Request for Proposal

For

Macaulay Mountain Conservation Area – Parking Lot Upgrades

In Prince Edward County

Requested by Quinte Conservation Authority
June 25, 2025

RFP Contact:
msmith@quinteconservation.ca

Closing:
Tues, July 22, 2025 at 2:30pm

Quinte Conservation
RR#2
2061 Old Highway 2
Belleville, ON
K8N 4Z2

Background & Scope of Work

Quinte Conservation is looking to engage a contractor who can resurface an existing parking lot and remove an existing pavilion. This tender also includes the civil and electrical work associated with a parking gate system.

Known Reports or Data

- Drawing – Macauly Mountain CA Parking Lot Improvement Plan
- Hydro One Scope
- Parking Boxx – Drawing CI-ENFF-N-2
- Parking Boxx – Site Preparation Guide

Schedule

The work is to be completed by Sept 1st, 2025.

Scope of work

Parking Lot

- Remove 450mm existing asphalt and granular. Proof roll area.
- Place & compact 300mm of granular B for sub-base.
- Place & compact 150mm of crushed granular A for base.
- Parking lot to be sloped such that water does not pool.

Roadway

- Remove 2 existing light standards.
- Remove 450mm existing asphalt and granular. Proof roll area.
- Place & compact 300mm of granular B for sub-base.
- Crown road sufficiently such that water does not pool.
- Provide swales as shown in the attached maps.
- Supply and install 16” CSP culverts as shown in the attached maps.

Existing Pavilion

- Remove and dispose of existing pavilion including the concrete pad. All debris to be removed off site.

Gate Site Work

- Supply and install 40m of u/g conduit from hydro pole to new pedestal as detailed and shown in the hydro layout. Trees and shrubs may have to be removed. Topsoil and seed the area following installation.
- Supply and install OESC Approved Support Structure to house both the new electrical meter and the new electrical panel. Location shown in the attached map.

- Coordinate with QC and Hydro One to install the Hydro One supplied conductor and make live the new meter. Quinte Conservation will pay the required Hydro One fees.
- Supply and install 12m of u/g conduit and conductor from electrical panel and stub up above island as required per Parking Boxx details. The number of conduits, the height of the stub and the location of the conduit is to be exactly as shown.
- Provide new island complete as shown in Parking Boxx details. Please note the slope and existing surface will alter the design.
- Supply and install exit-entry loops. Please note the distance required under surface.
- Parking Boxx will supply and install their own equipment including supplying, drilling and epoxying the mounting hardware. This includes the surface-mount bollards.
- Parking-boxx installation to be captured under this contracts ESA permit. Electrician to be on-site during Parking Boxx installation to ensure correct installation. Required to ensure ESA compliance of entire system.

General

- The contractor is to advise of schedule regarding required Conservation Area closures. Quinte Conservation will provide signage off the main road indicating any closures or area modifications. Contractor is to provide any other required barriers, fencing or signage.
- Any vegetated areas that are disturbed shall have 3” of topsoil and grass seed placed on backfilled area.
- Any disturbed areas shall be returned to its previous condition.

Damages

If any additional costs are incurred by Parking Boxx due to an improper installation of the items in this scope, then those costs shall be borne by the contractor.

Meetings and Site Visits

Upon award, a start-up meeting will be required to confirm the methodology, schedule, etc.

The contractor will be responsible for preparing agendas and recording minutes of all meetings and distributing them to QC in a timely fashion.

Proposal Submission Requirements

The proposal shall be submitted no later than the below requested date. Copies of the proposals shall be sent to Mike Smith at msmith@quinteconservation.ca.

The proposal shall include:

- Details on the approach and methodology including dewatering methods.
- Schedule including requested conservation area closures.
- Contact person and phone number and people involved in the preparation of the proposal.
- Project costs including unit prices.
- Sub-consultants to be used and their role.
- Attestation of all addenda reviewed.
- State all assumptions used.

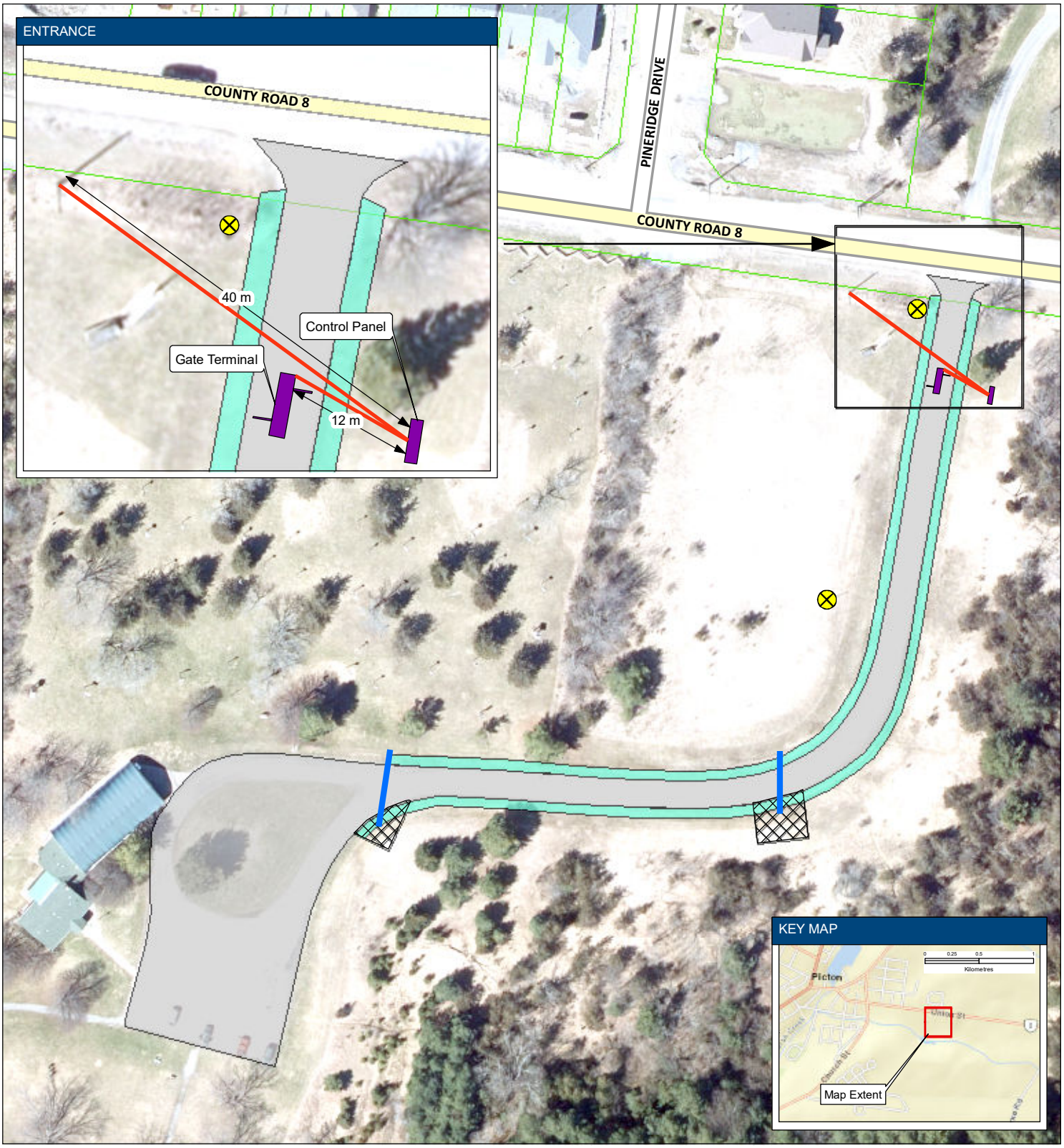
Proposals shall not exceed 6 pages in length.

Request for proposal issued	Tuesday, June 25, 2025
Mandatory Site Visit	Thursday, July 8, 2025 at 9:30am
Questions regarding the proposal due	Friday, July 11, 2025 at 9:30am
RfP addenda posted on the Quinte Conservation website	Tues, July 15, 2025
Request for proposal closing	Tues, July 22, 2025 at 2:30pm

Selection Criteria

QC will select the successful contractor following an assessment of the submitted proposals based on criteria such as meeting the project requirements, project team experience, project schedule and project cost. The proposal with the lowest bid may not necessarily be accepted.

It is anticipated that the successful consultant will be notified by the end of July 2025. This project is subject to confirmation of funding and Quinte Conservation reserves the right to reject any or all proposals and cancel the project. This RFP is not a tender.



Quinte CONSERVATION

Moira River, Napanee Region and Prince Edward Region Watersheds.
RR # 2, 2061 Old Highway # 2, Belleville, Ontario, K8N 4Z2.
www.quinteconservation.ca, 613-968-3434

DEPARTMENT: Conservation Lands Management

TITLE: Macaulay Mountain CA Parking Lot Improvement Plan

SCALE:	1:1,250		
SHEET:	1 of 1	02	12/05/25
DRAWING:	C.D.	01	20/03/25
CHECK:	M.S.	REV. No.	DD/MM/YY

LEGEND / NOTES

- Existing driveway and lot to be resurfaced
- Existing swale to be cleared & deepened
- Geotextile & rip rap to be installed
- Gate terminal & control panel to be installed
- 16" corrugated steel pipe (CSP) to be installed
- Underground duct to be installed
- Existing light pole to be removed
- Assessment Parcel Fabric

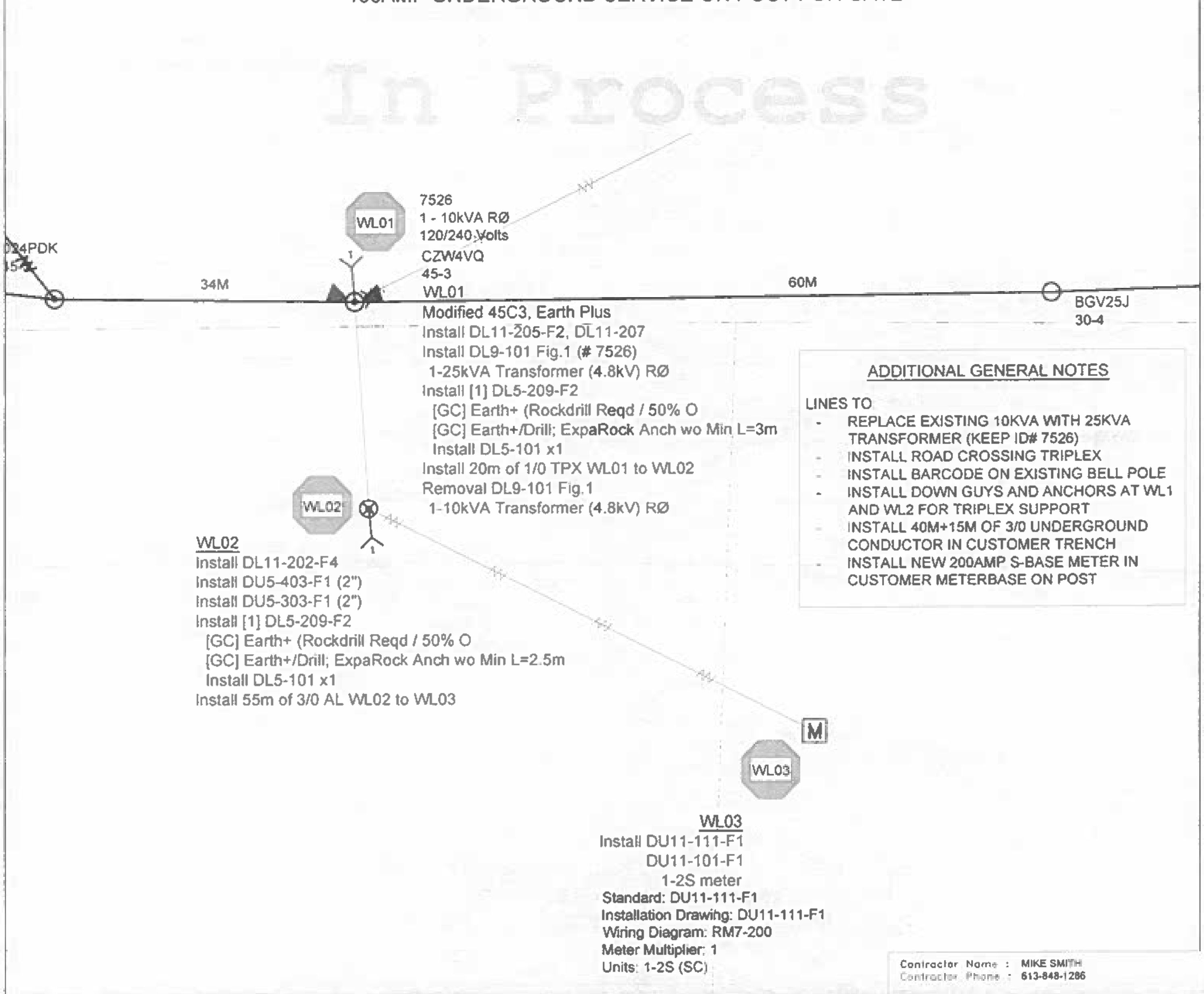
NORTH

0 10 20 40
Metres

Path: E:\Projects\CLM\ConservationAreas\MacaulayMountain\ParkingLotRelocation\MacaulayMtnParkingLotImprovementPlan.mxd

Original Document: 8.5 x 11 in

NEW CONNECT, 224 COUNTY RD 8, HALLOWELL TWP
WAUPOOS DS F2 [RWB - 4.8/8.32 kV - Modified]
100AMP UNDERGROUND SERVICE ON POST FOR GATE



ADDITIONAL GENERAL NOTES

LINES TO
- REPLACE EXISTING 10KVA WITH 25KVA TRANSFORMER (KEEP ID# 7526)
- INSTALL ROAD CROSSING TRIPLEX
- INSTALL BARCODE ON EXISTING BELL POLE
- INSTALL DOWN GUYS AND ANCHORS AT WL1 AND WL2 FOR TRIPLEX SUPPORT
- INSTALL 40M+15M OF 3/0 UNDERGROUND CONDUCTOR IN CUSTOMER TRENCH
- INSTALL NEW 200AMP S-BASE METER IN CUSTOMER METERBASE ON POST

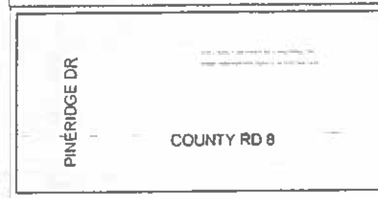
Contractor Name : MIKE SMITH
Contractor Phone : 613-848-1286

LINETYPES

SYMBOLS

COLOR SCHEME

LEGEND



KEY MAP (NTS)

Hydro One Networks Inc.
DESIGN SERVICES
DEMAND LAYOUT

Address: 224-GateCOUNTY-RD-8 Picton	
Notification Type: Secondary Service	Notification: 303774195
Township: Hallowell	Work Order: 64883937
Lot / Concession: 21 / 1	Construction Measure: 1047737
Rate Class: General Svc Energy 2TIER RPP	Service Size: 100
DS Station/Feeder: WAUPOOS DS F2	Meter Wiring Diagram: RM7-200
Primary/Secondary Voltage: 4.8/8.32 kV / Single 120/240	Scale: Custom
Transformer: 7526	ADET: Mountney, Allison
Switch: 666	Approver: Tim DeMarsh
Service Center: Picton	Approval Date: 6/13/2025 — Page: PAGE

Design ID 1497759

You are required to install a Hydro One approved Meter Base. Hydro One's list of approved meter bases is updated from time to time and we make our most current version available on our website at the following link:
https://www.hydroone.com/businessservices_/Documents/Meter-Socket-Base.pdf.

You are also required to obtain an Authorization to Connect, as well as any other required inspections and authorizations from the Electrical Safety Authority ("**ESA**").

You can contact the ESA at 1-877-372-7233 to arrange for an electrical inspection and any other required inspections or authorizations. You can also obtain a fee estimate at that time. It's easily done over the phone and will allow you to proceed with your electrical work.

