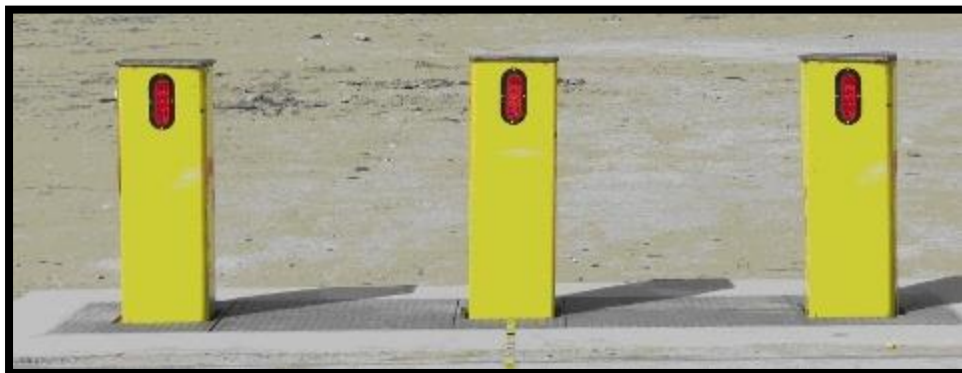




INSTALLATION GUIDELINE HANDBOOK

RSS-4000 SERIES

ELECTRIC BOLLARD VEHICLE BARRIER



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FEBRUARY 5, 2018

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1 GENERAL

This document describes the basic installation of the RSSI 4000 Series Electric Bollard Vehicle Barrier. It is **NOT** all encompassing and is based on “typical” installations. Integrators/Contractors are highly encouraged to review these guidelines and contact RSSI to clarify any issues or to answer questions prior to Mobilization. RSSI is a barrier manufacturer; on questions related to civil issues specific to a particular jobsite, Integrators/Contractors should refer to the Architectural Firm that designed the project or a licensed Civil Engineer familiar with the local site conditions and requirements.

1.1 Limited Warranty

RSSI Barriers, LLC Warrants the RSS-4000 Series of Barriers (RSS-4002, RSS-4003) to be free of defects in workmanship and materials for a period of **1 year for electrical and mechanical components – PARTS ONLY**. Warranty will begin from the date of shipment from the factory or if installed by RSSI Barriers LLC, from the date of installation unless otherwise agreed on.

RSSI Barriers, LLC reserves the right of final determination as to the existence and causes of any defect or failure. Any part or parts found to be defective and that are returned to RSSI Barriers, LLC within the warranty period, shall at our option be repaired or replaced free of charge F.O.B. the factory. Shipping costs are the responsibility of the Integrator, Contractor or the End User.

The warranty will not apply to the following circumstances that are beyond our control. Misuse, vandalism, accident, neglect, unauthorized repairs or modifications, acts of God (lightning, floods, insect damage, etc...), power surges, incorrect installation, or application.

The warranty set forth above is entirely exclusive and no other warranty whether written or oral, is expressed or implied. RSSI Barriers, LLC specifically disclaims any and all implied warranties, merchantability or fitness for a particular purpose. It is the purchaser’s sole and exclusive responsibility to determine whether or not the equipment will be suitable for a particular purpose. In no event shall RSSI Barriers, LLC be held liable for direct, indirect, incidental, special, consequential damages or loss of profits whether based on contract, tort, or any other legal theory during the course of the warranty or at any time thereafter. The end user agrees to assume all responsibility for all liability involving the use of this product, releasing RSSI Barriers, LLC of all liability.

All RSSI barriers require minimal maintenance; however, there are some tasks that need to be performed after the barrier is installed to insure compliance with the warranty provided. When the RSSI barrier is installed and not accepted by the end user until a later date, the maintenance tasks located in the Quarterly Preventative Maintenance Checklist (provided with the Operator Manual for each job) must be accomplished until acceptance by the end user. **Likewise, after acceptance the end user is required to conduct these quarterly preventive maintenance tasks to ensure the warranty is valid.**

IN ORDER TO USE THE VEHICLE BARRIER, YOU MUST UNDERSTAND AND BE IN FULL UNCONDITIONAL AGREEMENT WITH ALL STIPULATIONS OUTLINED ABOVE. IF YOU ARE NOT IN FULL AGREEMENT, DO NOT PUT UNIT INTO OPERATION. PLACING THE VEHICLE BARRIER INTO OPERATION WILL BE CONFIRMATION THAT YOU ARE IN FULL UNCONDITIONAL AGREEMENT WITH ALL OF THE ABOVE.



2 INSTALLATION

2.1 Introduction

This section provides basic information on the installation of the RSS-4000 Electric Bollard System and is designed to assist system integrators and subcontractors.

2.2 Safety

WARNING

Highlights an essential installation or maintenance procedure, practice, condition, statement, etc. which if not strictly observed, could result in injury to, or death of, personnel or long term health hazards.

CAUTION

Highlights an essential installation or maintenance procedure or statement, which, if not strictly observed, could result in damage to the system, equipment or injury.

NOTE

Highlights an essential installation or maintenance procedure, condition, or statement.

2.2.1 Safety Precautions

The following minimum safety precautions should be observed while performing procedures in this document. Refer to locally prescribed safety requirements of the end user and/or the State you are in.

- Dangerous voltages are present at system connections. Ensure power is OFF prior to connecting or disconnecting cables.
- Do not wear metal frame glasses, rings, watches, or other metal jewelry while working on electronic equipment during the installation process.

2.3 Mobilization

- The RSS-4000 Series Electric Bollard Vehicle Barrier consists of a steel vault and Insert Assembly that is hot dip galvanized with an anti-skid top surface with 1 foot x 1 foot removable bollard inserts.



