

DRAWN	SCALE (PLAN) NTS
CHECKED	SCALE (PROFILE) NTS
APPROVED	DATE 4/17/2008
PROJECT No.	
DWG. No.	HWSD – 1460

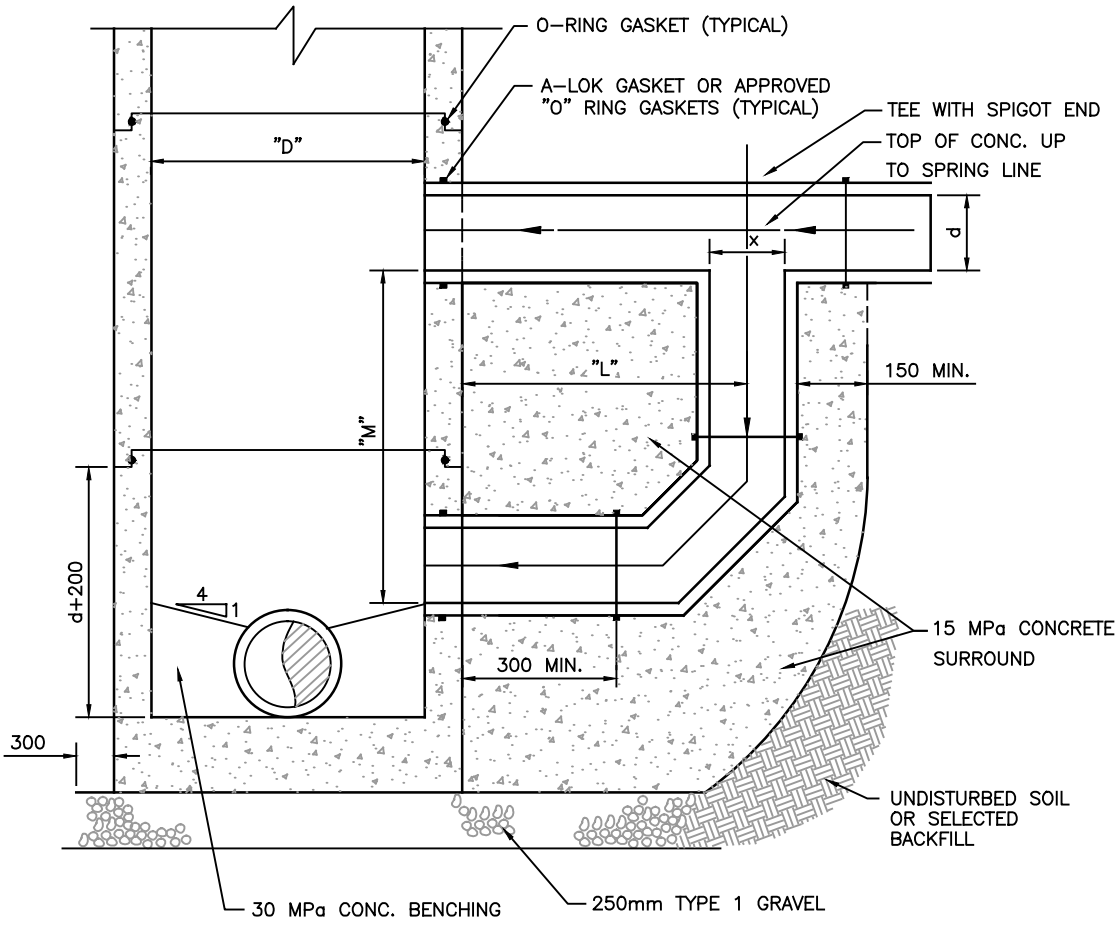


TABLE OF MINIMUM DIMENSIONS				
d	D	x	M	L
250	1050	200	900	700
300	1050	250	900	700
375	1050	300	900	700
450	1050	375	900	700
525	1200	450	975	750
600	1500	450	1075	800
750	1500	525	1275	900
900	1500	600	1500	1000
1050	1800	750	1650	1000
1200	2100	900	1650	1100
1500	*	1050	1800	1150

"D" IS BASED ON A MINIMUM ANGLE BETWEEN PIPES OF 90°.

* FOR PIPES GREATER THAN 1200 mm "D" IS LEFT TO THE DISCRETION OF THE ENGINEER.

NOTES:

1. PRECAST SECTIONS MUST CONFORM TO SECTION 33 39 00 OF THE STANDARD SPECS. FOR MUNICIPAL SERVICES.
2. EXTERNAL DROP MANHOLES SHALL BE USED WHEN THE INLET PIPE EXCEEDS 375 mm DIAMETER.
3. DROP MANHOLES MUST BE USED WHEN THE INVERT OF THE INLET PIPE EXCEEDS THE INVERT OF THE OUTLET PIPE BY MORE THAN 1000 mm.
4. 15 MPa CONCRETE SURROUND MUST BE PLACED BETWEEN DROP PIPE AND MANHOLE AND OTHERWISE COVER DROP PIPE 150 mm IN ALL DIRECTIONS.
5. BACKFILL AROUND MANHOLES SHALL BE TYPE 2 GRAVEL EXTENDING A MIN. OF 300 mm OUTWARD FROM MANHOLE AND VERTICALLY FROM BEDDING MATERIAL TO UNDERSIDE OF ROADBED GRAVELS.

No.	DESCRIPTION	DATE	BY	CHKD
2	GENERAL REVISIONS FOR 2009	09|06|09	ML	
1	REVISION DETAILS	YY|MM|DD	XX	

Halifax Water

ENGINEERING DEPARTMENT

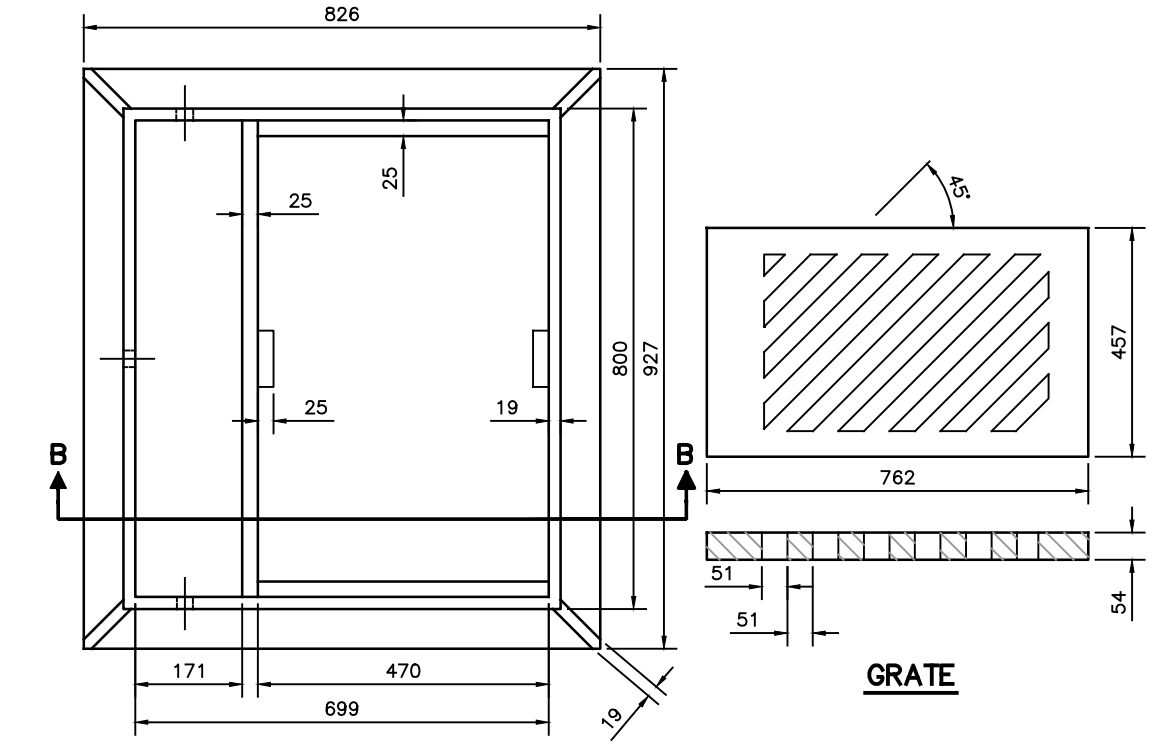
PROJECT

PRECAST EXTERNAL DROP MANHOLE SECTION

DRAWN	SCALE (PLAN) NTS
CHECKED	SCALE (PROFILE) NTS
APPROVED	DATE 4/17/2008
PROJECT No.	
DWG. No.	HWSD – 1480

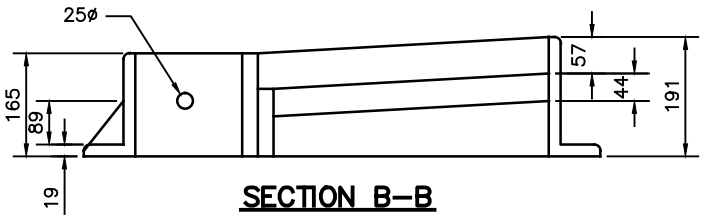
SCALE PLOTTED: 1=1 DATE PLOTTED: 4/17/2008 NOTES:

HRWC–A4P.dwg DWG FILENAME: HWSD – 1480.dwg

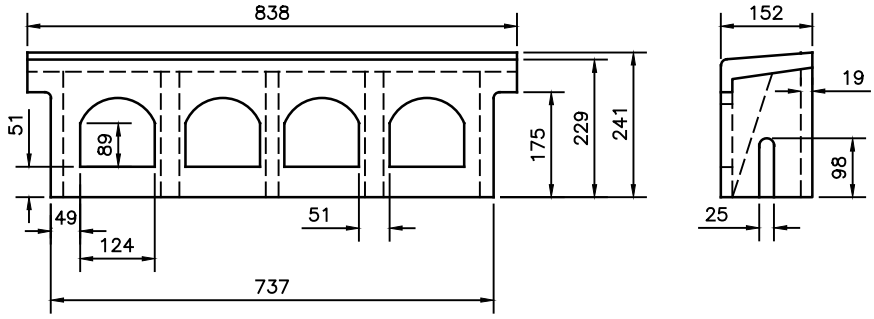


FRAME

GRATE



SECTION B–B



CURB

1. STANDARD CATCHBASIN FRAME AND GRATE SHALL BE IMP S361 OR EQUIVALENT.

2. MATERIAL GREY CAST IRON, A.S.T.M. A48/A48M (2008)
   GRATE WEIGHT 86 kg
   FRAME WEIGHT 143 kg
   CURB WEIGHT 54 kg
   LOAD CAPACITY 7260 kg
   GRATE WATER FLOW 1342 cm^2 OPENING
   CURB WATER FLOW 629 cm^2 OPENING

No.	DESCRIPTION	DATE	BY	CHKD
3	REVISED TITLE BLOCK	12|12|14	JW	SS
2	GENERAL REVISIONS FOR 2009	09|06|09	ML	
1	REVISION DETAILS	YY|MM|DD	XX	

