Innovative Control Systems®

Auto Passport®

with the All-In-One RFID Reader/ Antenna for the Auto Sentry® *flex*

Installation Guide - Version 3.0

November 8, 2019

Defining the World of Car Wash Technology

Installation Overview

Thank you for purchasing your Auto Passport, the ICS® radio frequency identification system. This document was written for technicians and electricans installing the Auto Passport. A thorough understanding of electrical wiring, installation, codes, and safety protocols is required. No prior experience with the Auto Passport is necessary. By reading the information and performing the procedures in this installation guide, you should be able to install the Auto Passport system-level and communications wiring.

NOTE: The Auto Passport is not a stand-alone system. WashConnect and a connection to an Auto Sentry is required.

System Components

- The protective enclosure houses the RFID reader and antenna.
- One All-In-One RFID Reader / Antenna Enclosure per lane is to be installed on an overhead truss or canopy above the lane near the Auto Sentry flex so vehicles can drive underneath it.
- The RFID All-In-One Reader/Antenna power and data cable terminates at the terminal blocks located in the base of Auto Sentry flex.
- The RFID All-in-One Cable is 35' in length.

Figure 1. All-In-One RFID Reader / Antenna Enclosure

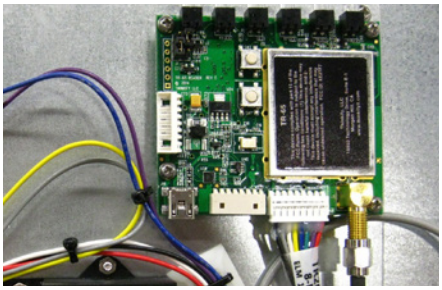


Figure 2. Internal view of Enclosure displaying the RFID Reader Card

Truss Size Information

Trusses are available in two sizes:

- A 95-inch truss to be installed on curbs or raised islands.
- A 100-inch truss to be installed on ground-level surfaces.

This guide should be supplied to the electrician prior to the installation of conduits and wiring to ensure the Auto Passport is installed properly. Faulty installations are the major cause of system malfunctions. The Auto Passport must be installed exactly as described in this installation guide to ensure its reliability and safe operation.

WARNING: Failure to properly install the Auto Passport could result in serious injury or death and will void the warranty.

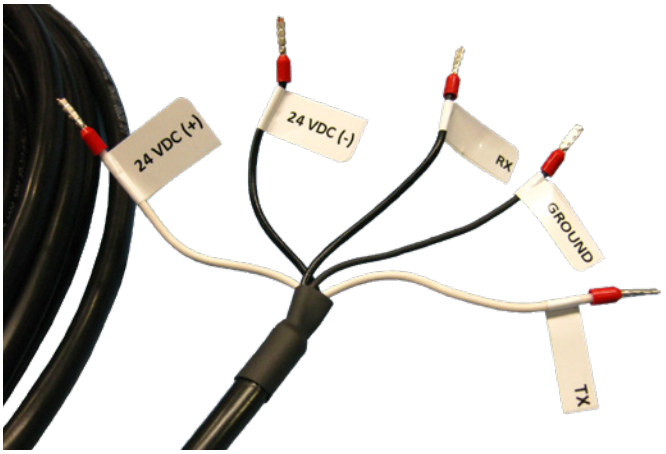


Figure 3. RFID All-In-One Cable

Version Considerations

This version 3.0 of the installation guide, released on November 5, 2019. WashConnect Software version of 1.6.7 or higher.

Site Planning

Careful planning for the layout of the site will help eliminate possible problems with the start-up of your system and will ensure continued, reliable system operation. In determining the location stage, keep the following objectives in mind:

- The Auto Passport has been designed to operate in an outdoor environment.

Hardware Specs

- The Auto Passport is designed to be located in all types of conditions, cold, wet, or hot.
- The unit has been designed to operate in the temperature range of -20° F to120° F (-28 °C to 48 °C).
- The RFID Antenna enclosure is mounted on a truss that is bolted to the concrete floor.
- Dedicated universal power supply (UPS): 1500VA/865 Watts output capacity.
- RFID All-In-One Reader / Antenna Enclosure Equipment Measurements, and Ratings:

Planning for Installation

- Prepare to have all the necessary tools and parts.
- Ensure Auto Sentry island specifications are met.
- Ensure permanent connections are performed by a licensed electrician who must comply with the National and Local recommended standards.
- Wiring can be contained in rigid PVC conduit or metal conduit.

Dimension	Amount
Width	10 - 1/2 in / 26.7 cm
Length	30 in / 76.2 cm
Depth	5- 1/2 in / 13.9 cm
Weight	30.0 lbs / 13.6 kg
Operating Temp. Range	-20° F to 120° F -28° C to 48° C
Frequency	902.75 – 927.25 MHz
Supply Voltage	24V DC
Max. Current	10 Amps @ 120 V AC
RF Power	Max 4 watts EIRP with antenna

Table 1: RFID All-In-One Reader/Antenna Enclosure Measurements, and Ratings

- High-voltage (AC) and low-voltage (DC) must not be combined in a common conduit, junction box, or wire trough.
- Power for the Auto Passport and any peripherals must come from the dedicated UPS, as supplied by ICS, and must be properly grounded.
- Check through all shipping containers before disposing of them looking for possible manuals, cables, connectors, etc.

