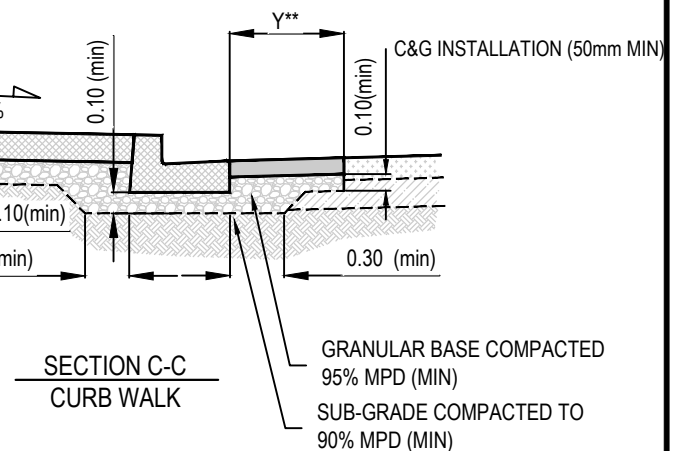




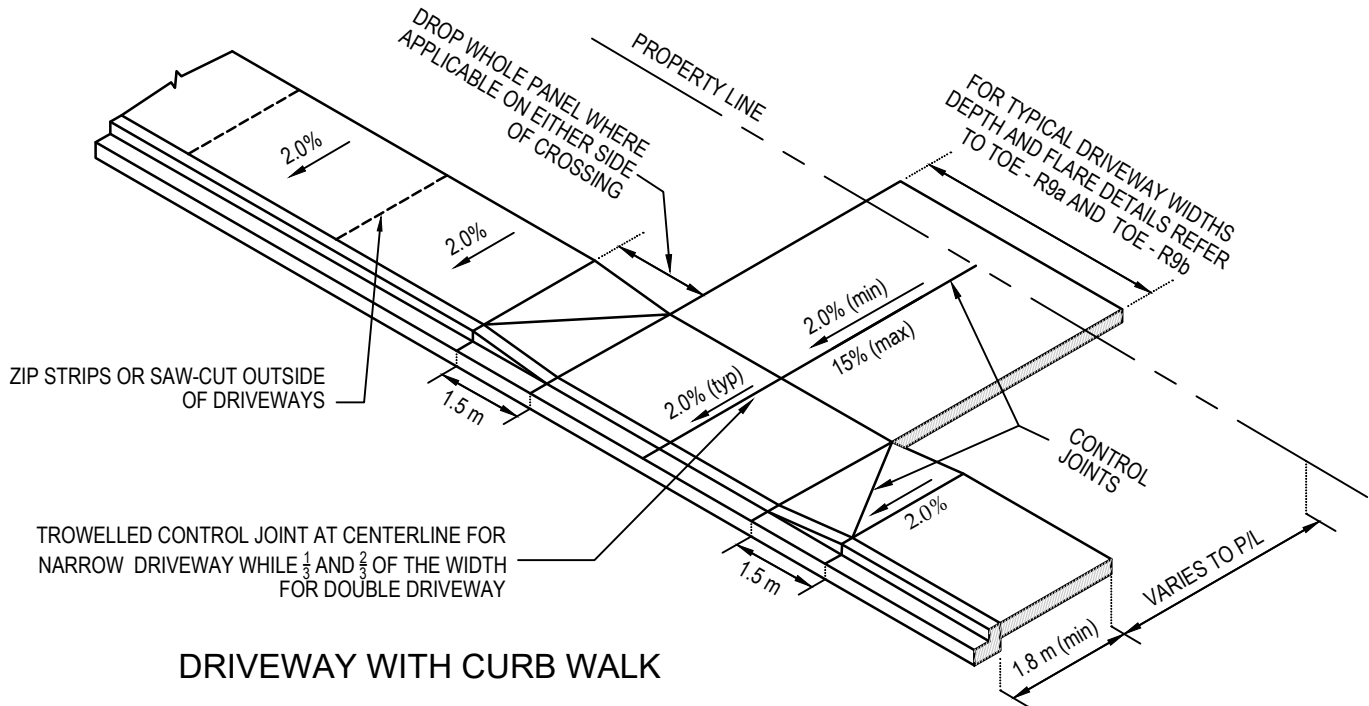
**PROJECT 1: ESQUIMALT ROAD
PROJECT 2: CRAIGFLOWER ROAD

SUPPLEMENTAL DETAIL DRAWINGS**



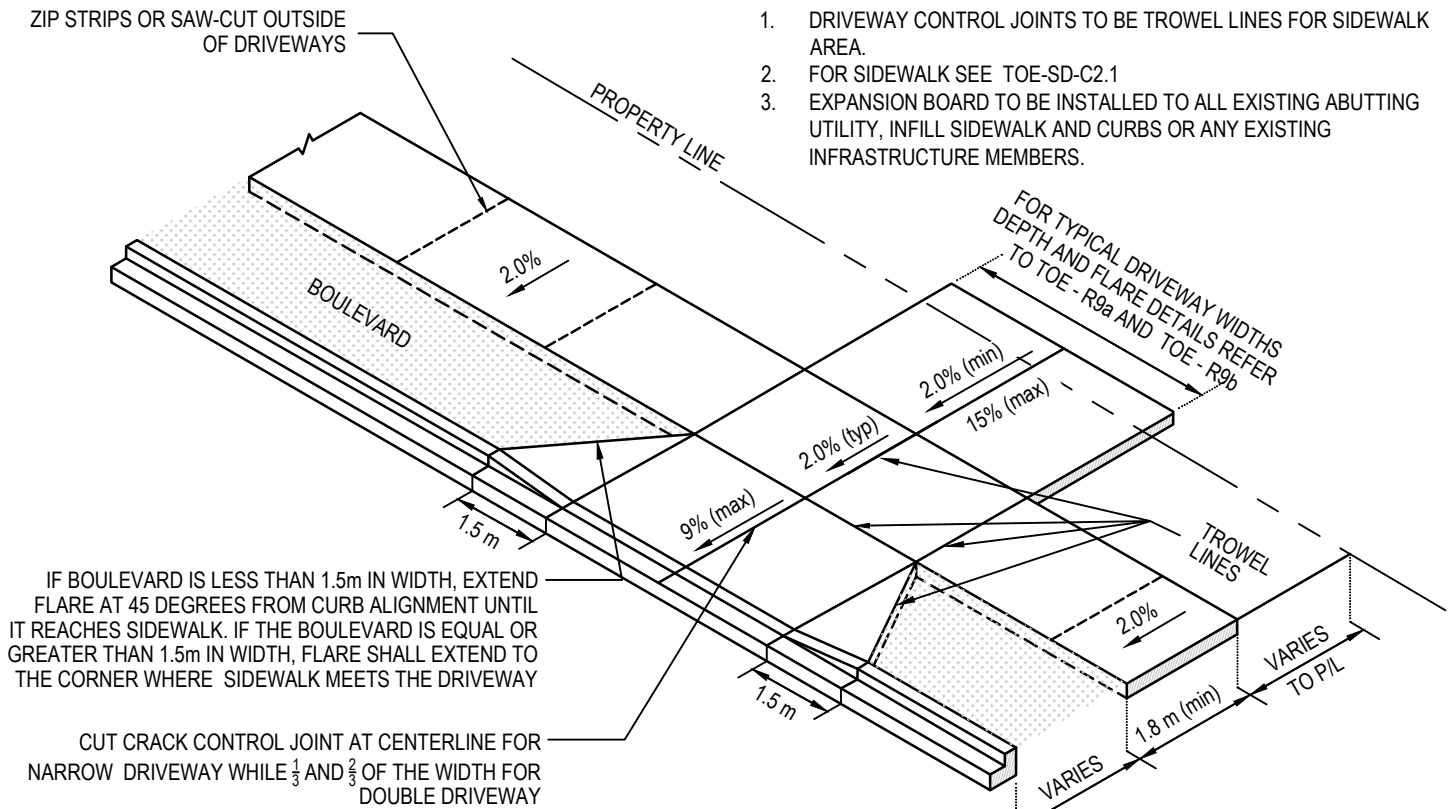


ISSUE DATE: DEC 06, 2023
APPROVED BY: C. DAVIE



NOTE:

1. DRIVEWAY CONTROL JOINTS TO BE TROWEL LINES FOR SIDEWALK AREA.
2. FOR SIDEWALK SEE TOE-SD-C2.1
3. EXPANSION BOARD TO BE INSTALLED TO ALL EXISTING ABUTTING UTILITY, INFILL SIDEWALK AND CURBS OR ANY EXISTING INFRASTRUCTURE MEMBERS.

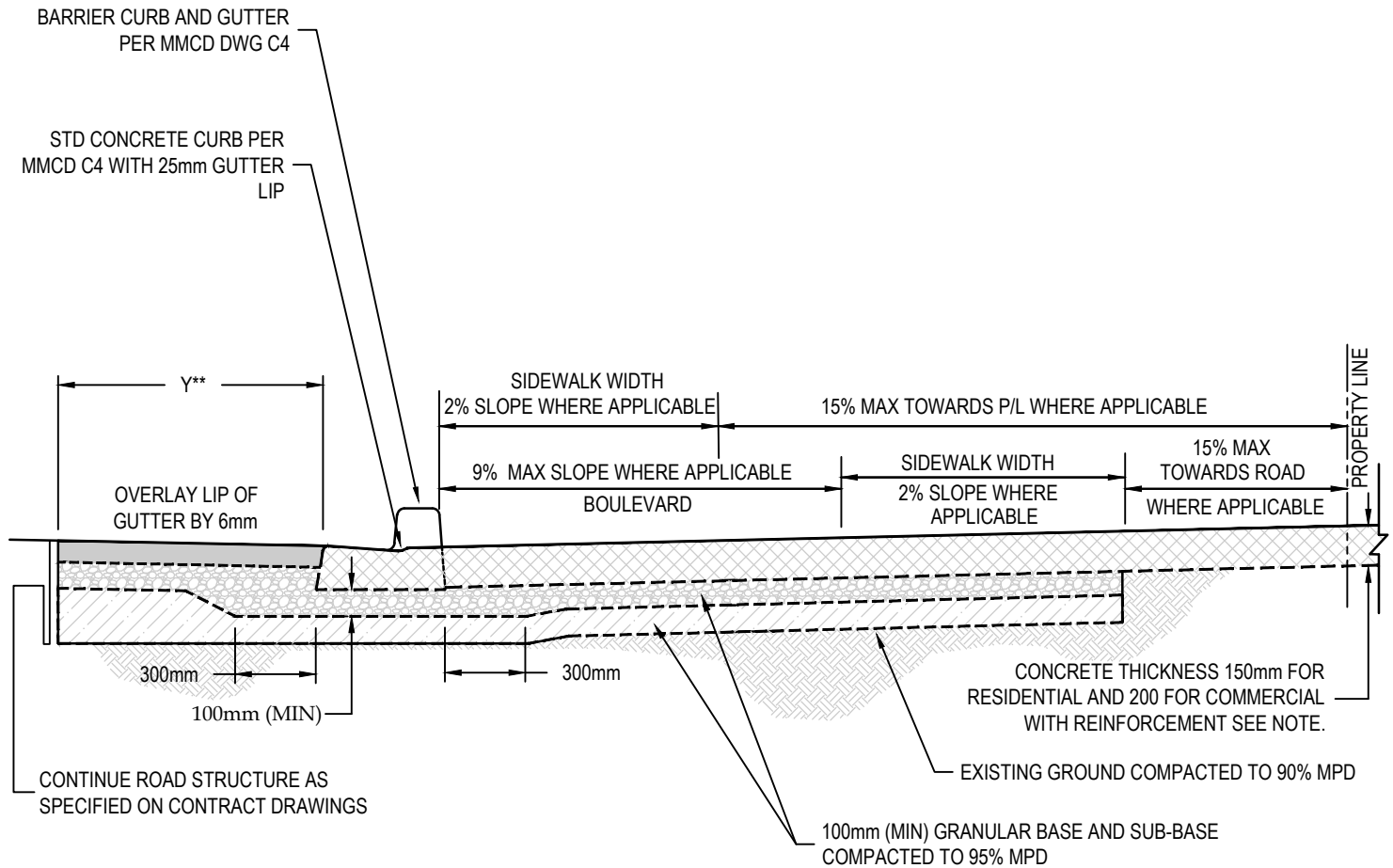


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TYPICAL DRIVEWAY CROSSING

ISSUE DATE: DEC 06, 2023
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Y** = MILL AND PAVE 1.0m AFTER CURB AND GUTTER INSTALLATION (50mm MIN) IF ROADWAY CONTAINS BICYCLE LANE, MILL AND PAVE TO THE EDGE OF THE VEHICLE LANE

NOTE:

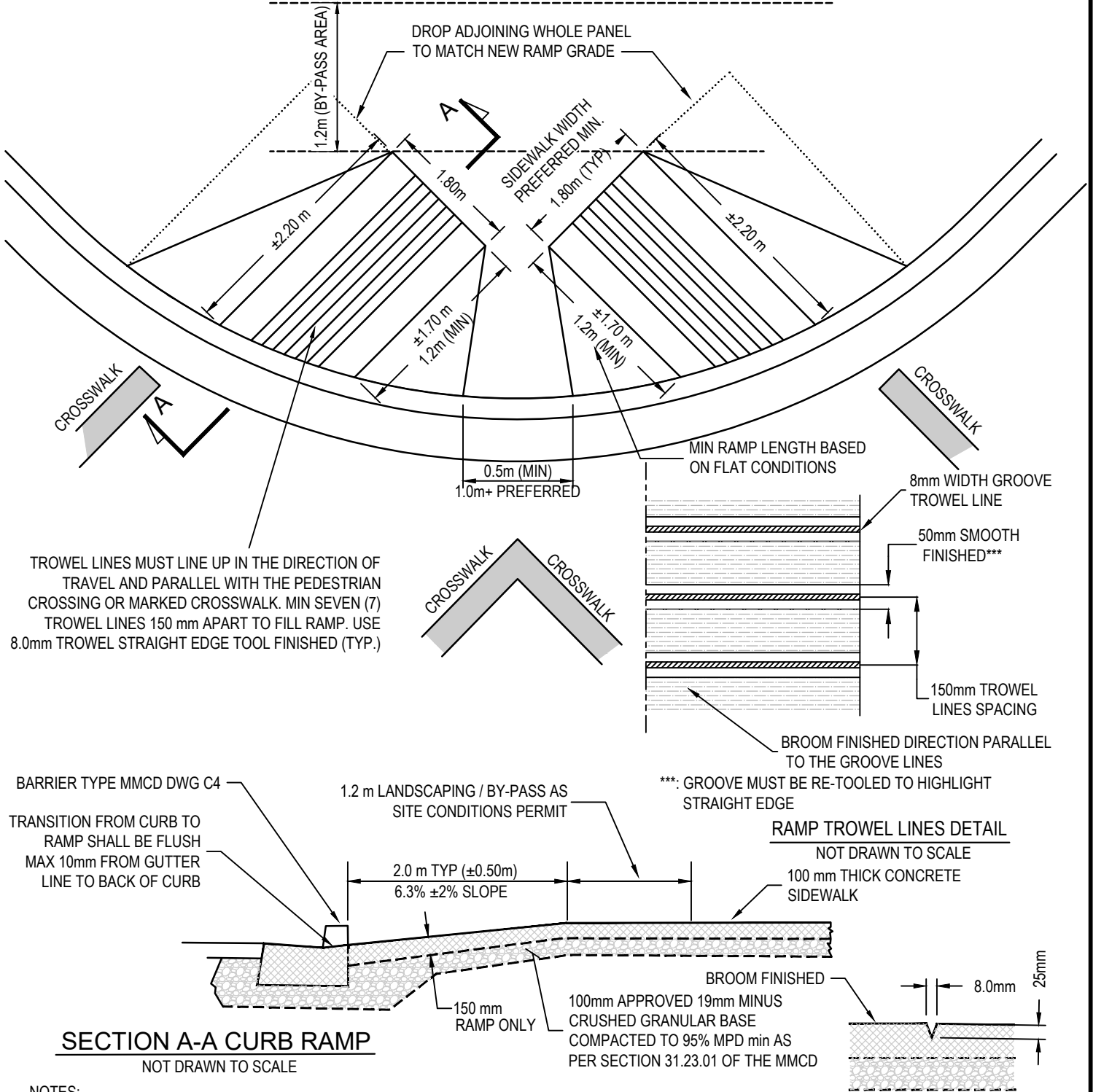
1. FOR COMMERCIAL DRIVEWAYS USE #5 OR 15M SPACED AT MAX 300mm ON CENTER BOTH WAYS. REBAR DEPTH TO BE AT LEAST 75mm FROM DRIVEWAY FINISHED GRADE.

NTS

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REV	REVISION DATE	APPROVED

**TYPICAL DRIVEWAY CROSSING
CROSS SECTION**

ISSUE DATE: DEC 06, 2023
APPROVED BY: C. DAVIE

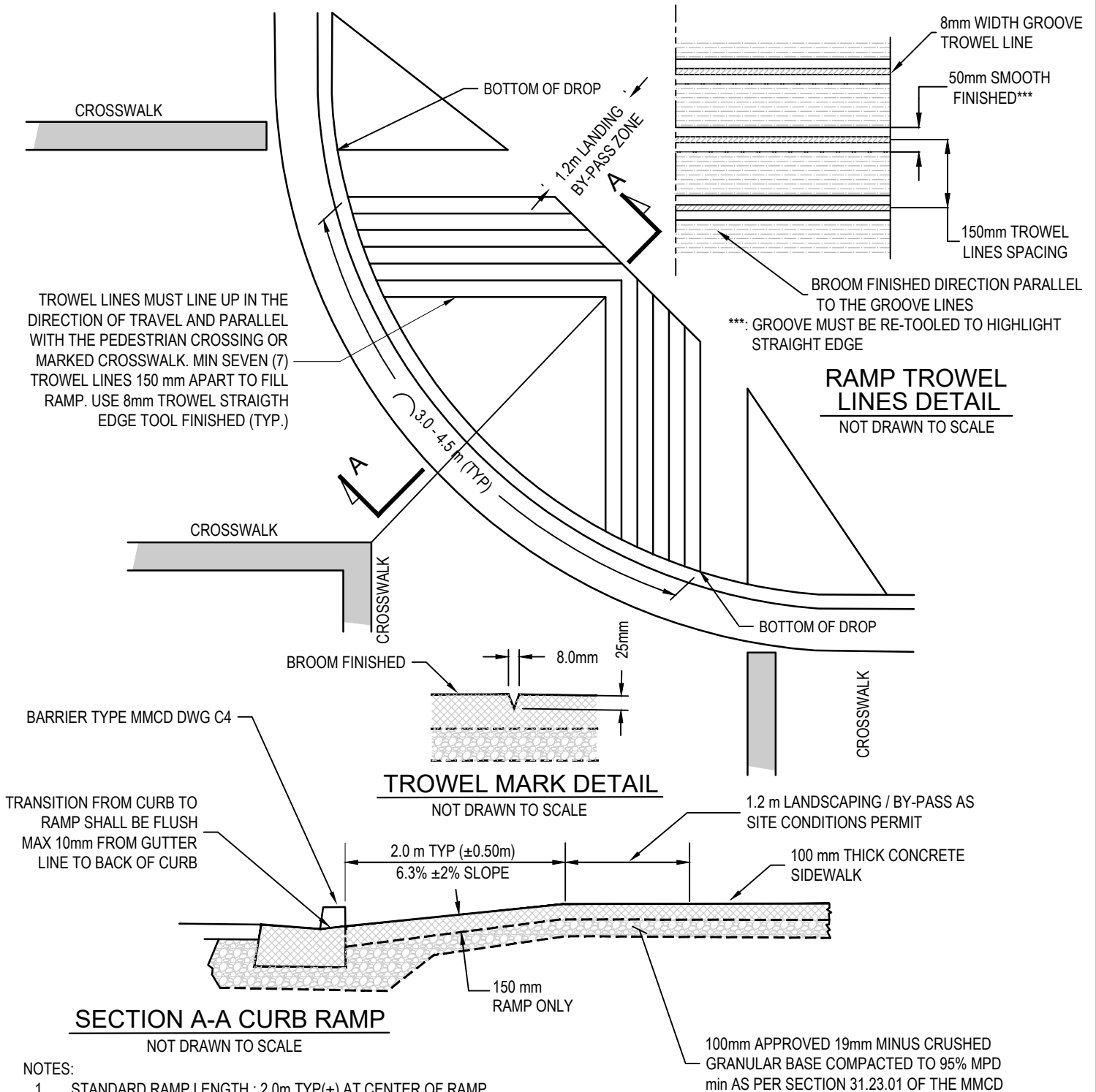


NTS

0	DEC.06.2023	CD
REV	REVISION DATE	APPROVED

DOUBLE WHEELCHAIR RAMPS (PREFERRED)

ISSUE DATE: DEC 06, 2023
APPROVED BY: C. DAVIE



NOTES:

