



LIGHTRAIL OPERATIONS



Trax and Streetcar Operations Qualification Test Study Guide



UTAH TRANSIT AUTHORITY

What to Expect

TRAX personnel must be able to communicate clearly in English and understand the specialized language of our business. Trainees must learn our terms and usage early in the training process. The TRAX Qualification Test will cover some of our definitions and a list of acronyms presented in this study guide.

The Qualification Test will contain 50 True/False and Multiple Choice questions. In order to pass this test and be eligible to attend TRAX New Operator Training you must achieve a score of 70%. Each question is worth 2 points. Questions will be similar to the samples below:

1. Established methods to perform a series of tasks.
 - a. Rule Book
 - b. Procedures
 - c. Operating Clearance
 - d. Advisory

2. On double track the normal direction of traffic is to the right.

TRUE or FALSE

The correct answer for 1 is b. Procedures and 2 is True.

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Rule Book

A book of rules, instructions, and definitions issued to all Rail Service employees. The Rule Book is supplemented by Standard Operating Procedures, Bulletins, and other written and verbal directives.



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Procedures

Established methods to perform a series of tasks.

Standard Operating Procedures



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Responsibility

Safety is the primary responsibility of all employees. At all times, UTA employees must protect their own personal safety, the safety of others, and the safety of equipment and property.



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Use of Care While on The Tracks

Employees shall not stand, step, sit, walk, or run on rails. When necessary to cross tracks, employees must step over rails, not on them.



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Attentiveness

Operators must be constantly alert and have their train or rail vehicle under control at all times. Train Operators must be prepared to stop short of any person, object, obstruction, or other hazard within their range of vision.



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Reflective Safety Gear Use

All personnel working on or around the rail and in the yard must wear UTA-approved personal protective equipment.



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Full Service Braking

The upper limit of the service braking effort normally required to stop the light rail vehicle/train, consisting of both dynamic and friction brakes as needed.



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Emergency Braking

The ultimate level of slide controlled braking achievable by a light rail vehicle/train. It is derived from a combination of independently controlled brakes, including emergency friction brakes, track brakes, and sanding.



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Panic Brake

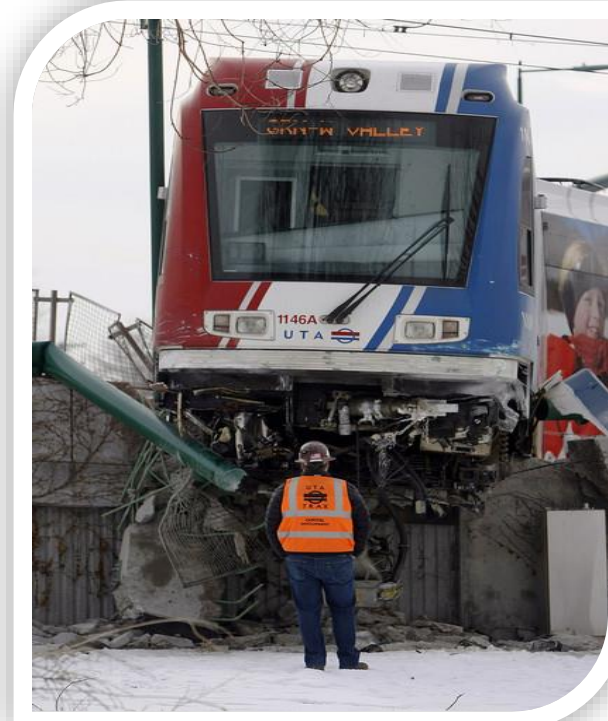
The ultimate level of non-slide controlled braking achievable by the light rail vehicle/train, derived from a combination of independently controlled brakes, including emergency friction brakes, track brakes, and sanding.



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Accident

An unforeseen event or occurrence which results in injury or property damage.



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Authorized Speed

The maximum allowable speed designated by signal indication, wayside signs, hand signals, bulletins, Operating Clearance, and Controller's instruction.



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Restricted Speed

A speed that will permit stopping within one-half the range of vision short of any train, obstruction, improperly lined switch, broken rail or other hazard; a restricted speed is not to exceed 20 MPH.



Operating Clearance

Documents issued to Rail Service employees daily, and must remain in the possession of each effected employee while on duty.



Daily Operating Clearance

Prepared by: 407

Activated / Rescinded	Op Initials	#	Advisories:	Operators: Record Advisories below with Start/End time.
/		A-1		
/		A-2		
/		A-3		
/		A-4		

Special Events:	Energy Solutions Arena: 19:00 – 21:00 Jazz vs. Chicago Bulls
Rule of the Day:	5.09 DOORS ON PLATFORM: When stopping at a station, doors must not be opened on the non-platform side. If any door is beyond the platform on the station side, report such to Control, and protect the door off the platform.
SOP of the Week:	105.14 Pull-Out Procedure
Active Bulletins:	2014-01 Update to TRAX & STREETCAR Rulebook

Safety Message of the Week:	Winter driving season is almost upon us! Here are some tips to remain safe while driving in winter weather conditions: 1; Monitor road conditions before departing: Utah Department of Transportation Road Weather page at http://commuterlink.utah.gov/RoadWeatherForecast.aspx 2; Drive for the conditions: Slow down and allow extra braking distance, do not tailgate. 3; Remain alert for sudden road condition changes: Bridges and overpasses often become icy first. Snow and blowing snow can produce sudden restrictions in visibility.
Comments:	<p>TRAX Operators: The default at Lovendahl 10 is now permanently reprogrammed to a Straight route. Southbound RED LINE Operators call your route at Murray Central for a diverge route at L-10</p> <p>TRAX Operators: Before putting any train into propulsion: Please make sure all doors are closed, and you have a door loop.</p>

Yard & Tail Track Moves	Monday – Friday: November 24, 2014
Effective Date:	Saturday: November 29, 2014
	Sunday: November 30, 2014

Train	Consist	Train	Consist

TRAX Daily Operating Clearance: Pg 1 of 2 Block Sheets effective date: 09/28/2014 form last revised: 11/04/2014

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Advisory

Information communicated by radio to all trains.