Halifax Water

ENGINEERING DEPARTMENT

PROJECT

CATCHBASIN
FRAME AND GRATE
FOR CURB AND GUTTER
INSTALLATIONS

DRAWN	SCALE (PLAN) NTS
CHECKED	SCALE (PROFILE) NTS
APPROVED	DATE 4/17/2008
PROJECT No.	
DWG. No.	HWSD – 1580

SCALE PLOTTED: 1=1 DATE PLOTTED: 4/17/2008 NOTES:

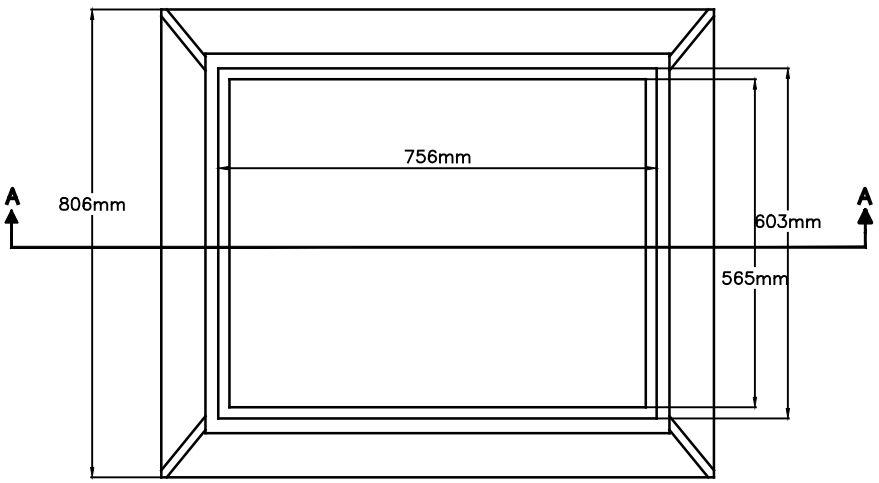
HRWC–A4P.dwg DWG FILENAME: HWSD – 1580.dwg

SCALE PLOTTED: 1:1 DATE PLOTTED: 12/14/2012 DWG FILENAME: HWSD – 1590.DWG

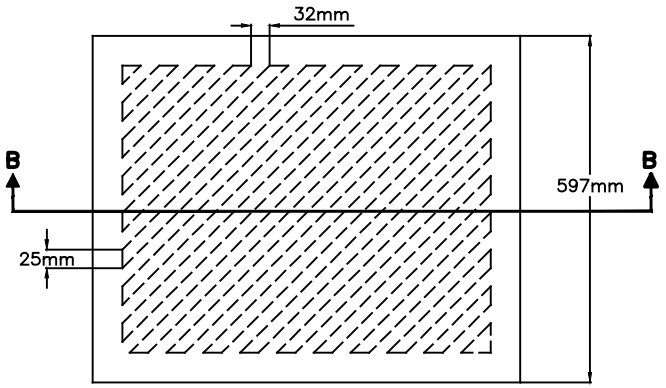
NOTES:

HRWC–A4L.dwg

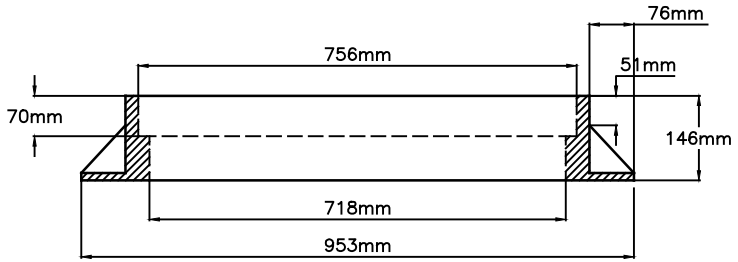
FRAME



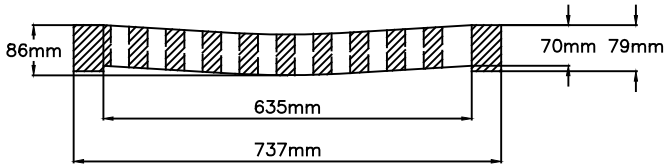
GRATE



SECTION 'A–A'



SECTION 'B–B'



NOTE:

MATERIAL – GRAY CAST IRON, A.S.T.M. A48–74, CLASS 30.
FRAME WEIGHT – 140.2 KG
GRATE WEIGHT – 126.6 KG
LOAD CAPACITY – 7,257 KG
GRATE OVERFLOW – APPROX. 1845 CM² OPENING

NOTE:

TOP OF CATCHBASIN COVER TO BE DEPRESSED 50 mm (MIN.) FROM SURROUNDING FINISHED GRADE.

No.	DESCRIPTION	DATE	BY	CHKD
1	NEW DRAWING	12|12|14	JW	SS

Halifax Water

ENGINEERING DEPARTMENT

PROJECT

S – 441

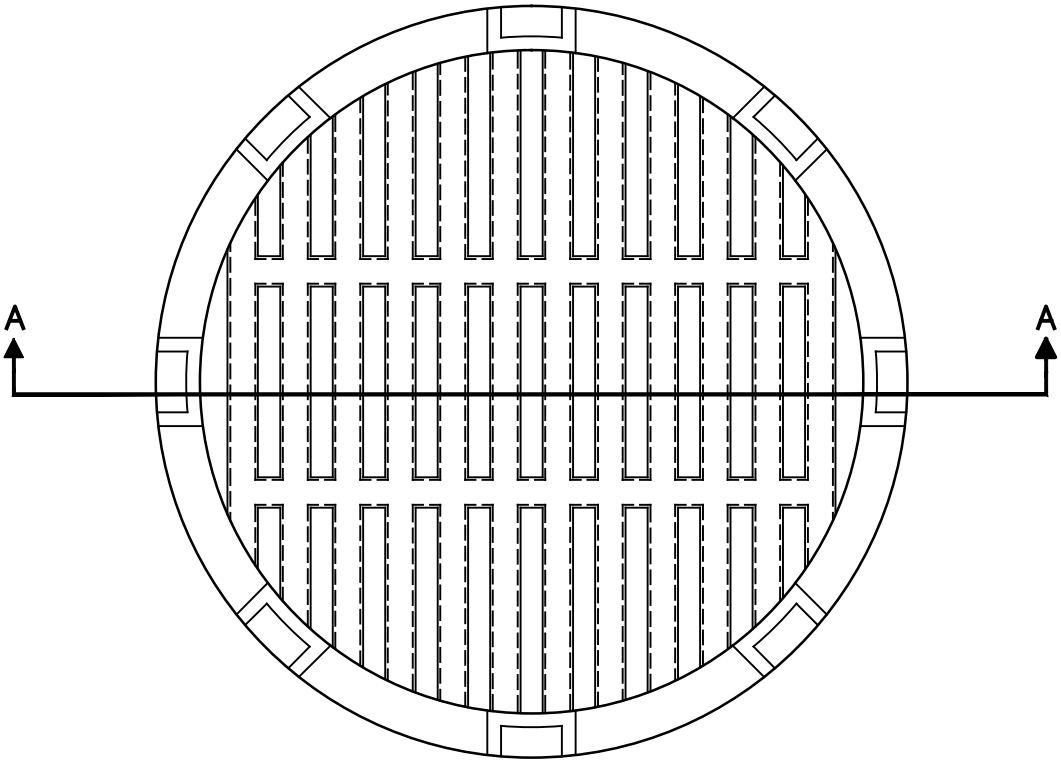
CATCHBASIN FRAME & GRATE

DRAWN	JW	SCALE (PLAN)	N.T.S.
CHECKED	SS	SCALE (PROFILE)	N/A
APPROVED	SS	DATE	12/12/17

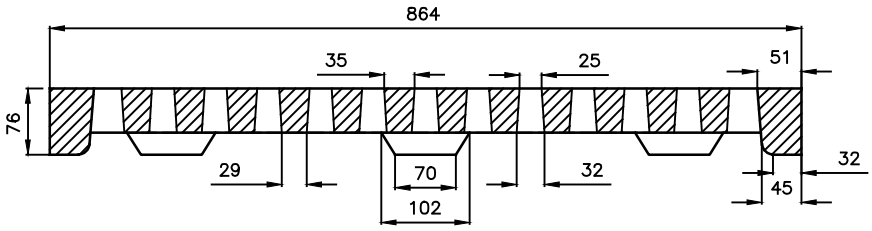
PROJECT No.

DWG. No. HWSD – 1590

GRATE



SECTION 'A–A'



NOTE:

MATERIAL – GRAY CAST IRON, A.S.T.M. A 48–74, CLASS 30.
GRATE WEIGHT – 138.8 KG
LOAD CAPACITY – 7,257 KG.

No.	DESCRIPTION	DATE	BY	CHKD
2	NEW DRAWING	12|12|17	JW	SS
1	REVISION DETAILS	YY|MM|DD	XX	

Halifax Water

ENGINEERING DEPARTMENT

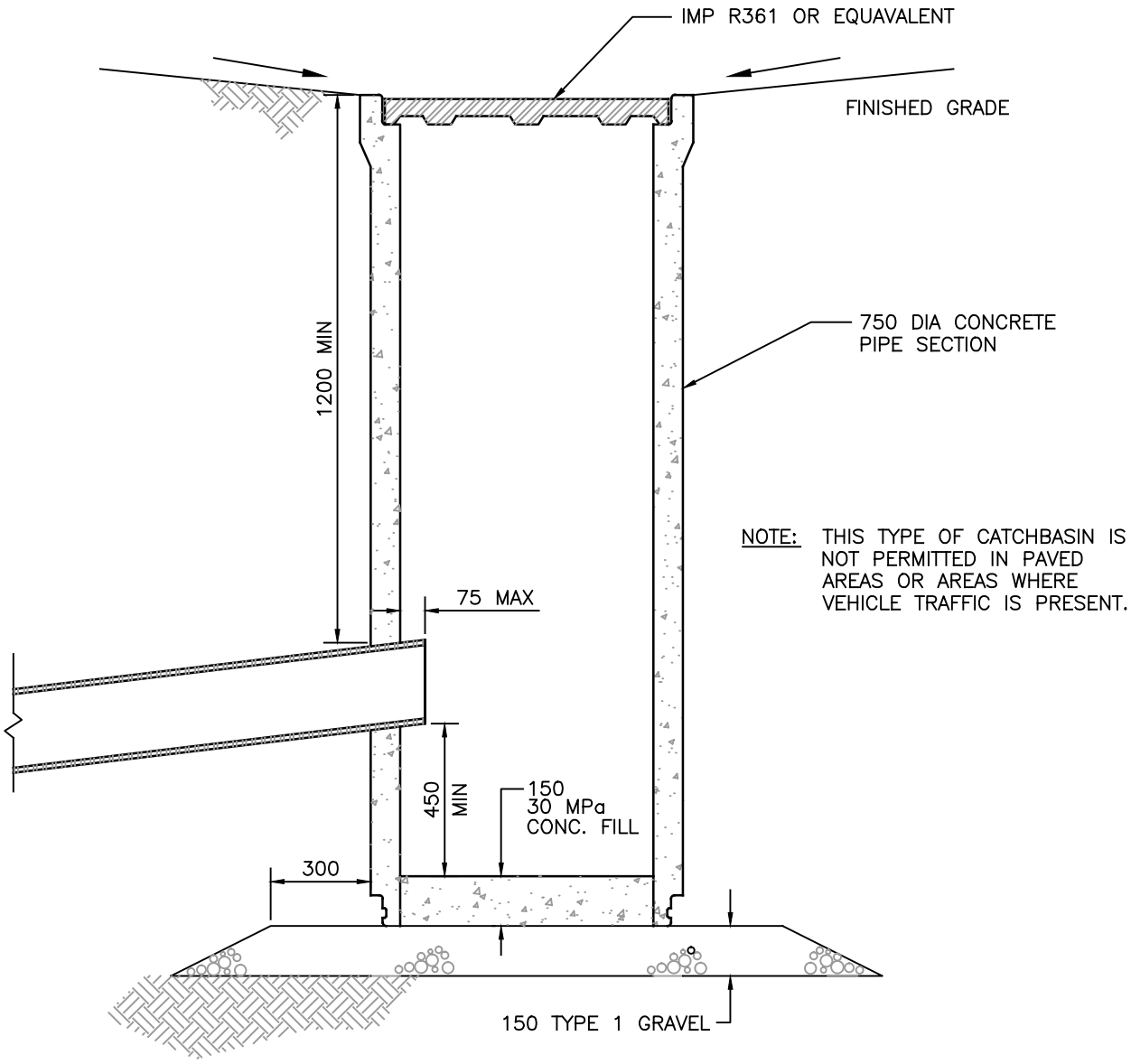
PROJECT
R – 361

GRATING
(FOR BELL END OF 750Ø PIPE)