Figure 2-1, RSS-4000

- The Bollard Assembly Height is 36 inches at deployment. All barriers are shipped fully operational, self-contained for easy installation. The weight of the barrier depends upon the unit purchased. (See Table 2-1)

Description	Dimensions(W x L x H)	Weight
RSS-4002 - 2 Post	36.5" x 84" x 61.5"	6,720 lbs
RSS-4003 - 3 Post	36.5"x 126" x 61.5"	8,260 lbs

Table 2-1 – RSS-4000 Series Dimension Chart

- Before you begin, you will need the following available on site prior to installation:
 - Equipment for excavation, soil compaction, removal and disposal of spoils
 - Street Saw or other like equipment for demolition.
 - Concrete placing and finishing tools
 - 3000 PSI (minimum) Mix Concrete (see Figure 2-6)
 - Equipment capable of lifting and setting the RSS-4000 in place
 - Email us at Service@rssi.com for the most up-to-date drawings and specifications.

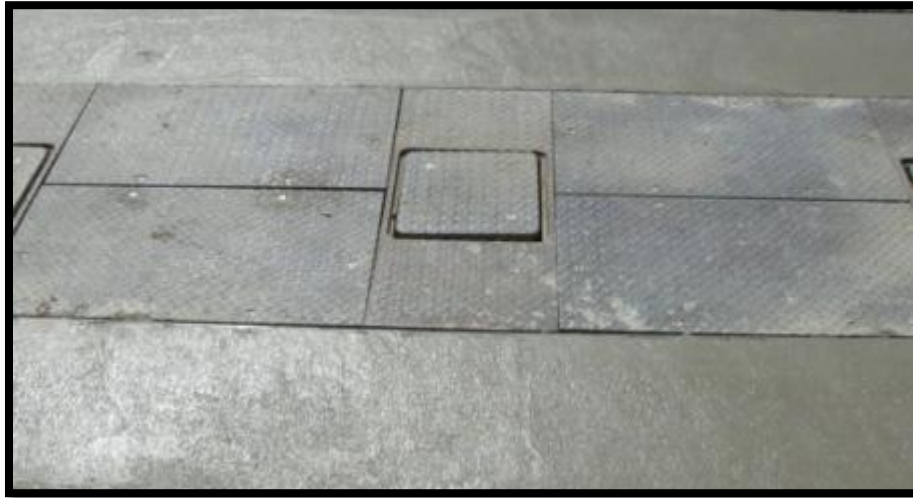


Figure 2-2, RSS-4000

2.4 Installation Instructions. Installing the RSS-4000 is a simple 5-step process.

2.4.1 Step One - Excavate

- The first step is to excavate the existing roadway to a dimension of the appropriate barrier size. (See Table 2-2)



Figure 2-3, Excavation

Barrier Size	Excavate Area (W x L x H)	Rebar Type #5	Concrete (3000 PSI min.)
RSS-4002-2 Post	84" x 108" x 62"	Not Required, fabricated into barrier	Approx 8.5 yards
RSS-4003-3 Post	84" x 150" x 62"	Not Required, fabricated into barrier	Approx. 9 yards

Table 2-2, Excavation Details

NOTE

Ensure barrier placement according to the approved site plan to ensure road crown, underground utilities, associated passive knee walls or static bollards are taken into account.

2.4.2 Step Two – Place Barrier

Once the soil is compacted (to local standard), place the RSS-4000 Vault with Insert Assembly into the pit leaving a 1 foot area for concrete on each end and 2 foot area to the front and rear. The barrier is typically installed ½ inch above grade to allow water to flow around the barrier. Local conditions may dictate installing the barrier flush to the existing roadway.



Figure 2-4, Barrier Placement

2.4.3 Step Three – Conduit Connections

- RSS-4000 barriers are self-contained shipped from the factory ready to install. Connect the appropriate PVC conduit to the power (1"), control (1") and sump pump (1½") PVC sleeves in the metal stub outs located on the front and side of the barrier. If the job site requires rigid conduits, the PVC sleeve in the stub outs will have to be replaced.

