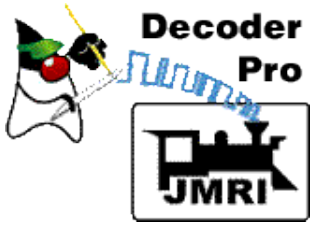
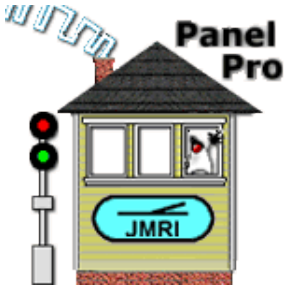




Intro to JMRI and PanelPro's Layout Editor

Dave Duchamp

Dick Bronson (Co-Presenter)

Bob Jacobsen (Co-Presenter)

What is JMRI?

JMRI (Java Model Railroading Interface) is open source (no cost) software for connecting a model railroad layout to a computer, and performing various model railroading tasks via the computer.

JMRI was/is developed by a group of volunteer programmers under the leadership of Bob Jacobsen.

JMRI uses the Java programming language.

JMRI continues to grow . . .

How is JMRI Organized?

JMRI has of an extensive library of model railroading software, and several front-end applications focusing on different areas of model railroading.

All JMRI applications use this common library.

JMRI Applications include:

DecoderPro - Programming DCC decoders.

PanelPro - Layout display for running trains.

What Computer Systems are Supported by JMRI?

Windows – Windows 7, Vista, XP, 2000, 98SE

Macintosh - MacOS X

Linux - several flavors

What Model Railroading Systems are Supported by JMRI?

Loconet - Digitrax (Chief, Empire Builder, Zephyr),
Uhlenbrock - Intellibox

Lenz - LI100, LI100F, LI101, LIUSB

NCE	Atlas Commander	
C/MRI	ZIMO MX-1	Roco
EasyDCC	ZTC	m-RPS
Wangrow	Fleischmann	Hornby
SPROG	TMCC (Lionel)	Protrak Grapevine
XPA Modem	Oak Tree Systems	**and More…**

What Model Railroading Tasks are Supported?

Programming DCC decoders
Computer Panel Displays (including full CTC Panel)
Computer throttles
Consisting
Control of Turnouts (Including Optional Feedback)
Routes (Controlling groups of Turnouts and/or Sensors)
Logix (Control and Automation Logic)
Control of Layout Lighting
Operations support (Switch Lists)
Control of Signals

and Many More …

How do I get started?

Detailed instructions for various computers and model railroading systems are on JMRI web site.

http://jmri.org

No computer programming is required.

More information on your handout.

Computer Connection Example

Workshop system:

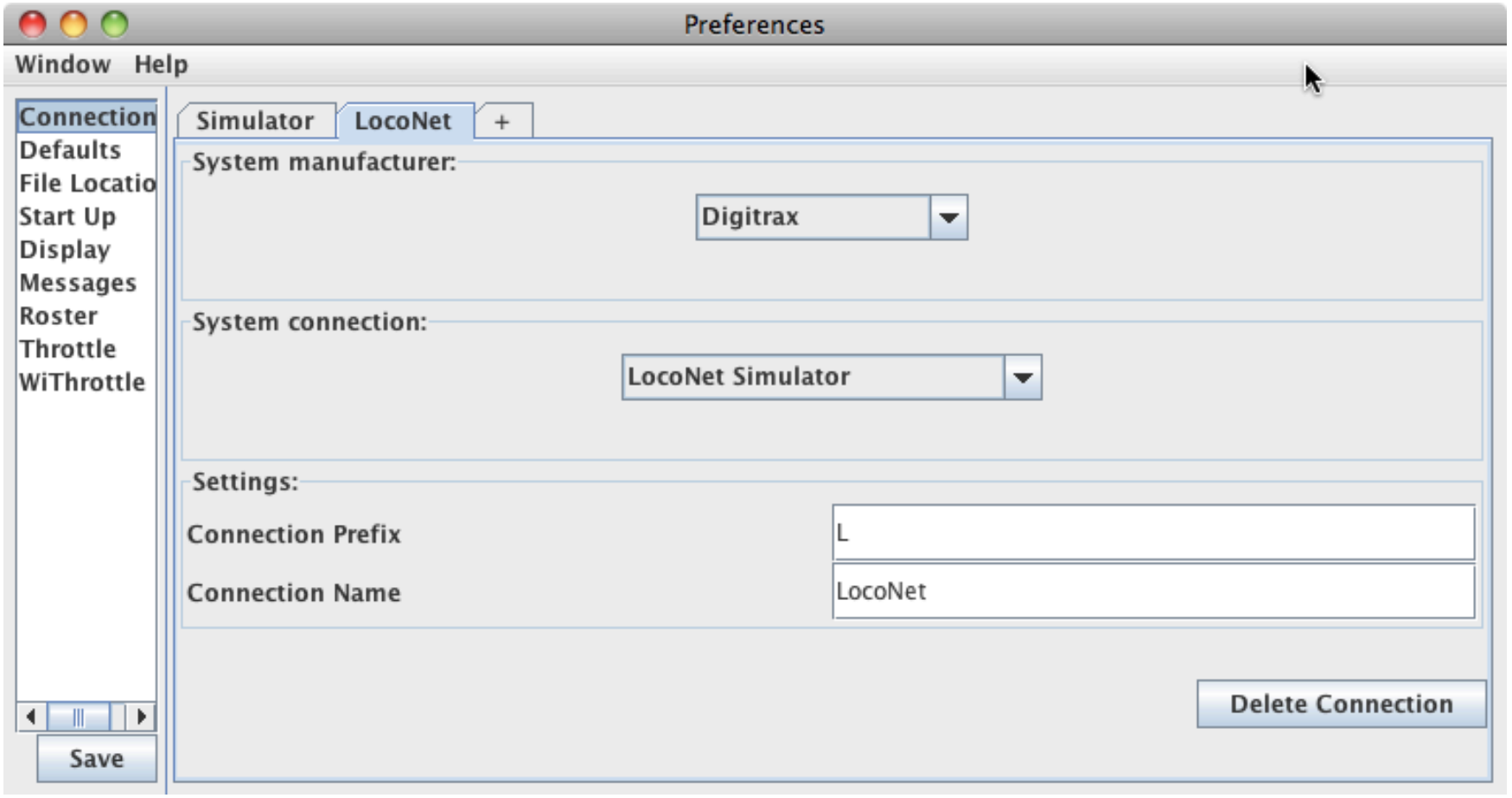
Digitrax DCS100

Locobuffer II

Serial to USB adapter

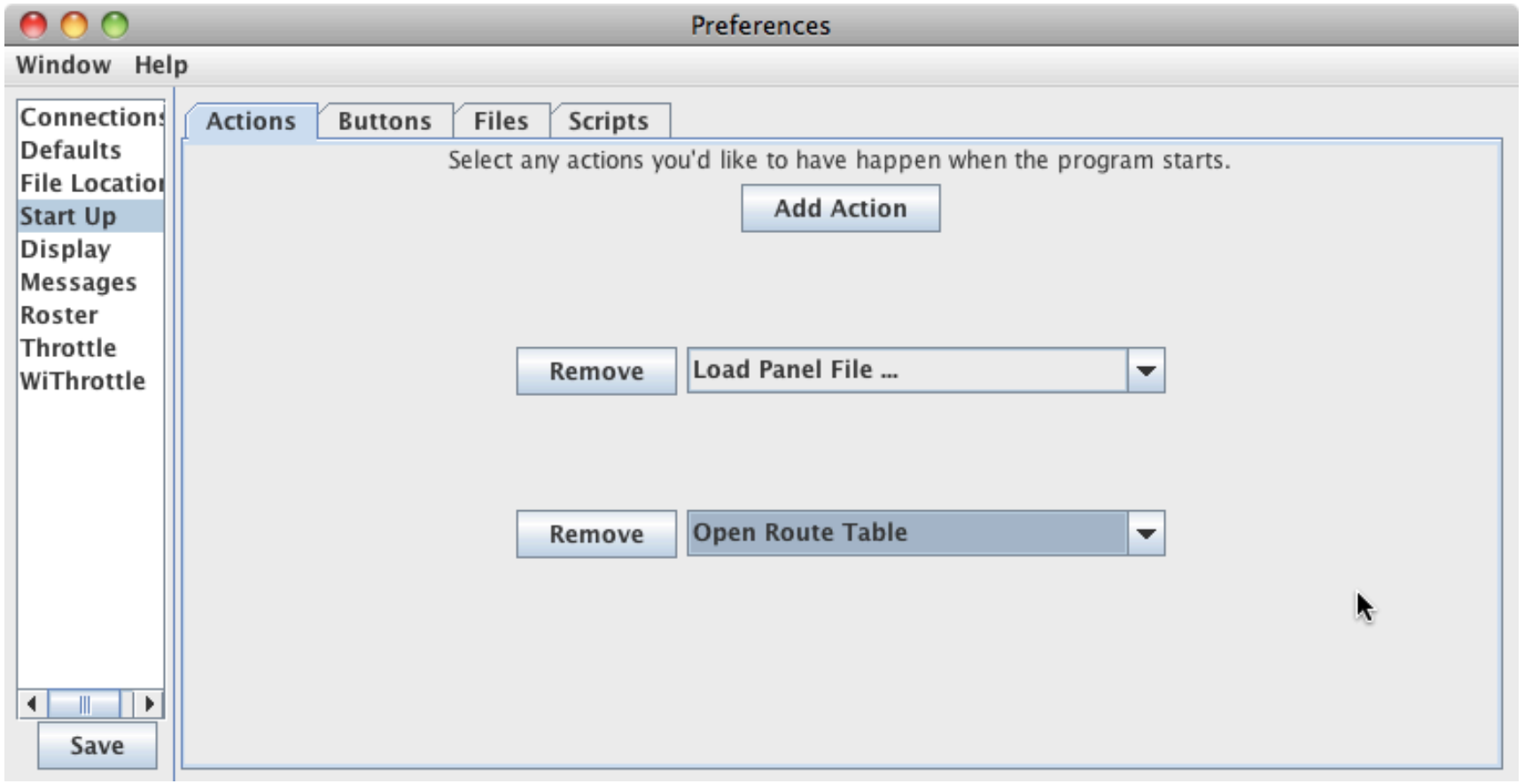
Macintosh MacBook Pro

Configuration Panel



New Improved Version

Set Defaults and Start Options



- Select the type of layout connection from an extensive pull-down menu. Multiple connections are supported.

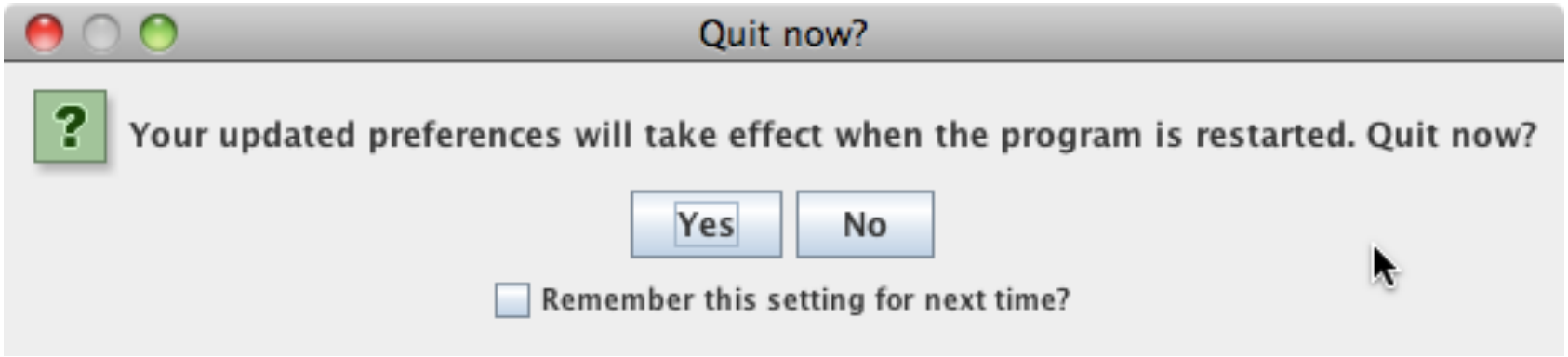
- Select configuration options for your layout connection.

- Set other startup options as desired by bringing up dialogs from the menu on the left.

- Click the “Save” button to write the connection configuration to disk.

Click the “Yes” button, to quit the program.

Restart the JMRI application.



Notes: Restart is required anytime preferences are changed for the preferences to take effect.

Preferences must be set for each JMRI application. They each have separate preferences files.

The program is set up according to the saved preferences.

Note: Startup window contains program version and Java version, in addition to connection information.

Configuration preferences may be accessed at any time via the Edit menu.

How do I get help?

1st - Most JMRI windows have a Help menu.

Window Help … Documentation related to that window

General Help … Overall JMRI documentation

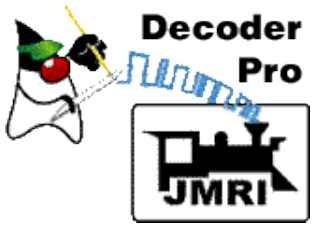
2nd - The JMRI web site - *http://jmri.org/*

Documentation and detailed instructions

3rd - JMRI Yahoo discussion group. **jmriusers**

Monitored by JMRI 'experts', eager to provide help.

Information in your handout on how to sign up.



What is DecoderPro?

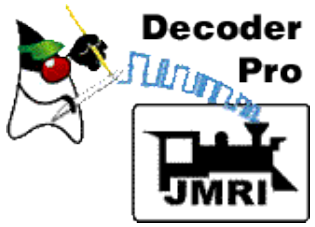
DecoderPro is a JMRI application.

DecoderPro is a better tool for programming DCC decoders.

DecoderPro simplifies the job of configuring complicated DCC decoders.

DecoderPro supports mobile decoders (decoders in locomotives).

DecoderPro supports some static decoders.



Basic Terminology

Decoder - small microcomputer based control unit

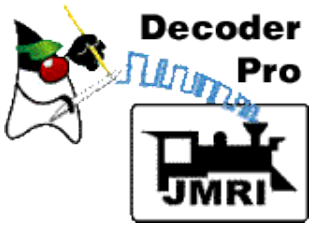
Mobile Decoder - Decoder in a locomotive, "decodes" DCC commands to control locomotive.

CV (Control Variable) - 8-bit data byte in a decoder that specifies user options.

Programming a Decoder - setting the values of the CV's to user's options.

Decoders have many CV's. Many CV's follow **NMRA Standards**, but some are vendor specific.

Each mobile decoder has an **Address** - a number that allows the locomotive to be uniquely identified.



Setting up an Address

Decoder (locomotive) addresses can be 2 digits or 4 digits on modern decoders and DCC throttles.

Usually set the address to the locomotive number.

Most decoders are set to address 03 on arrival.

A locomotive will respond to speed control and function commands that bear its address.

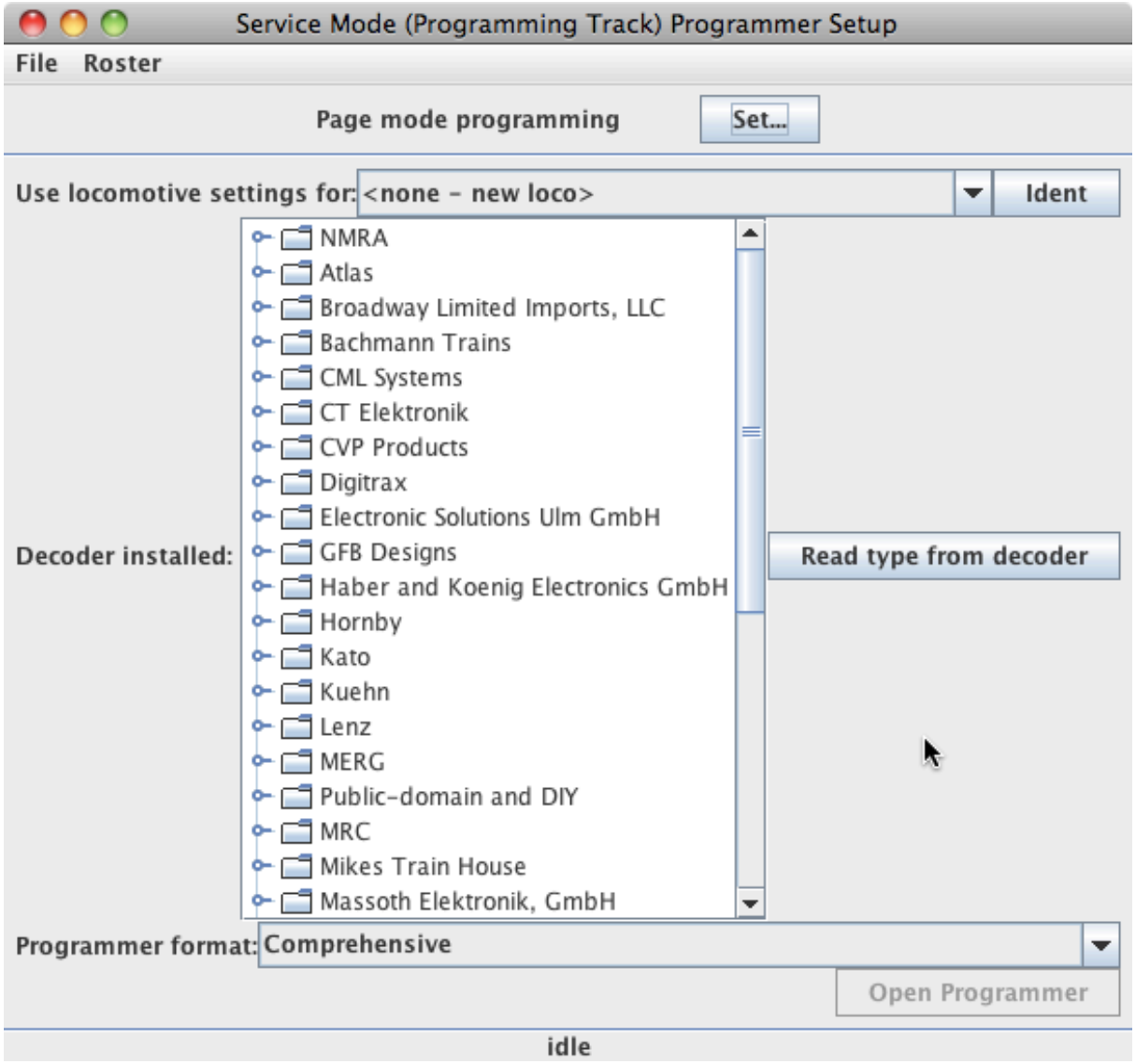
Setting the address is usually the first (and sometimes the only) programming needed.

It's easy to set up an address in DecoderPro.

Example - Setting the address of a new decoder

Put the locomotive with the new decoder on the programming track.

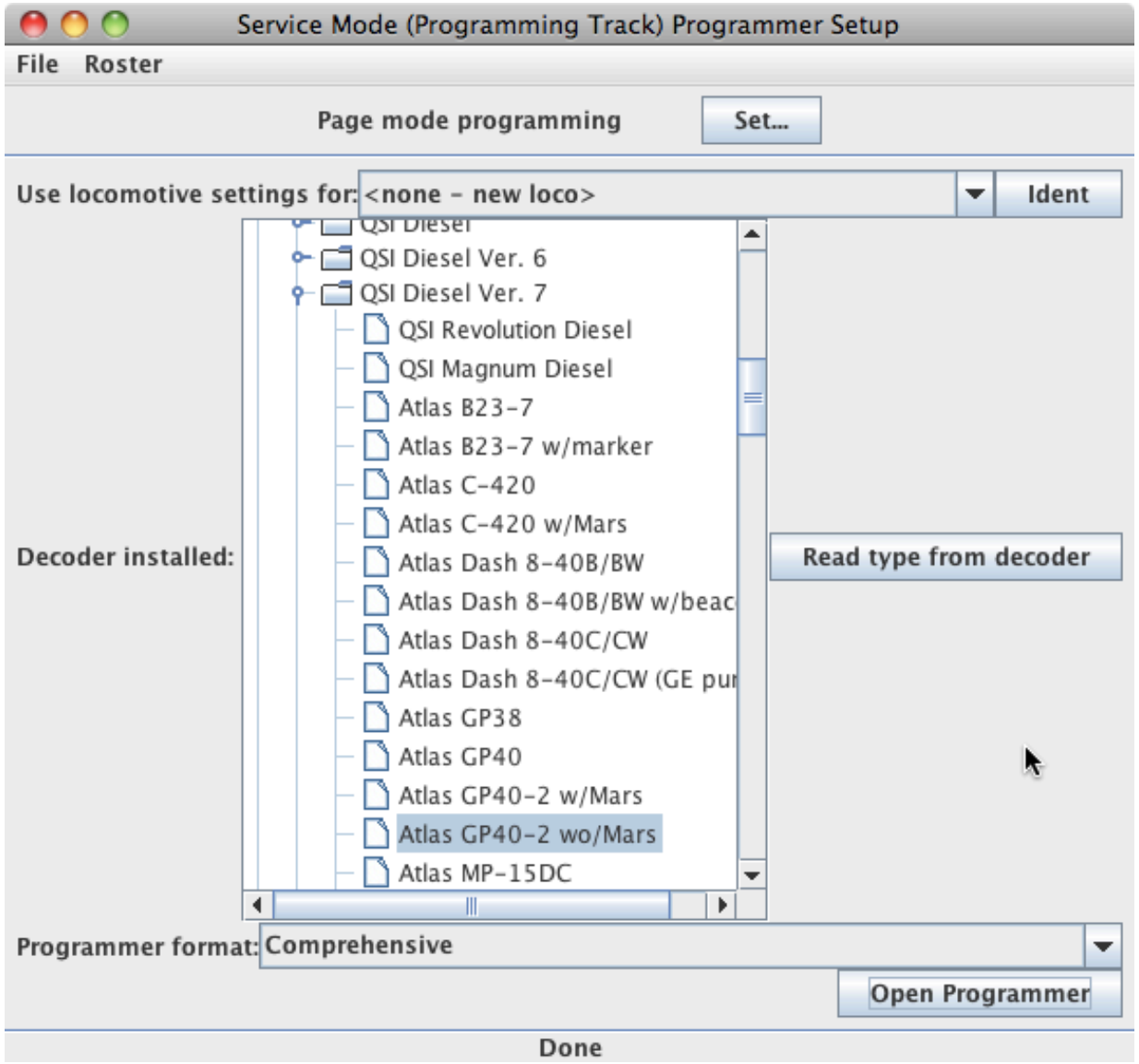
Start Decoder Pro. When the window below comes up, click "**Service Mode (Programming Track) Programmer**"



NMRA standards:
Two CV's identify a decoder:
CV8 - Manufacturer ID
CV7 - Manufacturer Version Number.
Both are read only.

<- Click here to have DecoderPro attempt to identify the decoder by reading these CV's.

Note: Some command stations cannot read CV's! For these, select the decoder in the list manually.



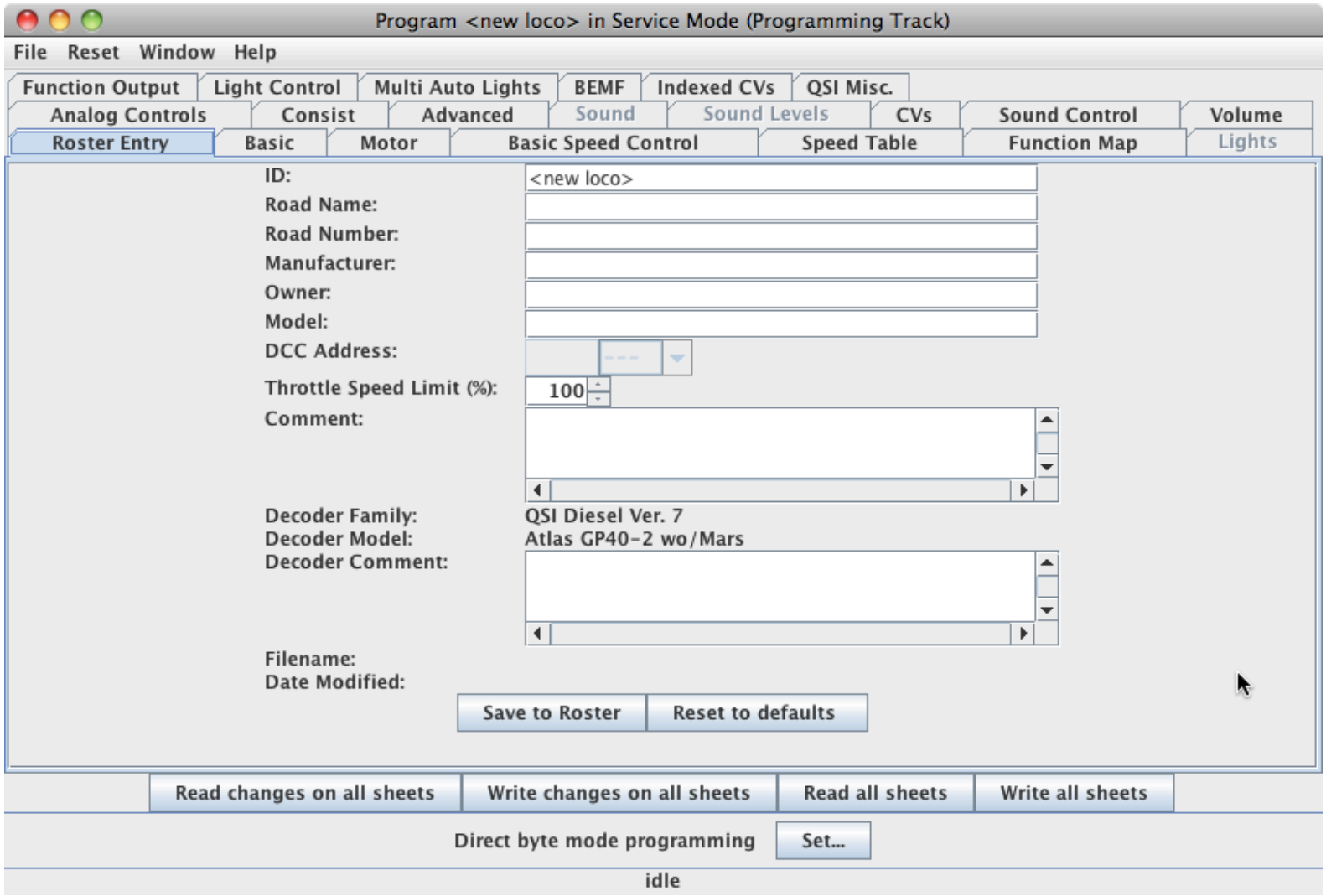
DecoderPro identified the decoder as a QSI Diesel Ver. 7 for an Atlas GP40-2 wo/Mars

(Sometimes the user has to choose among several possibilities.)