Advisories are of a more critical nature than General Announcements.

Control to all trains,
stand by for an advisory.
Advisory 1, broken gates
at Haven Ave.

Train 1 copies.



Train 2 copies.




Train 3 copies.



Bulletin

Information issued in writing by the Rail Operations Manager which may be a temporary or permanent change in the rules or procedures.

Bulletins must be signed for by all appropriate rail service personnel.

BULLETIN			
No.	Effective Date:	Supersedes:	N/A Page: 1 of 1
Title: D-Rail Labels			
Implementation:	Kim Fieldsted	Expiration Date:	
Issued By:	Jeff Lamora	SIRE Cabinet	
Signature			
Revision History:			
#	Date	Revised by:	Approved by: Comments:
N/A			

PURPOSE:

To alert All Rail Personnel of D-Rail labeling on the Right of Way.

APPLICATION:

All Rail Personnel

PROCEDURE:

All Power Derails that are on the Right of Way should be labeled as follows:

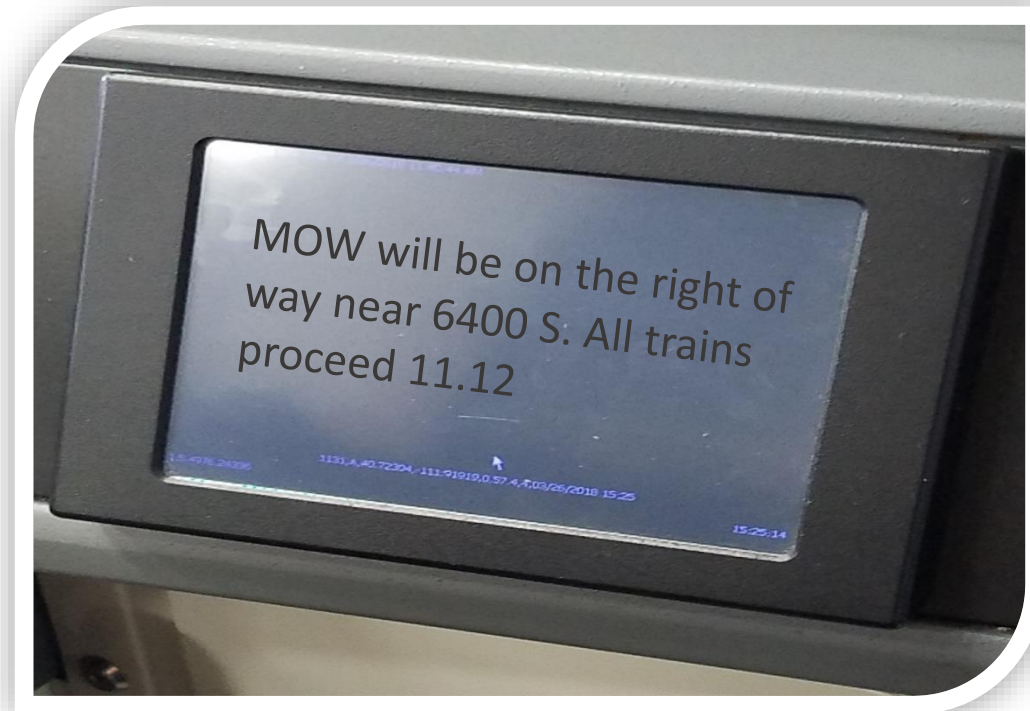


The labeling may be on an upright sign, or directly attached to the machine. This bulletin serves as notification until the information can be updated in the Light Rail Services Operation Rule Book.

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General Announcements

Information communicated by radio or by text message, which must then be acknowledged back to Control by all Train Operators.



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Access Ramp

Located on each end of station platforms and used for boarding and alighting passengers with mobility impairments.



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Appropriate Warning

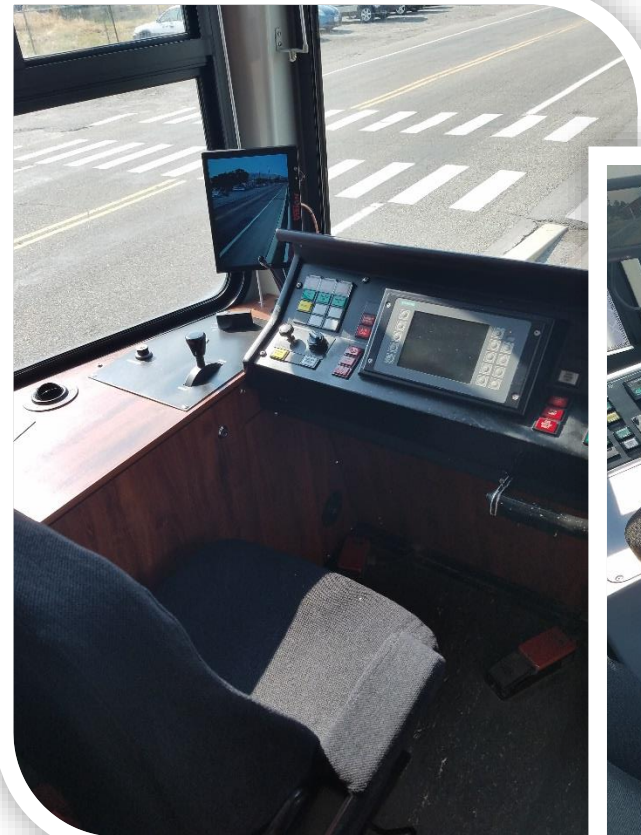
The horn and gong, used separately or together.