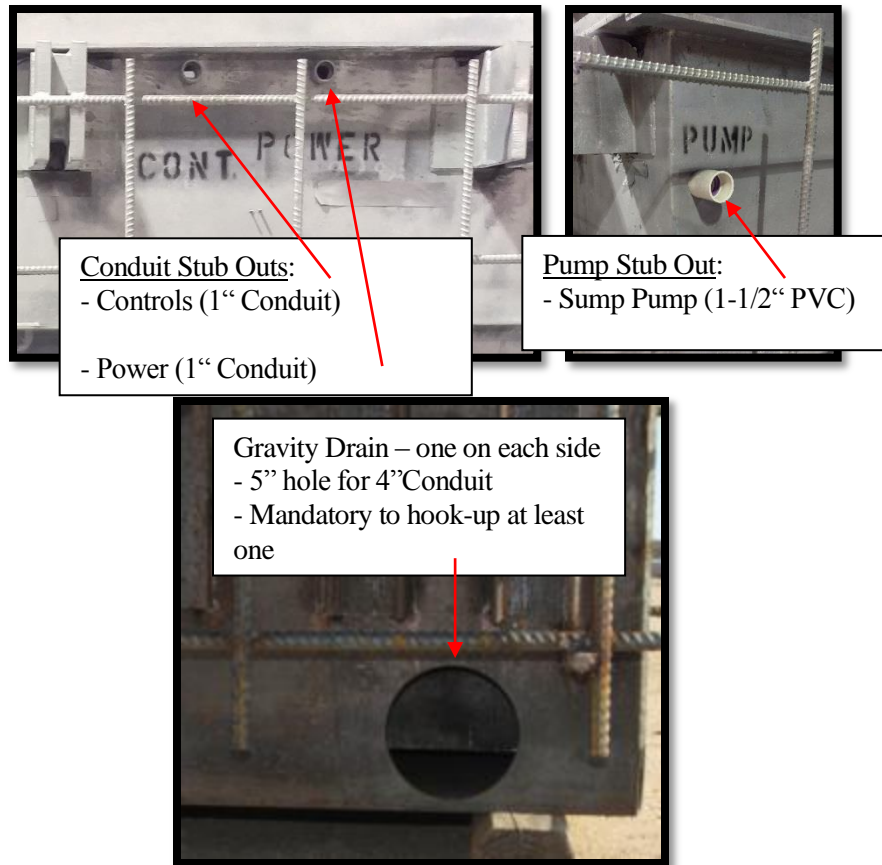


Figure 2-5, Conduit Connections

NOTE

*RSSI **requires** at least one of the 5" gravity drains be installed (4" PVC) to each barrier. Additionally, the Sump Pump discharge (1" PVC) should be "**SEPARATE**" from the Gravity Drain.*

2.4.4 Step Four –Concrete

WARNING

ENSURE ALL OPENINGS (SMALL HOLES ARE CUT IN BARRIER VAULT TO ACCOMMODATE THE HOT DIP GALVANIZE PROCESS) ARE COVERED BEFORE CONCRETE IS POURED. FAILURE TO DO SO WILL RESULT IN EQUIPMENT MALFUNCTION.

- Pour the concrete (3,000psi minimum) around the RSS-4000 unit. Be careful not to damage the electrical or drainage conduit. Vibrating to remove air pockets and a light broom finish is recommended. (See Figure 2-6 below) Allow sufficient time for concrete to harden before driving over barrier.



Figure 2-6, Concrete

NOTE

When barriers are aligned beside each other and a monolithic pour is used for two or more barriers, vibrate the concrete into the excavation to ensure adequate displacement of concrete. Place barriers in accordance with Installation Drawings.

2.4.5 Step Five – Conduit and Termination of Controls

- Some locations will have existing conduit, others you will have to trench and install/run new conduit. Based on the layout and distance from the barriers to the Barrier Control Panel (BCP), a handhold or J-Box may be installed. After conduit has been installed, move on to the controls. Barrier Control Panels arrive complete from the factory. All control and power wiring (provided by Integrator/Contractor) from the barrier, BCP and operator controls are labeled to coordinate with a termination strip in the control box. Operator Controls are custom made to adapt to each location. Typically, Panels are placed on an equipment pad within 50-100 feet from the barriers. (See Figure 2-7).



Figure 2-7, EPU Control Panel & Battery Back-up

Electrical Power Wiring should be sized by a Master Electrician or EE per N.E.C. Code based on distance from EPU/BBS to barriers. Ground Rod should be installed adjacent to the Control Panel per N.E.C. code. RSSI requires the use of Shielded Ethernet Cable to terminate between the barriers and the EPU. Additionally, RSSI requires the use of specific waterproof connectors for terminating connections in the barrier junction boxes (See Attachment 3 for cut sheets). Contact RSSI before terminating with any other connectors.

Electrical Terminations

1. Local commercial power (120/240VAC) 1P 3 wire 30A is wired to Battery Backup Panel (BBP) at MAIN CB-1 (L1 –L2, Neutral - Ground).
2. BBP transfers power to Barrier Control Panel (BCP) MAIN Disconnect Switch.
3. The Servo Box is inside the barrier powered through the BCP fuses FU1 and terminals 4L1 – 4L2 – Ground and wired through the Barrier Power J-box (splices).
4. The Barrier Heat Grid is powered through the BCP terminals 1H1 and 1H2 and wired through the Barrier Power J-box (splices).
5. The 120V Sump Pump is powered from the BCP terminals SP1&2 and Neutral wired through the Barrier Power J-box (splices).
6. The 24Vdc Traffic Lights are powered from the BCP PLC outputs and fused at 2amps.
7. The 24Vdc Barrier Warning LED Lights are powered from the BCP PLC fused outputs and wired through the Control J-Box splices.
8. The IR Beams(if applicable) are powered through the BCP +24Vdc (Red wire)/-24Vdc (Black wire) power terminal blocks to each IR Beam (splices in stands) Connect the Red wire to Brown and Gray wires of IR pigtail and Black wire to Blue wire of IR pigtail.
9. The Barrier Heat Thermostat (mounted outside) is connected at BCP terminals +24Vdc and PLC input (splices at thermostat); if applicable.
10. The Primary Operator Control panel is powered through the BCP +24Vdc and -24Vdc output terminal blocks to.

Control Terminations

1. The Servo Box inside the barrier communicates with the BCP via shielded twisted pair Ethernet cable (Cat5e) from a Ethernet switch to servo box (Tech will be required to terminate and label RJ45 connector on cable end at Ethernet switch in the BCP) Servo Box is pre-terminated at factory.
2. BCP receives vehicle presence indications from the LOOPS in the roadway to the front of the LOOP DETECTORS in the BCP. (Bottom DIP switch must be set to right position at this point).
3. BCP receives INPUTS from IR Sensor(if applicable) (black wire on sensor pigtails) the black wire is connected to blue wire connected on PLC input.
4. BCP controller receives a contact closure from the thermostat (mounted outside) to the BCP PLC inputs. This activates the barrier heat grid Contactors H1 & H2.
5. BCP receives INPUT from Battery Backup Panel (BBP) when commercial power is lost and/or when a Low Voltage condition is present. BBP terminations are marked (+24VDC) I:1/0 and I:1/1. The BCP terminations are mark (+24VDC), (I:1/0) for Loss of Power and (I:1/1) for Low Voltage condition.



