

NAME OF FUNDED PROJECT



1220

305

(SEE NOTE 2)

100

50

90

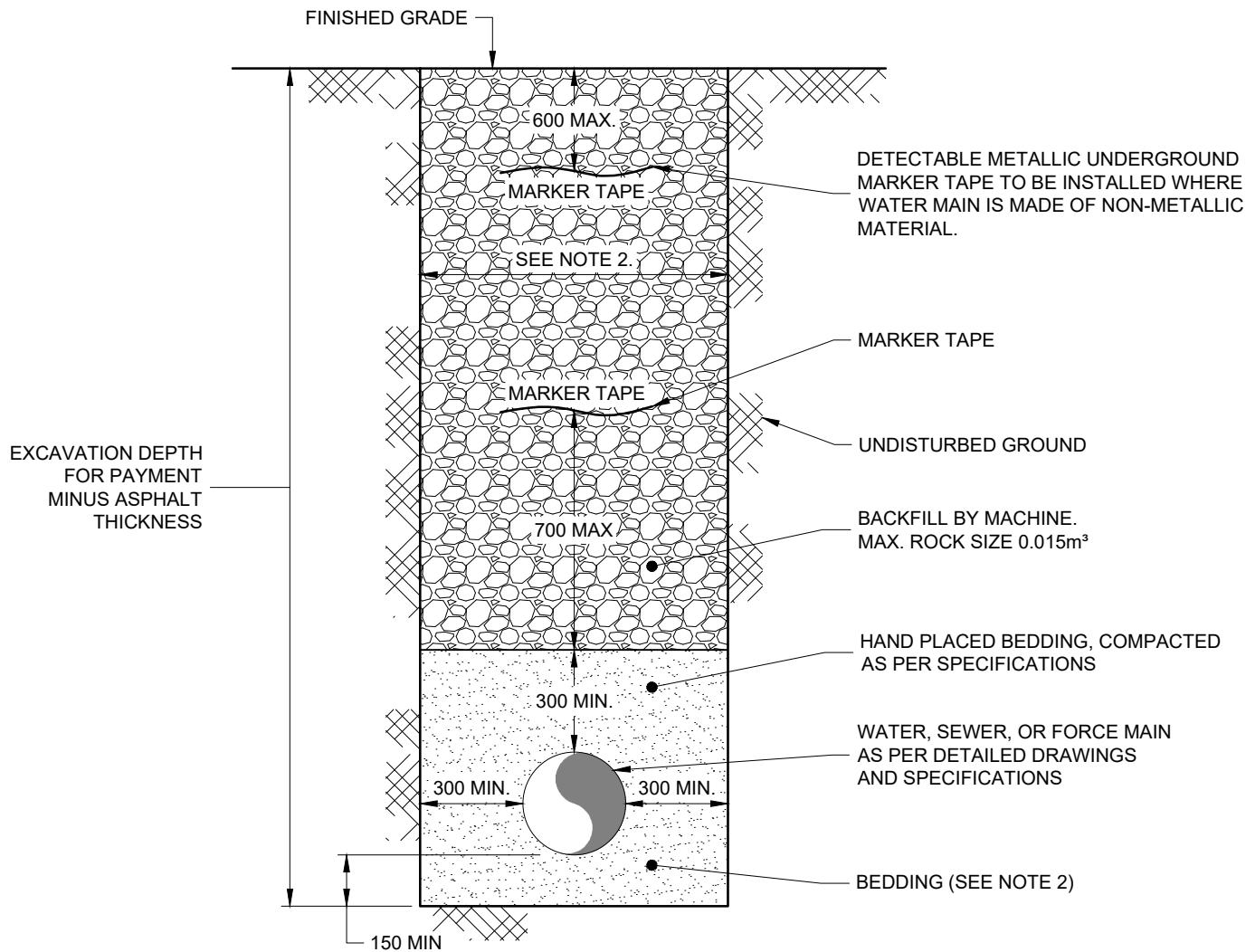
90

NAME OF ULTIMATE RECIPIENT

Department of Transportation and Infrastructure
Hon. _____, Minister _____

65
45
6550
40
50
100WHITE REFLECTIVE BACKGROUND
SEE NOTE 4**NOTES:**

1. LOGO AND COLORS AS PER PROVINCIAL GRAPHIC STANDARDS.
2. LETTERING TO BE BLACK IN COLOUR AS PER PROVINCIAL GRAPHIC STANDARDS.
3. SIGN PANEL TO BE 19mm CREZON PLYWOOD.
4. REFLECTIVE SHEETING BACKGROUND. (MINIMUM 3M™ ENGINEER GRADE, OAE)
5. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
6. COORDINATE PROJECT TITLE WITH MUNICIPAL INFRASTRUCTURE.
7. FOR FEDERAL PROJECTS, SIGN REQUIREMENTS TO BE CONFIRMED WITH THE PROVINCE.



NOTES:

1. THIS DETAIL IS INTENDED TO SHOW TYPICAL DIMENSIONS FOR PAYMENT PURPOSES ONLY. ACTUAL TRENCH DIMENSIONS ARE SUBJECT TO FIELD CONDITIONS AND/OR THE REQUIREMENTS OF THE HEALTH AND SAFETY REGULATIONS.
2. BEDDING TYPE SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS REQUIRED SCHEDULE OF QUANTITIES AND PRICES.
3. EXCAVATION WIDTH FOR PAYMENT AS PER BELOW UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENT.

DEPTH	MIN. WIDTH
0-4m	1500mm
>4m, <6m	2000mm
≥6m	2500mm

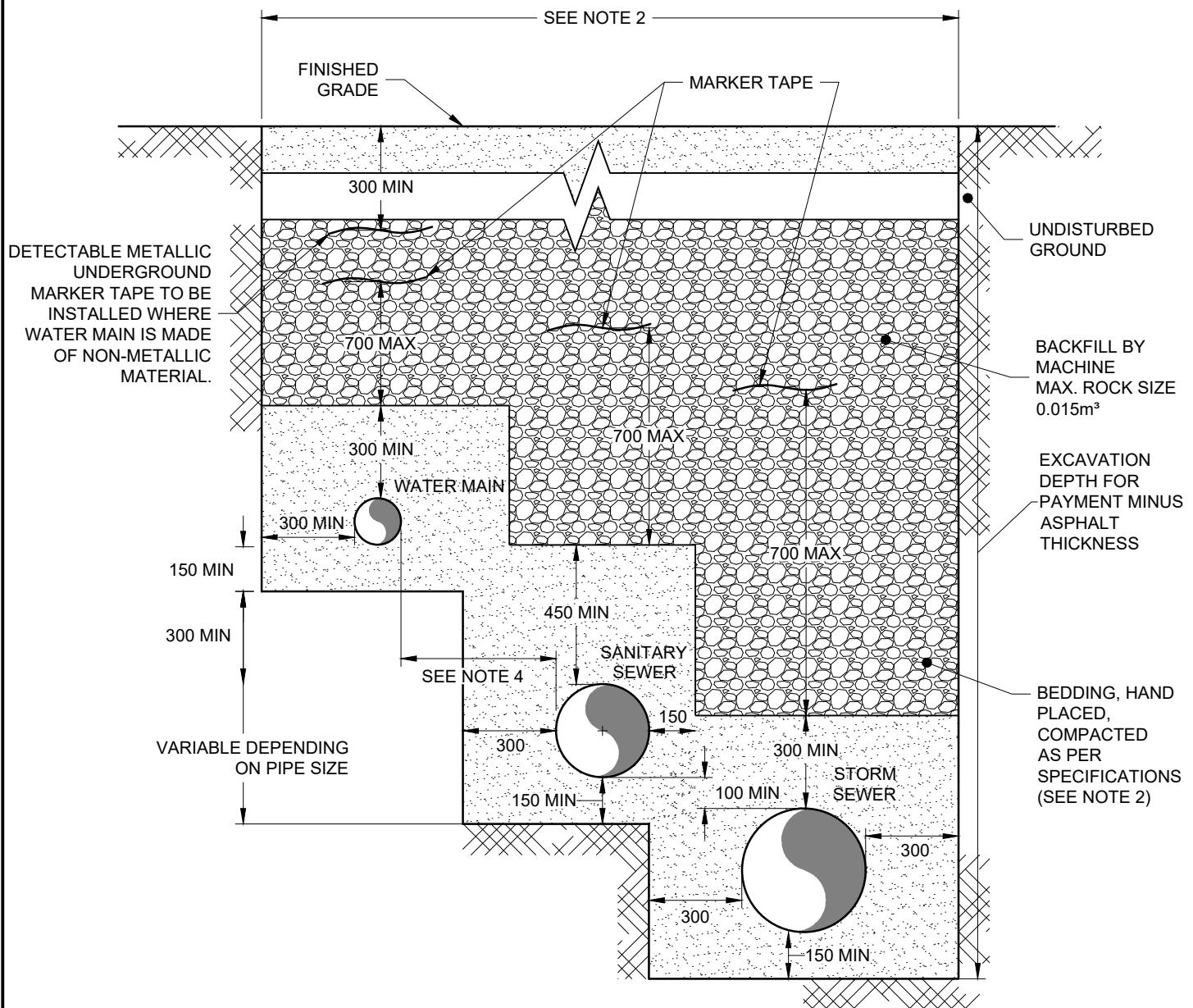
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

MUNICIPAL MASTER
SPECIFICATIONS

TYPICAL TRENCH DETAIL - SINGLE PIPE

DRAWING NUMBER 04020

DATE: APRIL 2023
SCALE: N.T.S.



NOTES:

1. THIS DETAIL IS INTENDED TO SHOW TYPICAL DIMENSIONS FOR PAYMENT PURPOSES ONLY. ACTUAL TRENCH DIMENSIONS ARE SUBJECT TO FIELD CONDITIONS AND/OR THE REQUIREMENTS OF THE HEALTH AND SAFETY REGULATIONS.

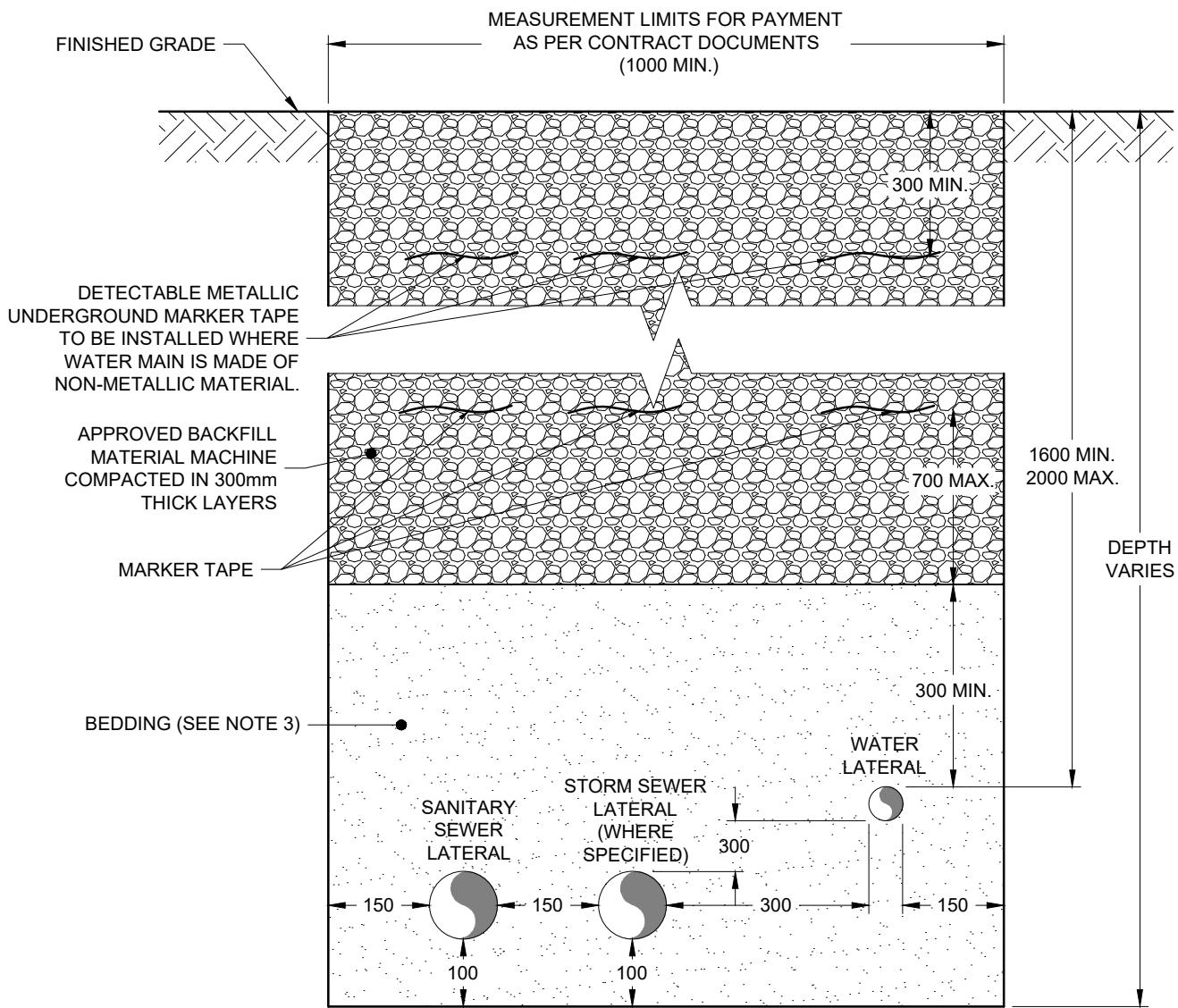
DEPTH	MIN WIDTH
0-4m	1500mm
>4m, <6m	2000mm
>6m	2500mm
2. BEDDING TYPE SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS REQUIRED SCHEDULE OF QUANTITIES AND PRICES.
3. UNDER NO CIRCUMSTANCES, SHALL ANY SANITARY OR STORM SEWER BE INSTALLED AT ZERO SLOPE.
4. MAINTAIN MINIMUM HORIZONTAL SEPARATION BETWEEN SEWER AND WATER MAIN OF 3000mm. WHERE MINIMUM HORIZONTAL SEPARATION IS NOT ACHIEVABLE, MAINTAIN MINIMUM VERTICAL SEPARATION OF 450mm FROM CROWN OF SEWERMAIN TO UNDERSIDE OF WATER MAIN.
5. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

MUNICIPAL MASTER
SPECIFICATIONS

TYPICAL TRENCH DETAIL - MULTIPLE PIPES

DRAWING NUMBER 04040

DATE: APRIL 2023
SCALE: N.T.S.



NOTES:

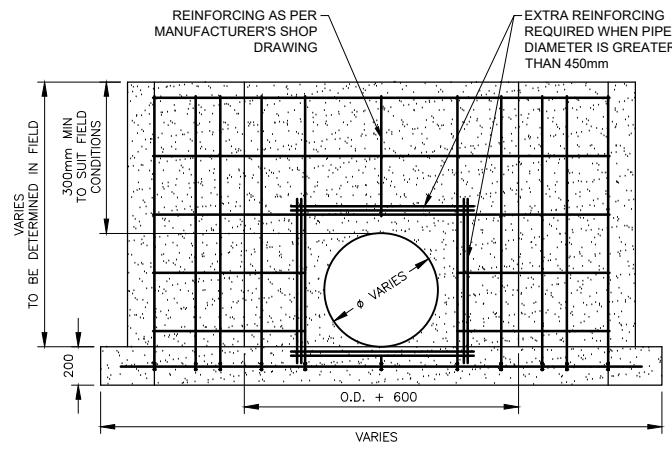
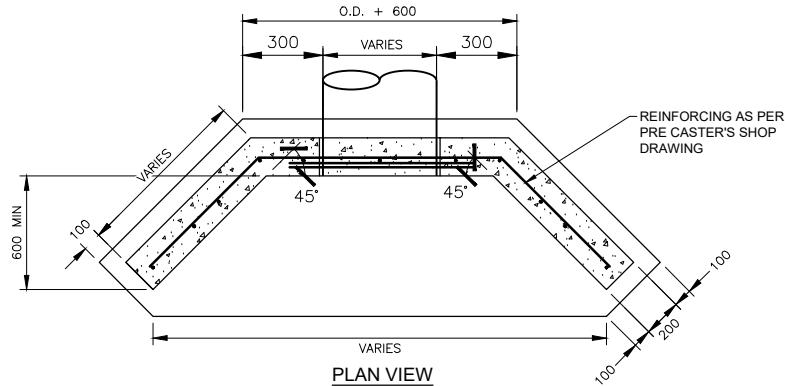
1. THIS DETAIL IS INTENDED TO SHOW TYPICAL DIMENSIONS FOR PAYMENT PURPOSES ONLY. ACTUAL TRENCH DIMENSIONS ARE SUBJECT TO FIELD CONDITIONS AND/OR THE REQUIREMENTS OF THE HEALTH AND SAFETY REGULATIONS.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
3. BEDDING TYPE SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS REQUIRED SCHEDULE OF QUANTITIES AND PRICES.
4. BUILDING SERVICES ARE TO TERMINATE AT THE SAME POINT AT THE EDGE OF THE ROAD RIGHT OF WAY. A 38 x 89 WOODEN MARKER POST SHALL BE INSTALLED PLUMB FROM THE END OF THE SERVICE LINES TO 600mm ABOVE THE GROUND SURFACE, PAINTED RED ABOVE THE GROUND. WHEN FACING THE BUILDING TO BE SERVICED, THE WATER SERVICE SHALL BE LOCATED ON THE RIGHT OF THE STORM SEWER, AND THE SANITARY TO THE LEFT OF THE STORM SEWER.
5. LOCATION, ALIGNMENT AND ELEVATION OF SERVICE LINES, SHALL BE CONFIRMED BY CONTRACTOR WITH ENGINEER PRIOR TO CONSTRUCTION.
6. WHEN STORM SERVICE IS NOT REQUIRED, MAINTAIN A MINIMUM 300mm HORIZONTAL SEPARATION BETWEEN WATER AND SANITARY SERVICES.

**MUNICIPAL MASTER
SPECIFICATIONS**

**TYPICAL TRENCH DETAIL
BUILDING SERVICE LINES**

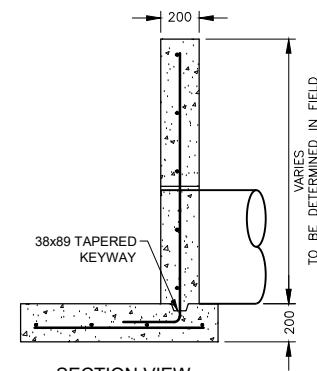
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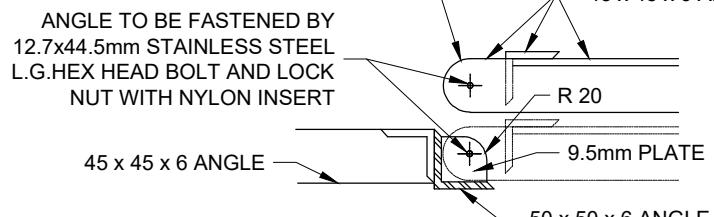
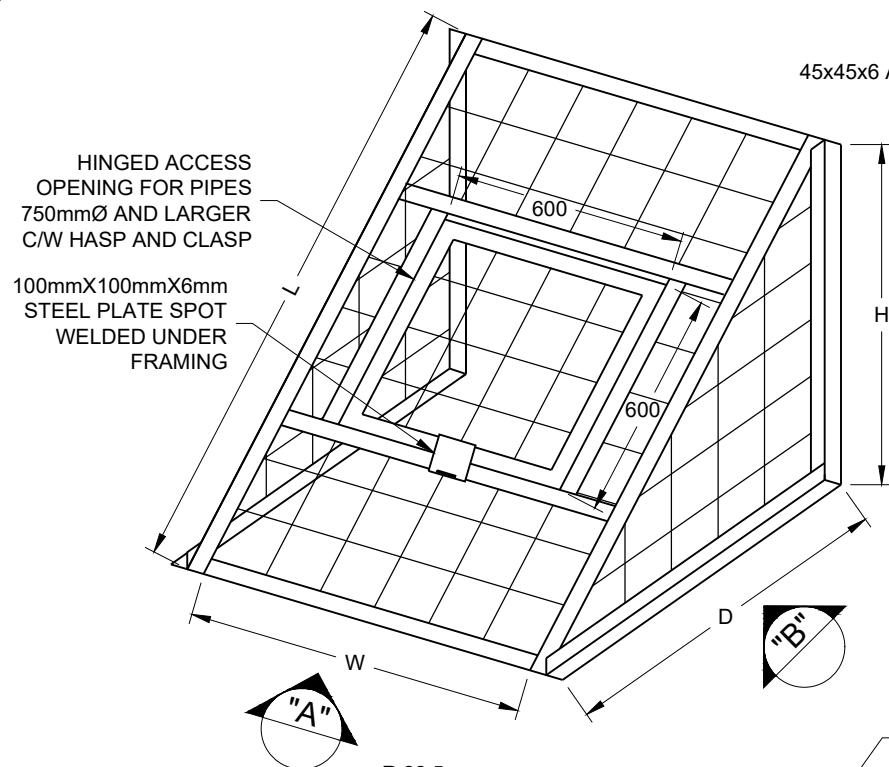
DATE: APRIL 2023
SCALE: N.T.S.



NOTES:

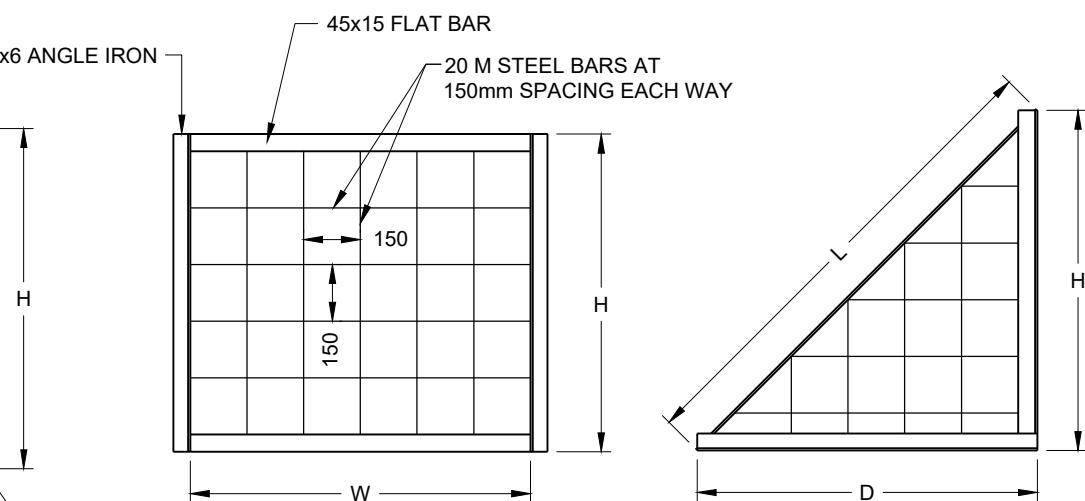
1. 30MPa CONCRETE.
2. COVER TO REINFORCING BARS: 75mm \pm 20mm.
3. GRANULAR "B" BACKFILL TO BE PLACED TO 300mm MIN THICKNESS ON ALL SIDES.
4. HAND RAIL REFER TO DRAWING 4170 TO BE PLACED ON WALLS WITH A HEIGHT EQUAL TO OR GREATER THAN 1200mm.
5. ALL EXPOSED CORNERS ON CONCRETE WORK SHALL BE CHAMFERED 25mm.
6. DEBRIS RACK TO BE USED FOR PIPES 600mm AND LARGER. FOR PIPES 750mm AND LARGER, A 600mm SQUARE HINGED ACCESS OPENING C/W HASP & CLASP SHALL BE INSTALLED IN THE TOP OF THE DEBRIS RACK.
7. HEADWALL SHALL BE SITED AT A GRADE SUCH THAT THE ULTIMATE OVERFLOW ROUTE IS OVER THE HEADWALL AND NOT THE UPSTREAM BANKS.
8. HEADWALLS WITH PIPE OPENING LARGER THAN 1800mm ARE REQUIRED TO BE STRUCTURALLY DESIGNED BY LICENSED PROFESSIONAL ENGINEER.
9. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
10. DEBRIS RACK DIMENSIONED TO MATCH





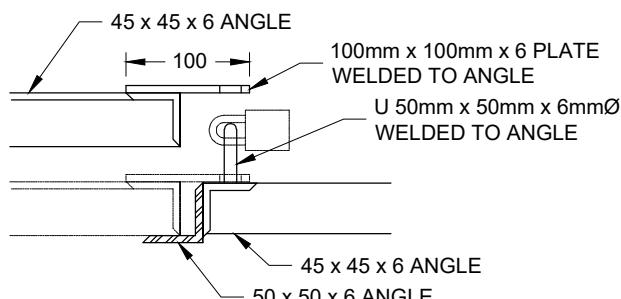
NOTES:

1. FRAMING TO BE 45x45x6 ANGLE EXCEPT WHERE INDICATED, ALL JOINS FULLY WELDED.
2. ALL JUNCTIONS TO BE SPOT WELDED.
3. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
4. ALL EXPOSED METAL TO BE PAINTED WITH RED OXIDE PRIMER
5. RACK TO BE ATTACHED USING 16mm ANCHORS AND BOLTS AT 300mm SPACING
6. ALL WELDING TO BE IN ACCORDANCE WITH THE LATEST EDITION OF CSA W59.



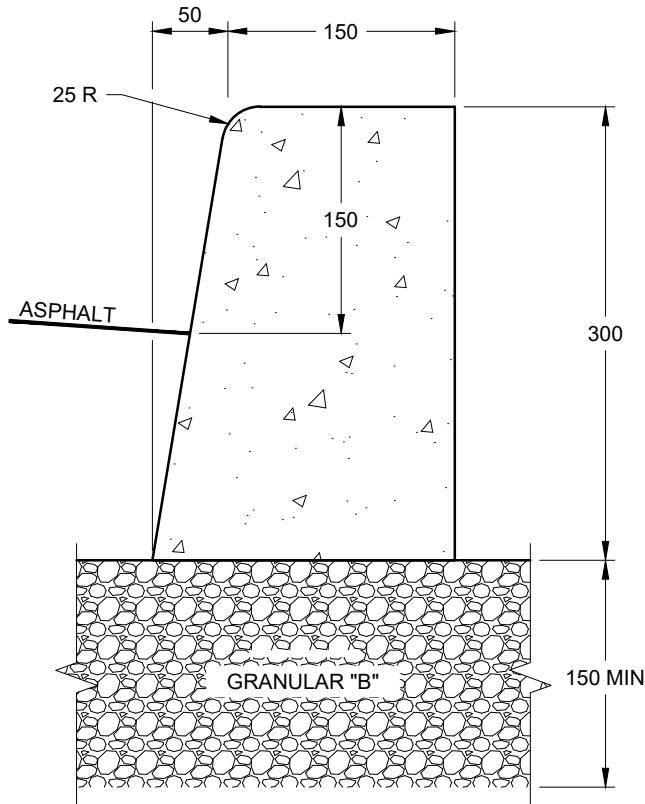
ELEVATION "A"

ELEVATION "B"

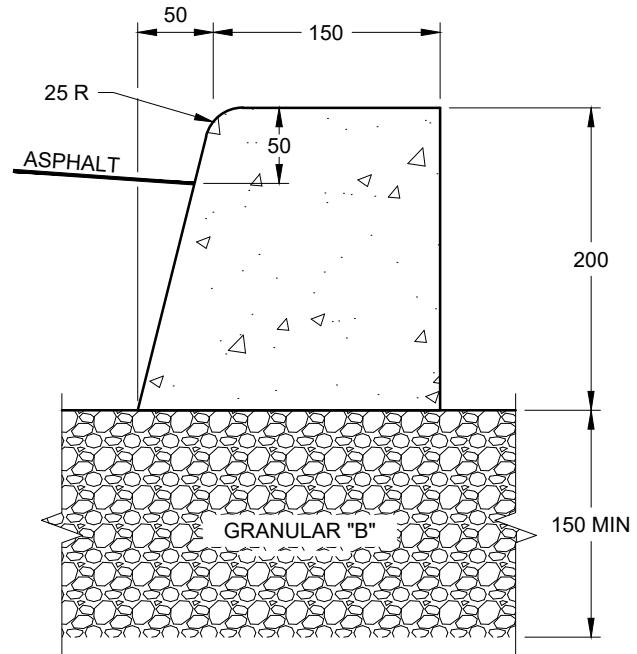


LOCKING DETAILS

PIPE DIAMETER	DIMENSIONS	
	D,H,W	L
600	1200	1698
750	1350	1910
900	1500	2121
1050	1650	2333
1200	1800	2545
1350	1950	2757
1500	2100	2970



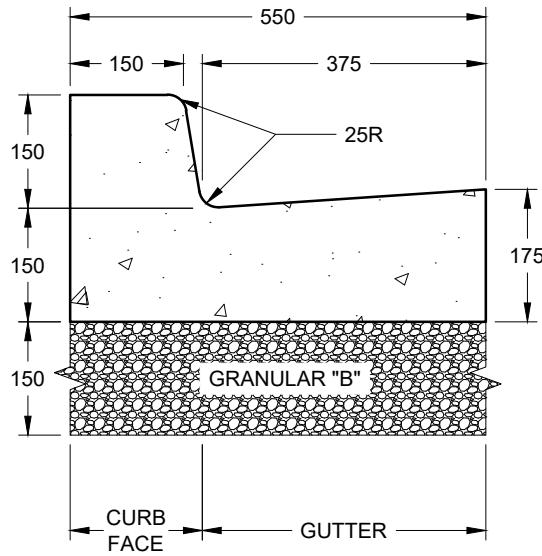
HIGH BACK



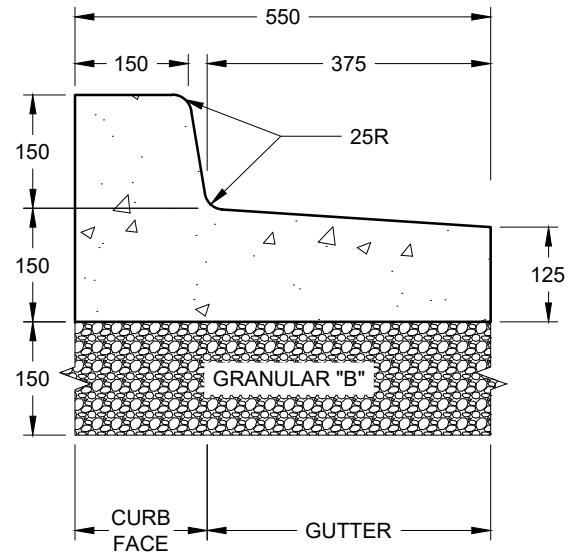
LOW BACK

NOTES:

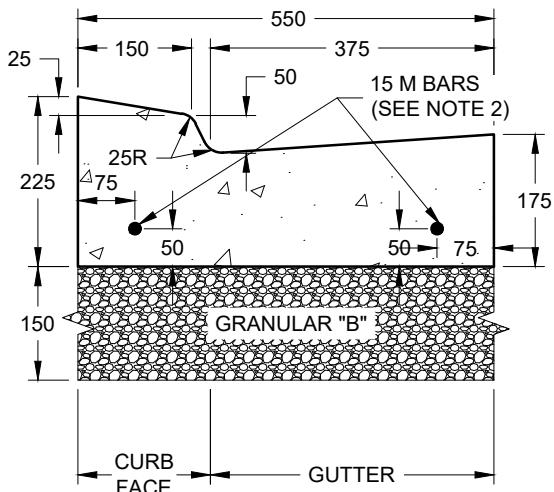
1. 32 MPa CONCRETE TO MEET CSA A23.1/A23.2, CLASS C-2 EXPOSURE.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
3. CONTRACTION JOINTS IN CURB AND GUTTER SECTIONS SHOULD EXTEND COMPLETELY THROUGH THE CURB HEIGHT AND 1/4 OF THE GUTTER THICKNESS. WHEN SIDEWALK IS ADJACENT TO CURB, MAKE JOINTS OF CURB AND SIDEWALK ALIGN.
4. IF THE CURB IS INTEGRAL WITH CONCRETE PAVEMENT, CONTRACTION JOINT SPACING IN THE CURB SHOULD MATCH THAT IN THE PAVEMENT.
5. CONTRACTION JOINTS SHOULD BE LOCATED WHERE THE PLACING OF CONCRETE MUST BE STOPPED FOR A PERIOD IN EXCESS OF 30 MINUTES.



