Eco Counter Pilot Count Program

City of Columbus Department of Recreation and Parks and MORPC

November 2022

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Regional Trail Data Collection

The collection of non-motorized traffic counts is critical to supporting the development and maintenance of a safe, comfortable, and connected active transportation network within Central Ohio. Overall, this data provides support to policy decisions and changes, helps staff plan for cost-effective investments, informs the design of future facilities, and provides metrics by which to measure performance and progress towards goals.

Some specific applications for this data include:

- Tracking changes in pedestrian and bicycle activity over time
- Evaluating the effects of new infrastructure on pedestrian and bicycle activity
- Prioritizing pedestrian and bicycle infrastructure projects
- Evaluating operational requirements and maintenance needs
- Conducting risk or exposure analyses
- Studying health and/or economic impacts of pedestrian and bicycle infrastructure
- Providing data for grant applications and other fundraising efforts

Eco Counter Pilot

In June 2021, MORPC purchased two Eco Counter Urban MULTI units from Eco Counter that were then transferred to the City of Columbus Department of Recreation and Parks (CRPD) for installation on the Central Ohio Greenways (COG) trail system. A Memorandum of Understanding (MOU) was drafted and signed by the two agencies to conduct this transfer as well as to manage the equipment and data. A sample of this MOU can be found in **Appendix A.**

Eco Counter Equipment Information

Eco Counter is a company that specializes in the development of equipment for collecting non-motorized volume count data. MORPC has purchased Eco Counter equipment in the past and has an active account with Eco Counter that provides access to the Eco Visio online dashboard for management and analysis of data collected using Eco Counter equipment. Previous purchases of Eco Counter equipment included the Pyro Box and Mobile MULTI units, which are designed for temporary use.

For the pilot program with CRPD, the desire was to install and test equipment that could be used on a permanent basis on the COG trail system. The Eco Counter Urban MULTI units were identified as the best equipment available for this purpose. These units are designed for permanent installation on a trail and have the ability to differentiate between user types (i.e., bicycle and pedestrian), as well as direction of travel. The equipment includes a passive infrared sensor in a metal bollard and inductive loops that are installed directly into the trail pavement. More information about this equipment can be found in **Appendix B**.

Eco Counter Equipment Costs

MORPC paid a total of $11,830 for the equipment for this pilot, which included the two Eco Counter Urban MULTI units, 15-minute data recording intervals (instead of 60-minute intervals), shipping fees, as well as a yearlong subscription for automated data transmission for each unit. An updated quote for this same equipment was procured from Eco Counter in September 2022, a screenshot of which is shown in Figure 1. The full quote can be found in **Appendix C.**

*Figure 1**. Eco Counter Quote for Urban Post MULTI Unit***

Subject Mid-Ohio Regional Planning Commission - Urban MULTI **Date :** 9/1/2022

Code	Description	Unit Price	Discount (%)	Discounted price	Qty	Price
MULTI for Pedestrians/Cyclists					**1**	**$ 5,945.00**
SYSTEM	Urban Post MULTI Pedestrians/Cyclists Counter - With direction 2 loops - less than 3m(10') - Activated	$ 5,525.00			1	$ 5,525.00
756	15-minute interval data recording	$ 220.00	100 %	$ 0.00	1	$ 0.00
850	Eco-Visio PROFESSIONNAL License, Automatic Data Transmission & Eco-Alert Service (1 year)	$ 420.00			1	$ 420.00
Shipping					**1**	**$ 70.00**
SH96966666	Shipping	$ 70.00			1	$ 70.00

Source: Eco Counter

Equipment Location Selection

MORPC and CRPD collaboratively identified locations on the COG trail system for installation of the two Eco Counter units. Key considerations for location identification included:

- Adjacent population density and other volume generators
- Potential trail volume impacts from future projects
- Ease of access for installation and maintenance
- Proximity to existing (Trafx) count equipment stations

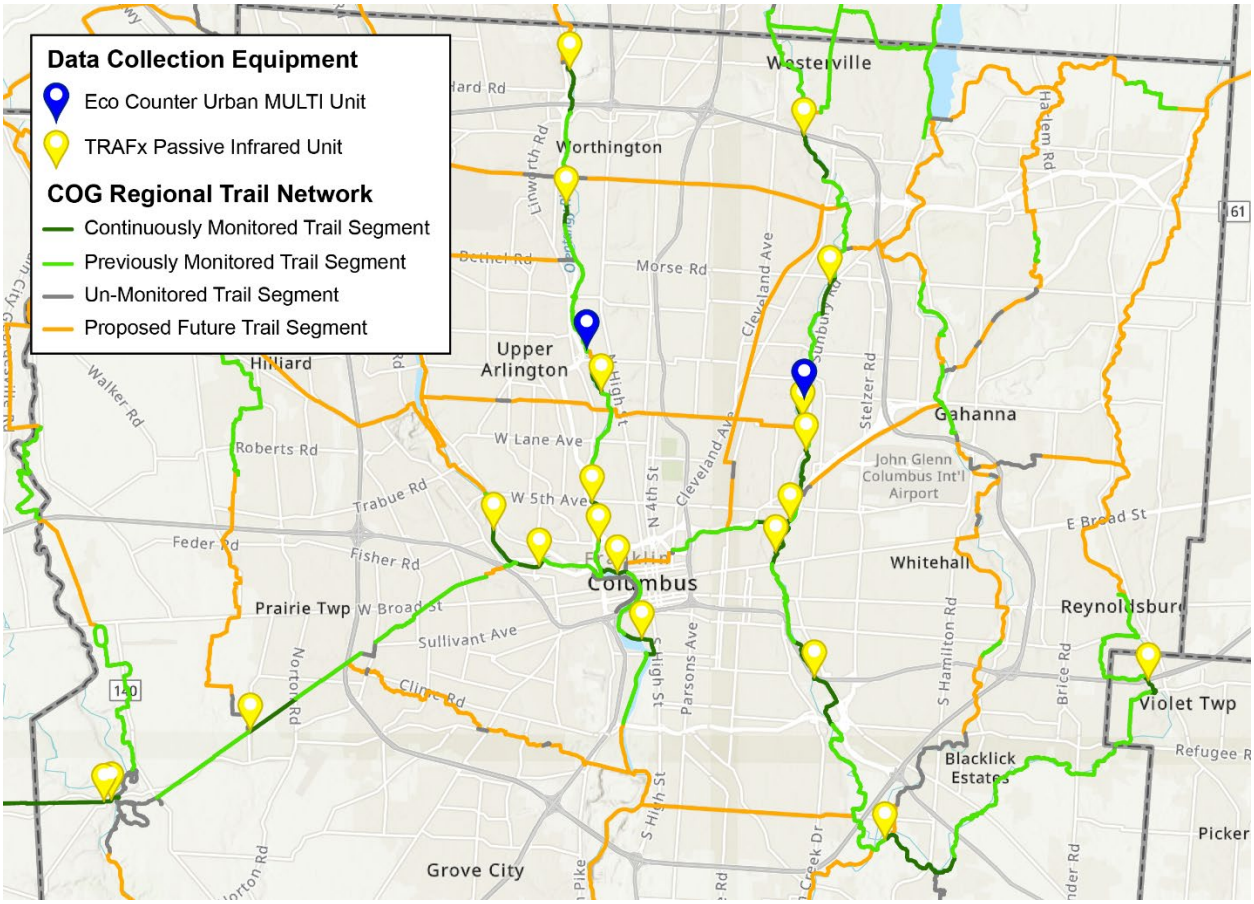
Additional considerations included important **site factors to avoid**, such as:

- Nearby power/transmission lines that could interfere with sensors
- Areas with high risk of flooding that could impact equipment
- Trails adjacent to roadways or parking areas where traffic can interfere with sensors (unless it is possible to point the sensors away from the traffic)
- Intersections or curves or otherwise geographically challenging areas
- Areas where trail users may gather or loiter and block sensors

The locations selected for installation of the equipment for this pilot included:

1. Olentangy Trail at Northmoor (north of the trail access point at Northmoor Place)
2. Alum Creek Trail at Sunbury Road access point

*Figure 2. **Locations of Eco Counter Urban MULTI Units***



Equipment Installation and Maintenance

CRPD was responsible for the equipment installation, which they put out to bid as a lump sum contract. The bid package for this service can be found in **Appendix D.** One bid was received for a total cost of $3,642 for installation of the two units. The equipment was installed in early October 2021 over the course of 1-2 weeks. Weather and other contractor-related delays contributed to the length of the installation. CRPD and the contractor communicated directly with Metro Parks Rangers to alert trail users of trail construction activity during that time.

Eco Counter provides a detailed installation guide as well as YouTube videos to assist with the installation process. In-house maintenance staff could potentially complete the installation of this equipment if a local agency or organization did not want to hire a contractor for installation. The installation information can be found in **Appendix E.**

CRPD also handled maintenance of the equipment. This required minimal staff labor to clear environmental build-up around the equipment to ensure accuracy of the sensors. Environmental build-up can include leaf clutter over the inductive loops, insects nesting inside the bollard at the sensor, etc. No significant maintenance was needed over the yearlong pilot. However, it is important to note that Eco Counter recommends replacement of the equipment battery every two years, at a cost estimated to be $125 each.

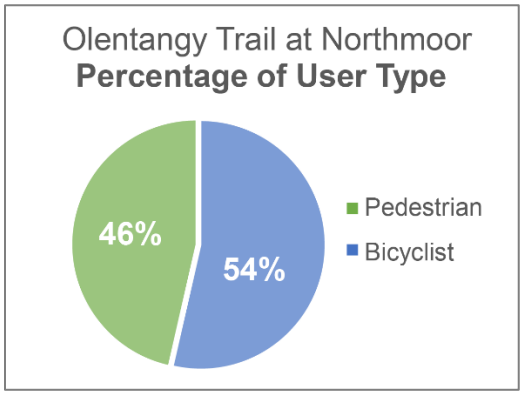
MORPC and CRPD will continue to monitor the equipment installed through this pilot to determine when the batteries actually need to be replaced, as there is not currently an accurate status monitor for battery life. Eco Counter recommends against purchasing batteries ahead of time, as they slowly lose charge over time – even if just sitting in storage.

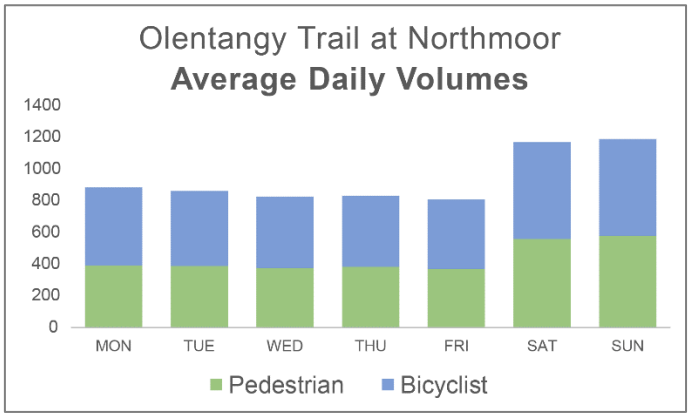
Eco Counter Data

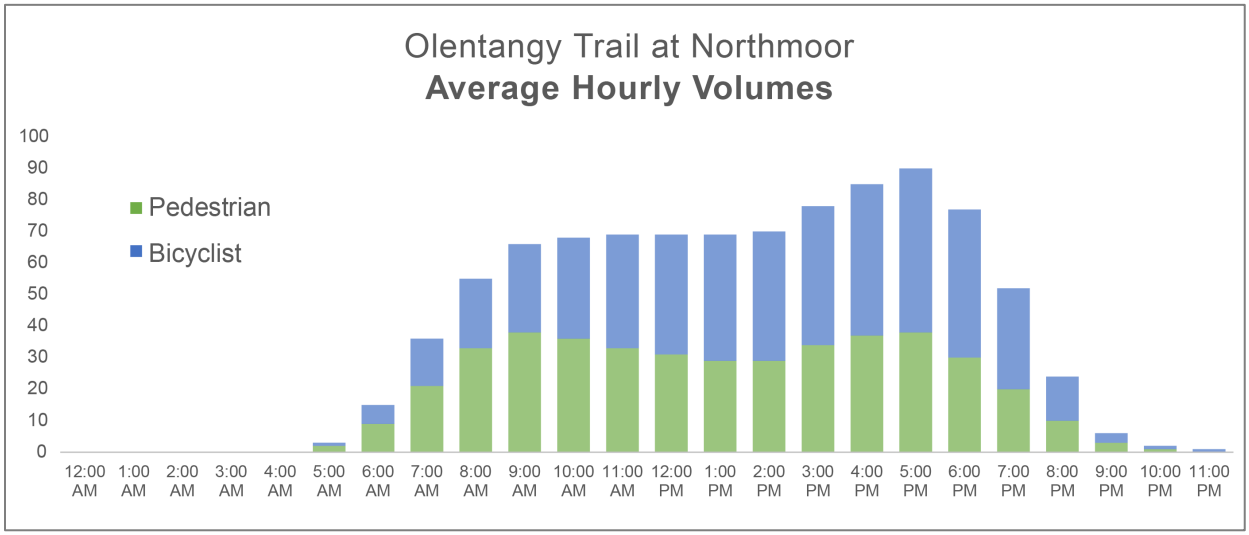
The data collected by the Eco Counter equipment is either transmitted automatically (through the automated data transmission subscription), or manually downloaded via Bluetooth from the equipment and then uploaded to the Eco Visio online dashboard. MORPC has an active account on Eco Visio that can be shared with an unlimited number of users to access any and all of the data in the dashboard. Specific equipment can be assigned to specified users to enable easier viewing of particular data. This Eco Visio account allows MORPC to efficiently manage an unlimited number of “sites” or Eco Counter data collection equipment. This includes temporary and permanent equipment.

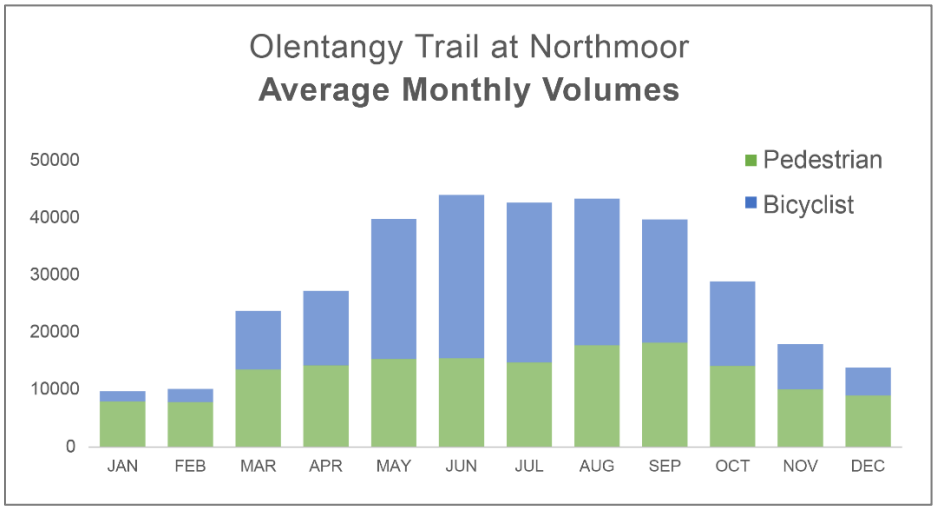
The Eco Visio dashboard also enables easy, quick, and convenient viewing of the data from each individual unit of data collection equipment as well as summaries of data from all of the equipment. Easy-to-use tools offer users the ability to analyze the data within the dashboard, or download the raw data to analyze in spreadsheet form. Charts, graphs, and other infographics can also be easily created within the dashboard and exported into formal reports. The graphics in Figure 3 are some examples of the materials that can be created using Eco Visio. Additionally, exported reports for the two count equipment locations can be found in **Appendix F.**

Figure 3. ***Eco Counter Data for Olentangy Trail at Northmoor***









Conclusions and Recommendations

Based on the experience provided through this yearlong pilot, MORPC and CRPD have determined following conclusions and recommendations for the COG Board and other Central Ohio trail partners:

- The Eco Counter Urban MULTI unit has a sleek and modern design that compliments the existing trail infrastructure and fits nicely into both urban and more natural trail environments. The equipment does not distract from the natural beauty and recreational use of the trails.
- The Eco Counter Urban MULTI was very easy to install, and could potentially be installed by parks maintenance staff if the capability and availability exists. If a community prefers to hire a contractor for installation, it is recommended that the equipment be installed as part of a larger trail construction project or multiple equipment units be installed at once to get more interest from multiple contractors. It is also important that the installer follows the installation guidelines provided by the manufacturer.
- The Eco Counter Urban MULTI provides a comprehensive view of when, where, and how our trails are being used, which can provide important insights for maintenance and planning needs. The data has also provided added value for recent funding applications to further expand and improve the quality of the trail system.
- The automated data transmission subscription provided a nearly real-time look into trail usage, making the data extremely accessible for staff to quickly conduct timely analyses. The additional information provided by this specific type of equipment – direction of travel and differentiation of user type – was also extremely valuable.
- CRPD concluded that the automated data transmission is desired, but the cost will be cumbersome for them to assume alone. Additionally, they do not have the staff resources to manually collect the data on a regular basis. It was suggested that the cost to provide automatic data transmission be shared across COG members who participate in the regional data collection and sharing.

MORPC is uniquely suited to take on the role of non-motorized data manager for the regional trail system and establish a centralized data hub for partners who wish to participate in this important data collection. MORPC and partners have identified the Eco Counter Urban MULTI data collection equipment as the best quality equipment available today for collecting directional and differentiated user volume data on our trails, and the online dashboard offered by Eco Counter provides the necessary platform for all data management and access.

Additionally, research[1] conducted by the Institute for Transportation Research and Education at North Carolina State University for the North Carolina Department of Transportation and the Federal Highway Administration also identified this specific equipment as the best available for these particular needs. The research summarized that this equipment has an acceptable benefit-cost ratio based on its high level of accuracy in data collection and design for permanent, long-term use, as well as an acceptable level of installation “difficultly” and high quality of associated software tools.

The other available technologies that collect similar volume data – directional and differentiates between user types – is either video technology, which has a significantly higher cost, or a piezoelectric strip that is much more difficult to install and does not have adequate associated data management software. MORPC has already purchased Eco Counter equipment and has experience with their procurement process, as well as an active account for their online dashboard. It would create an unnecessary burden on staff to manage an additional type of equipment through a completely new vendor, as well as a second data management software, and create a less effective system for managing regional trail count data.

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[1] *State-of-the-Art Approaches to Bicycle and Pedestrian Counters. NCDOT Project 2020-39. FHWA/NC/2020-39. March 2021. https://connect.ncdot.gov/projects/research/RNAProjDocs/RP2020-39%20Final%20Report.pdf*

Strategies for Next Steps

MORPC will continue to maintain a regional dashboard through Eco Counter that will be accessible to any local agency or organization that wants to participate in this data collection effort. The following strategies have been identified for this regional data sharing effort:

Equipment Purchasing and Installation

- Any local agency or organization that is building *new* trails within the Central Ohio Greenways system should install an Eco Counter Urban MULTI at a key location along the trail segment.
- MORPC staff can assist in the process of identifying an appropriate location for the equipment based on regional trail system connections and other important site characteristics.
- The procurement process requires the local agency or organization to contact the Eco Counter Client Consultant to set up a customer account for billing and shipping, but once the equipment is received and installed, it can be linked to the MORPC regional dashboard.
- Local agencies should work with MORPC and Eco Counter to connect their purchased Eco Counter equipment to the MORPC account and associated regional dashboard.

Regional Data Management

- MORPC will maintain the regional dashboard through Eco Counter and provide access to participating partner organizations.
- MORPC will develop a process to analyze the data and provide annual trail count reports that provide regional insights such as average daily trail traffic, estimated annual trail miles traveled, and evolving trail use trends.
- MORPC will recommend a cost-sharing approach to support automated data transmission, if desired by participating partner organizations.

Regional Equipment Management

- MORPC will support and encourage collaborative equipment management practices that may include agreements with participating partner organizations to perform routine maintenance such as battery replacement and equipment cleaning.

Appendices

Appendix A.
Template MOU between MORPC and Partner Agency/Organization

Appendix B.
Eco Counter Urban MULTI Fact Sheet

Appendix C.
Eco Counter Urban MULTI Equipment Quote (09-2022)

Appendix D.
City of Columbus Invitation for Bid Package

Appendix E.
Eco Counter Installation Guides

Appendix F.
Eco Visio Report for Olentangy Trail at Northmoor and Alum Creek Trail at Sunbury Road

Appendix A.

Template MOU between MORPC and Partner Agency/Organization

MID-OHIO REGIONAL
MORPC
PLANNING COMMISSION

111 Liberty Street, Suite 100
Columbus, Ohio 43215
morpc.org

T. 614. 228.2663
TTY. 1.800.750.0750
info@morpc.org

MEMORANDUM OF UNDERSTANDING (MOU)

Between
AGENCY and
Mid-Ohio Regional Planning Commission

This Memorandum of Understanding (MOU) between the Mid-Ohio Regional Planning Commission (MORPC) and AGENCY represents a mutual understanding and continuing partnership to share access to trail user volume data collection equipment and the data collected by that equipment for the purpose of monitoring trail use throughout the region.

1.0 PARTIES

This understanding is between the Mid-Ohio Regional Planning Commission (MORPC) and AGENCY.

2.0 BACKGROUND AND PURPOSE

2.1 MORPC has purchased NUMBER non-motorized data collection units – Eco Counter Urban Post MULTI units – for AGENCY to install on the regional trail system and use to collect trail volume data.

3.0 GENERAL RESPONSIBILITIES OF THE PARTIES

3.1 MORPC will provide AGENCY with access to, and control of, the non-motorized count equipment.

3.2 In exchange, AGENCY will install and maintain the equipment on the regional trail system.

4.0 SPECIFIC RESPONSIBILITIES OF THE PARTIES

4.1 MORPC will provide AGENCY with access to, and control of, the Eco Counter Urban Post MULTI units and associated equipment.

4.2 AGENCY will install the units on the regional trail network at locations agreed-upon by MORPC and AGENCY, per the installation guides provided by Eco Counter.

4.3 MORPC will coordinate with AGENCY to conduct validation and calibration of the equipment within one week after it is installed to ensure that the equipment is functioning and collecting data within an acceptable threshold of accuracy. MORPC will coordinate with Eco Counter if any additional assistance is needed to calibrate the equipment.

4.4 AGENCY will conduct routine maintenance of the equipment, as specified in the documentation provided by Eco Counter. MORPC will coordinate with AGENCY and Eco Counter on any non-routine maintenance necessary over the course of this agreement.

4.5 If any issues are discovered through the routine maintenance process, AGENCY must notify MORPC within 48 hours. MORPC will coordinate with Eco Counter and AGENCY to troubleshoot the issues that are identified.

4.6 AGENCY must notify MORPC within 48 hours when maintenance is performed on a counter, or if other activities are scheduled near the counter that may adversely affect its functionality or the data being collected. Maintenance or other activities may trigger the need for a new validation study on the counter.
4.7 In the case of vandalism or theft, neither party will hold the other party liable.
4.8 MORPC has purchased a 12-month subscription for automatic data collection. MORPC will maintain the online database where the data will be stored and will provide AGENCY access to the database.
4.9 MORPC will monitor the automatically transmitted data on a weekly basis. If any issues are discovered through the weekly review of the data transmitted to the database, MORPC will notify AGENCY upon identification of the issue and coordinate with AGENCY to address it.
4.10 MORPC will coordinate with AGENCY to conduct any data analysis and reporting. At a minimum, MORPC will provide brief monthly reports and a more detailed final report at the conclusion of the pilot period (or 12-month period).

5.0 TERMS OF MEMORANDUM

5.1 This MOU shall commence upon valid execution by all parties and shall expire upon the expiration of the pre-paid 12-month automatic data transmission period.
5.2 Prior to the expiration of this MOU, a new MOU will be drafted to continue the established relationship. Any changes regarding the terms of the agreement will be made, as necessary.
5.3 The parties agree that the rights granted under this MOU shall be used solely by each other and that such rights are non-transferable or assignable without the express written consent of all parties.
5.4 This MOU shall be construed and interpreted and the rights of the parties determined in accordance with the laws of the State of Ohio.
5.5 This MOU constitutes the entire agreement among the parties, and no changes or modifications to this MOU shall be made unless agreed to by all parties to this MOU in writing.
5.6 This MOU may be amended by a separate writing signed by all of the parties. Each amendment shall be incorporated as if fully rewritten into this agreement.

6.0 CONTRACTUAL OBLIGATIONS

Except for Sections 4 and 5, this MOU is not a legally binding contract, but rather an understanding between the parties, and as such shall have no force in law and is not enforceable by any court for any reason.

7.0 AUTHORIZING SIGNATURES AND DATES

_____	_____
Mid-Ohio Regional Planning Commission	AGENCY
William Murdock	Printed Name: _____
Executive Director	Title: _____
Date: _____	Date: _____

Appendix B.

Eco Counter Urban MULTI Fact Sheet

ECO COUNTER URBAN POST MULTI

The MULTI system uses the electromagnetic ZELT inductive loops in the pavement to detect bicyclists and the infrared PYRO sensor in a post to detect pedestrians and direction of travel of all users.

eco counter

Features:

- Differentiates between bicyclists and pedestrians
- Able to determine direction of travel
- Best for long-term permanent counting sites
- Data can be automatically transmitted daily (for additional fee)
- Works in all weather conditions
- Can be installed in any surface type (asphalt, concrete, gravel, soil)
- Sensor is embedded in aluminum (or wooden) post, mitigating risk of theft

Installation:

The urban post that houses all of the system's electronics, including the PYRO sensor, is bolted to a paved surface or the provided anchor embedded in concrete. Installations in pavement require cutting to lay the loop wire. Soil installations require digging a shallow trench in the path to lay the preformed ZELT loops.

Equipment Purchase Costs: *(updated 9/1/2022)*

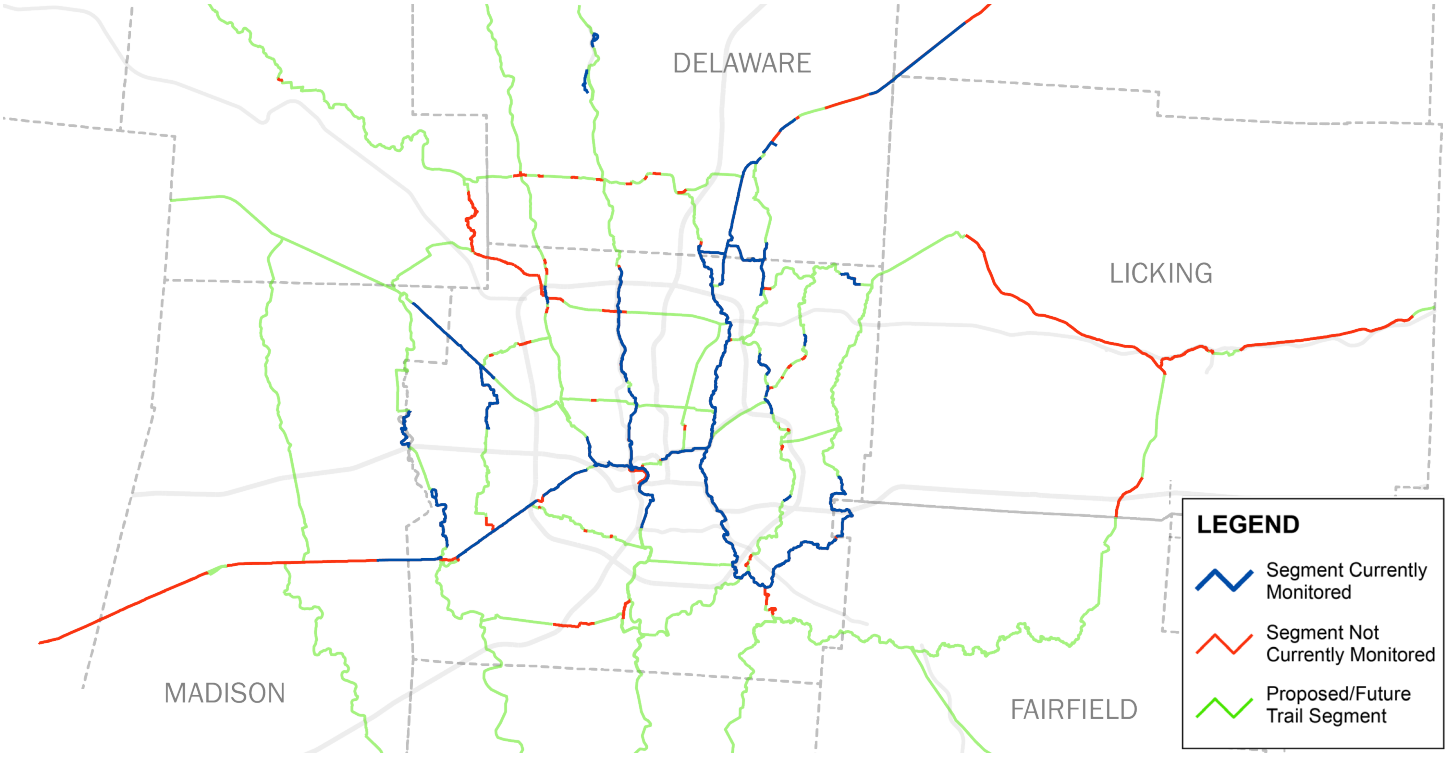
ITEM	UNIT PRICE	NOTES	TOTAL PRICE
URBAN POST MULTI - WITH DIRECTION - 10'	$5,525.00	ONE-TIME PURCHASE PRICE	$5,525.00
AUTOMATIC DATA TRANSMISSION SERVICE	$35.00	MONTHLY FEE PAID ANNUALLY	$420.00
ESTIMATED COST OF INSTALLATION	~$2,000.00*	ONE-TIME INSTALLATION COST	~$2,000.00*
		SUBTOTAL	**$7,945.00**
UNIT BATTERY REPLACEMENT	$125.00	EVERY TWO YEARS	$125.00

**estimate based on City of Columbus Department of Recreation and Parks experience*

MID-OHIO REGIONAL MORPC PLANNING COMMISSION

CENTRAL OHIO GREENWAYS

CENTRAL OHIO TRAIL MONITORING AREA



Additional (Ongoing) Costs:

- Wireless data transmission costs $35 per month, per unit ($420 per year)
- Replacement batteries cost $125 - Note: It is not recommended to purchase these in advance, as the batteries will lose charge even when not in use.