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Cab

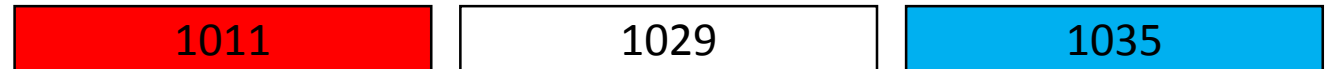
The compartment of a Light Rail Vehicle from which manual control is achieved.



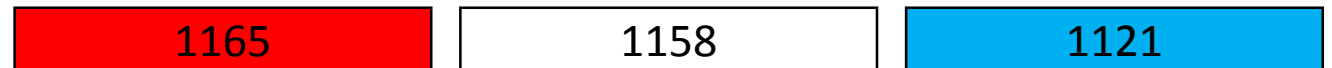
Consist

The number and specific identity of the Light Rail Vehicles, engines and/or cars which make up a train.

Train 1 Consist:



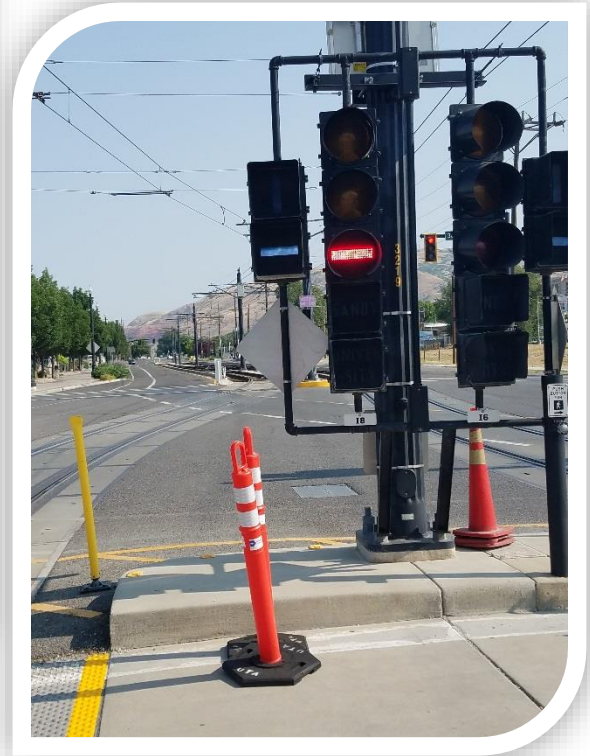
Train 2 Consist:



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Contact Control

The term to be used when the Operator of a Train is to stop at a specific location and call Control on the radio for further instructions.



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Notify Control

The term to be used when the Operator of a Train is to call Control on the radio either when they arrive at, or depart from a specific location. The Operator is not required to stop or hold.



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Contact Wire

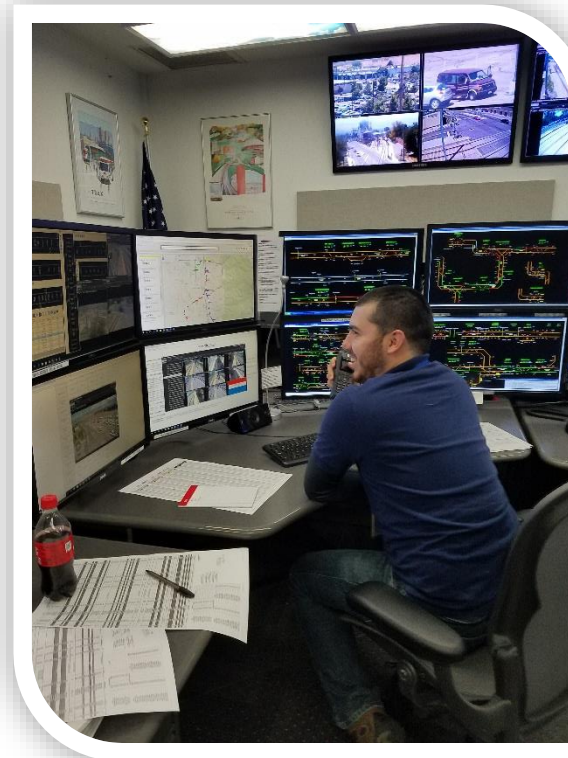
The overhead electrical conductors through which power is provided to the light rail vehicle through direct contact with the pantograph.



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Controller

The employee on duty in Control having authority over all movements on or affecting Light Rail Services tracks and property.



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Couple

The process of connecting two or more light rail vehicles together in order to operate them as a consist.



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Deadman

A device used on Light Rail Vehicles which must be held in the operating position before movement can occur.



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Train Monitoring System

A device used on Light Rail Vehicles which monitors the activity level of a Train Operator



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Dwell Time

The total time from the instant a train stops at a station to allow loading and unloading of passengers until the instant it resumes moving.



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Grade Crossing

A street, road, or footpath crossing over track at the top-of-rail level in the exclusive right-of-way area excluding pedestrian crossings at stations.



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Crossing Gates

Protective devices, warning bells, and lights located at grade crossings that inhibit the flow of vehicle and pedestrian traffic.