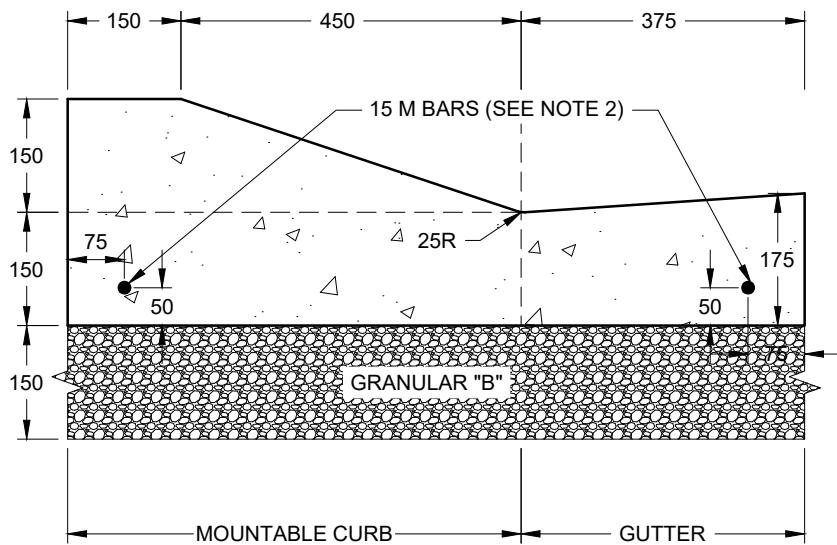
STANDARD CURB & GUTTER



CURB & GUTTER FOR SUPERELEVATION



STANDARD DEPRESSED CURB & GUTTER



_MOUNTABLE CURB & GUTTER

NOTES:

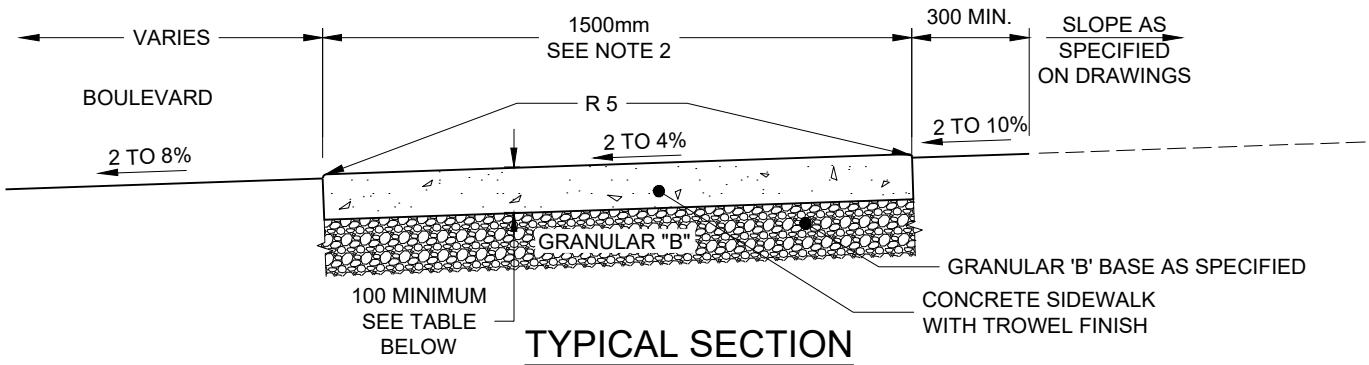
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2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
3. CONTRACTION JOINTS IN CURB AND GUTTER SECTIONS SHOULD EXTEND COMPLETELY THROUGH THE CURB HEIGHT AND 1/4 OF THE GUTTER THICKNESS. WHEN SIDEWALK IS ADJACENT TO CURB, MAKE JOINTS OF CURB AND SIDEWALK ALIGN.
4. IF THE CURB IS INTEGRAL WITH CONCRETE PAVEMENT, CONTRACTION JOINT SPACING IN THE CURB SHOULD MATCH THAT IN THE PAVEMENT.
5. CONTRACTION JOINTS SHOULD BE LOCATED WHERE THE PLACING OF CONCRETE MUST BE STOPPED FOR A PERIOD IN EXCESS OF 30 MINUTES.
6. 15M BARS ARE TO BE USED ONLY IN COMMERCIAL DRIVEWAY APPLICATIONS.

MUNICIPAL MASTER SPECIFICATIONS

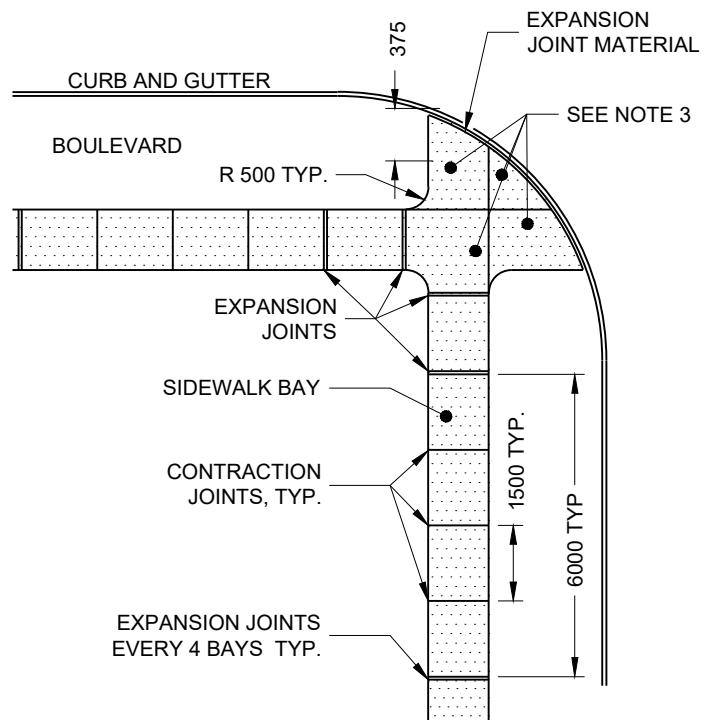
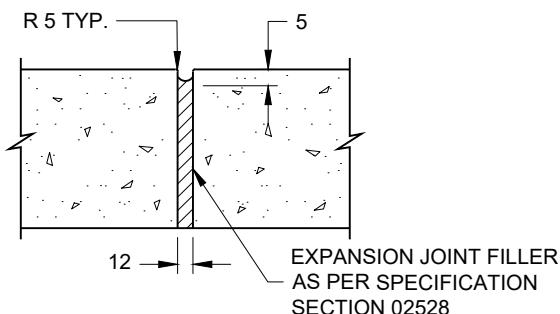
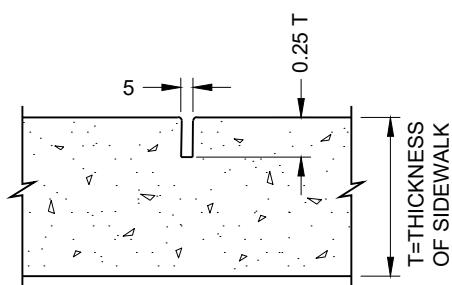
CONCRETE CURB & GUTTER

DRAWING NUMBER 04090

DATE: APRIL 2023
SCALE: N.T.S.

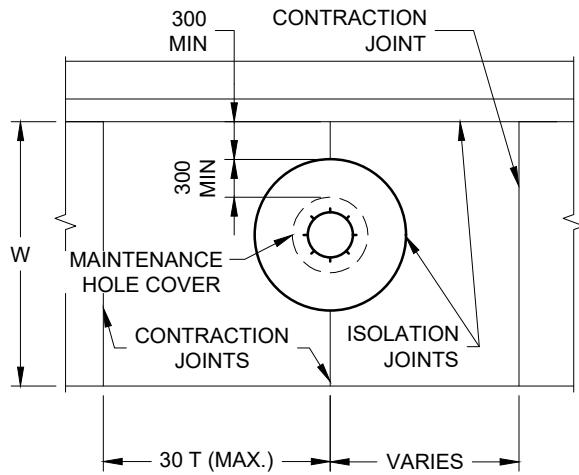


CONCRETE THICKNESS	
MINIMUM	100mm
RESIDENTIAL DRIVEWAY	150mm
COMMERCIAL/ INDUSTRIAL DRIVEWAY	200mm

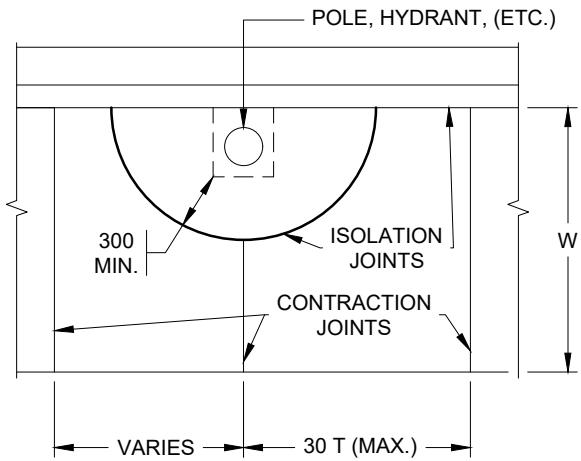


NOTES:

- 32 MPa CONCRETE TO MEET CSA A23.1/A23.2, CLASS C-2 EXPOSURE. AS PER SPECIFICATION SECTION 02528.
- SIDEWALK WIDTH SHALL BE INCREASED TO 2400mm AT SCHOOLS, BUS STOPS, AND OTHER HIGH PEDESTRIAN AREAS. SIDEWALK LENGTH IS PROJECT SPECIFIC AND SHALL BE DETERMINED BY ENGINEER.
- THIS STANDARD DRAWING TO BE READ IN CONJUNCTION WITH STANDARD DRAWING 04150.
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
- WHERE CONTRACTION JOINTS ARE NEEDED, THE METHOD USED MUST GUARANTEE THAT AT LEAST 1/4 OF THE SIDEWALK THICKNESS OF CONCRETE IS INDENTED TO CONTROL DRYING SHRINKAGE CRACKING. SUITABLE METHODS ARE THE USE OF PREFORMED JOINT MATERIALS OR SAW CUTTING ONE QUARTER THE SLAB THICKNESS WITHIN 6 TO 18 HOURS AFTER THE CONCRETE HAS HARDENED BEFORE DRYING SHRINKAGE CRACKS APPEAR. FOR SLIPFORM CONSTRUCTION, THE JOINTS MAY BE FORMED USING A GUILLOTINE OR WIRE TO CUT THE PLASTIC CONCRETE, OR BY SAW CUTTING THE HARDENED CONCRETE.
- CONTRACTION JOINTS SHALL BE LOCATED AT 24 TO 30 T MAXIMUM. WHERE SIDEWALK WIDTH IS 2.5 m OR GREATER, A CONTRACTION JOINT SHOULD ALSO BE FORMED ALONG THE CENTERLINE OF THE WALK. CONTRACTION JOINT SPACING FOR SIDEWALK SHALL BE APPROXIMATELY THE SAME AS THE WIDTH AND NOT MORE THAN 1.5 TIMES THE WIDTH.
- ISOLATION JOINTS SHOULD BE LOCATED ADJACENT TO EXISTING STRUCTURES, (POLES, WALLS, HYDRANTS, BUILDINGS, ETC.) ISOLATION JOINTS SHOULD ALSO BE LOCATED BEFORE AND AFTER CURVE SECTIONS AND AT INTERSECTIONS.
- ISOLATION JOINT FILLER SHOULD BE 12 mm THICK.
- CONTRACTION JOINTS SHOULD BE LOCATED WHERE THE PLACING OF CONCRETE MUST BE STOPPED FOR A PERIOD IN EXCESS OF 30 MINUTES.



DETAIL COVER BOXOUT



DETAIL POLE BOXOUT

NOTES:

1. T = CONCRETE THICKNESS.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
3. WHERE CONTRACTION JOINTS ARE NEEDED, THE METHOD USED MUST GUARANTEE THAT AT LEAST 1/4 OF THE CONCRETE THICKNESS IS INDENTED TO CONTROL DRYING SHRINKAGE CRACKING. SUITABLE METHODS ARE THE USE OF PREFORMED JOINT MATERIALS OR SAW CUTTING ONE QUARTER THE SLAB THICKNESS WITHIN 6 TO 18 HOURS AFTER THE CONCRETE HAS HARDENED BEFORE DRYING SHRINKAGE CRACKS APPEAR. FOR SLIPFORM CONSTRUCTION, THE JOINTS MAY BE FORMED USING A GUILLOTINE OR WIRE TO CUT THE PLASTIC CONCRETE, OR BY SAW CUTTING THE HARDENED CONCRETE.
4. CONTRACTION JOINTS SHALL BE LOCATED AT 24 TO 30 T MAXIMUM.
5. SPACING OF CONTRACTION JOINTS SHOULD VARY TO COINCIDE WITH THE CENTER OF MAINTENANCE HOLES OR OTHER BOX-OUTS.
6. ISOLATION JOINT FILLER (AS PER SPECIFICATION SECTION 02528) SHOULD BE 12 mm THICK.
7. CONTRACTION JOINTS SHOULD BE LOCATED WHERE THE PLACING OF CONCRETE MUST BE STOPPED FOR A PERIOD IN EXCESS OF 30 MINUTES.
8. CONTRACTION JOINTS IN CURB AND GUTTER SECTIONS SHOULD EXTEND COMPLETELY THROUGH THE CURB HEIGHT AND 1/4 OF THE GUTTER THICKNESS. WHEN SIDEWALK IS ADJACENT TO CURB, MAKE JOINTS OF CURB AND SIDEWALK ALIGN.
9. IF THE CURB IS INTEGRAL WITH CONCRETE PAVEMENT, CONTRACTION JOINT SPACING IN THE CURB SHOULD MATCH THAT IN THE PAVEMENT.
10. WHERE SIDEWALK WIDTH IS 2.5 m OR GREATER, A CONTRACTION JOINT SHOULD ALSO BE FORMED ALONG THE CENTERLINE OF THE WALK. CONTRACTION JOINT SPACING FOR SIDEWALK SHALL BE APPROXIMATELY THE SAME AS THE WIDTH AND NOT MORE THAN 1.5 TIMES THE WIDTH.
11. ISOLATION JOINTS SHOULD BE LOCATED ADJACENT TO EXISTING STRUCTURES, (POLES, WALLS, HYDRANTS, BUILDINGS, ETC.) ISOLATION JOINTS SHOULD ALSO BE LOCATED BEFORE AND AFTER CURVE SECTIONS AND AT INTERSECTIONS.

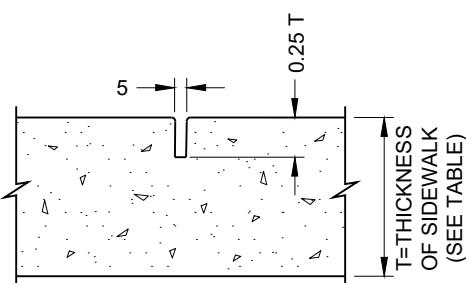
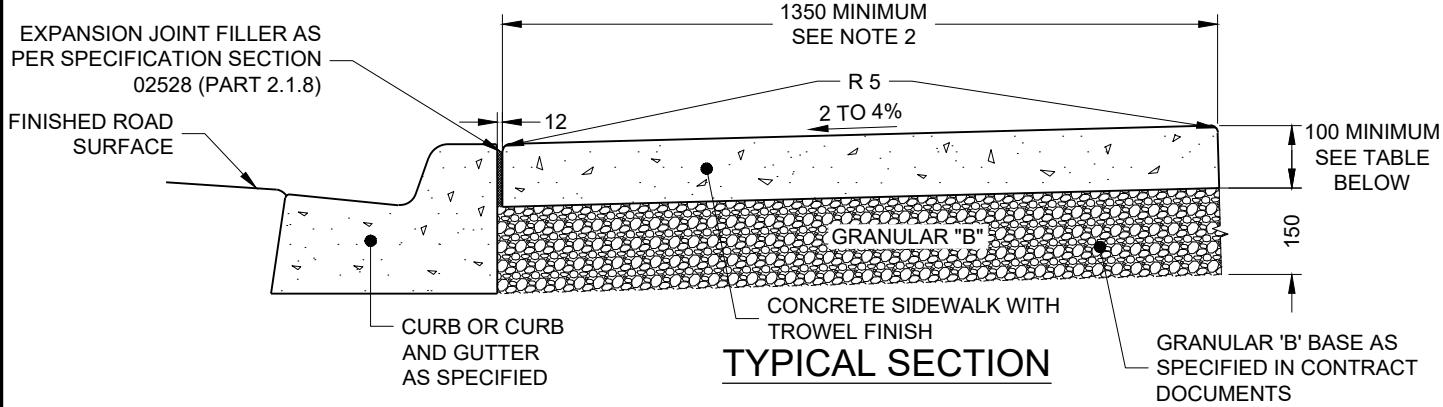
**MASTER
SPECIFICATIONS**

CONCRETE JOINT NOTES

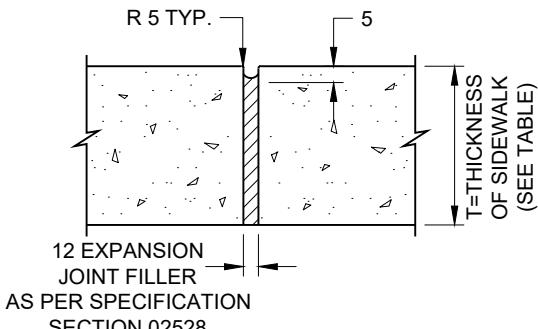
DRAWING NUMBER 04110

DATE: APRIL 2023

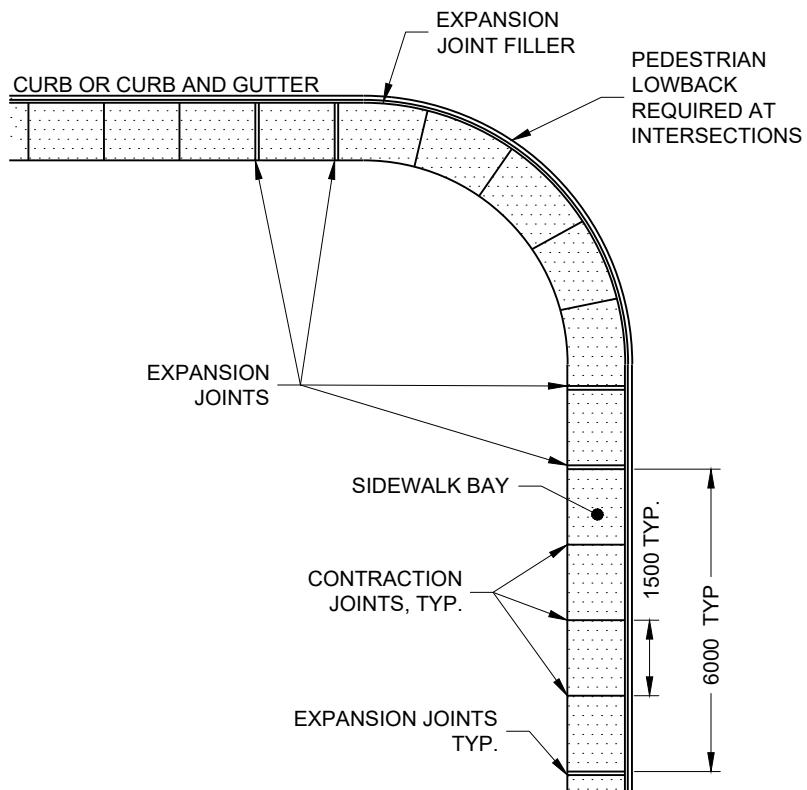
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CONTRACTION JOINT



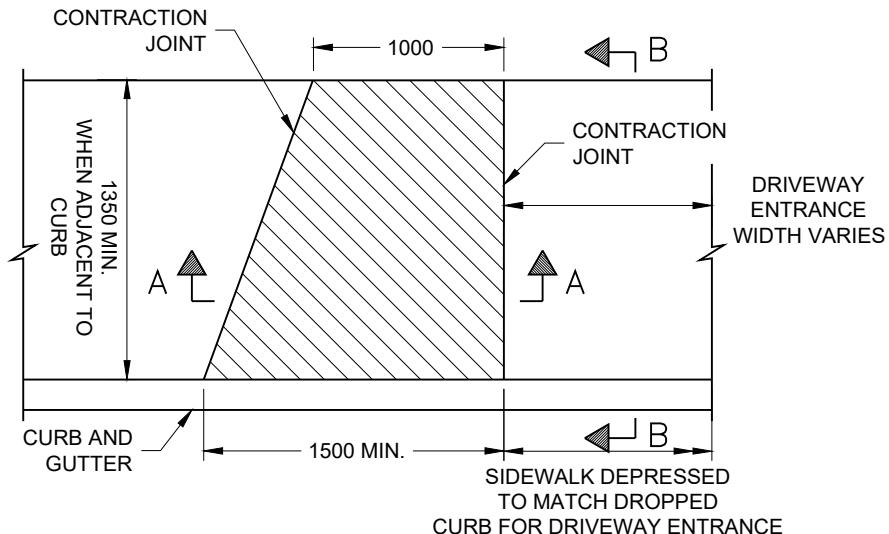
EXPANSION JOINT



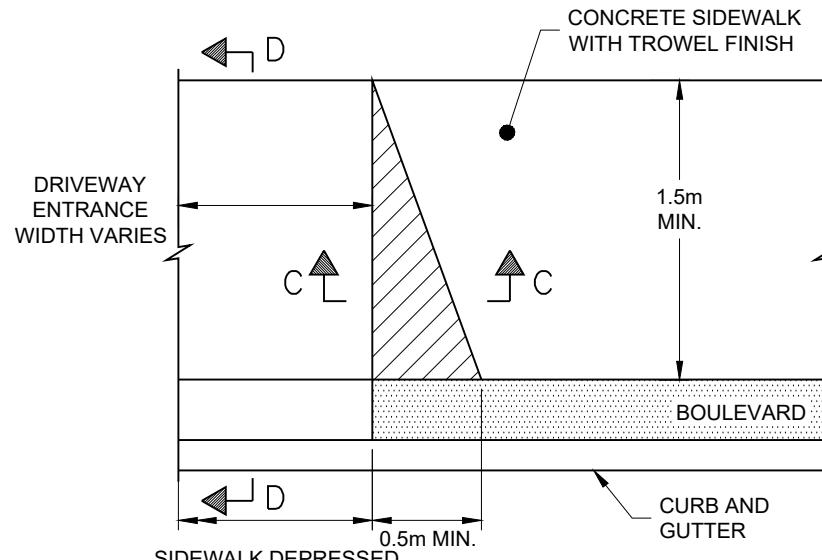
JOINT LAYOUT

NOTES:

1. 32 MPa CONCRETE TO MEET CSA A23.1/A23.2, CLASS C-2 EXPOSURE. AS PER SPECIFICATION SECTION 02528.
2. SIDEWALK WIDTH SHALL BE INCREASED TO 2400mm AT SCHOOLS, BUS STOPS, AND OTHER HIGH PEDESTRIAN AREAS. SIDEWALK LENGTH IS PROJECT SPECIFIC AND SHALL BE DETERMINED BY ENGINEER.
3. THIS STANDARD DRAWING TO BE READ IN CONJUNCTION WITH STANDARD DRAWING 04150.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
5. WHERE CONTRACTION JOINTS ARE NEEDED, THE METHOD USED MUST GUARANTEE THAT AT LEAST 1/4 OF THE DEPTH OF CONCRETE IS INDENTED TO CONTROL DRYING SHRINKAGE CRACKING. SUITABLE METHODS ARE THE USE OF PREFORMED JOINT MATERIALS OR SAW CUTTING ONE QUARTER THE SLAB THICKNESS WITHIN 6 TO 18 HOURS AFTER THE CONCRETE HAS HARDENED BEFORE DRYING SHRINKAGE CRACKS APPEAR. FOR SLIPFORM CONSTRUCTION, THE JOINTS MAY BE FORMED USING A GUILLOTINE OR WIRE TO CUT THE PLASTIC CONCRETE, OR BY SAW CUTTING THE HARDENED CONCRETE.
6. CONTRACTION JOINTS SHALL BE LOCATED AT 24 TO 30 D MAXIMUM. WHERE SIDEWALK WIDTH IS 2.5 m OR GREATER, A CONTRACTION JOINT SHOULD ALSO BE FORMED ALONG THE CENTERLINE OF THE WALK. CONTRACTION JOINT SPACING FOR SIDEWALK SHALL BE APPROXIMATELY THE SAME AS THE WIDTH AND NOT MORE THAN 1.5 TIMES THE WIDTH.
7. ISOLATION JOINTS SHOULD BE LOCATED ADJACENT TO EXISTING STRUCTURES, (POLES, WALLS, HYDRANTS, BUILDINGS, ETC.) ISOLATION JOINTS SHOULD ALSO BE LOCATED BEFORE AND AFTER CURVE SECTIONS AND AT INTERSECTIONS.
8. ISOLATION JOINT FILLER SHOULD BE 12 mm THICK.
9. CONTRACTION JOINTS SHOULD BE LOCATED WHERE THE PLACING OF CONCRETE MUST BE STOPPED FOR A PERIOD IN EXCESS OF 30 MINUTES.

