The Willow Creek Gazette

Willow Creek Railroad Museum Winter 2017

Inside this issue:

Signal Update Crossover Changes	2
Signal System Detection	3
2017 in Review	4
2017 in Review (continued)	5
2017 in Review (continued)	6
2017 in Review (continued)	7
2017 in Review (continued)	8
2017 in Review (continued)	9
2017 in Review 	10
Glimpse of History Switch Lamps	11

Winter At Willow Creek

by the editor

As you may imagine, winter is a slow period at Willow Creek. Train operation is restricted by the wet and cold weather.

Maintenance, however, still needs to be done. Garry requested Mark and I come out and help with leaf cleanup. It's amazing how quickly the downed leaves pile up and how big the pile gets as they are gathered. Some leaves remain and assistance is appreciated. Every wind storm also brings down limbs that need to be gathered.

With limited winter activity there is not much news to report in the Gazette. Hence a number of pages include a review of the 2017 activities. Alan Shifley has been kind enough to submit a couple of articles on signal operation and future additions. Alan has given a couple of short seminars on signal operation and his article on train detection provides some mental reinforcement of the concepts involved. I have always been impressed by the operation of our signal system. Thank you Alan!

Again I have included a *Glimpse of History* article. This year I was able to obtain a binder of Adams & Westlake Bulletins which give detailed descriptions of the lamps, lanterns and hardware they produced. If you have interest in collecting railroadiana lamp and lantern items you may find PDF copies at this location:

http://www.railroadiana.org/library/pgCat_AW191216.php

From Willow Creek Railroad

We wish you all a happy holiday season as this year draws to a close. Another year seems to have gone by too quickly. We look forward to seeing you again in 2018.

Signaling the Double Crossover

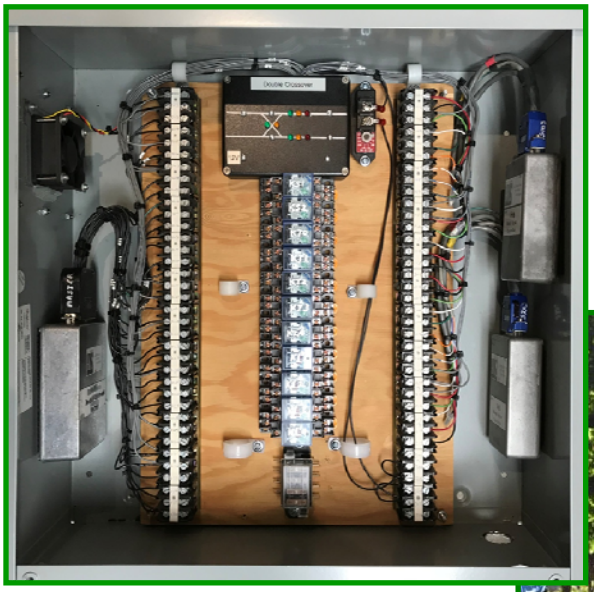
by Alan Shifley

Work is underway on signals and controls for the Double Crossover. The signal bridge is already in place, turnout motors have been fabricated and the control boxes are being set up and wired.

The Double-Crossover system will consist of a motor to drive each of the four turnouts and loop detectors to prevent operation of the turnouts when a train is present. The turnouts will be controlled by pushbuttons. A signal will be located above each mainline on the signal bridge. An indicator will also be located on the signal bridge between the mainlines to display crossover positions "X" or "||".

When the turnouts are lined in their typical "X" position, incoming trains on the two mainline tracks will be permitted through the crossover on a "first-come" basis similar to how the 3 -way crossing currently operates. When the turnouts are lined "||" straight through, each mainline will operate independently.

When this project is complete the entire Willow Creek mainline will be signaled. The primary purpose of the signals at Willow Creek is to enhance safety and to keep trains spaced apart during busy operating times such as during Steam-Up. They also contribute to our "museum" status by demonstrating how signals are used to control trains in prototype railroad operations.



