

THE OPS SESSION

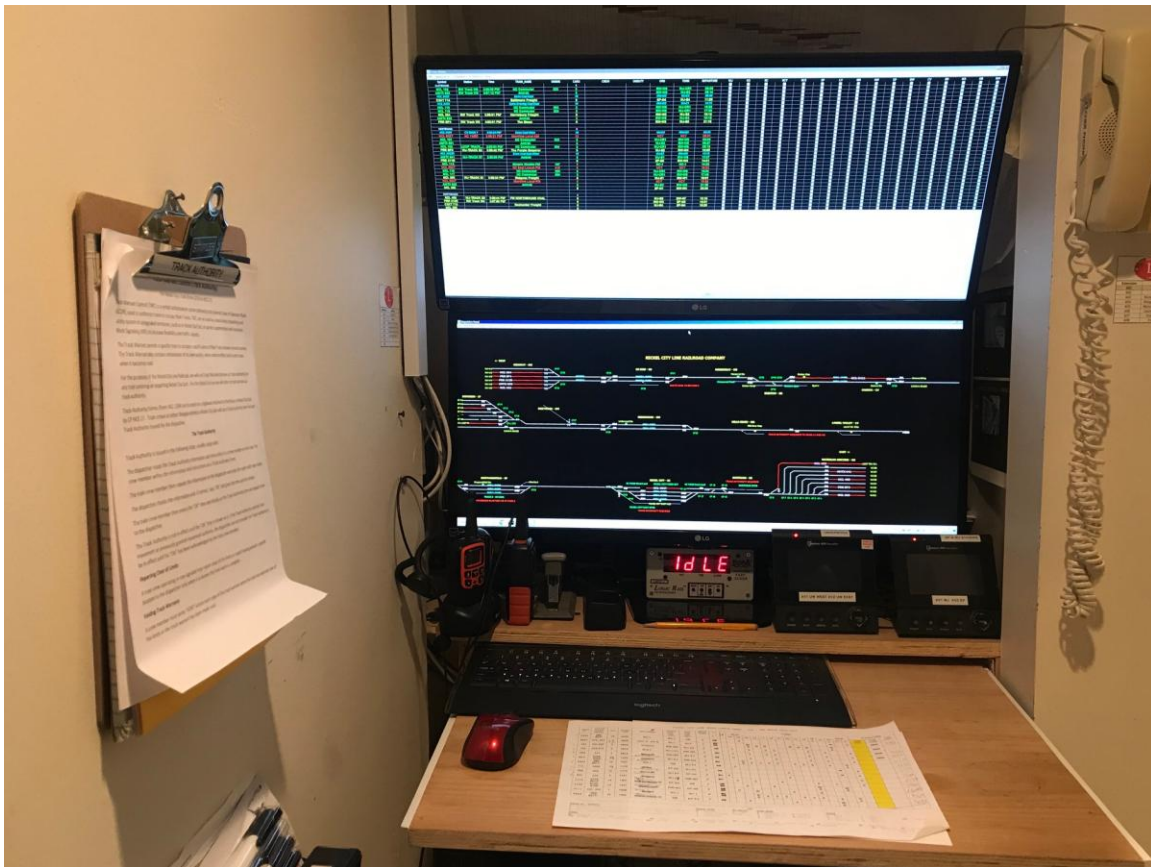
Each ops session covers an 6 hour period on a fast clock set at a rate of 2:1 (6 hours in 3 hours). Four sessions are required for a 24 hours day. The first session starts at midnight and ends at 6am (Session A). The next session runs from 6am to 12pm (Session A1). The next session runs from 12pm to 6pm (Session B). The final session runs from 6pm to midnight (Session C). The following paragraphs describe the roles and responsibilities of operators during each session.

Dispatcher

The dispatcher is responsible for routing all trains and scheduling train meets during each ops session. Dispatchers work 6 hour shifts (3 real hours). There is one shift per session.