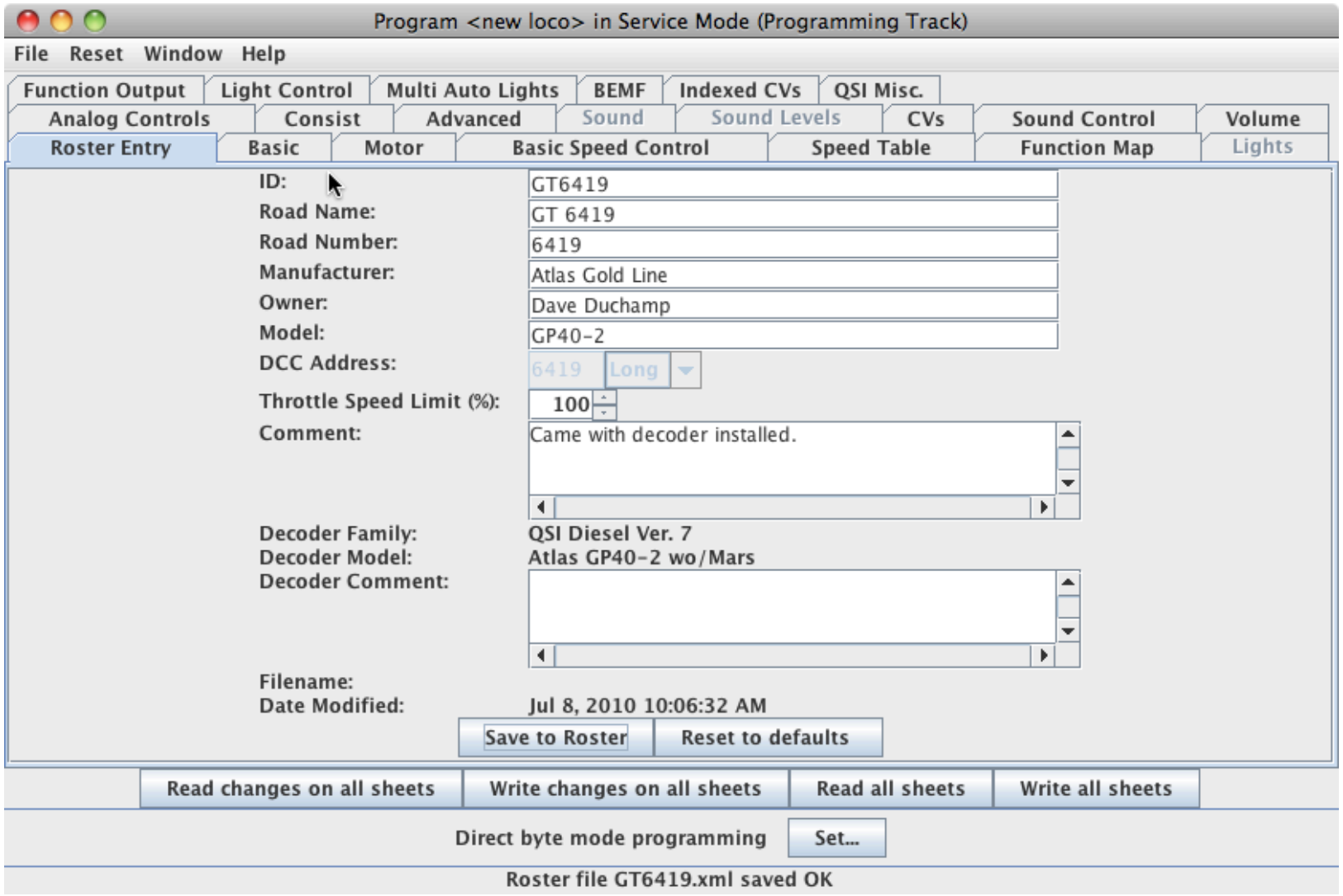
Click Atlas GP40-2 wo/Mars, to select it, and click "Open Programmer".

<-

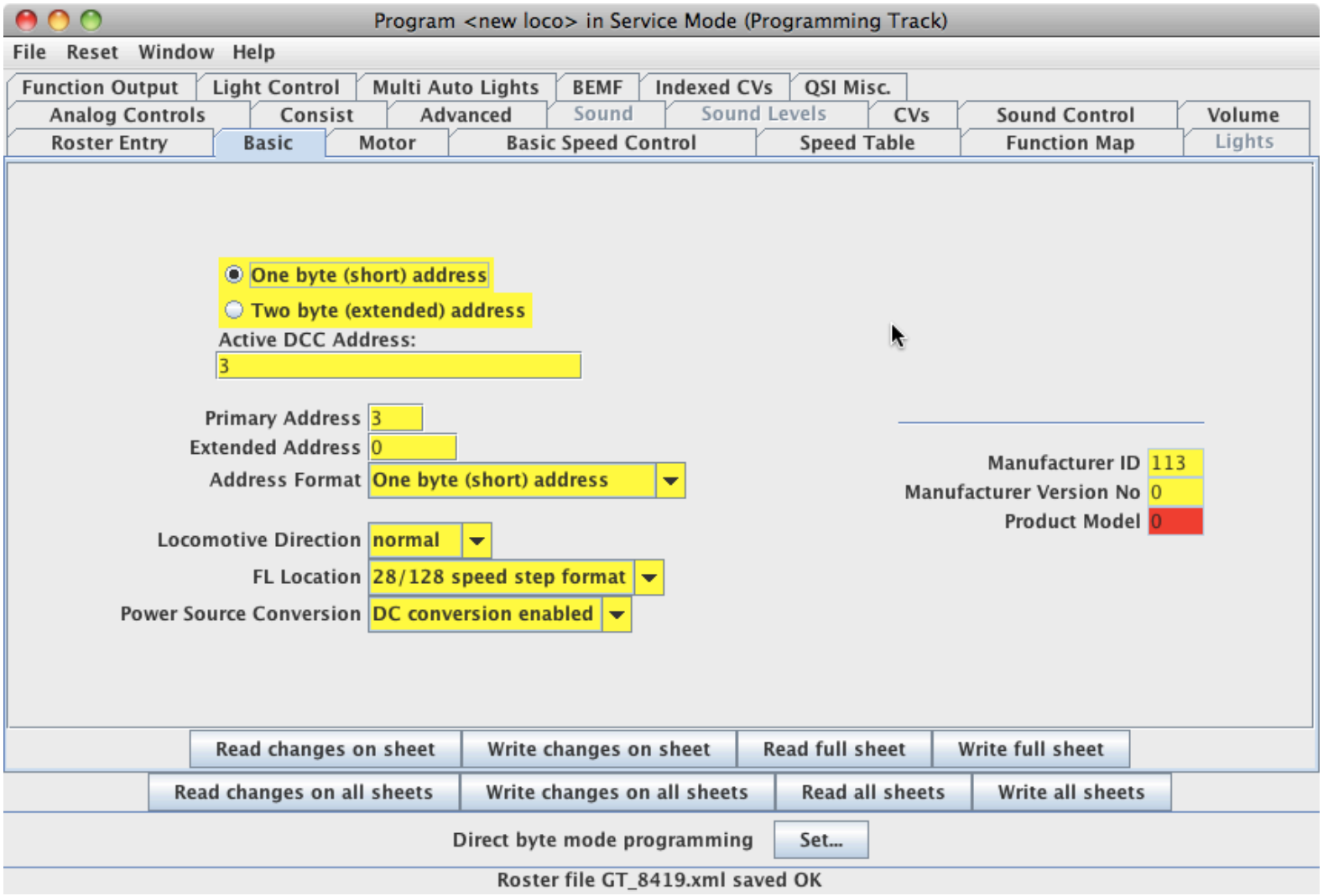
Fill in Roster information and click “Save to Roster”.



Click the Basic tab.

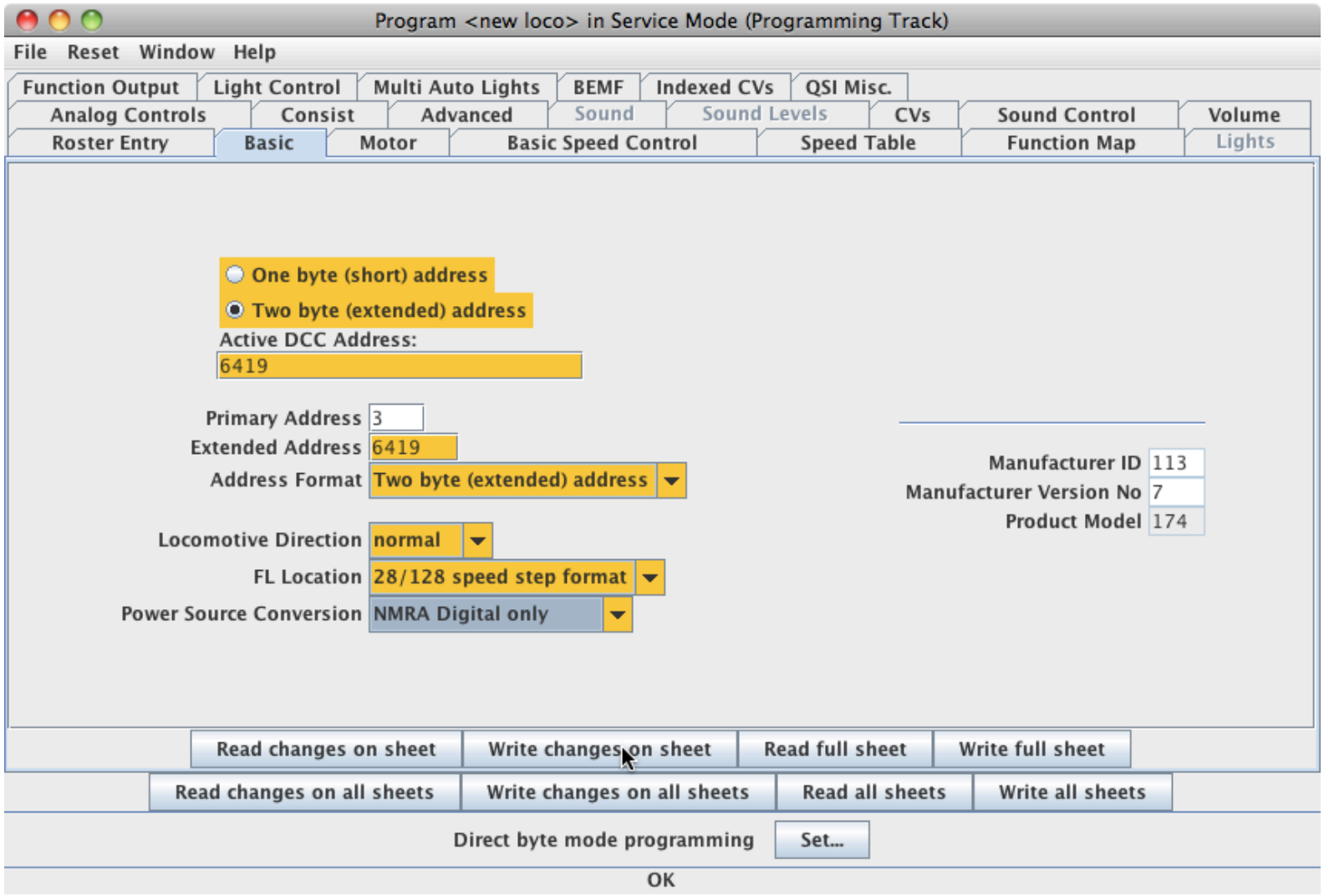


Click “Read full sheet”. Yellow items are replaced with values read from the decoder.



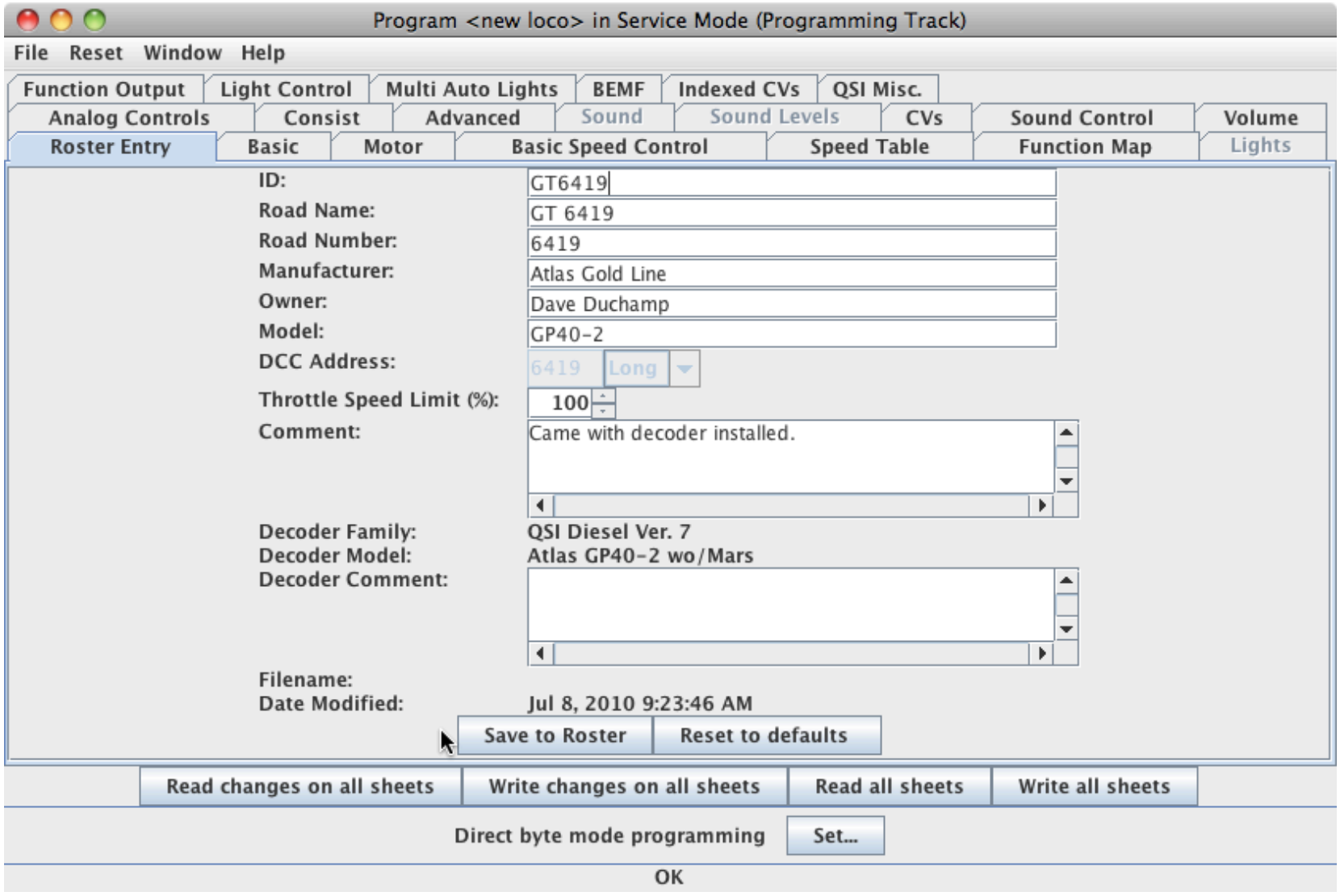
Switch off analog, and set new two-byte address.

Click “Write changes on sheet” to send to loco.



Return to Roster Entry and “Save to Roster” to update Roster on disk.

All done!



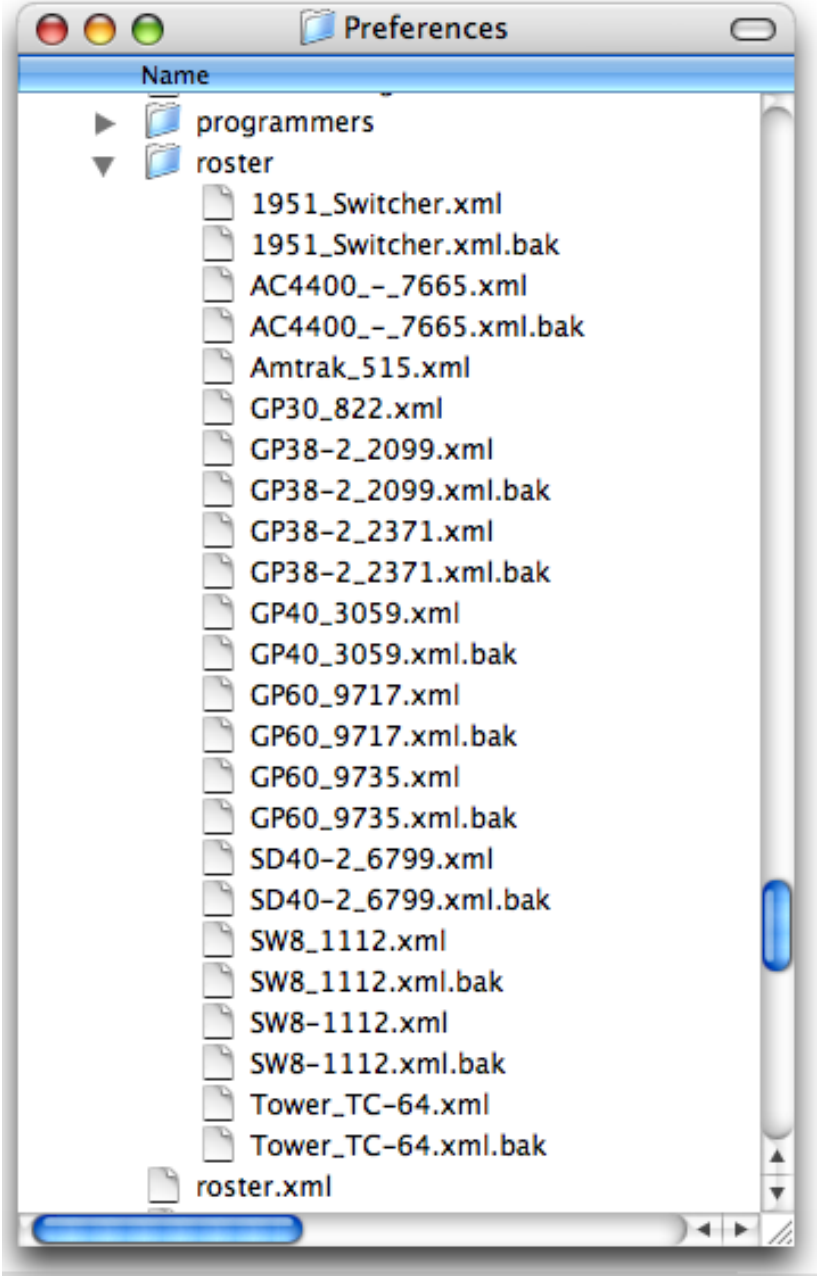
What are Roster Files?

DecoderPro stores the final information for each decoder in a **Roster File**.

These Roster Files are used to construct a Roster menu for JMRI applications.

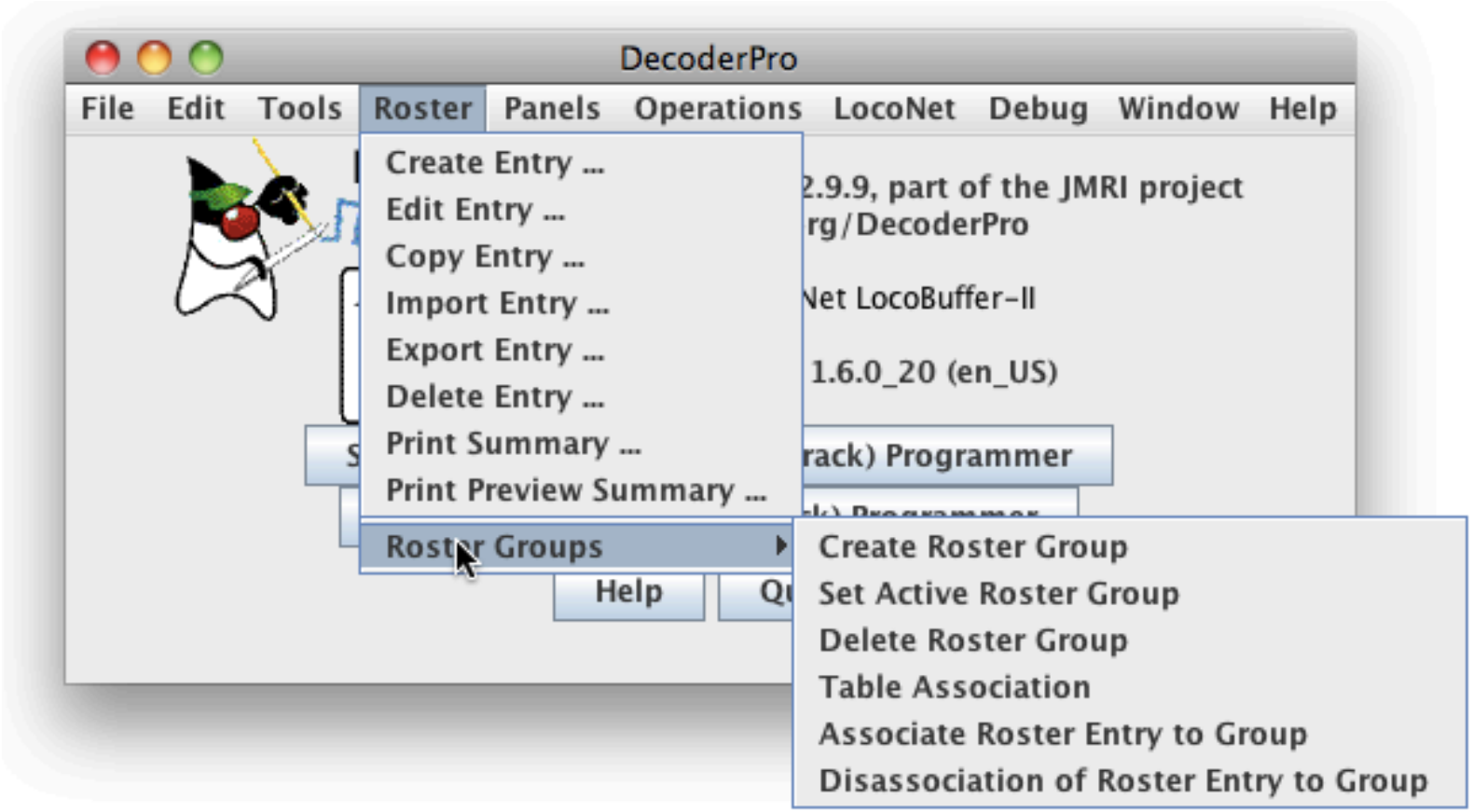
A Roster file allows easy reprogramming if decoder needs to be reset.

The Roster menu allows easy selection of a loco in JMRI tools--decoder programmer, throttle, consist, etc.



Roster Menu

New – Roster Groups

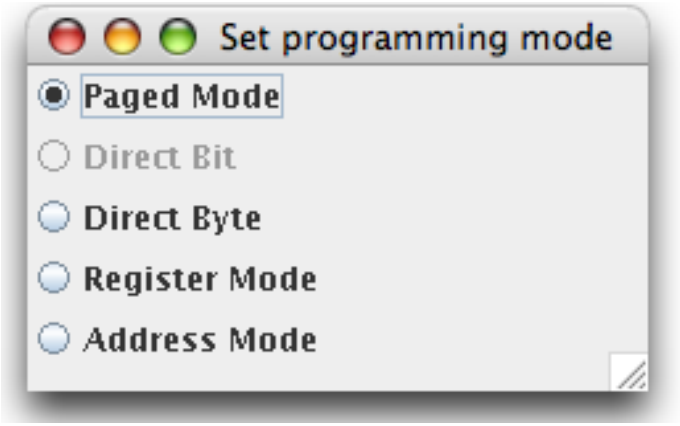


Miscellaneous Info and Tips

Support for new decoders is continuously added to DecoderPro.

DecoderPro works through the command station, so it's usually limited to what you can do with your throttle. Think of DecoderPro as a smart throttle.

DecoderPro supports other modes of programming. Access these other modes using the "Set…" button to get the dialog shown at the right. **Some decoders need a different mode for programming.**



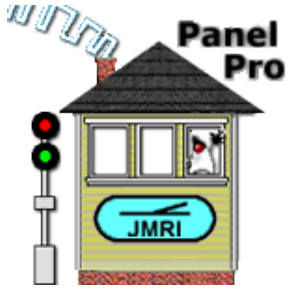
Some new sound decoders need a programming track booster to communicate with some command stations.

Sound Decoder Demo

DecoderPro Animated Demos:

Peter Ulvestad (Edmonton Model Railroad Association)

http://www3.telus.net/public/ulvestad/DecoderProDemos.html



What is Layout Editor?