Warranty:

All count equipment comes with a two-year warranty. Support is provided for free for as long as the account is active.

Program Details:

- MORPC will maintain a centralized account/database of all trail data through the Eco Counter dashboard.
- All agencies that are (paying) members of COG will be provided access to the data.
- Agencies may individually purchase Eco Counter equipment that can be added to the regional account/database.
- Agencies that purchase equipment will be responsible for having it installed.
- It is recommended that this equipment be purchased as a line item in any new trail construction projects.
- Ongoing maintenance and data transmission fee responsibility TBD

MID-OHIO REGIONAL MORPC PLANNING COMMISSION

CENTRAL OHIO GREENWAYS

Appendix C.

Eco Counter Urban MULTI Equipment Quote (09-2022)

Eco-Counter
604-3981 St-Laurent
Montréal, Quebec
H2W 1Y5, Canada

Contact : Julie Babin
Email : julie.babin@eco-counter.com
Phone : (514) 849-9779

Customer Number : 5181
Quote Number : Q-28616

QUOTE

Customer

Mid-Ohio Regional Planning Commission
111 Liberty St., Suite 100
Columbus, OH
43215, United States

Contact : Lauren Cardoni

Delivery address if different

Mid-Ohio Regional Planning Commission
111 Liberty St., Suite 100
Columbus, Ohio
43215, United States

Subject Mid-Ohio Regional Planning Commission - Urban MULTI

Date : 9/1/2022

Code	Description	Unit Price	Discount (%)	Discounted price	Qty	Price
MULTI for Pedestrians/Cyclists					**1**	**$ 5,945.00**
SYSTEM	Urban Post MULTI Pedestrians/Cyclists Counter - With direction 2 loops - less than 3m(10') - Activated	$ 5,525.00			1	$ 5,525.00
756	15-minute interval data recording	$ 220.00	100 %	$ 0.00	1	$ 0.00
850	Eco-Visio PROFESSIONNAL License, Automatic Data Transmission & Eco-Alert Service (1 year)	$ 420.00			1	$ 420.00
Shipping					**1**	**$ 70.00**
SH96966666	Shipping	$ 70.00			1	$ 70.00

Delivery lead time 4 to 5 weeks
Payment by check within 30 days
Please provide tax ID for customs clearance
All prices are in US dollars

Total **$ 6,015.00**

Sign and Date for Agreement

Appendix D.

City of Columbus Invitation for Bid Package

THE CITY OF COLUMBUS
ANDREW J. GINTHER, MAYOR

INVITATION FOR BID (SERVICE):

PROJECT NAME: TRAIL COUNTER INSTALLATION
DEPARTMENT NAME: RECREATION & PARKS
INTERIM DIRECTOR: PAUL R. RAKOSKY

DATE BIDS DUE: 8/31/2021
TIME BIDS DUE: 2:00 PM Local Time

BIDDER INFORMATION
BUSINESS NAME: _____

ADVERTISEMENT FOR BIDS

INTRODUCTION

The City of Columbus is accepting bids for the installation of two "Urban Multi Eco Counter" trail counter units. The City already procured the units. The work consists of the installation of two trail counter units along Columbus greenway trails (one on Olentangy Trail, one on Alum Creek trail), asphalt repair work, and other such work as necessary to complete the contract, in accordance with the scope of services and technical specifications set forth in this Invitation for Bid (IFB).

This IFB contains the following sections:

- Advertisement for Bids - This section provides a brief overview of the project and Bidding process. Return this section with your Bid.
- Scope of Services – This section describes the work to be performed and requirements for performing the work.
- Technical Specifications

All materials submitted in response to this advertisement will become part of the awarded contract; will become the property of the city; will not be returned; and will be considered public records subject to disclosure as contemplated by Ohio Revised Code Section 149.43. All materials received will be open to the public once the sealed Bids are publicly opened and/or read.

WHERE & WHEN TO SUBMIT BID

Bids will be received by the City of Columbus, Department of Recreation & Parks, Planning & Design until August 31st 2021 at 2:00pm local time. The bid should be emailed to Kelly Messer at knmesser@columbus.gov.

BID CANCELLATIONS AND REJECTIONS

The Director of Recreation & Parks may cancel the IFB, reject any or all Bids in whole or in part when it is in the best interest of the city, waive technicalities, hold Bids for a period of 180 days after the Bid opening, and/or advertise for new Bids, without liability to the city.

PRE-BID CONFERENCE

There will be no pre-bid conference.

SCHEDULE

All work must be substantially complete by November 1st, 2021.

EXAMINATION OF CONTRACT DOCUMENTS AND WORK SITE

The Bidder is expected to conduct a reasonable Project site investigation of the proposed Work and examine carefully the IFB, and all other documents furnished or referenced by the City in

the Bid Documents, before submitting a Bid. The Contractor's reasonable site investigation shall also include (1) review of these documents (but this is not substitute for Bidder's own investigation, interpretation, or judgment), and (2) investigation of the Project site, borrow sites, site access, hauling routes and all other locations related to the performance of the Work. The City reserves the right to direct that the Contractor perform a mandatory site inspection. The Bidder shall, and as and to the extent necessary, also make additional investigations of the Project site and existing and subsurface conditions as it deems necessary prior to submitting the Bid. The Bidder must obtain approval of the City prior to conducting any boring or subsurface exploration testing that may disturb existing field conditions.

Submitting the Bid is an affirmative statement that the Bidder has made a reasonable investigation of the proposed Work, the Project site, and the IFB and is satisfied as to the character, quality, quantities and conditions to be encountered in performing all Work and as to the requirements of the IFB.

The Bidder's investigation and examination shall be at the Bidder's expense and at no cost to the City. Any physical variance at the Project site from that indicated by the IFB, discovered by the Bidder during any investigation or examination conducted by the Bidder shall be called to the attention of the City in writing prior to submitting a Bid. No claims of ignorance of any requirements of the IFB or of any available data shall be accepted as a basis for any Claim for any extra compensation, extra work, or extension of time.

QUESTIONS

Questions regarding the IFB should be submitted to Kelly Messer, City of Columbus, Planning & Design, via email knmesser@columbus.gov prior to August 24th 2021 at 2:00pm local time.

The City or its representative will not be bound by any oral interpretations which are not reduced to writing and included in addenda. Any interpretations of questions so raised, which - in the opinion of the city or its representative require interpretations, will be issued by addenda and posted on: https://columbusvendorservices.powerappsportals.com/

CONTRACT COMPLIANCE REQUIREMENTS

The City of Columbus encourages the participation of city certified minority and female business enterprises. While participation of and/or partnering with city certified minority and female owned businesses is not a condition of Bid award, it is strongly encouraged.

Bidders will be given seven (7) business days after the Bid submittal date to update expired contract compliance information for renewal of numbers or to initially apply for a number. If said information has not been updated within 7 business days from the Bid submittal date, the Bid may be deemed non-responsive and may no longer be considered. All contractors and subcontractors who are party to a contract as defined in Columbus City Codes must hold valid contract compliance certification numbers before the contract is executed. The City is not responsible for notifying Bidders of expired contract compliance numbers after Bid submission.

This information is gathered and monitored by the Office of Diversity and Inclusion (ODI). Please contact ODI for assistance with identifying potential Minority contractors. Information on contract compliance certification is available at https://www.columbus.gov/odi/

Equal Business Opportunity Commission Office
1111 East Broad Street, Suite 203
Columbus, Ohio 43205
(614) 645 –4764
MBE/FBE Certification and Contract Compliance

BID SHEET

for

Trail Counter Installation

EACH RESPONSIVE BIDDER SHALL INSERT, IN THE SPACE PROVIDED, THEIR CONTRACT COMPLIANCE NUMBER.

Notice To Bidders: Base Bid or Item Bids may be awarded as separate contracts. Alternates will be awarded as part of the base bid and will be awarded based on available funds.

Please see additional sheets for description and site plans. Listed address is nearest property address. All work is located within ROW and final location to be marked and field verified with CRPD representative prior to beginning work.

BASE BID:

All work related to time and materials for Trail Counter Installation work: $_____

Contractor Name:_____

Address:_____

Phone Number: _____

Email Address: _____

Contract Compliance #/Tax ID#:_____

Scope of Work

Columbus Recreation and Parks Department (CRPD) is seeking a contractor to install two trail counter units (Urban Multi Eco Counter). One unit will be installed at Olentangy Trail in Northmoor Park (approximately 40.034801, -83.026118) and the second unit will be placed at Alum Creek Trail near Sunbury Road (approximately 40.005523, -82.934983). Both locations must be field verified with the CRPD project manager before work begins. All work must be substantially complete by November 1st, 2021. The contractor must coordinate their schedule around facility programming and get their schedule approved by CRPD before work begins.

Base Scope of Work consists of:

- Mobilizing labor and equipment to jobsite
- Isolate the designated work area with signage.
- Maintain safe trail traffic at all times with either signage or a detour route. Contractor must get MOT plan approval from CRPD project manager before work begins.
- Saw cut pavement to install Zeltloops / trail counter components and fill in saw cuts with sika fastfix 138tp in dark grey color.
- Installation of anchor base, post, manhole, and other related items for a complete project.
- Clean-up of area must be done on a daily basis while conducting scope of work.
- Restore site to existing conditions.

Technical Specifications (See Following Pages)

Note: Columbus Recreation and Parks included the Eco Counter installation guides and equipment information in the Technical Specifications of the Bid Package.

Appendix E.

Eco Counter Installation Guides

INSTALLATION GUIDE

URBAN MULTI

eco counter

V2

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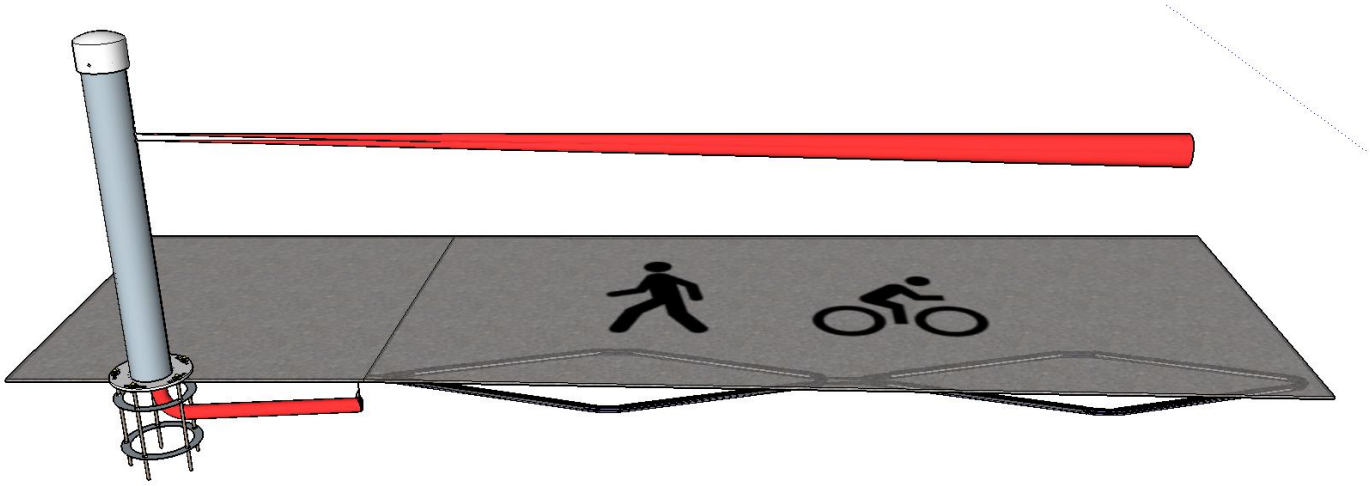
Introduction

The **Urban MULTI** differentiates between pedestrians and cyclists logging each of them separately.

The system also detects the direction of travel.



3D view of a two-loop system

Warnings

Warning!

- **Risk of bodily harm!**
  - Secure the worksite
  - Wear appropriate protective equipment.

- **Fire, explosion, and burn hazard.**

Do not short circuit, crush, disassemble, heat above 100 °C (212 °F), or incinerate the components of your Eco-Counter counting system.

- **The modem battery may explode or leak causing injury.**
  - Do not install the modem battery backwards, do not charge it, store it upside down or horizontally, put it on fire or mix it with used or other battery types.
  - Do not store the Urban Post upside down or horizontally.

Risk of damage!

- **Solvents may damage the lenses of the PYRO Sensor.**

  Clean the lenses of the PYRO Sensor with a soft damp cloth.

- All Eco-Counters have been tested to be resistant under the most severe environmental conditions (moisture, salt content, dust, temperature variations, etc.).

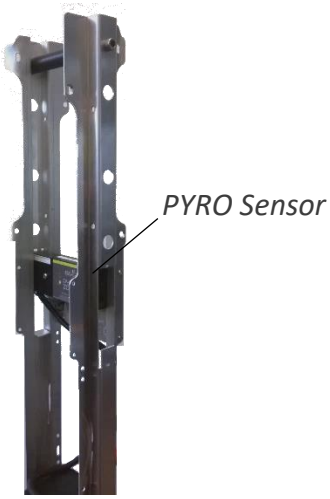
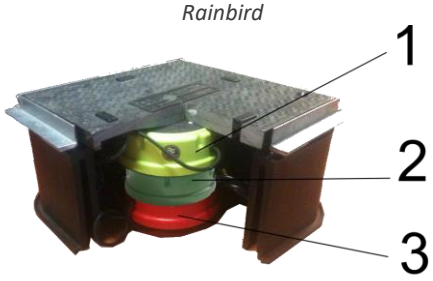
  We remind you that your Eco-Counter remains a measuring system, and therefore it should always be handled with care.

Preparing the Installation

Delivered Equipment

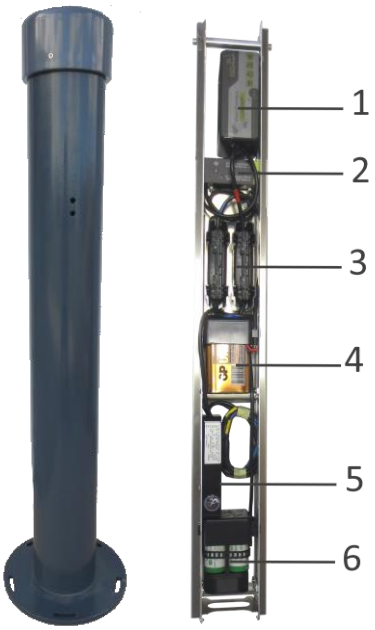
Counting System

- **Systems on which the counting system is housed in a manhole**

Urban Post	Inner Structure	Manhole
		 *Rainbird*  *B125*

1 - Eco-Combo Logger	**2** - ZELT Sensor	**3** - Battery pack	Smart Connect
			

- **Systems on which the counting system is housed inside the Urban Post**

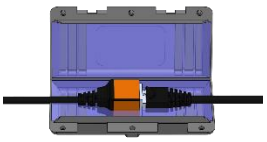
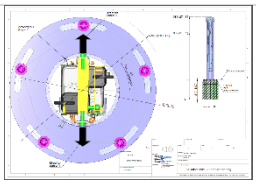


1	Eco-Combo Logger 	**2**	PYRO Sensor 
3	RayGel junction box 	**4**	Modem battery *Only with systems with an active automatic data transmission option* **Attention! The modem battery may explode or leak causing injury.** • Do not install the modem battery backwards, do not charge it, store it upside down or horizontally, put it on fire or mix it with used or other battery types.  • Do not store the Urban Post upside down or horizontally.
5	ZELT Sensor 	**6**	Sensor batteries 

Fixing Hardware

Anchor Base	Cap nuts	M8 washers	M8 nuts
			

Additional Hardware

Hex key for secured screws	Secured screws M4*20	Scotchlock® connectors	Wire to form the ZELT Loops	Magnetic key
				
Yellow reference tags	Geotextile fabric	RayGel junction box	Template	Caps for RJ45 and battery connectors
				

If the counting system is housed in a manhole, you have also received:

B125 manhole	Geotextile fabric	Screwdriver and anti-vandalism screws
		
OR		
Rainbird manhole & cap	Geotextile fabric and an elastic band to attach it underneath the manhole	Torx wrench and anti-vandalism screw
		

Required Equipment

- To secure the worksite

Safety cones and hazard signs

- To protect yourself

Necessary protective equipment

- To install the ZELT Loops

See the list of required equipment in the guide ***ZELT Inductive Loops for Bicycles - Installation in asphalt***.

Make sure to have the guide ***ZELT Inductive Loops for Bicycles - Installation in asphalt*** with you for the installation.

- To dig a hole for the anchor base and the manhole

Shovel and pickaxe

- To fix the Urban Post

To fix the anchor base: Spirit level, equipment necessary for making concrete.

To bolt down the Urban Post: M8 spanner.

To protect the cables for the PYRO Sensor and the ZELT Loops: Conduit Ø 25 mm (1''), utility knife.

- To test the system

Bicycle and Eco-Link software and user guide.

If you do not have the Eco-link software, ensure that there are two people present.

List of compatible devices with Eco-Link:

Laptop:

Download the Bluetooth compatibility test and run it on your laptop. https://www.eco-visio.net/Download/bluetooth-test-en.exe

If the result of the test is positive, download and install Eco-Link:

https://www.eco-visio.net/Download/ecolink.zip

Android-based tablet or smartphone.  .

Download Eco-Link via the Google Play Store.  .

- To display photos of your counter on Eco-Visio (optional)

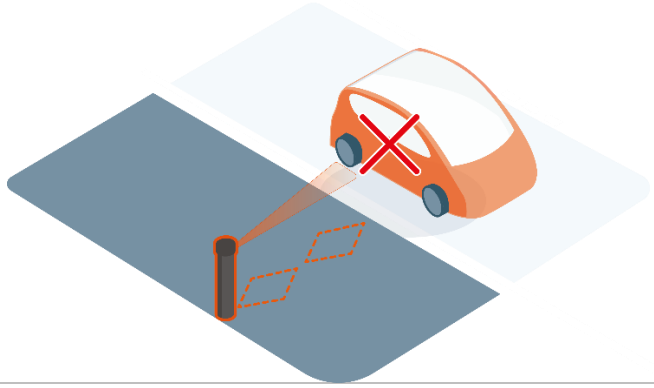
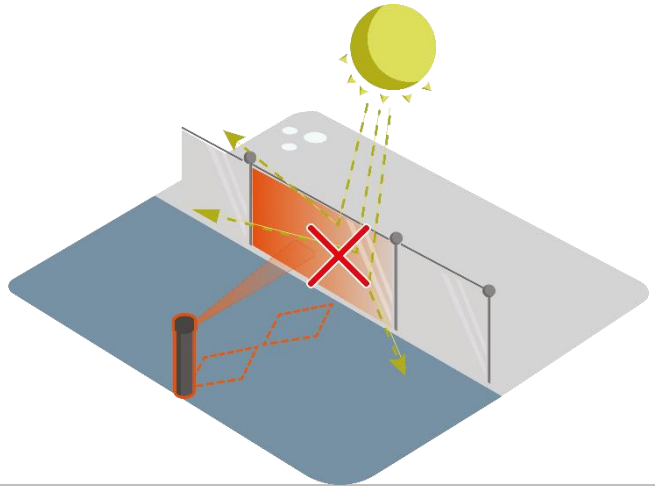
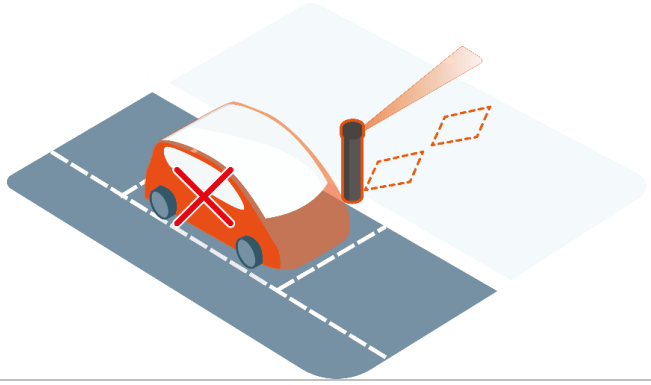
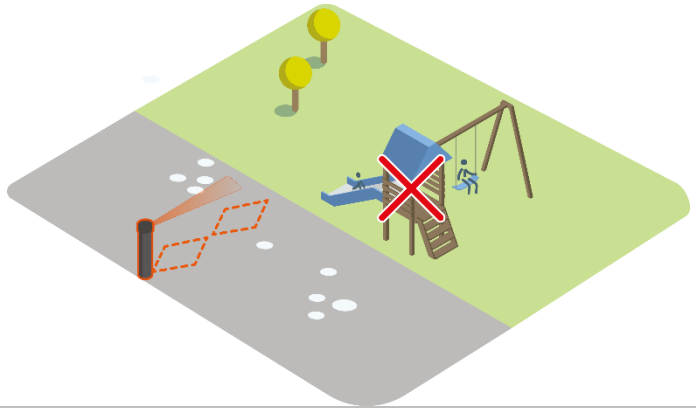
Camera

- To check the network coverage

Smartphone or tablet with internet connection or Eco-Link software.

Installation Site

AVOID

• **Motor vehicles in front of the PYRO Sensor** This will cause counting issues and false counts to be recorded.	
• **Heat sources in front or next to the PYRO Sensor** Surface or vegetation exposed to sunlight.	
• **Proximity to devices that can generate rapid fluctuations in temperature** Vents, cars, etc.	
• **Locations where undesired subjects could be counted** Animals, cars, undesired pedestrians or cyclists.	

- **Moving objects or vegetation in front of the PYRO Sensor**

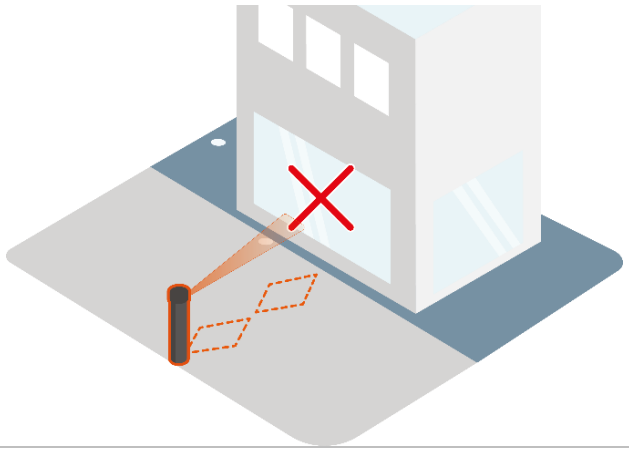
Door, bushes, branches, etc.

- **Window or reflective surface in front of the PYRO Sensor**

Surfaces transparent to light are not transparent to infrared radiation.

Reflective surfaces may affect the operation of the PYRO Sensor.

Point the PYRO Sensor at a non-metallic and non-reflective flat surface.

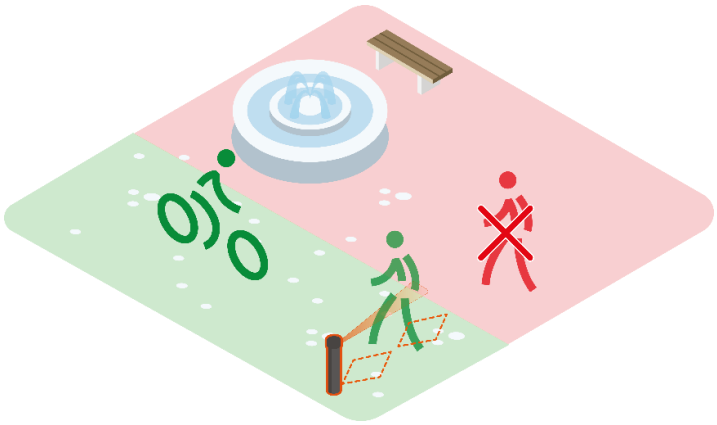


- **Paths too wide for the range of the PYRO Sensor**

Beyond the range announced, detection performance is no longer guaranteed.

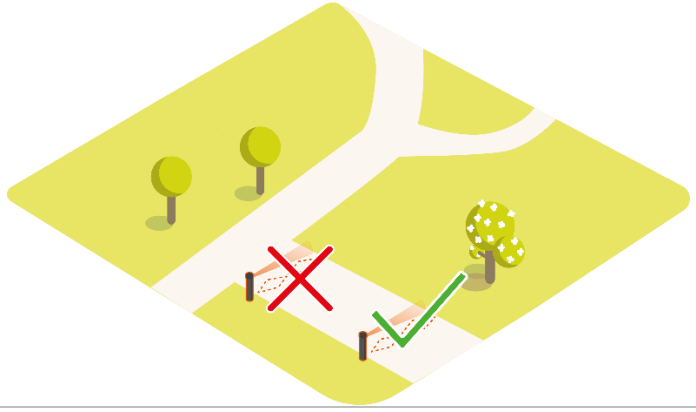
A sticker on the PYRO Sensor indicates the range.

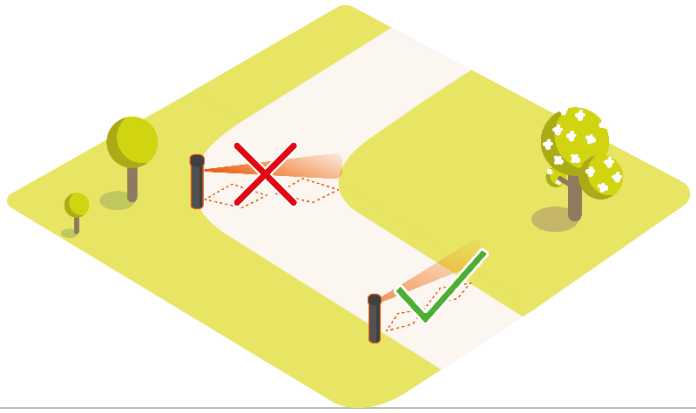
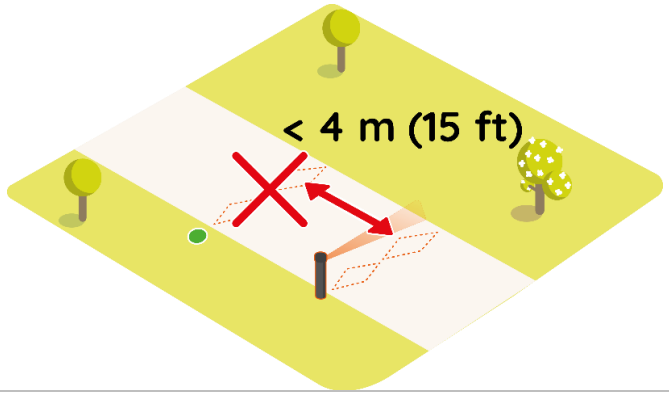
Unscrew the cap of the Urban Post with the torx wrench provided and lift the inner structure to see the sticker.



- **Congested or very slow traffic:**

Peaks of inclined paths, stops, proximity to road crossings, proximity to lookout points, the presence of undesired obstacles throughout the area being counted.



• **Areas where there is a curve or turn in the road/bike path** The Loops must be installed perpendicular to the flow of traffic for accurate detection.	
• **Areas subject to electromagnetic interferences:** Proximity to other ZELT Inductive Loops, electrical wires, overhead or underground, buried telecommunication equipment, etc.	

VERIFY NETWORK COVERAGE

Counting systems with the Automatic Transmission Feature activated: select a location with sufficient cellular network coverage.

If the network coverage is too low, choose another installation site

Please note that moving just a few meters may sometimes be sufficient to obtain proper network coverage.

How do I Know if the Automatic Transmission Function is Active

All systems are equipped with the capability to transmit data Automatically to our online platform Eco-Visio however, depending on how your device was ordered, the function may not be activated.

You can determine whether your device was sent from the factory with this function activated by looking at the third letter of the serial number of your Eco-Combo logger.

Letter « I »: *Your device's Automatic Transmission function has not yet been activated.*

Letter « H»: *The Automatic Transmission feature is active.*

If you wish to activate this function, please contact Eco-Counter.

See ***Appendix B – Checking the level of network coverage***, page 34, to verify network coverage.

Installing the System

Include the drying time for the concrete into the total installation time.