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Light Rail Vehicle (LRV)

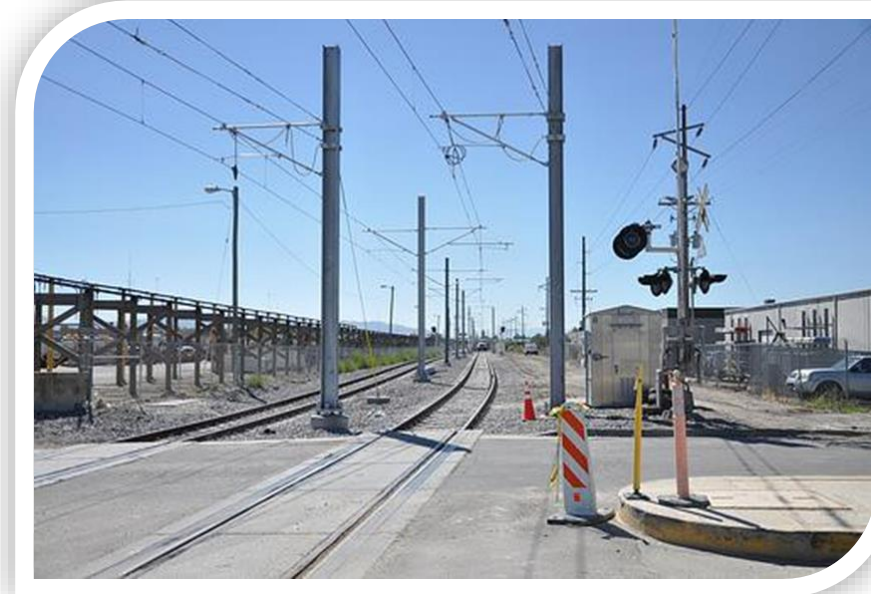
The passenger rail vehicle used to transport passengers on a light rail train.



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Mainline

Track designated for passengers or freight service which is governed by the authority of the Controller, signal indication, timetable, rules, or a combination thereof.

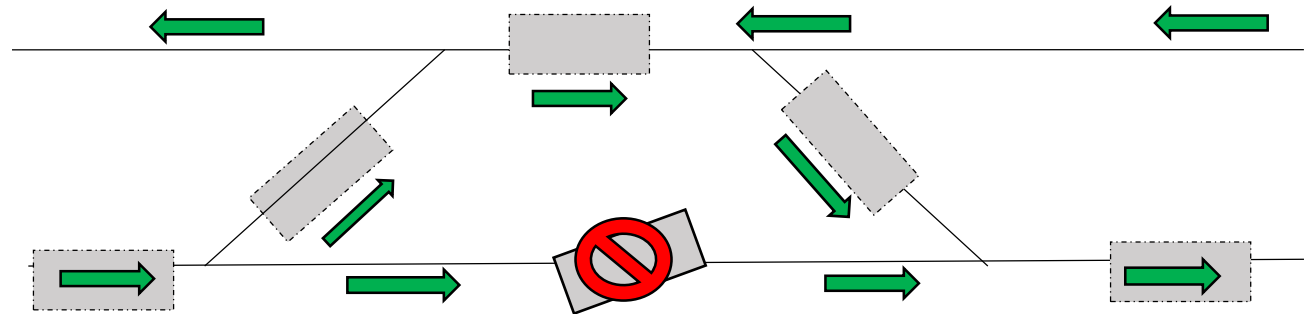


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Manual Block

A method of operation by which train movements are made without signal protection. Controllers are the only UTA employees authorized to implement a manual block.

Operating a train against the normal direction of traffic.



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Normal Direction of Traffic

On double track, the normal direction is to the right unless otherwise directed by Rules, Bulletins, Procedures or as instructed by the Controller.



Reverse Direction of Traffic

The operation of trains in Automatic Block System territory against the normal direction of traffic. When reverse running without signal protection, trains must proceed according to rules for operating without signal protection.



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Opposing Move

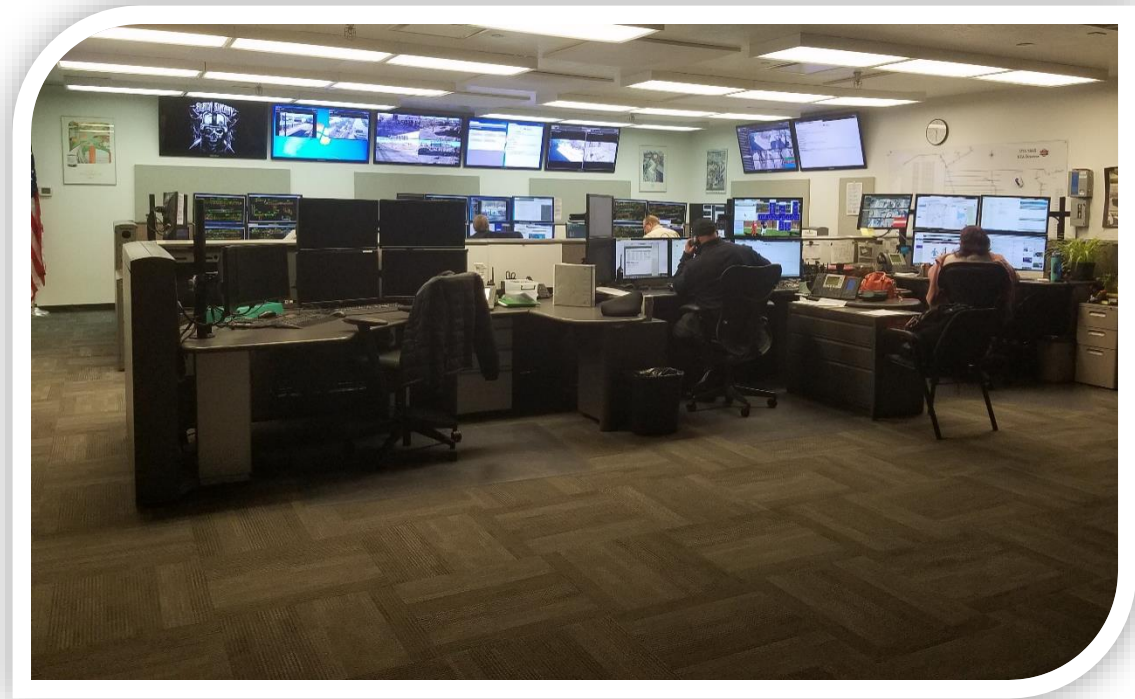
A train, the movement of which is in a direction opposite to and toward another train.