- An alternative to the traditional Panel Editor

Differences from Panel Editor

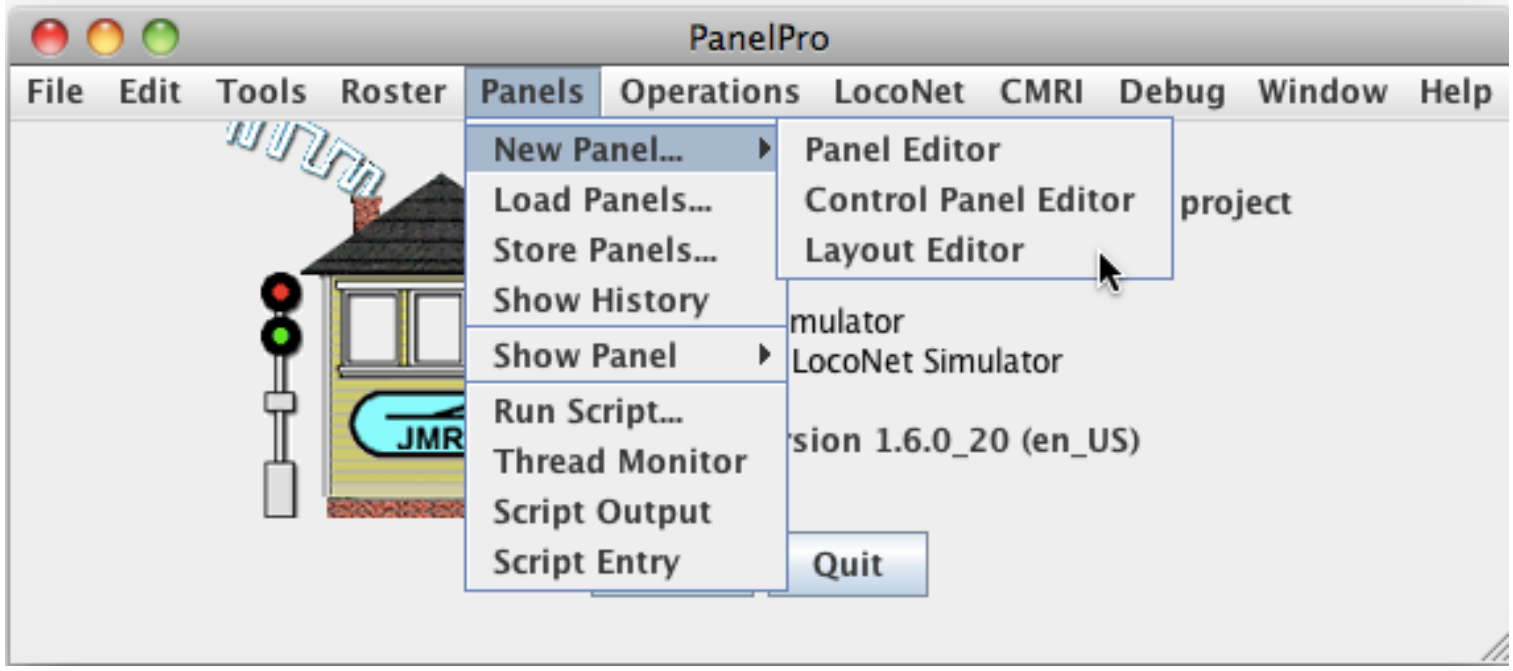
- Uses a drawn track diagram instead of icons for track
- Captures full connectivity automatically
- Supports new animation features and tools

Similarities to Panel Editor

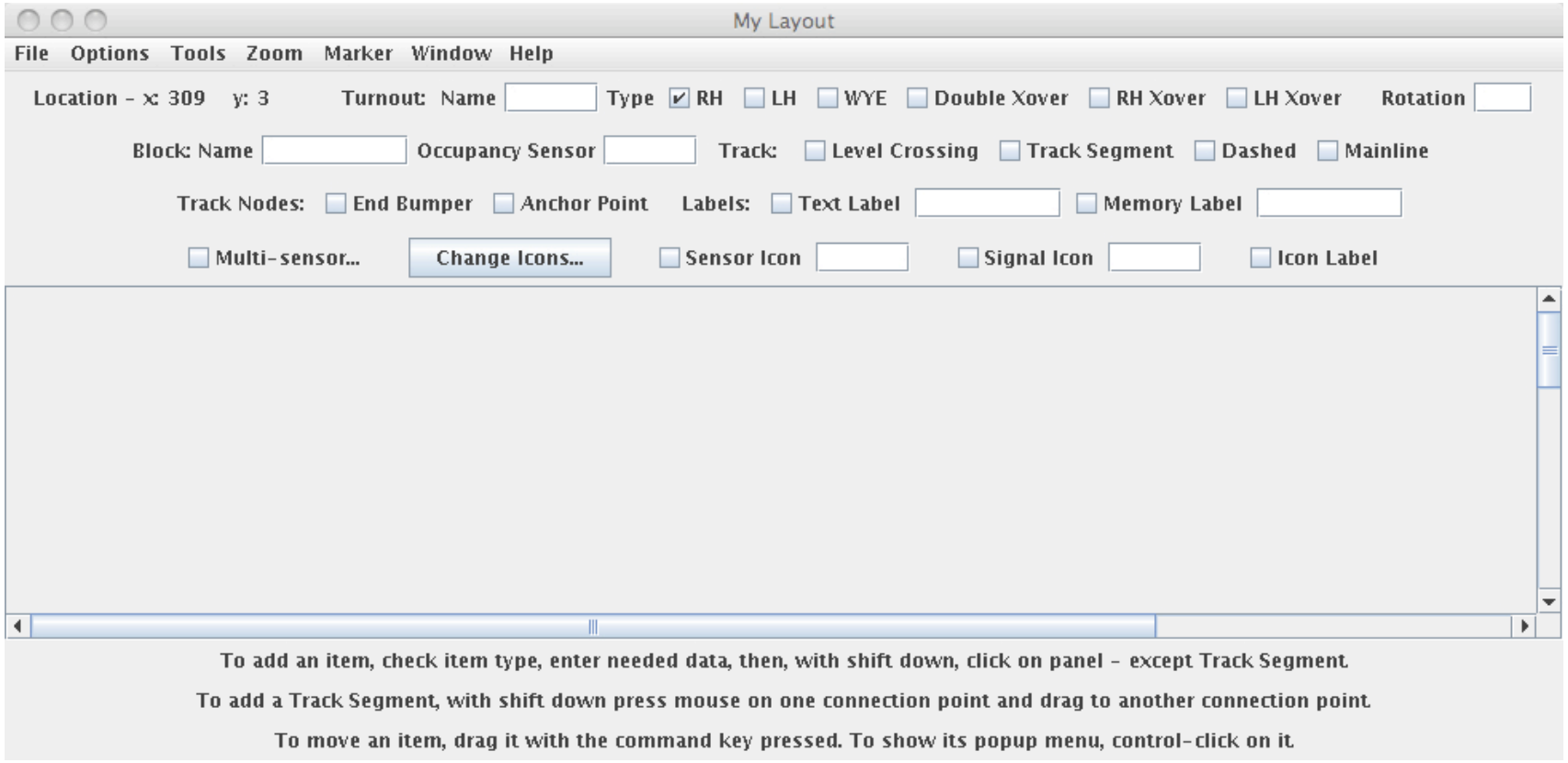
- Uses the same JMRI configuration items and tools
- Uses the same icons for panel items other than the schematic track diagram.

Simple Oval Tutorial

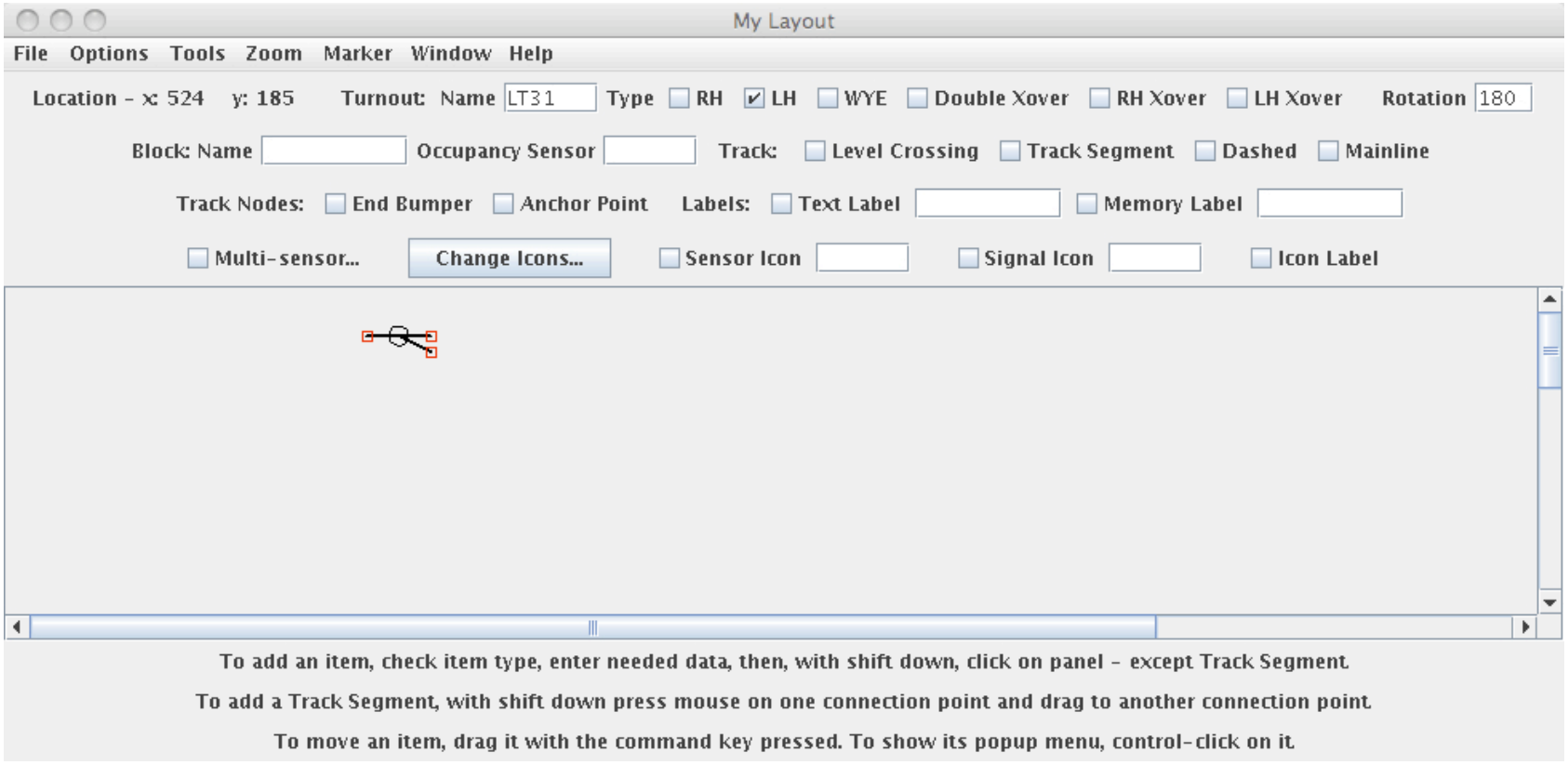
We start by selecting “New Panel>Layout Editor” in the Panels Menu



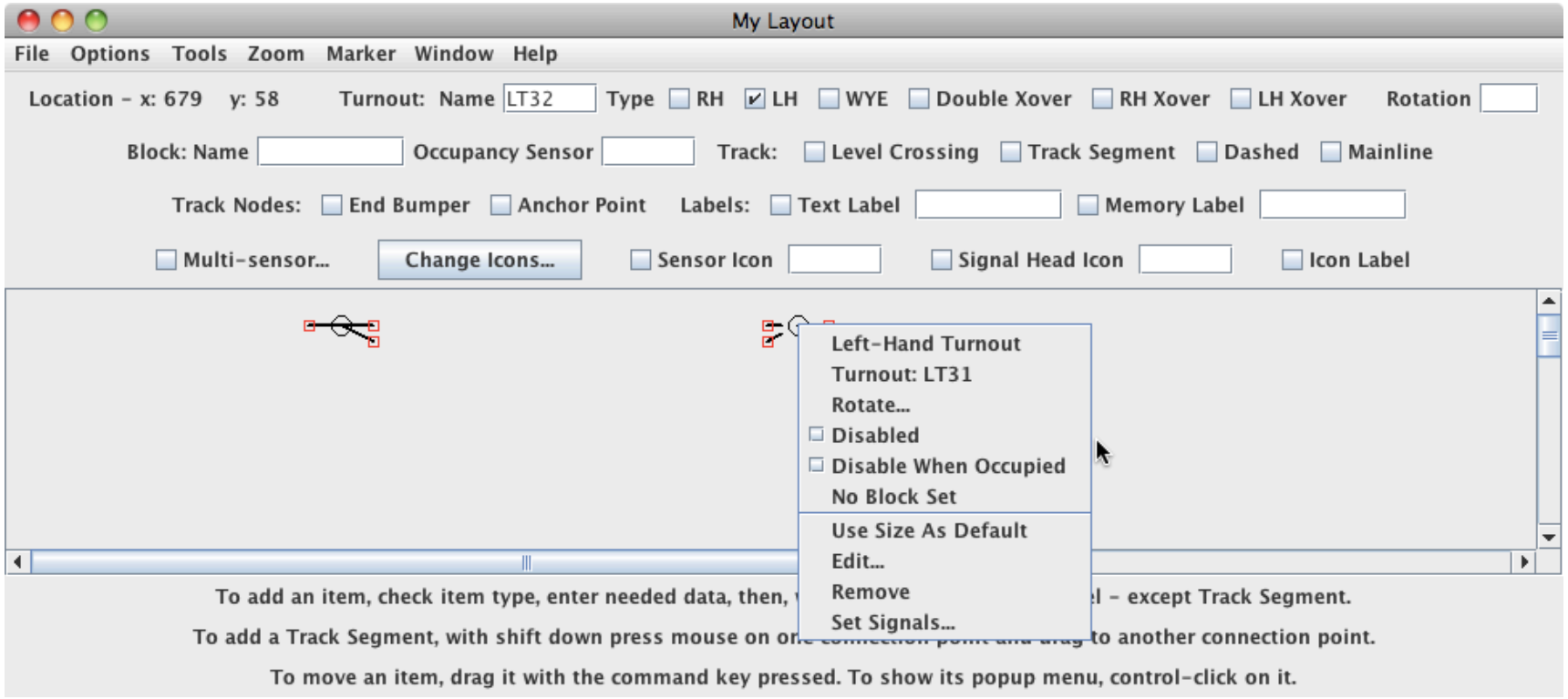
After resizing we have the Layout Editor window.



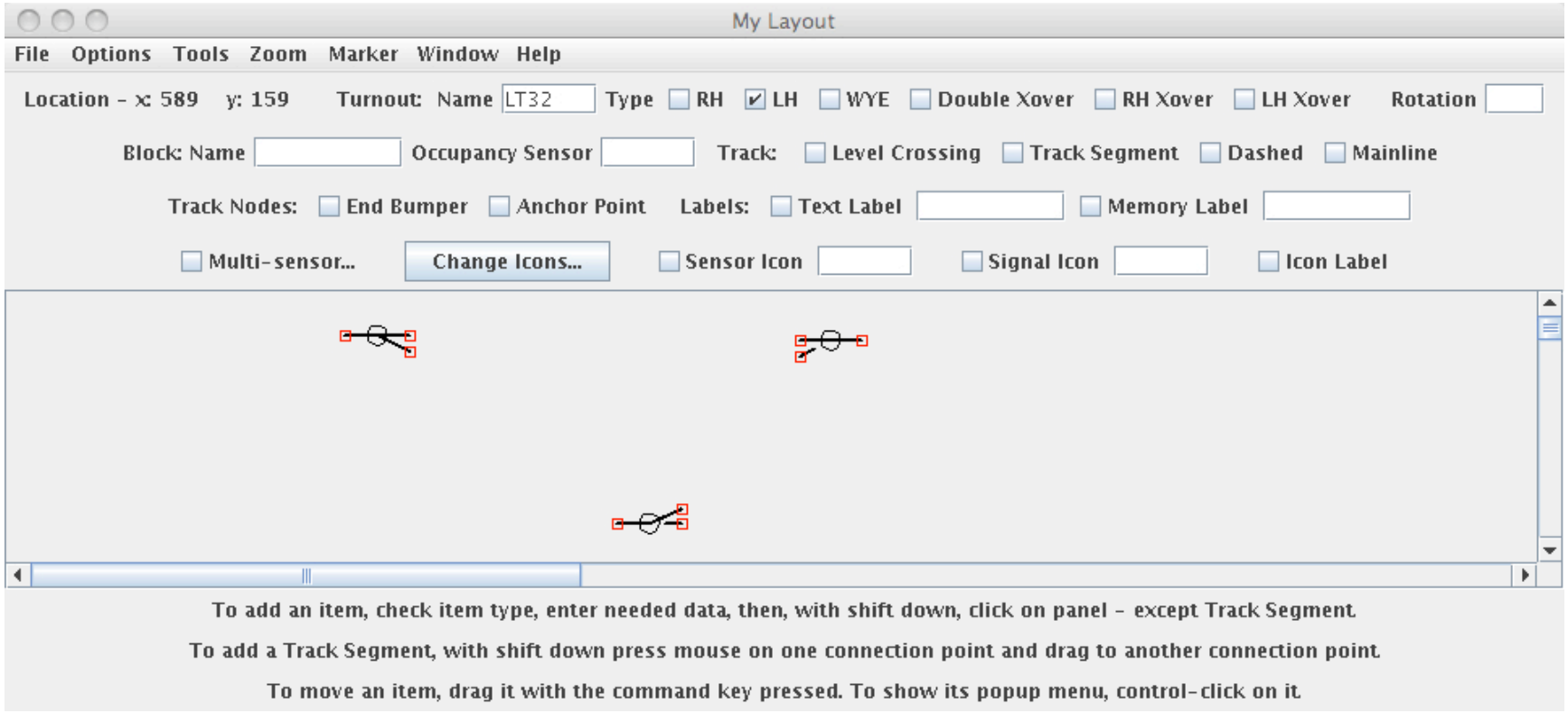
Shift-Click to add an RH turnout, and set up to add an LH turnout.



Shift-Click to add an LH turnout assigned to LT31. Note popup menu.



Added another turnout, LT32, for an industrial siding.



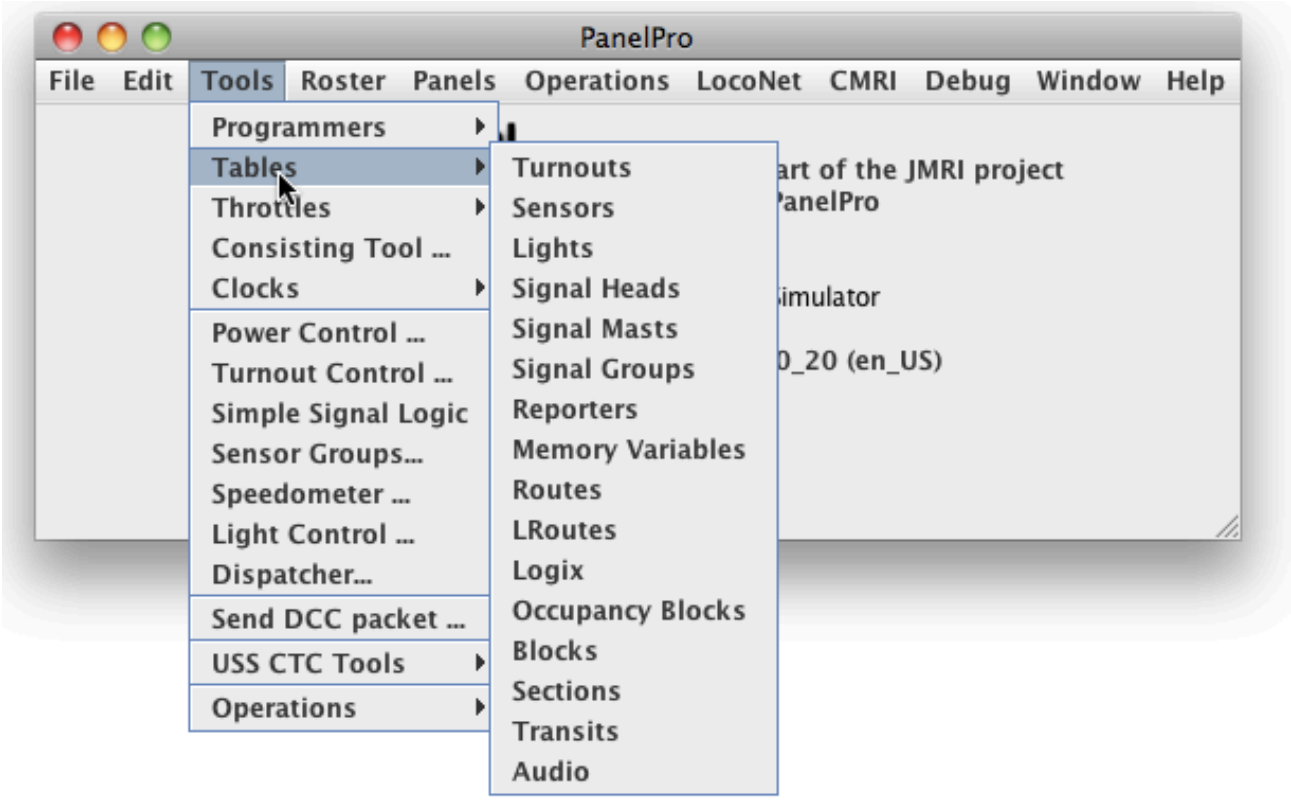
Previously entered items in tables:

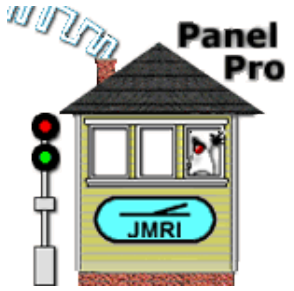
Turnouts

Sensors

Signals

Memory Variables





Pre-entered Turnout Table

With three track switches:

LT30, LT31, and LT32

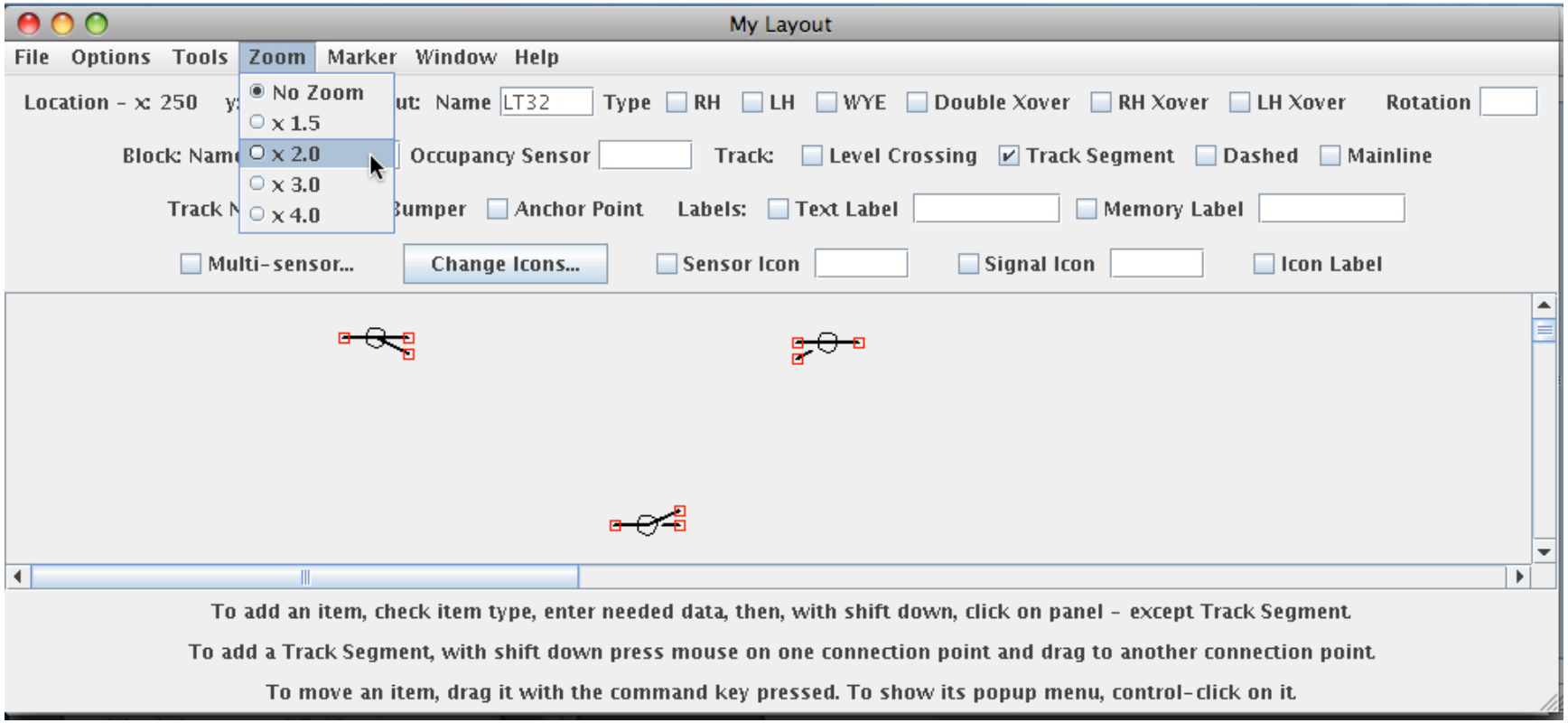
Turnout Table

File Window Help Automation

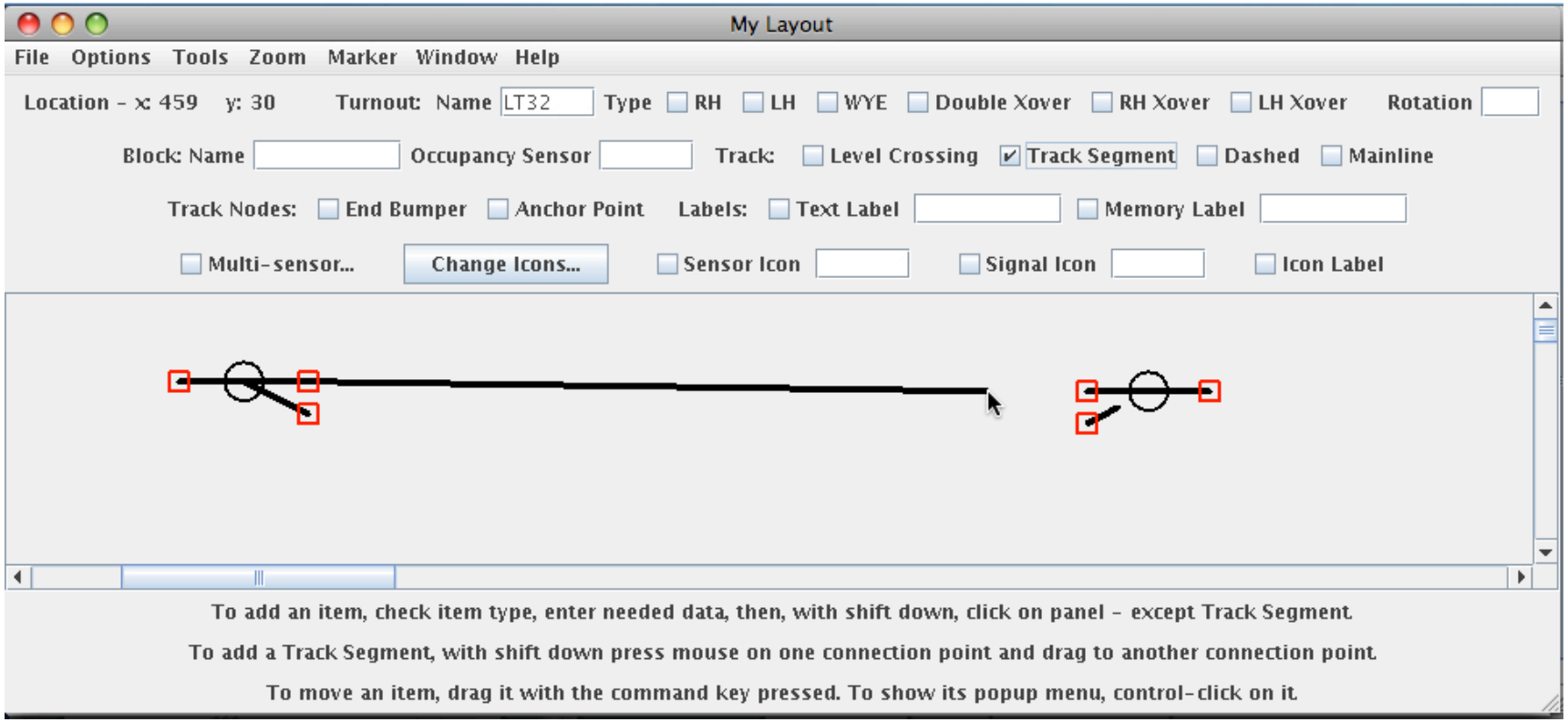
Syste...	User Name	Cmd	Comment	
LT1	Green IH1 (left throat 1)	Closed		Delete
LT2	Yellow IH1 (left throat 1)	Closed		Delete
LT3	Red IH1 (left throat 1)	Thrown		Delete
LT4	Green IH3 (left diverging)	Thrown		Delete
LT5	Red IH3 (left diverging)	Thrown		Delete
LT6	Green IH5 (left throat 2)	Closed		Delete
LT7	Red IH5 (left throat 2)	Thrown		Delete
LT10	Green IH2 (left continuing)	Closed		Delete
LT11	Yellow IH2 (left continuing)	Closed		Delete
LT12	Red IH2 (left continuing)	Thrown		Delete
LT30	left end	Thrown		Delete
LT31	right end	Closed		Delete
LT32	industry	Thrown		Delete

