



May 23, 2024

Budgetary Proposal:

Port of Alabama

Terminal Railway (TASD) Interchange Yard

Automated Flat Switching Yard

CONTENTS

I.	DESCRIPTION	3
	BACKGROUND	3
II.	MODULAR YARD AUTOMATION – SYSTEMS	4
	STAND ALONE SYSTEMS.....	4
	NX SYSTEMS	4
	FLAT SWITCHING SYSTEMS	4
	COMBINED – NX / FLAT SWITCHING	4
III.	PORT OF ALABAMA – TASD YARD PROJECT	5
	TASD YARD PHASES	5
	TYPICAL COMPONENTS	6
	EX: PORT OF ALABAMA -TASD YARD PRICING	18
IV.	ABOUT US	21

I. Description

Background

Apex Rail Automation was invited to travel and look at the Port of Alabama, Terminal Railway Interchange Yard (TASD) located in Mobile, Alabama. During our site visit we had the opportunity to learn more about the TASD yard and the Ports plans for automation of this yard. While visiting we had the opportunity to visit the CSX – Sibert yard where Apex has an existing flat yard system installed so we could demonstrate our flat yard switching system. We would like to take this opportunity to thank the Port of Alabama for taking time to meet with us and explain their plans for automation not only of the TASD yard but of other areas as well. We are looking forward to continuing to work with the Port of Alabama and hope to have the opportunity to work alongside of you to achieve your goals of automation. This proposal will focus on providing a Flat Switching Yard Automation system for the TASD yard. This proposal will cover the materials needed to make the TASD yard an automated flat switching yard consisting of:

- One outdoor rugged computer (Kiosk)
- 30 Remotely controlled switches (TS4500)
- Each TS4500 location will be equipped with AEI for railcar tracking.
- A two over two LED display board with cut-light
- Miscellaneous equipment (route advance system, cut-light, data communication system, train detection, etc.)

Once installed the system will provide automated flat switching yard support on the ladder.



The system will operate by the traincrew entering into the kiosk an ordered list of moves (tracks to switch into) based on their switch list. Once the list is entered the crew begins to switch. The system will line each route in succession as the crew either kicks the cuts or shoves-to-couple. Multiple methods of advancing the routes are provided with the system. Additionally, the system supports switching from anywhere on the ladder and

does not require the train to pull clear to the top of the ladder, or only kick from the top of the ladder.

II. Modular Yard Automation – Systems

Apex Rail Automation manufactures a variety of products that can be deployed in yards to address many different needs and issues. The core concept of our systems is that they are modular and allow for combining, deploying and upgrading without the need to replace major portions of the systems or equipment.

Stand Alone Systems

Stand Alone Systems are either single switches or crossovers remotely controlled by DTMF. Typical applications are for switches entering / departing yards.

NX Systems

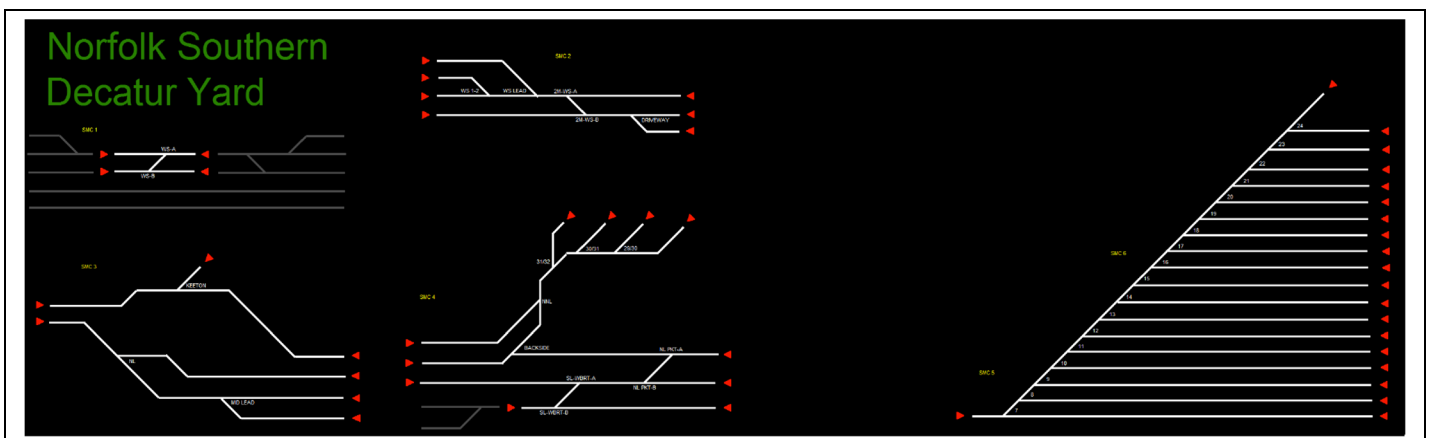
NX systems are typically characterized by having a remote computer or server/workstation configuration controlling multiple switches simultaneously to route trains throughout the yard. These systems are controlled by either a dispatcher or yardmaster at a central location.

Flat Switching Systems

Stand-alone Flat Switching systems are typically deployed with a kiosk on the ladder being controlled. All functions and logic are executed in the kiosk. The interface to TYES/YES is through the kiosk.

Combined – NX / Flat Switching

In systems that combine both NX and Flat switching, a server / workstation architecture is used. The kiosk becomes a workstation and all logic is executed on the server.



III. Port of Alabama – TASD Yard Project

This proposal will focus on the Modular Yard Automation System (MYA) - Flat Switching Yard System mentioned above. However, because the system is part of the MYA suite of systems it allows for future expansion of the system without needing to change out major components previously installed in earlier phases of the automation. This allows for future expansion at any time as the Port continues its phase approach to automation.

TASD Yard Phases

PHASE 1: Engineering

During this phase Apex will work with the Port of Alabama to refine and finalize the functional requirements of the system for the TASD yard.

PHASE 2: Delivery and construction

During this phase Apex will manufacture and deliver all the wayside material and coordinate with the installer selected by the Port to perform the installation of the supplied materials. If the Port would like Apex can provide a list of qualified installers, we have worked with on past projects.

PHASE 3: Test and Commissioning

During this phase Apex will provide on-site support for the testing and commissioning of the system. Additional, training will be provided to ensure Port personnel are able to operate and maintain the system as needed.

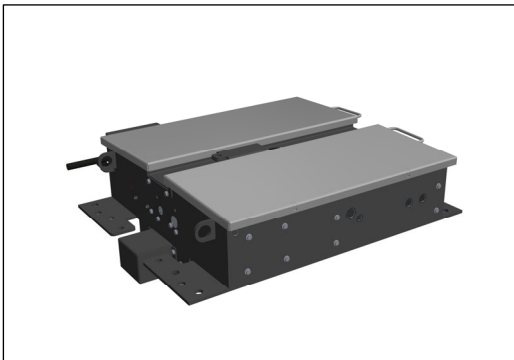
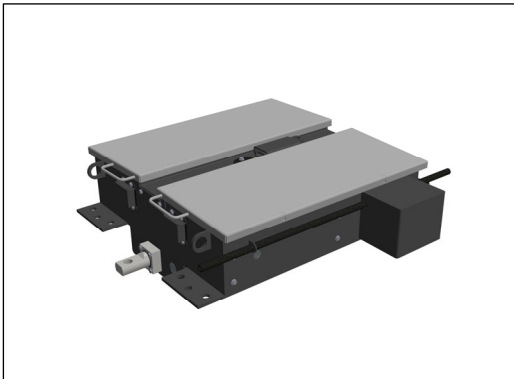
PHASE 4: Inservice and Warranty

During this phase Apex will provide on-site support for placing the system into revenue service. Once Inservice complete, Apex will provide support for any warranty or system issues.

Typical Components

TS4500 Switch Machine

The Apex TS4500 power switch machine is a proven technology allowing for cost-effective solutions to increase safety and reliability in yard switch control applications. The elimination of linkages and the use of sealed bearings ensures increased reliability and minimizes maintenance requirements, lowering the overall cost of ownership. The direct drive design maximizes the available power for throwing any size switch point. The spring holding device is easily adjustable and moves smoothly into position minimizing the potential damage to the track structure due to excessive impact during throwing or while in the holding position. The field serviceable spring assembly allows maximum availability and reliability. The switch machine is designed as a 12-volt DC system. The pictures below illustrate various configurations of the TS4500.