WARNING

ENSURE A QUALIFIED; LICENSED ELECTRICIAN TERMINATES THE ELECTRICAL CONNECTIONS ACCORDING TO NATIONAL ELECTRIC CODE AND ANY APPLICABLE STATE AND LOCAL CODES.

2.4.5.1 Installation of Shielded Ethernet Cable from Barrier to Barrier Control Panel (BCP)

- Shielded Ethernet cable is provided by RSSI and rolled up inside unit. The cable is terminated inside at Servo Drive using the TIA/EIA 568A wiring on the RJ45. This wire will need to be ran through Control J-Box and Controls conduit back to the BCP.

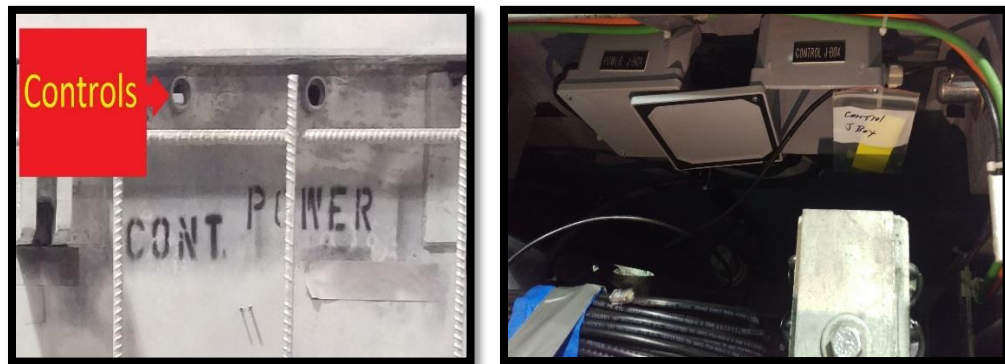


Figure 2-8, Controls Conduit, Ethernet Run Into J-box.

- Inside the EPU panel, terminate Ethernet Cable with RJ-45 connector. Use the TIA/EIA 568A Wiring diagram.

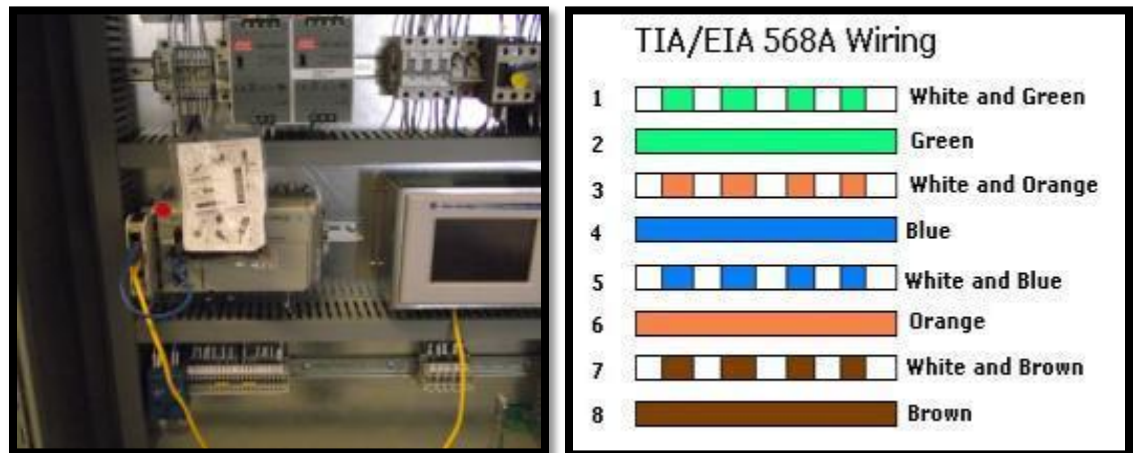


Figure 2-9, Ethernet Connection at EPU, Ethernet Wiring Diagram

- Once termination has been made, plug the cable into the Ethernet Switch.

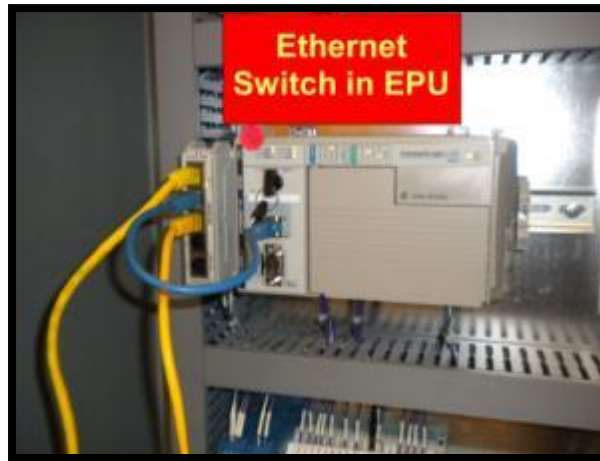


Figure 2-10, EPU Ethernet Switch

- Connect Ethernet shield wire to (Earth Ground) on top of switch at pin #4. If metal RJ45 is used, no grounding is required.



Figure 2-11, Ethernet Connection and Ground

WARNING

*This box should **ONLY** be opened at the RSSI factory. It is considered a “LRU” Line Replacement Unit. Opening this box **VOIDS THE WARRANTY**.*



Figure 2-12, Servo Drive Box Inside Barrier

CAUTION

The Ethernet cable is designed to be a straight run with no splices, severe bends or stretching. Splicing this cable will lead to premature failure of the network communication to the Servo Drive.