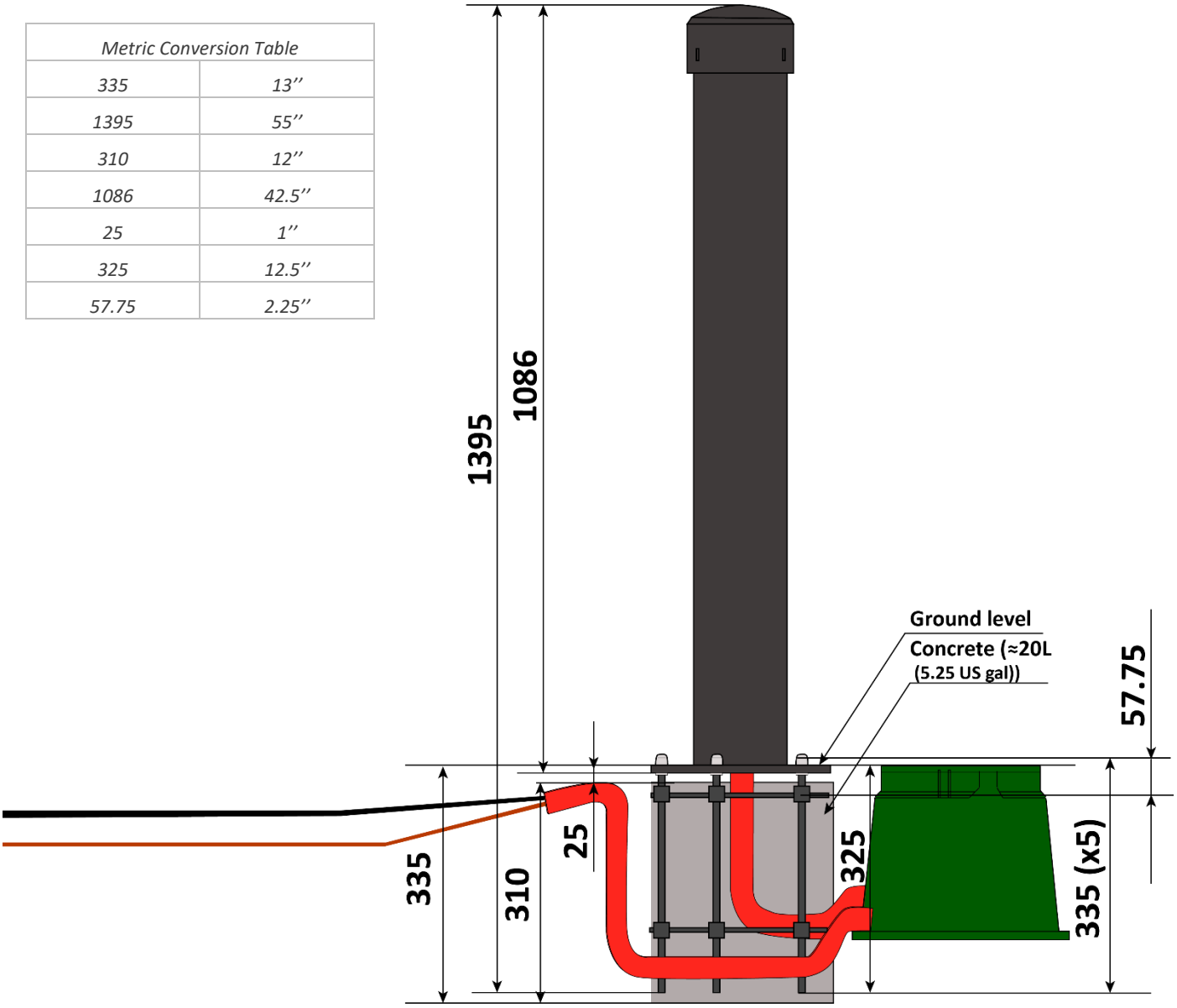
We recommend installing the system in two stages:

- **Day 1: Installation of the anchor base, manhole and conduits.**
- **Day 2: Installation of the ZELT Loops and Urban Post.**

Layout

Side View

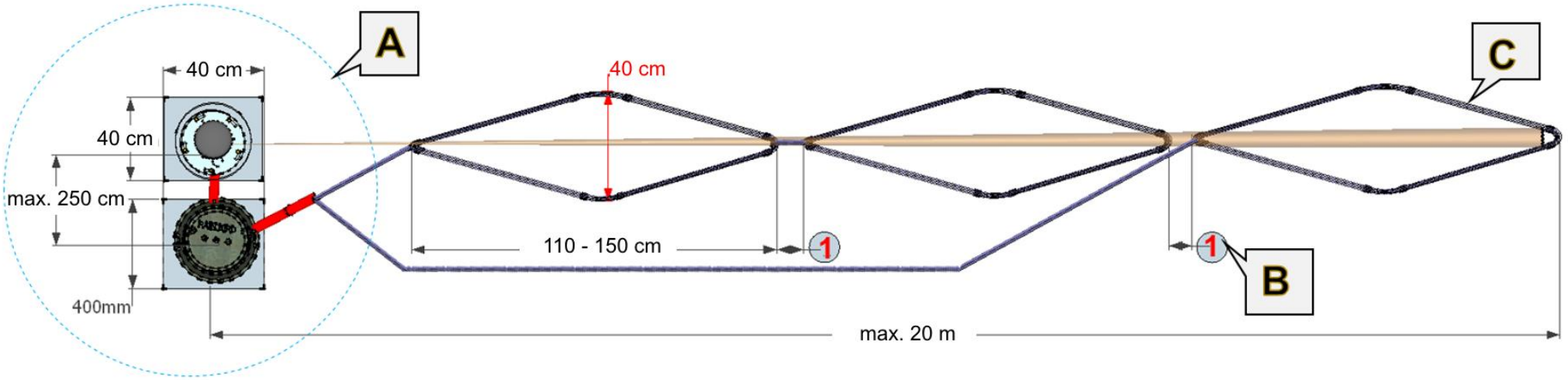
Metric Conversion Table	
335	*13”*
1395	*55”*
310	*12”*
1086	*42.5”*
25	*1”*
325	*12.5”*
57.75	*2.25”*



Note that the system shown on the layout diagram includes a manhole.

All systems with more than two ZELT Loops include a manhole.

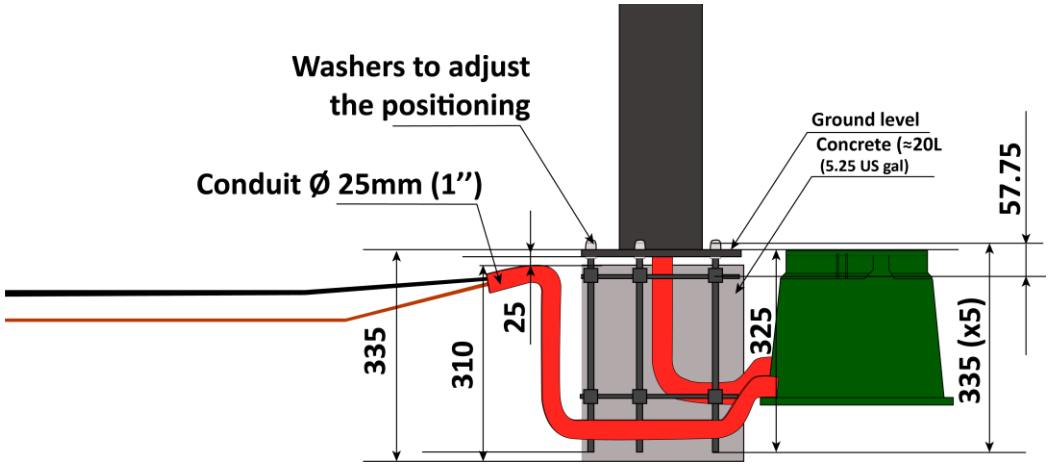
Top View



Example on a three-loop system

Metric Conversion Table	
40 cm	*16''*
250 cm	*98''*
20 m	*65'*
110 cm	*43''*
150 cm	*60''*

A/ Anchor Base

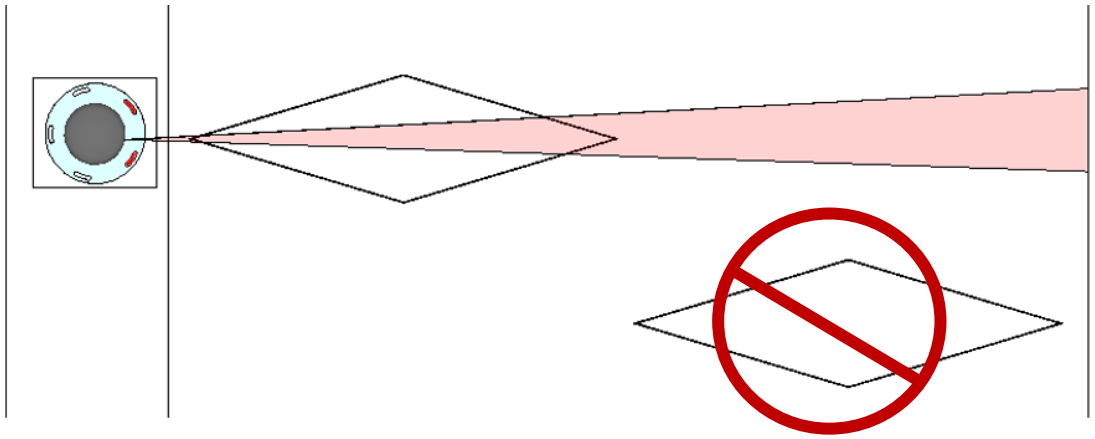


Metric Conversion Table	
335	*13''*
310	*12''*
25	*1''*
325	*12.5''*
57.75	*2.25''*

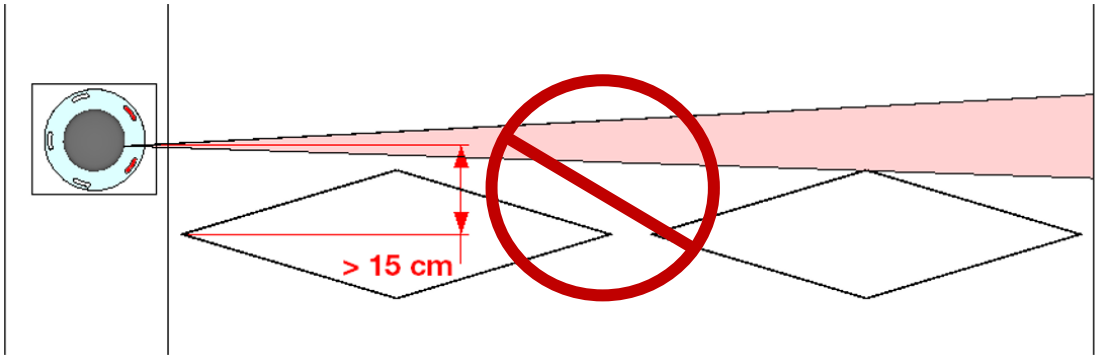
A/ Position of the Urban Post compared to the ZELT loops

To avoid imperatively:

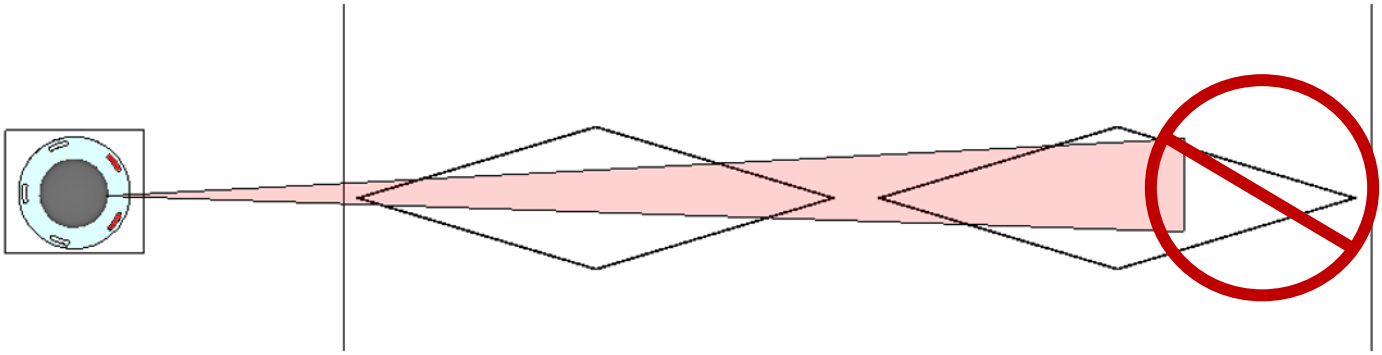
- Loops improperly aligned



- Urban Post with a gap of more than 15cm (6'') on the right or left



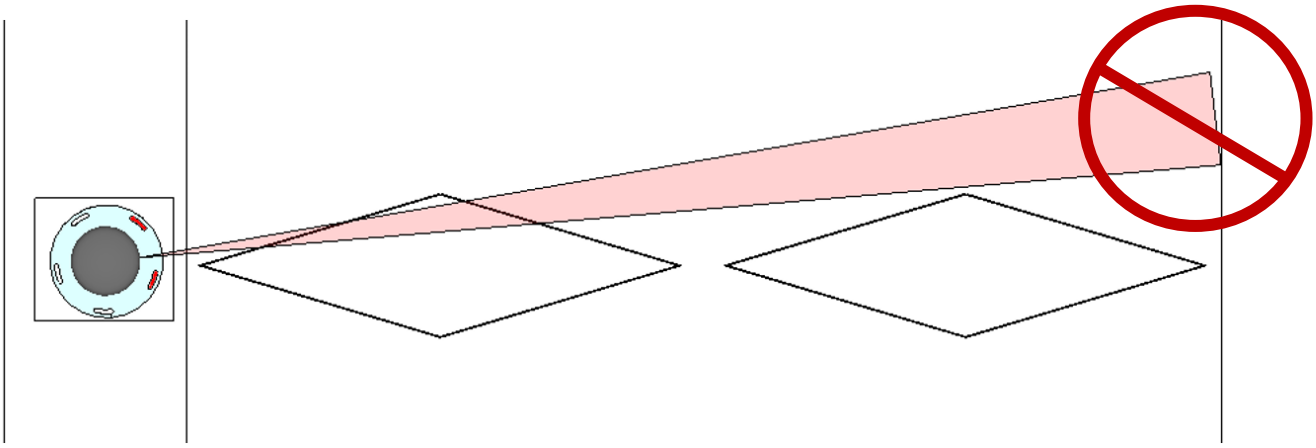
- Systems on which the direction is given by the PYRO Sensor: PYRO Sensor that doesn't cover each loop



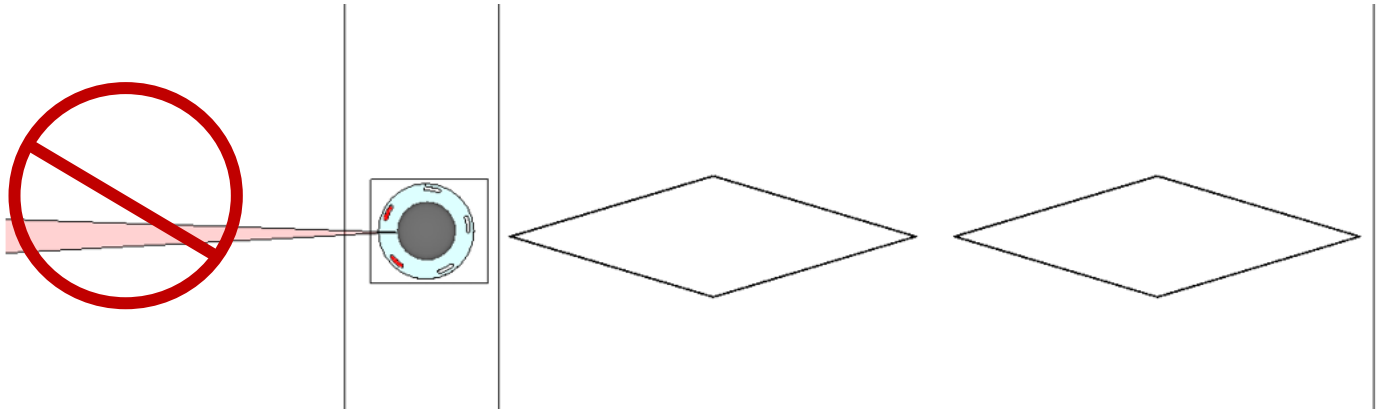
A sticker on the PYRO Sensor indicates the range.

Unscrew the cap of the Urban Post with the torx wrench provided and lift the inner structure to see the sticker.

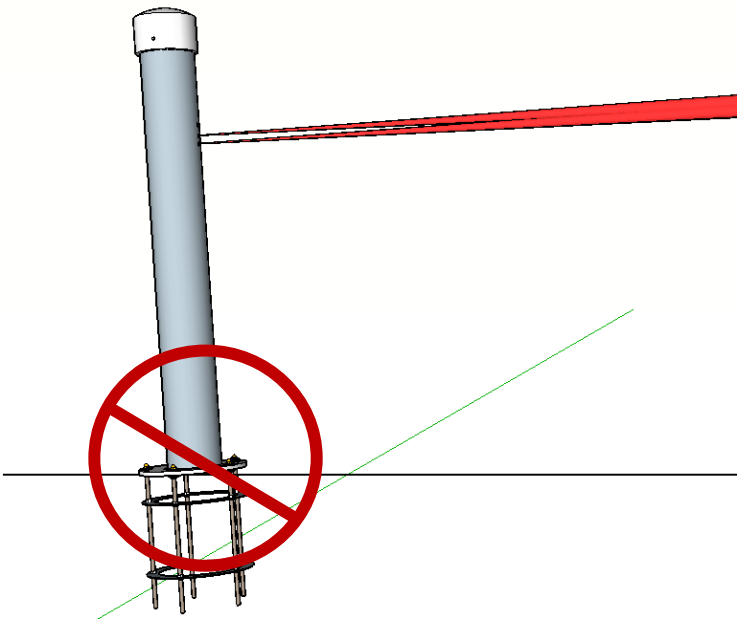
- PYRO Sensor that is not perpendicular to the flow of traffic



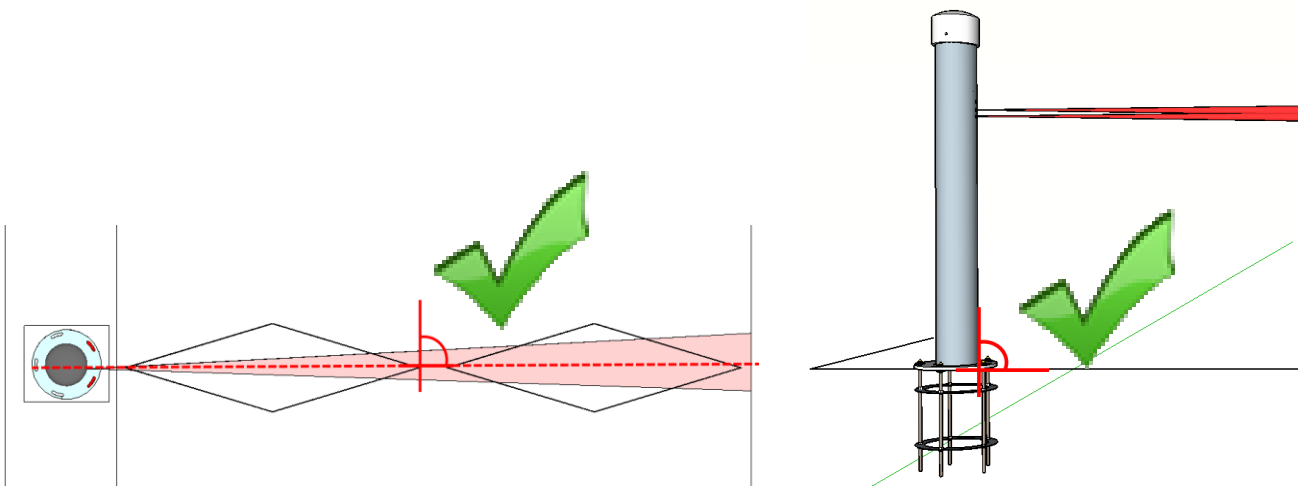
- PYRO Sensor that does not face the path



- Urban Post that is not perpendicular to the ground

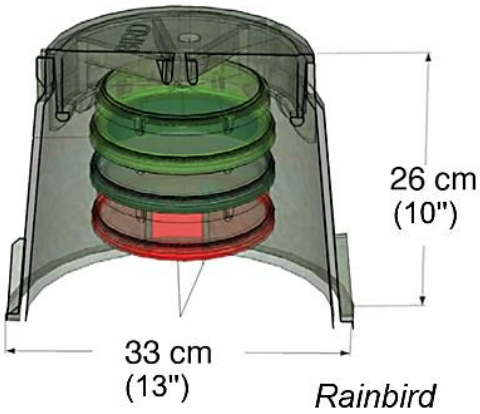


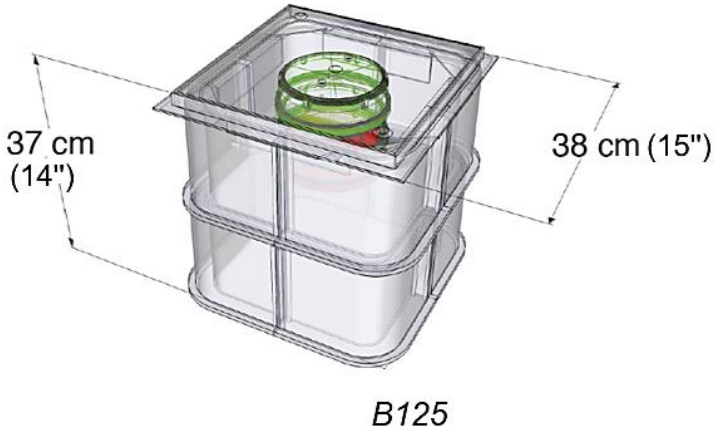
- **Proper Positioning**



A/ Manhole Dimensions

All systems with more than two ZELT Loops include a manhole





B/ Spacing between the ZELT loops and dimensions

Apply the corresponding spacing to the length of the loops. Please refer to ***Appendix A*** – ***Layout***, page 30, to do so.

C/ Dimensions of the cut-outs and positioning of the ZELT Loops

The number of loops and the positioning depend on the type of system ordered and on the installation site.

- System with direction recognition through the PYRO sensor: see ***Appendix A, Systems with direction recognition through the PYRO sensor***, page 31.
- System with direction recognition through the ZELT Loops: see ***Appendix A, Systems with direction recognition through the ZELT Loops***, page 33.

Procedure

Installing the Anchor Base & Manhole

Reminder: Follow the indications in the section *Layout*, page 13.

1. **Systems with more than two ZELT loops**: Dig a hole for the manhole less than 250 cm (8') from the location intended for the anchor base.

2. **Rainbird manhole**: Place the geotextile under the manhole and secure it with the supplied elastic band.

- **B125 manhole**: Place the geotextile at the bottom of the hole and place the manhole on top of it.

3. Dig a hole for the anchor base.

4. **Attention! The positioning of the anchor base determines the positioning of the PYRO Sensor.**

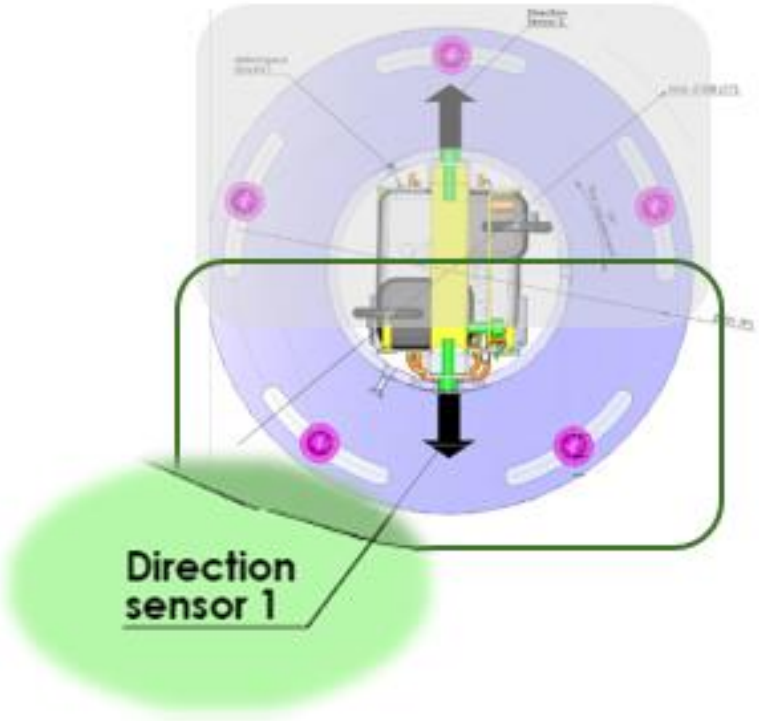
   Adjust the positioning of the anchor base by using the template supplied so that:

- The axis of the PYRO Sensor is perpendicular to the path once the installation has been accomplished.

- The PYRO Sensor is pointing at the ZELT loops.

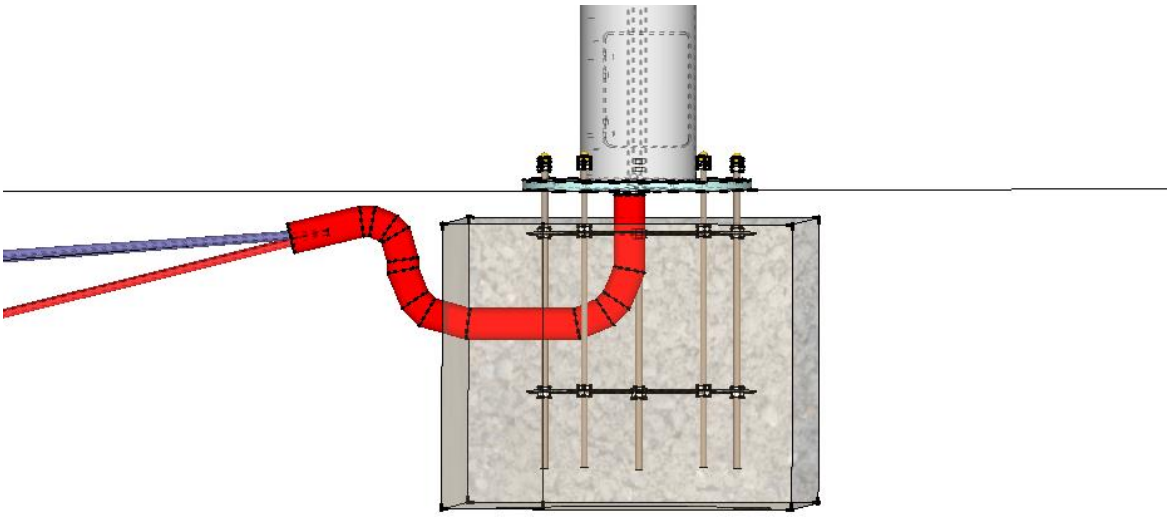
The template supplied has been designed by default for cases where the Urban Post includes two PYRO Sensors.

In your case, the reference PYRO Sensor is "***Sensor 1***".

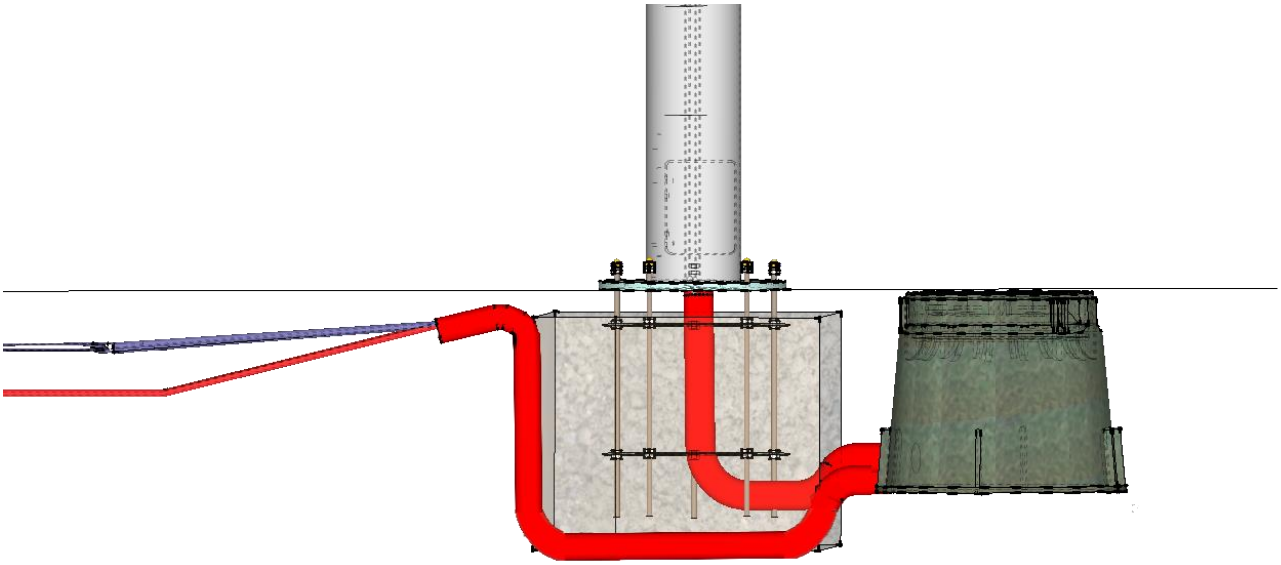


5. Place the conduit(s).

- Systems with one or two ZELT Loops:

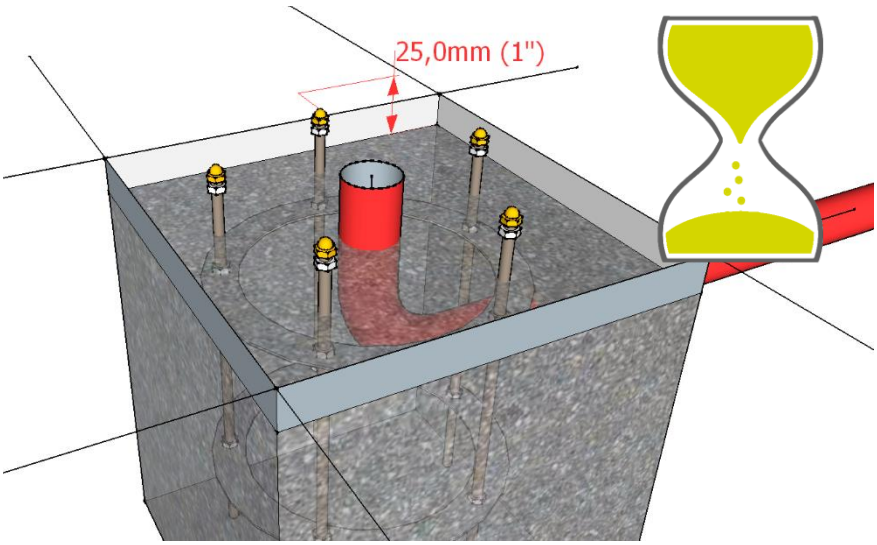


- Systems with more than two ZELT Loops:



6. Fill in the hole and the anchor base with concrete.
   Ensure the rod tips of the anchor base protrude 25mm (1") above the concrete surface.