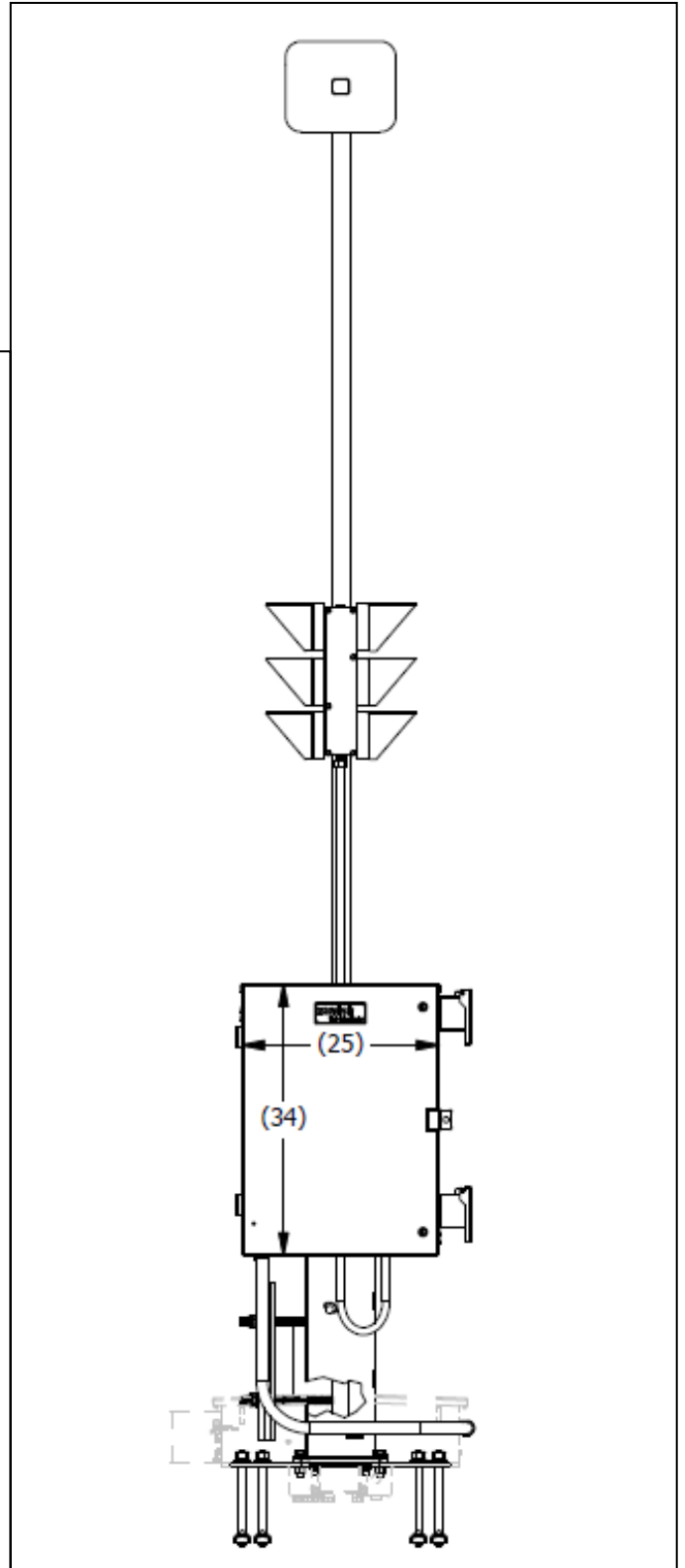
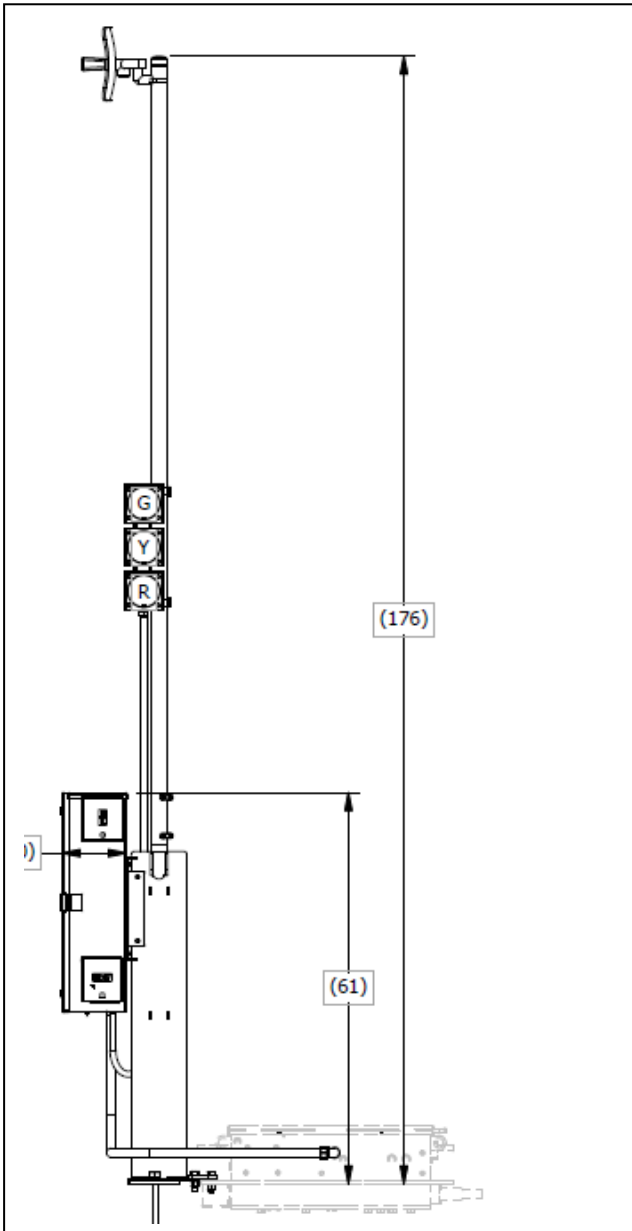


TS-4500 Switch Machine	
Dimensions	40 " (L) x 38" (W) x 9.37" (H)
Throw Force	Up to 4500 lbs.
Spring Holding Force	Self-adjusted to 2,000 lbs.
Speed of Throw	Less than 2 seconds
Point Detection	Proximity Sensors
Primary Motor Shut Off	Microprocessor based
M/W Lock-out Tag-out	Yes
Overload Protection	Solid State Timer
Throw Rod Mechanism	Direct Drive Rack & Pinion
Power Supply	12VDC
Charging System	Solar or AC
Local Control	Push Button Toggle
Remote Control	Radio, Data or DTMF
Manual Control	Hand Pump
Trail-able	Up to 40 mph
Environmental Specification	-40F to +130F
Enhancements	Internal Centering Device and Drain Plug

Wayside MYA Assembly

Includes:

- A. External Electronic Housing
- B. Three Aspect Back-to-Back LED Indicators
- C. Data Radio
- D. AEI railcar tracking
- E. Stanchion Assembly
 - o Tilt-over Mast Assembly
 - o Counterweight post
 - o Lower and upper mast segments



A. External Electronic Housing (MYA Enclosure)

All electronic components have been removed from the ground-based switch machine and mounted inside the MYA enclosure. This keeps the electronic components drier and less likely to fail due to exposure to excessive moisture or flooding. For close clearance locations the housing can be remotely mounted.

The electronic house includes:

1. Logic Controller
2. Over Switch (OS) Protection Circuits
3. Charging Equipment
4. AEI Equipment
5. All other Misc. Electrical Hardware



1. Logic Controller

Switch Interface Unit (SIU)

The SIU is a programmable logic controller developed and manufactured by Apex Rail Automation for switch machine control. The SIU handles all inputs and outputs for switch machine operations and reporting. The SIU contains the switch machine configuration data along with event logging for recreation when needed. The SIU handles all communication between the switch machine and RailMaster control system.

2. Over Switch (OS) Protection Circuit

Wheel Counters

Safety is always the priority in the implementation of our design. When using remote operated switch machines, OS protection is used to prevent the switch from being thrown while occupied and to eliminate side swipes.

For this yard Apex will incorporate the RTI MM4Z wheel counter control system for OS protection. OS protection is used to detect the presence of locomotives and rail cars as they occupy a switch. Wheel counters detect occupancy by counting the number of axles entering and exiting the OS. As soon as the first axle enters the OS detection zone the location becomes occupied. As the train exits the detection zone the axels are counted out. If the number of axles in is not equal to the number out the switch remains occupied. Once the counts equal the switch is ready for the next move. In application utilizing remote control operation of switch machine OS protection is critical to ensure the switch cannot be thrown while occupied.

Typically, single switch turnouts are equipped with three sensors. One located in front of the switch points and two at the fouling point of the turnout. By utilizing Wheel Counters, we can eliminate the need for additional track infrastructure typically required with other occupancy detection circuits.

3. Charging Equipment

AC Charging Assembly

Each switch location will come equipped with 120-volt AC charger used to charge the systems 105 amp hour 12-volt battery located in the switch machine. The battery is the main power source for the system allowing the switch to remain operational during power outages. The length of time for battery only operation varies by location. We have seen up to 150 throws on a fully charged battery.