Warning Markings

The symbol on the left is labeled on equipment and hardware to indicate one should consult accompanying documentation before proceeding.

Technical Support

Innovative Control Systems® provides a toll-free number for customers and installers for installation questions: **800-246-3469.**

Auto Sentry *flex* Island Specifications

- **NOTE 1:** The length of the island should be determined by the car wash owner, but ICS recommends that the island be a minimum of 18' - 0" in length. This will provide for adequate space for the proper placement of the Auto Sentry and its gate. If menu signs and other items are to be installed on the island, then it is the car wash owner's responsibility to increase the length of the island to accommodate these additional items. See Figure 4.
- **NOTE #2:** ICS highly recommends that the width of the islands be a minimum of 4' - 6" for the safety of the attendants when servicing. This measurement, along with the proper placement of the Auto Sentry, will prevent the rear of the Auto Sentry from hanging over into another drive-thru lane and provides ample room for vehicles to pass through the lanes without striking the rear of an Auto Sentry.
- **NOTE #3:** The height of the island, above the final finished grade upon which a vehicle will rest, must be 6". This will ensure that the Auto Sentry is at the optimum height for customers using the Auto Sentry while seated in their vehicles.
- **NOTE #4:** At the car wash owner's discretion, the installation of bollards at the entrance end of the island is highly recommended and will minimize the chances of vehicles striking and damaging an Auto Sentry or Traffic gate. Bollards should be located so that they provide protection to ICS equipment but also offer ample clearance so that the equipment can be easily installed and maintained.
- **NOTE #5:** Any canopy that is above both the Auto Sentry and the optional Traffic Gate must be a minimum of 12' - 6" from the base of the gate to the bottom of the canopy to allow the gate to open fully without striking the canopy.
- **NOTE #6:** The bill dispenser is in the base of the payment terminal and swings open 2' – ½ " towards the exit end of the island. This must be taken into consideration when setting canopy posts and RFID trusses. When dual post canopies are used, there must be a 2' - 6" clearance on the right side of the payment terminal. If the inside width is not at least 60" then the post must be mounted to the rear of the payment terminal which will require a minimum of 1' - 6" from the Auto Sentry. Contact an ICS Representative if there is any concern regarding canopy placement.

