

Appendix C

Design Drawings Specifications



Appendix C – Drawings and Details

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GENERAL

	DIRECTION OF FLOW
	PLUG
	FILTER CLOTH
	ROCK
	POWER POLE
	LIGHT STANDARD
	SUPER MAILBOX
	FENCE
	ABANDONED MAIN
	CULVERT
	OVERHEAD UTILITY
	UNDERGROUND UTILITY
	REMOVE COMPLETELY, PLUG ABANDONED PIPES WITH CONCRETE.
	INDICATES A TIE TO EXISTING CONTRACTOR IS RESPONSIBLE FOR VERIFYING ELEVATION AND LOCATION PRIOR TO CONSTRUCTION.
	PROPOSED CONDUIT
	PROPOSED ELEVATION
	LIP OF GUTTER

① 45° BEND	④ 11 1/2° BEND	Ⓐ ASPHALT DRIVEWAY
② 22 1/2° BEND	① INSULATED SEWER SERVICE	Ⓒ CONCRETE DRIVEWAY
③ 90° BEND		Ⓔ GRAVEL DRIVEWAY

LEGEND

	PROPOSED	EXISTING
SANITARY SEWER (SAN)		
STORM SEWER (STW)		
WATERMAIN (WAT)		
FORCEMAIN		
CLAMPING		
WATER & SEWER SERVICE		
MANHOLE		
CATCHBASIN		
VALVE		
HYDRANT VAULT (HV)		
WATER MANHOLE (WMH)		



N.T.S.

DATE DRAWN:
01/01/2020

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

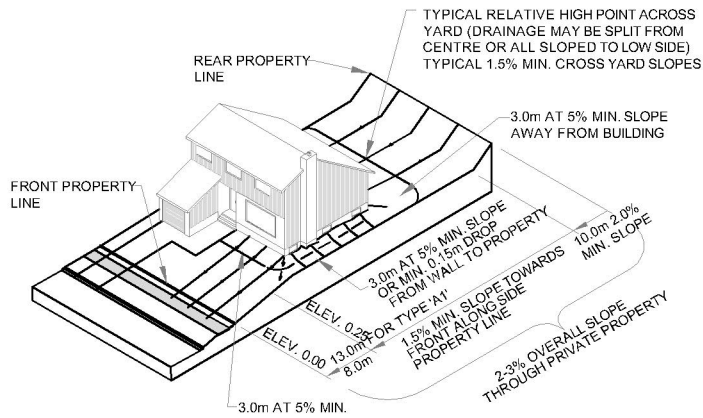
LEGEND

GENERAL

REVISION No.
1

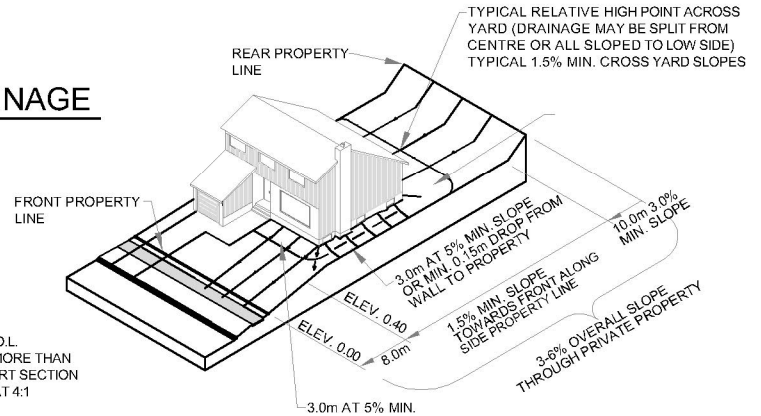
DWG.No.

A-100



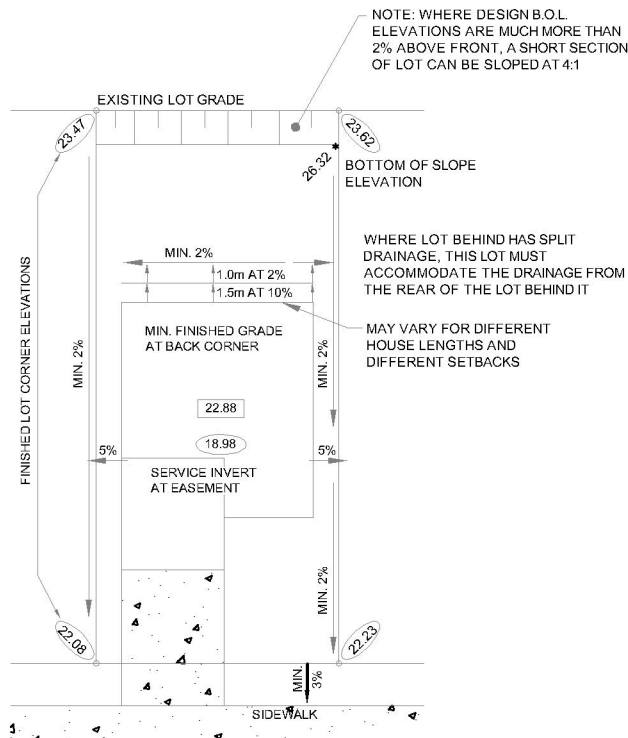
2-3% OVERALL LOT SLOPE

TYPE 'A' & TYPE 'A1' REAR TO FRONT DRAINAGE



3-6% OVERALL LOT SLOPE

TYPE 'B' REAR TO FRONT DRAINAGE



REAR TO FRONT DRAINAGE TYPICAL DETAIL



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TITLE:

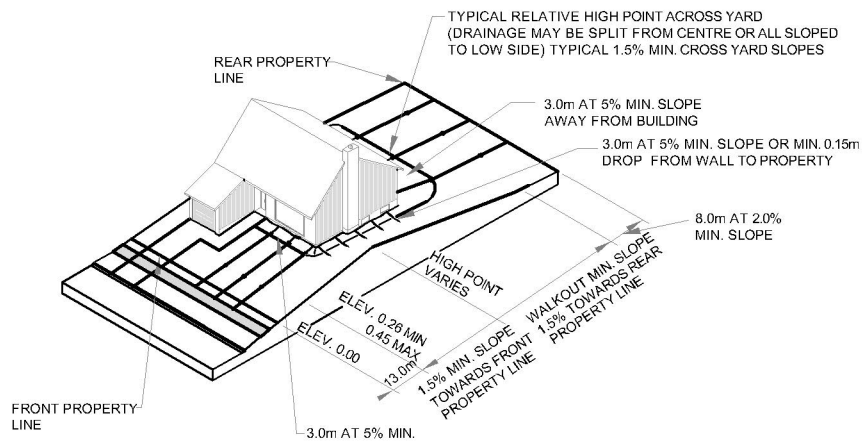
LOT GRADING AND DRAINAGE DETAILS (1/2)

GENERAL

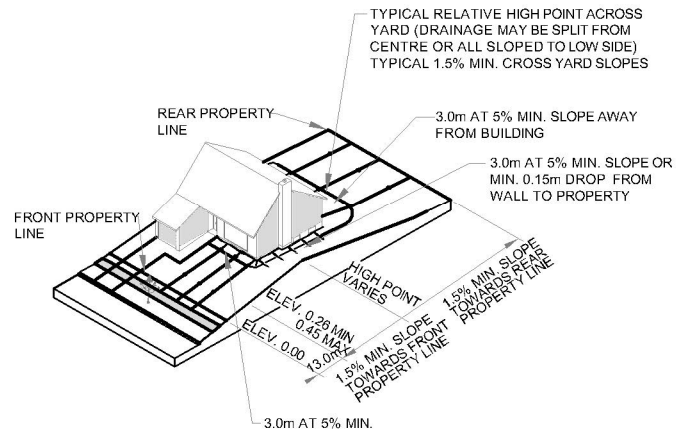
REVISION No.
1

DWG.No.

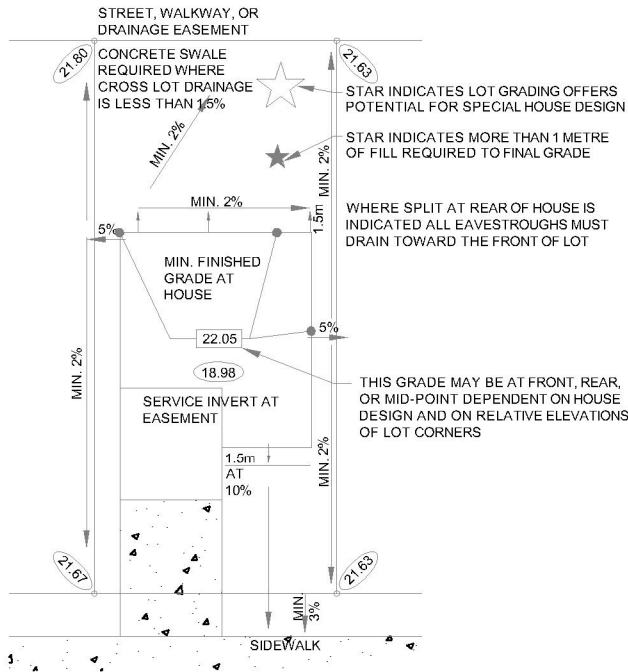
B-100



TYPE 'W' SPLIT DRAINAGE



TYPE 'D' STANDARD SPLIT DRAINAGE



SPLIT DRAINAGE TYPICAL DETAIL



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06/04/2022

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TITLE:

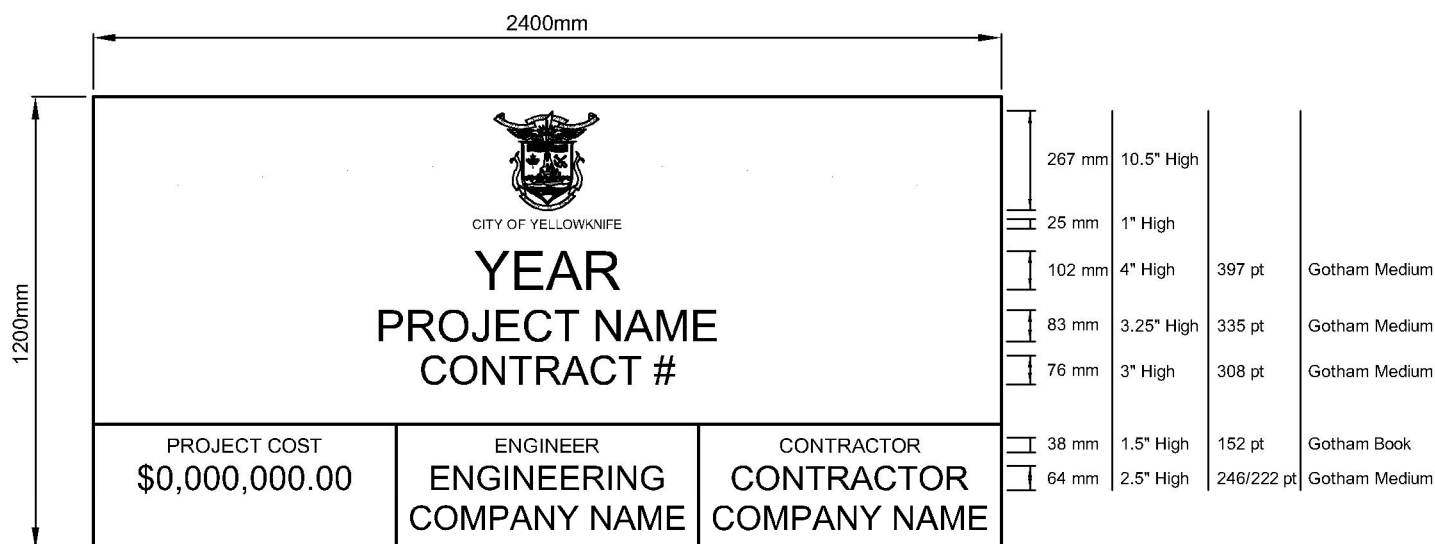
LOT GRADING AND DRAINAGE DETAILS (2/2)

GENERAL

REVISION No.
1

DWG.No.

B-101

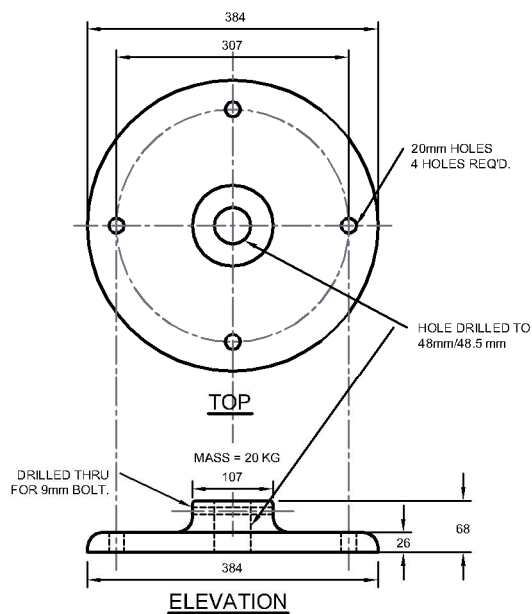


PROJECT CONSTRUCTION SIGN

SCALE 1:20

NOTES:

1. SIGN LAYOUT AND LETTERING TO CITY OF YELLOWKNIFE SIGNAGE STANDARDS.
2. PROVIDE AND ERECT A PROJECT SIGN IN A LOCATION DESIGNATED BY THE ENGINEER.
3. SIGN SHALL BE 1200 mm X 2400 mm (96" X 48"), 3 MIL WHITE DIBOND OR ALTERNATE APPROVED BY THE CITY.
4. SIGN TEMPLATE WILL BE PROVIDED, IN AN EDITABLE ADOBE ILLUSTRATION AI FILE.
5. PROVIDE ADEQUATE SUPPORTING FRAMEWORK FOR THE SIGN.
6. TEXT INFORMATION AS PER DETAIL ON DRAWINGS AND ENGINEER'S INSTRUCTIONS. TEXT TO BE APPLIED USING CUT VINYL OR DIGITAL, LAMINATED PRINT.
7. MAINTAIN SIGN IN GOOD CONDITION FOR THE DURATION OF THE THE WORK. CLEAN PERIODICALLY.
8. DISMANTLE SIGN WITH CARE AND DELIVER TO OWNER AT COMPLETION OF PROJECT.
9. NO OTHER SIGNS OR ADVERTISEMENTS OTHER THAN WARNING SIGNS ARE TO BE ERECTED ON SITE.



SIGN BASE

SCALE 1:10



AS SHOWN

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

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YK ENG.

TITLE:

PROJECT CONSTRUCTION SIGN

GENERAL

REVISION No.
1

DWG.No.

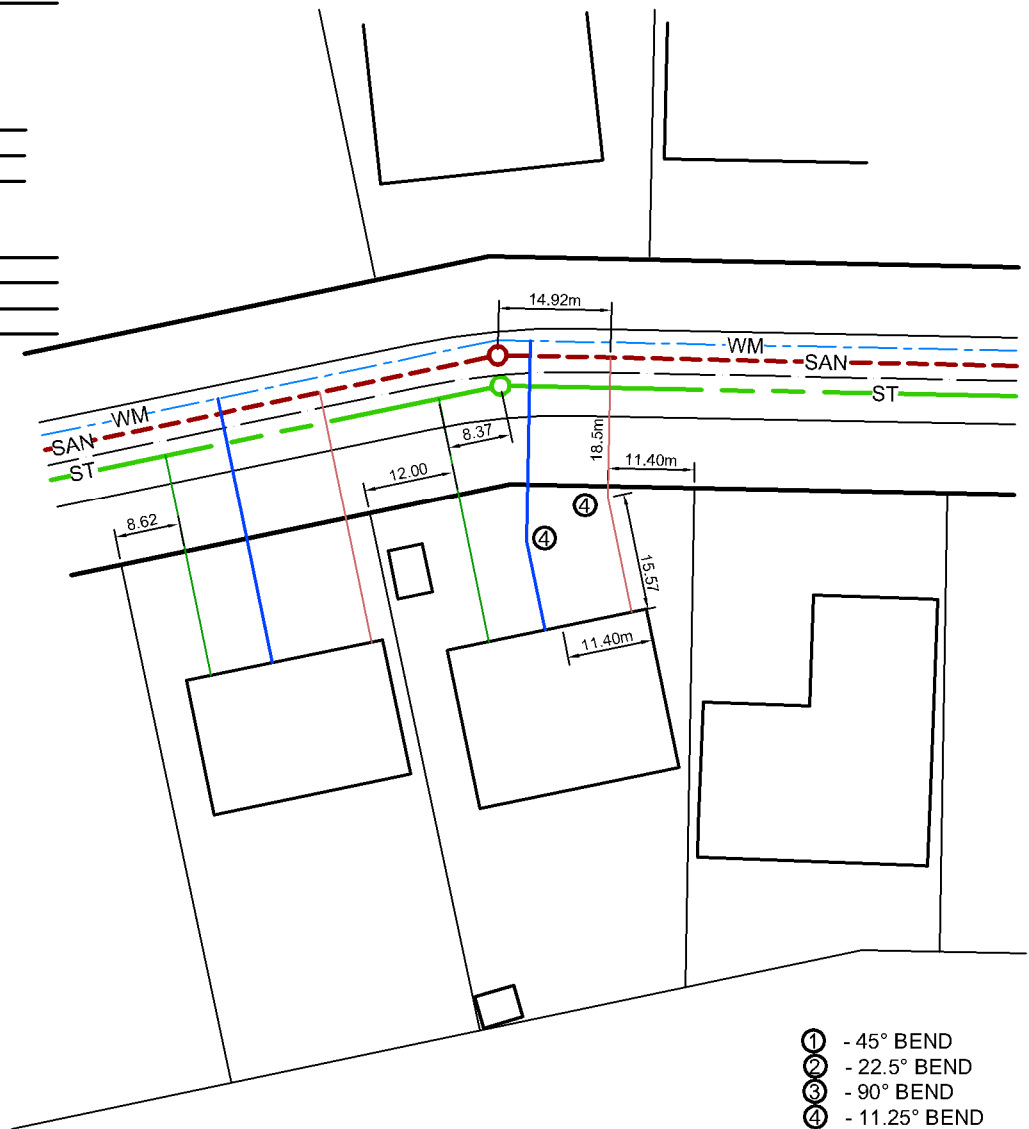
C-G-100

ADDRESS _____
 EX. SERVICE - SAN _____
 - WAT _____

HEAT TRACE ☐
 BLEEDER ☐

DATE INSTALLED _____
 DATE ON TEMP _____
 DATE OFF TEMP _____

METER INFORMATION
 NEW - SER # _____
 OLD - SER # _____
 NEW READING _____
 OLD READING _____



- ① - 45° BEND
- ② - 22.5° BEND
- ③ - 90° BEND
- ④ - 11.25° BEND

ELEVATIONS

NOTE:

IN AREAS WHERE EXISTING CONDITIONS REQUIRE A VARIANCE IN ALIGNMENT (AS PER EXAMPLE) INDICATE AND DIMENSION ANY AND ALL VARIANCES FROM ALIGNMENTS. DIMENSIONS CAN BE FROM ANY PERMANENT STRUCTURE OR PROPERTY LINE.

TOP SEWER @

MAIN	_____	GROUND	_____
BEND 1	_____	GROUND	_____
BEND 2	_____	GROUND	_____
BEND 3	_____	GROUND	_____
PROP. LINE	_____	GROUND	_____
TIE-IN	_____	GROUND	_____

TOP WAT @ MAIN _____

NOTE: FOR CLARITY THIS EXAMPLE INDICATES TWO LOCATIONS, HOWEVER CONTRACTOR WILL PROVIDE SEPARATE SHEETS FOR EACH INDIVIDUAL SERVICE.



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DATE DRAWN: 01/01/20	REVISION DATE: 06/04/2022
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TITLE:

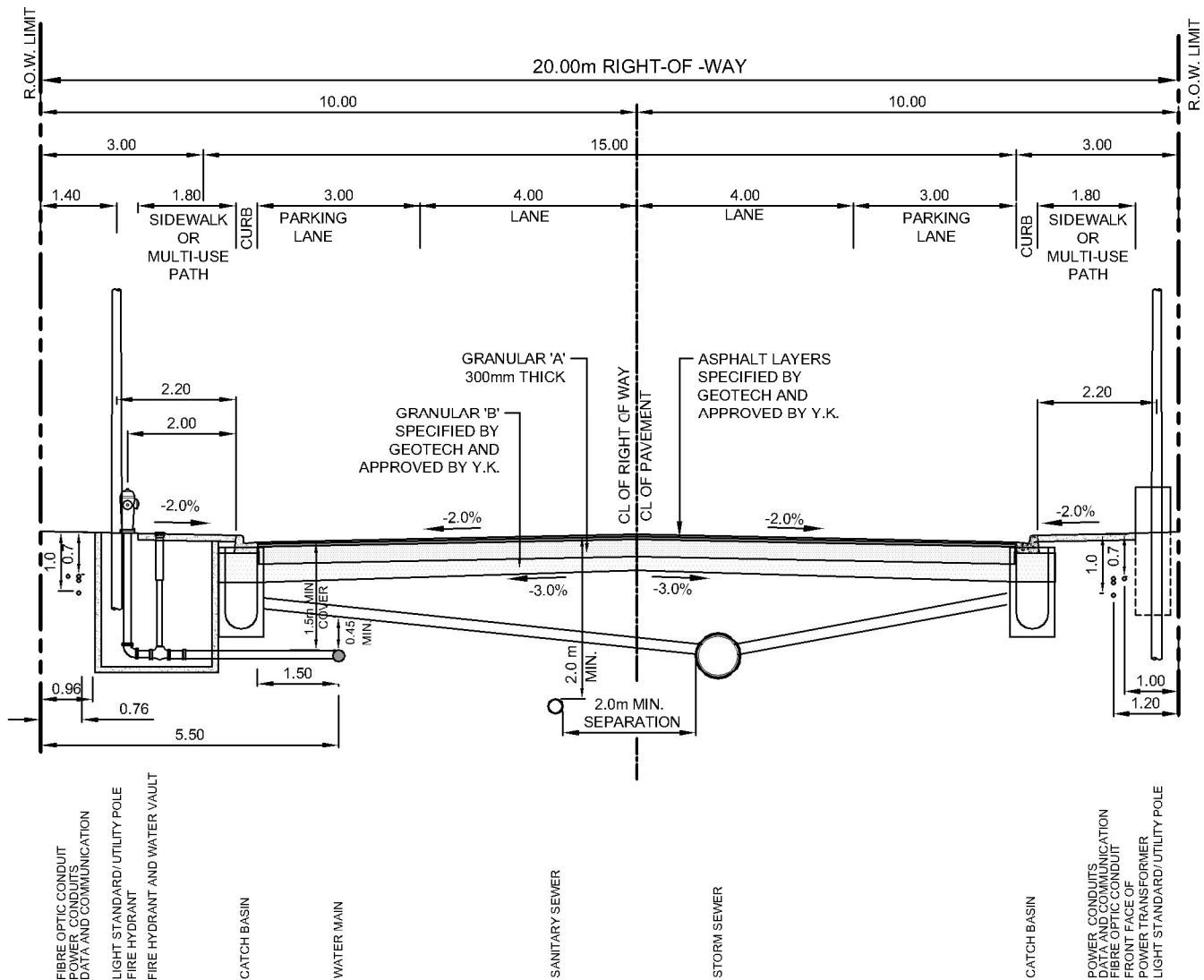
SERVICE RECORD DRAWING

GENERAL

REVISION No.
1

DWG.No.

D-100



1:125

DATE DRAWN:
03/24/2021

REVISION DATE:
06/04/2022

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YK ENG.

TITLE:

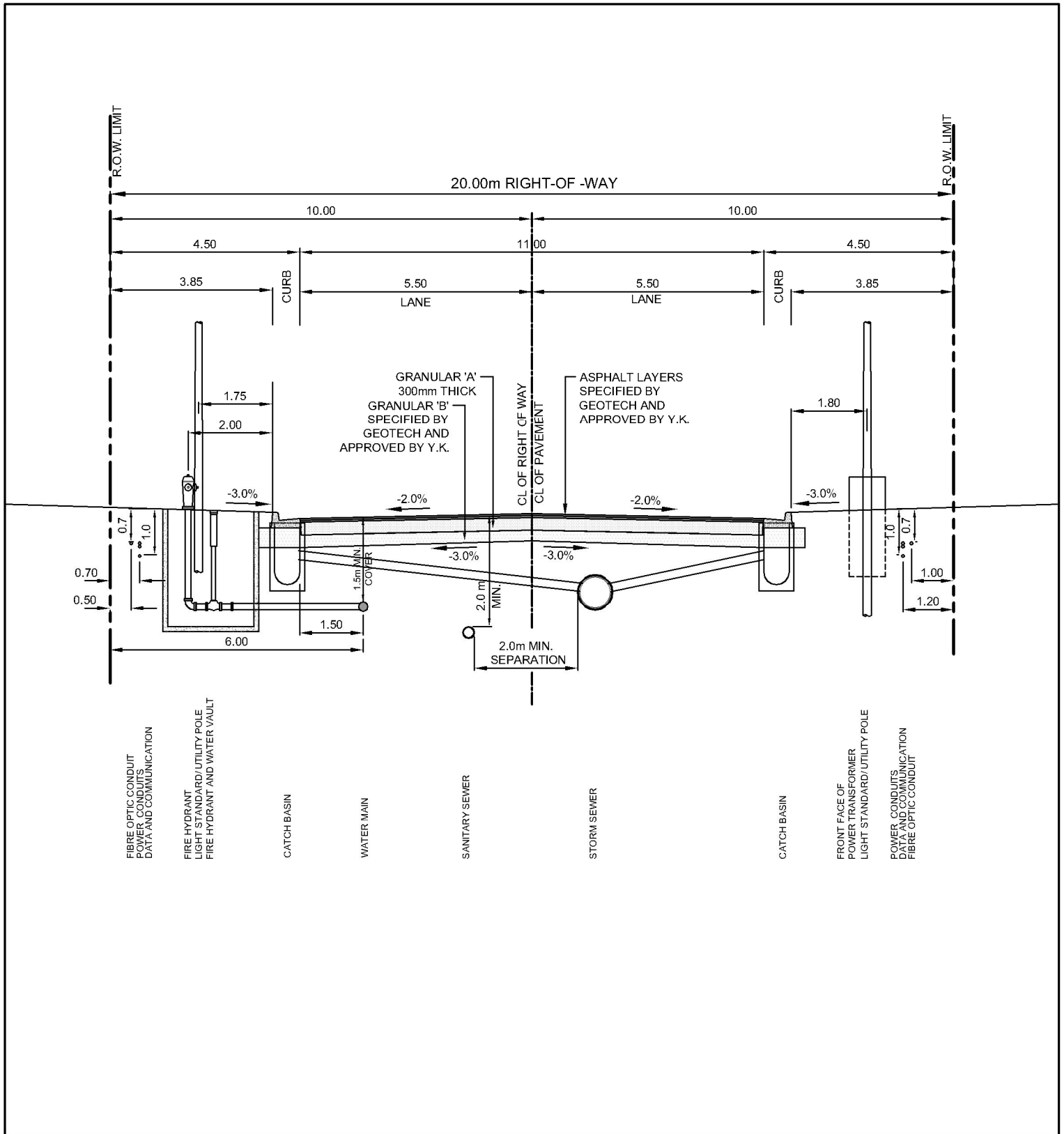
**ROAD CROSS SECTION - COMMERCIAL
STREET 20.0m R.O.W.**

ROADWAY

REVISION No.
1

DWG.No.

C-R-100 (C)



1:125

DATE DRAWN:
24/03/2021

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

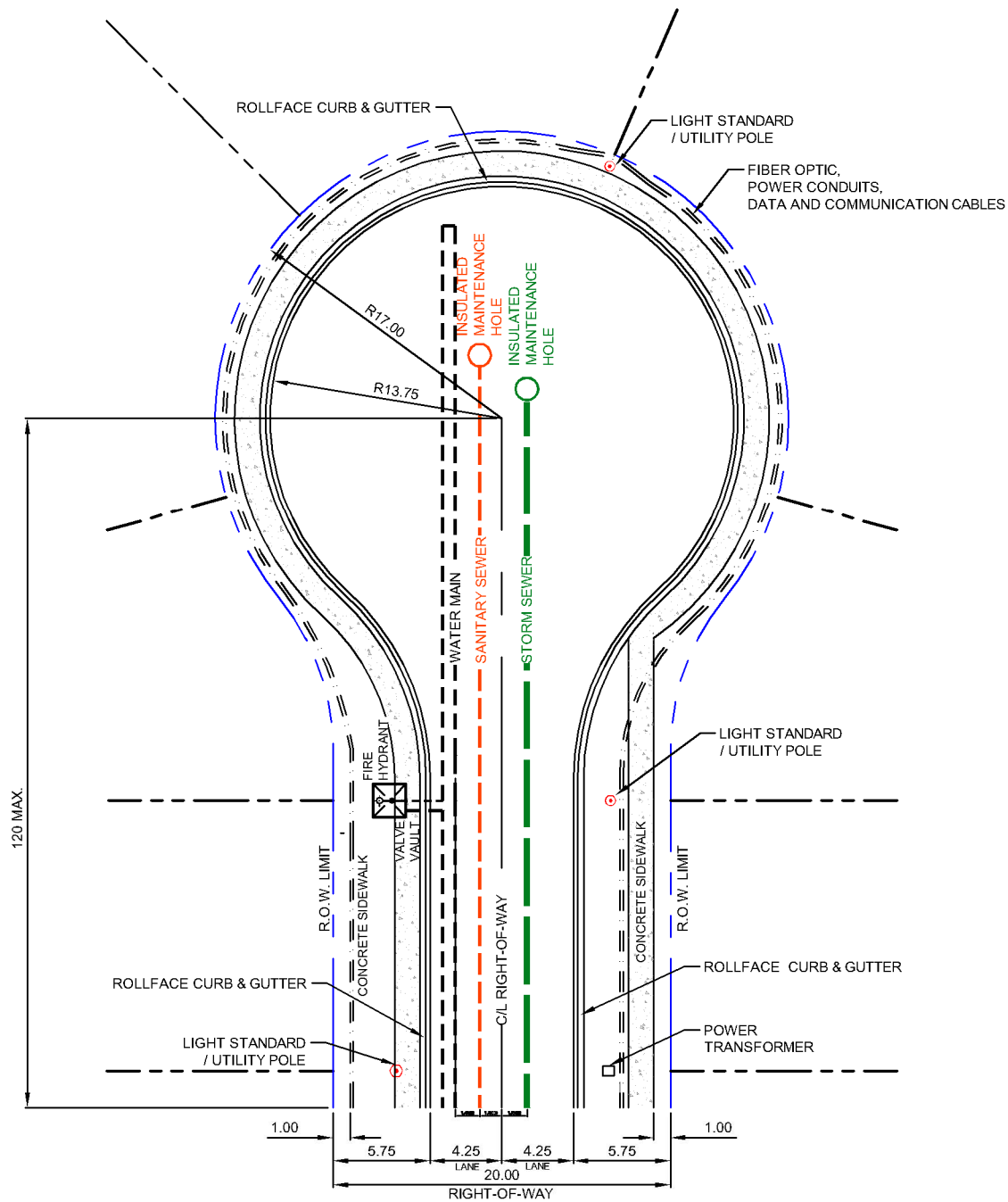
ROAD CROSS SECTION - INDUSTRIAL STREET
20.0m R.O.W.

ROADWAY

REVISION No.
1

DWG.No.

C-R-100 (I)



NOTES:

1. THE ABOVE IS INTENDED TO BE A GUIDELINE FOR LOCATION OF UTILITY CORRIDORS WITHIN NEW SUBDIVISIONS AND ROADWAYS. THE CORRIDOR LOCATIONS SHOULD ALSO BE CONSIDERED WHERE POSSIBLE WHEN NEW UTILITY PLANTS ARE TO BE CONSTRUCTED WITHIN EXISTING ROAD ALLOWANCES.
2. REFER TO STANDARD UTILITY CROSS SECTION DRAWINGS FOR VERTICAL AND HORIZONTAL DIMENSIONING TO EACH UTILITY PLANT.
3. NO TWO (2) ABOVE GROUND UTILITIES ON THE SAME LOT FRONTAGE.
4. FIBER OPTIC, POWER CONDUITS, DATA AND COMMUNICATION CABLES TO BE INSTALLED IN JOINT TRENCH.
5. SIDEWALK TO BE 1.50m WIDTH ONE SIDE OF R.O.W. ONLY FOR LOCAL STREETS. SIDEWALK TO BE 1.50m WIDTH BOTH SIDES OF R.O.W. FOR COLLECTOR AND ARTERIAL STREETS.
6. CONSIDERATION SHALL BE MADE FOR LOCATIONS OF DRIVEWAY ENTRANCES WHEN LOCATING ABOVE GROUND UTILITIES ON LOT FRONTAGES.



1:400

DATE DRAWN:
31/03/2021

REVISION DATE:
06/04/2022

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YK ENG.

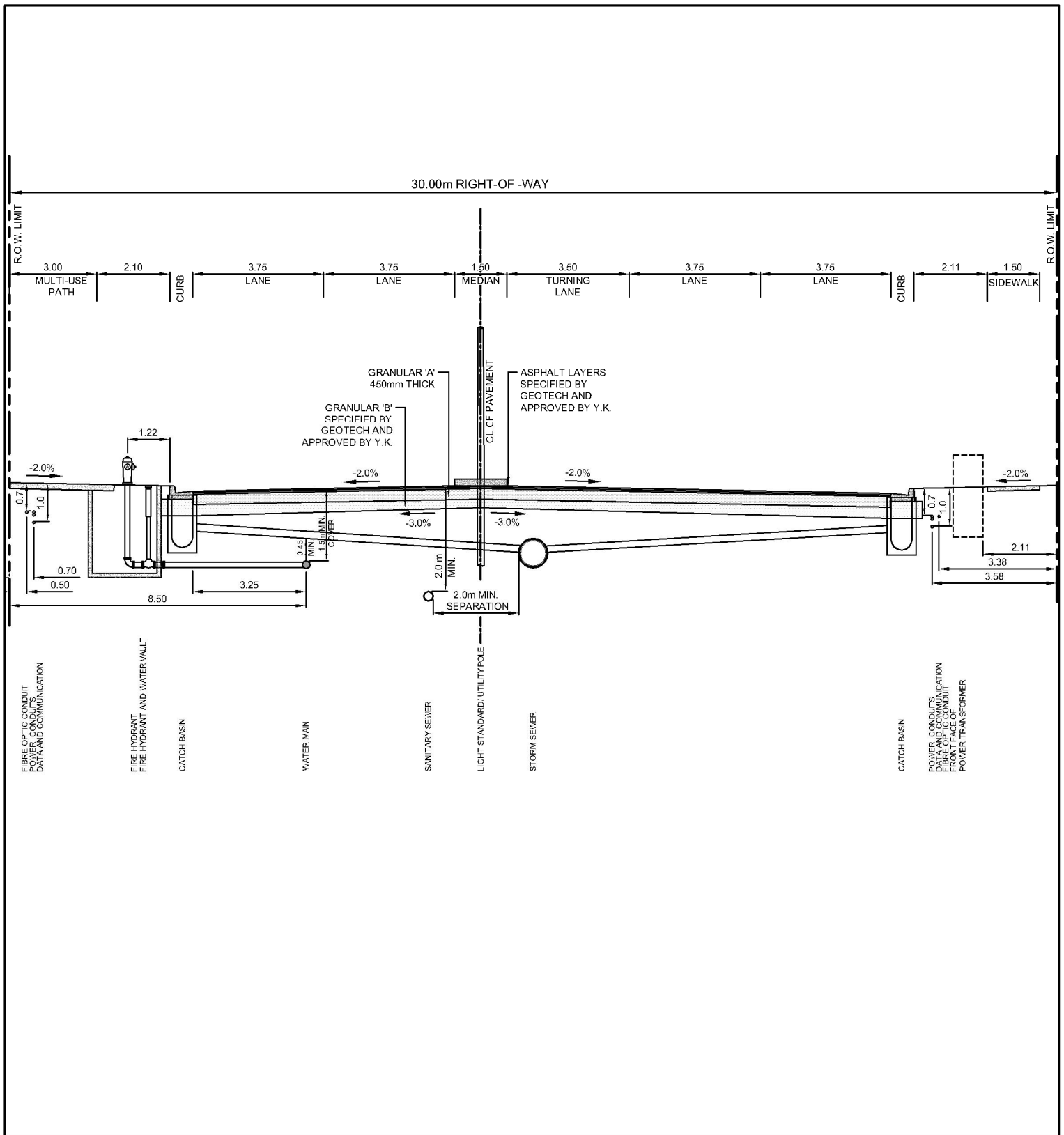
TITLE:

**ROAD CROSS SECTION - CUL-de-SAC 20.0m
R.O.W**

ROADWAY

REVISION No.
1

DWG.No.
C-R-100 (CUL)



1:175

DATE DRAWN:
24/03/2021

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

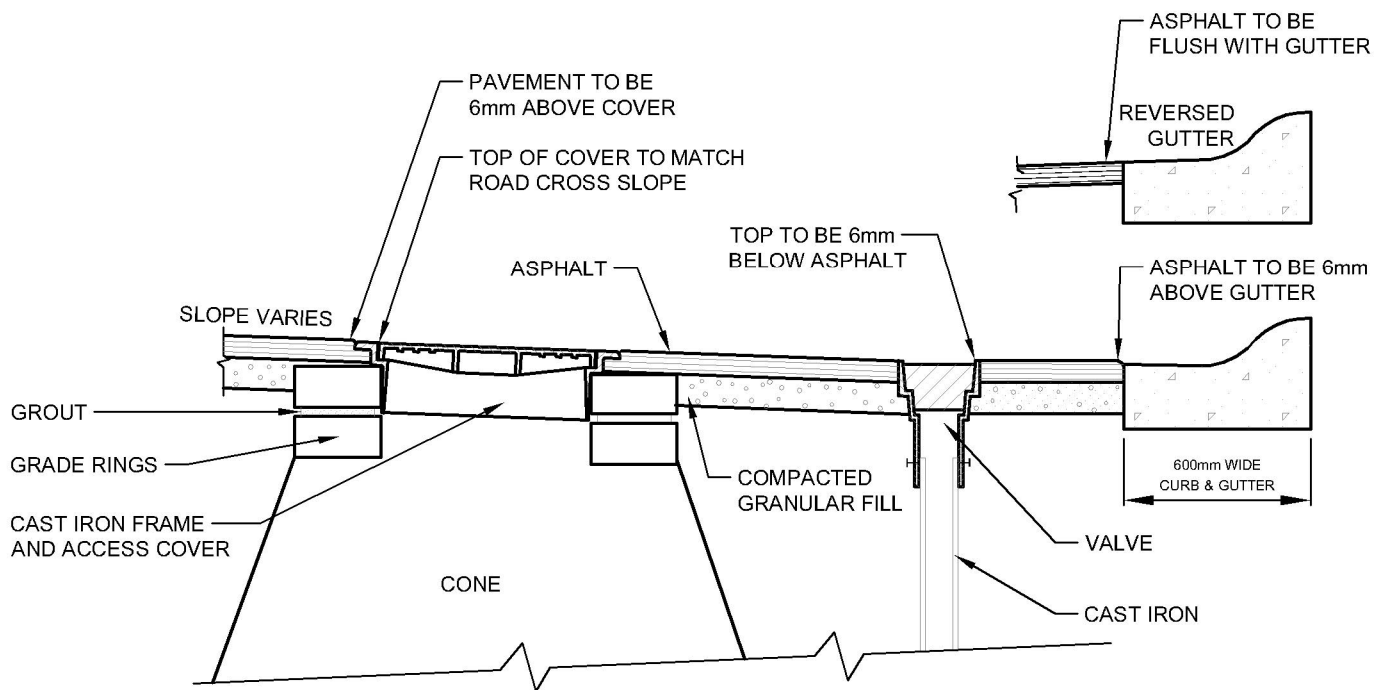
TYPICAL ROAD CROSS SECTION
ARTERIAL STREET
30m ROW

ROADWAY

REVISION No.
1

DWG.No.

C-R-101 (A)



ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE



1:15

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

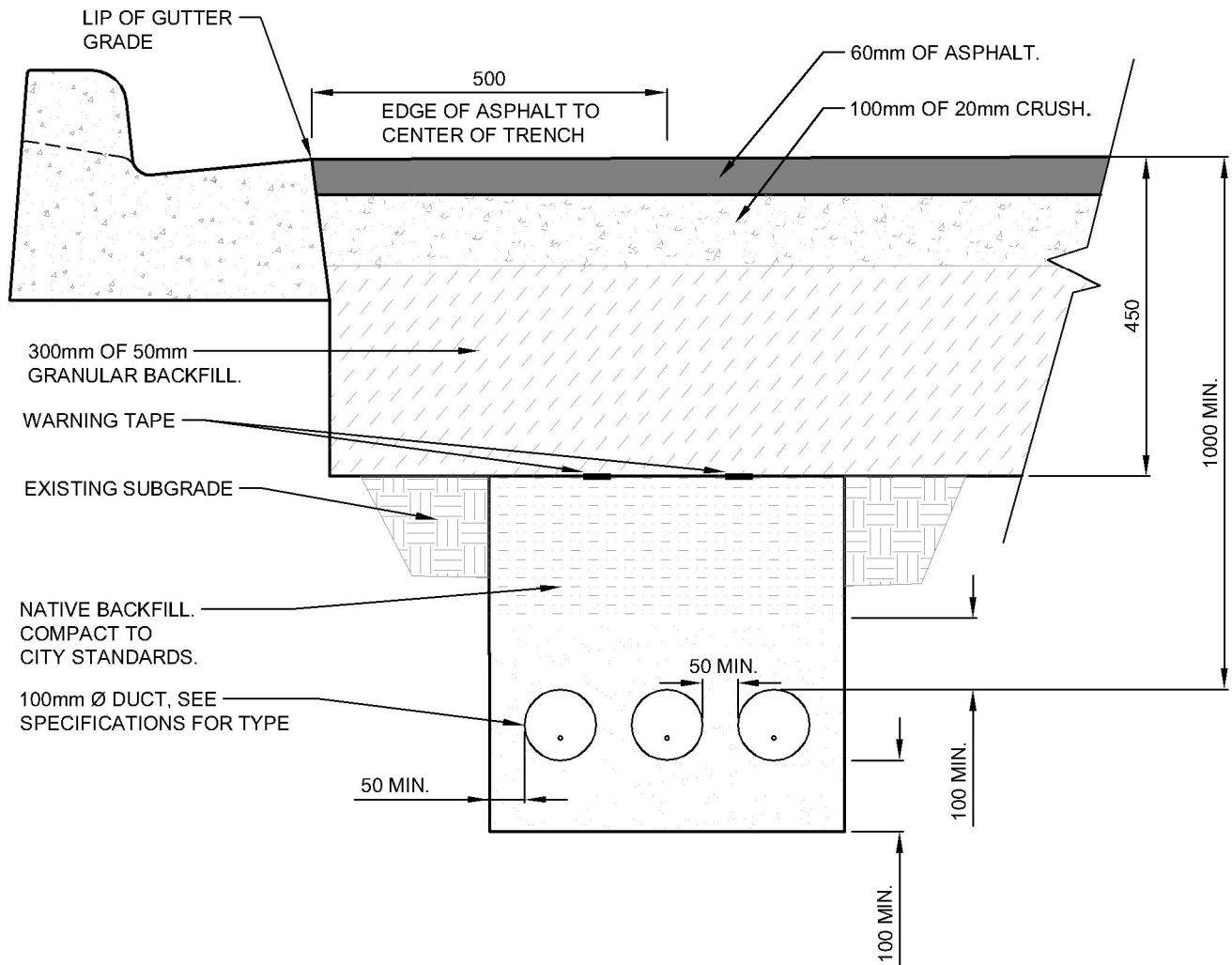
APPURTENANCES PAVING DETAILS

ROADWAY

REVISION No.
1

DWG.No.