Dispatcher Screens

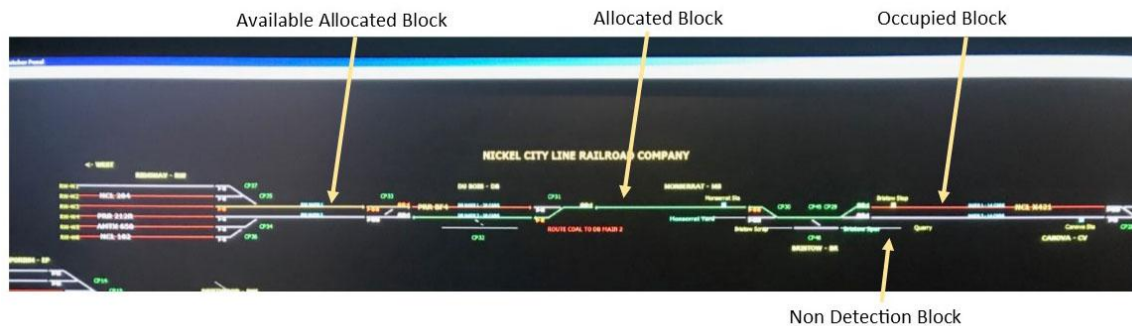
The Dispatcher's screen displays a schematic of the layout. The screen is laid out with the East to the right and West to the left (this is reverse orientation from the Yardmaster's screen).



Dispatcher's screens

Red track segments show occupied blocks on the railroad. White track segments are unoccupied blocks. Green track segments with arrows indicate allocated sections for a

train. Yellow track segments with arrows indicate an allocated block is now available, but cannot be used until the dispatcher releases, and reallocates the block to another train. Blue segments are allocated for Track Authority by the dispatcher. Gray track segments are blocks without block detection.



CATS Dispatch Screen Explained

The dispatcher uses the Computer Automated Traffic System (CATS) by Rodney Black. The dispatcher's screen is set up for Dispatcher Train Control (DTC) which means that the dispatcher must allocate a block(s) to a train in order for signals to indicate 'proceed'. Once the train clears the block(s), the dispatcher must release the block and then may reallocate it for another train. All signals will display the most restrictive setting (stop) until a block(s) is allocated for a train by the dispatcher. When the dispatcher reserves a route, all signals in one direction of travel may show "movement allowed" indications. All signals facing the opposing direction of travel remain in their most restrictive aspect.

Routing Trains

Reserving a route also locks the route. This means that until the existing reservation is cleared, a reservation cannot be made in the opposing direction or a turnout on the route cannot be changed by the dispatcher. The computer will not allow the dispatcher to set an unsafe route. An unsafe route is one which conflicts with an existing route, one in which the dispatcher has granted local switching to a block, one in which the dispatcher has taken a block out of service, one which has one or more turnouts aligned to a different route, or one in which a block is shown as occupied.

The signals for the reserved route will obey the "Signal Aspects and Indications" of the employee handbook. The symbols representing the signals on the dispatcher panel will be "empty" (white or grey) if not involved in a reserved route; red, if in the opposing direction; yellow, if the next signal is red; or green, if the next signal is not red. Thus, the symbols mirror the signals the engineer sees, to the extent that can be done with five colors. The colors of the signal icons are only loosely connected to the actual layout aspects.

The way the dispatcher reserves a route is to click the left mouse button when the mouse is positioned over an "empty" or "off" signal symbol. If the reservation is accepted, then the signal symbol changes color and the tracks composing the reserved route turn green with an arrow head pointing to the exit of each block. A subtle distinction exists between white "empty" icons and "grey" empty icons. White ones have a physical signal associated with them on the layout. Grey ones do not; thus, the color difference is a reminder to the

dispatcher that the train engineer does not see a signal that the dispatcher does. Tip: you will get more reliable response by clicking on the signal icon “head” (not the mast) because of the way CATS looks for “hot zones”.

There are two ways to clear a reservation. The dispatcher can cancel a reservation by clicking the left mouse button when positioned over a signal icon that is green or yellow. Alternatively, when a block within the reserved route is occupied, the reservation is cleared, but the block still shows occupied. This means that the signals again show their most restrictive aspect.

Using Extended Routes and Stacked Routes in CATS

Extended (N/X) Route

An Extended Route is a chain of Routes. The dispatcher selects the signal icon where the route originates, selects the icon where the route ends, and CATS determines if an open path exists between the two. If such a path exists, CATS will move any turnouts needed to create that path, then create a Quick Route on all CPs along the path.

Creating an Extended Route

- The dispatcher highlights “Set N/X Route” (if it is not greyed out) and clicks on Accept.
- The icon then blinks in the Entry/Exit color.
- The dispatcher to select an ending signal, with a left mouse click.