7. Let the concrete dry. Please refer to your concrete instructions for the drying time.

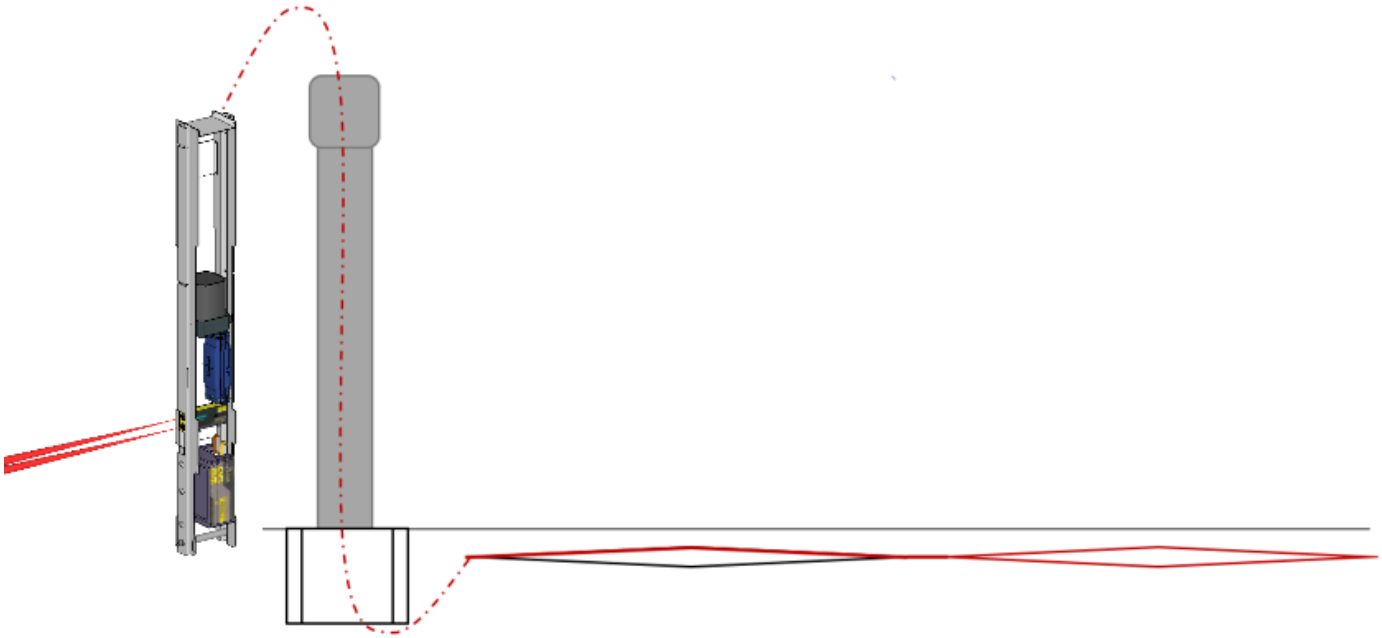


Installing the ZELT Loops

Refer to the document ***ZELT Inductive Loops for bicycles*** – ***Installation***, to install your ZELT Loop.

- **Install and test the complete system before covering the ZELT Loops.**
- **If the system does not include a manhole, keep enough slack at the beginning of the wire to be able to remove the inner structure from the Urban Post and turn it over.**

  This allows to replace the batteries.



Connect the Loops to the ZELT Sensor

Connect the ZELT Loops to the ZELT sensor by following the indications in the document ***ZELT Inductive Loops for bicycles*** – ***Installation***.

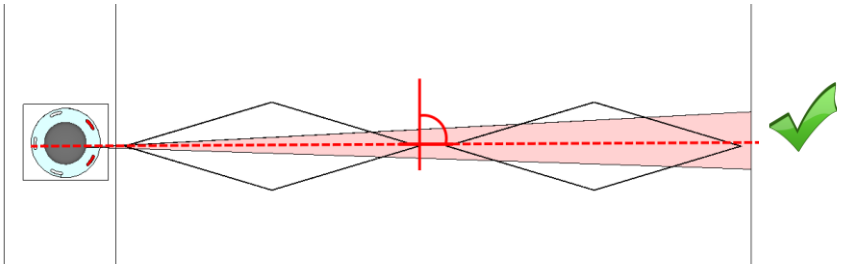
Installing the Urban Post

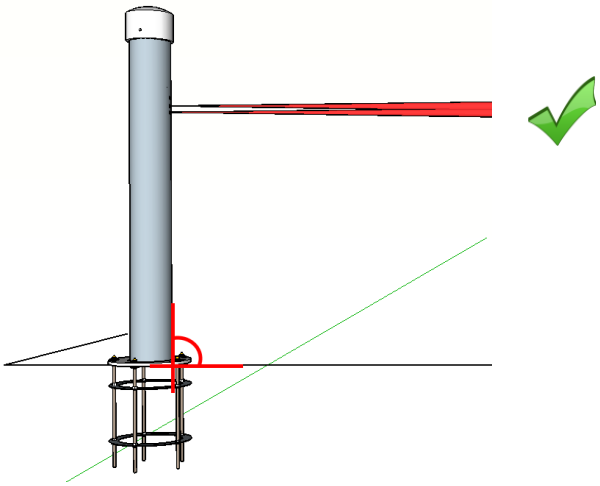
Warning! If the concrete is not dry, place the geotextile fabric over it before fixing the Urban Post to the anchor base.

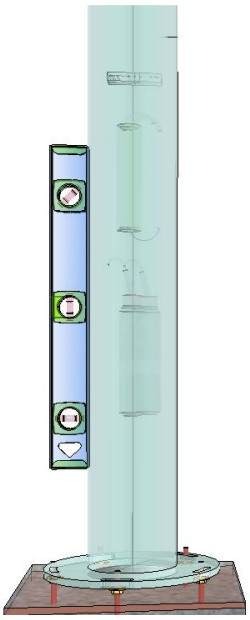
The geotextile fabric prevents the concrete from rising into the Urban Post.

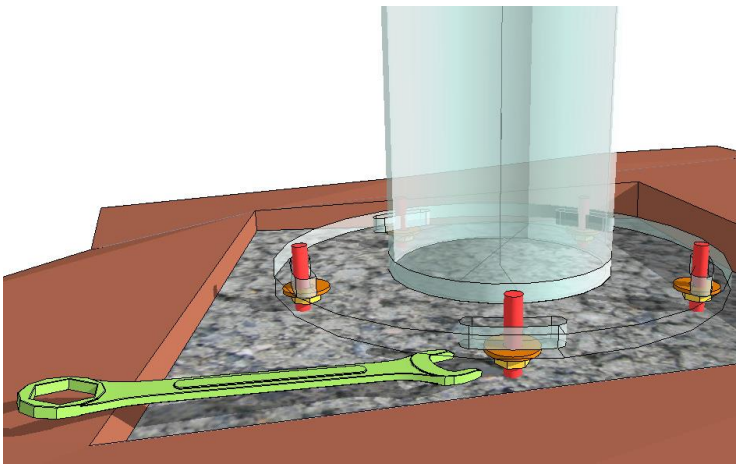
1. Place the Urban Post on the anchor base and adjust its position.

   The axis of the PYRO Sensor must be perpendicular to the path.





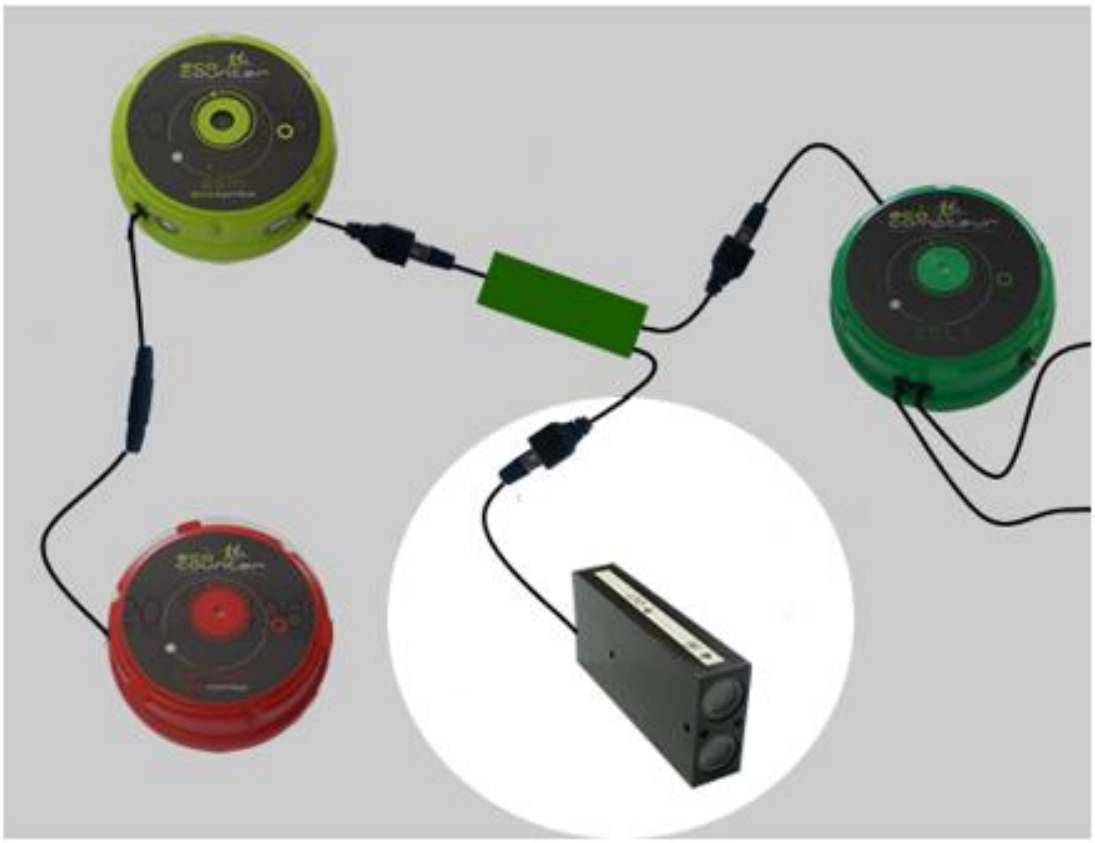




2. Bolt down the Urban Post.

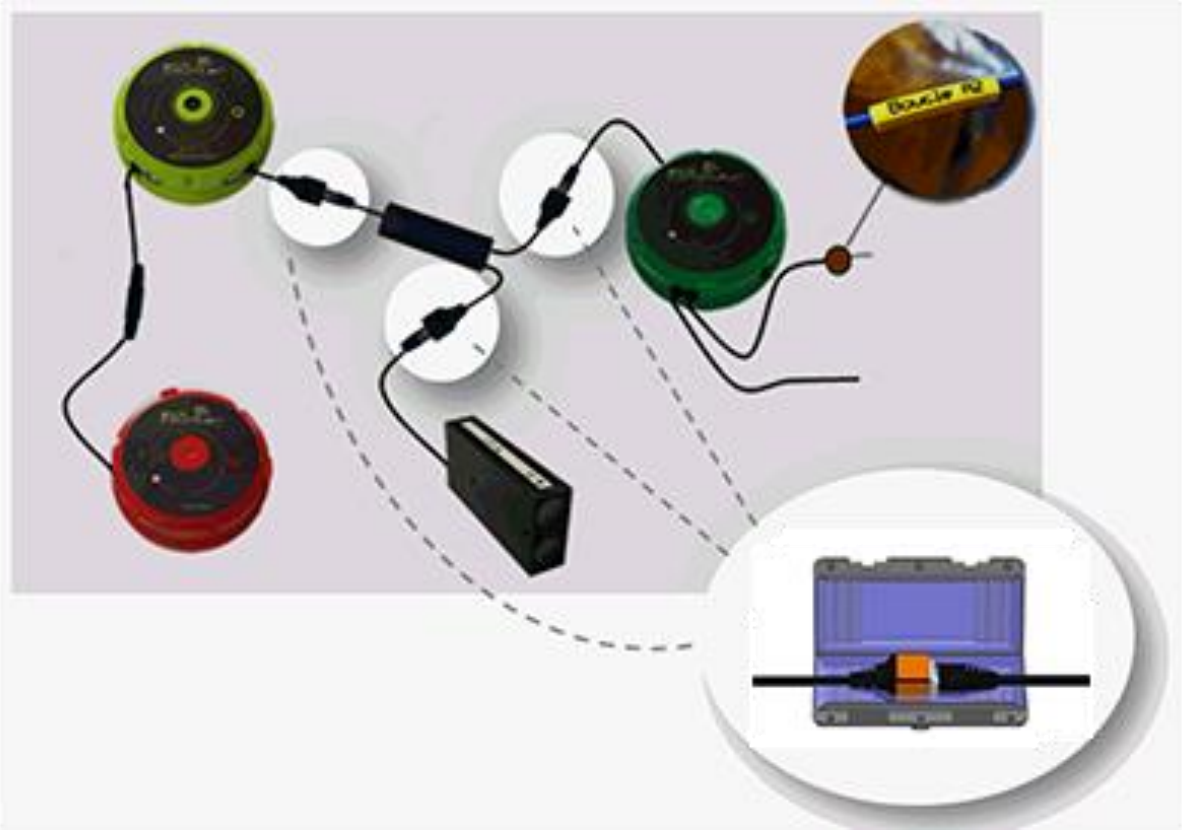
Connecting the PYRO Sensor (Systems Equipped with a Manhole)

1. Connect the PYRO sensor to the Smart Connect inside the manhole.



2. **Attention! Risk of material damage! RJ45 connectors are not waterproof.**

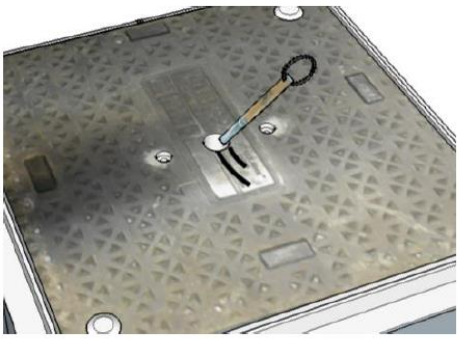
   Shut the black RayGel junction boxes over the connected rj45 sockets.

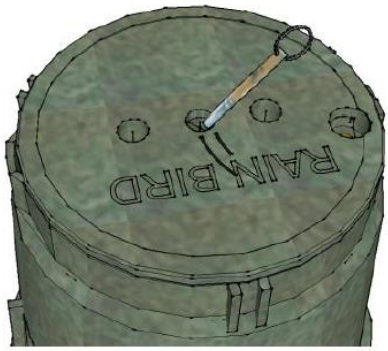


3. Wake-up your counter by waving the magnetic key over the wake-up zone.

   While waving the magnetic key, the wake-up zone lights up green. The wake-up zone will start flashing blue at regular intervals.

   If you don't tap the wake-up zone with the magnetic key for more than ten minutes, the Eco-Combo logger switches automatically to energy-saving counting mode.





4. Leave the magnetic key over the wake-up zone until you see very quick green flashes in the wake-up zone.

   This allows the Eco-Combo logger to detect the PYRO sensor.

Testing the Counting System

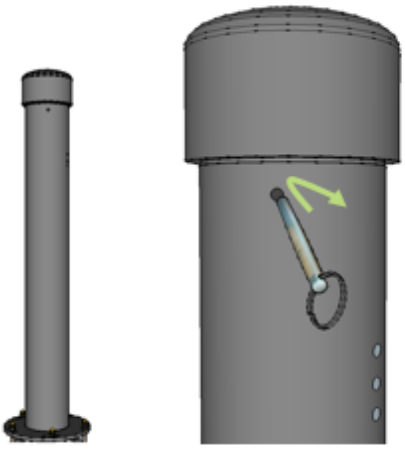
Bluetooth Communication

The following section is only relevant if you are using the software Eco-Link

Connect to the counter by proceeding as follows:

1. Tap the wake-up zone with the magnetic key.

System without a manhole



System with a manhole

While waving the magnetic key, the wake-up zone lights up green. The wake-up zone will start flashing blue at regular intervals.

If you don't tap the wake-up zone with the magnetic key for more than ten minutes, the Eco-Combo logger switches automatically to energy-saving counting mode.

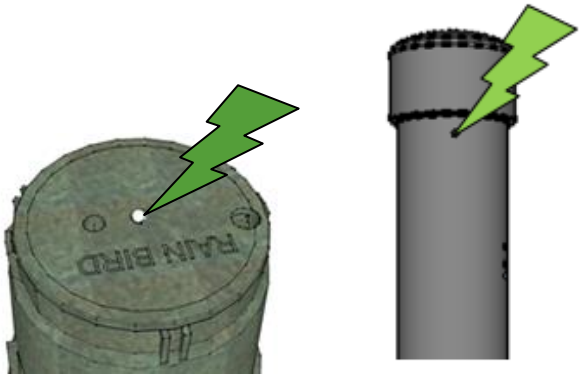
2. Start Eco-Link and connect to the counter.

   Follow the instructions in the section Connecting to an Eco-Counter, in the Eco-Link software guide, if necessary.

Counts

1. If the wake-up zone is off, follow step 1 in the section ***Bluetooth communication*** on page 25.
2. Ride over each ZELT Loop and:

If you have the Eco-Link software	If you do not have the Eco-Link software
Verify on Eco-Link that the passages are being correctly recorded, whatever the direction: IN or OUT	Verify that the wake-up zone displays one green flash with each passage.

Refer to the section ***Verifications of Counts*** in the Eco-Link software guide to check the counts in real-time using Eco-Link.	 **Ride over the ZELT loops in both directions: IN and OUT.**

3. Proceed the same for the PYRO Sensor, while simulating passages in both directions: IN and OUT.

Automatic Data Transmission

1. If the wake-up zone is off, follow step 1 in the section ***Bluetooth communication*** on page 25.
2. **If you have the Eco-Link software:**

   Make a modem test.

   Follow the section ***Testing a modem*** in the Eco-Link software guide, if necessary.

- **If you do not have the Eco-Link software:**

  Tap the wake-up zone six times with the magnetic key.

The wake-up zone lights up green when tapping it. It then flashes blue at regular interval.

The modem is now activated for 12 minutes. The following light signals indicate the modem is functioning correctly:

a) Blue activation zone, 3 flashes	Modem trying to connect to the network.
b) Blue activation zone, 2 flashes	Modem connected to the network.
c) Blue activation zone, 1 flash	Modem connected to the server that receives the data.
d) Solid blue light in activation zone	Data file transmitted to the server that receives the data.

Completing the Installation

1. Fill in the saw cuts by following the indications in the document ***ZELT Inductive Loops for bicycles - Installation in asphalt***.

Attention! The wiring used in the loops will not withstand temperatures exceeding 60° C (140° F). Do not use a substance that surpasses this temperature when filling in the saw cuts.

2. Seal the cover of the manhole.

3. Rainbird manhole: Put the cap on the secured screw to protect it from dirt.

4. Bury the manhole up to the lid and secure the lid.

5. Take a photo of the installation to illustrate your counter on Eco-Visio.

Analysing Your Data

Counters Equipped with an Active Automatic Transmission Feature	Counters with Manual Data Collection
• Activate the counting site in our online software, Eco-Visio. This will initiate data transfers to Eco-Visio. • Follow the instructions in the document ***Eco-Visio: Quick Start Guide*** to activate your counter.	1. Retrieve the data using Eco-Link before leaving the installation site. 2. Send the data to the online software Eco-Visio. Follow the instructions in the Eco-Link software guide if necessary.

Appendix A – Layout

Spacing Between the Loops

The spacing indicated by the  between the two loops is very important to respect and will vary depending on the length of the loops themselves.

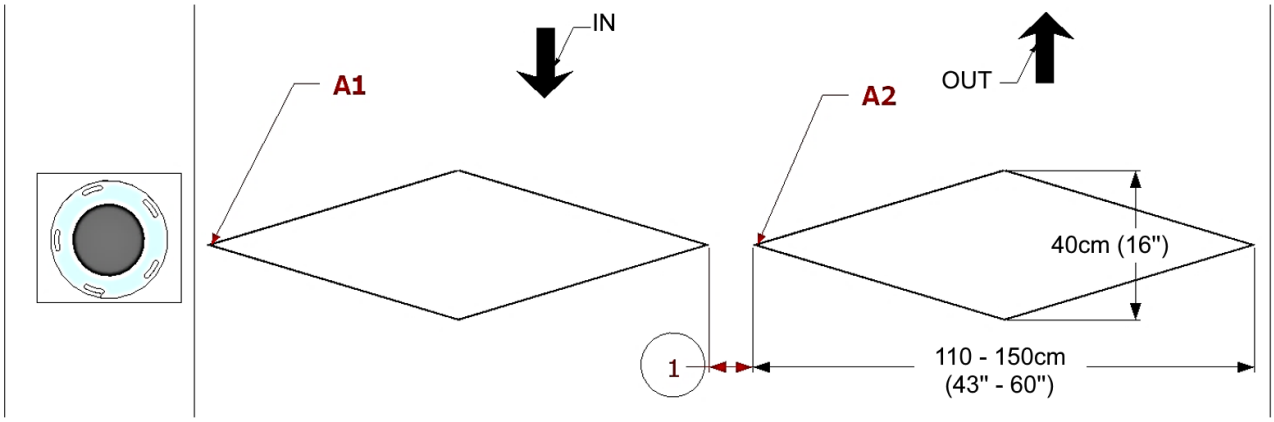
Apply the corresponding spacing to the length of the loops:

Loop Length	Distance
Greater than 150 cm (59’’)	Contact Eco-Counter to evaluate the feasibility
150 cm (59'')	8 cm (3.00'')
140 cm (55'')	10 cm (4.00'')
130 cm (51'')	12 cm (4.75'')
120 cm (47'')	14 cm (5.50'')
110 cm (43'')	16 cm (6.25'')
Less than 110 cm (43’’)	Contact Eco-Counter to evaluate the feasibility

Systems with Direction Recognition Through the PYRO Sensor

Attention! If you have specifically ordered a MULTI Counter with direction recognition through the ZELT Loops, follow the layout patterns in the section *System with Direction Recognition through the ZELT Loops*, page 33.

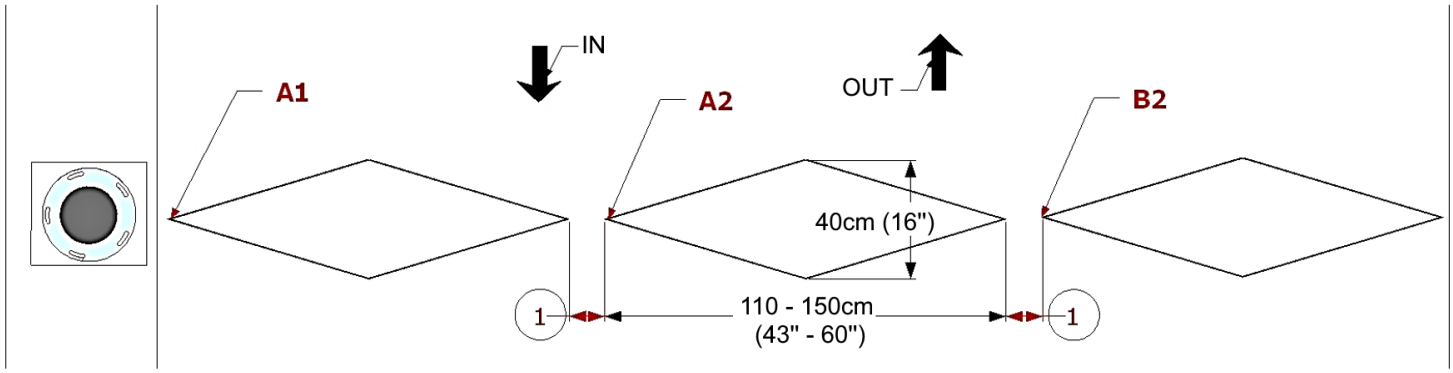
2 loops



1 Refer to the section ***Spacing between the loops***, page 30, to apply the correct spacing to the length of the Loops.

Place the end of the loop A2 under the loop A1.

3 loops

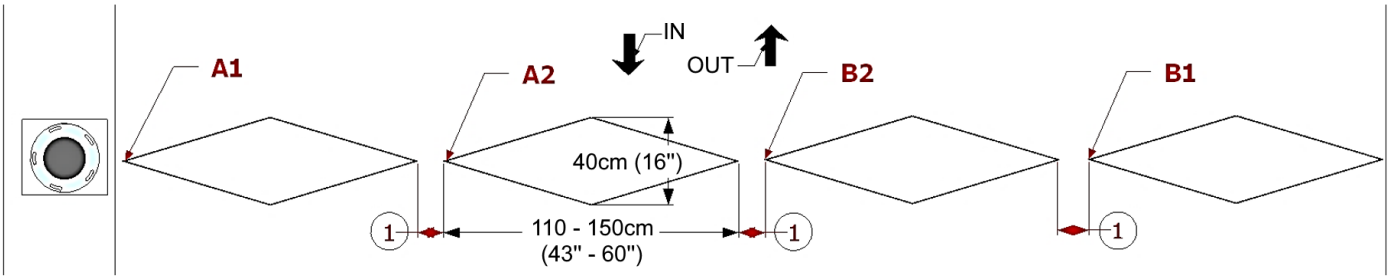


Cable B1 will not be used in this configuration. Close this cable with a scotchlock connector.

1 Refer to the section ***Spacing between the loops***, page 30, to apply the correct spacing to the length of the Loops.

Place the end of the loop A2 under the loop A1.

4 loops



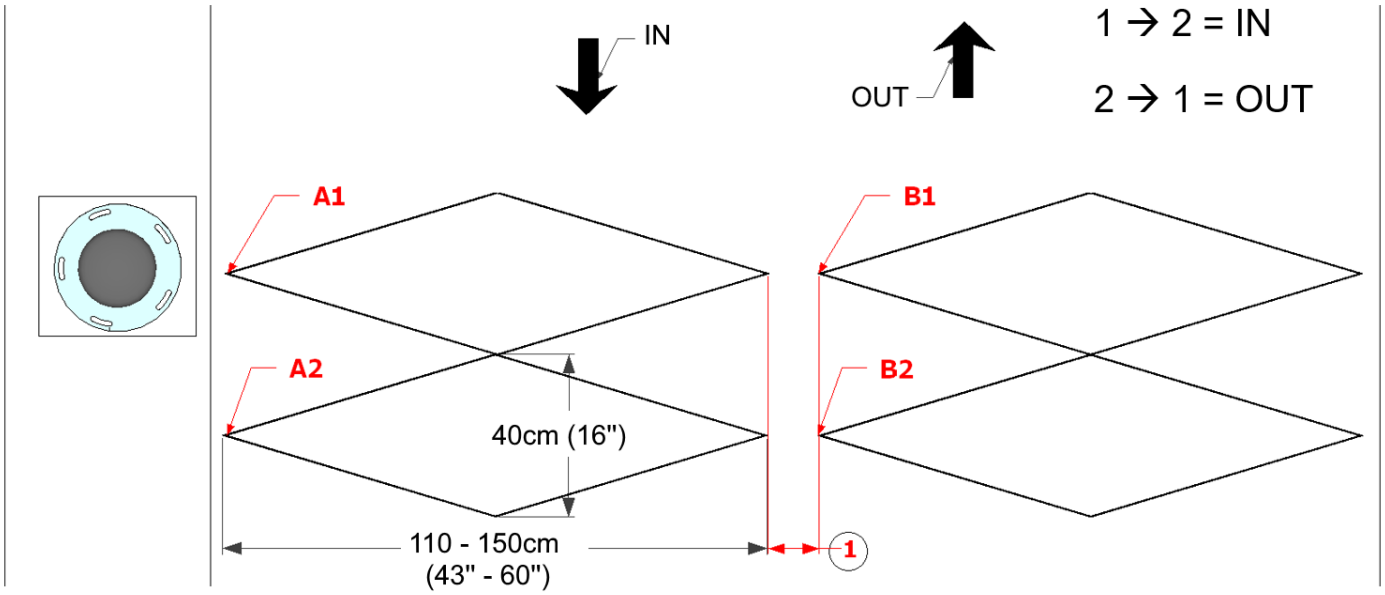
1 Refer to the section ***Spacing between the loops***, page 30, to apply the correct spacing to the length of the Loops.

- Place the end of the loop A2 under the loop A1.
- Place the end of the loop B1 under the loop B2.

Systems with Direction Recognition Through the ZELT Loops

Attention! Follow the installation diagrams below only if you have specifically ordered a MULTI System with direction recognition through the ZELT Inductive Loops.

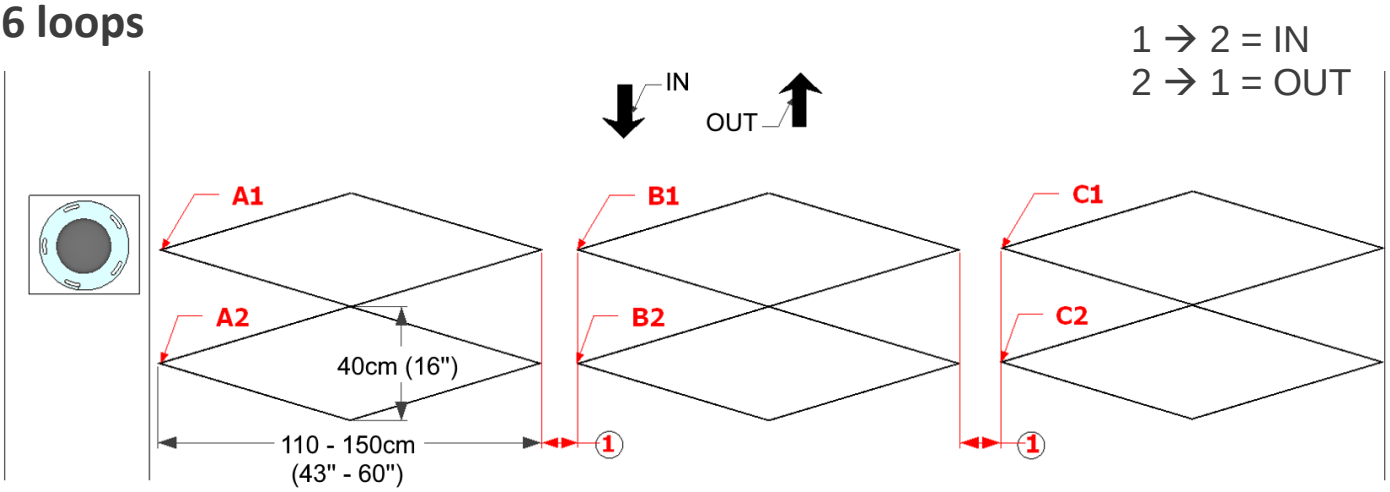
4 loops



1 Refer to the section ***Spacing between the loops***, page 30, to apply the correct spacing to the length of the Loops.