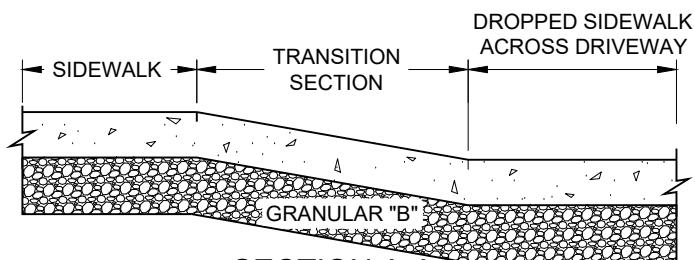


FULLY DEPRESSED



PARTIALLY DEPRESSED

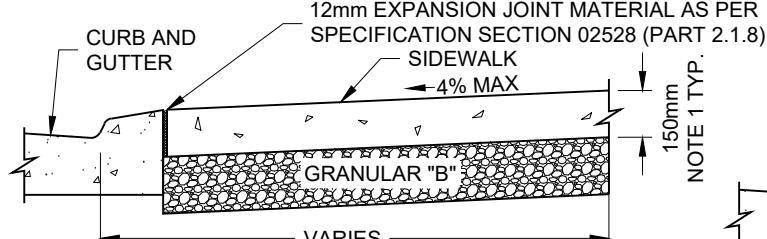
SIDEWALK AT DRIVEWAY ENTRANCE - PLAN



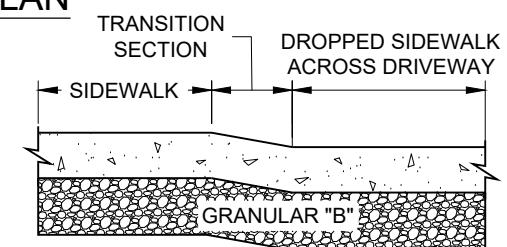
NOTES:

1. DRIVEWAY MINIMUM THICKNESS OF SIDEWALK SHALL BE 150 MILLIMETERS, 200mm AT COMMERCIAL AND INDUSTRIAL DRIVEWAYS.
2. FOR CONTRACTION JOINT DETAIL, SEE STANDARD DRAWING 04100.
3. CONCRETE IS TO BE 32 MPa TO MEET CSA A23.1/23.2, CLASS C-2 EXPOSURE.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

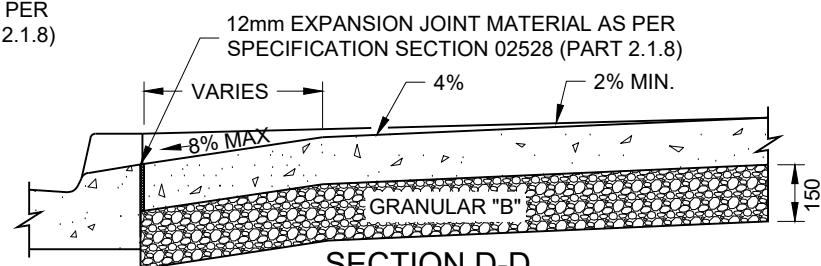
SECTION A-A



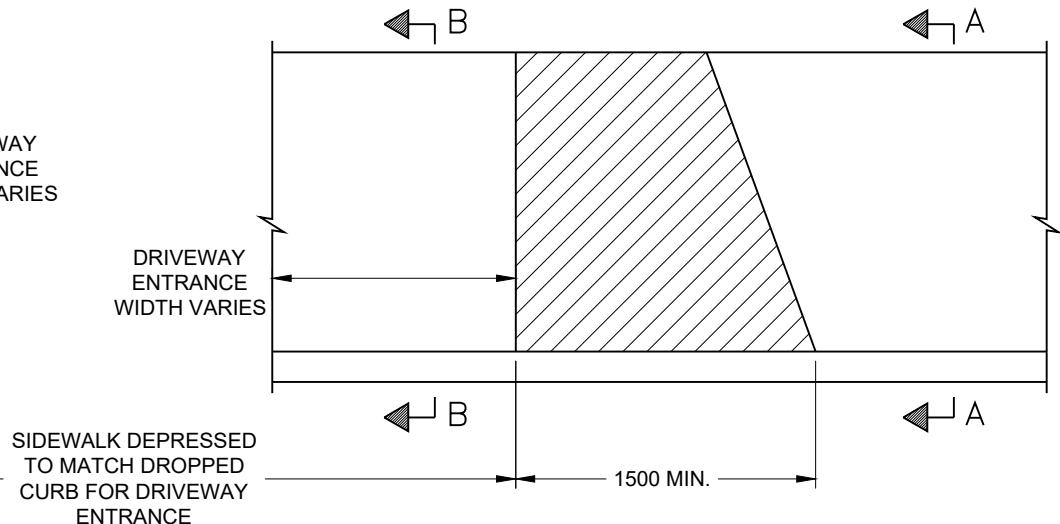
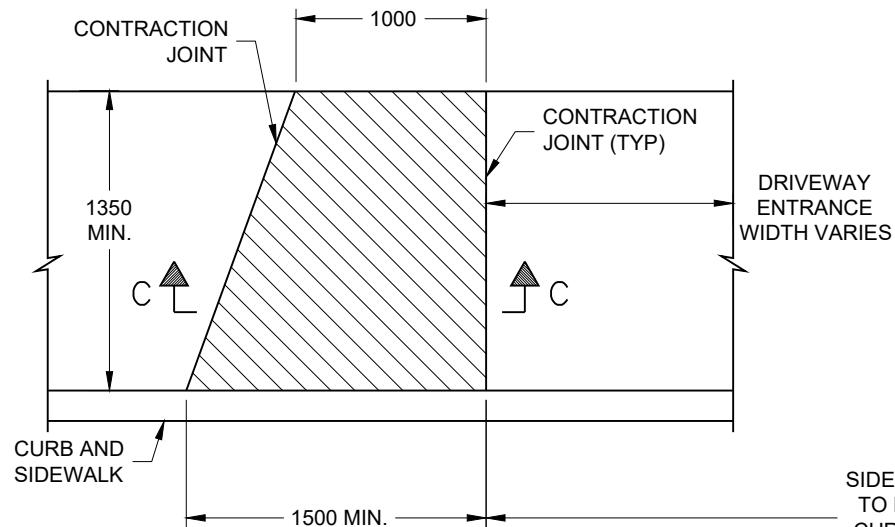
SECTION B-B
SIDEWALK WITHOUT BOULEVARD



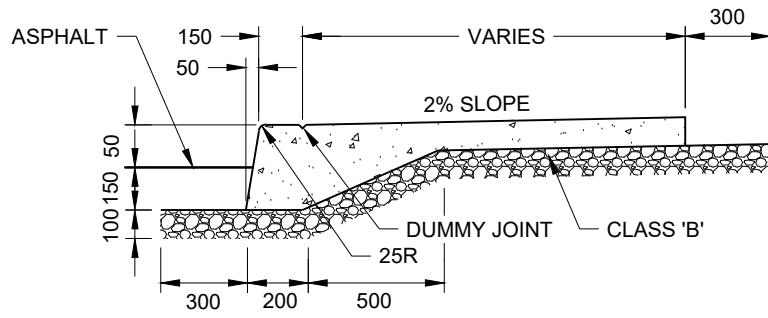
SECTION C-C



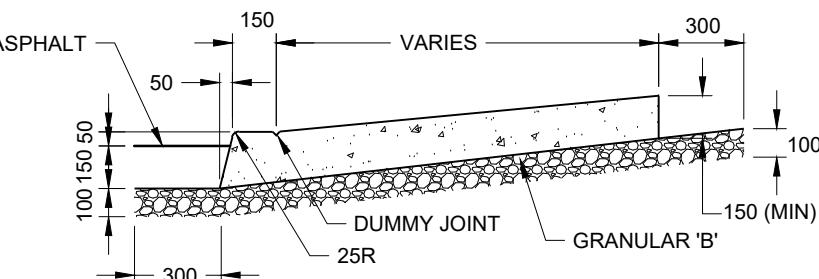
SECTION D-D
SIDEWALK WITH BOULEVARD



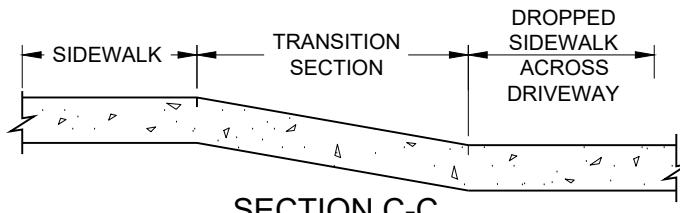
SIDEWALK AT DRIVEWAY ENTRANCE - PLAN



SECTION A-A



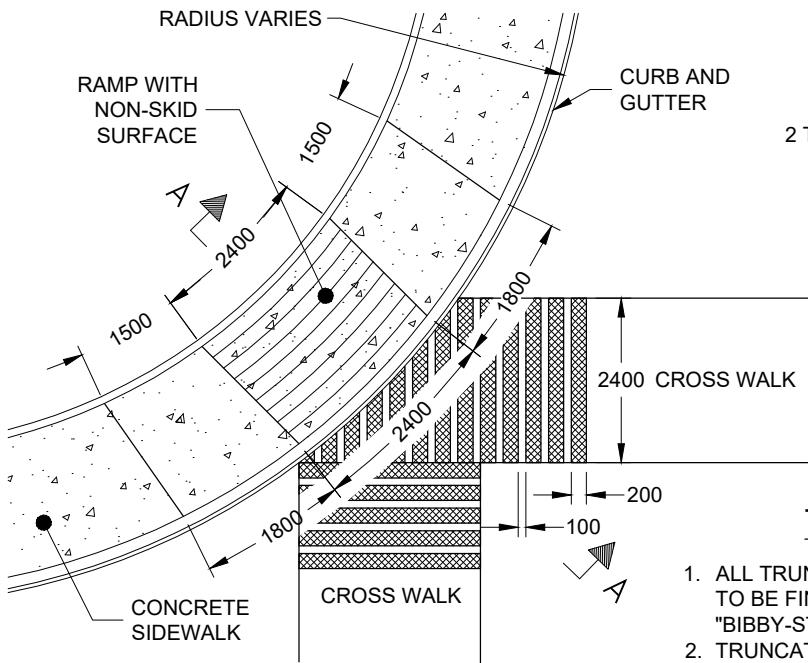
SECTION B-B



SECTION C-C

NOTES:

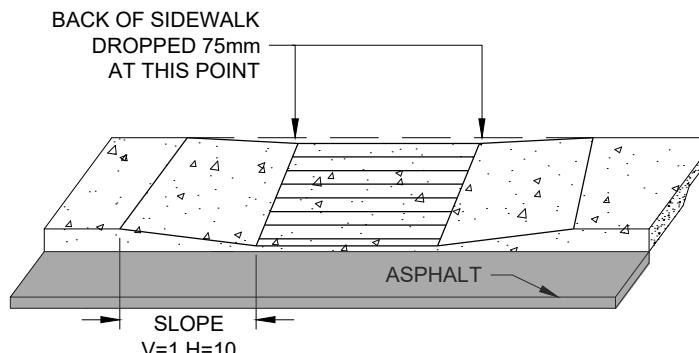
1. DRIVEWAY MINIMUM THICKNESS OF SIDEWALK SHALL BE 150 MILLIMETERS, 200mm AT COMMERCIAL AND INDUSTRIAL DRIVEWAYS.
2. FOR CONTRACTION JOINT DETAIL, SEE STANDARD DRAWING 04100.
3. CONCRETE IS TO BE 32 MPa TO MEET CSA A23.1/23.2, CLASS C-2 EXPOSURE.



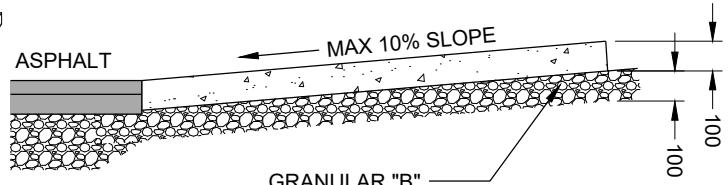
PLAN VIEW

TACTILE PLATES OPTION

1. ALL TRUNCATED DOME DETECTABLE WARNING PLATE DESIGNS ARE TO BE FINALIZED BY THE PLATE MANUFACTURER, "BIBBY-STE-CROIX" OR APPROVED EQUIVALENT (610mmx610mm SQ.).
2. TRUNCATED DOME PLATES ARE TO BE PLACED 150mm OFFSET FROM BACK OF CURB (200mm MAX.) MINIMUM 150mm CONCRETE REQUIRED FROM OUTER EDGE OF PLATE ASSEMBLY TO EDGE OF SIDEWALK.
3. COLOUR OF TRUNCATED DOME PLATES TO BE NATURAL PATINA.
4. PLATES TO BE ALIGNED PARALLEL TO CURB. ON RADII, REAR CORNERS OF ADJACENT PLATES TO TOUCH.



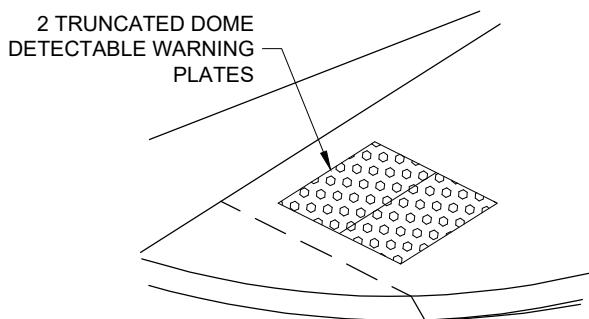
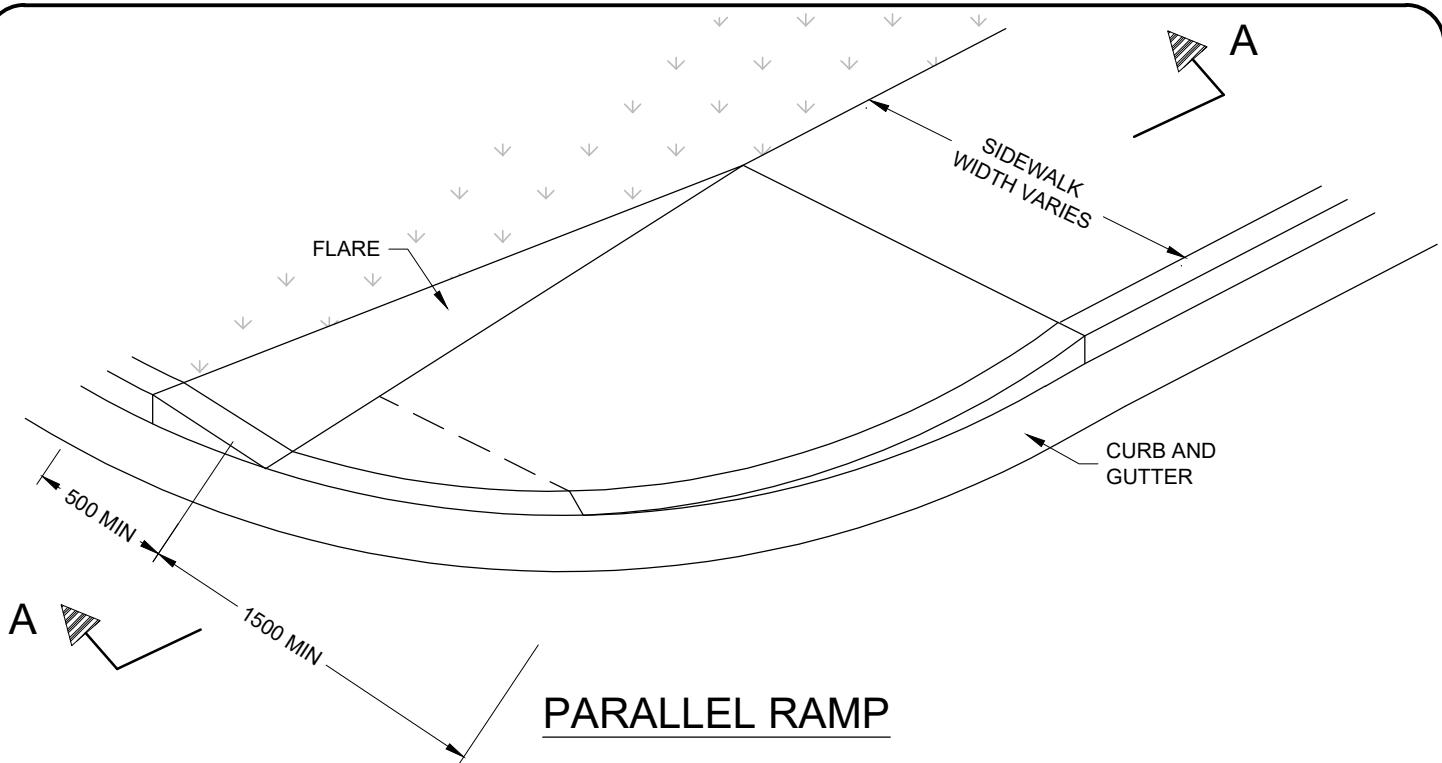
RAMP VIEW



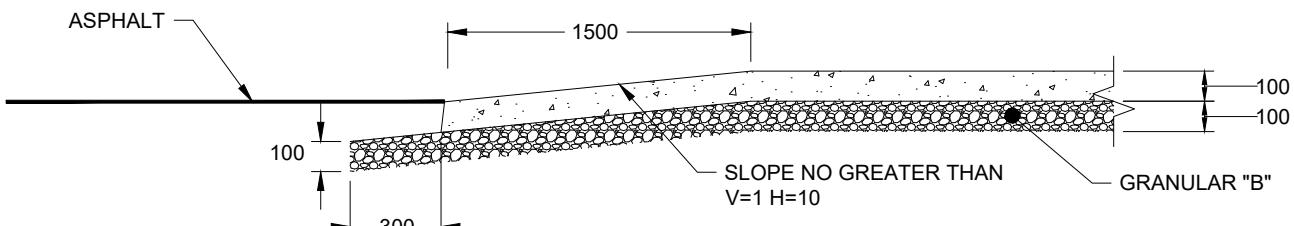
SECTION A-A

NOTES:

1. CONCRETE TO BE 32 MPa TO MEET CSA A23.1/23.2, CLASS C-2 EXPOSURE.
2. A NON-SKID RIBBED SURFACE SHALL BE EDGED ON RAMP. SCORE LINES MUST LINE UP IN THE DIRECTION OF TRAVEL AND BE PARALLEL WITH THE SIDEWALK. SCORE CONCRETE USING A 9.5mm TROWEL, MIN 6 SCORE LINES AT 150mm O.C.
3. THE CURB RAMP SLOPE SHOULD BE IN ACCORDANCE WITH THE PROVINCIAL BUILDINGS AND ACCESSIBILITY ACT AND REGULATIONS AND SHOULD NOT EXCEED 1:10 SLOPE.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



1. ALL TRUNCATED DOME DETECTABLE WARNING PLATE DESIGNS ARE TO BE FINALIZED BY THE PLATE MANUFACTURER, "BIBBY-STE-CROIX" OR APPROVED EQUIVALENT (610mmx610mm SQ.).
2. TRUNCATED DOME PLATES ARE TO BE PLACED 150mm OFFSET FROM BACK OF CURB (200mm MAX.) MINIMUM 150mm CONCRETE REQUIRED FROM OUTER EDGE OF PLATE ASSEMBLY TO EDGE OF SIDEWALK.
3. COLOUR OF TRUNCATED DOME PLATES TO BE NATURAL PATINA.
4. PLATES TO BE ALIGNED PARALLEL TO CURB. ON RADII, REAR CORNERS OF ADJACENT PLATES TO TOUCH.



NOTES:

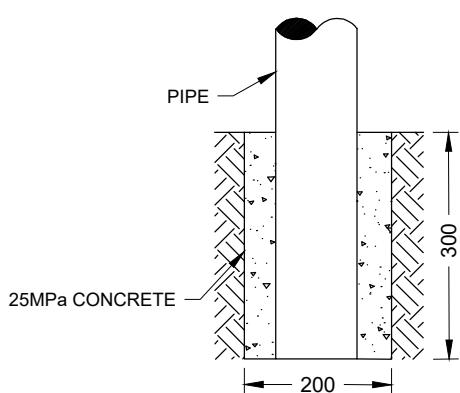
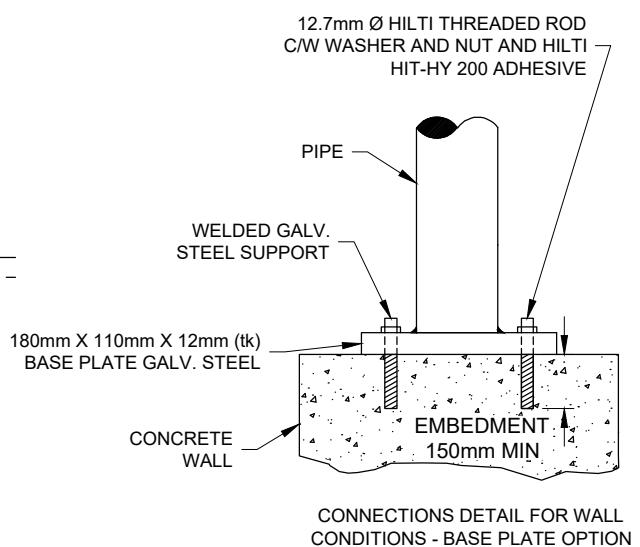
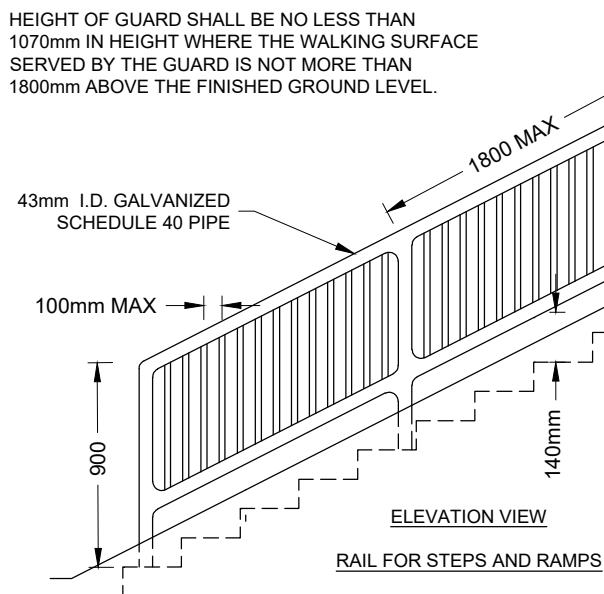
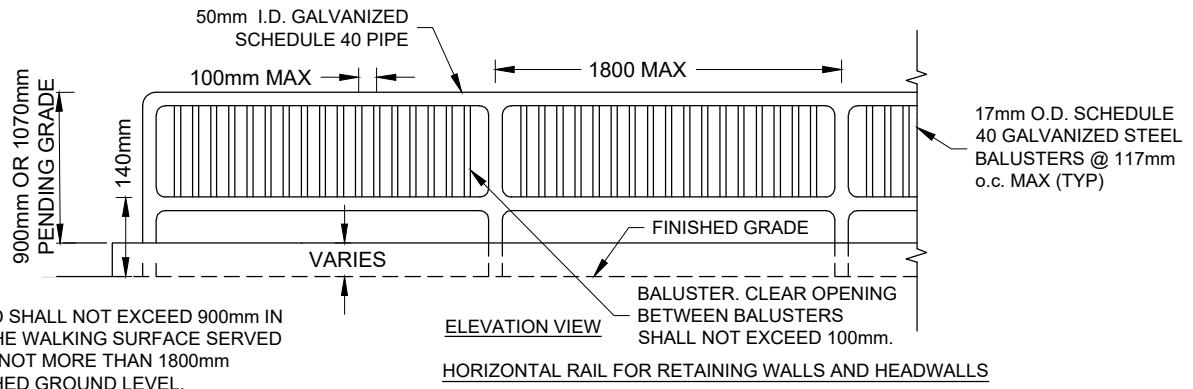
1. CONCRETE IS TO BE 32MPa TO MEET CSA A23.1/A23.2, CLASS C-2 EXPOSURE.
2. A NON-SKID RIBBED SURFACE SHALL BE EDGED ON RAMP. SCORE LINES MUST LINE UP IN THE DIRECTION OF TRAVEL AND BE PARALLEL WITH THE SIDEWALK. SCORE CONCRETE USING A 9.5mm TROWEL, MIN 6 SCORE LINES AT 150mm O.C.
3. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

**MUNICIPAL MASTER
SPECIFICATIONS**

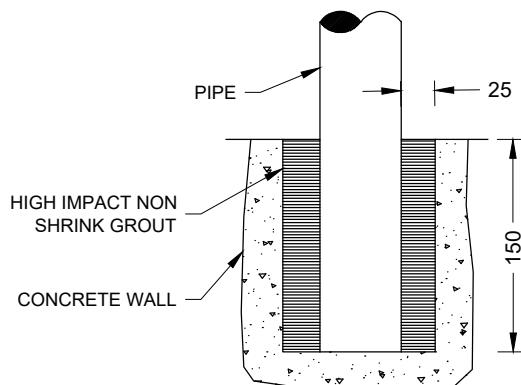
PARALLEL CURB RAMP

DRAWING NUMBER 04160

DATE: APRIL 2023
SCALE: N.T.S.



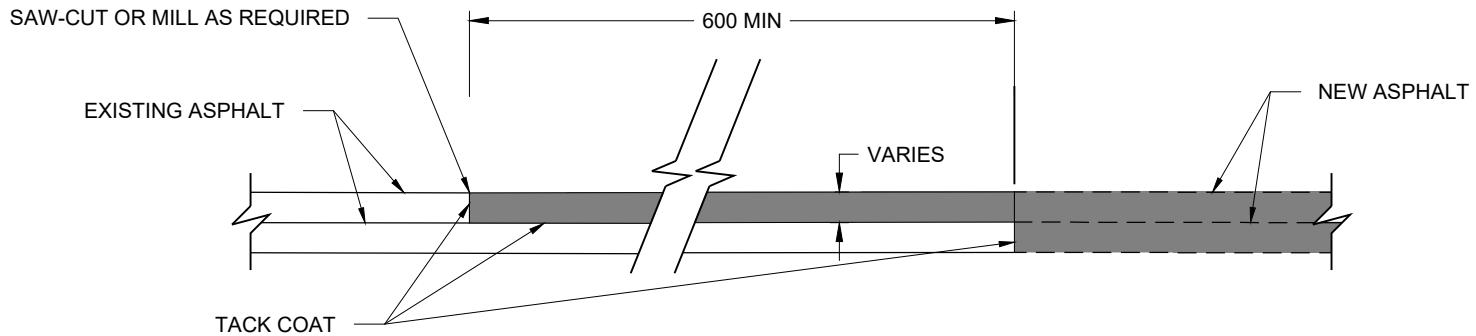
FOOTING DETAIL FOR O.M. CONDITIONS



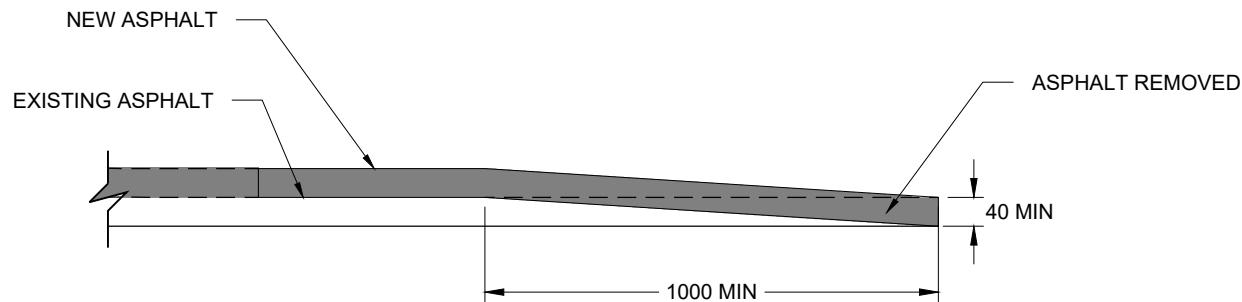
CONNECTIONS DETAIL FOR WALL CONDITIONS - CORE & GROUT OPTION

NOTES:

1. ALL WELDING TO BE IN ACCORDANCE WITH THE LATEST EDITION OF CSA W59.



OVERLAY ON TWO LIFTS OF EXISTING ASPHALT



OVERLAY ON ONE LIFT OF EXISTING ASPHALT

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

MIN. ALLOWABLE DEFLECTION ANGLES FOR CONCRETE PIPE

PIPE SIZE	MINIMUM ALLOWABLE DEFLECTION ANGLE				
(mm)	1200 MH	1500 MH	1800 MH	2100 MH	2400 MH
200	90	90	90	90	90
250	90	90	90	90	90
300	90	90	90	90	90
375	90	90	90	90	90
450	90	90	90	90	90
525	110	90	90	90	90
600	115	90	90	90	90
750	N/A	110	90	90	90
900	N/A	135	110	90	90
1050	N/A	N/A	115	110	90

MIN. ALLOWABLE DEFLECTION ANGLES FOR PVC PIPE

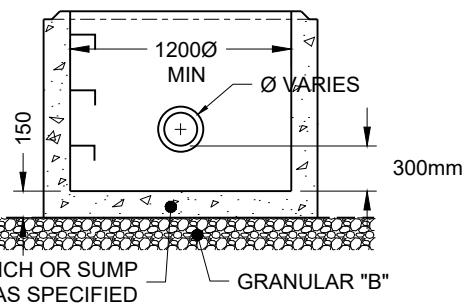
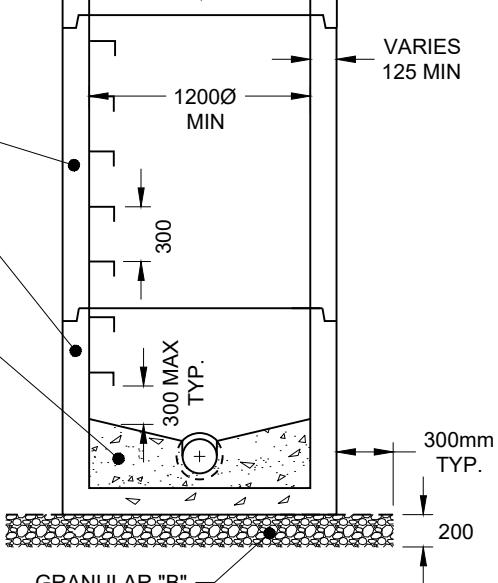
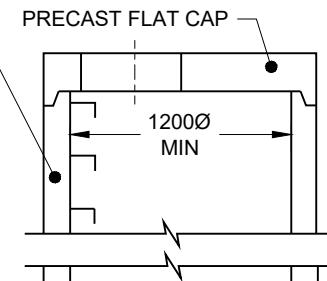
PIPE SIZE	1200 MH	1500 MH	1800 MH	2100 MH	2400 MH
(mm)	MIN ANGLE				
200	90	90	90	90	90
250	90	90	90	90	90
300	90	90	90	90	90
375	90	90	90	90	90
450	90	90	90	90	90
525	95	90	90	90	90
600	110	90	90	90	90
750	N/A	N/A	N/A	95	90
900	N/A	N/A	N/A	110	90
1050	N/A	N/A	N/A	105	95

AS SPECIFIED (SEE NOTE 8 BELOW)

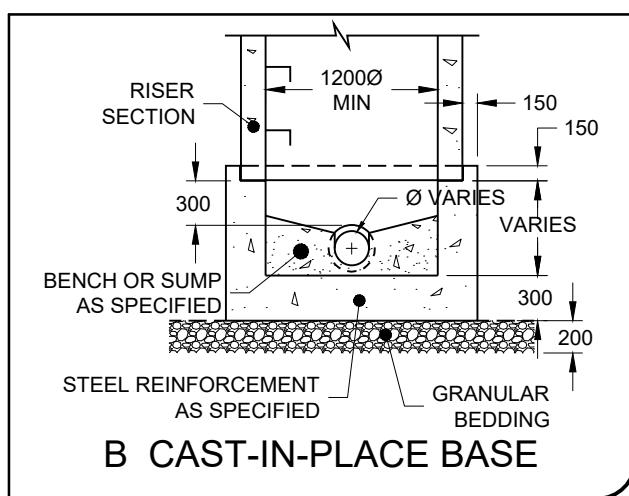
MH TYPE	MIN INVERT DROP
STRAIGHT RUN to 45° TURN	50mm
45° TURN +	150mm