NOTE

It is highly recommended to use experienced technicians trained to install shielded twisted pair terminations. After installing, test with a regular network cable tester.

2.4.5.2 Installation, Termination, and Testing of Fiber Cable

- If applicable, Fiber converters are located in the BCP and in location of Control Console.
- Fiber must be run in locations where the distance from the BCP to the Fiber Converter Panel is more than 300 feet.
- A technician terminates the fiber and conducts a BASIC go/no go indication test. At this point the fiber terminations could be connected up and possibly even work, however without further testing with an OTDR, Ethernet errors could occur. Power meters are also used by fiber technicians to

measure Power/Loss through the run and certify the fiber installation. It is highly recommended that this certification be done after termination.

- Connecting the fiber terminations (ST) to the fiber convertors
 1. Line up pegs with slots, push in and turn clockwise to lock
 2. There is a (TX) transmit and (RX) receive (marked on convertor)
 3. Take each pair of fiber cables (already terminated and tested) and connect to TX and RX
 4. Connect other end of fiber optic cable and termination to RX and TX (opposite)
 5. You should get LINK light indication on fiber convertor, if not, reverse connectors
- Cleaning the fiber terminations before, during and after the termination procedures is a key to success.

**NOTE**

It is highly recommended to use experienced technicians trained to install, terminate, test, and certify fiber. After installing, at a minimum test connection with an OTDR tester.

**CAUTION**

The Fiber cable is designed to be a straight run with no splices or severe bends or stretching.

2.4.6 Job Documentation.

- Drawings. RSSI provides submittal drawings upon request. Typical drawing packages are available by emailing us at Sales@rssi.com. Typical drawings show civil/installation layouts for barriers, tentative conduit layouts, Wire and Conduit Legend, and a Foundation drawing for the Control Panel Enclosures. As-Built drawings showing PLC I/O and interconnect wiring diagrams are printed and ship inside the BCP.

NOTE

A CD containing Equipment Manuals, Bill of Materials, Operator's Manual and AS-Built Drawings (effective ship date) is also mailed to the Project Manager.

- Operator Manual. Each project includes operator manuals that ship inside the BCP.
- Bill of Materials (BOM). Each job includes a BOM that ship inside the BCP. It contains a detailed list of system components, part numbers, and manufacturer.

3 COMMISSIONING

CAUTION

*Ensure a “**CERTIFIED**” installer or a RSSI Technician performs the Commissioning procedures. **NOT DOING SO WILL VOID THE WARRANTY.***

3.1 START-UP.

Upon completion of all terminations between the barriers, barrier related equipment, control panel, and operator controls, PRIOR to applying any power, the wiring should be checked out to ensure proper connection of terminated wires. It is imperative installers refer to and follow the as built drawings provided inside each control panel and Section A of the Start-Up/Turn-Over Procedures in Attachment 1.

3.2 TEST.

After the start-up procedures in Section A have been completed, it's time to run the remainder of the Sections of the Start-Up/Turn-Over Procedures Checklist in Attachment 1.

In closing, we want to reiterate that these guidelines are not intended to be all inclusive and are “Typical”. Local requirements and site conditions may require modifications. Integrators/Contractors should refer to the Architectural Firm that designed the project or a licensed Civil Engineer familiar with the local site conditions and requirements for clarifications. If you have any issues or questions, Integrators/Contractors are highly encouraged to contact RSSI (850) 871-9300 or Toll Free at (866) 249-1029 for clarifications.



6 Attachments

1. Commissioning Checklist
2. Safety Loop Set-Up
3. Servo Drive Set-up
4. Vehicle Detector Loop Installation
5. Traffic Light Installation
6. Waterproof Connectors

* * END OF SECTION * *



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Attachment 1, Start-Up/Turn-Over Procedures

Start-Up/Turn-Over Test Procedures - RSS-4000 Barrier System At

A. Visual Check Battery Backup System(BBS):

1. Verify that all field wiring and cables are connected as per "As Built" Drawings (From Battery back-up to BCP). ☐
2. Insure that all terminal screws and cables are tight. ☐
3. Insure there are no loose or naked wires. ☐
4. Insure that all circuit breakers are turned OFF, Inverter switch and CB on top is OFF. ☐

B. Voltage Test: Normal Power

1. Verify battery charger DIP switches are set correctly (S1=off, S2=on) ☐
2. Connect 2 each 12v batteries in series to the inverter, also connect charger wires (series) . Then check for 24vdc at the inverter, all battery cable connections must be tight and clean. ☐
3. Connect main power source to CB1. Then turn on main power source to verify correct incoming voltage (240vac or 208VAC) at CB1. ☐
4. Turn ON CB1 and observe contactor C1 energized, check for correct voltage at terminal blocks 3L1 and neutral (240vac). This is where the power leaves the BBS and powers barrier control panel. ☐
5. Turn on CB2 ☐
6. Turn on CB3, battery charger power light should come on and should show some current draw on meter. Check batteries for 26-28vdc to verify charger is working. ☐
7. Turn on inverter CB's and power switch, power light should turn green when stabilized. Check for correct voltage at the bottom of CB2 (240vac). The system is now operational. ☐

D. Control Panel Check: (Normal Power)

1. In the Control Panel, turn all circuit breakers off. ☐
2. Open Servo-Drive Fuse Holders F1 & F2. ☐
3. Turn on Main Disconnect and check for correct voltages. ☐
4. Turn on CB3 and CB1 (turns on 24v power supply). ☐
5. Turn-on CB 5- supplies 24vdc operating power to PLC, Touch Screen, Ethernet Switch, and Loop Detectors. All these devices will boot up and stabilize in a few minutes. ☐
6. Push in FU1- energizes the servo drive inside the barrier. ☐
7. Turn on CB4-Supplies operating power to the sump pump in the barrier. Check for correct voltage. ☐