DRAWN	JW	SCALE (PLAN)	NTS
CHECKED	SS	SCALE (PROFILE)	NTS
APPROVED	SS	DATE	12/17/2012
PROJECT No.			
DWG. No.	HWSD – 1594		

SCALE PLOTTED: 1=1 DATE PLOTTED: 4/17/2008 NOTES:

HRWC–A4P.dwg DWG FILENAME: HWSD – 1594.dwg



NOTE: THIS TYPE OF CATCHBASIN IS NOT PERMITTED IN PAVED AREAS OR AREAS WHERE VEHICLE TRAFFIC IS PRESENT.

No.	DESCRIPTION	DATE	BY	CHKD
2	GENERAL REVISIONS FOR 2009	09|06|09	ML	
1	REVISION DETAILS	YY|MM|DD	XX	

Halifax Water

ENGINEERING DEPARTMENT

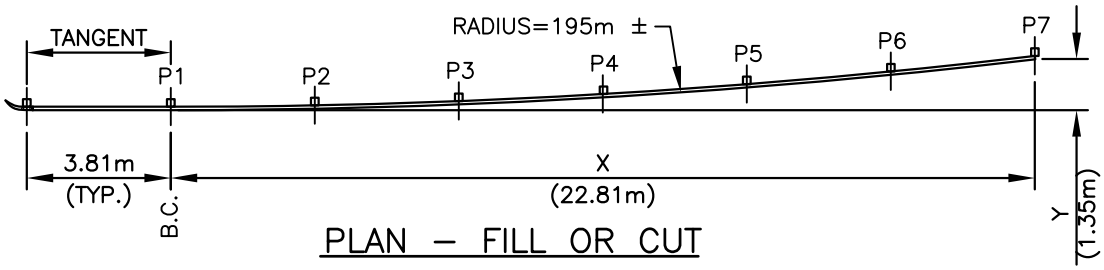
PROJECT

750 PRECAST
OFF STREET CATCHBASIN

DRAWN	SCALE (PLAN) NTS
CHECKED	SCALE (PROFILE) NTS
APPROVED	DATE 4/15/2008
PROJECT No.	
DWG. No.	HWSD – 1600

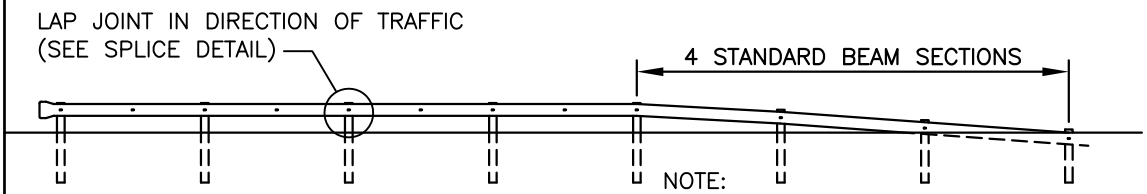
SCALE PLOTTED: 1=1 DATE PLOTTED: 4/15/2008 NOTES:

HRWC–A4P.dwg DWG FILENAME: HWSD – 1600.dwg



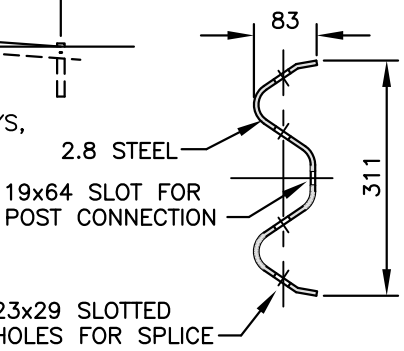
PLAN – FILL OR CUT

POST OFFSET TABLE		
POST #	X	Y
P1–P2	3.81	0.04
P1–P3	7.62	0.15
P1–P4	11.42	0.34
P1–P5	15.22	0.60
P1–P6	19.02	0.94
P1–P7	22.81	1.35

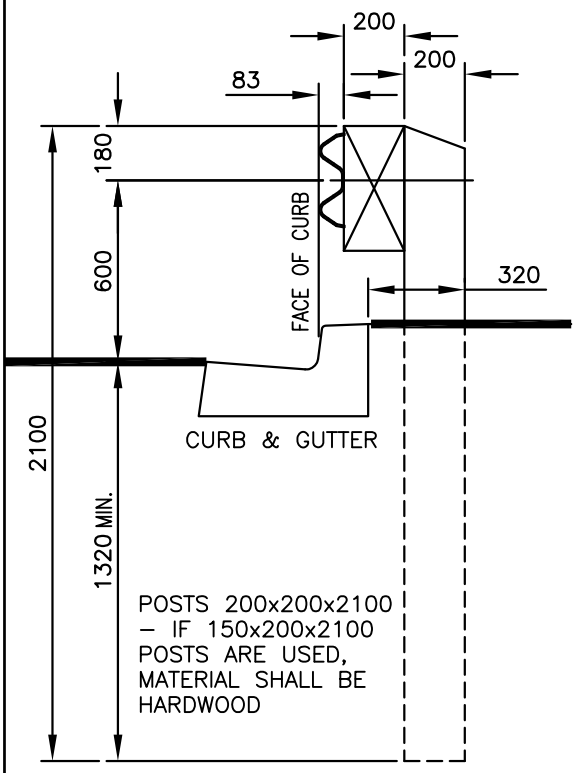


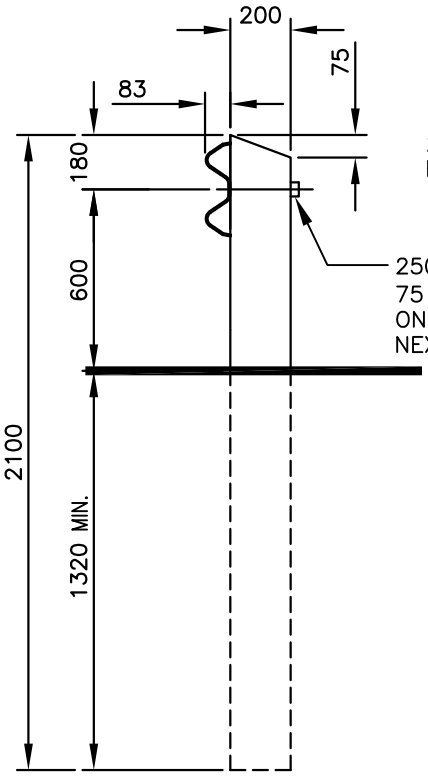
ELEVATION

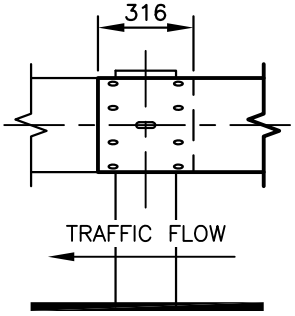
NOTE:
FOR 2 LANE/2 WAY ROADWAYS, BURRY BOTH ENDS.



BEAM SECTION (TYP.)

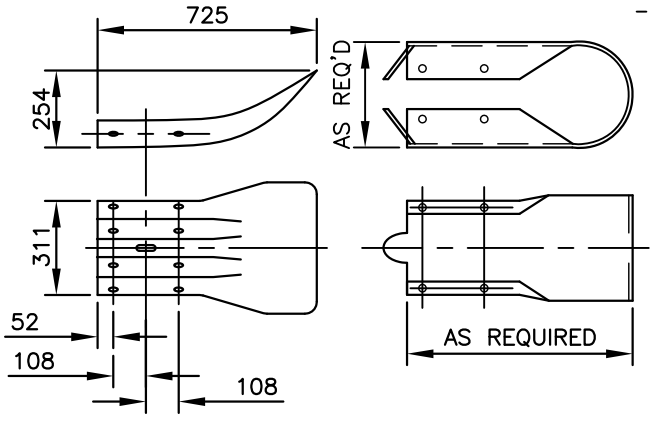






SPLICE DETAIL

NOTES:
- TWO 50x75 DELINEATORS ARE REQUIRED FOR EACH POST.
- A WHITE DELINEATOR SHALL BE PLACED ON THE SIDE OF THE POST FACING TRAFFIC.
- A YELLOW DELINEATOR SHALL BE PLACED ON THE OPPOSITE SIDE.
- THE DELINEATOR SHALL BE LOCATED AT THE EDGE OF THE POST NEAREST THE ROAD, VERTICAL, WITH THE TOP 75 BELOW THE LOWEST POINT OF THE GUARDRAIL PANEL.
- THE DELINEATOR SHALL BE ATTACHED WITH GALVANIZED NAILS.