Ending an Extended Route

- Let a train run the route. Or
- When a portion of the route clears, it is removed from the chain. Thus, it is possible to left mouse click on a signal icon to clear the
- Right mouse click on an icon in the Extended Route and select “Cancel N/X Route”.

Stacked Route

A Stacked Route is an Extended Route which cannot be created immediately, but is de-ferred until a clear path can be found.

Route stacking allows the dispatcher to schedule Extended Routes to be created later. This is useful for planning moves, scheduling them, and focusing attention on something else. The stacked routes will happen “automatically”.

- It is a two-step process of right mouse click on a signal icon, selecting “Stack Route”, and Accept.
- The icon will begin blinking (signifying that CATS will use the identified signal as the start of the Extended Route and is waiting for the dispatcher to identify the second signal to end the Extended Route).
- If a second icon is identified, then CATS pop up a confirmation dialog and when accepted, will add the Deferred Extended Route information to the stack of De-ferred Extended Routes.

Call On (Return to Train)

A common dispatching situation is that a train will leave some cars on a track (usually the main), and move over to an adjacent track for picking up or setting out cars. When its work is done, the crew will want to leave the adjacent track, go out to the main, and back onto the

cars that it left on the main. A similar situation happens when adding helper locomotives to a train on the main.

- The dispatcher uses Call On to temporarily override the signal safety system for one “move”. To activate it, the dispatcher lines the points, right clicks the mouse over the signal icon being overridden, selects the Call-on item, and Accepts the screen. The icon will then blink, indicating Call On is active. Simultaneously, the signal in the field will show a Restricting indication, to let the train crew know that they have permission to pass the signal, without talking to the dispatcher.

Call On is ended when the dispatcher cancels it via the signal menu or the immediate block protected by the signal is occupied.

Throwing Turnouts

If a section of track contains a turnout, that turnout is under dispatcher control, and the block is not occupied, reserved, or given to local control, then the dispatcher can move the turnout by clicking the left mouse button when not over any signal symbols or train labels while the mouse cursor is near the switch points (preferably in the “vee” between the routes).

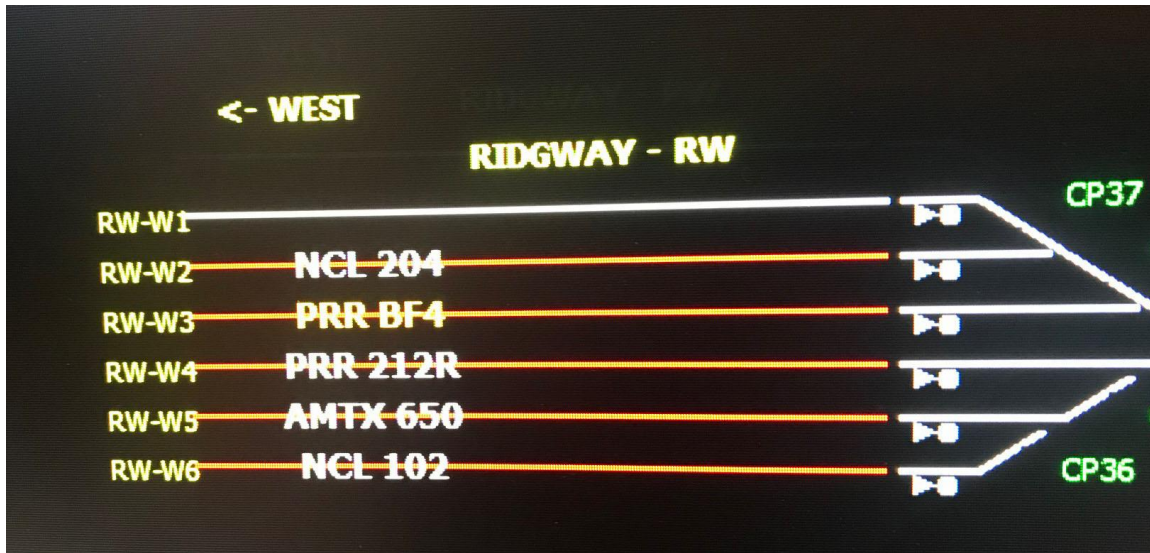
Train Detection

The tracks on the dispatcher panel will change to “occupied” (red) in response to detection messages from the layout. An occupied block in a reserved route will turn red, but the exit arrow will remain, showing the expected direction of travel of the train. When the detection clears, the reservation will be removed. Blocks can manually be marked as occupied or cleared by using the right mouse button when positioned over the desired track.