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

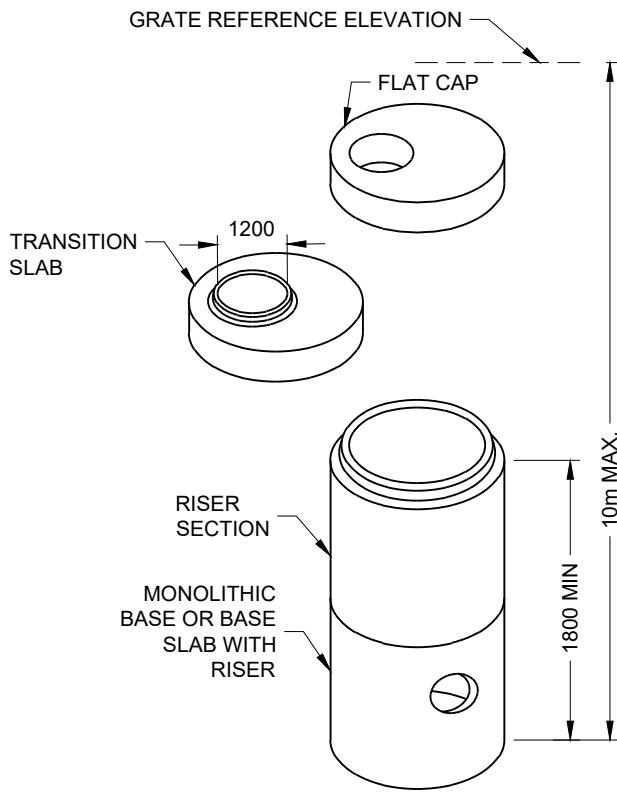
1. AIR ENTRAINED 30 MPa CONCRETE OR AN APPROVED NON-SHRINK GROUT. IF FINAL GRADE ADJUSTMENT EXCEEDS 150 mm IN HEIGHT THEN CIRCULAR 15M REBAR MUST BE INCORPORATED IN THE RAISED SECTION.
2. PRE-CAST CONCRETE GRADE RINGS (MAX. 2 RINGS) WITH A MINIMUM GRADE RING SIZE OF 150 mm



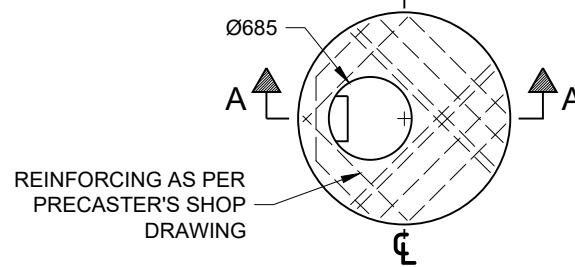
SUMP DETAIL



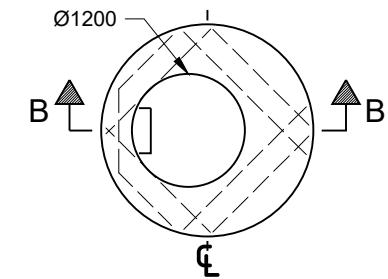
B CAST-IN-PLACE BASE



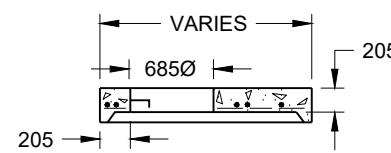
MAINTENANCE HOLE
COMPONENTS



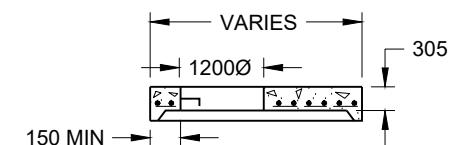
PLAN OF FLAT CAP



PLAN OF TRANSITION SLAB



SECTION A-A



SECTION B-B

NOTES:

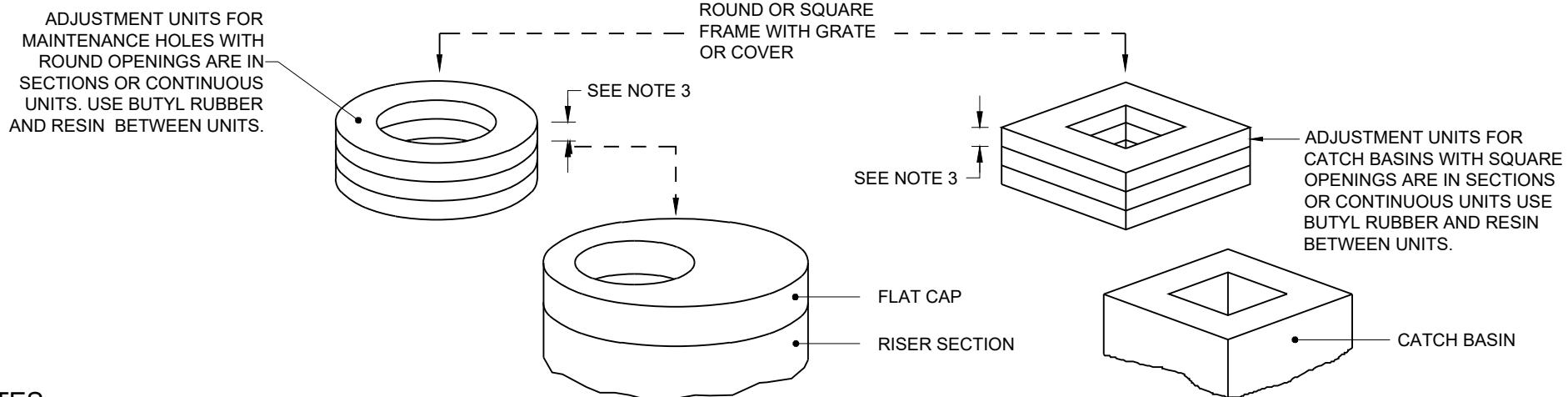
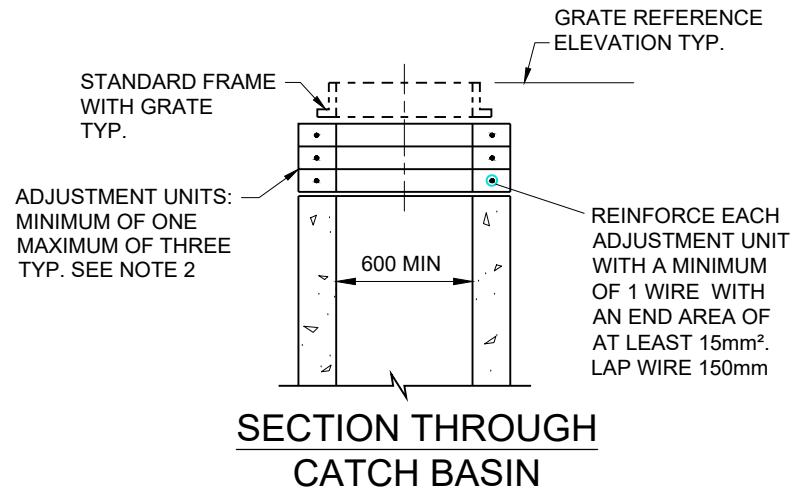
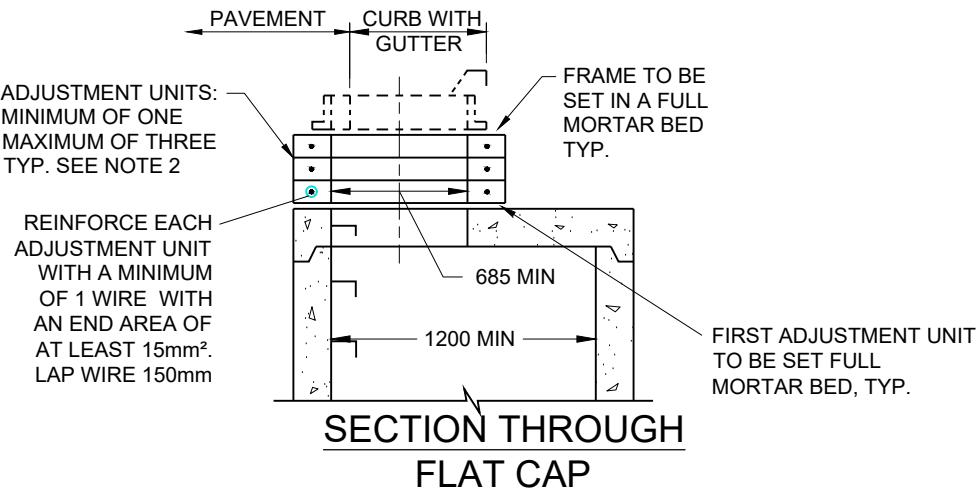
1. CENTER REINFORCING STEEL IN RISER ± 20 mm. ALL OTHER REINFORCING STEEL SHALL HAVE 25mm MINIMUM COVER.
2. STEPS SHALL BE ACCORDING TO STANDARD DRAWING 04280.
3. ALL DIMENSIONS ARE NOMINAL AND ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
4. IF A TRANSITION SLAB IS REQUIRED THE DETAIL SHALL BE PROVIDED BY THE PRECASTER

MASTER
SPECIFICATIONS

PRECAST CONCRETE MAINTENANCE
HOLE COMPONENTS
VARIOUS SIZES

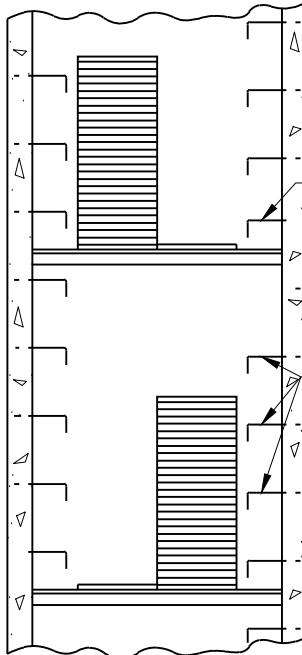
DRAWING NUMBER 04220

DATE:
APRIL 2023
SCALE:
N.T.S.

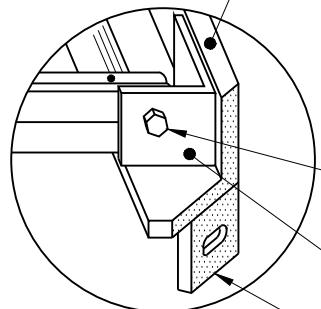


NOTES:

1. IF FIRST STEP IS IN AN ADJUSTMENT UNIT, THE ADJUSTMENT UNIT SHALL BE OF THE TYPE MANUFACTURED WITH A STEP IN PLACE.
2. CENTER REINFORCING IN ADJUSTMENT UNIT ± 10 mm.
3. ROUND AND SQUARE ADJUSTMENT UNITS ARE AVAILABLE IN SIZES OF 50, 75, 100, 150, AND 300mm.
4. ADJUSTMENT UNITS SHALL NOT EXTEND BEYOND THE OUTSIDE EDGE OF THE STRUCTURE.
5. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



SECTION A-A
GRATING OPEN

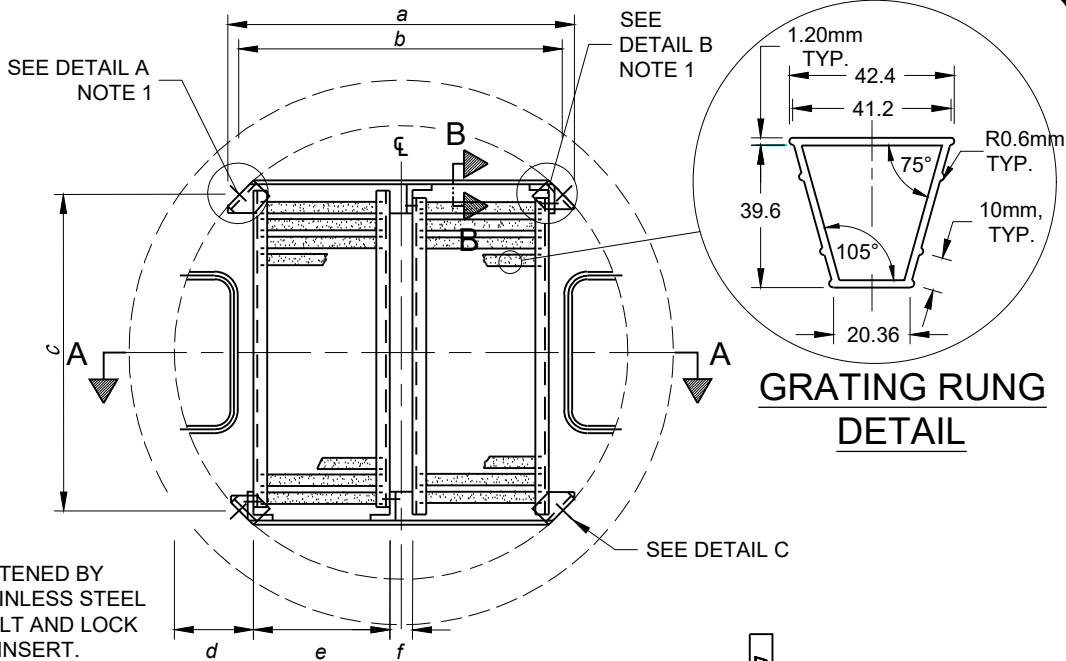


DETAIL B

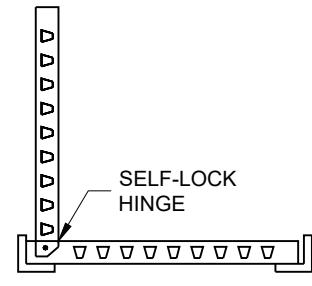
ANGLE TO BE FASTENED BY
12.7 X 44.5mm STAINLESS STEEL
L.G. HEX HEAD BOLT AND LOCK
NUT WITH NYLON INSERT.

HINGE BRACKET

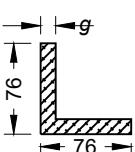
MOUNTING BRACKET,
TYP. (SEE DETAIL C)



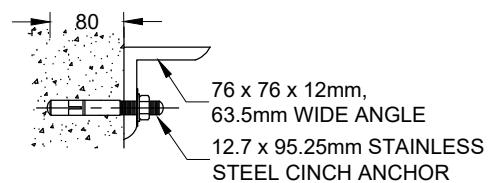
**DETAIL OF GRATING
AND BOLT-ON SUPPORT PLAN**



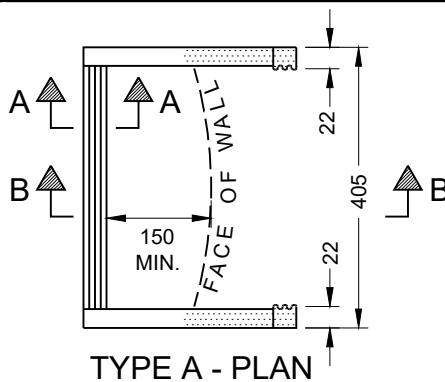
**OPEN POSITION
SIDE VIEW**



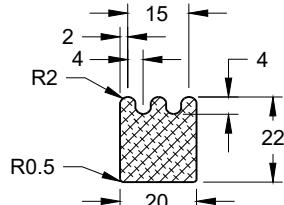
SECTION B-B



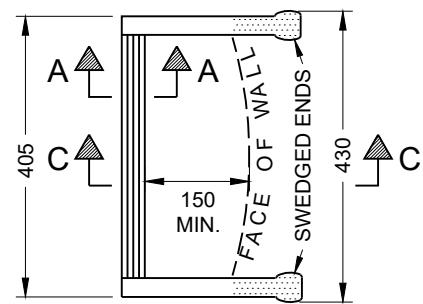
DETAIL C



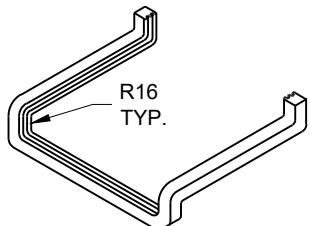
TYPE A - PLAN



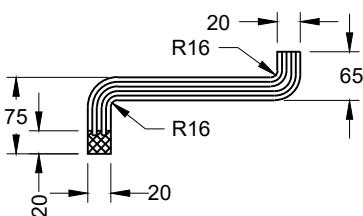
SECTION A-A



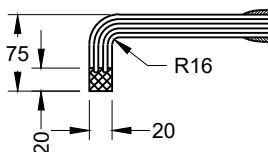
TYPE B - PLAN



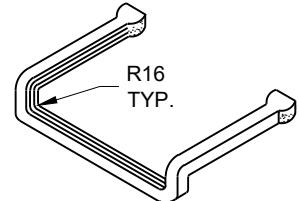
AUXILIARY VIEW



SECTION B-B



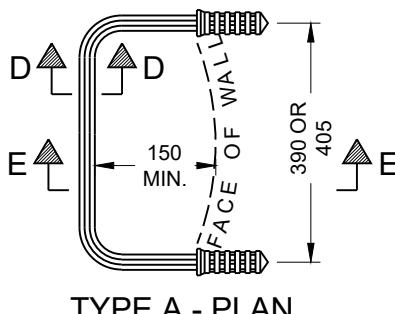
SECTION C-C



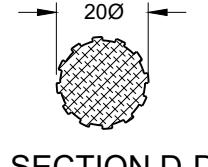
AUXILIARY VIEW

TYPE A

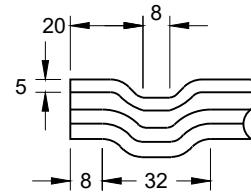
RECTANGULAR ALUMINUM



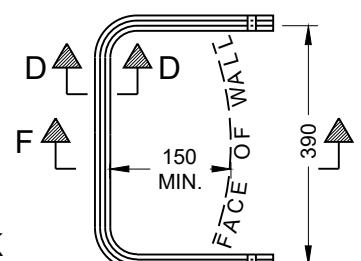
TYPE A - PLAN



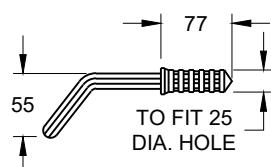
SECTION D-D



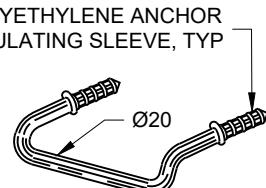
FORMED ANCHOR LOCK
DETAIL



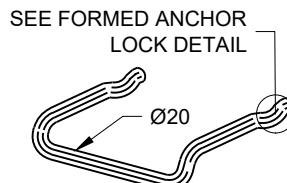
TYPE B - PLAN



SECTION E-E



AUXILIARY VIEW



AUXILIARY VIEW



SECTION F-F

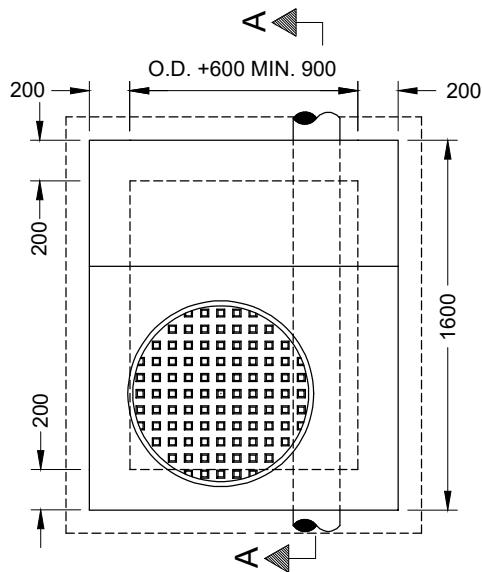
TYPE A

TYPE B

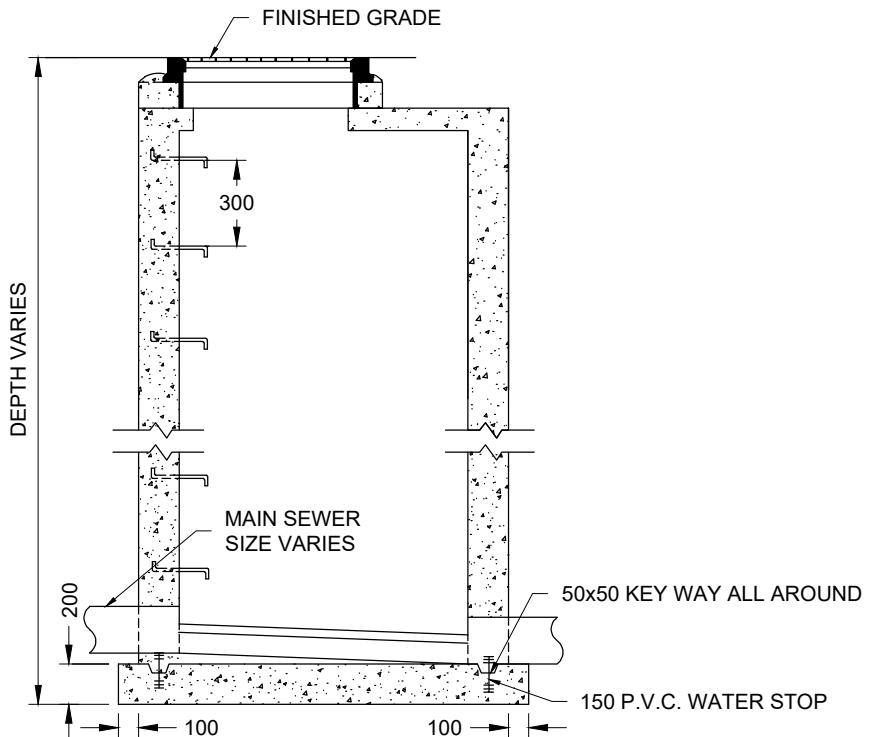
CIRCULAR ALUMINUM

NOTES:

1. ALL ALUMINUM COMPONENTS SHALL BE 6000 SERIES STRUCTURAL ALUMINUM.
2. ALL ALUMINUM IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH ASPHALT PAINT.
3. STEPS CAN BE CAST IN PLACE DURING CASTING OF THE MAINTENANCE HOLE, OR MECHANICALLY FASTENED (CAN/CSA 257.4-03) AFTER MAINTENANCE HOLE IS CONSTRUCTED.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



PLAN



SECTION A-A

NOTES:

1. CONCRETE TO BE 30 MPa TO MEET CSA A23.1, CLASS C-2 EXPOSURE.
2. FOR SUMP DETAIL SEE STANDARD DRAWING 04190.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH STANDARD DRAWING 04320.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

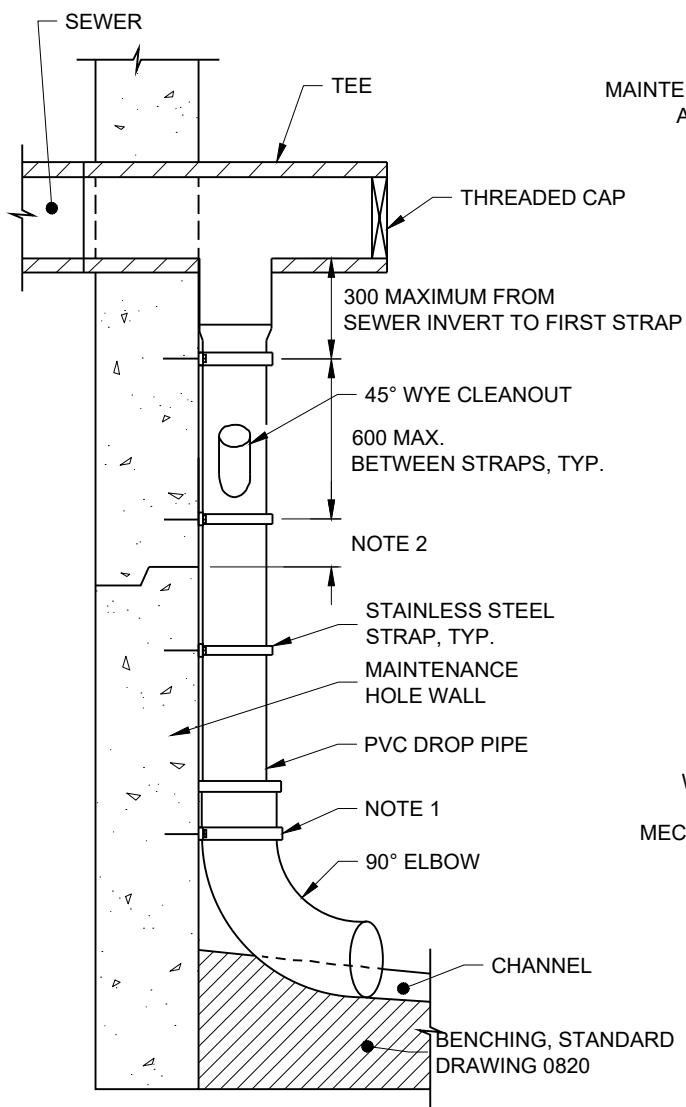
MH TYPE	MIN INVERT DROP
STRAIGHT RUN to 45° TURN	50mm
45° TURN +	150mm

**MUNICIPAL MASTER
SPECIFICATIONS**

**CAST-IN-PLACE MAINTENANCE
HOLE BACKDROP STRUCTURE**

DRAWING NUMBER 04290

DATE: APRIL 2023
SCALE: N.T.S.