C-R-102



ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE



1:10

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

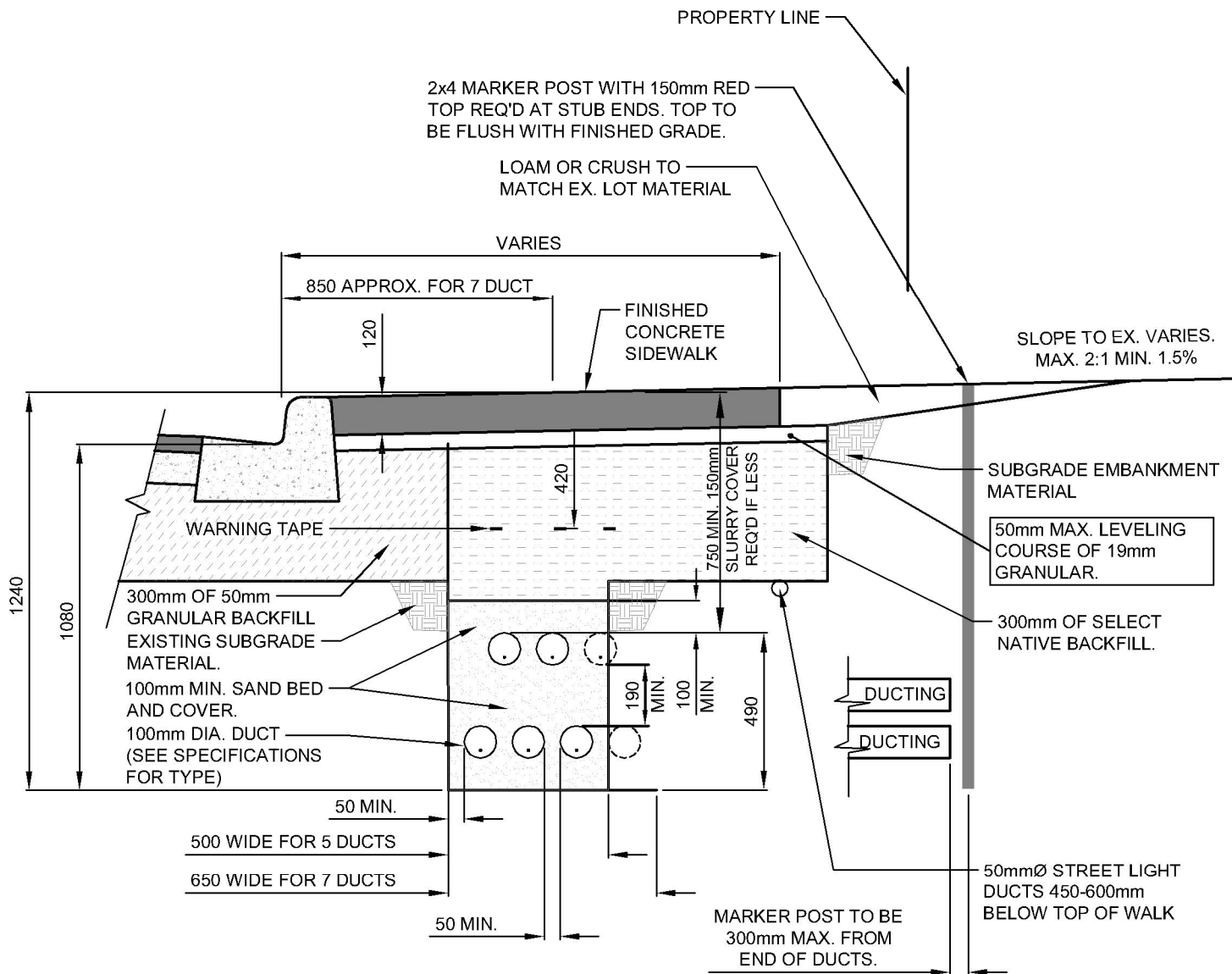
DIRECT BURIED CONDUITS UNDER ROADWAYS

ROADWAY

REVISION No.
1

DWG.No.

C-R-103



1:20

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

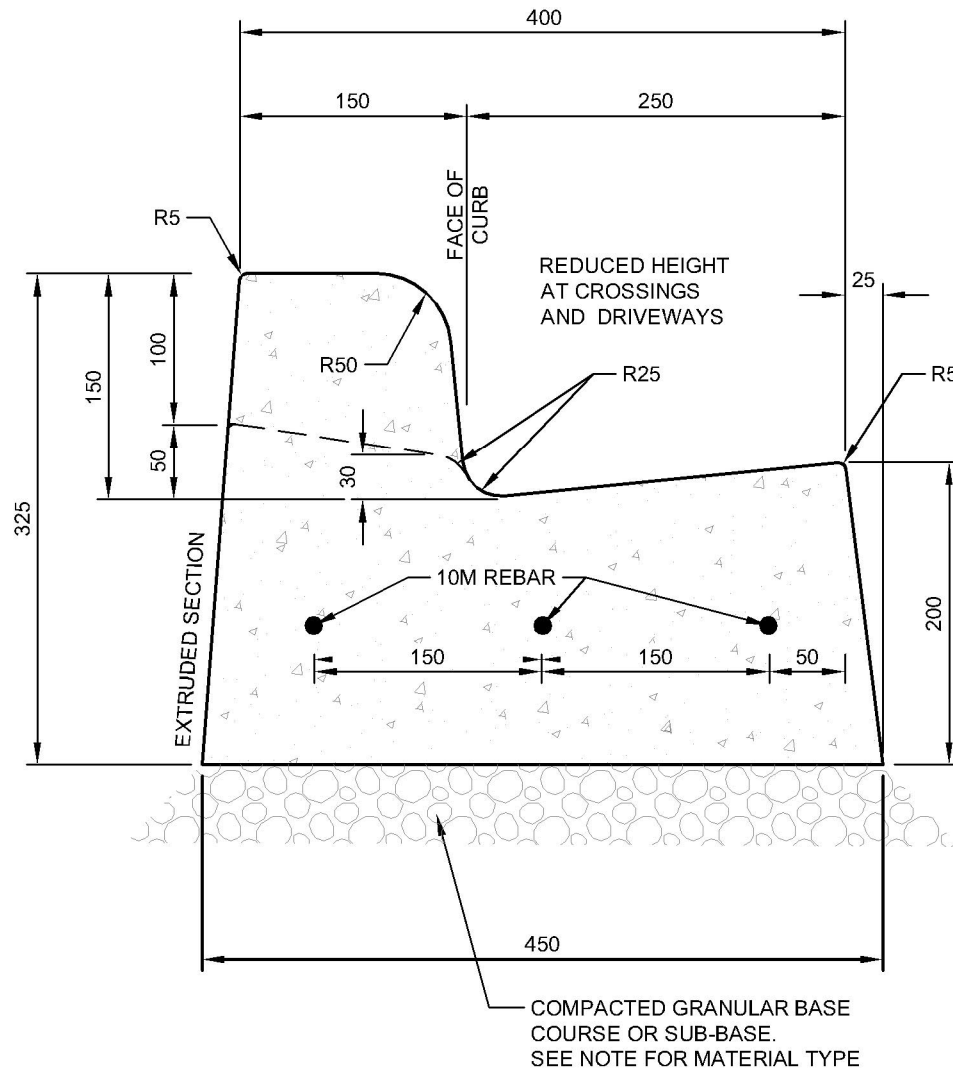
DIRECT BURIED DUCT DETAIL UNDER SIDEWALK

ROADWAY

REVISION No.
1

DWG.No.

C-R-104



NOTES:

1. REDUCED CURB HEIGHT AT ALL CROSSINGS AND DRIVEWAYS.
2. 3-10M REBAR AT ALL LANE AND COMMERCIAL CROSSINGS.
3. PREFERRED MATERIAL FOR BASE COURSE IS NATIVE MATERIAL.
4. CONTACT ENGINEER FOR APPROVAL OF IMPORTED GRANULAR MATERIAL IF THERE IS NO SUITABLE NATIVE MATERIAL.
5. CONTACT ENGINEER IF UNSUITABLE BASE CONDITIONS ARE ENCOUNTERED.
6. ALL DIMENSIONS IN MILLIMETERS UNLESS NOTED OTHERWISE



1:5

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

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YK ENG.

TITLE:

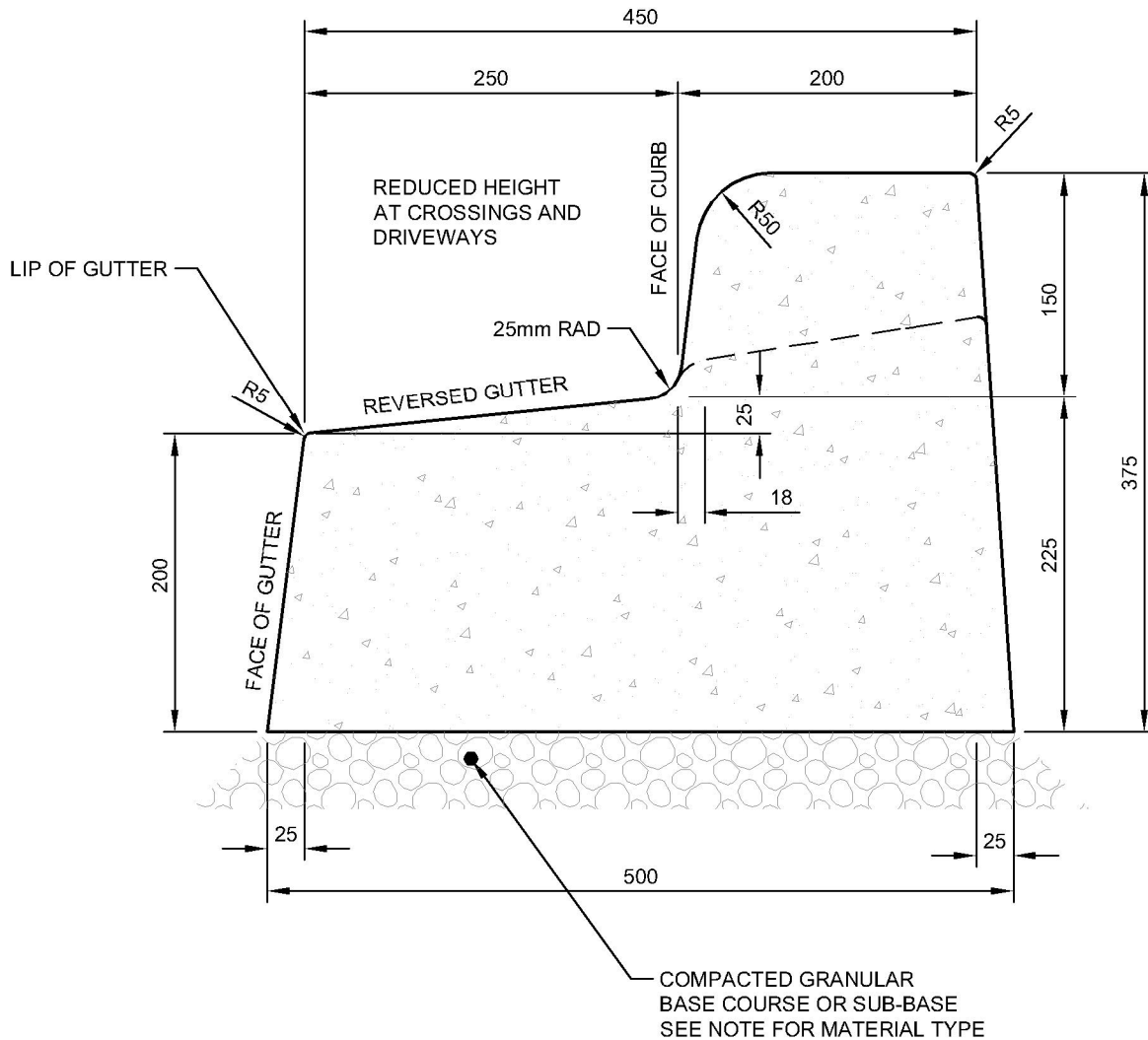
150mm BARRIER CURB AND 250mm GUTTER

ROADWAY

REVISION No.
1

DWG.No.

C-R-105A



NOTES:

1. PREFERRED MATERIAL FOR BASE COURSE IS NATIVE MATERIAL.
2. CONTACT ENGINEER FOR APPROVAL OF IMPORTED GRANULAR MATERIAL IF THERE IS NO SUITABLE NATIVE MATERIAL.
3. CONTACT ENGINEER IF UNSUITABLE BASE CONDITIONS ARE ENCOUNTERED.



1:5

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

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YK ENG.

TITLE:

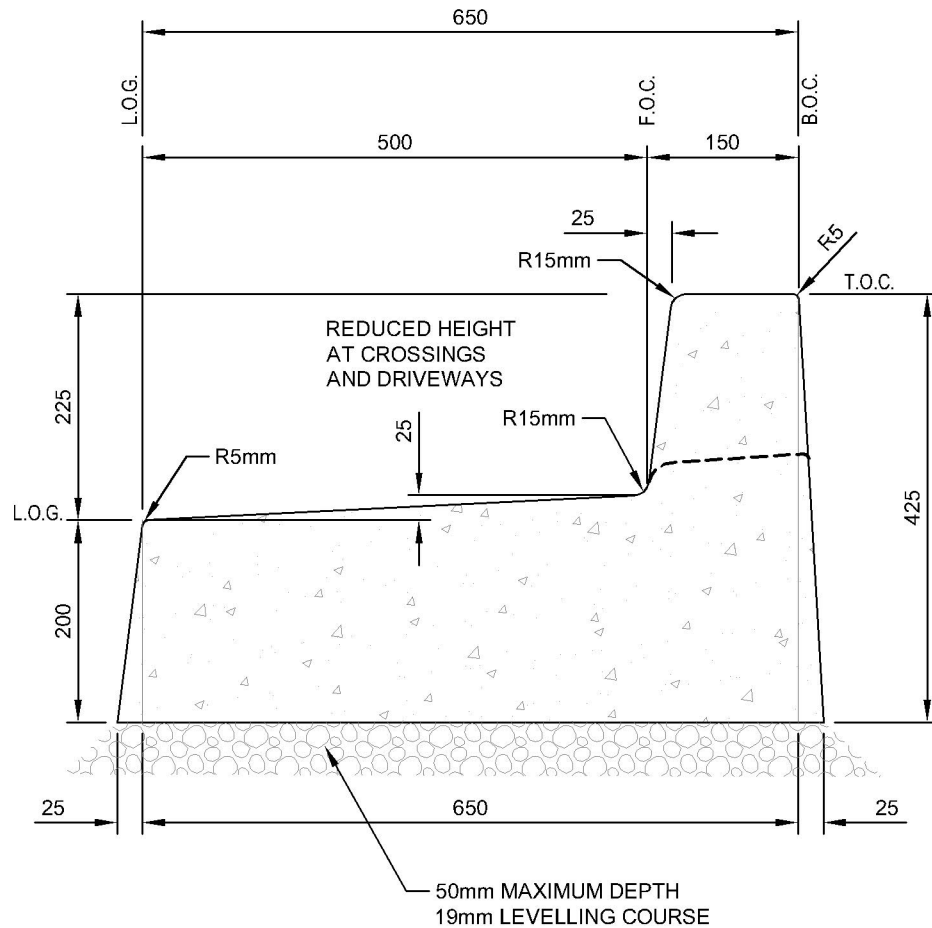
150mm BARRIER CURB & REVERSE GUTTER

ROADWAY

REVISION No.
1

DWG.No.

C-R-105B



NOTES:

1. PREFERRED MATERIAL FOR BASE COURSE IS NATIVE MATERIAL.
2. CONTACT ENGINEER FOR APPROVAL OF IMPORTED GRANULAR MATERIAL IF THERE IS NO SUITABLE NATIVE MATERIAL.
3. CONTACT ENGINEER IF UNSUITABLE BASE CONDITIONS ARE ENCOUNTERED.



1:7.5

DATE DRAWN:
22/03/2021

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

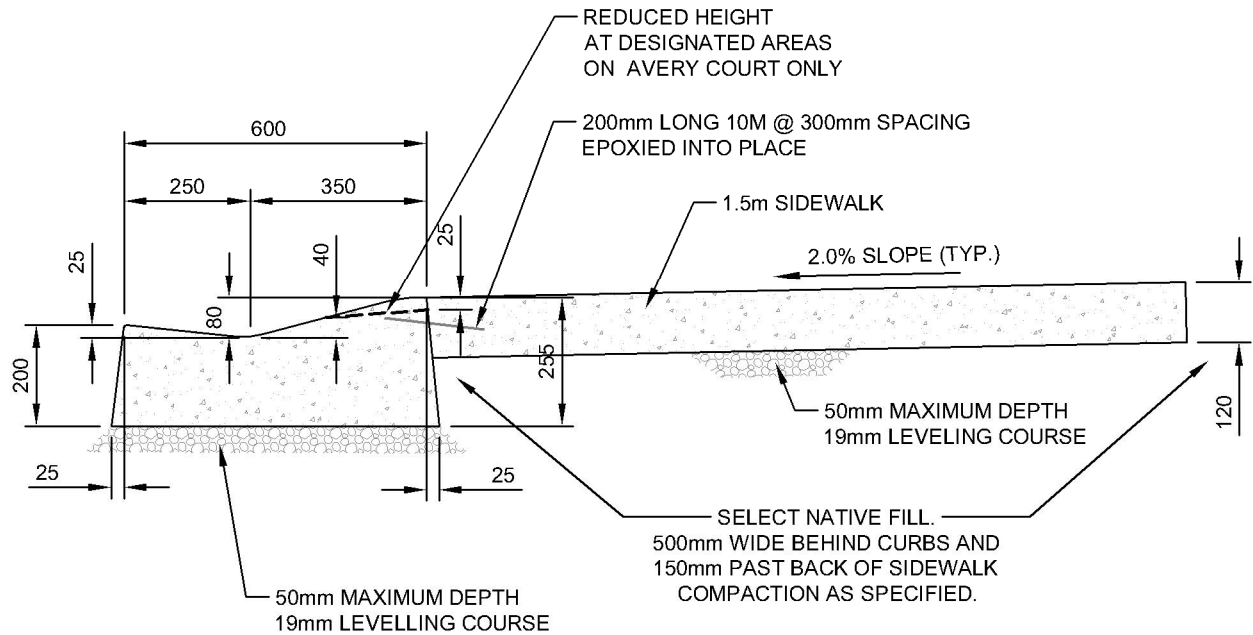
200mm BARRIER CURB & REVERSE CURB

ROADWAY

REVISION No.
1

DWG.No.

C-R-105C



ROLLFACE CURB & GUTTER AND SIDEWALK NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS
2. PREFERRED MATERIAL FOR BASE COURSE IS NATIVE MATERIAL
3. CONTACT ENGINEER FOR APPROVAL OF IMPORTED GRANULAR MATERIAL IF THERE IS NO SUITABLE NATIVE MATERIAL
4. CONTACT ENGINEER IF UNSUITABLE BASE CONDITIONS ARE ENCOUNTERED



1:15

DATE DRAWN:
22/03/2021

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

ROLLFACE CURB & GUTTER - CONCRETE
SIDEWALK

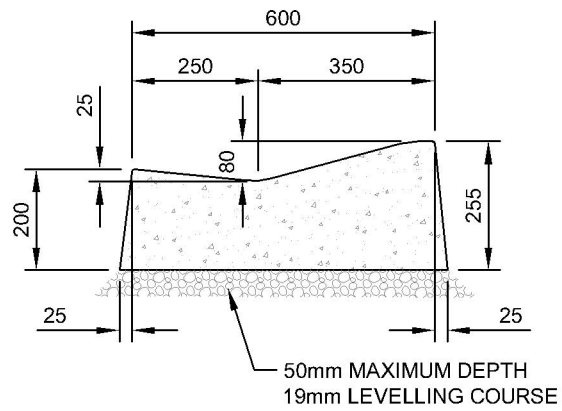
ROADWAY

REVISION No.
1

DWG.No.

C-R-106A

C-R-106B



ROLLFACE CURB & GUTTER AND SIDEWALK NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS
2. CONTACT ENGINEER FOR APPROVAL OF IMPORTED GRANULAR MATERIAL IF THERE IS NO SUITABLE NATIVE MATERIAL
3. CONTACT ENGINEER IF UNSUITABLE BASE CONDITIONS ARE ENCOUNTERED



AS SHOWN

DATE DRAWN:
22/03/2021

REVISION DATE:
06/04/2022

APPROVED BY:
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TITLE:

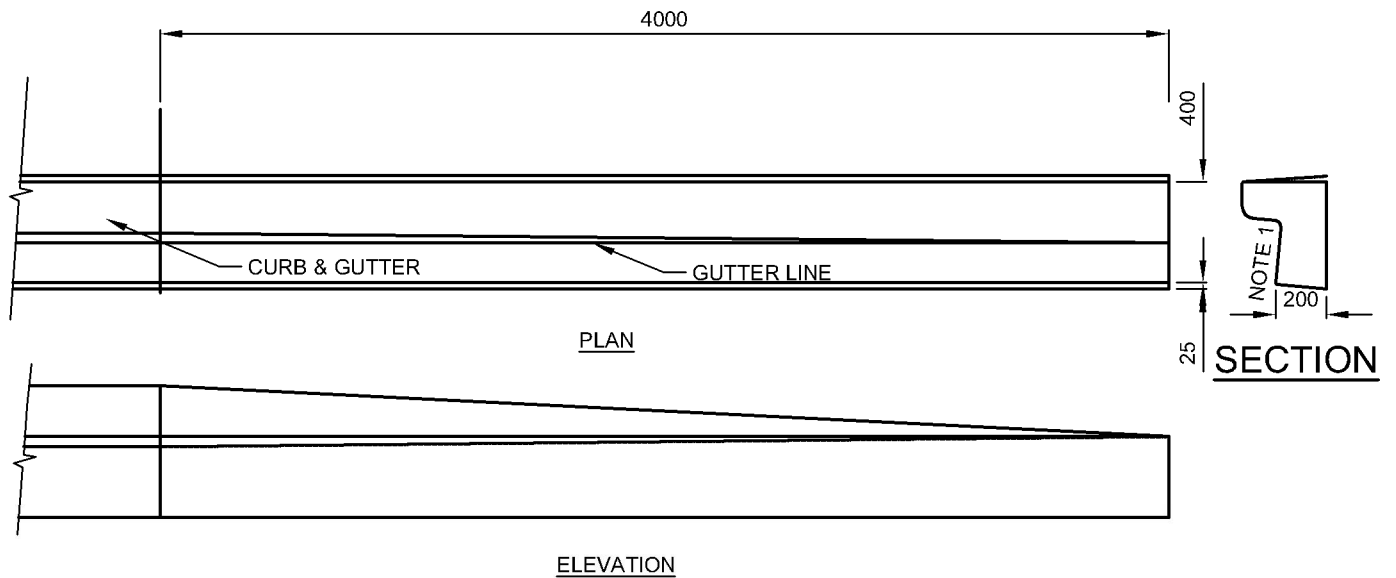
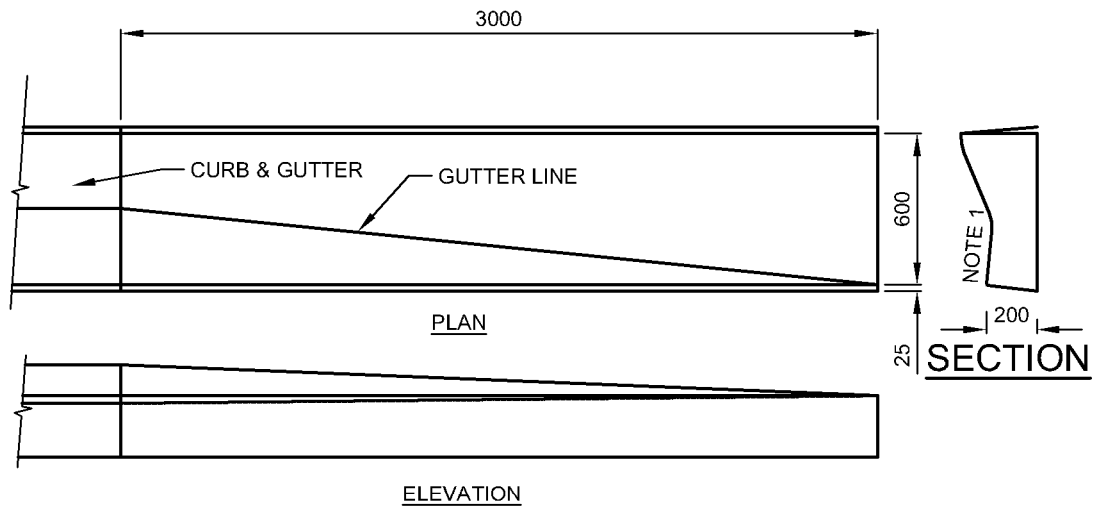
ROLLFACE CURB

ROADWAY

REVISION No.
1

DWG.No.

C-R-106C



NOTE:
1. SLOPE TO MATCH EXISTING SHOULDER



1:30

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

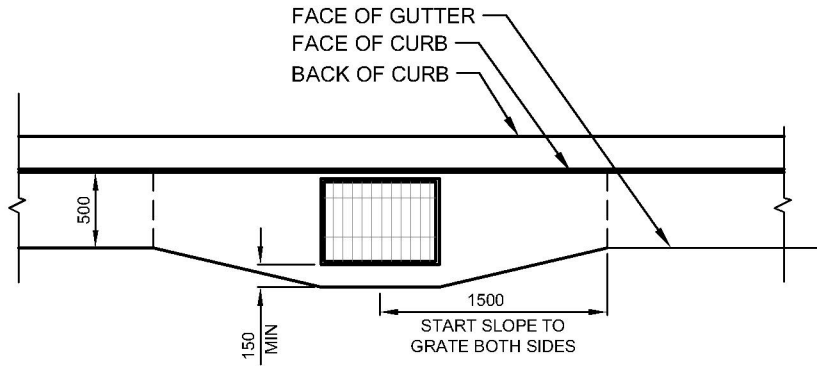
CURB AND GUTTER TERMINATION

ROADWAY

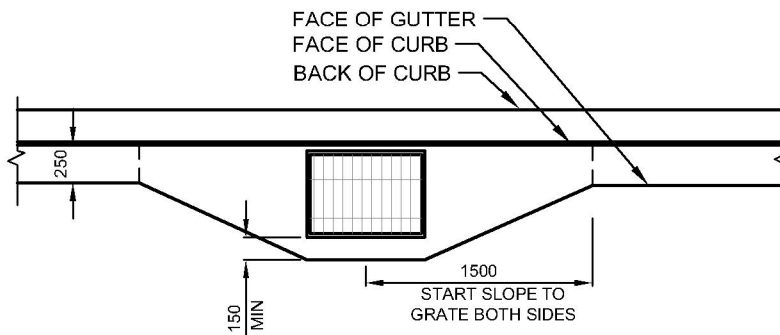
REVISION No.
1

DWG.No.

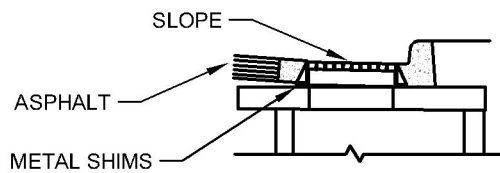
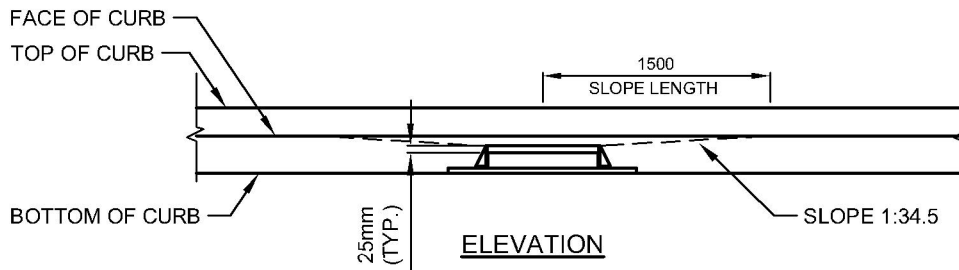
C-R-107



PLAN - CATCH BASIN FRAME AND COVER SET IN
200mm CURB WITH 500mm GUTTER



PLAN - CATCH BASIN FRAME AND COVER SET IN
150mm CURB WITH 250mm GUTTER



SECTION



N.T.S.

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

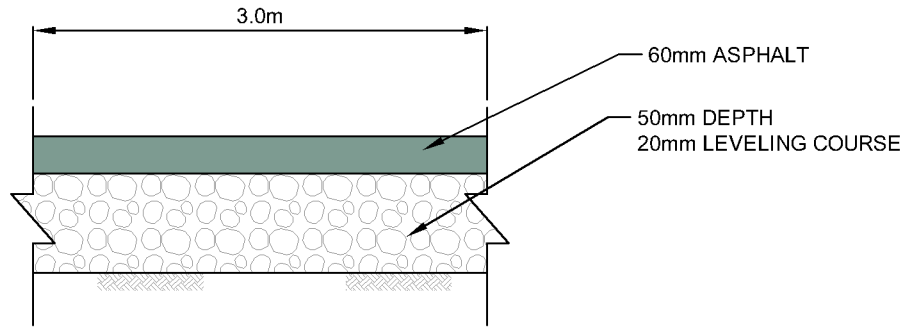
CATCH BASIN CURB AND GUTTER TIE-IN

ROADWAY

REVISION No.
1

DWG.No.

C-R-108

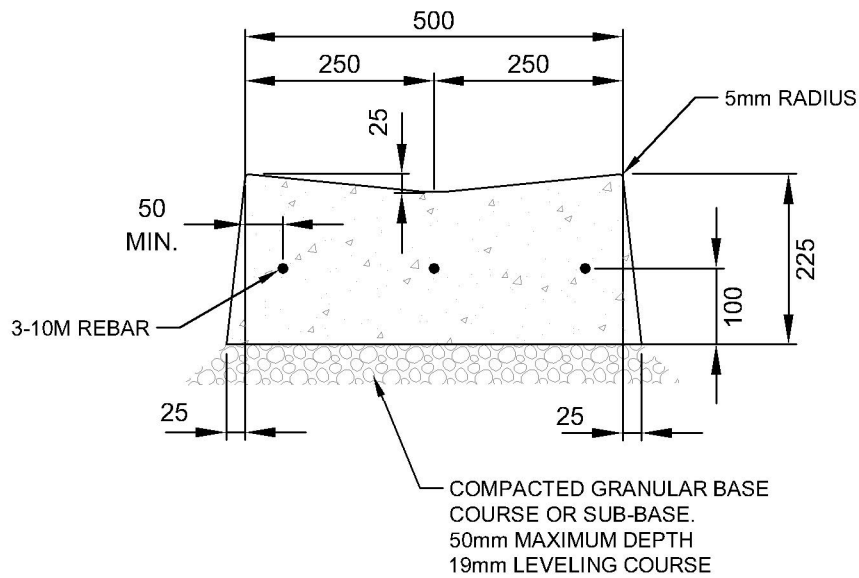


MULTI-USE PATH DETAIL

SCALE 1:50

NOTES:

1. MINIMUM WIDTH OF 3.0m MULTI -USE PATHWAYS MAY BE REQUESTED IN LIEU OF CONCRETE SIDEWALK.
2. THE GRANULAR BASE IS TO BE 150 mm WIDER THAN THE ASPHALT ON EACH SIDE.
3. MULTI-USE PATHWAYS SHALL FOLLOW SIDE-WALK STANDARDS FOR ALL DRIVEWAYS.



CONCRETE SWALE

SCALE 1:10

ALL DIMENSIONS ARE IN MILLIMETERS



AS SHOWN

DATE DRAWN:
16/03/2021

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

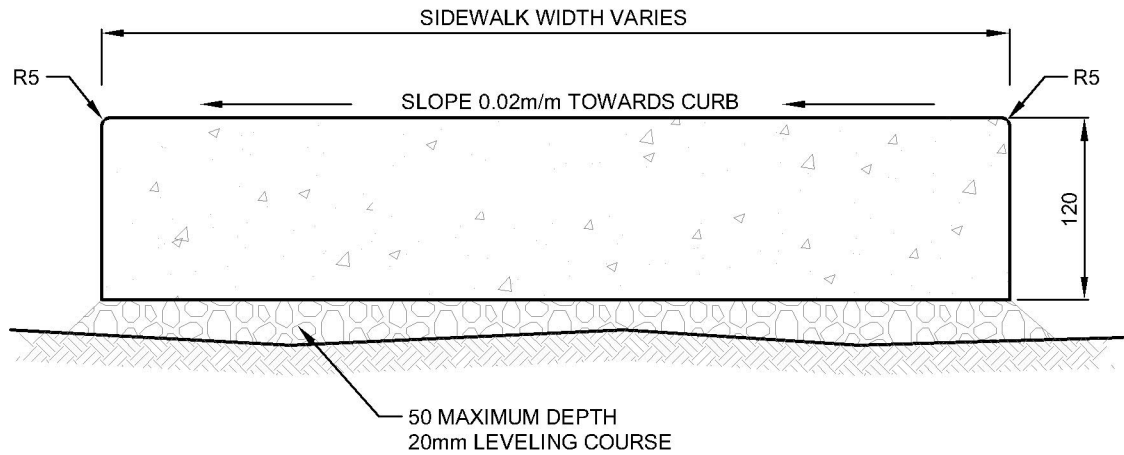
MULTI-USE PATHWAY AND
CONCRETE SWALES

ROADWAY

REVISION No.
1

DWG.No.

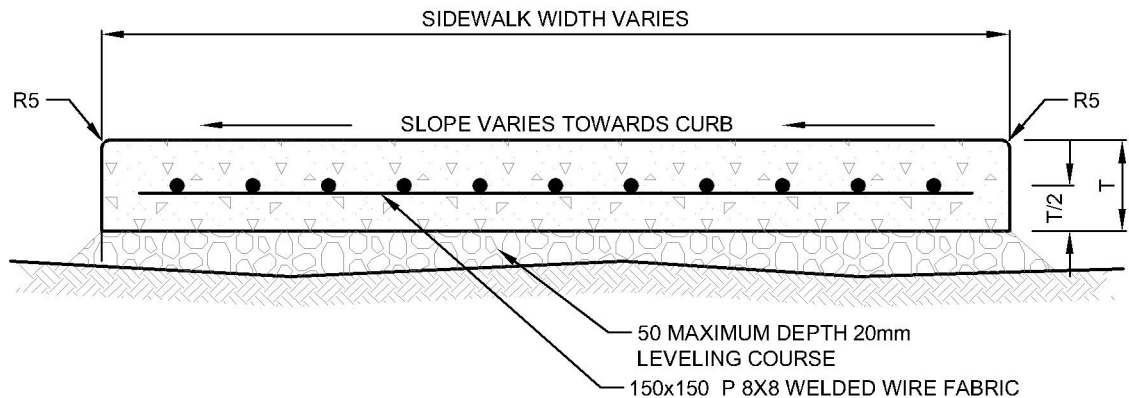
C-R-110A



NOTE:

- ELEVATION OF FRONT OF WALK TO BE SET SUCH THAT A MINIMUM SLOPE OF 0.02 m/m IS MAINTAINED ACROSS BOULEVARD BETWEEN FRONT OF WALK AND TOP OF CURB.

TYPICAL SECTION



NOTES:

1. THICKNESS "T" = 150 FOR PRIVATE CROSSINGS (NO WIRE REQUIRED).
2. THICKNESS "T" = 175 FOR LANE AND COMMERCIAL CROSSINGS (WIRE REQUIRED).
3. 0.02 m/m MINIMUM CROSS SLOPE FOR ALL CROSSINGS.
4. WHERE SLOPE BETWEEN TOP OF DEPRESSED CURB CROSSING AND FRONT OF WALK WOULD EXCEED 0.08 m/m FOR PRIVATE (0.04 m/m FOR LANE AND COMMERCIAL CROSSINGS), SIDEWALK CROSSINGS SHALL BE DEPRESSED SUCH THAT MAXIMUM SLOPE ACROSS BOTH BOULEVARD AND SIDEWALK DOES NOT EXCEED 0.08 m/m (0.04 m/m FOR LANE AND COMMERCIAL CROSSINGS).
5. PREFERRED MATERIAL FOR BASE COURSE IS NATIVE MATERIAL
6. CONTACT ENGINEER FOR APPROVAL OF IMPORTED GRANULAR MATERIAL IF NO SUITABLE NATIVE MATERIAL.
7. CONTACT ENGINEER IF UNSUITABLE BASE CONDITIONS ARE ENCOUNTERED.

SEPARATE SIDEWALK - SECTION AT CROSSING



1:5

DATE DRAWN:
01/01/20

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06/04/2022

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YK ENG.

TITLE:

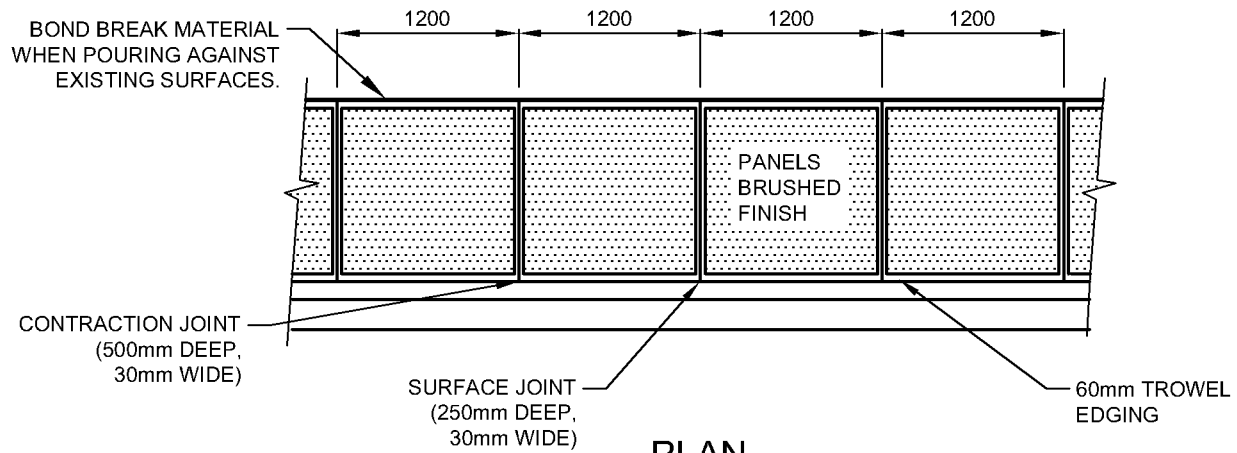
SEPARATE SIDEWALK

ROADWAY

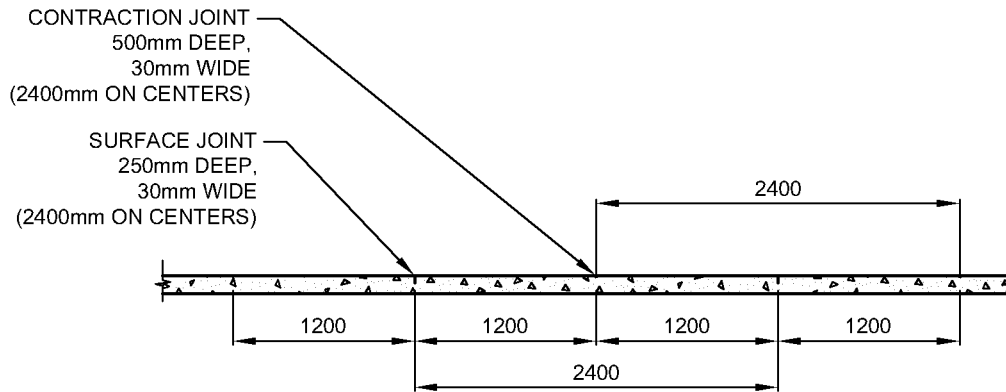
REVISION No.
1

DWG.No.

C-R-110



PLAN



SECTION



1:50

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

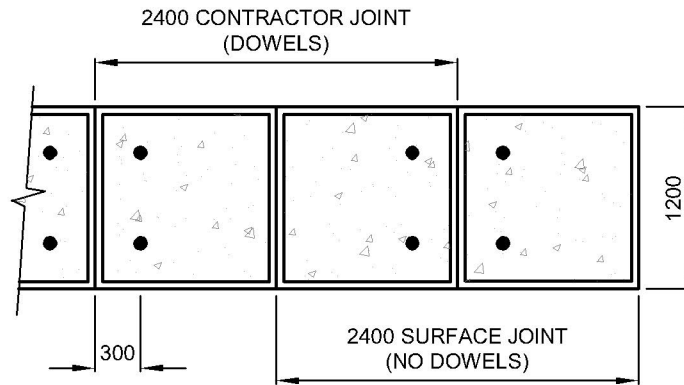
SIDEWALK JOINT AND FINISHING

ROADWAY

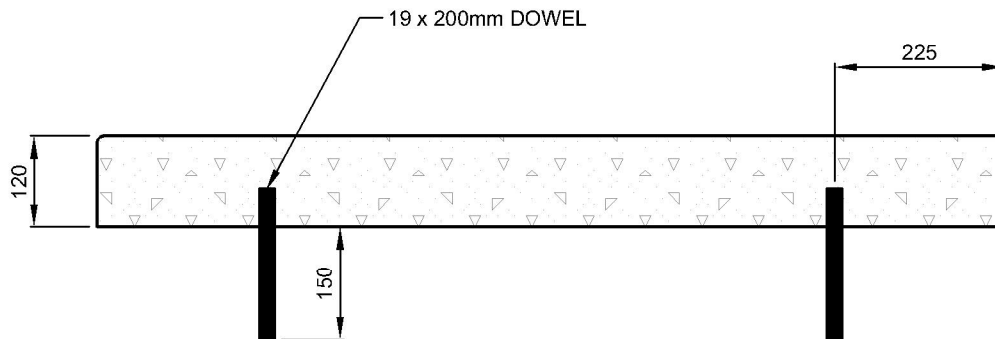
REVISION No.
1

DWG.No.

C-R-111



PLAN
SCALE 1:50



SECTION
SCALE 1:10



AS SHOWN

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

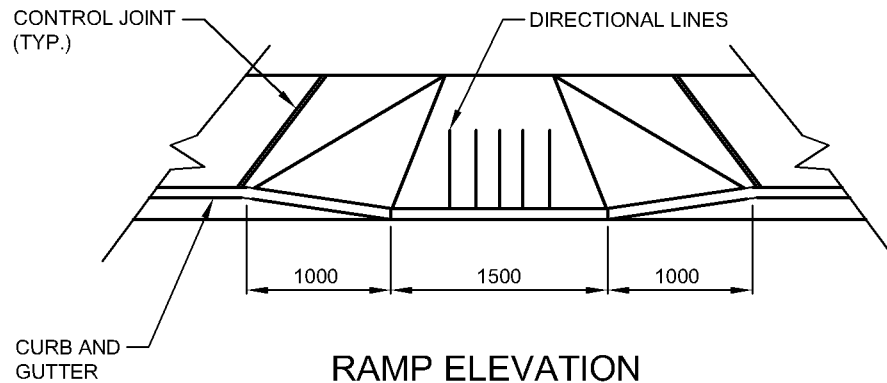
PIN WALK DETAIL FOR LANE

ROADWAY

REVISION No.
1

DWG.No.

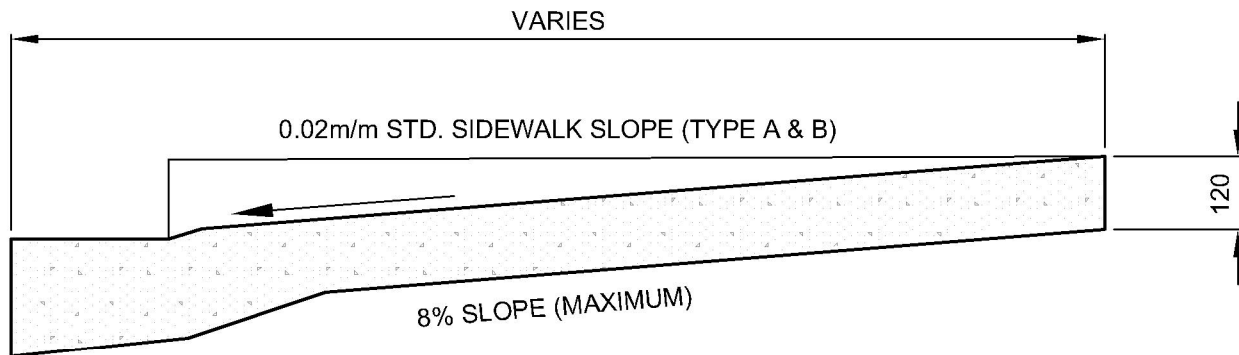
C-R-112



SCALE 1:50

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE NOTED.
2. TOOLED GROOVES 5 WIDEx10 DEEP, BROOM FINISH GROOVE SPACING 150 O.C. ADJACENT TO CURB.
3. WHERE RAMP TO BE USED AS A TRANSITION, USE THE CENTER OF THE 1500 RAMP AS THE CENTER OF THE TRANSITION.
4. CURBS AND RAMPS TO BE POURED MONOLITHICALLY.
5. IT MAY BE NECESSARY TO BUILD RAMPS WIDER AT HIGH VOLUME PEDESTRIAN TRAFFIC LOCATIONS.
6. WHEN THE CURB RETURN RADIUS IS LESS THAN 4.0m TWO RAMPS ARE REQUIRED.
7. MATCH ASPHALT SURFACE TO GUTTER LIP WITHIN 3mm PLUS OR MINUS.



TYPICAL CROSS SECTION

SCALE 1:15



AS SHOWN

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

PARA-RAMP

ROADWAY

REVISION No.
1

DWG.No.

C-R-114



1. SLOPE OF RAMPS SHALL NOT EXCEED 8%.
2. CROSS SLOPE OF RAMPS SHALL NOT EXCEED 2% IN EITHER DIRECTION.
3. CROSS SLOPE OF FLARED SIDE OF RAMP SHALL NOT EXCEED 8%.
4. DROPPED CURB AT RAMP SHALL BE MODIFIED TO ELIMINATE 30mm STEP AT GUTTER.
5. ACCESSIBLE PEDESTRIAN SIGNAL TO HAVE TACTILE ARROW THAT ALIGNS WITH THE DIRECTION OF CROSSWALK..
6. MINIMUM THICKNESS AT RAMP IS 200mm. MINIMUM THICKNESS OF SIDEWALK AND FLARED SIDES ADJACENT TO RAMP IS 150mm.
- A. WHERE ONLY ONE CROSSWALK IS PRESENT AT AN INTERSECTION, ONLY ONE CURB RAMP IS REQUIRED.
- A. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.