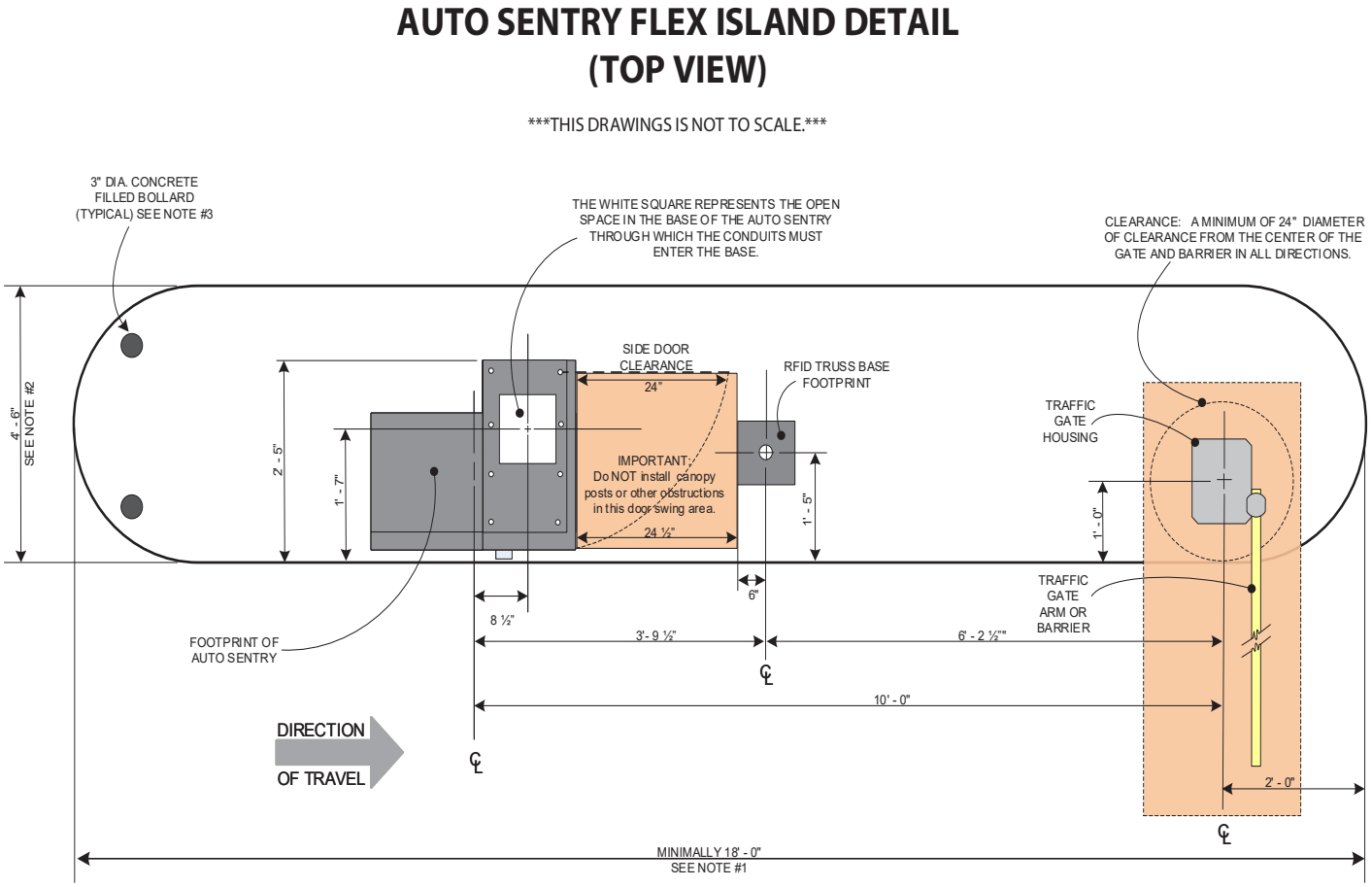


Figure 4. Auto Sentry Flex Island Specifications

System Wiring

Auto Passport® All-In-One Reader/Antenna Power Requirements

- Power for the Auto Passport reader/antenna is supplied by the Auto Sentry flex.
- The Auto Sentry *flex* has terminal blocks located inside the base for power termination.

Recommended and Accepted Grounding Methods

The Auto Passport equipment must be properly grounded. Proper system grounding is an extremely important part of the system installation. Grounds for all devices should be wired to the main service electrical panel ground bus bar which, in turn, should be grounded to a ground rod. A conduit ground does not provide a sufficient ground. It is recommended that the neutral and ground bus bars be bonded together when it is not prohibited by local codes.

The universal ground symbol identifies the grounding terminal located in the Auto Sentry unit near the terminal blocks.

WARNING: Failure to properly ground the unit could result in unit failure and/or bodily injury. Ground wire must be connected to the ground terminals.

NOTE: Improper grounding will void equipment warranty.

Wire Gauge and Conduit Size

When planning the orientation of the wiring runs, follow the applicable ICS wiring diagrams and consider the layout of the components at the site. To determine conduit size needed, see the table below for more information.

	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
AWG 14	13	24	39	69	94	154	—	—
AWG 12	10	18	29	51	70	114	164	—
AWG 10	6	11	18	32	44	73	104	160
AWG 8	3	5	9	16	22	36	51	79
AWG 6	1	2	6	11	15	26	37	57
AWG 4	1	1	4	7	9	16	22	35
AWG 3	1	1	3	6	8	13	19	29
AWG 2	1	1	3	5	7	11	16	25
AWG 1	1	1	1	3	5	8	12	18

Table 2: Number of Wires (THHN) in a Given Conduit Size

Conduit Detail (Triple Lane)

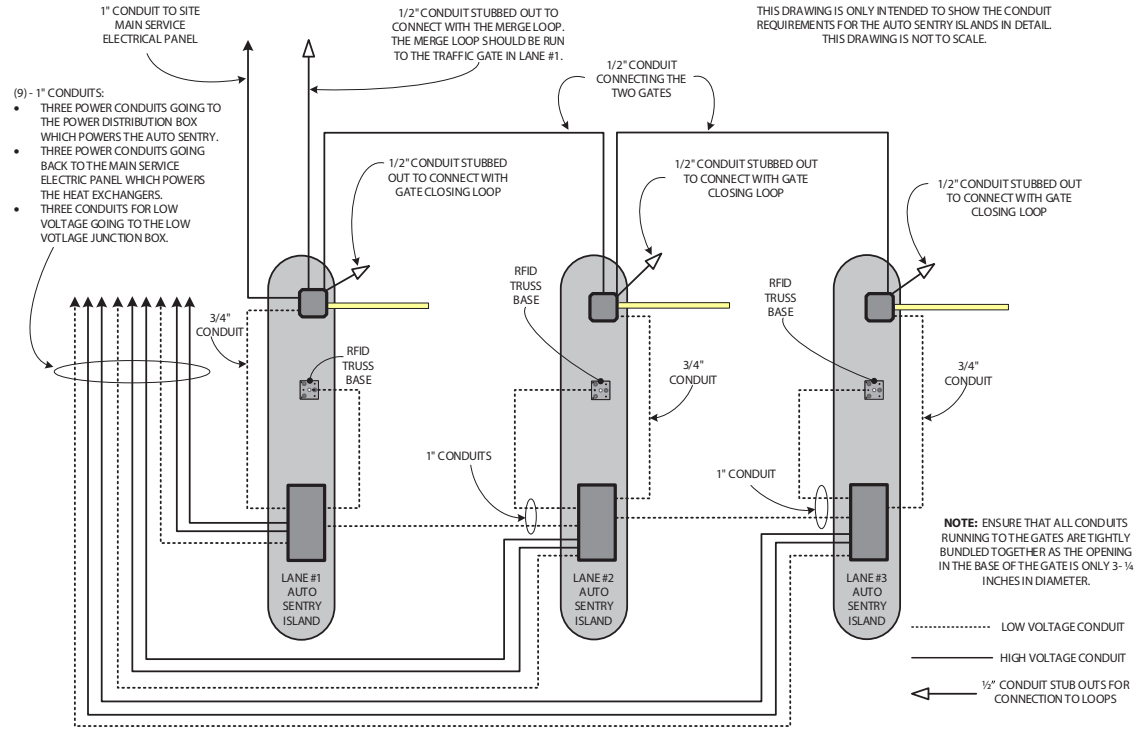


Figure 5. Triple Lane Example Conduit Layout

RFID Wiring Layout

The wiring layout is the same for one, two, three, or four lanes. There is one cable that houses five wires and they connect from the RFID All-in-One Reader / Antenna back to its corresponding Auto Sentry *flex*. See Figure 6.