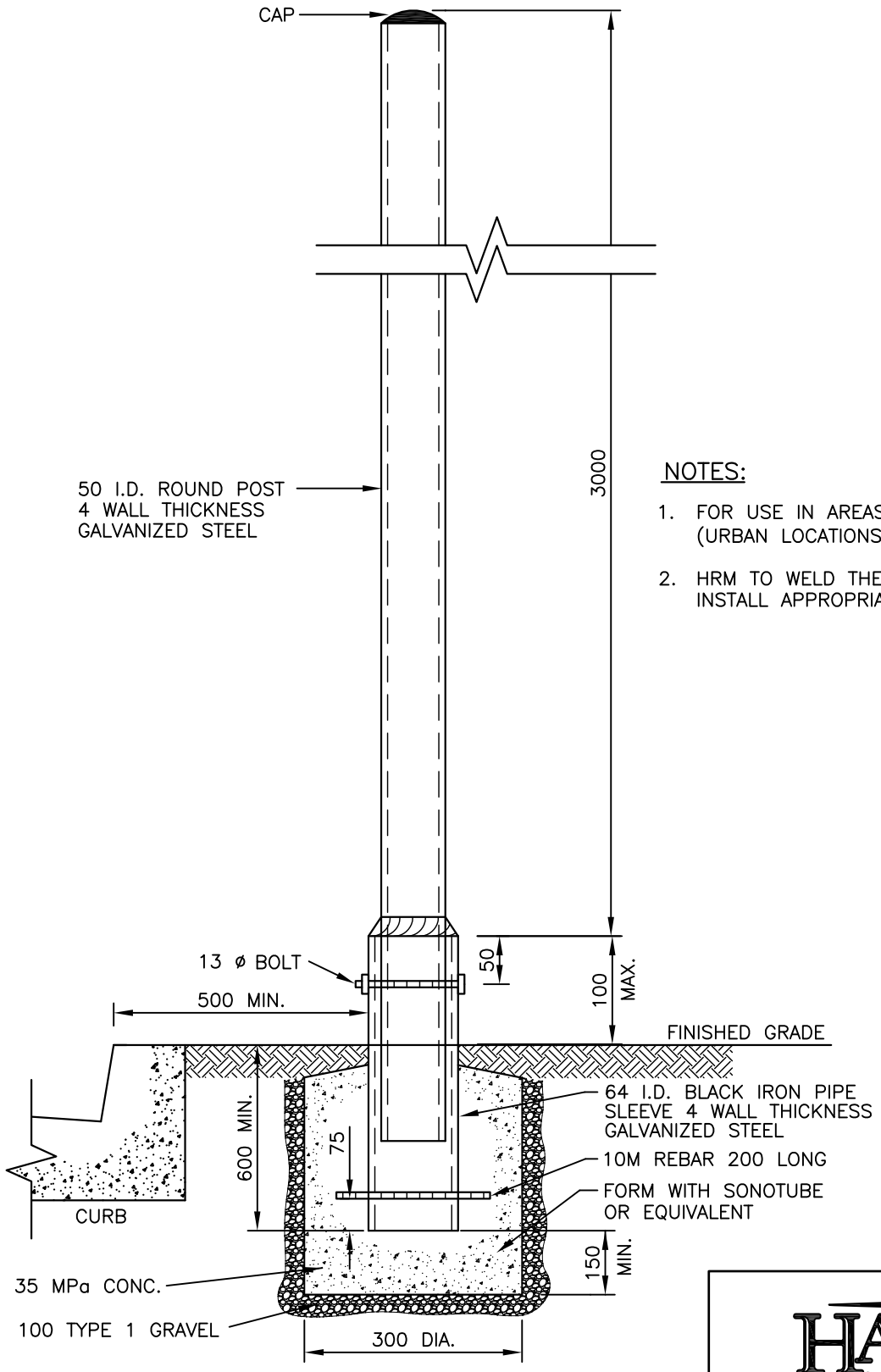
TERMINAL END BUFFER END

HALIFAX
REGIONAL MUNICIPALITY

STANDARD DETAIL

GUIDE RAIL INSTALLATION

DATE: 2013	REFERENCE	APPROVED
SCALE: NTS		FIG No.: HRM 36



NOTES:

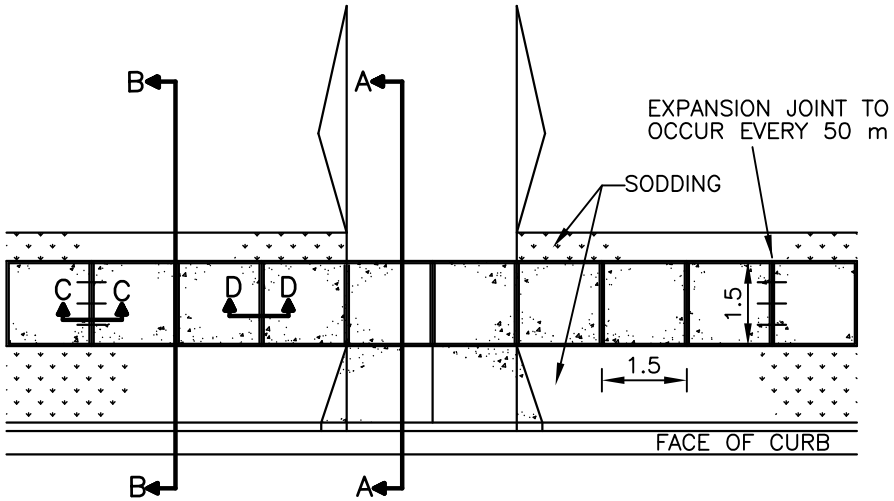
1. FOR USE IN AREAS WITH CURB AND GUTTER (URBAN LOCATIONS)
2. HRM TO WELD THE POST AND SUPPLY AND INSTALL APPROPRIATE SIGNS.

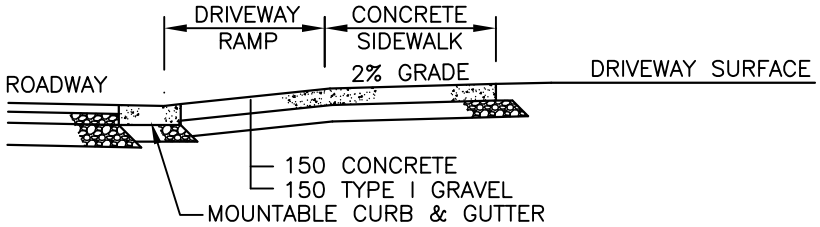
HALIFAX
REGIONAL MUNICIPALITY

STANDARD DETAIL

URBAN TRAFFIC SIGN POST

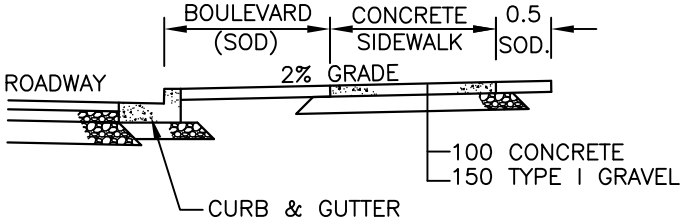
DATE: 2013	REFERENCE	APPROVED
SCALE: NTS		FIG No.: HRM 38





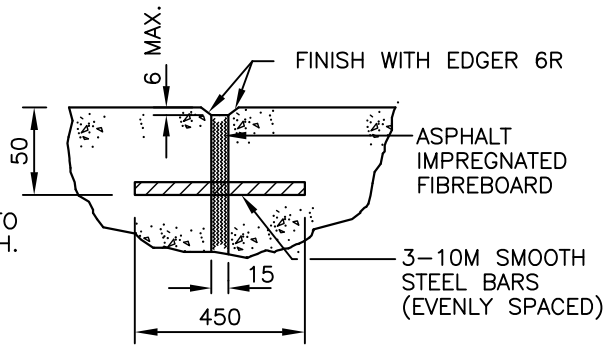
SECTION A–A

(DRIVEWAY CROSS–SECTION)



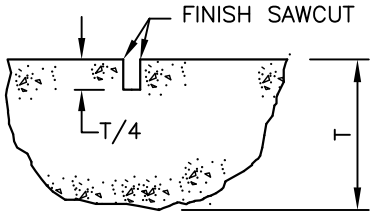
SECTION B–B

(SIDEWALK CROSS–SECTION)



SECTION C–C

(EXPANSION JOINT)



SECTION D–D

(CONTROL JOINT)

NOTES:

1. CONCRETE SIDEWALK AT COMMERCIAL DRIVEWAY TO BE 150 THICK WITH 150x150 WELDED WIRE MESH.
2. CRUSHED ROCK BASE TO EXTEND 150 BEYOND EDGE OF SIDEWALK STRUCTURE.
3. CONTROL JOINTS ARE TO BE SAW CUT.
4. SIDEWALK ABUTTING HIGH DENSITY AREAS SHALL SHALL HAVE FULL WIDTH (3 m) SIDEWALKS.
5. SIDEWALKS ABUTTING COMMERCIAL AREAS ARE TO BE FULL WIDTH (3 m) AND 150 mm THICKNESS.
6. EXPANSION JOINT BARS ARE TO BE GREASED ON ONE SIDE OF THE JOINT.
7. DURING CONSECUTIVE POURS, THE END OF EACH POUR IS TO OCCUR AT AN EXPANSION JOINT. WHERE THIS IS NOT FEASIBLE, AN ADDITIONAL EXPANSION JOINT IS TO BE INSTALLED.
8. INSTALL A 9 m LONG CONCRETE LANDING PAD AT ALL BUS STOP LOCATIONS. INCREASE THIS TO 14.5 m FOR ARTICULATED BUS ROUTES.
9. WHEN BOULEVARD IS LESS THAN 1.5 m OR WHEN THE SIDEWALK ABUTS THE CURB & GUTTER, SLOPE SIDEWALK AND DRIVEWAY RAMP IN A STRAIGHT LINE GRADE FROM BACK OF SIDEWALK TO LIP ON CURB OPENING.

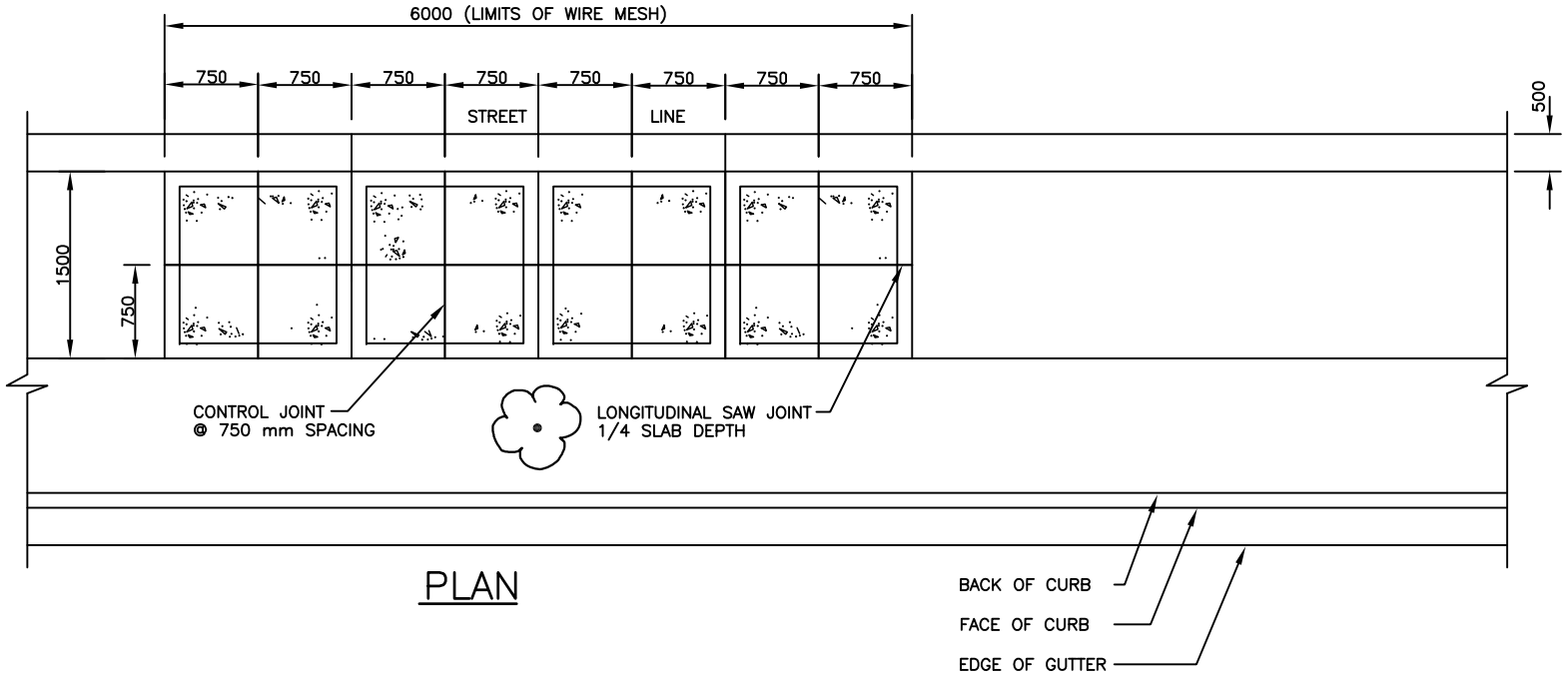
HALIFAX

REGIONAL MUNICIPALITY

STANDARD DETAIL

URBAN SIDEWALK

DATE: 2013	REFERENCE	APPROVED
SCALE: NTS		FIG. NO. HRM 44



PLAN

NOTES:

1. 150 X 150 – M.W. 18.7 X M.W. 18.7 (WELDED WIRE FABRIC) PLACED AT 1/2 THE SLAB DEPTH.
2. NO TREE ROOTS TO BE REMOVED WITHOUT HRM APPROVAL

HALIFAX
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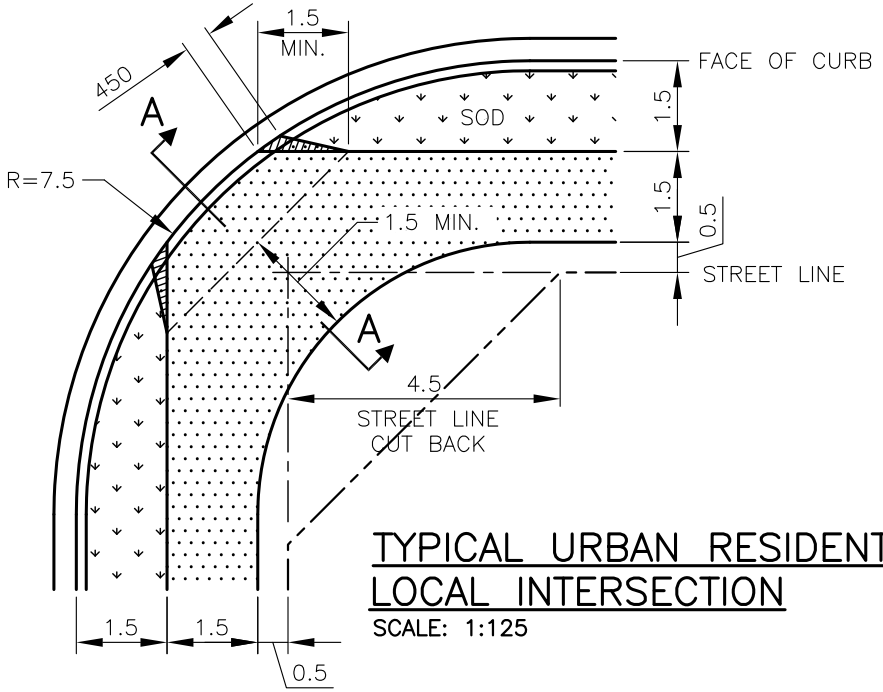
STANDARD DRAWING

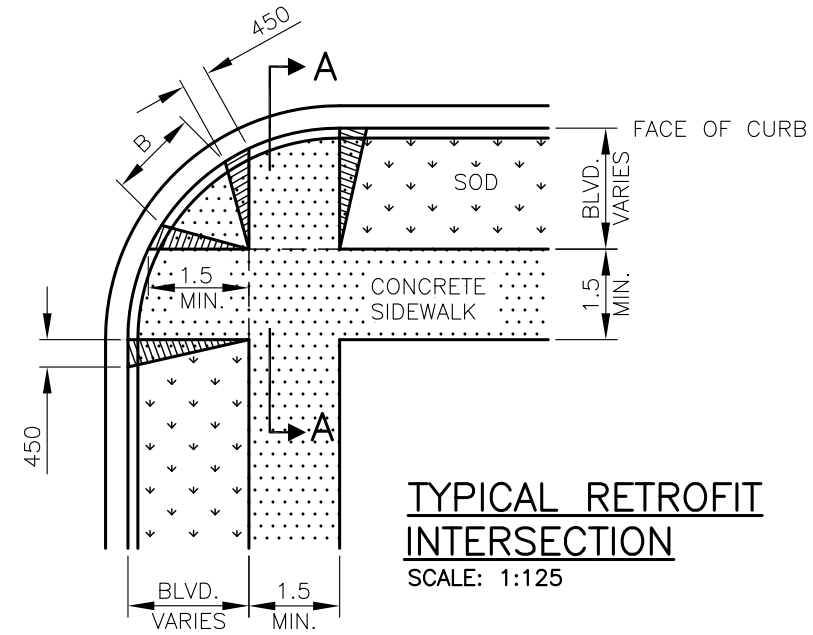
CONCRETE SIDEWALK REINFORCING

DATE: 2013	REFERENCE	APPROVED
SCALE: NTS		FIG. NO. HRM 48



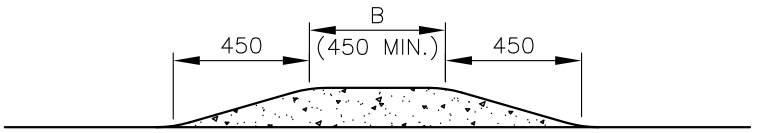
TYPICAL URBAN RESIDENTIAL LOCAL INTERSECTION

SCALE: 1:125



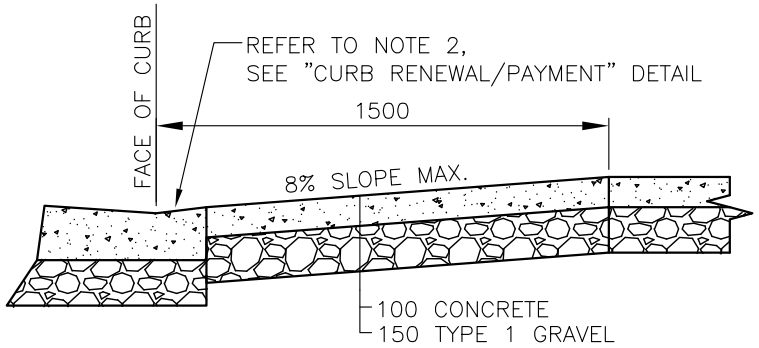
TYPICAL RETROFIT INTERSECTION

SCALE: 1:125



PEDESTRIAN RAMP DIVIDER VIEW

SCALE: 1:25



SECTION A–A

SCALE: 1:25

NOTES:

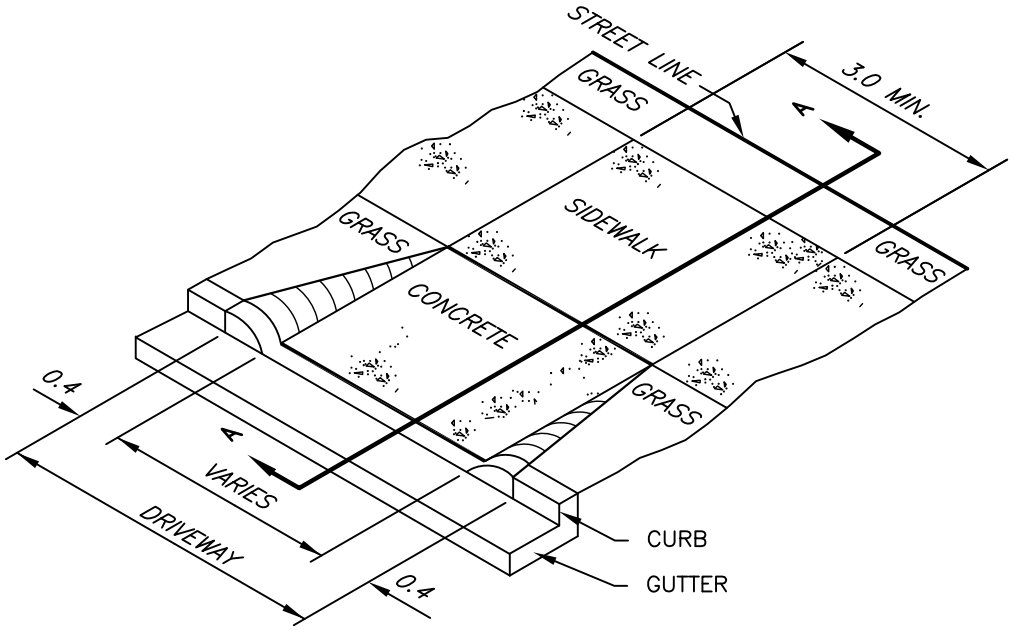
1. PEDESTRIAN RAMPS SHALL BE ALIGNED WITH THE SIDEWALK INSIDE EDGE.
2. INSTALL RAMP DIVIDER ONLY WHEN (B) WILL BE GREATER THAN 450mm.
3. WHERE RAMP DIVIDER IS NOT POSSIBLE, THE MINIMUM WIDTH OF RAMP IS TO BE THE RESULTING WIDTH IF RAMP EDGES ARE ALIGNED WITH INSIDE EDGES OF SIDEWALK. MINIMUM RAMP WIDTH IS 1.5m.
4. WHERE THE SIDEWALK ABUTS THE CURB A 1.0m TRANSITION TAPER IS REQUIRED IN THE CURB AND SIDEWALK ALONG ITS LENGTH.

