

## Definitions of Model Railroad Wiring Terms

### 1. Block

A *Block* is a Track Segment (See *Track Segment*) that is not part of a yard or an industrial siding. Most railroad modelers use the terms segment and block interchangeably, but for wiring purposes, we will use the term Track Segment unless there is a specific reason not to, such as in conjunction with the conventional use of the term Block Signal. A Block can be a portion of a mainline, of a branchline, or of a passing siding.

### 2. Block Signal

A *Block Signal* is a semaphore or light that indicates the occupancy status of the next Block (See *Block*) or next several Blocks or even alternate Blocks as in the case of a siding, to the locomotive engineer and thus provides safe control information. Branches or portions of mainline that do not have operating block signals are called "*Dark*." (See *Signal* and *Train Order Board Signal*)

### 3. Bus or Wire Bus

A *Bus* is a form of power and/or signal connection from a single source to any number of sinks or vice versa.

The only DCC bus we have is a Green and Black twisted pair of wires to provide power and control to the various stationary decoders.

There is a 24 volt DC power bus with a Red and Blue twisted pair and a 12 volt DC power bus with an Orange and Blue twisted pair. These have been provided for scenic lighting and other purposes that do not pertain to track power or control.

### 4. Drop

The term *Drop* is borrowed from the electricians and telephone linemen. To them it denotes a set of wires or a cable that connects a user to a supply. We use an abstraction of that meaning.

1) Each track segment has at least one drop consisting of a pair of color coded insulated 22 gauge wires that are individually soldered to the outside of their respective rail and that penetrate the roadbed. In general the drop should be close to the center of the track segment.

2) Each turnout also has a drop consisting of a triple of color coded insulated 22 gauge wires, with one for each of the left and right rails and a third for the frog, that penetrate the roadbed. A segment with one or more turnouts will have at least two drops.

Drops are always kept short.

On the bottom of the roadbed the drop wires from the rails of a track segment are individually connected to a heavier gauge twisted pair Segment Feed through the uniquely identified and labeled two position terminal strip. Drop wires from a turnout are connected to a uniquely identified three position terminal strip.

### 5. Occupied Segment

A Track Segment (See *Track Segment*) is considered to be *Occupied* if it is considered unsafe for a train to enter that segment with the expectation of safely exiting the other end.

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A thrown turnout to an unprotected siding or a thrown turnout against oncoming traffic (trailing point) or a work crew or a single train car within the block are each sufficient to cause a block to be unsafe. Realistic Operations rules have other conditions to declare a segment unsafe. If a section of track consists of two or more contiguous segments and that section does not have a passing siding, then if any one of those segments is unsafe, the whole section is marked as unsafe.

There are exceptions and special operating rules for segments that are portions of a yard or of an industrial siding.

### 6. Power Distribution Panel

A *Power Distribution Panel* is a centrally located panel that has all of the necessary connections and unique identifier labels to provide the DCC power and control from the circuit breakers and/or boosters. One end of each segment lead will be terminated at the power distribution panel.

### 7. Power Divisions

A *Power Division* is made up of one or more adjacent track segments that are wired to the same circuit breaker.

### 8. Segment Feed

A *Segment Feed* is a dedicated twisted pair of 16 or 18 gauge wires that provides electrical connection between the two position terminal strip for the Drop and the connections where the DCC power and control are provided. Segment feed wires have color coded insulation to match the segment drops and the pairs are uniquely identified at both ends to match the segment identification. There is a one-to-one relationship between the segment feeds and the track segments.

### 9. Signal

A *Signal* is a semaphore or light that indicates a safety instruction to the train engineer and conductor. Signals are not a part of the current plan, but the track segments are defined and wired so that signaling could be added at a later date. (See *Block Signal* and *Train Order Signal*). [TBD] Signals should be discussed elsewhere in the Standards Document

### 10. Track Segment

A *Track Segment* is an electrically isolated but mechanically contiguous track that connects a railroad from point A to point B. A track segment must normally be shorter than about six feet.

Each track segment has a unique identification code that allows the various construction crew members and operators to easily recognize it from above and below the benchwork.

A typical example of an identification for a conventional track segment might look like:

[TBD]

TS 0102xxxx

Each track segment has at least one Drop to provide the electrical connection to the left and right (from the engineer's perspective) rails.

### 11. Train Order Board Signal

A *Train Order Board Signal* is a distinctive semaphore or light that indicates that a train must slow down or stop to receive a Train Order. A tower at an interchange or at a station is a likely location for a Train Order Board. (See *Signal* and *Block Signal*).

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### 12. Turnout

A *Turnout* is a mechanically contiguous track with moveable rails and additional features that allows a railroad alternate routes from a single point A to points B and C. The moveable part of a turnout is called a switch.

Each turnout has a unique identification code that allows the various construction crew members and operators to easily recognize it from above and below the benchwork.

A typical example of an identification for a conventional turnout might look like:

[TBD] TU 0102xxxx

Each turnout has at least one Drop to provide the electrical connection to the left and right (from the engineer's perspective) rails and the frog.

### 13. Unique Identification Code

A *Unique Identification Code* is a combined lettering and numbering system based on what is being identified and how many scale miles it is from the eastmost point on the mainline and other considerations for ease of reference. Each track segment and each turnout have a unique code that is easily recognized from above and below the benchwork.

A typical example of an identification for a conventional turnout might look like:

[TBD] TU 0102xxxx

A typical example of an identification for a conventional track segment might look like:

[TBD] TS 0102xxxx

Two conventional track segments running parallel as for example a mainline and a passing siding might be distinguished by:

[TBD] TS 010201xx

[TBD] TS 010202xx

Each Drop, Segment Feed wire pair, and Power Distribution Panel connection are clearly and uniquely labeled for ease of construction and maintenance and operation.

[TBD] Unique Identification Code should be discussed elsewhere in the Standards Document.