METROLINX

Payments (PRESTO) Station Fare Transaction Processor (SFTP) Standard

MX-PYM-STD-002

Revision 00
November 2024

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Metrolinx,

an Agency of the Government of Ontario

Preface

This is the first edition of the *Payments (PRESTO) Station Fare Transaction Processor (SFTP) Standard*. This standard replaces the previous document titled *PRESTO PDS-SFTP Specifications Summary*.

This document is for use by designers, consultants and contractors involved with the planning, design and construction of projects that include these devices. It is intended for suitably qualified professionals that are familiar with the subject matter. This document is not a substitute for all applicable local codes, standards and manuals.

The *Payments (PRESTO) Station Fare Transaction Processor (SFTP) Standard* was developed by the Operational Readiness Payments Office, Payments (PRESTO) Division, Metrolinx.

Suggestions for revision or improvements, including a description of the proposed change along with information on the background of the application and any other useful rationale or justification, can be sent to the Metrolinx Payments (PRESTO) Office, Attention: Director Operational Readiness Payments. The Director of Operational Readiness Payments ultimately authorizes the changes. Proposals for revisions or improvements to include your name, company affiliation (if applicable), email address, and phone number.

November 2024

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1. Scope

1.1 Overview

1.1.1 This standard sets out the requirements during planning, design, construction, and maintenance.

1.1.2 This PRESTO device is for riders (customers) to pay for the fare on GO Transit Train services. Customers either pay for their fares using a PRESTO card or a Credit Card. Cards may be physical cards or virtual cards in mobile wallets.

1.2 Purpose

1.2.1 The key objective of this standard is to provide accurate details and specifications to plan the design and execution of SFTP PRESTO device infrastructure by providing installation details, civil works requirements, and power and data specifications.

1.2.2 Compliance with this standard during planning, design, construction, and maintenance will ensure that Work performed aligns with the holistic approach for Payments (PRESTO) elsewhere in the network.

1.2.3 The Contracted Party shall perform all Work in accordance with the requirements of this standard and shall support the Metrolinx commitment to always take safety seriously.

2. Definitions, Abbreviations, Interpretation, Codes, and Standards

2.1 Definitions

2.1.1 Capitalized terms used in this standard shall have the meanings prescribed in Table 1.

Table 1: Definitions

Term	Definition
Contracted Party	Means the party responsible for the performance of the Work of the project assignment and under contract or agreement with Metrolinx (e.g. Consultant, Contractor, Designer, Design-Builder, Project Co, Technical Advisor, or Developer).

Term	Definition
	Within this standard, wherever the term Contracted Party is used, but there is no Contracted Party, the same item shall apply directly to Metrolinx.
Customer Service	Means station attendants that assist GO Transit customers.
GO Station	Means any GO Transit station.
Metrolinx	Means Metrolinx, a non-share capital corporation continued under the *Metrolinx Act,* S.O. 2006, c.16 and a Crown Agency in accordance with the *Crown Agency Act,* R.S.O. 1990, c.48 and includes all operating divisions.
Metrolinx Standards	Means standards developed by Metrolinx as defined in Section 2.4.1.
PRESTO	Means Metrolinx's Regional Fare Card System
Transit Safety	Means the division within Metrolinx that is accountable for the enforcement of the Trespass to Property Act.
Work	Means the design, construction, maintenance, installation, testing, commissioning, and completion of the scope of the project assignment.

2.2 Abbreviations

2.2.1 The abbreviations used in this standard shall have the meaning prescribed in Table 2.

Table 2: Abbreviations

Abbreviation	Definition
ANSI	American National Standards Institute
AWG	American Wire Gauge
CMR	Communications Multipurpose Cable, Riser
ITFS	Information Technology Field Services
I&IT	Innovation & Information Technology
LAN	Local Area Network

Abbreviation	Definition
N/A	Not Applicable
NEMA Box	National Electrical Manufacturer Association Box
PDS	PRESTO Developed Software
SFTP	Station Fare Transaction Processor
U/UTP	Unshielded Twisted Pair
UPS	Uninterruptible Power Supply
USB	Universal Serial Bus

2.3 Interpretation

2.3.1 This standard shall be interpreted according to the following provisions, unless the context requires a different meaning:

a) Unless the context specifically states otherwise, all obligations included herein are the responsibility of the Contracted Party to undertake.