HALIFAX
REGIONAL MUNICIPALITY

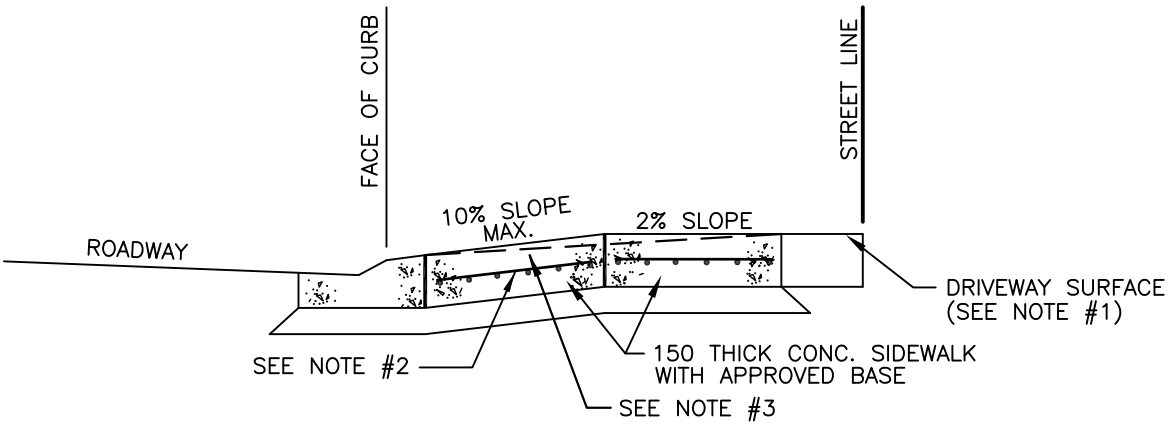
STANDARD DETAIL

PEDESTRIAN RAMP ALIGNMENT

DATE: 2013	REFERENCE	APPROVED
SCALE: AS NOTED		FIG No.: HRM 49



VIEW PLAN



SECTION A–A

NOTES:

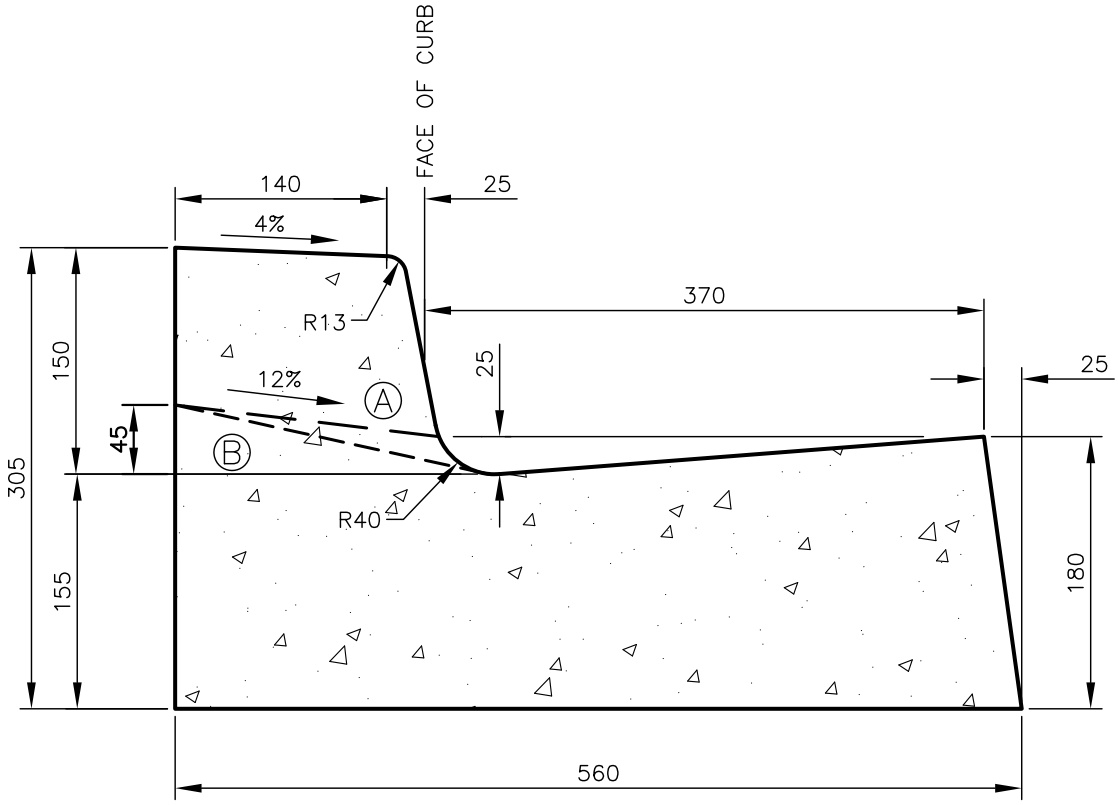
1. IF DRIVEWAY SURFACE IS GRAVEL, THIS SHALL BE ASPHALT CONCRETE.
2. FOR COMMERCIAL AND INDUSTRIAL DRIVEWAYS PLACE 150 x 150 – M.W. 18.7 x M.W. 18.7 PLACED 50mm FROM BOTTOM OF CONCRETE RAMP AND SIDEWALK.
3. WHEN BOULEVARD IS LESS THAN 1.5m OR WHEN THE SIDEWALK ABUTS THE CURB & GUTTER, SLOPE SIDEWALK IN A STRAIGHT LINE GRADE FROM BACK OF SIDEWALK TO LIP ON CURB OPENING.
4. MINIMUM DISTANCE BETWEEN CONTROL JOINTS IS 1200. PROVIDE CONTROL JOINTS WITHIN 150 OF CHANGE IN CROSS SECTION OF CURB.

HALIFAX
REGIONAL MUNICIPALITY

STANDARD DETAIL

DRIVEWAY RAMP

DATE: 2013	REFERENCE	APPROVED
SCALE: NTS		FIG No.: HRM 50



CURB & GUTTER SECTION

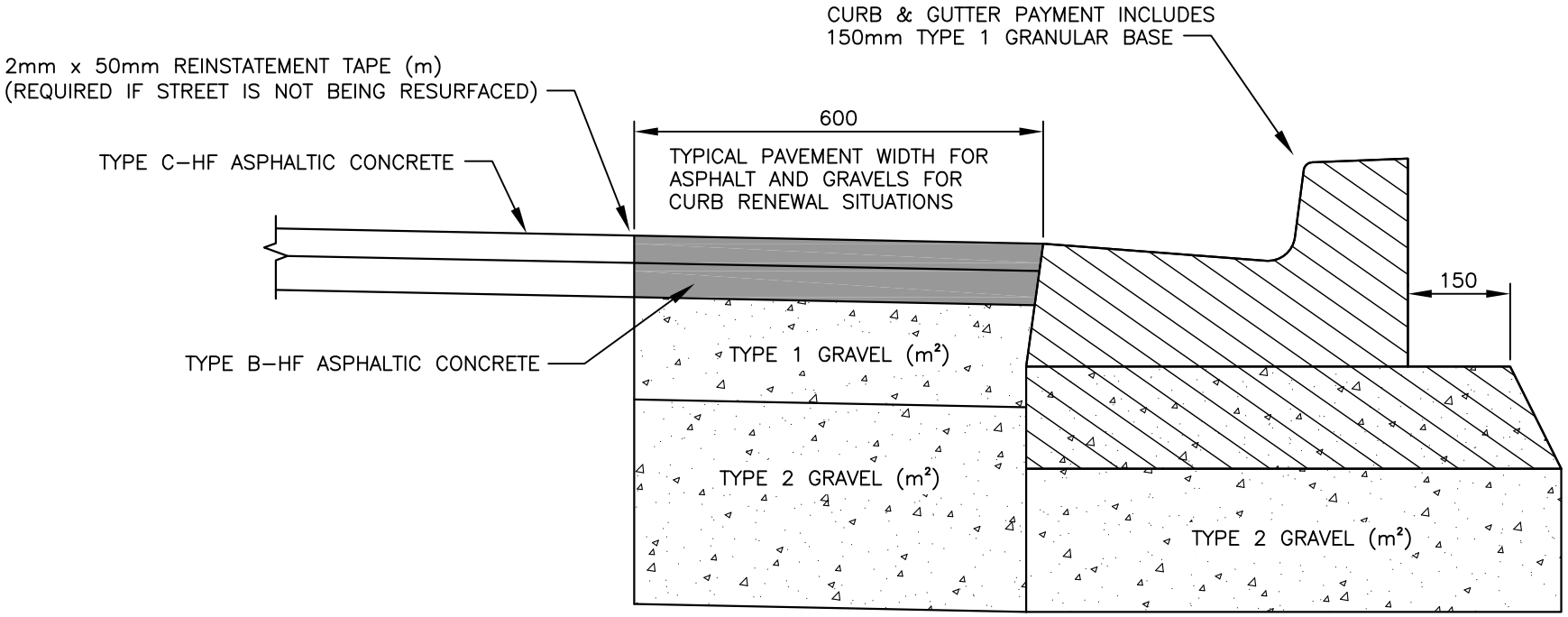
NOTES:
1. DASHED LINE "A" INDICATES CURB AT DRIVEWAYS.
2. DASHED LINE "B" INDICATES CURB AT PEDESTRIAN RAMPS.
3. TRANSITION TAPERS SHALL BE PROVIDED AT DRIVEWAYS AND PEDESTRIAN RAMPS AS PER THE "PEDESTRIAN RAMP ALIGNMENT" DETAIL AND "DRIVEWAY RAMP" DETAIL.

HALIFAX
REGIONAL MUNICIPALITY

STANDARD DETAIL

CONCRETE CURB & GUTTER

DATE: 2013	REFERENCE	APPROVED
SCALE: 1:5		FIG No.: HRM 53



NOTES:

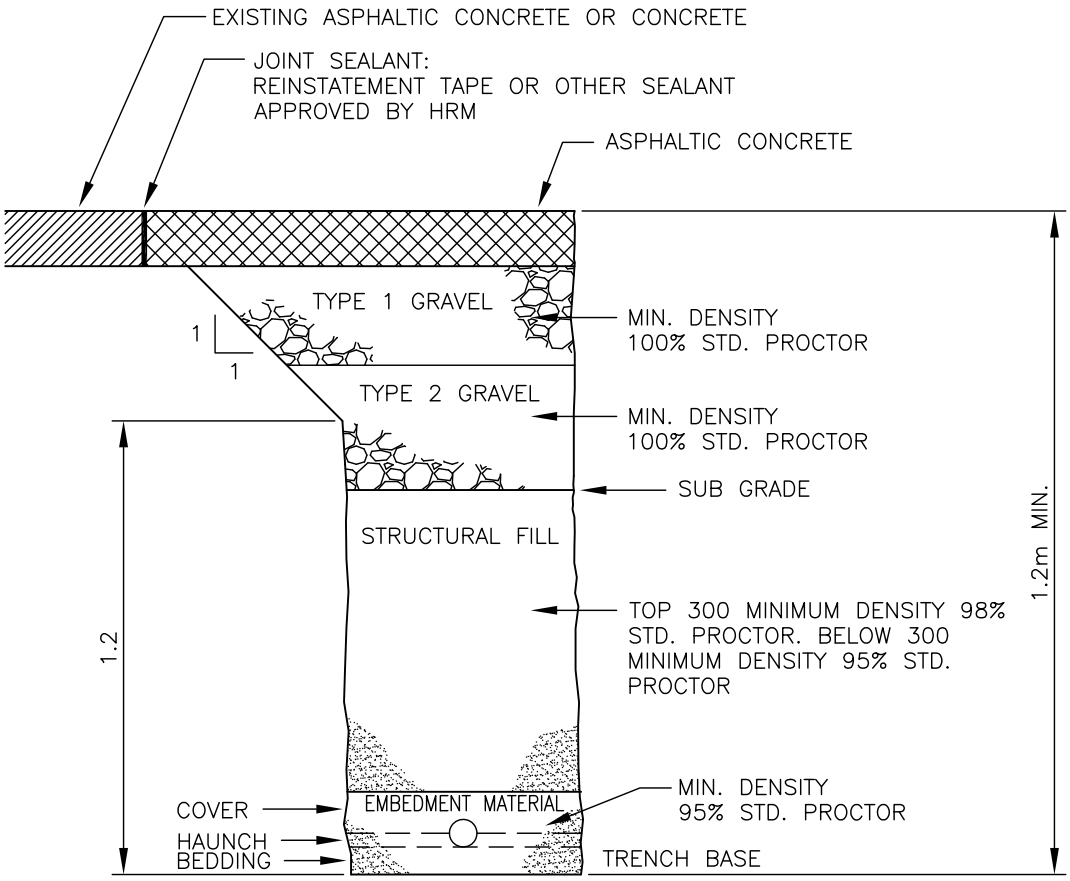
1. CURB AND GUTTER PAYMENT INCLUDES A GRANULAR BASE OF 150mm OF TYPE 1 GRAVEL, OR AS INDICATED ON DRAWINGS.
2. ASPHALT AND GRAVEL THICKNESS AS INDICATED ON DRAWING.