TITLE:

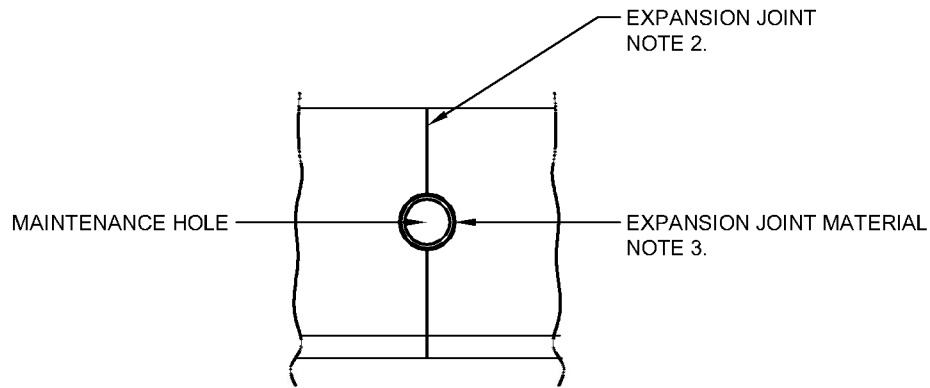
DATE DRAWN:	REVISION DATE:
03/25/2021	06/04/2022

ROADWAY

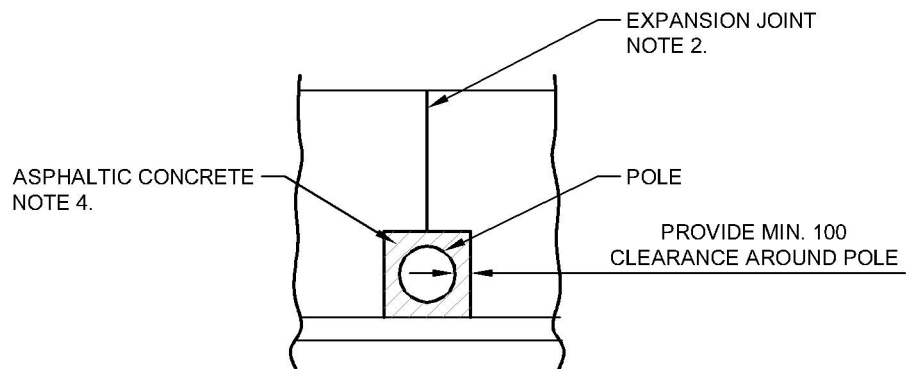
REVISION No.
1

DWG.No.

C-R-114A



UTILITY APPURTENANCE



UTILITY POLE

NOTES:

1. ADJUST JOINTS TO COINCIDE WITH CENTER OF UTILITY, WITH MIN. SLAB LENGTH OF 1m.
2. EXPANSION JOINT MATERIAL SHALL BE PLACED AROUND MAINTENANCE HOLES FLUSH WITH CONCRETE SURFACE.
3. FOR PORTLAND CEMENT CONCRETE ALTERNATIVE USE EXPANSION JOINT MATERIAL AROUND BOXOUT.



1:50

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

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YK ENG.

TITLE:

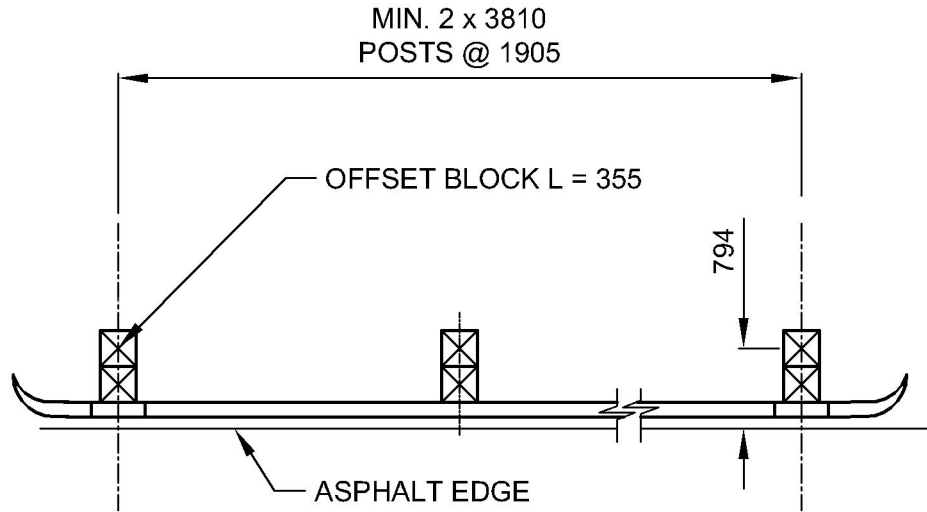
UTILITY ISOLATION IN SIDEWALKS

ROADWAY

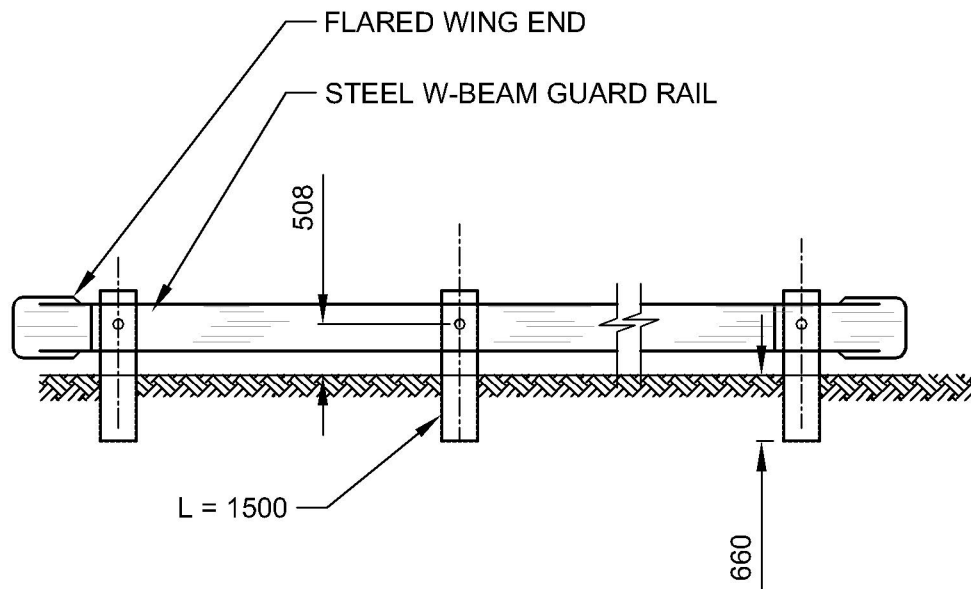
REVISION No.
1

DWG.No.

C-R-115



PLAN



ELEVATION



13.333315

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

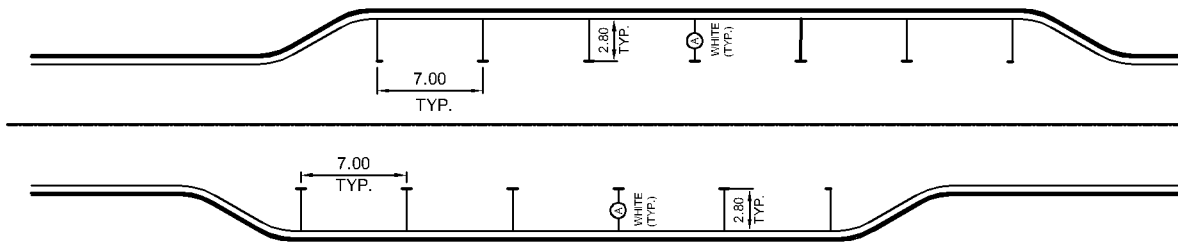
GUARD RAIL PLAN AND ELEVATION

ROADWAY

REVISION No.
1

DWG.No.

C-R-116



TYPICAL PARALLEL STREET PARKING



1:500

DATE DRAWN:
30/03/2021

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

TYPICAL PARALLEL STREET PARKING

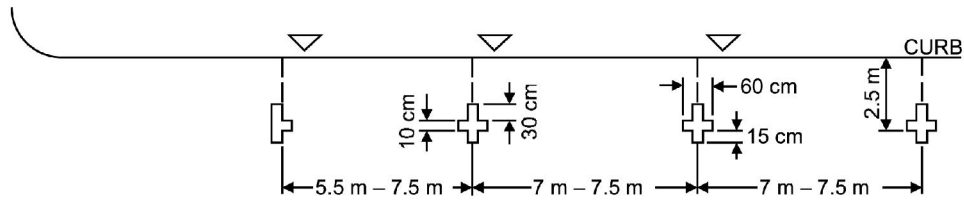
ROADWAY

REVISION No.
1

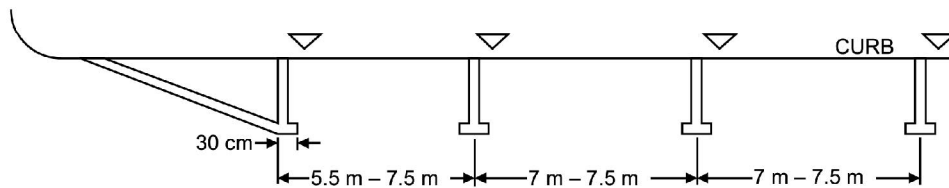
DWG.No.

C-R-117

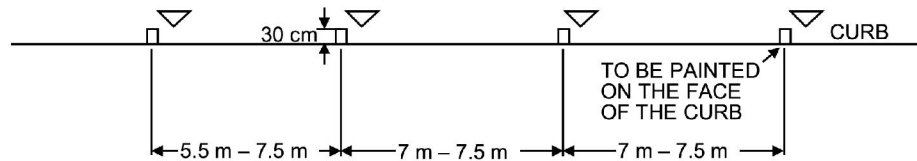
Figure 47 – Typical Markings for Parallel Parking



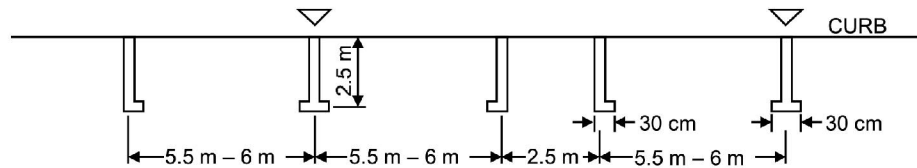
SINGLE METERS



SINGLE METERS



SINGLE METERS



TWIN METERS



N.T.S.

DATE DRAWN:
30/03/2021

REVISION DATE:
06/04/2022

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YK ENG.

TITLE:

PARKING MARKINGS (REFERENCE)

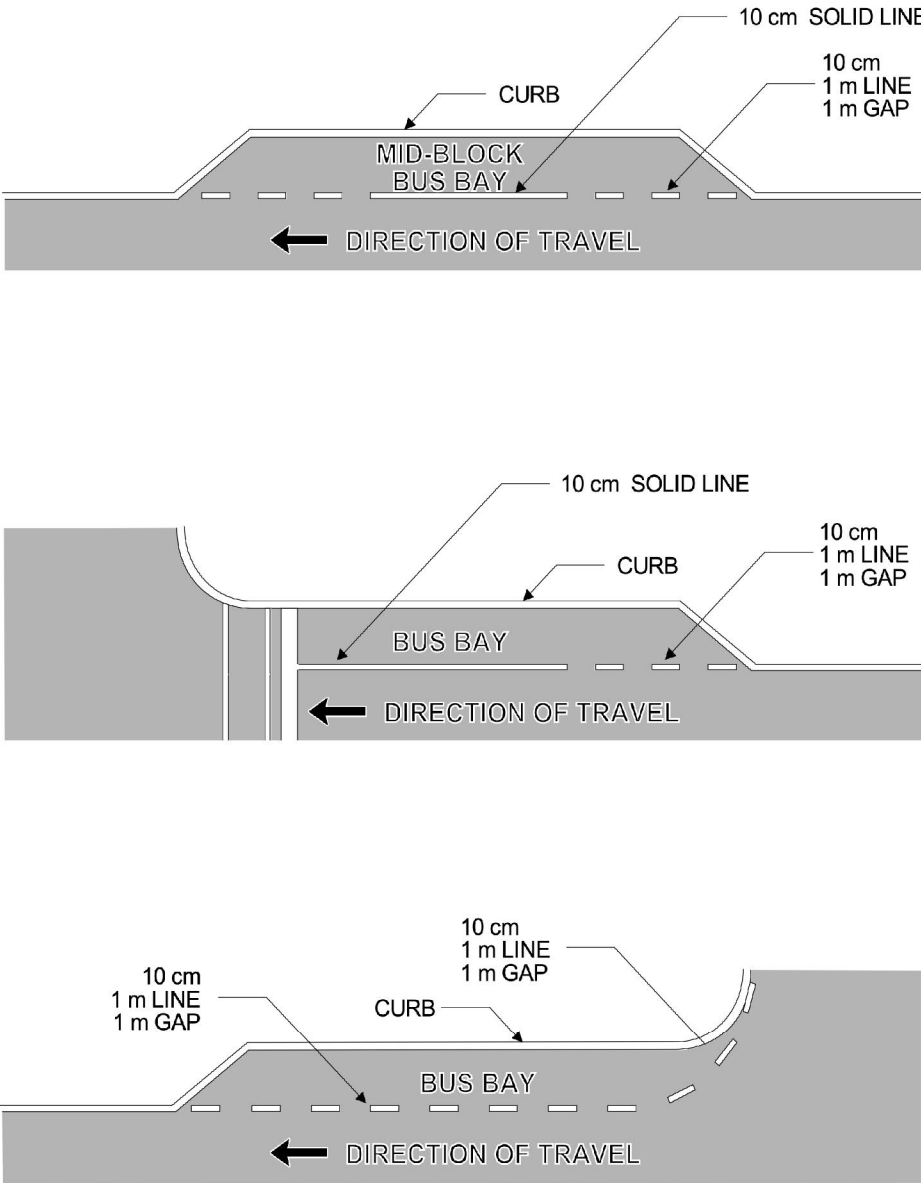
ROADWAY

REVISION No.
1

DWG.No.

C-R-117A

Figure 35 – Typical Markings for Bus Bays



N.T.S.

DATE DRAWN: 01/01/20
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APPROVED BY:
D.MCMILLAN

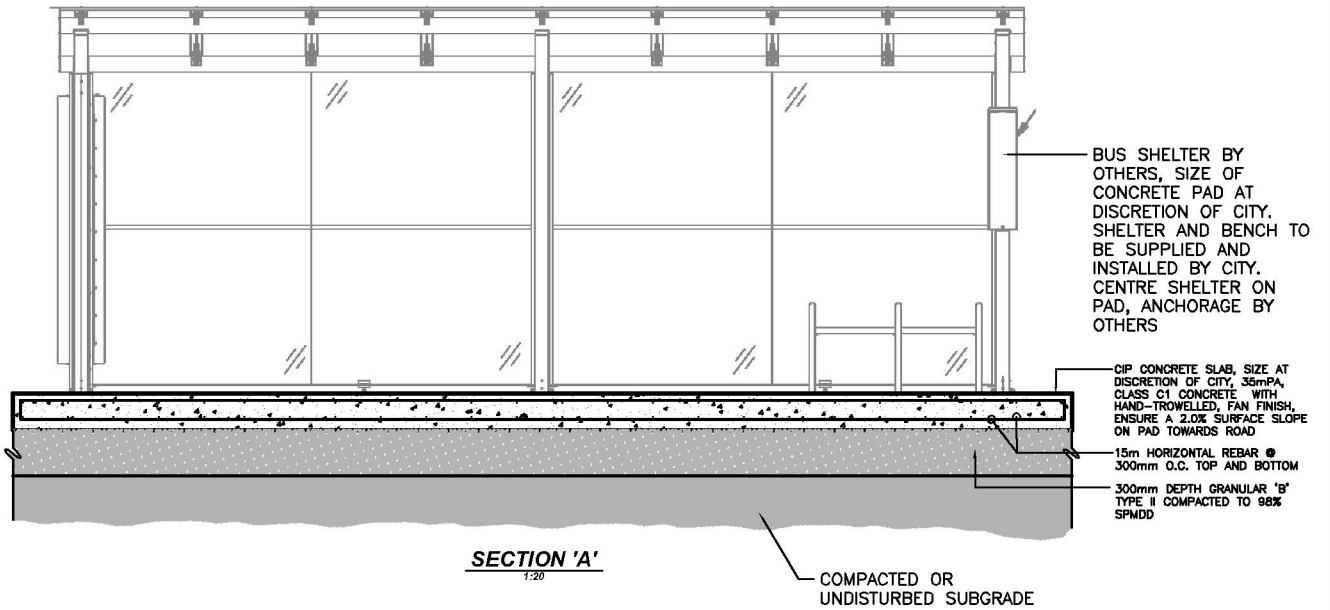
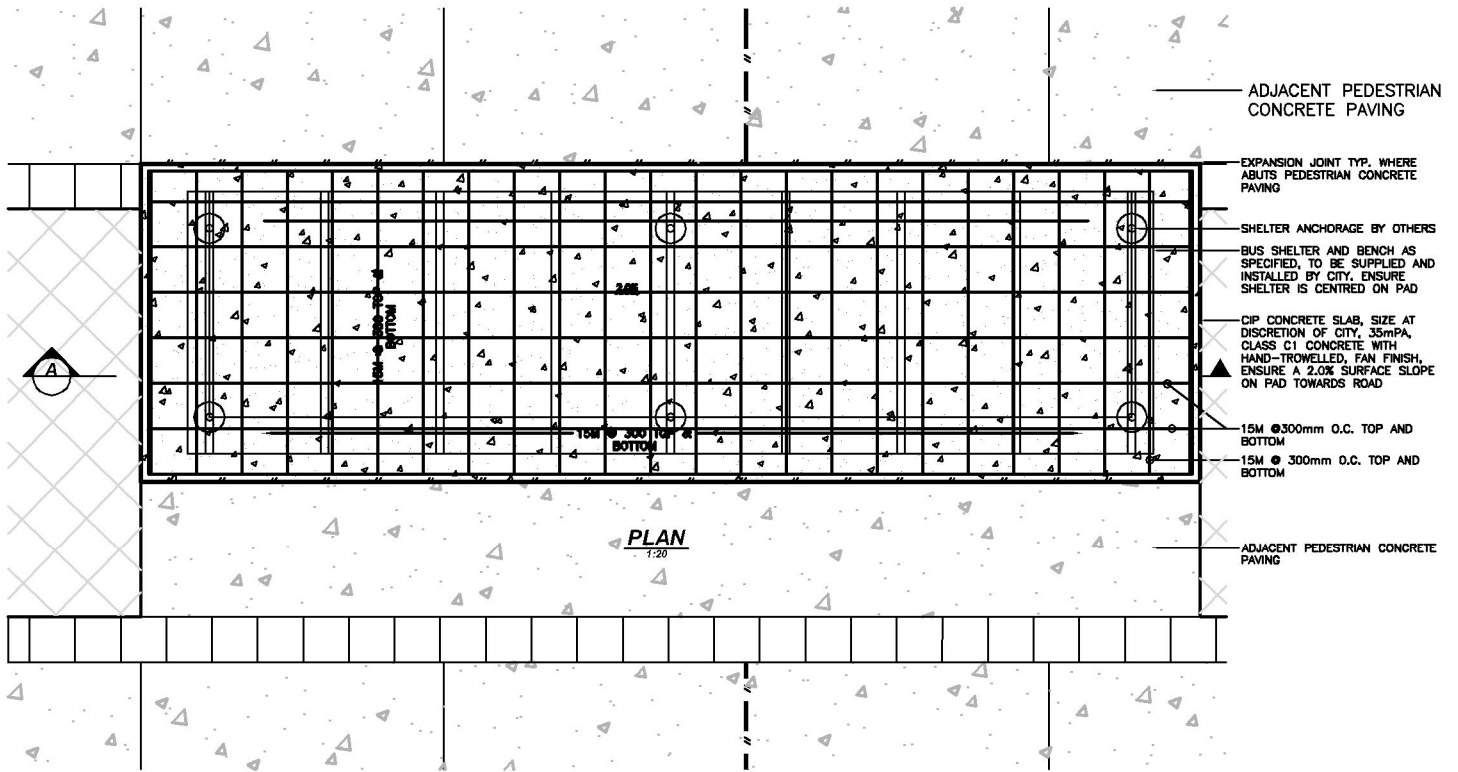
TITLE:

BUS PULLOUT LAYOUT (REFERENCE)

ROADWAY

REVISION No.
1

DWG.No.
C-R-118A



N.T.S.

DATE DRAWN: 30/03/2021
REVISION DATE: 06/04/2022

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YK ENG.

TITLE:

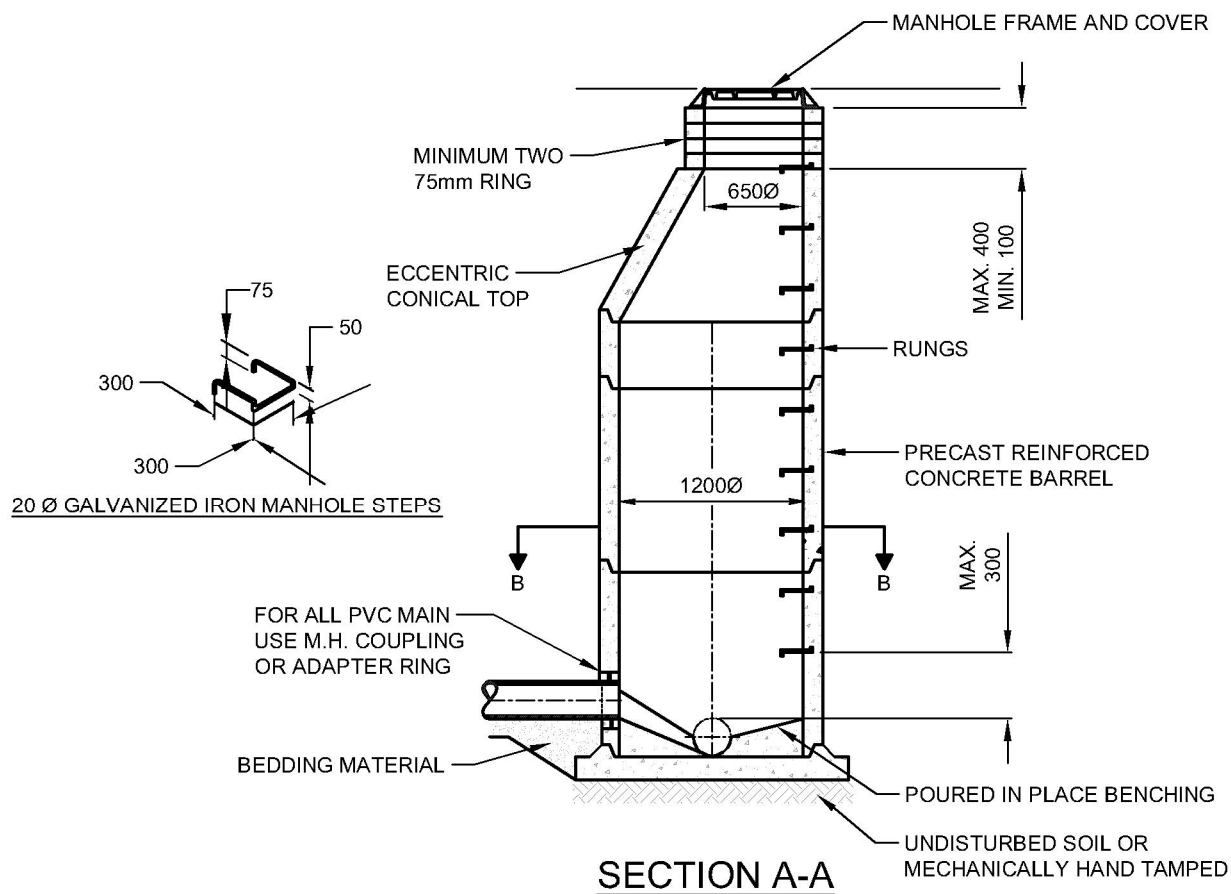
BUS SHELTER (REFERENCE)

ROADWAY

REVISION No.
1

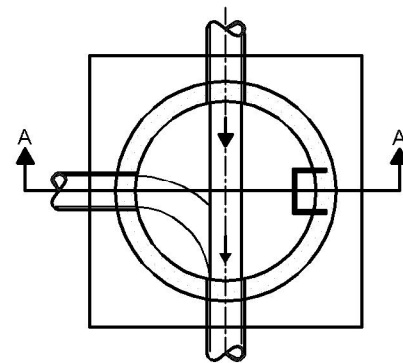
DWG.No.

C-R-118B



NOTES:

1. PRECAST RINGS, CONES AND BARRELS TO MEET CURRENT A.S.T.M. C478 STANDARDS.
2. POURED IN PLACE CONCRETE TO BE 25 M Pa AT 28 DAYS.
3. FOR MANHOLES OVER 4.8m IN DEPTH, THE BASE SHALL BE REINFORCED WITH 13 Ø REBAR AT 250 CENTER EACH WAY.
4. SAFETY STEPS TO BE SPACED AT 400 MAX. DISTANCE.
5. ALL JOINTS TO BE SET IN MORTAR.
6. CHANNELING AND BENCHING TO BE FINISHED TO TROWEL SMOOTHNESS.
7. MINIMUM 150 CONCRETE BASE TO BE CONSTRUCTED ON COMPACTED GRANULAR MATERIAL OR UNDISTURBED NATIVE MATERIAL.
8. COMPACT BACKFILL AROUND MANHOLES TO A MINIMUM OF 97% STANDARD PROCTOR DENSITY.



SECTION B-B



1:50

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

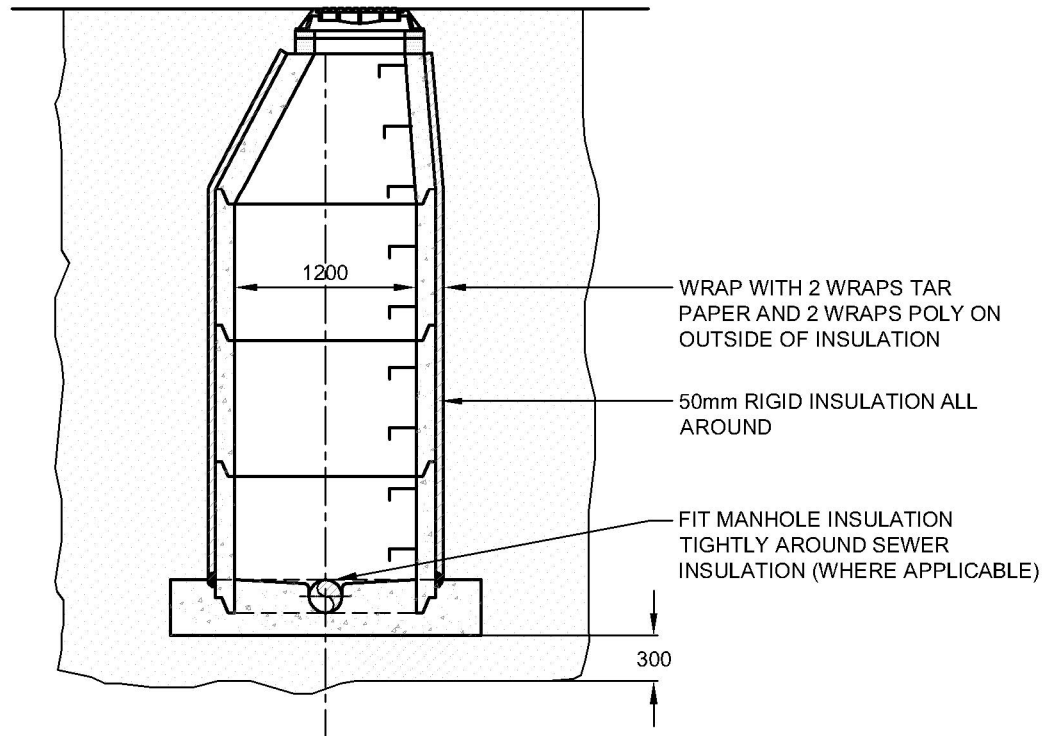
PRECAST MANHOLE

SANITARY

REVISION No.
1

DWG.No.

C-S-100



NOTE:
FOR TYPICAL MANHOLE DETAILS SEE TYPICAL PRECAST MANHOLE DETAIL



1:50

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

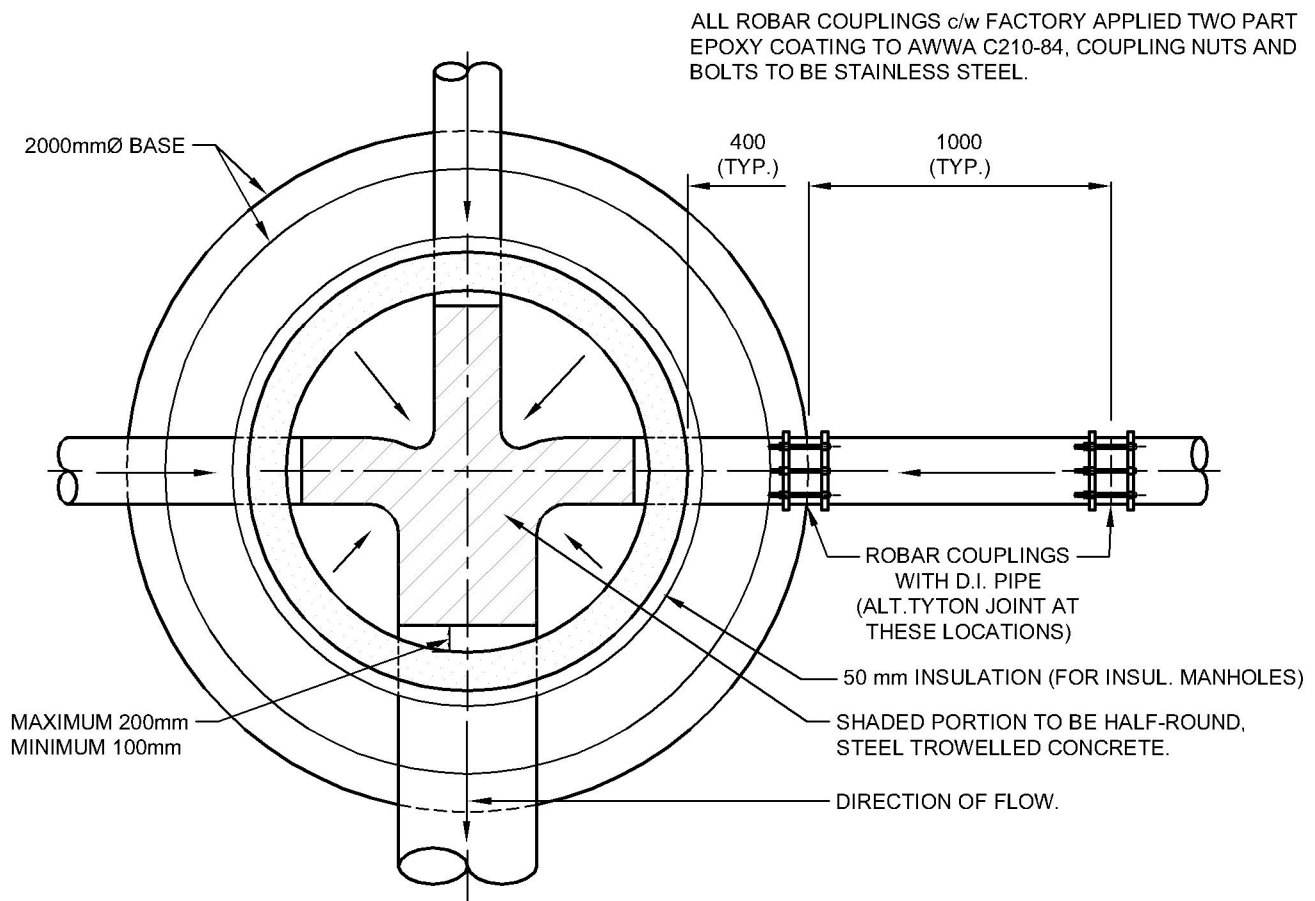
TYPICAL INSULATED MANHOLE

SANITARY

REVISION No.
1

DWG.No.

C-S-102



ALTERNATIVE:

WHERE ONE PIPE ONLY PASSES THROUGH MANHOLE TOP HALF OF PIPE
MAY BE REMOVED, LOWER HALF TO FORM BENCHING.



1:25

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

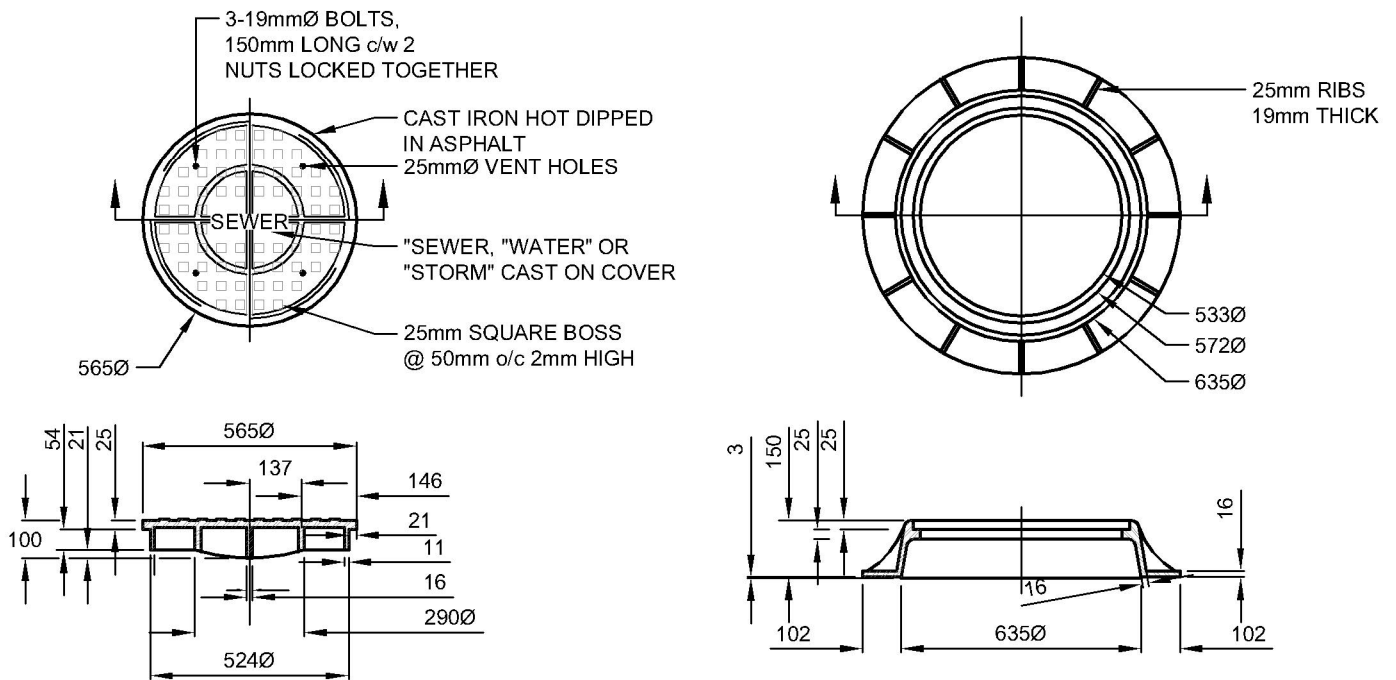
STANDARD SHAPING OF MANHOLE BOTTOMS

SANITARY

REVISION No.
1

DWG.No.

C-S-103



USE ALSO FOR STORM SEWER MANHOLES, WATER
AND HYDRANT VAULTS COVER LABELED "STORM"
OR "WATER" RESPECTIVELY



1:20

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

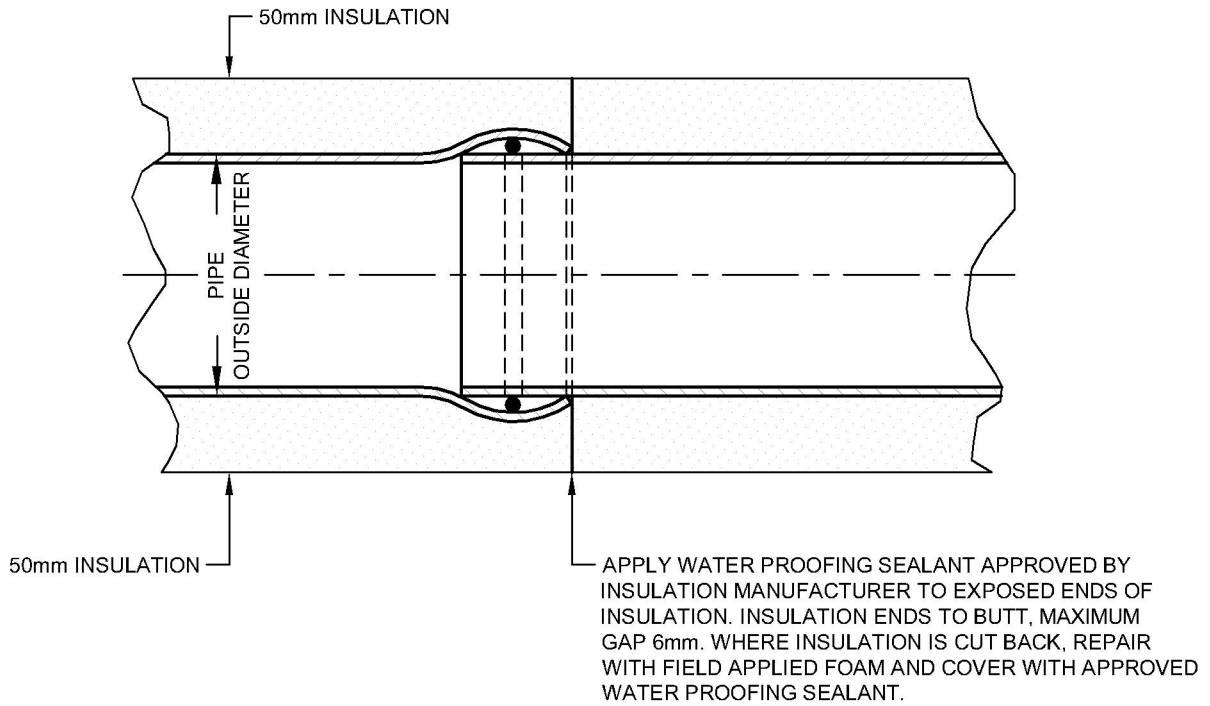
STANDARD MANHOLE FRAME AND COVER F-39

SANITARY

REVISION No.
1

DWG.No.

C-S-104



1:5

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

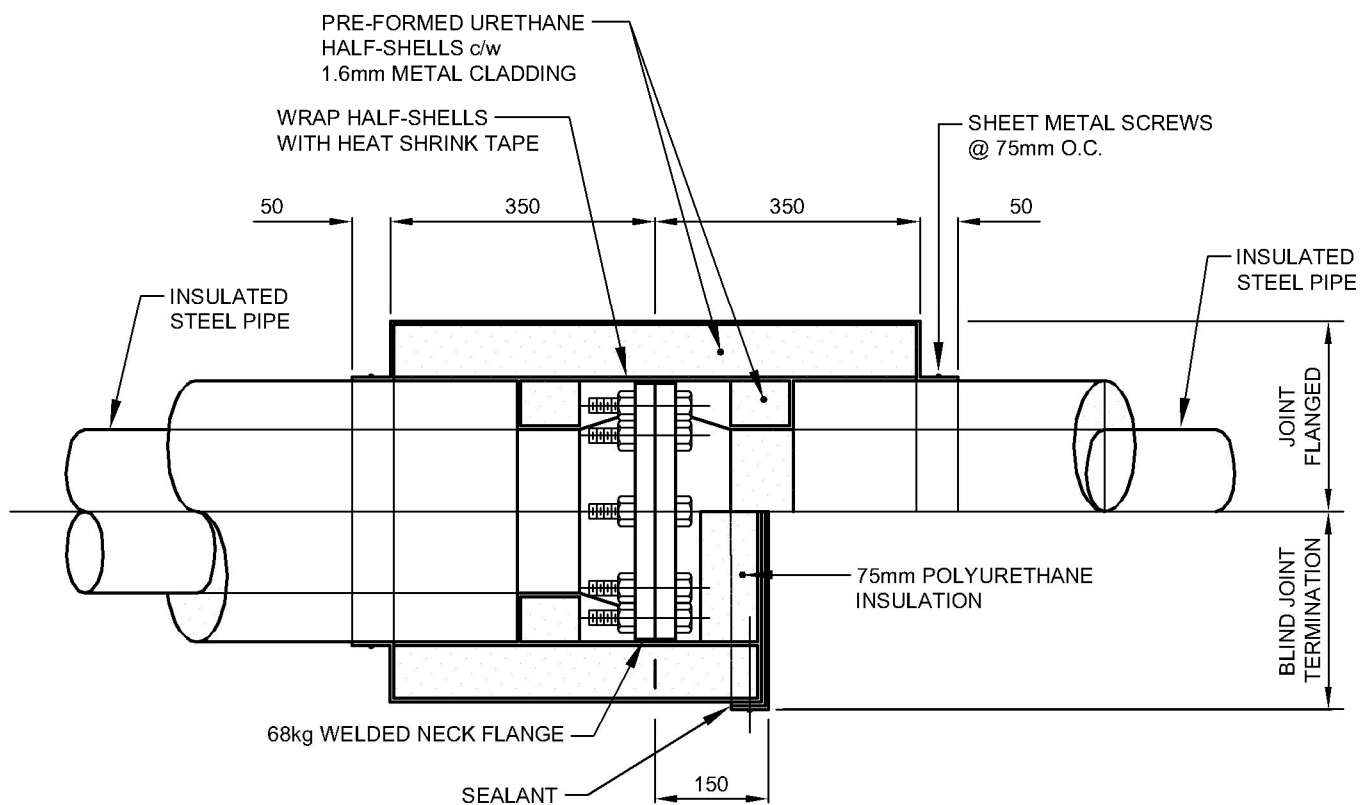
INSULATED SANITARY SEWER-BELL AND
SPIGOT JOINT

SANITARY

REVISION No.
1

DWG.No.

C-S-105



NOTES:

1. COAT ALL EXPOSED SURFACES WITH MASTIC.
2. ALL DIMENSIONS IN MILLIMETERS UNLESS NOTED OTHERWISE.



1:10

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

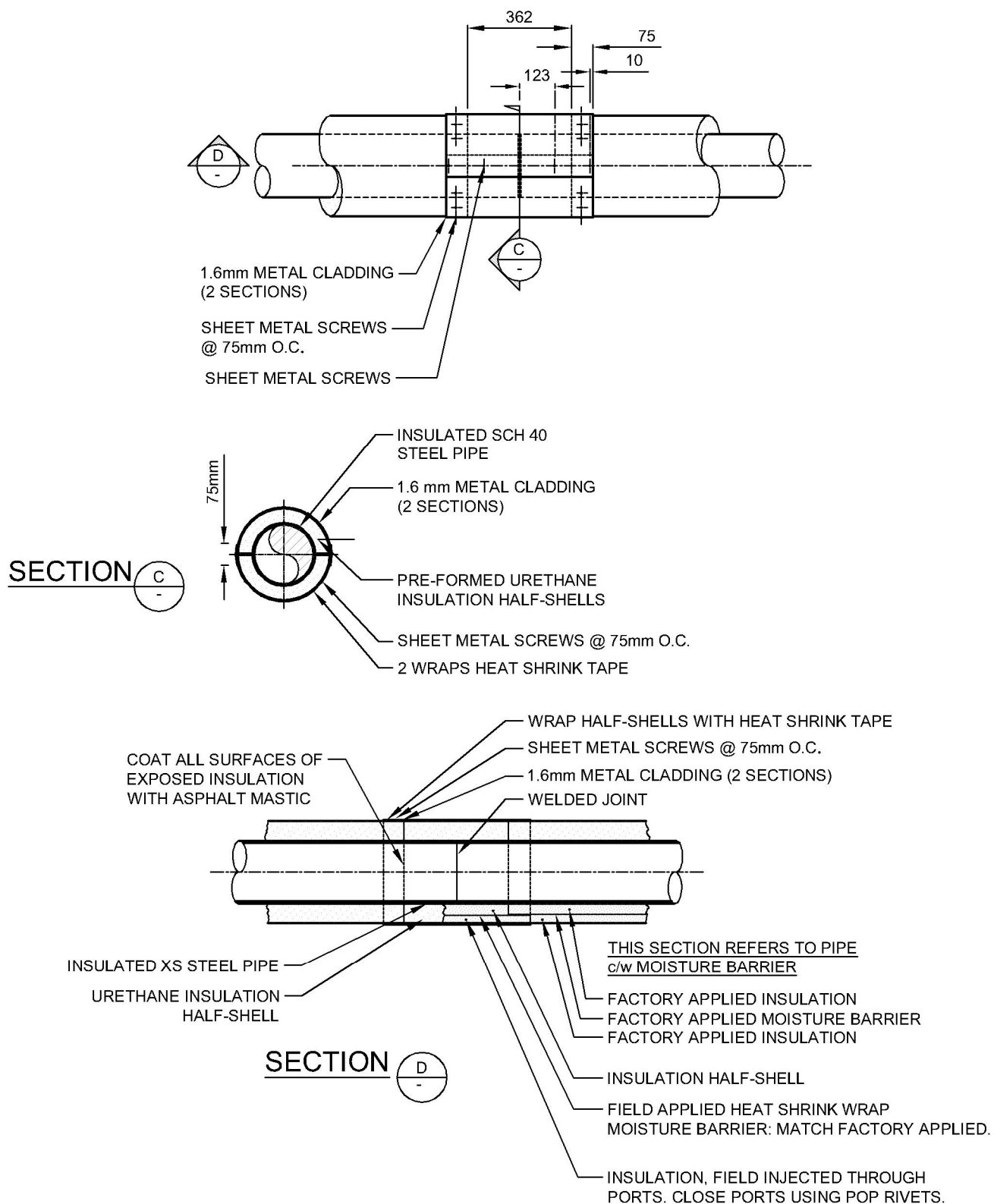
FLANGED JOINT DETAIL

SANITARY

REVISION No.
1

DWG.No.