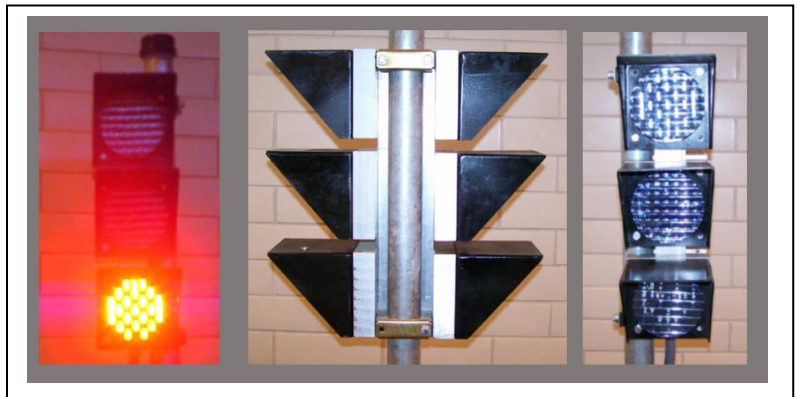
4. AEI Equipment

Reader

When a railcar passes by an AEI Antennas, the reader captures the tag's information, such as the car's number, ownership, and type, and sends it to a central system for processing and monitoring. This technology is crucial for maintaining accurate records of railcar movements, improving logistics, and enhancing the overall efficiency of rail operations. Being installed in the enclosure ensures the reader's protection from environmental factors, maintaining optimal performance and reliability.

B. Three Aspect Back-to-Back LED Indicators

The switch position indicators are designed to provide ultimate visibility under any condition. Each indicator is five inches in diameter and provides train crews with visual indication of the turnout position. Indicators can be mounted in many different configurations to provide the best visual reference based on track geometry and clearances. Each indicator has its own visor to protect the indicators while also increasing visibility during sunny days.



LED Indicator Specifications:

- 23 Degree Light Spread
- 5" LED Lens
- Visibility up to 10,000 Feet
- Dimmable
- Available Colors
 - Green, Yellow, Red, Blue, Luner

C. Wireless Communications Radio

For wireless communication from the Wayside control location to the control system Apex utilizes the Ubiquiti line of radios. Switches are typically provided with the LiteBeam 5AC Gen 2 AirMAX Antenna providing our customers with a lightweight, low-cost solution for communications. Eliminating the need for costly infrastructure for communications.



Features:

- Improved Radio Design
- Improved Mounting
- Improved Surge Protection
- Easy Management via Mobile App

D. AEI railcar tracking

In modern rail operations, accurate inventory management and efficient tracking of railcar movements are paramount to ensuring operational excellence. Our proposal includes the seamless integration of Automatic Equipment Identification (AEI) technology with the RailMaster™ Control System, creating a robust solution for tracking railcar movement into and out of tracks. This integration not only enhances operational visibility but also enables precise inventory control within your rail facility.

Key Benefits:

Real-Time Visibility: The integration of AEI with RailMaster™ provides visibility into the location and status of railcars. This enables you to track arrivals, departures, and movements with precision, reducing the risk of errors and improving operational efficiency.

Accurate Inventory Management: By integrating AEI data into the RailMaster™ Control System, you gain accurate and up-to-date inventory information. This allows for better planning, allocation of resources, and timely decision-making based on actual inventory levels.

Enhanced Security: With AEI integration, the RailMaster™ Control System adds an additional layer of security by monitoring and validating railcar movements. Unauthorized or irregular movements can be quickly detected and addressed, enhancing overall facility security.

Operational Optimization: The combined capabilities of AEI and RailMaster™ enable you to optimize railcar routing, reduce dwell times, and improve overall operational performance. This leads to streamlined workflows, reduced costs, and enhanced customer satisfaction.

The Apex Railcar Tracking & Rail Automation system is a fully integrated system allowing for the efficient movement and tracking of AEI tag equipped railcars within a facility. The system is designed to provide the user with the key goals outlined below.

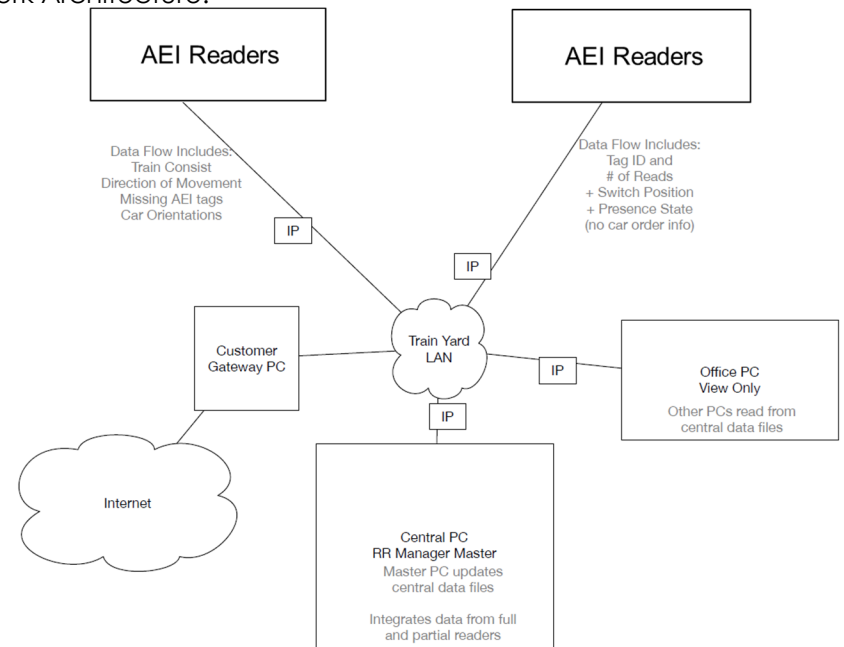
Efficiency: The system will minimize the time required to inventory railcars.

Accuracy: The system will accurately track railcars within the facility minimizing the amount of time to retrieve railcars.

Management: The system provides the tools to manage railcar inventory

RailMaster™ with added centralized railcar tracking tracks railcar movement in the yard using AEI tag readers and information from the switch control system. It displays the location of railcars on a computer screen and can be networked so multiple users can access railcar data as needed.

Example Network Architecture:



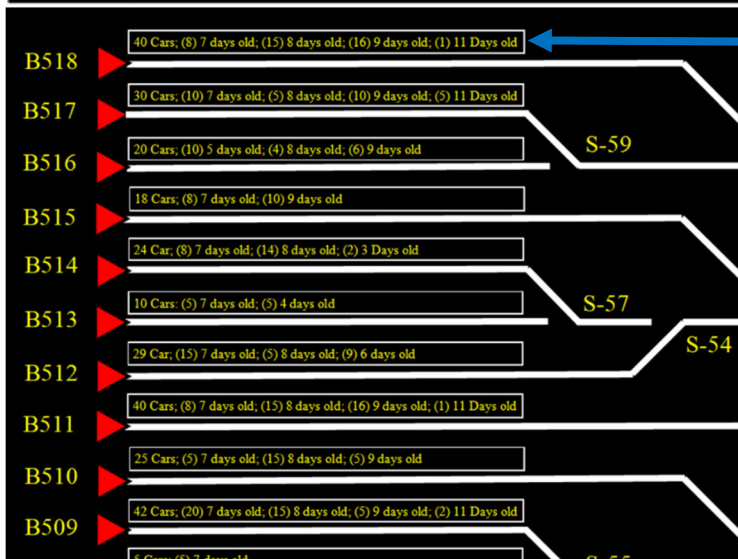
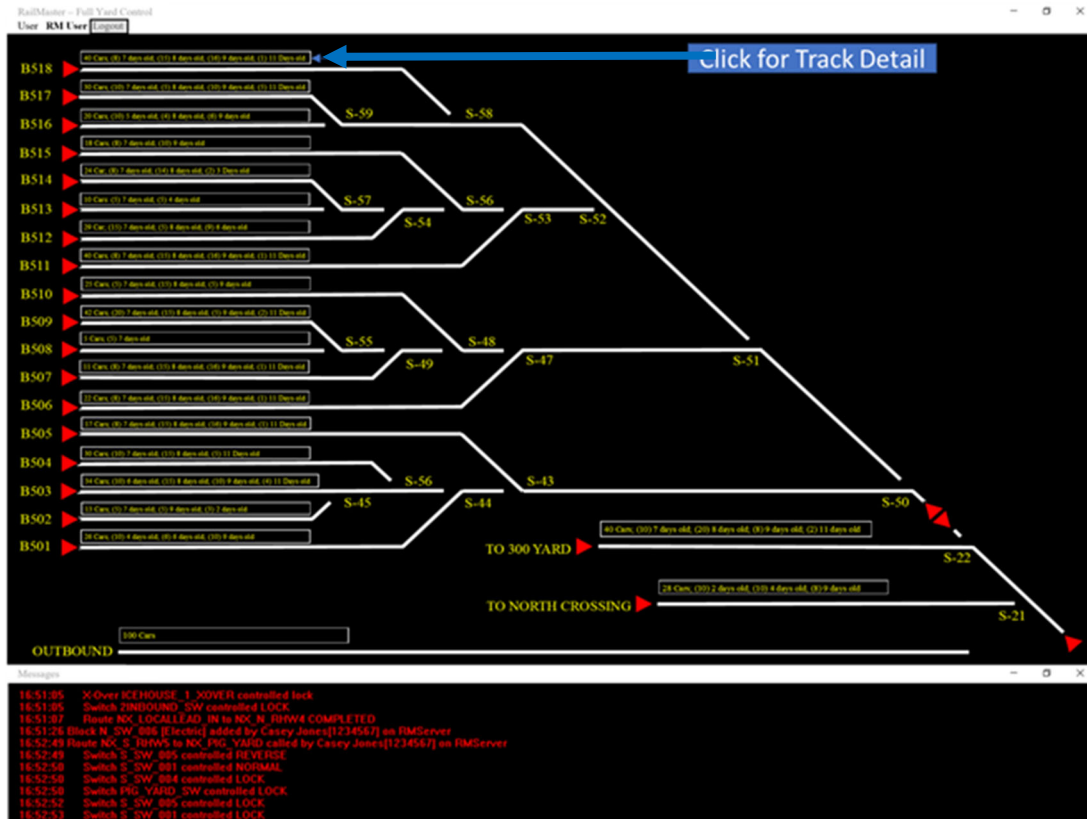
RailMaster tracks and displays the positions of cars within the yard and can be configured to transmit railcar movement and positioning data to other software systems. It utilizes information gathered from tag readers at switch locations to maintain a continuous inventory of railcar locations and their positions on tracks.