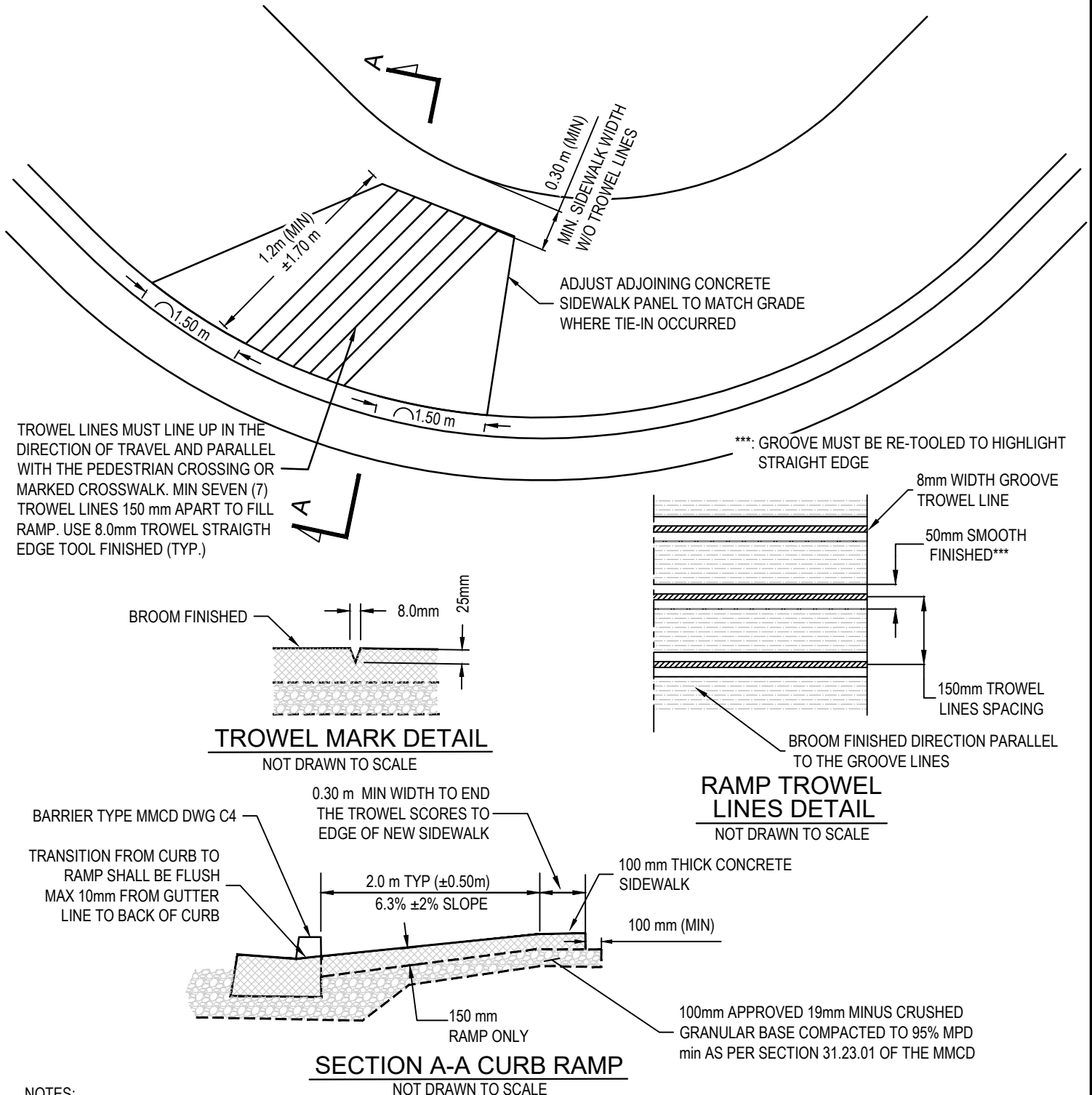
1. STANDARD RAMP LENGTH : 2.0m TYP(±) AT CENTER OF RAMP
2. RECOMMENDED RAMP SLOPE (6.3% ±2%). MAX SLOPE 8.3% WHERE TOPOGRAPHY PERMITS
3. ADJUST LENGTH OF RAMPS AS REQUIRED
4. WHEN SITE CONDITIONS DO NOT PERMIT TYPICAL LAYOUT, CONTACT MUNICIPAL ENGINEER FOR APPROVAL OF DESIGN.
5. SIDEWALK MUST EXTEND TO SIGNAL POLE (WHERE APPLICABLE)
6. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

NTS

0	DEC.06.2023	CD
REV	REVISION DATE	APPROVED

SINGLE RADIAL WHEELCHAIR RAMP

ISSUE DATE: DEC 06, 2023
APPROVED BY: C. DAVIE



NOTES:

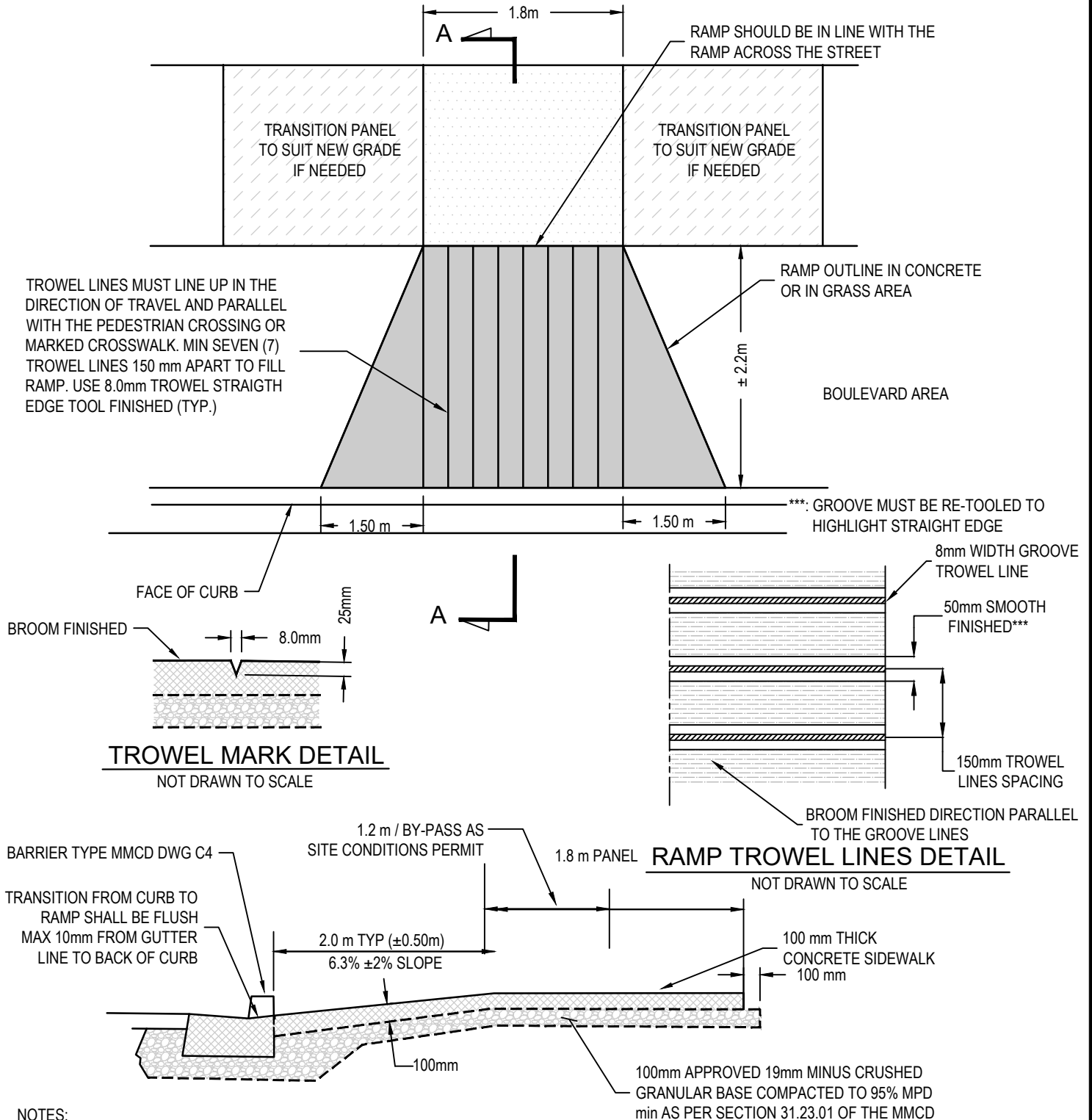
1. STANDARD RAMP LENGTH : 2.0m TYP(±) AT CENTER OF RAMP
2. RECOMMENDED RAMP SLOPE (6.3% ±2%). MAX SLOPE 8.3% WHERE TOPOGRAPHY PERMITS
3. ADJUST LENGTH OF RAMPS AS REQUIRED
4. WHEN SITE CONDITIONS DO NOT PERMIT TYP LAYOUT, CONTACT MUNICIPAL ENGINEER FOR APPROVAL OF DESIGN.
5. SIDEWALK MUST EXTEND TO SIGNAL POLE (WHERE APPLICABLE).
6. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

NTS

0	DEC.06.2023	CD
REV	REVISION DATE	APPROVED

SINGLE DIRECTIONAL WHEELCHAIR RAMP

ISSUE DATE: DEC 06, 2023
APPROVED BY: C. DAVIE



NOTES:

1. STANDARD RAMP LENGTH : 2.0m TYP(±) AT CENTER OF RAMP
2. RECOMMENDED RAMP SLOPE (6.3% ±2%). MAX SLOPE 8.3% WHERE TOPOGRAPHY PERMITS
3. ADJUST LENGTH OF RAMPS AS REQUIRED
4. WHEN SITE CONDITIONS DO NOT PERMIT TYP LAYOUT, CONTACT MUNICIPAL ENGINEER FOR APPROVAL OF DESIGN.
5. SIDEWALK MUST EXTEND TO SIGNAL POLE (WHERE APPLICABLE).
6. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

SECTION A-A CURB RAMP

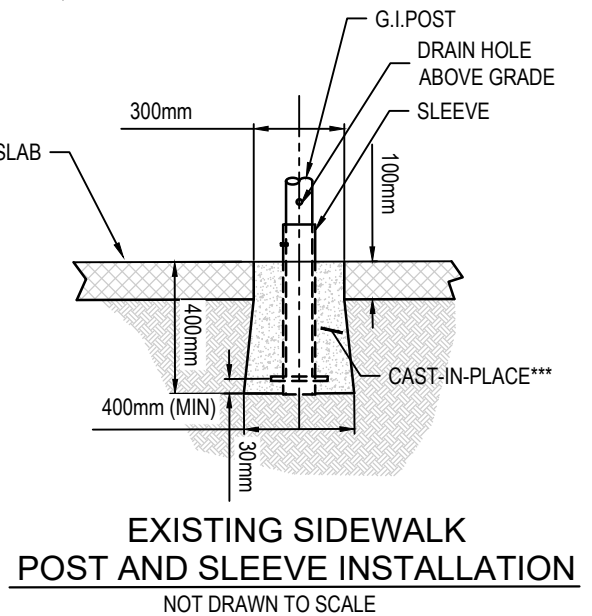
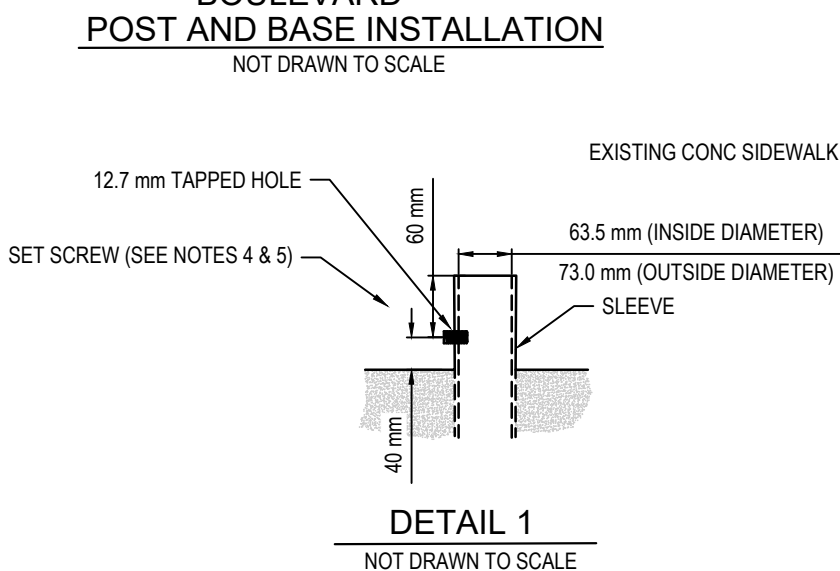
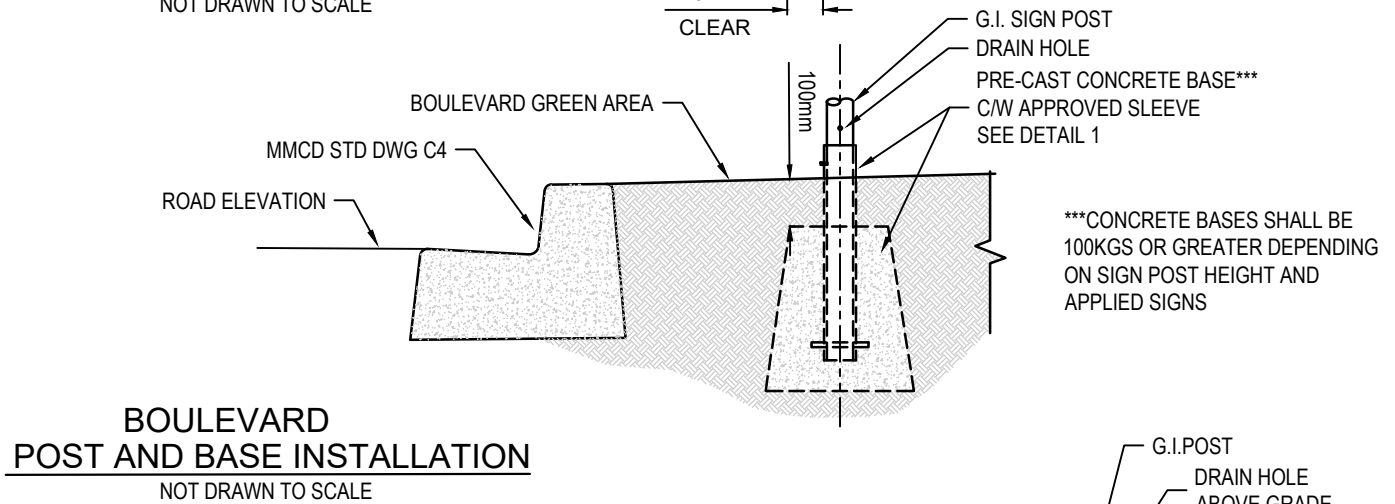
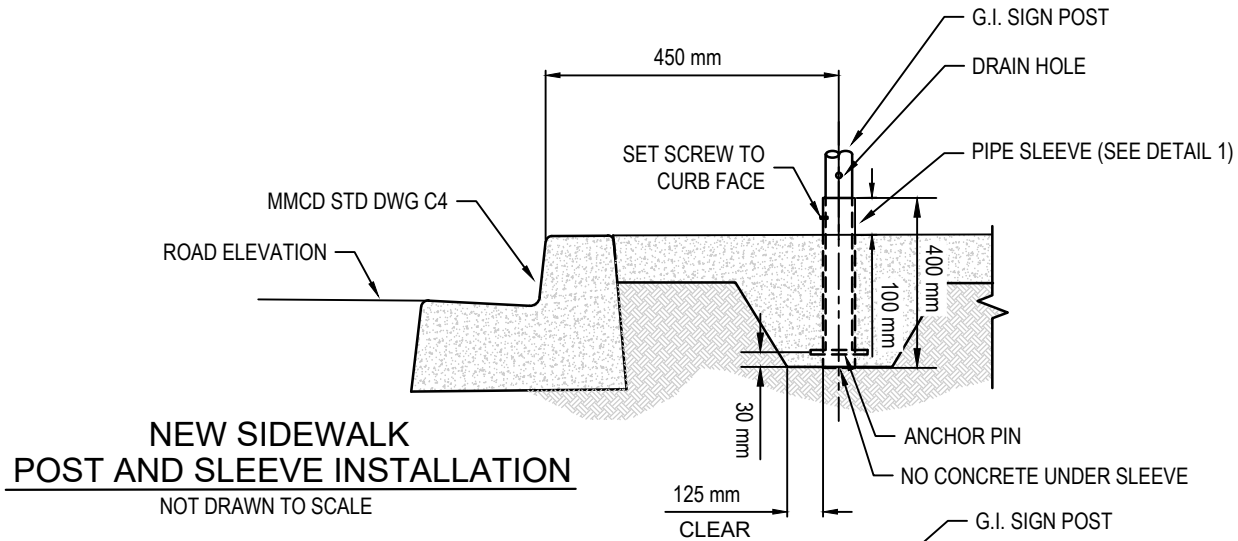
NOT DRAWN TO SCALE

NTS

0	DEC.06.2023	CD
REV	REVISION DATE	APPROVED

T - INTERSECTION/MID-BLOCK WHEELCHAIR RAMP

ISSUE DATE: DEC 06, 2023
APPROVED BY: C. DAVIE



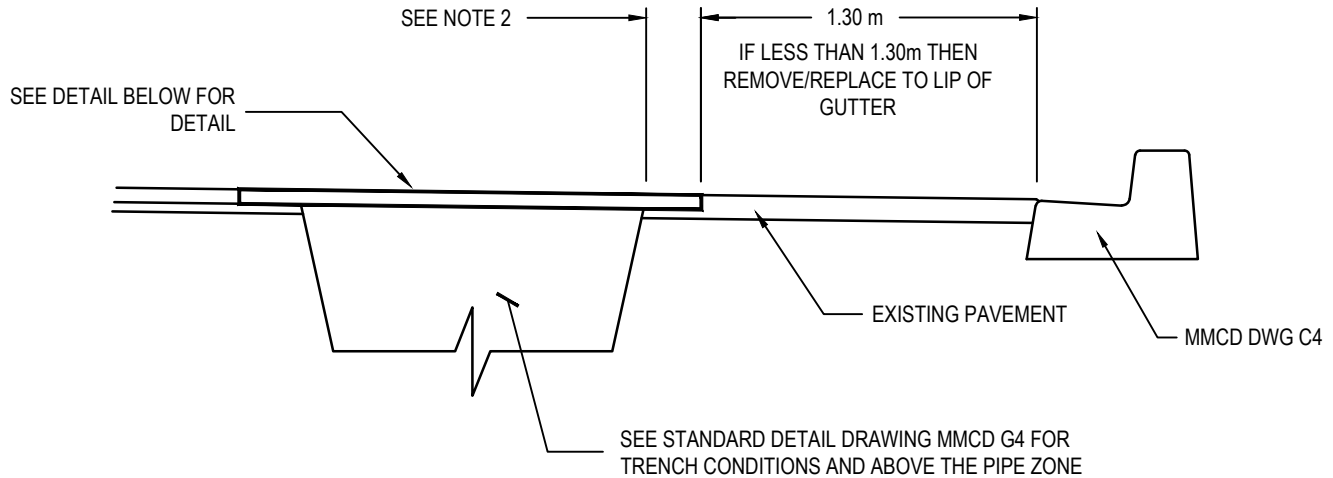
NOTES:

1. CAUTION MUST BE TAKEN TO ENSURE THAT NO CONCRETE OR DEBRIS GET INSIDE THE SLEEVE.
2. THE SLEEVE IS TO BE ABSOLUTELY PLUMB.
3. ALTERNATIVE SIGN LOCATION MAY BE NECESSARY IN INSTANCE OF CONFLICT WITH UNDERGROUND UTILITIES.
4. POST AND SLEEVE: 12.7mm DIAMETER X 12.7mm OR 19.1 mm LENGTH CUP POINT STAINLESS STEEL ALLEN KEY SET SCREW.