Once you have completed your Customer Work, please contact the ESA again for the actual electrical inspection. The ESA will advise you when they have completed their inspection and will send a copy of your Authorization to Connect directly to our Field Business Centre office. We will then contact you to discuss the scheduling of your service connection.

SECTION 5: Hydro One Connection Work:

Hydro One Work: (Connection Work that must be performed by Hydro One)	**Basic Connection Work:** HYDRO ONE TO REPLACE EXISTING 10KVA WITH NEW 25KVA TRANSFORMER, INSTALL 20M OF 1/0 ROAD CROSSING TRIPLEX, ROAD CROSSING POLE AND ANCHORS FOR SUPPORT AT WL1 AND WL2, INSTALL NEW 200AMP S-BASE METER IN CUSTOMER METERBASE **Work above the basic connection:** HYDRO ONE TO SUPPLY AND INSTALL 40M+15M OF 3/0 UNDERGROUND CONDUCTOR IN CUSTOMER TRENCH, RUN CONDUCTOR UP POLE AND BACKFILL OPEN ENDS OF TRENCH

SECTION 6: Hydro One Connection Work - Costs and Amount Payable:

Cost of Hydro One Connection Work and Amount Payable by You for Hydro One Connection Work: (Payable upon Contract Execution)	**Basic Connection Work:** Labour Material Equipment Administration **LESS**[1] Credit for Basic Connection Work[2] Up to 30m Secondary Credit[3] for residential Customers with their own Secondary or Primary

SECTION 3: Customer Obligations

Schedule B Customer Work:

- Maintain minimal 30cm horizontal clear separation of primary and secondary underground cables from sewer lines.
- Ensure exposed trench ends are clear of water, snow, and debris on day of connection.
- Trenching to remain on YOUR property only up to Road Allowance.
- Meter base to be on front OR driveway side of structure and no more than 3m from front face.
- Meter base to be mounted so mid-point of socket is 1.75m above FINISHED grade.
- Meter base to be surface mounted. No recess or enclosure permitted.
- Meter base to be 4-jaw socket style 200A max. JUMBO version required if Hydro One-supplied UG wire.
- Conduit into meter base to be 2 inch (wire 3/0 or smaller) or 3 inch (wire 250MCM) or 4 inch (wire 500MCM).
- Construct trench to guidelines per https://www.hydroone.com/business-services/builders-and-contractors. Trench may be backfilled but ends must be left open for wire installation.
- Provide clean mason sand for Hydro One to cover wires. The remainder of backfill is your responsibility.
- Trenching to follow typical installation only.
- Any changes to the original scope of work must be communicated with Hydro One.
- Grading to be within +/-15 cm of final grade prior to customer trenching or pad mount transformer base installation.
- Refer to the Retail Revenue Metering Standards Guide: https://www.hydroone.com/businessservices_/Documents/Hydro-One-Retail-Metering-Standards-Guide.pdf.
- For operating and working clearances, a minimum of 3 m shall be provided on the operating side of the equipment, and 1 m on all other sides. In order to facilitate switch stick operation, the terrain on the 3 m operating side must be relatively level.
- Provide trench photos including depth, DB2 conduit, proper pull rope, clean sand, trench ends with clean unfrozen masonry sand, via email to the FBC.
- Trench must be left open at pole and meter base location for wire installation, Hydro One to supply and install flex pipe and coupler.

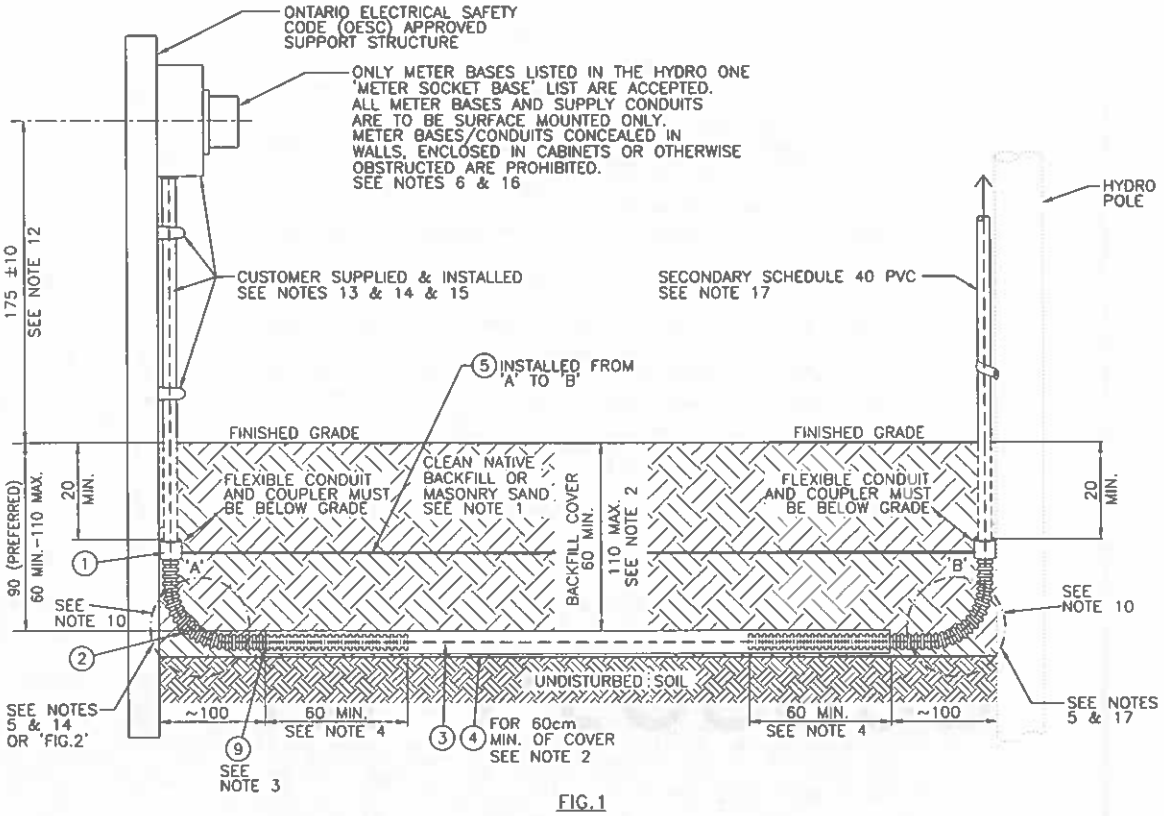


FIG. 1

OPTION 1 – TYPICAL INSTALLATION
WITH FLEXIBLE CONDUIT TRANSITION

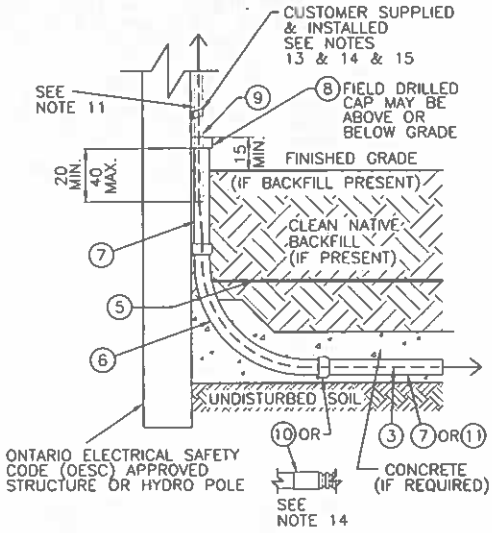


FIG. 2

OPTION 2 – TYPICAL INSTALLATION
WITH CONTINUOUS CONDUIT TRANSITION

FOR SHEET 2 OF THIS DRAWING SEE DU11-102-0501
FOR SHEET 3 OF THIS DRAWING SEE DU11-102-0502

ALL DIMENSIONS IN CENTIMETRES
UNLESS OTHERWISE STATED

Rev No.	Date	Revision Particulars	den	ckd	des	app
01	SEPT 2023	ORIGINAL DU-03-209.1-0501-R05 IS NOW SUPERSEDED BY THIS NEW DRAWING/REVISION. CHANGED TO SECTION 11. GENERAL UPDATES. CHANGED TO NEW DWG. & NUMBERING FORMAT. UPDATED DETAILS TO FIGURES. UPDATED NOTES 2, 6 11 & 15. ADDED NOTES 16 & 17. DIRECT BURIED CONTENT WAS MOVED TO NEW SECTION 15 AND DU15-132-0500/0501 R01.	PC	MM	MM	MM

Drawn By:	Checked By:	Designed By:	Design Approved By:
PC	M.MATEVSKI	M.MATEVSKI	M.MATEVSKI P.Eng.
Scale: N.T.S.	Date: (yyyy/mm/dd) 2022/05/03	Pole ID:	

Hydro One Networks Inc.

Title: TRENCH DETAIL – SECONDARY SERVICE CABLE FROM DIP POLE TO METER BASE

Drawing No. DU11-102-0500 Rev. No. 01

TITLE BLOCK REV 02 – AUGUST 2014

A4 (210 x 297) millimetres 0 10 50

NOTES:

1. BACKFILL: ENSURE DB2 CONDUIT IS ENVELOPED WITH MASONRY SAND UPON INSTALLATION (7.5cm MINIMUM BELOW AND 15cm MINIMUM ABOVE). REMAINDER OF BACKFILL MUST BE CLEAN AND FREE OF DEBRIS TO PREVENT DAMAGE TO THE DUCT. BACKFILL SHALL BE WELL TAMPED.
2. STRAIGHT DUCT SHALL BE EMPLOYED IN THE TRENCH TO HOUSE THE CABLE. IT SHALL BE 100mm (4") DIAMETER PVC TYPE DB2 CONDUIT. THE ENDS OF THE DUCT SHALL BE CAPPED OR BAGGED TO PREVENT DEBRIS AND MOISTURE FROM ENTERING THE DUCT PRIOR TO CABLE INSTALLATION. AFTER CABLE INSTALLATION, INSTALL THE FLEXIBLE CONDUIT TO MAKE 90° TRANSITION. SEE DU11-102-0500 OPTION 1. SCHEDULE 40 PVC CONDUIT AND ASSOCIATED FITTINGS ARE ACCEPTABLE POSITIVE DEVIATION, IF DB2 CONDUIT IS NOT AVAILABLE, PROVIDED SEPARATIONS SPECIFIED ON THIS DRAWING ARE MAINTAINED.

   SEE OPTION 2 FOR ALTERNATE METHODS.
3. PULL TAPE: A 1/2" WIDE POLYESTER PULLING TAPE MUST BE INSTALLED THROUGH THE ENTIRE LENGTH OF THE DUCT.
4. INSERT FLEXIBLE CONDUIT 60cm IN THE DB2 CONDUIT. THE SIZE OF THE FLEXIBLE CONDUIT WILL VARY BASED ON THE CONDUCTOR SIZE.
5. RADIUS MUST BE GREATER THAN THE SPECIFIED CABLE MINIMUM BENDING RADIUS.
6. INSTALL METER COMPARTMENT AS PER ONTARIO ELECTRICAL SAFETY CODE (OESC), USE ONLY HYDRO ONE APPROVED METER BASES LISTED IN THE HYDRO ONE 'METER SOCKET BASE' LIST.
7. TELECOMMUNICATION PLANT MAY SHARE SERVICE TRENCH BUT MUST BE INSTALLED IN ITS OWN CONDUIT.
8. PREFERRED ROUTING FOR GAS SERVICE SHALL BE ON OPPOSITE SIDE OF THE BUILDING THAN THAT OF THE ELECTRICAL SERVICE. IF COMMON TRENCHING IS UNAVOIDABLE, 30cm MINIMUM CLEAR SEPARATION SHALL BE MAINTAINED IN ALL DIRECTIONS BETWEEN GAS SERVICE AND ELECTRICAL SUPPLY CABLE.
9. CLEARANCES, DEPTHS, SEPARATIONS AND FORMS OF MECHANICAL PROTECTION OF THE CABLE ARE MINIMUM REQUIREMENTS. INCREASED CLEARANCES AND OR ADDITIONAL FORMS OF MECHANICAL PROTECTION ARE CONSIDERED POSITIVE DEVIATIONS AND ARE ALLOWED.
10. IF FURTHER TRENCHING ALONG ROAD ALLOWANCE IS REQUIRED, IT SHALL BE CONSTRUCTED PER HYDRO ONE STANDARD TRENCH PROFILES.
11. RISER CONDUIT TO BE EASILY REMOVED BY HYDRO ONE FOR CABLE INSTALLATION PURPOSES. FOR HYDRO ONE DIP POLE PARTS AND FRAMING REFER TO SECTION 5.
12. FINAL METER BASE HEIGHT IN REFERENCE TO FINISHED GRADE.
13. CUSTOMER SUPPLIED AND INSTALLED CONDUIT, METER BASE, CLAMPS AND ASSOCIATED HARDWARE INSTALLED PER ONTARIO ELECTRICAL SAFETY CODE (OESC).
14. THE METER BASE CONDUITS WILL VARY IN SIZE DEPENDING ON CONDUCTOR SIZE (i.e. 2" DIAMETER FOR 3/0 AWG, 3" FOR 250 kcmil OR 500 kcmil CONDUCTOR). FLEXIBLE CONDUIT WILL ALSO VARY IN SIZE (i.e. 2" OR 3" FOR 3/0 AWG OR 3" FOR 250 kcmil OR 500 kcmil CONDUCTOR) WHEN USED TO CONNECT THE RISER CONDUIT TO THE HORIZONTAL DUCT PER OPTION 1. FLEXIBLE CONDUIT WILL BE 4" FOR ALL CONDUCTOR SIZES IF USED AS MAIN CONDUIT (HORIZONTAL DUCT) PER OPTION 2. APPROPRIATELY SIZE COUPLERS (SHOWN AND LISTED IN THE PARTS LIST) SHALL BE USED TO CONNECT THE SCHEDULE 40 PVC TO THE FLEXIBLE CONDUIT. ONLY ONE SERVICE CABLE PERMITTED PER CONDUIT.
15. THE SUPPLY SERVICE CABLE AT THE METER BASE SHALL BE HOUSED IN ITS OWN DISTINCT CUSTOMER SUPPLIED CONDUIT (CONDUIT SHALL NOT HOUSE ANY OTHER PLANT), AND SHALL NOT HAVE ANY ACCESS PORT (LB CONDUIT FITTING, JUNCTION BOX, ETC.). ANY MODIFICATION TO CUSTOMER OWNED METER-BASE WHICH VOIDS CSA CERTIFICATION IS NOT PERMITTED.
16. METER BASE TO MAINTAIN 1m MINIMUM CLEARANCE FROM DISCHARGE OF ANY COMBUSTIBLE GAS RELIEF DEVICE OR VENT. IF 1m CLEARANCE IS NOT AVAILABLE IT CAN BE REDUCED TO 0.3m MINIMUM CLEARANCE WHICH IS ONLY APPLICABLE IF REGULATORS EQUIPPED WITH CERTIFIED OVERPRESSURE CUT-OFF/SHUT-OFF WITH LIMITED OR NO RELIEF IS INSTALLED FOR THE GAS DISCHARGE OPENING. THE OVERPRESSURE RELIEF DEVICES MUST BE MARKED "LR-OPCO", "P-OPCO" OR "OPSO".
17. FOR CONDUIT SIZES AND TRANSITION OPTIONS AT THE DIP POLE SEE DU5-303-0500.