Partially-wired main control box for the Double Crossover

Showing location of signal bridge that will indicate position of switches for Double Crossover

Train Detection at Willow Creek

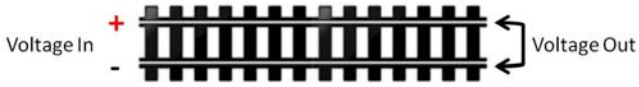
by Alan Shifley

At the heart of any signal system is the ability to detect trains. At Willow Creek the primary type of train detection is the track circuit.

Track Circuit Detection

A track circuit is basically an electrical-current loop with low voltage applied to the rails at one end and a device to detect the voltage at the other end. The two rails must be insulated from each other and insulated at each end of the track circuit to define a section of track known as a ***signal block***.

A block is considered to be ***clear*** as long as voltage is detected at the far end of the rails.



Track Circuit

A block is considered ***occupied*** if voltage is not detected at the far end of the rails, such as when a train is on the track creating an electrical path ("short") between the rails. An open circuit will also interrupt the voltage at the far end, providing a level of fail-safe protection if a wire or connection is broken.

Track Circuit Shorted by a Train

Inductive Loop Detection

The second type of train detection at Willow Creek is the inductive loop. The inductive loop is typically used where the rails are not insulated such as at a turnout where the rails are welded together.

The inductive loop is formed by burying multiple loops of wires in a rectangle below the track. The loop is connected to a loop detector that senses a change when a metal object such as a train enters the loop.

Each detection method has advantages and challenges.

The track circuit design used at Willow Creek has proven to be very reliable overall, functioning consistently in all types of weather conditions from dry to wet and even in snow. Challenges include components being subject to physical damage from derailed trains, people or vehicles and, when the track has not been used in a while, rust that reduces rail-to-wheel electrical contact.

Loop detectors have been used successfully at a number of locations around the railroad to supplement track circuits. Loop detectors are not used as a stand-alone method of detection because if a train stays in a loop for an extended period of time the loop detector will re-tune and no longer recognize the presence of the train.

Reliable detection of trains enables the use of signals to keep trains separated and to control the movement of trains, such as through the three-way crossing. It also enables the use of crossing signals and to enhance the safety and operational interest of the railroad.

2017 In Review

February 18th

February 25th

It was a very wet winter. The grounds didn't dry out until late May.

April 22nd

April 22nd

Storms brought down a lot of debris and the weeds flourished. Several trees were damaged.

May 6th

There was lots of debris to clog the waterfall filter and pump.

May 6th

The wet weather allowed grass to grow tall between times when it was dry enough to mow.

May 13th

The sawmill was a temporary site to store the roundhouse hydraulic lift until it became dry enough to store at Willow Creek

2017 In Review

May 27th

Frank cuts up storm damaged spruce tree.

May 27th

Evan removes remaining hawthorn tree roots from south ditch.

June 10th

Steve Scharer poured car barn concrete slab and signal bridge footings earlier this week.

June 17th

June 17th

The car barn is moved to its permanent location on the concrete slab.

June 25th

Greene Engine on display in the Dezotell Building.

July 1st

Alan installs signal head on new bridge.

July 3rd

Alan's view from atop the Searchlight Signal ladder.

2017 In Review

July 8th

July 8th

Track leading to car barn is assembled and installed.

July 22nd

Alan installs electronics and detectors to activate crossing signal outside the south gate.

July 22nd

July 23rd

Track leading to car barn is connected and ballasted.

July 29th

Roundhouse door skins have been applied and the trim painted.

2017 In Review : Steam-Up July 29 &30; August 5 & 6

2017 Great Oregon SteamUp Panorama

Operation Life Saver Display

Logging Display @ New Location

First Day

Display Track

2017 In Review

August 20th

This was the weekend of the eclipse camp out.

The grounds are ready for visitors.