2.4 Codes and Standards

2.4.1 All systems, equipment and materials required for the Work relating to this standard shall be provided in accordance with the most current edition of applicable federal, provincial, municipal, and industry codes, standards, and guidelines, including:

a) Metrolinx/GO Transit standards and guidelines (the "Metrolinx Standards"), including all latest version documents on the GO site, including amendments and bulletins (http://www.gosite.ca/engineering_public/);

b) National Building Code of Canada (NRCC 51690), latest version;

c) Ontario Provincial Standard Specifications (OPSS), latest version;

d) Ontario Provincial Standard Drawings (OPSD), latest version;

e) Canadian General Standards Board (CGSB), latest version;

f) Canadian Standards Association (CSA), latest version;

g) American National Standards Institute (ANSI), latest version; and

h) Telecommunications Industry Association (TIA), latest version.

3. Installation Parameters

3.1 Power Specifications

3.1.1 The SFTP requires the following power specifications:

a) 110V AC / 15 A breaker min. (recommended 20 A breaker); and

b) 12 AWG maximum wire gauge.

3.1.2 Dedicated breakers are highly recommended for each SFTP. However, in circumstances where this is not possible, there cannot be more than 3 SFTPs shared on the same breaker*.

***Note:** SFTPs sharing the same breaker shall not be within the same proximity of one another. For example, 2 SFTPs on either side of a walkway to the train platform, shall be on separate breakers. Or 2 SFTPs in the waiting area of the station building shall be on separate breakers. This approach is critical for redundancy and customer availability in the case of a device outage.*

3.2 Data Specifications

3.2.1 The SFTP requires two CAT 6 cables with the following specifications:

a) CAT 6 cables running between demarcation and device/equipment shall not exceed 90 m (300 ft) (within conduit run, not including service coil);

b) Cable shall be dedicated and not shared;

c) RJ45 connector type shall be provided, per Metrolinx I&IT standards; and

d) CAT 6 data cable type shall be provided, per Metrolinx I&IT standards.

***Note:** Current Metrolinx I&IT standards supersede all wiring requirements stated within this document. Refer to the latest Metrolinx I&IT standards.*

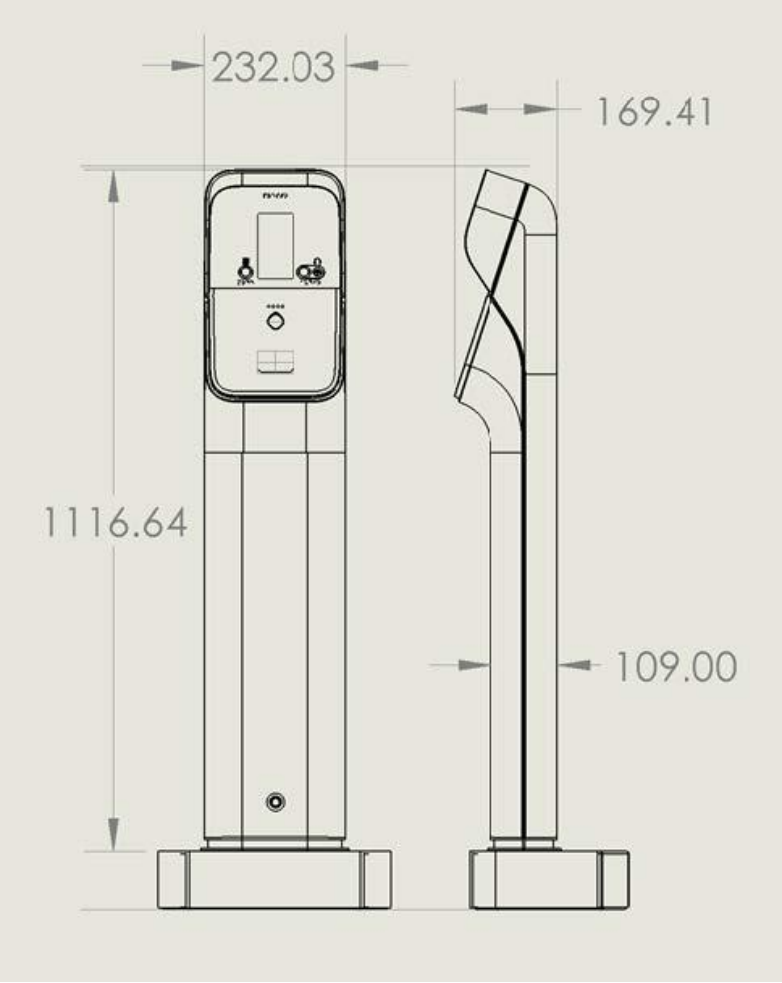
3.3 Dimensions and Weight

3.3.1 Table 3 shows the SFTP dimensional and weight of parameters.

Table 3: Dimension and Weight Parameters

	Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
SFTP/BRT-FTP Housing	1116	232	169	27-45