Add ... Show feedback information Show lock information Automatic re

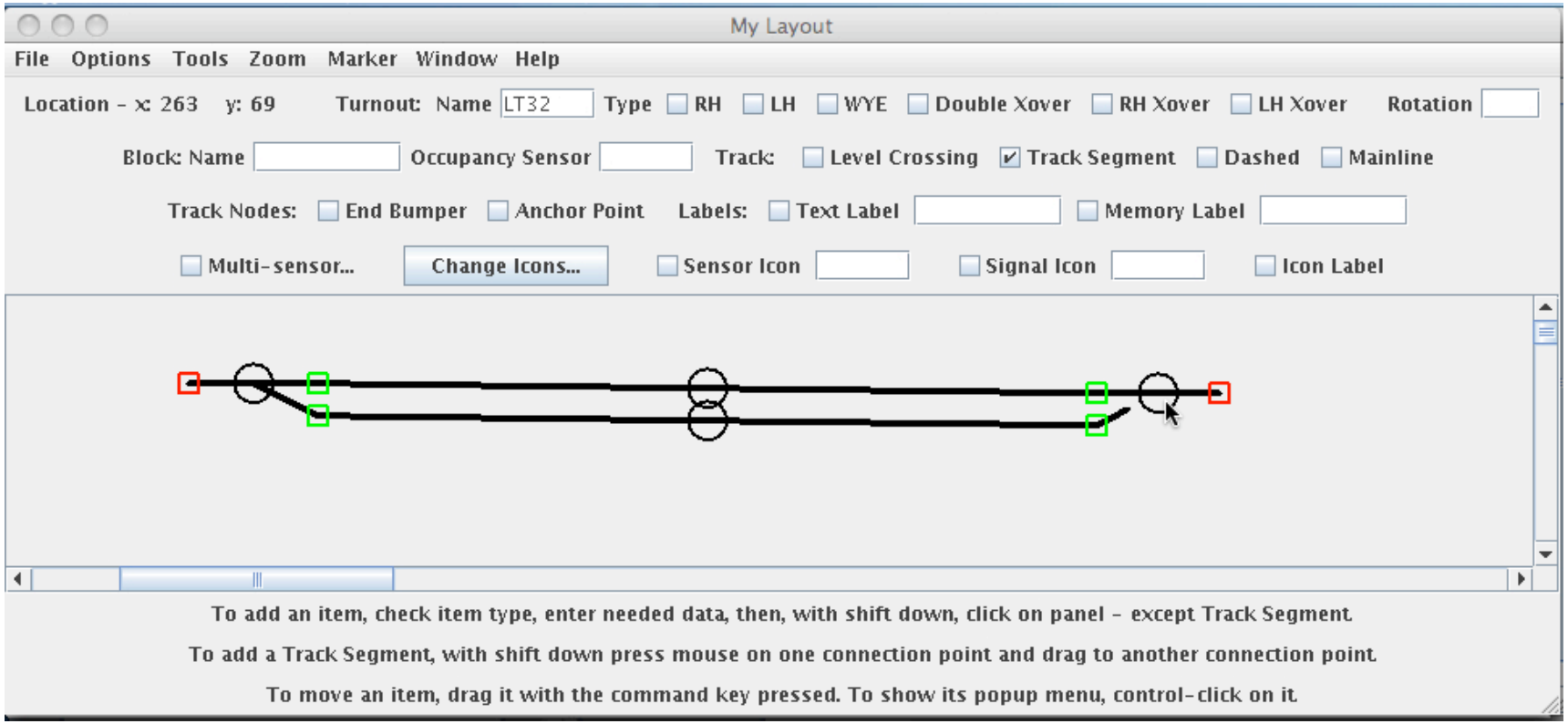
Zoom in to the top two turnouts before connecting them.

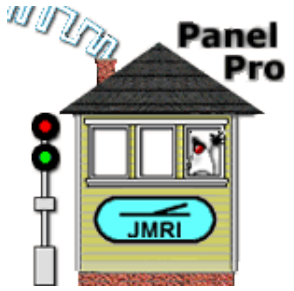


Link together the top two turnouts with **Track Segments**.

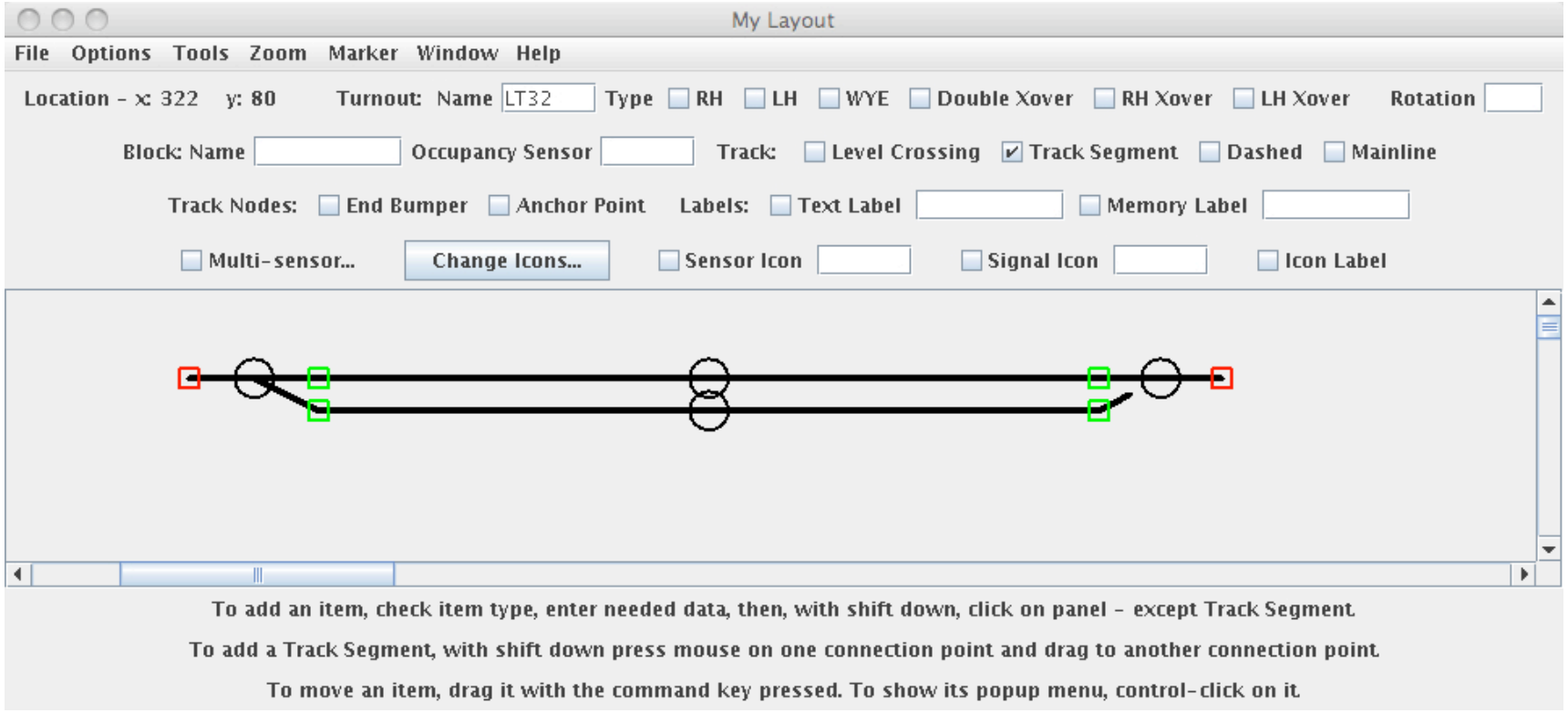


The turnouts are connected with **Track Segments**, but need alignment.

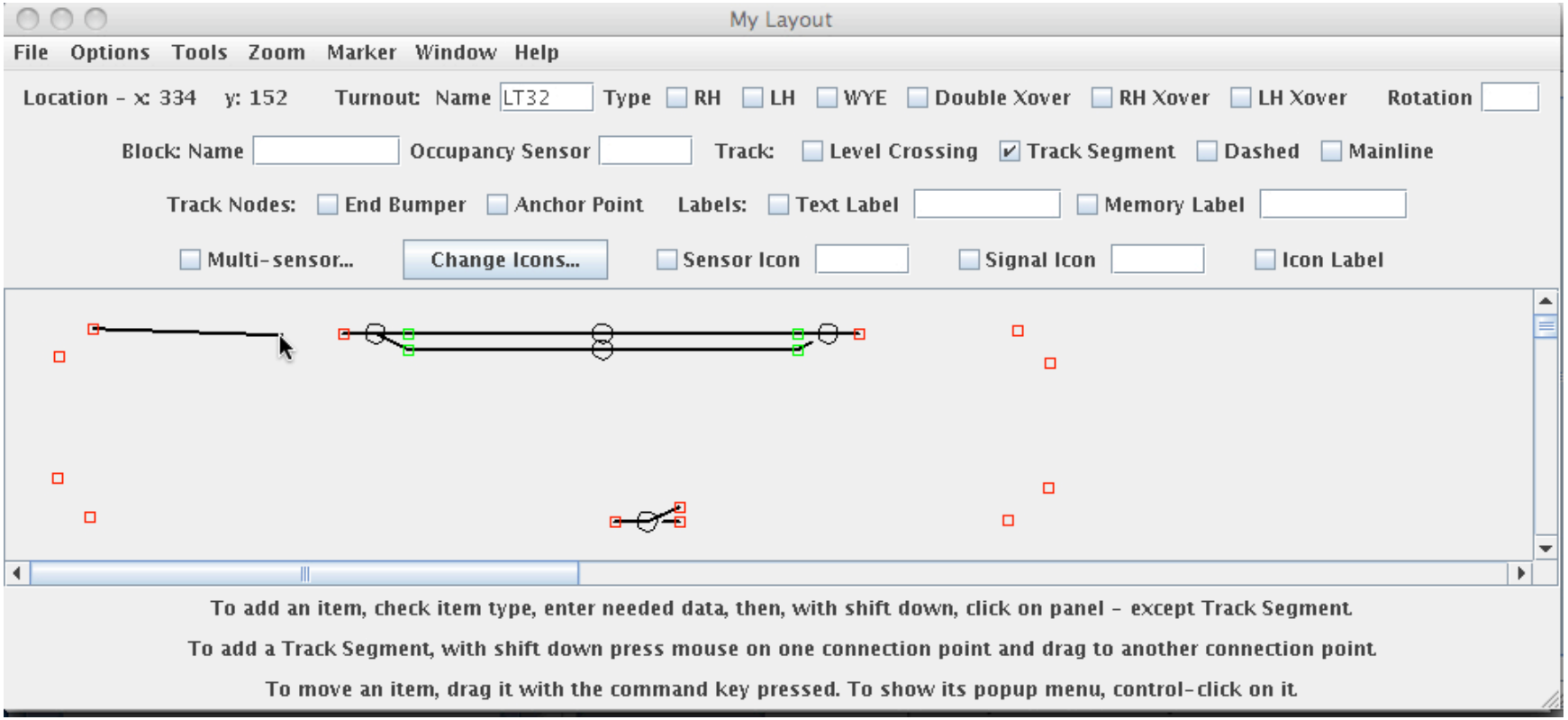




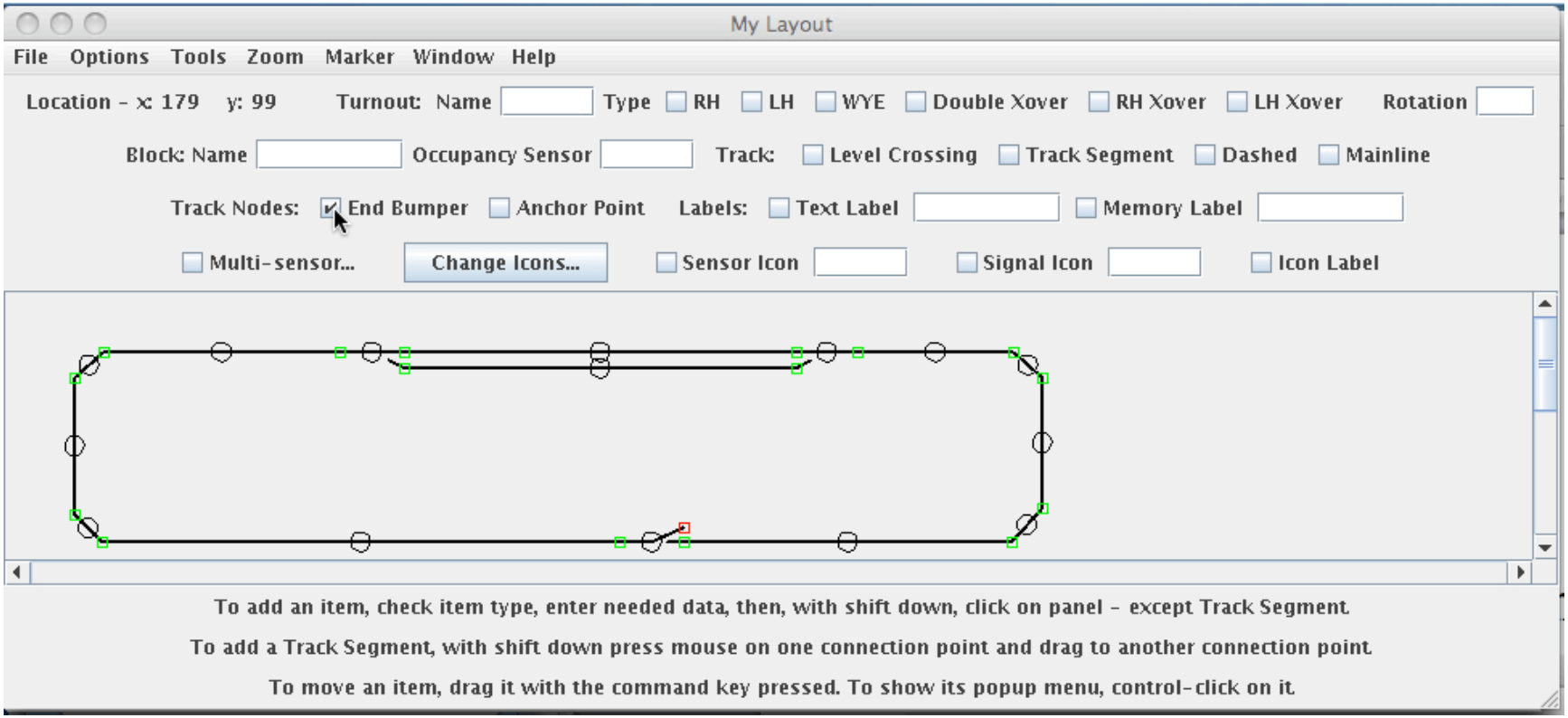
Aligned! Need to add Anchor Points to complete our oval.



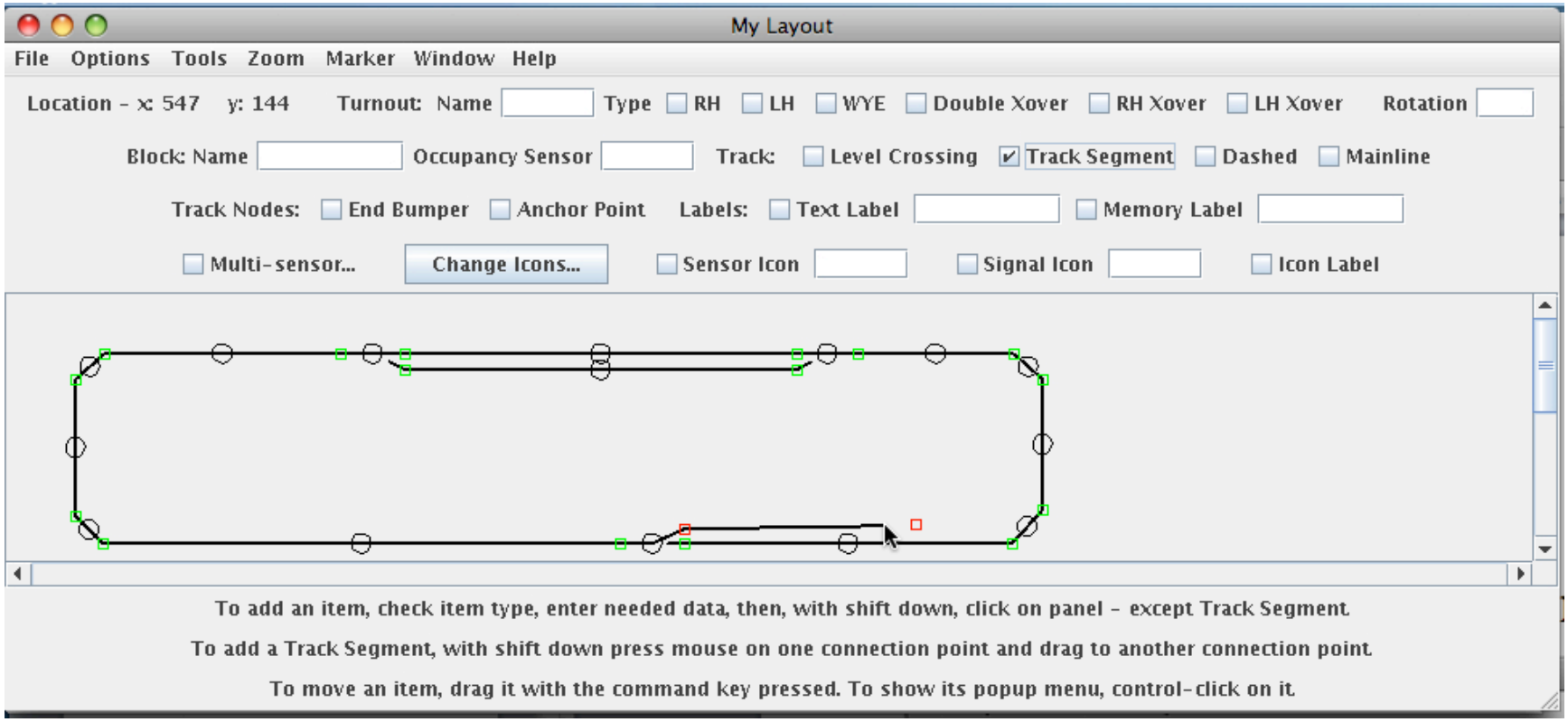
Need to connect the Anchor Points to complete our oval.



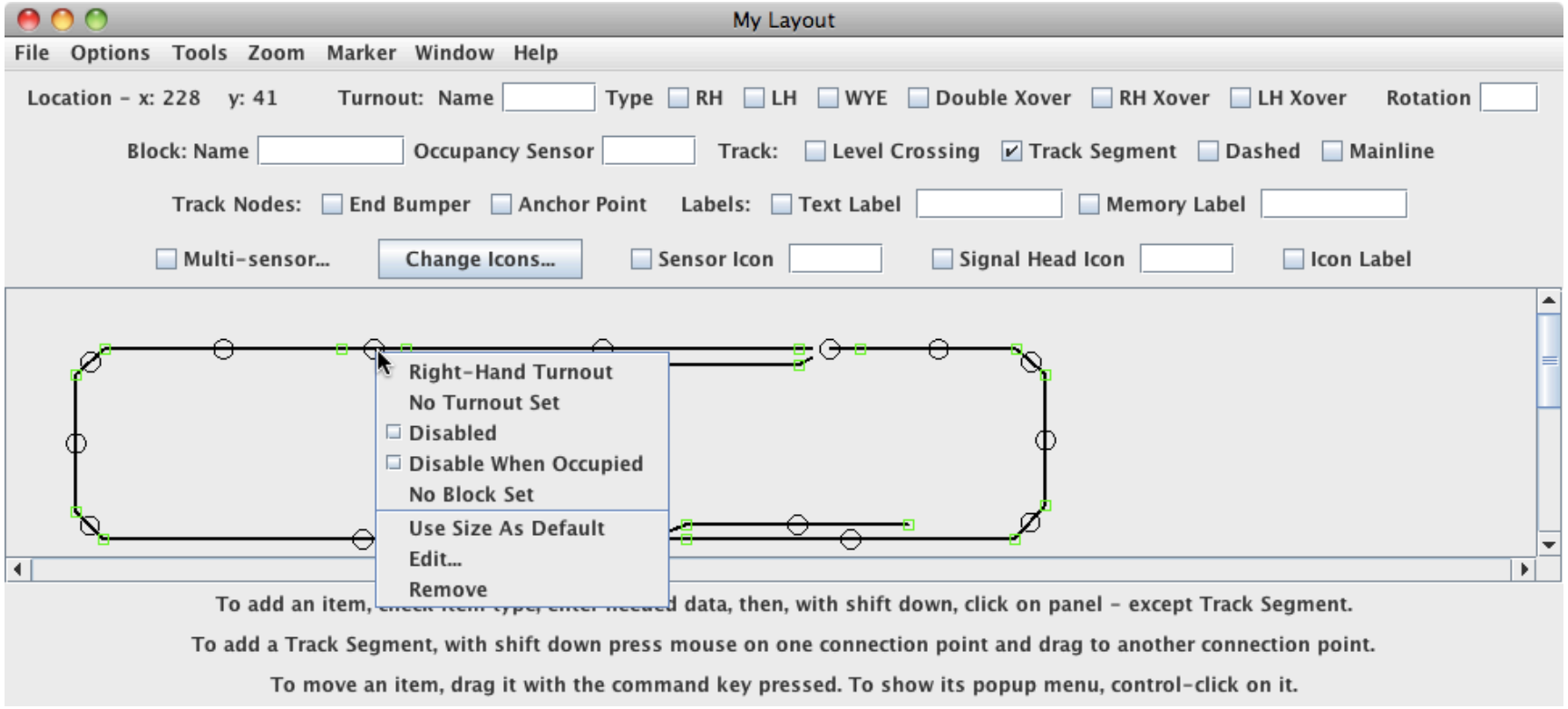
Need to add industrial siding track - add an “End Bumper”.



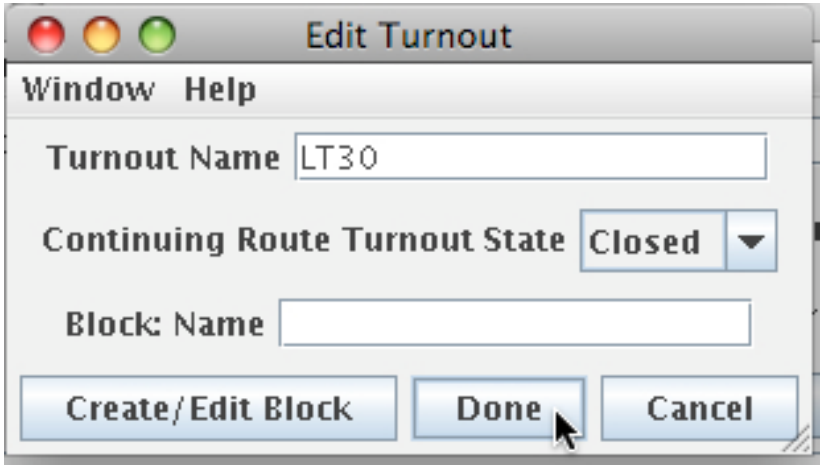
Add Track Segment to connect turnout to the “End Bumper”.



Assign a physical turnout to the upper left turnout drawing.

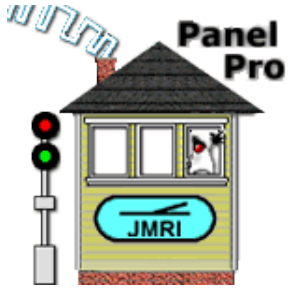


Enter the name of the physical turnout, and click Done.