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SIGN POST SLEEVE

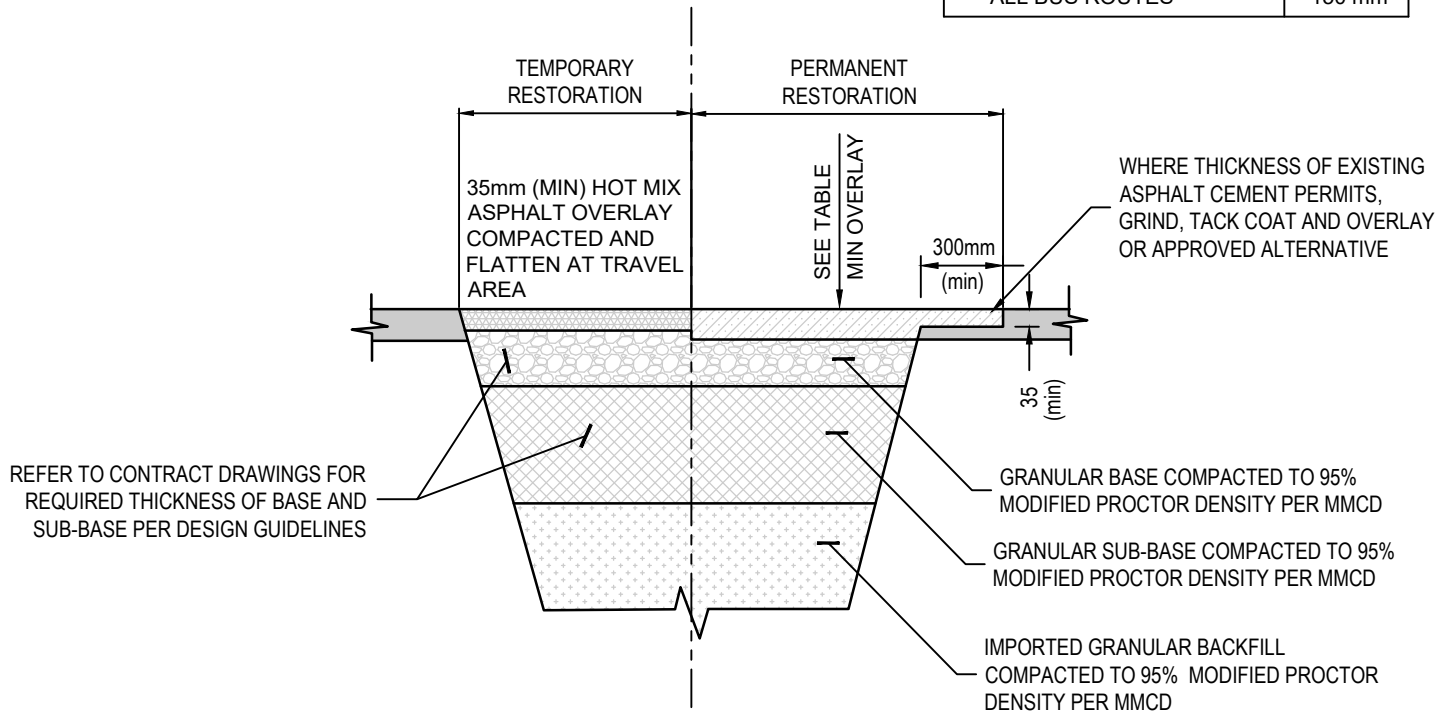
ISSUE DATE: DEC 06, 2023
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NOTES:

1. TRENCHLINE SHOWN FROM APPROVED CONSTRUCTION PLAN SHALL BE SUPERSEDED WITH THE NEW LINE FROM THE UNDISTURBED AREA BEING REFERENCED.
2. EXTEND PAVEMENT RESTORATION LIMITS TO NEAREST LANE/CENTRELINE/BIKE LINE OR HALF LANE WIDTH (VEHICLE LANES ONLY). ENSURE SEAMS ARE OUTSIDE OF WHEEL PATHS

TABLE PER MMCD GUIDELINES MIN THICKNESS OF ASPHALT COURSE	
LOCAL ROAD	75 mm
COLLECTOR ROAD	100 mm
ARTERIAL ROAD	150 mm
ALL THICKNESSES ARE * MIN OR MATCH EXISTING	
** ALL BUS ROUTES	150 mm



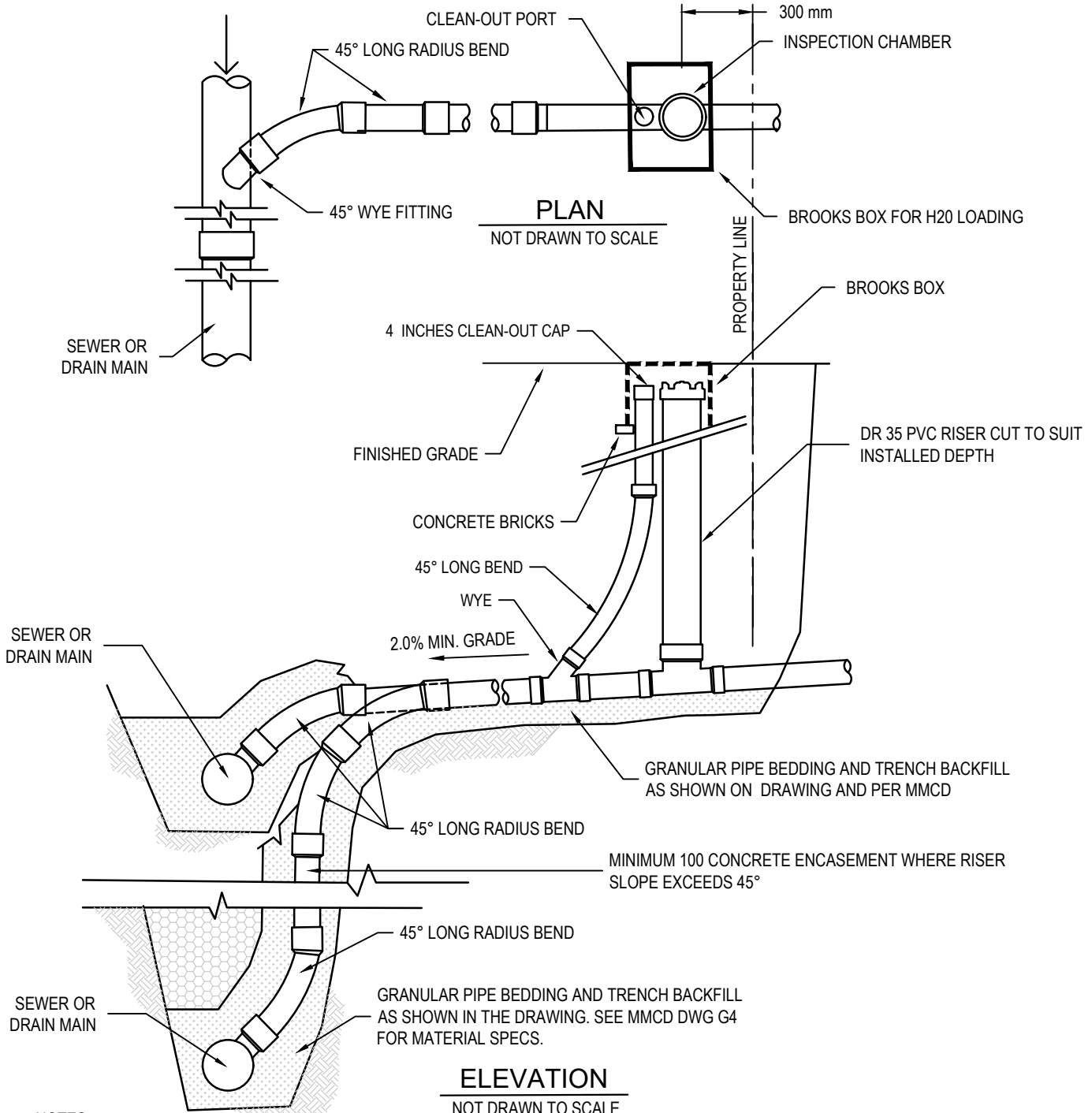
NOTES:

1. COLD MIX ASPHALT OVERLAY IS ACCEPTABLE FOR 2 WEEKS. FOR TEMPORARY RESTORATION, OTHERWISE HOT-MIX REQUIRED. CONTRACTOR TO MONITOR ROAD FOR GRANULAR AGGREGATES SPALLING. IMMEDIATE POT HOLE REPAIR IS REQUIRED FOR DAMAGED AREAS.

PAVEMENT RESTORATION

ISSUE DATE: DEC 06, 2023
APPROVED BY: C. DAVIE

0	DEC.06.2023	CD
REV	REVISION DATE	APPROVED



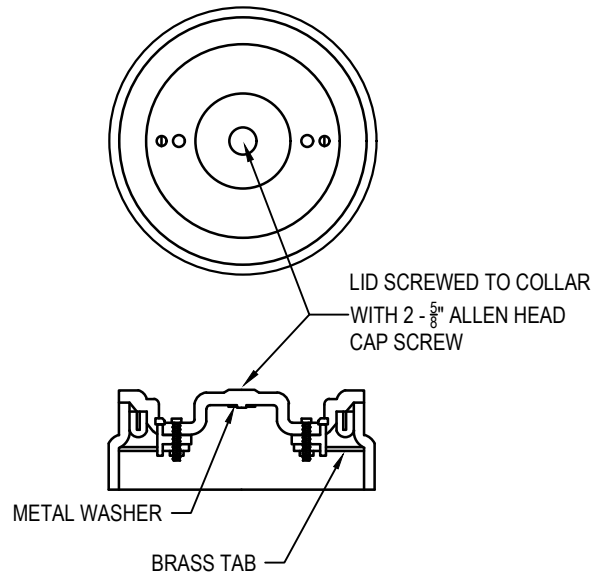
NOTES:

1. CONNECTIONS TO BE 100 TO 200 AS SPECIFIED ON CONTRACT DRAWINGS.
2. RISER TYPE SERVICE TO BE USED ONLY WHEN SERVICE IS MORE THAN 2.4m ABOVE WYE INVERT OR AS DIRECTED BY CONTRACT ADMINISTRATOR.
3. SERVICE CROSSINGS COVER LESS THAN 1.0m AT ROAD AREAS TO BE DESIGN BY AN ENGINEER AND TO BE APPROVE BY THE TOWNSHIP.
4. LOCATION OF SERVICE AND MARKER AS SHOWN ON CONTRACT DRAWINGS.
5. SEE DRAWING S9a FOR DETAILS OF INSPECTION CHAMBER AND INSTALLATION REQUIREMENTS.
6. INSPECTION CHAMBER AND CLEAN-OUT TO BE HOUSED IN THE BROOKS BOX SHOWN IN DWG S9a. BOX TO BE ADJUSTED TO SUIT INSTALLATION IF NEEDED.
7. LID TO BE COLOR CODED (RED = SEWER, GREEN = DRAIN)
8. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

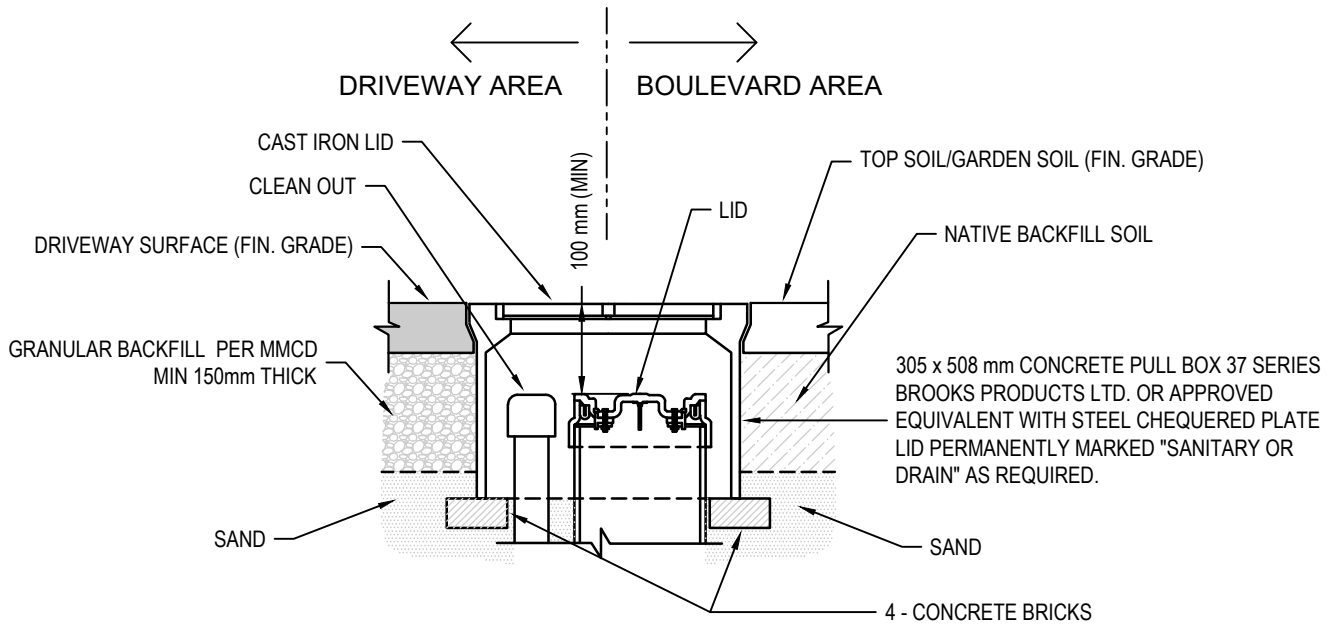
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REV	REVISION DATE	APPROVED

SANITARY AND STORM SEWER SERVICES

ISSUE DATE: DEC 06, 2023
APPROVED BY: C. DAVIE



LID DETAIL
NOT DRAWN TO SCALE



INSTALLATION IN DRIVEWAY AND BOULEVARD
NOT DRAWN TO SCALE

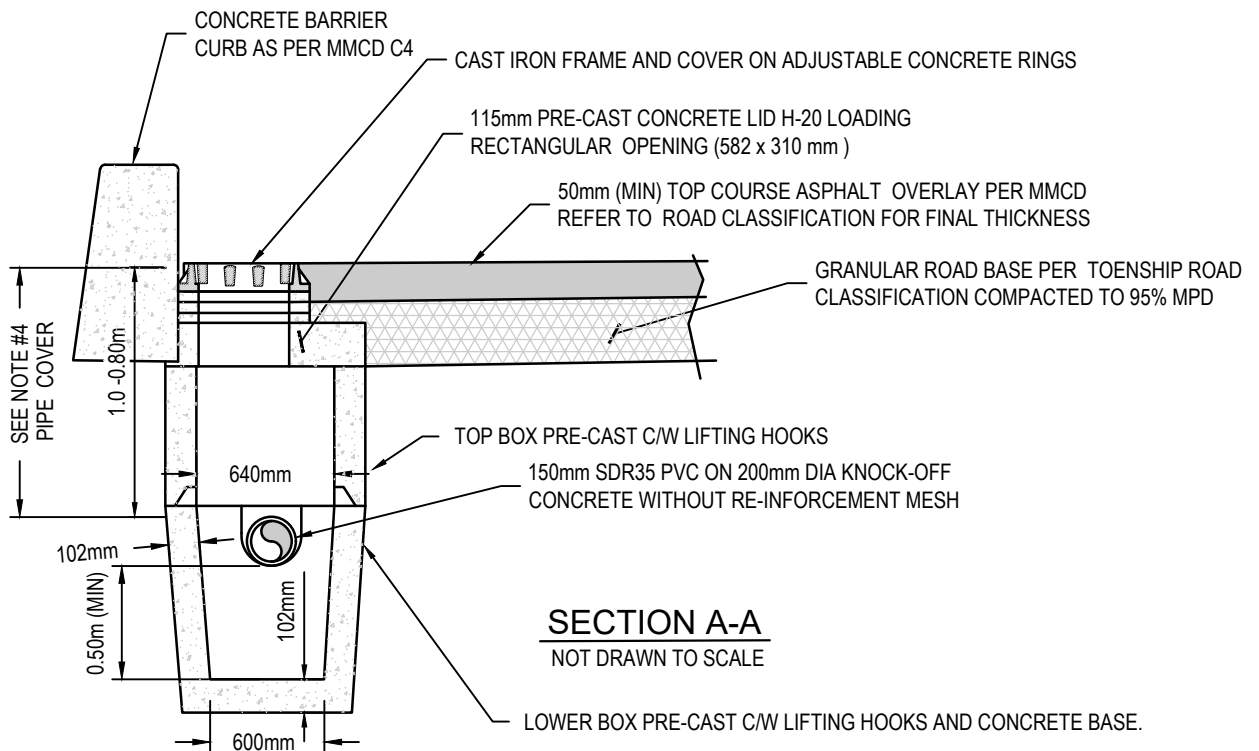
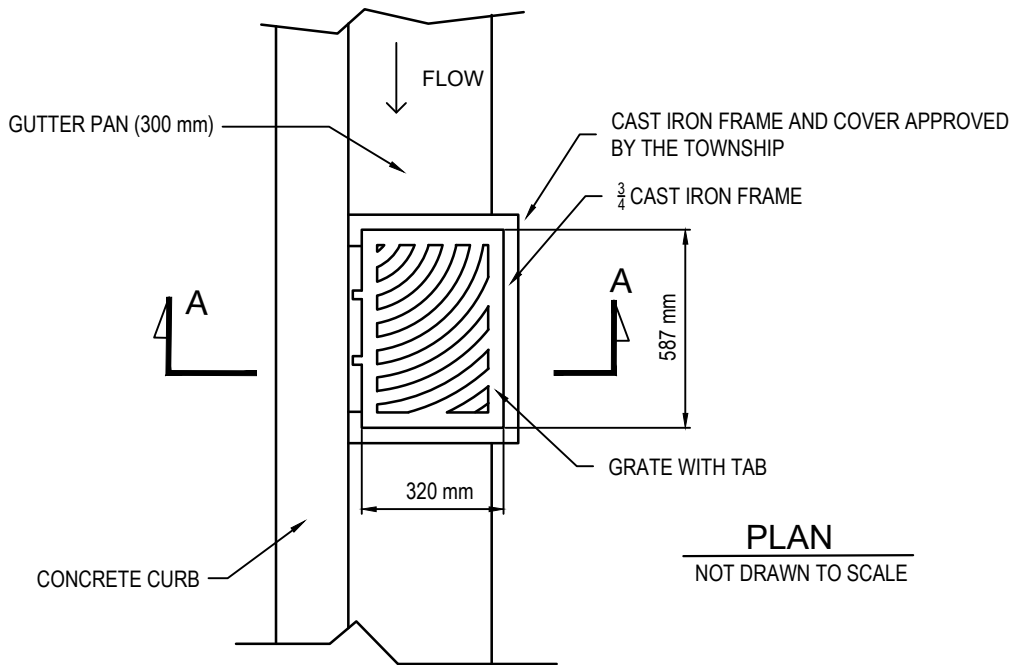
NOTES:

1. REFER TO DRAWING S7-a FOR INSTALLATION REQUIREMENTS
2. INSPECTION CHAMBER TO BE APPROVED MANUFACTURED FITTING.
3. REFER TO CONTRACT DRAWINGS FOR SITE SPECIFIC DIMENSIONS REFER TO SECTION 33 30 01 FOR DETAILED SPECIFICATIONS
4. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

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REV	REVISION DATE	PREPARED BY

**INSPECTION CHAMBER FOR 100 TO 200
DRAIN & SEWER CONNECTION**

ISSUE DATE: DEC 06, 2023
APPROVED BY: C. DAVIE



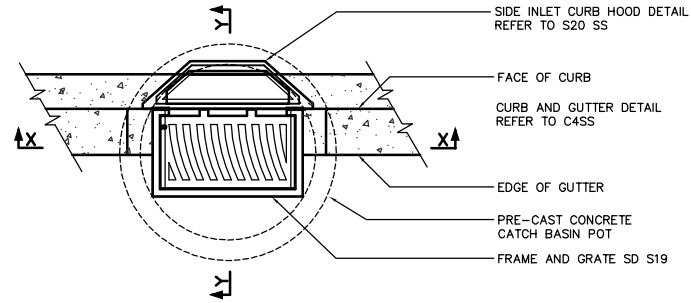
NOTES:

1. PRE-CAST UNITS C/W BASE AND H-20 RATING, APPROVED BY CONTRACT ADMINISTRATOR ARE ACCEPTABLE;E.
2. REFER TO CONTRACT DRAWINGS SECTION 33 44 01 FOR DETAILED SPECIFICATIONS
3. COMBINED STORM LEADS TO BE SIZED BY THE ENGINEER ON RECORD.
4. CB LEAD COVER FOR RESIDENTIAL RD. TO BE 1000 mm AND (ARTERIAL/COLLECTOR) TO BE 1.2 m.
5. USED PRE-CAST RINGS TO ATTAIN TO DESIRED COVER AND FINISHED GRADE.
6. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

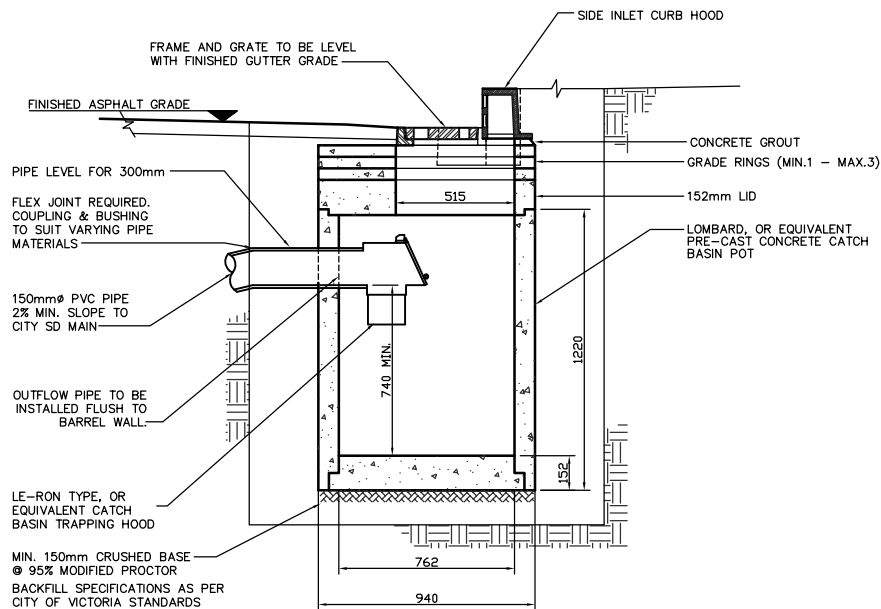
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REV	REVISION DATE	APPROVED