MAINTENANCE HOLE AS SPECIFIED

GRANULAR "B"

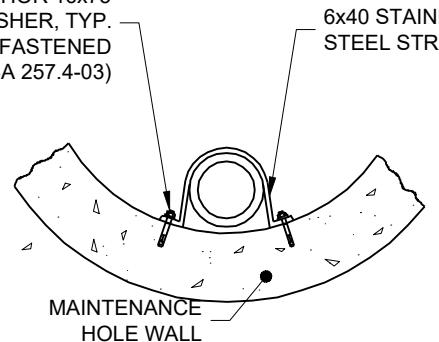
SIDE VIEW

FLOW

FRONT VIEW

MAINTENANCE HOLE IN SECTION

304 STAINLESS STEEL WEDGE ANCHOR 16x75 WITH WASHER, TYP. MECHANICALLY FASTENED (CAN/CSA 257.4-03)

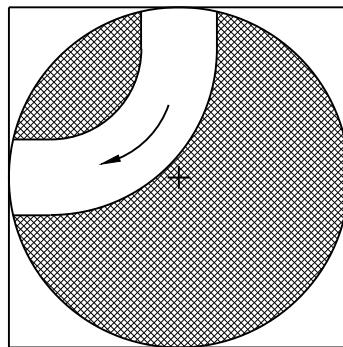


INTERNAL DROP STRUCTURE DETAIL

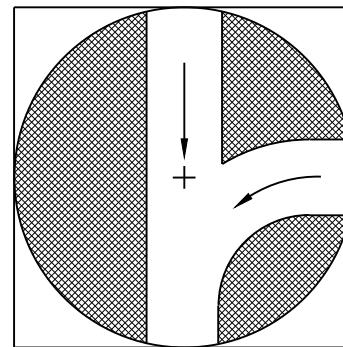
FASTENER DETAIL

NOTES:

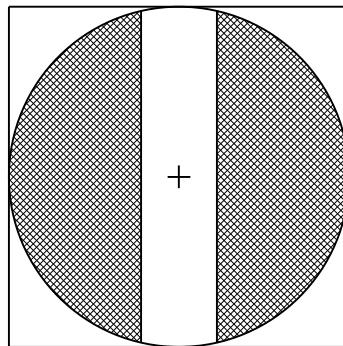
1. AT THE ELBOW, A STAINLESS STEEL STRAP IS REQUIRED AT BOTTOM OF BELL.
2. STRAPS SHALL NOT BE PLACED WITHIN 150mm OF ANY MAINTENANCE HOLE SECTION JOINT.
3. INTERNAL DROP STRUCTURE SHALL BE USED IN MAINTENANCE HOLES WITH A MINIMUM HEIGHT OF 600mm FROM THE INLET PIPE INVERT TO THE BOTTOM OF CHANNEL.
4. MINIMUM DIAMETER FOR MAINTENANCE HOLE TO BE 1500mm, MINIMUM INSIDE CLEARANCE OF MAINTENANCE HOLE TO BE 1200mm AFTER DROP STRUCTURE INSTALLED.
5. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



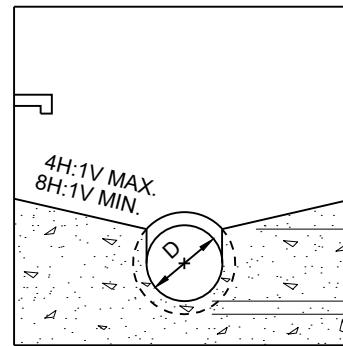
1. RIGHT ANGLE BEND



2. THREE WAY JUNCTION



3. STRAIGHT THROUGH

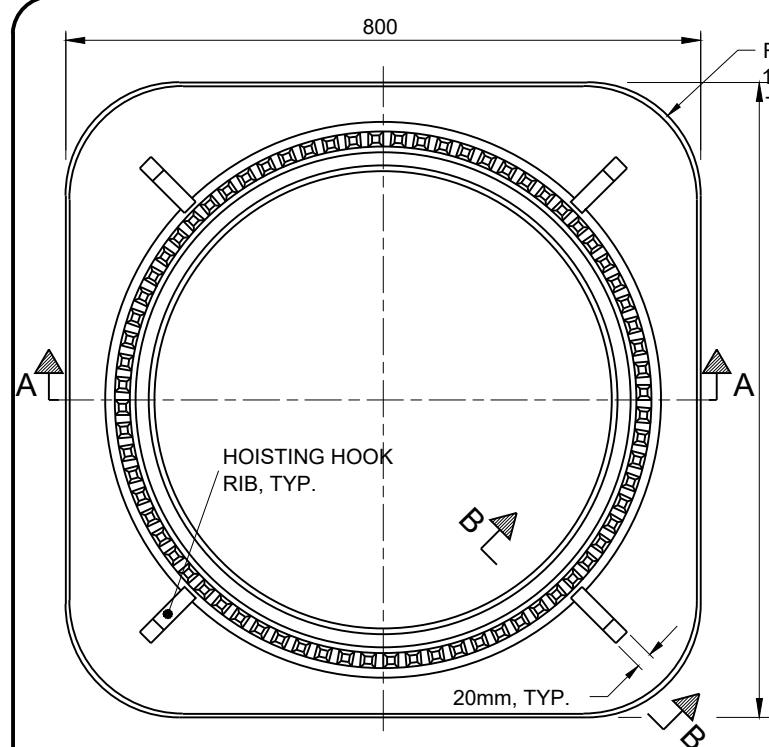


SECTION

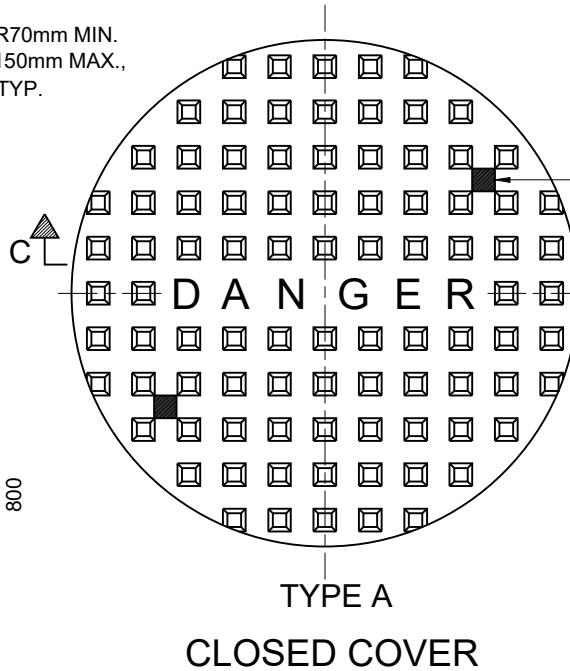
MAXIMUM PIPE DIAMETER IN THE WALL OF PRECAST RISER SECTIONS		
MAINTENANCE HOLE DIAMETER	No. 1-2	No. 3
1200	450	900
1500	750	1050
1800	900	1485

NOTES:

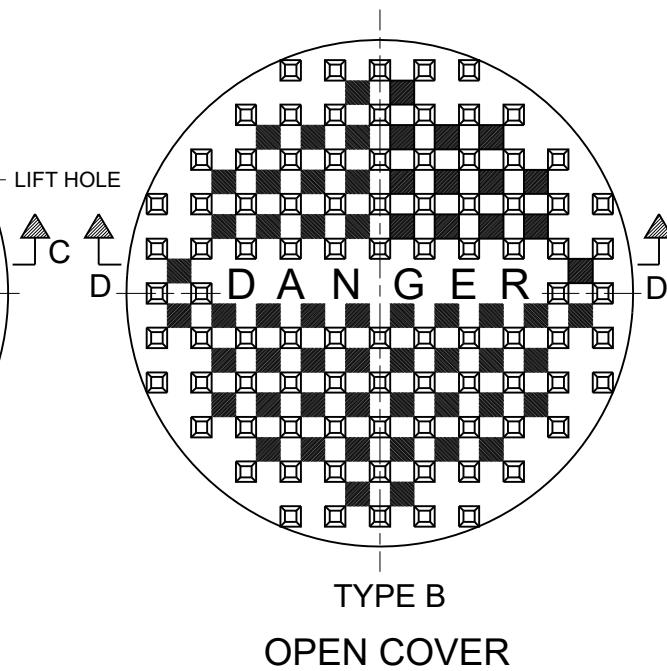
1. CONCRETE FOR BENCHING SHALL BE 30MPa.
2. BENCHING AND CHANNEL SHALL BE TROWEL FINISHED
3. WHEN SPECIFIED, MAINTENANCE HOLES THAT ARE 1200mm IN DIAMETER WITH A UNIFORM CHANNEL FOR 200 OR 250mm PIPE MAY BE PREBENCHING AT THE MANUFACTURER WITH STANDARDIZED BENCHING SLOPE AND CHANNEL ORIENTATION.
4. ALL DIMENSIONS ARE NOMINAL AND IN MILLIMETERS UNLESS OTHERWISE NOTED.
5. THERE IS TO BE A MINIMUM CLEARANCE OF 150mm BETWEEN THE FACE OF THE PIPE AND INSIDE OF THE MAINTENANCE HOLE.



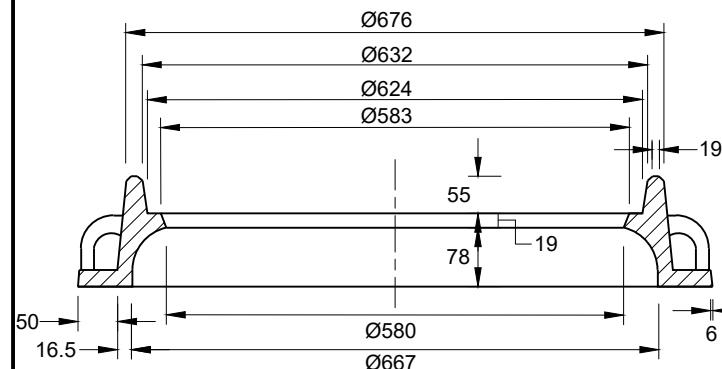
FRAME PLAN



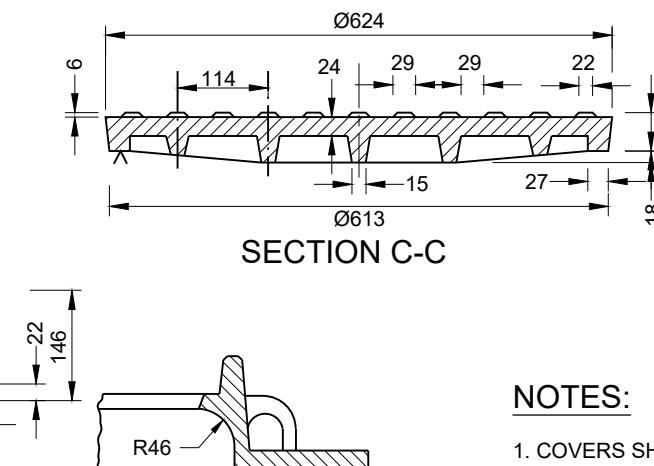
CLOSED COVER



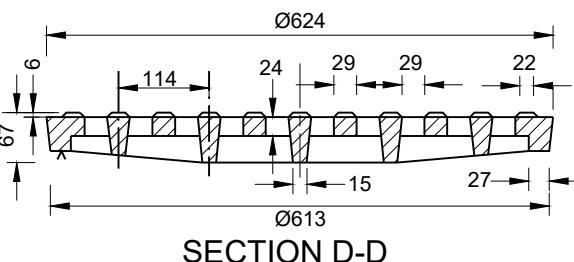
OPEN COVER



SECTION A-A



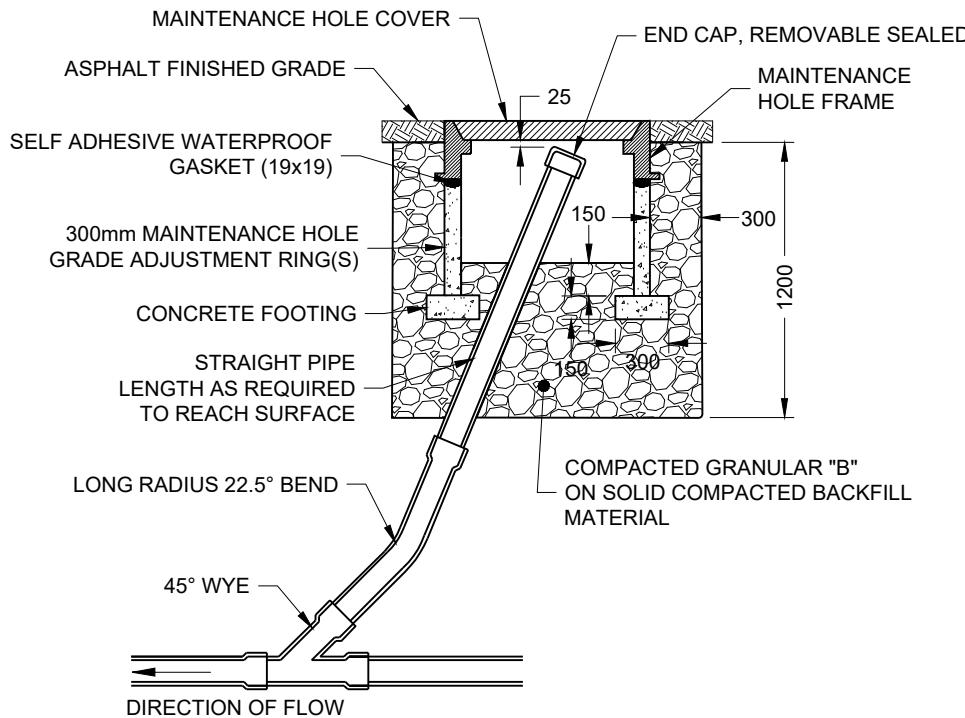
SECTION C-C



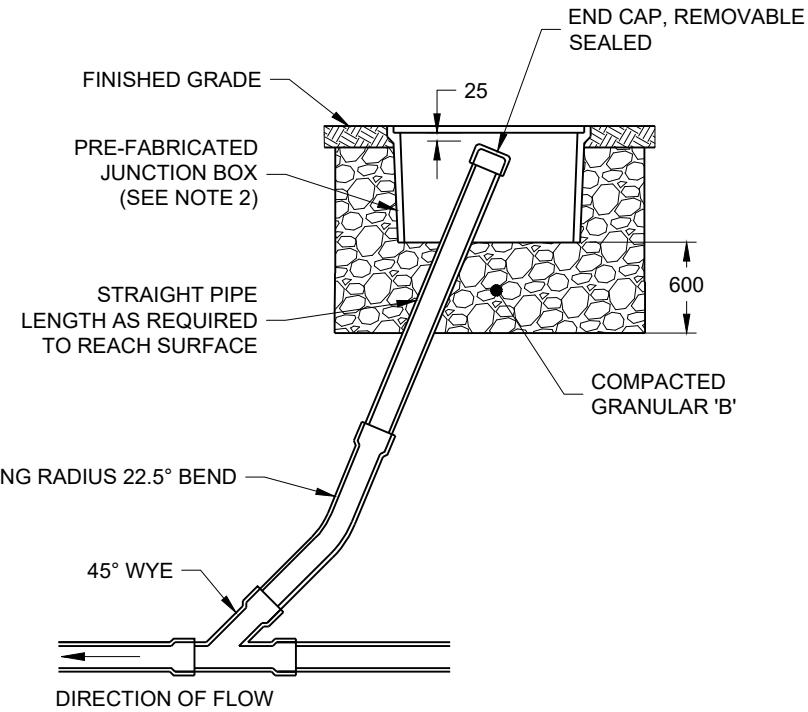
SECTION D-D

NOTES:

1. COVERS SHALL BE TYPE A OR TYPE B AS SPECIFIED IN THE CONTRACT DOCUMENTS.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



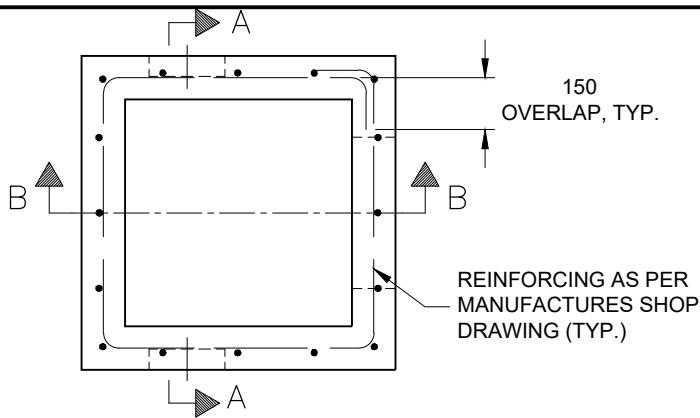
CLEAN OUT IN ASPHALT



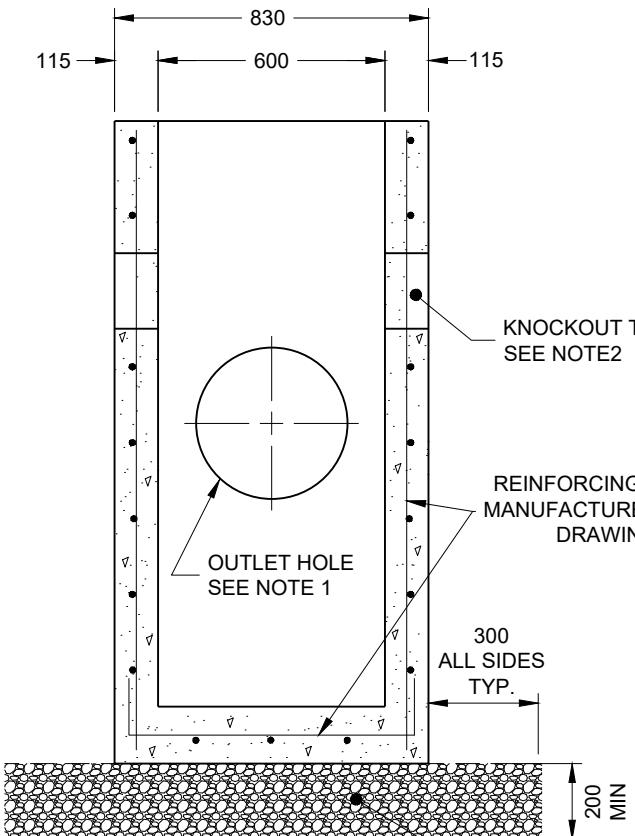
CLEAN OUT IN SIDEWALK OR GRASS USING A PREFAB JUNCTION BOX

NOTES:

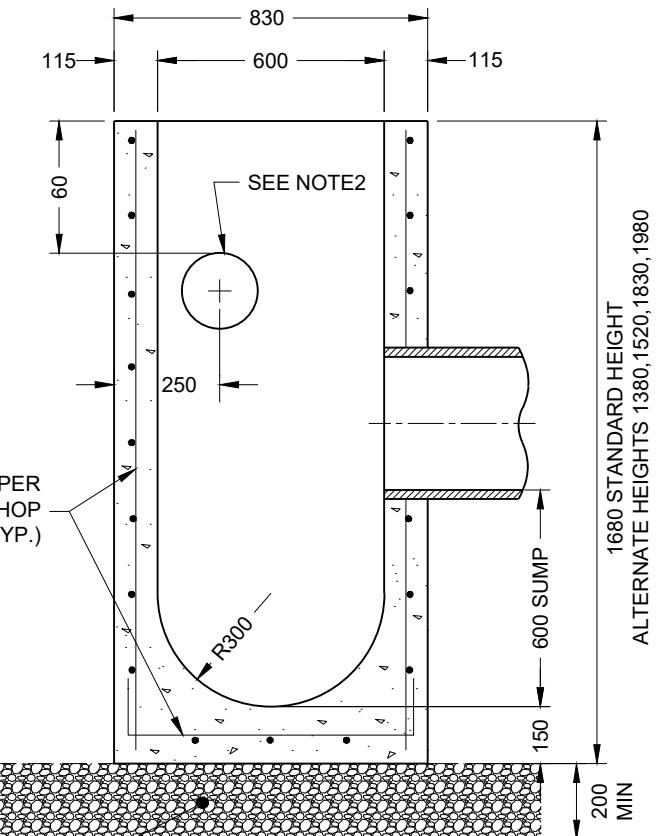
1. COVER TO BE FLUSH WITH FINISHED GRADE.
2. 22,500lb LOAD RATED COVER, NO LOGO, BLACK.
3. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.



PLAN



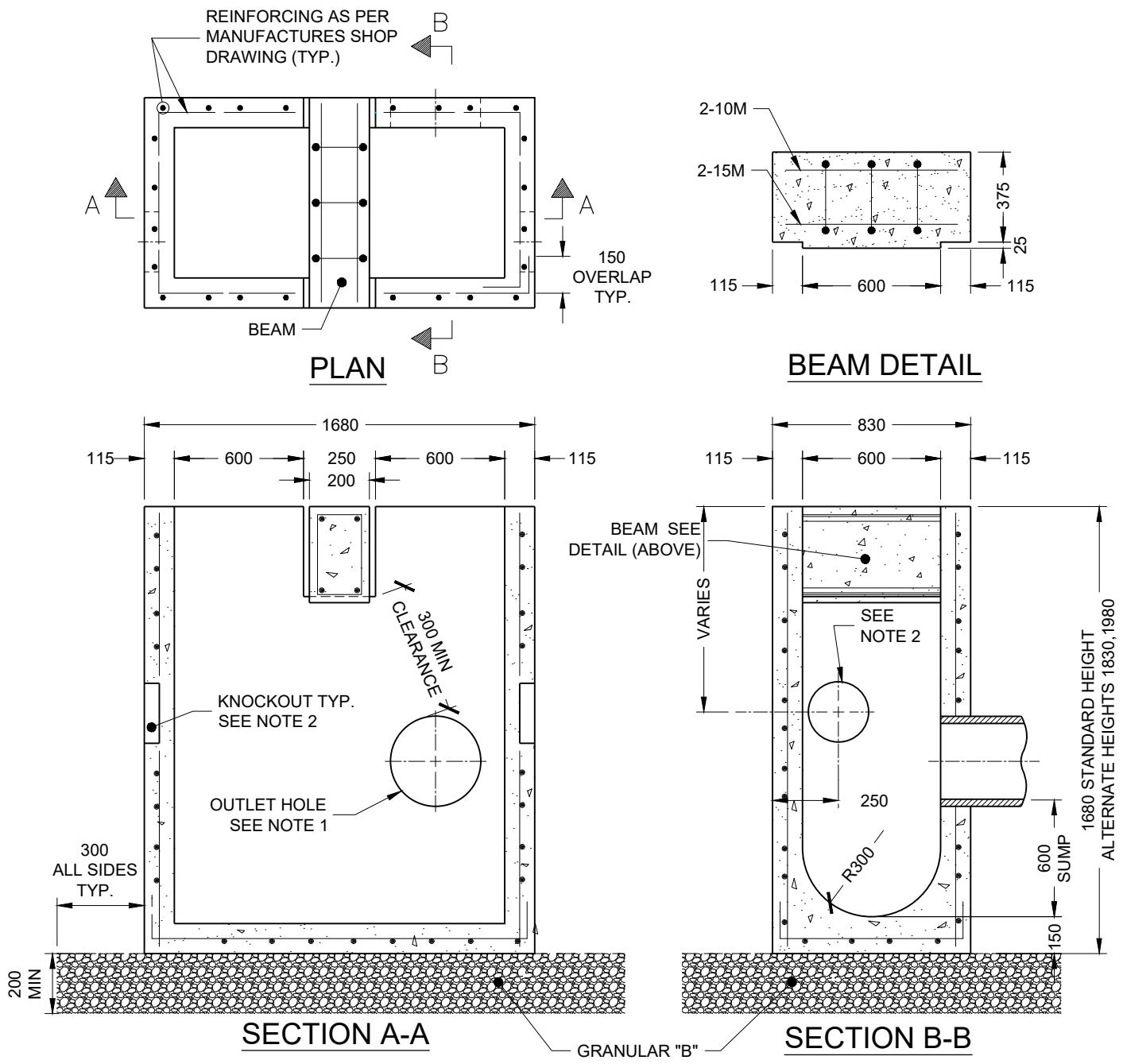
SECTION A-A



SECTION B-B

NOTES:

1. OUTLET HOLE SIZE 525mm DIAMETER MAXIMUM, LOCATION AS REQUIRED.
2. 200mm DIAMETER KNOCKOUT TO ACCOMMODATE SUBDRAIN. KNOCKOUT SHALL BE 60mm DEEP.
3. GRANULAR BACKFILL SHALL BE PLACED TO A MINIMUM OF 300mm ALL AROUND THE BOTTOM OF THE CATCH BASIN.
4. FRAME, GRATE, AND ADJUSTMENT UNITS SHALL BE INSTALLED ACCORDING STANDARD DRAWING 04250.
5. ALL DIMENSIONS ARE NOMINAL AND IN MILLIMETERS UNLESS OTHERWISE NOTED.
6. CONCRETE TO BE 30 MPa TO MEET CSA A23.1, CLASS C-2 EXPOSURE.



NOTES:

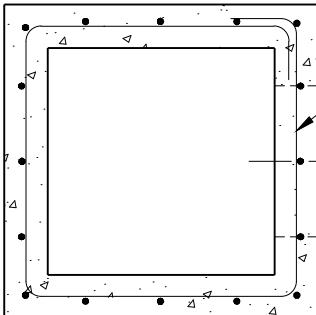
1. OUTLET HOLE SIZE 525mm DIAMETER MAXIMUM, LOCATION AS REQUIRED.
2. 200mm DIAMETER KNOCKOUT SHALL ACCOMMODATE SUBDRAIN. KNOCKOUT SHALL BE 60mm DEEP.
3. GRANULAR BACKFILL SHALL BE PLACED TO A MINIMUM THICKNESS OF 300mm ALL AROUND THE CATCH BASIN.
4. FRAME, GRATE, AND ADJUSTMENT UNITS SHALL BE INSTALLED ACCORDING TO STANDARD DRAWING 04250. STEPS SHALL BE ACCORDING TO STANDARD DRAWING 04280, AND SPECIFICATION SECTION 02601.
5. ALL DIMENSIONS ARE NOMINAL AND IN MILLIMETERS UNLESS OTHERWISE NOTED.
6. CONCRETE TO BE 30 MPa TO MEET CSA A23.1, CLASS C-2 EXPOSURE.

MUNICIPAL MASTER
SPECIFICATIONS

PRECAST CONCRETE TWIN INLET CATCH BASIN
600 x 1450mm

DRAWING NUMBER 04360

DATE: APRIL 2023
SCALE: N.T.S.



REINFORCING
AS PER
MANUFACTURER'S
SHOP DRAWING

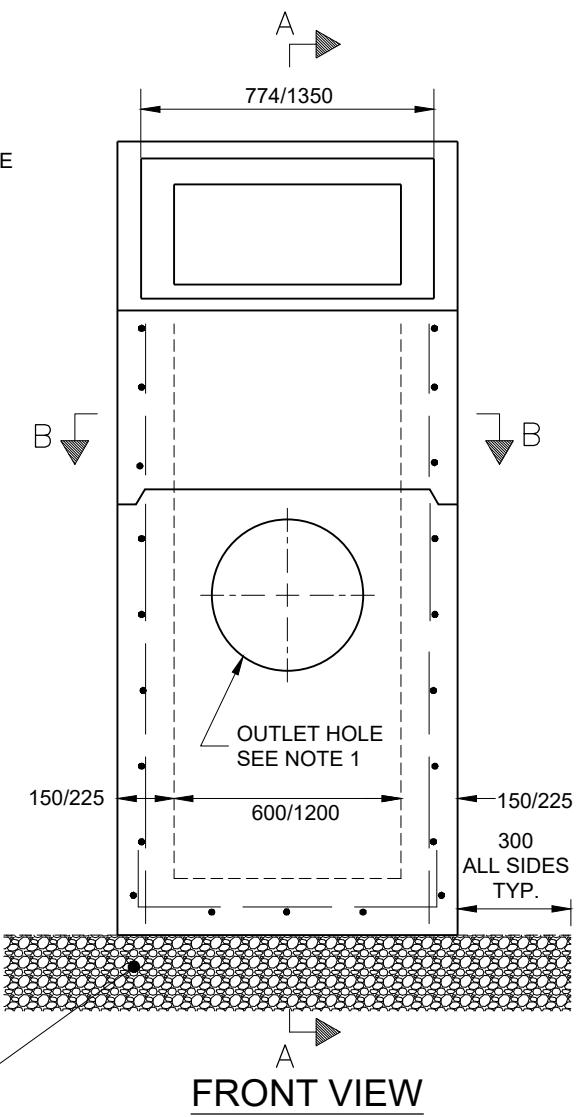
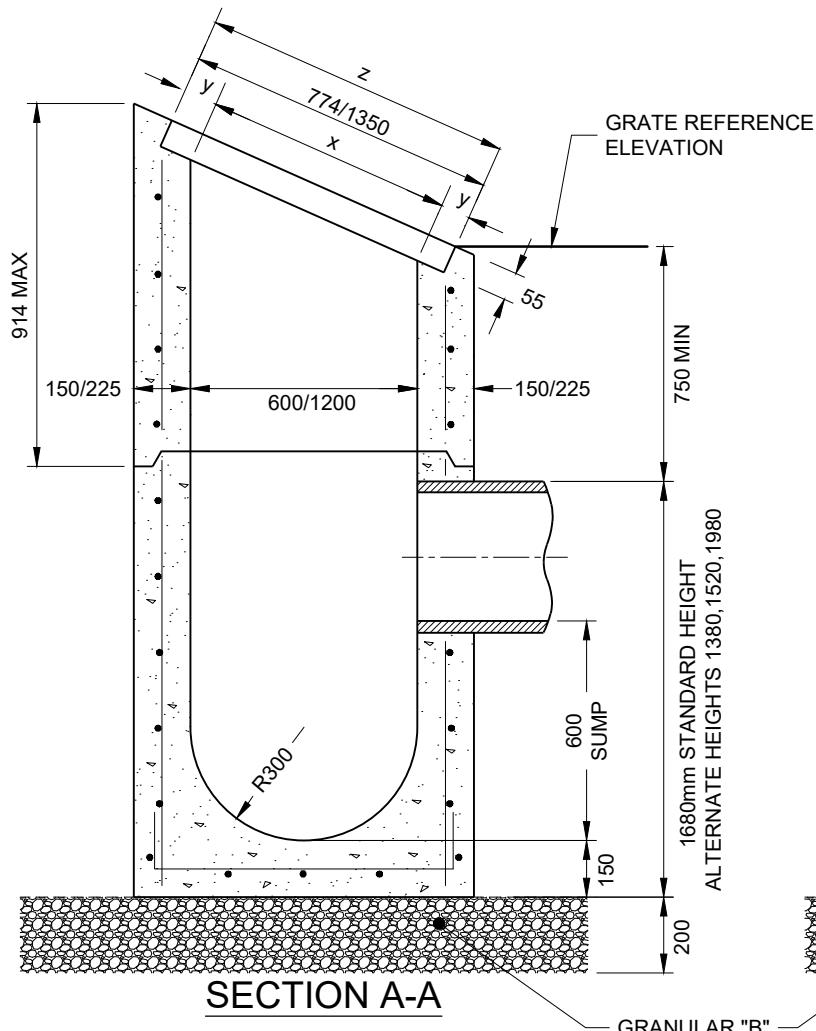
OPENING DIMENSIONS (600X600)

GRATE SLOPE	x	y
2H:1V	670	52
3H:1V	632	71
4H:1V	618	78
6H:1V	608	83
HOR	600	87

OPENING DIMENSIONS (1200X1200)

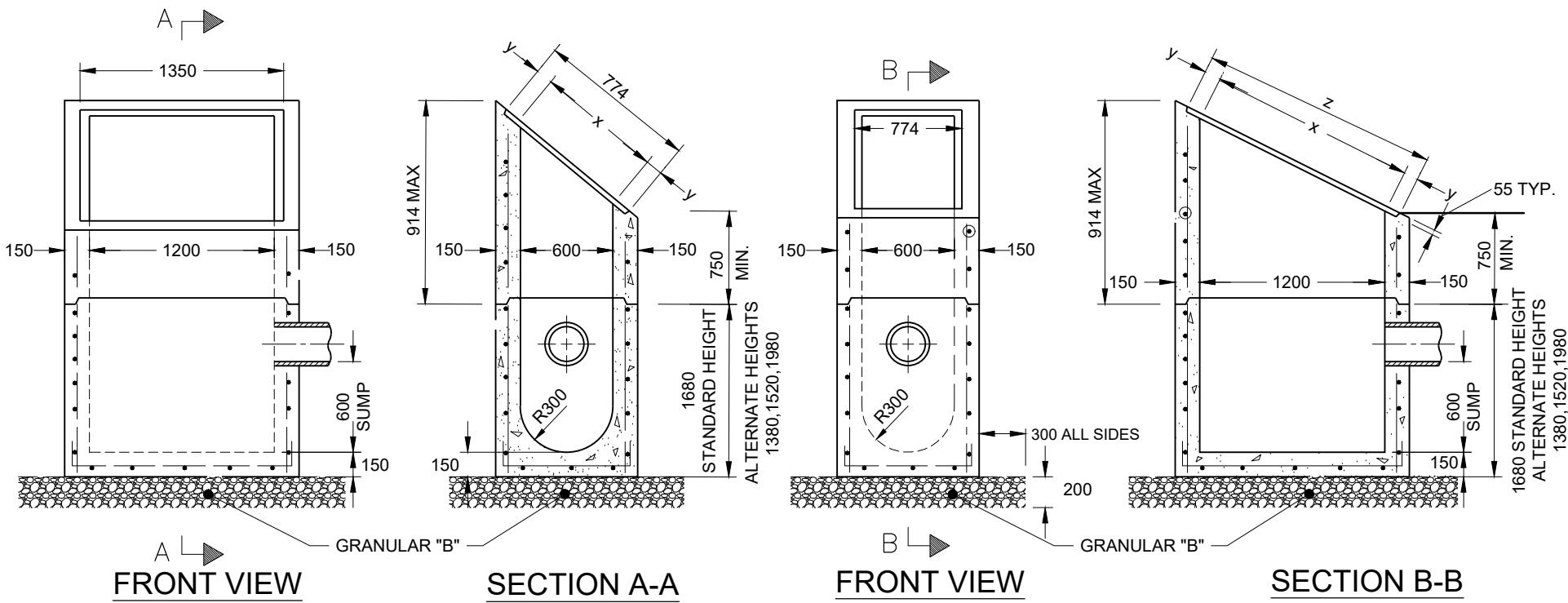
GRATE SLOPE	x	y	z
2H:1V	1341	66	1473
3H:1V	1265	104	1473
4H:1V	1237	118	1473
6H:1V	1216	65	1346
HOR	1200	73	1346

SECTION B-B



NOTES:

- OUTLET HOLE SIZE 525mm DIAMETER MAXIMUM, LOCATION AS REQUIRED.
- WHERE INLET IS PLACED ACROSS DITCH AND IS ACCESIBLE TO VEHICULAR TRAFFIC, GRATING SLOPE SHALL BE 6H:1V OR FLATTER.
- GRANULAR BACKFILL SHALL BE PLACED TO A MINIMUM OF 300mm ALL AROUND THE DITCH INLET.
- GRATING SHALL BE INSTALLED ACCORDING TO STANDARD DRAWING 04410.
- ALL DIMENSIONS ARE NOMINAL AND IN MILLIMETERS UNLESS OTHERWISE NOTED.
- CONCRETE TO BE 30 MPa TO MEET CSA A23.1, CLASS C-2 EXPOSURE.