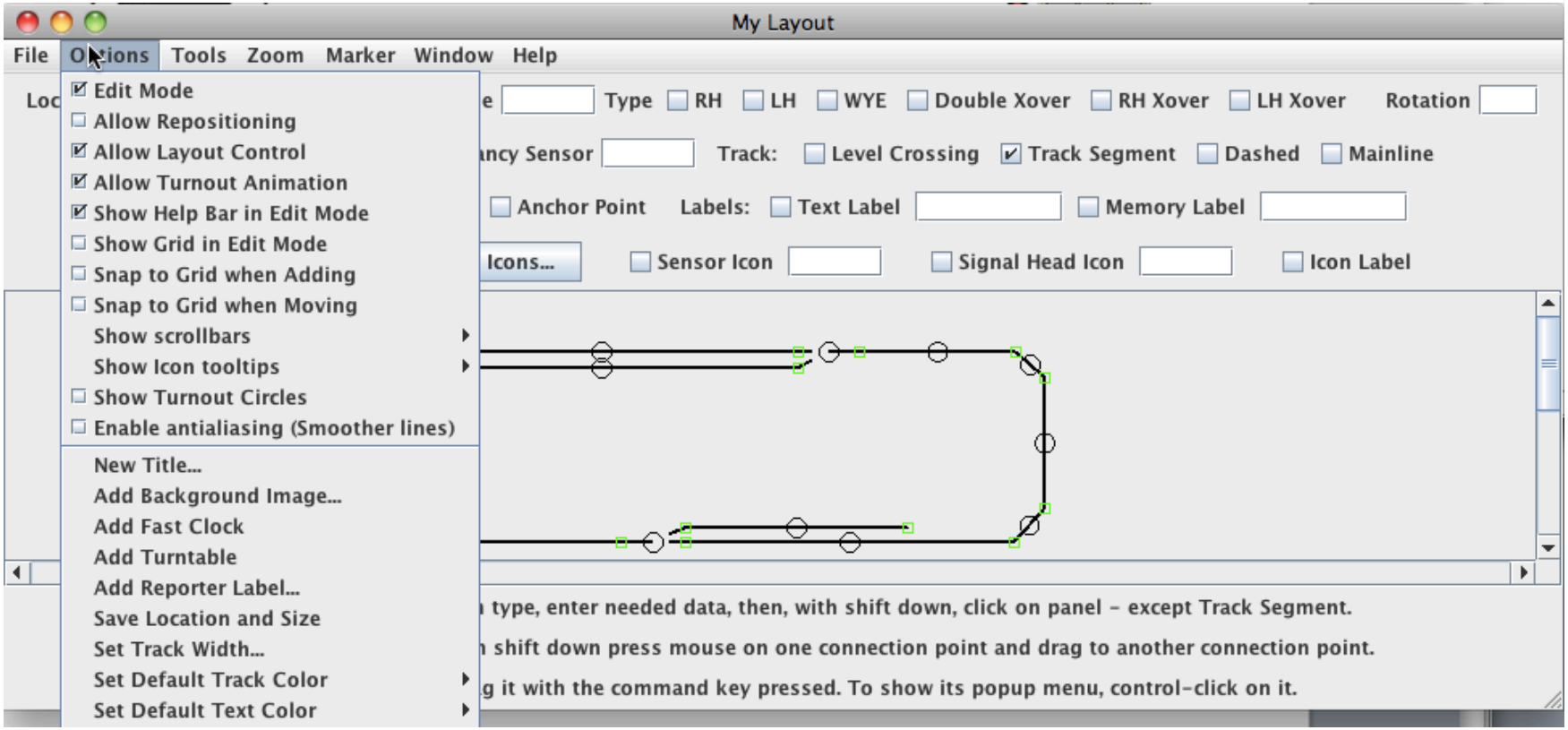


We don't need the Help Bar at the bottom any more.

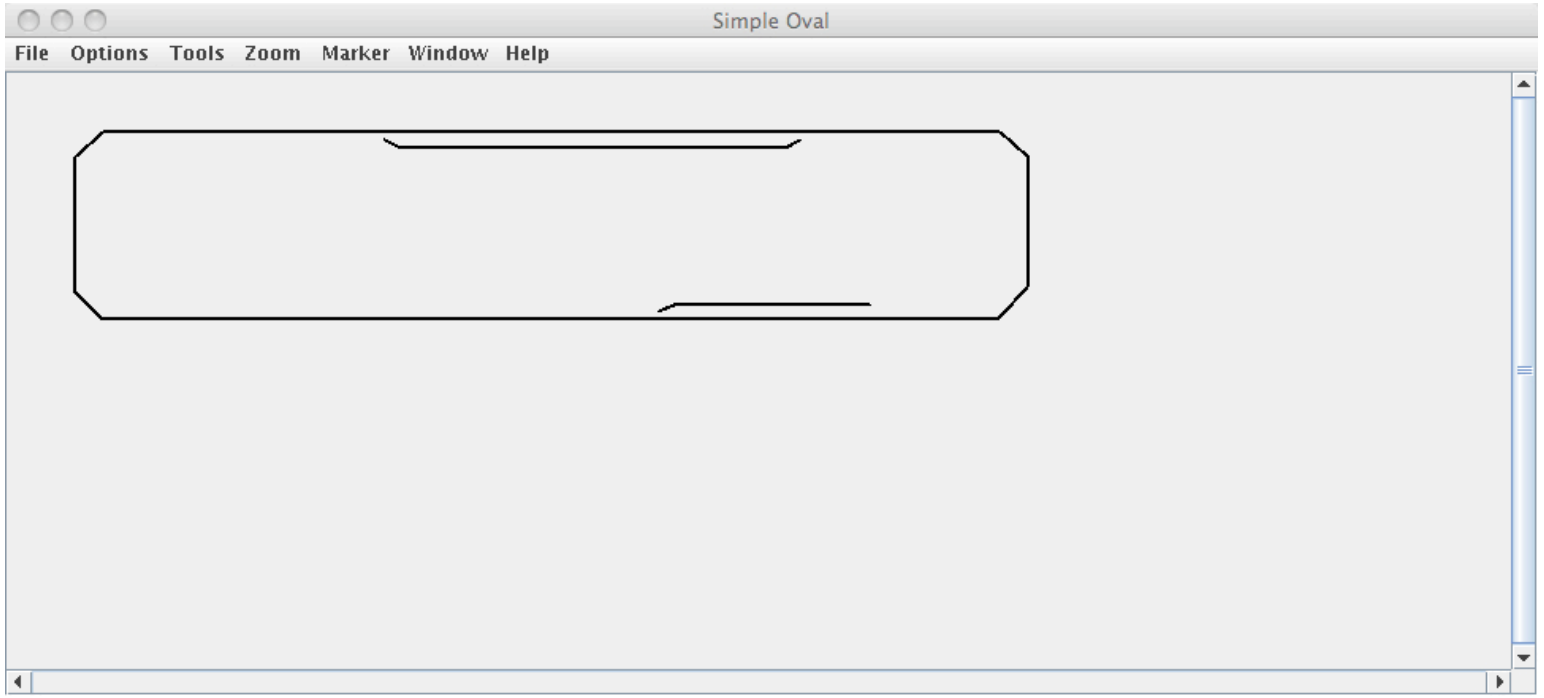
Change the title to "Simple Oval".



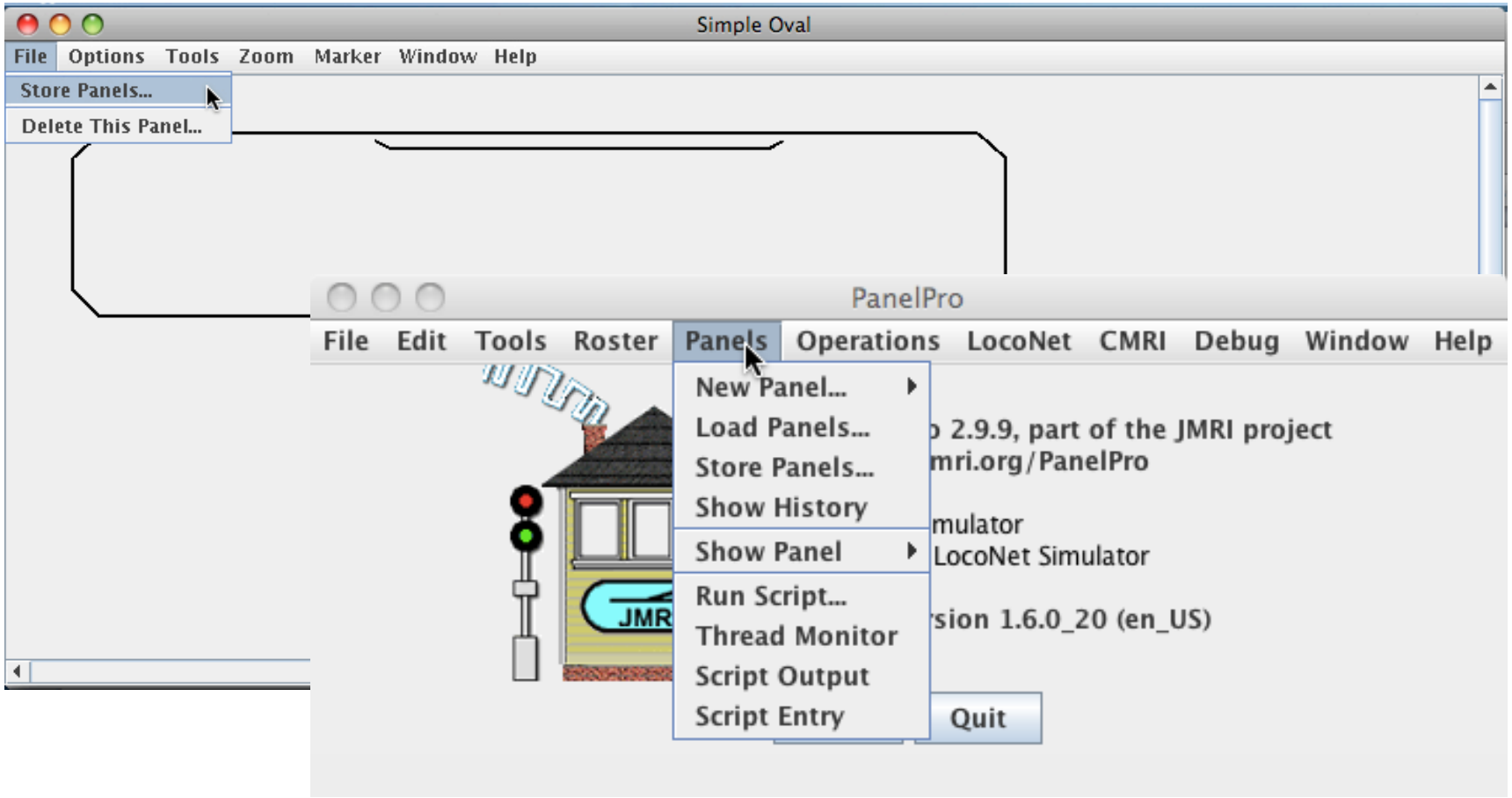
And turn off Edit Mode to see our simple oval layout.



A schematic of the simple oval layout.

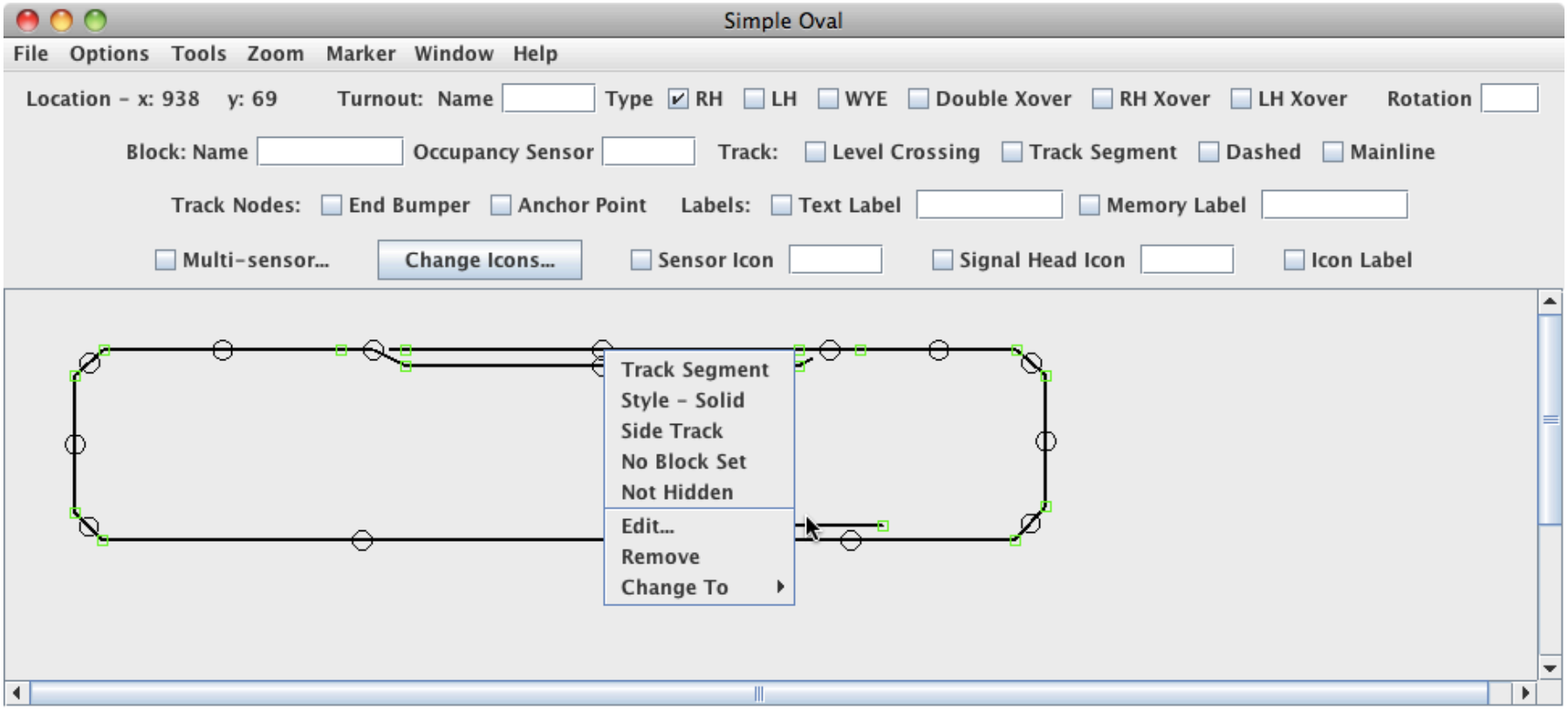


Select “Store panels…” to save panel information to disk.

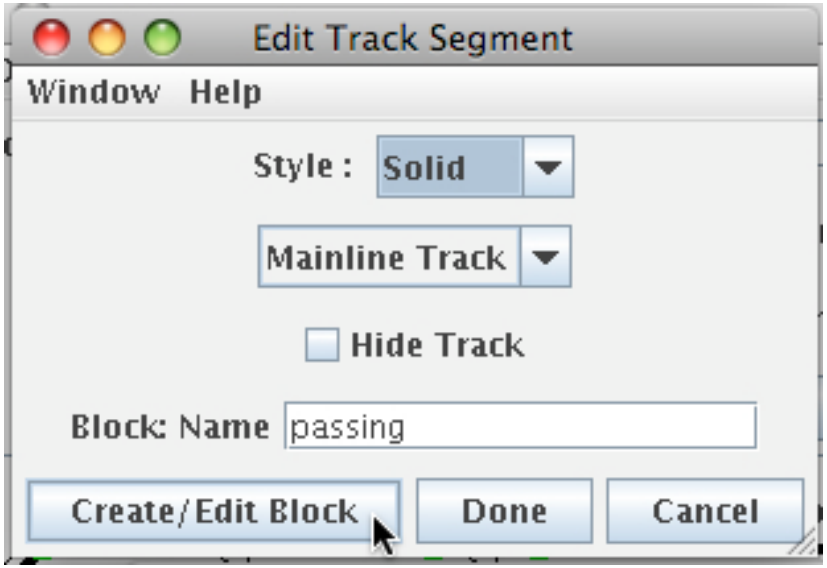


Panel Animation

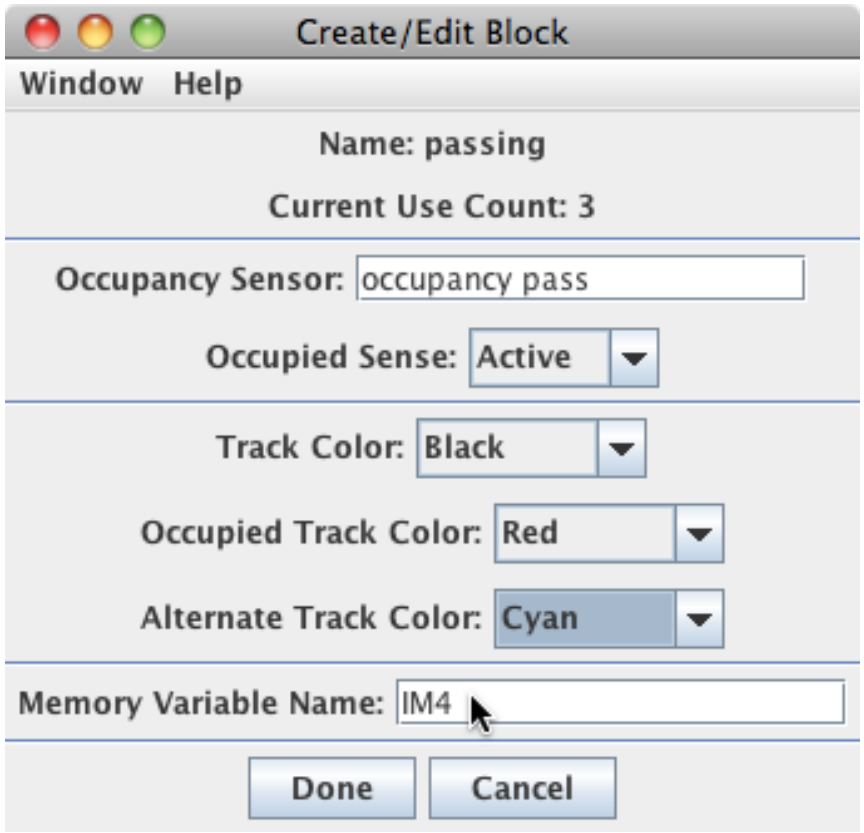
Animation. Add “Blocks” and define “Mainline” track.



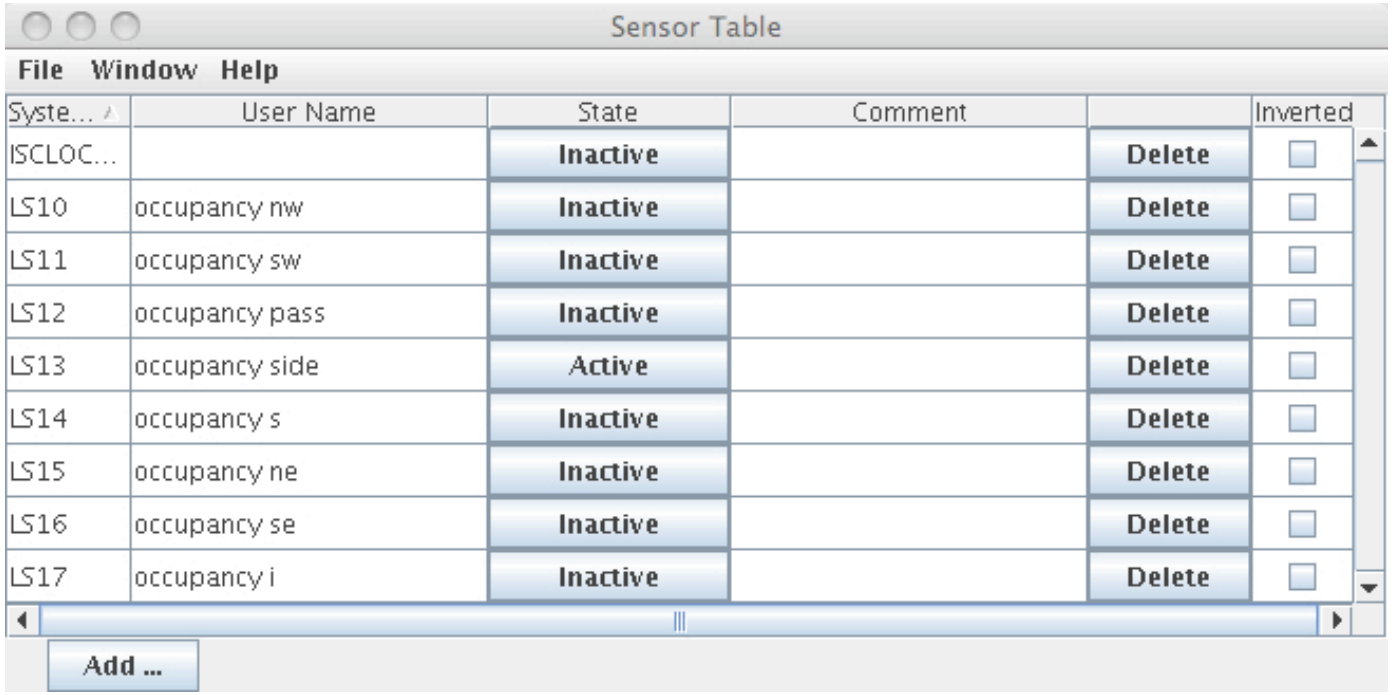
Select “Mainline Track”, type a name for the block, and click “Create/Edit Block”.



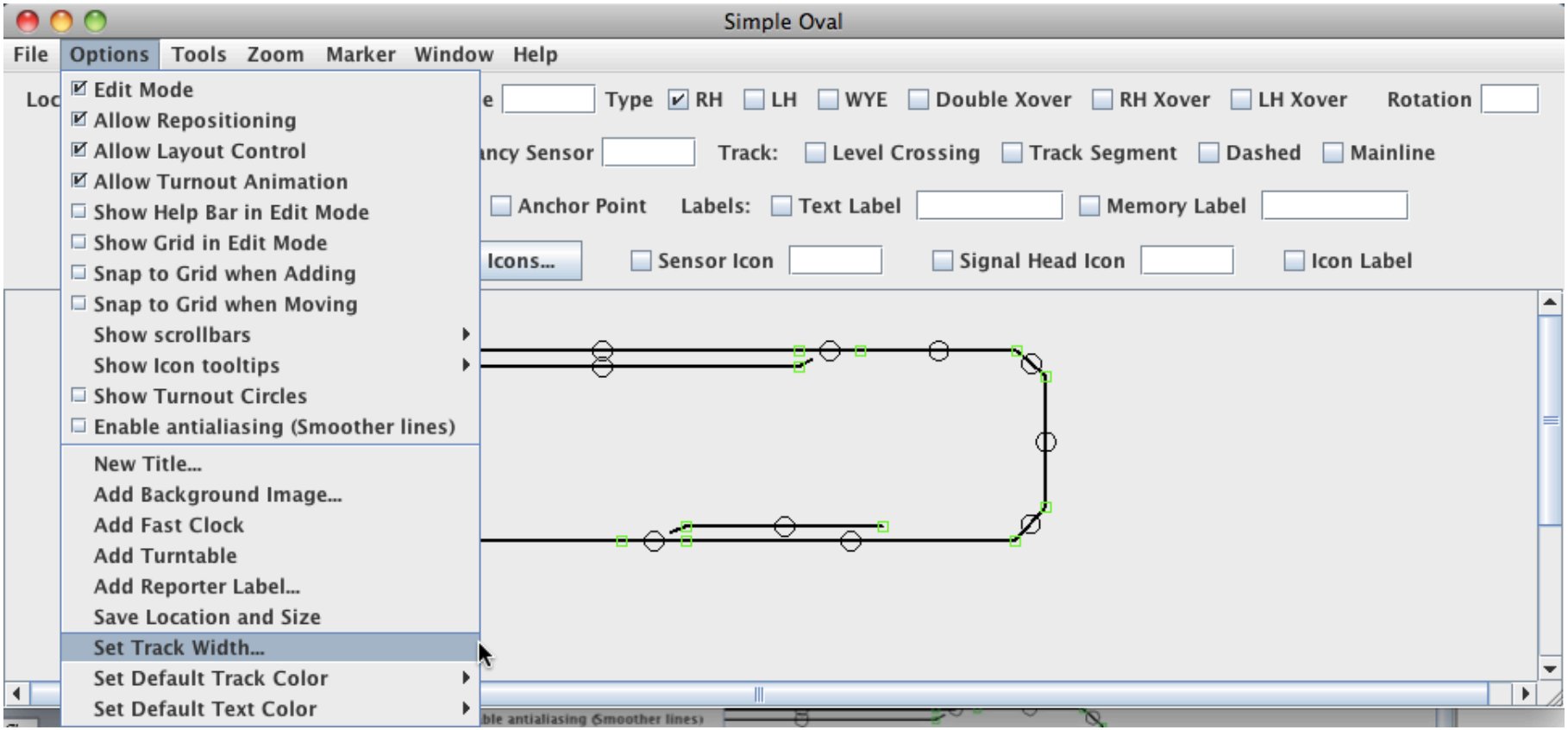
Enter name of Occupancy Sensor, select “Red” for color of occupied track, select “Cyan” for alternate, and click “Done”.



Occupancy Sensors were previously entered into the Sensor Table.

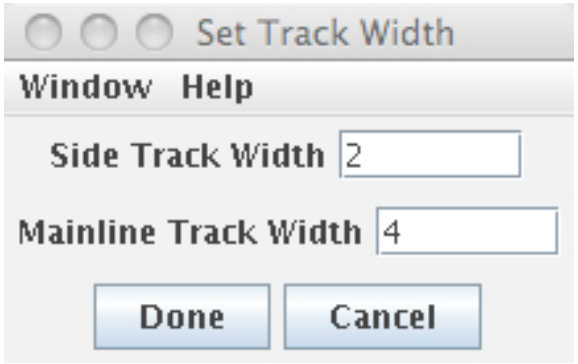


Note mainline track is wider. Select “Set Track Width…”.