C-S-106



1:20

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

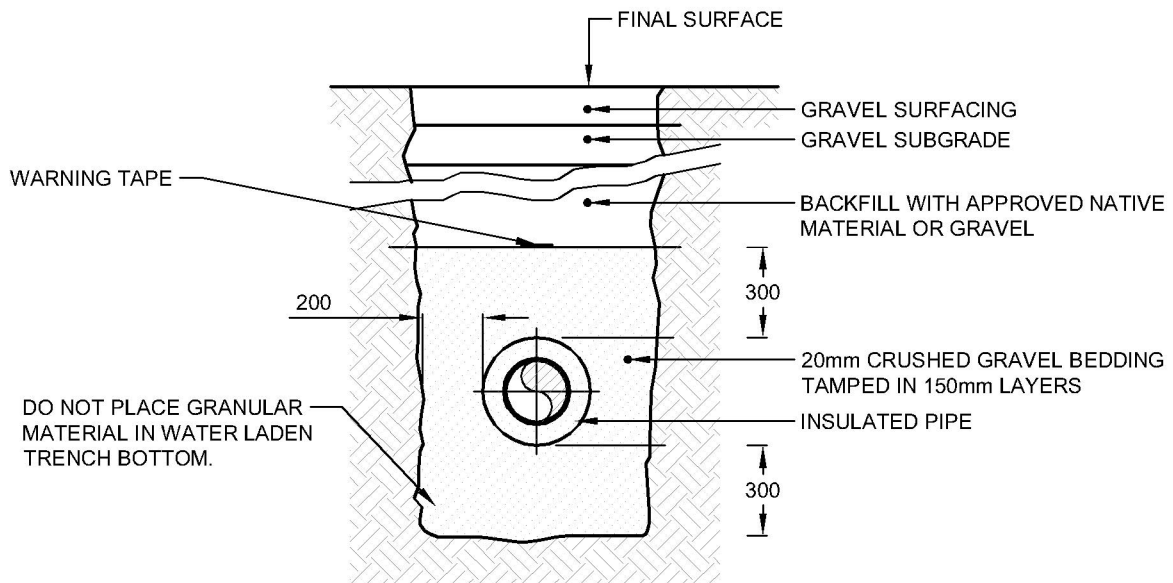
TYPICAL WELDED JOINT DETAIL

SANITARY

REVISION No.
1

DWG.No.

C-S-107



NOTES:

1. IN SOFT OR UNSTABLE GROUND CONDITIONS (FROZEN OR UNFROZEN), UNDERCUT SUBGRADE AS DIRECTED BY ENGINEER (SEE DWG. C-T-101).
2. SEE SHEET C-T-101 FOR DETAIL OF COMBINED TRENCH



1:25

DATE DRAWN:
01/01/2020

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

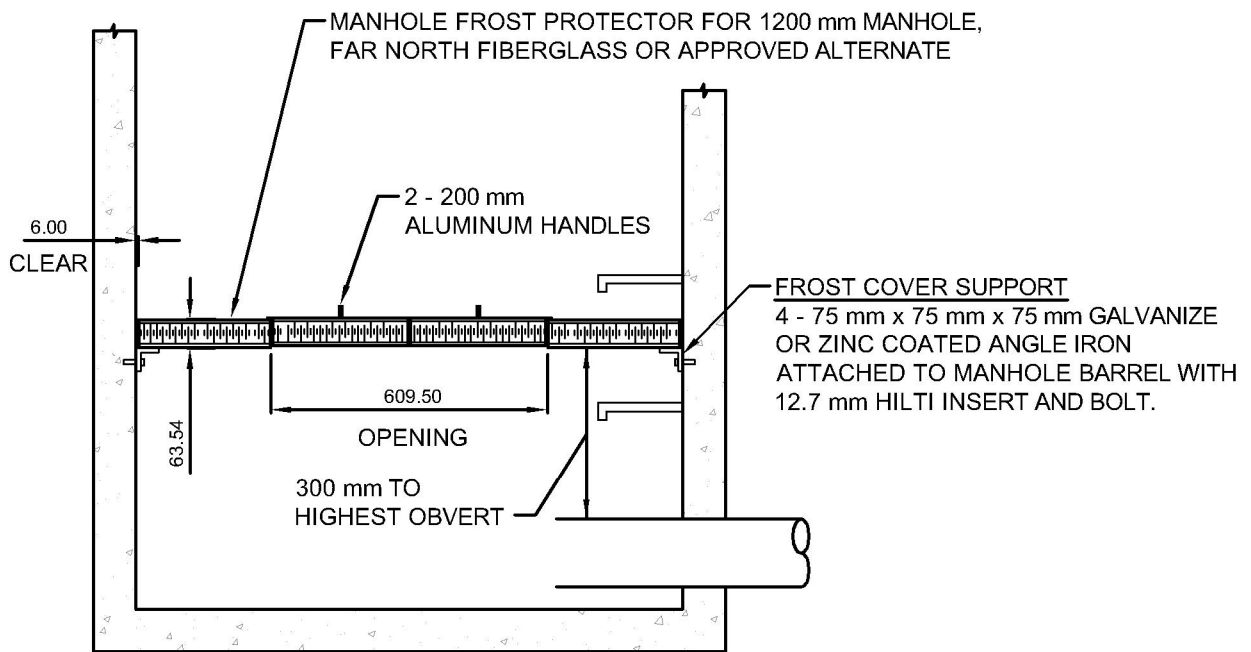
TYPICAL SANITARY SEWER BEDDING

SANITARY

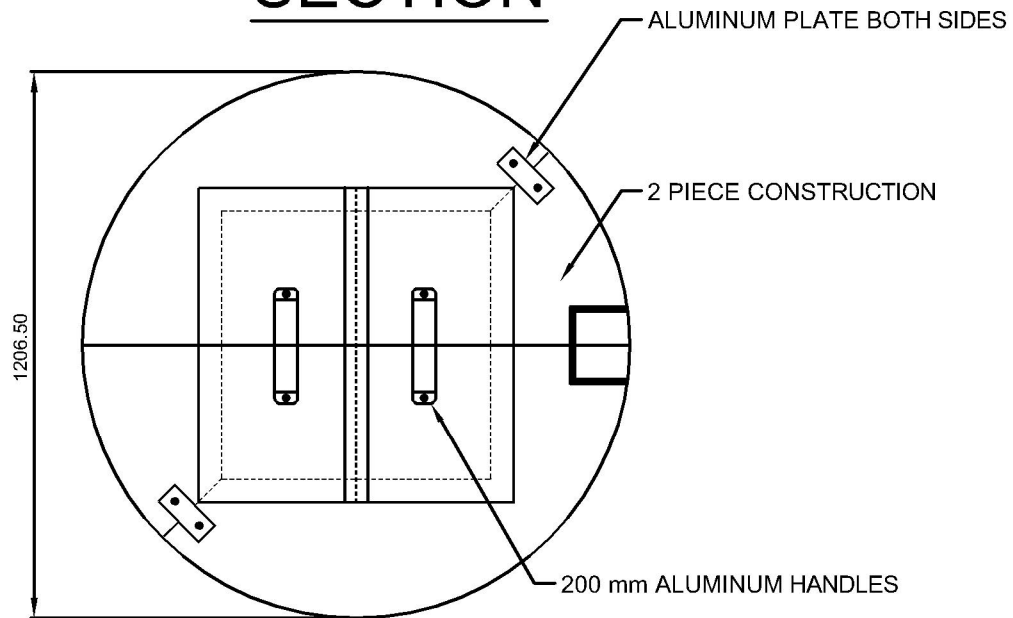
REVISION No.
1

DWG.No.

C-S-108



SECTION



PLAN



N.T.S.

DATE DRAWN:
01/01/2020

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

SANITARY MANHOLE FROST COVER LID

SANITARY

REVISION No.
1

DWG.No.

C-S-109

"STORM" WARNING TAPE

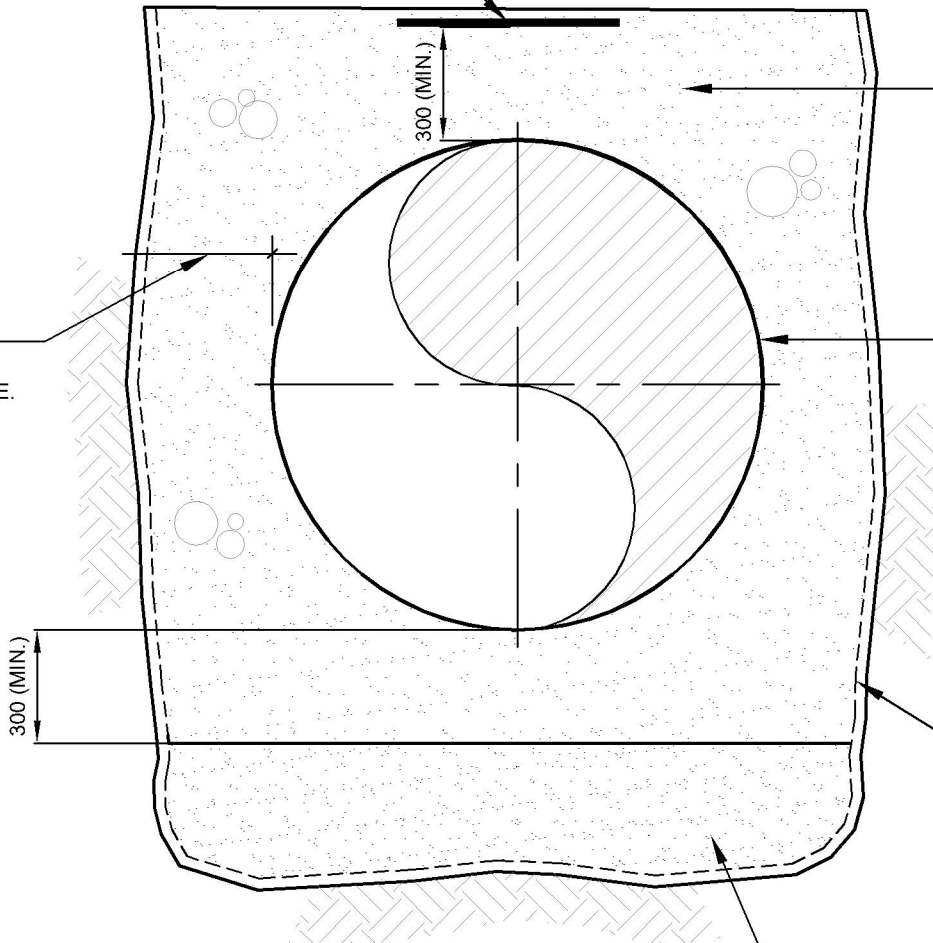
CRUSHED STONE
BEDDING

ALUMINIZED ULTRA
FLOW, C.M.P. PIPE
OR CB LEAD

FILTER CLOTH,
WHERE ORDERED

OVER-EXCAVATION WHERE ORDERED
SEE SHEET C-T-101.
DO NOT PLACE GRANULAR MATERIAL
IN WATER LADEN TRENCH BOTTOM.

GREATER OF:
1) 300mm
2) 0.5 Ø OF PIPE.



1:20

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

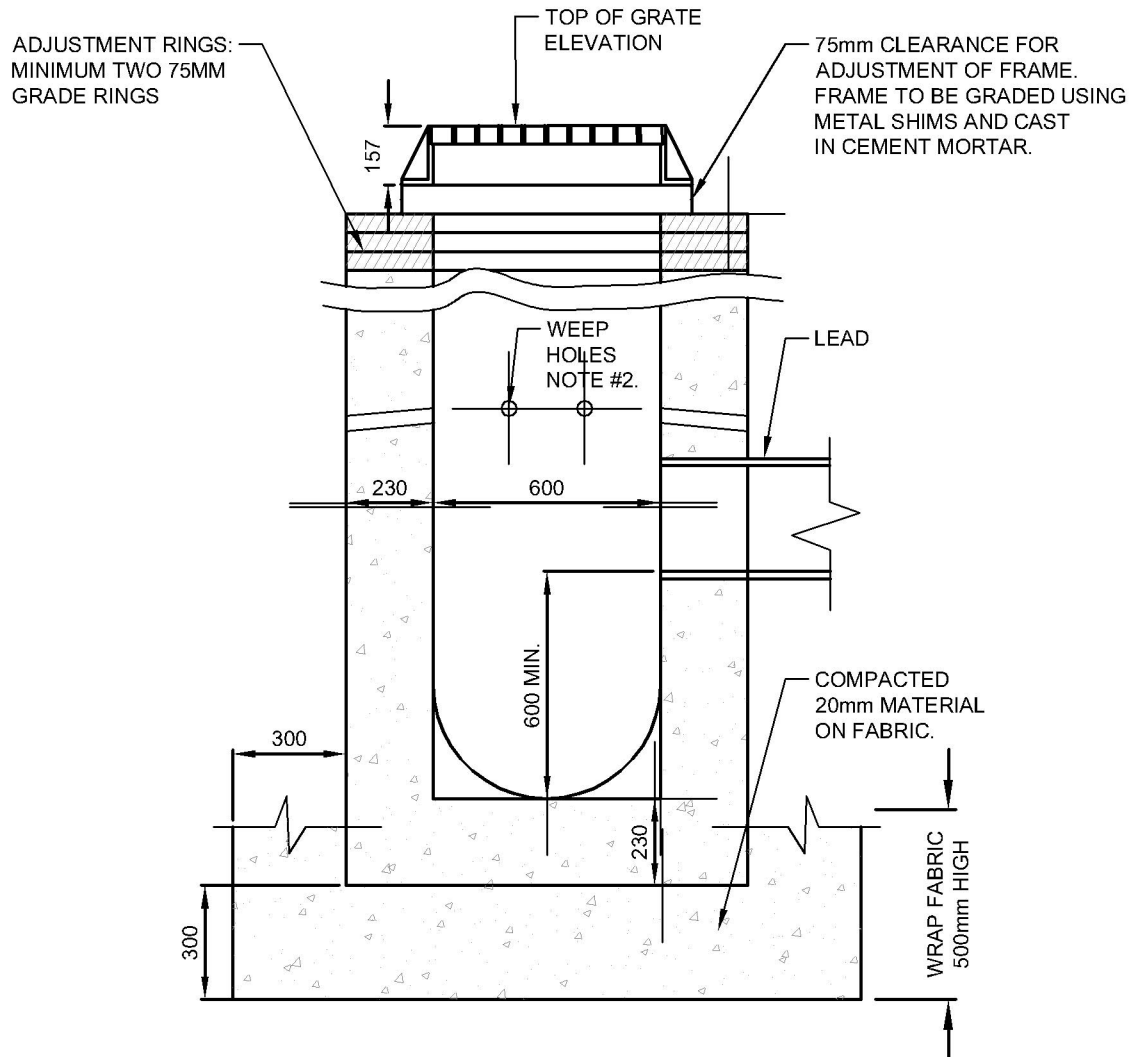
TYPICAL STORM SEWER BEDDING

STORM

REVISION No.
1

DWG.No.

C-ST-100



NOTES:

1. TO PERMIT USE OF COLLAPSIBLE FORMS, SEMI-CIRCULAR BOTTOM MAY BE EMPLOYED AT CONTRACTOR'S OPTION.
2. WEEP HOLES OPTIONAL - 40mm Ø. HOLES SHALL BE PLACED SO THAT THE BOTTOM OF THE WEEPER INSIDE AND TOP OF WEEPER OUTSIDE ARE LEVEL.
3. 20mm GRANULAR BACKFILL TO BE PLACED TO MIN. THICKNESS OF 300mm ALL SIDES.
4. FILTER FABRIC IN BOTTOM OF CATCH BASIN EXCAVATION AND FOR 500mm HIGH AROUND SIDES.
5. CLASS OF CONCRETE - 25 MPa AT 28 DAYS.
6. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.



1:20

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

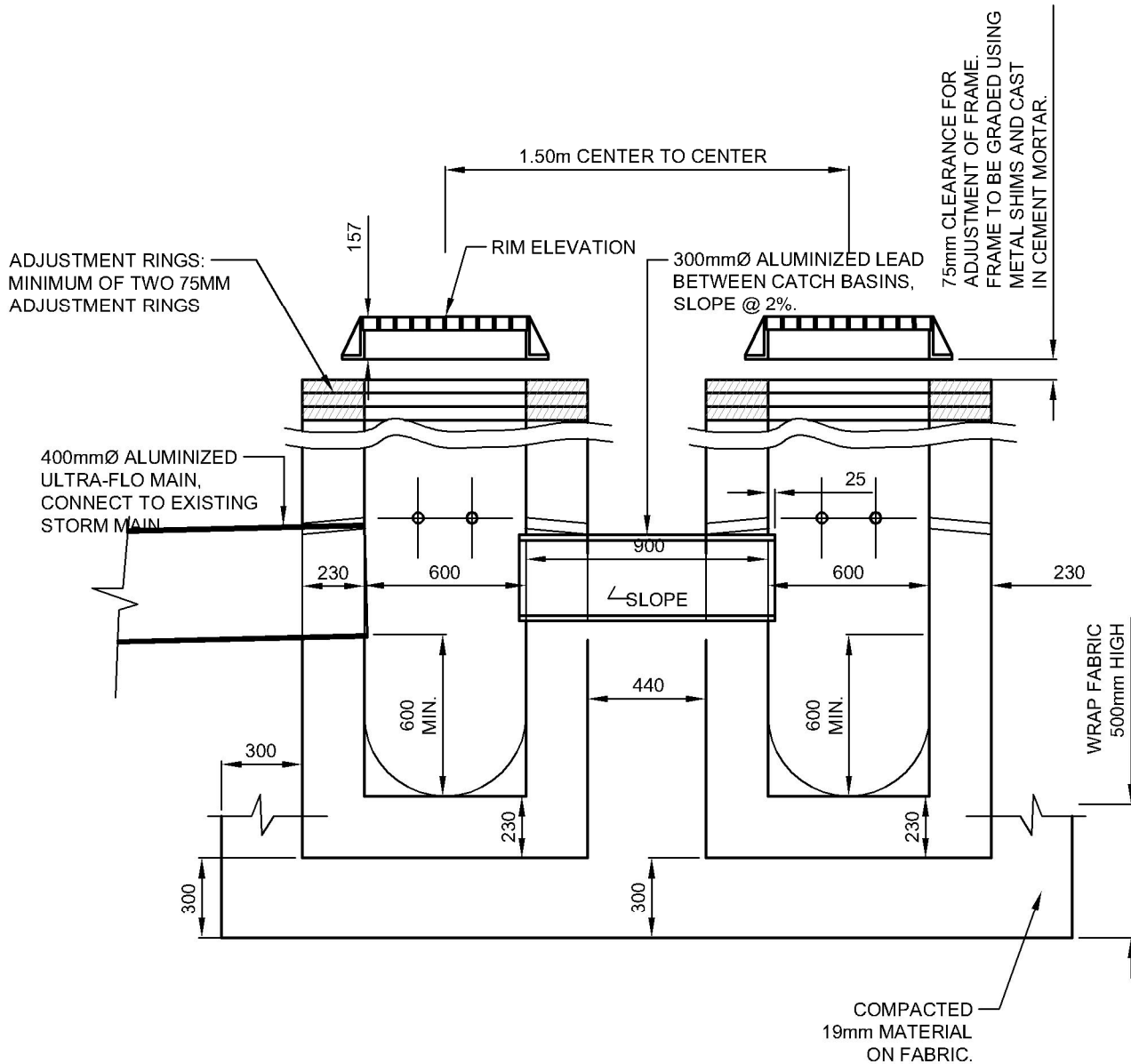
CONCRETE CATCH BASIN

STORM

REVISION No.
1

DWG.No.

C-ST-101



1:25

DATE DRAWN:
01/01/2020

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

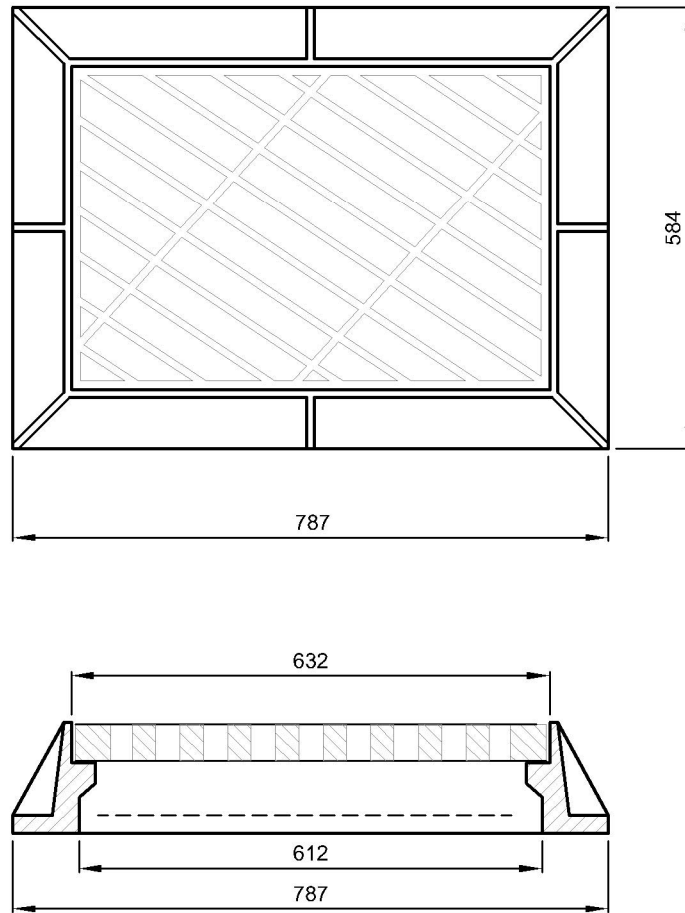
DOUBLE 600MMX600MM PRE-CAST
CATCH BASIN INSTALLATION

STORM

REVISION No.
1

DWG.No.

C-ST-102



1:10

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

TYPE NF-51 CATCH BASIN FRAME AND COVER

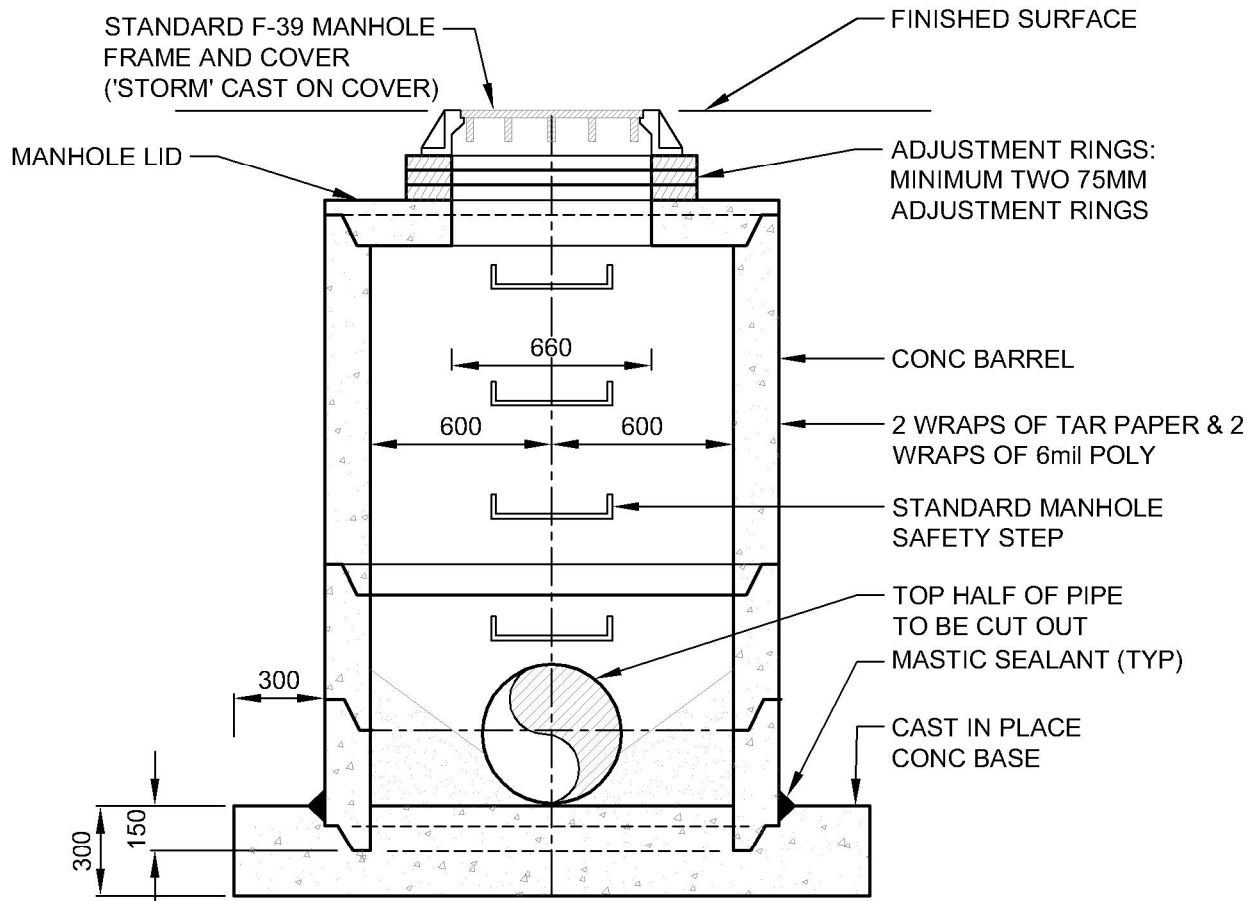
STORM

REVISION No.
1

DWG.No.

C-ST-104

NOTE: USE CONE IN PLACE OF FLAT TOP WHERE
DEPTH OF BURY WILL PERMIT.



1:25

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

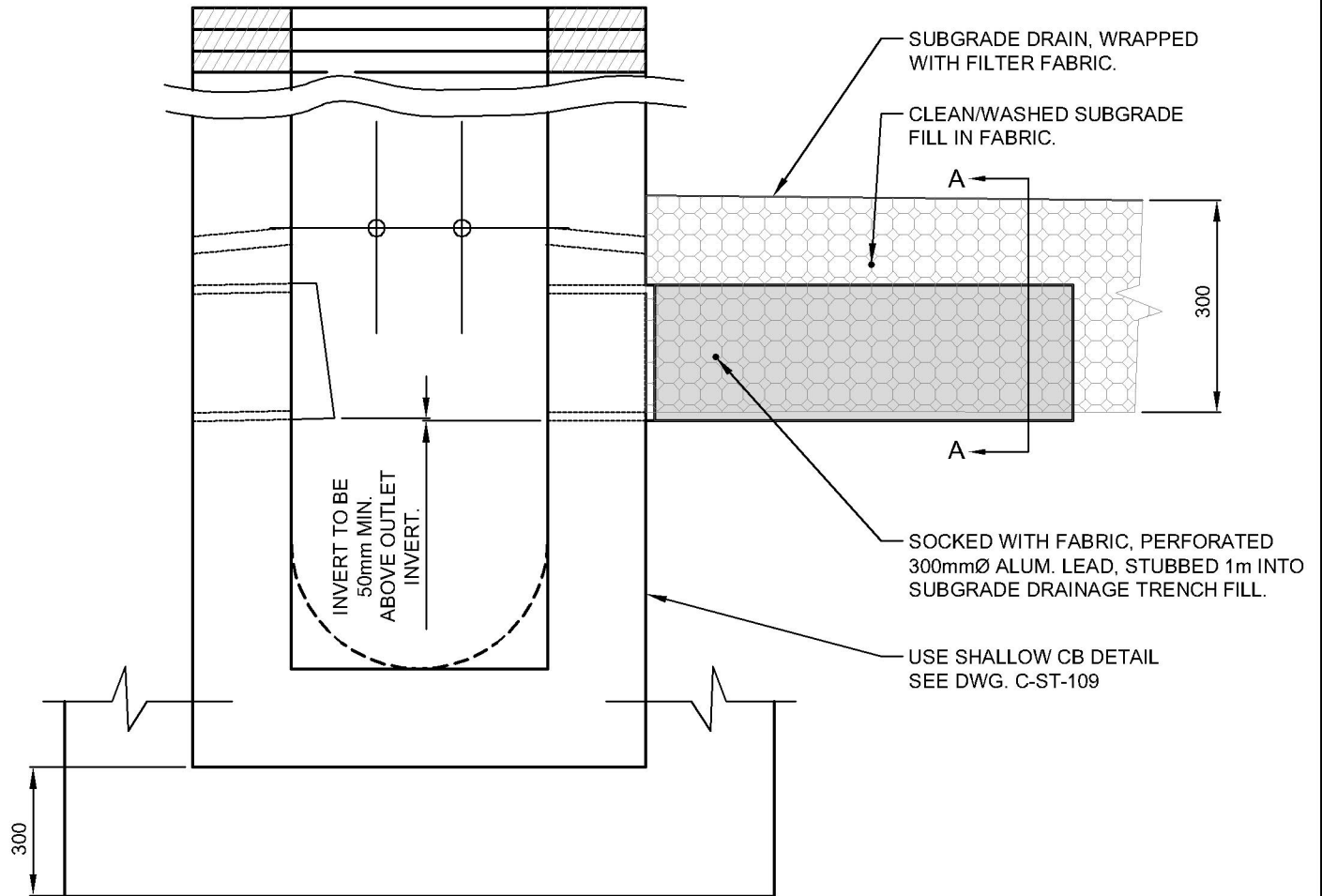
1200mm Ø MANHOLE - ALTERNATIVE No.1 FOR
STORM PIPES 550mm Ø or LESS

STORM

REVISION No.
1

DWG.No.

C-ST-105



1:10

DATE DRAWN:
01/01/2020

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

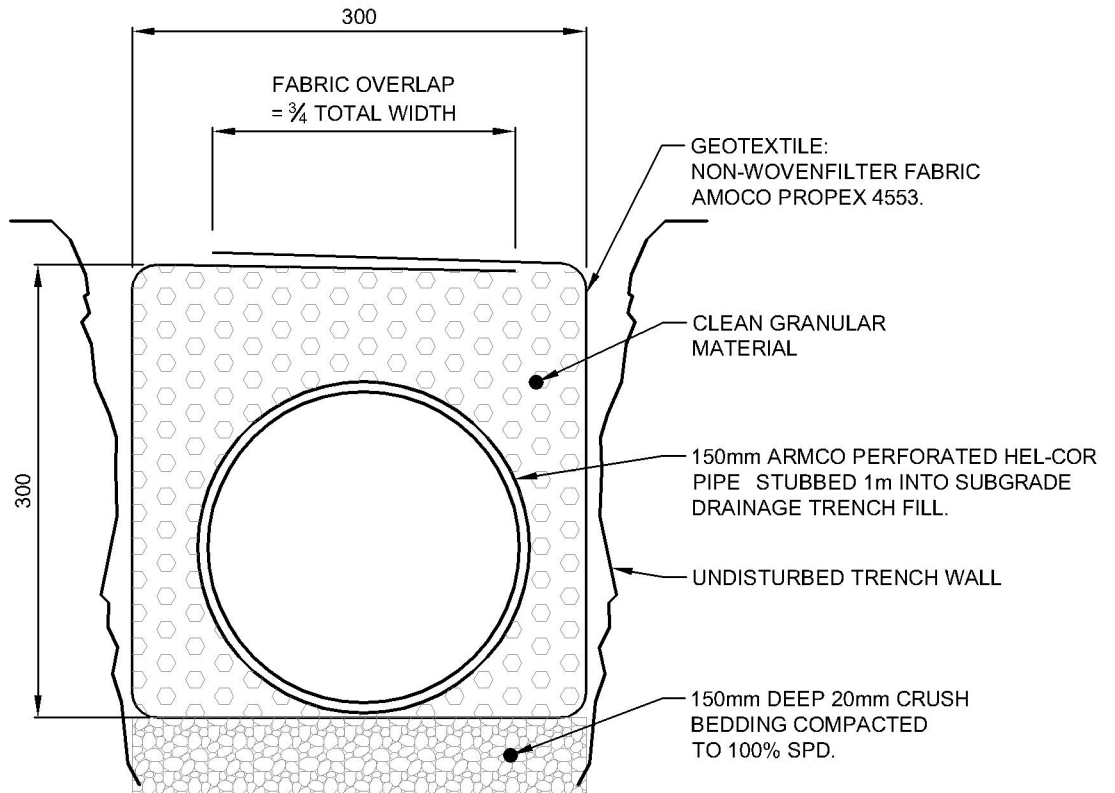
SUBGRADE DRAIN TIE-IN

STORM

REVISION No.
1

DWG.No.

C-ST-106



1:5

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

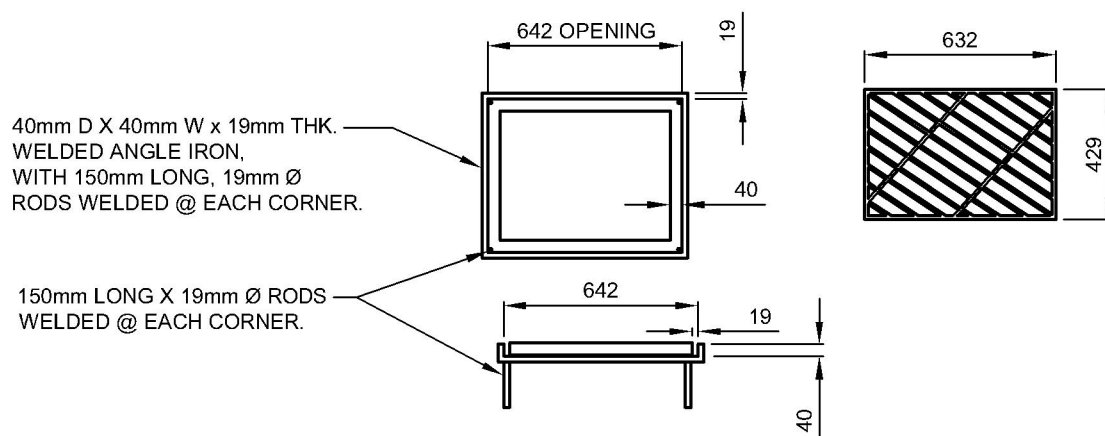
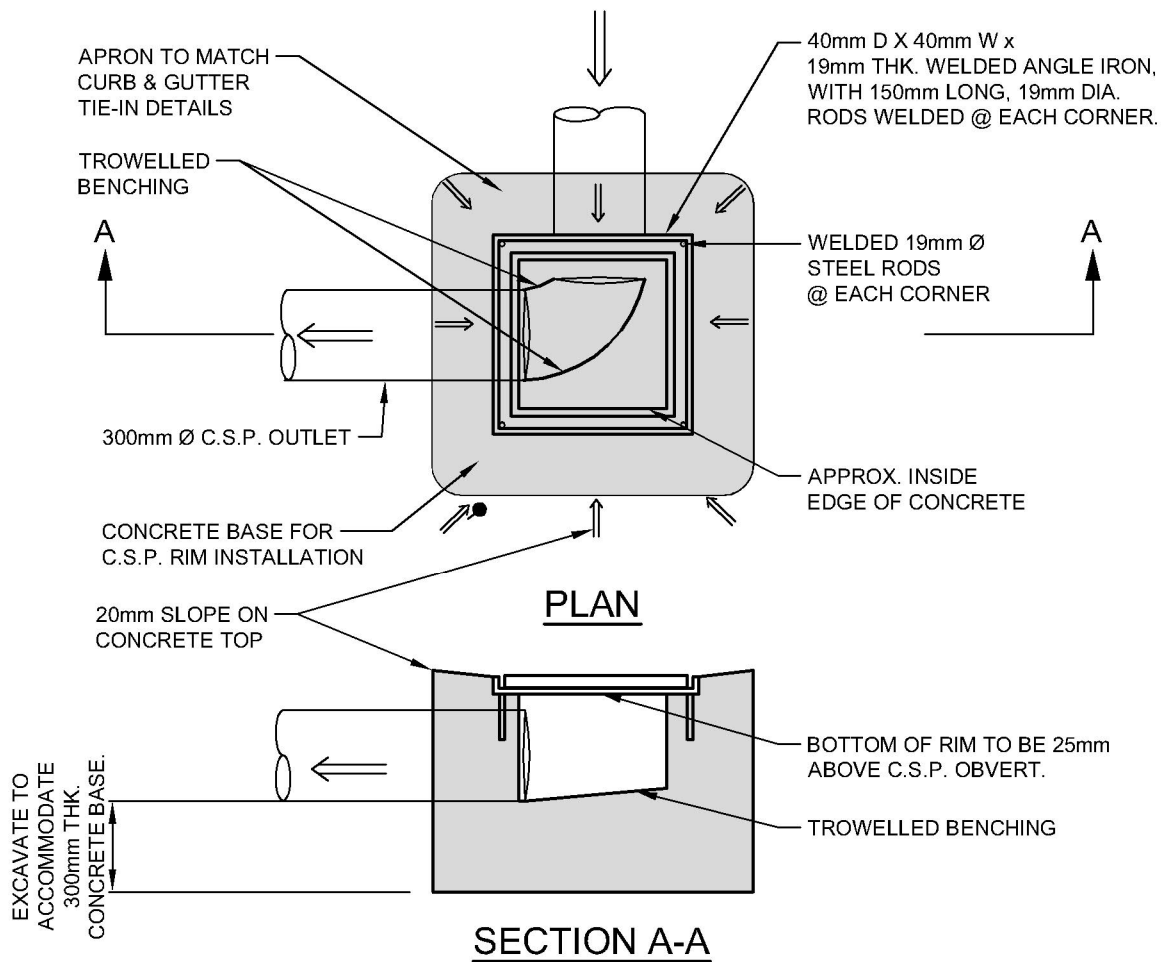
SUBGRADE DRAIN TIE-IN SECTION A-A

STORM

REVISION No.
1

DWG.No.

C-ST-107



SHALLOW CATCH BASIN WELDED RIM FRAME - DETAIL



1:25

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

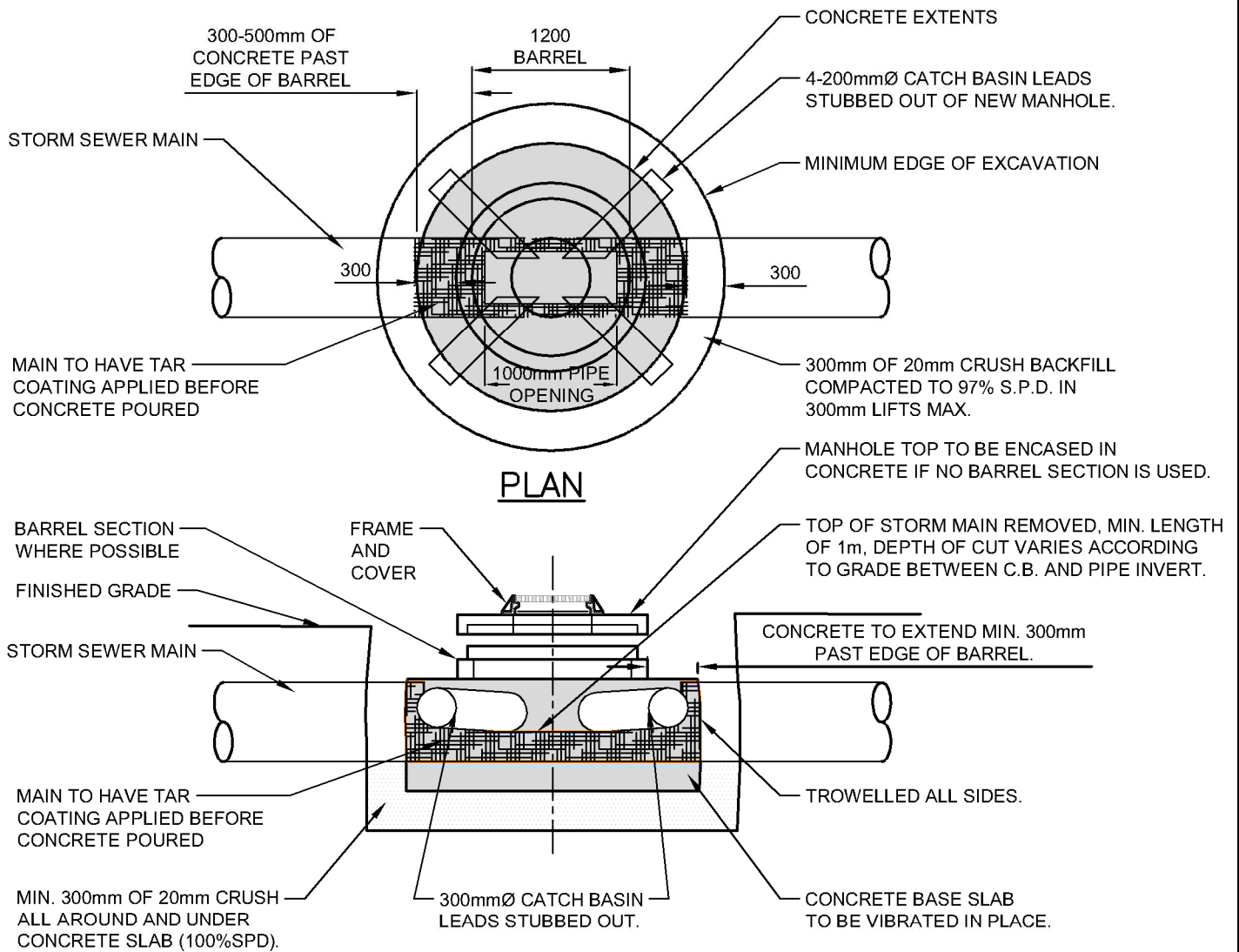
SHALLOW CATCH BASIN

STORM

REVISION No.
1

DWG.No.

C-ST-108



NOTES:

1. ALL JOINTS TO BE TARRED.
2. RUBBER GASKET REQUIRED IF BARREL AND TOP USED.
3. CONCRETE TO BE VIBRATED IN PLACE WITH MECHANICAL VIBRATOR.
4. WHERE POSSIBLE, WALLS TO BE FORMED WITH PLYWOOD TO PROVIDE UNIFORM BACKFILL SURFACE.