August 20th

August 21st

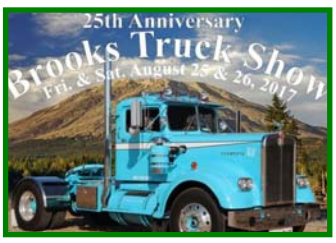
Night operations added to the experience.

Viewers gathered on the east lawn to observe the morning eclipse.

August 26th

The 25th Anniversary Truck Show was the following weekend.

August 26th



August 26th

2017 In Review

September 2nd

Members at the annual business meeting.

September 9th

Painting the ICP.

September 10th

Roof on the car barn.

September 10th

Members and family of Oregon National Guard enjoy their annual picnic.

September 16th

September 16th

Prentice and Evan placed rocks behind ICP to provide for future landscaping and pedestrian walkway flow.

September 16th

The brown and gray custom color mix on the south side did not look quite right. It was decided to repaint with standard mix colors.

2017 In Review

September 16th

Ernie moves rock with Alan's tractor.

September 30th

Garry paints columns & trim.

October 7th

Alan's ICP work station for future south side electric switch controllers.

October 27th

Garry working leaves.

November 5th

Temporary weather protection installed.

December 9th

Geese gathered on Powerland Parking Area

December 13th

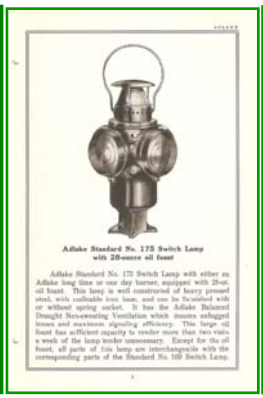
Summer Shade means massive winter cleanup.
Mark becomes "leaf herder"

A Glimpse of History: Railroad Lamps ~ Switch Lamps

Railroad lamps are distinguished from lanterns by both function and design. Lamps were generally intended to be stationary, were generally made of a sheet metal or cast metal body, and used lenses to amplify light from an interior light source. A wide variety of different lamps were used by the railroads, including semaphore lamps, classification lamps, train order lamps, bridge lamps, marker lamps, and switch lamps. Lanterns were designed to be portable and used globes which were surrounded by a metal frame. This article will discuss switch lamps. Their purpose was to make switch alignment readily visible.


98068


97137


Adlake Standard No. 173 Switch Lamp with 25-ounce oil fount


98062


Adlake Long-Time Burner

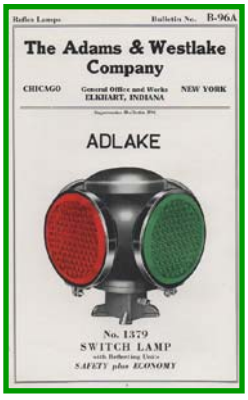
Early switch lamps burned oil for illumination. From an Adlake Bulletin B-17: "*In consequence of lower rates and higher wages, railroad managers are looking for a means to decrease maintenance costs, in order that railroad properties may pay dividends to stock holders. The problem of reducing the maintenance cost is in large part a problem for the railway supply manufacturer. The long-time burner for switch and semaphore lamps is a striking illustration of one method of reducing maintenance cost. The average cost per annum of a one-day burner is. . . . $20.58 The average cost per annum of a long-time burner is. . . $9.76 The saving per annum in maintenance cost by a long-time burner is therefore. . . . $10.82. These figures include oil, wicks, repairs and the labor of tending the lamp, and are taken from the Proceedings of the Railway Signal Association Yearly Report for 1905.*"


98121

98170

To further reduce cost railroads eventually switched to electrically illuminated lamps to eliminate oil lamp maintenance. The lamp on the right is electrically illuminated with an additional feature. The plastic lens is faceted around the perimeter. Reflection from headlights can illuminate this signal. This made the signal visible in the event the bulb burned out.


98200



The signal lamp on the left has no internal illumination. The glass lens has a mirror coating on the back which reflects the oncoming engine's headlight. This model was called a "Reflex Lamp". In the pictures the lens was illuminated by the photo flash.