The system offers multiple methods to access information about a railcar directly from the main display. Below are additional details on how to access detailed track inventory and specific vehicle details:

- For detailed track inventory, select a track from the main screen to open a secondary window displaying the inventory specific to that track.
- To access specific vehicle details, choose a railcar from the main screen to open another window showing detailed information about the selected vehicle.

General Track Overview

When a track is chosen from the main screen, users can access a general track overview in a secondary window. This overview displays the inventory specific to the selected track, offering a comprehensive view of the track's contents and status. This feature streamlines track management by providing quick access to essential inventory details, facilitating efficient organization and utilization of resources within the facility.



Specific Track Inventory

When a specific track is selected from the main screen, a secondary window will appear, presenting the user with the inventory details for that track. This feature enhances the system's functionality by providing precise information on the contents and status of each track within the facility, facilitating efficient track management and inventory control.

The screenshot shows a 'Track Detail' window with a track layout diagram on the left and a table of vehicle inventory for 'B518 Track' on the right. The table includes columns for Car ID, Date Received, Current days on property, Spot, and OWNED.

Car ID	Date Received	Current days on property	Spot	OWNED
APEX123446	6/20/2022	7	1	NO
APEX123447	6/19/2022	8	2	NO
APEX293840	6/20/2022	7	3	NO
APEX293841	6/20/2022	7	4	NO
APEX293842	6/20/2022	7	5	NO
APEX293843	6/20/2022	7	6	NO
TTXL39493	6/20/2022	7	7	NO
UPRR39494	6/20/2022	7	8	NO
CSX39495456	6/20/2022	7	9	NO
ADM3949453	6/16/2022	11	10	NO
ADM394564	6/18/2022	9	11	NO
CSX39452345	6/18/2022	9	12	NO
TTXL3949343	6/18/2022	9	13	NO
APEX2048242	6/18/2022	9	14	NO
TTXL3949343	6/18/2022	9	15	NO
CSX37653735	6/18/2022	9	16	NO
NGLS508032	6/18/2022	9	17	NO
ADM3943453	6/18/2022	9	18	NO
WLER204823	6/18/2022	9	19	NO
WLER480402	6/18/2022	9	20	NO
TTXL3949345	6/18/2022	9	21	NO
GTX6980972	6/18/2022	9	22	NO
CSX54343562	6/19/2022	8	23	NO
ABCD5858028	6/19/2022	8	24	NO
ADM2564256	6/19/2022	8	25	NO
DOW4092244	6/19/2022	8	26	NO
GTX58023420	6/19/2022	8	27	NO
CPRR9070900	6/19/2022	8	28	NO
TTXL3949334	6/19/2022	8	29	NO
APEX909709	6/18/2022	9	30	NO
APEX980989	6/18/2022	9	31	NO

Specific Vehicle Details

Upon selecting a specific vehicle from the main screen, a secondary window will appear, offering users detailed information about that particular vehicle. This functionality enhances the system's capabilities by providing comprehensive insights into each vehicle's status, location, and relevant data, ensuring effective vehicle management and operational control within the facility.

The screenshot shows a 'Track Detail' window with a track layout diagram on the left and a table of vehicle inventory for 'B518 Track' on the right. A blue callout box points to a specific vehicle in the table with the text 'Click for Vehicle Detail'.

Car ID	Date Received	Current days on property	Spot	OWNED
APEX123446	6/20/2022	7	1	NO
APEX123447	6/19/2022	8	2	NO
APEX293840	6/20/2022	7	3	NO
APEX293841	6/20/2022	7	4	NO
APEX293842	6/20/2022	7	5	NO
APEX293843	6/20/2022	7	6	NO
TTXL39493	6/20/2022	7	7	NO
UPRR39494	6/20/2022	7	8	NO
CSX39495456	6/20/2022	7	9	NO
ADM3949453	6/16/2022	11	10	NO
ADM394564	6/18/2022	9	11	NO
CSX39452345	6/18/2022	9	12	NO
TTXL3949343	6/18/2022	9	13	NO
APEX2048242	6/18/2022	9	14	NO
TTXL3949343	6/18/2022	9	15	NO
CSX37653735	6/18/2022	9	16	NO

When a specific car is selected, another window will display the Umblor AEI tag data corresponding to the chosen Railcar.

The screenshot shows the RailMaster software interface. On the left, a track layout is displayed with various tracks labeled BS18 through BS01. A red arrow points to a specific railcar on track S-22. On the right, a 'Track Detail' window is open, displaying the following 'Vehicle Details':

CAR ID	APEX2048242
Received Date	6/18/2022 12:00
Current Days Onsite	9
Location	B518
Spot	14
Owned	NO
Vehicle Type Code	H350
Vehicle Type	Unequipped Hopper
Axles	4
Outside Length	51' 8"
Tare Weight	60,600
Capacity Weight	202,400

The system includes a "Find Vehicle" button on the toolbar, enabling users to search for a specific railcar. Clicking this button displays a comprehensive list of all vehicles currently in the system. Upon selecting a vehicle from this list, the system opens a vehicle details window, providing users with precise information about the railcar's location within the facility.

The screenshot shows the 'Car Edit' dialog box and the 'Track Detail' window. The 'Car Edit' dialog box prompts the user to 'Enter the number of the vehicle you wish to find.' and displays a list of vehicle IDs. The 'Track Detail' window shows the 'Vehicle Details' for the selected vehicle.

Car Edit Dialog Box:

Enter the number of the vehicle you wish to find.

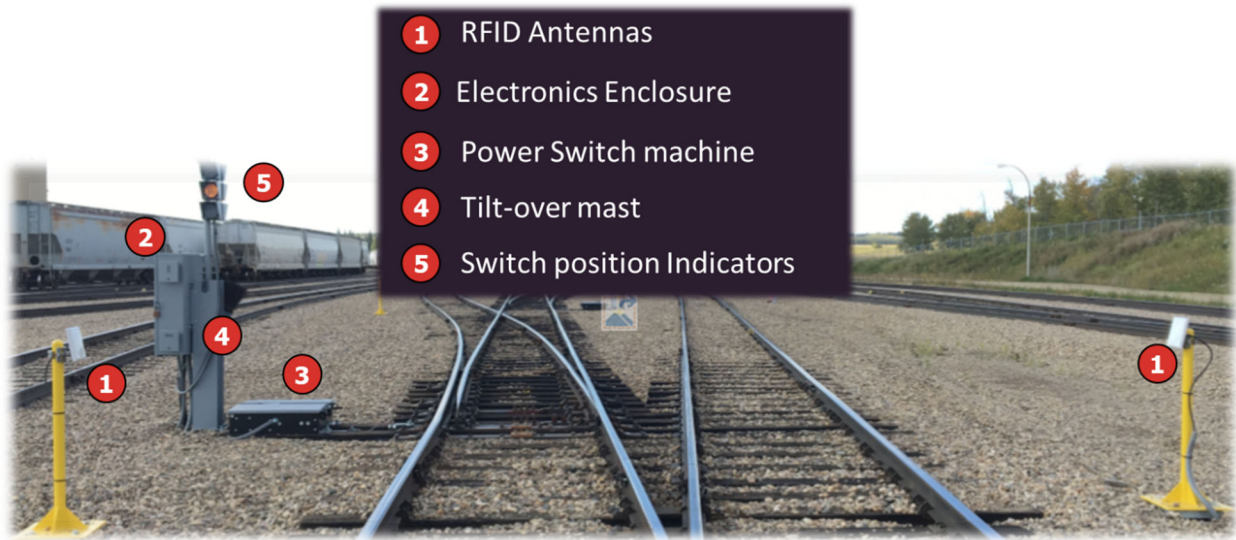
- CR 635473
- APLX1526152
- APLX6152712
- BN 635372
- CEFX011137
- CR 161517
- CR 162531
- CR 635473
- CSX 125261
- CSX 126522
- CSX 152431
- CSX 152631
- CSX 262521
- DLRX050083
- GATX632536
- GATX651712
- IC 611111
- NS 152412

Track Detail Window:

Vehicle Details

CAR ID	APEX2048242
Received Date	6/18/2022 12:00
Current Days Onsite	9
Location	B518
Spot	14
Owned	NO
Vehicle Type Code	H350
Vehicle Type	Unequipped Hopper
Axles	4
Outside Length	51' 8"
Tare Weight	60,600
Capacity Weight	202,400

The image below shows the placement of the AEI antennas at the switch location.