Figure 1: SFTP Dimensions



3.4 SFTP Base Mounting

3.4.1 For GO Transit and UP Express sites, SFTP devices are mounted on the metal base solution.

3.4.2 SFTP metal base details

3.4.2.1 Part of the SFTP civil works activities is the installation of the SFTP metal base. To successfully prepare the metal base for the SFTP installation, the following shall be ensured:

a) Metal Base Components

1) The metal base comes in two parts. A bottom portion is secured to the prepared surface (typically a concrete surface), and a top portion (lid) is secured to the bottom portion. It is important to identify the front of the base, as the SFTP direction is directly determined by the positioning of the metal base; and

2) In Figure 1: SFTP Dimensions (in the section above), the SFTP side view shows the SFTP device front close to the edge of the metal base.

b) Power and Data Conduits

1) The metal base is designed to accept power and data conduits entering from the bottom of the base. It is important to note that there is a divider built into the bottom part of the base that is meant to separate the power and data conduits. Power conduits shall enter the bottom of the base from the right side. Data conduits shall enter the bottom of the base from the left side;

2) Conduit size to be determined by Civil Works Contractor. See Figure 2 below.

c) Grounding

1) The metal base lid and bottom shall be grounded. Grounding wire that is run from the power demarcation to the device location shall be used to ground both the lid and bottom of the base, as well as provide grounding cable slack for the device. See Figure 2 below.

d) Securing Metal Base Lid and Bottom

1) The metal base lid and bottom shall be secured properly:

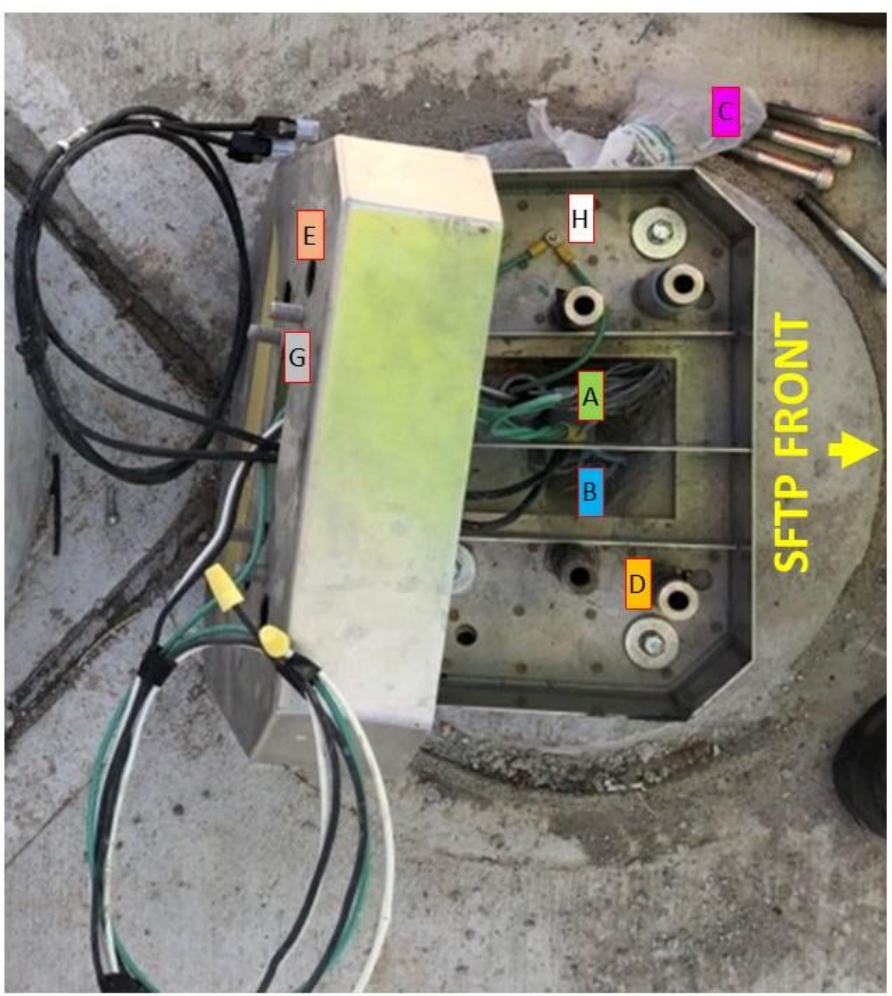
i. Metal Base bottom portion shall be secured to the prepared ground surface (typically a concrete surface);

ii. Metal Base lid portion is secured using four bolts that are tightened through the bolt holes of the lid to the bolt holes found in the metal base bottom portion. The bolts shall pass through stainless-steel spacers in order to support the lid while tightening down. Otherwise, without the spacers, the lid will cave and bend; and

iii. Power and data cables shall be pulled through the lid openings, with power cables coming out of the right side and the data cables coming out of the left side.