NOTES:

1. OUTLET HOLE SIZE 525mm DIAMETER MAXIMUM, LOCATION AS REQUIRED.
2. WHERE INLET IS PLACED ACROSS DITCH AND IS ACCESSIBLE TO VEHICULAR TRAFFIC, GRATING SLOPE SHALL BE 6H:1V OR FLATTER.
3. REINFORCING AS PER MANUFACTURER'S SHOP DRAWING.
4. GRANULAR BACKFILL SHALL BE PLACED TO A MINIMUM OF 300mm ALL AROUND THE DITCH INLET.
5. GRATING SHALL BE INSTALLED ACCORDING TO STANDARD DRAWING 04410.
6. ALL DIMENSIONS ARE NOMINAL AND IN MILLIMETERS UNLESS OTHERWISE NOTED.
7. CONCRETE TO BE 30 MPa TO MEET CSA A23.1, CLASS C-2 EXPOSURE.

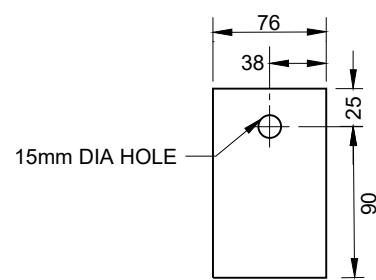
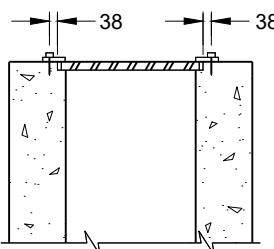
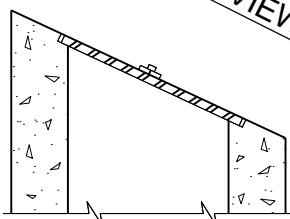
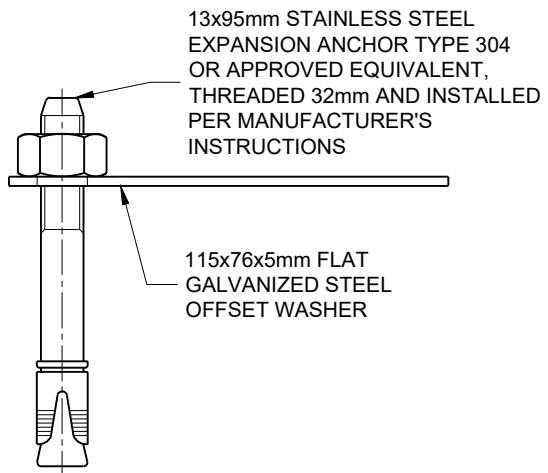
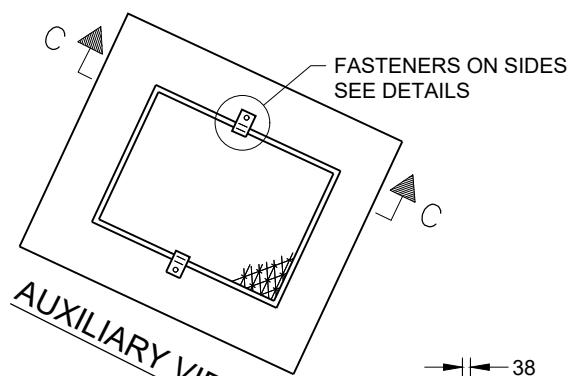
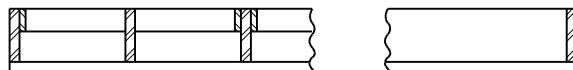
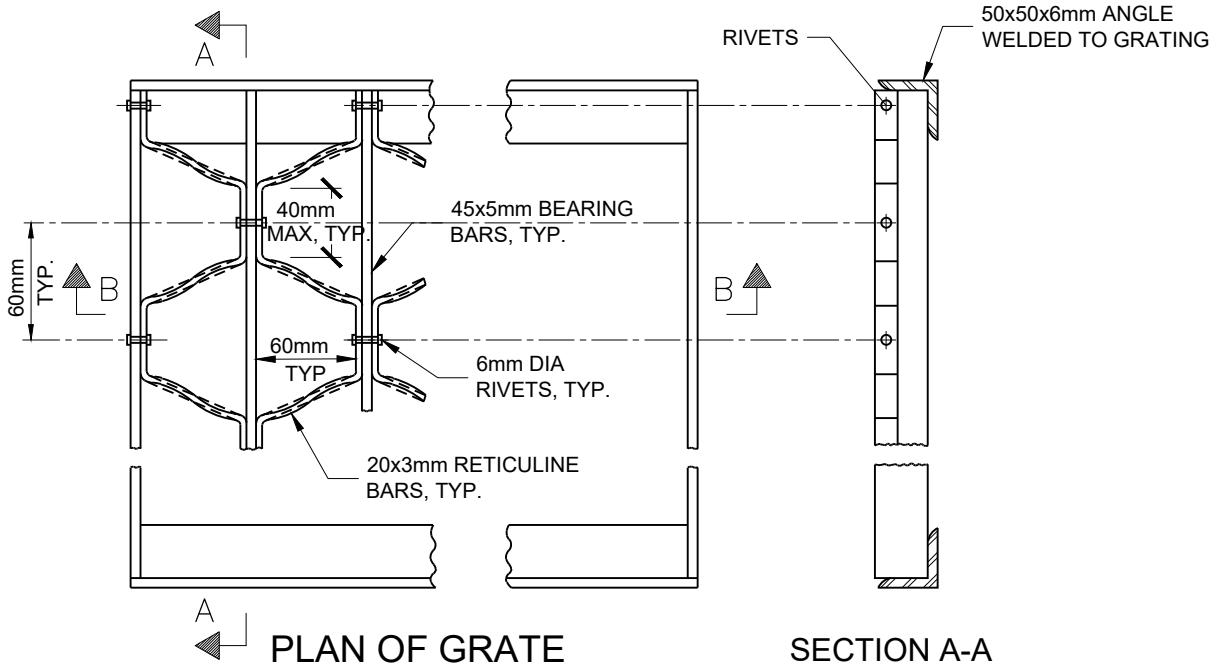
OPENING DIMENSIONS mm			
GRATE SLOPE	x	y	z
2H:1V	1341	66	1473
2H:1V	670	52	
3H:1V	1265	104	1473
4H:1V	1237	118	1473
6H:1V	1216	65	1346
HOR	600	87	
HOR	1200	73	1346

MUNICIPAL MASTER
SPECIFICATIONS

PRECAST CONCRETE DITCH INLET
600mm x 1200mm

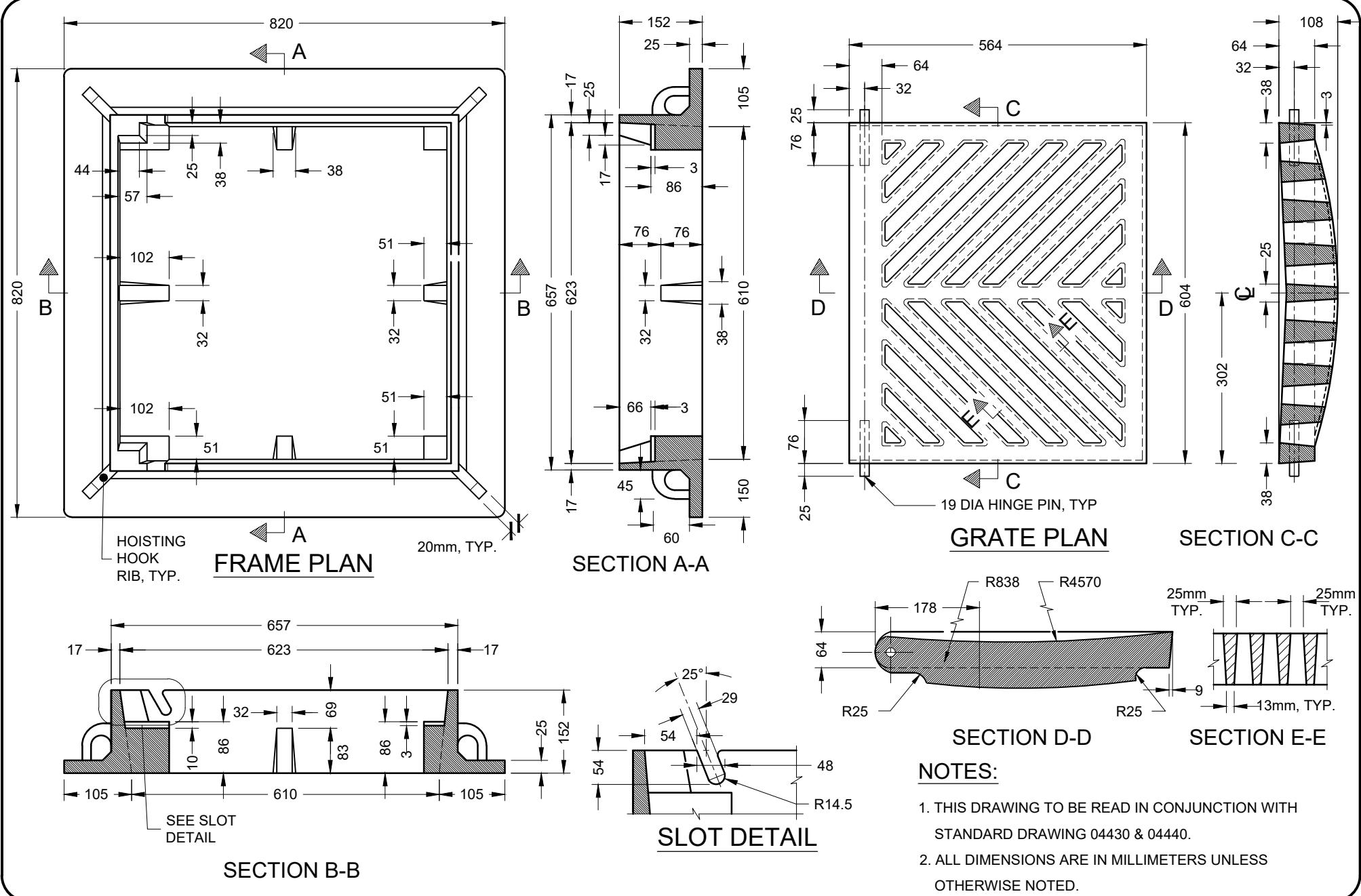
DRAWING NUMBER 04400

DATE:
APRIL 2023
SCALE:
N.T.S.



NOTES:

1. FASTENER SHALL BE INSERTED TO MAINTAIN MINIMUM CONCRETE COVER REQUIREMENTS.
2. ALL STEEL COMPONENTS AND RIVETS SHALL BE GALVANIZED.
3. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
4. ALL WELDING TO BE IN ACCORDANCE WITH THE LATEST EDITION OF CSA W59.

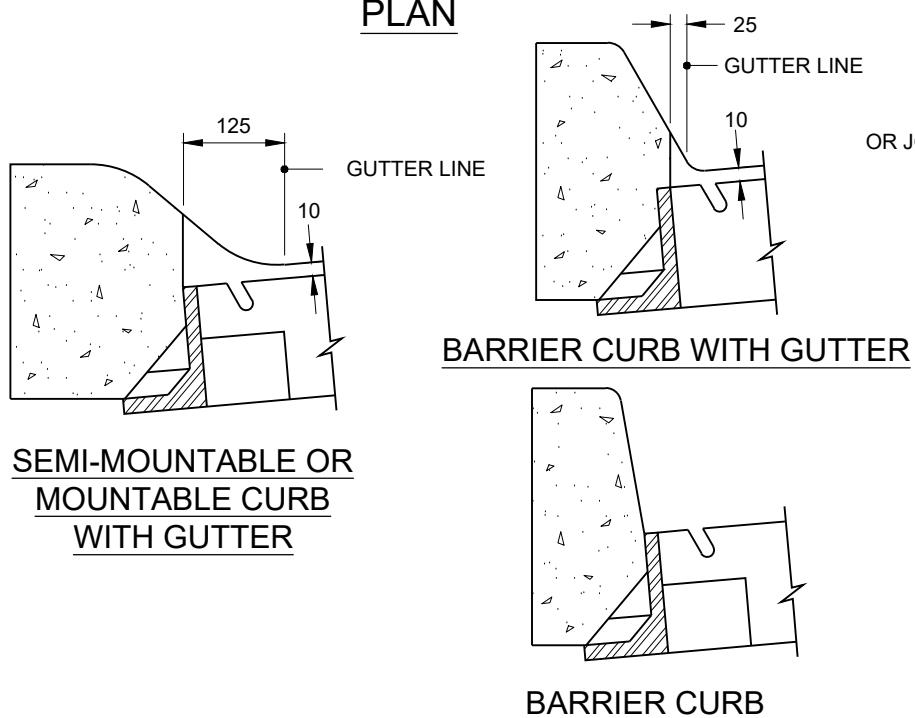
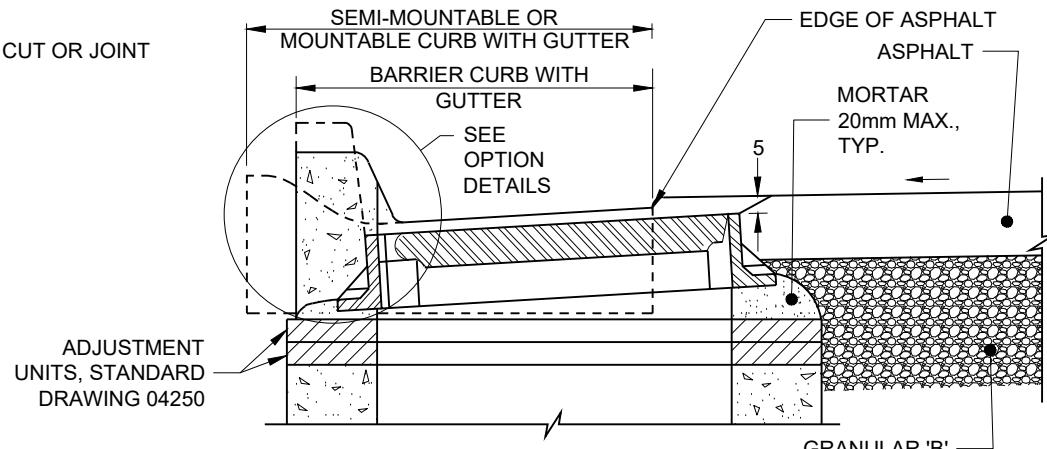
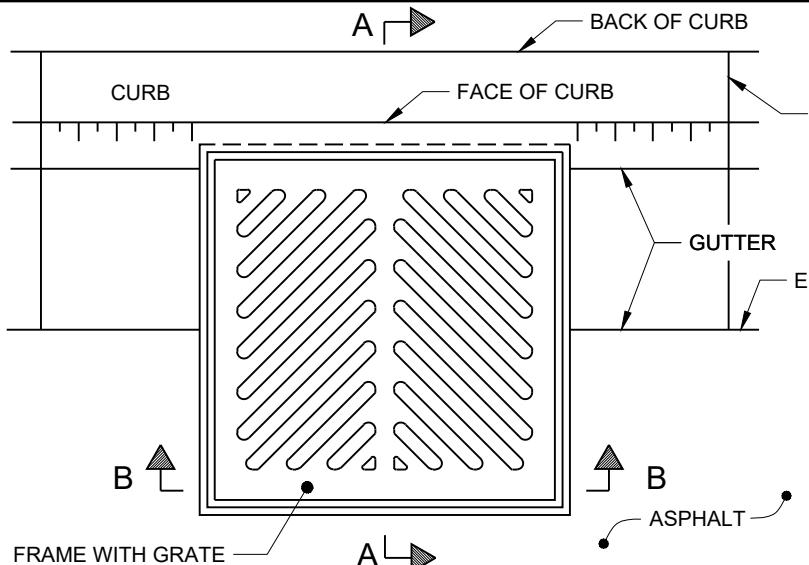


MUNICIPAL MASTER
SPECIFICATIONS

CAST IRON, SQUARE FRAME WITH
GRATE FOR CATCH BASINS

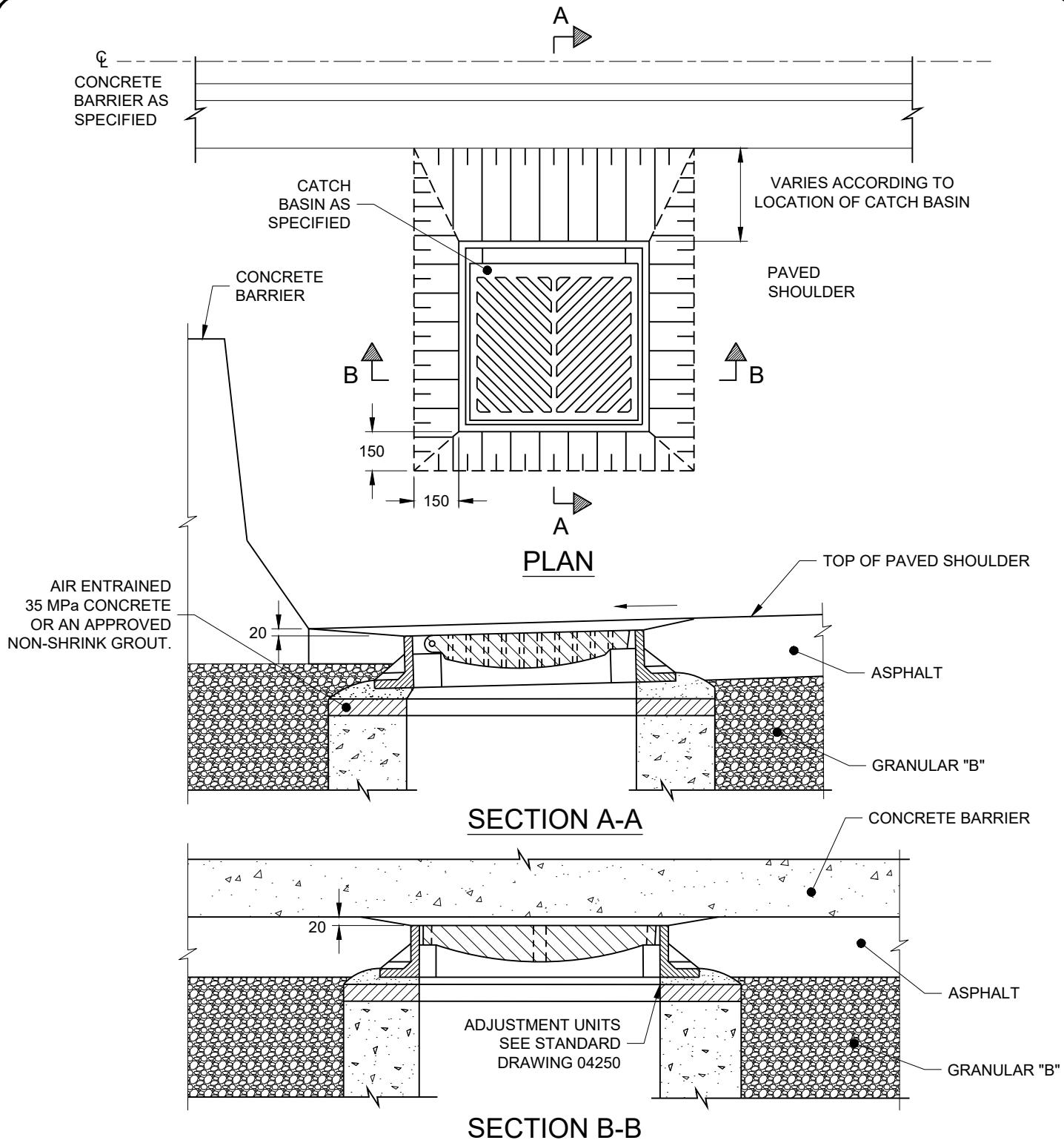
DRAWING NUMBER 04420

DATE:
APRIL 2023
SCALE:
N.T.S.



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



NOTES:

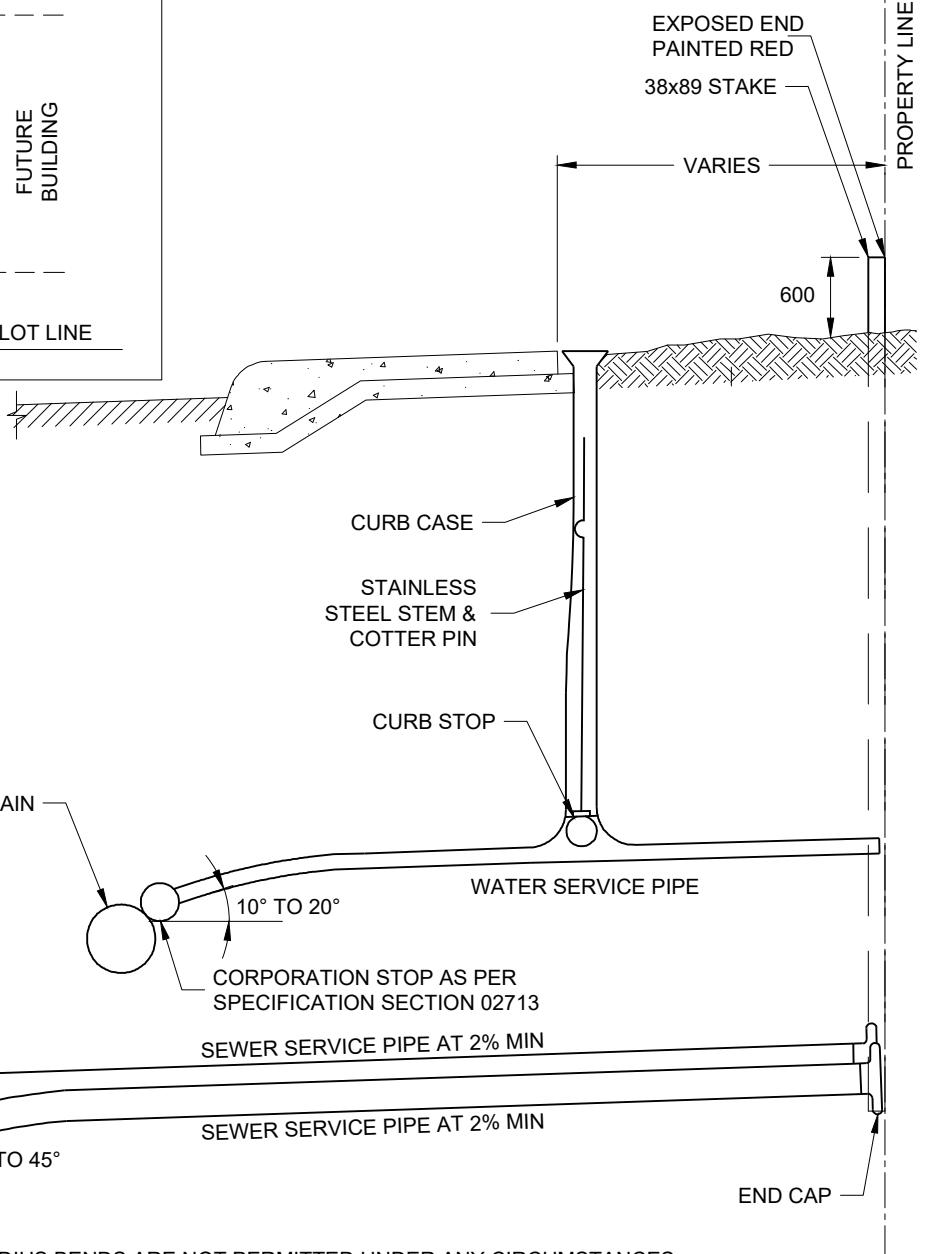
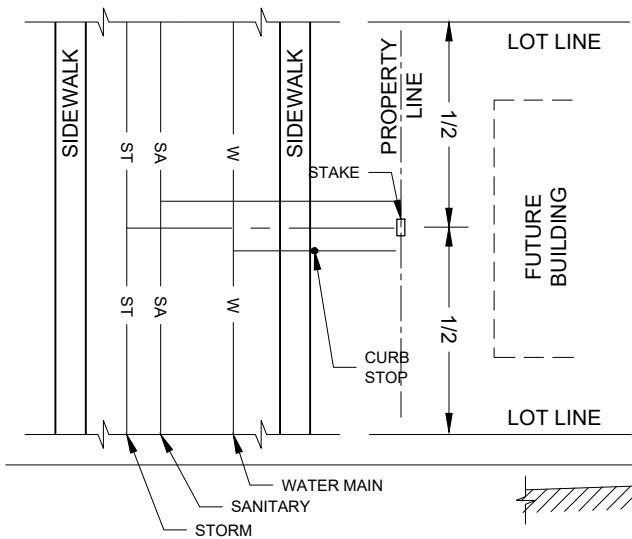
1. WHEN CATCH BASINS ARE PLACED BACK TO BACK ON BOTH SIDES OF THE CONCRETE BARRIER, BACKFILL SHALL BE UNSHRINKABLE BACKFILL TO THE LIMITS OF EXCAVATION AND WITHIN 150mm OF TOP OF CONCRETE CATCH BASIN STRUCTURE. WHERE CATCH BASINS ARE NOT PLACED BACK TO BACK THEY SHALL BE STAGGERED WITH A MINIMUM SPACING OF 10m.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

**MUNICIPAL MASTER
SPECIFICATIONS**

**CATCH BASIN FRAME WITH GRATE SHOULDER
INSTALLATION AT CONCRETE BARRIER**

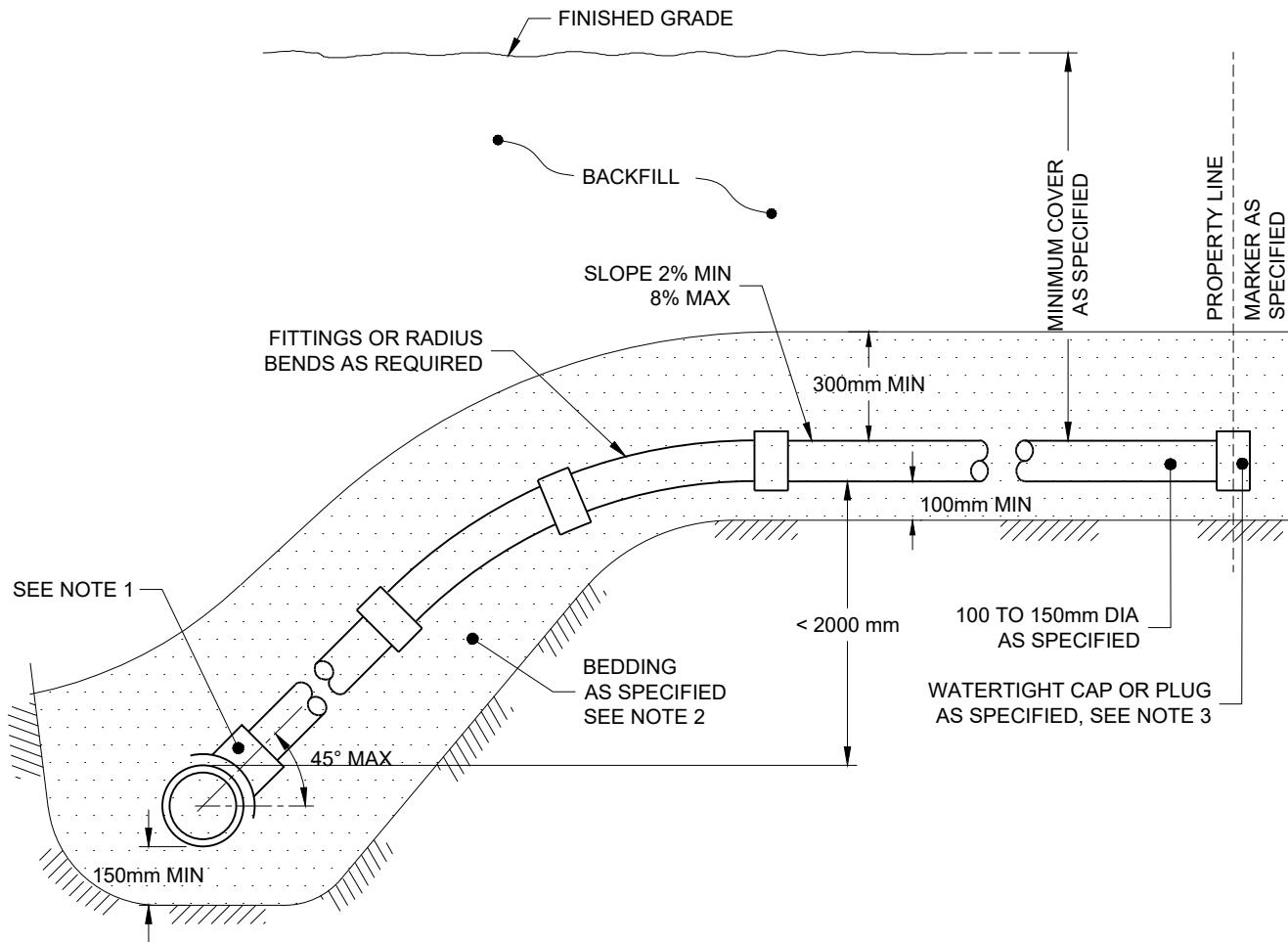
DRAWING NUMBER 04440

DATE: APRIL 2023
SCALE: N.T.S.