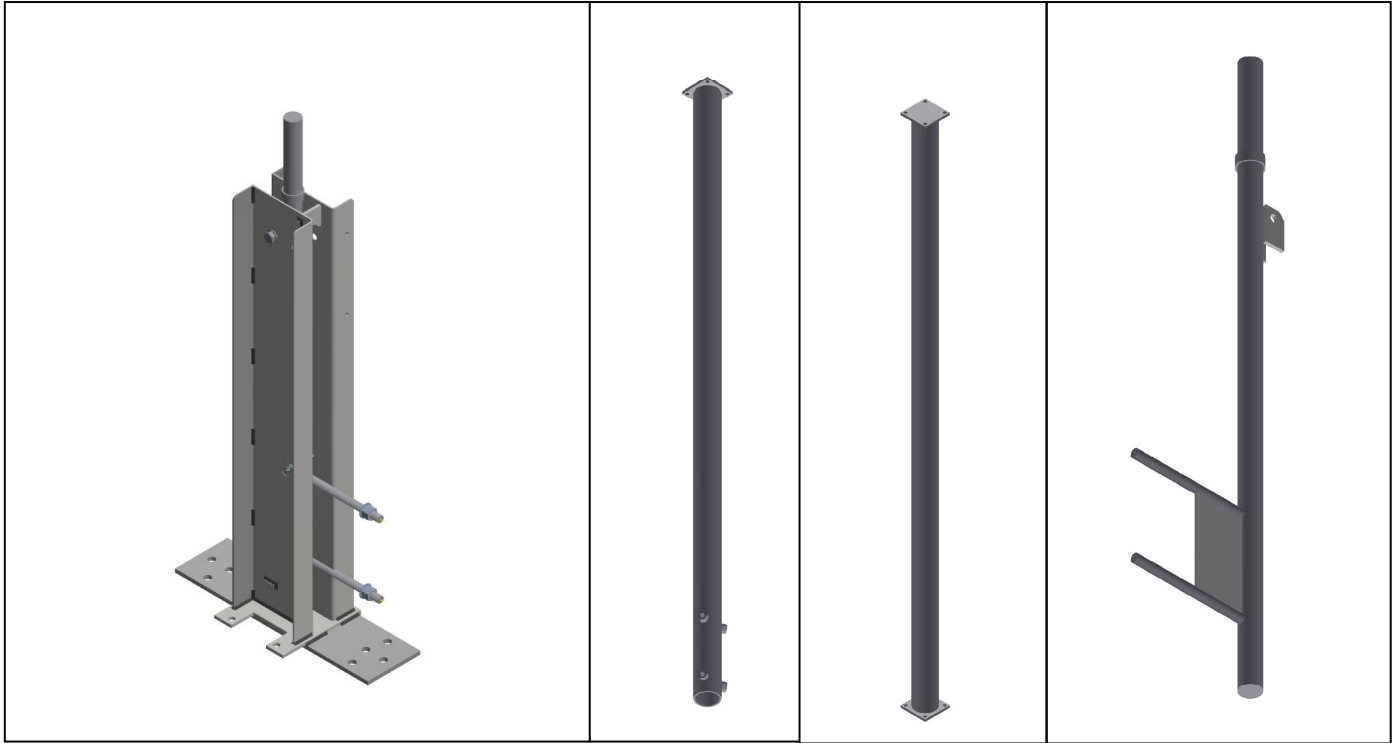


The RFID antennas in the system are strategically positioned ahead of the switch points, as illustrated in the accompanying diagram. These antennas are activated by the power switch machines over switch occupancy detection system. The AEI Electronics are integrated within the equipment enclosure, leveraging existing power sources, over switch protection mechanisms, and communication networks. This integration eliminates the necessity for additional infrastructure dedicated to power supply, communications, and over switch detection for the RFID reader system. The only externally visible components beyond the AEI system itself are the Two Antennas (Items 1) depicted in the provided example. At the switch location, the two antennas are connected via cables to the electronics enclosure.

Upon the switch becoming occupied, the AEI reader initiates its operation and begins scanning RFID tags. The system utilizes the switch's position to ascertain the railcar's trajectory as it traverses past the antennas. Upon the switch becoming unoccupied, the system transmits the Railcar Tag information to the RailMaster™ control system for subsequent analysis and display on the RailMaster™ Screen.

E. Stanchion Assembly

The Tilt-Over Mast assembly is designed to provide easy maintenance of Wayside equipment without the need to have a ladder to service or repair components mounted to the mast, keeping safety in mind. The mast is counterbalanced to allow one person to easily raise and lower when needed. The tilt-over mast assembly also provides an above ground location for the



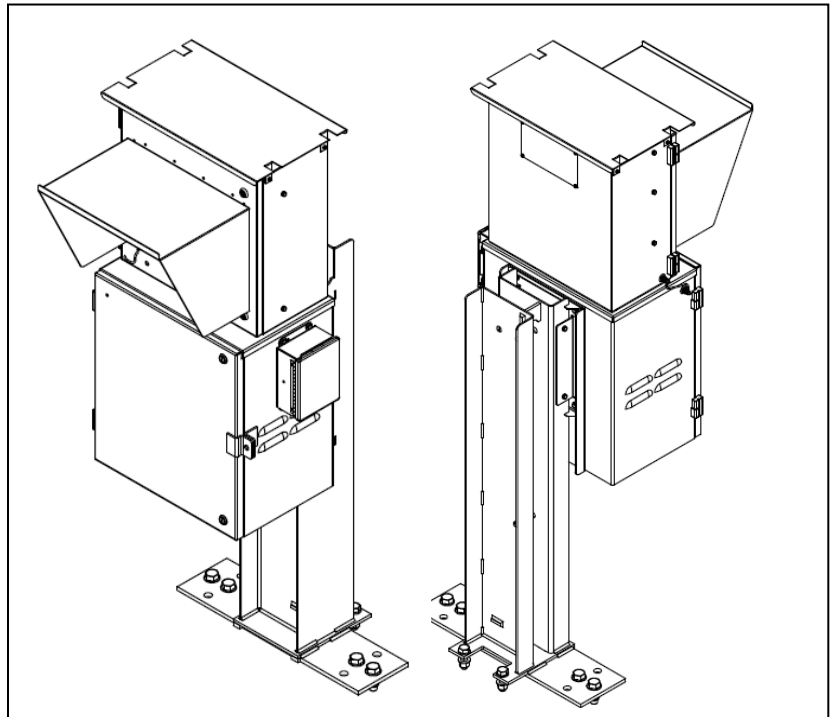
systems electronics keeping out of the switch machine and less likely to be damaged should flooding occur. The tilt-over mast allows the communication antenna to be mounted at the top of the mast ensuring its located above the railcars providing the best line of site for the communication network. This stanchion configuration also allows for remote mounting of the electronics enclosure. With this assembly switch position indicators will be in a back-to-back configuration mounted over the switch machine.

RailMaster – Touchscreen Kiosk

Kiosks are weather-hardened touch-screen PCs that can be mounted out in the train yard in the elements. However, some customers choose to mount the kiosk inside a bungalow to allow crews to get out of the elements.

Kiosks can be configured to:

- Control individual switches.
- Line routes through the yard using a single button tap.
- Automate the classification process using stacked routes and portable handheld route-advance clickers.

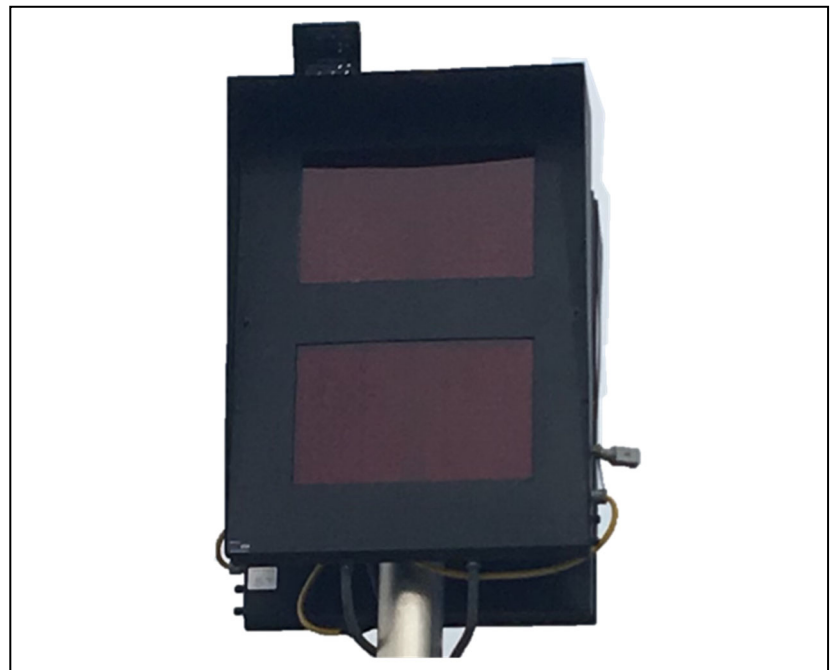


RailMaster - 2 Over 2 Display

2 Over 2 Displays are weather-hardened screens mounted on the ladder to provide users with the number of cars in a cut and track numbers. There is also a kick light at the top to inform the user when the ladder is ready for the next cut of cars to be released.