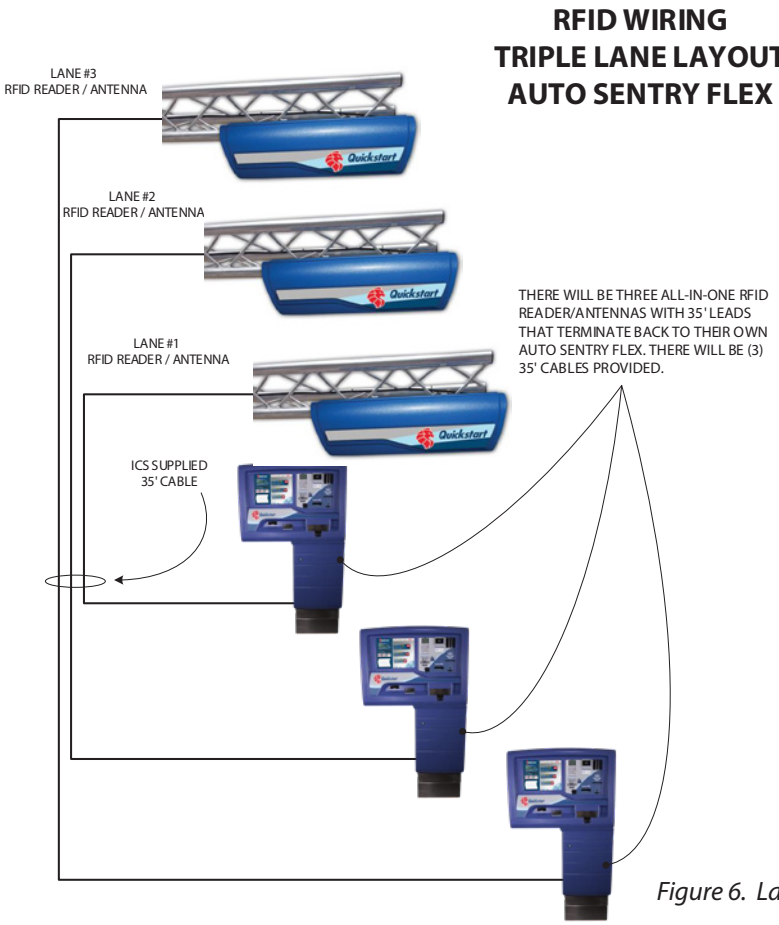


Figure 6. Layout Triple Lane Example RFID Wiring Layout

Truss and RFID System Installation

NOTE: It is recommended to have 2 people perform the installation of the RFID system.

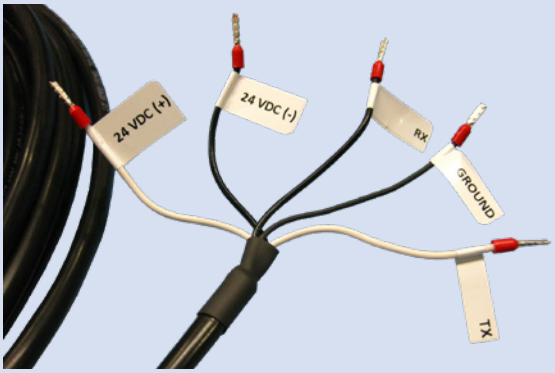
Tools Required (not supplied by ICS)

- 1/8" Allen Wrench
- Small Flat Head Screw Driver
- Hammer Drill
- Diagonal Cutting Pliers
- Fish Tape
- Ladder

Parts Required (not supplied by ICS)

- 8" or greater UV Cable Ties
- 1/2" dia. x 6" L Concrete Anchor Bolts

Parts Required (supplied by ICS)

Part Description	Parts Included
All-In-One RFID Reader / Antenna Enclosure NOTE: Colors may vary.	
Power and Data Wires in the RFID All-In-One Cable	

Estimated Completion Time

We estimate that it will take 2 hours to perform this procedure. Keep all hardware organized as you work.

WARNING: Please have a certified electrician check voltages on the power supply before installing new components. The voltage should be 24 volts.

Instructions to Power Down the Auto Sentry *flex*

WARNING: Failure to turn off the Auto Sentry increases the risk of serious bodily injury or death.

1. On the site server desktop, click on the VNC icon for the Auto Sentry *flex*.
2. On the menu bar, click the Windows flag icon.
3. Click the Shutdown button.
4. Wait until the Auto Sentry *flex* display goes to a white screen.
5. Open the rear doors of the Auto Sentry *flex*.
6. Inside the head of the Auto Sentry *flex*, turn off the power switch.
7. Inside the left side of the head of the Auto Sentry *flex*, turn off both Circuit Breakers by pressing the blue buttons on the breakers until they click out. See Figure 7.
8. Inside the base of the Auto Sentry *flex*, turn off the breaker by pressing the blue button on the breaker until it clicks out.