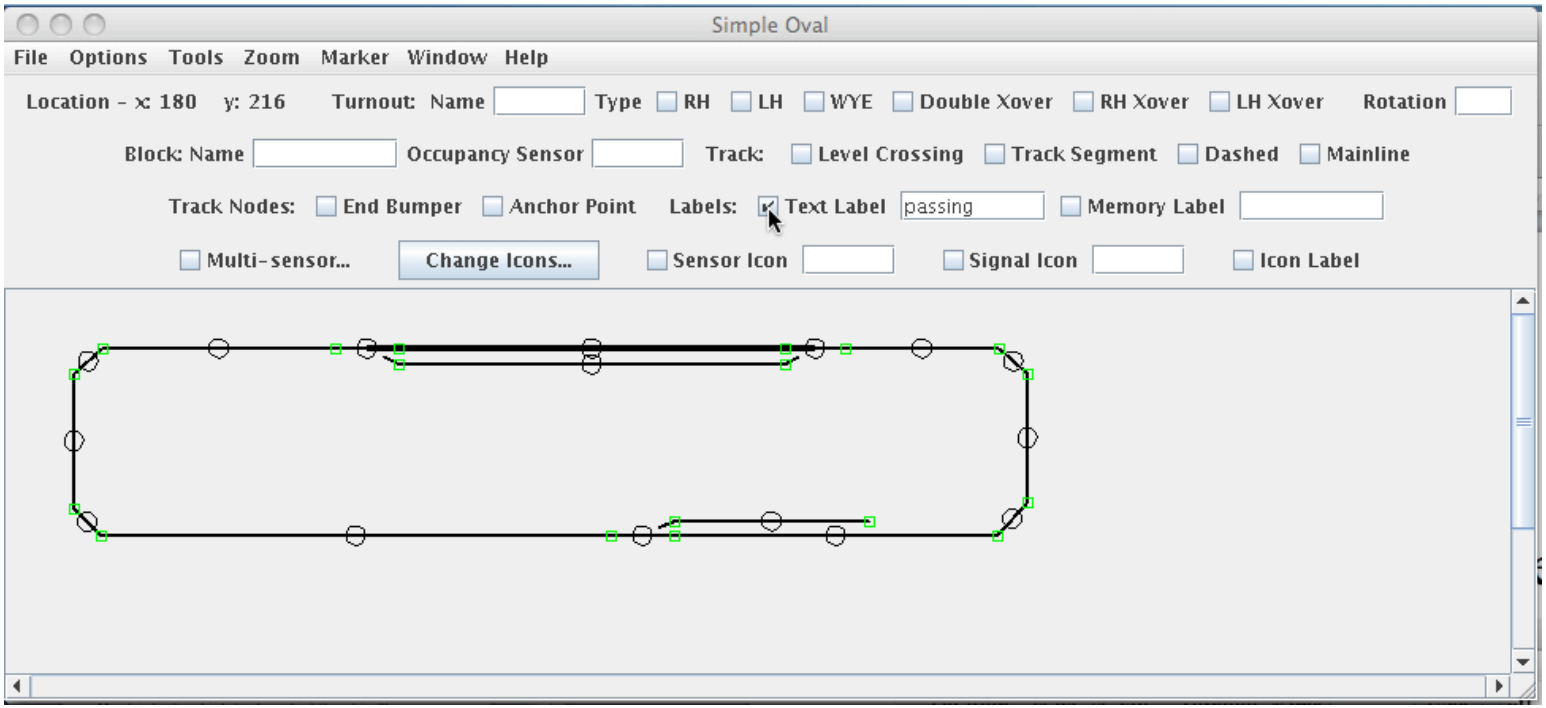


Mainline track and side track can be different widths.

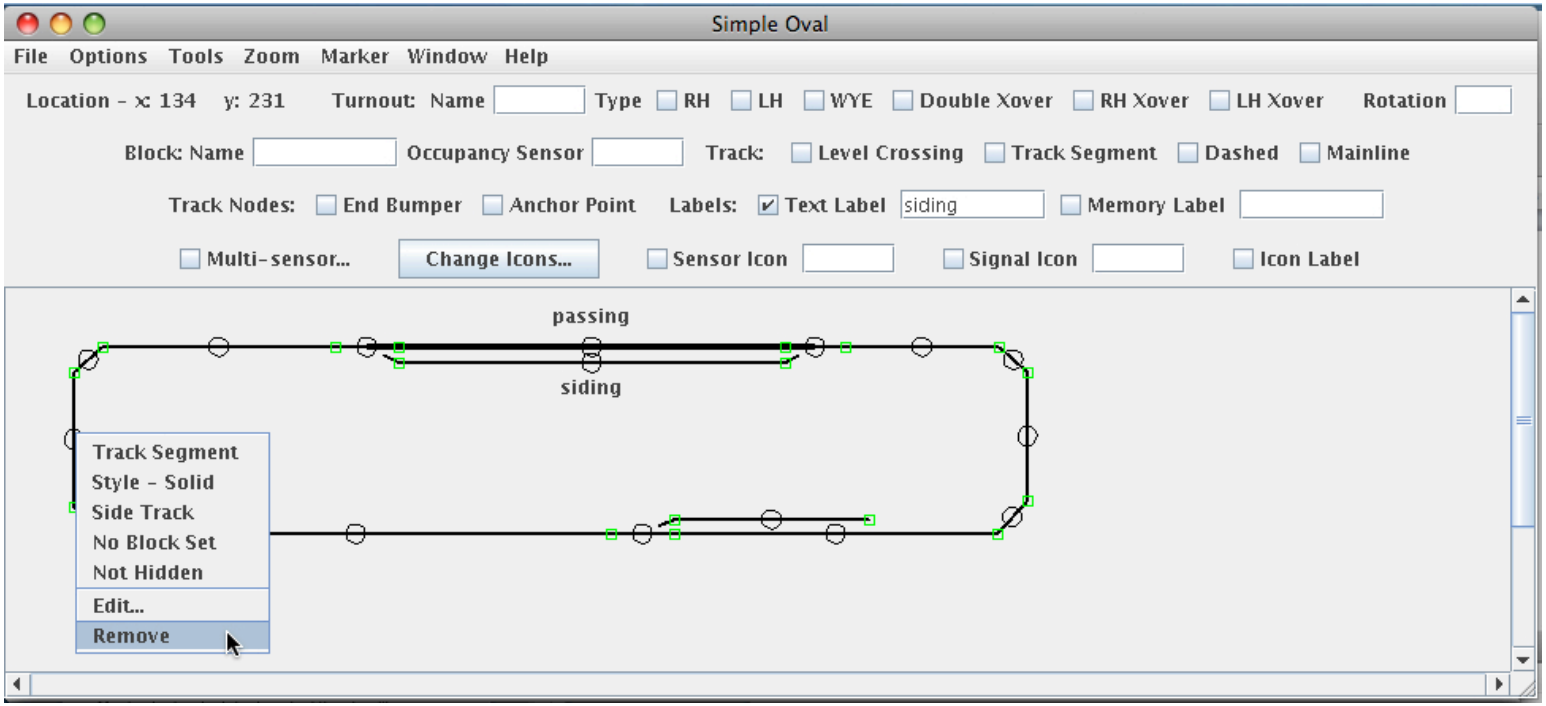
Click “Done” to use the defaults.



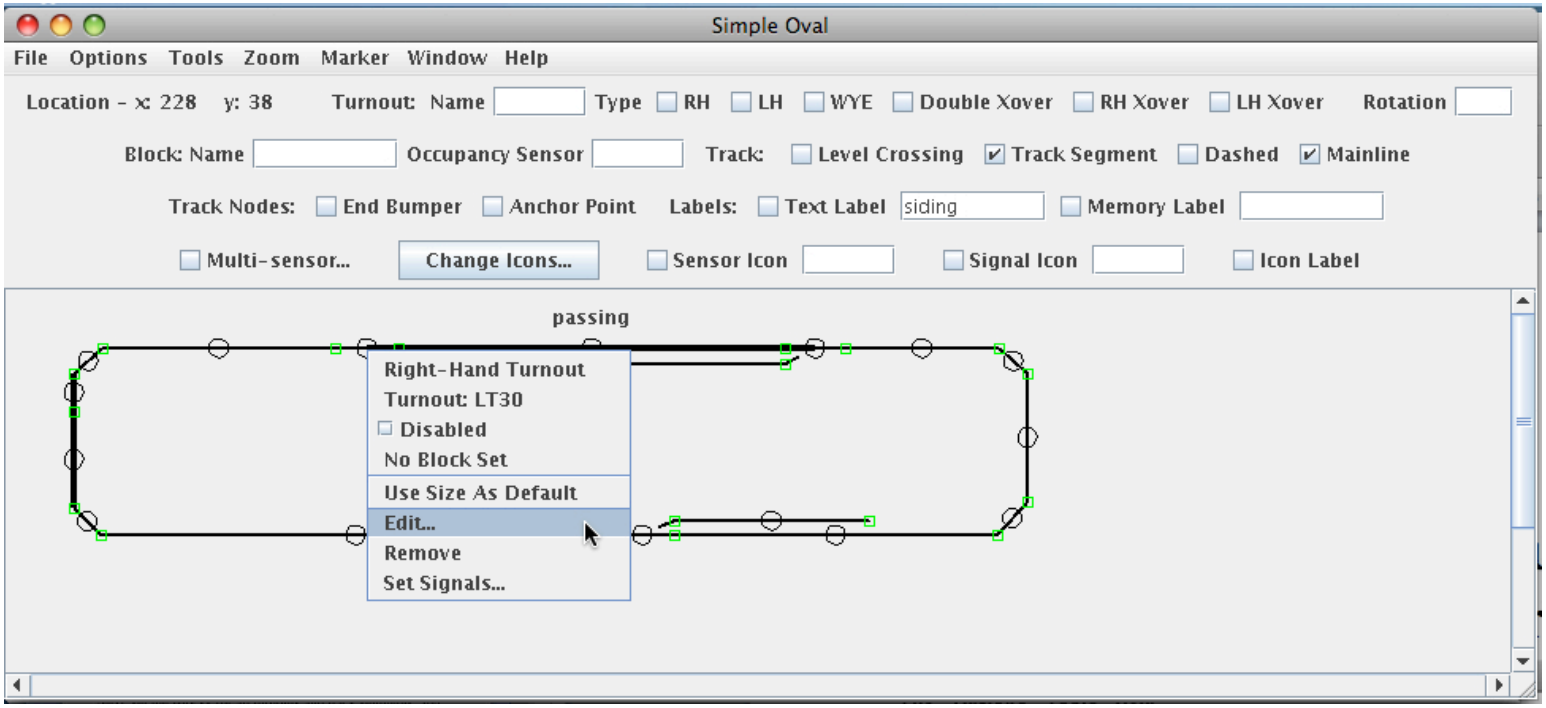
Add a Text Label to label the block.

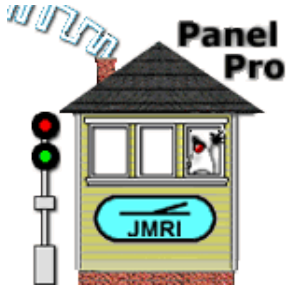


Add a block boundary point on the left side of the oval.

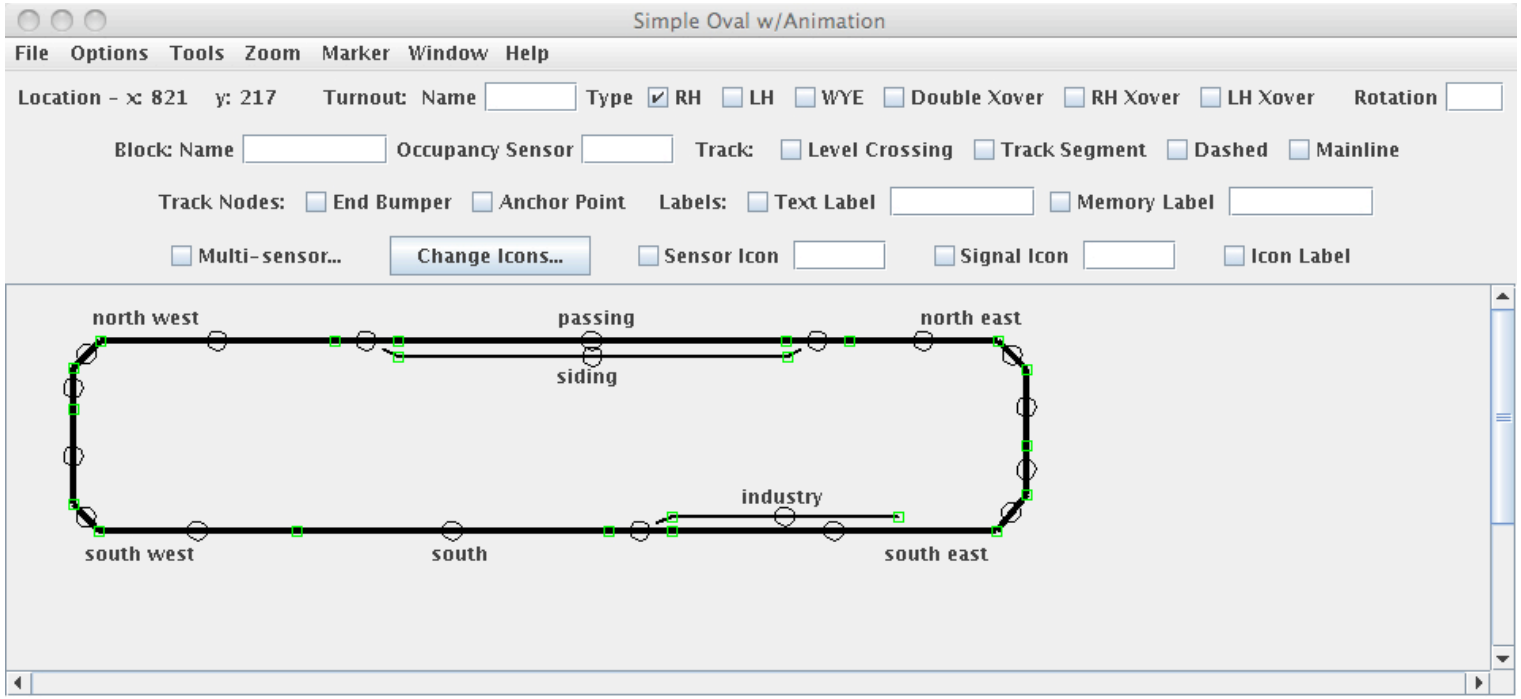


Next, set the Blocks for all turnouts and track segments, and add two more block boundaries.

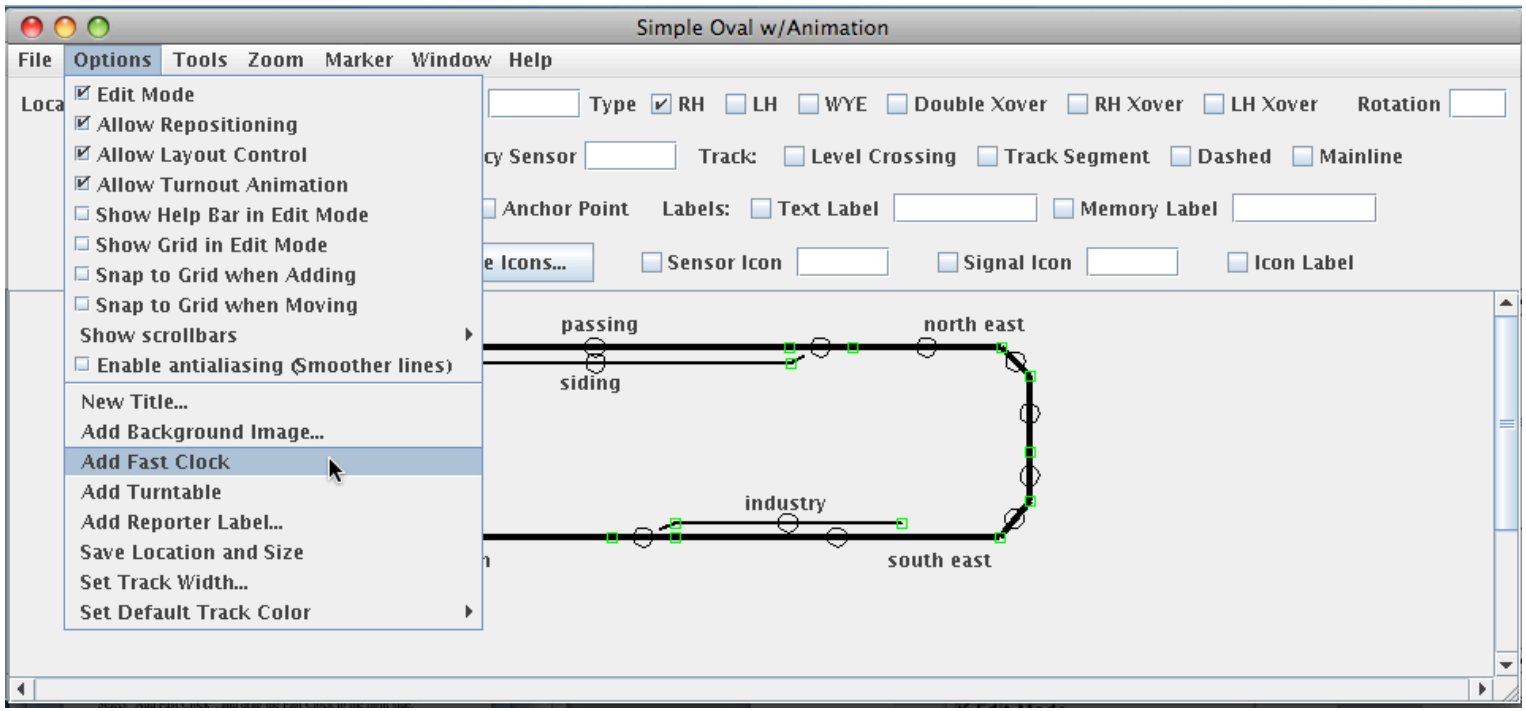




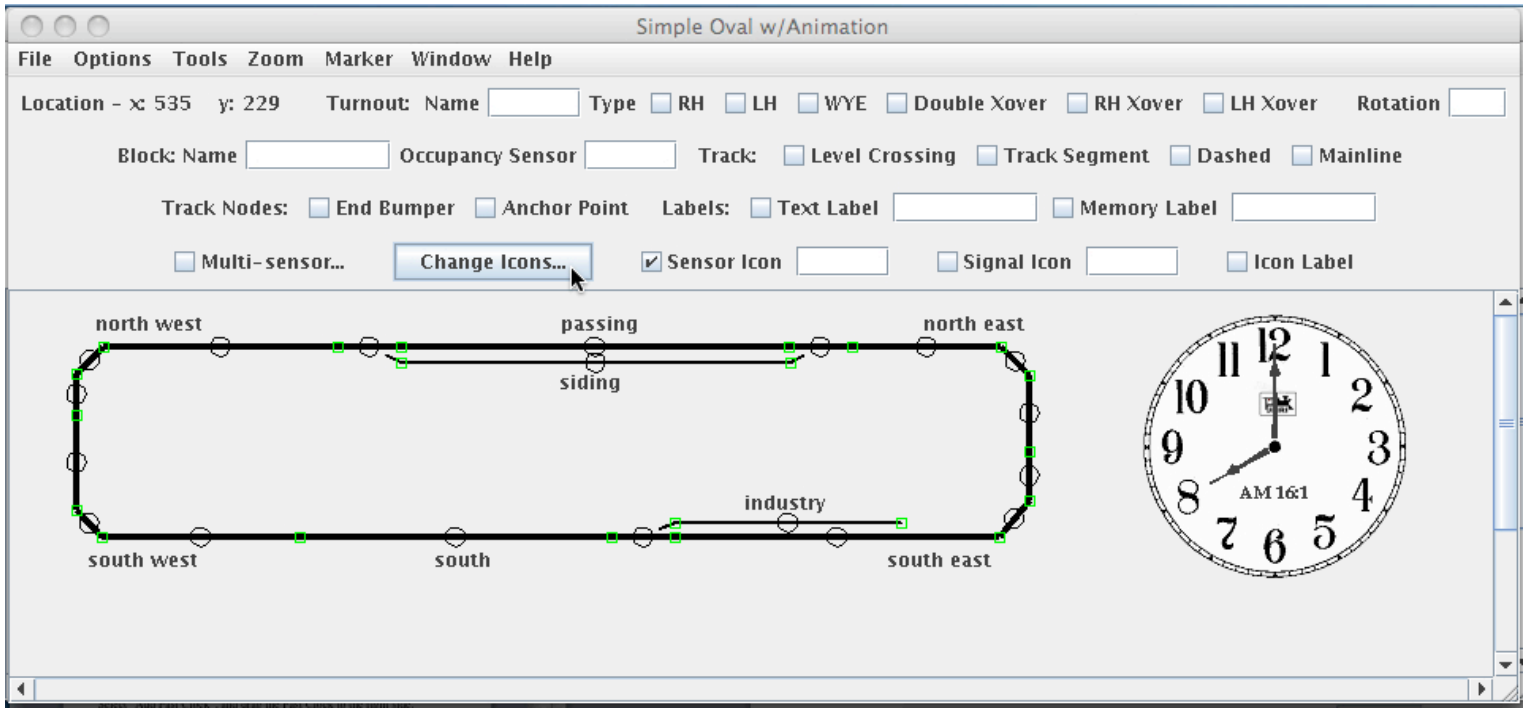
Use a Logix to simulate a Train. First add a Fast Clock.



Select “Add Fast Clock”, and drag the Fast Clock to the right side.



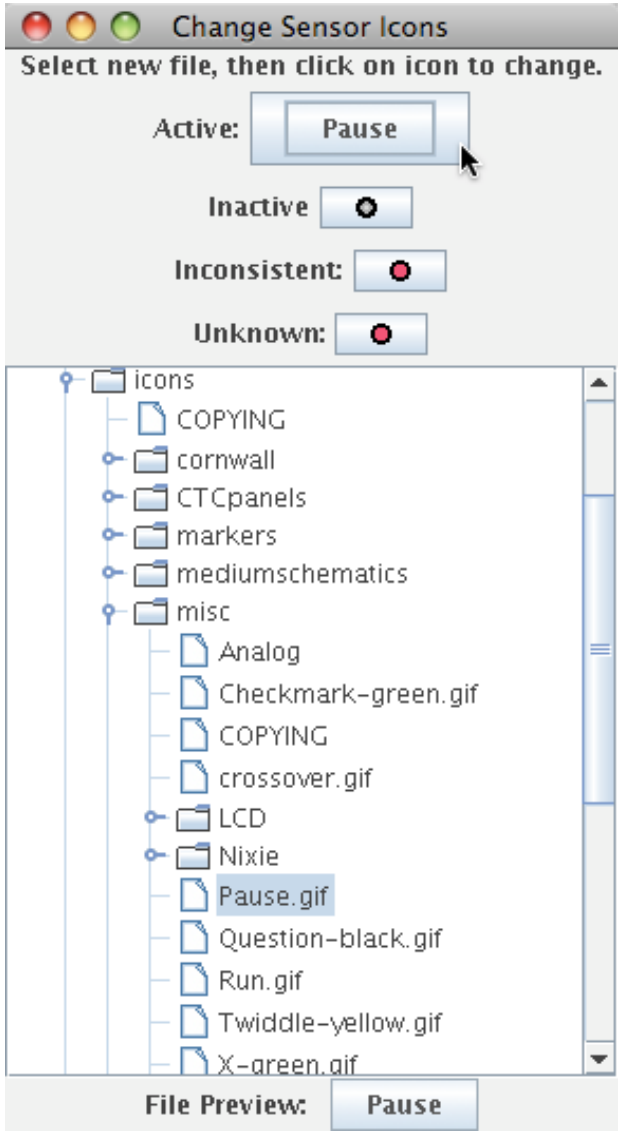
Need to add a button to start the simulation. Change Sensor Icon.



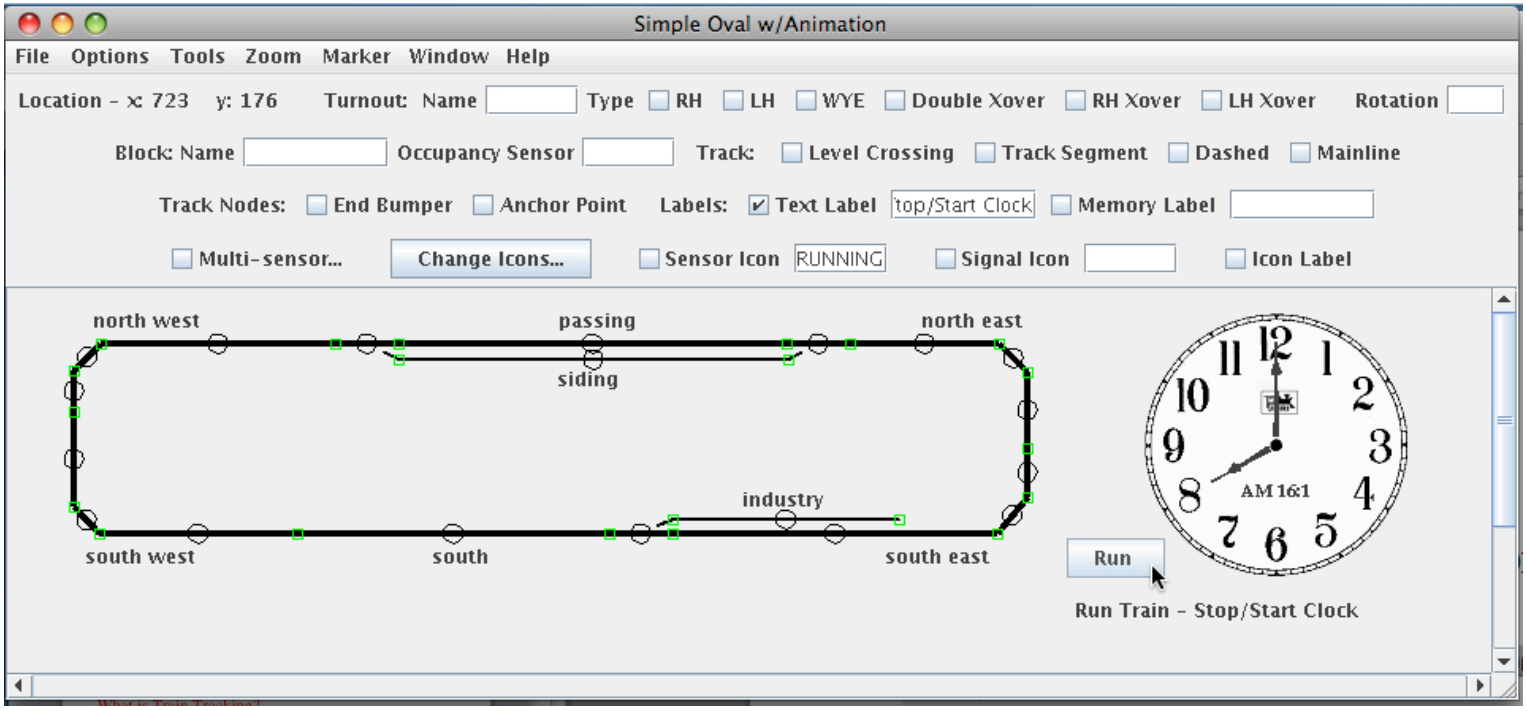
Set the Pause.gif icon
for Active, and

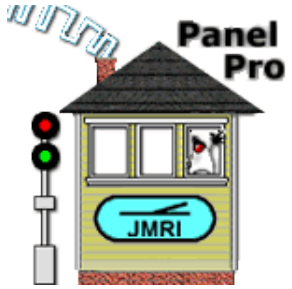
Set the Run.gif icon
for Inactive.