- Place the end of the loop B1 under the loop A1.
- Place the end of the loop B2 under the loop A2.

6 loops



1 Refer to the section ***Spacing between the loops***, page 30, to apply the correct spacing to the length of the Loops.

- Place the end of the loop B1 under the loop A1.
- Place the end of the loop B2 under the loop A2.

Appendix B – Checking the Level of Network Coverage

Prerequisites

Proceed as follows to verify the network coverage: Go to the installation site with the battery connected to the Eco-Combo logger.

Note: the battery is already connected to the Eco-Combo logger.

Required Equipment

Magnetic key

Mobile device with internet connection

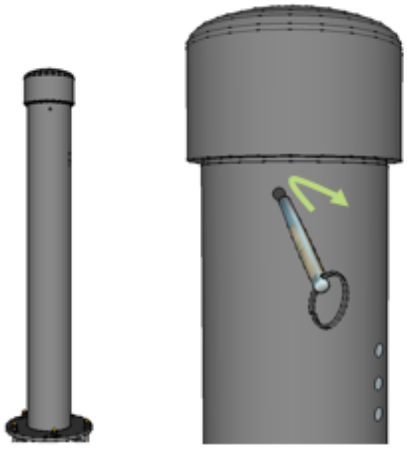
If you do not have a mobile device with internet connection, you can check the level of network coverage using the Eco-Link software.

See the section ***Testing the counting system > Automatic data transmission***, page 26.

Procedure

1. Wake-up your Eco-Combo logger by waving the magnetic key over the wake-up zone.

Systems without a manhole



Systems with a manhole

When waving the magnetic key, the wake-up zone must light solid green.

The activation zone flashes then blue at regular intervals.

2. Tap the wake-up zone 6 times with the magnetic key.

   The wake-up zone lights up green when tapping it.

   After waving the magnetic key six times, the LED must light solid blue.

a) Blue activation zone, 3 flashes
b) Blue activation zone, 2 flashes
c) Blue activation zone, 1 flash
d) Solid blue light in activation zone

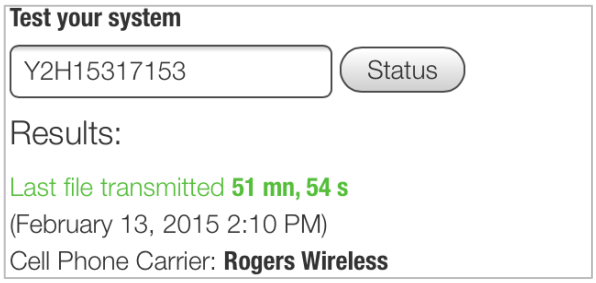
3. When the wake-up zone is solid blue, go to the following webpage: http://eco-counter.net/status/

4. Type in the serial number of your Eco-Combo logger.

5. Click on ***Status***.

The webpage gives you:

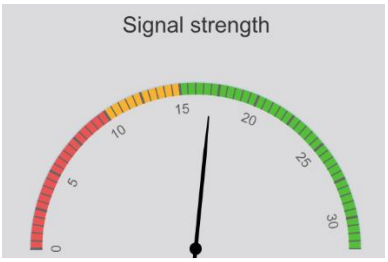
- The date and time when the counter communicated for the last time. Make sure that the date and time matches with the time when you tapped the wake-up zone six times with the magnetic key.



If the date and time does not match, proceed as follows:

a) Leave the magnetic key over the wake-up zone until it switches off.
b) Repeat the procedure again.

- The quality of the coverage.



- If the indicator is in the red zone, the system will not be able to send data, so do not install the system at this location.
- If the indicator is in the orange zone, the counter may have difficulty sending data on a daily basis.

Customer Service

Hardware

The entire system is guaranteed for **2 years** starting from the date printed on the warranty certificate (the warranty certificate is delivered with your product).

In the rare case that there is a problem with a part in your system, the product must be returned with the Product Return Sheet. Please contact us to receive this sheet.

The logger serial number (please see the warranty certificate delivered with the product) must be identified on the Product Return Sheet.

The warranty cannot be implemented in the case of mishandling, incorrect installation (by someone other than Eco-Counter), or any other reason listed in the warranty certificate.

If the product can be repaired, a quote will be submitted to the customer prior to repair.

Any product damaged as a result of mishandling or improper use will be either replaced or repaired according to the parts price list used at the time of the request.

Software

Problems related to the use of the software can be dealt with remotely.

Please do not hesitate to contact Customer Service for assistance:

Europe / World	North America
Tel: +33. (0)2.96.48.48.83 Fax: +33. (0)2.96.48.69.60 Email: support@eco-counter.com	Toll Free: 1-866-518-4404 Phone: 1-514-849-9779 Email: help@eco-counter.com

Europe / World

4 rue Charles Bourseul | 22300 Lannion, France

Tel: +33 2 96 48 48 81 | Fax: +33 2 96 48 69 60

North America

604-3981 St. Laurent Blvd. | Montreal, QC H2W 1Y5 | Canada

Direct: 1-514-849-9779 | Toll Free: 1-866-518-4404

eco-counter@eco-counter.com | www.eco-counter.com

ENGLISH

ZELT INDUCTIVE LOOPS FOR BICYCLES

INSTALLATION IN ASPHALT

Serial numbers starting with X or Y

Contents

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Principle of the ZELT Inductive Loop for Bicycles **2**

Choosing the Installation Site **3**

Warnings **4**

Required Equipment **5**

Installing the ZELT Loops **6**

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Unidirectional systems (or those that do not determine the direction of passage) *16*

Bidirectional systems (or those that are capable of determining the direction of passage) for bidirectional lanes *19*

Bidirectional systems (or those that are capable of determining the direction of passage) for two independent unidirectional lanes *21*

Systems with Sensor ZELT Selective (for shared lanes) 22

Unidirectional systems (or those that do not determine the direction of passage) *22*

Bidirectional systems (or those that are capable of determining the direction of passage) for bidirectional lanes *25*

Bidirectional systems (or those that are capable of determining the direction of passage) for two independent unidirectional lanes *26*

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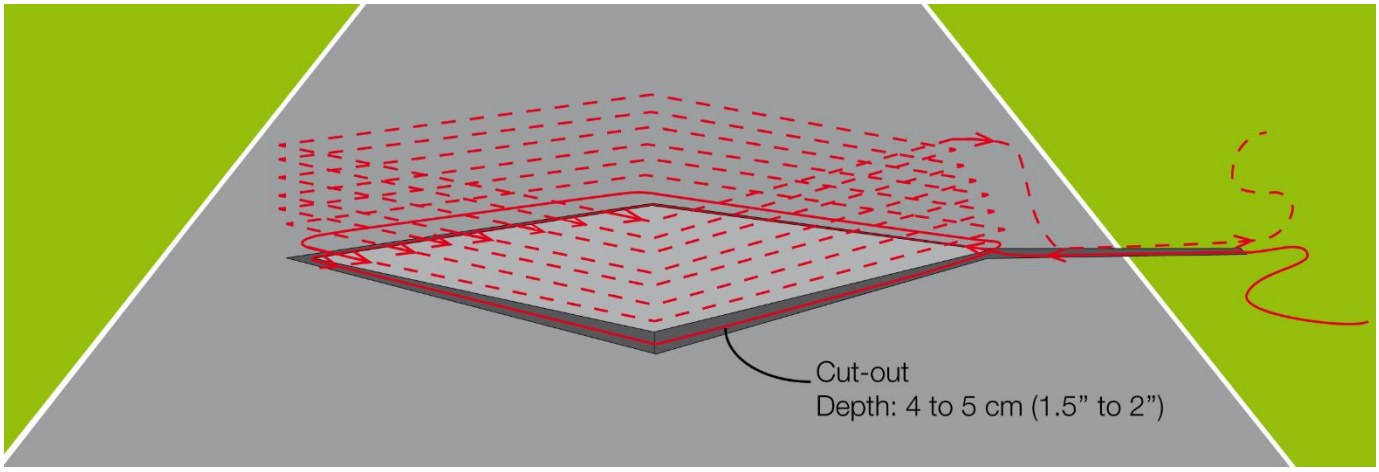
Principle of the ZELT Inductive Loop for Bicycles

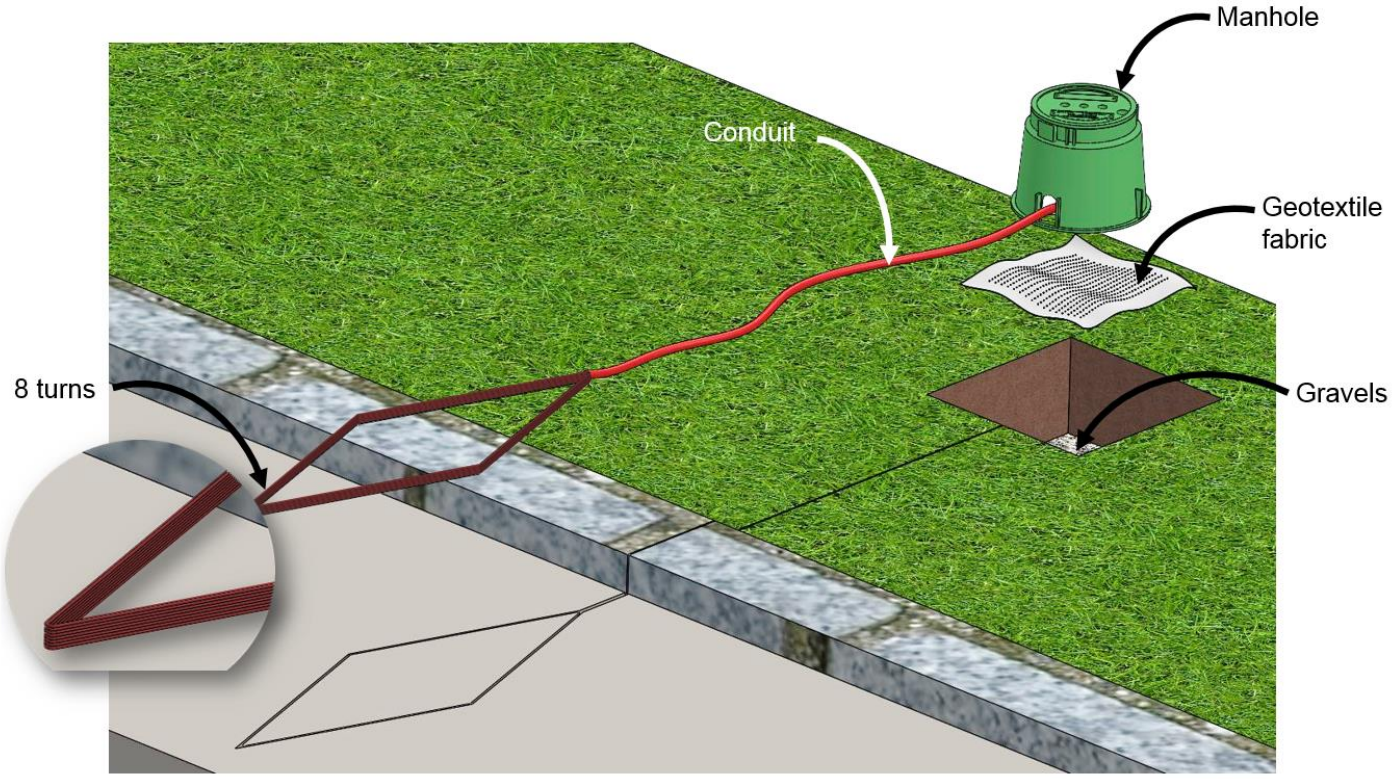
The ZELT Inductive Loop for bicycles consists of:

- 8 turns of stranded wire
- forming a diamond shape
- layed 4 to 5 cm (1.5'' to 2'') under the ground surface.

The ZELT Loop detects the magnetic signature of the wheels of bicycles.



Forming of the Loop



Overview of a system including a manhole

Choosing the Installation Site

AVOID THE FOLLOWING SITES:

- **Areas subject to electromagnetic interferences:**
  - Proximity to other ZELT Inductive Loops.
  - Electrical wires, overhead or underground.
  - Buried telecommunication equipment, etc.
- **Congested or very slow traffic:**
  - Peaks of inclined paths.
  - Stops.
  - Proximity to road crossings.
  - Proximity to lookout points.
  - Presence of undesired obstacles throughout the area being counted.
- **Areas where there is a curve or turn in the road/bike path**

  The Loops must be installed perpendicular to the flow of traffic for accurate detection.

VERIFY NETWORK COVERAGE

Counting systems with the Automatic Transmission Feature activated: select a location with sufficient cellular network coverage.

If the network coverage is too low, choose another installation site

Please note that moving just a few meters may sometimes be sufficient to obtain proper network coverage.

How do I Know if the Automatic Transmission Function is Active

You can determine whether or not your device was sent from the factory with this function activated by looking at the third letter of the serial number of your Eco-Combo logger.

- *Letter « I »: Your device's Automatic Transmission function has not yet been activated.*
- *Letter "H": The Automatic Transmission function is active.*

Go to the installation site with the battery connected to the Eco-Combo logger to check the network coverage.

Refer to the counting system user guide to proceed.

Warnings

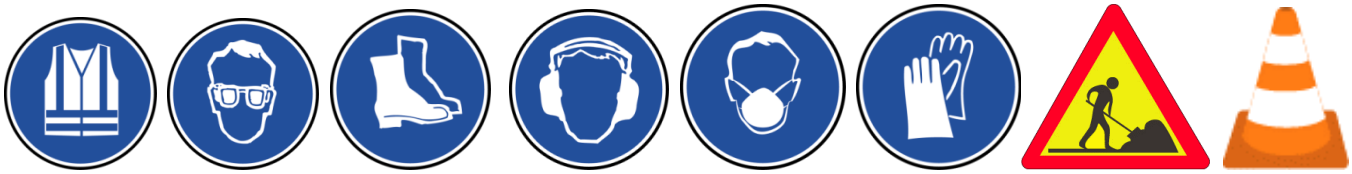
Risk of bodily harm!

Fire, explosion and burn hazard.

Do not short circuit, crush, disassemble, heat above 100 °C (212 °F) or incinerate the components of your Eco-Counter® counting system.

Risk of bodily harm!

- Use safety cones and hazard signs to secure the work site.
- Wear the necessary protective equipment: Reflective safety vest, protective glasses and footwear, safety headphones, anti-dust mask, and protective gloves when necessary.



Risk of damage

Your Eco-Counter is a measuring system, and therefore it should always be handled with care.

Required Equipment

- **To trace the area to be dug out**
  - Straight plank of wood (150 cm (60'') minimum)
  - Tape measure
  - Chalk
- **To cut the diamonds into the asphalt**
  - Thermal saw with blower and double diamond disk capable of cutting out a gutter measuring 10 mm (1/2'') wide and 50 mm (2'') deep.
- **To install the Loops**
  - To form the Loops: Drill, pliers and a short ruler (to push in the Loops).
  - To verify the inductance of the Loops (optional): Multimeter.
  - To protect the Loop ends (optional): Conduit Ø 25 mm (1''), utility knife.
  - If you would like to use your own wire to form the Loops, make sure that you use a stranded wire.
- **To fill in the saw cuts**
  - Asphalt or other filler regularly used for roadwork with a temperature that does not exceed 60° C (140° F).

We recommend using micro-cement for sealing the road work (example: sika fastfix-138tp, 714 scellflash micro-beton (micro-cement)).

  - Sponge
  - Water
  - Trowel
- **To test the Loops**
  - Counting system and corresponding user guide
  - Bicycle
  - Eco-Link software

If you do not have the Eco-link software, ensure that there are two people present.

List of compatible devices with Eco-Link:

- *Laptop: The laptop must be equipped with a compatible Bluetooth connection.*

1. *Download the Bluetooth compatibility test and run it on your laptop.*

   https://www.eco-visio.net/Download/bluetooth-test-en.exe
2. *If the result of the test is positive, download and install Eco-Link:*

   https://www.eco-visio.net/Download/ecolink.zip

- *Tablet or Smartphone: Must be an Android-based device.* .

Download Eco-Link via the Google Play Store.

Installing the ZELT Loops

Preparing the Installation Surface

1. Trace the area to be cut out. **To do so, respect the dimensions and positioning for your system:**

- **ZELT systems with Greenway ZELT Sensor → See the section *Layout*, page 16.**
- **ZELT systems with Selective ZELT Sensor → See the section *Layout*, page 22.**

Greenway ZELT Sensor

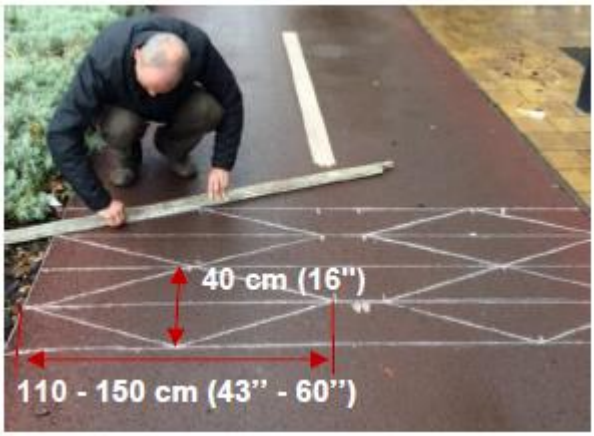
Selective ZELT Sensor

Attention! Eco-MULTI system for pedestrians and bicycles→ The dimensions and positioning are not shown in this installation guide.

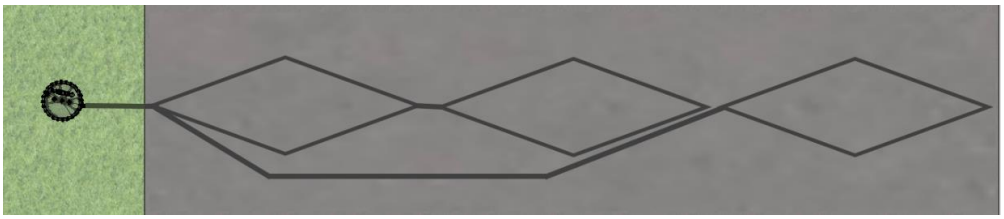
Refer to the Eco-MULTI system installation guide to see the layout.

- Ensure that the tracing of the diamond is a perfect diamond shape.
- The width of the diamond must be 40 cm +/- 2 cm (16'' +/- 0.5'').
- The length can be adjusted between 110 cm (43'') and 150 cm (60'') depending on the width of the path where it will be installed.

  If there is a need for the Loops to be a different size, please contact Eco-Counter® to verify whether or not the desired dimensions are feasible.



- For systems with more than 2 Loops installed side by side: Trace a gutter for the end of the Loops furthest from the counter.



2. Cut into the asphalt with the thermal disk according to the markings indicated in step 1 and the recommended dimensions for the gutter.

Dimensions of the Cut-Outs:

- Width: 0.5 to 1 cm (1/4'' to 1/2'')
- Depth: 5 cm (2'')

3. Clear out gravel from the saw cuts using a blower.

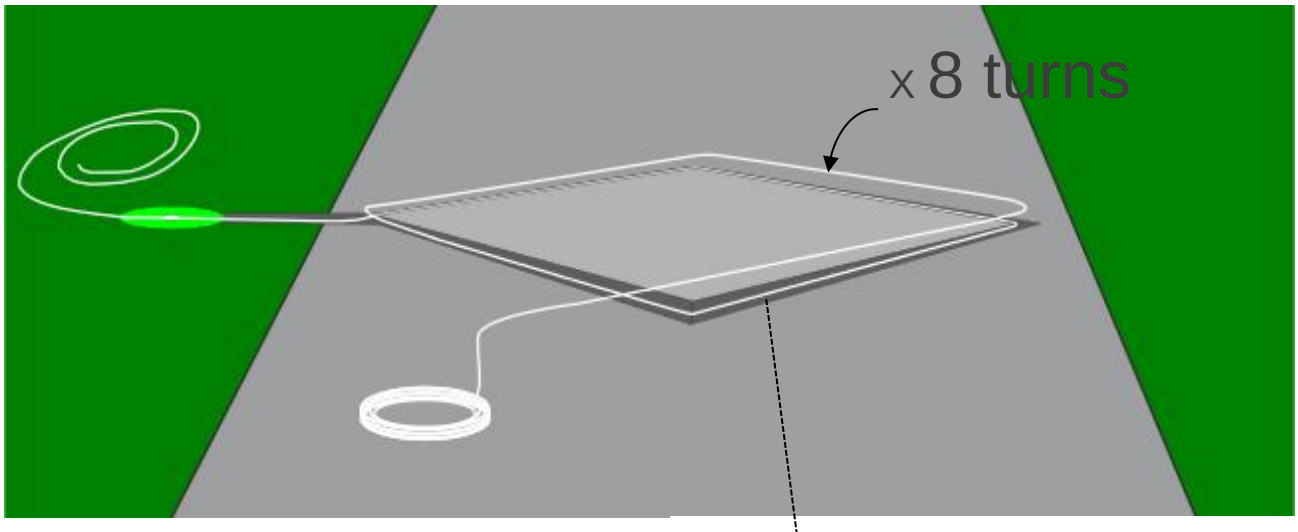
Use the short ruler to remove any remaining pieces of gravel.

4. Cut a slit in the shoulder to pass the wiring from the Loops to the counter.

Forming the ZELT Loops

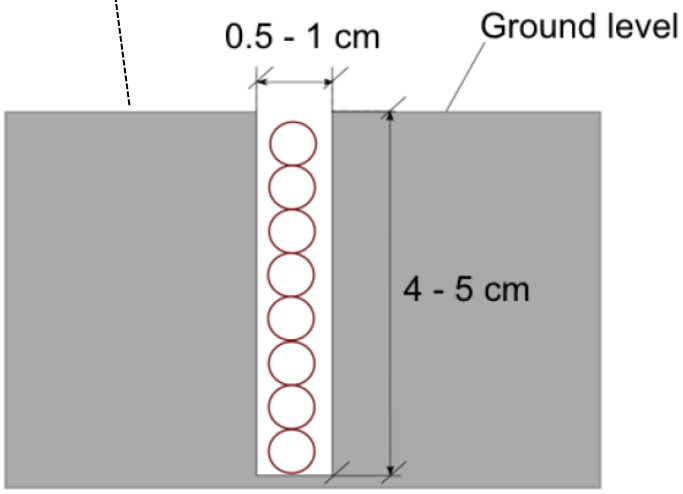
Warning! If you would like to use your own wire to form the Loops, make sure that you use a stranded wire.

1. Form a Loop of 8 turns.



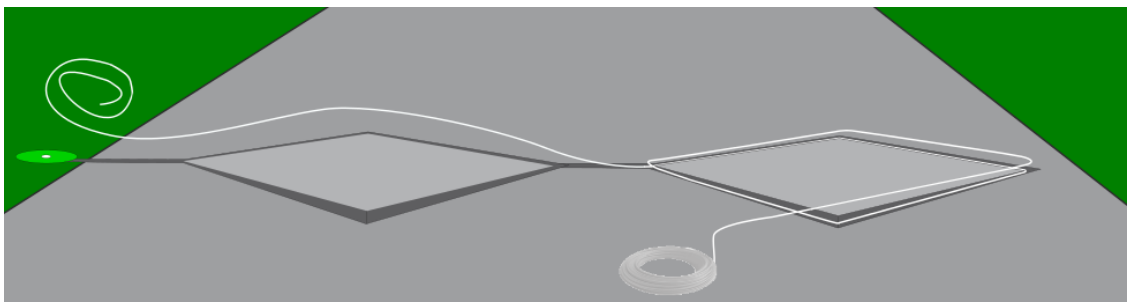
- There is no preferred rotation direction of the Loops.
- **Keep enough slack so that the wire extends back to the counter.**
- Systems with more than two ZELT Loops:
  - Form Loops A1 and A2 with the red conductive wire
  - Form Loops B1 and B2 with the black conductive wire

  This will make it easier to identify the two pairs of Loops.

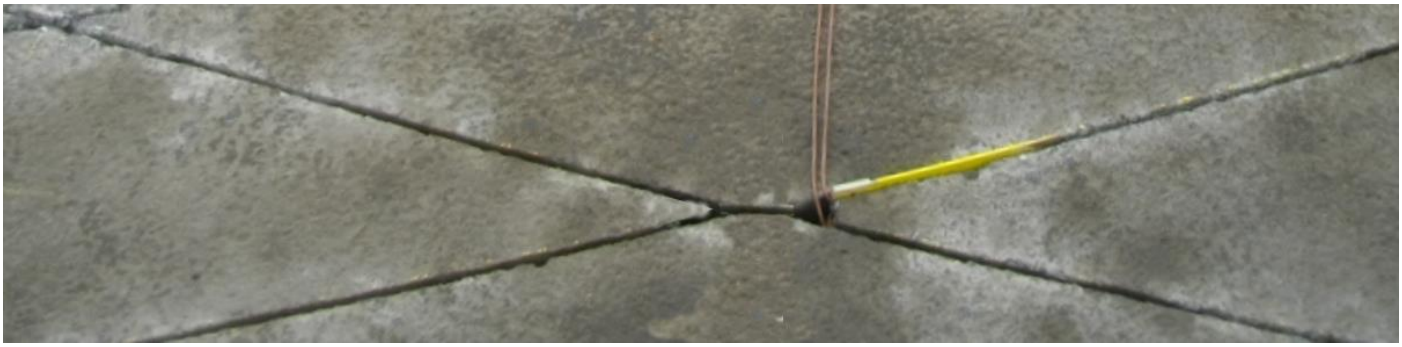


Cut-out - Sectional view

- Systems with Loops installed side by side Form a first Loop in the cut-out furthest from the counter.



2. Push the end of the two wires into the saw cut with the small ruler.



3. Stretch out the end of the two wires and bring them to the manhole.

The end must be long enough to reach the manhole with 50 centimetres (20'') of extra slack.

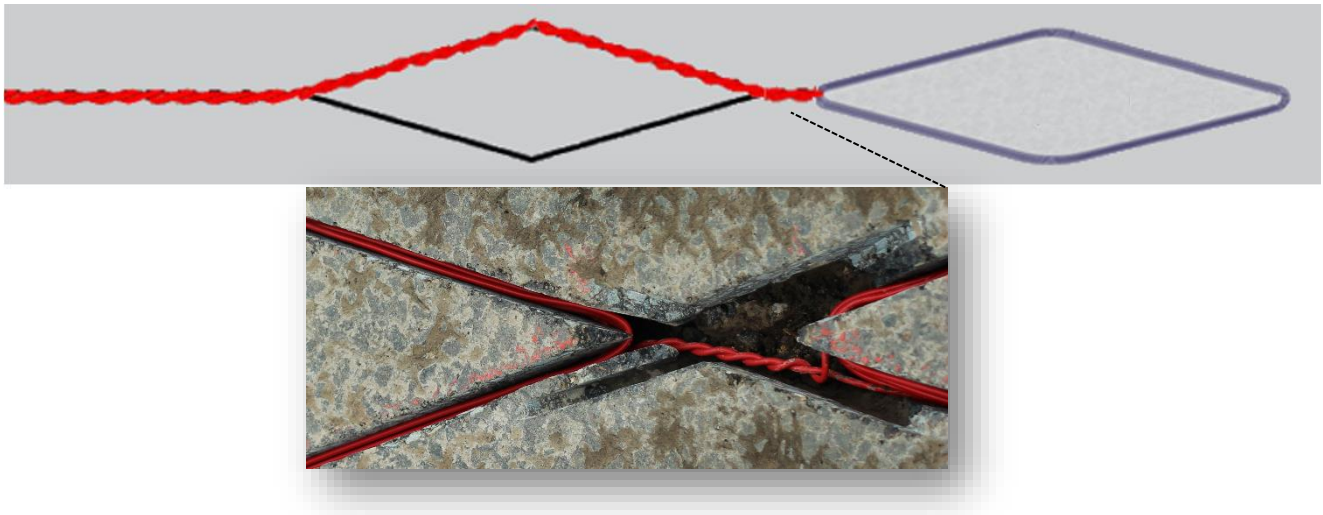
4. Stretch out the end of the two wires and twist them.

Attention! Only twist the end of the wires. The 8 turns forming the diamond shape must not be twisted.

Example for a system with two Loops installed side by side:

Only the red portion must be twisted. Bring the twisted end to the counter while placing its end through the cut-out in the Loop closest to the counter.

The Loop closest to the counter will be formed on top of the twisted end of the furthest Loop.



a. Attach the two extremities of the wire to a drill or an electric screwdriver.
b. Stretch out the wires.
c. Twist the wires.
d. Keep the wires tight while rotating the drill at a slow pace in order to achieve optimal results.
e. There should be at least 30 twists per meter (per yard).

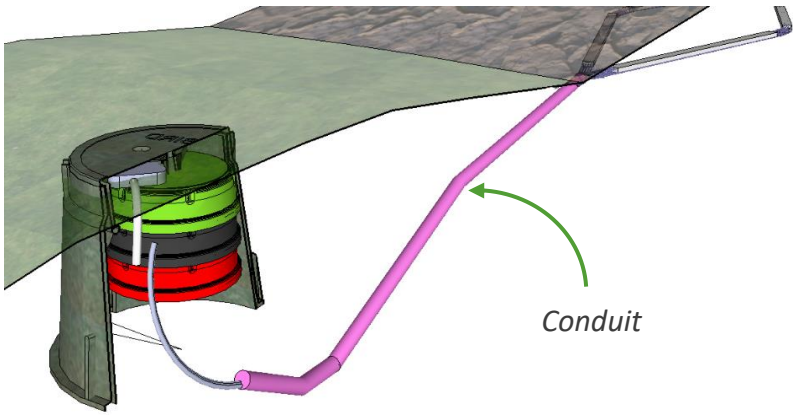
Connecting the ZELT Loops

1. Put a yellow reference tag - A1, A2, B1 or B2 at the end of the twisted end to indicate the Loop reference.

If you do not know which Loop has which reference, refer to the installation diagram.