See Figure 2 below.

Figure 2: Base Components



A Power Cables

B Data Cables

C Bolts

D Spacers

E Bolt Holes (Lid)

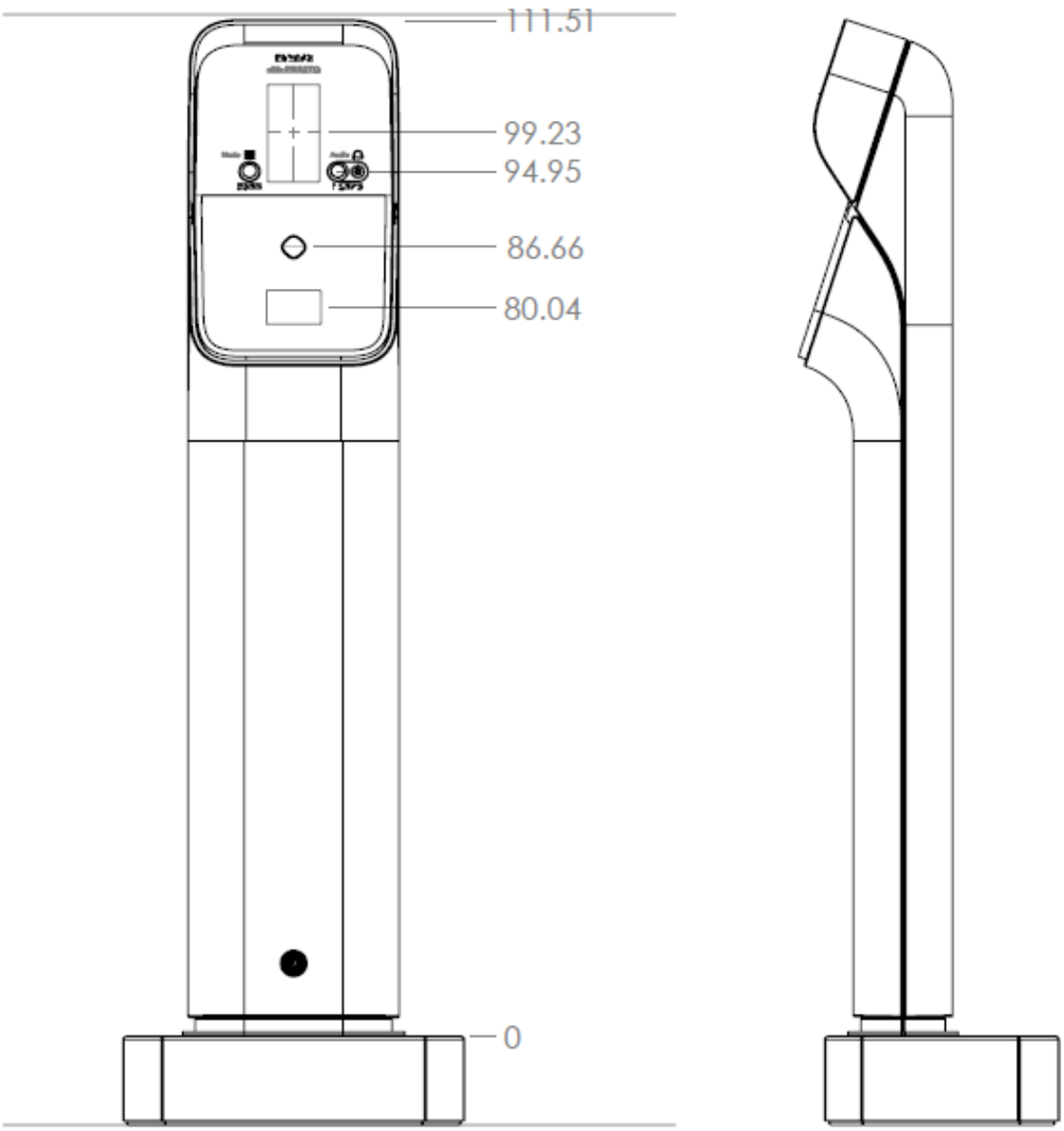
G Device Mounting Posts (Lid)

H Grounding (Bottom & Lid)

3.5 Interaction Point Height Requirements

3.5.1 The interaction point height requirements for the SFTP are shown in Figure 3.

Figure 3: SFTP Interaction Points (mm)