TOP INLET CATCH BASIN

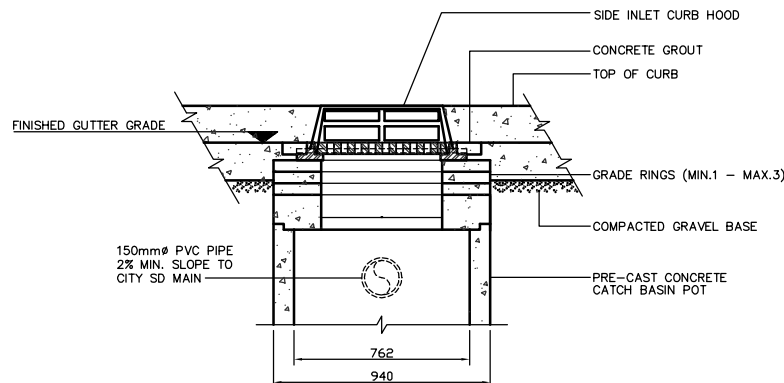
ISSUE DATE: DEC 06, 2023
APPROVED BY: C. DAVIE



PLAN



SECTION Y-Y



SECTION X-X

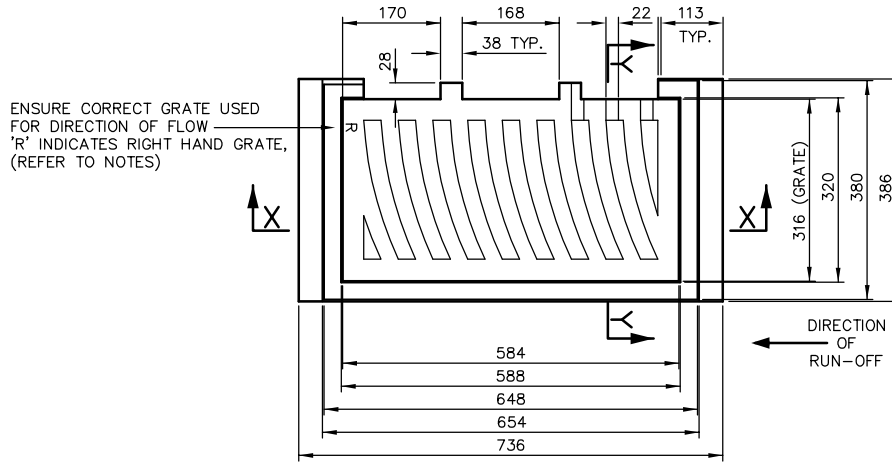
NOT TO SCALE

SIDE-INLET CATCH BASIN DETAIL

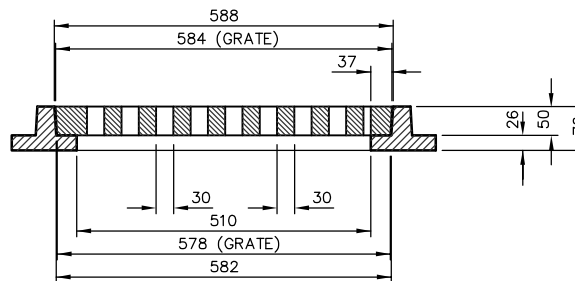
REVISIONS

DRAWING NUMBER:

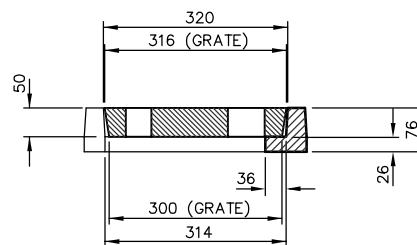
SD S11b



PLAN – FRAME & GRATE



SECTION X-X



SECTION Y-Y

NOTES

1. ALL METAL BEARING SURFACES BETWEEN FRAME AND GRATE MACHINED TO ENSURE GOOD SEATING.
2. FURNISHED WHEN SPECIFIED: GRATES IN RIGHT AND LEFT HAND CASTINGS (UNIT SHOWN IN DWG IS RIGHT HAND).

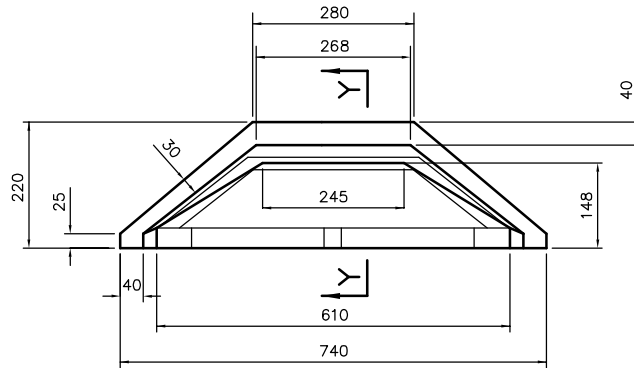
NOT TO SCALE

**GUTTER CATCH BASIN
FRAME & COVER**

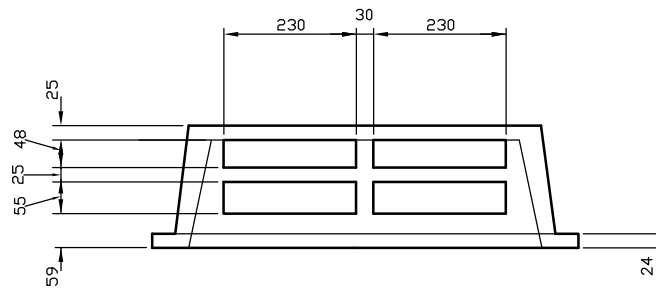
REVISIONS

DRAWING NUMBER:

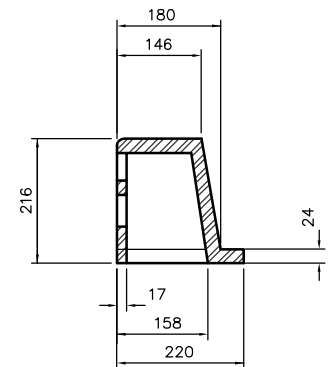
SD S19



PLAN



ELEVATION



SECTION Y-Y

NOTES

- 1) DIMENSIONS ARE BASED ON GRAY IRON CASTINGS.
- 2) STANDARD TOLERANCES ± 1 mm.

NOT TO SCALE

SIDE INLET DETAIL

REVISIONS

DRAWING NUMBER:

SD S20

Bollard Cover R-7301

General Description:

R-7301 Stainless Steel Bollard Covers offer the most versatile protection for posts under 4-1/2 inches in diameter. This is a shorter model in comparison to the R-7301-EX with a height of 36 inches and features a dome top. Increase visibility and aesthetics of steel pipe security posts, while ensuring protection from wear and corrosion. 4 installation types available: Spray foam adhesive, set screws, top hanger, or J hanger. Covers are made from corrosion-resistant 316 stainless steel. Optional powder coating is available in 1 of 6 custom colors.

Specifications:

Height: 36"
Base Diameter: 6 1/4"
Weight: 25 lbs (Bollard Only)
Material: Stainless Steel 316
Max. Interior Security Post:
4 1/2" x 34" (Diameter x Height)

Finish Options:

- ☉ Satin #6 Buffed
- Polyester Powdercoated (Additional service charge)

See Reliance Foundry's standard color options at:
www.reliance-foundry.com/bollard/colors-bollards

Installation Options:

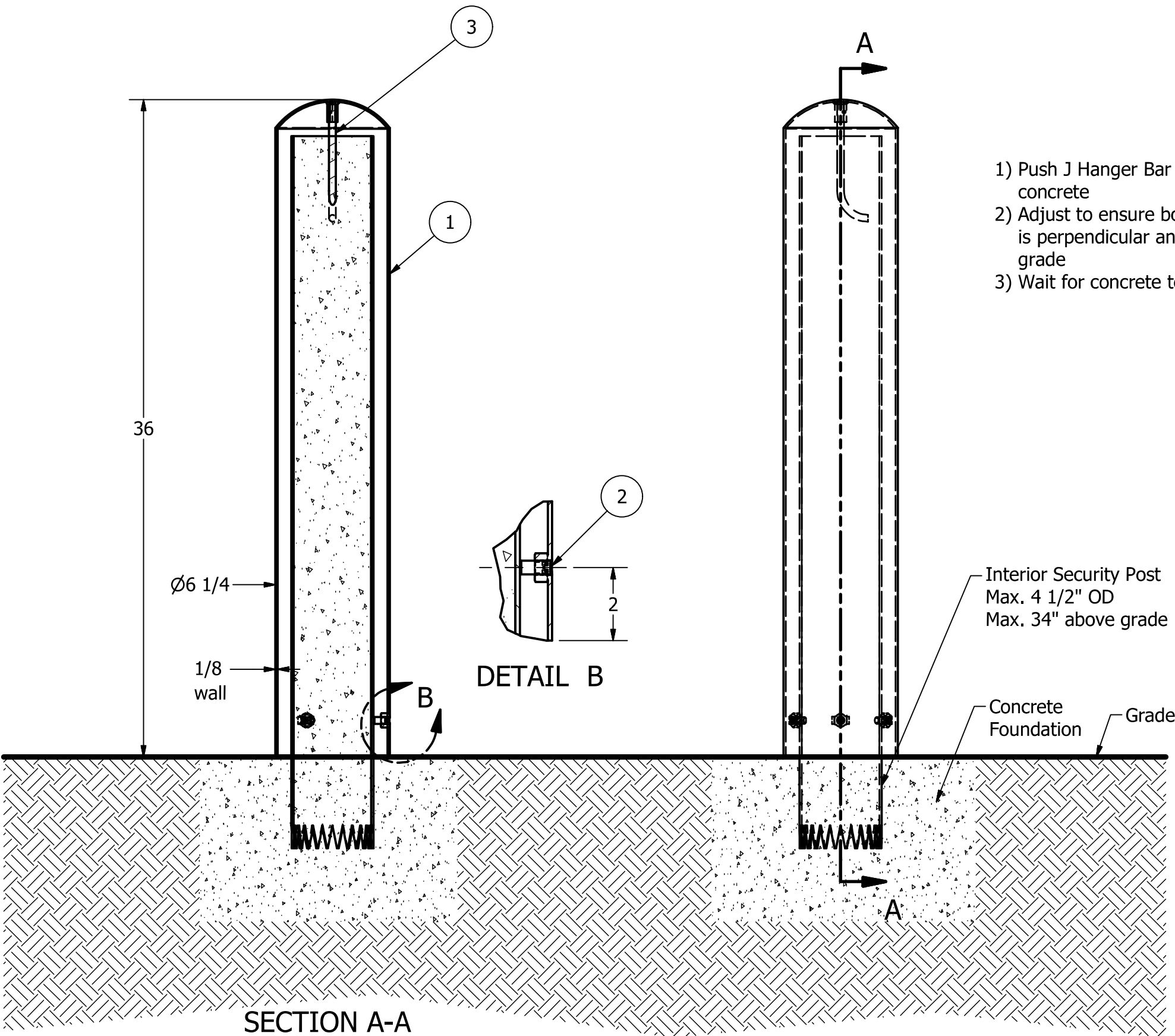
- Set Screw Installation Option
(see sheet 2 of 5)
- Adhesive Foam Installation Option
(see sheet 3 of 5)
- Top Hanger Installation in Existing Concrete
(see sheet 4 of 5)
- ☉ J Hanger Installation in New Concrete
(see sheet 5 of 5)

For more information on bollard post installation, please visit:
www.reliance-foundry.com/bollard/installation-bollards

Care and Maintenance:

Despite its natural anti-corrosion properties, stainless steel may corrode if cautionary procedures are not followed, or if products are neglected for extended periods of time. High-saline environments or other areas with high exposure to chlorides may increase risk of stainless steel corrosion. Regular cleaning will maintain optimal condition and appearance.

See Reliance Foundry's maintenance guide at:
www.reliance-foundry.com/bollard/stainless-steel-maintenance



J Hanger Installation in New Concrete

- Notes:
- 1) Bollard cover is provided as shown. Concrete, foundation and/or installation ordered separately or provided by others.
 - 2) Minimum foundation sizes depend on local soil conditions, weather conditions, and engineering requirements.
 - 3) Dimensions provided herein is for reference only. Please consult Reliance Foundry sales professionals if any dimension is critical to your particular installation.
 - 4) Reliance Foundry reserves the right to amend design and specifications without prior notice for product improvement.

PARTS LIST					
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	1	R-7301	R7301 Stainless Steel Bollard Cover	Stainless Steel 316	25 lbs
2	3	Hexagon Socket Set Screw 3/8" x 7/8"	Hexagon Socket Set Screw 3/8" x 7/8" - requires 3/16" hex key	Stainless Steel	
3	1	R7300 J HANGER 3/8"	R7300 Top J Hanger 3/8" Custom Order Length	Steel	1/4 lbs

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RELIANCE FOUNDRY
— SINCE 1925 —

Unit 207, 6450 - 148 Street, Surrey, BC V3S 7G7, Canada
1-877-789-3245 info@reliance-foundry.com
www.reliance-foundry.com

TITLE			
Bollard Cover R-7301			
SIZE		DWG NO	REV
C		R7301	C2
NOT TO SCALE		SHEET 5 OF 5	

TBOS-BT / TBOS-BT-LT

Bluetooth Battery-Operated Controller

Install anywhere. Program from a smartphone.

Easy to Install

- Ideal for commercial applications, including municipal parks, street and highway landscape projects, and construction projects.
- Convenient durable option for providing uninterrupted irrigation while AC-power is not available.
- The TBOS potted latching solenoid will mount on all Rain Bird valves: DV, DVF, ASVF, PGA, PEB, PESB, EFB-CP, BPE and BPES series.
- One Smartphone can program an unlimited number of TBOS-BT Controllers.
- The TBOS solenoid adapters will adapt the potted latching solenoid for use in retrofit applications with selected Irritrol® (Hardie/Richdel) and Buckner® valves or Champion® and Superior® valve actuators.

Easy to Program

- Intuitive programing using the Rain Bird Smartphone app.
- User interface available in these languages: English, French, Spanish, Portuguese, German, Italian, Turkish, Russian, Chinese, Japanese, and Arabic.
- Complete Manual irrigation mode.
- Controller and station names can be customized in App for easier identification.
- TBOS-II Field Transmitter is compatible with TBOS & TBOS-BT Models only. "LT" models are not compatible.

Rain Bird App Features (TBOS-BT/LT)

- Low battery indicator warns of failing batteries in the TBOS-BT Controller.
- 3 local irrigation programs may be saved and restored from App.
- Capability to erase the controller's individual station programs or all programs.
- Capability to review the irrigation program.

TBOS-BT/LT Controller Features

- Basic programming includes 3 independent programs A, B and C, each with 8 start times per day.
- Stations can be assigned to several programs with different watering run times.

- Run time is from 1 minute to 12 hours in 1-minute increments.
- Independent station operation allows sequential start times (with stacking in case of overlap).
- Program-specific and global Monthly Seasonal Adjust; 0% to 300% (1% increment).
- Five watering day cycle modes (Custom, even, odd, odd-31, cyclical) selectable by program for maximum flexibility and watering restriction compliance.
- Rain Delay from 1 to 14 days.
- Master valve output on TBOS-BT 2-, 4-, and 6-station models.
- A TBOS Backup program may be saved and restored (manually or automatically for Contractor Default capability).
- No loss of irrigation program after a battery replacement.

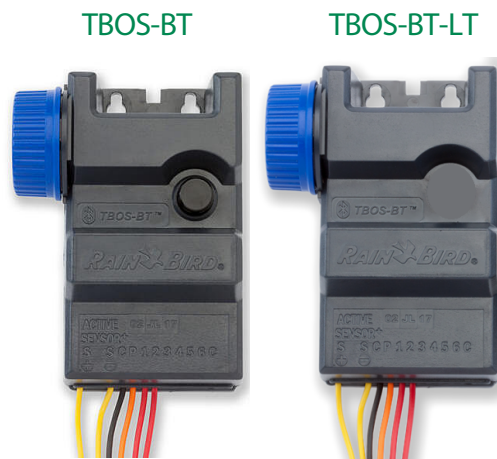
TBOS-BT/LT System Components

Rain Bird App (TBOS-BT/LT)

- Available for Android and iOS devices.

TBOS-BT Controllers

- Available in 4 models: 1, 2, 4, or 6 stations.
- Operates one valve per station.
- Direct Rain Sensor Connection accommodates the Rain Bird RSD-BEx Rain Sensor.
- Operates with one 9V alkaline battery (Energizer and Duracell are recommended) type 6AM6 (international standard) or 6LR61 (European standard): battery not included.
- Battery life is one year with a high-quality 9V alkaline battery.
- Resists humid and harsh environments.
- Rated IP68: 100% waterproof and fully submersible.
- Master Valve/Pump output on on TBOS-BT 2-, 4-, and 6-station models.
- Dimensions: Width: 3.8" (9,5 cm)
Height: 5.1" (13,0 cm)
Depth: 2" (5,3 cm)
- Weight: 17.64 ounces (500g)
- Maximum wire run between the controller and solenoid: 30m by using 1.5mm² (16 AWG) extended wire.



TBOS-BT/LT System Accessories

TBOS Potted Latching Solenoid

- Two 0.75 mm² wires (18 gauge) are supplied: 60 cm long (23.6 inches)
- Plastic adapter included for Rain Bird valves: DV, DVF, ASVF, PGA, PEB, PESB, EFB-CP, BPE and BPES series.
- 10 bars (150 psi) maximum operating pressure.

Certifications

- cULus, FCC Part 15b, ISED RSS-247 Issue 2.0, CE, IP68, ICASA, CITC, ACMA, SUBTEL, SRRC, MIC, IFETEL, CRA, TRA. For current certifications visit: www.rainbird.com/tbosbt

How to Specify

TBOS-BT Controller Models (Europe Only)

- TBOS-BT1 (1 station)
- TBOS-BT2 (2 station)
- TBOS-BT4 (4 station)
- TBOS-BT6 (6 station)

TBOS-BT/LT Controller Models (US & Europe)

- TBOS-BT1LT (1 station)
- TBOS-BT2LT (2 station)
- TBOS-BT4LT (4 station)
- TBOS-BT6LT (6 station) Available in Europe only

TBOS-BT/LT Solenoid Adapters

- Easy to install.
- Black adapter for plastic valves allows the TBOS potted latching solenoid to be used with selected Irritrol (Hardie/Richel) and Buckner valves.
- Brown adapter for brass valves allows the TBOS potted latching solenoid to be used with selected Champion and Superior valve actuators.

RSD-BEx Rain Shutoff Device

- Operates with 24V or 9V controllers, including TBOS, TBOS-II and TBOS-BT/LT.
- Designed to save water by automatically measuring precipitation and keeping irrigation systems from watering in rainy conditions.
- Does not interrupt irrigation taking place, but subsequent program starts will be prevented.
- Automatic return to normal watering schedule when the moisture level decreases as a result of natural evaporation.

Specifications

TBOS-BT/LT Controller

The irrigation controller shall be programmable from the Rain Bird Smartphone App.

The programs and manual operations shall be communicated to the controller from a Smartphone via Bluetooth.

The controller shall be of a module type which may be installed in a valve box underground.

The controller shall be housed in an ABS plastic cabinet and shall be potted to insure waterproof operation. Their battery compartment shall be dual-sealed to prevent water from entering the compartment. The controller shall have two mounting slots for

screws allowing the controller to be securely mounted inside a valve box. The controller shall be designed to accommodate one 9V alkaline battery (EN22- 6L561-6AM6-9V) for one full year regardless of the number of stations utilized.

The controller shall operate ____ (1, 2, 4 or 6) stations.

One sensor input shall be present on the controller and shall accommodate dry contact rain sensor.

____ -station (2-, 4-, or 6-) models shall be able to support a Master valve.

All valves shall affect the Master Valve /Pump.

The controller shall have station run time capability from one minute to twelve hours in one minute increments, a 365-day calendar with leap year and three programs A, B, C with eight start times each. One valve can be assigned to none, one, any or all programs.

Each program shall be capable of being set to any of the following: custom cycle (days of the week), cyclic (1 to x days variable), odd days, odd days-31 and even days.

The controller shall have a program level and global Monthly Seasonal Adjust; 0% to 300% (1% increment).

A Rain Delay shall allow the user to suspend irrigation programs from 1 to 14 days.

The controller shall be capable of starting/stopping a manual single valve or manual program, cancel irrigation in progress or launch a test valve via Bluetooth from the Rain Bird App.

Each valve not activated during the last 24 hours shall be automatically activated during 1 second each day for an anti-calcium effect.

TBOS-BT/LT Potted Latching Solenoid

Controller station output shall drive one

single potted latching solenoid that shall fit onto any Rain Bird Valves: DV, DVF, ASVF, PGA, PEB, PESB, EFB-CP, or BPE or BPES series valve.