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Rail Control Center

The designated location from which all TRAX operations are authorized and directed.



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Shop

The building used for light rail vehicle maintenance.



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Spot

Placing a rail vehicle or track equipment in a designated position or specific location.



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Station

Locations along the alignment where passengers board and alight trains.



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Train

One or more Light Rail Vehicles, Engines, and/or cars, coupled together, operating on the mainline and displaying headlights to the front and red light(s) to the rear.



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Qualified Employee

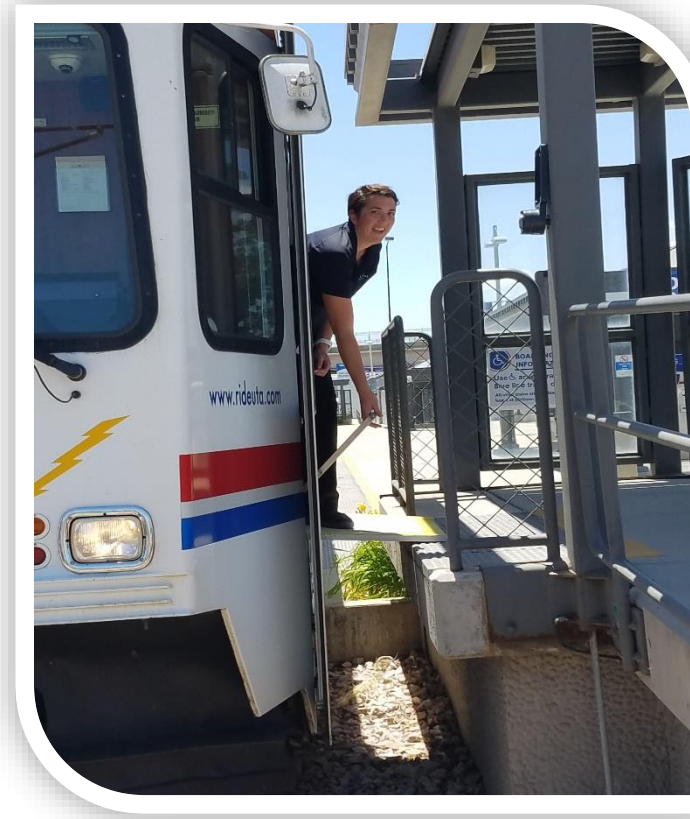
Is properly trained and certified -- and possesses the necessary licenses or certificates on his/her person that are required for his/her duties.



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Train Operator

A qualified Employee who controls the movements of a train.



Headway

The time separation between two trains, both traveling in the same direction.

UTA STREETCAR								S-Line		Route 720							
								Weekday		Effective Date: April 8, 2018							
EASTBOUND to Fairmont										WESTBOUND to Central Pointe							
Train	Central Pointe	South Salt Lake City	300 E	500 E	700 E	Sugarmont	Fairmont	 Train	Fairmont	Sugarmont	700 E	500 E	300 E	South Salt Lake City	Central Pointe	Train	
71	5:00	5:02	5:04	5:05	5:07	5:09	5:10	71	5:20	5:21	5:23	5:25	5:26	5:28	5:30	71	
70	5:20	5:22	5:24	5:25	5:27	5:29	5:30	70	5:40	5:41	5:43	5:45	5:46	5:48	5:50	70	
71	5:40	5:42	5:44	5:45	5:47	5:49	5:50	71	6:00	6:01	6:03	6:05	6:06	6:08	6:10	71	
70	6:00	6:02	6:04	6:05	6:07	6:09	6:10	70	6:20	6:21	6:23	6:25	6:26	6:28	6:30	70	
71	6:20	6:22	6:24	6:25	6:27	6:29	6:30	71	6:40	6:41	6:43	6:45	6:46	6:48	6:50	71	
70	6:40	6:42	6:44	6:45	6:47	6:49	6:50	70	7:00	7:01	7:03	7:05	7:06	7:08	7:10	70	
71	7:00	7:02	7:04	7:05	7:07	7:09	7:10	71	7:20	7:21	7:23	7:25	7:26	7:28	7:30	71	
70	7:20	7:22	7:24	7:25	7:27	7:29	7:30	70	7:40	7:41	7:43	7:45	7:46	7:48	7:50	70	
71	7:40	7:42	7:44	7:45	7:47	7:49	7:50	71	8:00	8:01	8:03	8:05	8:06	8:08	8:10	71	
70	8:00	8:02	8:04	8:05	8:07	8:09	8:10	70	8:20	8:21	8:23	8:25	8:26	8:28	8:30	70	
71	8:20	8:22	8:24	8:25	8:27	8:29	8:30	71	8:40	8:41	8:43	8:45	8:46	8:48	8:50	71	
70	8:40	8:42	8:44	8:45	8:47	8:49	8:50	70	9:00	9:01	9:03	9:05	9:06	9:08	9:10	70	
71	9:00	9:02	9:04	9:05	9:07	9:09	9:10	71	9:20	9:21	9:23	9:25	9:26	9:28	9:30	71	
70	9:20	9:22	9:24	9:25	9:27	9:29	9:30	70	9:40	9:41	9:43	9:45	9:46	9:48	9:50	70	
71	9:40	9:42	9:44	9:45	9:47	9:49	9:50	71	10:00	10:01	10:03	10:05	10:06	10:08	10:10	71	
70	10:00	10:02	10:04	10:05	10:07	10:09	10:10	70	10:20	10:21	10:23	10:25	10:26	10:28	10:30	70	

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Slow Zone

A section of track of defined limits through which trains must operate at reduced speed.



**SLOW
ZONE
AHEAD**

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Roadway Worker in Charge

A designated employee qualified under the UTA Roadway Worker Protection Plan, responsible for providing on-track safety for roadway workers or work groups.