1:50

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

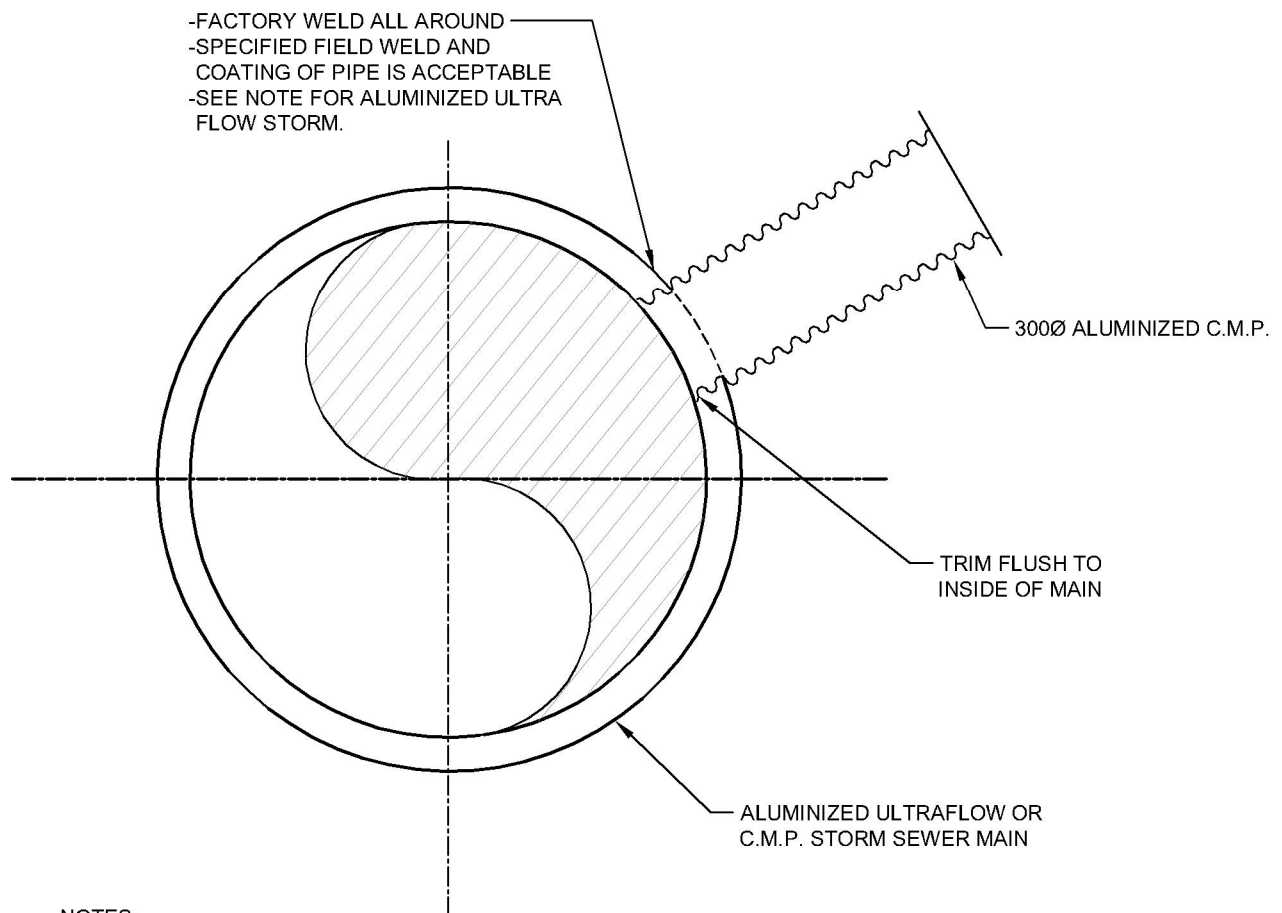
SHALLOW COVER CAST IN PLACE

STORM

REVISION No.
1

DWG.No.

C-ST-109



NOTES:

1. USE ONLY WHERE AUTHORIZED BY ENGINEER.



1:20

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

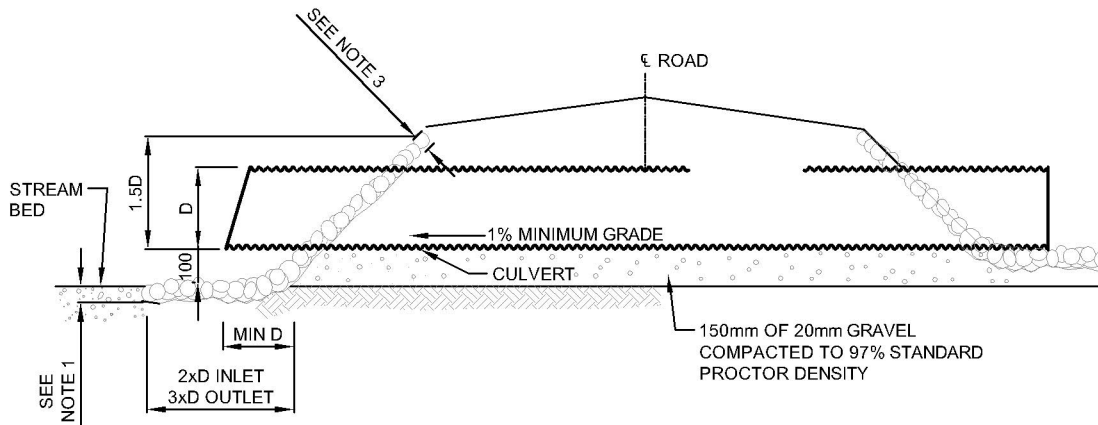
CATCH BASIN LEAD TO MAIN CONNECTION

STORM

REVISION No.
1

DWG.No.

C-ST-110

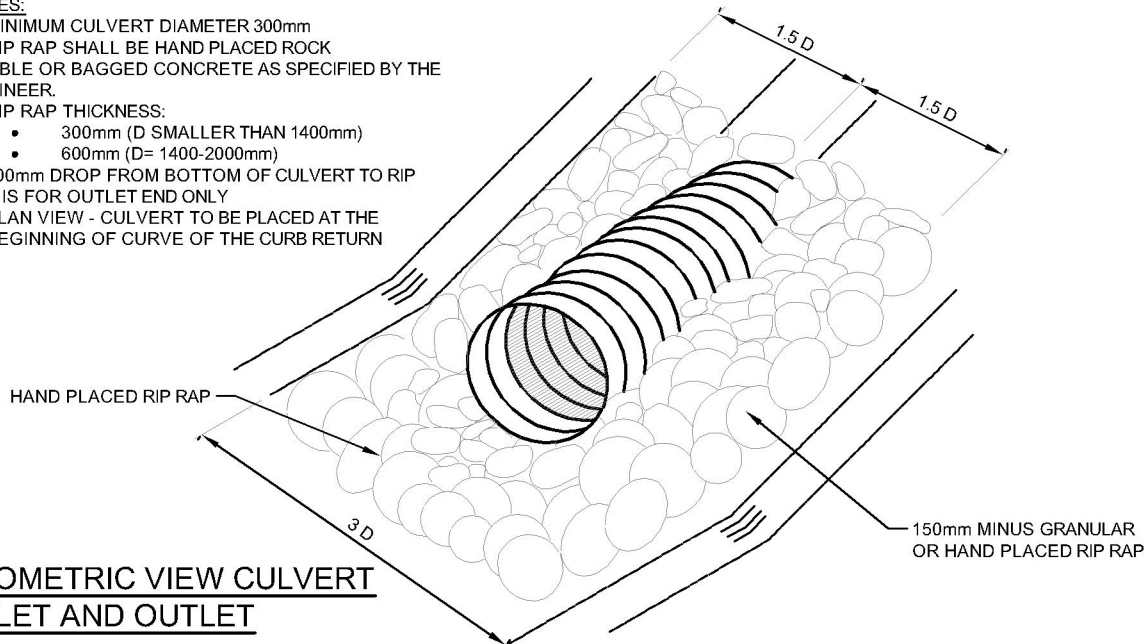


SECTION "A-A" CULVERT INLET AND OUTLET

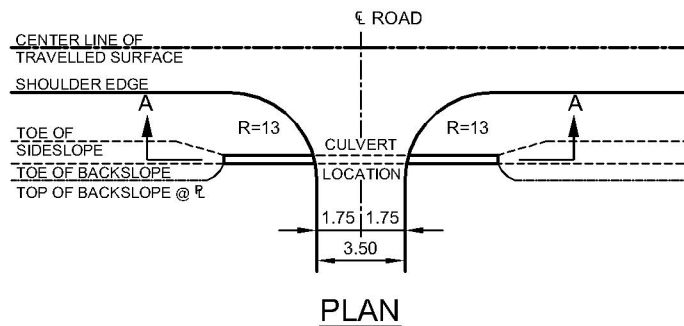
SCALE N.T.S.

NOTES:

1. MINIMUM CULVERT DIAMETER 300mm
2. RIP RAP SHALL BE HAND PLACED ROCK COBBLE OR BAGGED CONCRETE AS SPECIFIED BY THE ENGINEER.
3. RIP RAP THICKNESS:
 - 300mm (D SMALLER THAN 1400mm)
 - 600mm (D= 1400-2000mm)
4. 100mm DROP FROM BOTTOM OF CULVERT TO RIP RAP IS FOR OUTLET END ONLY
5. PLAN VIEW - CULVERT TO BE PLACED AT THE
6. BEGINNING OF CURVE OF THE CURB RETURN



ISOMETRIC VIEW CULVERT INLET AND OUTLET



N.T.S.

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

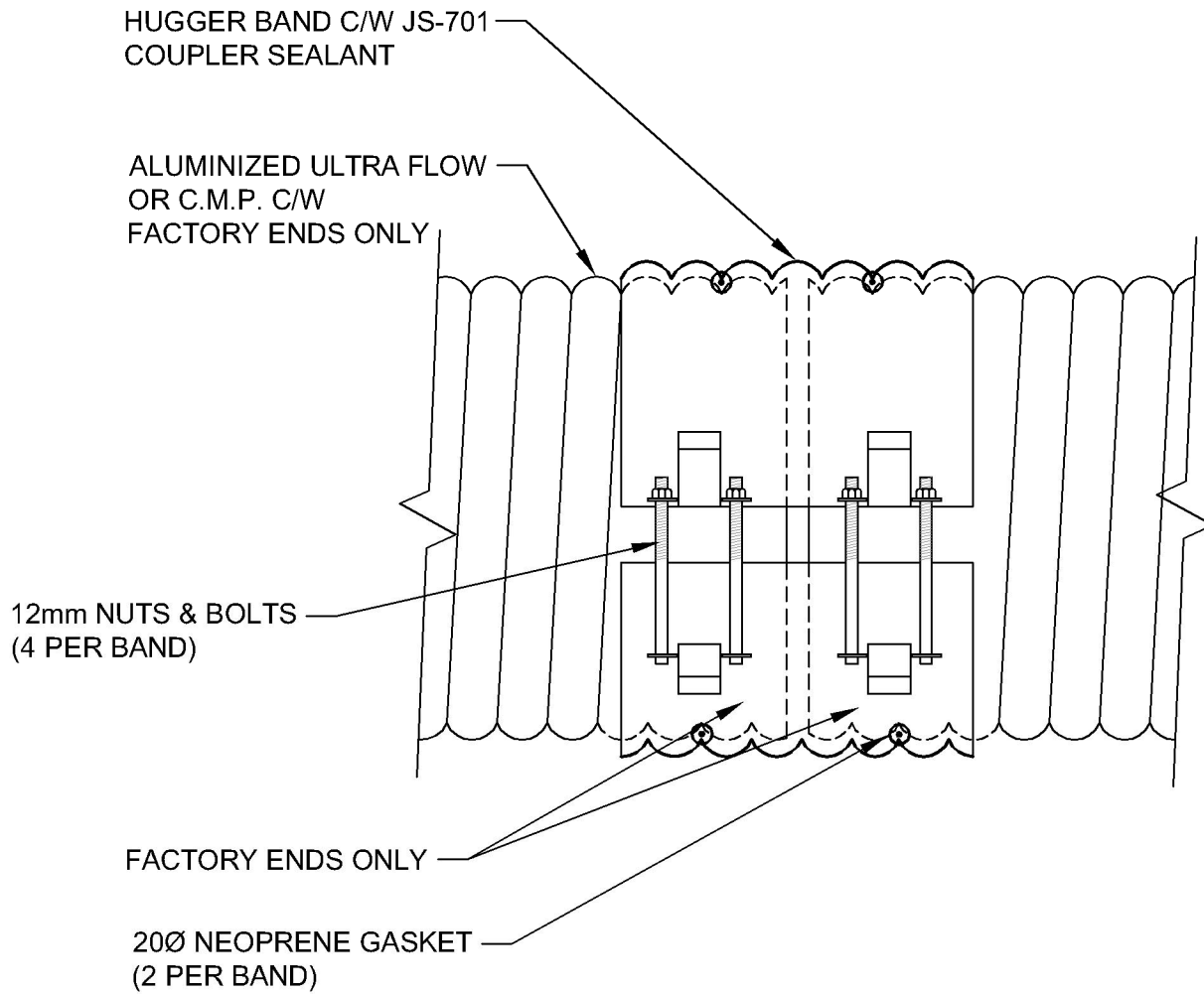
TYPICAL CULVERT INSTALLATION WITH
RIP RAP END TREATMENT

STORM

REVISION No.
1

DWG.No.

C-ST-111



N.T.S.

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

JOINT DETAIL

STORM

REVISION No.
1

DWG.No.

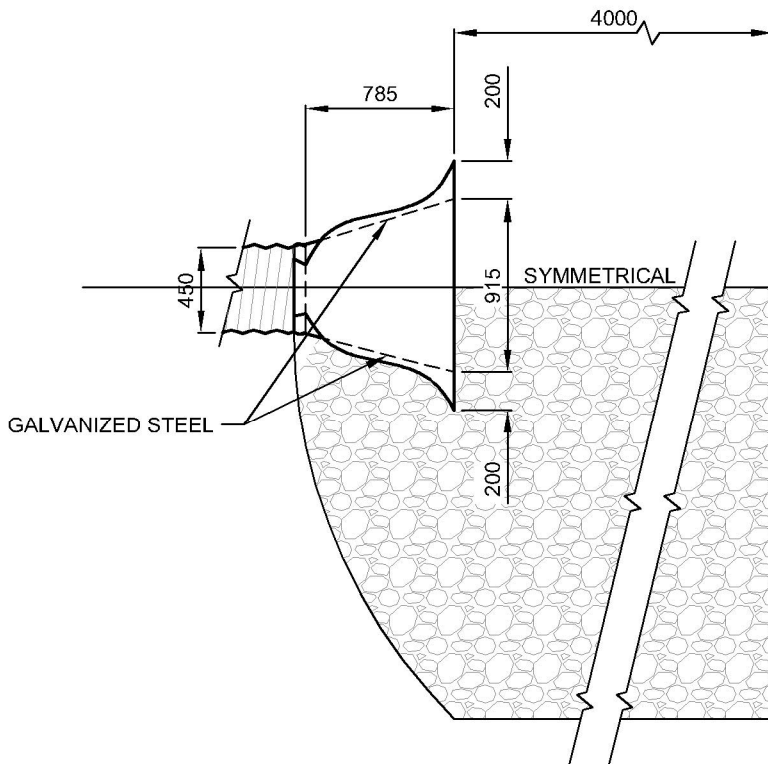
C-ST-112

RIP RAP

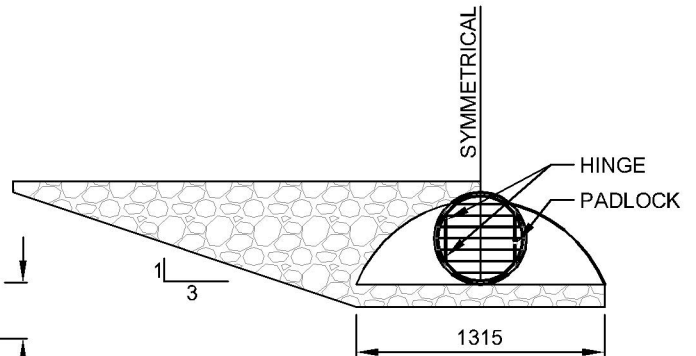
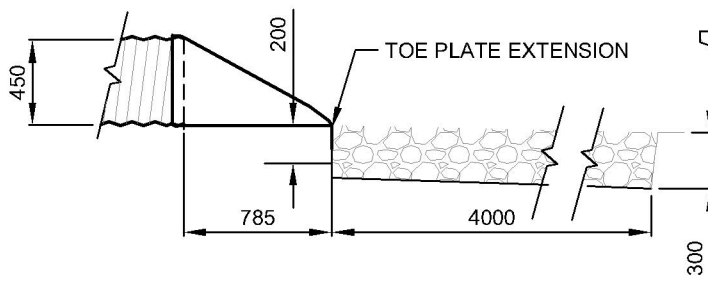
- DENSE DURABLE ROCK OBTAINED FROM BLAST ROCK
- WELL GRADED WITH 95% PASSING 300 mm SCREEN AND NOT MORE THAN 5% PASSING 150mm SCREEN
- LARGEST DIMENSION OF INDIVIDUAL PIECES TO BE NOT GREATER THAN TWICE THE SHORTEST DIMENSION
- DO NOT USE LONG FLAT STONES

NOTES:

1. END SECTION SHALL BE 2.0 mm C.S.P. AS MANUFACTURED BY ARMTEC OR APPROVED EQUAL.
2. TRASH GRILL AS FABRICATED BY ARMTEC, HINGED ONE SIDE. PADLOCK HASP ON OTHER SIDE.



PLAN



ELEVATION

STORM DRAIN OUTFALL FLARED END SECTION



1:40

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

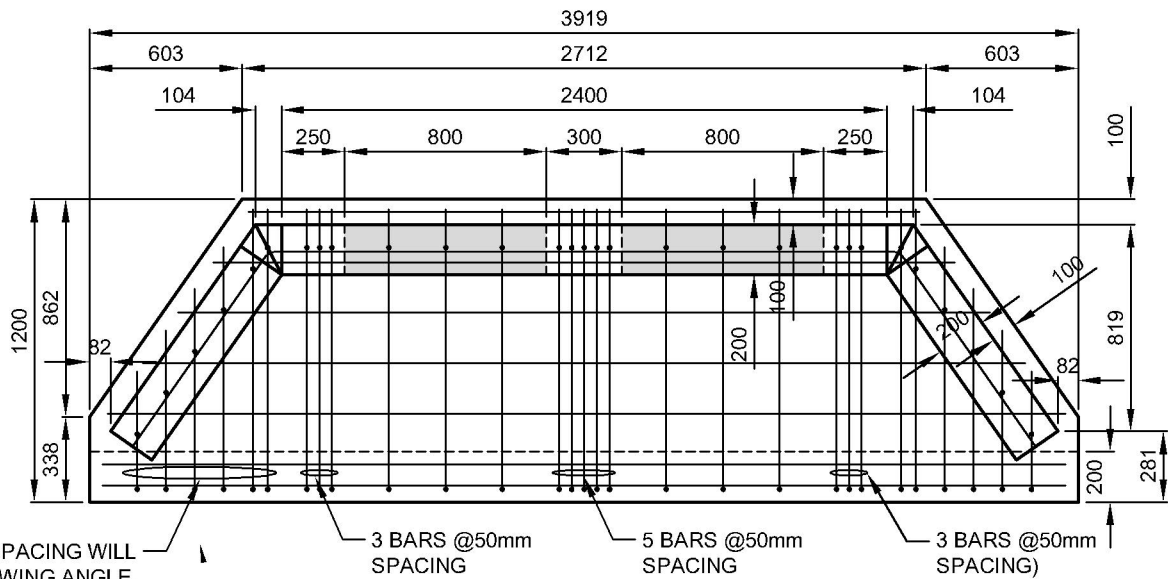
STORM DRAIN OUTFALL

STORM

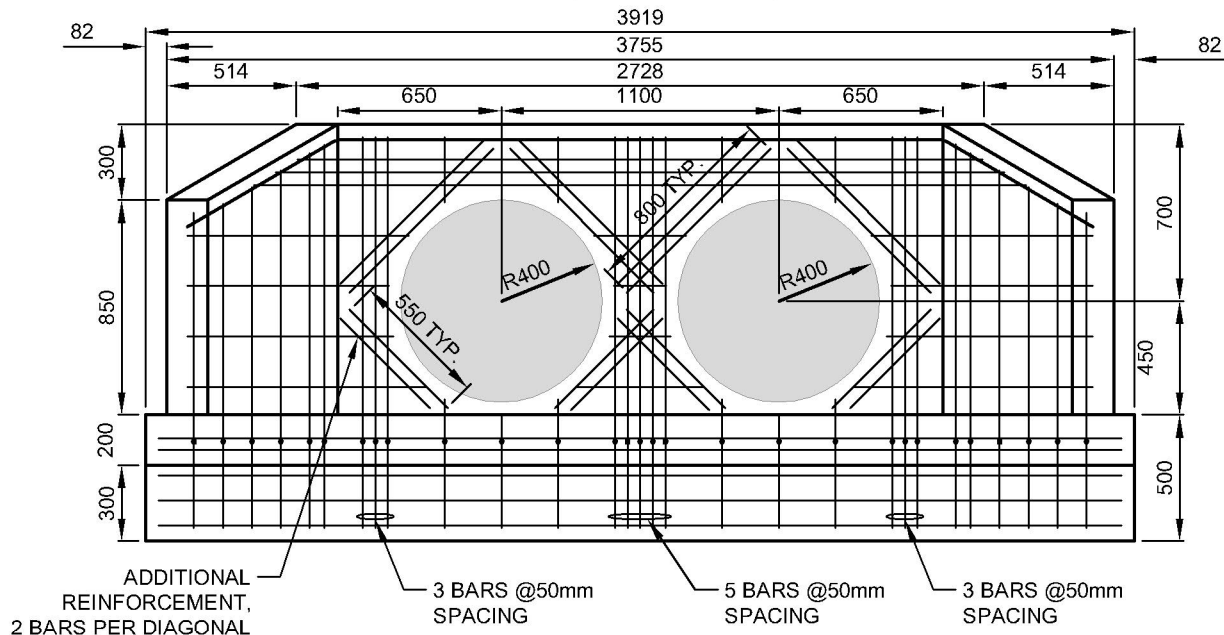
REVISION No.
1

DWG.No.

C-ST-113



PLAN VIEW



FRONT VIEW (PROFILE)

NOTES:

1. ALL CONCRETE SHALL HAVE 28 DAY COMPRESSIVE STRENGTH OF 25MPa, MAXIMUM AGGREGATE SIZE OF 20mm AND AIR ENTRAINED 5-8%.
2. ALL STEEL REINFORCING BARS SHALL BE BILLET STEEL CONFORMING TO CSA G30.18, GRADE 400EW.
3. ALL SPLICES IN REINFORCEMENT SHALL BE 40 TIMES THE LARGER BAR DIAMETER.
4. ALL BENDS IN REINFORCEMENT SHALL HAVE A MINIMUM RADIUS OF 3 TIMES THE BAR DIAMETER.
5. BED BASE OF WING-WALL WITH 300mm OF 50mm MINUS AND COMPACT TO 100% STANDARD PROCTOR DENSITY.
6. UNLESS OTHERWISE NOTED, ALL BARS SHALL BE 15M SPACED AT 200mm ON-CENTER AND PLACED AT MID-DEPTH OF THE WALL OR SLAB.
7. DO NOT WELD REINFORCEMENT.
8. WHERE POSSIBLE, CAST WALL AROUND CULVERT. OTHERWISE, FORM OPENING TO 850mmØ AND GROUT BETWEEN WALL AND CULVERT.
9. PROVIDE ADDITIONAL DIAGONAL REINFORCEMENT AROUND CULVERTS AS SHOWN.
10. PROVIDE 38x140mm KEY AT COLD JOINT BETWEEN WALL AND BASE.



1:30

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

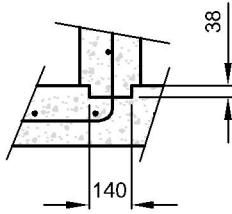
DOUBLE CULVERT WING-WALL DETAIL

STORM

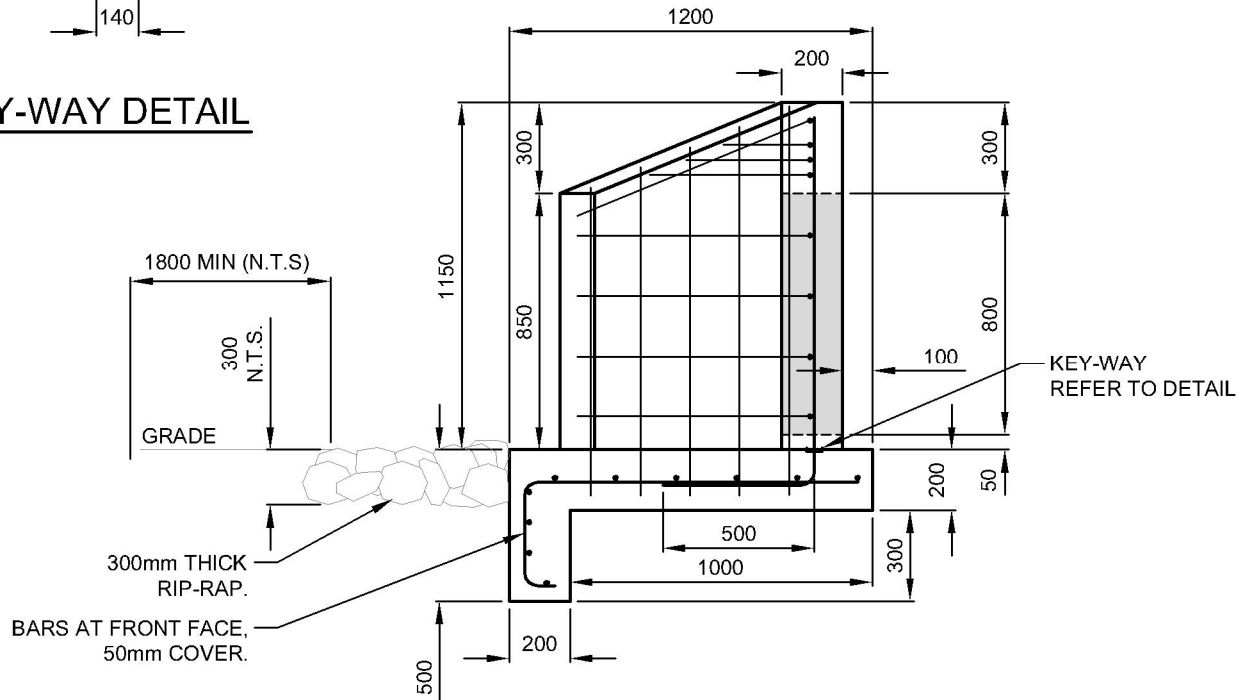
REVISION No.
1

DWG.No.

C-ST-114



KEY-WAY DETAIL



END VIEW

NOTES:

1. ALL CONCRETE SHALL HAVE 28 DAY COMPRESSIVE STRENGTH OF 25MPa, MAXIMUM AGGREGATE SIZE OF 20mm AND AIR ENTRAINED 5-8%.
2. ALL STEEL REINFORCING BARS SHALL BE BILLET STEEL CONFORMING TO CSA G30.18, GRADE 400EW.
3. ALL SPLICES IN REINFORCEMENT SHALL BE 40 TIMES THE LARGER BAR DIAMETER.
4. ALL BENDS IN REINFORCEMENT SHALL HAVE A MINIMUM RADIUS OF 3 TIMES THE BAR DIAMETER.
5. BED BASE OF WING-WALL WITH 300mm OF 50mm MINUS AND COMPACT TO 100% STANDARD PROCTOR DENSITY.
6. UNLESS OTHERWISE NOTED, ALL BARS SHALL BE 15M SPACED AT 200mm ON-CENTER AND PLACED AT MID-DEPTH OF THE WALL OR SLAB.
7. DO NOT WELD REINFORCEMENT.
8. WHERE POSSIBLE, CAST WALL AROUND CULVERT. OTHERWISE, FORM OPENING TO 850mmØ AND GROUT BETWEEN WALL AND CULVERT.
9. PROVIDE ADDITIONAL DIAGONAL REINFORCEMENT AROUND CULVERTS AS SHOWN.
10. PROVIDE 38x140mm KEY AT COLD JOINT BETWEEN WALL AND BASE.



1:25

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

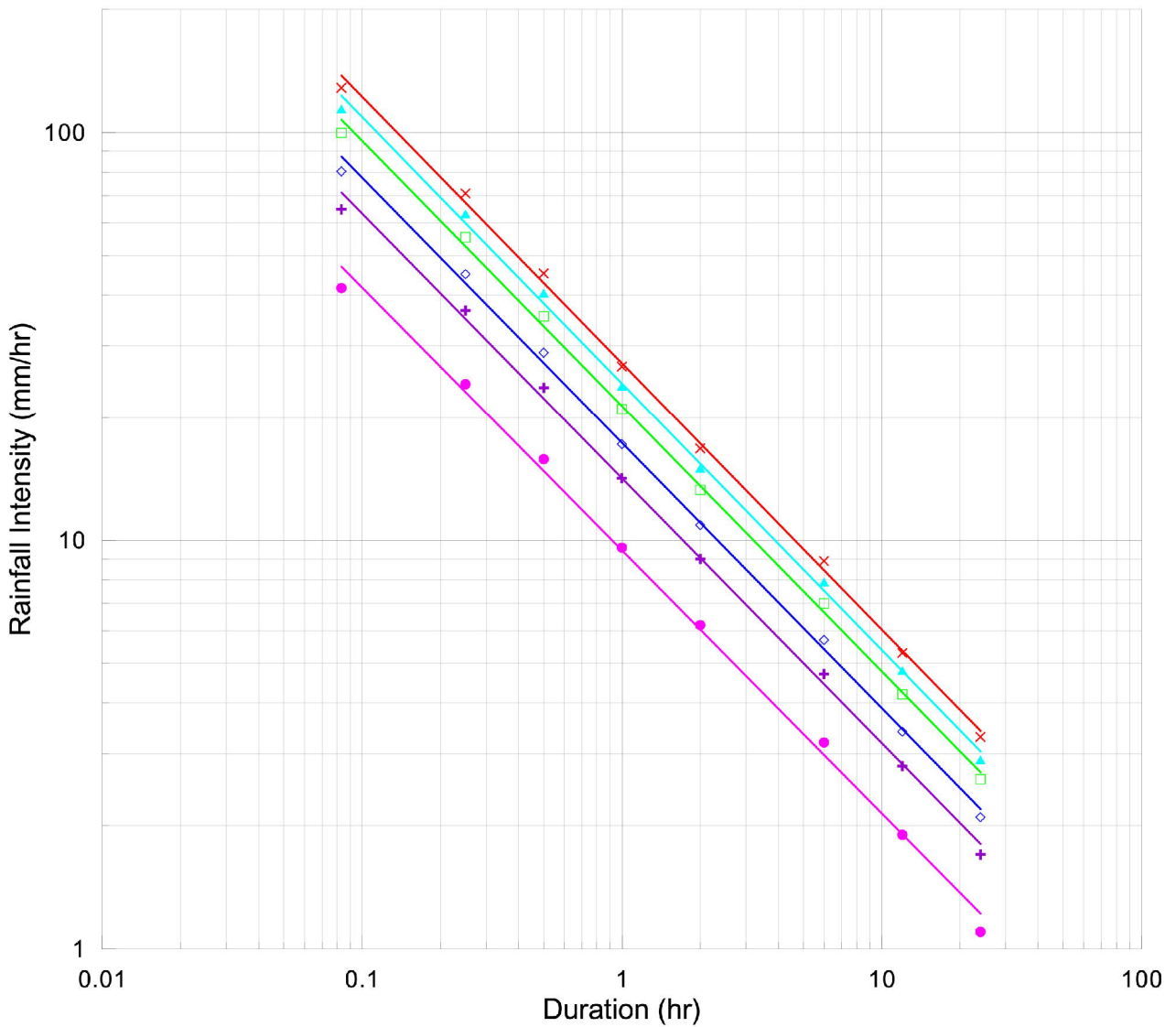
CULVERT WING-WALL SIDE VIEW

STORM

REVISION No.
1

DWG.No.

C-ST-115



FOR REFERENCE ONLY
(see PIEVC Program)



N.T.S.

DATE DRAWN: 01/01/20	REVISION DATE: 06/04/2022
APPROVED BY: D.MCMILLAN	

TITLE:

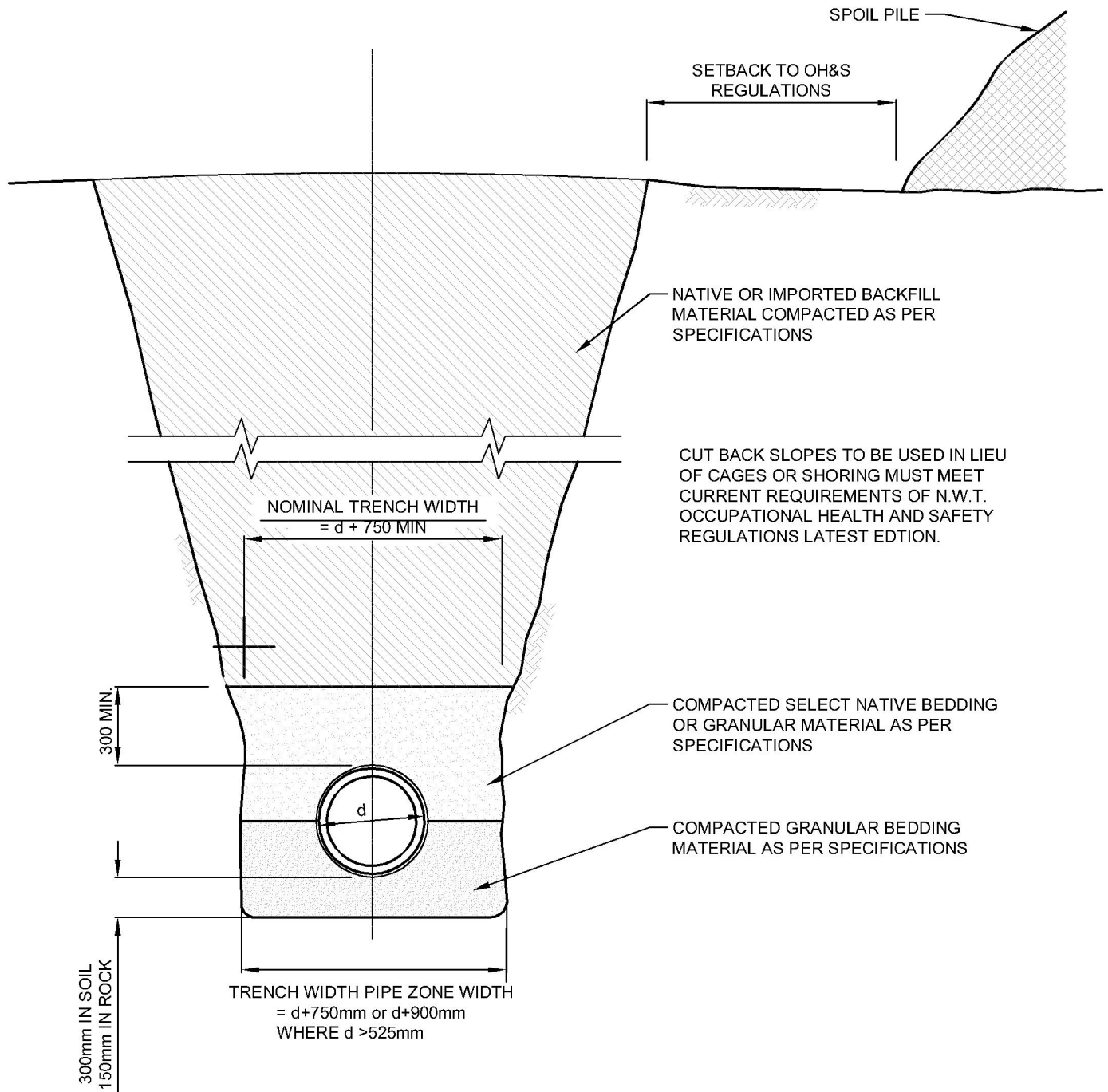
RAINFALL INTENSITY I-D-F CURVE

STORM

REVISION No.
1

DWG.No.

C-ST-116



1:30

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

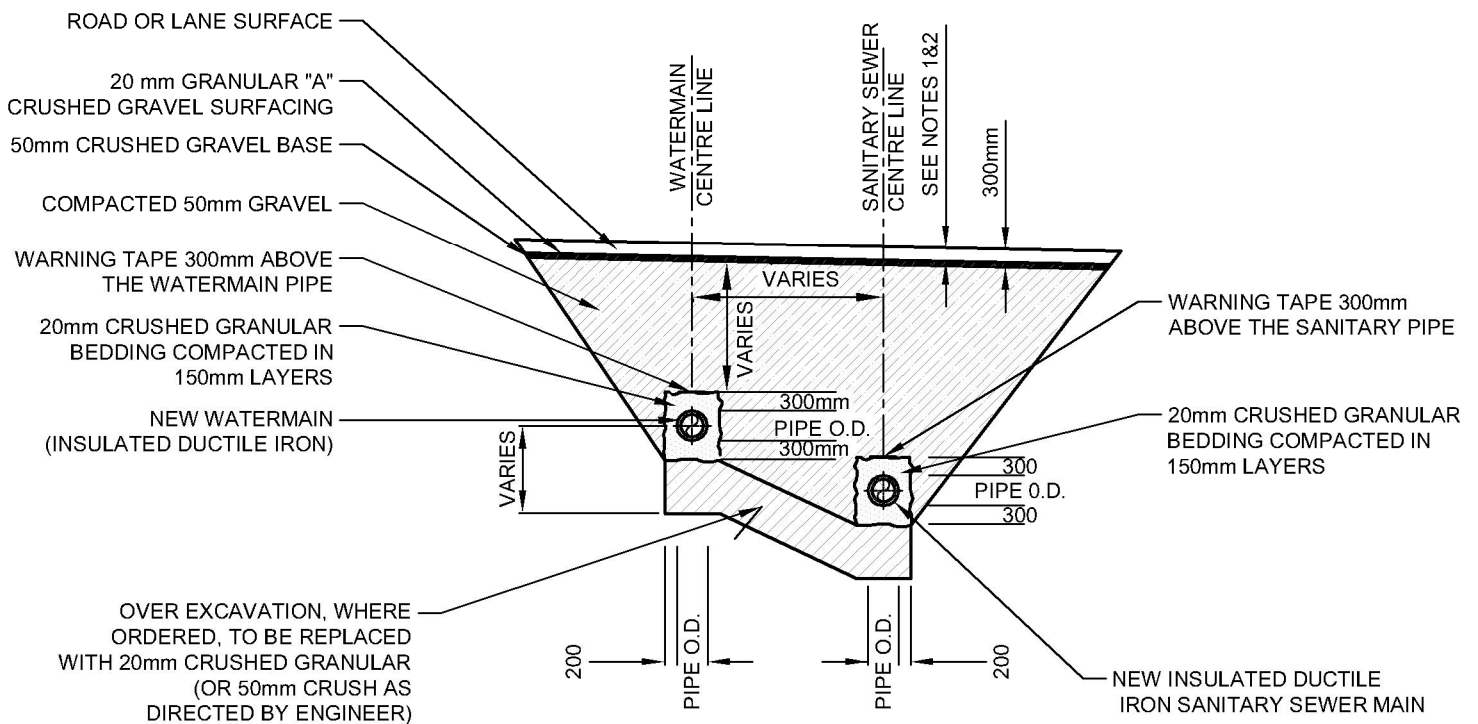
TYPICAL TRENCH SECTION

TRENCH

REVISION No.
1

DWG.No.

C-T-100



NOTES:

1. IN SOFT OR UNSTABLE GROUND CONDITIONS, FROZEN OR UNFROZEN, UNDERCUT SUBGRADE AS DIRECTED BY ENGINEER.
2. EXCAVATION CROSS SECTION MAY VARY WITH DISTANCE BETWEEN MAINS, DEPTH OF OVEREXCAVATION, AND SOIL CONDITIONS.



1:125

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

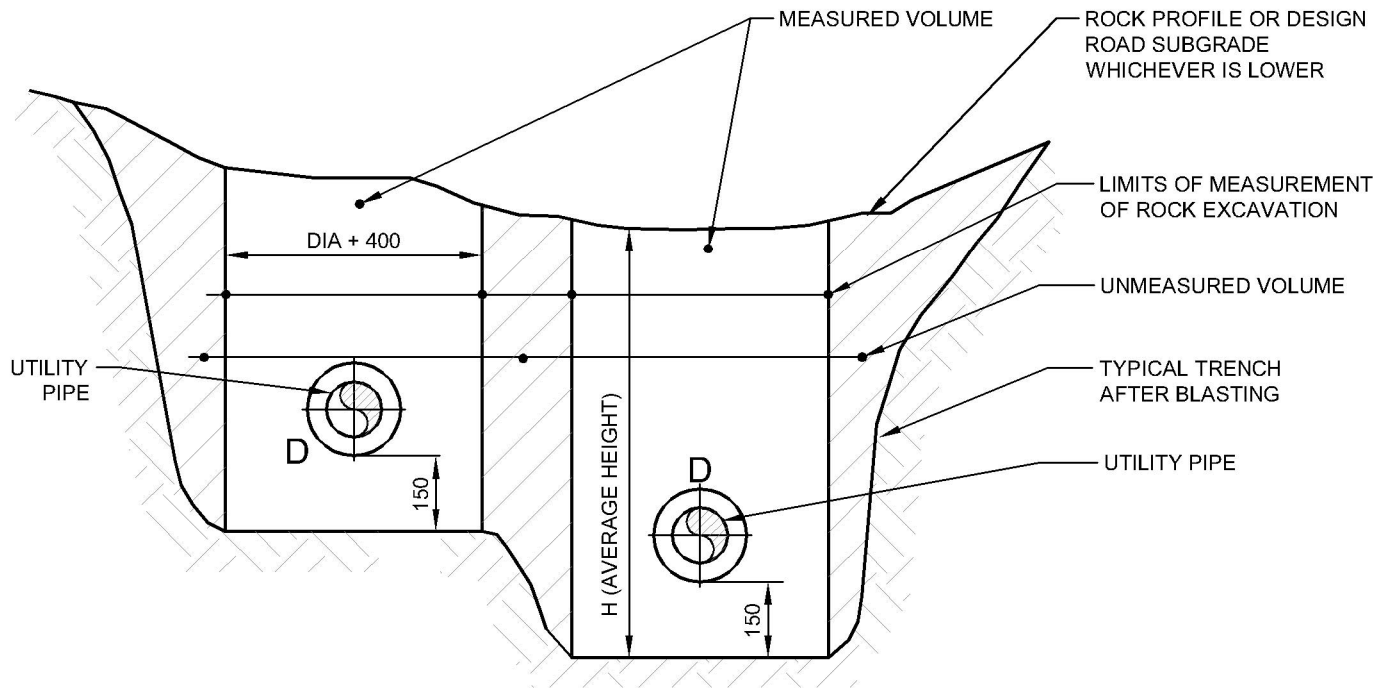
**TYPICAL COMMON TRENCH DETAIL
SANITARY AND WATERMAIN**

TRENCH

REVISION No.
1

DWG.No.

C-T-101



1. DIA. = OUTSIDE DIAMETER OF PIPE AND INSULATION (IF ANY)
2. ROCK EXCAVATION QUANTITY = $H \times (DIA. + 400mm) \times \text{LENGTH OF PIPE FOR EACH MAIN OR SERVICE PIPE}$
3. FOR STORM MAIN 600mm TO 1800mmØ ONLY
4. ROCK EXCAVATION QUANTITY = $H \times (DIA. + DIA.) \times \text{LENGTH OF STORM PIPE}$
5. ALL DIMENSIONS IN MILLIMETERS UNLESS NOTED OTHERWISE

FOR REFERENCE ONLY



N.T.S.

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

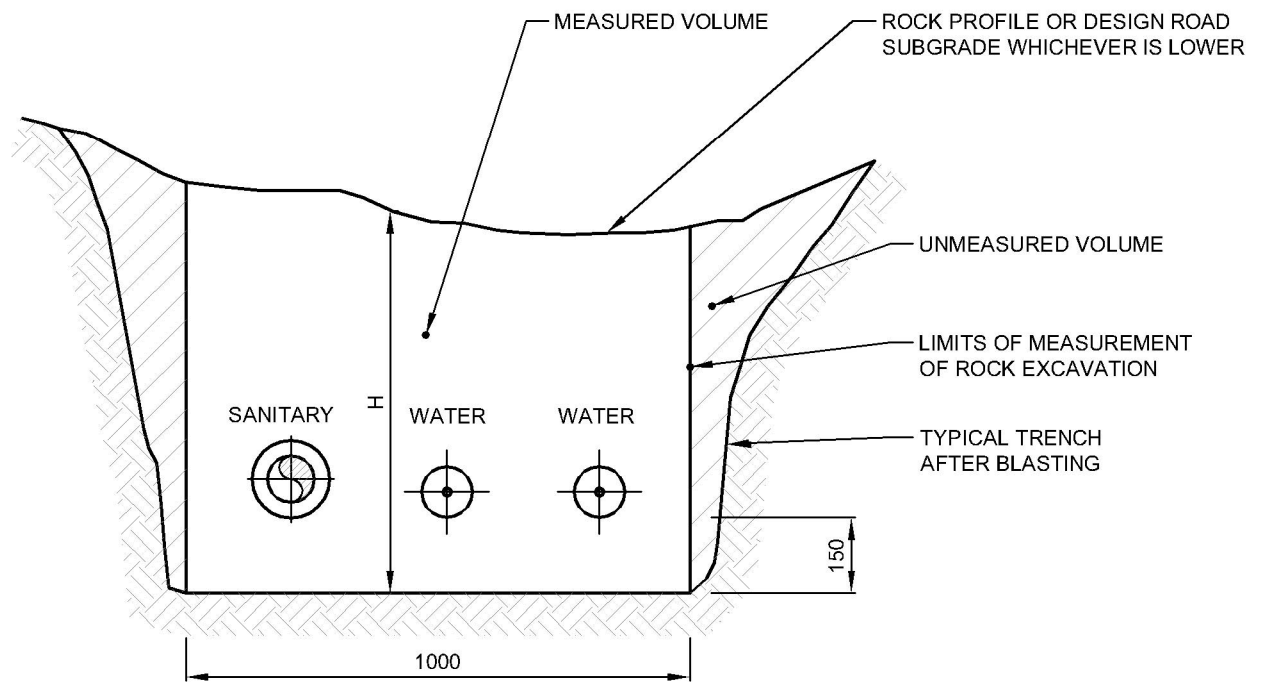
TRENCH ROCK EXCAVATIONS
MEASUREMENTS - MAINS

TRENCH

REVISION No.
1

DWG.No.