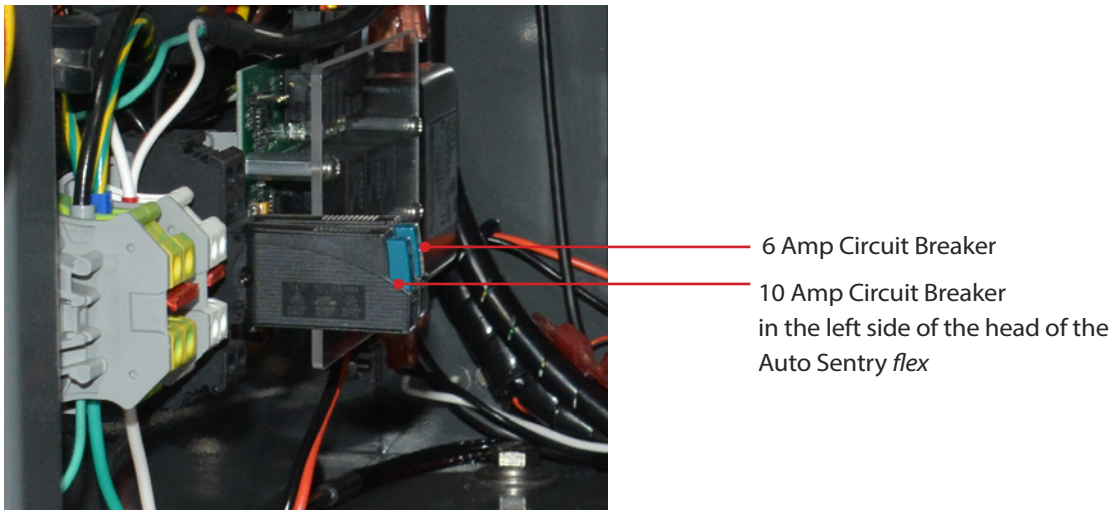


Figure 7. Circuit Breaker Location

9. Shut off the electricity by turning off the Auto Sentry *flex* breaker inside the ICS® power distribution box.

Truss Base Mounting Location

- Mount truss base 1’5” from the edge of the curb to the center of the truss base. See Figure 8.
- Mount truss base 30 1/2” from the center of the Auto Sentry flex to the center of the truss. See Figure 9.

