Railroad Signals

What do they mean?
Why would I care or want to know?
Why should I care?

• Understanding the meaning of signals can make a model railroading session more enjoyable.

Understanding signals can help with in railfanning.
Railroad Traffic Control Systems

• Ever since the first railroad had more than one train running on it, there needed to be a way to safely share the trackage.
• Timetable and Train Order
• Direct Block Control
• Track Warrant Control
• ABS (Automatic Block Signaling)
• CTC (Centralized Traffic Control)
Figuring out where the trains are

• Timetable and Train Order: need a timetable and copies of the train orders
• Track warrant/direct block control: Scanner and ETT (Employee Timetable) help.
• Signals: these can give you clues even in track warrant territory (UP Cherokee Sub).
Ball signals were an early form of signaling, both for traffic control and as train order signals. In either case, the ball being at the top, or up high, meant proceed past the signal. Hence the term “High ball”.
Lower Quadrant Semaphores

Not common because not inherently fail-safe (mechanical failure such as breakage of control rod could cause a false proceed (Green) aspect. But some are still in use.
Upper Quadrant Semaphores

On breakage or failure the semaphore drops to the most restrictive position (red) or even falls completely down – which clearly indicates a failure.
Semaphores
Color-light signal: Traffic and RR

Can you spot the primary difference?
Answer: “High Green” on RR aka “Highball”.
# Basic Signal Aspects

2-block aspects shown – add APPROACH MEDIUM for 3 – block protection.

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Name</th>
<th>Indication (what the train crew needs to DO):</th>
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</thead>
<tbody>
<tr>
<td>“Green”</td>
<td>CLEAR</td>
<td>Proceed at maximum authorized speed.</td>
</tr>
<tr>
<td>“Yellow”</td>
<td>APPROACH</td>
<td>Reduce speed to Medium speed (per the RR timetable, often 30 MPH), prepared to stop at next signal. This means that the next block is clear but the block after that may be occupied or a switch is thrown against the train’s movement so next signal is at STOP.</td>
</tr>
<tr>
<td>“Red”</td>
<td>STOP</td>
<td>Stop, do not pass unless authorized by the dispatcher. The next block is occupied or a switch is thrown against the train’s movement.</td>
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</table>
Signal is clear as train approaches....
“Knocking down” a signal

Signal “dropped to red” because the locomotive or train is now in the block PROTECTED BY THE SIGNAL. The engineer, unlike a model RR operator, would not see this.
Absolute vs Intermediate/Permissive

Absolute: “Stop and Stay”. No number board, found at control points and interlockings.

Permissive: “Stop and Proceed.” Typically found in ABS sections (note number board).

Permissive signal video
Route-Based signaling (GCOR/Western RRs)

• Normal Route Cleared

Eastern roads use NORAC:– SPEED-BASED signals
Route-Based signaling (GCOR/Western RRss)

- Diverging Route Cleared (stop at end of siding)
Diverging approach as seen by the train crew
Route-Based signaling (GCOR/Western RR)

- Double Track with Crossovers
Putting it together: KCS Signal Rules

For a table of virtually ALL US signal aspects, see “Todd’s Book of Signal Aspects.”
KCS Signal Rules (continued)

For more detailed information, please see [US Railroad Signal Basics](#)
Confused? Then follow this simple rule:

If it’s not **ALL RED**

It’s not **RED AT ALL**!

Corollary: if it ain’t **ALL RED**, then the **RED** isn’t **READ**.
Is a train coming?

• Absolute Signals
  • If not red, a train is ABSOLUTELY coming (because the dispatcher has cleared a route for a train).

• Permissive Signals
  • If red, a train has passed or is coming
  • Not red? Block is clear (could mean no train or train cleared – not conclusive.)

• Approach lighting
  • Can help: if LIT, a train is in the block, APPROACHING the signal.