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Flagger

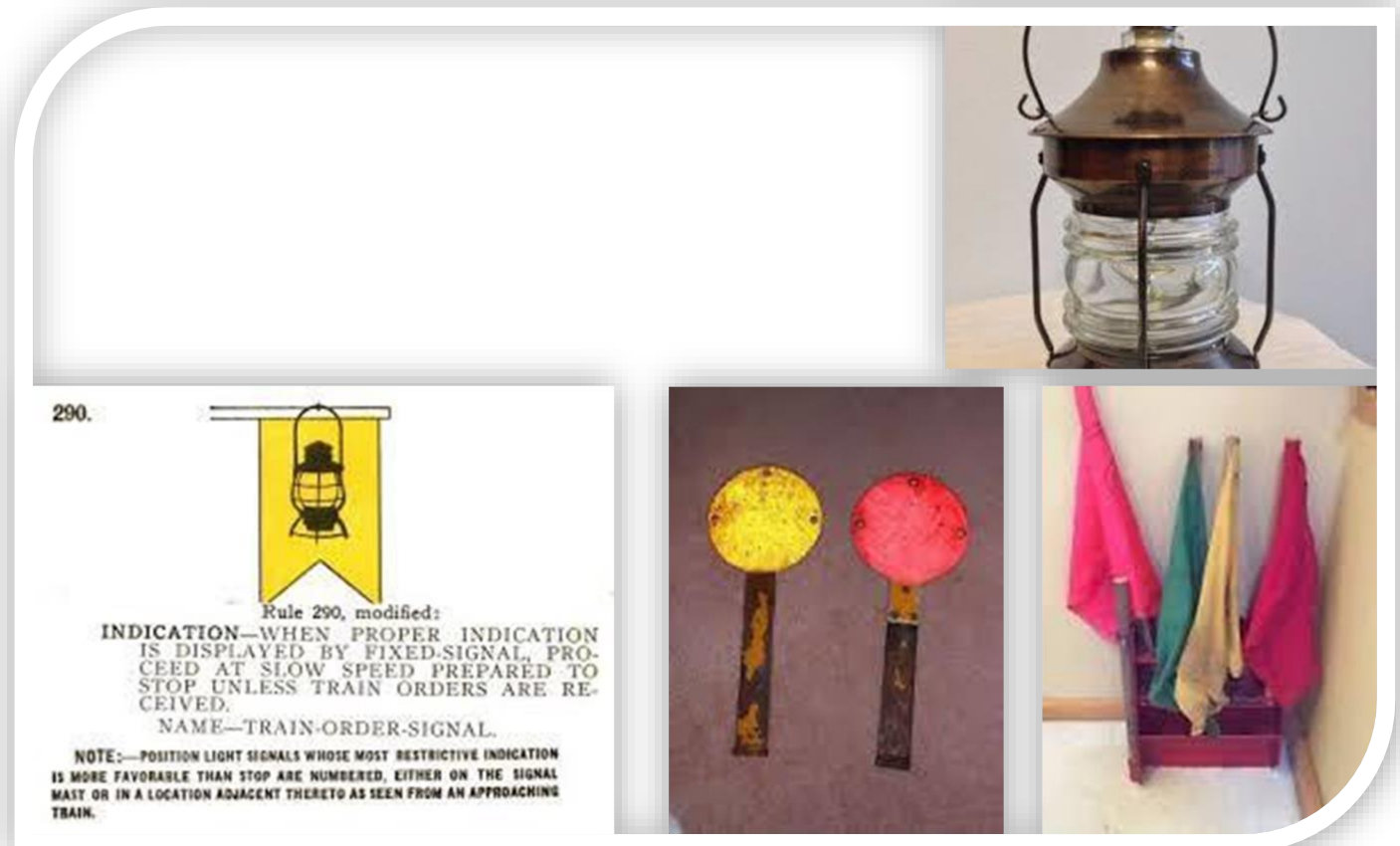
An Employee using a flag assigned to protect persons and equipment working on or near the tracks to ensure the safe passage of trains.



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Flag

A device used for relaying hand signals or to indicate conditions on the right-of-way. Flags may be cloth, metal, lights, or other suitable material.



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Operate on Sight

To operate prepared to stop
within one's range of vision.



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Right-of-Way

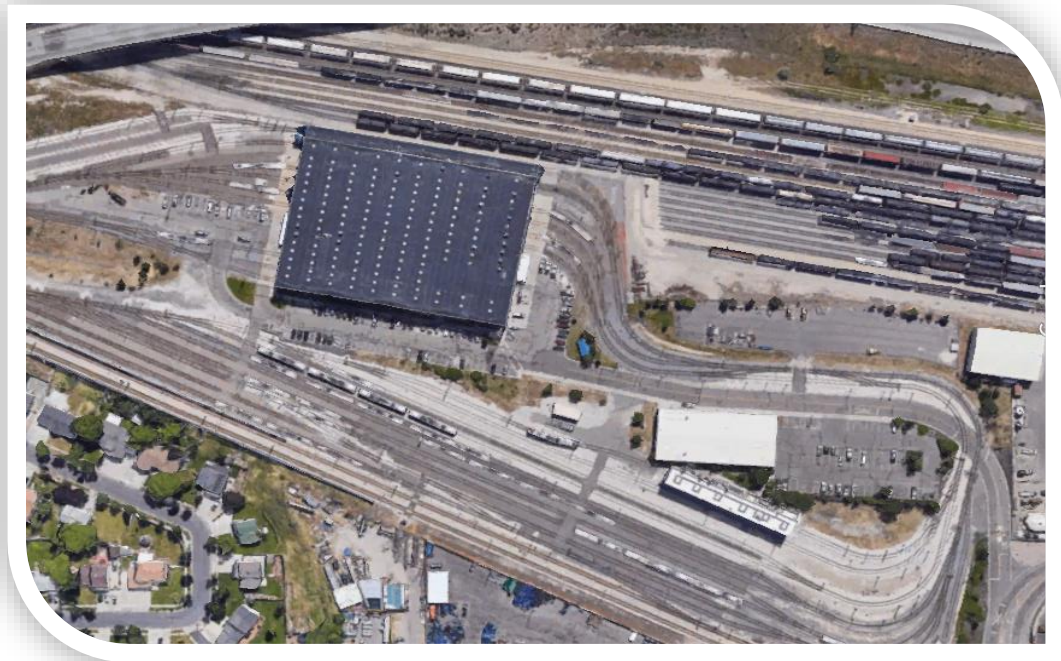
The limits of UTA owned property including and adjacent to any track.