2 Over 2 Displays are configured to:

- Display number of cars in the current cut.
- Display current track for the cut.
- Provides indication to ground crews when the ladder is lined for the next cut of cars.
- The 2 over 2 display receives information directly from the RailMaster kiosk.



EX: Port of Alabama -TASD Yard Pricing

Item 1 - APEX Single Switch MYA Assembly

Quantity: 30

Each Includes:

- One (1) SIU Logics Controller with event logging
- One (1) Tilt-Over Mast Assembly
- One (1) MM4Z Wheel Counter Detection System
- One (1) Wireless Network Antenna
- One (1) Switch machine interconnect cable
- One (1) AC charging assembly
- One (1) 3 Aspect back-to-back LED indicators
- One (1) Grounding package
- One (1) Terminal interface
- One (1) MOW lockable box
- One (1) Normal, Reverse & Route Advance lockable box

Note: During Phase 1 of the project, we may find a need to remote mount enclosers away from the switch machine due to clearance issues. At that time, we can address additional cost needed for the remote mounting foundations.

Item 2 - APEX TS4500 Hydraulic Switch Machines

Quantity: 30

Each Includes:

- One (1) – Low Profile TS4500 Switch Machine
- One (1) - Connecting rod.
- One (1) - Mounting hardware
- One (1) - Battery

Item 3 - APEX RailMaster Flat Switch Yard Control System – Kiosk

Quantity: 1

Includes:

- RailMaster Flat Switching Yard Software
- Software engineering yard layout configuration
- Weather Hardened Local Control Panel
- Touchscreen
- Keyboard and Mouse
- AC Power discontent
- AC Charging Circuit
- Three 105 Amp hour Batteries
- Wireless Network Communications Antennas

Item 4 - 2 Over 2 Scoreboard Display**Quantity; 1**

Includes:

- 2 – 2 Over 2 Score Boards
- 1 – Wireless Network Communication Radio
- 1 – Cut light
- 1 – Hardware for Mounting to a Telephone Pole (Pole not Included)
- 2 – SIU Logic Controllers (One for Route Advance; one for Route Recall)
- 1 – Electronics Enclosure
- 1 – AC charging System
- 1 – 12-volt battery
- 1 – Misc. Network materials

Onsite Technical and Commissioning Support

Onsite technical and commissioning support is provided to verify the installation of the field equipment. We typically use one week onsite during the installation process to walk through with the installer. We also show them testing procedures they can perform to ensure each location is installed and operating properly. The second week is used once the installation is complete to verify the installation of all the materials and to verify all installed equipment is functioning as intended. Once the installation is verified the entire system will be tested to ensure it is operating properly before being placed into revenue service.

Item 5 - Onsite Technical and Commissioning Support**Quantity: 1**

Two Weeks (2) – Onsite Technical and Commissioning Support
One (1) Technician

Each Week Includes:

Two (2) Travel Days and three (3) onsite dates each week

Item 6- Adding AEI railcar tracking to the system

Each equipped switch location Includes:

- One (1) AEI electronics package (X 30)
- Two (2) AEI Antennas, Cabling, Pipe masts, and foundations (X 30)
- RailMaster Control systems software update (X 1)

Further discussion is needed to determine the exact number of locations required to provide effective coverage of the yard. Reader requirements can vary based on several factors, including operational methods, desired tracking locations, and the handling of movements. We have provided numbers based on equipping all 30 switch locations as a worst-case scenario, which will most likely not be required for your tracking needs but gives us a comprehensive baseline.

Pricing

Complete Yard Control system (without Railcar Tracking)

\$ 1,053,552.55

This includes:

- **Item 1** - APEX Single Switch MYA Assembly
- **Item 2** - APEX TS4500 Hydraulic Switch Machines
- **Item 3** - APEX RailMaster Flat Switch Yard Control System – Kiosk
- **Item 4** - 2 Over 2 Scoreboard Display
- **Item 5** - Onsite Technical and Commissioning Support

Cost to add Railcar Tracking

\$ 283,115.65

This includes:

- **Item 6** - Adding AEI railcar tracking to the system

Turnkey Installation (Cost Plus 25%)

\$ 1,295,218.75

This includes installation of:

- **Item 1** - APEX Single Switch MYA Assembly
- **Item 2** - APEX TS4500 Hydraulic Switch Machines
- **Item 3** - APEX RailMaster Flat Switch Yard Control System – Kiosk
- **Item 4** - 2 Over 2 Scoreboard Display
- **Item 5** - Onsite Technical and Commissioning Support
- **Item 6** - Adding AEI railcar tracking to the system.

When we contract the installation on a project, we charge the installation cost plus a 25% markup. This markup covers essential services such as project management, installation oversight, and other critical aspects that ensure the project runs smoothly. By doing this, we can provide skilled technicians, use high-quality materials and equipment, handle unforeseen issues, and ensure compliance with safety standards. This approach guarantees that your project is completed efficiently, on time, and to the highest standards, ultimately providing you with peace of mind and a hassle-free experience.

Turnkey project cost

\$ 2,631,886.95

IV. About US

Apex Rail Automation (Apex) manufactures wayside railroad switch and signaling products as well as railyard automation solution technologies. Apex offers products and engineering solutions for both mainline track and railyards.

We primarily serve large freight railroads such as Class 1 Railroads in North America. We also have many successful automation projects, products and services for the Short-Lines, Industrial, Transit and Intermodal markets.

Our rail automation technologies include:

- Railyard management software and electronics
- Remote-controlled hydraulic switch machines
- AEI RF Railcar Tracking

Our switch control and signaling products include:

- Mainline track switch machines
- Connecting rods and layouts
- Industrial crossing warnings



History

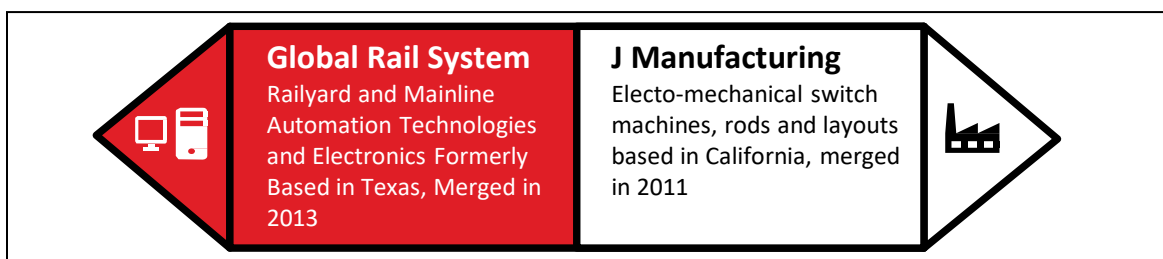
Apex was established in November 2020 with the sale of Vossloh Signaling USA, Inc. (VSIG) from Vossloh AG. Apex is headquartered in Grass Valley, California.

In 2014, VSIG was formed with the merger of Global Rail Systems (GRS) and J Manufacturing, Inc. (JMI) under the parent company Vossloh AG:

JMI was based in California and primarily focused on electro-mechanical switch machines, rods and layouts. JMI was acquired by Vossloh AG in 2011.

GRS was based in Texas and primarily focused on railyard automation technologies and electronics. GRS was acquired by Vossloh AG in two separate transactions with an investment in 2009 and the complete acquisition in 2013.

Apex is the industry leader providing turnkey solutions for both railyard and mainline track. Our origins in the merger of these two businesses gives us the capability to deliver state-of-the-art engineering and high-quality manufacturing.



Commitment to Quality Manufacturing

Apex differentiates itself through its high quality, innovative products, new product launches and equipment updates, which have continually garnered the attention of Class I railroads. We accomplish this by investing in our people and our equipment. Our team conducts incoming inspection of parts and raw material; in-process inspection as product parts and components are assembled and moved throughout the facility; and final inspection prior to packaging finished product for shipping. Each of these inspections is appropriately documented with Quality Control Sign-Off



M-1003 Certification

For more than 15 years Apex has continued to certify for the Association of American Railroads M-1003 Certification.