PARTS LIST

PART No.	MM No.	DESCRIPTION	QTY.
1	30030348 30031161 30030236	COUPLER KIT, 2", FLEX TO 2" RIGID COUPLER KIT, 3", FLEX TO 2" RIGID COUPLER KIT, 3", FLEX TO 3" RIGID	A/R
2	30030366 30030235	CONDUIT, FLEX, 2" CONDUIT, FLEX, 3"	A/R
3	30005908 30005915 30005959	SERVICE CABLE, 3/0 AWG, 3-COND., AL. SERVICE CABLE, 250Kcmil, 3-COND., AL. SERVICE CABLE, 500Kcmil, 3-COND., AL.	A/R
4	30007710	CONDUIT, PVC, 4", DB2	A/R
5	20002181	CAUTION TAPE, BURIED ELECTRIC LINE	A/R
6	30007687	SWEEP, 4" x 16" RADIUS, SCHEDULE 40, PVC	A/R
7	30007583	CONDUIT, 4", SCHEDULE 40, PVC	A/R
8	30031602	CAP, 4", SCHEDULE 40, PVC	A/R
9	20000007	TAPE, PULLING, 1/2" WIDE, POLYESTER	A/R
10	30031918	COUPLER KIT, 4" FLEX TO 4" RIGID	A/R
11	30031917	CONDUIT, FLEX, 4"	A/R

MM# = REFER TO SECTION 16 ONLY | A/R = AS REQUIRED

* = SUPPLIED BY CUSTOMER

FOR SHEET 1 OF THIS DRAWING SEE DU11-102-0501
FOR SHEET 3 OF THIS DRAWING SEE DU11-102-0502

ALL DIMENSIONS IN CENTIMETRES
UNLESS OTHERWISE STATED

Rev. No	Date	Revision Particulars	dsn	ckd	Jes	app
01	SEPT 2023	ORIGINAL DU-03-209.1-0501-R05 IS NOW SUPERSEDED BY THIS NEW DRAWING/REVISION. CHANGED TO SECTION 11. GENERAL UPDATES. CHANGED TO NEW DWG. & NUMBERING FORMAT. UPDATED DETAILS TO FIGURES. UPDATED NOTES 2, 6 11 & 15. ADDED NOTES 16 & 17. DIRECT BURIED CONTENT WAS MOVED TO NEW SECTION 15 AND DU15-132-0500/0501 R01.	PC	MM	MM	MM

Hydro One Networks Inc.

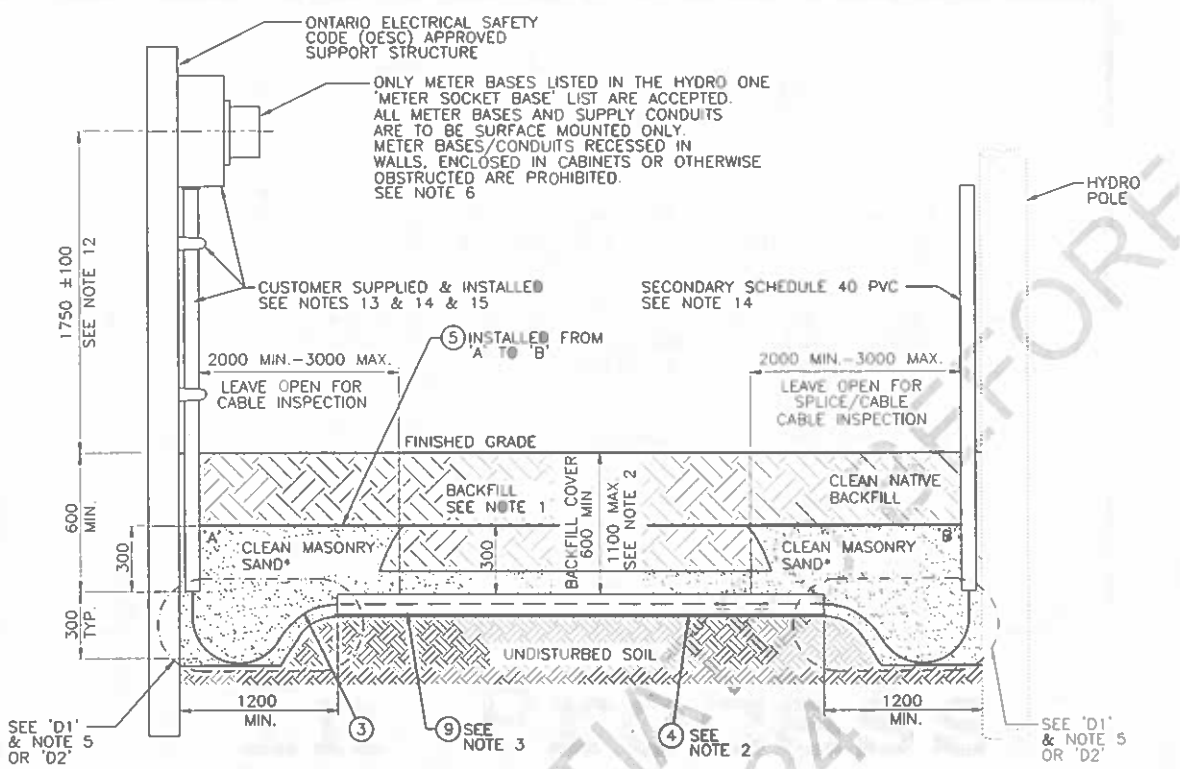
Drawn By	Checked By	Designed By	Design Approved By
PC	M.MATEVSKI	M.MATEVSKI	M.MATEVSKI P.Eng.
Scale	Date (yyyy/mm/dd)	Pole ID	
N.T.S.	2022/05/03		

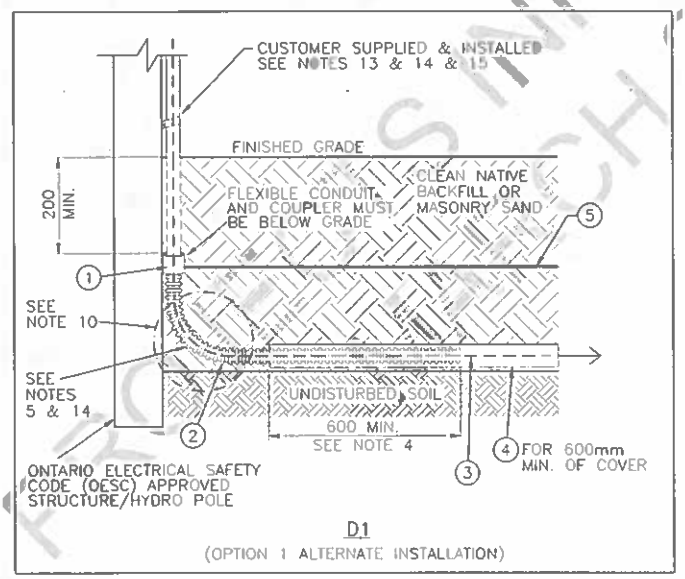
Title:
TRENCH DETAIL - SECONDARY SERVICE CABLE FROM DIP POLE TO METER BASE

Drawing No.	Rev. No.
DU11-102-0501	01

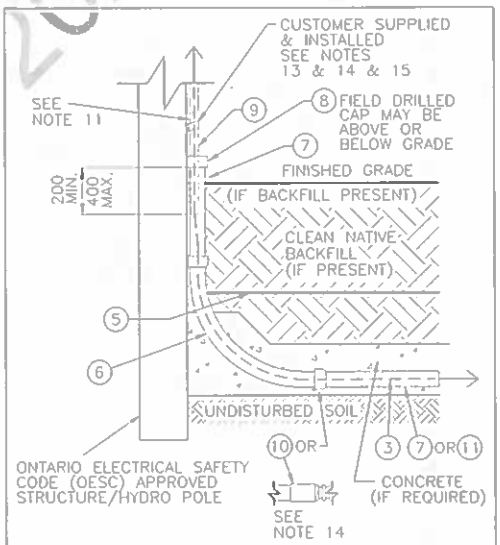
TITLE BLOCK REV 02 - AUGUST 2014

A4 (210 x 297) millimetres 0 10 50





D1
(OPTION 1 ALTERNATE INSTALLATION)



D2
(OPTION 2 ALTERNATE INSTALLATION)

FOR SHEET 2 OF THIS DRAWING SEE DU-03-209.1-0501
FOR SHEET 3 OF THIS DRAWING SEE DU-03-209.1-0502

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED

Rev. No.	Date	Revision Particulars	dsn	ckd	des	app
05	FEB 2022	UPDATED PART #1 & 2. ADDED PART # 10 & 11. UPDATED NOTES 4 & 14. ADDED NOTES 15. UPDATED D1 & D2 LAYOUT. DIMENSION UPDATE IN D1 & D2.	PC	MM	KA	MM
04	AUG 2019	REMOVED 2" OPTION, UNIVERSAL SIZE. MODIFIED PARTS 1, 2 & 8. MODIFIED NOTES 1, 2 & 4. ADDED NEW NOTES 12, 13 & 14. REMOVED PREVIOUS PART 9 (STRAPS). INTRODUCED GENERIC SUPPORT STRUCTURE FOR CUSTOMER INSTALLATION.	PC/ LS	SJ	SJ	MM

Hydro One Networks Inc.

Drawn By:	Checked By	Designed By	Design Approved By:
L.SEQUEIRA			
Scale: N.T.S.	Date: (yyyy/mm/dd) 2012/08/30	Pole ID:	

Title: TRENCH DETAIL – SECONDARY SERVICE CABLE FROM DIP POLE TO METER BASE

Drawing No. DU-03-209.1-0500 Rev. No. 05

A4 (210 x 297) millimetres 0 10 50 Sheet Number: 1 / 3

TITLE BLOCK REV 02 – AUGUST 2014

Hydro One trenching guidelines:
Secondary service trench with supply taken from dip pole
per Hydro One Networks Inc. standard drawing DU-03-209.1-0500

The installation options listed below explain Hydro One Networks' Standard (DU-03-209.1-0500) for the installation of Hydro One owned single-phase secondary underground cables. Regardless of who installs the cable, the trench must be constructed per DU-03-209.1-0500/0501. **Note: Options described below will allow the cable installer crew to perform their work without a coordinated site visit with the trench installer.**

For most installations, either Option 1 or Option 2 can be selected by the customer (Option 2 calls for increased mechanical protection via more rigorous conduit); however, Option 2 must be selected for installations where a minimum cover of 600mm is not possible.

Option 1 (requires minimum cover of 600mm): Direct buried cable encapsulated in masonry sand at trench ends as shown in DU-03-209.1-0500

- The trench can be backfilled, excluding open pit area, at either end of trench prior to cable installation.
- The trench must be backfilled with clean masonry sand in areas indicated in DU-03-209.1-0500 and clean native backfill to finished grade immediately after installation of cable.

If the trench end(s) is(are) temporarily left open (i.e. if backfilling cannot occur immediately after cable installation), a length of flexible conduit (specified by Hydro One and listed in DU-03-209.1-0500) shall be applied between the horizontal DB2 conduit and the vertical Schedule 40 PVC at both the meter base and the source pole to provide temporary protection of the cable. See 'D1' in DU-03-209.1-0500. The flexible conduit shall be inserted inside the 100mm DB2 duct a minimum of 600mm.

Option 2 (reduced cover): Schedule 40 PVC / flexible conduit, and sweeps

- In areas of poor soil conditions (e.g. rocky) and where installing straight lengths of Schedule 40 PVC is impossible, flexible conduit can be installed at the sole discretion of Hydro One. This flexible conduit, as listed in DU-03-209.1-0500, shall be 100mm diameter electrical grade corrugated flexible conduit. Flexible drainage pipe or thin wall conduit is **NOT** acceptable.
- In a case where 600mm of cover is not possible, the secondary cable may be installed in Schedule 40 PVC or in a continuous length of flexible conduit (see above for details on flexible conduit) at a minimum cover of 300mm.
- In a case where 300mm of cover is not possible, such as on bald rock, Schedule 40 PVC (or alternatively the flexible conduit as mentioned above) will be covered in a minimum thickness of 3" (75mm) of concrete wherever reduced cover is encountered. The concrete shall cover the conduit at all points until the vertical component of the sweep is reached. If flexible conduit is employed, it shall not permanently extend beyond the concrete and be left exposed.
- Schedule 40 PVC sweeps shall be used at the trench ends to make the transition to the meter base and dip pole conduits. See 'D2' in DU-03-209.1-0500.

NOTE: If any discrepancies between this document and the referenced standard are found, the standard shall prevail. It is **the customer's responsibility to ensure compliance** to the standard. Not complying with the standard will result in Hydro One not completing their work and an "extra trip charge" being applied.

FOR SHEET 1 OF THIS DRAWING SEE DU-03-209.1-0500
FOR SHEET 2 OF THIS DRAWING SEE DU-03-209.1-0501

ALL DIMENSIONS IN MILLIMETRES
UNLESS OTHERWISE STATED

05	FEB 2022	UPDATED PART #1 & 2. ADDED PART # 10 & 11. UPDATED NOTES 4 & 14. ADDED NOTES 15. UPDATED D1 & D2 LAYOUT. DIMENSION UPDATE IN D1 & D2.	PC	MM	KA	MM
04	AUG 2019	REMOVED 2" OPTION, UNIVERSAL SIZE. MODIFIED PARTS 1, 2 & 8. MODIFIED NOTES 1, 2 & 4. ADDED NEW NOTES 12, 13 & 14. REMOVED PREVIOUS PART 9 (STRAPS). INTRODUCED GENERIC SUPPORT STRUCTURE FOR CUSTOMER INSTALLATION.	PC/ LS	SJ	SJ	MM

Drawn By	Checked By	Designed By	Design Approved By
L.SEQUEIRA			
Scale	Date: (yyyy/mm/dd)	Part ID	
N.T.S.	2012/08/30		

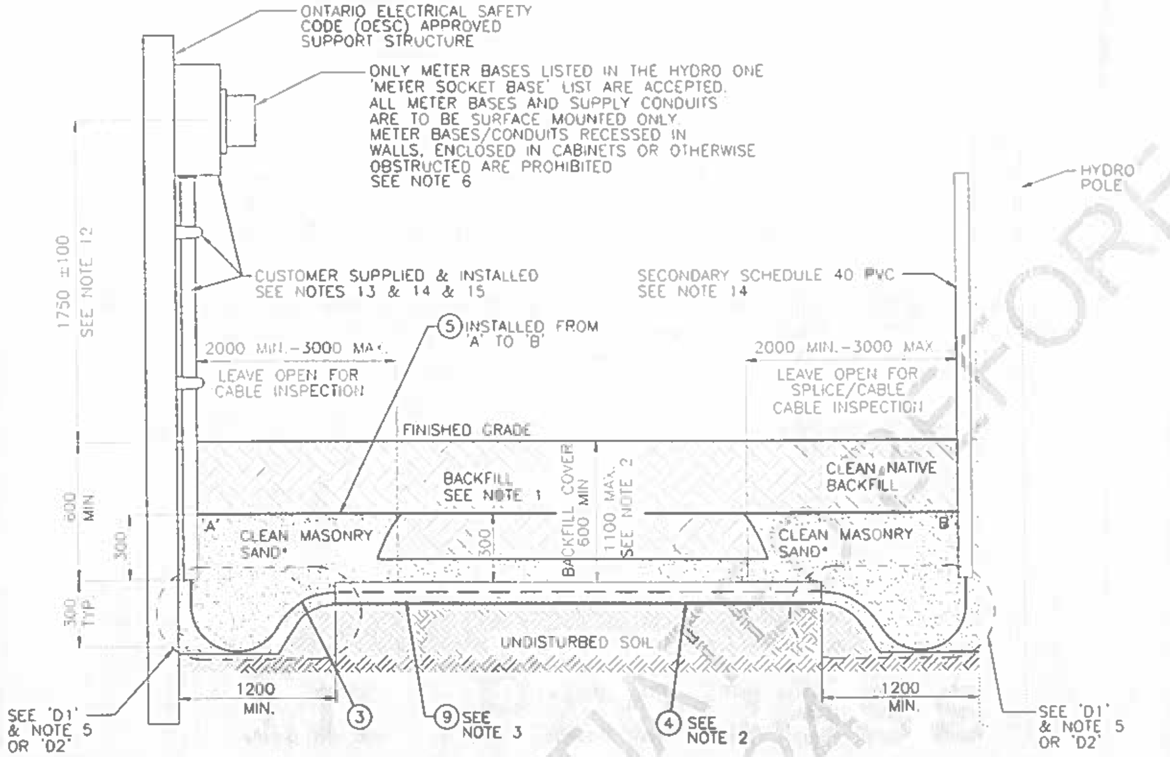
Hydro One Networks Inc.