3.6 Fully Installed SFTP

3.6.1 The fully installed SFTP is shown in Figure 4.

Figure 4: Fully Installed SFTP

3.7 GO SFTP Requirements

Table 4: GO SFTP Requirements

Demarcation to Device	Requirements
Description	SFTP supports fare payment. Power and data connections shall meet or exceed Metrolinx I&IT / ITFS Standards. Consult the following documents: 1. The latest version of *Innovation & Information Technology (I&IT) Telecommunication and Systems Standard* for details; and 2. *Electrical Identification and Nomenclature Specification.*
Wire Run for Power	Pull power wires through completed power conduits from the power panel to the SFTP installation location. The wires shall be pulled in power conduits from UPS backed-up power panels in the communications rooms or mini-hub rooms.
Power Wires Requirement (rating)	250 watts max.; dedicated 15A breaker/circuit; Device cannot support a larger gauge than 12 AWG; Wire gauge transitions shall not occur within the device. Transition of wire gauge shall occur at the closest junction box to the device, not in the at the device; Provide dedicated neutral per device/circuit, not shared; and Provide dedicated ground per device/circuit, not shared.
Termination of Power Wires	Marretted ends; Protect all terminations from exposure, protected with an enclosure if necessary. For safety and security: 1. Label Power Distribution Panels ~6 inches from both wire ends; Labeling (Denote "FPT 1" for Fare Payment Terminal 1) 2. Wires shall be protected with an enclosure if necessary.
Cables Run for Comms	Pull comms cables (two cables per device) through conduit, from demarcation to device/equipment end. CAT 6 between demarcation and device/equipment shall not exceed 90 m (300 ft) (within conduit run); cabling shall be dedicated and not shared. Two CAT 6 cable runs per device (One for the main PRESTO connection / One for the payment terminal connection)

	Note: Current Metrolinx I&IT standards supersede all wiring requirements stated within this document. Refer to the latest Metrolinx I&IT standards.
Cables Run for Comms Temporary Installation	For short periods of time (max 30 days), aerial data cable runs are acceptable. However, cables shall be contained in conduits or cable protector ramps. For longer than 30 days, all data cables shall be buried or trenched, with no exceptions. Temporary or permanent runs of data cable shall be terminated using recommended connectors.
UPS	SFTP devices are not equipped with an internal UPS. The internal backup battery shall only allow devices to close the current transaction and perform a scheduled shutdown. All SFTP shall be connected to UPS backed-up power panels in communication rooms. Consult the latest version of the *Innovation & Information Technology (I&IT) Telecommunication and Systems Standard* for details.
Comms Cable (CAT 6)	CMR Category 6 U/UTP, four twisted pair 22-24 AWG. All communication cables shall comply with ANSI/TIA-568-B.2 comms connectivity with ends terminated. Protect all terminations from exposure, covered with an enclosure if necessary. Mini-hub rooms shall be used to span beyond the 90 m limitations of the CAT 6. Power and data connections shall meet or exceed Metrolinx I&IT / ITFS Standards. Consult the latest version of the *Innovation & Information Technology (I&IT) Telecommunication and Systems Standard* for details. Refer to Section 7.4.3, Metrolinx Innovation & Information (I&IT) Telecommunication and Systems Standards.
Termination of Comms Cables	CAT 6 termination type at device end: Male RJ45 Rev-connects or equivalent. CAT 6 termination type at patch panel: Female RJ45 Keystone punched down.
Wireless Solution	If a LAN connection is unavailable, SFTP can be equipped with wireless cellular (LTE) functionality.