E. Battery Backup System Operational Check:

1. Turn off CB1 in BBS panel and observe contactor C1 de-energize and C2 energize. ☐
2. Check voltage at terminal blocks 3L1 and 3L2 (240vac) ☐



3. Turn CB1 back on and after approx. 4 seconds, the contactor C2 should de-energize and C1 should energize. ☐
4. Check voltage at terminal blocks 3L1 and 3L2 (240vac or 208vac). ☐
5. Check inverter power light, it should be green. ☐
6. If batteries go below 20vdc, the inverter will go into stand-by mode and power light will be red. In this case, cycle the inverter power switch when main power comes back on, check for condition of batteries, battery cables and signs of corrosion. Check battery charger for charging voltage and amps and allow batteries to re-charge. ☐

F. Testing Ethernet Connectivity (if necessary)

1. Using a laptop, connect your Ethernet cable to an empty port on the Ethernet switch (located in EPU panel). ☐
2. Set your static TCP/IP address to 192.168.1.200 with subnet mask 255.255.255.0 (no gateway is needed for this test). ☐
3.
 - a. Go to DOS PROMPT and type PING 192.168.1.10 you should get replies from the PLC. ☐
 - b. Go to DOS PROMPT and type PING 192.168.1.11 you should get replies from the Drive. ☐
 - c. Go to DOS PROMPT and type PING 192.168.1.12 you should get replies from the HMI. ☐
4. IF you do not get replies from the devices, ensure your laptop is on the correct subnet again and troubleshoot connectivity problems to any device. Test Ethernet cabling end to end with an Ethernet Cable Tester. ☐

G. Tuning the Barrier

1. On the touch screen, go to the main screen and check for any alarms and reset or clear. ☐
2. On the touch screen, go to the LOGIN box and login: **maint** password: **12345**. ☐
3. On the touch screen, select the JOG/TEACH box and push the JOG UP button until the barrier rises up one foot. ☐
4. On the touch screen, return to the main screen and select the HOME box and then select the HOME button (will flash while homing, the barrier will slowly creep down until homed) the barrier is now homed. Return to main screen. ☐
5. On the touch screen, select the BARRIER CONTROL box and run the barrier to the UP position using the JOG UP button. Measure the bollard assembly in the up position to ensure it reaches 35-36 inches. Go into TEACH menu and press TEACH UP position. Using JOG DOWN button run barrier to DOWN position and ensure down position is all the way down into roadway. Enter the TEACH Menu and press TEACH DOWN POSITION. ☐
6. If equipped with manual push button operators station, test all the up and down commands and check for proper position lights. ☐
7. Check all traffic signal lights making sure the sequences are correct, check barrier warning lights. ☐
8. If equipped with heat package, set the barrier's heat thermostat to engage H1 heat contactor (it will pull in), then check for correct voltage at 1H1 and 1H2 (208 or 240VAC). ☐

H. Safety Loop Check:



1. Position a person at the RSSI Control Panel/Box and drive a vehicle slowly over the safety loops and the barriers. The RED LED (detects presence) will light as the vehicle travels over the safety loops and will turn off as the vehicle clears them. ☐
2. With the Barrier in the DOWN position, pull a vehicle forward on the front edge of the front safety loop and stop. The LED indicator on the safety loop detector in the RSSI Control Panel/box should indicate RED (detects presence). ☐
3. Touch the Barrier UP Icon on the "Touch screen". Barrier should not operate. ☐
4. Back the vehicle off the safety loop. Touch the Barrier UP Icon and as the barrier starts to raise pull the vehicle onto the front edge of the safety loop. The barrier should stop and lower to the down position. ☐

WARNING-Ensure to use extreme caution when pulling the vehicle forward as the barrier is rising. Recommend placing wheel chocks to prevent vehicle from traveling onto the barrier.

5. With the Barrier in the DOWN position, pull a vehicle forward to the rear edge of the back safety loop and stop. The LED indicator on the safety loop detector in the RSSI Control Panel/Box should indicate RED (detects presence). ☐
6. Press the Barrier UP Icon, Barrier should not operate. ☐
7. Pull the vehicle off the safety loop. Touch the Barrier UP Icon and as the barrier starts to raise Back up the vehicle onto the back edge of the safety loop. The barrier should stop and lower to the down position. ☐

WARNING-Ensure to use caution when backing the vehicle as the barrier is rising. Recommend placing wheel chocks to prevent vehicle from traveling onto the barrier.

Repeat for additional barriers.

G. Verify Approved Sequence of Operation

1. Step by Step run through the approved sequence of operation for the appropriate gate ☐
2. For additional technical support, please contact RSSI at (850) 871-9300 or Toll Free at (866) 249-1209.



This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Attachment 2, Safety Loop Set-up

Safety Loop Set-up

1. Ensure 24v power supply is on (CB5).
2. Install the wires from the safety loops at the bottom of the detector. Loop detector should flash and then go to solid red number on the front of the detector.



NOTE

Ensure safety loops are clear before powering safety loop detectors.