2. Verify the inductance of the Loops. The level of inductance must be between 100 and 150 µH.

3. Run the twisted wires into the conduit (optional).



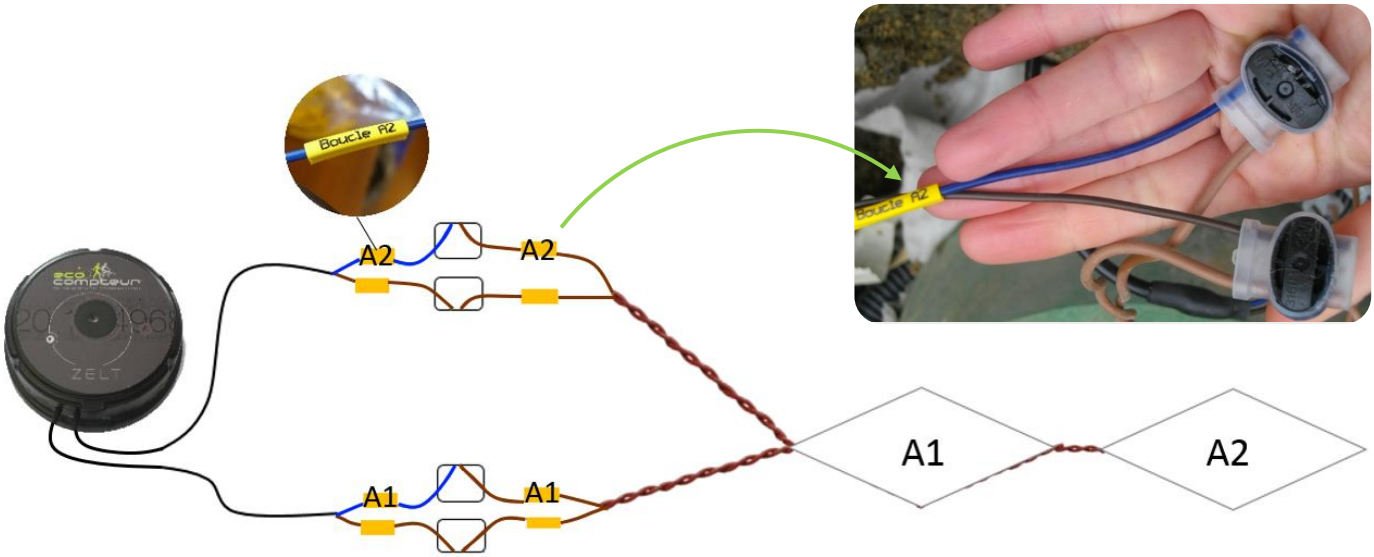
Example for a system including a manhole

4. Connect the ZELT sensor to the ZELT Loops. To do so, install the Scotchlock® connectors.

Make sure to connect the right Loop to the right scotchlock connector by using the yellow reference tags supplied.

Scotchlock® connectors

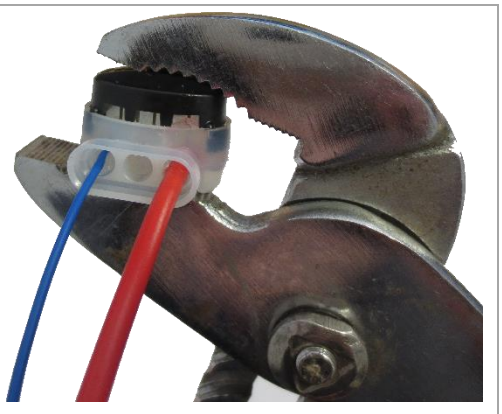
Yellow reference tags

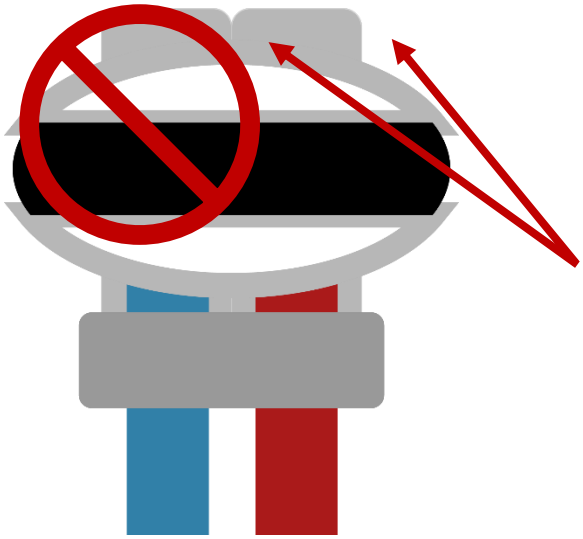


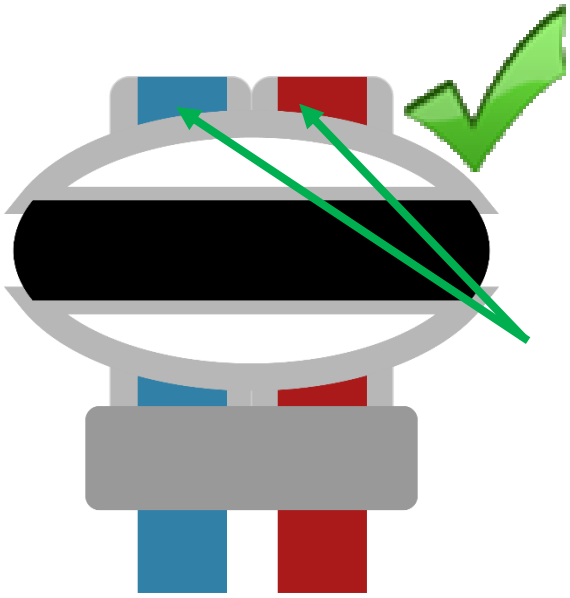
Example of connections on a two-Loop system

Install the Scotchlock connectors by proceeding as follows:

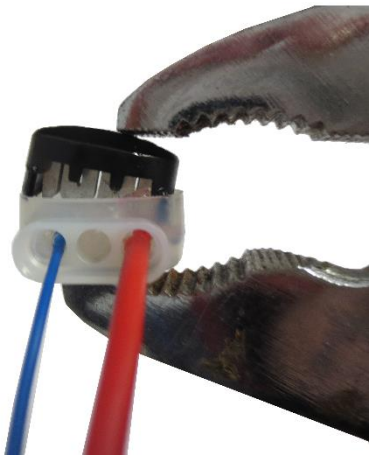
Attention! Do not strip the wires.

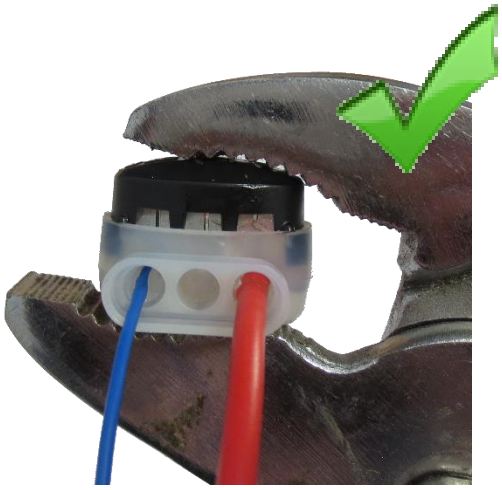
		
a. Insert the two wires into the two external holes of the Scotchlock connector.	b. Insert the wires as far as possible.	c. Close the connector by using a pair of pliers to release the gel and establish a connection.





The wires are not inserted as far as possible





The cap is not positioned properly.

The connection may fail

Testing the ZELT Loops

1. Wake-up your Eco-Combo logger by waving the magnetic key over the wake-up zone.

Refer to the user guide for your counting system to locate the wake-up zone.

While waving the magnetic key, the wake-up zone lights up green.

The wake-up zone will start flashing blue at regular intervals.

If you don't wave the magnetic key over the wake-up zone for more than five minutes, the Eco-Combo logger switches automatically to energy-saving counting mode. Wave the magnetic key over the wake-up zone of the Eco-Combo logger to wake it up.

2. Ride over each Loop, and verify that:

If you have the Eco-Link software	If you do not have the Eco-Link software
The passages are being correctly recorded. Refer to the section ***Verifications of Counts*** in the Eco-Link software guide to check the counts in real-time using Eco-Link.	The wake-up zone flashes green at each passage.

Ride over the middle and over both edges of the Loop.

Filling in the Saw Cuts

Warning! The wiring used in the Loops will not withstand temperatures exceeding 60° C (140° F). Do not use a substance that surpasses this temperature when filling in the saw cuts.

1. Fill in the saw cuts.

2. Bury the conduit protecting the Loops ends.

3. Install the counting system as indicated in the installation guide for your counting system.

Layout

Spacing between the Loops

The spacing indicated by the  between the two Loops is very important to respect and will vary depending on the length of the Loops themselves.

Apply the corresponding spacing to the length of the Loops:

Loop Length	Distance
Greater than 150 cm (59’’)	Contact Eco-Counter® to evaluate the feasibility
150 cm (59'')	8 cm (3.00'')
140 cm (55'')	10 cm (4.00'')
130 cm (51'')	12 cm (4.75'')
120 cm (47'')	14 cm (5.50'')
110 cm (43'')	16 cm (6.25'')
Less than 110 cm (43’’)	Contact Eco-Counter® to evaluate the feasibility

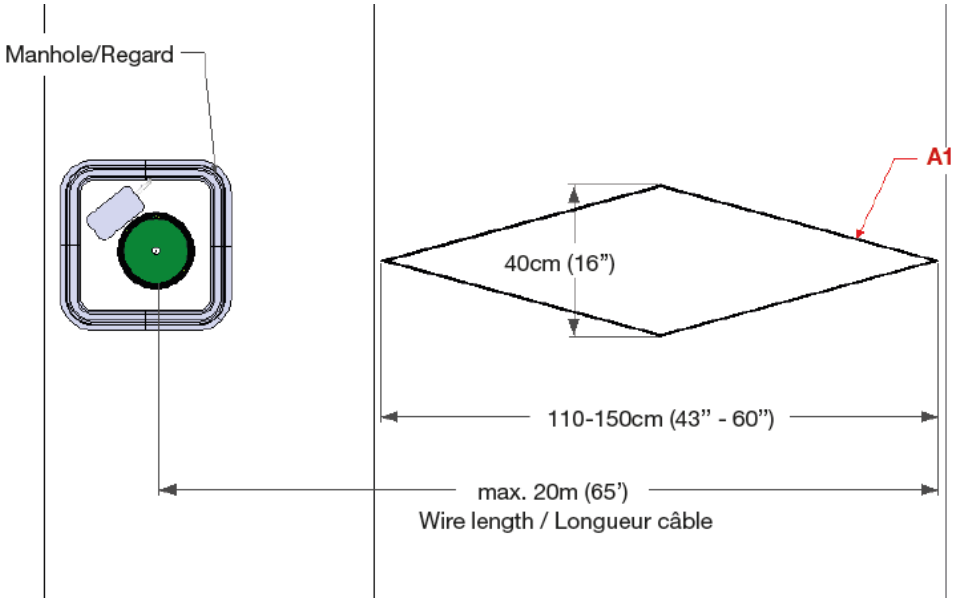
Systems with Sensor ZELT Greenways

Make sure that your ZELT sensor is dark green.

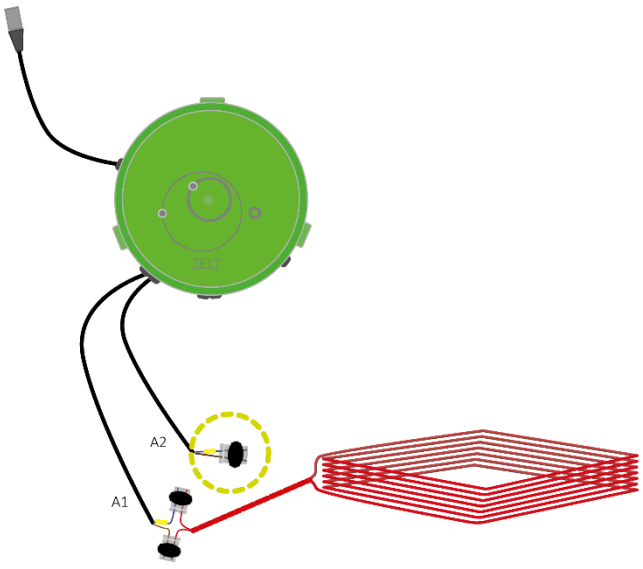
If your ZELT sensor is black, it is a ZELT Selective sensor.

Unidirectional systems (or those that do not determine the direction of passage)

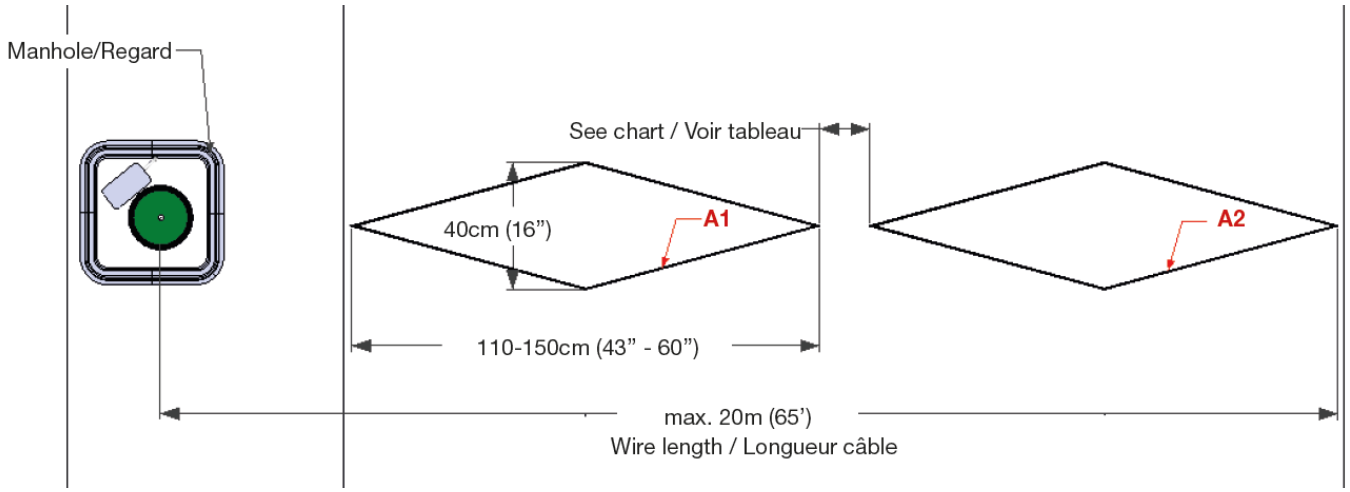
1 Loop – Lanes less than 1.5 m (5') wide



Cable A2 is not used. Close this cable with a Scotchlock® connector.



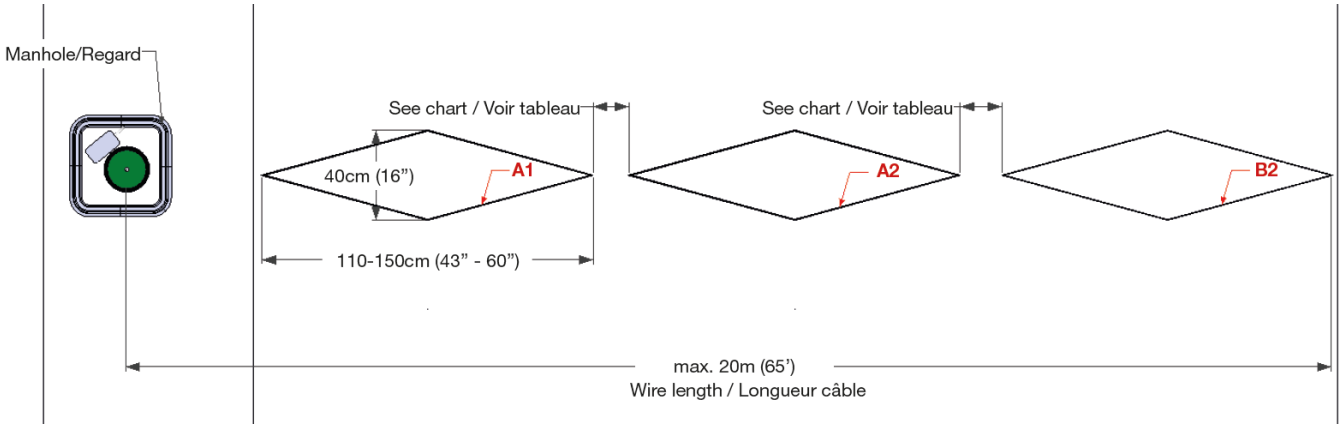
2 Loops – Lanes less than 3 m (10’) wide



1 **Refer to the chart on page 15 to apply the correct spacing to the length of the Loops.**

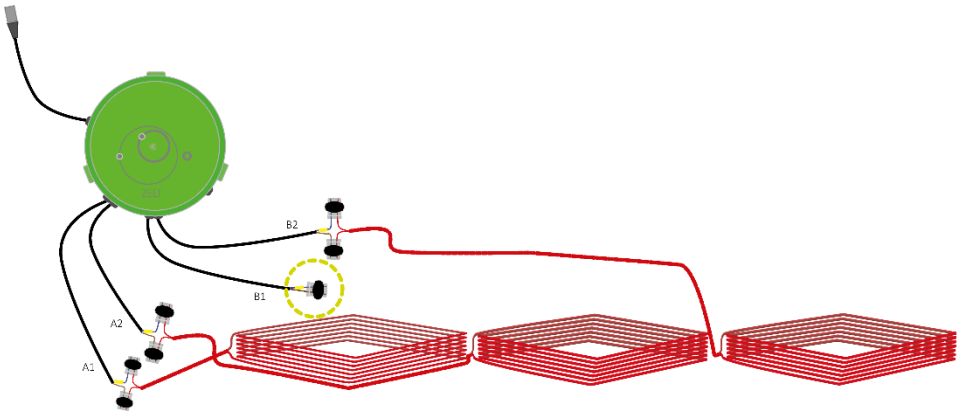
Place the end of the Loop A2 under the Loop A1.

3 Loops – Lanes less than 4 m (15') wide



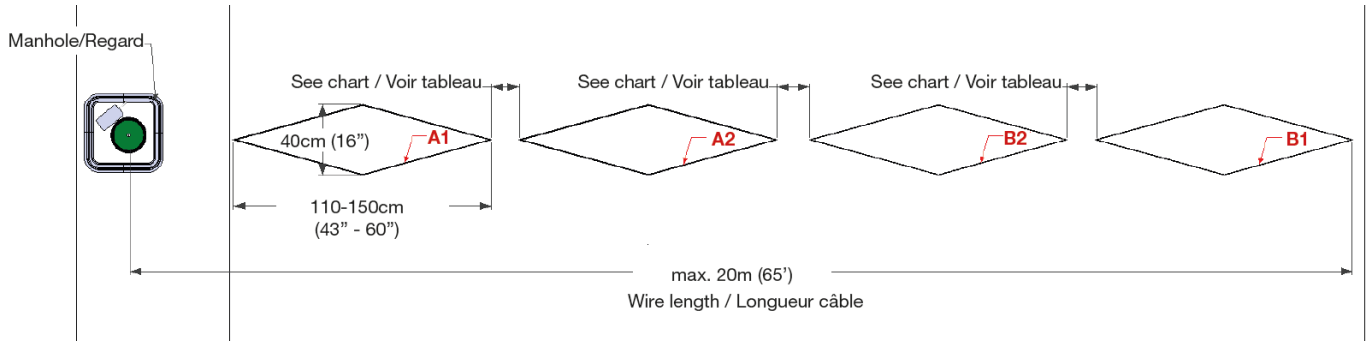
1 **Refer to the chart on page 15 to apply the correct spacing to the length of the Loops.**

- Cable B1 is not used. Close this cable with a Scotchlock® connector.



- Place the end of the Loop A2 under the Loop A1.

4 Loops – Lanes less than 6 m (20') wide



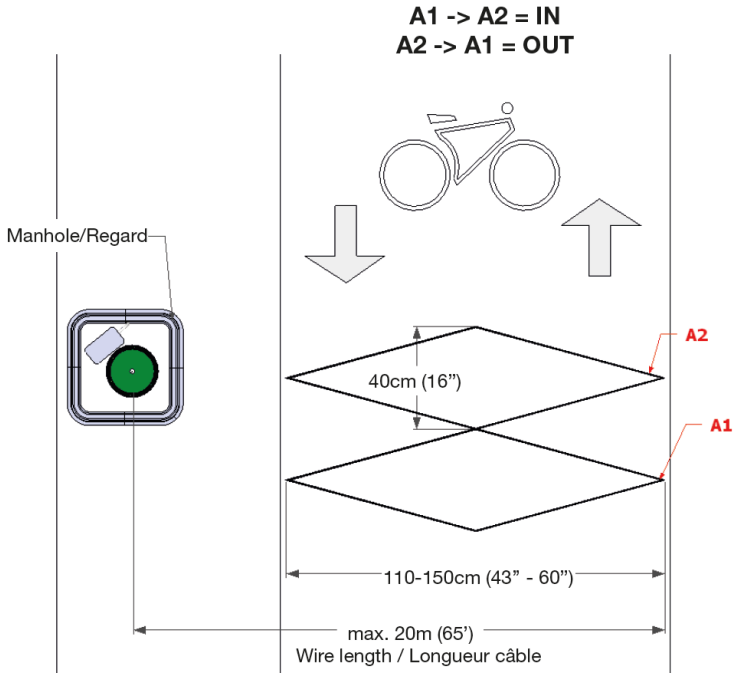
1

Refer to the chart on page 15 to apply the correct spacing to the length of the Loops.

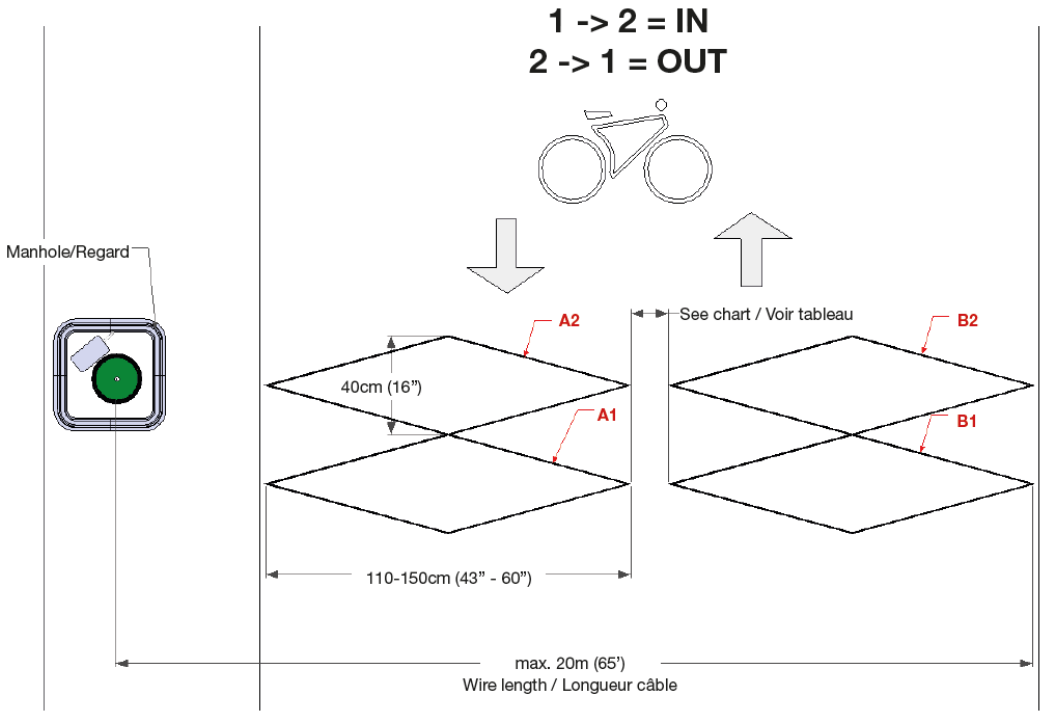
- Place the end of the Loop A2 under the Loop A1.
- Place the end of the Loop B1 under the Loop B2.

Bidirectional systems (or those that are capable of determining the direction of passage) for bidirectional lanes

2 Loops – Lanes less than 1.5 m (5') wide



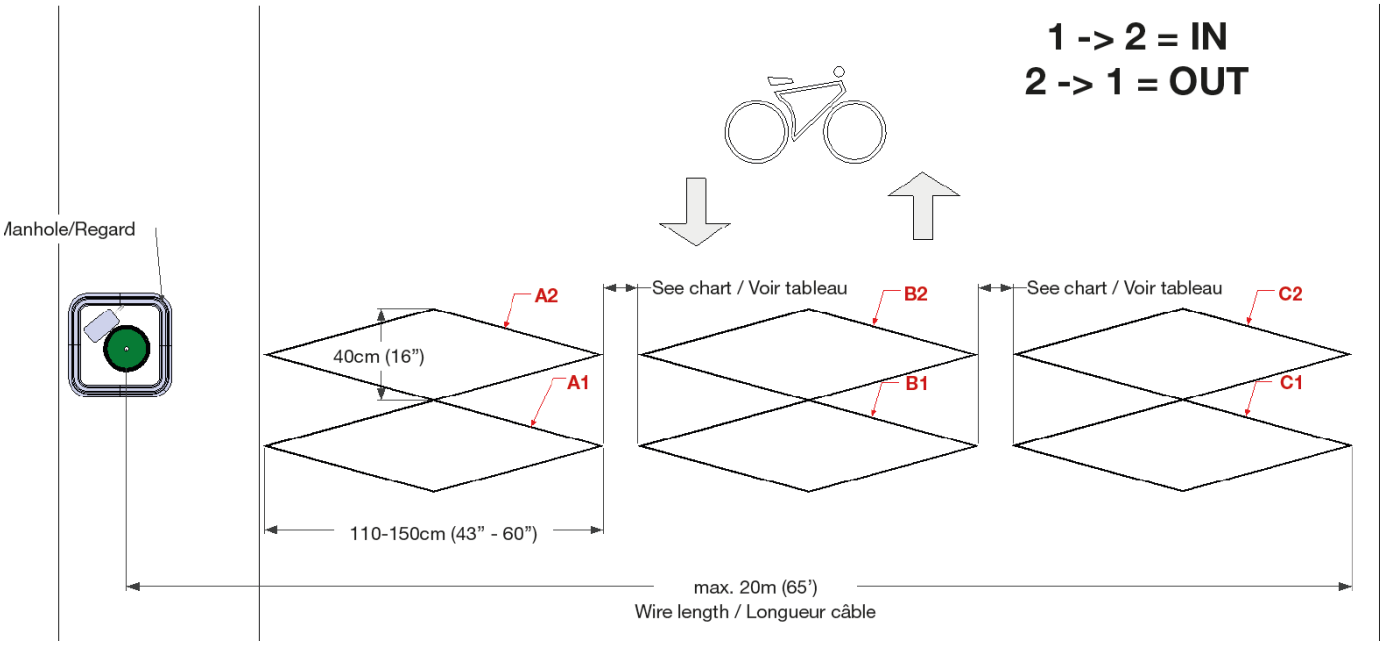
4 Loops – Lanes less than 3 m (10') wide



1 **Refer to the chart on page 15 to apply the correct spacing to the length of the Loops.**

- Place the end of the Loop B2 under the Loop A2.
- Place the end of the Loop B1 under the Loop A1.

6 Loops – Lanes less than 4 m (15') wide

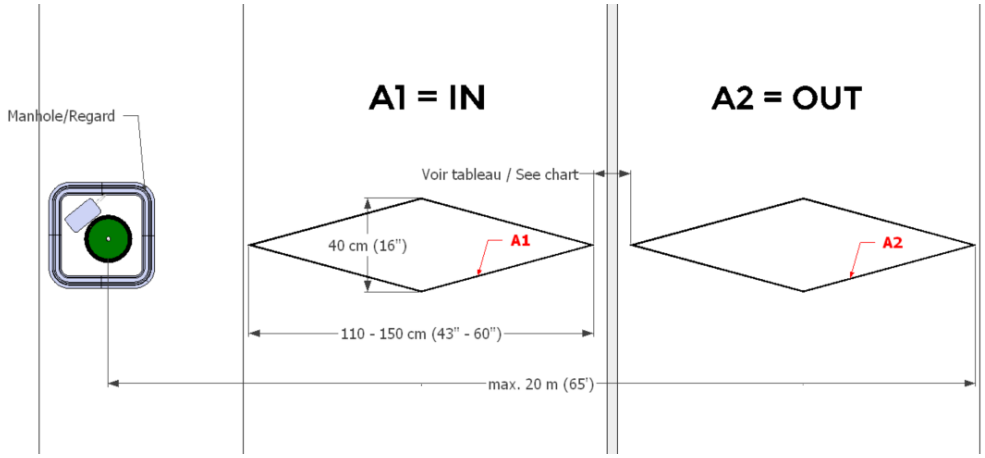


1 **Refer to the chart on page 15 to apply the correct spacing to the length of the Loops.**

- Place the end of the Loop B2 under the Loop A2.
- Place the end of the Loop B1 under the Loop A1.