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Running Rails

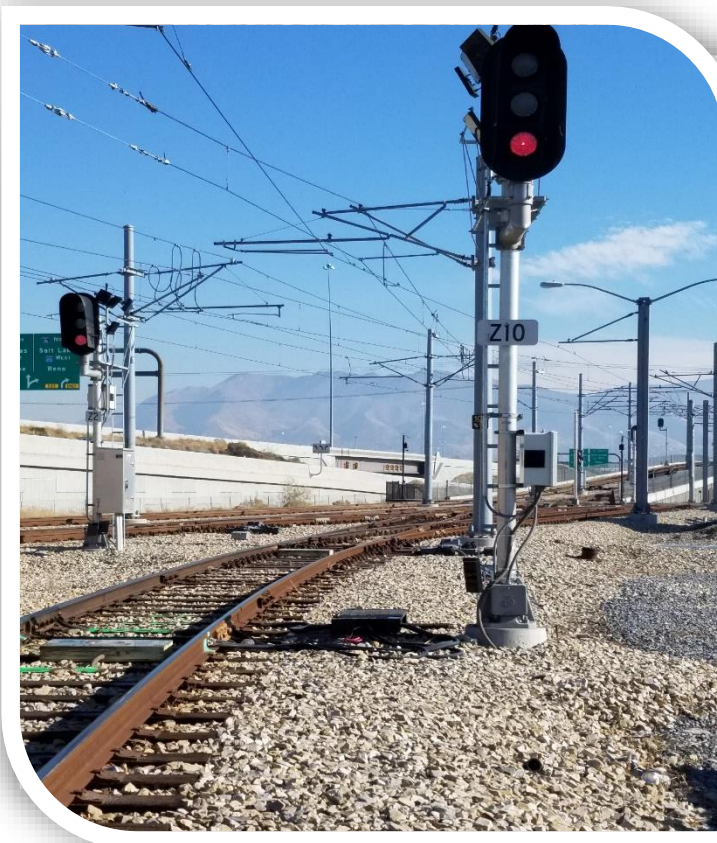
The tracks upon which a train moves.



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Yard Lead

A track connecting Main Line track to Yard track.



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Yard Limits

All yard and shop tracks outside of signaled territory.



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Yard Track

Rail tracks within a yard used for car storage, repair, and testing.



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Tail Track

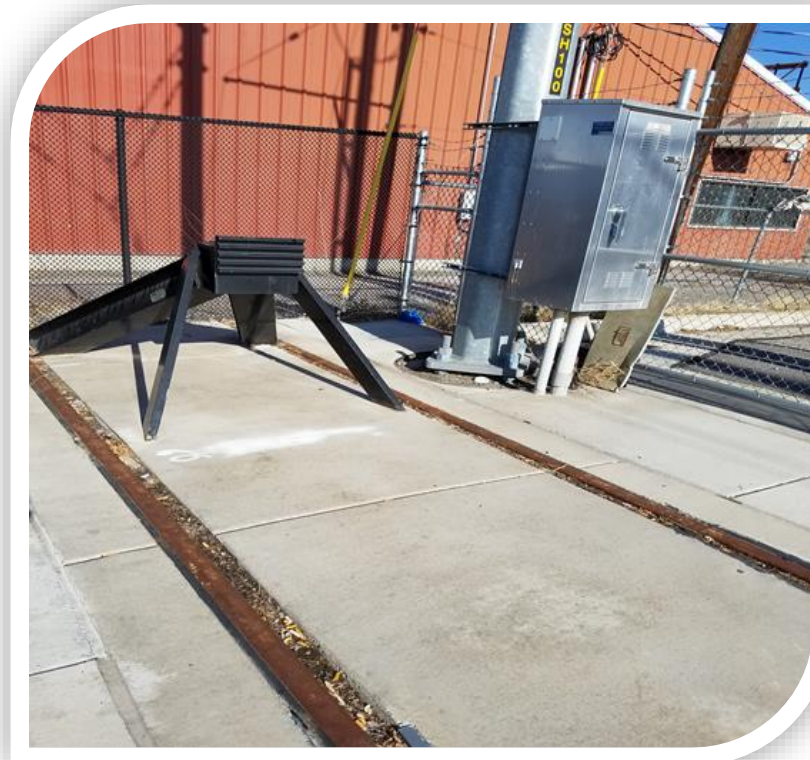
A mainline track designated for train storage. It is located outside of signal territory and usually at a terminal station.



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Bumping Post

Structures placed at the end of tracks to prevent rail vehicles from running off the track.