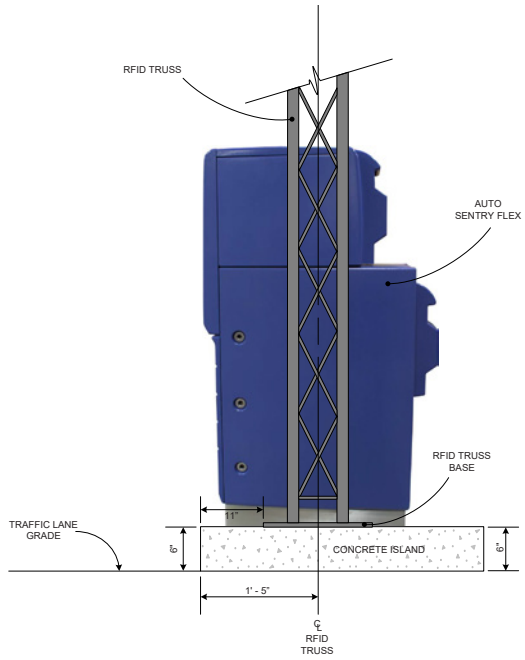


Figure 8. Truss Base Location Rear View

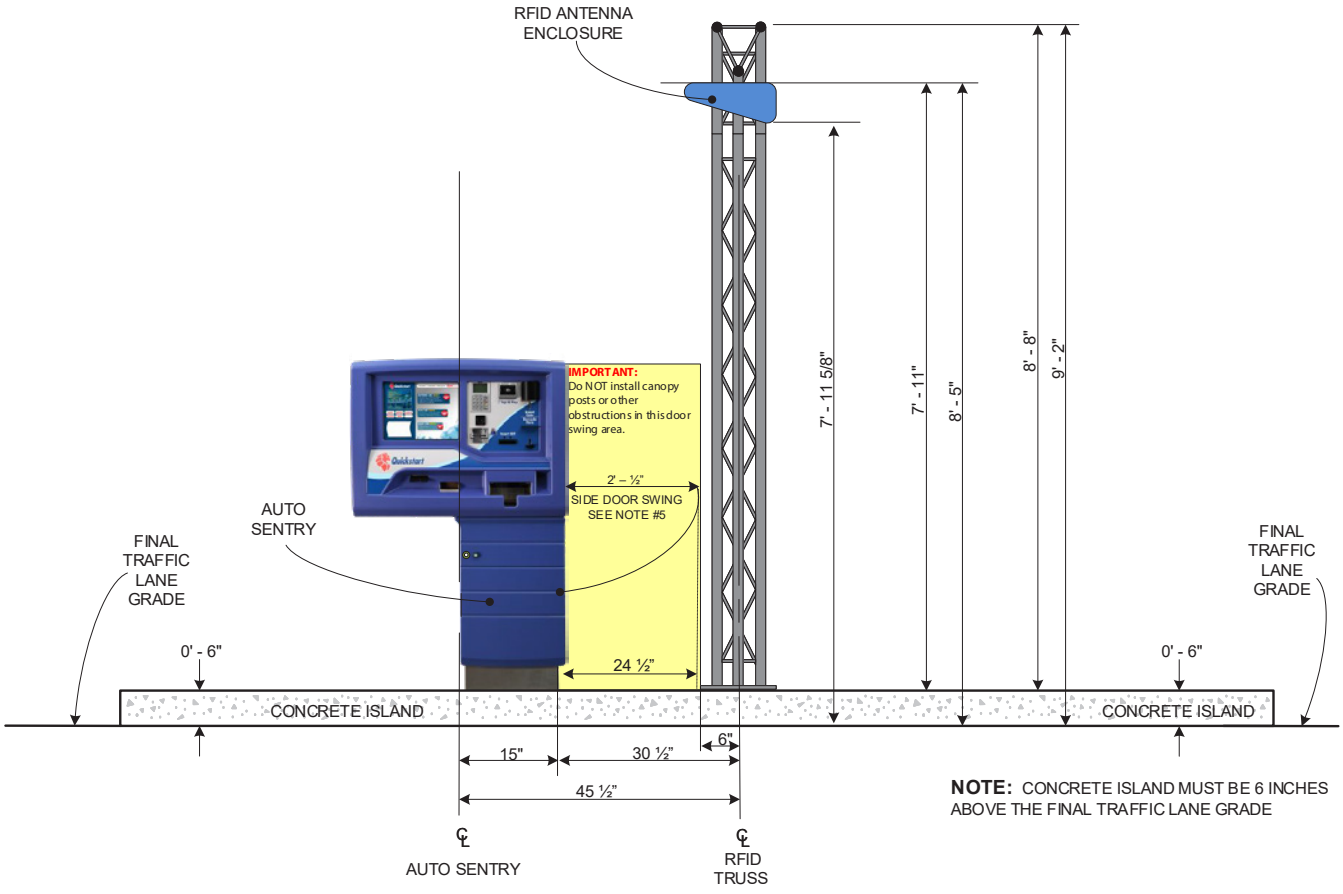


Figure 9. Truss Base Location Side View

Truss Base Mounting Instructions

1. The three mounting holes that are adjacent to the rear edge of the truss base should always be furthermost away from the traffic lane and the vehicle. The two mounting holes adjacent to the front edge of the truss base should always be closest to the traffic lane and the vehicle. See Figure 10.
2. The center hole in the truss-base is used to pass the RFID all-in-one reader/antenna cable to pass from the conduit up through the center of the truss to the RFID enclosure. Minimally, a 1" conduit is recommended for the RFID All-In-One Cable.
3. Using a hammer drill, secure the base of the truss to the concrete island with 1/2" dia. x 6"L concrete anchor bolts through each one of the mounting holes in the base of the truss. There are (5) truss-base mounting holes 9/16" in Diameter.