Tracks which do not have detectors associated with them are painted in a grey color, to distinguish them from detected tracks. This is a reminder to the dispatcher that reservations on those tracks will not clear automatically. However, positioning a train label on undetected track will tell CATS that the track is occupied and CATS will color the track accordingly.

Tracking Trains

Train labels have been placed on sections of tracks to record where trains are. Train tracking on the dispatcher’s CATS screen is enabled, which allows the labels to follow detection reports automatically. Otherwise, the dispatcher can move them manually.



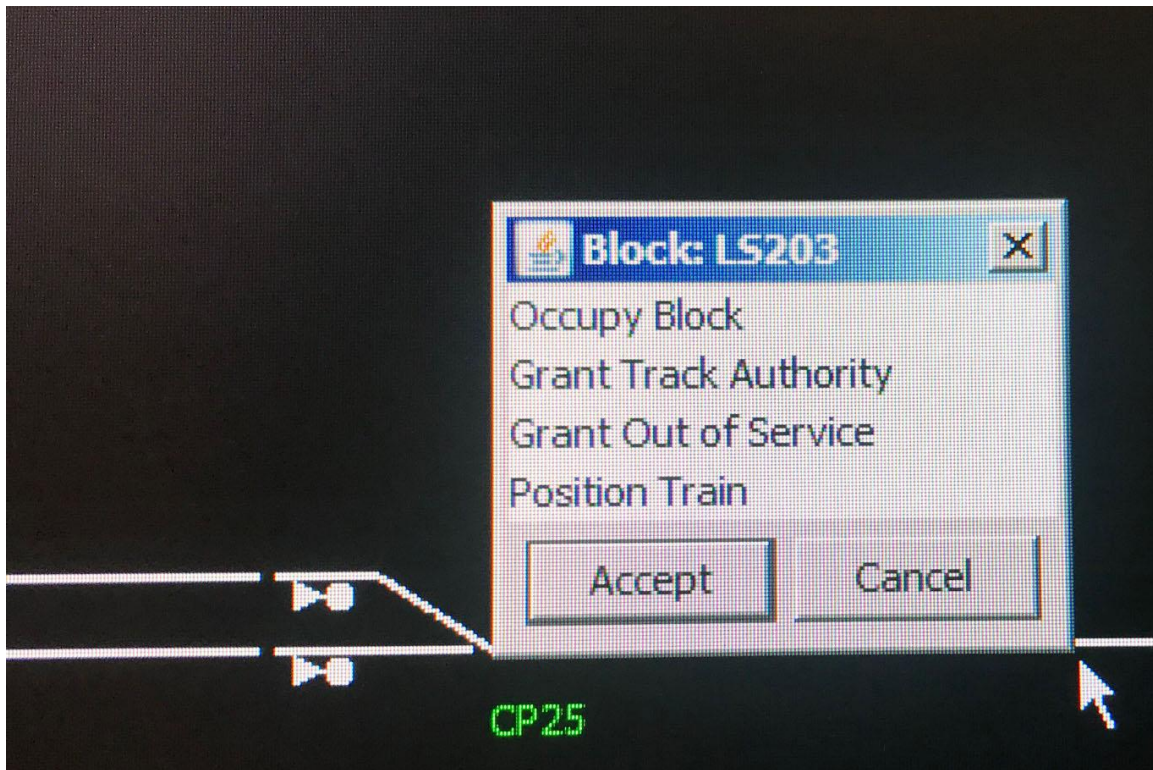
Train Tracking Markers. Train BF4 is Active (Almond Color). Trains 204, 212R, 650, and 102 are unassigned (light grey color).

The simplest way to move a train label is to place the mouse cursor over the label and “drag” the label to another block by moving the mouse while holding down the left mouse button. The cursor changes from its default symbol to a cross inside a circle when the program recognizes the left button has been pushed when over a train label.

The other way of moving a train is to use the four arrow keys on the keyboard. The problem is knowing which train will move. The normal life cycle of a train is something like the following: it is created; it is positioned on the layout; crew is assigned to it; it does its work; it is tied down; it may be removed. The color of the train’s label indicates which state it is in. A train that is positioned without a crew is “empty” (default light grey). A train with a crew is almond. A train that has completed its chores is a rose color.