Then close the window.



Entered ISCLOCKRUNNING for Sensor, and shift-click near the clock.





What is Train Tracking?

Each Block has a “value”.

“Value” is automatically passed from Block to Block as a train moves from Block to Block.

The “value” follows the train around the layout.

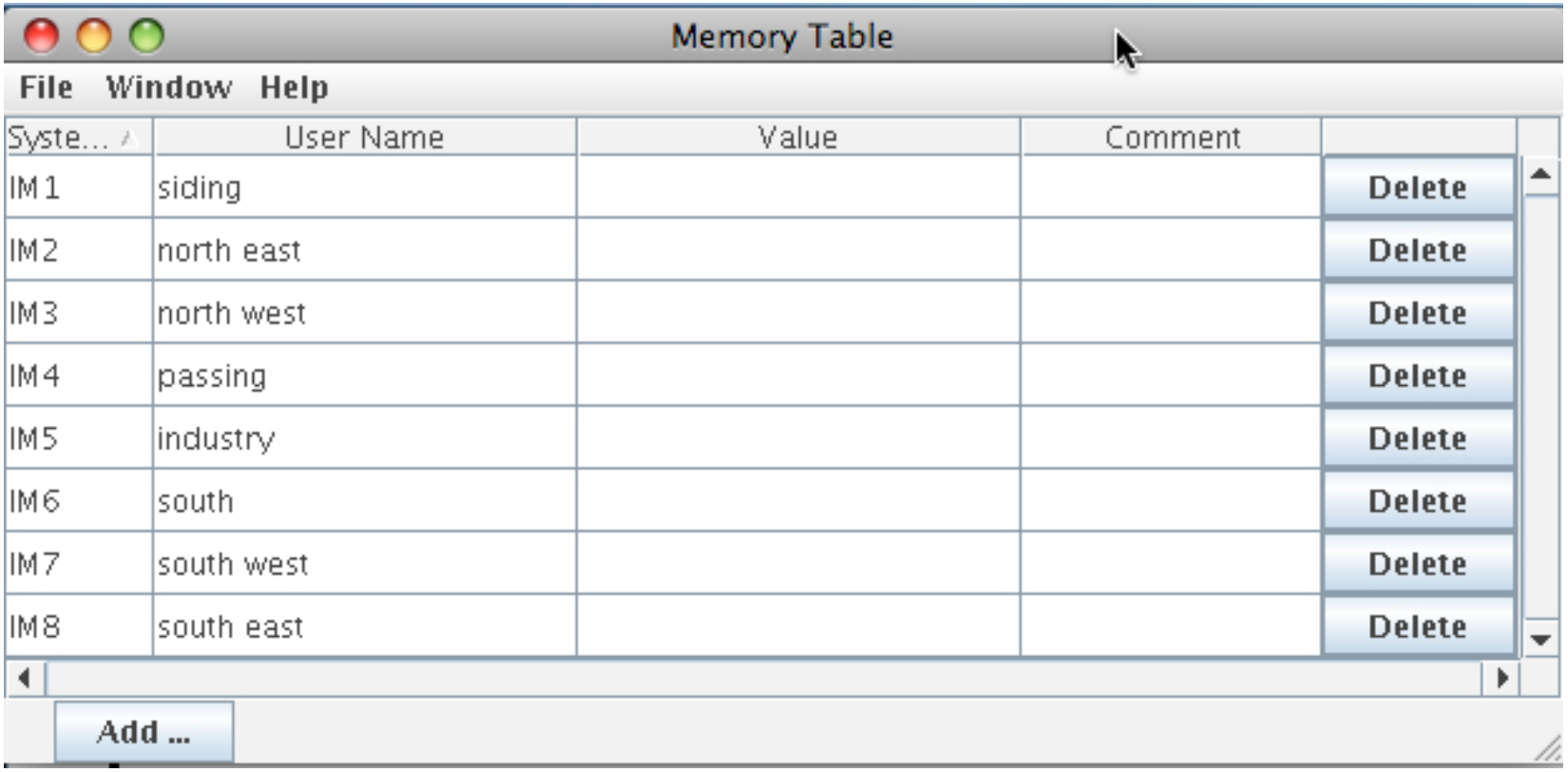
Setting the “value” to a train name, passes the train name around.

If a Memory Variable is linked to each Block, Layout Editor will automatically copy the “value” of the Block into the Memory Variable.

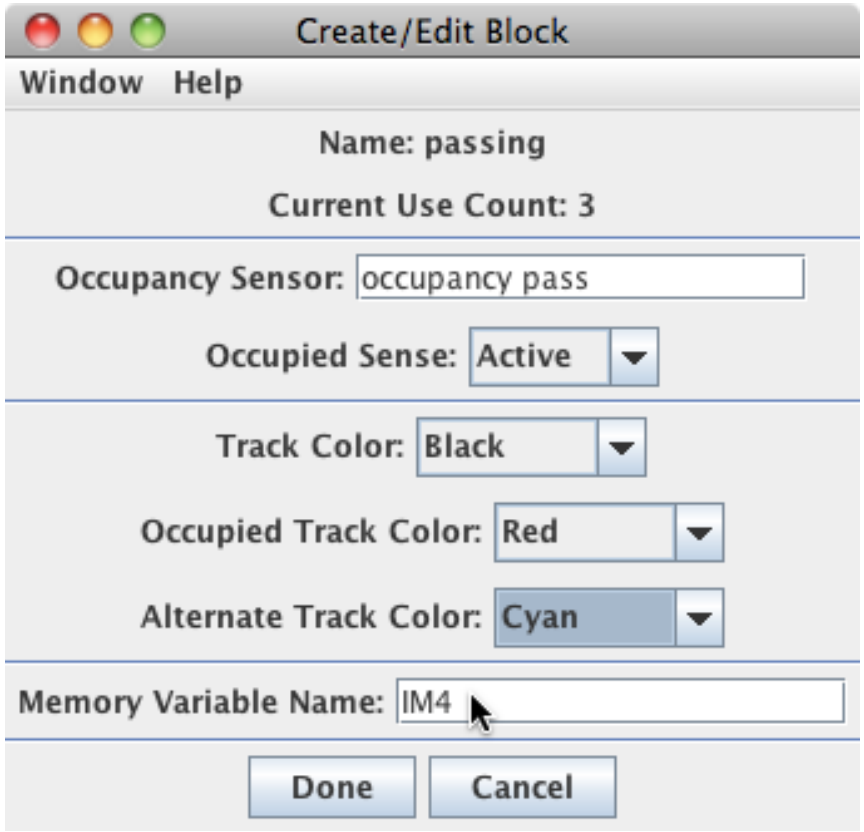
Using a Memory Label near each block, we can display the name of the train in that block.

Since Layout Editor knows the full connectivity of its layout, it sets this up automatically.

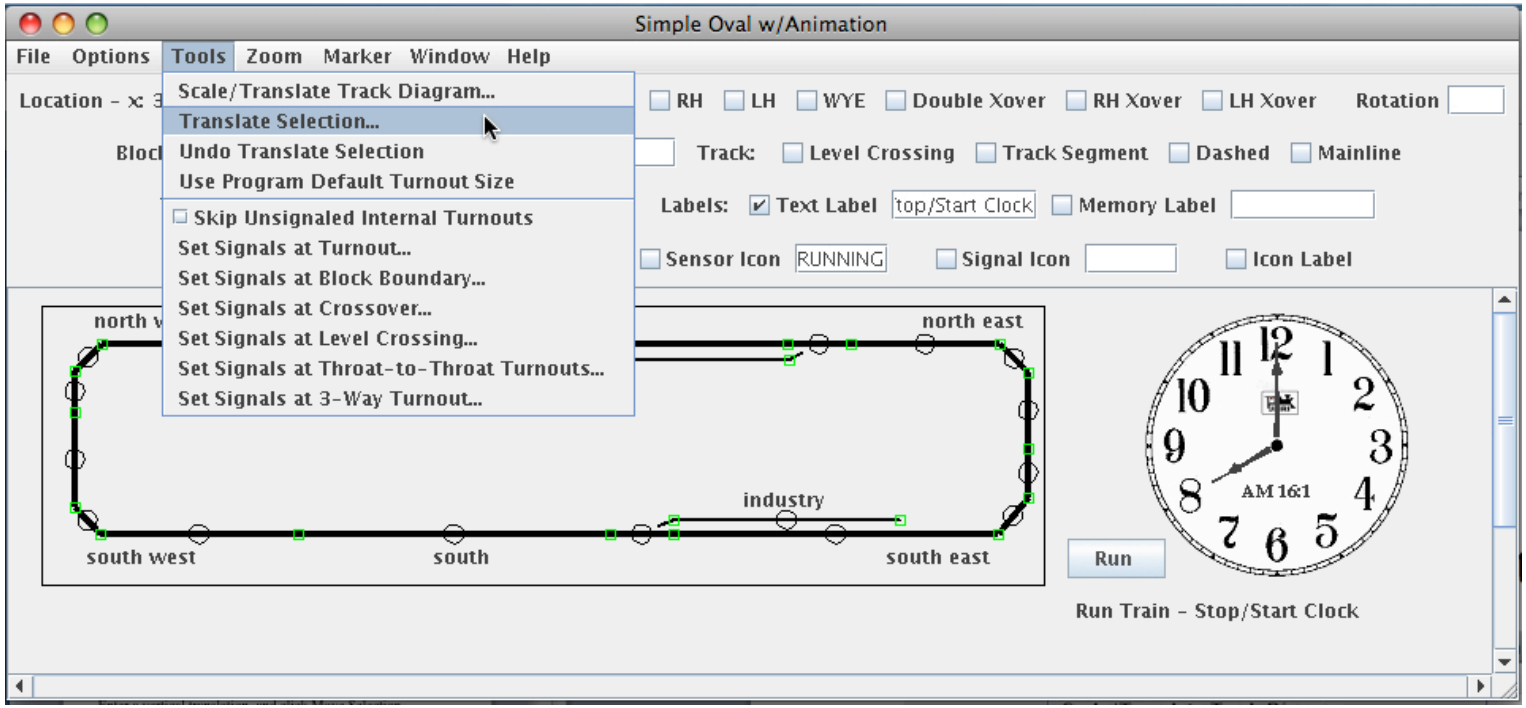
Memory Table - a Memory Variable defined for each Block



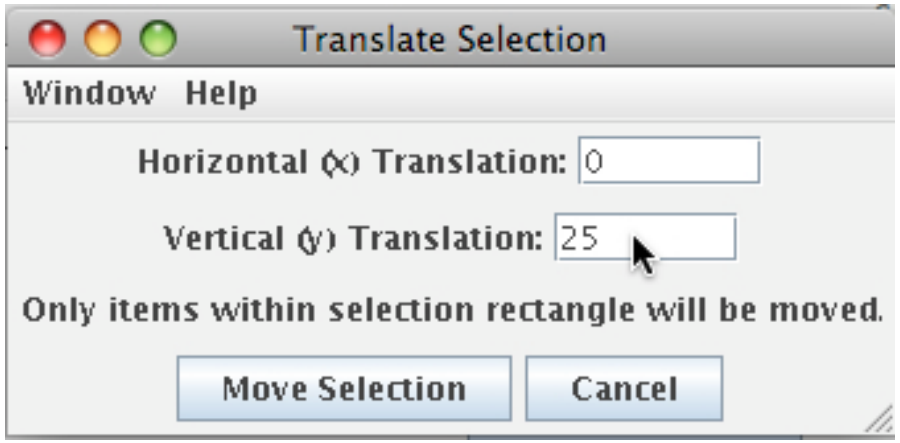
Ensure that each block has its Memory Variable.



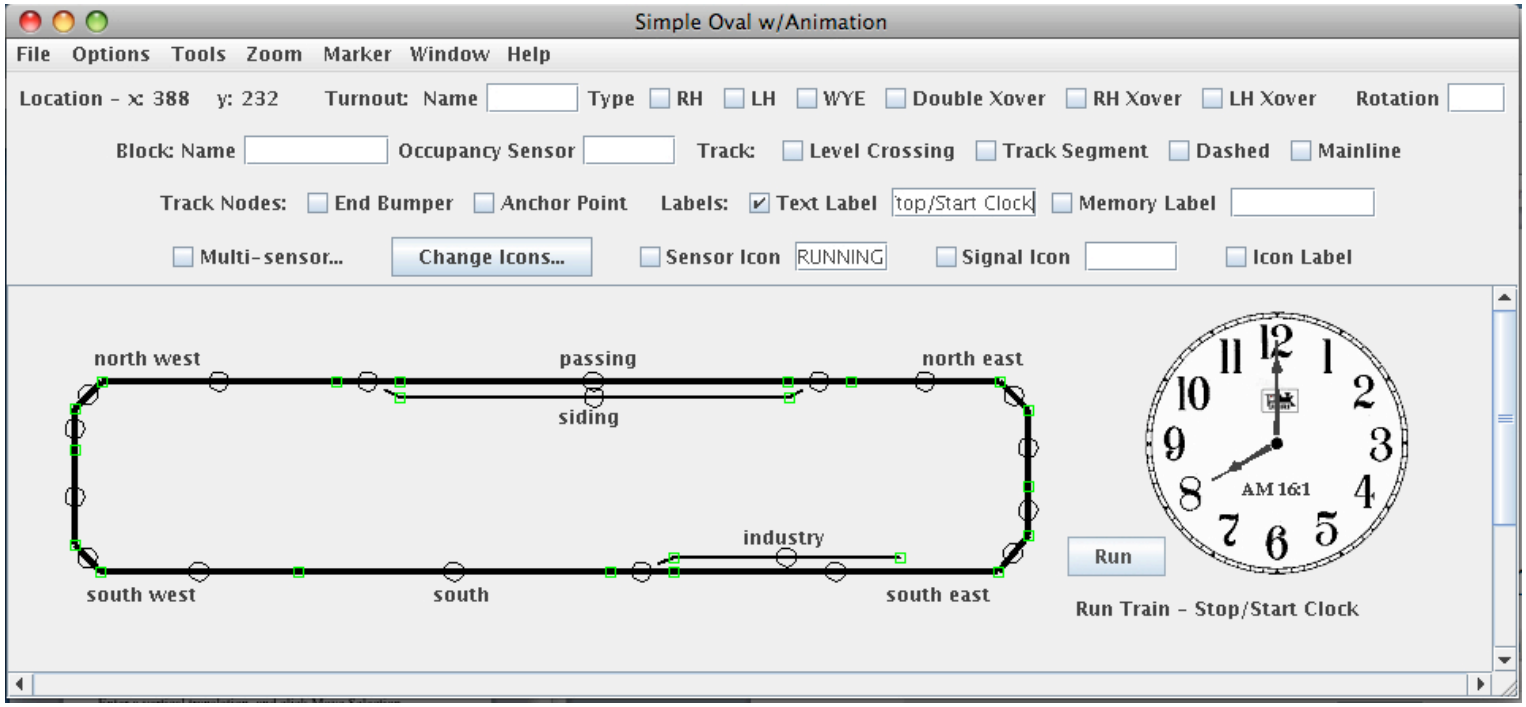
Need more room at the top to place Memory Labels.



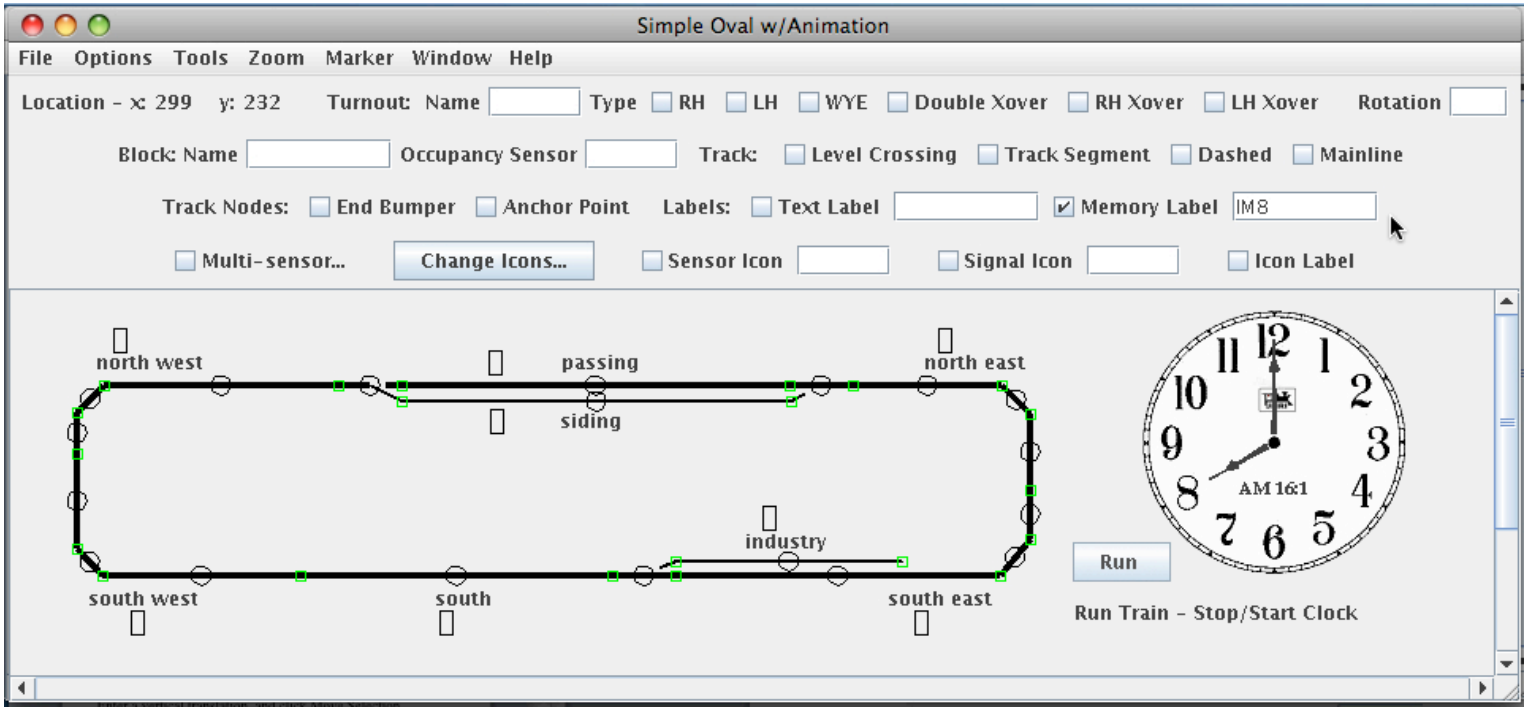
Enter a vertical translation, and click Move Selection



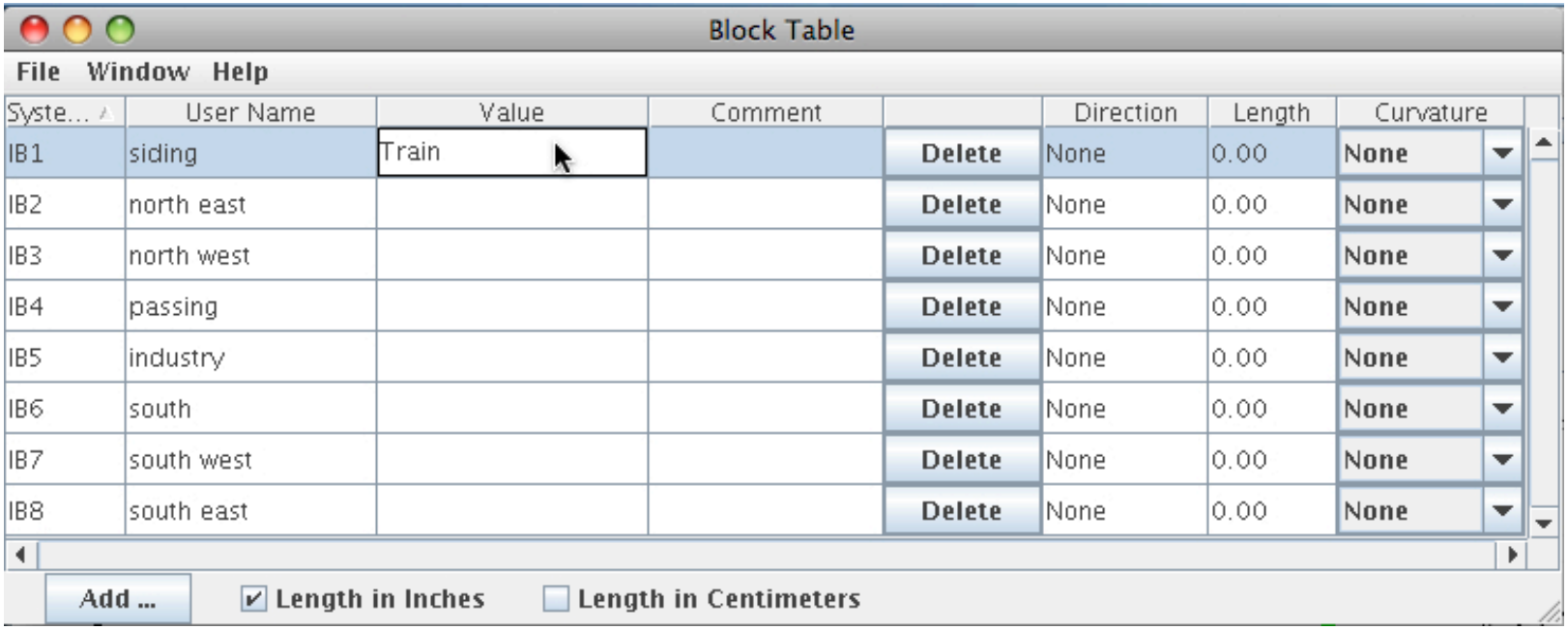
Near each Block place a Memory Label for its Memory Variable



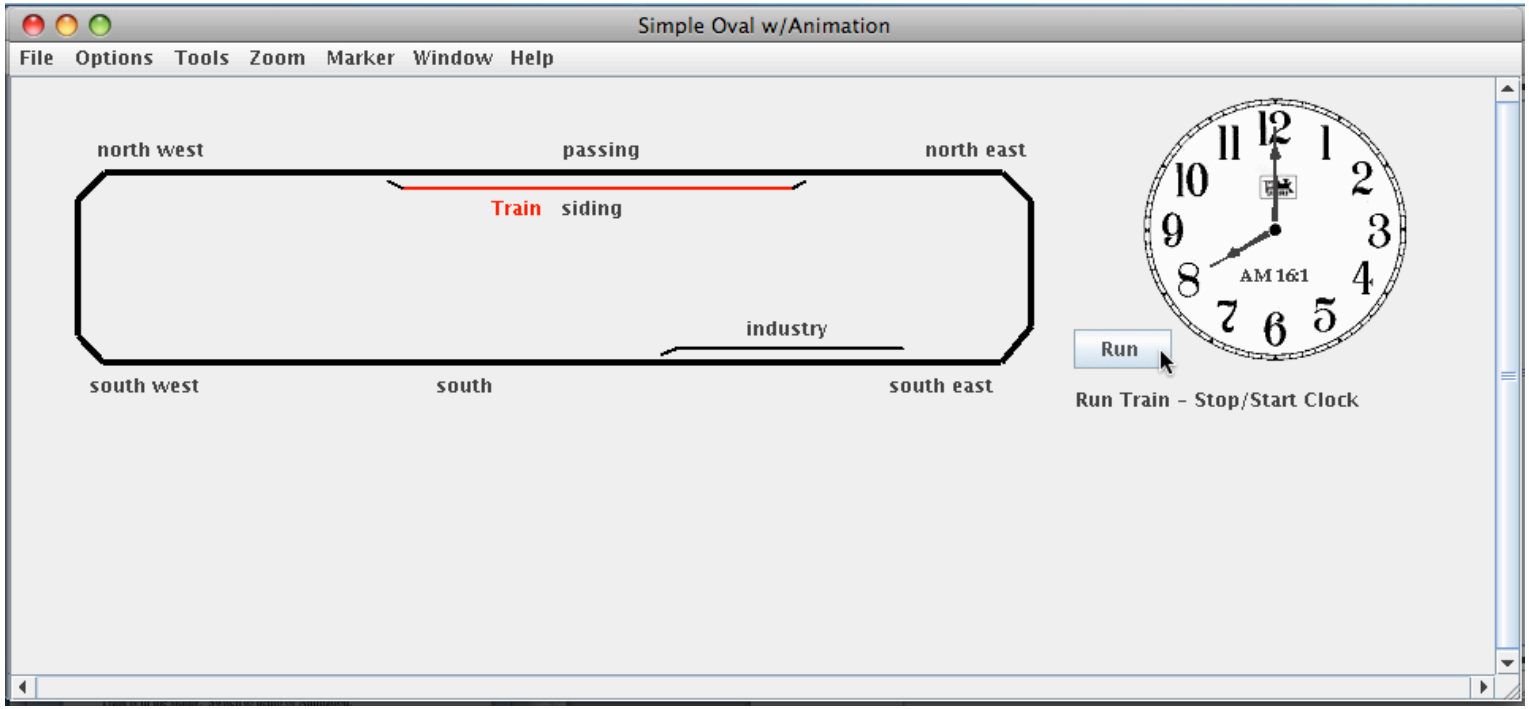
A small rectangle marks the location of each Memory Label.



Place the train in the “siding” block by entering it in the Block Table.