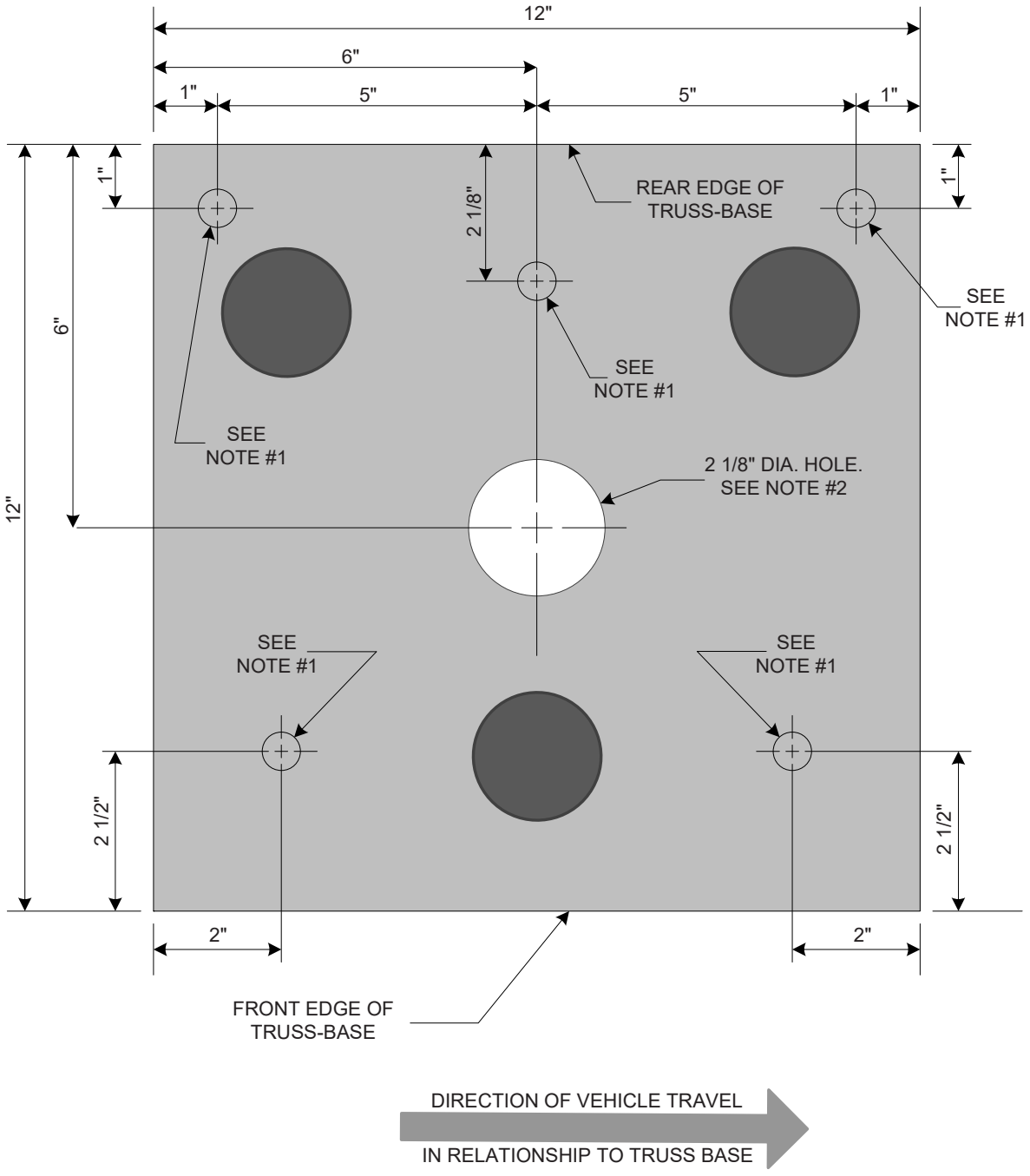


Figure 10. Truss Base Mounting Specifications

RFID All-In-One Reader/Antenna Mounting

1. Attach the RFID All-In-One Reader / Antenna enclosure to the truss that is next the Auto Sentry and extends over the lane.

   - The truss will be shipped with truss brackets and hex screws. (1/8" Allen key is needed to install but not supplied by ICS).

2. Mount the center of the enclosure at 3' 6-1/2" from the edge of the curb. See Figure 12.

   - To ensure the proper angle for the antenna, the enclosure should be mounted so the top of the enclosure is level. The antenna is angled inside of the enclosure. The enclosure will appear to be facing down. See Figure 9, Figure 11, and Figure 12.

3. Route cable down through the center of the truss. ICS recommends securing the cable to the truss every 12 inches with cable ties.

4. Use diagonal cutters to cut excess length off of the cable ties.

IMPORTANT: The enclosure should not be rotated on the truss as that would move the antenna to a position where it is not designed to work properly.