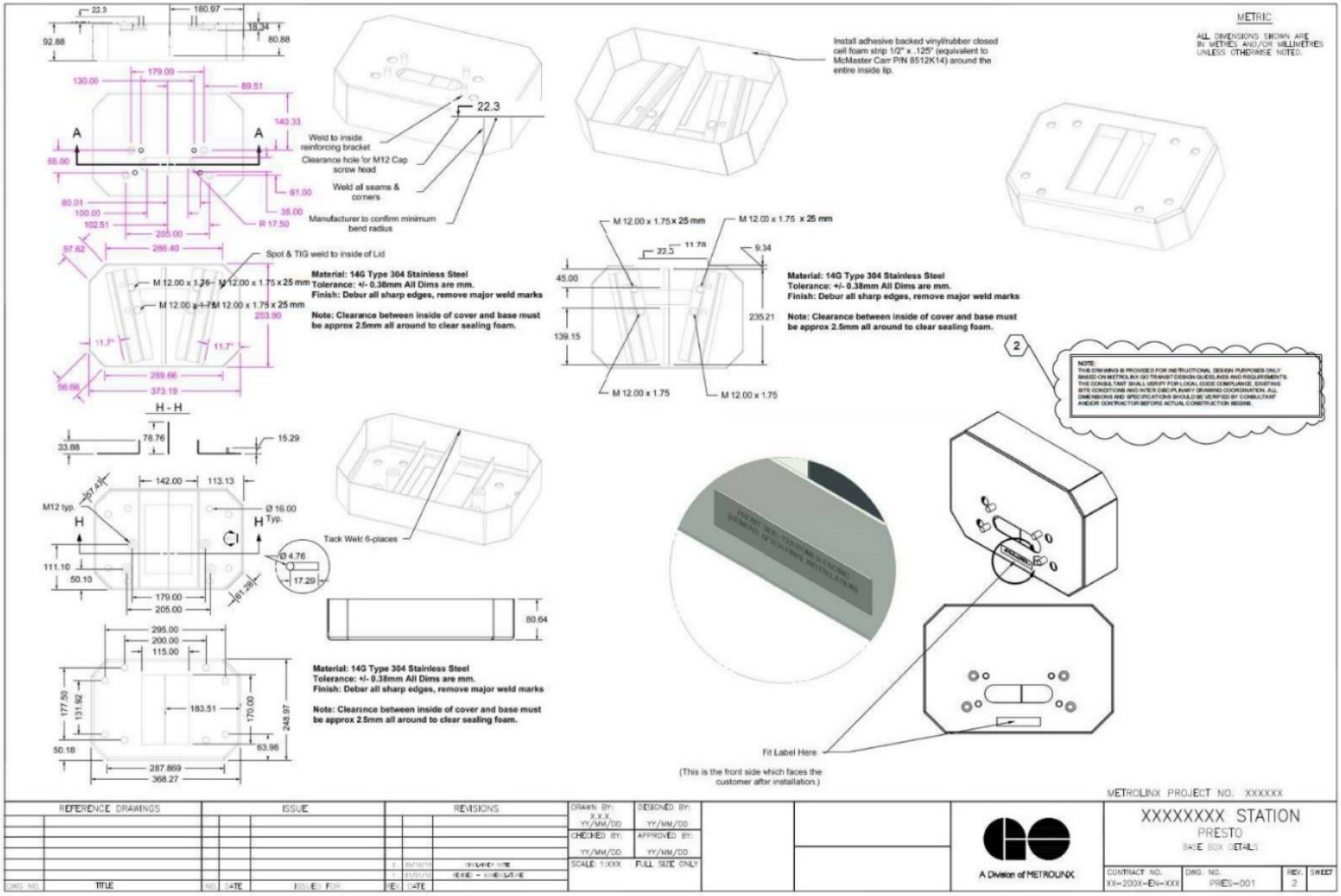
	Consult with ITFS and the PRESTO team when planning for installation at such locations.
Service Coil	Power: 1 m (3 ft) Comms: 1 m (3 ft)
Portable SFTP Wall Plug Lockable Power Recommendation	The power plug for portable SFTP shall be safely secured to the wall outlet using any market lockable solution. The use of cable ties or similar is not acceptable.
Readiness: Comms Cable (Cable Integrity/Continuity)	Fluke metre report, or equivalent, to validate comms continuity. Test results shall be provided to Metrolinx I&IT for review.
Data Cable Labeling	For safety and security: 1. Label Network Patch Panels ~6 inches from both cable ends; Labeling (Denote "SFTP1" for PRESTO SFTP 1 and "SFTP1-SPARE" for secondary data cable). 2. Cables shall be protected with an enclosure if necessary. Post-installation data cables shall be updated with device identification (ID) at the device level and in the patch panel.