HALIFAX
REGIONAL MUNICIPALITY

STANDARD DETAIL

CURB RENEWAL/PAYMENT

DATE: 2013	REFERENCE	APPROVED
SCALE: 1:10		FIG No.: HRM 54



NOTE:
1. REFER TO THE TRENCH REINSTATEMENT SPECIFICATIONS FOR SPECIFIC REQUIREMENTS.

HALIFAX
REGIONAL MUNICIPALITY

STANDARD DETAIL

DEEP TRENCH REINSTATEMENT

DATE: 2013	REFERENCE	APPROVED
SCALE: 1:20		FIG No.: HRM 60

TRENCH BACKFILL AND REINSTATEMENT – TESTING REQUIREMENTS

TEST REQUIRED	COMPACTION REQUIRED	MINIMUM TEST FREQUENCY	
		TRENCH LESS THAN 1.5m WIDE	TRENCH GREATER THAN 1.5m WIDE
COMPACTION OF BEDDING, HAUNCH & COVER MATERIALS (ASTM D698) *SEE NOTE 3	95% MINIMUM AT 3% ± OF OPTIMUM MOISTURE. (SEE NOTES)	1 PER 25m AT THE CENTRELINE OF THE TRENCH (AND EACH BENCH OR SECTION OF TRENCH LESS THAN 25m IN LENGTH) FOR EACH 600 VERTICAL DEPTH OF BACKFILL MATERIAL A MINIMUM OF 3 TESTS PER TRENCH SHALL BE PERFORMED.	3 PER 25m (AND EACH BENCH OR SECTION OF TRENCH LESS THAN 25m IN LENGTH) FOR EACH 600 VERTICAL DEPTH OF BACKFILL MATERIAL 1 TEST SHALL BE TAKEN AT THE CENTRELINE OF THE TRENCH (SET BACK AT LEAST 300mm FROM THE EDGE OF THE TRENCH). A MINIMUM OF 3 TESTS PER TRENCH SHALL BE PERFORMED.
COMPACTION OF STRUCTURAL FILL TO SUBGRADE ELEVATION (ASTM D698) *SEE NOTE 3	TOP 300 98% COMPACTION MINIMUM AT 3% ± OF OPTIMUM MOISTURE. (SEE NOTES)		
	BELOW 300 95% COMPACTION MINIMUM AT 3% ± OF OPTIMUM MOISTURE. (SEE NOTES)		
COMPACTION OF TYPE 1 & TYPE 2 BASE & SUB–BASE MATERIALS (ASTM D698)	100% COMPACTION MINIMUM AT 3% ± OF OPTIMUM MOISTURE (SE NOTES)	FOR EACH MATERIAL, 1 PER 25m AT THE CENTRELINE OF THE TRENCH (AND EACH BRANCH OR SECTION OF THE TRENCH LESS THAN 25m IN LENGTH) FOR EACH 300VERTICAL DEPTH OF BACKFILL MATERIAL. A MINIMUM OF 3 TESTS PER TRENCH SHALL BE PERFORMED.	FOR EACH MATERIAL, 3 PER 25m (AND EACH BRANCH OR SECTION OF TRENCH LESS THAN 25m IN LENGTH) FOR EACH 300 VERTICAL IN DEPTH OF BACKFILL MATERIAL. 1 TESTS SHALL BE TAKEN AT THE CENTRELINE OF THE TRENCH AND 1 AT EACH EDGE OF THE TRENCH (SET BACK AT LEAST 300mm FROM THE EDGE OF THE TRENCH). A MINIMUM OF 3 TESTS PER TRENCH SHALL BE PERFORMED.
COMPACTION OF HOT MIX ASPHALT PAVEMENT (ASTM D3549 & 2726)	95% OF MAXIMUM THEORETICAL DENSITY OF COMPARATIVE MARSHALL LABORATORY SAMPLE.	ONE TEST FOR EACH 75m² OF PAVEMENT SURFACE. A MINIMUM OF 1 TEST PER TRENCH.	ONE TEST FOR EACH 75m² OF PAVEMENT SURFACE. A MINIMUM OF 1 TEST PER TRENCH.

NOTES:

1. THE TRENCH WIDTH FOR DETERMINATION OF THE TEST SHALL BE THE WIDTH OF THE TRENCH AT THE LEVEL OF THE TEST BEING PERFORMED.

2. IF MINIMUM MOISTURE DENSITY REQUIREMENTS ARE NOT MET BY THESE TESTS, THE CONTRACTOR SHALL RECOMPACT THE TRENCH AS NEEDED TO ACHIEVE THE SPECIFIED COMPACTION. SUCH RECOMPACTION SHALL EXTEND ON BOTH SIDES OF THE FAILED TEST SECTION A DISTANCE EQUAL TO 1/2 THE DISTANCE FROM WHERE THE LAST TEST WAS TAKEN OR 50m, WHICHEVER IS LEAST. AN ALTERNATIVE PROCEDURE WOULD BE TO MORE CLEARLY DEFINE THE LIMITS OF THE FAILED AREA TO ADDITIONAL TESTS.

3. TESTING FOR BEDDING, HAUNCH AND STRUCTURAL FILL ARE ONLY REQUIRED WHEN THE TOTAL LENGTH OF TRENCH EXCEEDS 100 m, OR WHEN REQUESTED BY THE HRM INSPECTOR.

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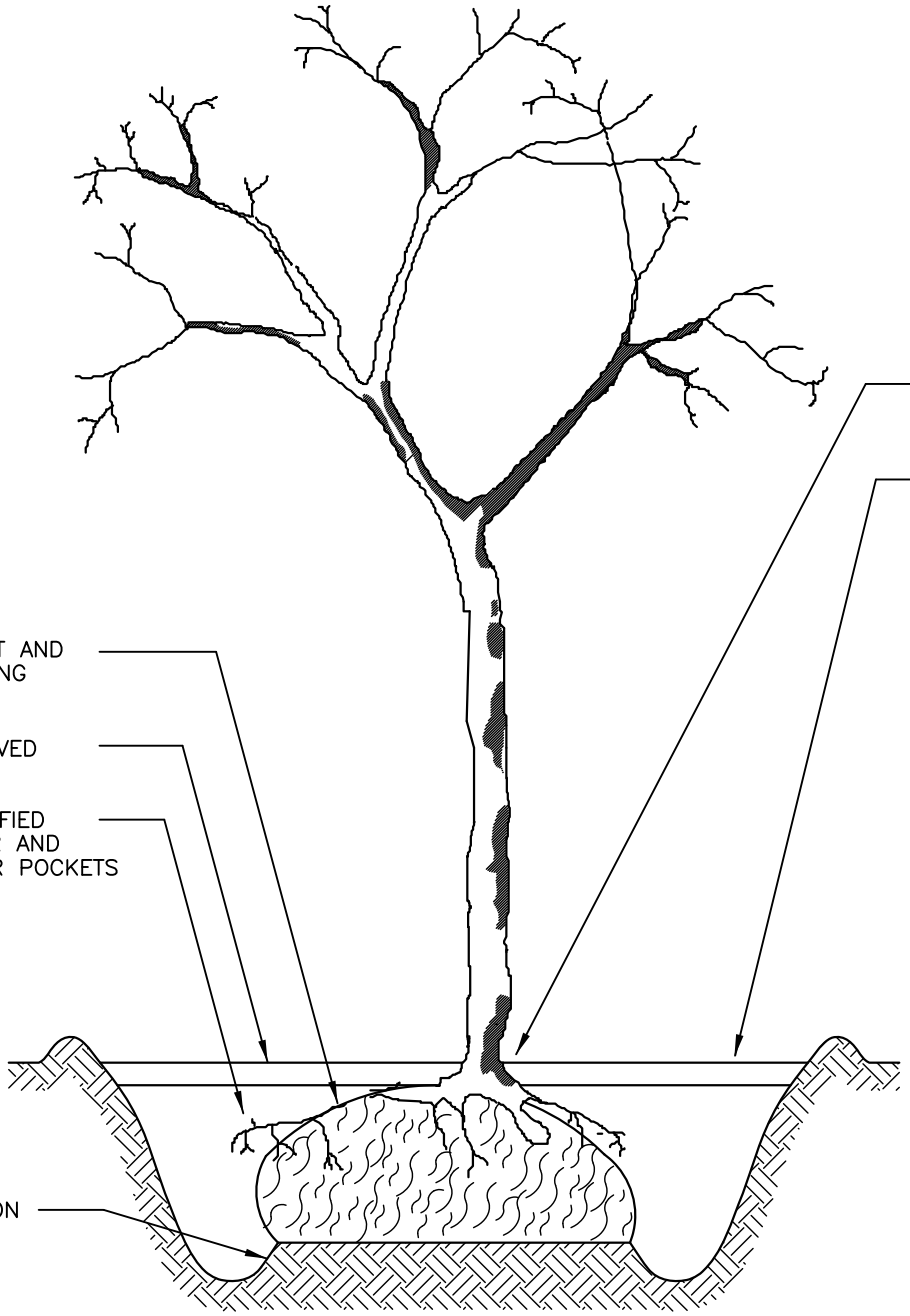
TRENCH BACKFILL & REINSTATEMENT–TESTING

DATE: 2013	REFERENCE	APPROVED
SCALE: NTS		FIG No.: HRM 61



NOTE:

1. THE SOIL USED FOR TREE PLANTING SHALL BE OF GOOD FERTILE TOPSOIL AUGMENTED WITH EITHER BONE OR FISH MEAL.
2. WIDTH OF HOLE TO BE 1.5 m.