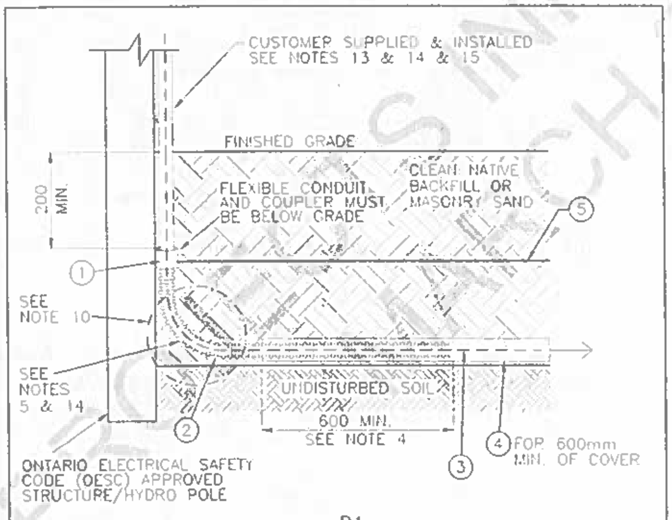
TRENCH DETAIL – SECONDARY SERVICE CABLE FROM DIP POLE TO METER BASE

Drawing No. DU-03-209.1-0502 Rev No. 05

TITLE BLOCK REV 02 – AUGUST 2014

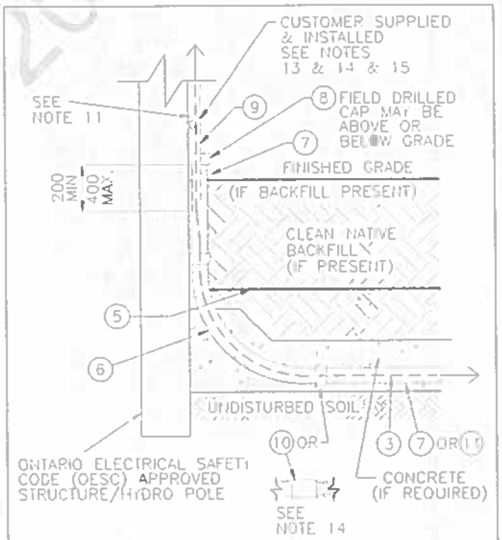
A4 (210 x 297) millimetres 0 10 50





D1

(OPTION 1 ALTERNATE INSTALLATION)



D2

(OPTION 2 ALTERNATE INSTALLATION)

FOR SHEET 2 OF THIS DRAWING SEE DU-03-209.1-0501
FOR SHEET 3 OF THIS DRAWING SEE DU-03-209.1-0502

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED

Rev. No.	Date	Revision Particulars				
05	FEB 2022	UPDATED PART #1 & 2. ADDED PART # 10 & 11. UPDATED NOTES 4 & 14. ADDED NOTES 15. UPDATED D1 & D2 LAYOUT. DIMENSION UPDATE IN D1 & D2.	PC	MM	KA	MM
04	AUG 2019	REMOVED 2" OPTION. UNIVERSAL SIZE. MODIFIED PARTS 1, 2 & 8. MODIFIED NOTES 1, 2 & 4: ADDED NEW NOTES 12, 13 & 14. REMOVED PREVIOUS PART 9 (STRAPS). INTRODUCED GENERIC SUPPORT STRUCTURE FOR CUSTOMER INSTALLATION.	PC/LS	SJ	SJ	MM

Hydro One Networks Inc.

Drawn By:	Checked By:	Designed By:	Design Approved by:
L.SEQUEIRA			
Scale: N.T.S.	Date: (yyyy/mm/dd) 2012/08/30	Pole ID:	

Title: TRENCH DETAIL – SECONDARY SERVICE CABLE FROM DIP POLE TO METER BASE

Drawing No.: DU-03-209.1-0500 — Rev. No.: 05

NOTES:

1. BACKFILL: ENSURE DB2 CONDUIT IS ENVELOPED WITH MASONRY SAND UPON INSTALLATION (75mm MINIMUM BELOW AND 150mm MINIMUM ABOVE). REMAINDER OF BACKFILL MUST BE CLEAN AND FREE OF DEBRIS TO PREVENT DAMAGE TO THE DUCT. BACKFILL SHALL BE WELL TAMPED.
2. STRAIGHT DUCT SHALL BE EMPLOYED IN THE TRENCH TO HOUSE THE CABLE. IT SHALL BE 100mm (4") DIAMETER PVC TYPE DB2 CONDUIT. THE ENDS OF THE DUCT SHALL BE CAPPED OR BAGGED TO PREVENT DEBRIS AND MOISTURE FROM ENTERING THE DUCT PRIOR TO CABLE INSTALLATION. IF OPEN TRENCH ENDS MUST BE LEFT UNATTENDED AFTER CABLE INSTALLATION, SEE DU-03-209.1-0500 OPTION 1, WITH A LENGTH OF FLEXIBLE CONDUIT TO MAKE 90° TRANSITION.

   SEE OPTION 2 FOR ALTERNATE METHODS.
3. PULL TAPE: A 1/2" WIDE POLYESTER PULLING TAPE MUST BE INSTALLED THROUGH THE ENTIRE LENGTH OF THE DUCT.
4. INSERT FLEXIBLE CONDUIT 600mm IN THE DB2 CONDUIT. THE SIZE OF THE FLEXIBLE CONDUIT WILL VARY BASED ON THE CONDUCTOR SIZE.
5. RADIUS MUST BE GREATER THAN THE SPECIFIED CABLE MINIMUM BENDING RADIUS.
6. INSTALL METER COMPARTMENT AS PER ONTARIO ELECTRICAL SAFETY CODE (OESC). USE ONLY HYDRO ONE APPROVED METER BASES LISTED IN THE HYDRO ONE 'METER SOCKET BASE' LIST. METER BASE TO MAINTAIN 1M MINIMUM CLEARANCE FROM DISCHARGE OF ANY COMBUSTIBLE GAS RELIEF DEVICE OR VENT.
7. TELECOMMUNICATION PLANT MAY SHARE SERVICE TRENCH BUT MUST BE INSTALLED IN ITS OWN CONDUIT.
8. PREFERRED ROUTING FOR GAS SERVICE SHALL BE ON OPPOSITE SIDE OF THE BUILDING THAN THAT OF THE ELECTRICAL SERVICE. IF COMMON TRENCHING IS UNAVOIDABLE, 300mm MINIMUM CLEAR SEPARATION SHALL BE MAINTAINED IN ALL DIRECTIONS BETWEEN GAS SERVICE AND ELECTRICAL SUPPLY CABLE.
9. CLEARANCES, DEPTHS, SEPARATIONS AND FORMS OF MECHANICAL PROTECTION OF THE CABLE ARE MINIMUM REQUIREMENTS. INCREASED CLEARANCES AND OR ADDITIONAL FORMS OF MECHANICAL PROTECTION ARE CONSIDERED POSITIVE DEVIATIONS AND ARE ALLOWED.
10. IF FURTHER TRENCHING ALONG ROAD ALLOWANCE IS REQUIRED, IT SHALL BE CONSTRUCTED PER HYDRO ONE STANDARD TRENCH PROFILES.
11. RISER CONDUIT TO BE EASILY REMOVED BY HYDRO ONE FOR CABLE INSTALLATION PURPOSES.
12. FINAL METER BASE HEIGHT IN REFERENCE TO FINISHED GRADE.
13. CUSTOMER SUPPLIED AND INSTALLED CONDUIT, METER BASE, CLAMPS AND ASSOCIATED HARDWARE INSTALLED PER ONTARIO ELECTRICAL SAFETY CODE (OESC).
14. THE METER BASE AND DIP POLE CONDUITS WILL VARY IN SIZE DEPENDING ON CONDUCTOR SIZE (i.e. 2" DIAMETER FOR 3/0 AWG, 3" FOR 250 kcmil OR 500 kcmil CONDUCTOR). FLEXIBLE CONDUIT WILL ALSO VARY IN SIZE (i.e. 2" OR 3" FOR 3/0 AWG OR 3" FOR 250 kcmil OR 500 kcmil CONDUCTOR) WHEN USED TO CONNECT THE RISER CONDUIT TO THE HORIZONTAL DUCT PER OPTION 1. FLEXIBLE CONDUIT WILL BE 4" FOR ALL CONDUCTOR SIZES IF USED AS MAIN CONDUIT (HORIZONTAL DUCT) PER OPTION 2. APPROPRIATELY SIZE COUPLERS (SHOWN AND LISTED IN THE PARTS LIST) SHALL BE USED TO CONNECT THE SCHEDULE 40 PVC TO THE FLEXIBLE CONDUIT.
15. THE SUPPLY SERVICE CABLE AT THE METER BASE SHALL BE HOUSED IN ITS OWN DISTINCT CUSTOMER SUPPLIED CONDUIT (CONDUIT SHALL NOT HOUSE ANY OTHER PLANT).

PARTS LIST

PART No.	MM No.	DESCRIPTION	QTY.
1	30030348 30031161 30030236	COUPLER KIT, 2", FLEX TO 2" RIGID COUPLER KIT, 3", FLEX TO 2" RIGID COUPLER KIT, 3", FLEX TO 3" RIGID	A/R
2	30030366 30030235	CONDUIT, FLEX, 2" CONDUIT, FLEX, 3"	A/R
3	30005908 30005915 30005959	SERVICE CABLE, 3/0 AWG, 3-COND., AL. SERVICE CABLE, 250Kcmil, 3-COND., AL. SERVICE CABLE, 500Kcmil, 3-COND., AL.	A/R
4	30007710	CONDUIT, PVC, 4", DB2	A/R
5	20002181	CAUTION TAPE, BURIED ELECTRIC LINE	A/R
6	30007687	SWEEP, 4" x 16" RADIUS, SCHEDULE 40, PVC	A/R
7	30007583	CONDUIT, 4", SCHEDULE 40, PVC	A/R
8	30031602	CAP, 4", SCHEDULE 40, PVC	A/R
9	20000007	TAPE, PULLING, 1/2" WIDE, POLYESTER	A/R
10	30031918	COUPLER KIT, 4" FLEX TO 4" RIGID	A/R
11	30031917	CONDUIT, FLEX, 4"	A/R

MM# = REFER TO SECTION 16 ONLY | A/R = AS REQUIRED

* = SUPPLIED BY CUSTOMER

FOR SHEET 1 OF THIS DRAWING SEE DU-03-209.1-0500
FOR SHEET 3 OF THIS DRAWING SEE DU-03-209.1-0502

ALL DIMENSIONS IN MILLIMETRES
UNLESS OTHERWISE STATED

Rev No	Date	Revision Particulars	dwn	ckd	des	app
05	FEB 2022	UPDATED PART #1 & 2. ADDED PART # 10 & 11. UPDATED NOTES 4 & 14. ADDED NOTE 15. UPDATED D1 & D2 LAYOUT. DIMENSION UPDATE IN D1 & D2.	PC	MM	KA	MM
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Hydro One Networks Inc.

Drawn By:	Checked By:	Designed By:	Design Approved By:
L.SEQUEIRA			
Scale: N.T.S.	Date: (yyyy/mm/dd) 2012/08/30	Pole ID:	

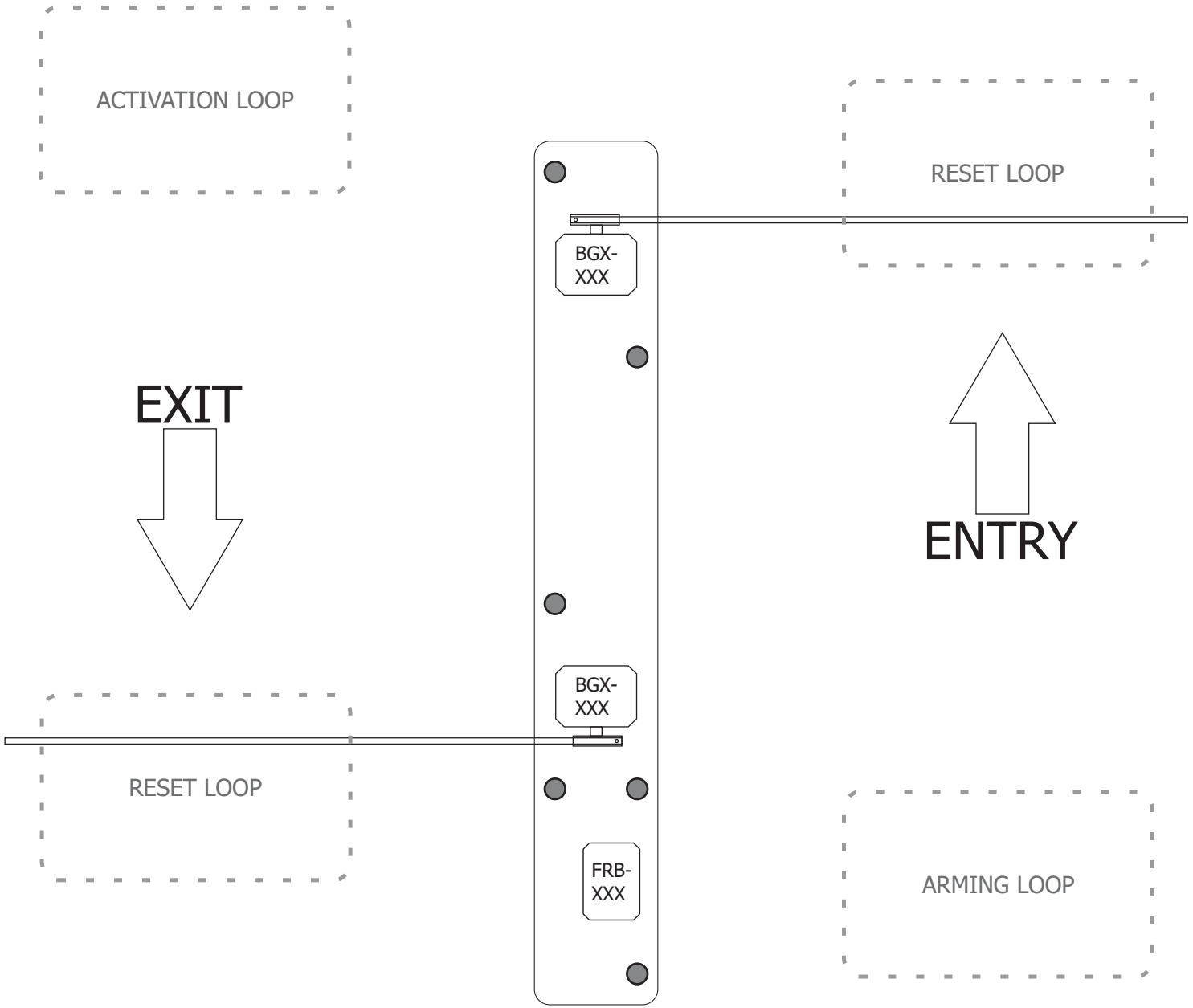
Title: TRENCH DETAIL – SECONDARY SERVICE CABLE FROM DIP POLE TO METER BASE