Figure 1, Safety Loop Detector

3. Ensure the dipswitches are in the correct position. Recommended factory settings are:

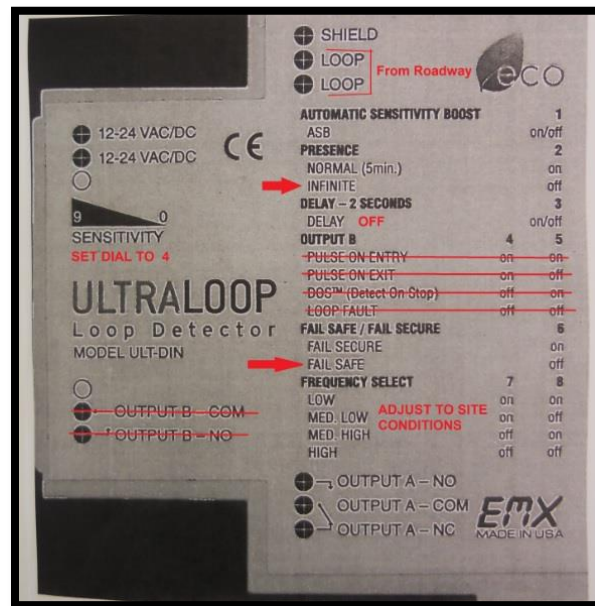


Figure 2, Factory settings for loop detector

ATTACHMENT 3, Servo Drive Set-up

FROM THE MAINTENANCE TOUCH SCREEN IN THE BCP

Homing the Barrier

1. Turn on Fuse FU1. On the maintenance touch screen in the BCP, go to the main screen and check for any alarms and reset or clear.
2. At the Main Screen, go to the LOGIN box and login: “**RSSI**” password: “**32404**”.
3. Once you have logged in at the Main screen, select the HOME box and then at the HOME menu press the red HOME button. The Home button will flash while homing, once it has completed the process the green BARRIER HOMED button will appear. The barrier is now homed, select Main to return to main screen.

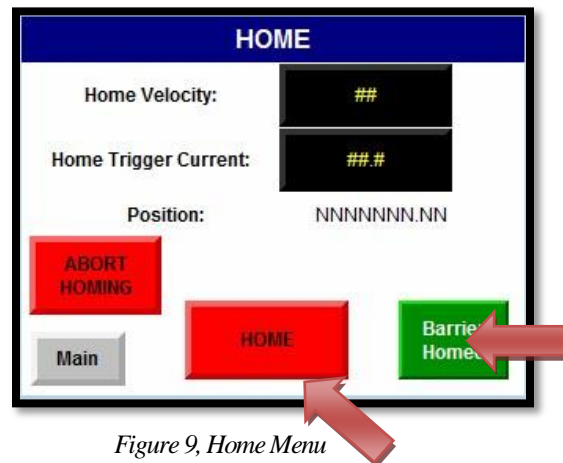


Figure 9, Home Menu

Barrier Control

1. From the MAIN MENU, press the BARRIER CONTROL button (See Fig 10).

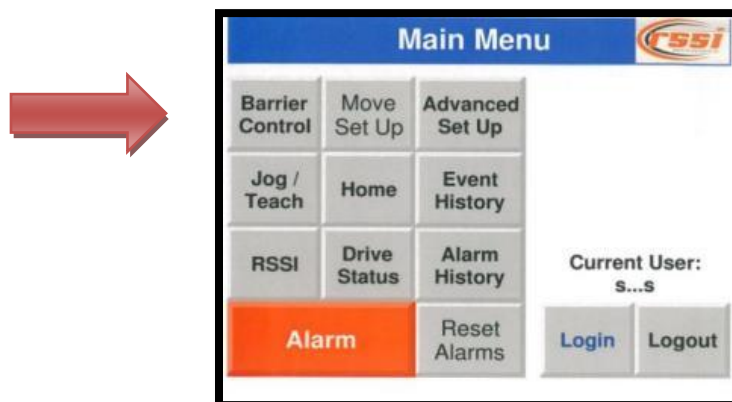


Figure 10, Main Menu

2. Inside the BARRIER CONTROL menu use the MOVE CLOSED/OPEN buttons to operate the barrier a few cycles, measure the post assembly in the CLOSED(up) position to ensure it reaches 35-36 inches and ensure the OPEN(down) position is all the way down and out of roadway. (See Fig 11)

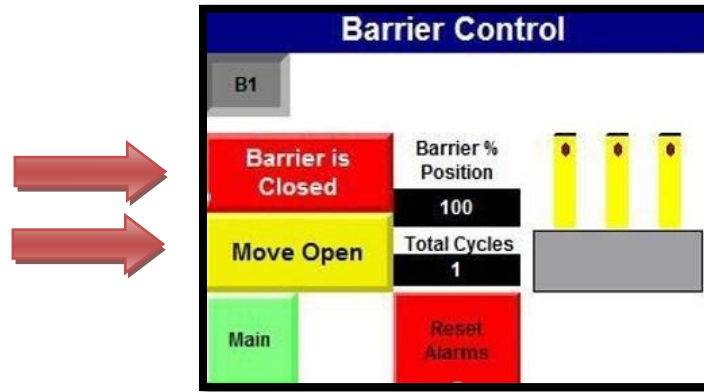


Figure 11, Barrier Control Menu



NOTE

If the Peak Current is higher than 20 Amp, it may indicate that the barrier position needs to be adjusted. Refer to Step 5 in Attachment 2 of the Maintenance Manual.



NOTE

If the barrier post assembly is not flush with the roadway (protruding from barrier), refer to Step 5 in Attachment 2 of the Maintenance Manual.

ATTACHMENT 4, Vehicle Detector Loop Installation Guide

INTRODUCTION

This loop installation guide is intended to illustrate the steps involved in installing a "saw cut type" vehicle detector loop. Loop sizes shown in the figures and illustrations vary according to the detection requirement being accommodated. The photographs are for typical loops used in conjunction with traffic signals.