Figure 11. RFID Reader/Antenna Enclosure on Truss

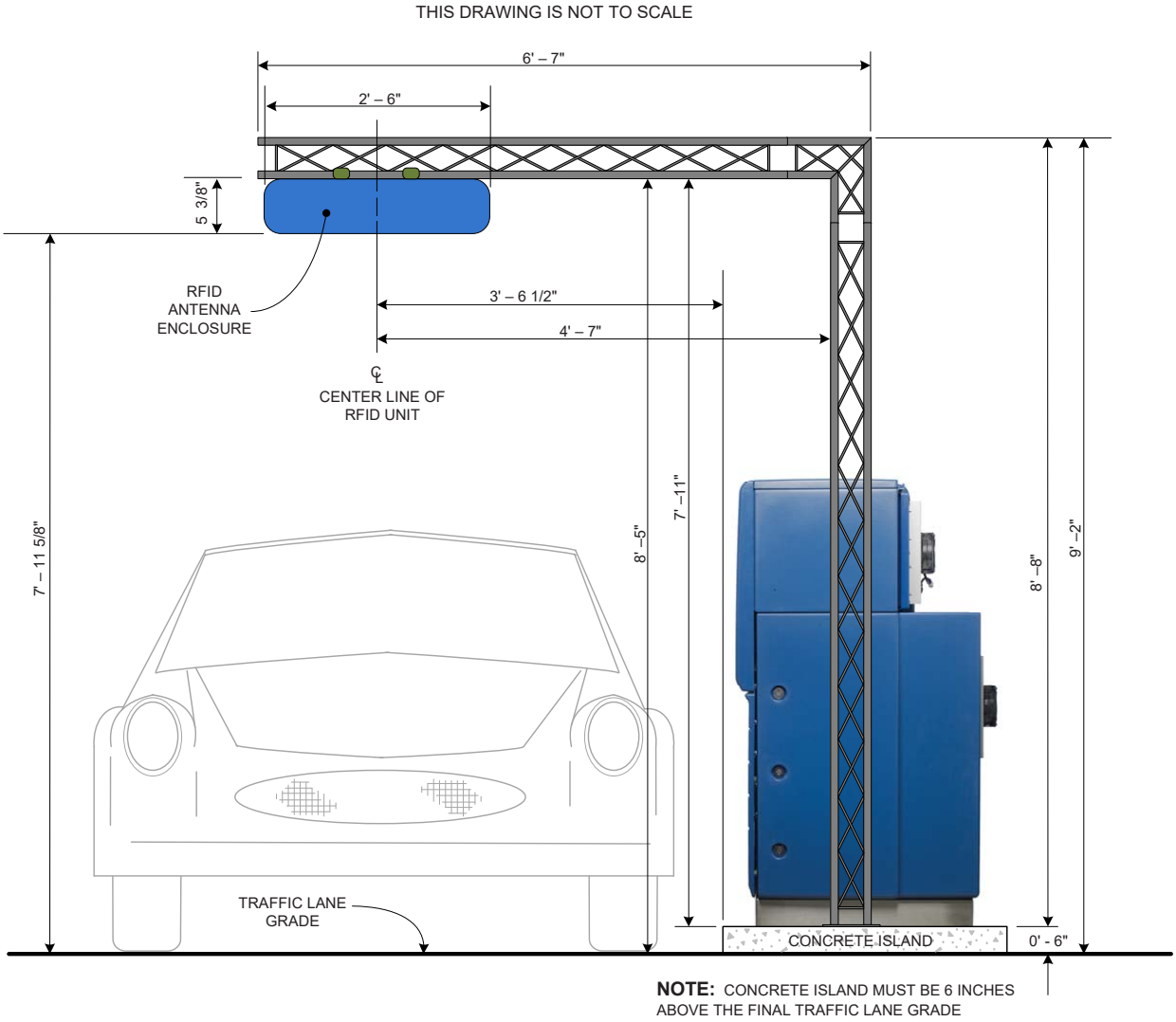


Figure 12. RFID Enclosure Mounting on Truss

RFID All-In-One Reader/Antenna Wiring

1. Unplug the cables from the bill dispenser.
2. Unbolt the bill dispenser from the bill dispenser tray.
3. Remove the bill dispenser.
4. Unscrew any cable clamps holding the bill dispenser cables to the drawer and remove the cables from the drawer.
5. Remove the bill dispenser drawer from the base of the Auto Sentry *flex*.
6. Using the fish tape, pull the RFID All-In-One Cable through the 1" conduit from the base of the truss to the Auto Sentry *flex*.
7. Locate the set of terminal blocks included on the left wall inside the base as shown in Figure 13.

   NOTE: There is a terminal description label below the terminal blocks.
8. The RFID All-In-One RFID Reader/Antenna cable has 5 wires to connect to the terminal blocks as follows, see Figure 13 and Figure 14.
   - Attach the power wires marked 24VDC(+) and 24VDC(-) from the RFID reader to the bottom terminals of the orange and black terminal blocks: 24V DC(+) wire to orange terminal block 24V DC(+), and the 24V DC(-) wire to black terminal block 24V DC(-).
   - Attach the data wires from the RFID reader to the bottom terminals of the orange, yellow, and white terminal blocks: the wire marked (Tx) to the orange terminal block (Tx), the wire marked (Rx) to the yellow terminal block (Rx), and the wire marked Ground to the white terminal block (GD).
9. Re-install the bill dispenser drawer and the bill dispenser.
10. Re-attach the cables for the bill dispenser.

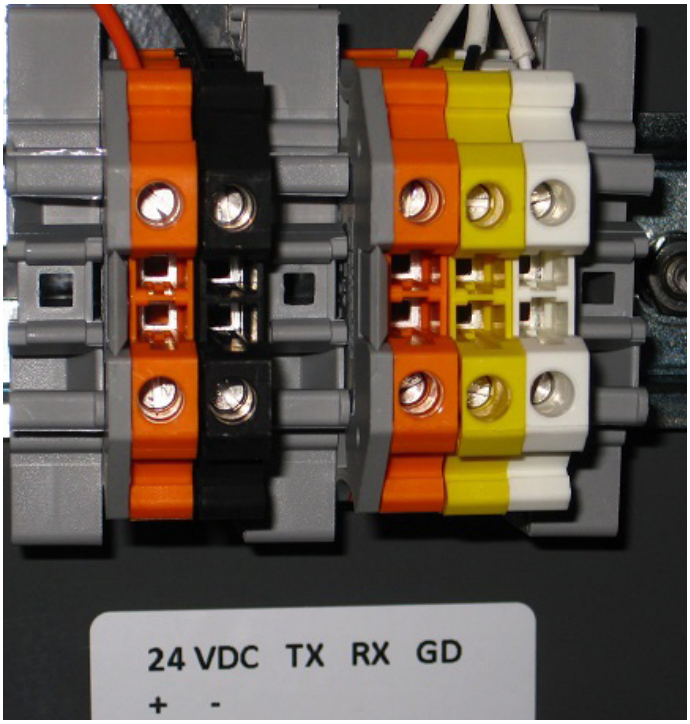


Figure 13. Terminal Block Inside Auto Sentry Base

Figure 14. Wire Termination

Instructions to Power On the Auto Sentry *flex*

1. After the truss and enclosure are installed, and all the wires are connected as instructed on page 11, reconnect the power to the ICS power distribution box by turning on the Auto Sentry *flex* breaker inside the ICS® power distribution box.
2. Turn the breakers on in the head and the base of the Auto Sentry *flex* by pressing the blue buttons on the breakers until they click in. See Figure 7 on page 7.
3. Inside the base of the Auto Sentry *flex*, turn on the breaker by pressing the blue button on the breaker until it clicks in.
4. Inside the Auto Sentry *flex*, turn on the power switch to boot the system.
5. Please contact ICS Technical Support to configure the RFID system: **800-246-3469**

Innovative Control Systems®

If you have any questions or concerns, please contact ICS Technical Support: 800-246-3469.

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MISSION STATEMENT:

It is our passion to leverage our experience as car wash operators, our position as a Market Leader, and our ability to incorporate advanced technology into Visionary products, which enables our Customers to differentiate their operations, achieve a distinct competitive advantage, and maximize their earnings.

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