Drawing No: DU-03-209.1-0501 Rev. No: 05

A4 (210 x 297) millimetres 0 10 50

TITLE BLOCK REV 02 - AUGUST 2014

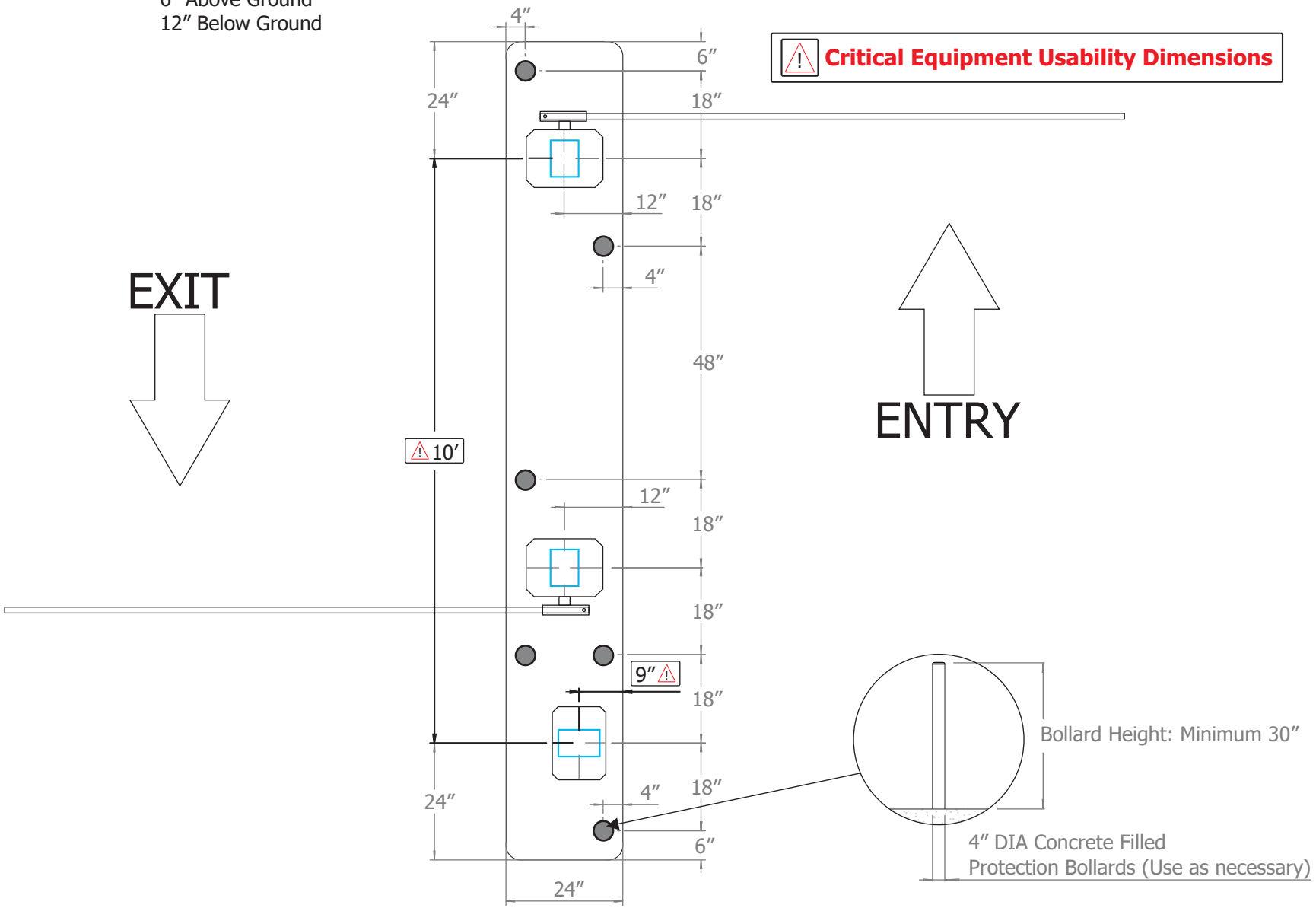
[PAGE 1: OVERVIEW]



Project:			ParkingBOXX Parking Made Easy®
Title:	Flat Rate Entry, Free Exit		
DATE	**REVISION**	**SHEET NO.**	**DWG. No.** CI-ENFF-N-2
DECEMBER 2024	003		**Scale:** 1″:30″

[PAGE 2.1: DIMENSIONS]

ISLAND DIMENSIONS
14'x2'x18"
6" Above Ground
12" Below Ground

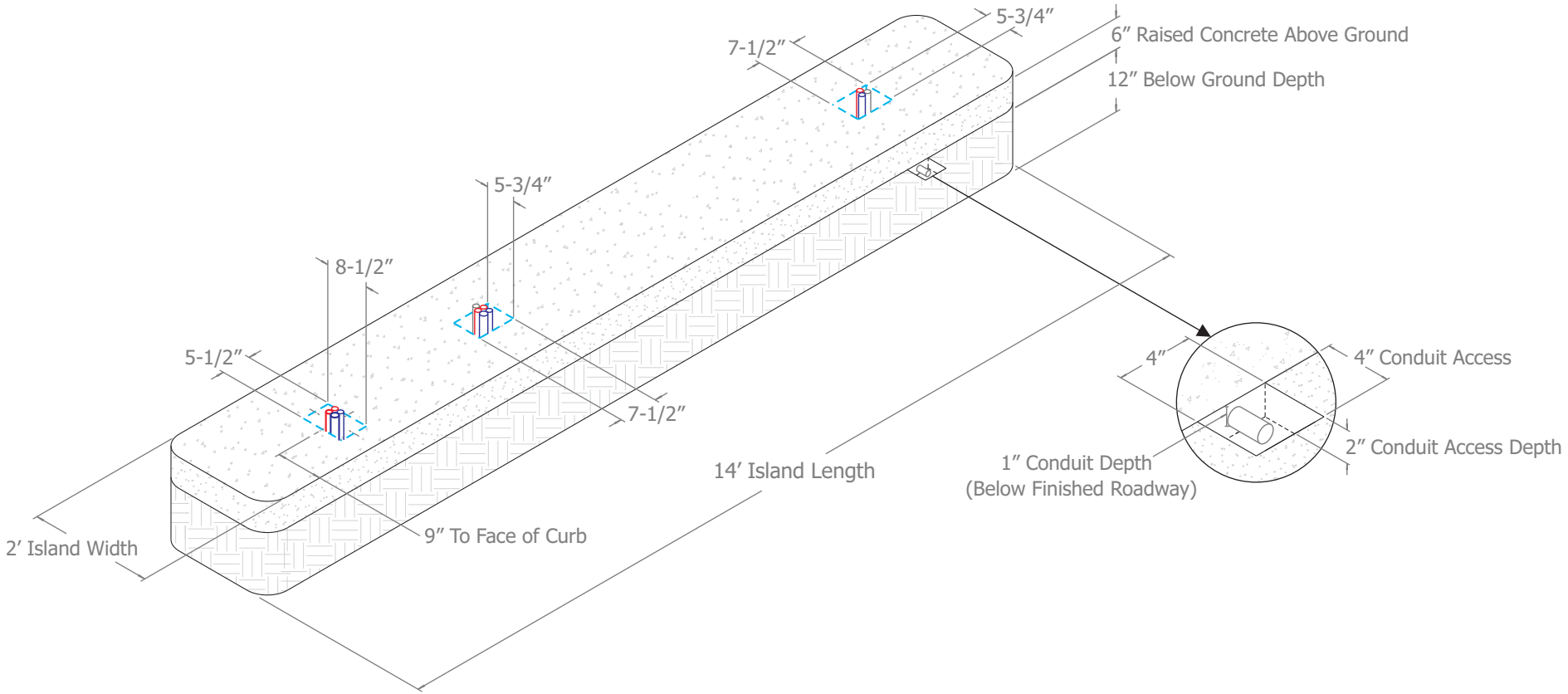


Project:		
Title: Flat Rate Entry, Free Exit		
DATE	**REVISION**	**SHEET NO.**
DECEMBER 2024	003	

ParkingBOXX
Parking Made Easy®

DWG. No.	CI-ENFF-N-2
Scale:	1":30"

ISLAND DIMENSIONS
14'x2'x18"
6" Above Ground
12" Below Ground



Project:		
Title: Flat Rate Entry, Free Exit		
DATE	**REVISION**	**SHEET NO.**
DECEMBER 2024	003	

ParkingBOXX
Parking Made Easy®

DWG. No.	CI-ENFF-N-2
Scale:	1":30"

[PAGE 3: CONDUIT]

Conduit Legend

High Voltage

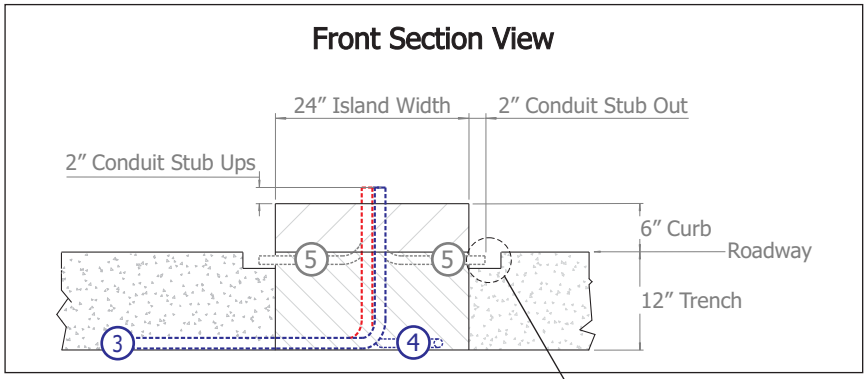
1. 1" SCH 40 PVC for incoming power
2. 3/4" SCH 40 PVC between machines for high voltage cables

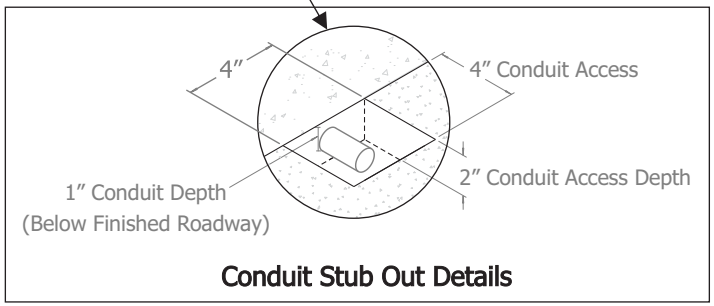
Low Voltage

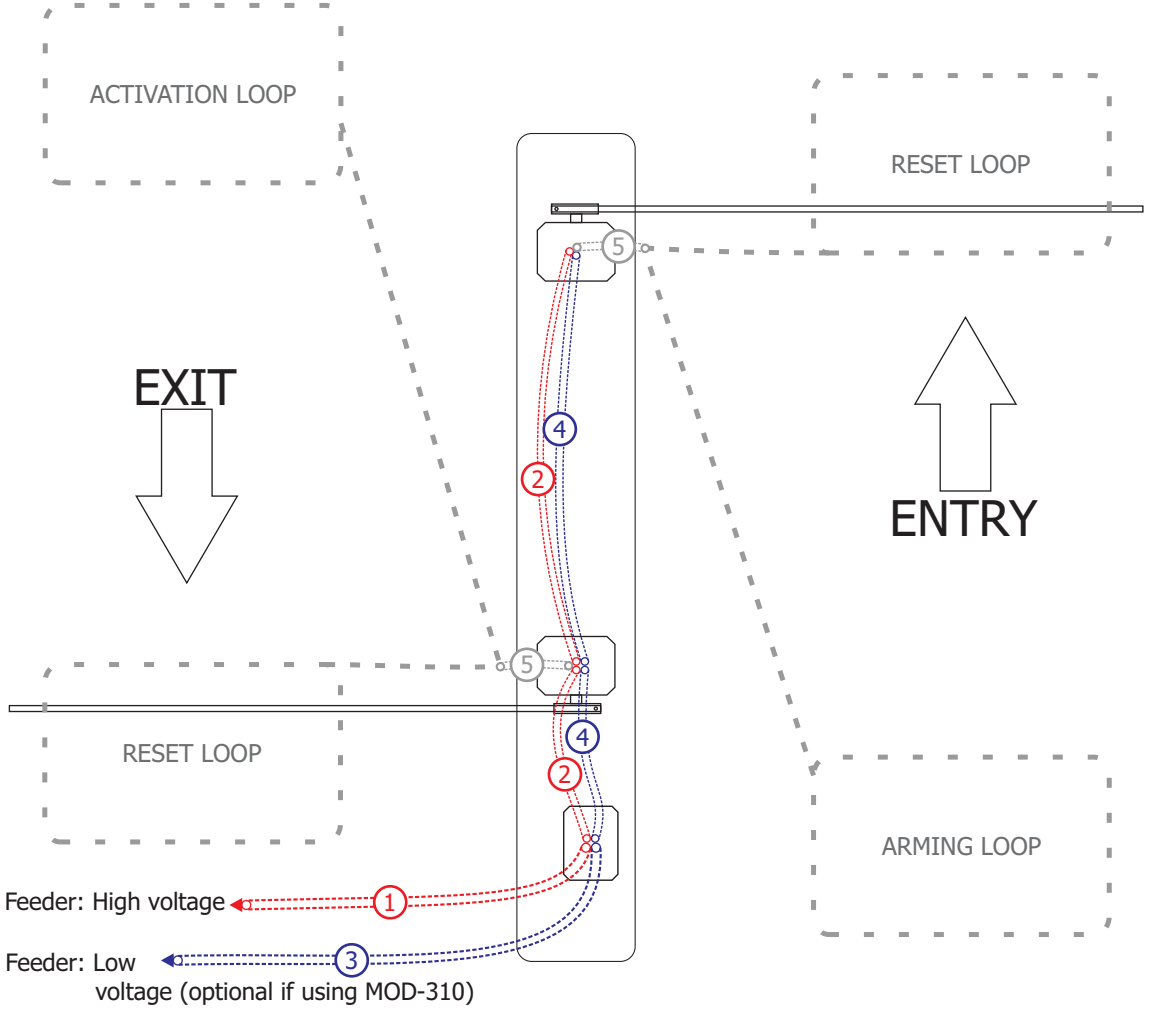
3. 1" SCH 40 PVC for incoming data cables
4. 3/4" SCH 40 PVC between machines for low voltage cables

Loop Sensors

5. 3/4" SCH 40 PVC loop lead conduit; Stub out 2" from curb and 1" below finished roadway (leave accessible)







Project:		
Title: Flat Rate Entry, Free Exit		
DATE	**REVISION**	**SHEET NO.**
DECEMBER 2024	003	

ParkingBOXX
Parking Made Easy®

DWG. No.	CI-ENFF-N-2
Scale:	1":30"

[PAGE 4: CABLING]

Wiring Legend

High Voltage

Power:

-120VAC / 20A x2:

Extend power cables **2'** above island at each machine location

Low Voltage

Data:

-Ethernet:

Cat-5e/Cat-6 from ISP to Flat-Rate BOXX <300' per cable

Extend ethernet cables **6'** above island at Flat-Rate BOXX location

NOTE: ethernet not required if Flat-Rate BOXX is equipped with MOD-310 cellular modem

Signal:

-Gate Controls:

22/12 Signal cable between Flat-Rate BOXX and Entry Gate

22/12 Signal cable between Flat-Rate BOXX and Exit Gate

Extend signal cables **4'** above island at each respective machine location

Loop Sensors

Reset:

-Red twisted leads AWG 16 or AWG 12 Stranded

Extend loop wires **4'** above island

Arming/Activation:

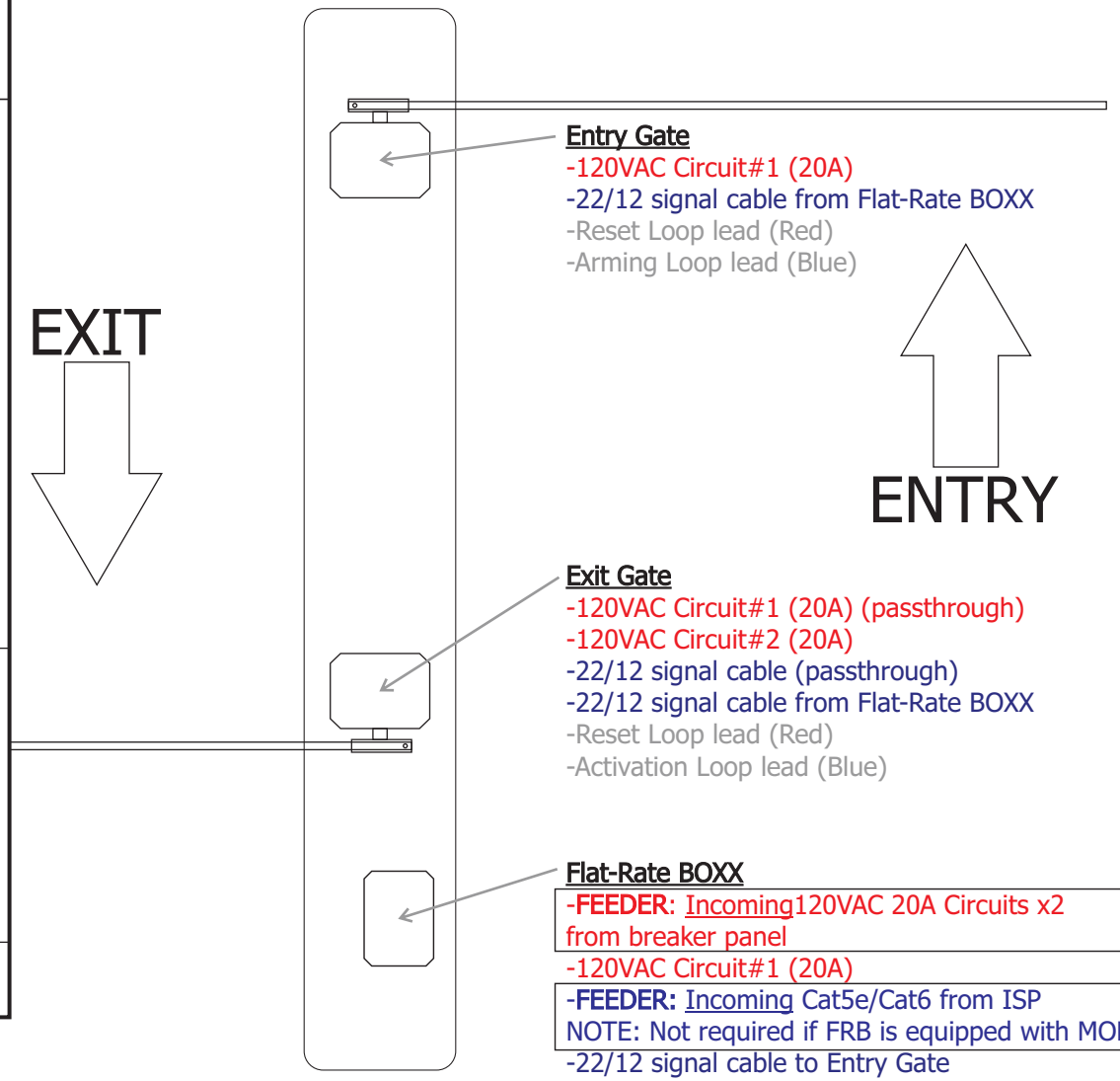
-Blue twisted leads AWG 16 or AWG 12 Stranded

Extend loop wires **4'** above island

Refer to site Preparation Guide for more details.