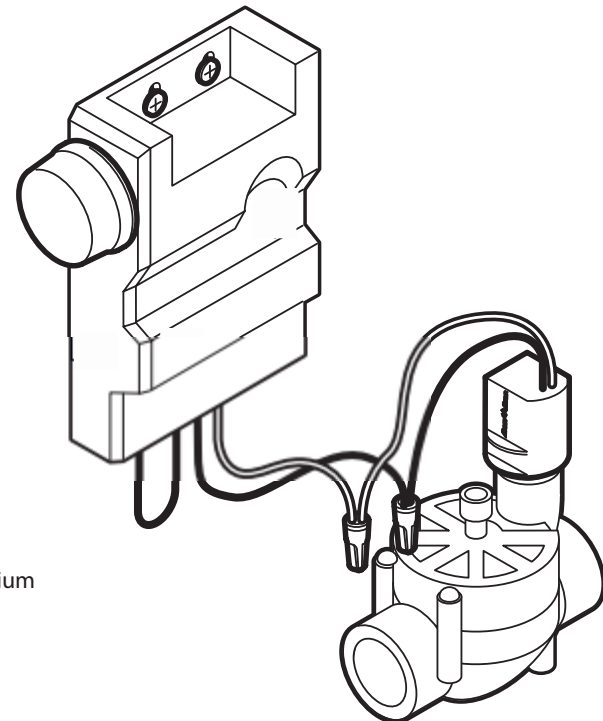
The controller and Potted Latching Solenoid shall be as manufactured by Rain Bird Corporation, Glendora, California, USA.

TBOS-BT/LT Rain Shutoff Device

The Rain Shutoff Device shall function correctly only when buried under 2" (5 cm) of sand. The device shall be pre-set and nonadjustable.

The device shall function with a DC system only. The device shall have a bypass switch.

The Rain Shutoff Device shall be as manufactured by Rain Bird Corporation, Glendora, California, USA.



Rain Bird Corporation
6991 East Southpoint Road
Tucson, AZ 85756
Phone: (520) 741-6100
Fax: (520) 741-6522

Rain Bird Technical Services
(800) RAINBIRD (1-800-724-6247) (U.S. & Canada)

Rain Bird Corporation
970 West Sierra Madre Avenue
Azusa, CA 91702
Phone: (626) 812-3400
Fax: (626) 812-3411
Specification Hotline

800-458-3005 (U.S. & Canada)

Rain Bird International, Inc.
1000 West Sierra Madre Ave
Azusa, CA 91702
Phone: (626) 963-9311
Fax: (626) 852-7343

The Intelligent Use of Water™
www.rainbird.com

INSTALLATION GUIDE

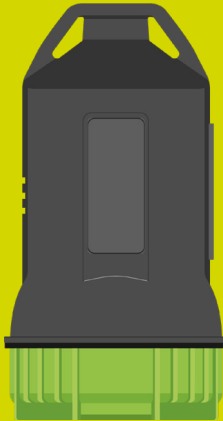
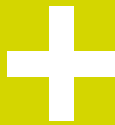
◀ ZELT^{Evo} ▶



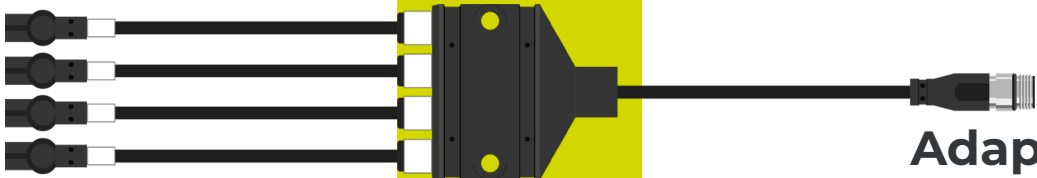
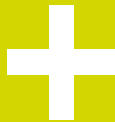
Zelt^{Evo} system



ZELT^{Evo} sensor



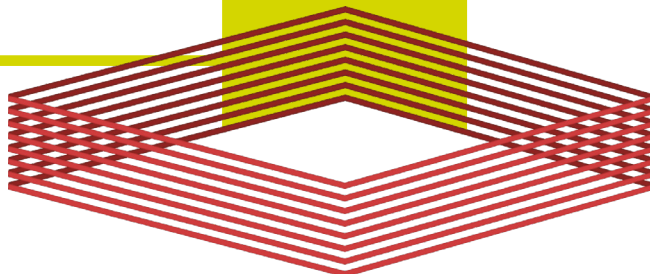
Battery pack



Adapter



**Electromagnetic
loops**



Zelt^{Evo} detailed content



wire for the loops
(colour may vary)



Battery pack



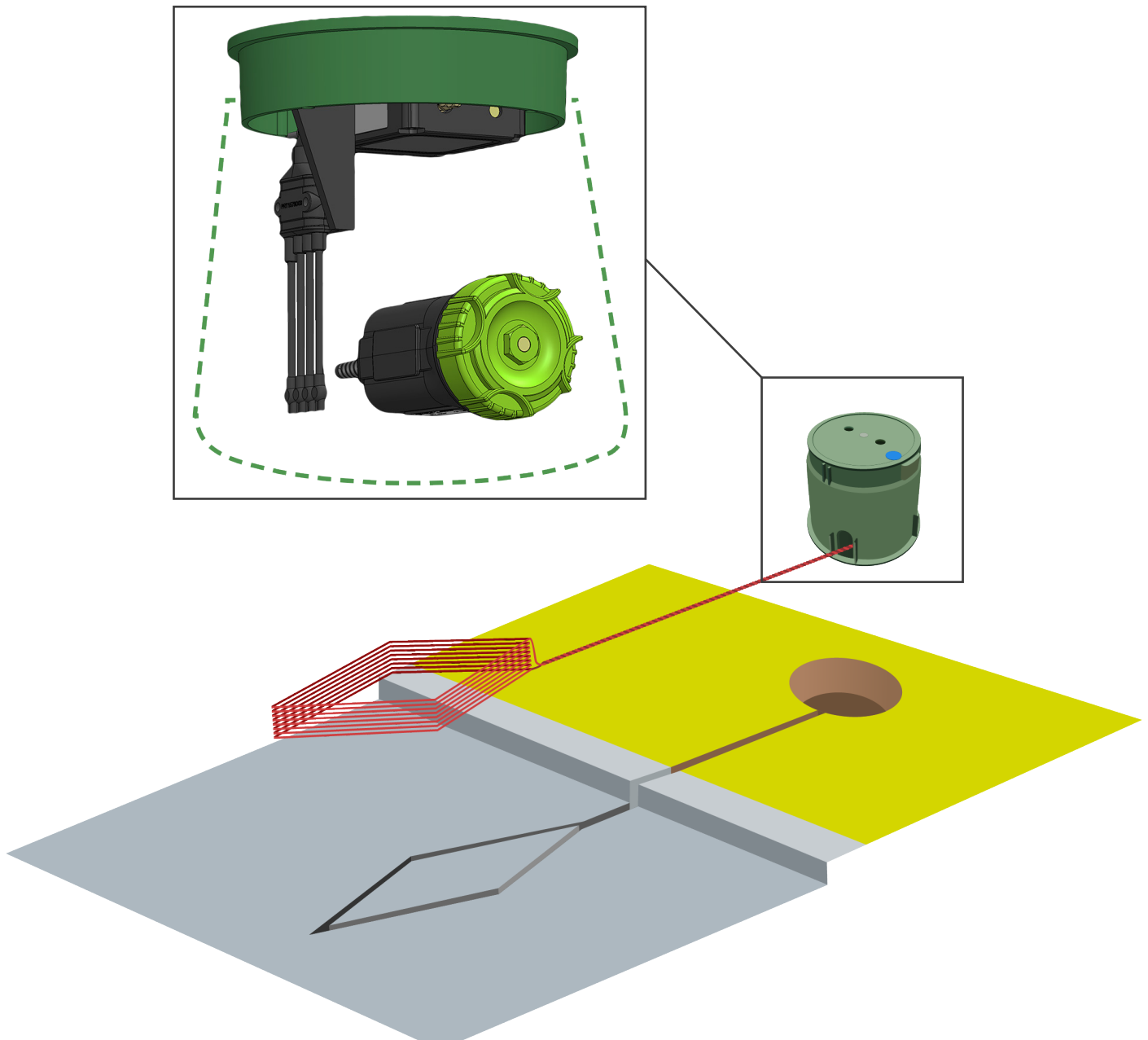
Geotextile + Torx TT45 spanner +
magnetic key + plug



Scotchlok® + loop markers



Overview of the Zelt^{Evo} system



There are two manholes for the Zelt Evo: the nature manhole and the urban manhole. The following installation will be based on the nature manhole, but the instructions given will also apply to the urban manhole.



nature manhole



urban manhole

Contents

Site selection	p.06
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Safety	p.07
Warnings before installation	p.08
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Installation steps

Step 1 - Drawing loops on the ground	p.11
Step 2 - Cutting the kerfs	p.11
Step 3 - Winding the loops	p.14
Step 4 - Cutting off excess cable	p.15
Step 5 - Twisting the loop tails	p.16
Step 6 - Referencing loops	p.16
Step 7 - Arrange the loop tails	p.17
Step 8 - Connecting the loops to the adapter	p.17
Connect the battery pack and the loops	p.20
Step 9 - Installation wizard	p.21
Step 10 - Testing the loops	p.22
Step 11 - Covering the loops	p.22
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Customer service	p.24
Appendix - Replace COMBO/ZELT	p.25

Site selection

AVOID THE FOLLOWING SITES:

Sites with sources of electromagnetic interference, for example:

Other counting loops (minimum 4 m (157") between loops).
Overhead or buried high voltage power lines.
Buried telecom equipment, etc.

Sites with slowing down or stationary users, for example:

End of a climb.
Within proximity of a stop sign.
Within proximity of a pedestrian crossing.
Presence of obstacles in the vicinity of the counting location, etc.

Curved lanes:

The passage must be in a straight line over the loops.

Materials needed

To mark out the area to be cut

Plank of wood or ruler of 150 cm (59") minimum
Measuring tape
Chalk

To cut out the kerfs

Thermal grinder with vacuum blower and double diamond disc for concrete

To install the loops

To form the loops: screwdriver (or drill), pliers, ruler.
To check the inductance of the loops (optional): multimeter with inductance reading.
To protect the tail of the loops (optional): Ø 25 mm (0.1") conduit, cutter.
If you are using your own cable to form the loops: 1.5 mm² (AWG-15) multi-strand cable.

To fill in the kerfs

Detector loop sealant, Backfill mortar or any material normally used for road works as long as the temperature of the product **does not exceed 60°C (140°F)**.

Recommended: cold mix or fast hardening micro-concrete for sealing road elements (e.g. sika fastfix-138tp, 714 scellflash micro-concrete).

To test the loops

Bicycle.
E-Scooter.

To be adapted according to the types of vehicles to be counted.

Safety

Risk of personal injury

Secure the work area with cones and signs.



Wear appropriate personal protective equipment:
high visibility vest, protective shoes and goggles, ear defenders,
dust mask, protective gloves, etc.

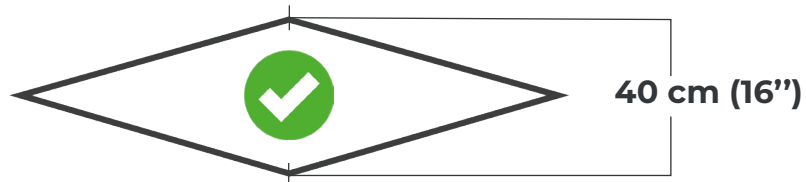


**The Eco-Counter® is a measuring device:
handle it with care both during installation and use.**

Warnings before installation

Observe the following tips for optimal counting.

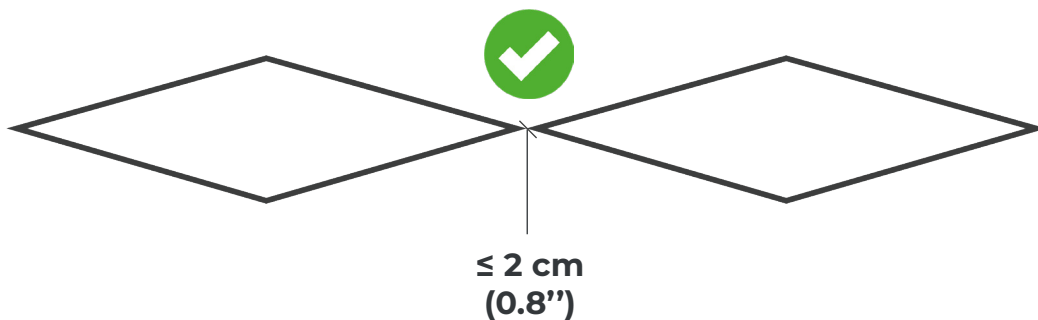
The width of the loop is **ALWAYS 40 cm (16")**.
Only the length varies depending on the size of the lane.



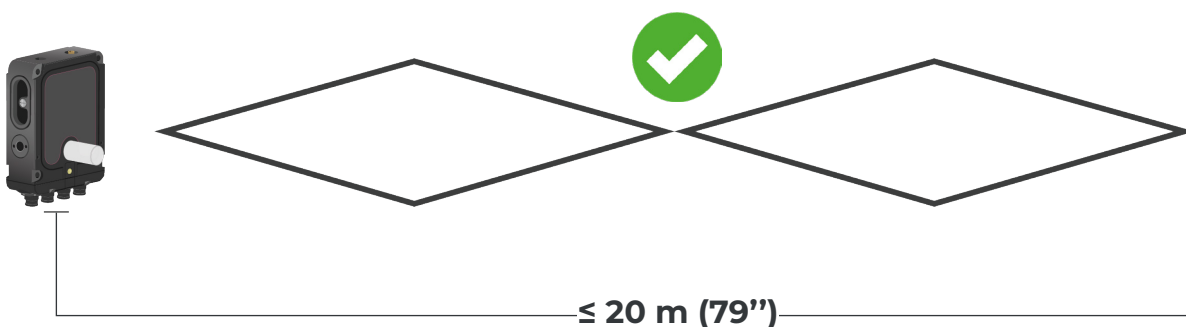
Space on the sides: **15 cm maximum** between the lane and the loop.
Scooters or bicycles could ride in this space and not be counted.



If two loops are side by side:
The space between the two loops should be less than **2 cm (0.8")**.



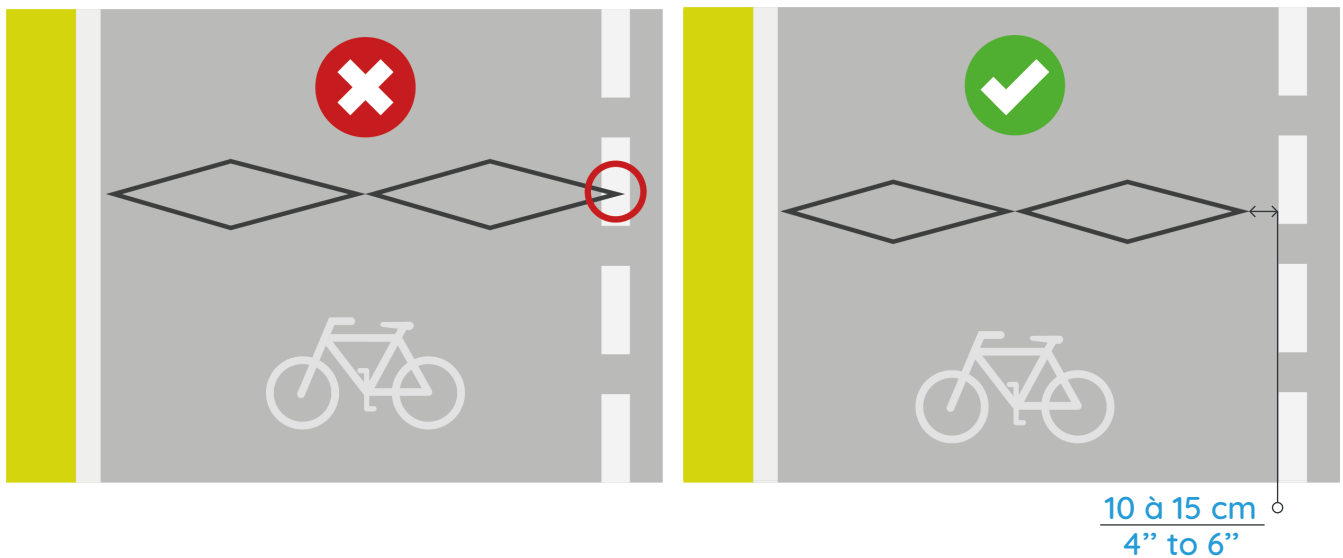
The distance between the ZELT^{Evo} sensor and the farthest loop tip should be less than **20 m (79")**.



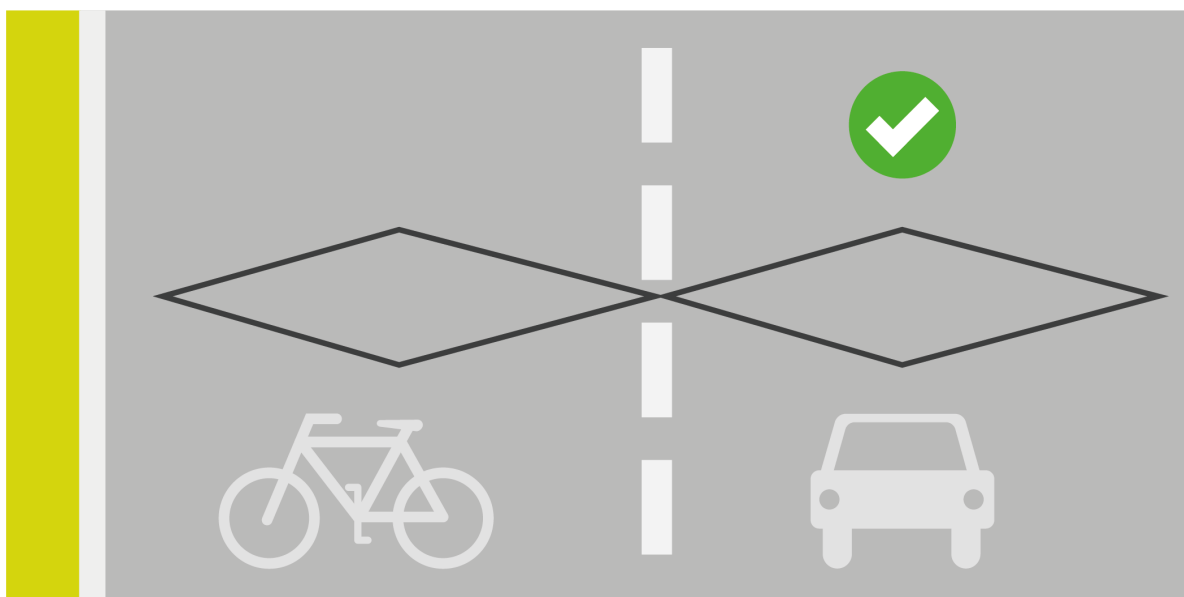
Special cases: shared bike/car lanes

Solution 1: Make the loops inside the bike lane (10 to 15 cm, 4" to 6"), excluding the dividing line between the bike lane and the vehicle lane, as shown below.

WARNING: if cars overflow the bike lane and drive close to the loop ends, counts may be disrupted.



Solution 2: Install additional loops on the road to saturate the signal when these vehicles pass, as shown below, and thus avoid counting disturbances.



Fixing the holder to the manhole



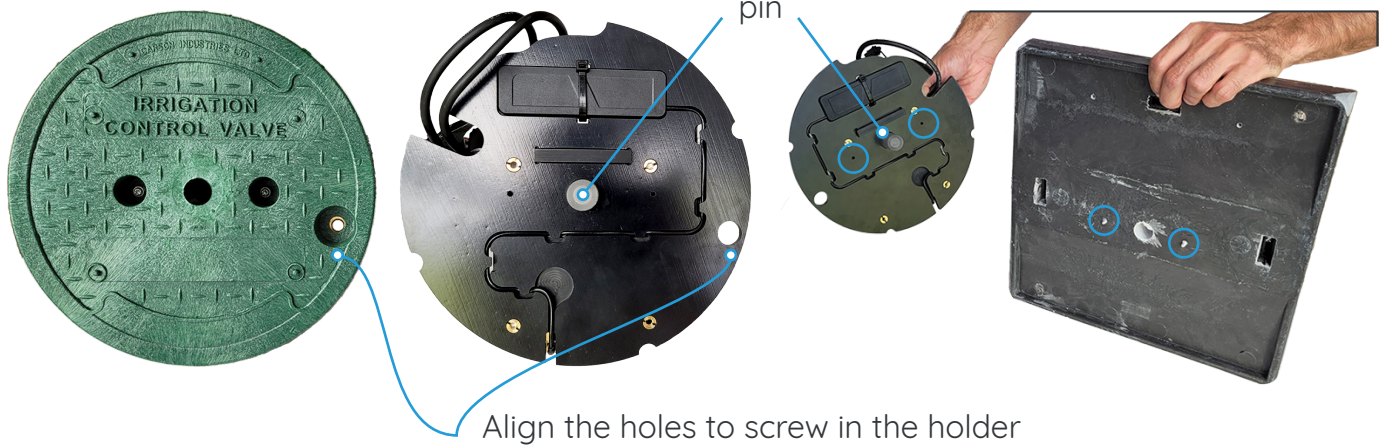
*This step is only valid if you have purchased the product **without** the Eco-Counter manhole option.*



follow the steps below to attach it correctly.