Bidirectional systems (or those that are capable of determining the direction of passage) for two independent unidirectional lanes

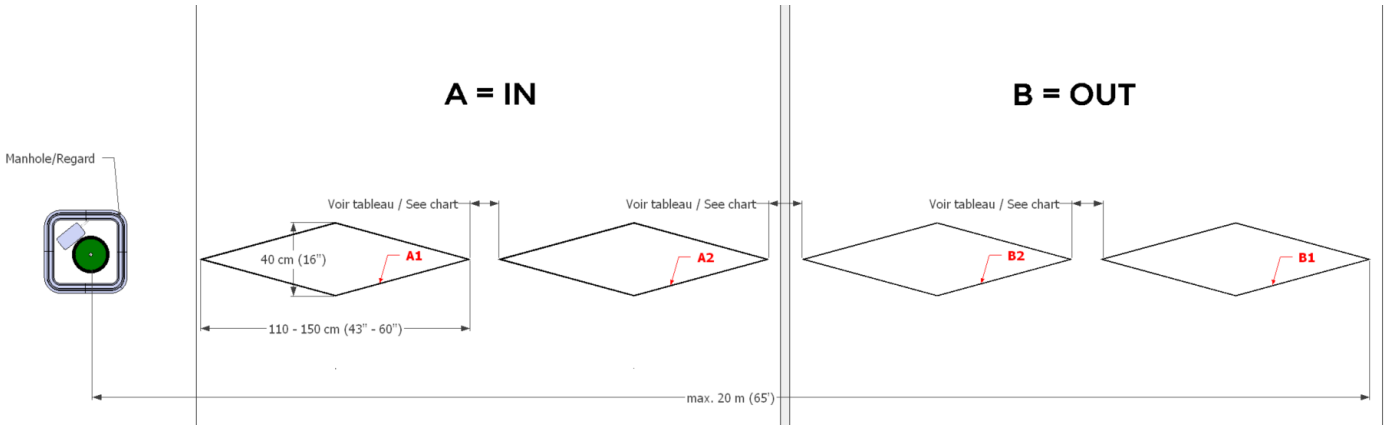
2 Loops – Lanes less than 1.5 m (5') wide



1 **Refer to the chart on page 15 to apply the correct spacing to the length of the Loops.**

Place the end of the Loop A2 under the Loop A1.

4 Loops – Lanes less than 3 m (10') wide



1 **Refer to the chart on page 15 to apply the correct spacing to the length of the Loops.**

- Place the end of the Loop A2 under the Loop A1.
- Place the end of the Loop B1 under the Loop B2.

Systems with Sensor ZELT Selective (for shared lanes)

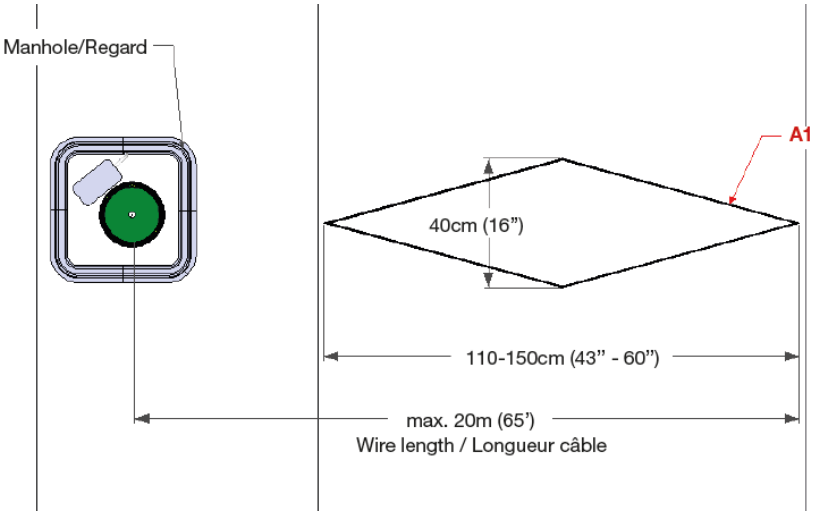
Make sure that your ZELT sensor is black.

If your ZELT sensor is dark green, it is a Greenway ZELT sensor.

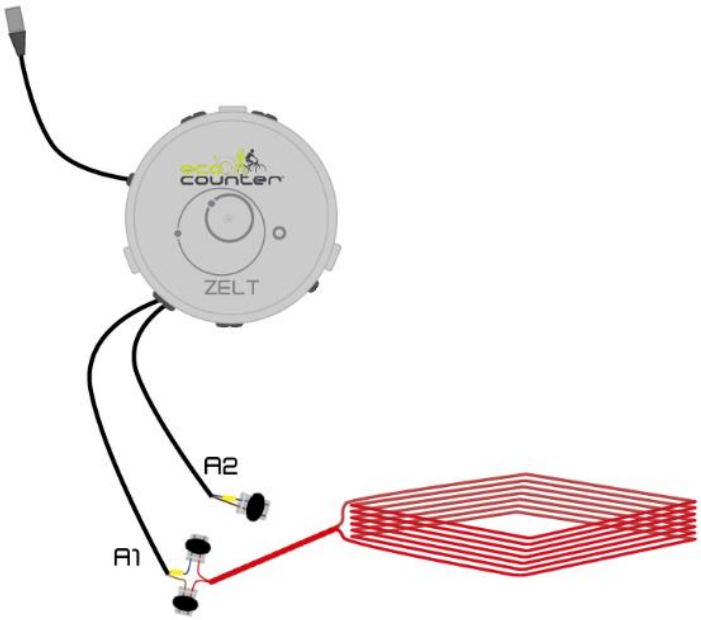
The ZELT Selective sensor is specifically designed to monitor bicycles on roads in mixed traffic (bicycle lanes, shared bicycle/bus lanes).

Unidirectional systems (or those that do not determine the direction of passage)

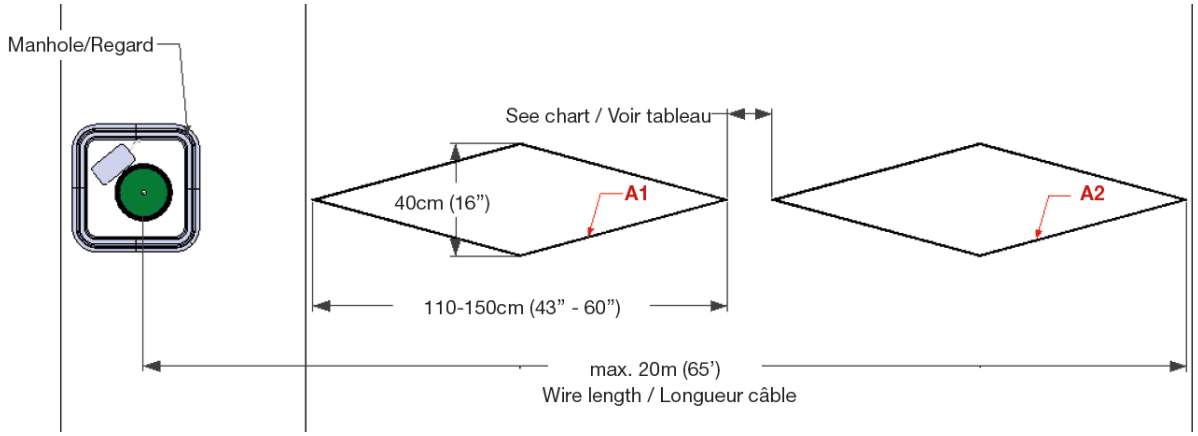
1 Loop – Lanes less than 1.5 m (5') wide



Cable A2 is not used. Close this cable with a Scotchlock® connector.



2 Loops – Lanes less than 3 m (10’) wide

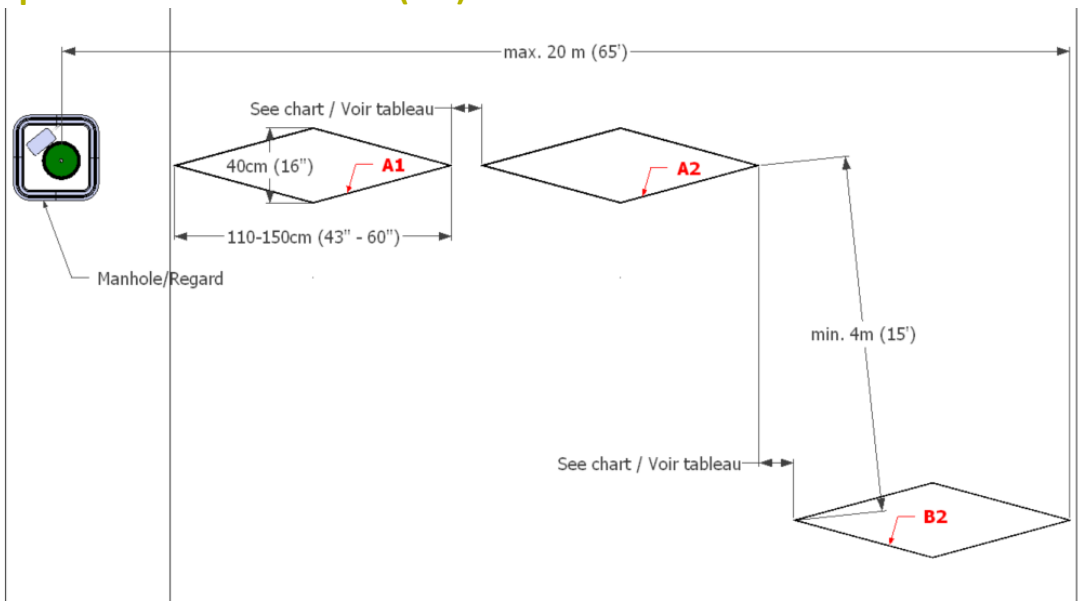


1

Refer to the chart on page 15 to apply the correct spacing to the length of the Loops.

Place the end of the Loop A2 under the Loop A1.

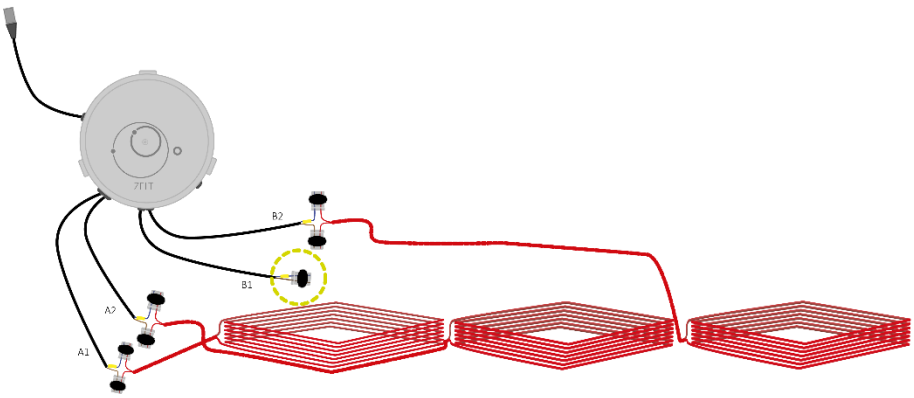
3 Loops – Lanes less than 4 m (15') wide



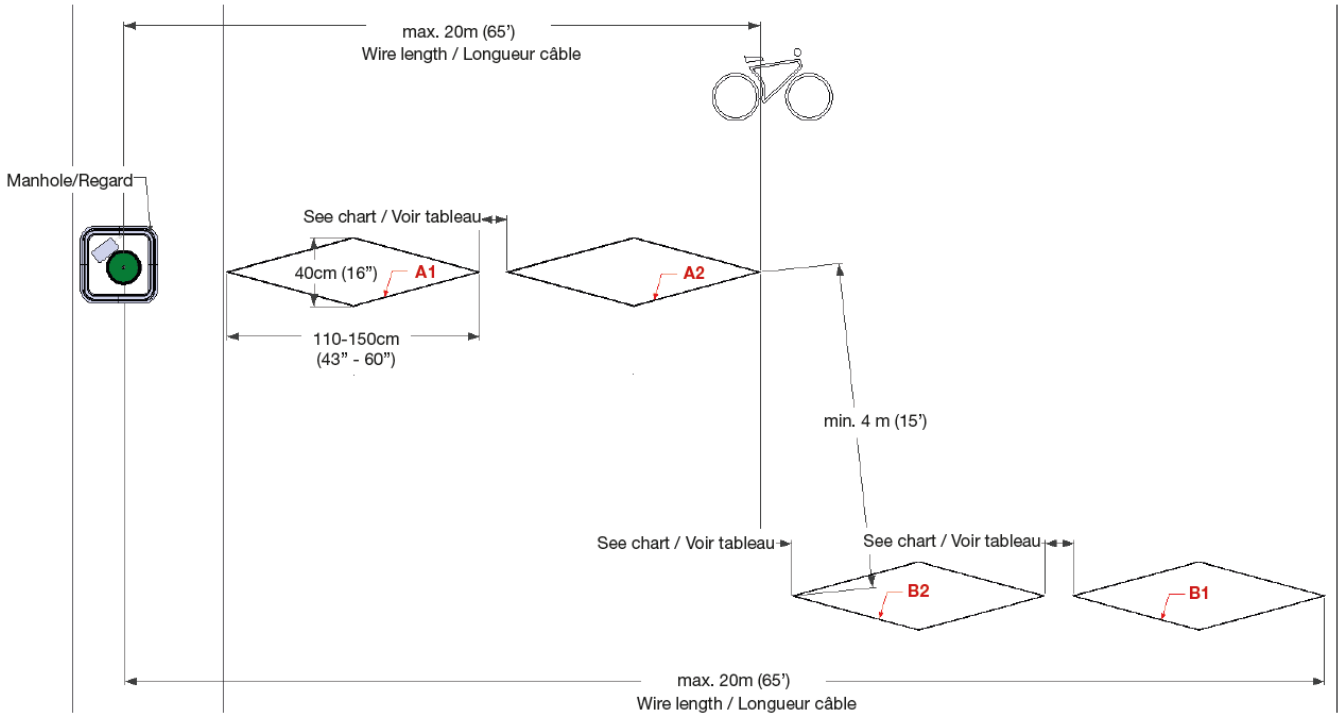
1

Refer to the chart on page 15 to apply the correct spacing to the length of the Loops.

- Cable B1 is not used. Close this cable with a Scotchlock® connector.
- Place the end of the Loop A2 under the Loop A1.



4 Loops – Lanes less than 6 m (19'5'') wide



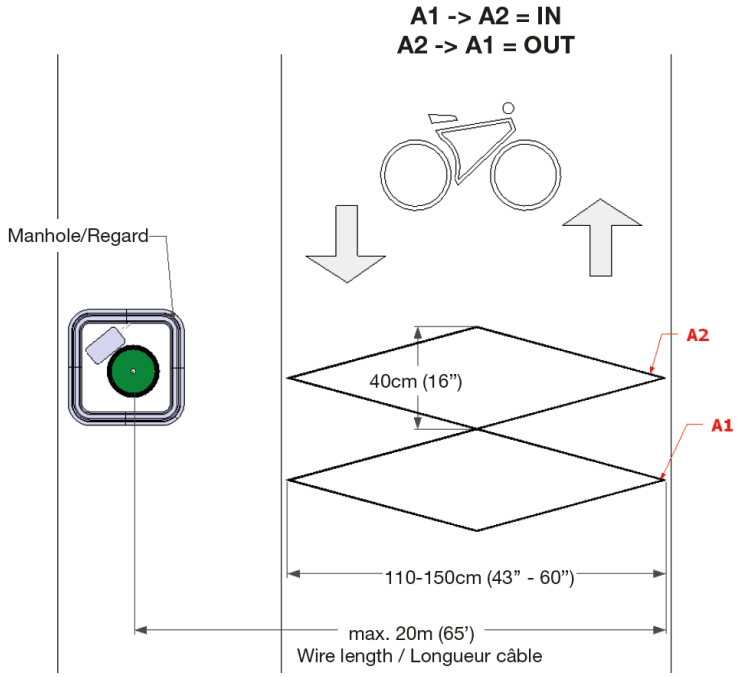
1

Refer to the chart on page 15 to apply the correct spacing to the length of the Loops.

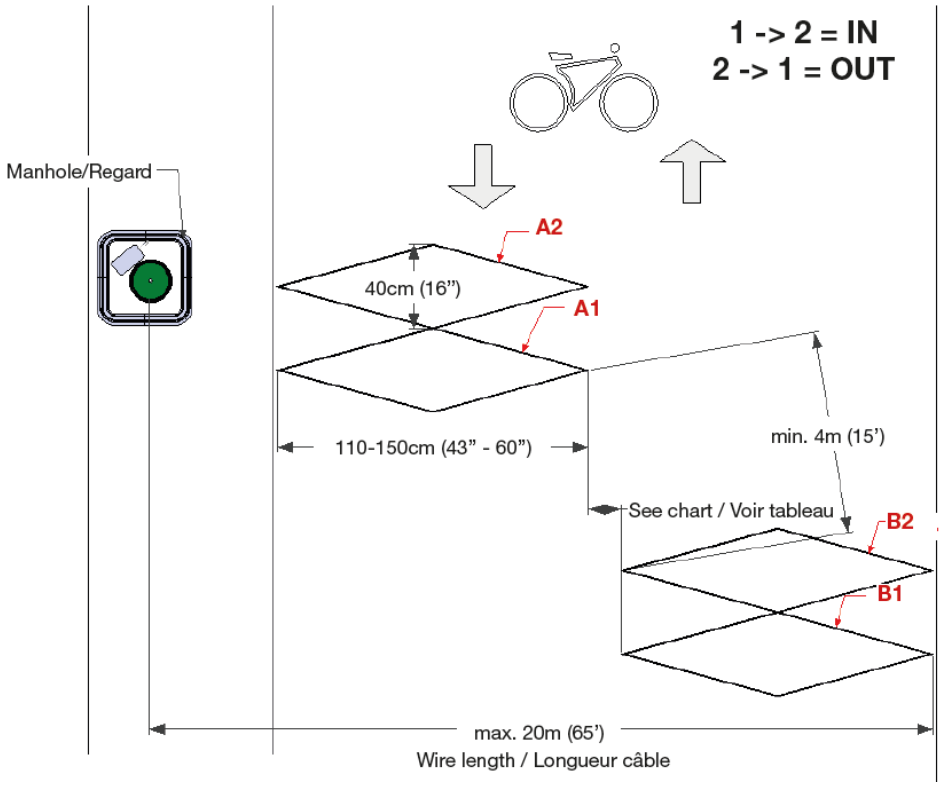
- Place the end of the Loop A2 under the Loop A1.
- Place the end of the Loop B1 under the Loop B2.

Bidirectional systems (or those that are capable of determining the direction of passage) for bidirectional lanes

2 Loops – Lanes less than 1.5 m (5') wide



4 Loops – Lanes less than 3 m (10') wide

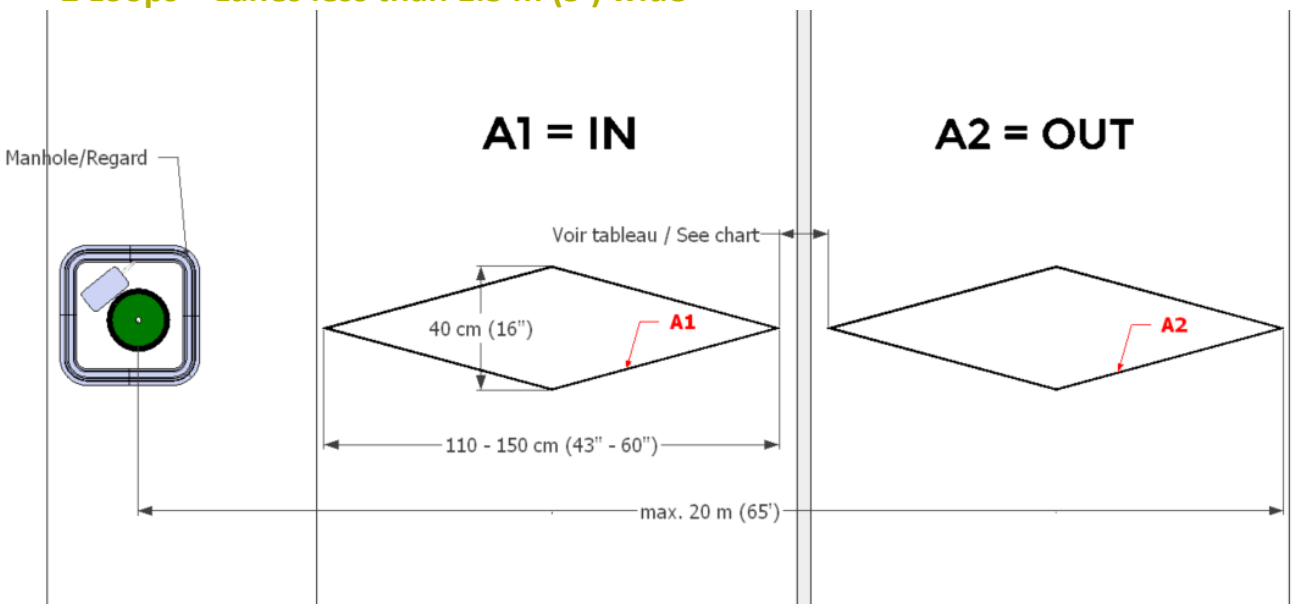


1

Refer to the chart on page 15 to apply the correct spacing to the length of the Loops.

Bidirectional systems (or those that are capable of determining the direction of passage) for two independent unidirectional lanes

2 Loops – Lanes less than 1.5 m (5') wide

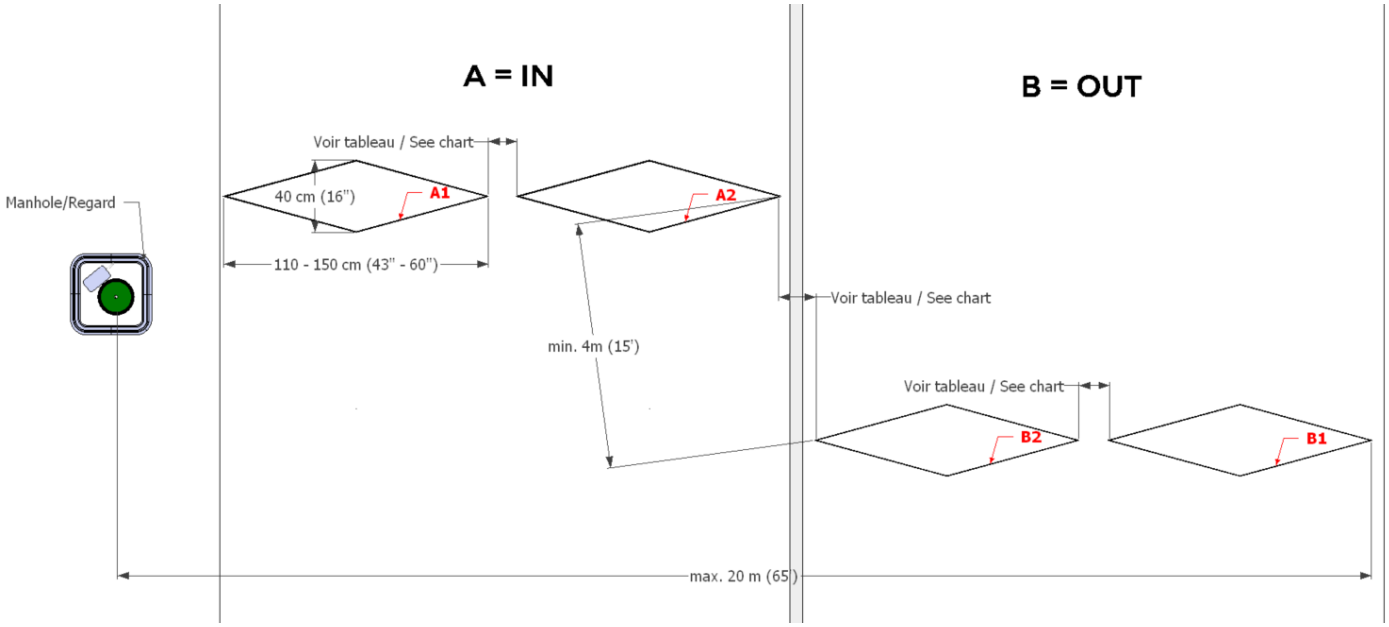


1

Refer to the chart on page 15 to apply the correct spacing to the length of the Loops.

Place the end of the Loop A2 under the Loop A1.

4 Loops – Lanes less than 3 m (10’) wide



1

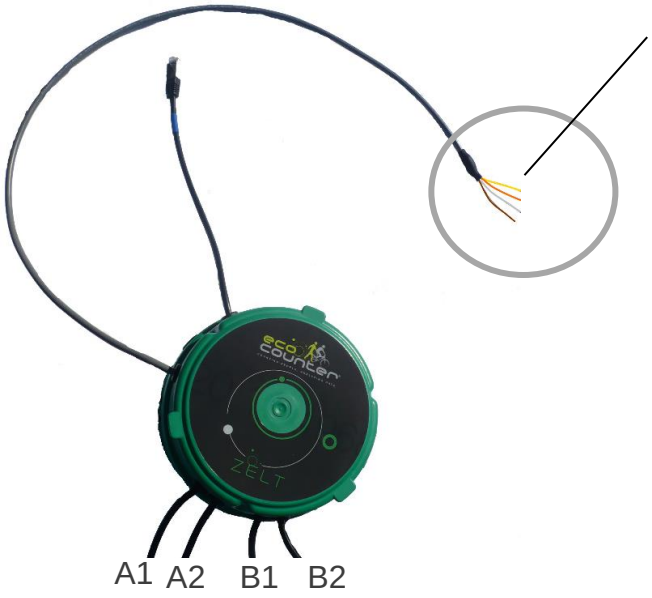
Refer to the chart on page 15 to apply the correct spacing to the length of the Loops.

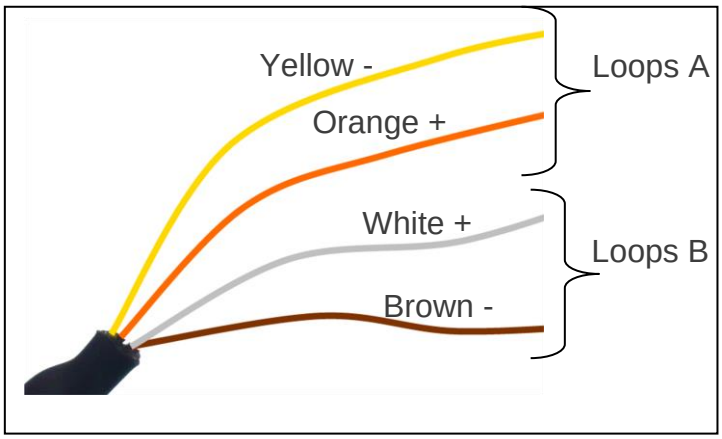
- Place the end of the Loop A2 under the Loop A1.
- Place the end of the Loop B1 under the Loop B2.

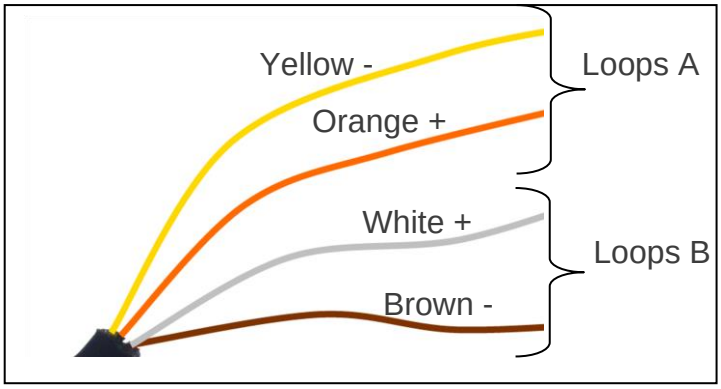
Dry Contact Outputs

If you have ordered a ZELT System with dry contact output, your ZELT Sensor looks like this:

- **Systems with one to four Loops:**

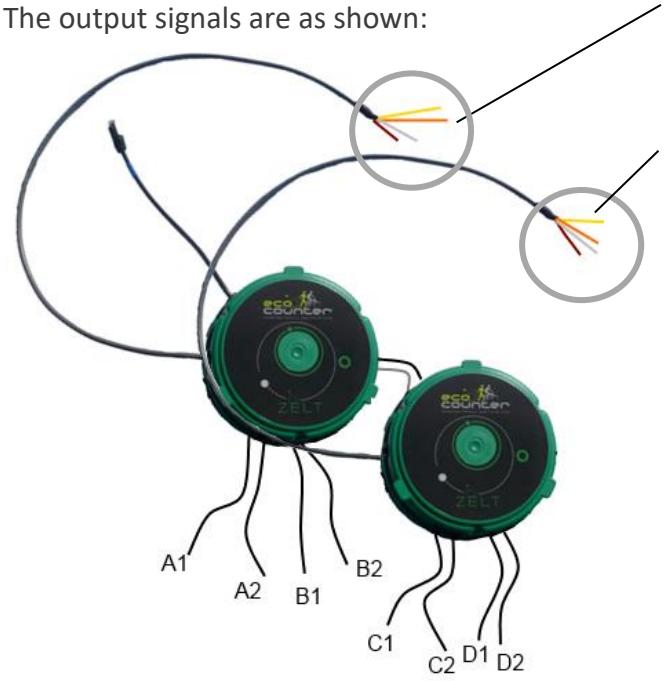


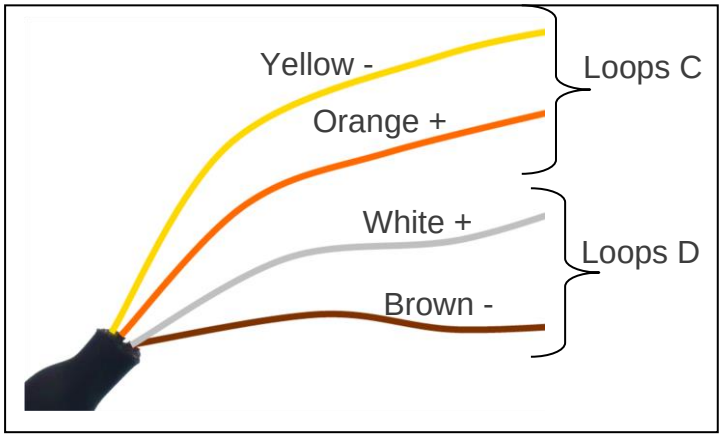


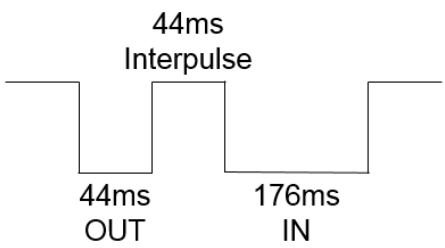


- **Systems with five to eight Loops:**

The output signals are as shown:







Customer Service

Hardware

The entire system is guaranteed for 2 years starting from the date printed on the warranty certificate (the warranty certificate is delivered with your product).