*Note - For power, use appropriate gauge for distance of run.

DISCLAIMER: All wiring to be completed prior to equipment installation.



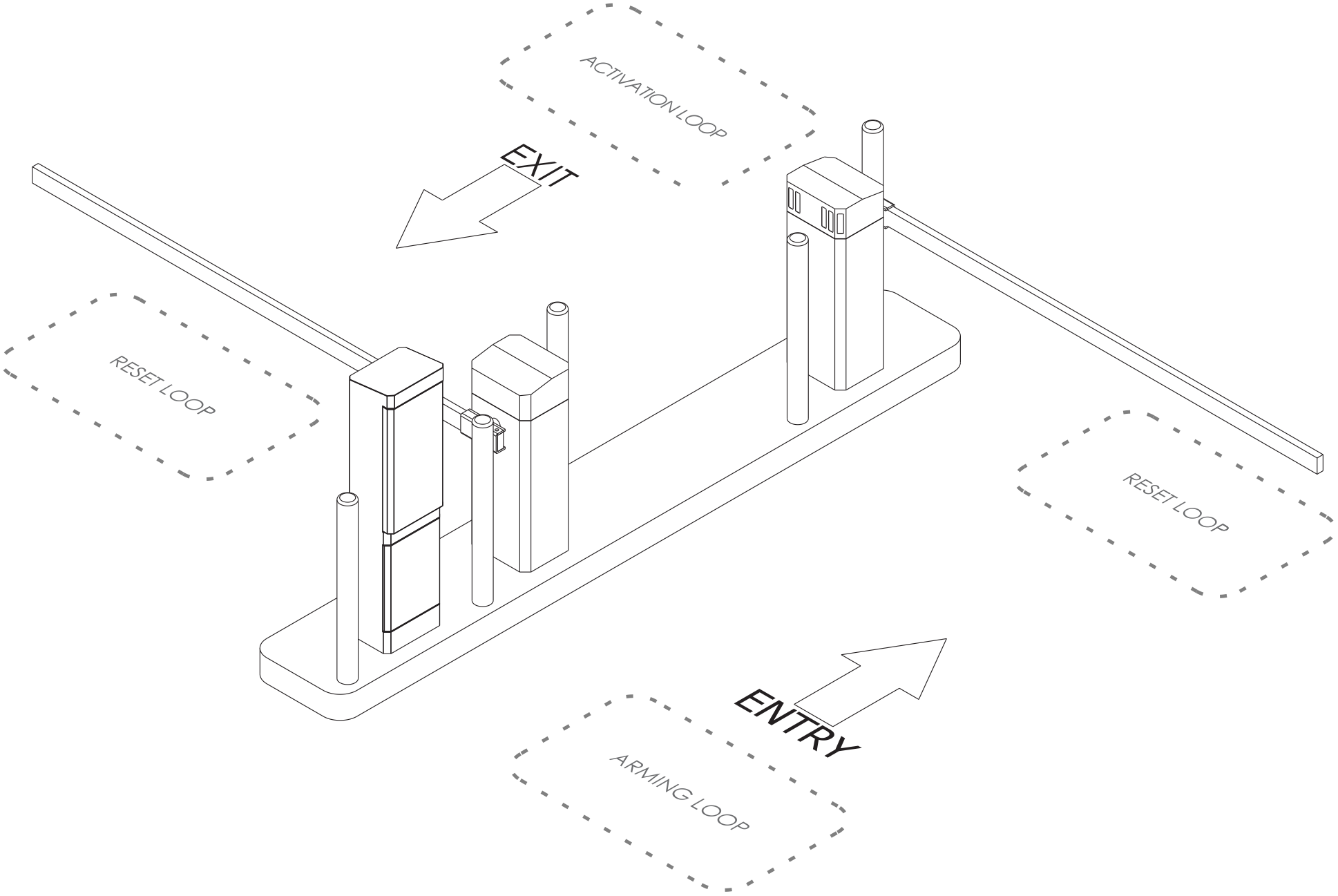
Entry Gate
-120VAC Circuit#1 (20A)
-22/12 signal cable from Flat-Rate BOXX
-Reset Loop lead (Red)
-Arming Loop lead (Blue)

Exit Gate
-120VAC Circuit#1 (20A) (passthrough)
-120VAC Circuit#2 (20A)
-22/12 signal cable (passthrough)
-22/12 signal cable from Flat-Rate BOXX
-Reset Loop lead (Red)
-Activation Loop lead (Blue)

Flat-Rate BOXX
-**FEEDER**: Incoming120VAC 20A Circuits x2 from breaker panel
-120VAC Circuit#1 (20A)
-**FEEDER:** Incoming Cat5e/Cat6 from ISP
NOTE: Not required if FRB is equipped with MOD-310
-22/12 signal cable to Entry Gate
-22/12 signal cable to Exit Gate

Project:			ParkingBOXX Parking Made Easy®
Title:	Flat Rate Entry, Free Exit		
DATE	**REVISION**	**SHEET NO.**	**DWG. No.** CI-ENFF-N-2
DECEMBER 2024	003		**Scale:** 1":30"

[PAGE 5: FINISHED ISLAND VIEW]



Project:			ParkingBOXX Parking Made Easy®
Title:	Flat Rate Entry, Free Exit		
DATE	**REVISION**	**SHEET NO.**	**DWG. No.** CI-ENFF-N-2
DECEMBER 2024	003		**Scale:** 1″:30″

Site Preparation Guide

Civil work photos and instructions

Contents

Cabling Requirements: Power & Communications

Power
All of our machines run on 120VAC single-phase @ 60 Hz. We specify a single 20A circuit per lane and most lanes will have 2+ pieces of equipment that will share this circuit. These circuits should be dedicated and not shared with light posts or other equipment. We do not specify the gauge of wire required since it will depend on the distance of the run which is site specific.

Communications
Network – All devices that require a network connection will be shown on the interconnect drawing with a blue dotted line. For most applications, Cat-5e or Cat-6 (UTP) cable will be appropriate. Cables must be less than 300' in length, and terminated at the switch/patch panel/router end. BOXX will terminate cable ends at the machines. If there is a cable run that will be longer than 300', alternate means must be employed such as fiber-optic cable and media converters or copper ethernet extenders. If physically running cable to a location is not possible, you will need to employ a wireless solution. We recommend running physical cable whenever possible and only using a wireless infrastructure as a last resort. We do not have a specification for fiber-optic or wireless hardware because it will largely depend on the situation and existing infrastructure in place. All of the BOXX hardware must be on the **SAME** network.

Serial Data – All card readers and ticket dispensers require a serial data connection*, and will be shown on the interconnect drawing with a red dotted line. The most accessible cable that can be used for this application is Shielded Cat-5e or Shielded Cat-6 (STP/FTP). This is similar to the standard cable used for networking, however, it is paramount that shielded cable is used for this application. Unlike the network cables, the serial data cable runs from the server to the first device where it terminates, and then from the first device to the second, second to third and so on; this is called a daisy-chain formation or Data BUS. It is important that the BUS is run in this fashion, and it will be shown on the interconnect drawing as such. The length of each individual cable on the chain does not matter as long as the total combined length of the chain is less than 4,000'. There should be no splices in the BUS. *Note: Serial data cables are not required for CloudEASE systems.

Phone line – Most BOXX systems are now utilizing VoIP intercoms which use the network cables as specified above and no additional cabling is required. If you requested analog intercoms for your system, you will need to run analog phone cables from the phone service panel to each device that will have an analog intercom. Terminations at the phone service panel will need to be done by the service provider. BOXX will terminate the cables at the machines. Cat-3/5/6 cable or any telecom cable may be used as the analog phone line medium.

Signal – Low voltage signal wire between the control device (Entry BOXX, Exit BOXX, Access Control Pedestal, etc.) and the barrier gate it is controlling. We specify 18-6 stranded unless otherwise noted. BOXX will terminate both ends of these cables.

Stub-up Length Requirements

Gate – Power and signal cables must stub up 3' from conduit.

Entry/Exit/Flat-Rate/Pay BOXX – Power cables must stub up 3' and data/signal cables must stub up 6' from conduit.

Access Control Pedestal – Power, data and signal cables must stub up 6' from conduit.

Conduits: Type and installation

Intra-Island Conduits

All conduits within the island forms should be ¾" schedule-40 PVC unless otherwise specified by specific site drawings. Conduits should be stubbed directly up at the locations indicated by the laneway drawings; tied tightly together and capped/taped before pouring concrete to avoid the introduction of debris or foreign objects. After the concrete is set, but before cables are pulled, all conduits on the island need to be cut down to 2-3" high (see section "New construction…/Conduits" for additional details) . **If the conduits are left too tall, the machines will not fit properly.**

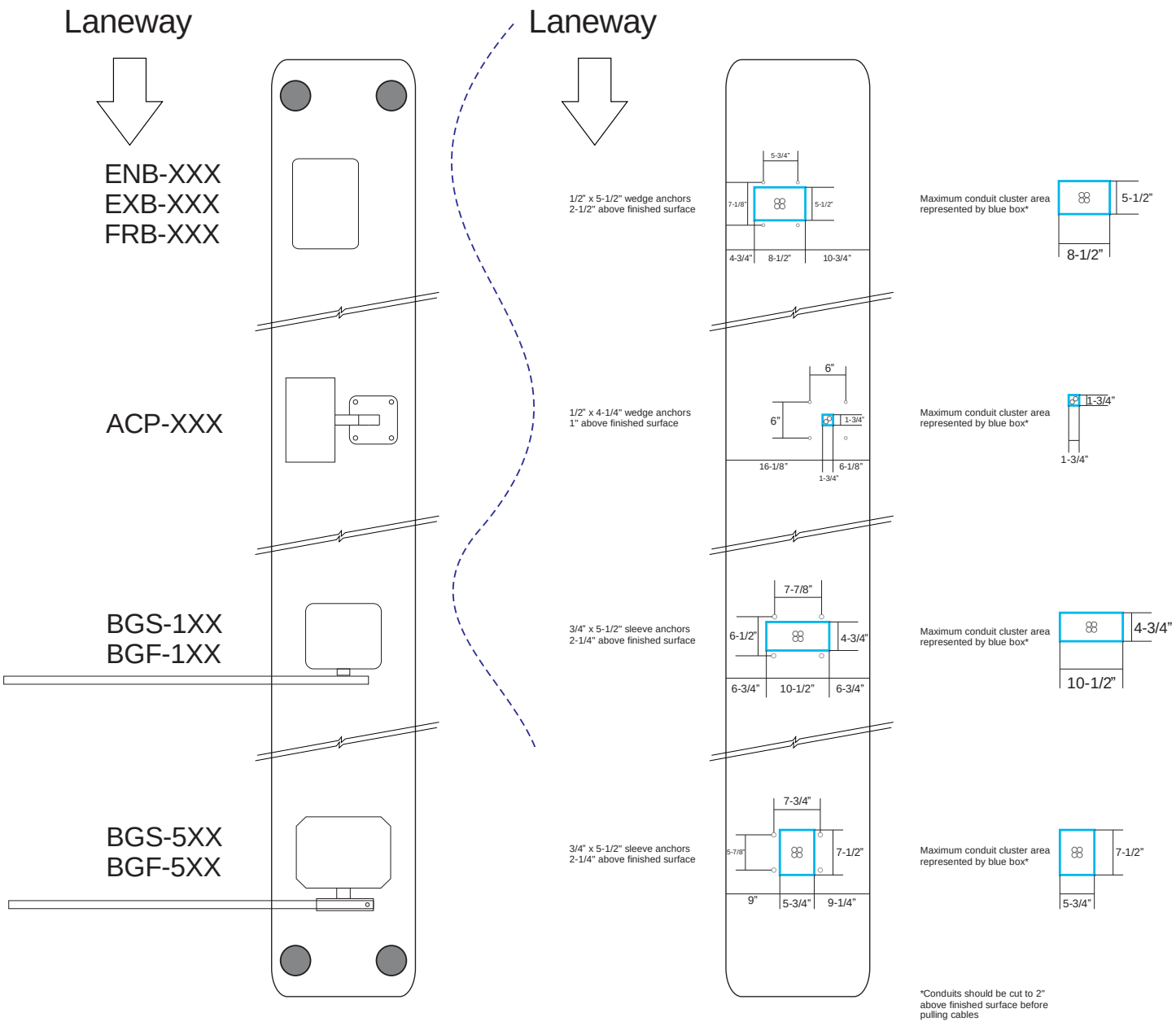
Feeder Conduits

For most standard installations, feeder conduits will be 1" schedule-40 PVC. On a typical Entry/Exit parking island, there will be two feeder conduits; one for power that will run to an electrical room/breaker panel/etc., and one for data that runs to a network closet/parking booth/management office/etc. On systems that have more than one parking island, there will likely be multiple feeder conduits on some of the islands to not only connect the islands to their power/data sources, but also to connect them to one another. Though we specify 1" conduit for the feeders, you may need to increase the conduit size for runs that will have a higher than typical number of data cables, thicker gauge power cables to account for voltage drop over longer distances, or fiber optic cable with minimum conduit size requirements, etc. Consider all of the cabling required for your project scope before selecting your conduit size. Though we specify schedule-40 PVC, your building code/fire code/environmental code may impose other requirements.

Schedule-40 PVC 1"

Bolt patterns and conduit stub-up allowances

BOXX will install all anchoring bolts for the equipment, so it is not necessary to set any ahead of time. The purpose of the below diagrams is to show **WHERE** the bolts will be, as well as the mounting bars so that the conduit clusters are kept within the specified dimensions.



A larger, scaled version of this diagram is available upon request.

Induction Loop Sensors: Type and installation

Saw-cut loops

For laneways that are already surfaced (asphalt or concrete), the easiest and most cost-effective way to install the loop sensors is to saw-cut them into the finished surface. It is a minimally invasive cut (about ¼" diameter). A coil of wire is layed into the sawcut and then sealed afterwards. Both ends of the coiled wire need to enter the island for termination at the loop detector module located inside of the gate operators. When framing your islands, it is very important that you install a loop lead conduit that is accessible from the finished surface of the laneway.