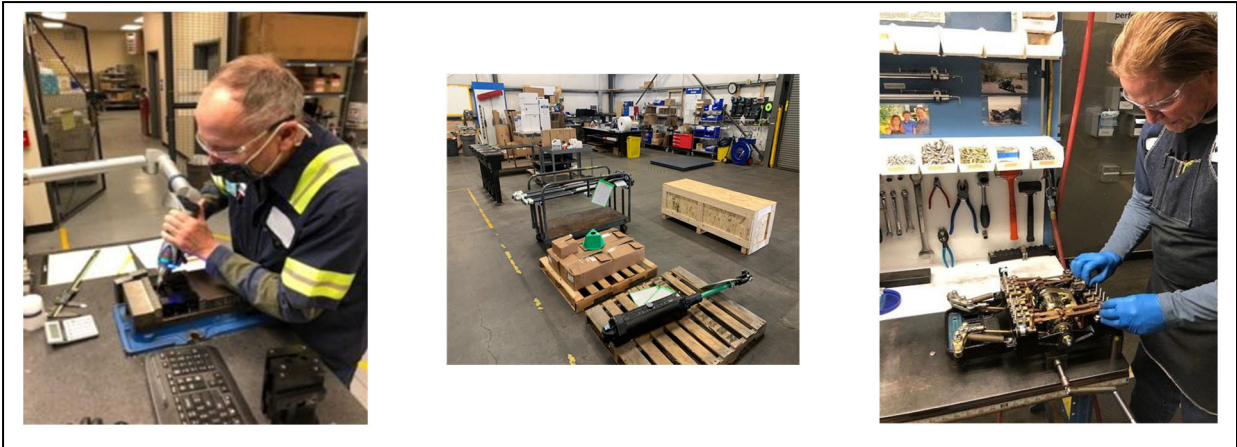


Quality Control

Quality Control (QC) personnel continually inspect and test all supplier parts and materials in our state-of-the-art laboratory, which is conveniently located adjacent to our receiving area and production lines. Our QC Technicians are well trained and experienced in all aspects of the quality processes including incoming material inspection, test and inspection requirements, documentation, and release of hold points. QC has established hold points allowing them to inspect all material at critical points and catch any issues before any production work proceeds. QC Technicians document their inspections and release of hold points on a router form. QC personnel are vigilant in the continual, ongoing implementation of their Quality Assurance Manual in order to maintain their ARR M-1003 Certification.

Equipment Preventative Maintenance

Our commitment to quality includes our commitment to our equipment. Periodic maintenance of the equipment and machinery are completed and documented to include date of service and personnel completing the maintenance. Frequency of required maintenance is shown on the forms attached on or near the production equipment.



Apex Rail Automation
TERMS AND CONDITIONS OF SALE

Seller's Terms and Conditions Control this Agreement

These terms and conditions shall apply to all sales of "Goods" and/or "Services" by **Apex Rail Automation**. ("Seller") to the Buyer (the transaction hereinafter referred to as the "Agreement"). This Agreement expressly limits Buyer's acceptance to these terms and conditions. Buyer may reject this Agreement by not ordering or receiving any Goods or Services. This Agreement does not constitute an acceptance by Seller of any offer or counteroffer of Buyer, and Seller hereby rejects any additional, different, or inconsistent terms, conditions or limitations contained in or incorporated by reference in any forms, purchase orders or other documents of Buyer that already have been or hereafter may be presented to Seller with respect to this Agreement. For the sake of clarity, Seller hereby rejects the terms and conditions of, and any obligations that may be imposed by, any prime contract to which Buyer is a party. If Buyer has submitted or will submit additional and/or different terms and conditions to Seller, or submit a counteroffer to Seller, Seller's subsequent performance will not be construed as either acceptance of Buyer's additional and/or different terms and conditions or Buyer's counteroffer, nor will Seller's subsequent performance be viewed as a willingness to accept any provision of the Uniform Commercial Code, as adopted by any state or commonwealth, that is contrary or in addition to any of the terms and conditions hereof. Clause headings are for reference purposes only and shall not affect the interpretation of this Agreement.

Prices

Unless otherwise agreed to by Seller in writing, Seller's prices for the Goods and Services will be the prices quoted by Seller, approved by Seller in writing or Seller's standard prices for such Goods and Services as of the date hereof; provided, however, that Seller may change the price for the Goods and Services in accordance with any change to its standard pricing for such Goods and Services prior to the date of shipment of Goods or performance of Services, as the case may be.

Shipping

Unless Buyer specifies otherwise in writing, Goods will be boxed as Seller deems proper for protection against normal handling, and extra charge will be made for preservation, waterproofing and similar added protection of goods. Routing and manner of shipment will be at Seller's discretion and unless otherwise agreed to by Seller in writing, Buyer will pay any insurance costs in connection with delivery of the Goods and be responsible for filing and pursuing claims with carriers for loss of, or damage to, Goods in transit. Shipment of all Goods will be made F.O.B. point of shipment at Seller's facility (Ex Works Seller's facility per INCOTERMS 2010 for international shipments) and Buyer will bear the risk of loss and damage to Goods after point of shipment. Any shipping dates for Goods or performance dates for Services given in advance of actual shipment of Good or performance of Services are Seller's best estimates for informational purposes only, and deliveries of Goods and performance of Services will be made subject to prior orders on file with Seller. If Buyer is unable to receive the Goods when they are tendered, Buyer will be liable to Seller for any losses, damages, or additional expenses incurred or suffered by Seller as a result of Buyer's inability to receive the Goods. Buyer immediately will inspect all Goods upon its receipt of them and will be deemed to accept the Goods upon receipt. Any claims for shortages or discrepancies will be waived by Buyer unless made in writing to Seller within five days of receipt of the Goods.

Payment

- (a) All payments for Goods and Services must be made in United States currency, unless otherwise specified in writing by Seller. Payments for Goods and Services will be made by such means as Seller may specify, such as by check or wire transfer, provided that Seller may refuse, in its sole discretion, payment by any means, including, without limitation, credit cards.
- (b) Complete payment for Goods and Services is due within 30 days from the date of Seller's invoice; provided, however, that Seller reserves the right, in its sole discretion, to require full payment in cash before order entry, shipment, or delivery.
- (c) Seller will have the right to offset any and all amounts due and owing from Seller to Buyer under this Agreement, including, without limitation, any chargebacks or rebates, against any amounts due and owing from Buyer to Seller under this Agreement or otherwise.
- (d) If Buyer defaults in payment, Buyer will be liable for all collection costs incurred by Seller including, without limitation, attorneys' and collection agency fees, and all related disbursements.
- (e) If Buyer does not make payment for Goods or Services when payment is due, past due amounts are subject to interest charges of two percent (2%) per month or the maximum percentage rate permitted by law, whichever is less.

Taxes

The purchase price of the Goods and Services does not include transportation taxes and sales, use, excise, import or any similar tax, impost, duty or other governmental charge arising pursuant to or in connection with the sale, purchase, processing, delivery, storage, use, consumption, performance or transportation of the Goods and Services. Buyer is responsible for payment of any transportation taxes, and any present or future sales, use, excise, import or any other similar tax, impost, duty or other governmental charges applicable to this Agreement and to the sale and/or furnishing of the Goods and Services.

Cancellation

Buyer may cancel its order for Goods and/or Services, but only if Seller agrees to such cancellation in writing and only after Buyer pays reasonable charges for expenses already incurred and commitments made by Seller in connection with the placement of such order(s). Seller may cancel in whole or in part any order for Goods or Services under this Agreement at any time without cause. Until Buyer has fully and finally paid all amounts owed to Seller for any Goods, Buyer will hold such Goods in trust for Seller, and Seller may repossess them if Buyer fails to pay for them in a timely fashion.

Additionally, Seller may file a UCC financing statement giving public notice of its ownership interest in any Goods for which it has not received complete payment.

Limited Warranty; Disclaimer of Warranties

Seller warrants that upon delivery of Goods and/or the provision of Services and for one year thereafter (the "Limited Warranty Period"), the Goods and/or Services will meet the specifications agreed upon in writing by Seller and Buyer ("Specifications"). The Limited Warranty shall not cover noncompliance with the Specifications that results from (a) use of Goods in other than their normal and customary manner or not in compliance with Seller's instructions; (b) neglect, abuse, or misuse; (c) accident, fire, flood, lightning or other acts of God, war, or other events beyond Seller's reasonable control; (d) improper handling, operation, transport, storage, or environmental conditions; (e) unauthorized alterations or repairs; (f) improper or faulty installation, maintenance or service, including installations, service or maintenance not in compliance with standard industry practices; or (g) damage that occurs during shipment. EXCEPT AS EXPRESSLY PROVIDED HEREIN, SELLER HEREBY EXPRESSLY DISCLAIMS AND EXCLUDES ANY AND ALL REPRESENTATIONS AND WARRANTIES, WHETHER WRITTEN OR

ORAL, WHETHER EXPRESS OR IMPLIED, WHETHER ARISING BY CONTRACT, AT LAW, IN EQUITY, BY STRICT LIABILITY OR OTHERWISE, WITH RESPECT TO THE GOODS AND SERVICES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY, ANY WARRANTY AGAINST DEFECTS IN DESIGN, MATERIALS OR WORKMANSHIP, ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTY AGAINST INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY, INCLUDING, WITHOUT LIMITATION, ANY PATENTS, TRADEMARKS, OR COPYRIGHTS. SELLER HEREBY EXPRESSLY DISCLAIMS ANY AND ALL REPRESENTATIONS AND WARRANTIES THAT GOODS AND SERVICES CONFORM TO ANY OTHER SPECIFICATIONS, DRAWINGS, DESIGNS, OR SAMPLES NOT AGREED TO IN WRITING BY SELLER AND BUYER.