In the rare case that there is a problem with a part in your system, the product must be returned with the Product Return Sheet. Please contact us to receive this sheet. The logger serial number (please see the warranty certificate delivered with the product) must be identified on the Product Return Sheet.

The warranty cannot be implemented in the case of mishandling, incorrect installation (by someone other than Eco-Counter®), or any other reason listed in the warranty certificate. If the product can be repaired, a quote will be submitted to the customer prior to repair. Any product damaged as a result of mishandling or improper use will be either replaced or repaired according to the parts price list used at the time of the request.

Software

Problems related to the use of the software can be dealt with remotely. Please do not hesitate to contact Customer Service for assistance:

Europe / World	North America
Tel: +33. (0)2.96.48.48.83 Fax: +33. (0)2.96.48.69.60 Email: support@eco-counter.com	Toll Free: 1-866-518-4404 Phone: 1-514-849-9779 Email: help@eco-counter.com

Europe / World

4 rue Charles Bourseul | 22300 Lannion, France

Tel: +33 2 96 48 48 81 | Fax: +33 2 96 48 69 60

North America

604-3981 St. Laurent Blvd. | Montreal, QC H2W 1Y5 | Canada

Direct: 1-514-849-9779 | Toll Free: 1-866-518-4404

eco-counter@eco-counter.com | www.eco-counter.com

Appendix F.

Eco Visio Report for Olentangy Trail at Northmoor and Alum Creek Trail at Sunbury Road

Olentangy Trail Report

Lauren Cardoni
11/03/2022

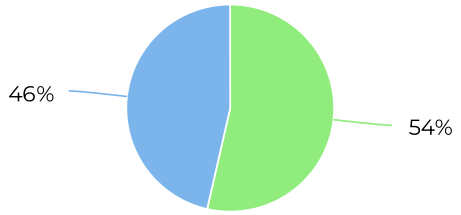
Olentangy Trail at Northmoor

May 15, 2022 → August 24, 2022

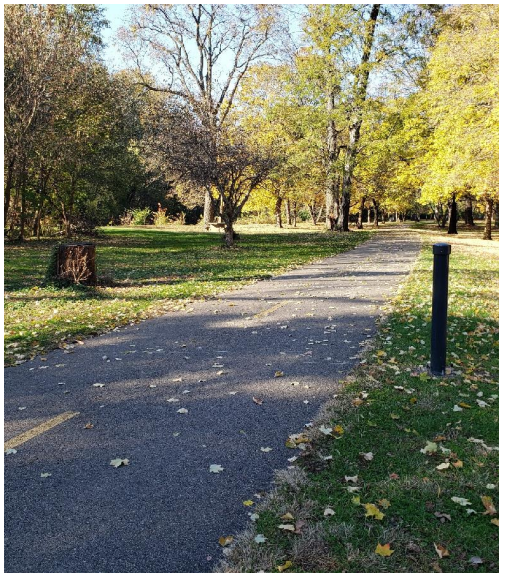
Location

User Types

11/03/2021 → 11/02/2022

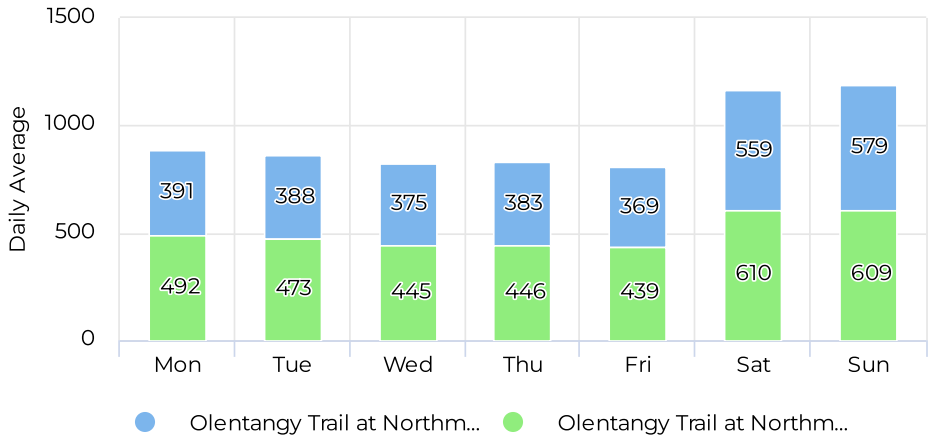


Olentangy Trail at Northmoor Cyc...
Olentangy Trail at Northmoor Ped...



Average Daily Traffic

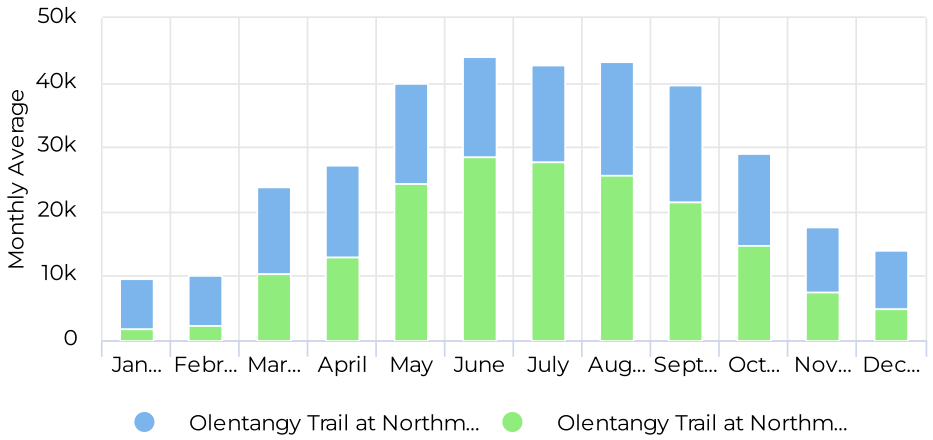
11/03/2021 → 11/02/2022



Olentangy Trail at Northm...
Olentangy Trail at Northm...

Average Monthly Traffic

11/03/2021 → 11/02/2022



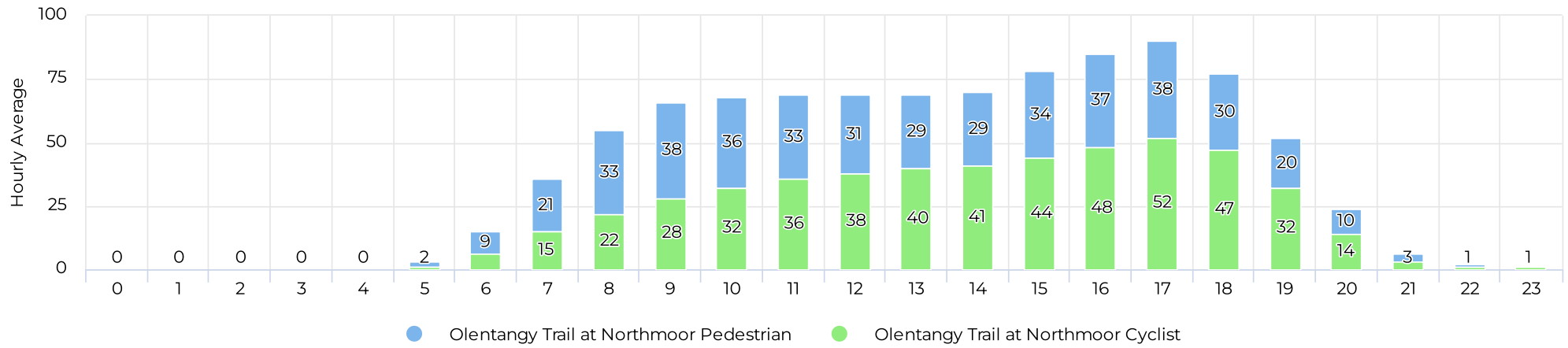
Olentangy Trail at Northm...
Olentangy Trail at Northm...

Olentangy Trail at Northmoor

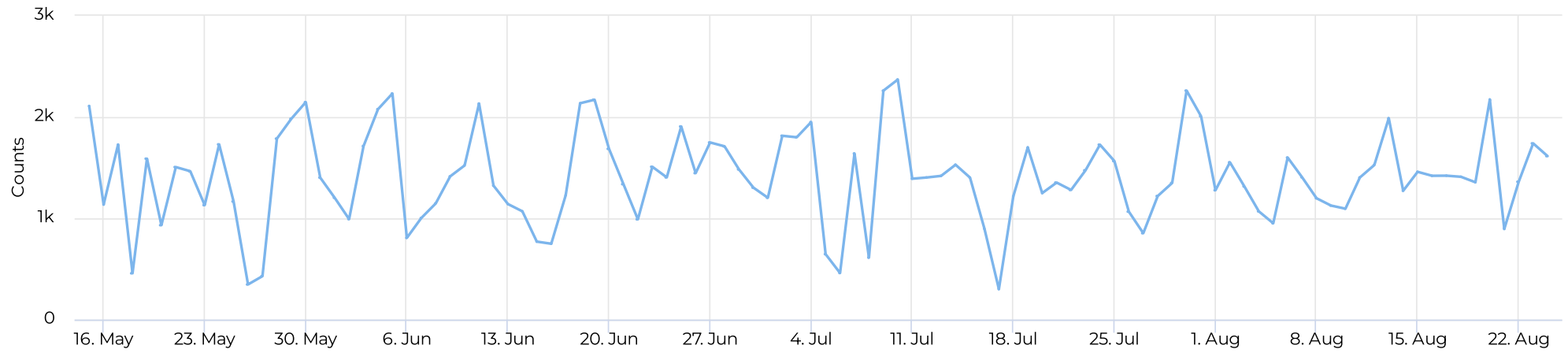
May 15, 2022 → August 24, 2022

Average Hourly Traffic

11/03/2021 → 11/02/2022



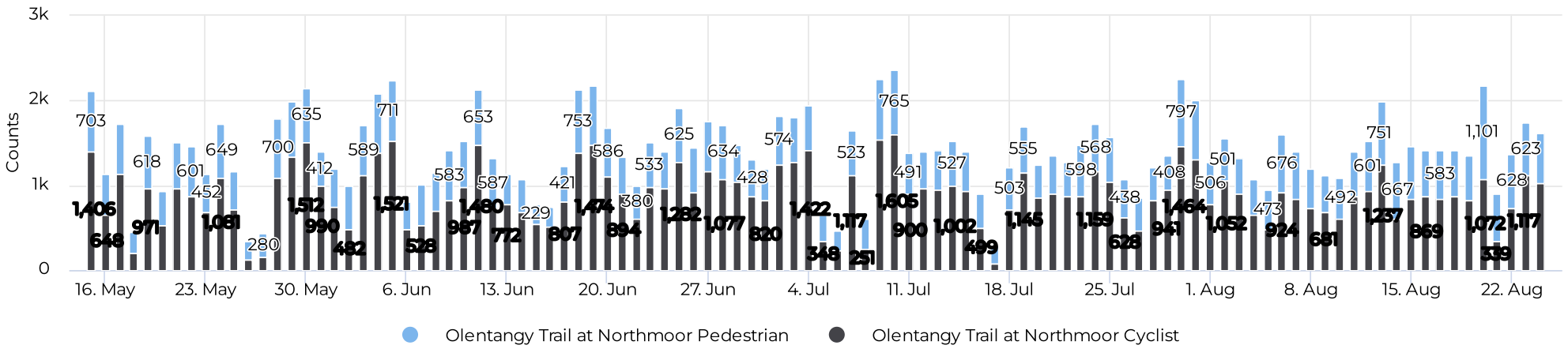
Daily traffic



Olentangy Trail at Northmoor

May 15, 2022 → August 24, 2022

Daily Volumes by User Type

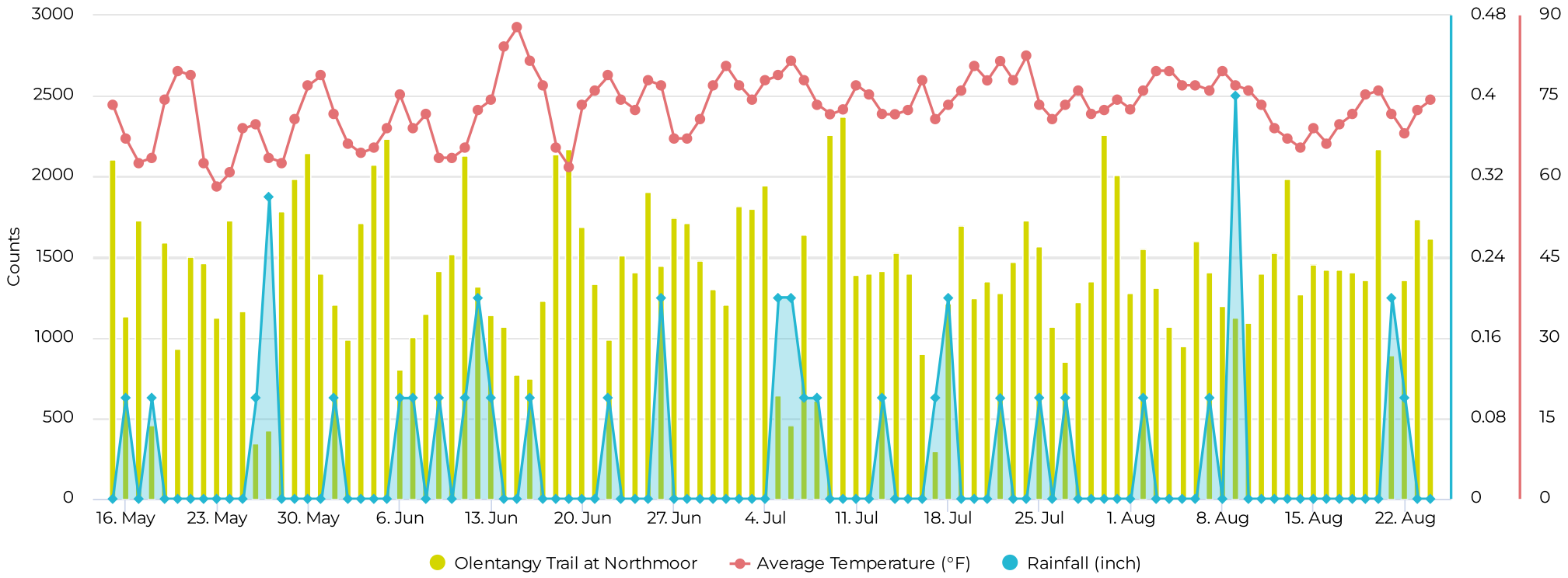


Olentangy Trail at Northmoor

May 15, 2022 → August 24, 2022

Daily Volumes and Weather Conditions

05/15/2022 → 08/24/2022



Olentangy Trail at Northmoor

May 15, 2022 → August 24, 2022

Key Figures Summary

Site	Total ▼	Daily Average	Peak Day	Peak Count
Olentangy Trail at Northmoor	143,446	1,406	Sun Jul 10, 2022	2,370
Olentangy Trail at Northmoor Cyclist	90,643	889	Sun Jul 10, 2022	1,605
Olentangy Trail at Northmoor IN	72,692	713	Sun Jul 10, 2022	1,223
Olentangy Trail at Northmoor OUT	70,754	694	Sun Jul 10, 2022	1,147
Olentangy Trail at Northmoor Pedestrian	52,803	518	Sat Aug 20, 2022	1,101
Olentangy Trail at Northmoor Cyclist South	45,464	446	Sun Jun 5, 2022	788
Olentangy Trail at Northmoor Cyclist North	45,179	443	Sun Jul 10, 2022	819
Olentangy Trail at Northmoor Pedestrian North	27,513	270	Sat Aug 20, 2022	575
Olentangy Trail at Northmoor Pedestrian South	25,290	248	Sat Aug 20, 2022	526

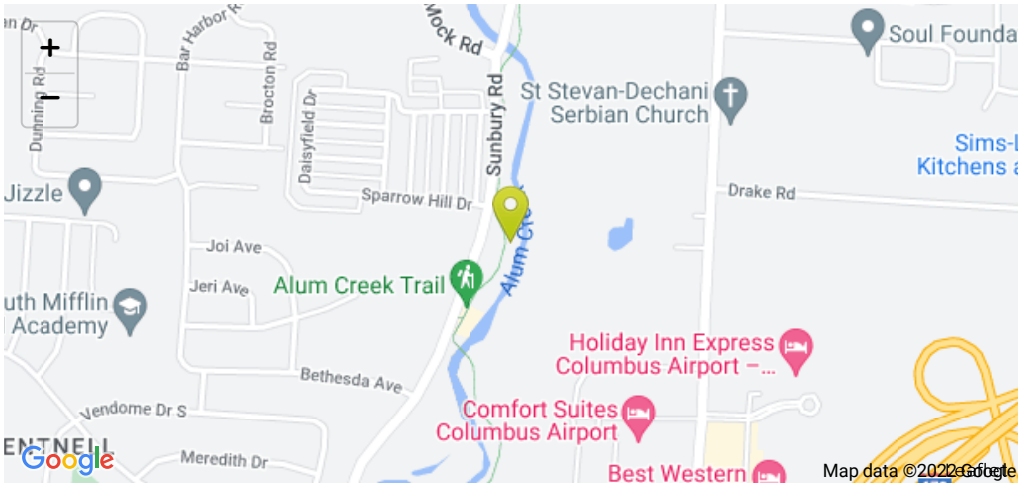
Alum Creek Trail Report

Lauren Cardoni
11/03/2022

Alum Creek Trail at Sunbury

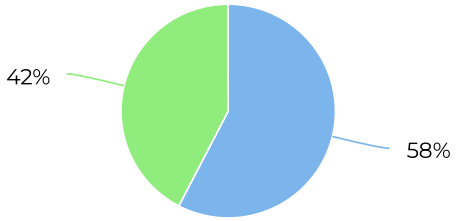
May 15, 2022 → August 24, 2022

Location



User Types

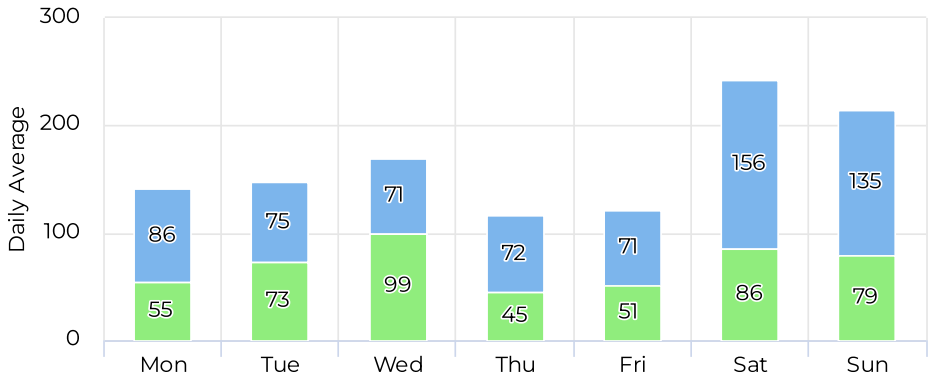
11/03/2021 → 11/02/2022



Alum Creek Trail at Sunbury Pede...
Alum Creek Trail at Sunbury Cycl...

Average Daily Traffic

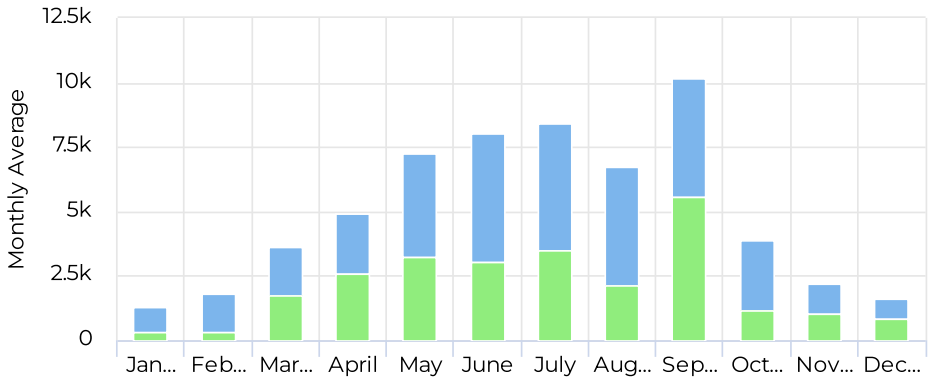
11/03/2021 → 11/02/2022



Alum Creek Trail at Sunb...
Alum Creek Trail at Sunb...

Average Monthly Traffic

11/03/2021 → 11/02/2022



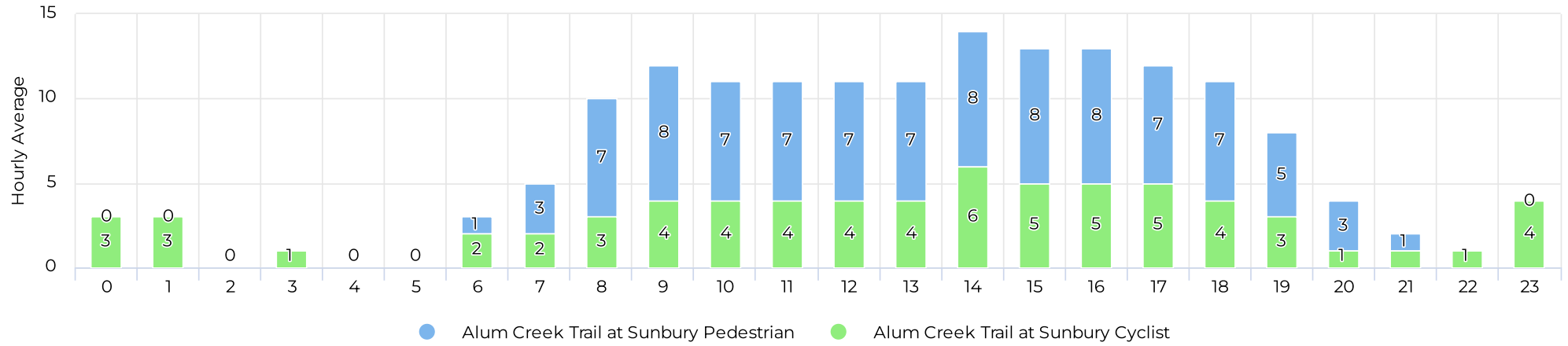
Alum Creek Trail at Sunb...
Alum Creek Trail at Sunb...

Alum Creek Trail at Sunbury

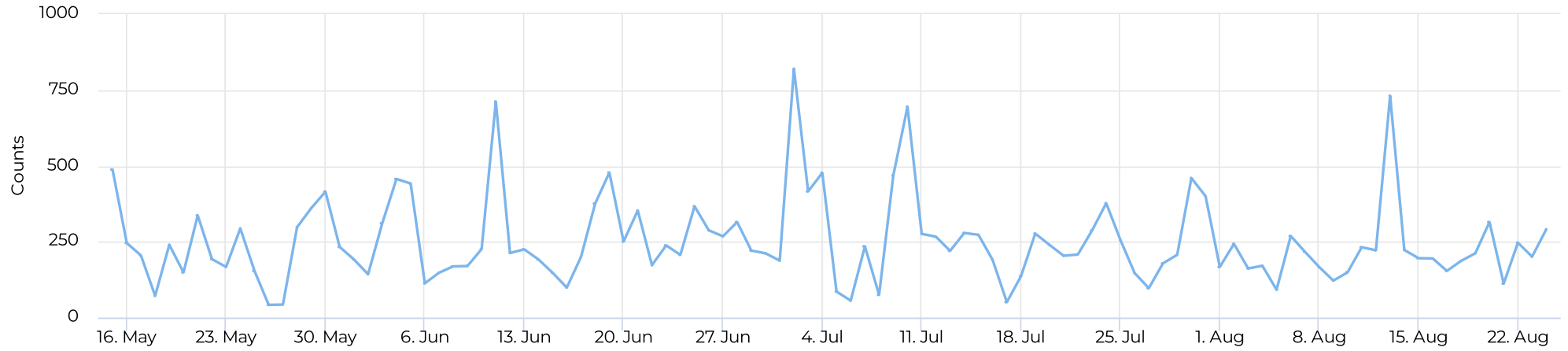
May 15, 2022 → August 24, 2022

Average Hourly Traffic

11/03/2021 → 11/02/2022



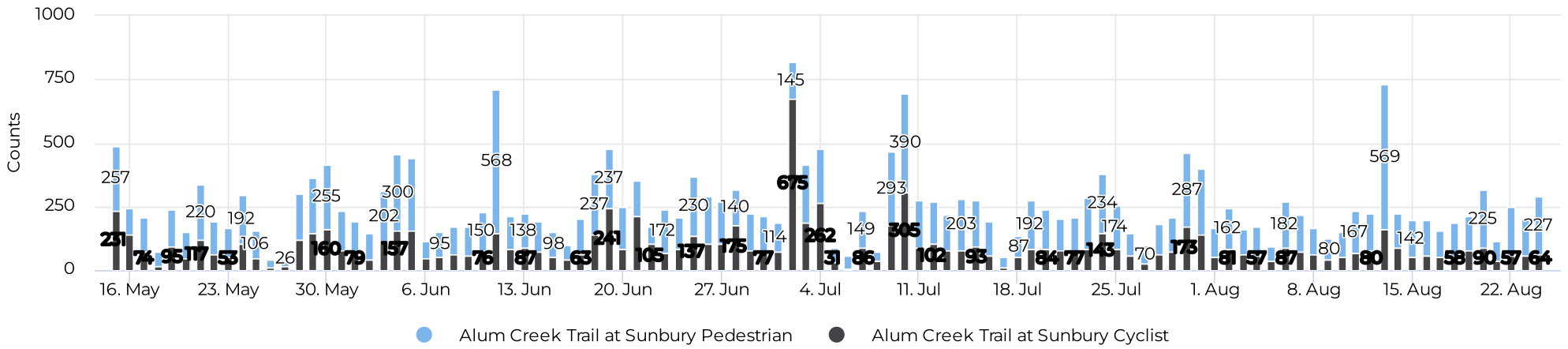
Daily traffic



Alum Creek Trail at Sunbury

May 15, 2022 → August 24, 2022

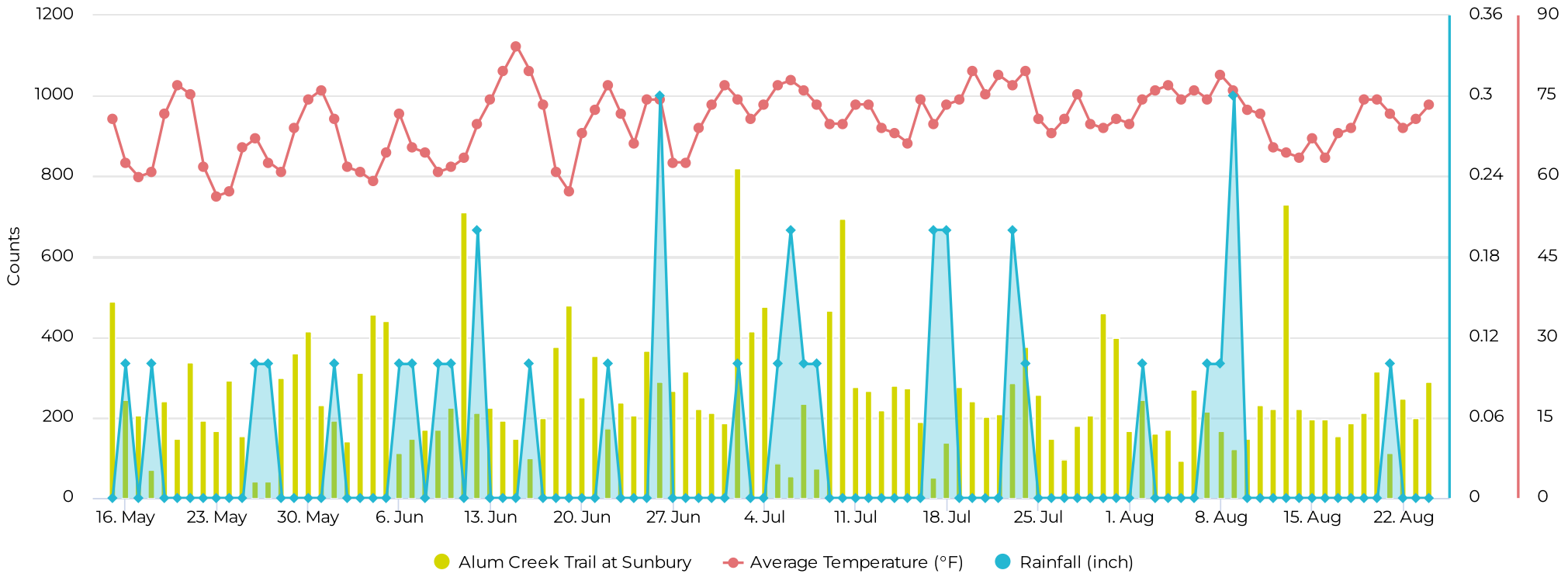
Daily Volumes by User Type



May 15, 2022 → August 24, 2022

Daily Volumes and Weather Conditions

05/15/2022 → 08/24/2022



May 15, 2022 → August 24, 2022

Key Figures Summary

Site	Total ▼	Daily Average	Peak Day	Peak Count
Alum Creek Trail at Sunbury	25,669	252	Sat Jul 2, 2022	820
Alum Creek Trail at Sunbury Pedestrian	16,018	157	Sat Aug 13, 2022	569
Alum Creek Trail at Sunbury IN	13,064	128	Sat Jul 2, 2022	420
Alum Creek Trail at Sunbury OUT	12,605	124	Sat Jul 2, 2022	400
Alum Creek Trail at Sunbury Pedestrian South	11,638	114	Sat Aug 13, 2022	366
Alum Creek Trail at Sunbury Cyclist	9,651	95	Sat Jul 2, 2022	675
Alum Creek Trail at Sunbury Cyclist North	8,225	81	Sat Jul 2, 2022	362
Alum Creek Trail at Sunbury Pedestrian North	4,380	43	Sat Jun 11, 2022	212
Alum Creek Trail at Sunbury Cyclist South	1,426	14	Sat Jul 2, 2022	313