In most cases, BOXX will be responsible for cutting in the loop sensors. The most important responsibility of the customer will be to prepare the loop lead conduit so that it is accessible.

PVC pre-formed loops

For unsurfaced laneways (dirt or gravel), the easiest and most cost-effective way to install the loop sensors is to bury PVC pre-formed loops in the laneway.

If you are installing PVC preformed loops, this can be done before or after framing, but typically before pouring concrete. Alignment is easier when your conduit stub-ups have been completed. [Left] is an unframed island with conduit stub-ups and loops placed.

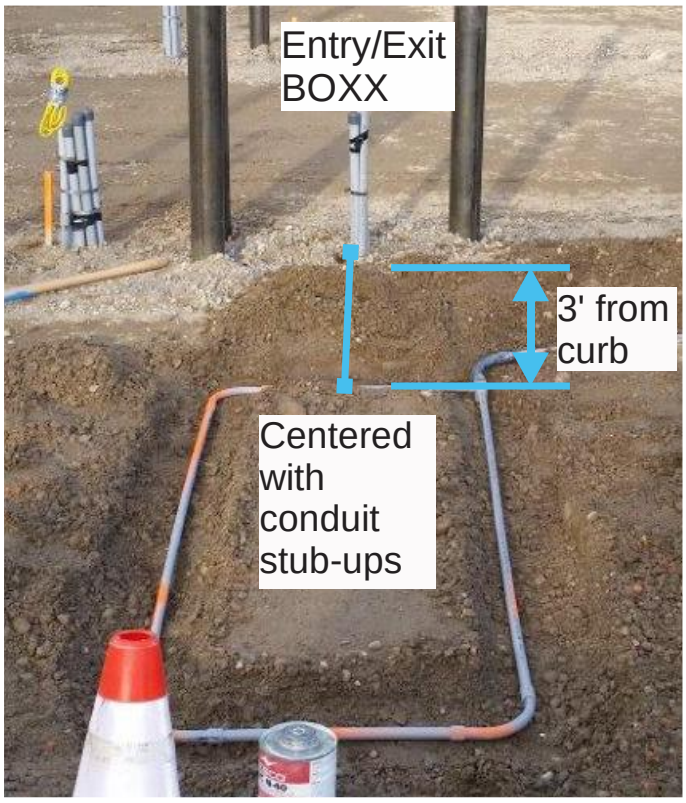
Once the loops are placed, they should be re-covered with dirt/gravel (especially if you are going to be paving over them). **The loops need to be 2-3" below the surface. If they are too deep, they will not function properly.**

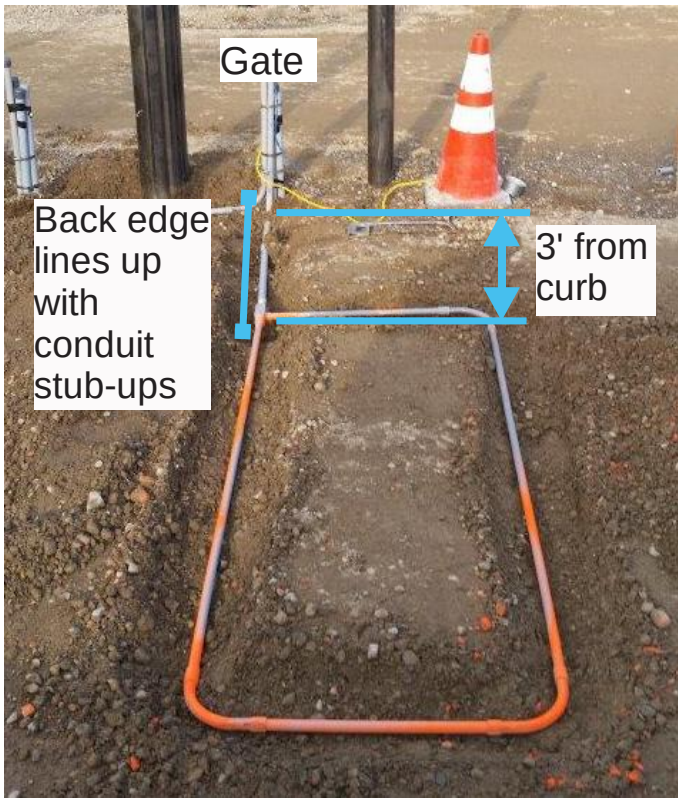
All loops should be approximately 3' from the curb.

Arming loops should be centered with the machine that they are arming.

Reset loops should be placed so that the back edge lines up with the conduit stub-ups for the gate so that approximately 30% of the loop is before the gate arm, and 70% of the loop is past the gate arm.

Refer to the below pictures for loop placement. For **MOST** applications, the arming/activation loops for the Entry/Exit BOXXs will have **blue** leads; the safety/reset loops for the gate operators will have **red** leads. This will help differentiate which loop is which once they are buried.





Reclaimed Asphalt

There is a gray area between surfaced and unsurfaced laneways. Reclaimed asphalt, chip seal, or old "crumbling" asphalt may fall into either loop category depending on material continuity and fragmentation.

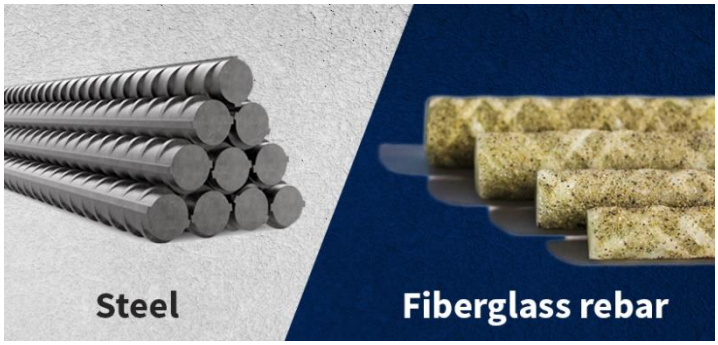
The asphalt as seen on the right is an ideal surface for saw-cut loops.

The chip seal as seen on the left is less ideal, however as long as there are no large sections missing, and the materials are not "loose", saw-cut loops are still the best option.

The crumbling asphalt as seen below is the worst type of surface for loop installation. Saw-cut loops are not an option. The loop locations OR the entire laneway may be excavated for PVC loop installation.

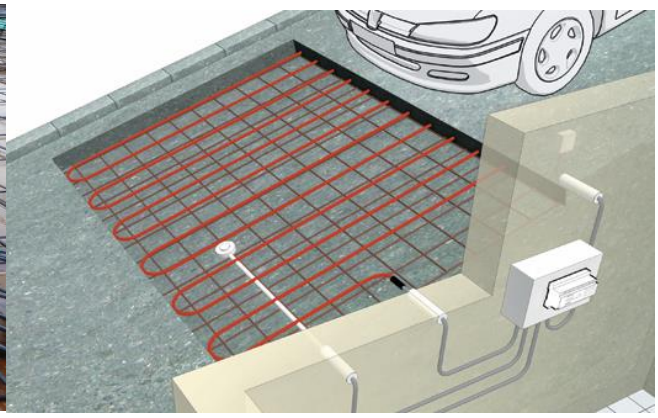
Parking Garage Loops

For new parking garage projects, PVC loops are by far the best option. They are the safest, cleanest, and easiest to install. The placement requirements are the same the above listed in the "PVC pre-formed loops" section, however instead of burrying the loops in gravel, for this type of installation, loops will need to be secured to the framing/supports before pouring concrete. The loops should be elevated from the framing such that they will be 2-3" below the finished surface once the concrete is poured. An important consideration when laying out PVC loops in a parking garage is that since they work by sensing the metal content in vehicles above the surface, any stationary metal in the slab or structure will dimish their efficacy; consider utilizing fiberglass or composite rebar (FRP/GFRP) and drainage grates/covers within 5' of loops.



If the slab has already been poured and PVC loops are no longer an option, saw-cut loops may be used, though there are some considerations that must be made. The cut depth for saw-cut loops is 1-1/2" – 2". Post tension cables or glycol heating lines may interfere with the ability to cut the required depth for loops. The architecht will need to confirm that cutting will be safe and not interfere with any slab-embeded items. Where as-built drawings are missing or incomplete, a slab x-ray or GPR scan may be required.

Post-tension cables

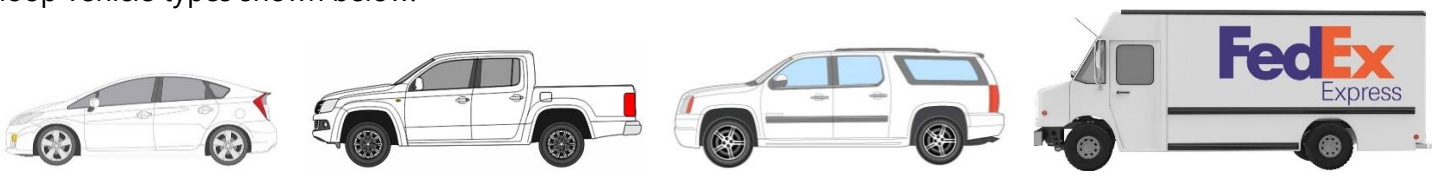


Glycol Heating System

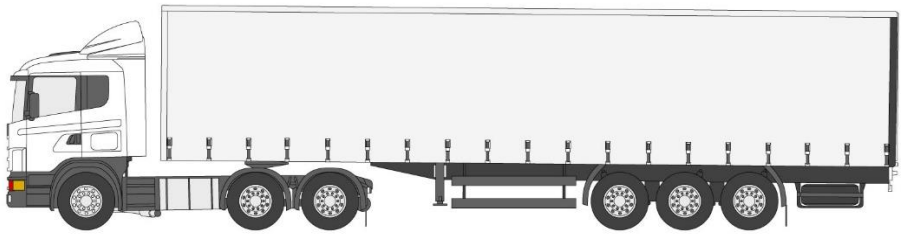
Standard vs. Oversized Loops

The TYPE of vehicular traffic that will utilize the laneways will determine the size of loops required.

Standard loops are 2.5' x 5' (+/-) depending on lane width. Standard loops are appropriate for most non-commercial vehicular traffic (consumer cars/trucks/SUVs) and 2-axle commercial and courrier vehicles. Standard loop vehicle types shown below:



Oversized loops are typically 5' x 10', but will commonly be tailored to to the laneway in which they will be installed. Oversized loops are appropriate for Commercial vehicles such as transport trucks as well as ANY vehcile towing a trailer (boat trailer, RV, camper, moving trailer, etc.). In addition to commercial vehicles and consumer trailers, any laneway that will be patronized by high ground clearance vehicles (lifted trucks, off-road vehicles, etc.) should be outfitted with oversized loops. Oversized loop vehicle types shown below:

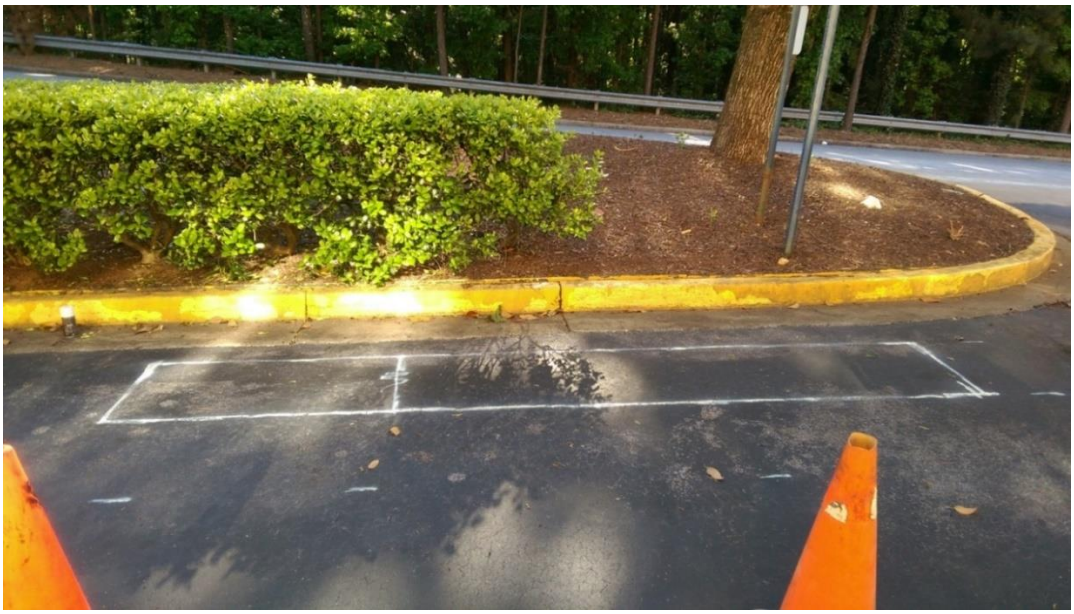


Special considerations: If the primary traffic demographic calls for standard loops, but on occasion an oversized vehicle may need to access the parking lot, standard loops may still be the best option with an "oversized vehicle procedure" put in place (for example, holding the gate open electronically while the garbage truck services the lot). Some examples of vehicles that may require special consideration shown below:

New construction on an existing surfaced lot

Excavation

Draw/mark Island dimensions – Make sure you take into account fire lane regulations.



Remove pavement.

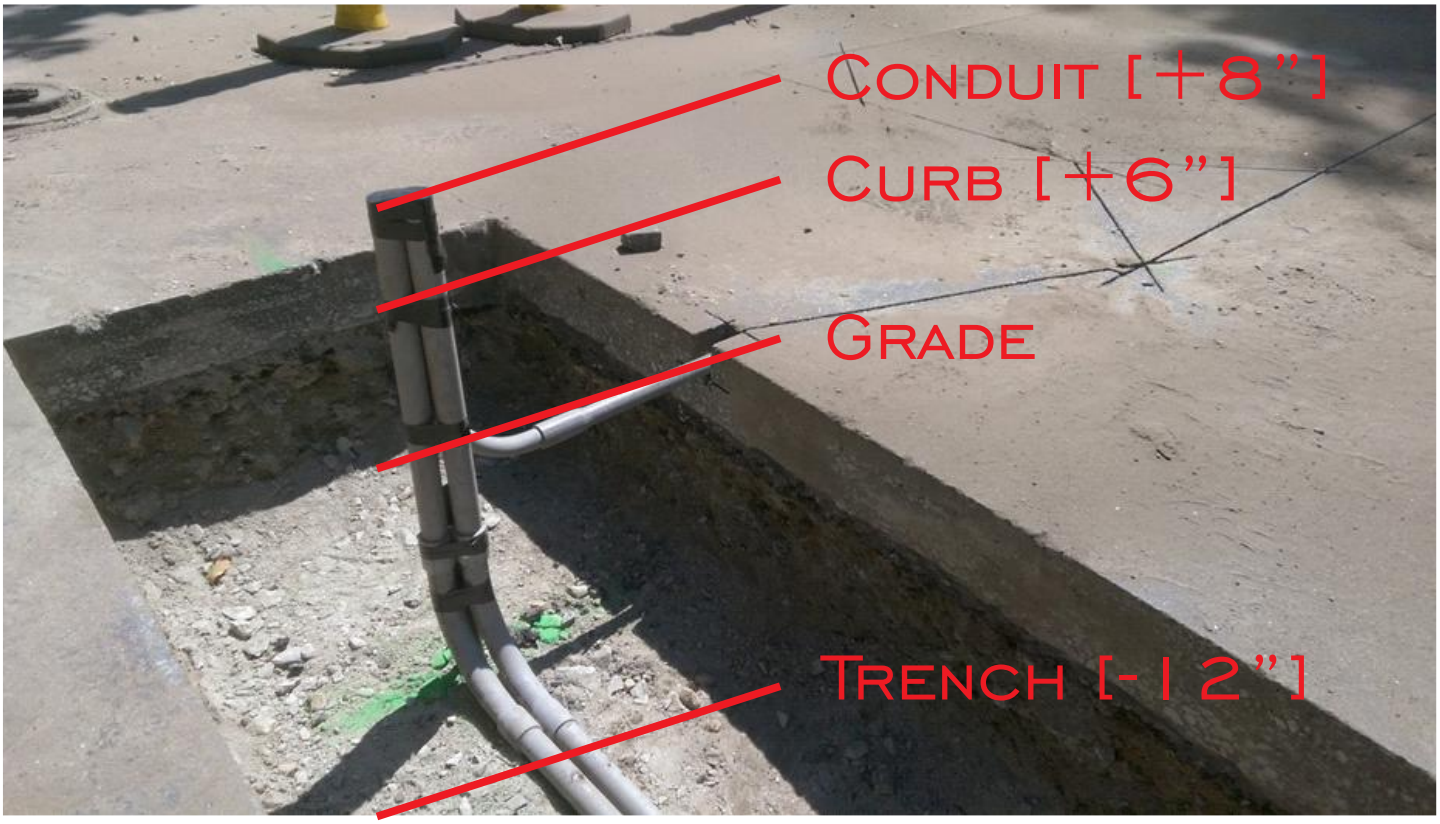
Excavate at least 12”. Take frost line into consideration. For northern climate installations, your footing may need to be deeper than 12”.