Exclusive Remedy for Goods

Seller will, in its sole discretion, repair or replace any Goods that fail to conform to the Specifications. The remedies provided herein will be the Buyer's SOLE AND EXCLUSIVE REMEDY against Seller with respect to any Good and in lieu of any other remedies available at law, in equity, or otherwise. This remedy only will be available to Buyer for one year after the Good is delivered to Buyer, and Seller's obligations hereunder will be void unless Buyer provides Seller with notice of the non-compliant Good within 30 days of the discovery of the noncompliance. The warranties and remedies for failure of Goods to comply with Specifications provided hereby are nontransferable to third persons by Buyer.

Exclusive Remedy for Services

Buyer's SOLE AND EXCLUSIVE remedy against Seller concerning any Service provided hereunder that fails to conform to the Specifications is the reperformance of that Service or, at Seller's sole election, a refund of the purchase price for the Service, and such remedy will be in lieu of any other remedies available at law, in equity, or otherwise. This remedy only will be available to Buyer for one year after the Service is provided to Buyer, and Seller's obligations hereunder will be void unless Buyer provides Seller with notice of the non-compliant Service within 30 days of the discovery of the noncompliance. The warranties and remedies for failure of Services to comply with Specifications provided hereby are nontransferable to third persons by Buyer.

Limitation of Liability

NOTWITHSTANDING ANYTHING ELSE CONTAINED HEREIN TO THE CONTRARY AND TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT WILL: (A) SELLER BE LIABLE TO BUYER FOR ANY CONSEQUENTIAL, EXEMPLARY, INCIDENTAL, INDIRECT, LIQUIDATED, MATERIAL, PUNITIVE, SPECIAL, SPECULATIVE OR OTHER DAMAGES, OR ATTORNEYS' FEES OR COURT COSTS ARISING IN ANY MANNER PURSUANT TO OR IN CONNECTION WITH THIS AGREEMENT, THE GOODS OR THE SERVICES (EVEN IF SELLER IS MADE AWARE OF THE POTENTIAL FOR SUCH DAMAGES); AND (B) SELLER'S TOTAL LIABILITY RELATED TO ANY GOOD OR SERVICE EXCEED THE PURCHASE PRICE OF SUCH GOOD OR SERVICE.

Indemnification

Buyer will indemnify, defend and hold harmless Seller, its shareholders, officers, directors, employees, agents, representatives, and third-party subcontractors from and against all losses, damages, liabilities, costs, and expenses including, without limitation, property damage, loss of profits or revenue, loss of use of any property, cost of capital, cost of purchased or replacement power or temporary equipment, personal or bodily injury, death or third party liability for claims of intellectual property infringement ("Losses"), that may arise pursuant to or in connection with this Agreement, the Goods, or the Services (including, without limitation, Losses arising in connection with the performance of Services on Buyer's premises by Seller's employees, representatives, agents, or subcontractors), regardless of whether such Losses are suffered directly by Buyer or arise pursuant to or in connection with a third-party suit, claim, counterclaim, demand, judgment or other action (each a "Claim") and regardless of whether or not Seller or any third-party is proportionately negligent with respect to such Losses and/or Claim. For the avoidance of doubt and without limitation of the foregoing, this indemnification obligation requires Buyer to pay any judgments against Seller or any other indemnified party resulting from any Claim, any court costs of Seller or any other indemnified party in connection with any Claim, and any reasonable attorneys' fees and disbursements incurred by Seller or any other indemnified party in Seller's defense of any Claim. Seller will have the sole and exclusive right to conduct the defense of any Claim at Buyer's sole and exclusive cost and expense. Buyer's indemnification obligation does not depend on the truth or accuracy of any allegations made against Seller, Buyer or any third party.

Ownership

Seller will have and retain all right, title, and interest in and to any and all trade secrets, technical data, sales service and product plans, methodologies, techniques, designs, molds, tools, samples, systems, know-how, expertise and other proprietary information that it may use pursuant to or in connection with any Services or Goods, and Buyer will not obtain a license to, or any other property rights in, any such Seller property pursuant to or in connection with this Agreement.

Export Controls; Availability; Laws.

- (a) Certain Goods may be subject to export controls under the laws, regulations and/or directives of the United States and various other countries. Buyer must comply with such laws and regulations and not export, re-export or transfer these Goods to any country to which such export, re-export, or transfer is forbidden or without first obtaining all required authorizations or licenses.
- (b) Buyer hereby warrants and represents that it will comply with any and all Laws with respect to the purchase, use, and operation of any and all Goods and Services.

Force Majeure

Seller will not be liable for its failure to perform under this Agreement (including, without limitation, the failure to deliver any Goods or perform any Services) due to circumstances beyond its control, including, without limitation, fire, flood, earthquake, pestilence or similar catastrophe; war, act of terrorism, or strike; lack or failure of transportation facilities, shortage of suitable parts, materials or labor; any existing or future law, rule, regulation, decree, treaty, proclamation, order of any governmental agency, or any other government act; inability to secure fuel, materials, supplies, equipment or power at reasonable prices or in sufficient amounts; act of God or the public enemy; or any other event or cause beyond Seller's reasonable control, including, without limitation, any delay caused by Buyer (each, a "Force Majeure Event"). If any Force Majeure Event prevents Seller's performance of any of its obligations under this Agreement, Seller will have the right to (a) change, terminate or cancel this Agreement, or (b) omit during the period of the Force Majeure Event all or any portion of the quantity of the Goods deliverable during that period, whereupon the total quantity deliverable under this Agreement will be reduced by the quantity omitted. If Seller is unable to supply the total demands for any Goods to be delivered under this Agreement due to a Force Majeure Event, Seller will have the right to allocate its available supply among its customers in whatever manner Seller deems to be fair and equitable. In no event will Seller be obligated to purchase

materials from other than its regular sources of supply in order to enable it to supply Goods to Buyer under this Agreement. No change, cancellation or proration by Seller will be deemed to be a breach of any clause, provision, term, condition, or covenant of this Agreement.

Choice of Law; Choice of Venue

The negotiation, execution, performance, termination, interpretation and construction of this Agreement will be governed by the internal laws of the State of Delaware, excluding any conflicts of laws rules and expressly excluding the United Nations Convention on Contracts for the International Sale of Goods. If either Seller or Buyer brings a lawsuit or any other action arising out of this Agreement against the other party, such party must file its lawsuit or other action in a state or federal court located in Delaware. Seller and Buyer expressly submit to the exclusive jurisdiction of those courts and consent to

venue in those courts, and Seller and Buyer consent to extra-territorial service of process on Seller and Buyer. IN THE EVENT OF LITIGATION PERTAINING TO ANY MATTER COVERED BY THIS AGREEMENT, EACH OF SELLER AND BUYER HEREBY AGREE TO WAIVE ANY RIGHT THAT IT MAY HAVE TO A JURY TRIAL OF ANY OR ALL ISSUES THAT MAY BE RAISED IN SUCH LITIGATION.

Nothing contained

in this Agreement will be construed to limit or waive any rights of Seller under applicable United States federal, state, or local laws. Any provision of this Agreement held to be invalid, illegal or unenforceable will be ineffective to the extent of such invalidity, illegality or unenforceability without affecting the validity, legality and enforceability of the remaining provisions hereof.

Miscellaneous

None of Seller's or Buyer's shareholders, directors, officers, members, partners, managers, employees, agents or representatives have any authority to orally modify or alter in any way the terms, conditions, and limitations of this Agreement. The terms, conditions, and limitations set forth in this Agreement can be modified, altered, or added to only by a subsequent written instrument signed by an authorized representative of Seller or by language included on the face hereof. Regardless of how many times Buyer purchases, or has purchased, goods and services from Seller by whatever means, each time Buyer accepts this Agreement, Buyer and Seller enter into a separate agreement that will be interpreted without reference to any other agreement between Buyer and Seller, or what Buyer may claim to be a course of dealing or course of performance that has arisen between Buyer and Seller. No inconsistent usage of trade or industry custom, if any, prior to, contemporaneous with or subsequent to the making of this Agreement will waive, vary, serve to explain or serve to interpret any of the terms, conditions and limitations of this Agreement. This Agreement is the sole and exclusive agreement with respect to the matters discussed herein and the provision of Goods and Services hereunder and supersedes all prior and contemporaneous agreements and understandings, negotiations, inducements, representations or conditions, whether oral or written, whether express or implied, between Buyer and Seller with respect to such matters. Failure by Seller to enforce any of the terms, conditions and limitations of this Agreement will not constitute a waiver of those terms, conditions and limitations or a waiver of any other terms, conditions or limitations of this Agreement, and the failure of Seller to exercise any right (whether provided by this Agreement, law, equity, or otherwise) arising from Buyer's default under this Agreement will not constitute a waiver of that right or any other rights. All notices required or permitted to be given hereunder will be deemed to be properly given if delivered in writing personally, sent by United States certified or registered mail addressed, return receipt requested, or by nationally recognized overnight courier service providing for reasonable proof of delivery to Seller or Buyer, as the case may be, at the addresses set forth on the face hereof, with postage thereon fully prepaid. The effective time of notice will be upon delivery, if delivered personally, or two days after the date when deposited in the mail or with a courier, if mailed or sent by courier. The provisions hereof will survive indefinitely.