C-T-102



ROCK EXCAVATION QUANTITY = H x 1.00m x LENGTH OF SERVICE.

FOR REFERENCE ONLY



N.T.S.

DATE DRAWN: 01/01/20
REVISION DATE: 06/04/2022

APPROVED BY:
YK ENG.

TITLE:

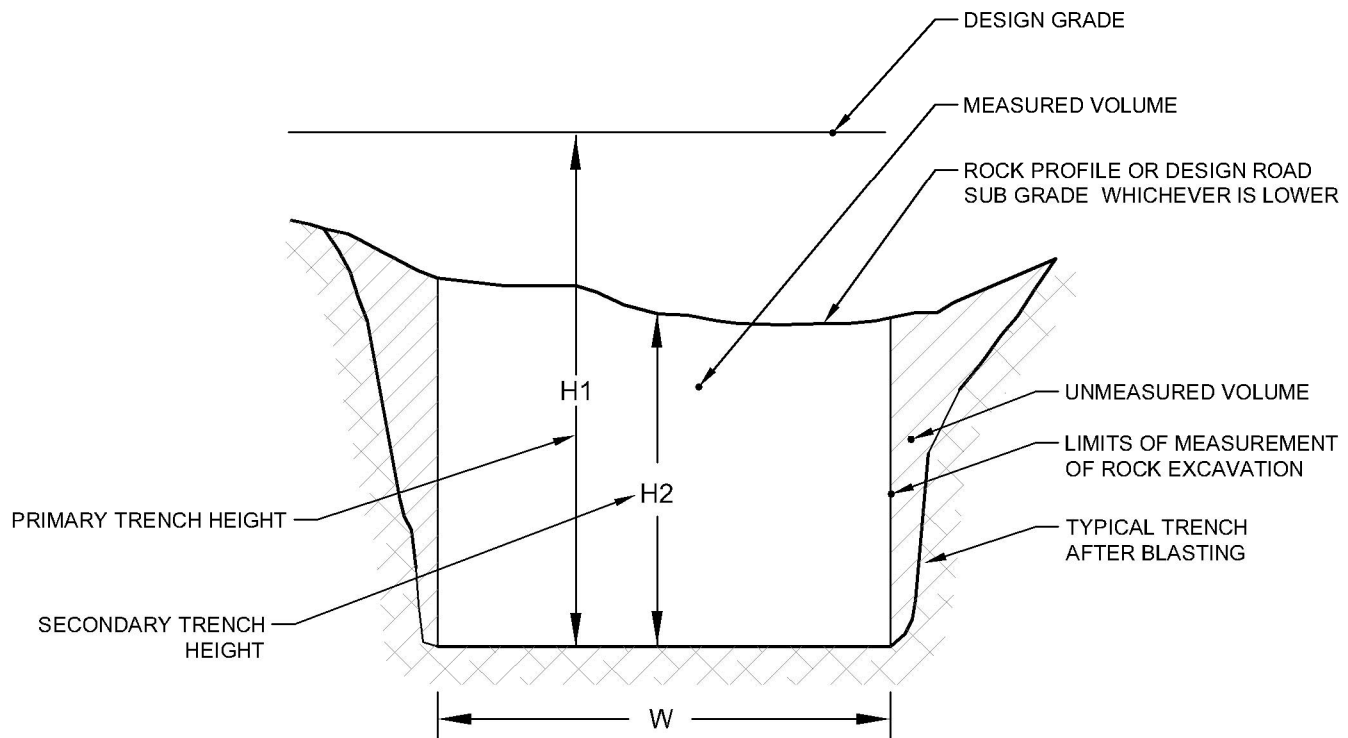
TRENCH ROCK EXCAVATIONS
MEASUREMENTS - SERVICES

TRENCH

REVISION No.
1

DWG.No.

C-T-103



PRIMARY TRENCH
 — ROCK EXCAVATION QUANTITY = $1.00\text{m(W)} \times (\text{H1}) \times \text{LENGTH}$

SECONDARY TRENCH
 — ROCK EXCAVATION QUANTITY = $0.80\text{m(W)} \times (\text{H2}) \times \text{LENGTH}$

FOR REFERENCE ONLY



N.T.S.

DATE DRAWN: 01/01/20
 REVISION DATE: 06/04/2022

APPROVED BY:
 YK ENG.

TITLE:

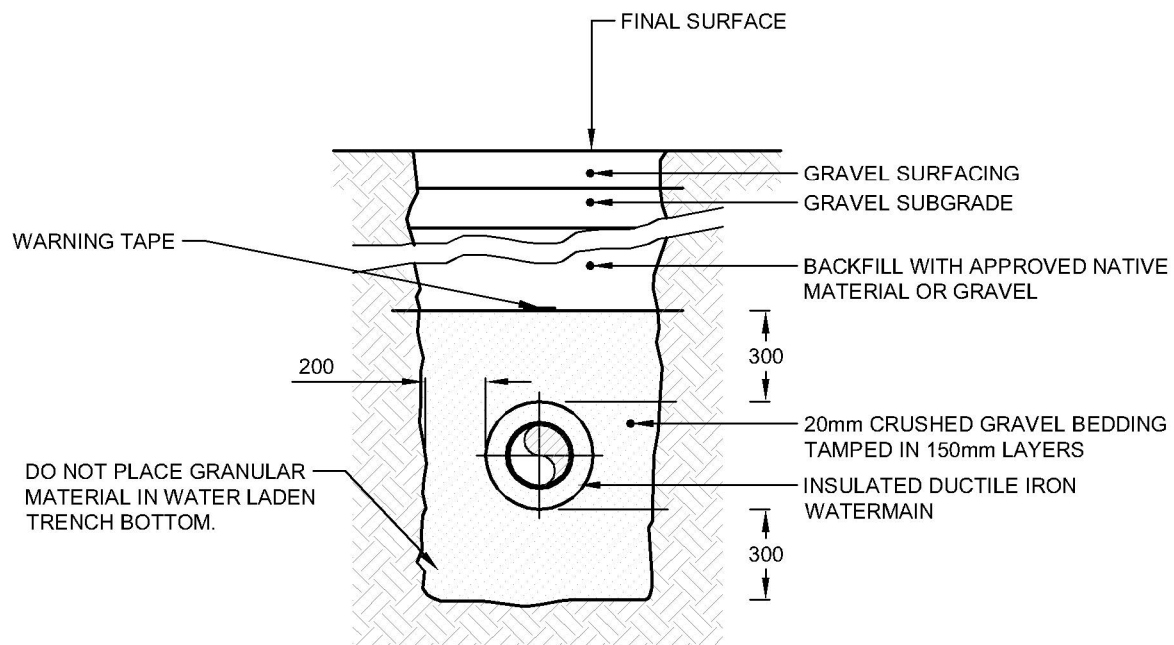
SHALLOW UTILITY TRENCH DETAIL

TRENCH

REVISION No.
 1

DWG.No.

C-T-104



NOTES:

1. IN SOFT OR UNSTABLE GROUND CONDITIONS (FROZEN OR UNFROZEN), UNDERCUT SUBGRADE AS DIRECTED BY ENGINEER (SEE DWG. C-T-101).
2. SEE DWG. C-T-101 FOR DETAIL OF COMBINED TRENCH
3. SANITARY MAIN TO BE BEDDED USING THIS DETAIL.



1:25

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

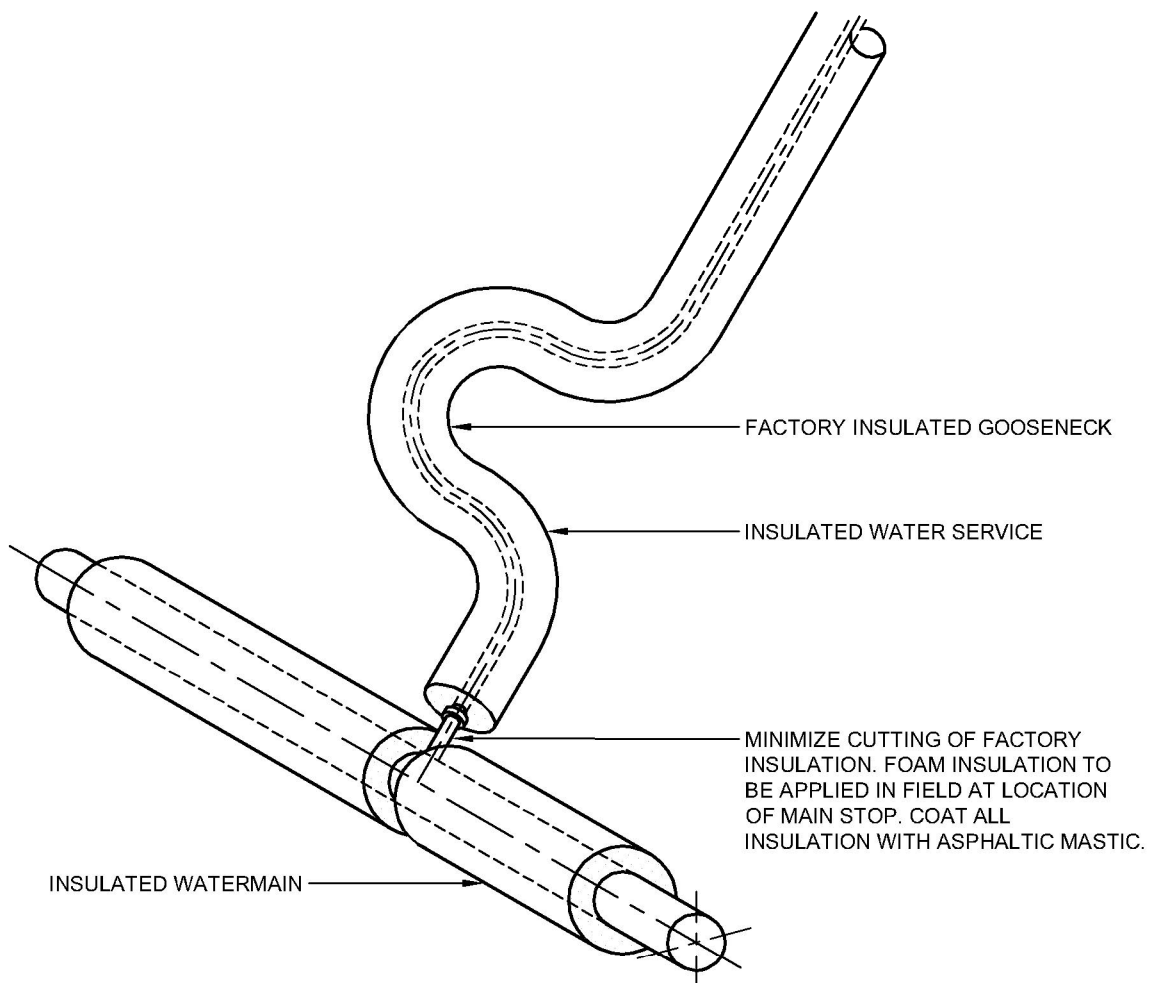
TYPICAL WATERMAIN BEDDING

WATER

REVISION No.
1

DWG.No.

C-W-100



GOOSENECK / MAIN STOP INSULATION
DETAIL AT WATER MAIN SCALE N.T.S.



N.T.S

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

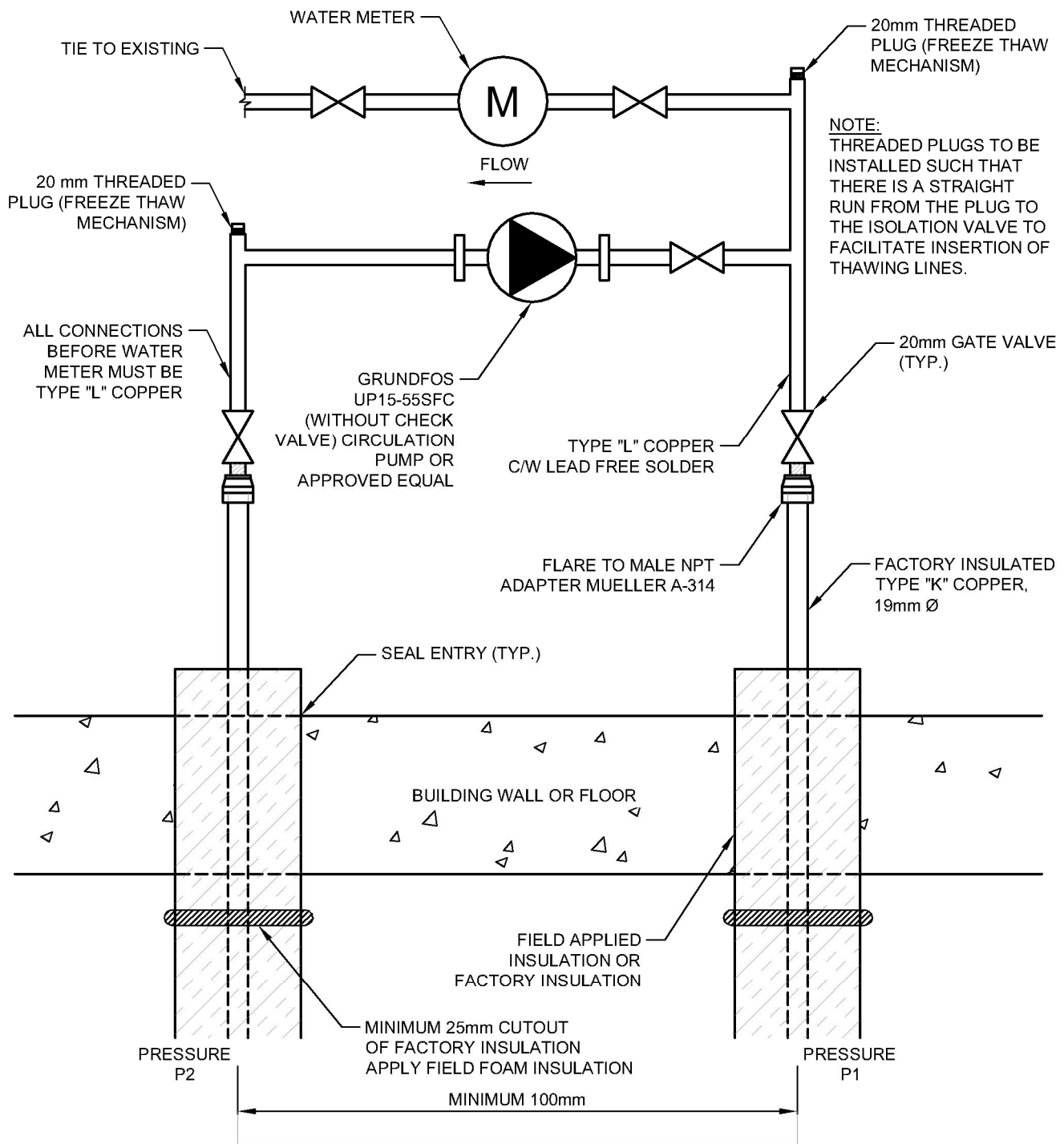
GOOSENECK/MAIN STOP INSULATION
DETAIL AT WATER MAIN

WATER

REVISION No.
1

DWG.No.

C-W-101



ALL FITTINGS TO BE COPPER OR BRASS, NO GALVANIZED, BLACK OR CAST IRON ALLOWED.



N.T.S.

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

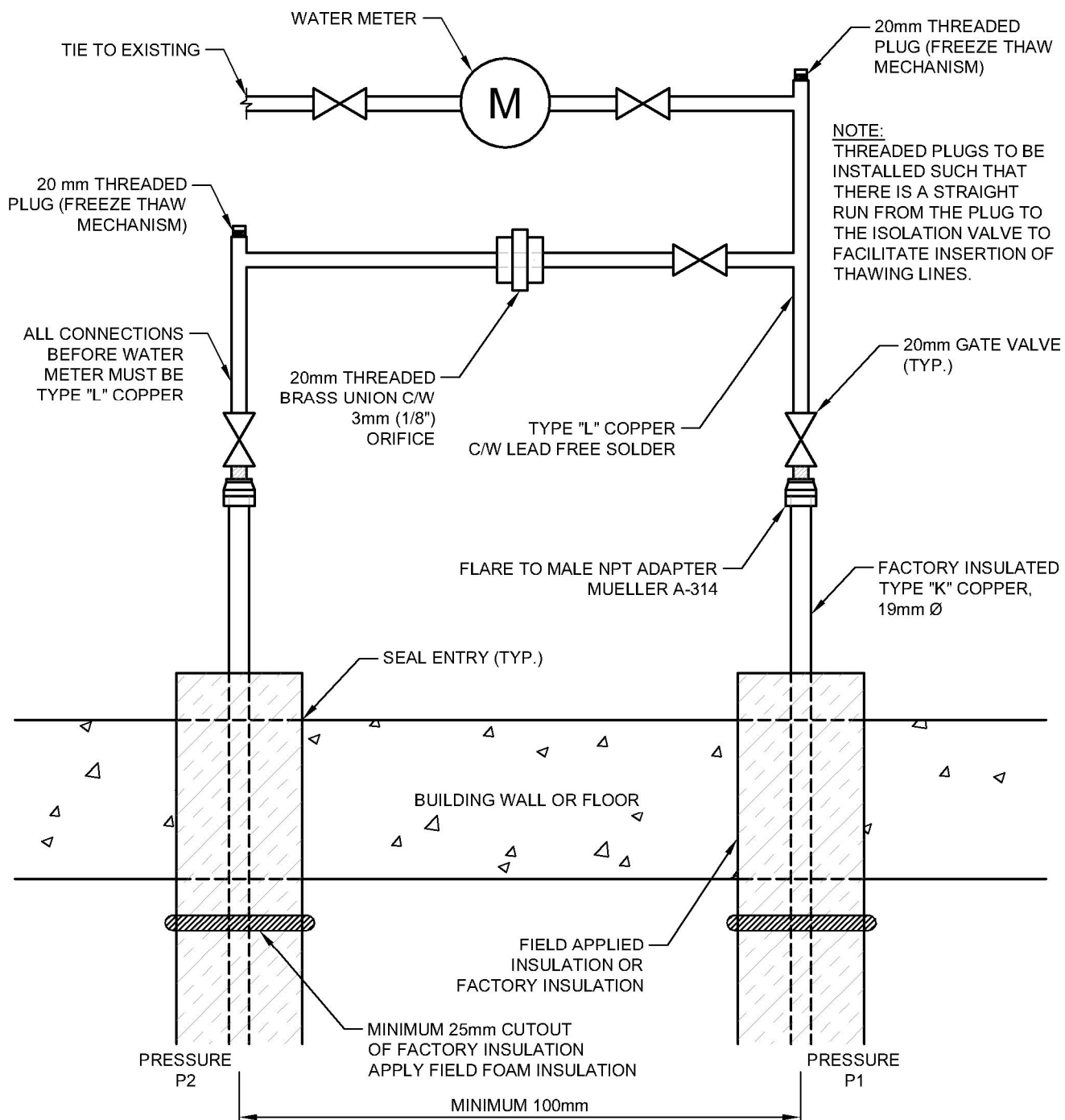
CIRCULATION PUMP INSTALLATION DETAIL

WATER

REVISION No.
1

DWG.No.

C-W-102



1:10000

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

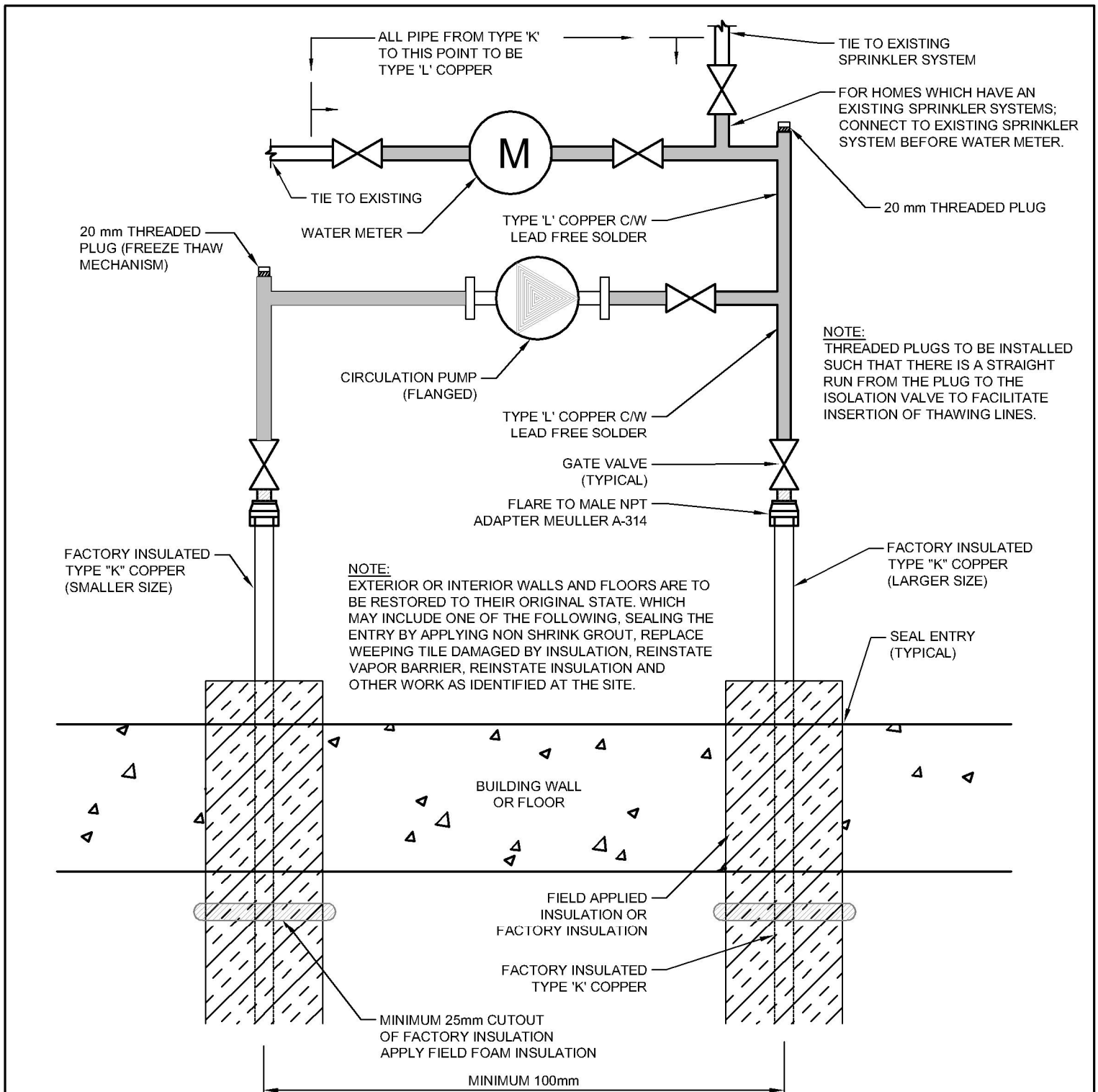
ORIFICE INSTALLATION DETAIL

WATER

REVISION No.
1

DWG.No.

C-W-103



ALL FITTINGS TO BE COPPER OR BRASS, NO GALVANIZED, BLACK OR CAST IRON ALLOWED.



N.T.S.

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

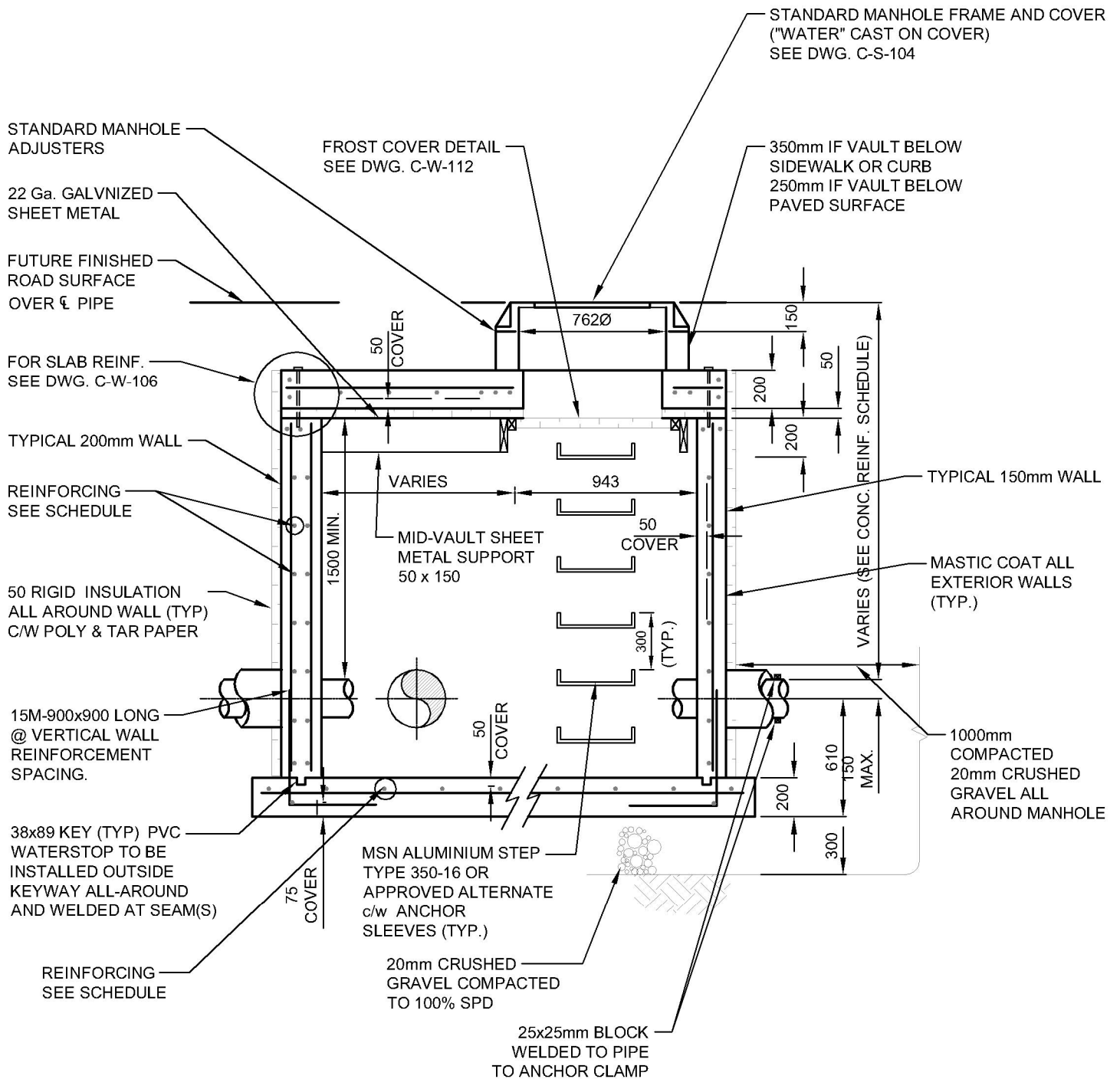
TYPICAL BUILDING CIRCULATION PUMP & METER INSTALLATION

WATER

REVISION No.
1

DWG.No.

C-W-104



NOTES:

1. NO MANHOLE CONES TO BE USED
2. ALL UNITS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE



1:30

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK. ENG.

TITLE:

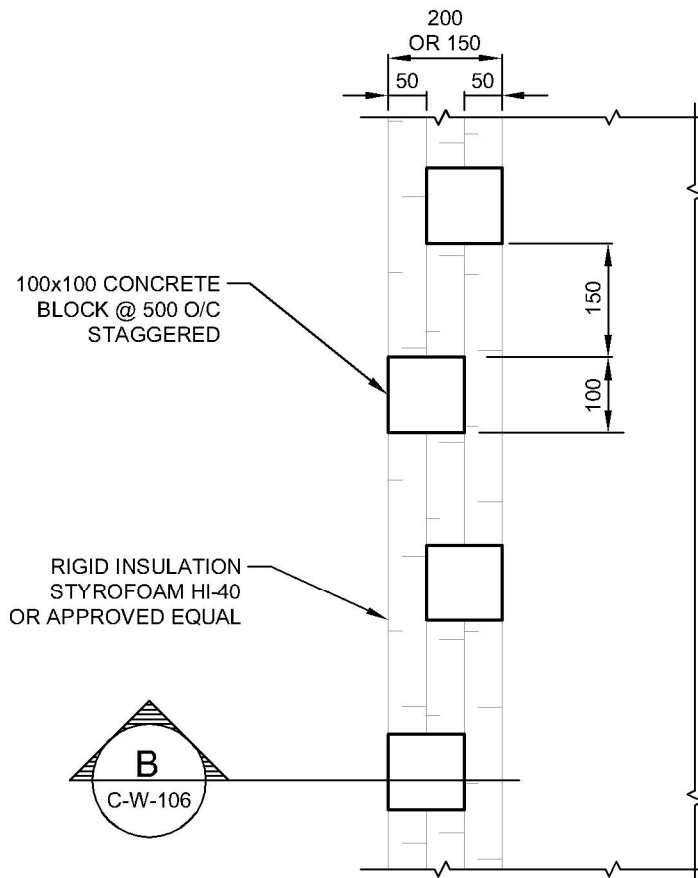
WATER MANHOLE - SECTION A

WATER

REVISION No.
1

DWG.No.

C-W-105



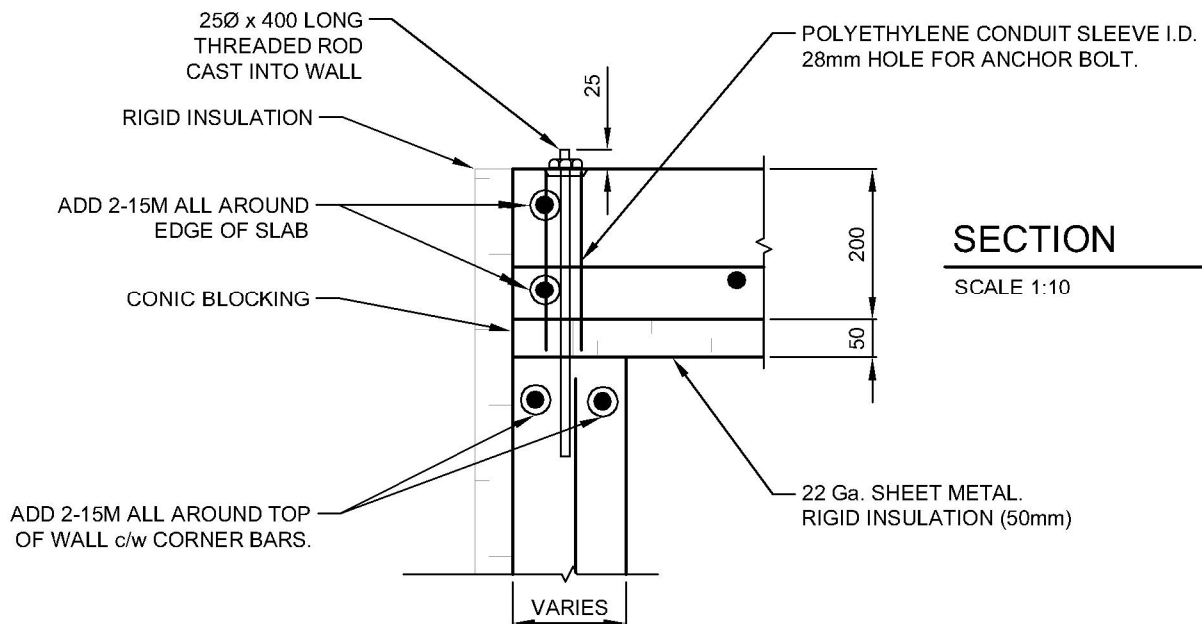
PLAN

DETAIL

SCALE 1:10

1

C-W-106



SECTION

SCALE 1:10

B

C-W-106



1:10

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

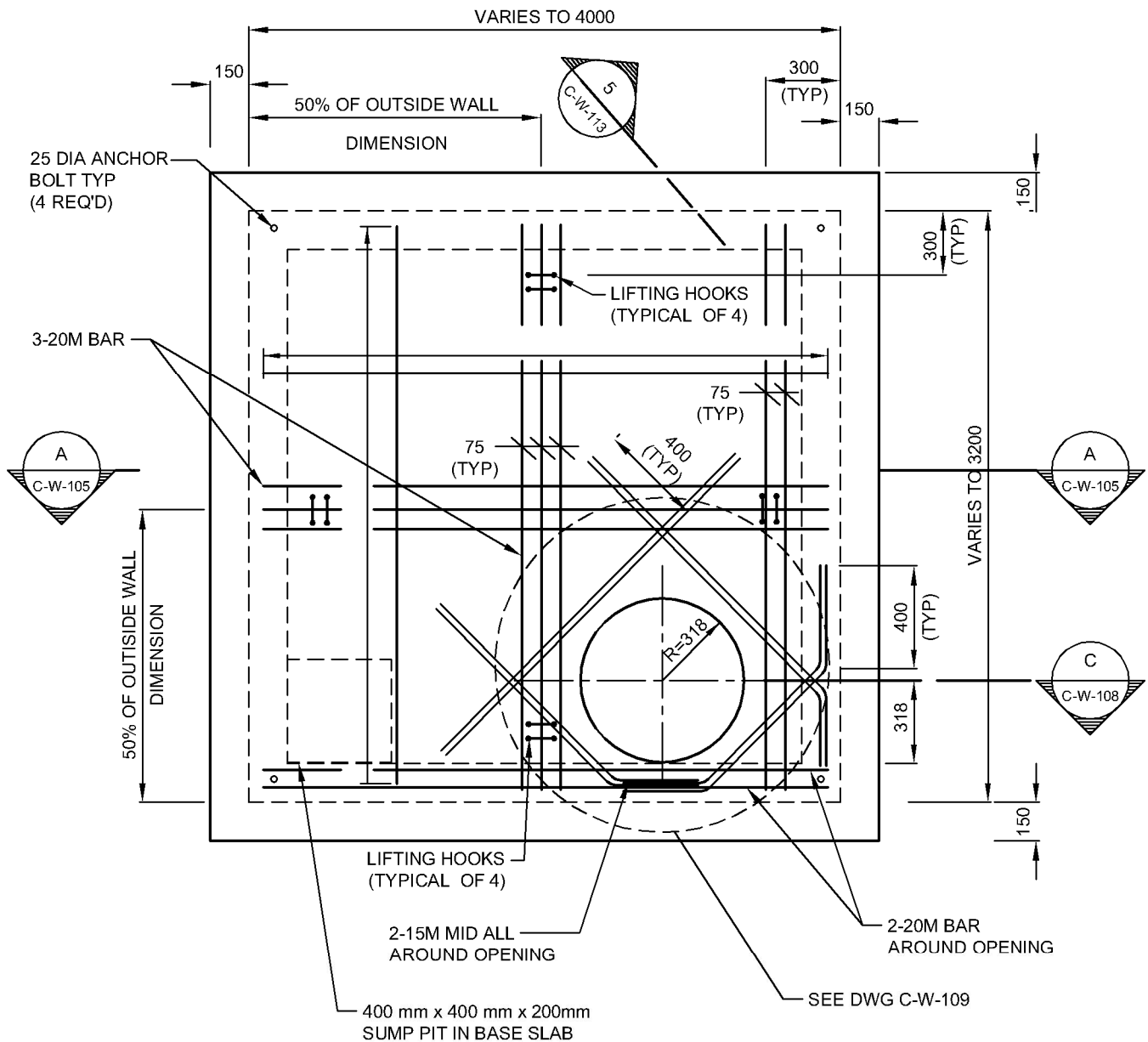
WATER MANHOLE - SLAB REINFORCEMENT

WATER

REVISION No.
1

DWG.No.

C-W-106



NOTE:
FOR ADDITIONAL REINFORCING SEE SCHEDULE

ALL UNITS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE



1:25

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

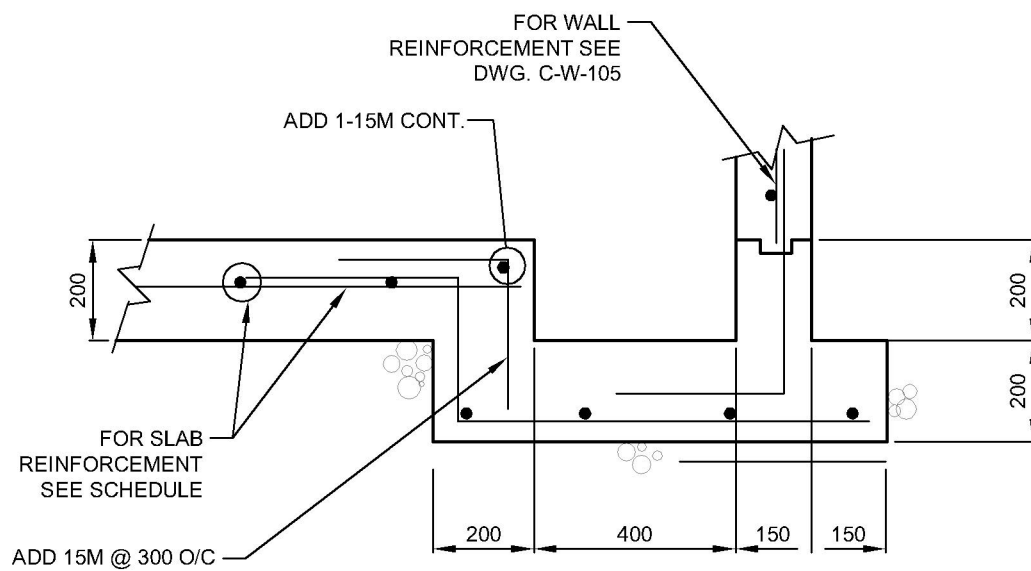
WATER MANHOLE - ROOF SLAB PLAN

WATER

REVISION No.
1

DWG.No.

C-W-107



SECTION **C**

C-W-107



1:15

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

WATER MANHOLE - SECTION C

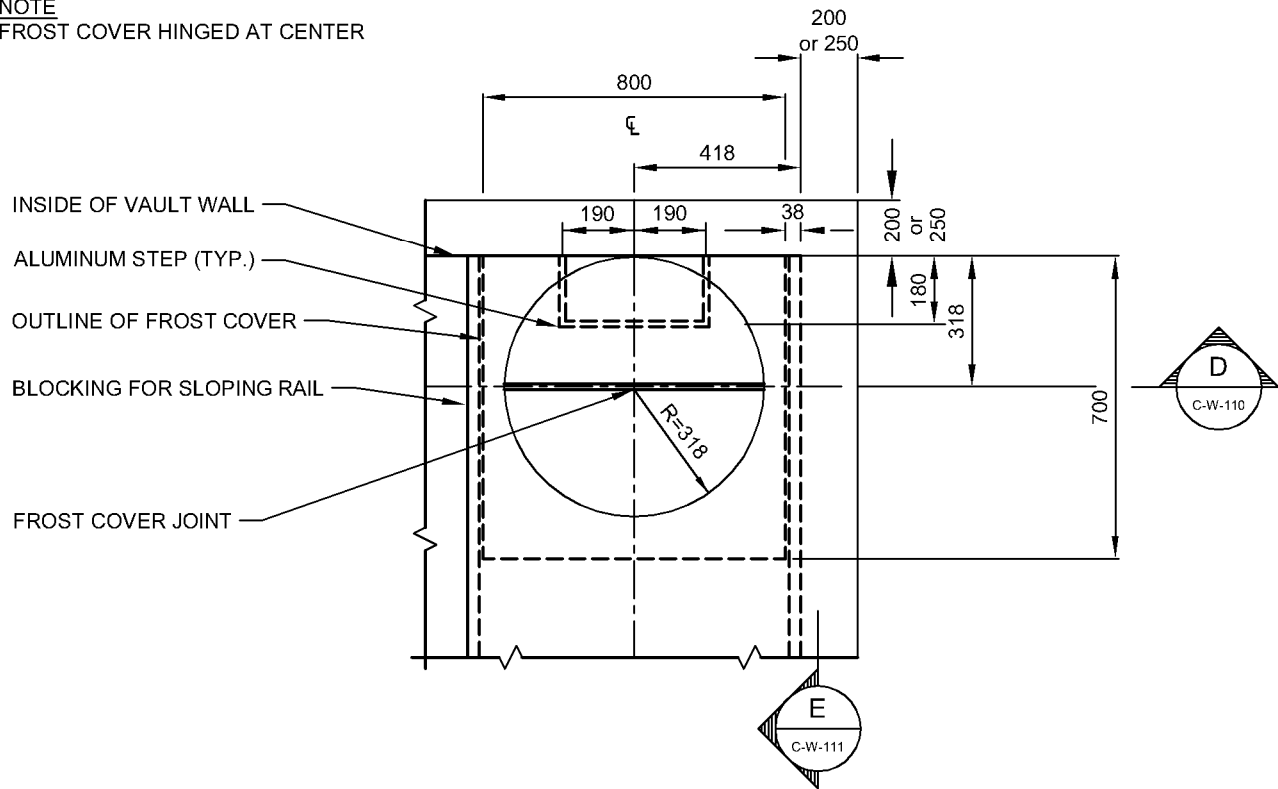
WATER

REVISION No.
1

DWG.No.

C-W-108

NOTE
FROST COVER HINGED AT CENTER



FROST COVER

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE



1:20

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

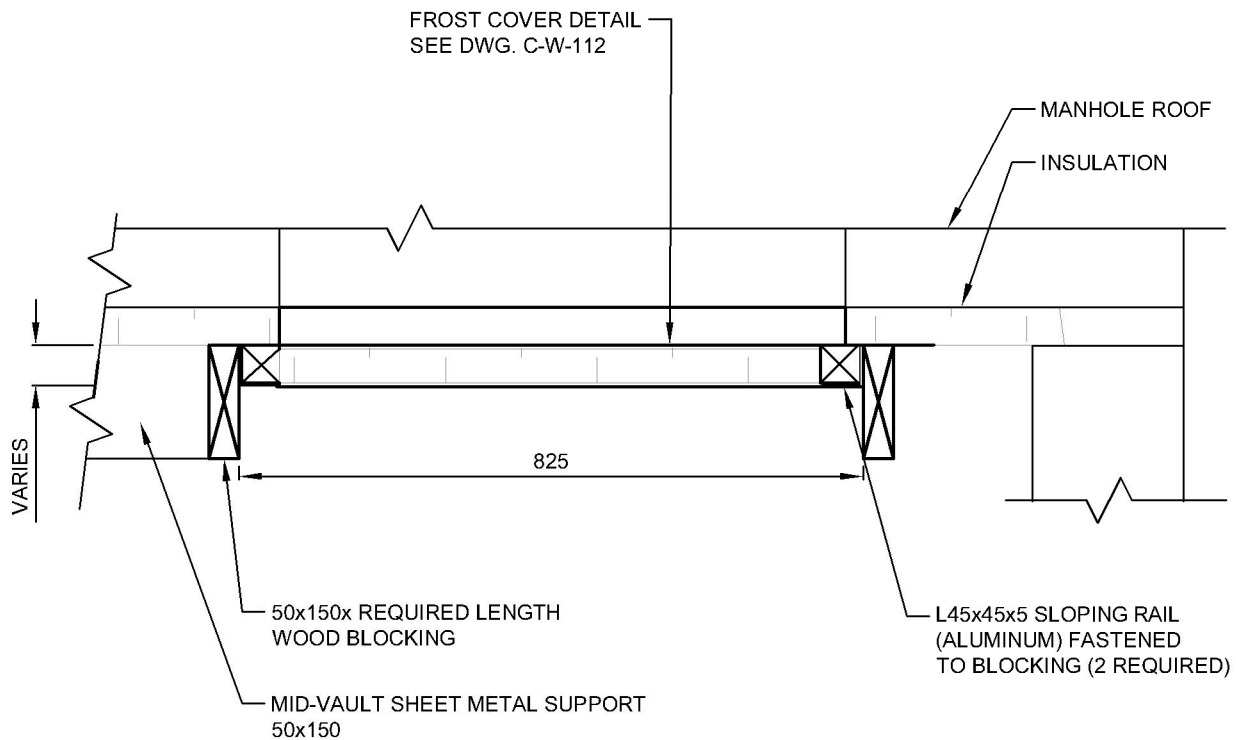
FROST COVER PLAN

WATER

REVISION No.
1

DWG.No.