Conduit

Layout Conduit as per the drawings provided.
Counduits must be grouped tightly together.
Use spikes/rebar to keep conduits in place.

Ensure conduit clusters stub-up in the correct locations as per the drawings provided.

Saw cut, and seal loops – refer to drawing for number of loops and loop location. NOTE: If BOXX will be installing the loops, just leave the loop lead conduit accessible.



Framing

Frame Island – 2x6 Lumber works well for this. Secure to the roadway.

Round corners with sheet metal or Mason-board.

Concrete

Pour concrete; ensure that it is level.
Once concrete is dry, pull cables.
Power wires should extend 3' above the surface.
Data cables should extend 6' above the surface.

Mounting Equipment

Remove form and mount equipment. In most cases, BOXX will be responsible for mounting/installing the machines.

If you are mounting your own equipment, the most effective method is by using wedge anchors. Refer to bolt patterns diagram (page 4) for spacing. Different machines require different sizes of anchors. Below are the basic guidelines:

Entry BOXX -	½" x 5-½" wedge anchor	SIMPSON Strong-Tie STB2-505124SS
Exit BOXX -	½" x 5-½" wedge anchor	
Mini Pay -	½" x 5-½" wedge anchor	
Flat-Rate BOXX -	½" x 5-½" wedge anchor	
Smart Parking Meter –	½" x 5-½" wedge anchor	
Access Control Pedestal -	½" x 4-¼" wedge anchor	SIMPSON Strong-Tie STB2-504144SS
Long-Range Reader Stand -	½" x 4-¼" wedge anchor	
Bolt-Down Bollard (4" O.D.) –	½" x 4-¼" wedge anchor	
Barrier Gate –	5/8" x 6" wedge anchor	SIMPSON Strong-Tie STB2-626004SS
	OR	
	¾" x 6-¼" sleeve anchor	SIMPSON Strong-Tie SL75614H

New construction on an unsurfaced/gravel lot

Excavation/Conduit/Framing

Dig a trench large enough (or larger) for the form. Construct the form and set it in the trench. The footing must be at least 18" deep. When construction is complete, the curb should be 6" above the roadway. If you are going to be paving, keep this in mind to account for the thickness of the asphalt.

Measure to ensure the conduits stub up in the appropriate locations according to the drawings provided. Keep conduit clusters tight.

Concrete

Pour concrete. After it has set, remove forms and grade laneway. It is important that the island is level, even if the laneway is sloped. Pull cables. Power wires must extend 3’ above the surface. Data cables must extend 6’ above the surface.

Mounting Equipment

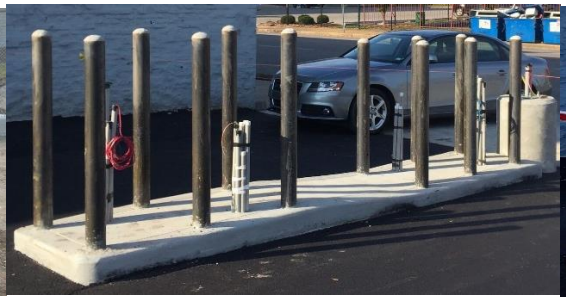
Refer to anchoring specs (page 10).

Bollards

The best way to protect your parking equipment is with steel bollards. Specific measurements for bollard locations are provided and must be followed to ensure proper protection of the equipment and to avoid mounting conflicts. There are a few different types of bollards which are shown below:

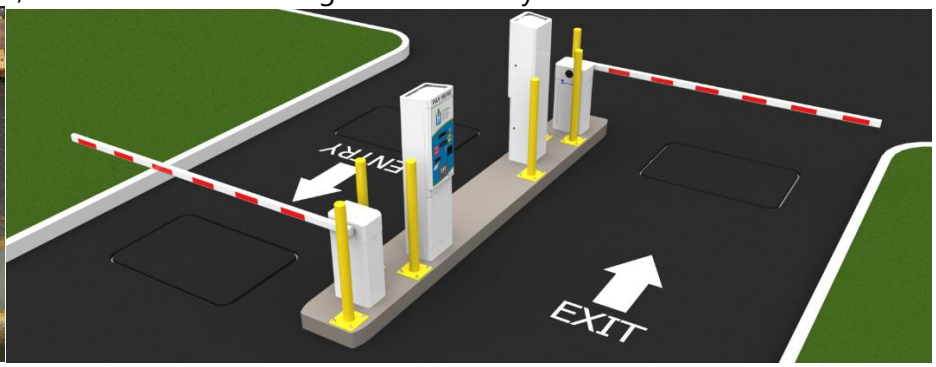
Concrete-Filled Steel Pipe
This method is only possible before pouring concrete. We recommend SCH40 4"O.D. stainless steel pipe. For added security, you can upgrade to SCH80 or 6"O.D. pipe. If you cannot source stainless, you can use regular steel pipe, but it may rust if it is exposed. It is recommended to paint all bollards for visibility, especially non stainless bollards to prevent against rust. BOXX recommends 'traffic yellow' paint, however there is no regulation, so you can be creative and match the property décor/color scheme if you wish.

To install, drive the steel pipes into the dirt/gravel in the locations as indicated by the laneway drawings. Ensure they are plumb. Typical height for bollards is 4-5' above the finished surface of the concrete island. It is common to drive the pipes into the ground, leaving them higher than the finished height, and then cutting them down to uniform size after concrete is poured. After the pipes have been cut to finished height, fill them with concrete and paint them.


Manufactured Bolt-Down Bollards
If the concrete has already been poured, or you do not want to take on the project of installing concrete-filled steel pipe bollards, you may want to install manufactured bolt-down bollards (These can be purchased from BOXX in standard yellow or black). If you are installing these yourself, refer to the laneway drawings provided for placement. It is very important that the bollards are mounted in the correct positions to maximize their effectiveness and ensure there are no spatial conflicts.

To install, place the bollards in the correct locations and mark the 4 mounting holes. For standard 4"O.D. steel bolt-down bollards, furnish with 4-½" wedge anchors. Only 1" of the anchor should be above the surface.

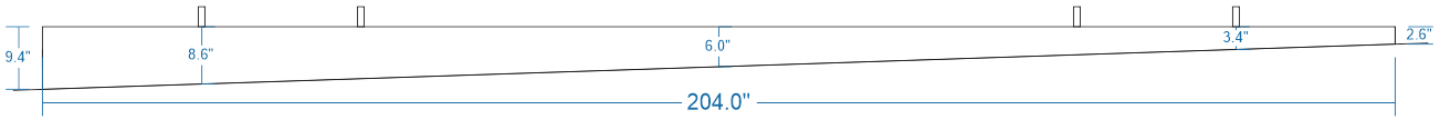



Sloped Laneways

Depending on the severity of the slope in the laneway, there are two main ways of leveling the concrete pads to ensure the machines have a level base to mount to without being shimmed.

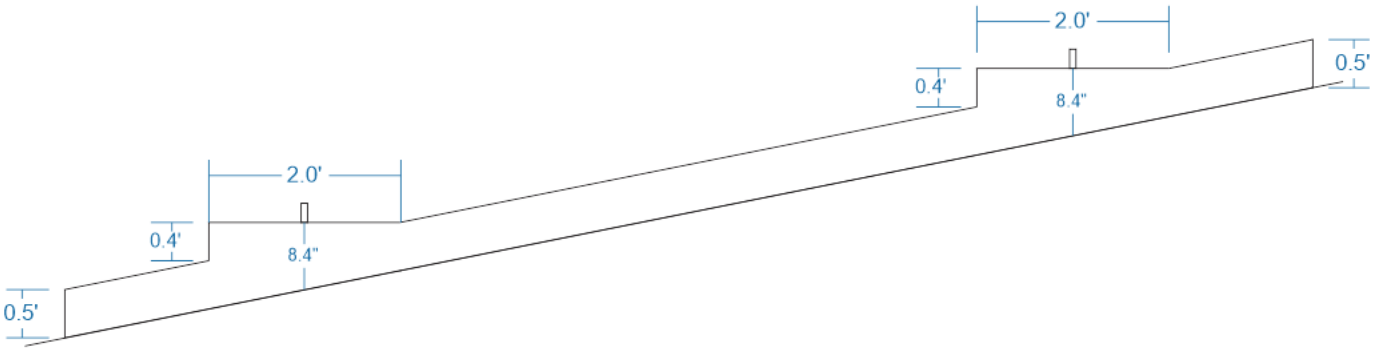
Gradient Average Leveling

For minor slopes (<6" over 10'), the easiest way to frame your island is to calculate the average of the gradient based on a 6" curb and disperse the difference over the entire length of the island. For example, if the laneway has a 3.33% grade and the concrete pad needs to be 17' long, the average of the gradient is 5.66". Therefore, when framing the island, one end of the curb will be finished to approx. 2.5" and the other end will be finished to approx. 9.5", and the center will be 6". Example shown below:



"Stepped" Leveling

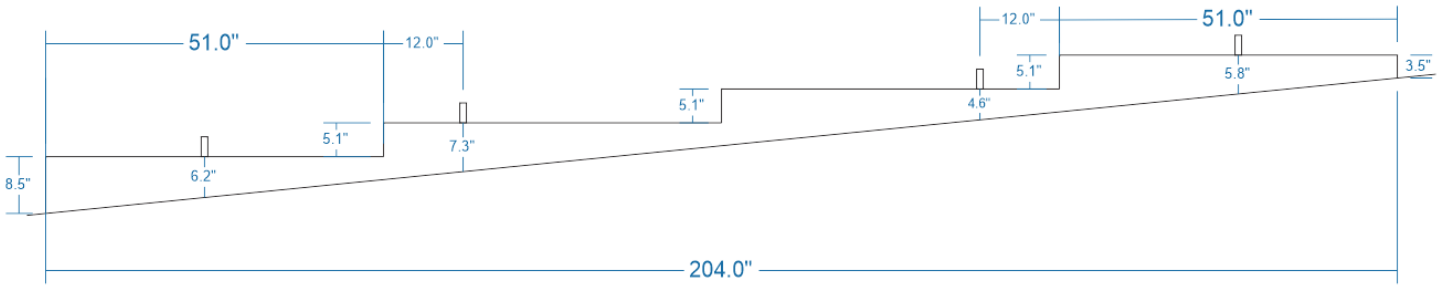
For more significant slopes (>6" over 10'), "stepped" leveling is the most effective solution. In this scenario, the overall island will match the same slope as the laneway, but every location where a machine will be mounted will be leveled so that the end product will resemble a stretched out staircase. The area to be leveled where each machine will be located must be at least 2' wide, centered on the conduit stub-ups. The drawing below shows a 13' island on 20% grade and 2 leveled machine mounting locations:



Example:

Stepped Gradient Average Levelling

In some cases, the best option may be to implement a hybrid solution of the above two methods. There is no hard and fast rule as to when this method should be implemented, and it will depend on many factors such as the overall slope of the laneway, number of machines to be mounted on the island, and preferred aesthetic. This method will have the same stretched out staircase appearance but without the sloped sections in between. The drawing below shows a 17' island on 10% grade and space for 4 machines:



Example:

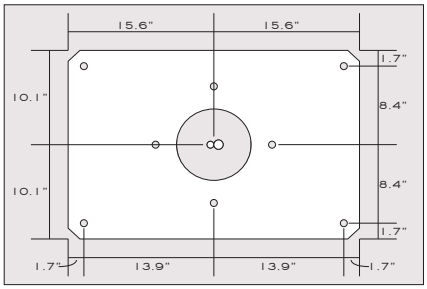
Note: The spacing between each "step" can be adjusted to ensure that there is at least 2' (wide) of level mounting surface for each machine location, centered on the conduit stub-ups.

Pay BOXXs

Types and Size

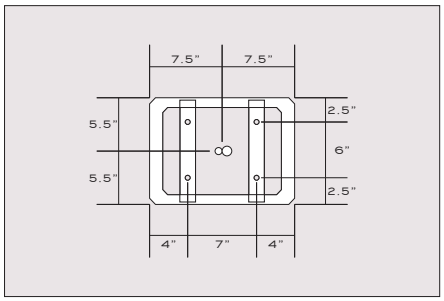
Parking BOXX offers two main form factors of non-vehicular parking payment kiosks.

Big PAY



Mounting footprint

Mini PAY



Mounting footprint

The Big PAY is our full-featured model with cash accepting/dispensing options available.
The Mini PAY is our streamlined credit/debit only model.

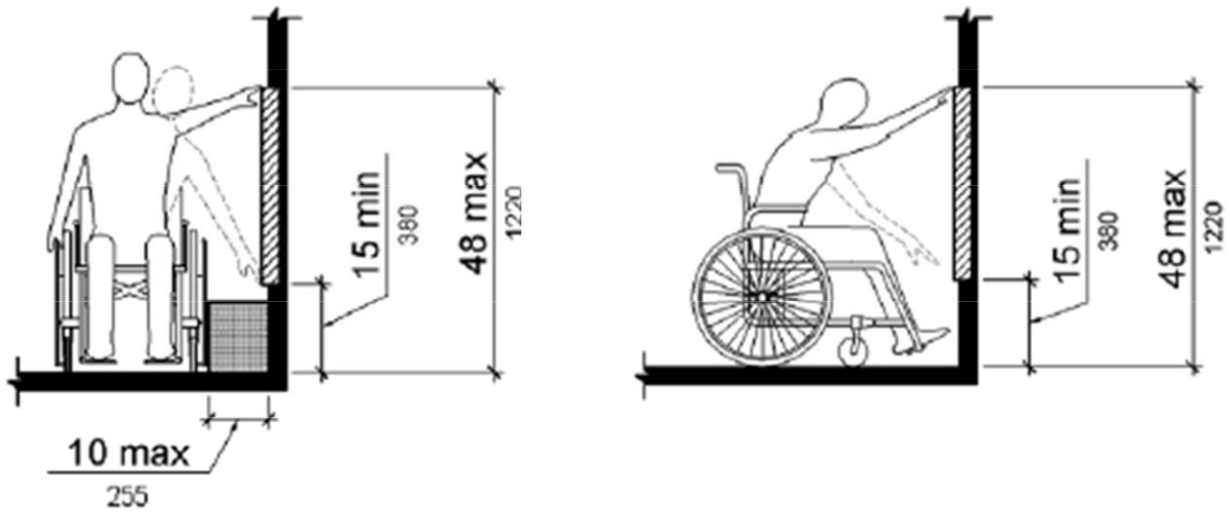
Installation

Wherever possible, it is ideal to stub the conduits up through the concrete where the Pay BOXX will be installed. For retrofit installations, external conduit may be required. Before the machine is installed, appropriate conduits for the environment should be installed and terminated to junction boxes within 2' of the proposed machine location and no more than 4' above the ground. There should be 1 box for power cables, and 1 box for data cables. BOXX recommends using a weatherproof box with ¾" threaded knockout furnished with armored liquid-tite conduit whip for termination to Pay BOXX. All conduit terminations to Pay BOXXs must be on the back or sides of the unit within 8" of the base.

ADA Compliance

For parking system components that are not in the vehicle laneway, parking payment stations:

a. Should be ground level to ensure that all station components are within the acceptable reach ranges.



b. Should be positioned to allow for either foreward or parallel approach to the machine.