Track Authority

Track Authority is granted to a train to perform local switching. This means the turnouts in the block are unlocked and the signals protecting the block are set to their most restrictive aspect, protecting the block from other trains.



The popup window to Occupy Blocks, Grant Track Authority, place tracks out of service, or position a train.

Track Authority is placed on a block by positioning the mouse cursor over a block, clicking the right mouse button, selecting “Track Authority”, and pushing the “Accept” button. Track Authority is removed by a similar operation. When Track Authority is placed on a block, the block is painted blue.



Track Authority has been granted to the above block which changes color to Blue. Signals on either end of the block indicate ‘Stop’.

On the NCL, giving Track Authority on a block is reflected on the layout by presenting a “Stop” (red) aspect on signals protecting the block.

Track Authority is required at the following locations:

- Nickel City East between CP22 and CP NCE17
- Karthaus between CP15 and CP KS7
- Clearfield

Track Authority (TA) is a verbal authorization system defined by the General Code of Operation Rules (GCOR), used to authorize trains to occupy Main Tracks with the issuance of a Track Warrant. TA can be used as a stand-alone dispatching and safety system in unsignaled territories, such as in Nickel City East, or can be supplemented with Automatic Block Signaling (ABS) to increase flexibility and traffic capacity.

The Track Warrant permits a specific train to occupy a specific piece of Main Track between named locations. The Track Warrant also contains information of its own validity; when comes in effect and in some cases when it becomes void.

For the purposes of the Nickel City Line Railroad, we use Track Warrants for any train entering or departing **Nickel City East, Karthaus, and Clearfield**.

Track Authority forms (Form NCL 1204) are located on a clipboard attached to the fascia at Nickel City East, by CP NCE 17, and at Dubois. Train crews with work at, **Nickel City East, Karthaus, or Clearfield** will use a Track Authority form for each Track Authority issued by the dispatcher.

The Track Authority

Track Authority is issued in the following steps, usually using radio:

- The dispatcher reads the Track Authority information and instructions to a crew member on the train from the Track Authority list at the Dispatcher's desk. The crew member writes the information and instructions on a Track Authority Form.
- The train crew member then repeats the information to the dispatcher and ends the report with their initials.
- The dispatcher checks the information and, if correct, says "OK" and gives the time and his initials.
- The train crew member then enters the "OK" time and initials on the Track Authority form and repeats them to the dispatcher.

The Track Authority is not in effect until the "OK" time is shown on it. If the Track Authority restricts train movement or previously granted movement authority, the dispatcher cannot consider the Track Authority to be in effect until his "OK" has been acknowledged by the train crew member.

Reporting Clear of Limits

A train crew operating in non-signaled may report clear of the limits or report having passed a specific location to the dispatcher only when it is known the train work is complete.

Voiding Track Warrants

A crew member must write "VOID" across each copy of the track warrant when the train has reported clear of the limits or the track warrant has been made void.

Placing Tracks Out of Service

If a block is having maintenance performed on it, then the dispatcher should place Out Of Service on the block. This is accomplished like "Track Authority" – placing the mouse cursor over the track, clicking the right mouse button, and selecting "Out of Service". OOS is removed by the same process.



This block has been placed out of service using the same pop up menu as for Track Authority. The track color changes to magenta to indicate the track is out of service.

On the NCL, no special signal aspects are used on the layout to designate OOS, but the protecting signal drops to “Stop”.

Clearing Trains

When a train is ready to depart, the Hostler will assign the train crew to the train via the TrainStat software. Then the Hostler will call the dispatcher and advise that the train crew is on duty and ready to depart. If the train is cleared, the dispatcher will issue a clearance time. Otherwise, the dispatcher will issue a HOLD time and he/she will need to call the Hostler back when the train can be cleared. The Hostler will enter either the clear or hold time on the Train Lineup Sheet.