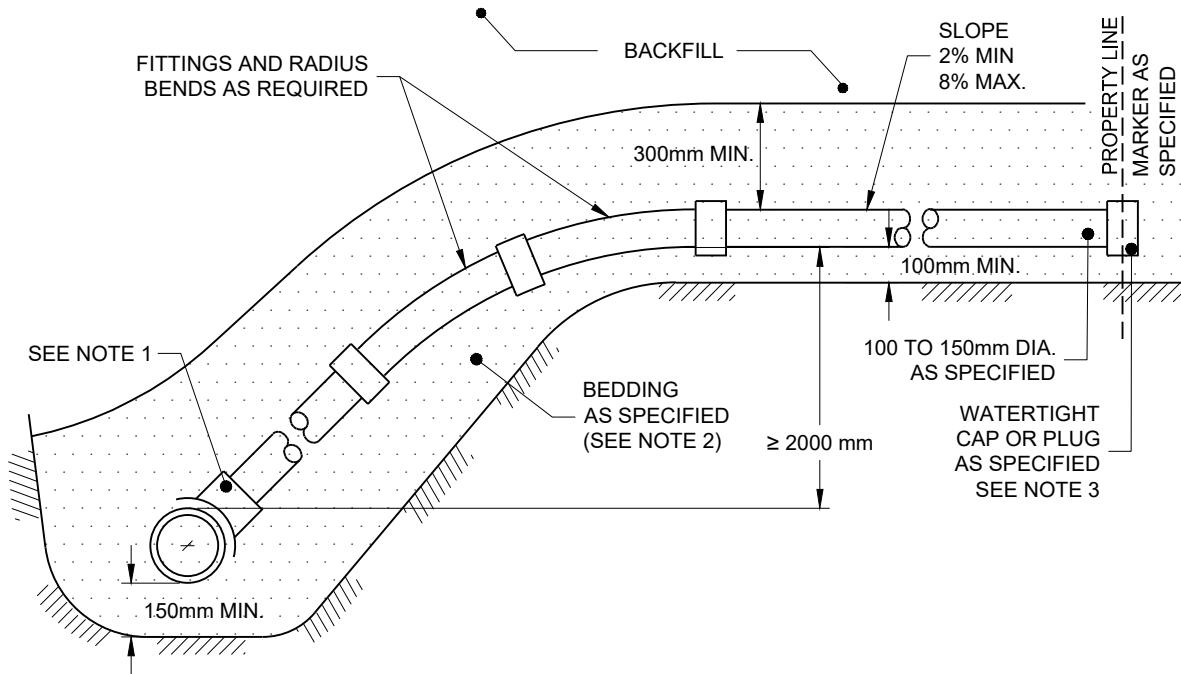
NOTES:

1. SHORT RADIUS BENDS ARE NOT PERMITTED UNDER ANY CIRCUMSTANCES.
2. MAXIMUM DEFLECTION IS 45° (ONE 45° BEND OR TWO 22.5 ° BENDS).
3. IF GREATER DEFLECTION THAN 45° IS APPROVED BY THE ENGINEER THEN A CLEAN OUT MUST BE INSTALLED UPSTREAM OF DEFLECTION (SEE STANDARD DRAWING 0865).
4. MINIMUM 1.0m DISTANCE BETWEEN TWO LONG RADIUS BENDS.
5. SERVICES TO BE BROUGHT TO PROPERTY BOUNDARY AND CONNECTED TO EXISTING SERVICE OR TERMINATED AS PER PROJECT REQUIREMENTS.
6. THE REQUIREMENTS OF THIS PLAN MUST BE FOLLOWED FOR THE FULL LENGTH OF THE SERVICE LATERAL, FROM THE BUILDING TO THE POINT OF CONNECTION TO THE PUBLIC MAINS.
7. MAINTAIN MINIMUM HORIZONTAL SEPARATION BETWEEN SEWER SERVICE AND WATER SERVICE OF 300mm. WHERE MINIMUM HORIZONTAL SEPARATION NOT ACHIEVABLE, MAINTAIN MINIMUM VERTICAL SEPARATION OF 300mm FROM CROWN OF SEWER SERVICE.
8. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

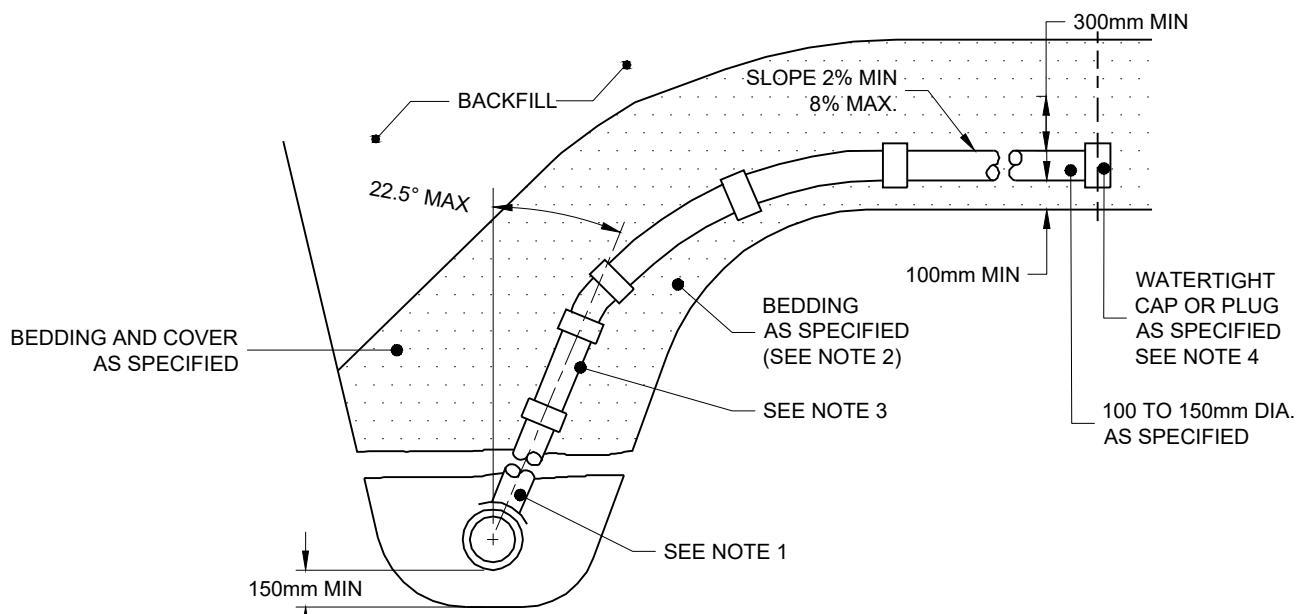


NOTES:

1. SEWER SERVICE CONNECTIONS TO THE MAIN PIPE SEWER SHALL BE MADE USING FACTORY MADE TEES OR WYES, STRAP-ON-SADDLES, OR OTHER APPROVED SADDLES. AS PER SPECIFICATION SECTION 02702.
2. BEDDING MATERIAL SHALL BE TYPE 1 FOR PVC, AND TYPE 3 FOR DUCTILE IRON PIPES.
3. CAP OR PLUG AT PROPERTY LINE SHALL BE ADEQUATELY BRACED.
4. MAINTENANCE HOLES SHALL BE USED AT THE MAIN SEWER TO CONNECT SERVICE CONNECTIONS GREATER THAN OR EQUAL TO 200mm.
5. FOR NEW CONSTRUCTION, SADDLES SHALL BE INSTALLED ON THE MAIN PIPE BEFORE THAT PIPE IS LAID.
6. APPROVED CUT-IN TOOL SHALL BE USED FOR FIELD MADE CONNECTIONS.
7. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

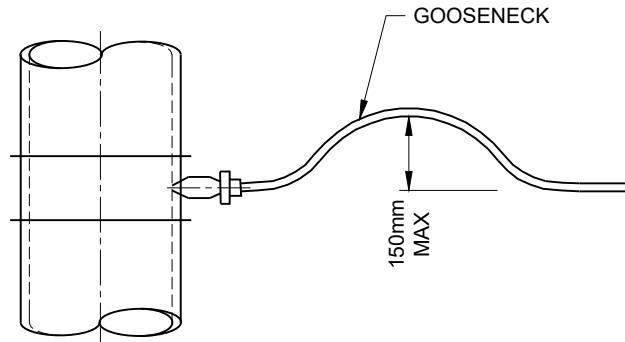


CONNECTION WITHOUT VERTICAL RISER

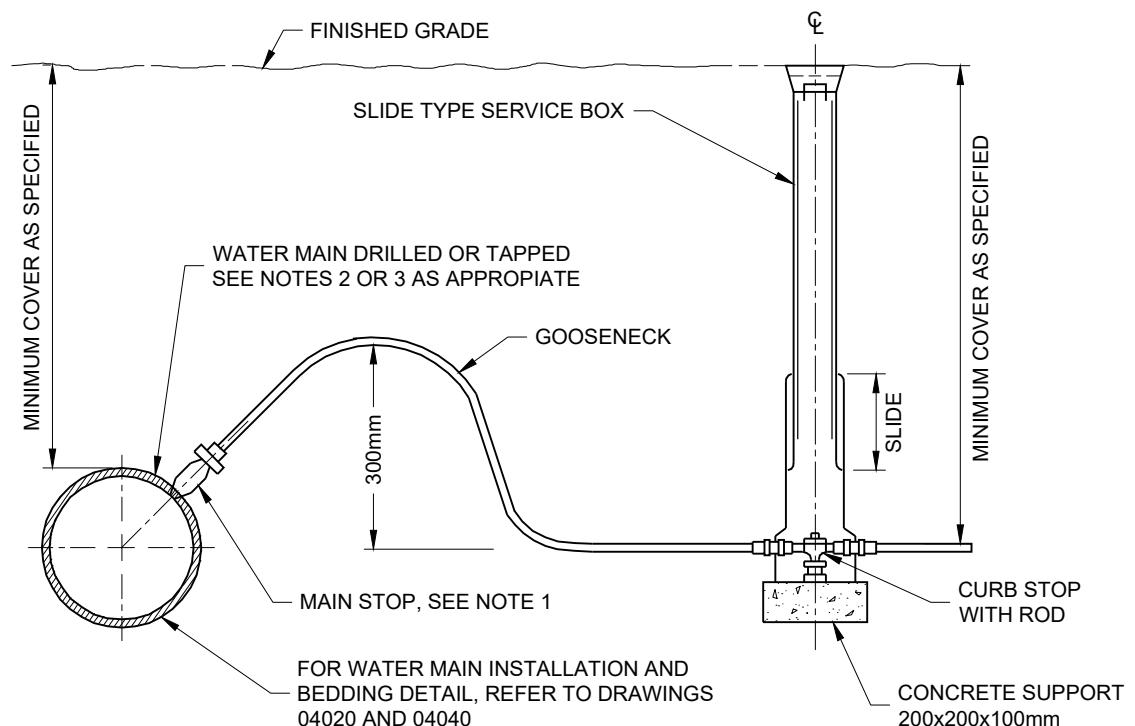


NOTES:

1. SEWER SERVICE CONNECTIONS TO THE MAIN PIPE SEWER SHALL BE MADE USING FACTORY MADE TEES, STRAP-ON-SADDLES, OR OTHER APPROVED SADDLES. AS PER SPECIFICATION SECTION 02702.
2. BEDDING MATERIAL SHALL BE TYPE 1 FOR PVC, AND TYPE 3 FOR DUCTILE IRON PIPES.
3. VERTICAL RISERS SHALL BE AS SPECIFIED.
4. CAP OR PLUG AT PROPERTY LINE SHALL BE ADEQUATELY BRACED.
5. MAINTENANCE HOLES SHALL BE USED AT THE MAIN SEWER TO CONNECT SERVICE CONNECTIONS GREATER THAN OR EQUAL TO 200mm.
6. FOR NEW CONSTRUCTION, SADDLES SHALL BE INSTALLED ON THE MAIN PIPE BEFORE THAT PIPE IS LAID.
7. APPROVED CUT-IN TOOL SHALL BE USED FOR FIELD MADE CONNECTIONS.
8. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



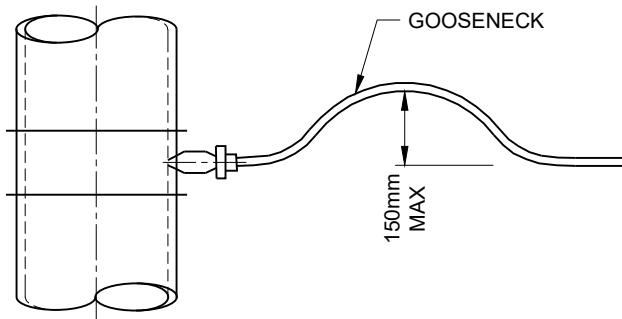
HORIZONTAL GOOSENECK OPTION



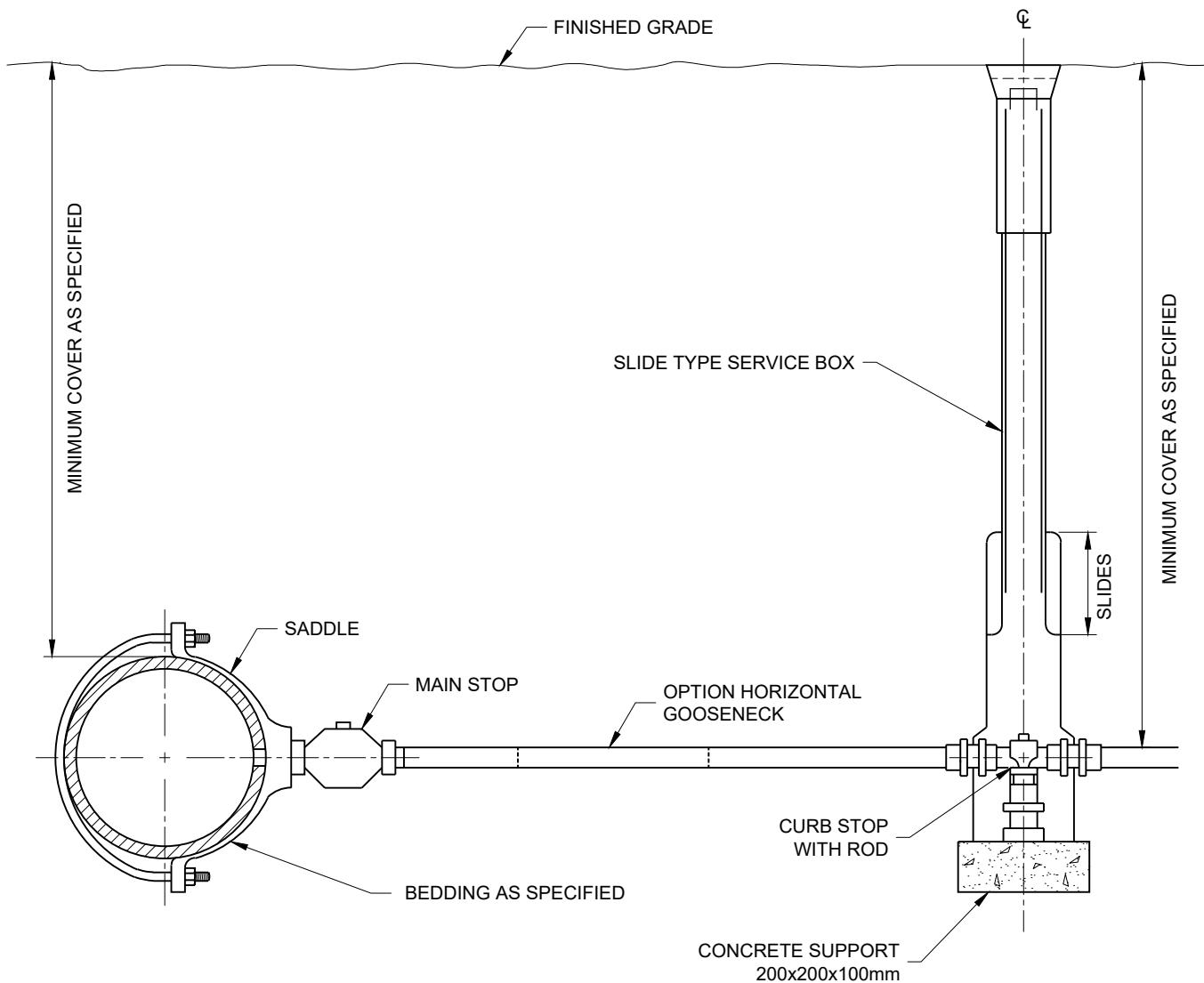
VERTICAL SECTION

NOTES:

1. FOR PLASTIC SERVICE PIPE, INSTALL MAIN STOP AT 45° ABOVE HORIZONTAL WITH A MINIMUM 1.2m LONG GOOSENECK.
2. DIRECT TAP DUCTILE IRON PIPE WITH APPROVED TOOL WITH STANDARD AWWA INLET THREAD.
3. SERVICE CONNECTIONS TO PLASTIC WATER MAINS SHALL BE MADE USING SERVICE SADDLES OR FACTORY MADE TEES.
4. COUPLINGS SHALL NOT BE PERMITTED UNLESS THE SERVICE LENGTH EXCEEDS 20m BETWEEN THE MAIN STOP AND CURB STOP.
5. ALL WATER SERVICES SHALL BE INSTALLED 90° TO THE LONGITUDINAL AXIS OF THE WATER MAIN.
6. BACKFILL MATERIAL WITHIN 500mm OF SERVICE BOX SHALL BE NATIVE OR IMPORTED, AS SPECIFIED.
7. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

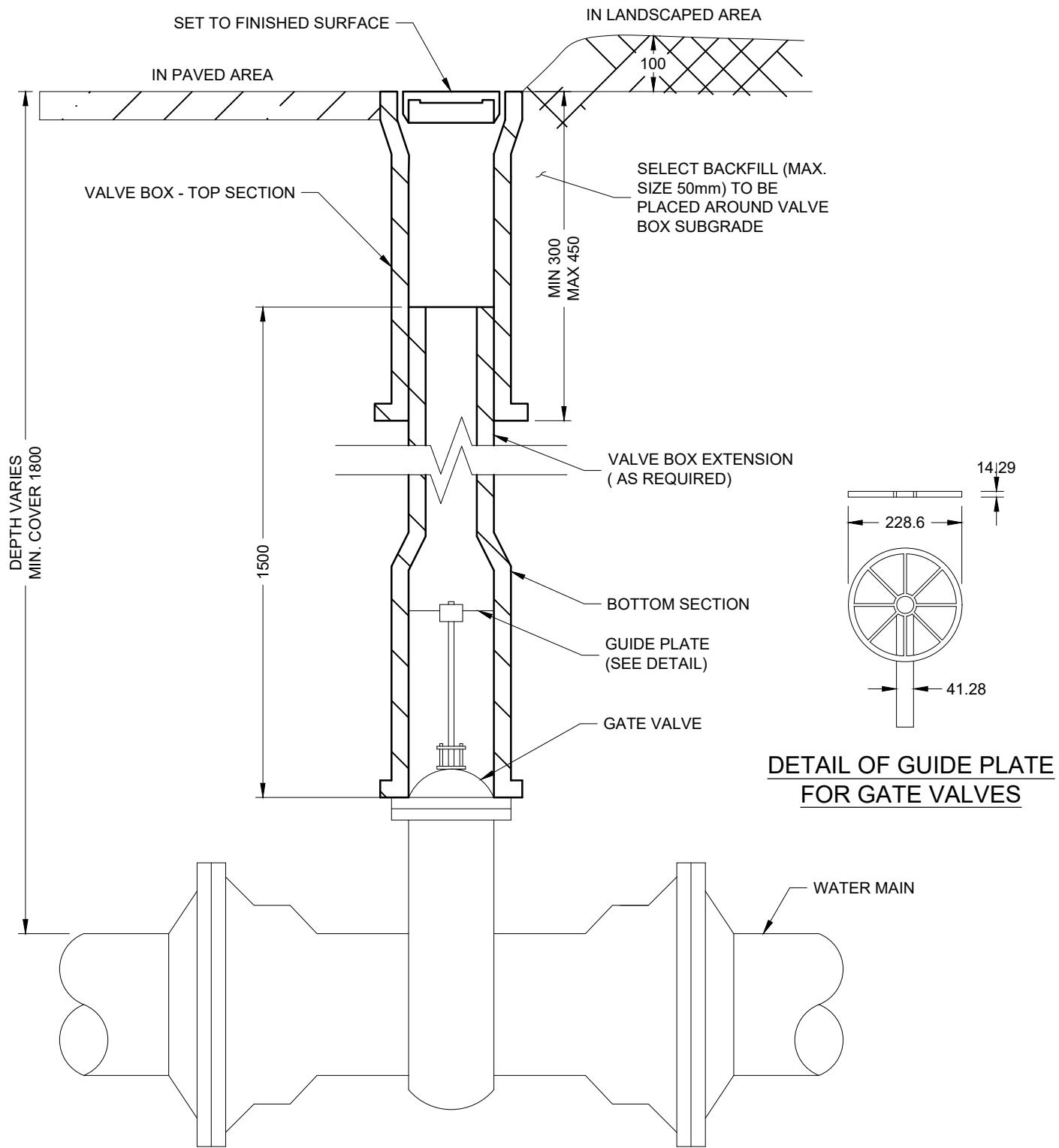


HORIZONTAL GOOSENECK OPTION



NOTES:

1. COUPLINGS SHALL NOT BE PERMITTED UNLESS THE SERVICE LENGTH EXCEEDS 20m BETWEEN THE MAIN STOP AND CURB STOP.
2. ALL WATER SERVICES SHALL BE INSTALLED 90° TO THE LONGITUDINAL AXIS OF THE WATER MAIN.
3. BACKFILL MATERIAL WITHIN 500mm OF SERVICE BOX SHALL BE NATIVE OR IMPORTED, AS SPECIFIED.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



SLIDING TYPE VALVE BOX

NOTES:

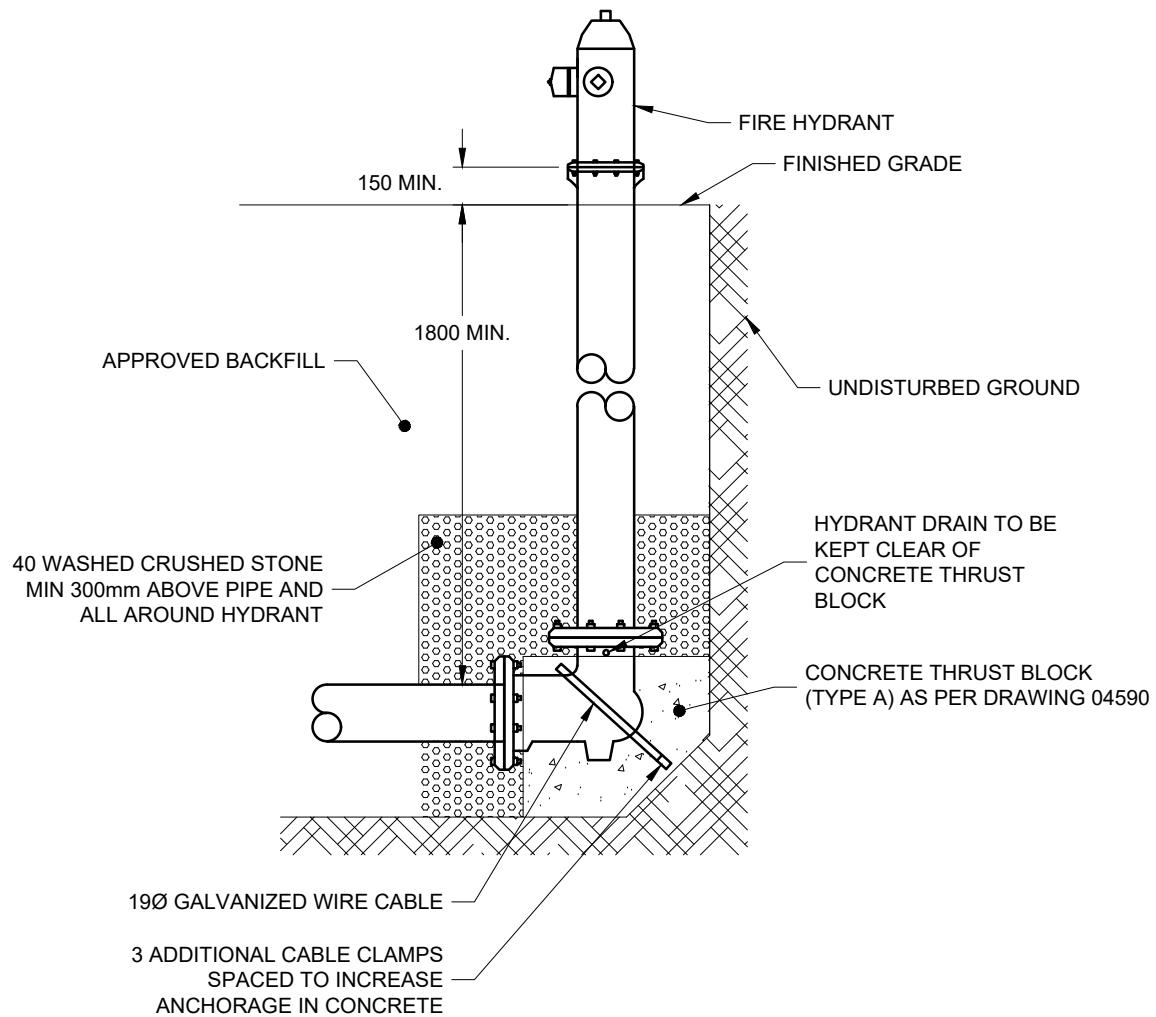
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

MUNICIPAL MASTER
SPECIFICATIONS

SLIDING TYPE VALVE BOX

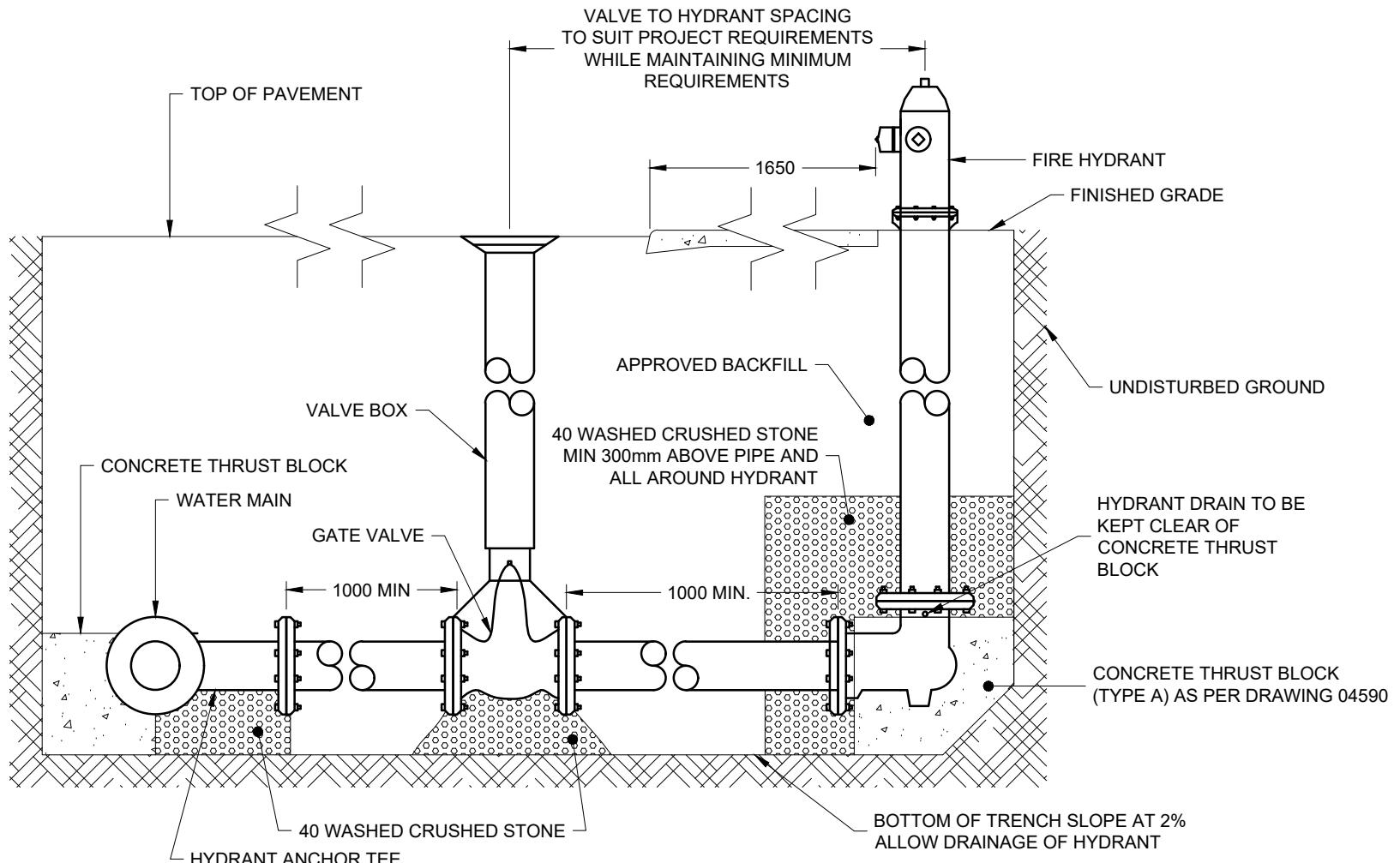
DRAWING NUMBER 04540

DATE: APRIL 2023
SCALE: N.T.S.