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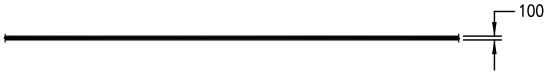
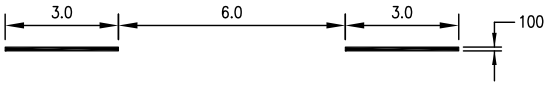
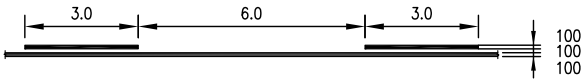
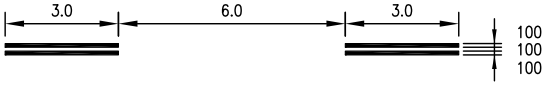
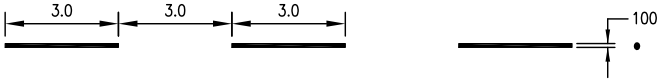
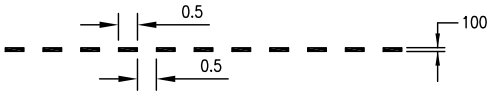
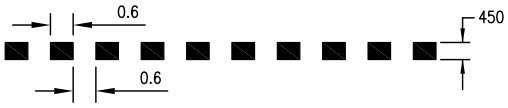
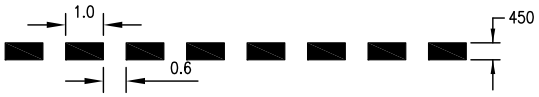
TREE PLANTING

DATE: 2013	REFERENCE	APPROVED
SCALE: NTS		FIG No.: HRM 66

NAME OF LINE	–LENGTH DIMENSION (m) –WIDTH DIMENSIONS (mm)	USE
SOLID		• EDGE LINES (WHITE OR YELLOW) • DIRECTIONAL DIVIDING LINES (YELLOW) • LANE LINES, PROHIBITING LINES (WHITE) • BIKE LINES (WHITE)
BROKEN		• DIRECTIONAL DIVIDING LINES (YELLOW) • LANE LINES (WHITE)
SIMULTANEOUS SOLID & BROKEN		• DIRECTIONAL DIVIDING LINES (YELLOW) • TWO–WAY LEFT TURN LINES (YELLOW)
DOUBLE SOLID		• DIRECTIONAL DIVIDING LINES (YELLOW)
DOUBLE BROKEN		• REVERSIBLE LANE (YELLOW)
DASHED		• CONTINUITY LINES IN MERGING AND DIVERGING AREAS AND TAPERS FOR LEFT–TURN AND RIGHT–TURN LANES.
		• LANE LINES WITHIN MULTI–LANE ROUNDABOUT (WHITE)
		• BUS BAYS (WHITE) • BIKE LANES (WHITE)
		• GUIDING LINES (WHITE)
STOP		• INTERSECTION STOP LINES (WHITE)
CROSSWALK		• CROSSWALKS (WHITE)
YIELD		• SINGLE LANE ROUNDABOUT YIELD LINES (WHITE)
		• DOUBLE LANE ROUNDABOUT YIELD LINES (WHITE)

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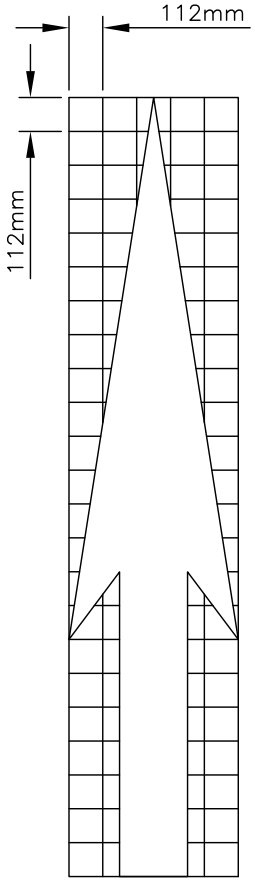
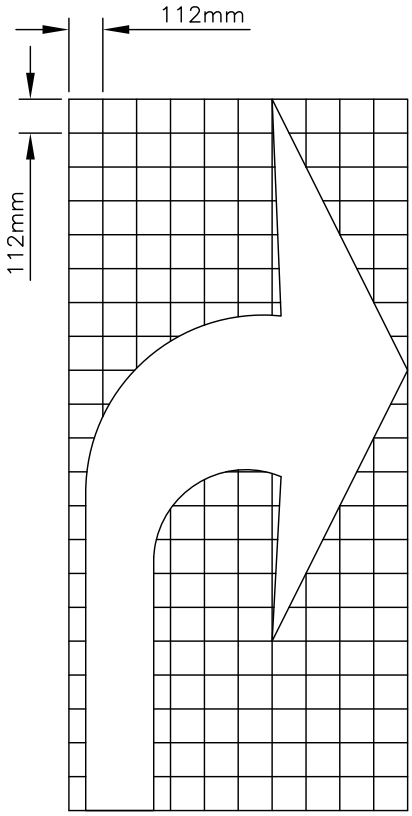
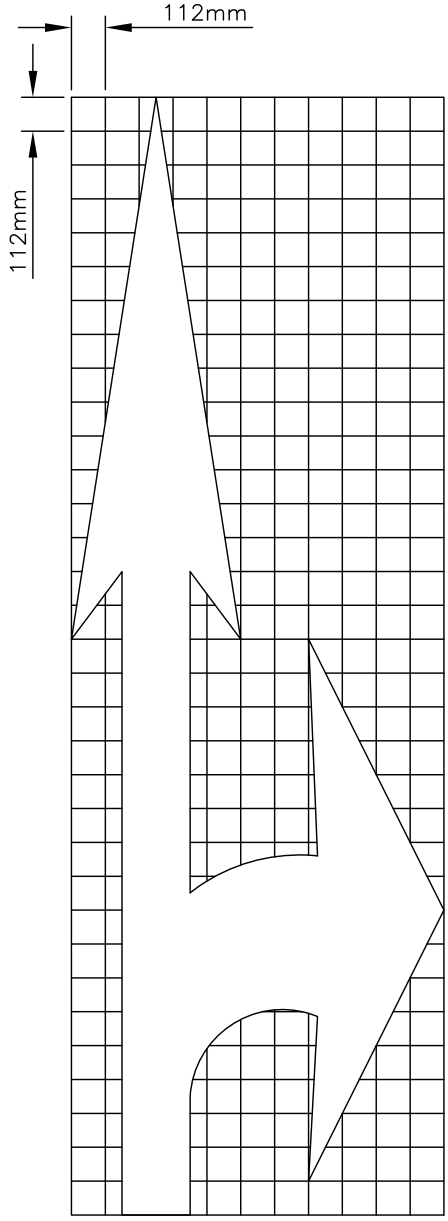
LONGITUDINAL AND TRANSVERSE MARKINGS

DATE: 2013	REFERENCE	APPROVED
SCALE: 1:200		FIG No.: HRM 90







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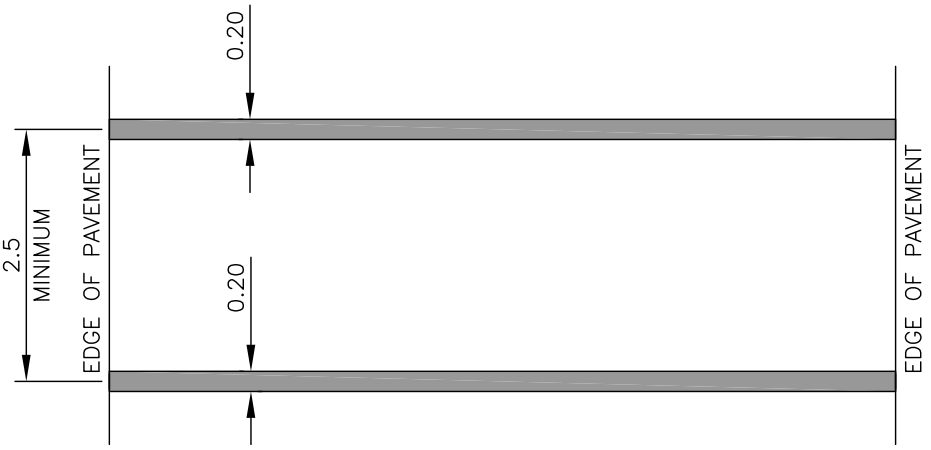
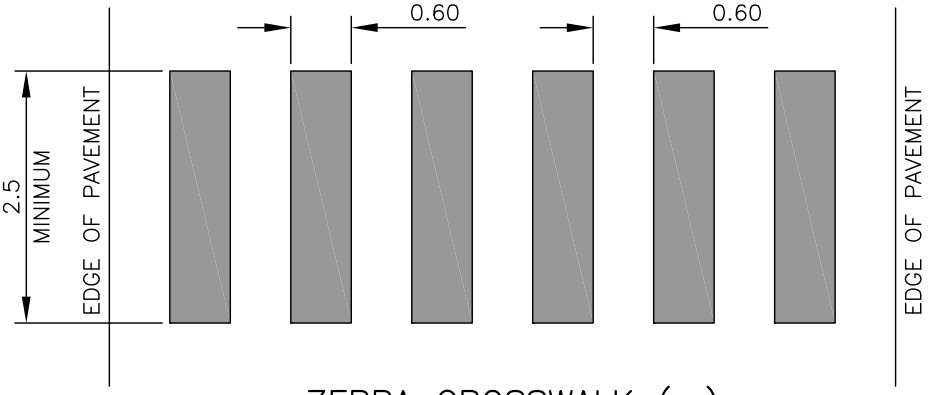
PAVEMENT ARROWS

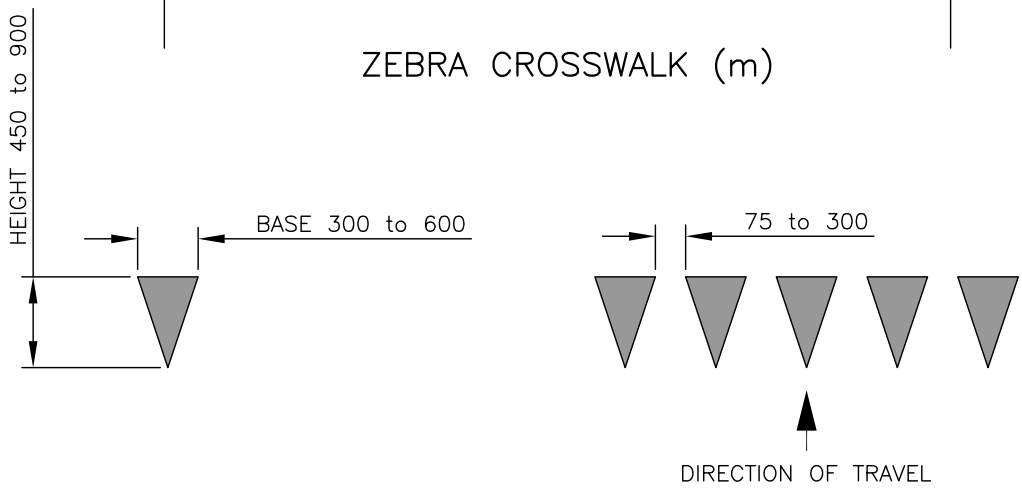
DATE: 2013	REFERENCE	APPROVED
SCALE: 1:25		FIG No.: HRM 91



TWIN PARALLEL LINE CROSSWALK (m)



ZEBRA CROSSWALK (m)



ADVANCED YIELD TO PEDESTRIANS LINE (mm)

NOTES ON ADVANCED YIELD TO PEDESTRIAN LINE:

TRIANGLE HEIGHT IS EQUAL TO 1.5 TIMES THE BASE DIMENSION. YIELD LINES MAY BE SMALLER THAN SUGGESTED WHEN INSTALLED ON MUCH NARROWER, LOW SPEED FACILITIES SUCH AS SHARED–USE PATHS.

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PEDESTRIAN PAVEMENT MARKINGS

DATE: 2013	REFERENCE	APPROVED
SCALE: 1:75		FIG No.: HRM 93