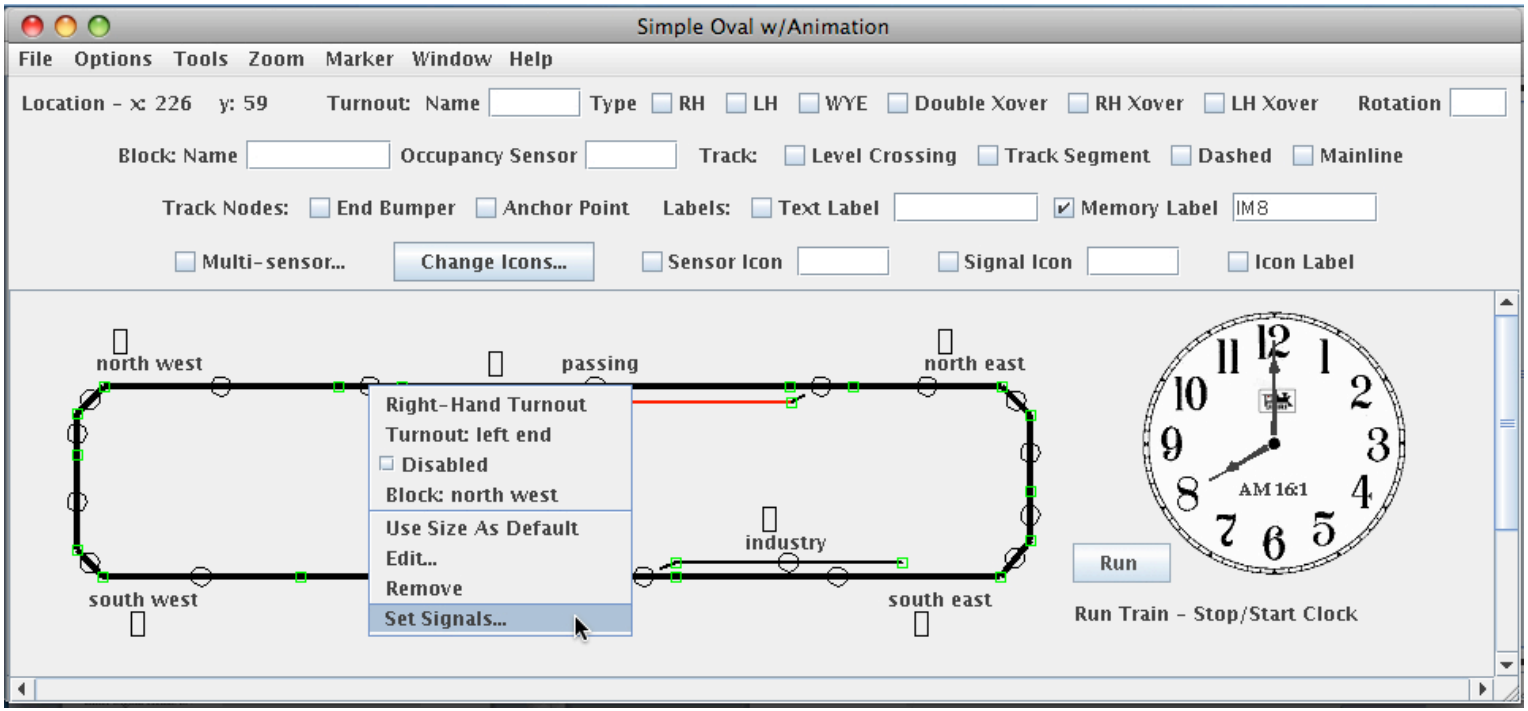


Train is in the siding.



Add Signals

Add Signals using Layout Editor's Set Signals… Tools.



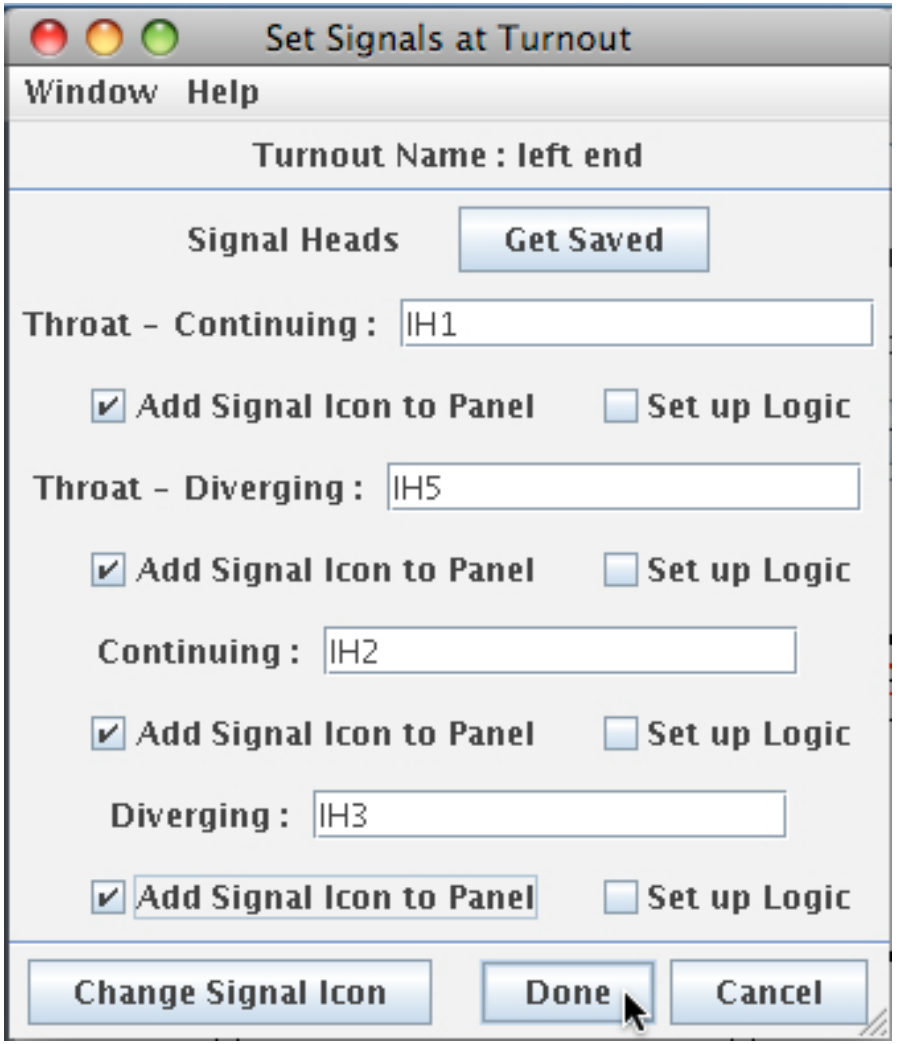
Enter Signal Heads to tell Layout Editor which head is where.

Options:

1) Place Signal Icon on the panel.

2) Set up Logic

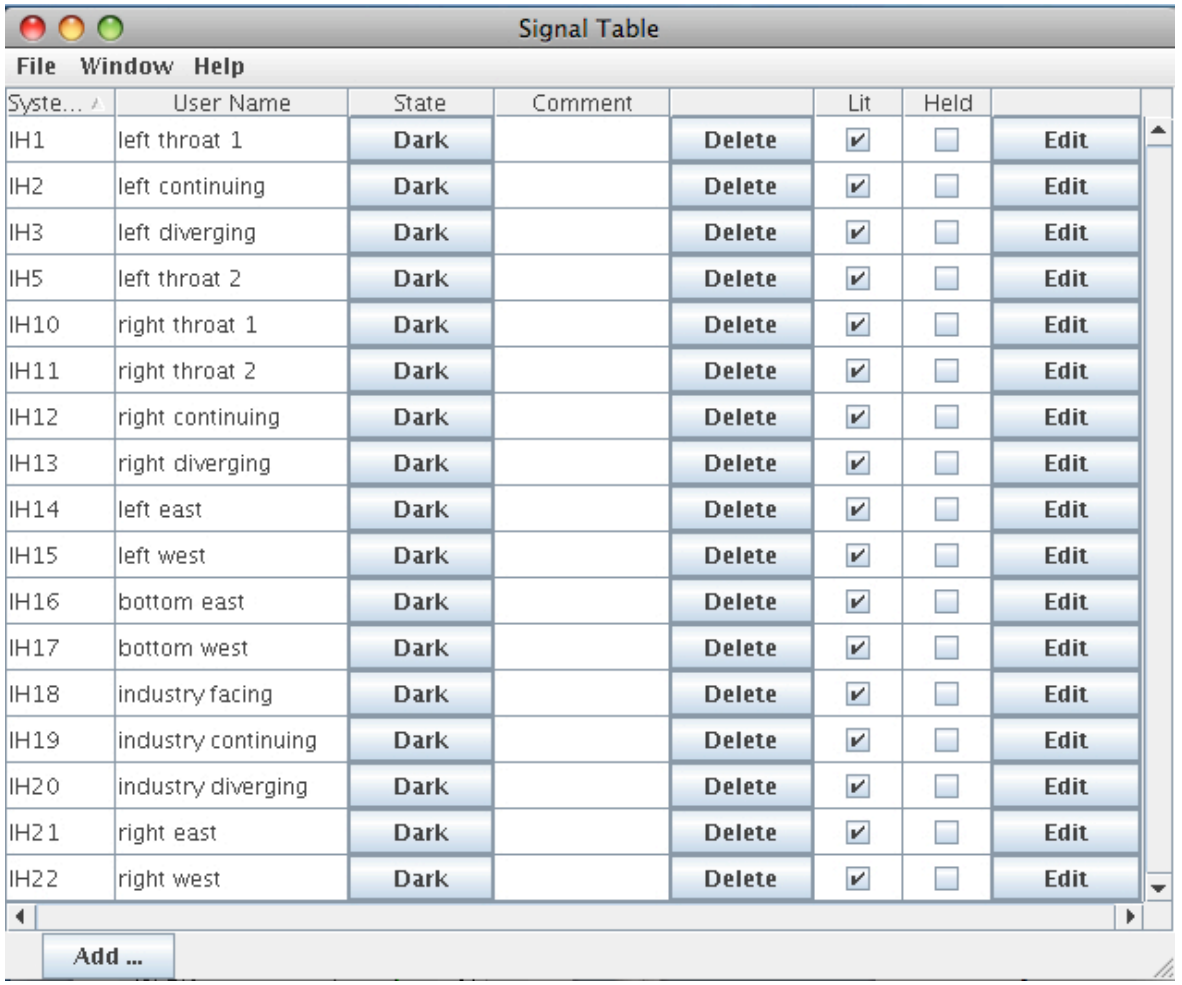
(Signal Heads must be in the Signals Table.)



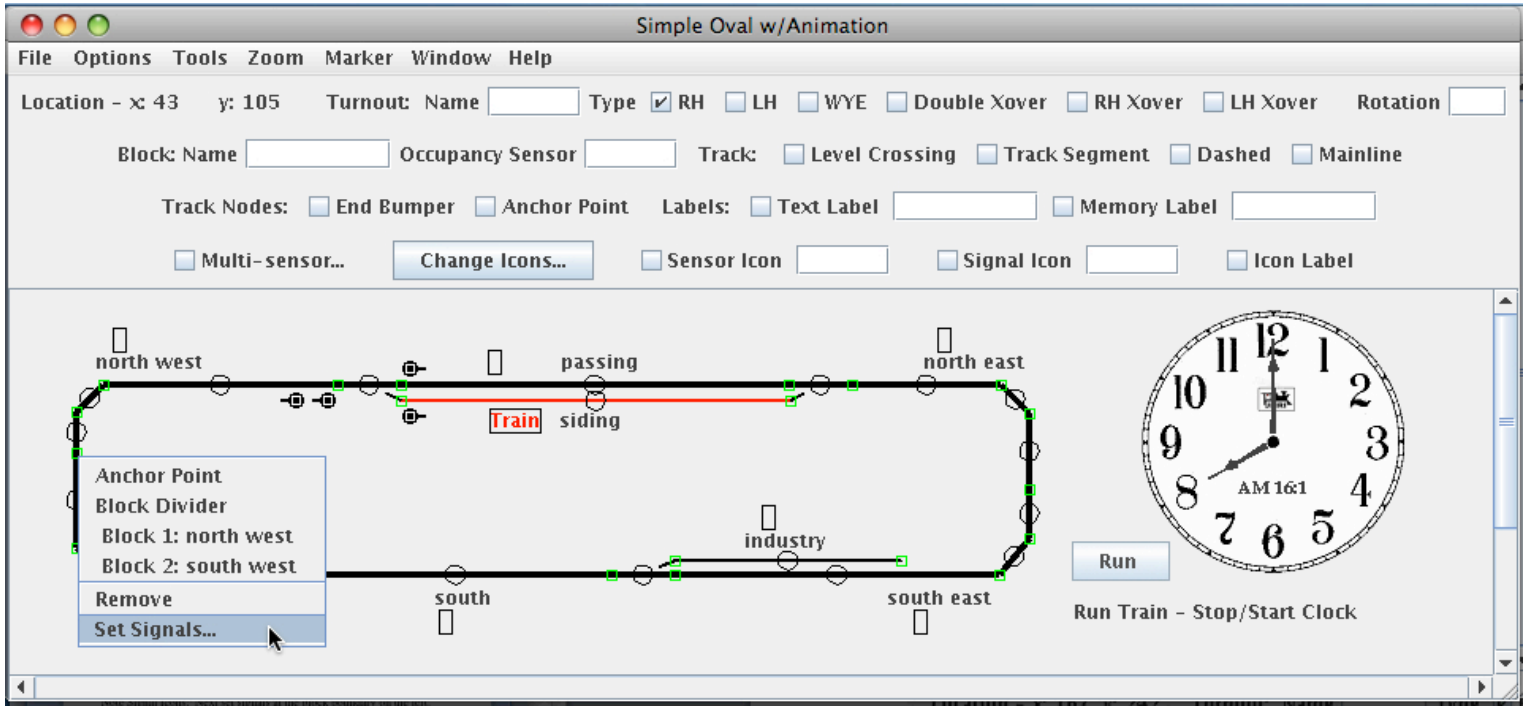
The Signal Table with all pre-entered Signal Heads.

User Names indicate where each Signal Head is placed.

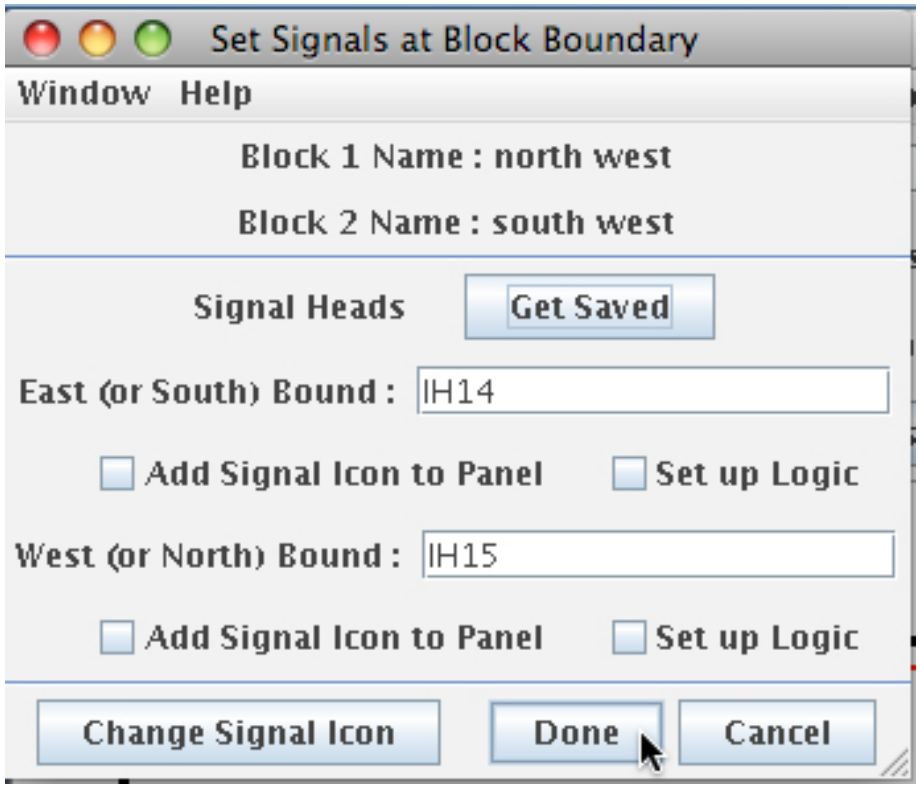
All are “Triple Output” type.

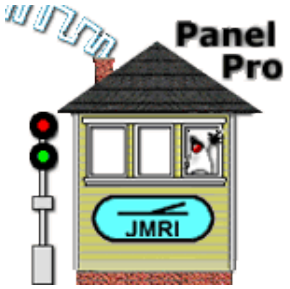


Note Signal Icons. Next set signals at the block boundary on the left.



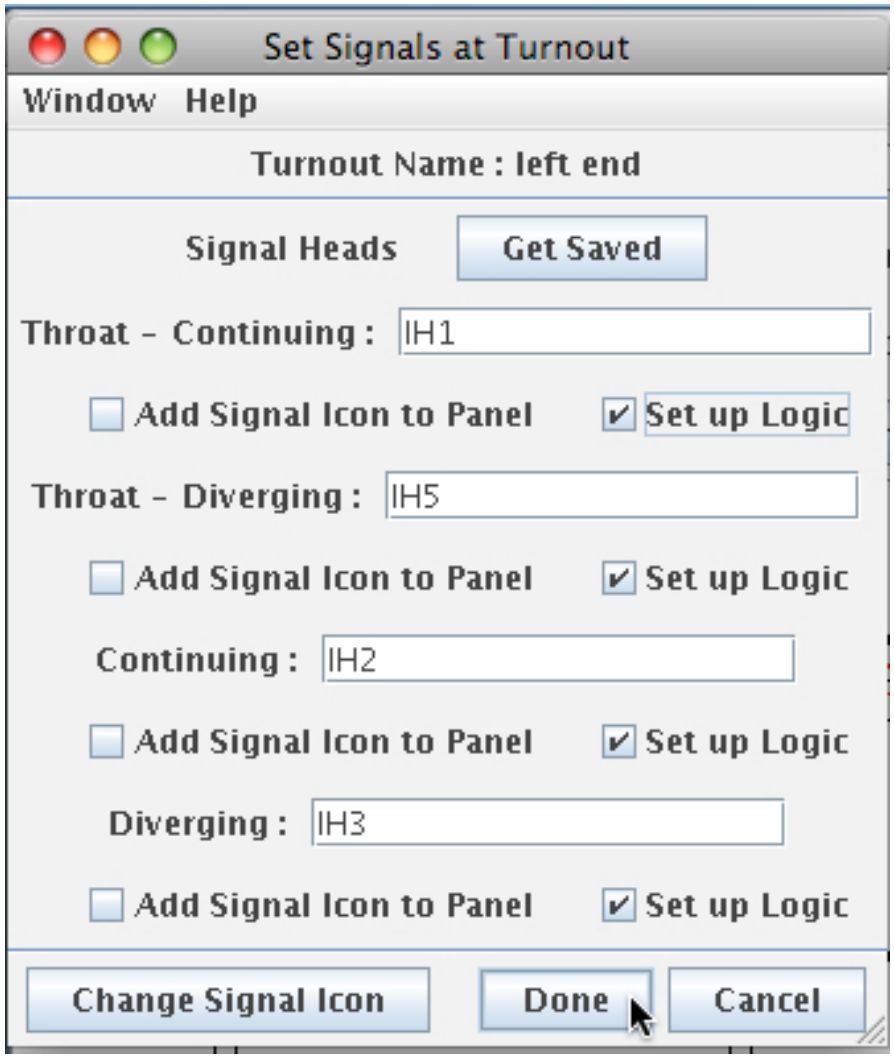
Block Boundary
between
north west
and
south west



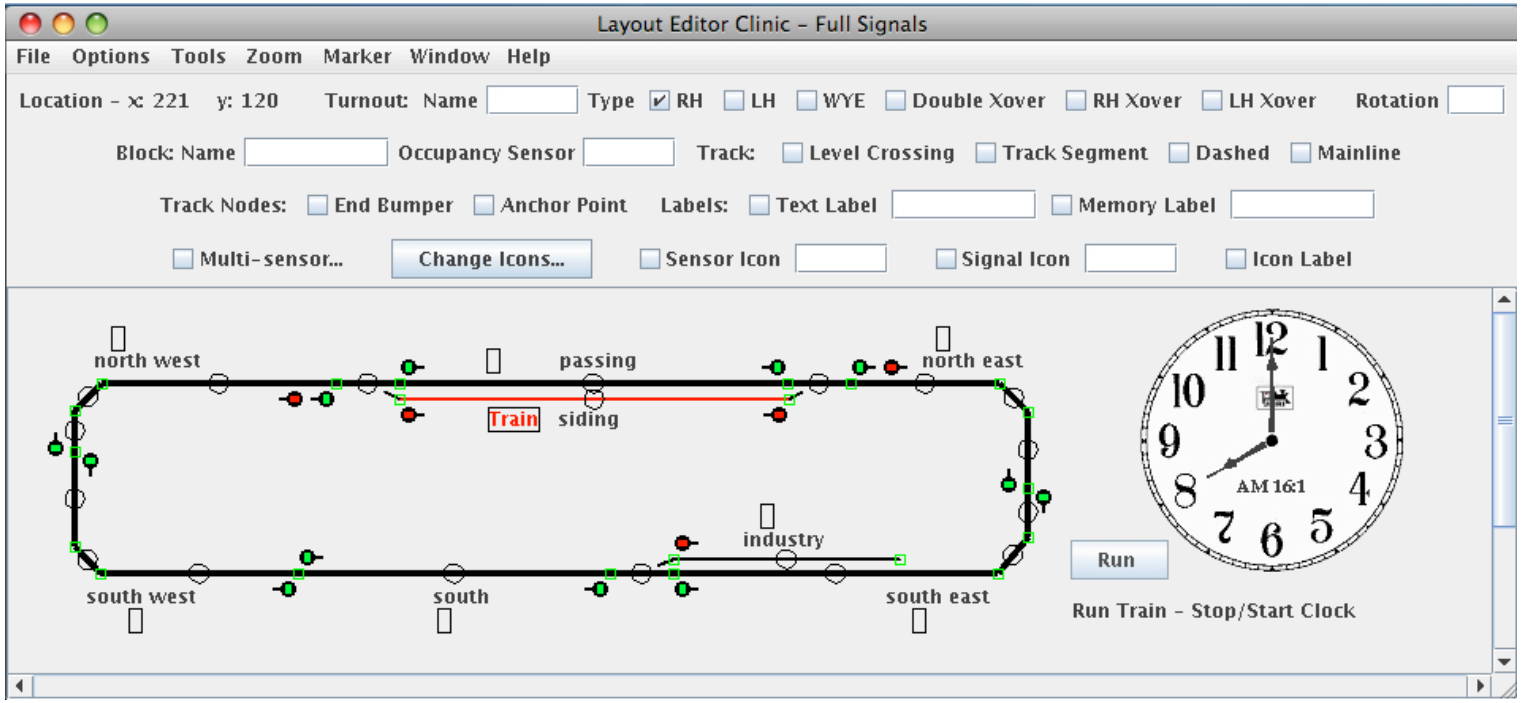


After placing all Signal Head Icons, then, revisit all turnouts and block boundaries, this time checking "Set up Logic".

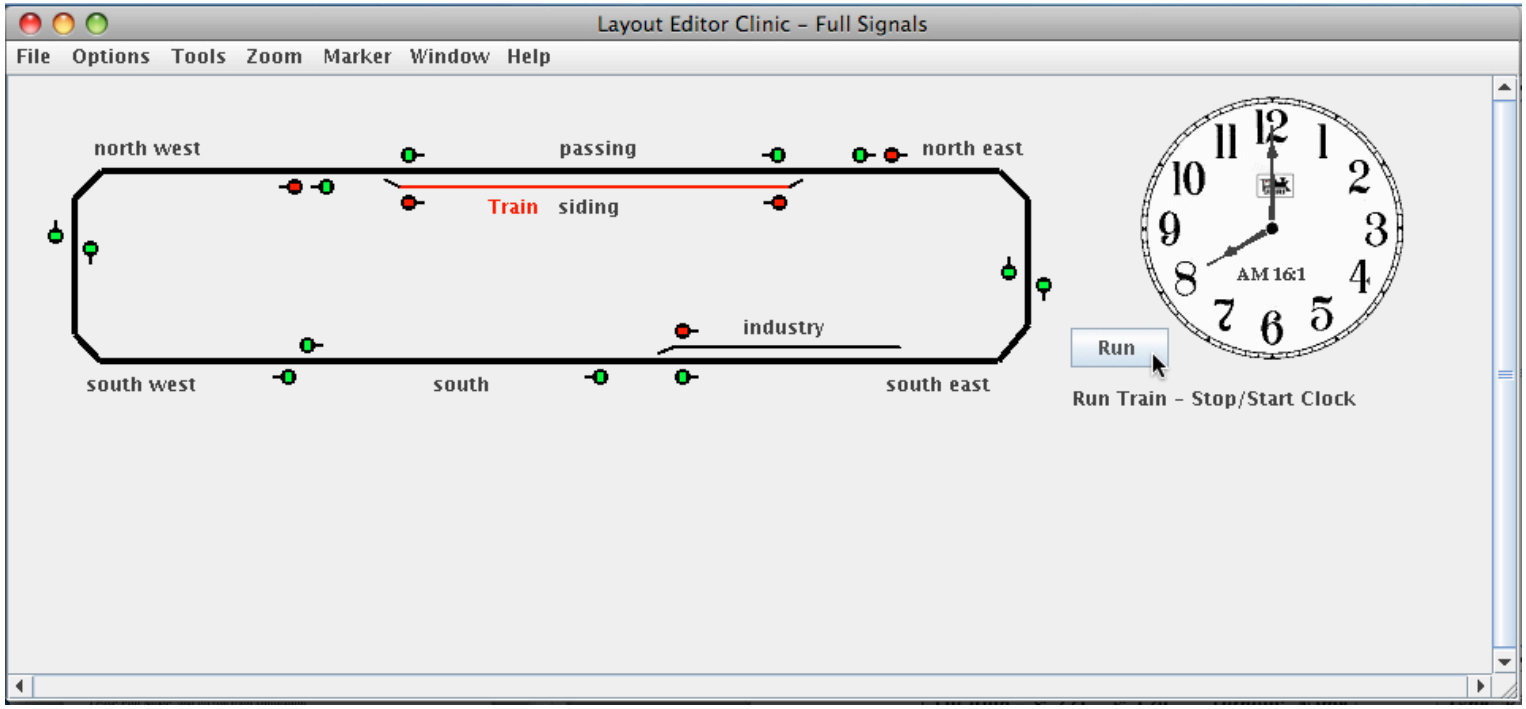
Logic will be set up for ABS signalling.

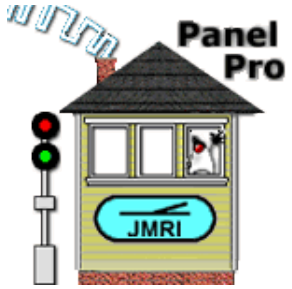


All signals are placed, and ABS signal logic is functioning.



Leave Edit Mode, and run train simulation.





This clinic is available as a PDF file:

JMRILayoutEditor2010.pdf

To run the demos, view the tables and the Logixs that simulates train running, you also need this file:

LayoutEditor2010.xml