NOTES:

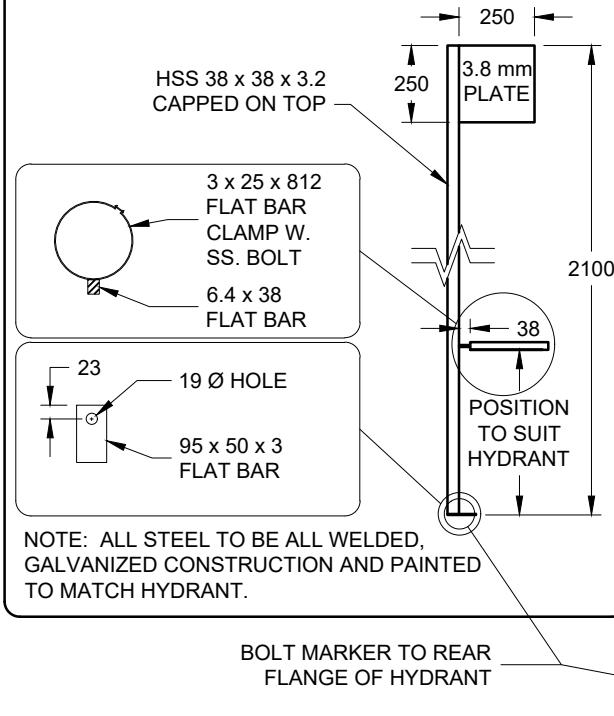
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. MECHANICAL JOINT RESTRAINTS CAN BE USED IN LIEU OF THRUST BLOCKS AT THE DISCRETION OF THE DESIGNER.



NOTES:

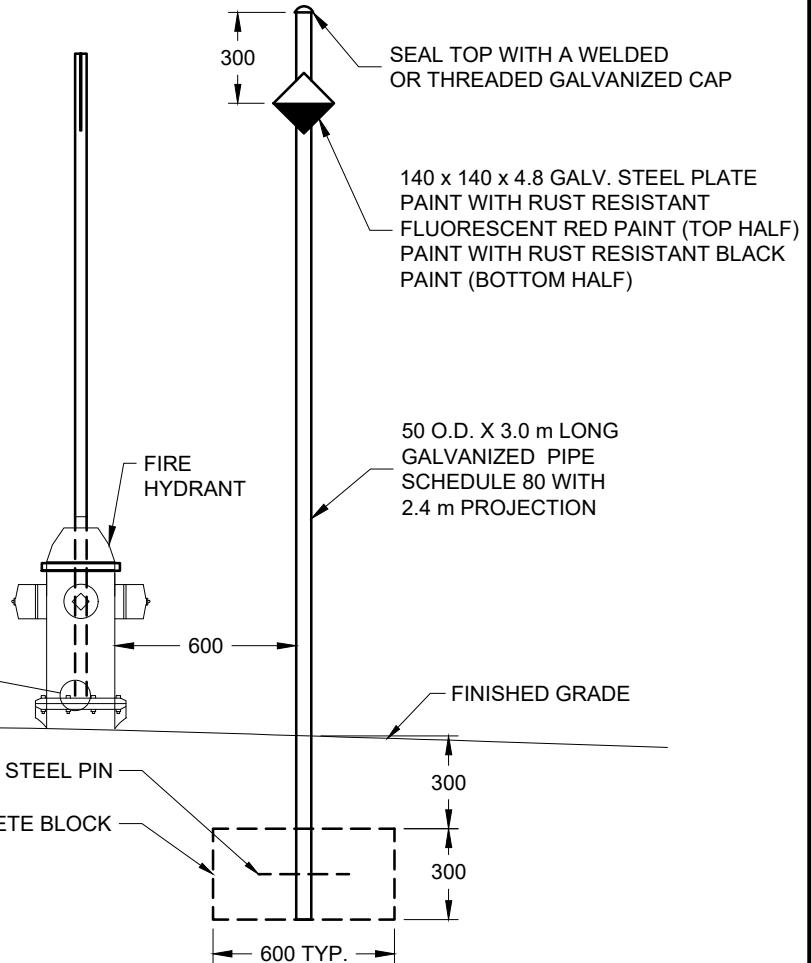
1. HYDRANT LEADS TO BE 150 mm DIAMETER PIPE.
2. CONCRETE FOR THRUST BLOCKS TO BE 25 MPa.
3. HYDRANT DRAIN TO BE KEPT CLEAR OF CONCRETE THRUST BLOCK.
4. TEES FOR FIRE HYDRANT LATERALS TO BE 150 mm OFF ALL DIAMETER LINES. ALL LATERALS TO BE 150 mm DIAMETER PIPE.
5. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

HYDRANT CONNECTED MARKER

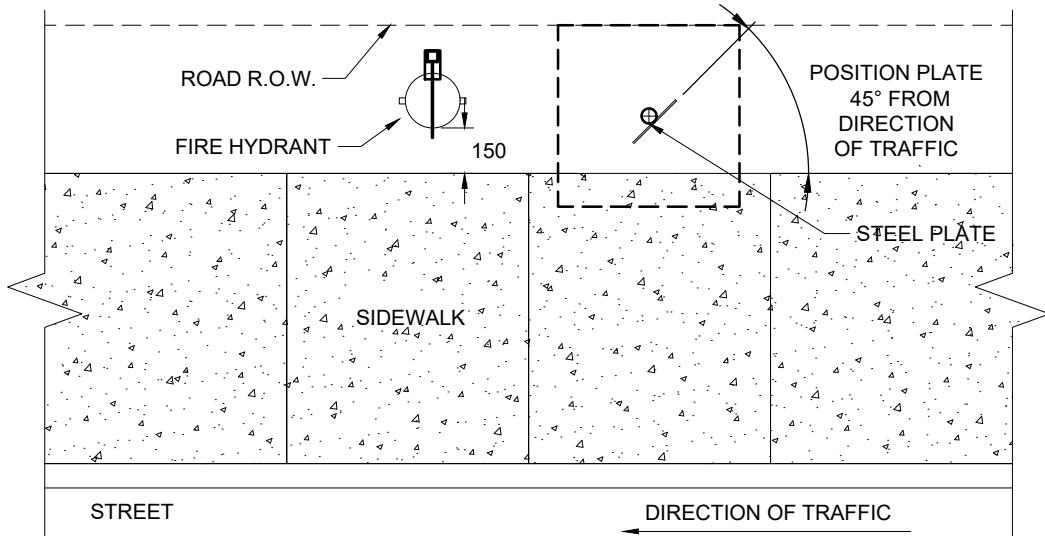


NOTE: ALL STEEL TO BE ALL WELDED,
GALVANIZED CONSTRUCTION AND PAINTED
TO MATCH HYDRANT.

ISOLATED HYDRANT MARKER



SECTION



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. INSTALL HYDRANT CONNECTED MARKER OR ISOLATED HYDRANT MARKER TO SUIT PROJECT REQUIREMENTS
3. ALL WELDING TO BE IN ACCORDANCE WITH THE LATEST EDITION OF CSA W59.

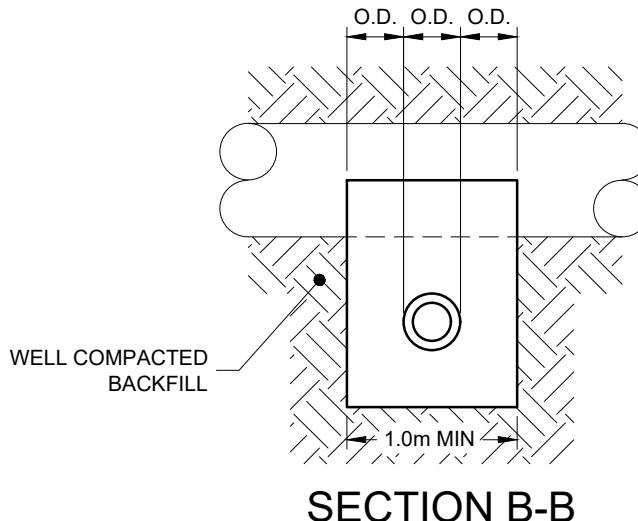
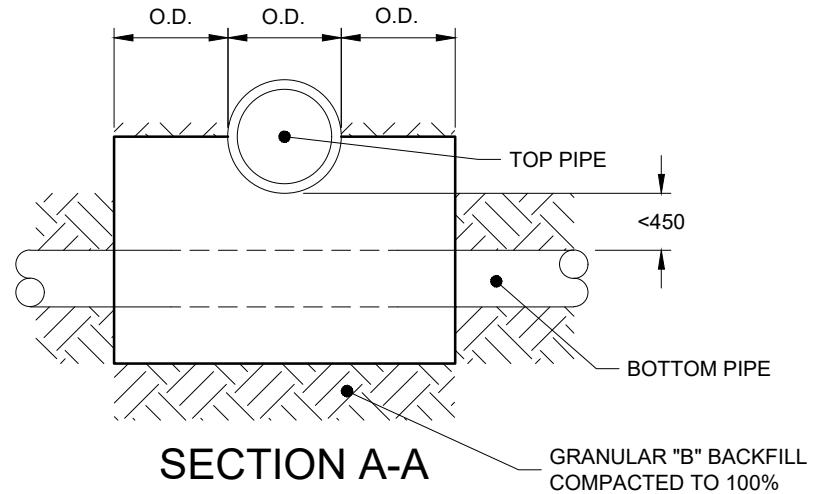
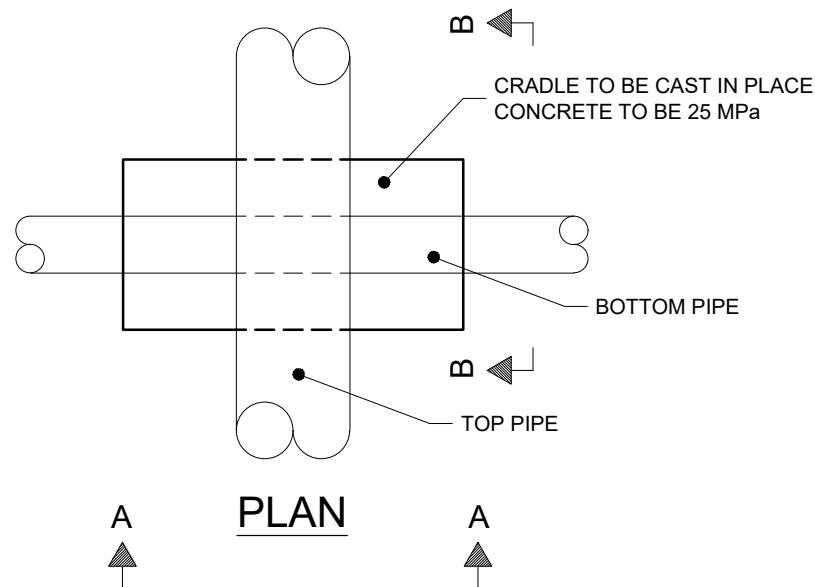
PLAN

MUNICIPAL MASTER SPECIFICATIONS

HYDRANT MARKER

DRAWING NUMBER 04570

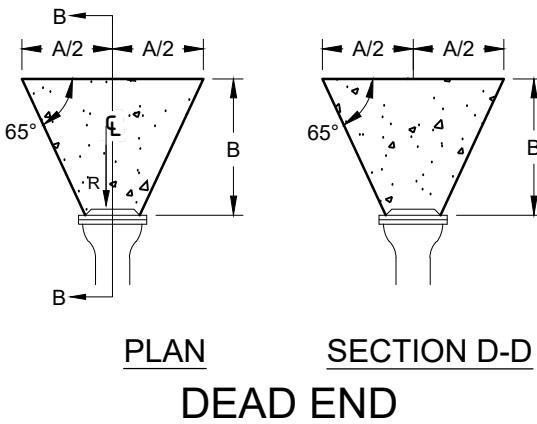
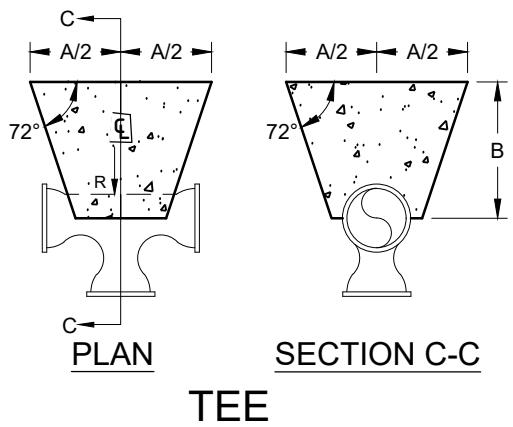
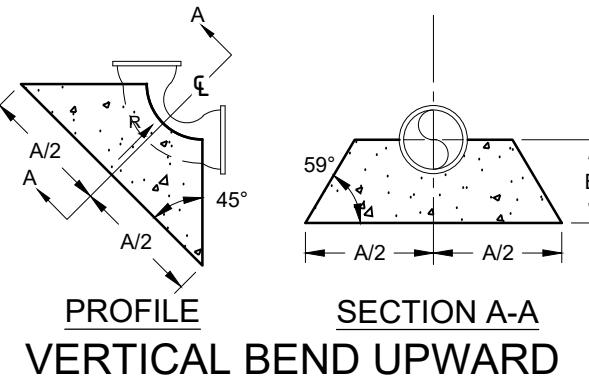
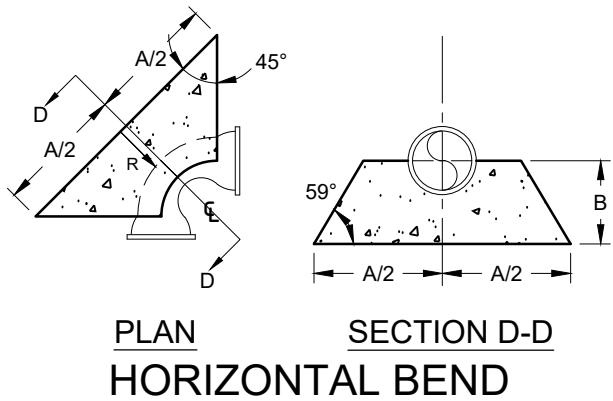
DATE: APRIL 2023
SCALE: N.T.S.



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. SEWER PIPE SHALL BE INSTALLED SUCH THAT ITS JOINTS ARE AS FAR AS POSSIBLE FROM THE PIPE CROSSING. TO ACHIEVE THIS, JOINTS SHALL BE STAGGERED UPON APPROACH TO ENSURE THE MIDDLE OF THE SEWER PIPE IS AT THE POINT OF CROSSING.

NOMINAL DIAMETER (mm)	EFFECTIVE AREA (m ²)	BENDS --- HORIZONTAL & VERTICAL --- UP																		TEE & DEAD END						
		90°				45°				22 1/2°				11 1/4°												
		R	b AREA	A	B	CONC	R	b AREA	A	B	CONC	R	b AREA	A	B	CONC	R	b AREA	A	B	CONC	R	b AREA	A	B	CONC
100	0.012	1.74	0.14	375	300	0.04	0.94	0.08	300	300	0.04	0.37	0.03	300	300	0.04	0.24	0.02	300	300	0.04	1.23	0.10	375	450	0.04
150	0.024	3.61	0.30	525	300	0.04	1.95	0.16	450	300	0.04	1.00	0.08	300	300	0.04	0.50	0.04	300	300	0.04	2.55	0.21	450	450	0.04
200	0.042	6.21	0.51	750	450	0.19	3.36	0.27	525	450	0.04	1.71	0.14	375	450	0.04	0.86	0.07	300	450	0.04	4.39	0.36	600	450	0.08
250	0.063	9.21	0.75	900	450	0.19	5.03	0.41	675	450	0.08	2.61	0.21	450	450	0.04	1.29	0.11	375	450	0.04	6.58	0.54	750	450	0.19
300	0.088	13.24	1.09	1100	450	0.38	7.12	0.58	750	450	0.19	3.65	0.30	525	450	0.04	1.84	0.15	375	450	0.04	9.34	0.76	900	525	0.19



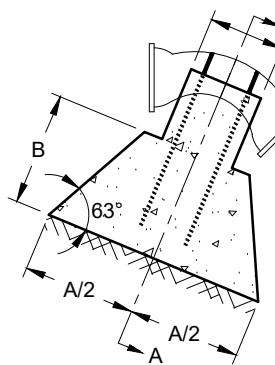
ABBREVIATIONS:

- R - REACTION IN 1000kg
- b - MINIMUM BEARING AREA AT SOIL TO CONCRETE FACE IN m³
- CONC - VOLUME OF CONCRETE IN m³
- A & B - DIMENSION OF CONCRETE IN mm UNLESS OTHERWISE SHOWN

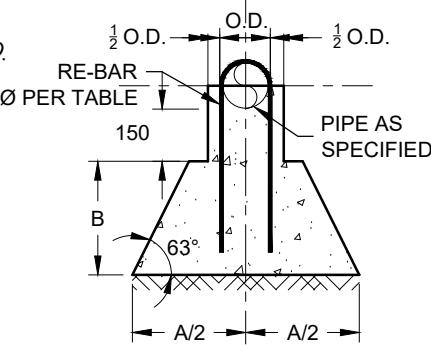
NOTES:

1. CONCRETE SHALL BE 25MPa 28 DAY STRENGTH.
2. BLOCKS SHALL BE POURED DIRECTLY AGAINST UNDISTURBED SOIL AS INDICATED. (NO UNDISTURBED SOIL SHOWN)
3. DESIGN DATA - STATIC PRESSURE OF 1000KPa.
- MINIMUM SOIL BEARING CAPACITY 120 KPa.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

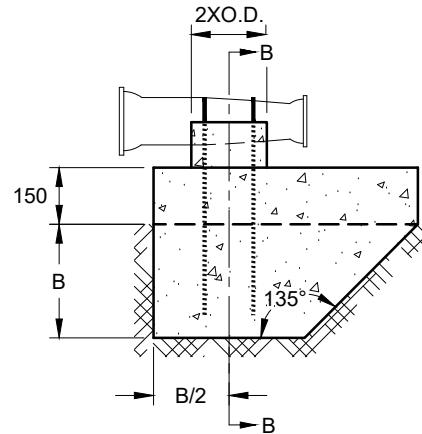
NOMINAL DIAMETER (mm)	EFFECTIVE AREA (m ²)	VERTICAL BENDS DOWN																NOMINAL DIAMETER (mm)	EFFECTIVE AREA (m ²)	REDUCERS								
		90°				45°				22 1/2°				11 1/4°						R	RE-BAR	A	B	CONC				
		R	RE-BAR	A	B	CONC	R	RE-BAR	A	B	CONC	R	RE-BAR	A	B	CONC	R	RE-BAR	A	B	CONC							
100	0.012	1.74	15M	1150	525	0.75	0.94	15M	900	450	0.38	0.37	15M	750	450	0.19	0.24	15M	750	450	0.19	100 X 150	0.012	1.32	15M	900	450	0.57
150	0.025	3.61	20M	1525	750	1.72	1.95	20M	1225	600	0.98	1.00	15M	900	450	0.38	0.50	15M	900	450	0.38	150 X 200	0.017	1.84	15M	900	600	0.57
200	0.042	6.21	25M	1825	900	2.87	3.36	20M	1450	675	1.53	1.71	15M	1075	525	0.76	0.86	15M	900	450	0.38	150 X 250	0.038	4.03	15M	1200	750	1.15
250	0.063	9.21	25M	2050	975	4.20	5.03	25M	1675	750	2.29	2.61	20M	1375	675	1.15	1.29	15M	1075	525	0.57	150 X 300	0.064	6.80	20M	1200	900	1.34
300	0.088	13.24	25M	2275	1150	5.92	7.12	25M	1900	900	3.25	3.65	20M	1525	750	1.72	1.84	20M	1150	525	0.76	200 X 300	0.047	4.97	15M	1200	750	1.15



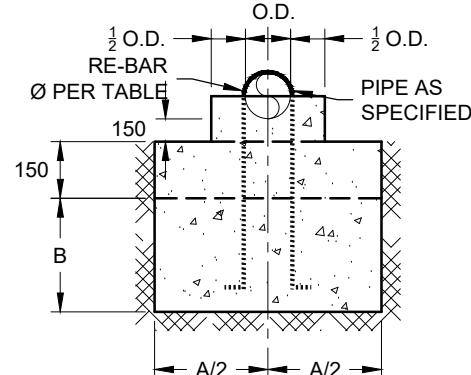
ELEVATION



SECTION A-A



ELEVATION



SECTION B-B

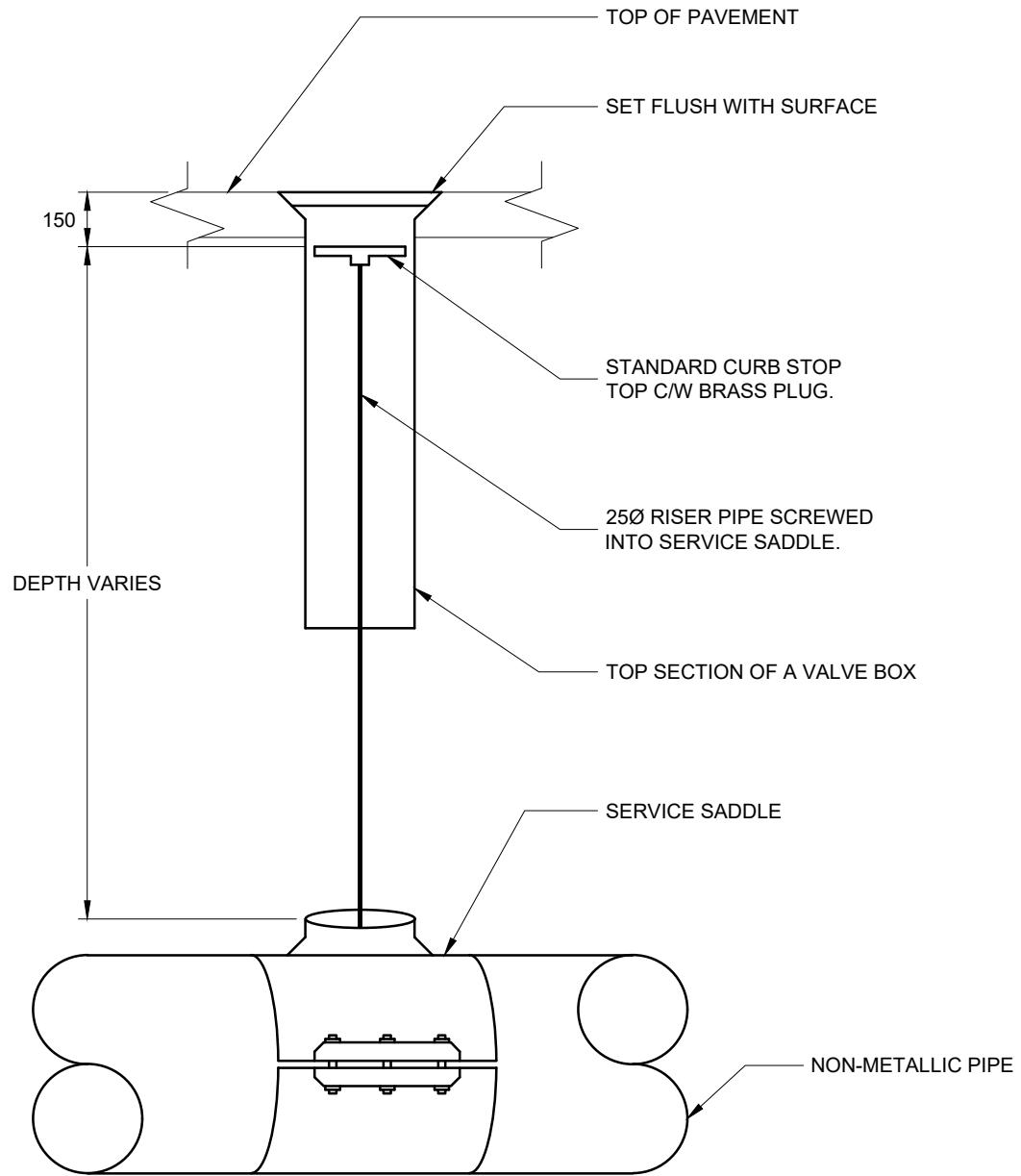
VERTICAL BEND DOWN

NOTES:

1. CONCRETE SHALL BE 25 MPa 28 DAY STRENGTH.
2. 200 MICRON THICK POLYETHYLENE TO BE PLACED AROUND FITTING AND BETWEEN THRUST BLOCK.
3. RE-BARS, REINFORCING STEEL STRUCTURAL GRADE 125 MPa MINIMUM WORKING STRESS WHEN EXPOSED TO SOIL BARS SHALL BE COATED WITH ASPHALT PAINT TO PREVENT CORROSION.
4. BLOCKS SHALL BE POURED DIRECTLY AGAINST UNDISTURBED SOIL AS INDICATED.
5. DESIGN DATA - STATIC PRESSURE 1000KPa.
 - MINIMUM BEARING CAPACITY OF SOIL 120 KPa.
6. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

ABBREVIATIONS:

R	REACTION IN 1000 Kg.
CONC.	VOLUME OF CONCRETE IN m ³ .
A & B	DIMENSION OF CONCRETE IN mm UNLESS OTHERWISE NOTED.



NOTES:

1. SOUNDING POINT TO BE LOCATED 250m FROM NEAREST VALVE AND SPACED 250m APART.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

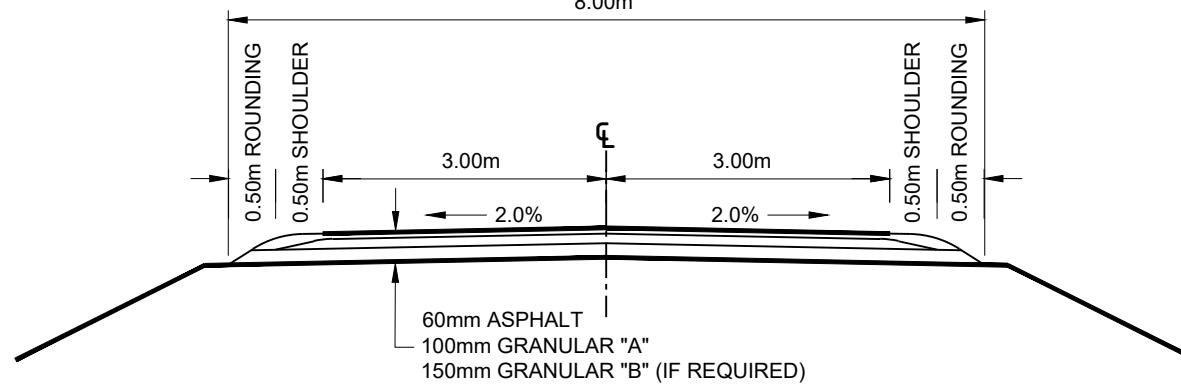
MUNICIPAL MASTER
SPECIFICATIONS

SOUNDING POINT / MARKER DETAIL FOR
NON-METALLIC WATER MAIN

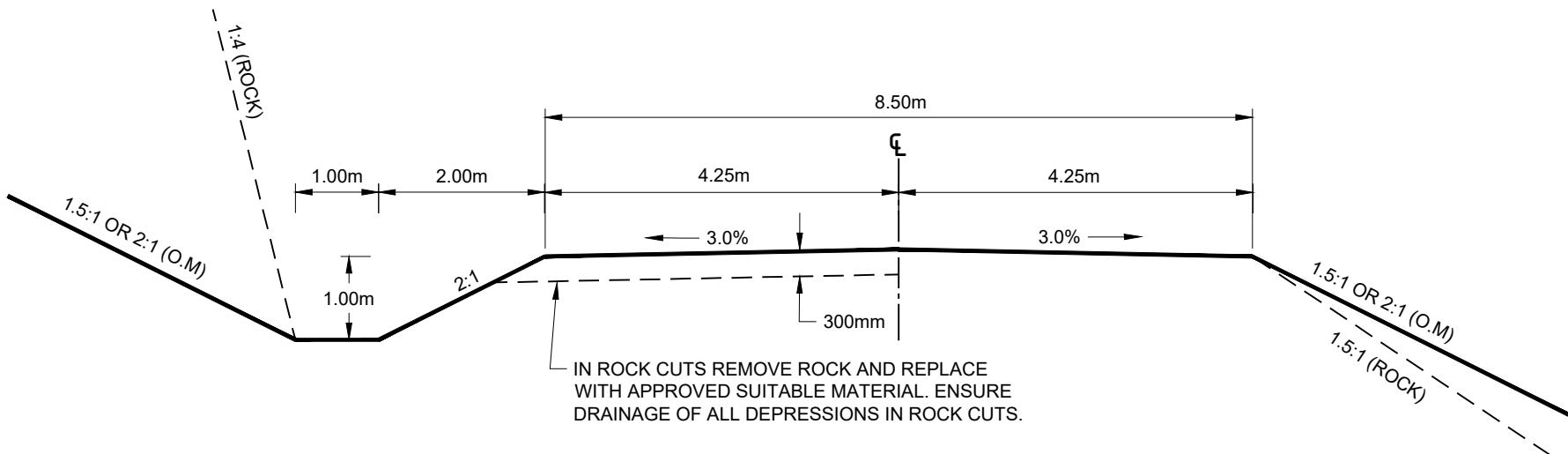
DRAWING NUMBER 04610

DATE:	APRIL 2023
SCALE:	N.T.S.

MUNICIPAL ROAD



TYPICAL CROSS SECTION FOR
MUNICIPAL ROAD FINAL CONSTRUCTION



TYPICAL CROSS SECTION FOR MUNICIPAL
ROAD SUB-GRADE CONSTRUCTION

NOTE:

IF SCARIFYING IS REQUIRED WIDTH OF SCARIFYING SHALL BE WIDTH OF PAVEMENT PLUS 300mm ON BOTH SIDES.