C-W-109



SECTION

D

C-W-109



1:10

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

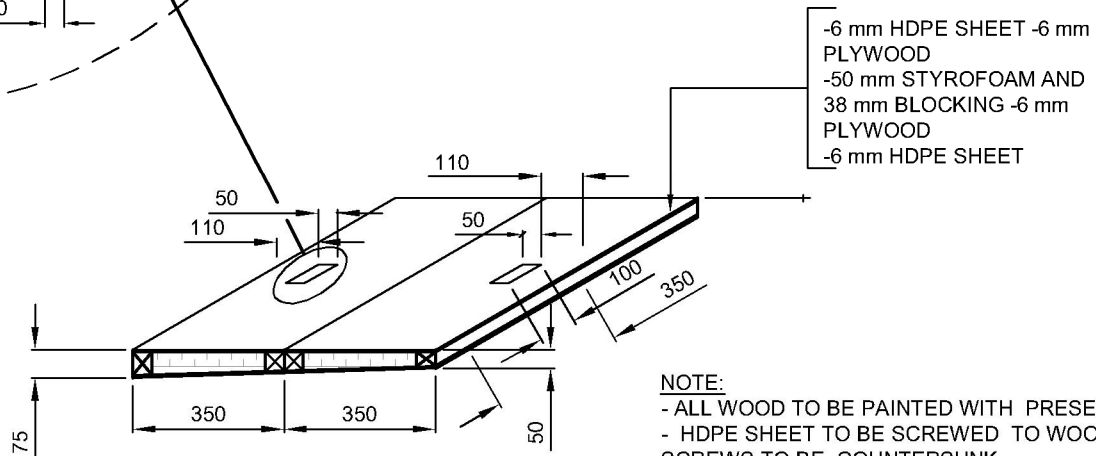
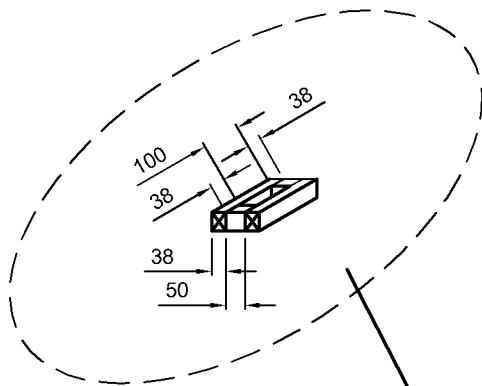
FROST COVER - SECTION D

WATER

REVISION No.
1

DWG.No.

C-W-110



NOTE
PLYWOOD AND HDPE SHEET TO BE CUT OUT FOR OPENING ON TOP ONLY, BOTTOM LAYERS TO REMAIN INTACT

NOTE:
- ALL WOOD TO BE PAINTED WITH PRESERVATIVE
- HDPE SHEET TO BE SCREWED TO WOOD, ALL SCREWS TO BE COUNTERSUNK
- WOOD STOP TO BE FASTENED TO END OF SLOPING RAIL AFTER FROST COVER INSTALLATION

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE



1:20

DATE DRAWN: 01/01/20	REVISION DATE: 06/04/2022
-------------------------	------------------------------

APPROVED BY:
D.MCMILLAN

TITLE:

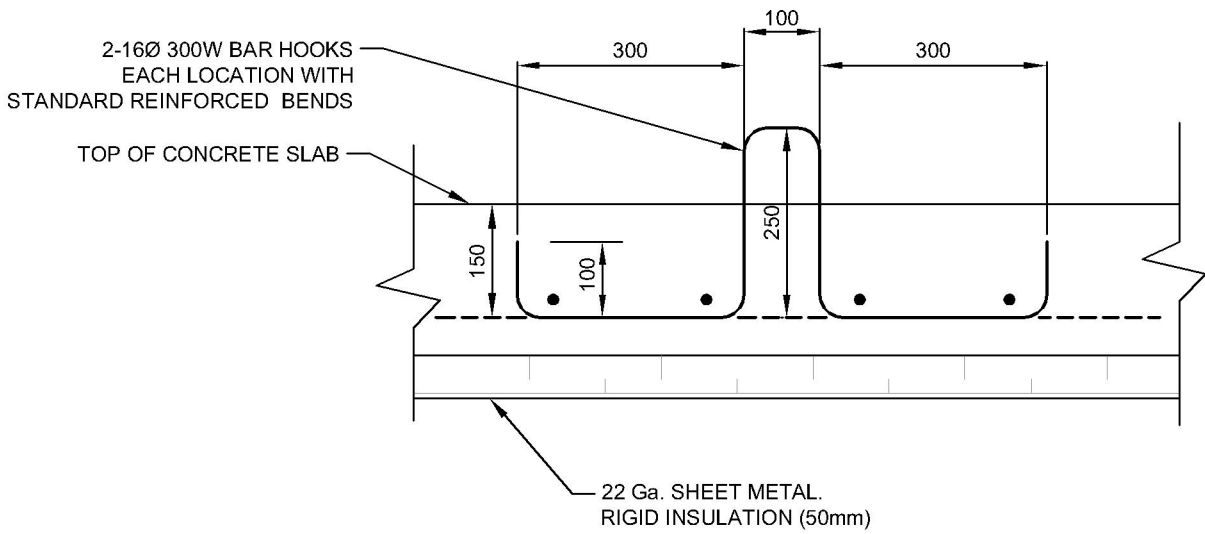
FROST COVER DETAIL

WATER

REVISION No.
1

DWG.No.

C-W-111



1:10

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

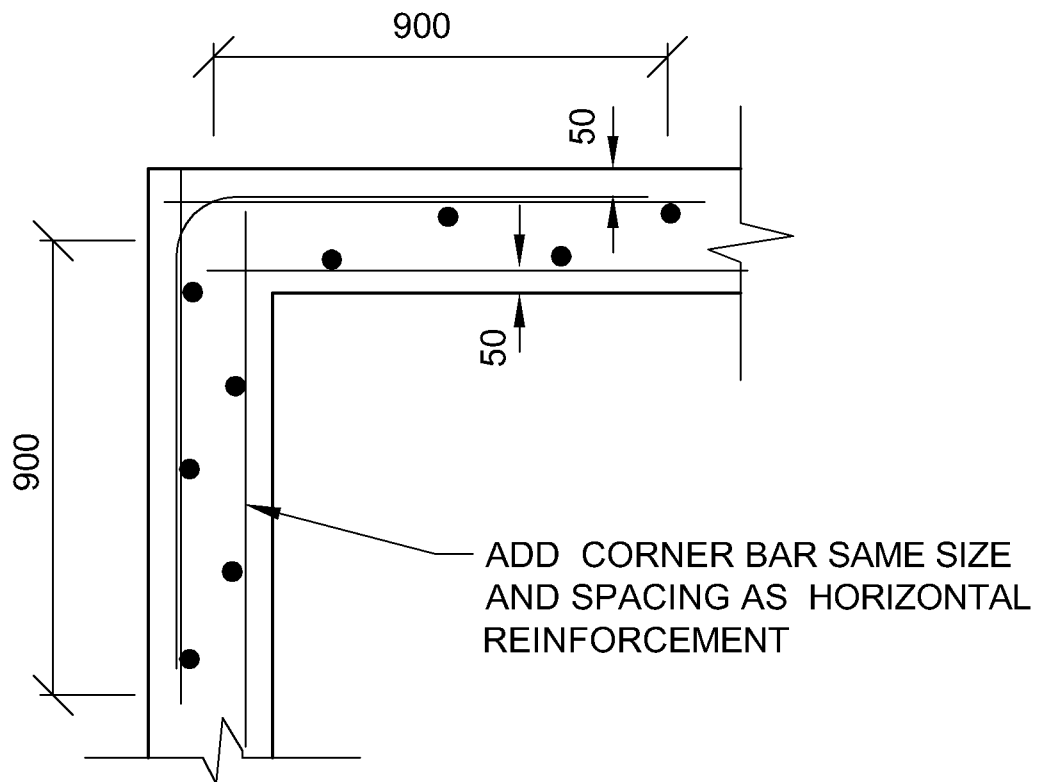
WATER MANHOLE - LIFTING HOOKS

WATER

REVISION No.
1

DWG.No.

C-W-112



AS SHOWN

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

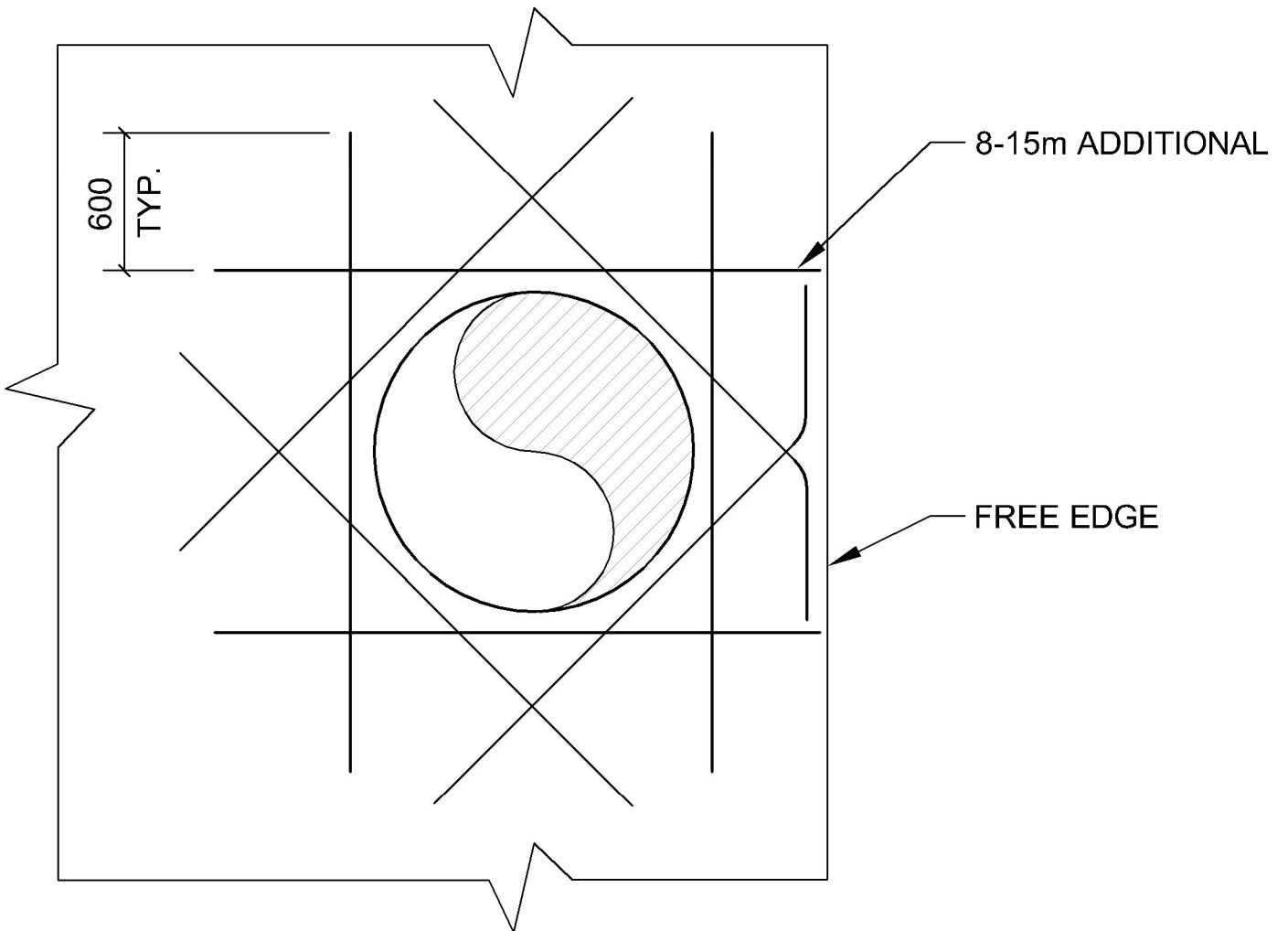
WATER MANHOLE - TYPICAL 200mm CORNER BAR
ENFORCEMENT

WATER

REVISION No.
1

DWG.No.

C-W-113



1:30

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

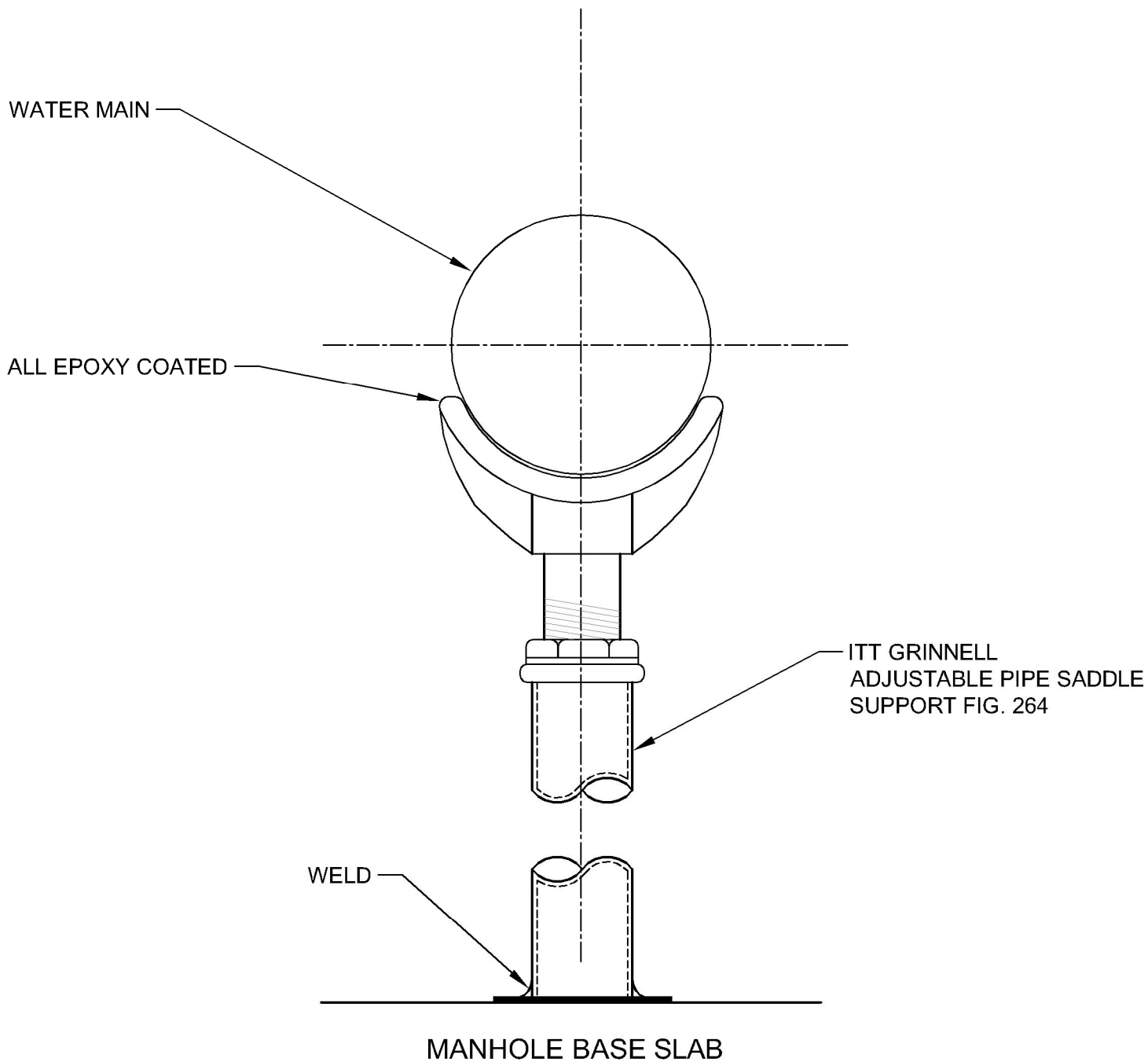
WATER MANHOLE - TYPICAL REINFORCEMENT
AROUND WALL OPENINGS

WATER

REVISION No.
1

DWG.No.

C-W-114



1:150

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

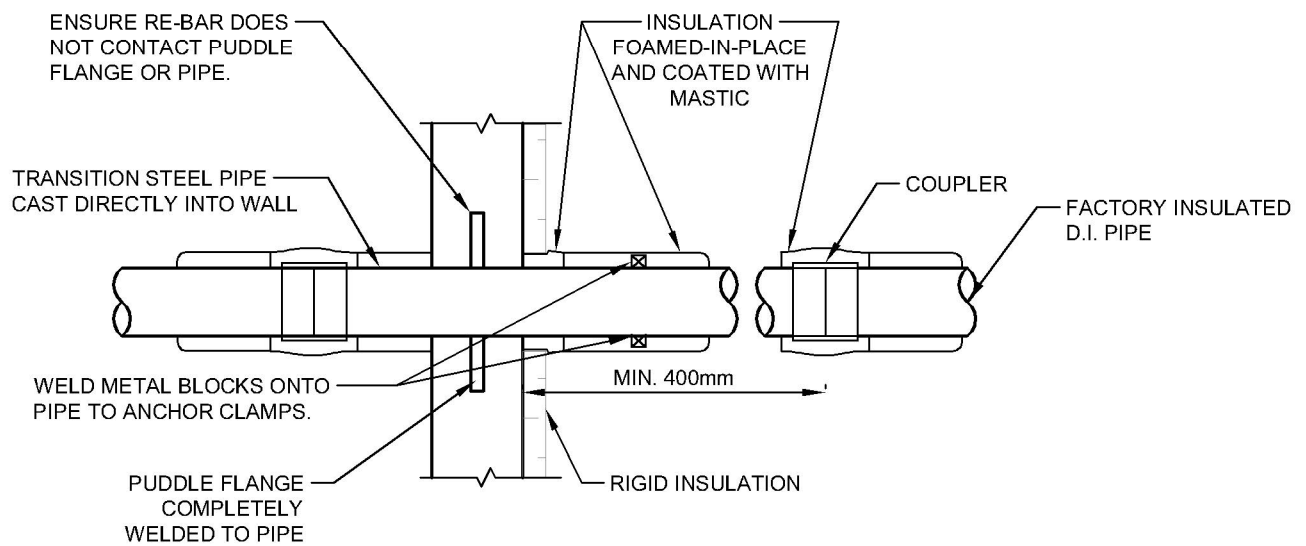
WATER MANHOLE - PIPE SUPPORT

WATER

REVISION No.
1

DWG.No.

C-W-115



1:10

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

WATER MANHOLE - TYPICAL PIPE THOROUGH WALL

WATER

REVISION No.
1

DWG.No.

C-W-116

LIST OF COMPONENTS

(APPLIES TO ALL VALVE CHAMBERS)

- (A) — D.I. CLASS 52 (INSULATED) SIZE AS NOTED.
- (B) — ROBAR COUPLING OR BELL / SPIGOT JOINT.
- (C) — D.I. CLASS 52 (INSULATED) 1000mm LONG.
- (D) — DRAIN TAPPING (20 mm WELDOLET, BRASS NIPPLE AND GATE VALVE)
LOCATED MINIMUM 100 mm FROM INSIDE VAULT WALL
- (E) — ROBAR COUPLING (D.I. TO STEEL).
- (F) — TRANSITION STEEL, LENGTH AND SIZE TO SUIT, C/W PUDDLE FLANGE
MINIMUM LENGTH FROM OUTSIDE OF VAULT - 400 mm
- (G) — FLANGED, RESILIENT SEAT GATE VALVE, "NON-RISING STEM", SIZE AS NOTED
- (H) — FLANGED D.I. TEE.
- (J) — VIC-FLANGE ADAPTORS, STYLE 741.
- (K) — STANDARD VICTAULIC COUPLING, STYLE 77.
- (L) — 90° VICTAULIC ELBOWS, NO. 10.
- (N) — VICTAULIC CROSS
- (O) — VICTAULIC REDUCING TEE, NO. 25.
- (P) — VICTAULIC TEE, NO. 20.
- (R) — VICTAULIC CONCENTRIC REDUCER, NO. 50.
- (S) — VICTAULIC GROOVED NIPPLE, NO. 43 OR AS REQUIRED.
- (T) — D.I. REDUCER
- (U) — D.I. FLANGED CROSS
- (V) — VENT TAPPING (20mm WELDOLET, BRASS NIPPLE AND GATE VALVE) (SEE NOTES)
- (W) — FLANGED D.I. HYDRANT TEE (MAIN SIZE x 150mmØ), HYD. RISER AND HYD.
- (Y) — 12mm THICK METAL BLOCKS WELDED TO F, FOUR PER TRANSITION STEEL
- (Z) — VICTAULIC CAP

NOTES:

1. INSTALL BOTH DRAIN "D" AND VENT "V" TAPPING ON EACH TRANSITION STEEL "F"
2. LOCATION OF MANHOLE TO BE DETERMINED BY ENGINEER (APPLIES TO ALL VAULTS)
3. IF CONTRACTOR USING HYDRANTS FROM STOCK, "W" MUST BE MAIN SIZE X 200 mm Ø.
4. ALL COMPONENTS TO BE EPOXY COATED BY MANUFACTURER. FIELD APPLICATIONS OF EPOXY COATINGS WILL NOT BE ACCEPTED. BURN MARKS FROM WELDING WILL RESULT IN IMMEDIATE REFUSAL FOR ACCEPTANCE.



N.T.S.

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

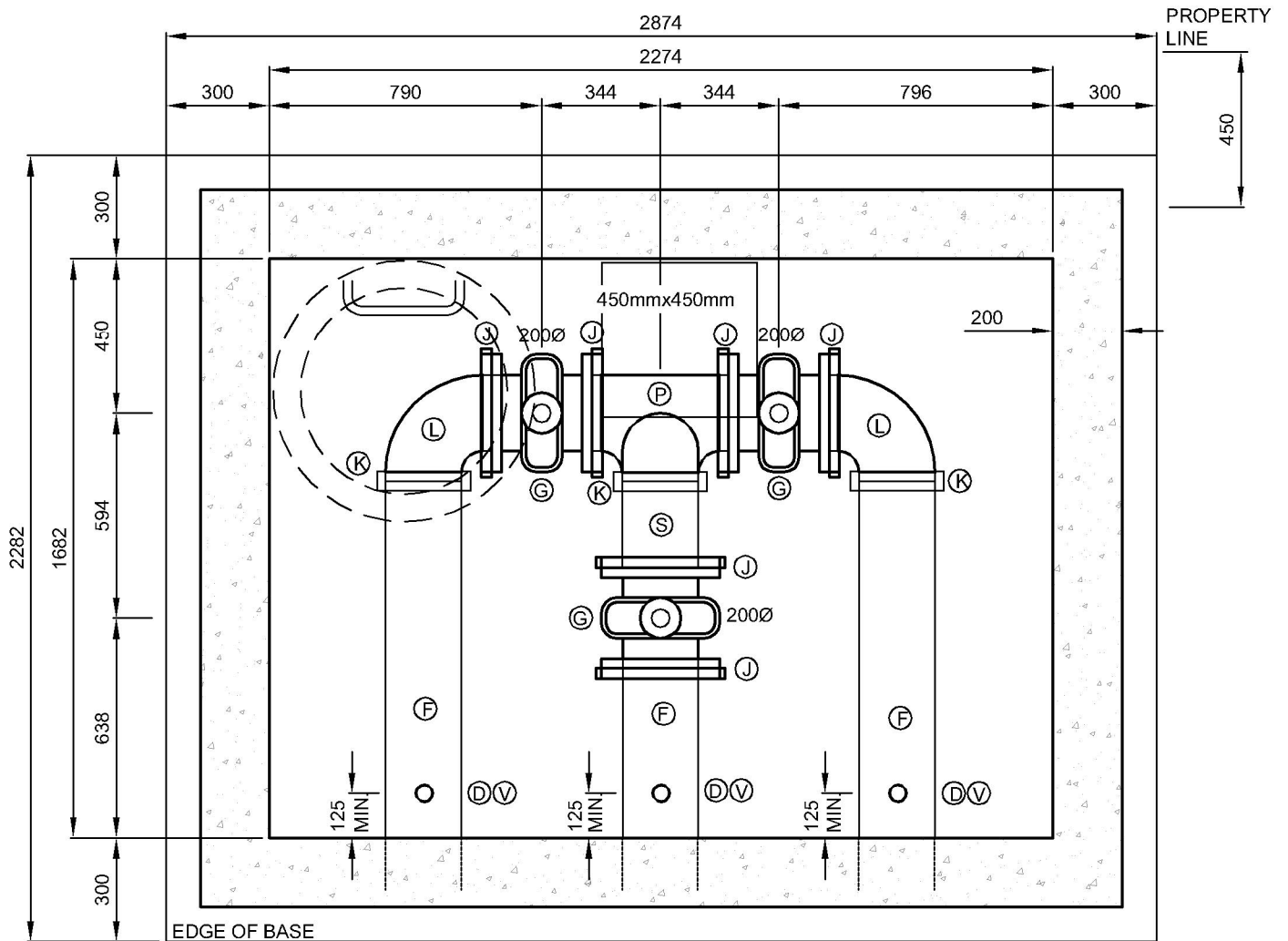
LIST OF COMPONENTS

WATER

REVISION No.
1

DWG.No.

C-W-117



1:20

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

WATER VAULT - 200mm Ø MAIN (AV1)

WATER

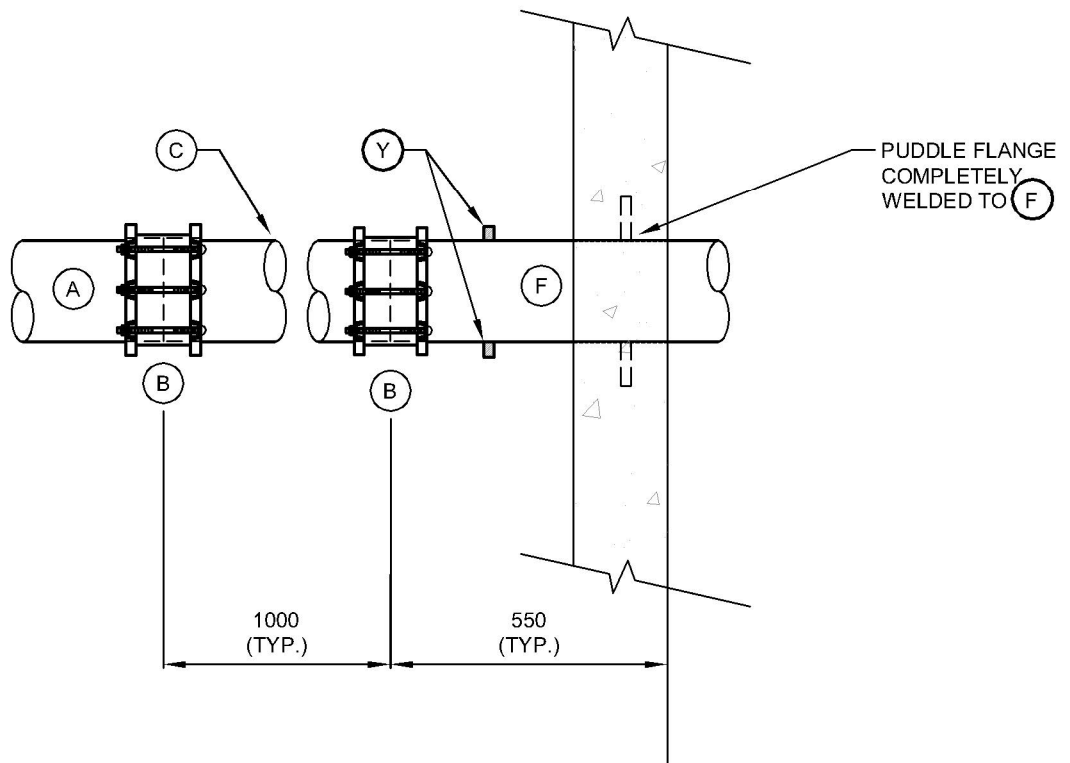
REVISION No.
1

DWG.No.

C-W-118



C-W-120



COMPONENTS - REFER TO LIST OF COMPONENTS



1:15

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

DETAIL CONNECTION TO MH. WALL

WATER

REVISION No.
1

DWG.No.

C-W-122

CLAMPING TABLE - 300 mm DIA AND SMALLER

FITTING TYPE	MINIMUM CLAMPED LENGTH (metres)	JOINTS NORMALLY CLAMPED *
TEE - RUN	24	4
TEE - BRANCH	24	4
DEAD END	24	4
90 ° BEND	24	4
45 ° BEND	12	2
22 1/2 ° BEND	6	1
11 1/4 ° BEND	6	1
REDUCER	ENGINEER TO DEFINE	---

*PARTIAL LENGTH ON EACH SIDE OF FITTING

NOMINAL PIPE SIZE	TIE ROD DIAMETER
100 mm	16 mm
150 mm	19 mm
200 mm	19 mm
250 mm	22 mm
300 mm	22 mm

NOTES:

1. PROTECT CLAMPS WITH FACTORY APPLIED TWO PART EPOXY COATING TO AWWA C210-84
2. USE UNI-FLANGE 1390-C, OR APPROVED ALTERNATIVE.
3. CLAMP EACH INDIVIDUAL JOINT.
4. INSULATE FITTINGS AND REPAIR INSULATION CUTBACKS AS PER BELL AND SPIGOT JOINTS.
5. TIE RODS, NUTS, BOLTS AND WASHERS TO BE TYPE 304 STAINLESS STEEL.
6. WASHERS MUST BE USED UNDER ALL NUTS TO PREVENT DAMAGE TO EPOXY COATING.
7. TEFLON WASHERS, OR EQUIVALENT, ARE TO BE INSTALLED BETWEEN ALL WASHERS AND CLAMPS.



N.T.S.

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

UNDERGROUND PIPE CLAMPS DETAIL

WATER

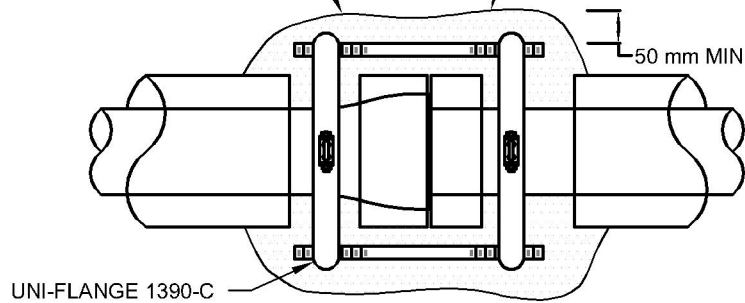
REVISION No.
1

DWG.No.

C-W-123

FACTORY INSULATION CUT BACK FOR ATTACHING CLAMPS. COAT EXPOSED INSULATION WITH WATER PROOFING SEALANT

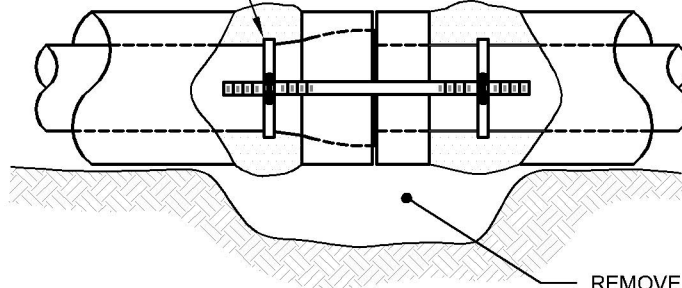
FIELD APPLIED FOAM INSULATION TO COVER ALL CLAMPS, TIE RODS, NUTS AND BOLTS TO MINIMUM 50 mm THICKNESS. TRIM EXCESS INSULATION TO SMOOTH CONTOUR AROUND JOINT PRIOR TO APPLICATION OF WATER PROOFING SEALANT



INSULATED PIPE CLAMPING - TOP

UNI-FLANGE 1390-C

TRIM EXCESS FIELD APPLIED INSULATION TO SMOOTH CONTOUR AROUND JOINT



REMOVE PIPE BEDDING TO SUFFICIENT DEPTH TO ALLOW APPLICATION OF FOAM INSULATION AND WATER PROOFING SEALANT
REPLACE AND HAND TAMP BEDDING MATERIAL

INSULATED PIPE CLAMPING - SIDE



1:15

DATE DRAWN:
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D.MCMILLAN

TITLE:

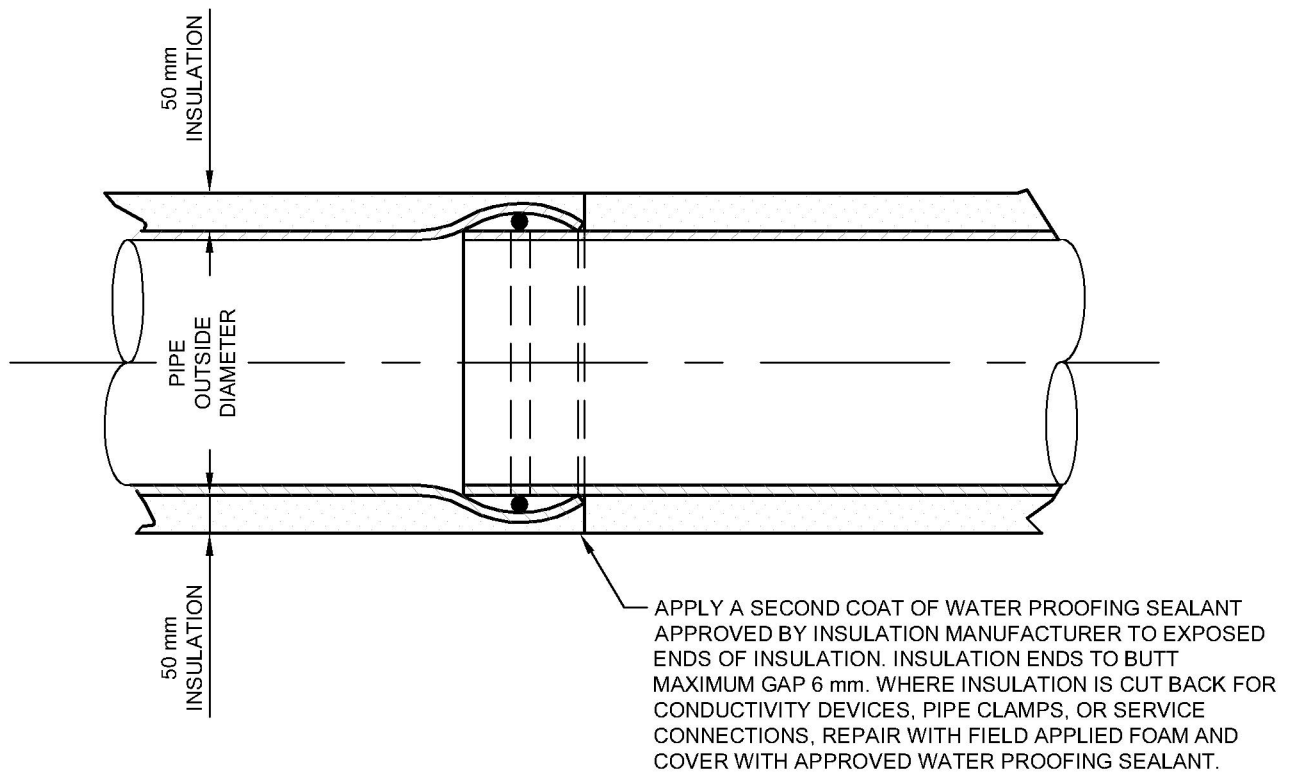
INSULATED PIPE CLAMPING (TOP AND SIDE)

WATER

REVISION No.
1

DWG.No.

C-W-124



1:10

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

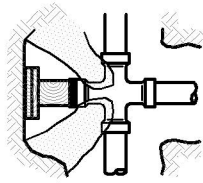
INSULATED WATERMAINS - BELL AND
SPIGOT JOINT

WATER

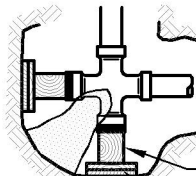
REVISION No.
1

DWG.No.

C-W-125

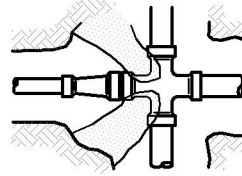


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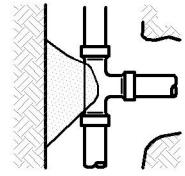


②

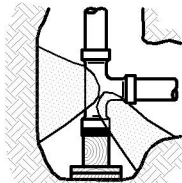
100mm x 100mm
WOOD BLOCK (TYP.)
2-50mm x 200mm x 250mm
WOOD THRUST BLOCKING
(TYP.)



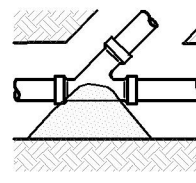
③



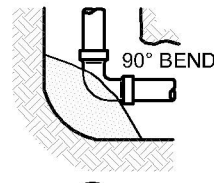
④



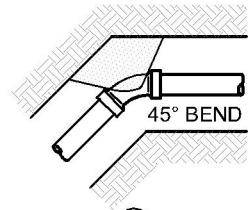
⑤



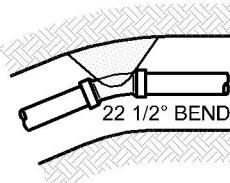
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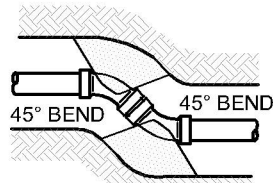
⑦



⑧



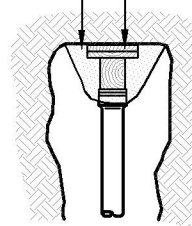
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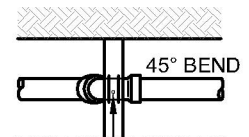
⑩

IF DEAD END FINAL
USE CONCRETE
THRUST BLOCKING.

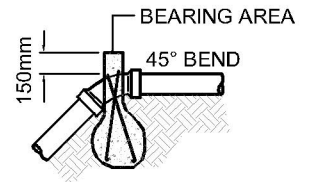
FOR FUTURE EXTENSION
USE WOOD THRUST
BLOCKING.



⑪



#15 REBAR (TYP.)



⑫

REACTION BLOCKING

REACTION BLOCKING - BEARING AREA													
AREA IN m ²							AREA IN m ²						
TYPE	PIPE SIZE (mm)						TYPE	PIPE SIZE (mm)					
	100	150	200	250	300	400		100	150	200	250	300	400
1/4/12	0.20	0.40	0.65	1.10	1.45	2.60	9	0.10	0.15	0.30	0.45	0.60	1.10
2/5/7	0.30	0.55	0.90	1.45	2.10	3.70	10	0.30	0.60	1.00	1.20	2.20	4.20
3	0.10	0.15	0.20	0.35	0.50	0.85							
6/8/11	0.15	0.30	0.60	0.60	1.20	2.00							

NOTES:

- THRUST BLOCK AREAS BASED ON 75 kPa HORIZONTAL LOADING
- CONCRETE TO BE 15 MPa AT 28 DAYS
- ALL BLOCKING TO BE AGAINST UNDISTURBED GROUND
- WOOD BLOCKING TO BE AGAINST UNDISTURBED GROUND
- 2 LAYERS OF 6 mil (0.15mm) POLYETHYLENE TO BE PLACED BETWEEN PIPE AND CONCRETE
- INSULATED PIPE/FITTING: REMOVE INSULATION WHERE CONCRETE THRUST BLOCKING BEARS AGAINST PIPE. REMAINING EXPOSED PIPE NOT IN CONTACT WITH THRUST BLOCK TO BE RE-INSULATED AND SEALED



N.T.S.

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

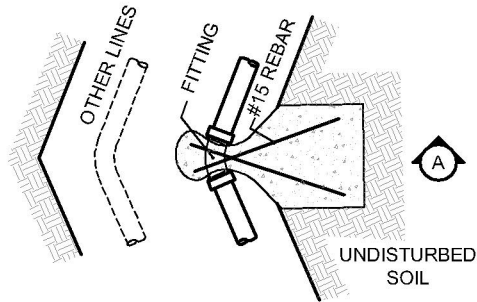
REACTION BLOCKING A

WATER

REVISION No.
1

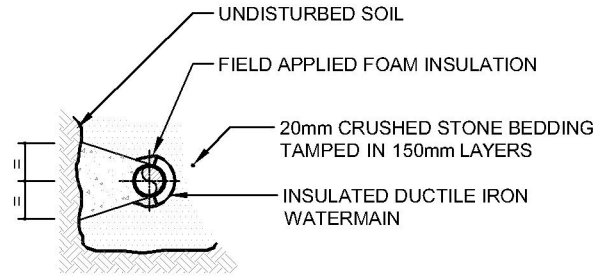
DWG.No.

C-W-126



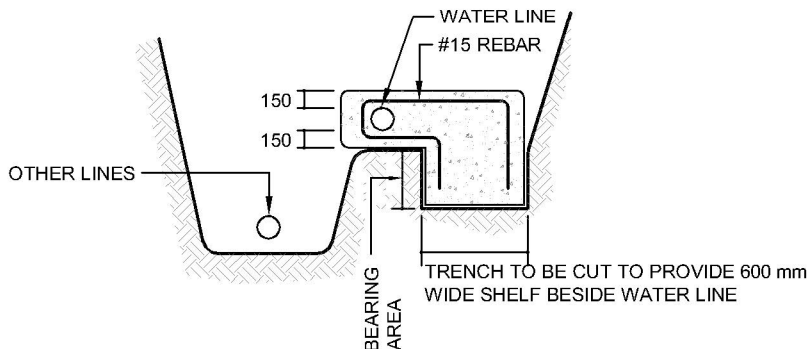
DEADMAN THRUST BLOCK

HEIGHT SUFFICIENT TO
PROVIDE REQUIRED AREA
(SEE REACTION BLOCKING)

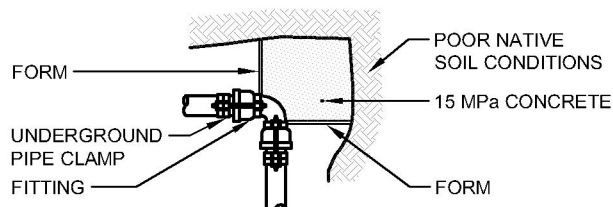


**TYPICAL REACTION BLOCK
SIDE VIEW**

ALTERNATIVE:
CROSSING OTHER LINE TO OPPOSITE
TRENCH WALL IF DIRECTED BY ENGINEER



SECTION A



NOTES:

1. TO BE USED ONLY IN POOR NATIVE SOIL CONDITIONS, WHERE DIRECTED BY THE ENGINEER.
2. ENSURE THAT FITTING IS ACCESSIBLE, i.e. NOT COVERED BY CONCRETE
3. VOLUME OF REACTION BLOCK:
 - 3.1.1. 150mmØ - 1.4 CUBIC METERS
 - 3.1.2. 200mmØ - 1.4 CUBIC METERS
 - 3.1.3. 250mmØ - 2.2 CUBIC METERS

ALTERNATE REACTION BLOCKING



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DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

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YK ENG.

TITLE:

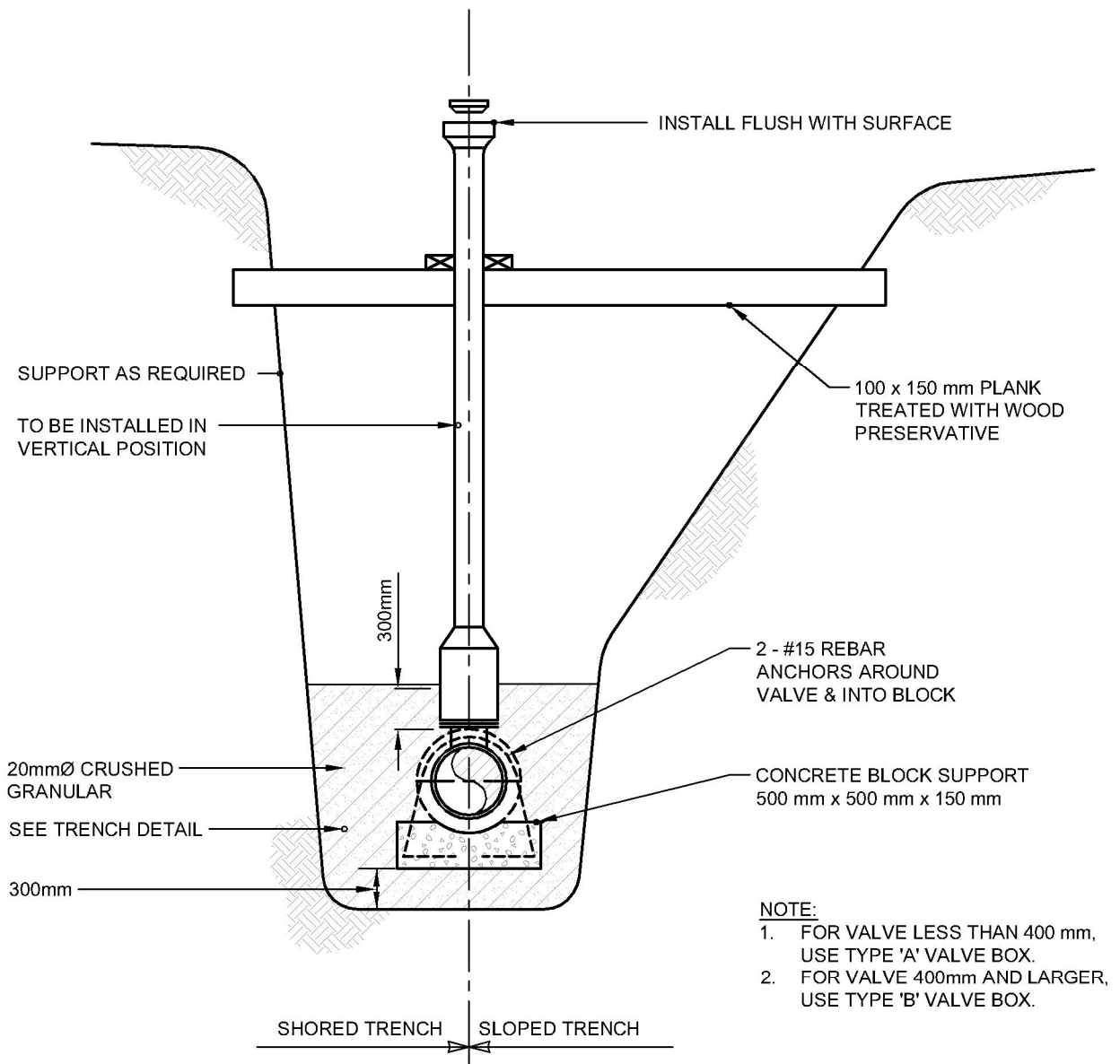
REACTION BLOCKING B

WATER

REVISION No.
1

DWG.No.