When replacing a ZELT counter with a ZELT Evo, please refer to page 24.

1. Alignment of the holder with the manhole



Align the holes to screw in the holder

2. Screwing



Screw the holder onto the manhole cover by inserting the pin in the hole provided for this purpose.



Do not use self-drilling screws



Max. recommended length for screws :

18mm for nature manhole

23mm for urban manhole

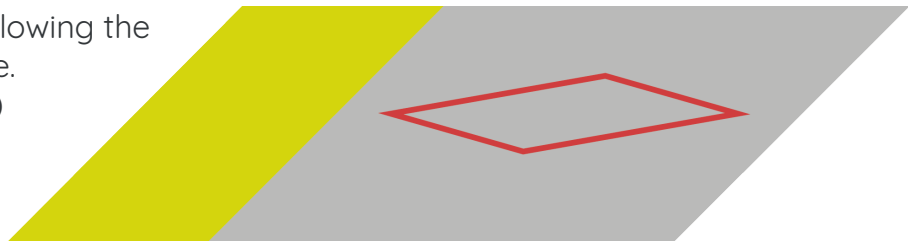


Step 1

Drawing loops on the ground

In HD mode, the loops should be spaced 40 cm (16") apart.

Draw the loops on the ground following the appropriate diagram for your site.
(see notice on layout diagrams)

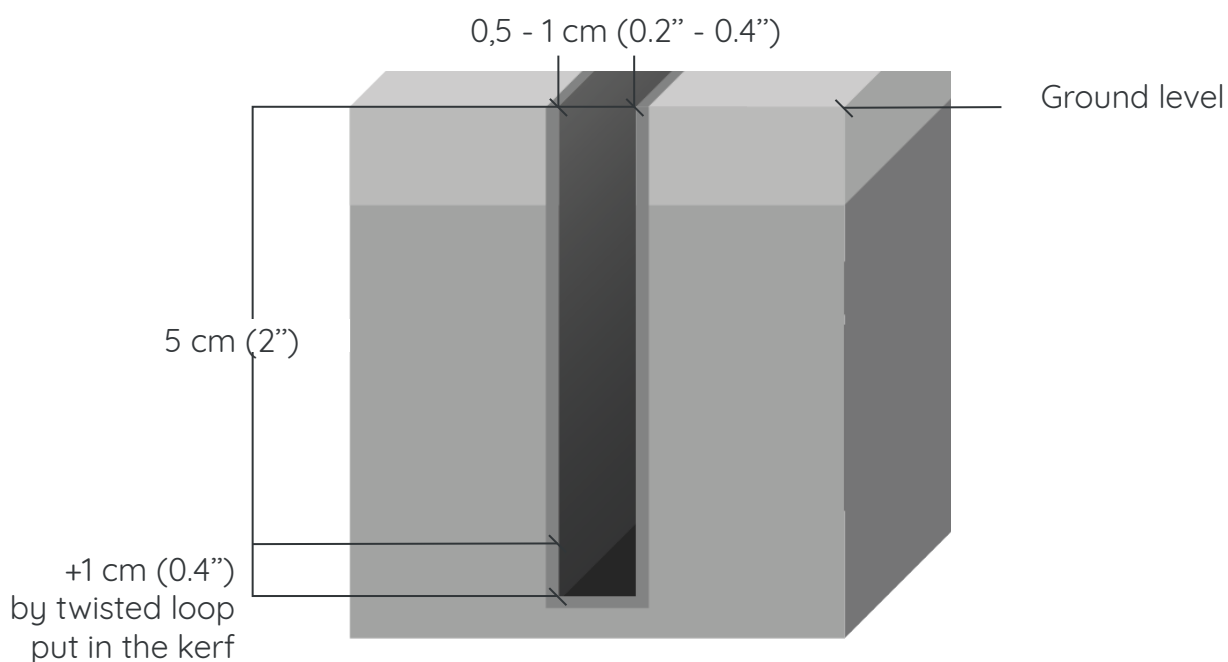


Step 2

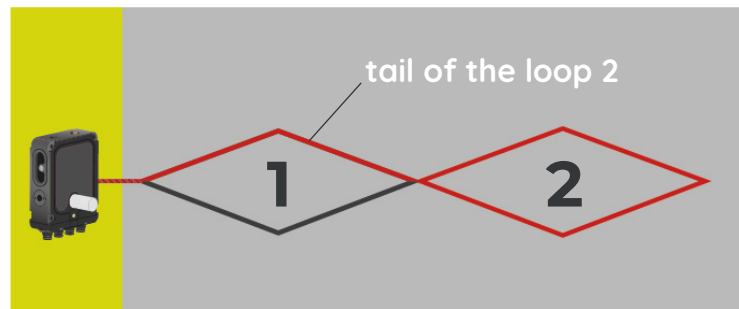
Cutting the kerfs (loop and kerf)



The vertices of the diamond must be perfectly pointed.
If the vertices of the diamond are rounded or broken during the cutting of the ground, the detection is not accurate.



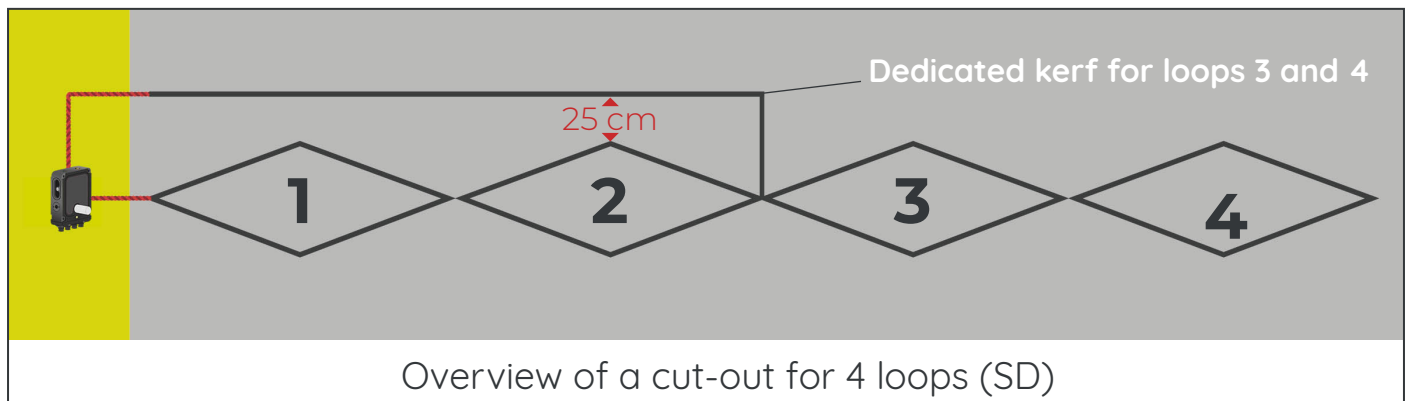
Sectional view of the kerf



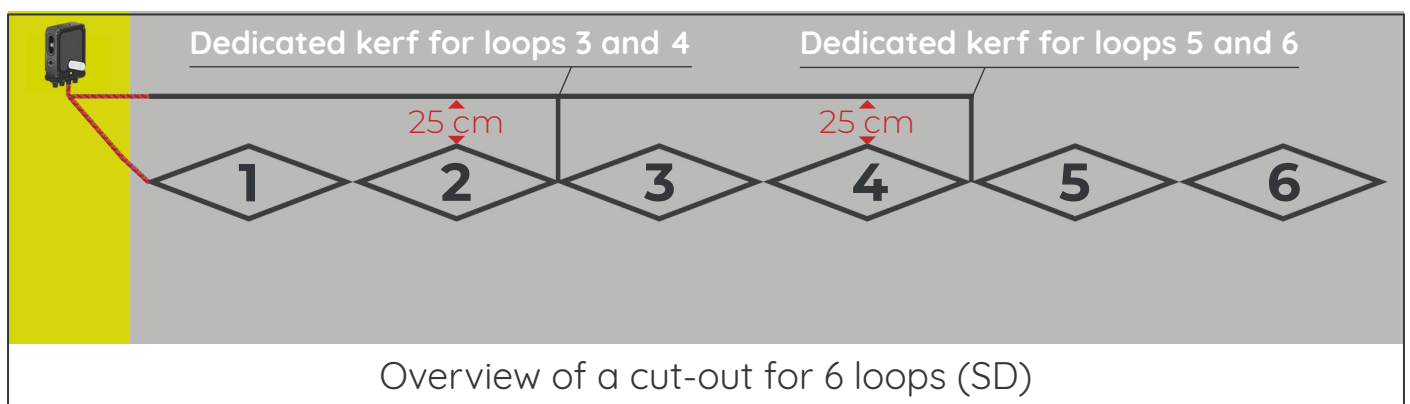
Overview of a cut-out for 2 loops (SD)

Place the kerf more than 25 cm (10") from the loops.

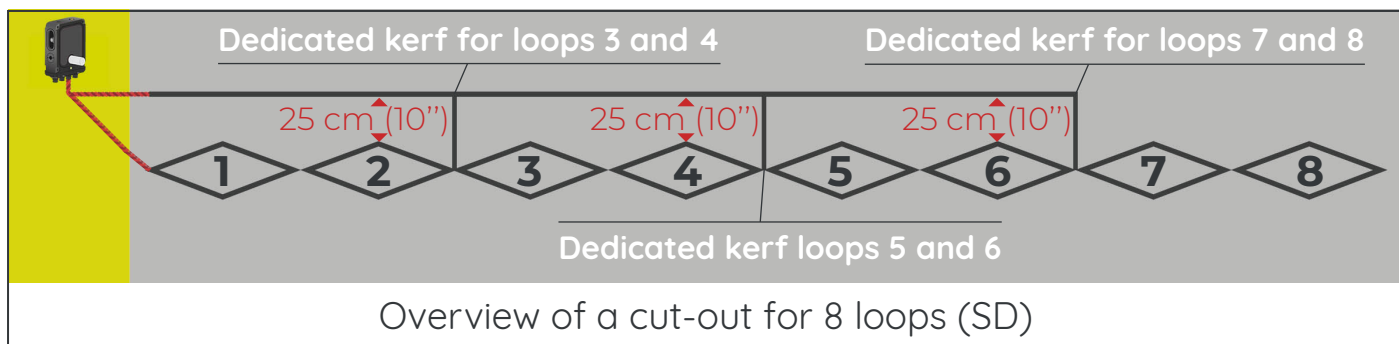
Below 25 cm (10") you risk a malfunction of the loops.



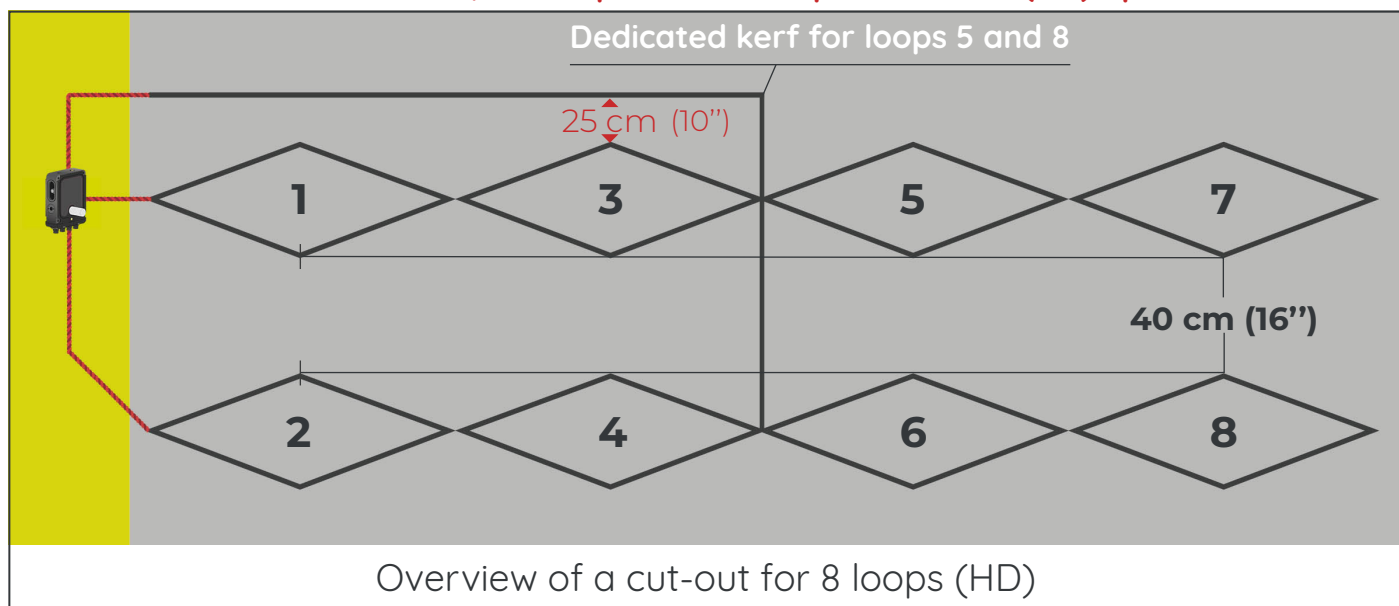
Overview of a cut-out for 4 loops (SD)



Overview of a cut-out for 6 loops (SD)



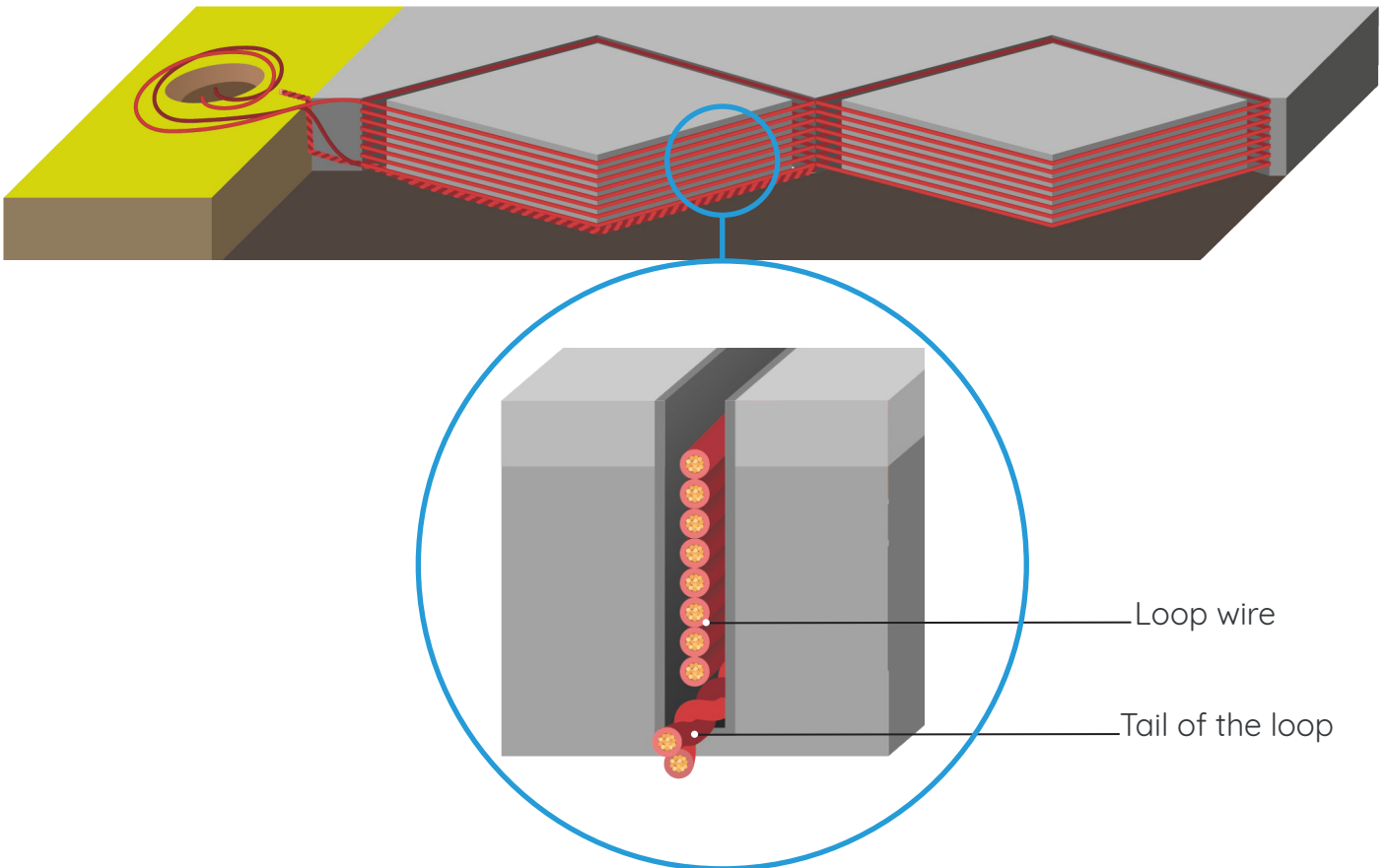
In HD mode, the loops should be spaced 40 cm (16 inches) apart.



**Clean and dry the sawcuts
before moving on to the next step**

Step 3 Winding the loops

Place the wire in the diamond cut-out



Form a loop in the furthest diamond from the ZELT^{Evo} sensor.
The direction of rotation is not important.

Loops **110 – 150 cm (43" - 59")**

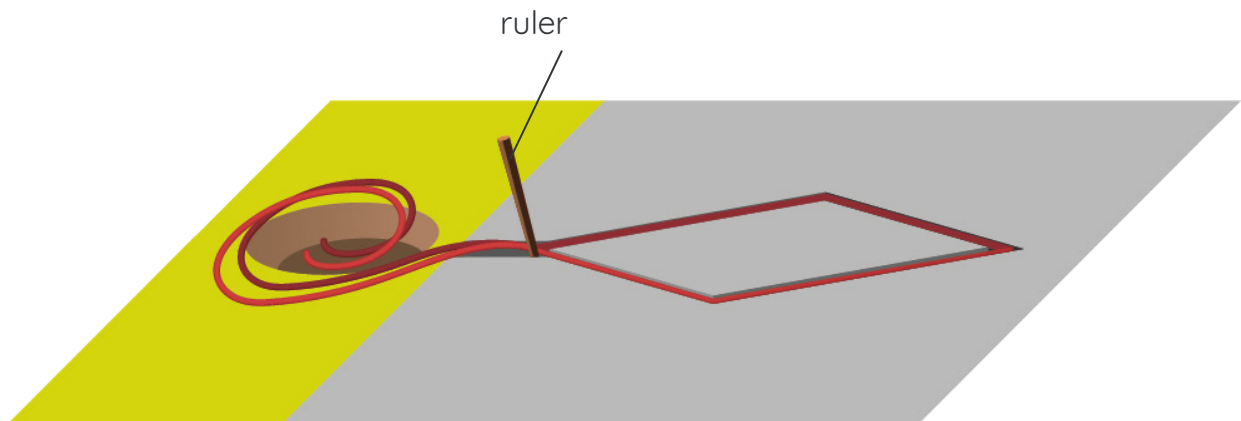
Wind the wire to form
8 full diamonds

IMPORTANT: Keep enough length of wire
to easily bring the loop tail to the ZELT^{Evo} sensor.

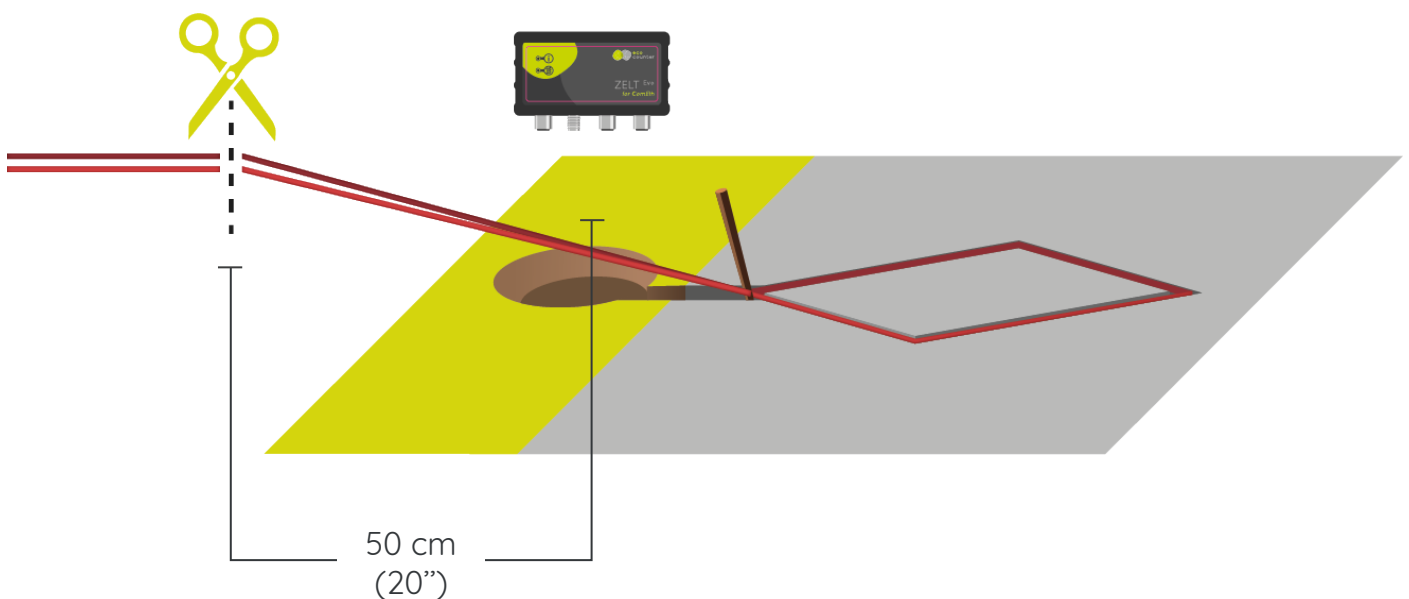
Step 4

Cutting off excess cable

Secure the wire in the kerf at the tip of the diamond with a ruler or any object that can block the wire.