4. Handover and Commissioning

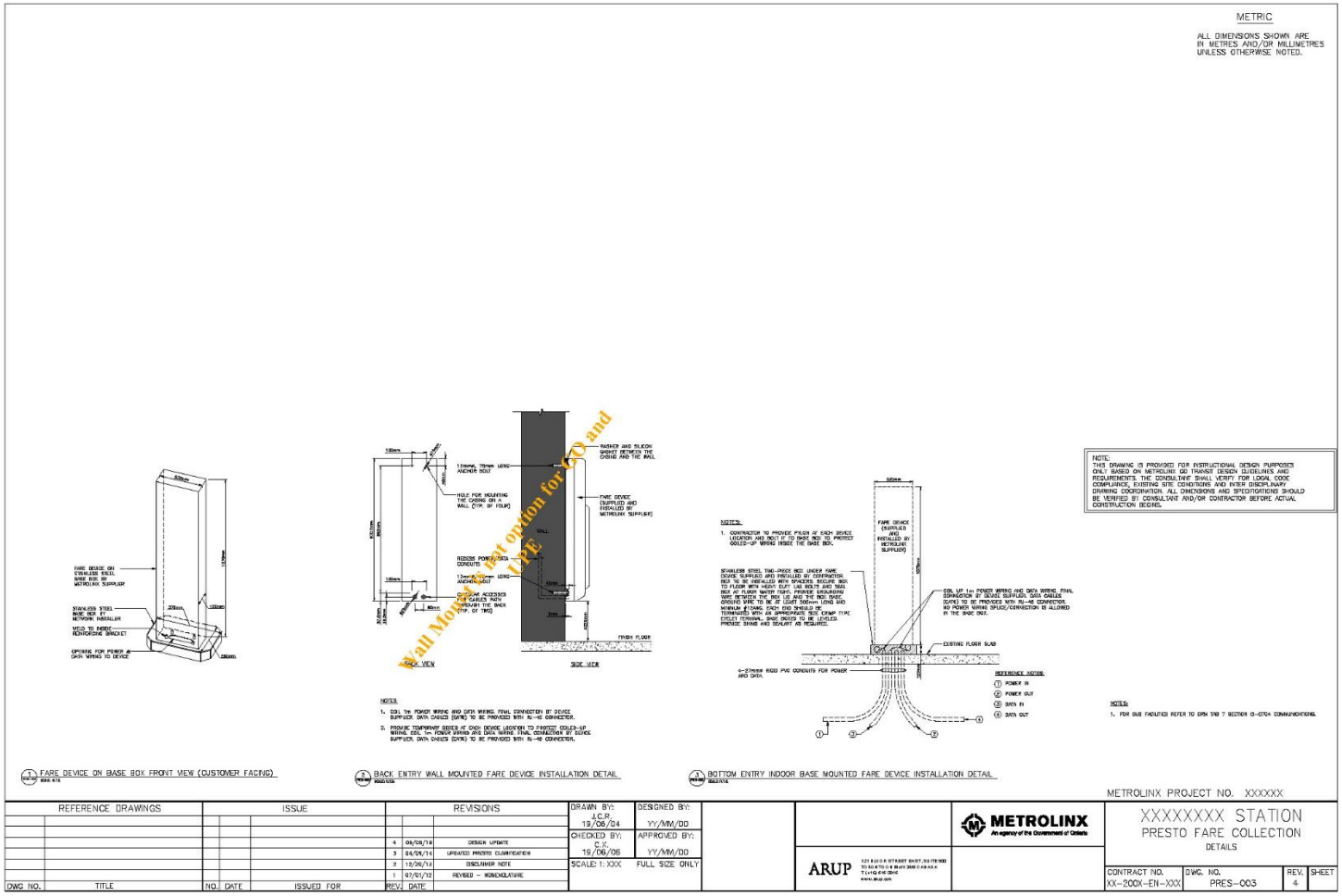
4.1 Handover and Commissioning

4.1.1 The final handover of all new assets to Metrolinx shall follow the Rail Corridor Asset Handover Protocol.

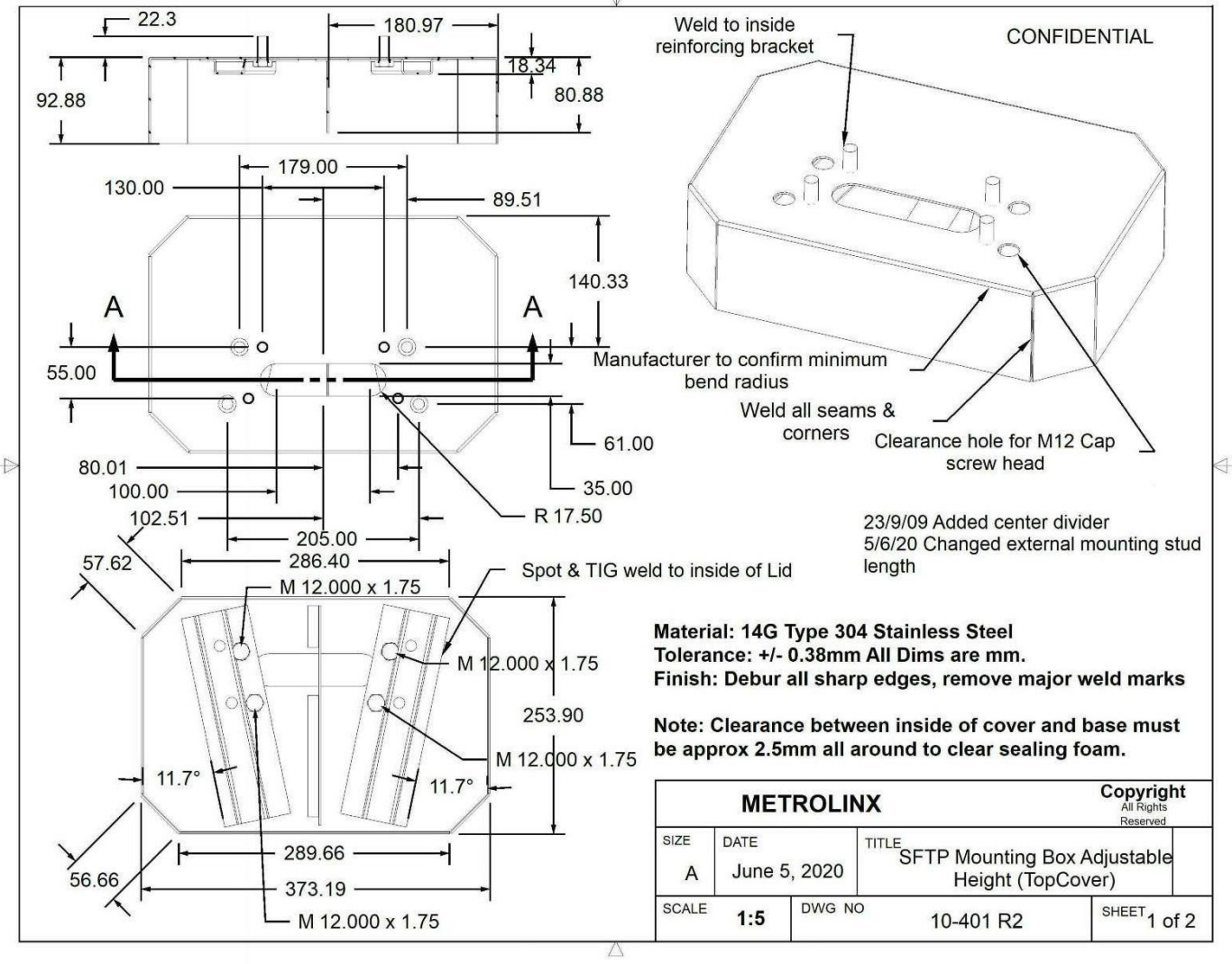
Appendix A. Metal Base Specifications



Appendix B. Metal Base Installation Details



Appendix C. Metal Base Lid Specifications - Part 1



Appendix D. Metal Base Lid Specifications - Part 2

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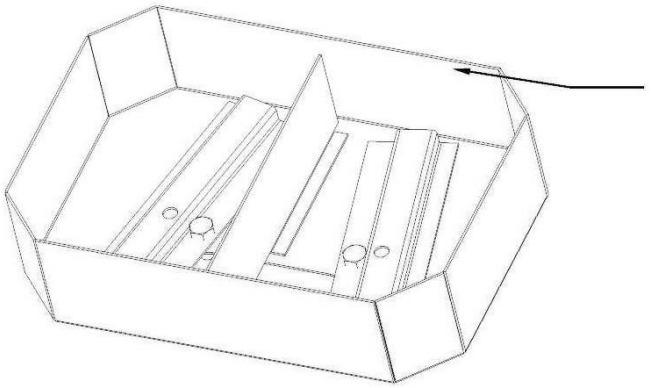
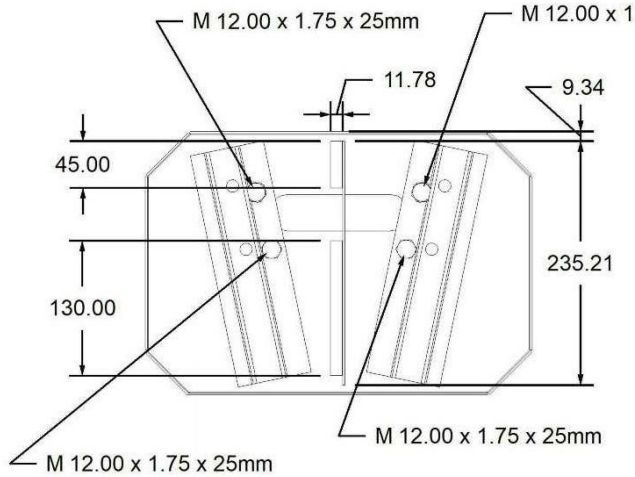


Install adhesive backed vinyl/rubber closed cell foam strip 1/2" x .125" (equivalent to McMaster Carr P/N 8512K14) around the entire inside lip.



Material: 14G Type 304 Stainless Steel
Tolerance: +/- 0.38mm All Dims are mm.
Finish: Deur all sharp edges, remove major weld marks

Note: Clearance between inside of cover and base must be approx 2.5mm all around to clear sealing foam.

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SIZE A	DATE June 5, 2020	TITLE SFTP Mounting Box Adjustable Height (TopCover)	REV
SCALE 1:5	DWG NO 10-401-R2	SHEET 2 of 2	