C-W-127



1:50

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:

TITLE:

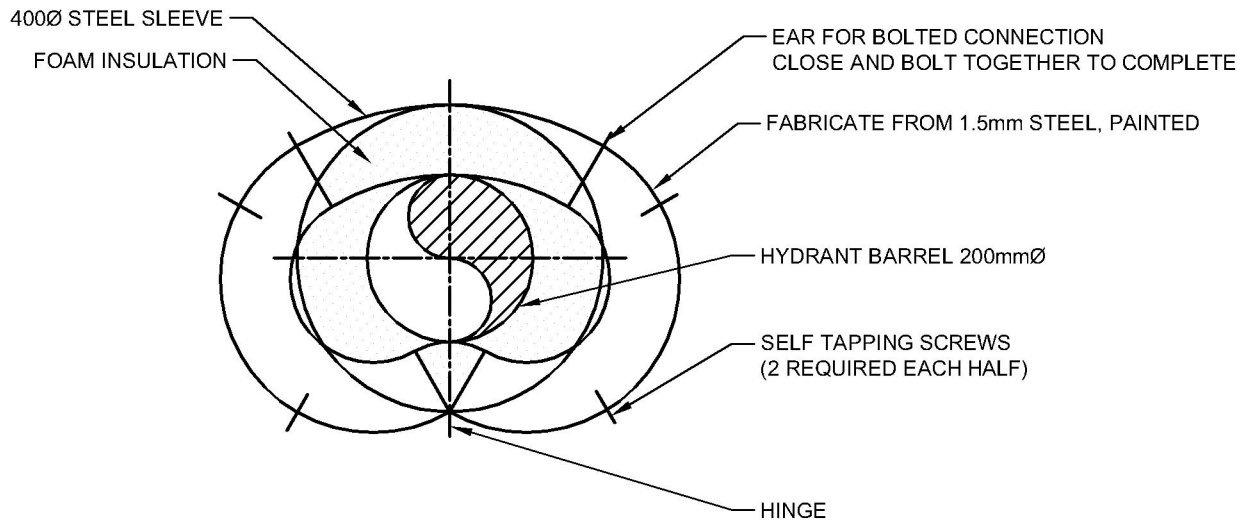
TYPICAL SINGLE VALVE INSTALLATION

WATER

REVISION No.
1

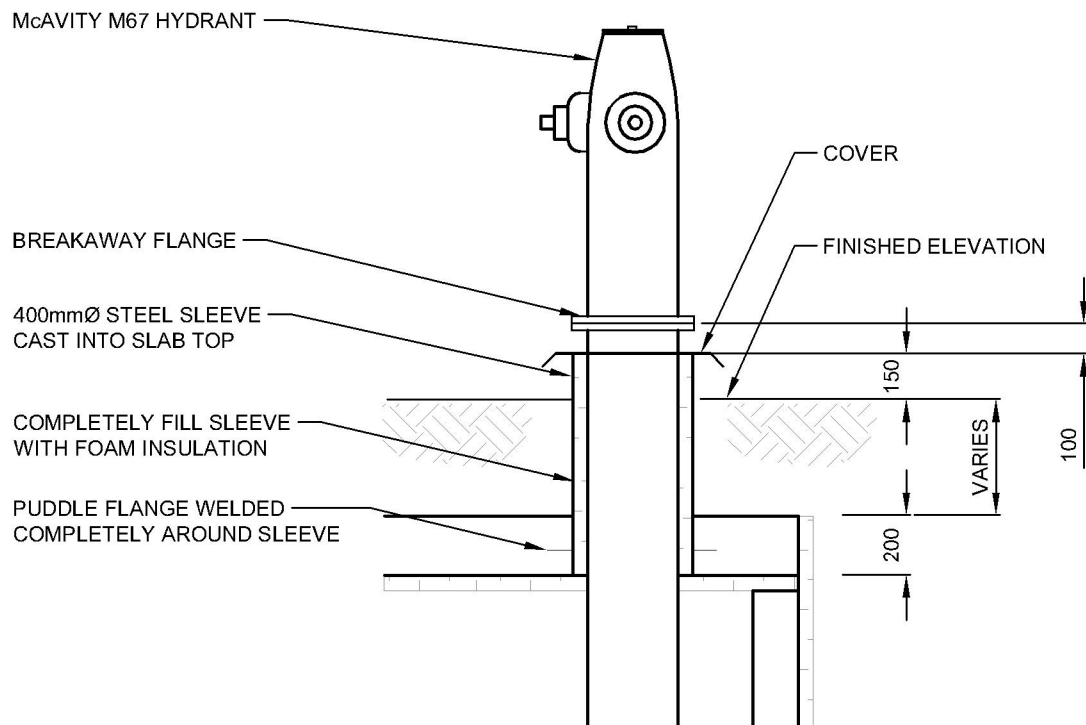
DWG.No.

C-W-128



COVER DETAIL

NTS



HYDRANT THROUGH ROOF DETAIL

ALL DIMENSIONS IN MILLIMETERS
UNLESS NOTED OTHERWISE

SCALE 1:25



AS SHOWN

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

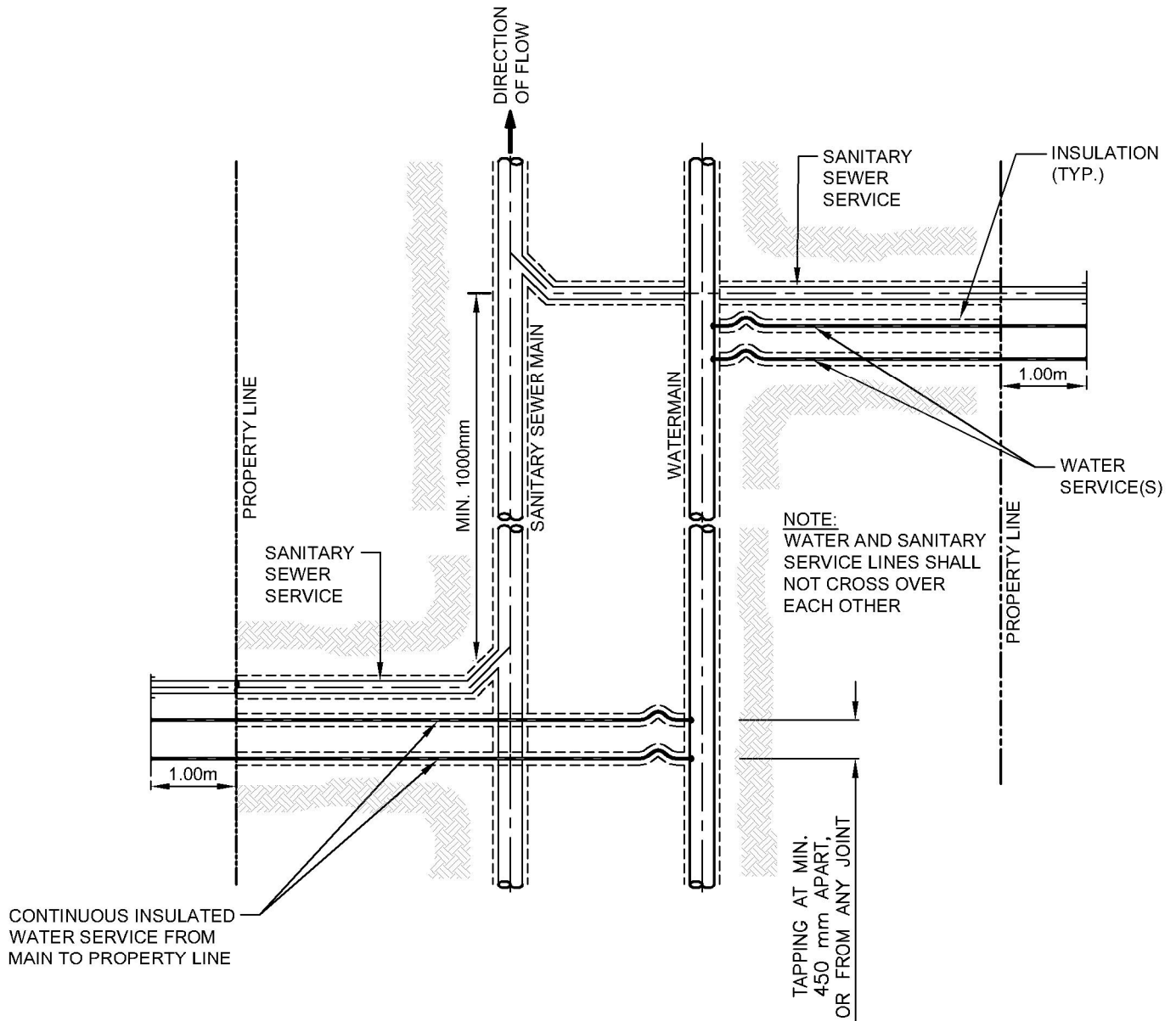
**HYDRANT THROUGH ROOF & CONCRETE
WATER MANHOLE COVER**

WATER

REVISION No.
1

DWG.No.

C-W-129



NOTE:
WATER SERVICE PIPE TO BE ONE CONTINUOUS PIECE FROM WATERMAIN TO 1m PAST PROPERTY LINE. FLARED COPPER TO COPPER CONNECTIONS ARE TO BE USED ONLY WHEN SERVICE LENGTH EXCEEDS LONGEST AVAILABLE PIPE LENGTH DUE TO TRANSPORT RESTRICTIONS.



1:75

DATE DRAWN:
01/01/2020

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

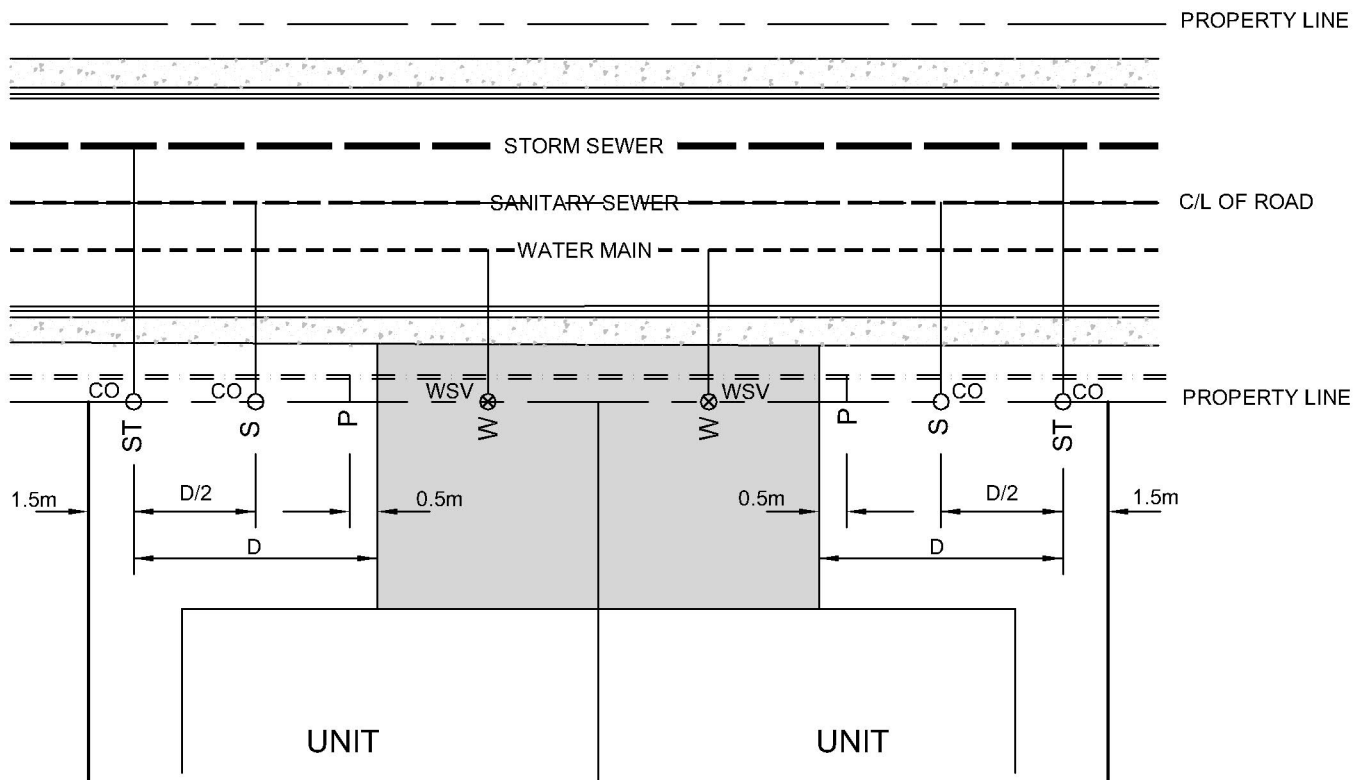
SERVICE PLAN

SERVICE

REVISION No.
1

DWG.No.

C-SE-100



NOTE:
 REFER TO PLAN AND PROFILE SHEETS FOR ACTUAL LAYOUT
 OF STORM SANITARY AND WATER MAIN SERVICES WHICH
 MAY DIFFER FROM THE STANDARD DETAIL SHOWN ABOVE.
 THOSE PLANS SHALL TAKE PRECEDENCE OVER THIS DETAIL.



N.T.S.

DATE DRAWN:
25/03/2021

REVISION DATE:
06/04/2022

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TITLE:

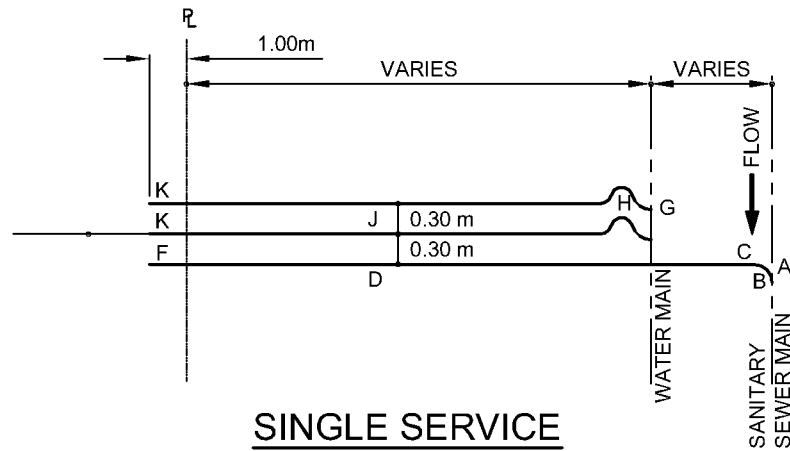
TYPICAL SERVICE AND DRIVEWAY LAYOUT

SERVICE

REVISION No.
1

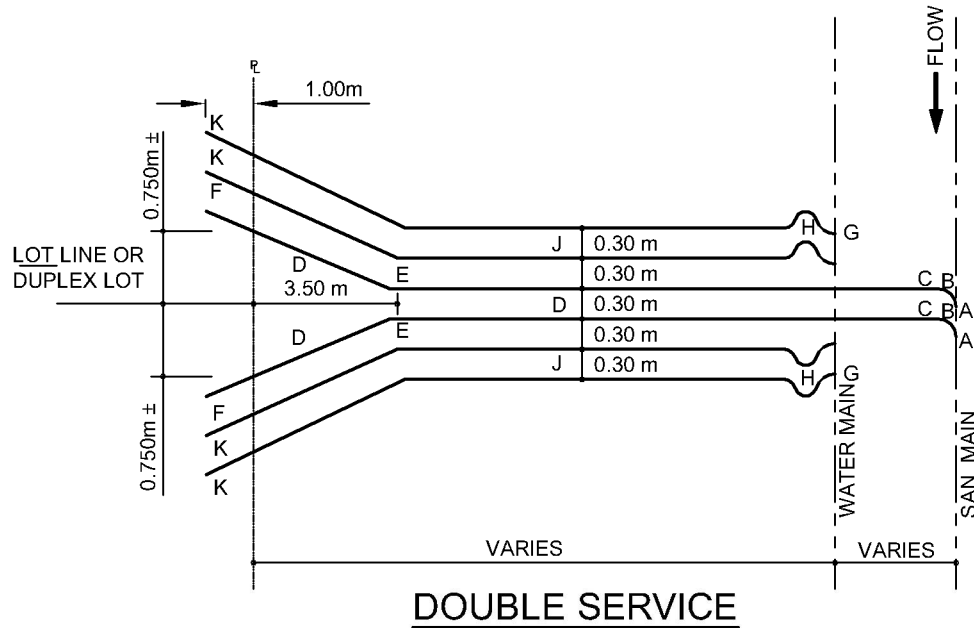
DWG.No.

C-SE-101



NOTES:

1. INSTALL 38 x 89 WOOD POST 2.45m LONG VERTICALLY AT END OF SERVICE.
2. TOP OF POST TO BE 600mm ABOVE GRADE. PAINT ABOVE GRADE RED.



- A - 100 mm SADDLE (D.I.)
 B - STUB PIECE
 C - 45 ° BEND
 D - SANITARY SERVICE
 E - 22 1/2 ° BEND
 F - PLUG OR CAP
 G - 2 - CORPORATION STOPS
 H - 2 - GOOSENECKS, FACTORY INSULATED
 J - 2 - COPPER WATERLINES, FACTORY INSULATED
 K - 2 - GATE VALVES, RED & WHITE

NOTE:

1. NORMAL SERVICES 100 mm DUCTILE IRON SEWER
2. 19 mm COPPER WATER SUPPLY
3. 19 mm COPPER WATER RETURN



1:75

TITLE:

TYPICAL SERVICE CONNECTION TO LOTS

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

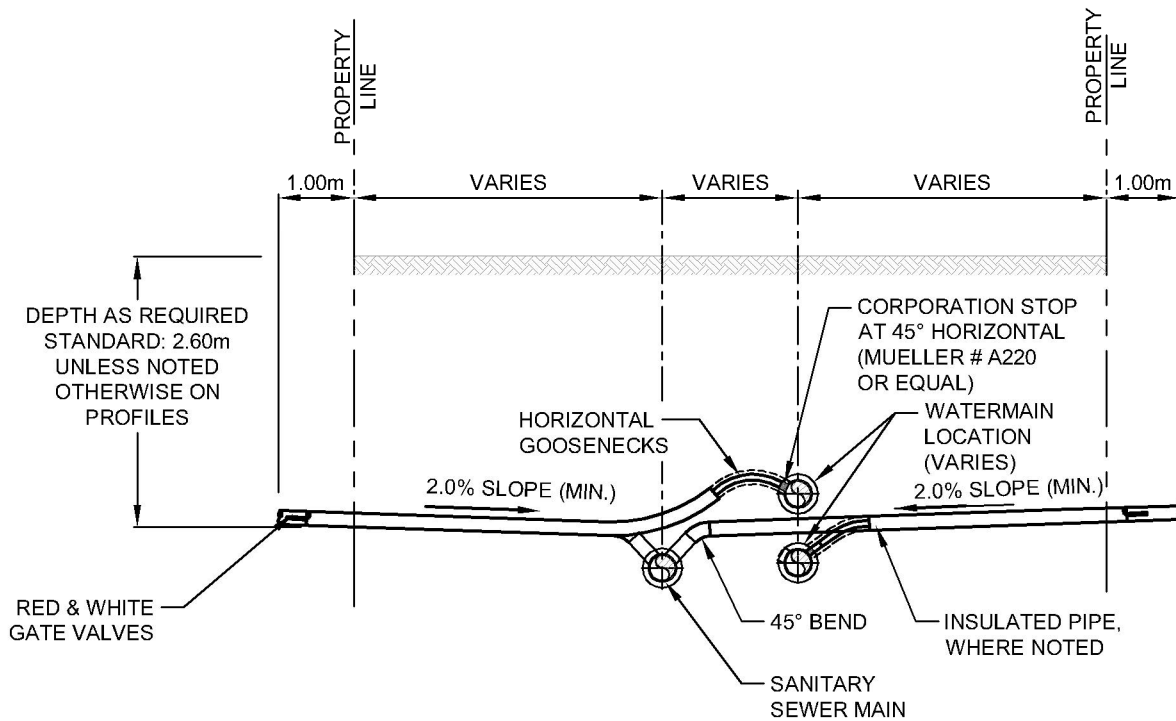
APPROVED BY:
YK ENG.

SERVICE

REVISION No.
1

DWG.No.

C-SE-102A



SECTION



N.T.S.

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
D.MCMILLAN

TITLE:

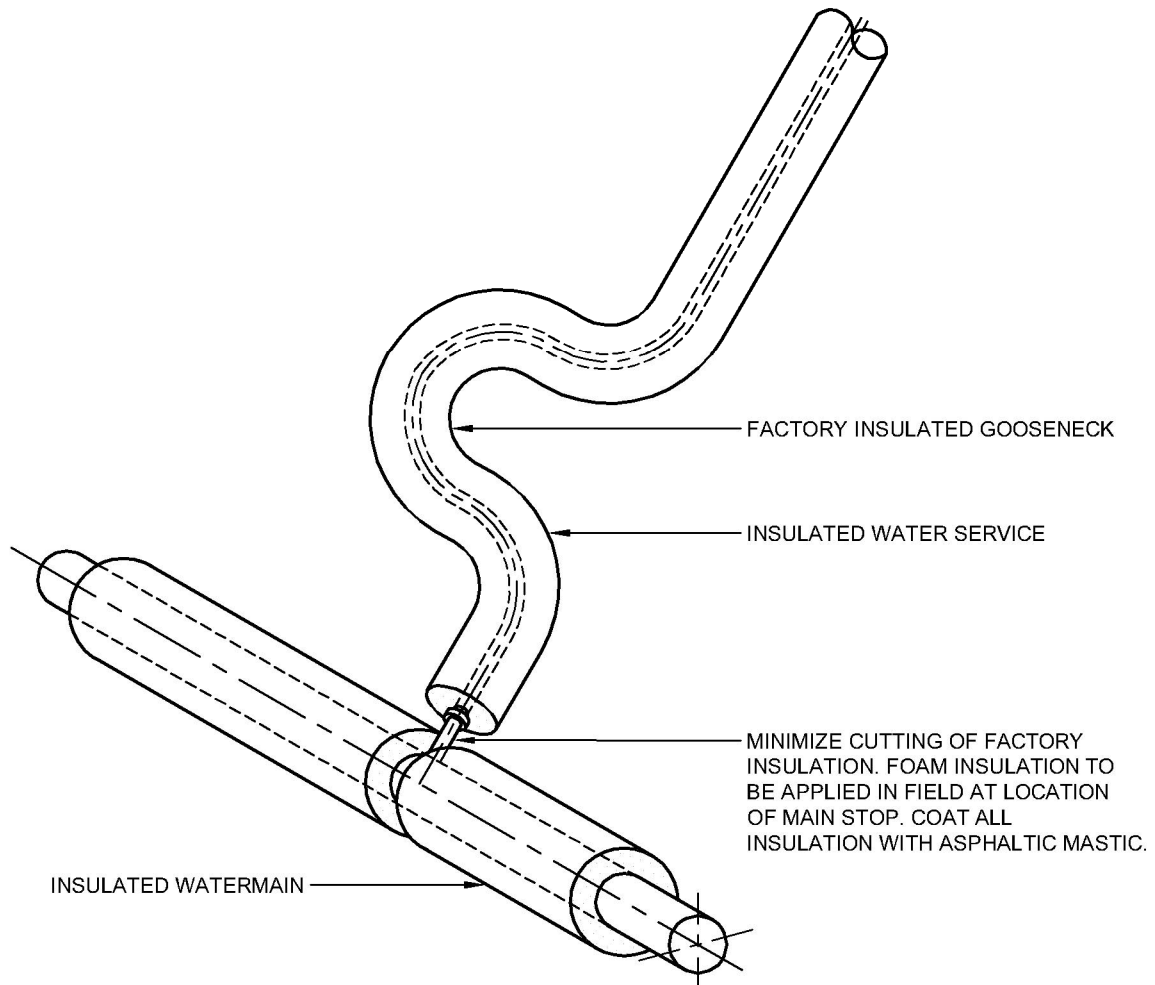
TYPICAL SERVICE CONNECTION TO LOTS

SERVICE

REVISION No.
1

DWG.No.

C-SE-102



N.T.S.

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

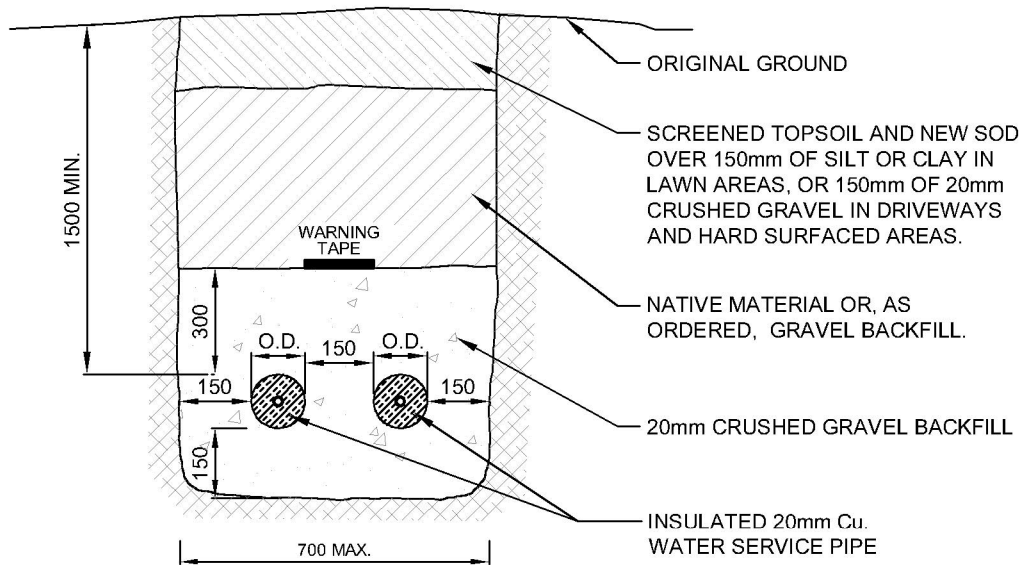
GOOSENECK MAIN STOP INSULATION AT WATERMAIN

SERVICE

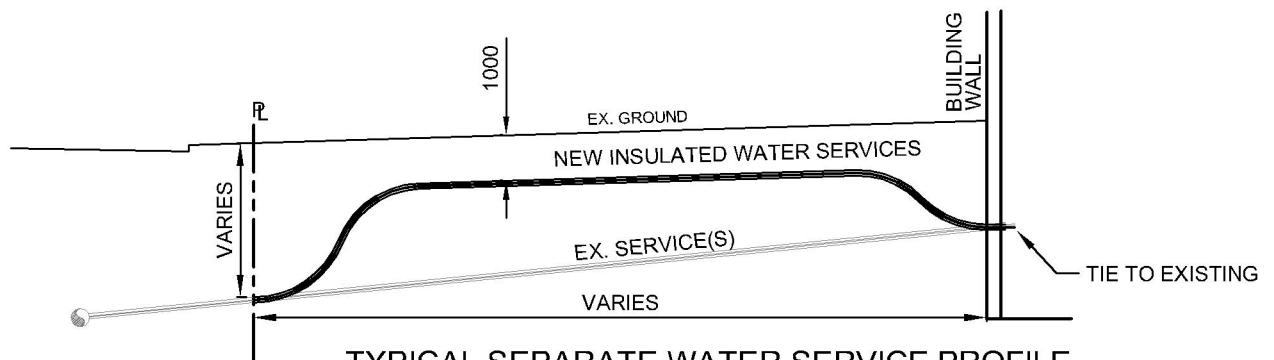
REVISION No.
1

DWG.No.

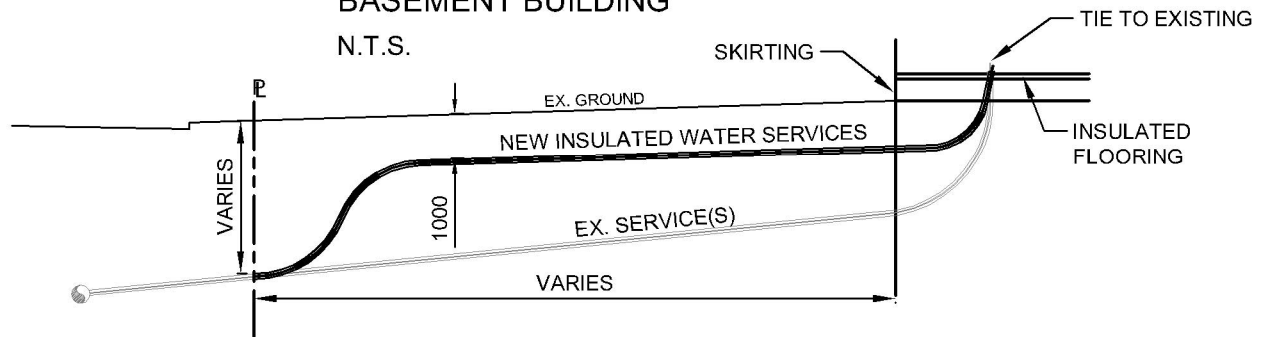
C-SE-103



TYPICAL SEPARATE WATER SERVICE TRENCH



TYPICAL SEPARATE WATER SERVICE PROFILE BASEMENT BUILDING



TYPICAL SEPARATE WATER SERVICE PROFILE ABOVE GRADE BUILDING



N.T.S.

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
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TITLE:

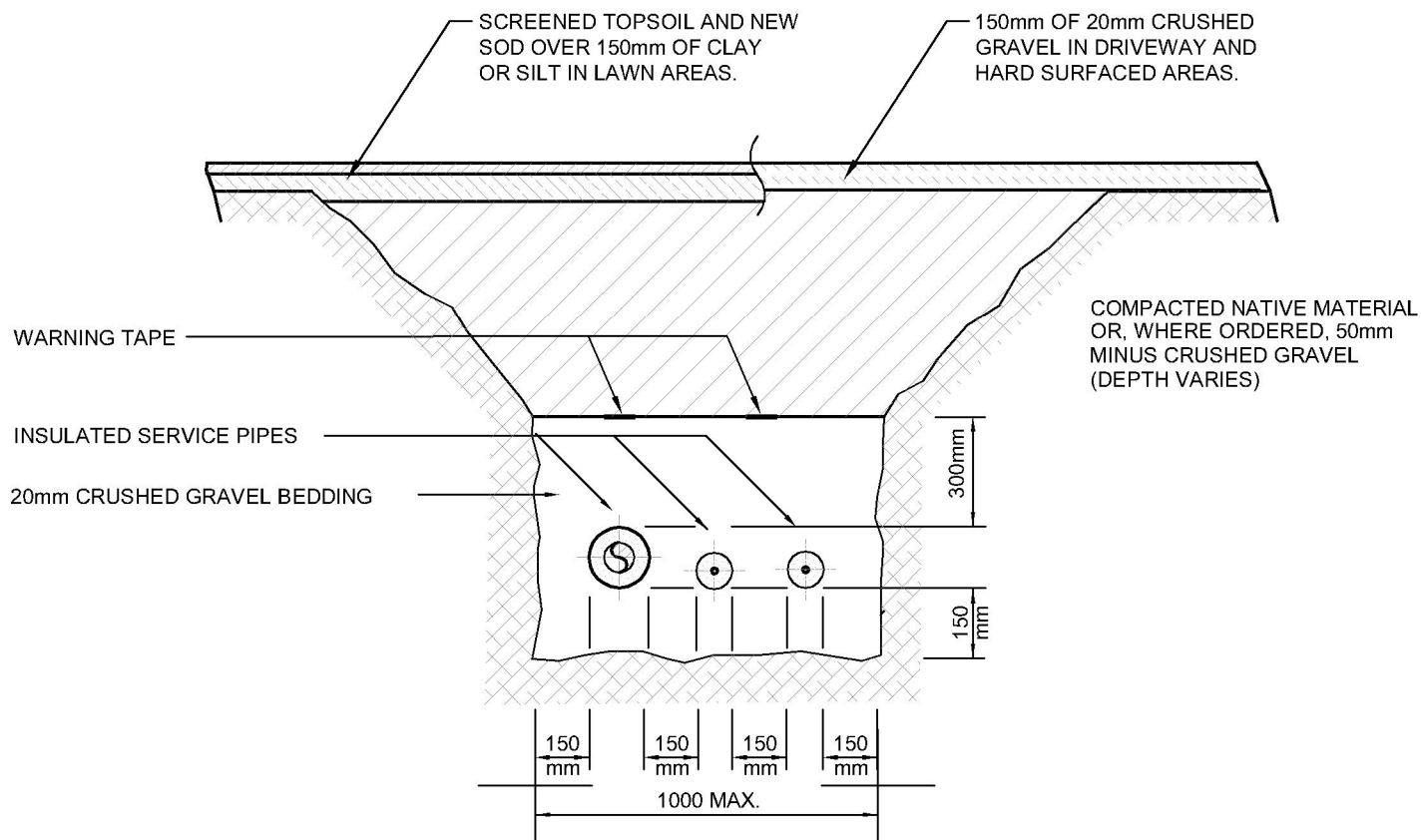
TYPICAL SEPARATE WATER SERVICE

SERVICE

REVISION No.
1

DWG.No.

C-SE-104



TYPICAL COMBINED WATER/SEWER SERVICE TRENCH DETAIL
(ON PRIVATE PROPERTY)



N.T.S.

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

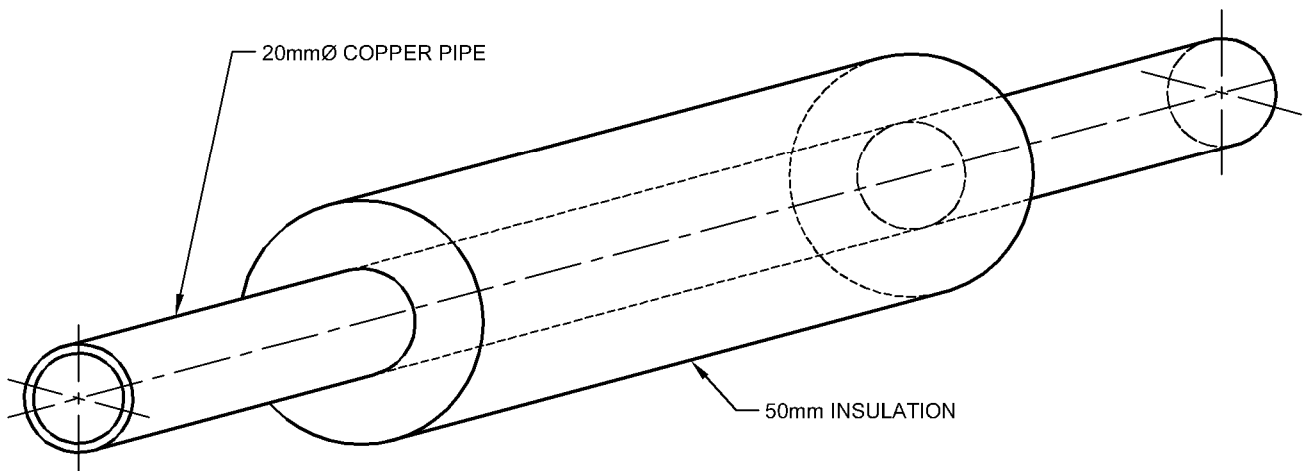
**TYPICAL COMBINED WATER-SEWER
SERVICE TRENCH DETAIL**

SERVICE

REVISION No.
1

DWG.No.

C-SE-105



NOTE:

1. ALL WATER SERVICE PIPE TO BE PREINSULATED WITH 50mm INSULATION AND DOUBLE TAPE WRAP AS MANUFACTURED BY URECON OR AS EQUAL.
2. ALL DIMENSIONS IN MILLIMETERS UNLESS NOTED OTHERWISE



N.T.S.

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

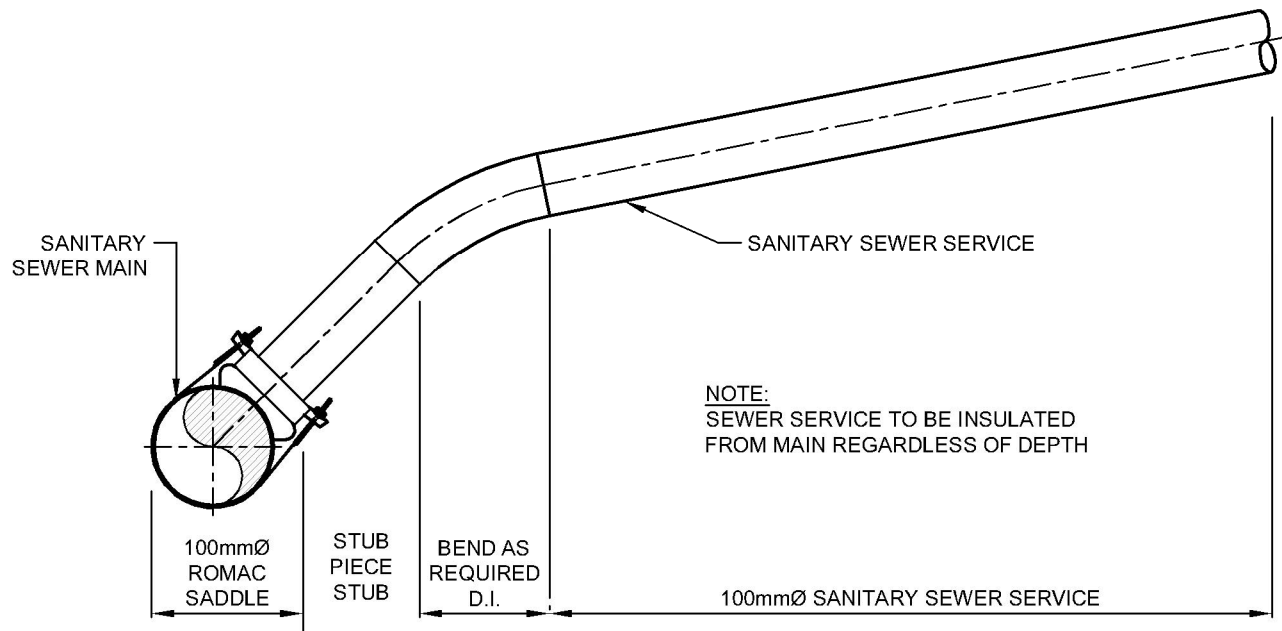
SERVICE PIPE INSULATION DETAIL

SERVICE

REVISION No.
1

DWG.No.

C-SE-106



N.T.S.

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

SANITARY SEWER MAIN AND SERVICE DETAIL

SERVICE

REVISION No.
1

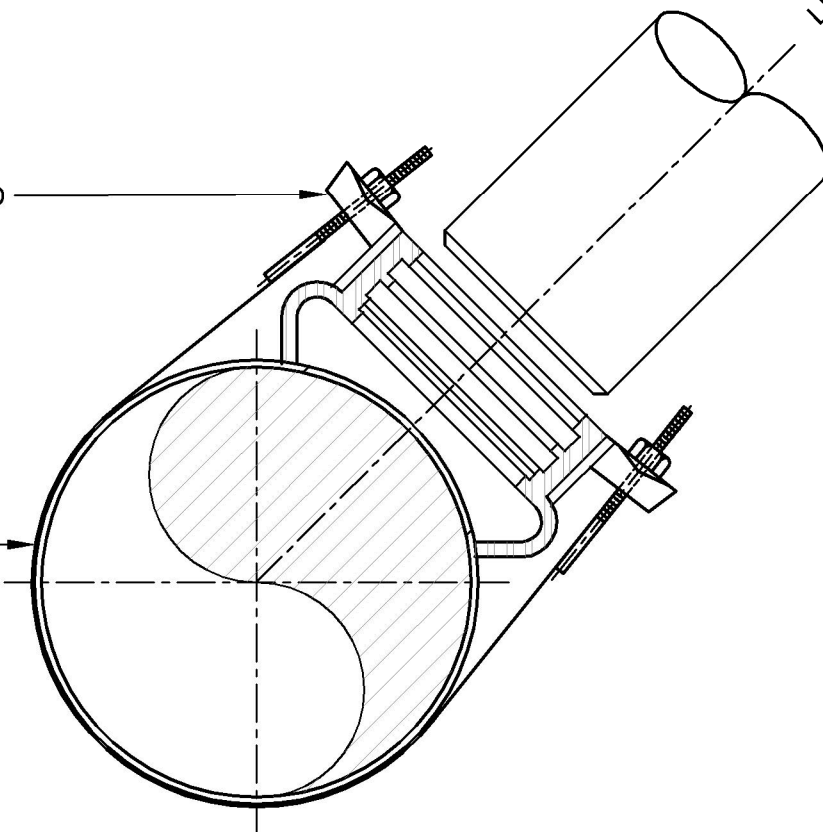
DWG.No.

C-SE-107

SEWER SADDLE MANUFACTURED
BY ROMAC INDUSTRIES INC.

SANITARY SEWER MAIN

CENTRE
LINE
PIPES



N.T.S.

DATE DRAWN:
01/01/20

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

SANITARY SEWER SERVICE AND
CONNECTION DETAIL

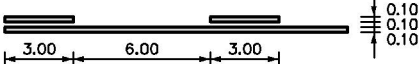
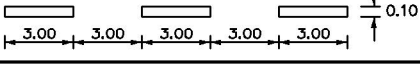
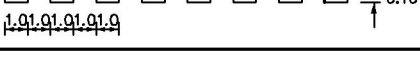
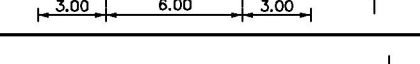
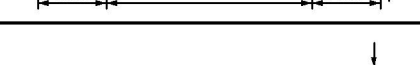
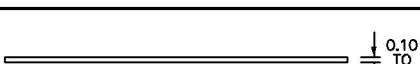
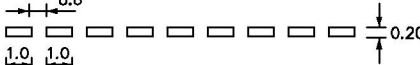
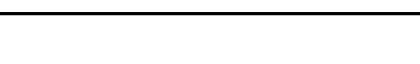
SERVICE

REVISION No.
1

DWG.No.

C-SE-108

PAVEMENT MARKINGS LEGEND

NAME OF LINE		DIMENSIONS (m)	USE
LONGITUDINAL	(A)		EDGE LINES (WHITE OR YELLOW), DIRECTIONAL DIVIDING LINES (YELLOW) LANE LINES PROHIBITING LANE CHANGES (WHITE)
	(B)		DIRECTIONAL DIVIDING LINES (YELLOW)
	(C)		DIRECTIONAL DIVIDING LINES TWO-WAY LEFT TURN LANES (YELLOW)
	(D)		CONTINUITY LINES (WHITE)
	(E)		GUIDING LINES (E.G. INTERSECTION MOVEMENTS) (WHITE)
	(F)		DIRECTIONAL DIVIDING LINES (YELLOW) URBAN LANE LINES, LOW SPEED (WHITE)
	(G)		LANE LINES (WHITE) HIGH SPEED ROAD
TRANSVERSE	(H)		INTERSECTION STOP LINES (WHITE)
	(I)		CROSSWALKS (WHITE)
	(J)		YIELD LINE (SHARK TEETH) (WHITE)
	(K)		YIELD LINES (E.G. INTERSECTION MOVEMENTS) (WHITE)
	(L)		ZEBRA CROSSWALKS (WHITE)

GENERAL NOTES:

- ALL DIMENSIONS AND RADII ARE TO CONSTRUCTION BASELINE OR EDGE OF PAVEMENT.
- ALL ROAD SIGNS TO BE RELOCATED UNDER THE DIRECTION OF THE CITY OF YELLOWKNIFE WORKS DEPARTMENT.
- TEMPORARY PAVEMENT MARKINGS ON THE BASE COURSE ASPHALT SHALL BE ORGANIC SOLVENT-BASED PAINT INCLUDING REFLECTORIZING GLASS BEADS
- PAVEMENT MARKINGS ON THE SURFACE COURSE ASPHALT SHALL BE FIELD REACTED POLYMERIC PAVEMENT MARKING MATERIALS HAVING A MINIMUM MARKING THICKNESS OF 2.0mm.
- PAVEMENT MARKINGS SHALL BE PLACED WITHIN 5 DAYS OF ASPHALT PLACEMENT.
- TACTILE SURFACE INDICATOR PLATES SHALL BE EJW DURALAST.



N.T.S.

DATE DRAWN:
19/03/2021

REVISION DATE:
06/04/2022

APPROVED BY:
YK ENG.

TITLE:

PAVEMENT MARKINGS LEGEND

PAVEMENT

REVISION No.
1

DWG.No.

PM 100