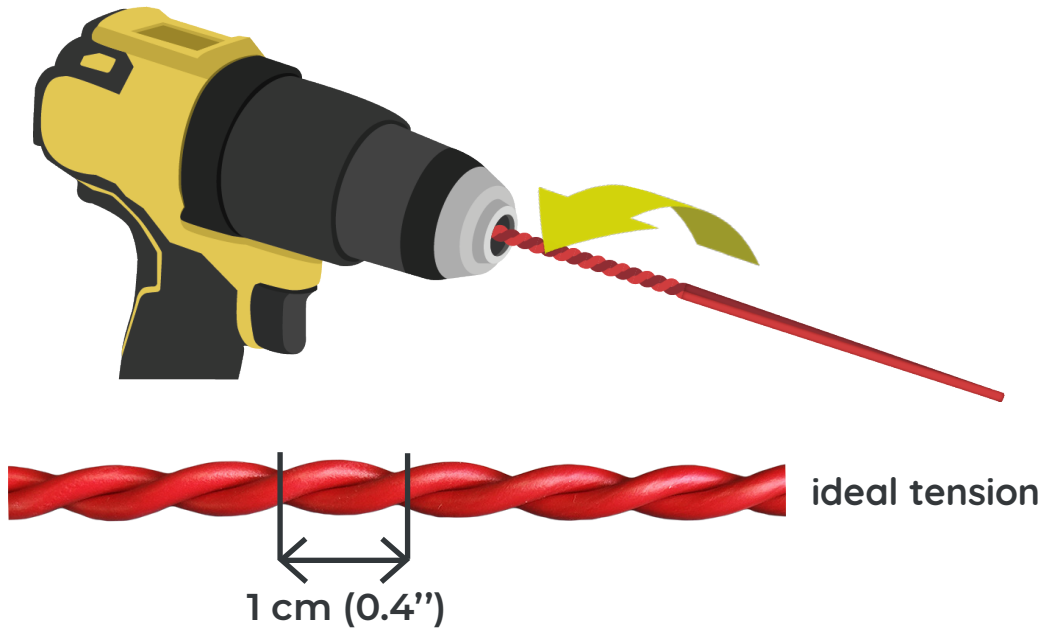
Stretch both ends of the cable, then bring them to the manhole with the ZELT^{Evo} sensor. From the ZELT^{Evo} sensor, allow an additional 50 cm (20") and cut off the excess.



Step 5

Twisting the loop tails

Attach the two ends of the cable to a drill.
Tighten the assembly.
Engage the screwdriver.
Keep the wire taut and the speed slow for best results.
Make sure you get a tension similar to the diagram below.



Step 6

Referencing loops

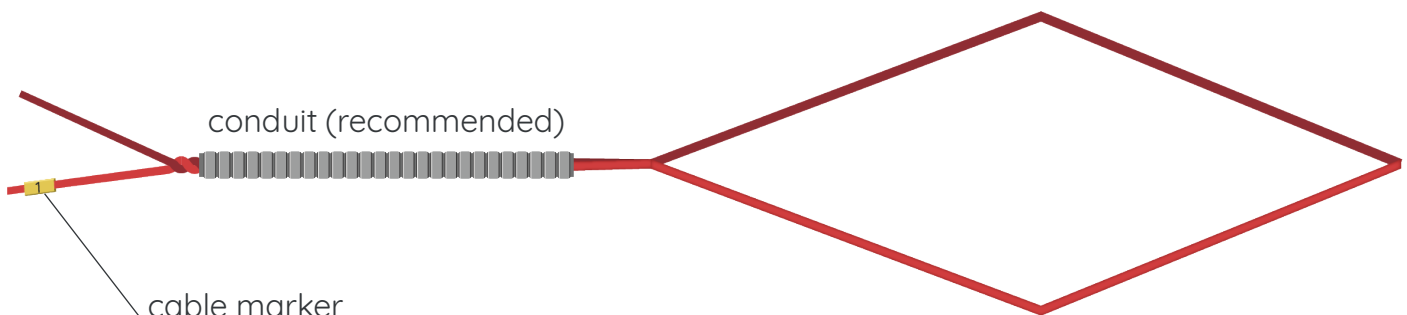
Insert a cable marker with the loop reference (1, 2, 3, etc.), on one end of the twisted tail.

To reference the loops, follow the notice on the **layout diagrams**.

Insert the twisted tails of the loops into the conduit (recommended).

For a ZELT meter replacement by ZELT Evo, please refer to the loop matching table on page 26.

If you have a multimeter: with inductance reading, check the inductance of the loops. The inductance value should be between 100 and 150 μH .



Step 7

Arrange the loop tails

In order to place the tails,
please refer to the dedicated location diagrams on page 12 to 13.

Step 8

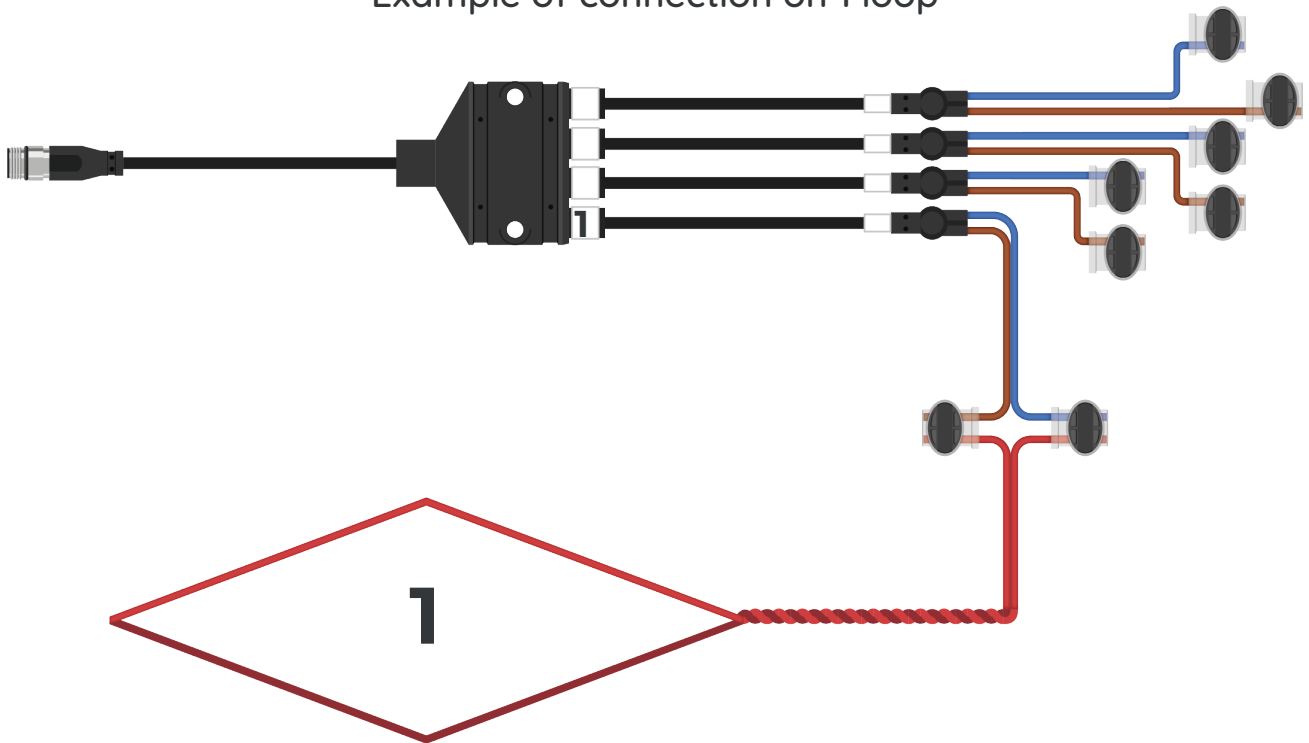
Connecting the loops to the adapter

Pass the wires into the manhole as shown in the picture below

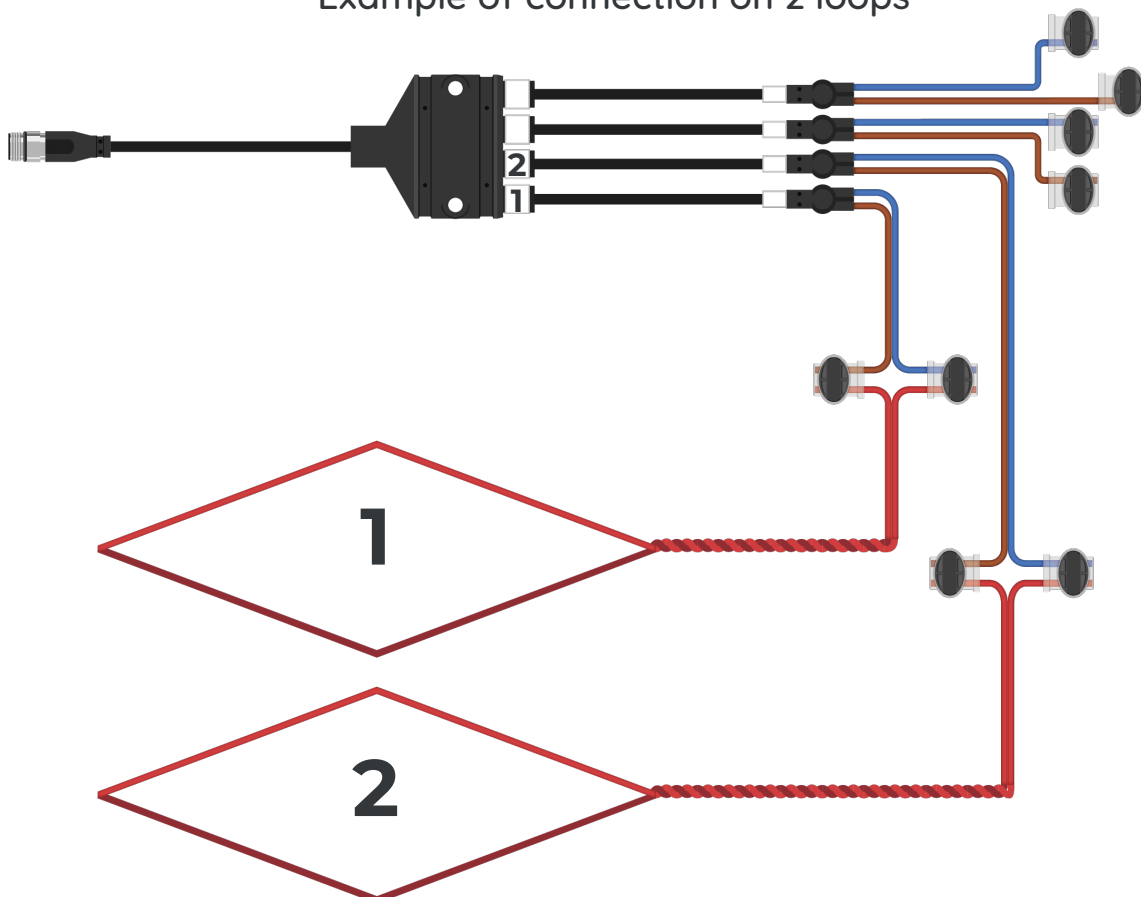


Close the unused cables of the adapter with a Scotchlok® connector (1 connector per wire).

Example of connection on 1 loop



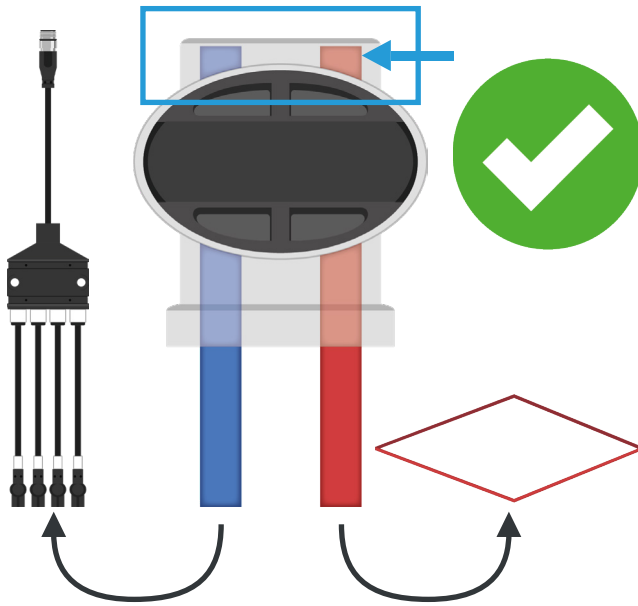
Example of connection on 2 loops



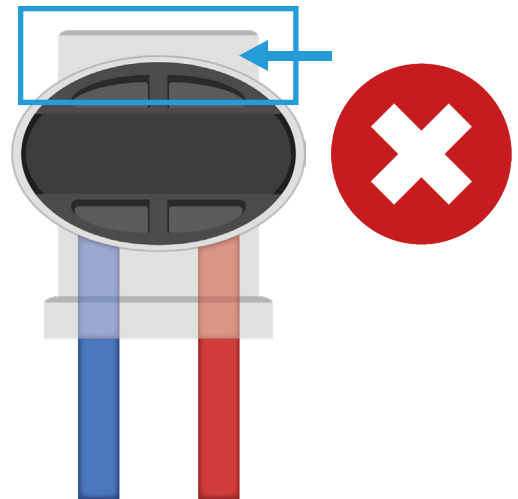
Following the same logic, connect the additional loops to the adapter.

Connect the ZELT loops to the adapter.
Use the Scotchlok® connectors. You will need 2 connectors per loop.
Insert the two cables into the holes of the Scotchlok® connector.
Push the cables in as far as they will go.

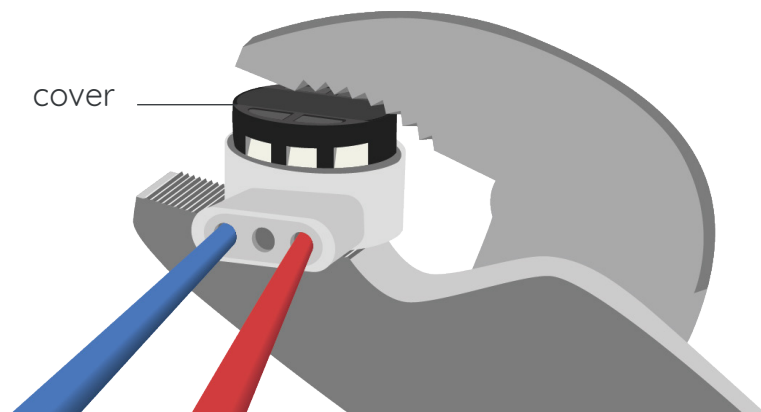
the wires are fully inserted



the wires are not fully inserted



Be sure to position the cover properly before pushing it on, then press the Scotchlok® connector with pliers to release the gel and connect it.



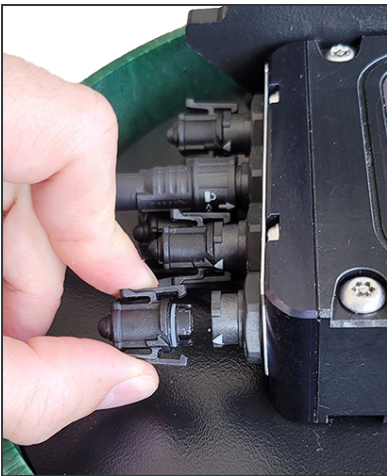
Connect the battery pack



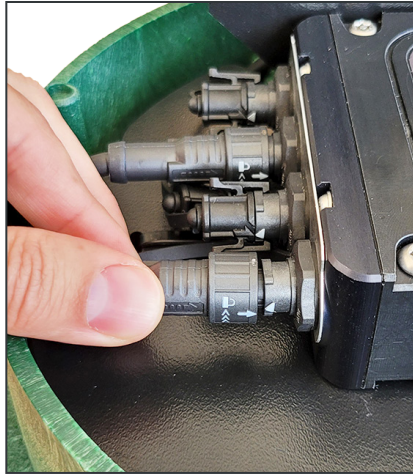
Warning ! Do not open the battery pack !



1. Remove the plug from the socket labeled **PWR** by squeezing on the lugs.
2. Insert the battery pack cable by aligning the white arrow with the white triangle.
3. Push in the cable. The connection is operational if you hear a «click».



1



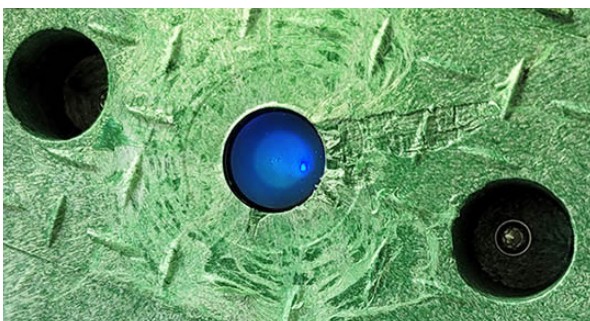
2



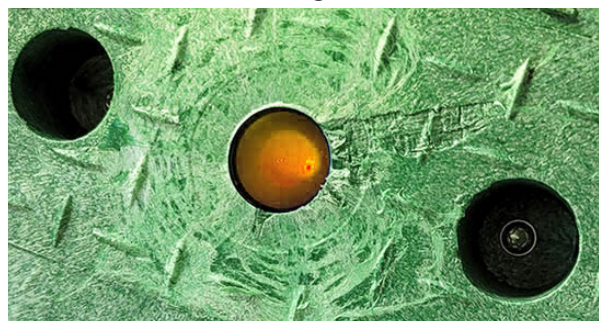
3

You can verify that the sensor is awake by looking at the manhole's lid.
A blue (or orange) light flashes in the center. The sensor stays awake for 3 minutes.
To wake it up again, simply pass the magnetic key over the center circle on the lid and the blue (or orange) light will reappear.

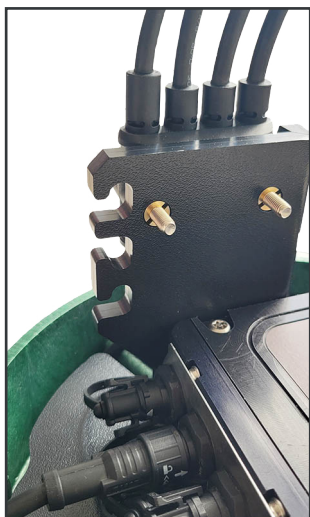
Serial number starting with ZLT2408xxxx



Or



Pass the battery pack cable through the cable clip as shown below.



1



2



3

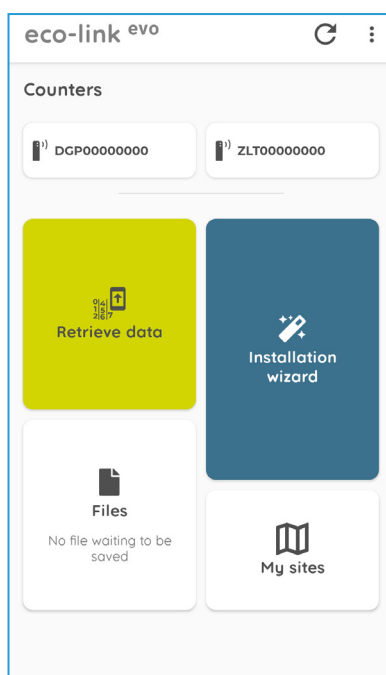
Step 9 Installation wizard

You can finalize the configuration with the eco-link^{Evo} installation wizard.
If you do not have the application yet, you can download it using the QR code below or by searching on your device's app store..

The counter is already configured according to your order.
However, you can modify its configuration if necessary using the installation wizard.



Download eco-link^{Evo}

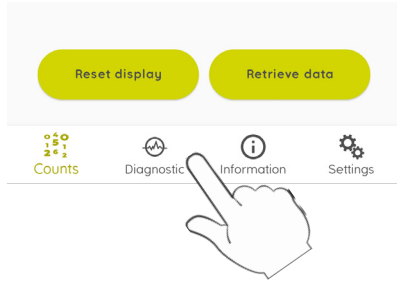


Download eco-link^{Evo}

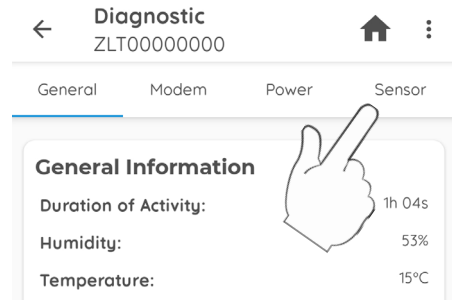
Start the **Installation wizard** by clicking the blue button.
Follow the steps in the wizard to finalize the configuration of your Zelt^{Evo}.