Figure 1



Figure 2



Figure 3

INSTALLATION INSTRUCTIONS:

1. Mark the loop outline on the pavement surface using either a string or rigid frame and aerosol spray paint as shown in figures 1 & 2. Note that corners are diagonally cut to prevent damage to wire insulation during placement of the wire in the slot (see figure 3).
2. Place a mark on the concrete saw blade to insure the saw cut depth is 2" deep. The saw blade should be 1/4" wide at the lead cable slot and 1/8 inch wide for the loop slot.
3. Saw loop outline in pavement as shown in figure 4.



Figure 4



Figure 5

4. Clean debris from saw slot with compressed air, as shown in figure 5, and allow surface and slot to completely dry.
5. After the loop size has been determined, refer to illustration 1 to determine the number of turns of

loop wire to be placed in the loop slot. It is important that the proper number of turns are used.

6. Carefully install a continuous piece of the provided Loop Wire in the saw slot. Use Loop Installation Roller to insure that the wires are in the bottom of the saw slot (see figure 7). Do not use metal objects with pointed or sharp edges for this purpose!



NOTE

NO WIRE SPLICES ARE PERMITTED IN THE SAW SLOT!



Figure 6 Figure 7

7. Install backer rod in 4 inch segments in the saw slot as needed (see figure 6) to insure that the wires are held tightly in the bottom of the slot.
8. Twist the two wires at least five turns per foot where they exit the saw slot.

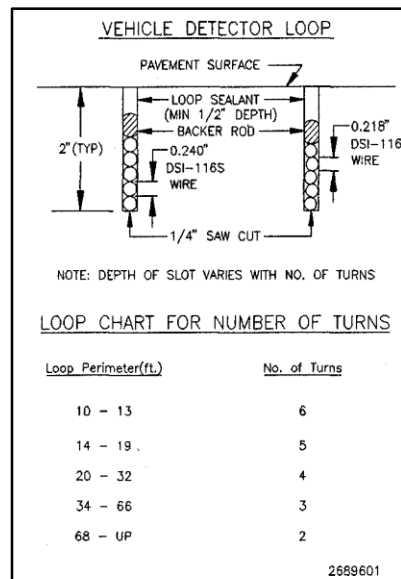


Illustration 1

**NOTE**

If the backer rod is not pressed down firmly on top of the wires and the wires fully encapsulated, the detector loop may false call due to the wires being loose and vibrating under the backer rod. The loop wires should be continuous from the BCP, around the loop and back.



9. When installing the loop sealant material, insert the tip of the applicator in the saw cut and confirm the material is being pumped completely around the wires or firmly on top of the backer rod. After pouring the loop sealant in the saw cut as shown in figure 8, level the material using a "v"-shaped piece of cardboard or a special tool (figure 9) to remove any high spots of material in the saw cut. Avoid overfilling the saw cut as it may cause premature failure of the loop sealant.

ATTACHMENT 5, Traffic Light Installation

1. Run Conduit up where Traffic Light will be located.
2. Pour concrete pad 16" W X 16" L X 24" D – Square base is 13 ¾ inches X 13 ¾ inches.
3. You can make a mounting template by tracing the bottom of the square base on cardboard. This provides location where the anchor bolt holes can be drilled.

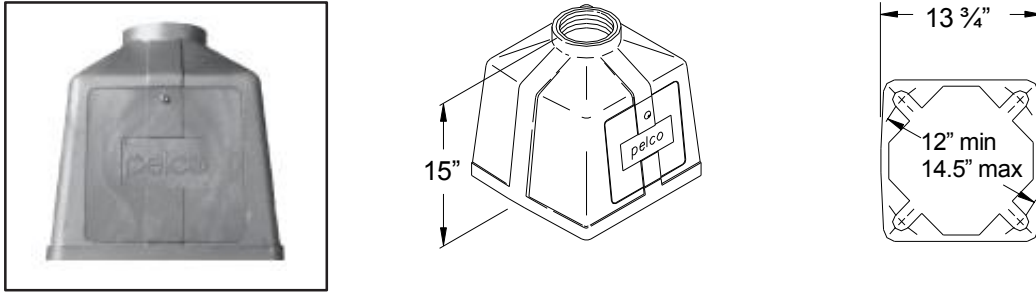


Figure 1, Traffic Light Pole Base

4. Use 1/2 inch X 5 ½ inch wedge anchor bolts (threaded on one end) to secure Square Base in place.
5. Place square base over the anchor bolts and shim base as necessary to make level. Remove the maintenance door cover on the base to allow access for securing base to anchor bolts. Secure base to bolts with 1/2 inch Nuts and 5/8 inch washers.
6. Pull wires for light through the top of the base
7. Run wires through the Traffic Light Pole and screw pole into the base.
8. Attach the Pedestal Adaptor to the Traffic Light Assembly.
9. Attach the Tunnel Visors to the traffic lights.
10. Run the wires into the traffic Light assembly through the Pedestal adaptor and mount the traffic light to the pole.
11. After securing the pedestal adaptor/traffic light assembly to the pole, terminate wires in the traffic light.




Figure 2, Traffic Light Configurations – 2 & 3 Lights

ATTACHMENT 6, Water-proof Connectors

Connectors

Sealed Crimp and Solder Connectors - Butt Connectors

- Crimped for mechanical reliability
- Soldered for strength & conductivity
- Sealed to prevent wire corrosion and provide a waterproof seal



POWER PHASE

Part No.	Mfg. No.	Wire Range	Color
0710572	ML5-20	24 - 22 AWG	Clear
0710573	ML5-16	20 - 18 AWG	Red
0710574	ML5-14	16 - 14 AWG	Blue
0710575	ML5-10	12 - 10 AWG	Yellow