Train Status										
File Appearance Templates IP Address Help										
Symbol	Station	Time	TRAIN NAME	ENGINE	CARS	CREW	ONDUTY	ORG	TERM	DEPARTURE
EASTBOUND										
NCL 102	RW Track W6	3:56:55 PM*	NC Commuter	223	0			RW-W6	WJ-CR1	08:05
AMTX 650	RW Track W5	3:57:12 PM*	Amtrak		3			RW-W5	WJ-E3	09:14
NCL X422			Extra Coal East		10			RW-W2	WJ-E2	09:40
CSXT 714			Baltimore Freight		9			EP-N4	WJ-E4	11:20
NCL X424			Extra Evening Coal East		15			RW-W2	WJ-E1	14:15
NCL 116			NC Commuter	554	3			RW-W6	WJ-CR1	18:20
NCL 118			NC Commuter	223	3			RW-W6	WJ-CR1	17:50
NCL 204	RW Track W2	3:59:01 PM*	Harrisburg Freight		0			RW-W2	WJ-E2	18:12
AMTX 622			Amtrak		3			RW-W6	WJ-E4	18:16
PRR BF4	RW Track W3	4:00:01 PM*	The Bison		0	Gurnham, R		RW-W3	WJ-E6	21:10
WESTBOUND										
NCL X421	CV MAIN 1	3:56:24 PM*	Extra Coal West		10	Renninger, L		WJ-E4	RW-W2	04:45
NCL 602T	NC YARD	3:55:21 PM*	Mainline Local-AM		13			NCY	NCY	08:01
NCL 101			NC Commuter	223	3			WJ-CR1	RW-W6	08:40
AMTX 601			Amtrak		3			WJ-E3	RW-W6	08:27

The TrainStat screen will be updated by the Hostler for the Crew Assignments and the time they report on duty. The Hostler will also terminate trains on the TrainStat screen, which will remove the train and crew from the TrainStat and CATS screens.

When a train has been cleared by the dispatcher, the train crew will contact the dispatcher via two-way radio. The Dispatcher will set the assigned route on the mainline; allocate the blocks; and authorize the train to enter the mainline when it is clear. Dispatchers control the distance a train is authorized to travel before a mandatory stop. The Dispatcher issues a train order verbally to each engineer via two-way radio. The train order identifies the train number, that the train is clear to proceed or must hold, and if clear, how far the clearance to proceed is good for. Here is an example:

Engineer: “Train 200 to NCL Dispatch, Over”

Dispatcher: ”Go Ahead Train 200, Over”

Engineer: “Train 200 is ready to depart Waterloo Junction Track E2. Over.”

The Dispatcher aligns the turnouts and allocates the appropriate blocks so Train 200 can depart the staging yard and is properly routed on the mainline.

Dispatcher: “Roger Train 200. You are cleared to depart Waterloo Junction, Track E2 and proceed to Sheppardsfield. Hold short of CP 24 and advise dispatch, over.”

Engineer: “Copy. Train 200 cleared to depart E2 through Sheppardsfield. Hold short of CP 24 and advise dispatch. Train 200 out.”

When trains are scheduled to arrive in Nickel City Yard, the Dispatcher will hold the train at the CP15 or CP23. When the train arrives at either CP, the dispatcher will call the Yardmaster to get clearance for the train to enter the yard. Once the Yardmaster has granted permission, the dispatcher will set the appropriate route, allocate the corresponding blocks, and then advise the Engineer to contact the Yardmaster on the Yard Channel for further instruction.

Trains bound for Nickel City East, Karthaus, or are scheduled to work Main 1 between Sheppardsfield and Underwood require Track Authority. At Sheppardsfield, the dispatcher will issue Track Authority to the train requesting to go to Nickel City East or Main 1 between Sheppardsfield and Underwood. At Nickel City the dispatcher will issue Track Authority to go to Karthaus.

The train crew will record the Track Authority on a Track Authority Form and then read it back to the dispatcher. If the read back is correct, the train is cleared to proceed after the track route is aligned. See the supplement on Track Authority for more information. Once the train has entered the affected blocks authorized by the Track Authority, the dispatcher will change the track status of the affected block(s) to ‘Grant Track Authority’ as described in the Track Authority section above.

The Dispatcher should exercise the following priority when routing trains on the mainline:

Eastbound trains are superior to Westbound trains

- 1st Priority – Long distance passenger trains
- 2nd Priority – Commuter trains
- 3rd Priority – Through trains (freight, coal, ore, intermodal, etc)
- 4th Priority – All other trains (freight, coal, ore, intermodal, etc)
- 5th Priority – Local or Way Freight trains
- 6th Priority – Extra trains

Dispatchers communicate with train crews on the assigned Road radio channel.