Step 10 Testing the loops

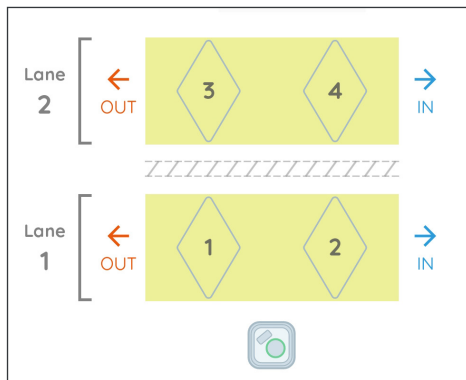
Be sure to test the loops before covering them
Make passes in both the middle and at the ends of each loop



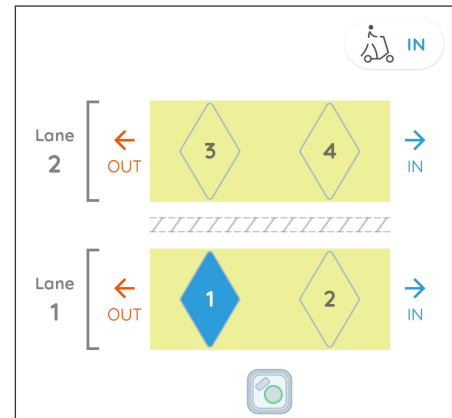
Tap on Diagnostic



Tap on Sensor



State without passage



State with passage

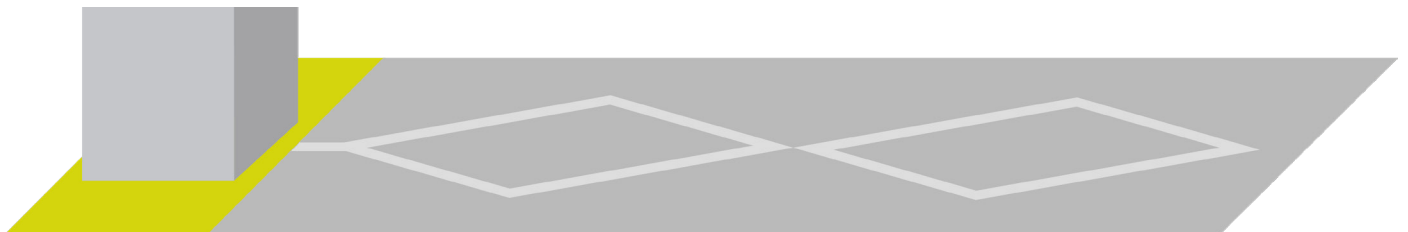
If the loops appear in a different state, contact customer service (p. 24)

Step 11 Covering the loops

Reminder :

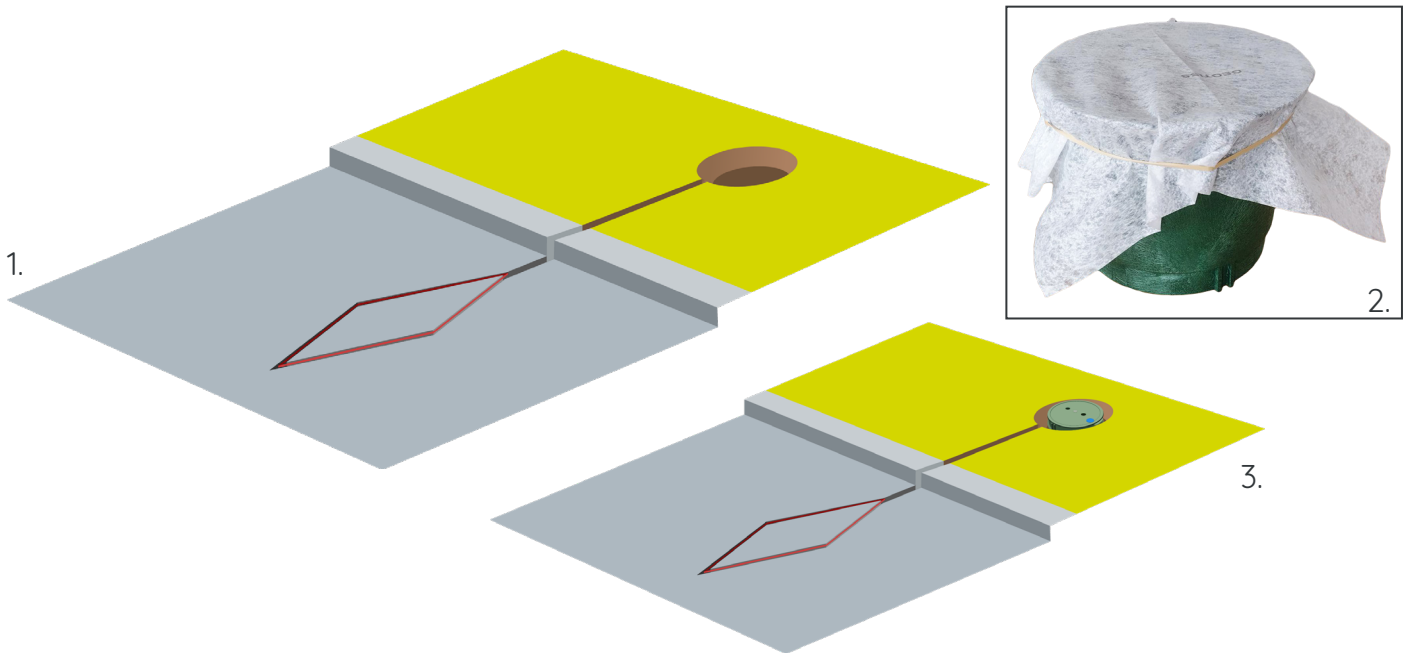
*Use cold mix or fast hardening micro-concrete for sealing road elements
(e.g. sika fastfix-138tp, 714 scellflash micro-concrete).*

The loop cable does not tolerate temperatures above 60°C (140°F).

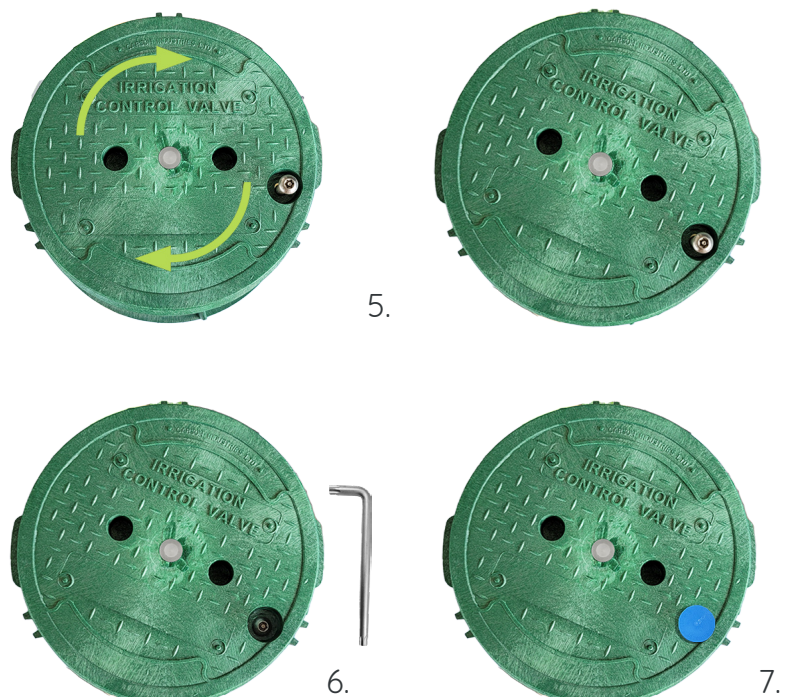


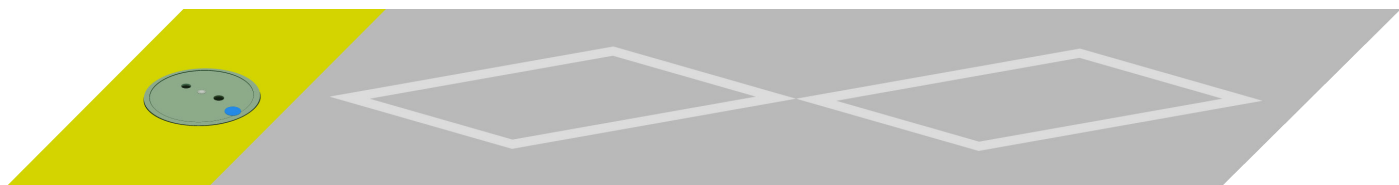
Manhole installation

1. Dig a hole the size of the diameter at the base of the manhole, 33 cm (13") minimum.
2. Place the geotextile as shown below with its elastic band over the base of the manhole.
3. Place the manhole in the hole.



4. Place the cables and battery pack in the bottom of the manhole.
5. Position the lid and turn it clockwise until it stops.
6. Screw down the bolt with the TT 45 torx spanner.
7. Place the blue plug over the bolt location and fill in the hole.





Your installation is complete!

Customer service

Do not hesitate to contact customer service for assistance.

Europe / World

Tel: +33. (0)2.96.48.48.83

Email: support@eco-counter.com

North America

Toll Free: 1-866-518-4404

Phone: 1-514-849-9779

Email: help@eco-counter.com

Appendix

Replace COMBO/ZELT

1. Open the manhole and take out the ZELT sensor, its Combo and its battery.
2. Cut the scotchlok®.
3. Unscrew the Combo from the manhole.



1.



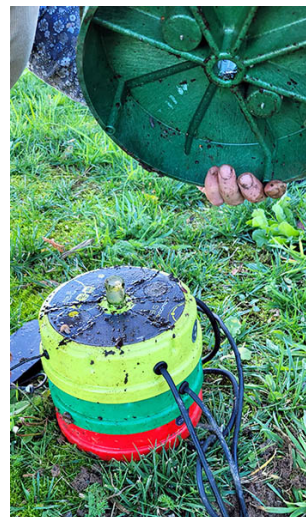
1.



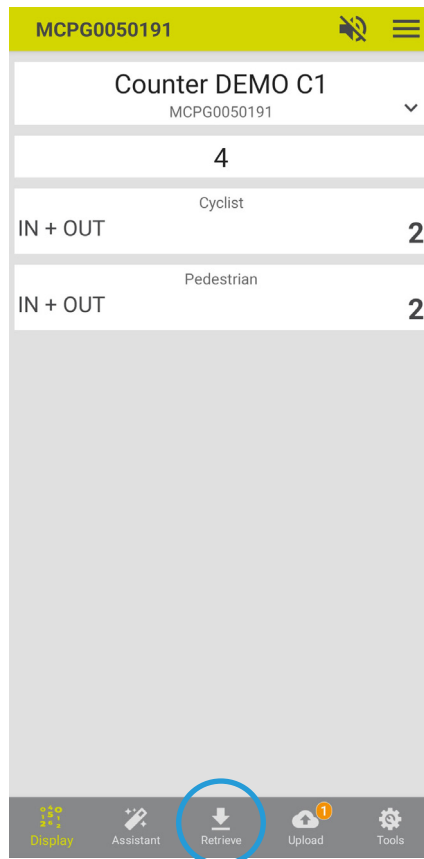
2.



3.



3.



Before disconnecting the ZELT sensor completely, perform a final data retrieval with Eco-Link Android using the **Retrieve** button.

You can now follow the installation steps described from page 10:

Fixing the holder to the manhole.

Then go to page 17, step 8: **Connecting the loops to the adapter.**

Attention to loop matching!


Connect loop A1 to 1 of the adapter, loop A2 to 2, etc.

ZELT loops	ZELT ^{Evo} Adapter
A1	1
A2	2
B1	3
B2	4
C1	5
C2	6
D1	7
D2	8

Finally, download the **Eco-Link ^{Evo}** application on page 21 to finalise the installation.



General Characteristics

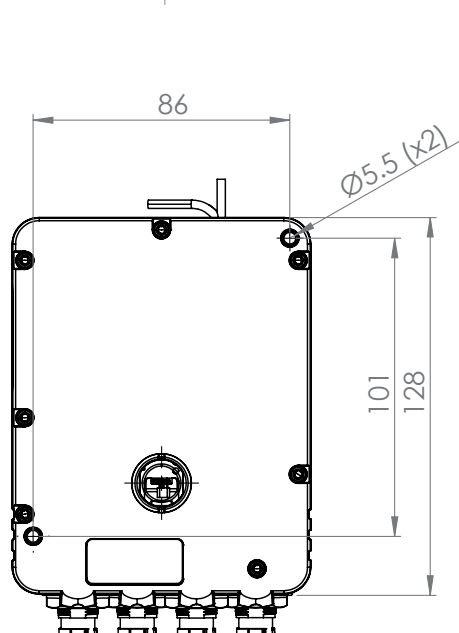
Technology	Electromagnetic loop
Power source	Battery >12 months or 12V or solar solution  Direct current Power source should be limited to PS1 (<15W)
Calibration	Autocalibration
Covered width	+ Without direction detection: up to 39' (12m) + With direction detection: up to 19' (6m)
Counted users	+ Cyclists + Scooter users (option)
Transmission frequency	+ Standard : Twice a day + Going from every 15 minutes down to once a day
Data recording	+ Aggregation: every 60 minutes or 15 minutes (option) + Maximum 650.000 time-stamped data with direction
Configuration	Configuration using the Eco-Link Evo app
Operating temperature	-25°C to 70°C (-13°F to 158°F)
Connectivity	+ LTE: max output power 21 dBm bands B1/3/8/20/28 + Bluetooth: max output power 8.2 dBm frequency 2.4GHz -2.5GHz + GNSS L1 frequency: 1559MHz - 1610MHz

Physical Characteristics

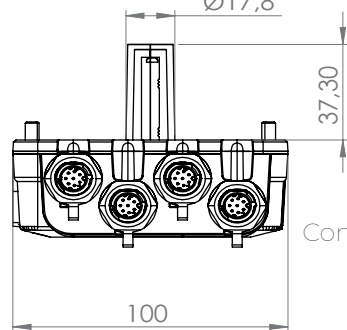
Sensor dimensions	3.93" x 5.03" x 1.49"
Sensor weight	320 g (excluding battery pack)
Sensor materials	+ PA11, GF8 (housing and cover) + ABS/PC (internal interlayer)
Connectors	+ 2 x 4 loop connectors + 1 battery pack connector + 1 dry contact connector
Installation	+ Trench depth: 1.57" - 1.96" (40 - 50 mm) + Trench width: 0.78" (20 mm) + Manhole installed nearby
IP classification	IP 68
Detection loop size	+ Loop length: 31.5" - 59" (80 - 150 cm) + Loop width: 15.7" (40 cm)

Sensor

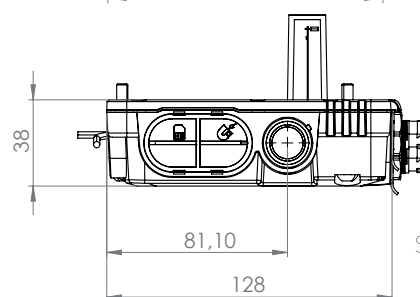
Top view



Ø17,8

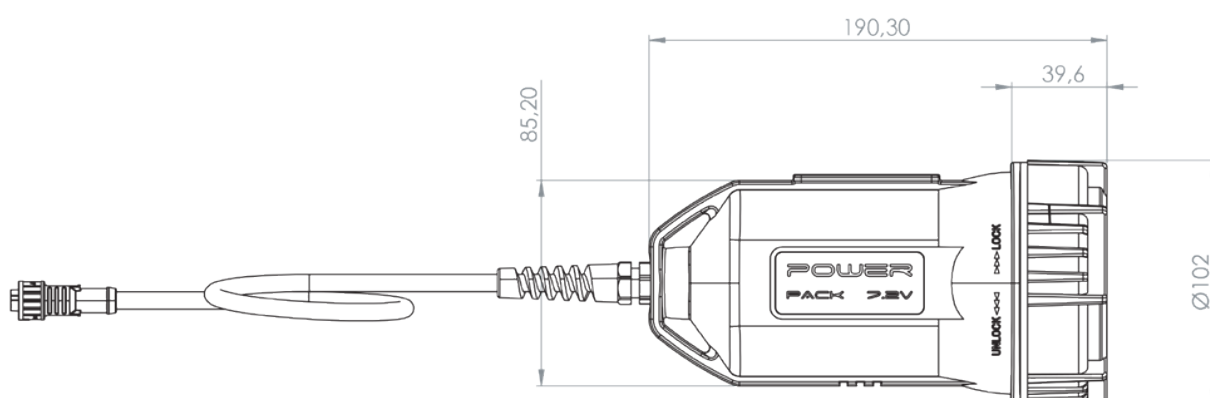


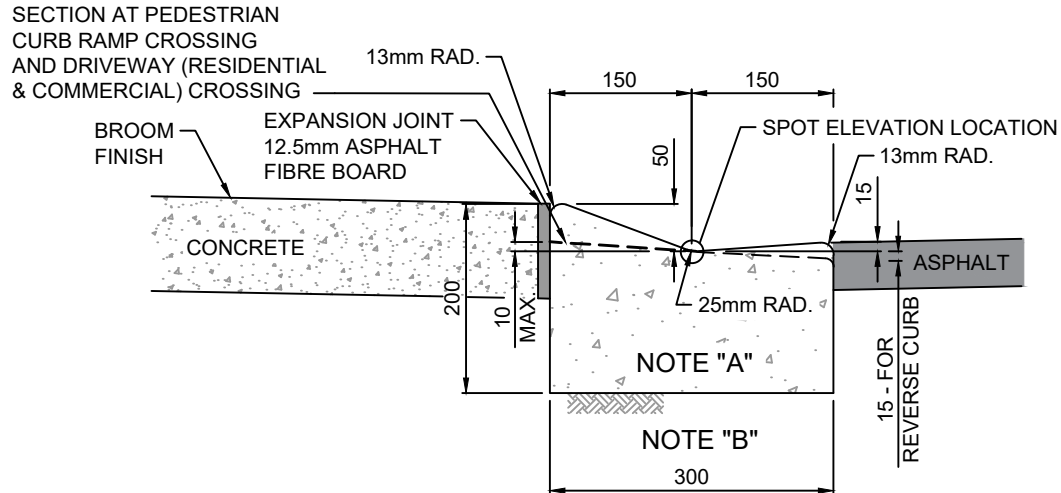
Connector view



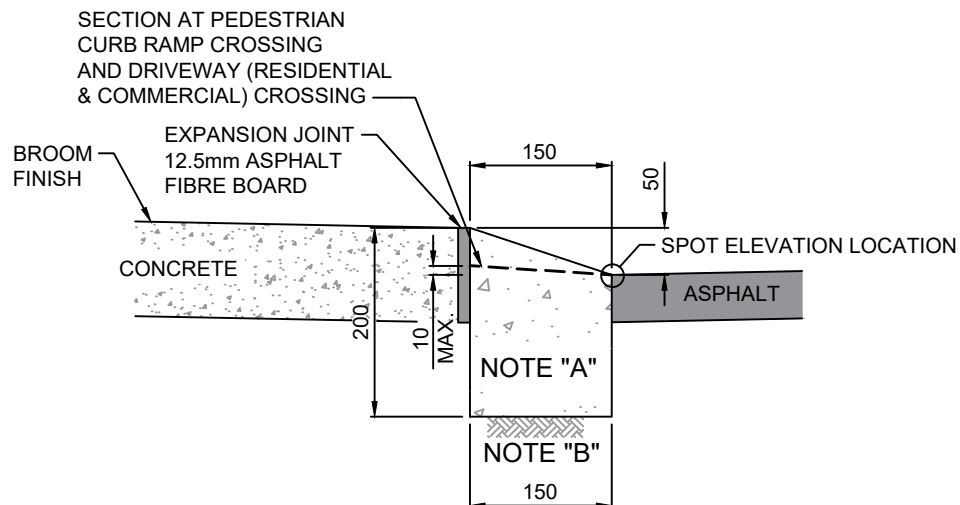
Side view

Battery pack





TYPE E
(BIKE/PEDESTRIAN MOUNTABLE SEPARATION CURB WITH GUTTER)



TYPE E
(BIKE/PEDESTRIAN MOUNTABLE SEPARATION CURB WITHOUT GUTTER)

NOTE "A" CONTROL JOINTS CUT AT 4.5m INTERVALS (MIN. 50mm DEPTH).

NOTE "B" PLACE A MINIMUM OF 150mm APPROVED GRANULAR BASE AT 95% MPD (19mm MINUS CRUSHED GRANULAR).

USE ONLY CITY APPROVED MIN. 32 MPa CONCRETE MIX.

NOTE:

1. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

SCALE: N.T.S.

1	2019-08-14	J. LEE
REV.	REVISION DATE	APPROVED

CURBS
CONCRETE CURB TYPE E

ISSUE DATE: AUGUST 2019

APPROVED BY: J. LEE