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Ballast

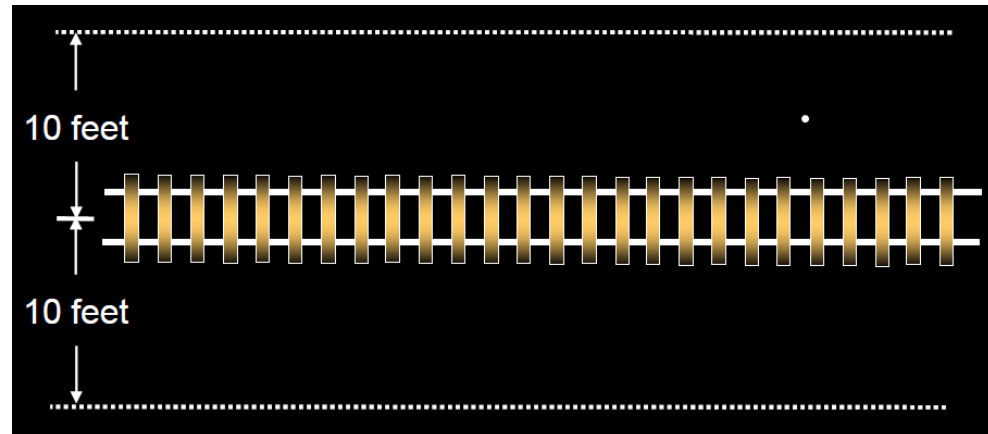
Selected material placed onto the roadbed for the purpose of holding the track in proper alignment and providing proper drainage.



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Fouling Distance

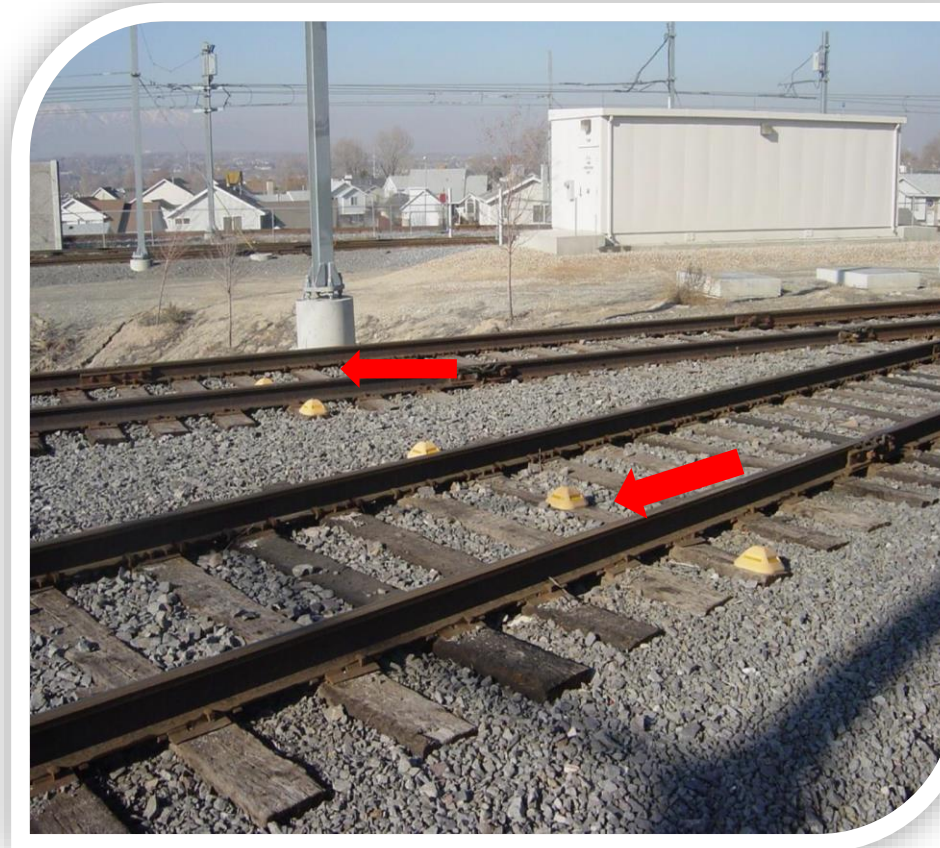
The area within 10 feet of the centerline of any track or within 10 feet of any high voltage conductor or appliance.



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Fouling Point

The location on a track beyond which movement or storage of rail cars, equipment, or materials will interfere with movements on another track.



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Fouling Point Mark

A device indicating the closest point to which a train may approach an area without encroaching on the clearance for equipment on adjacent track.



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Switch

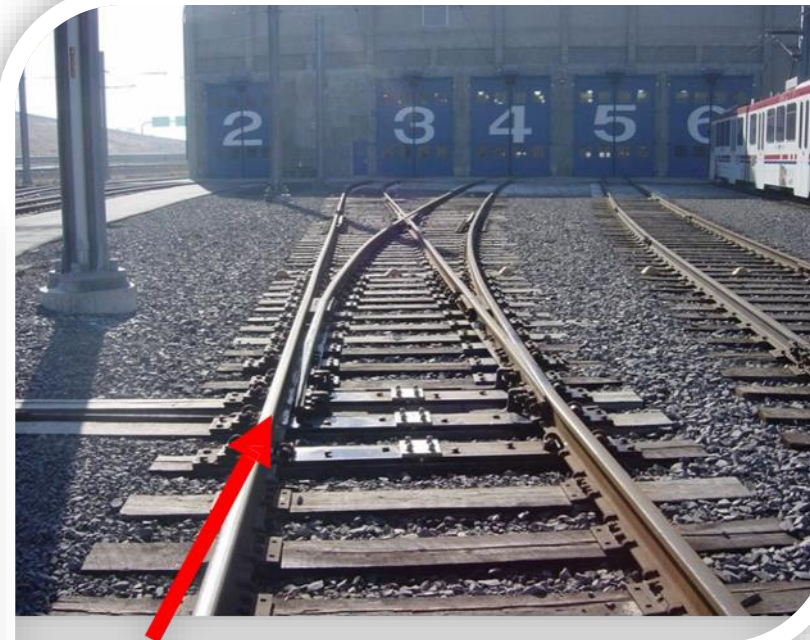
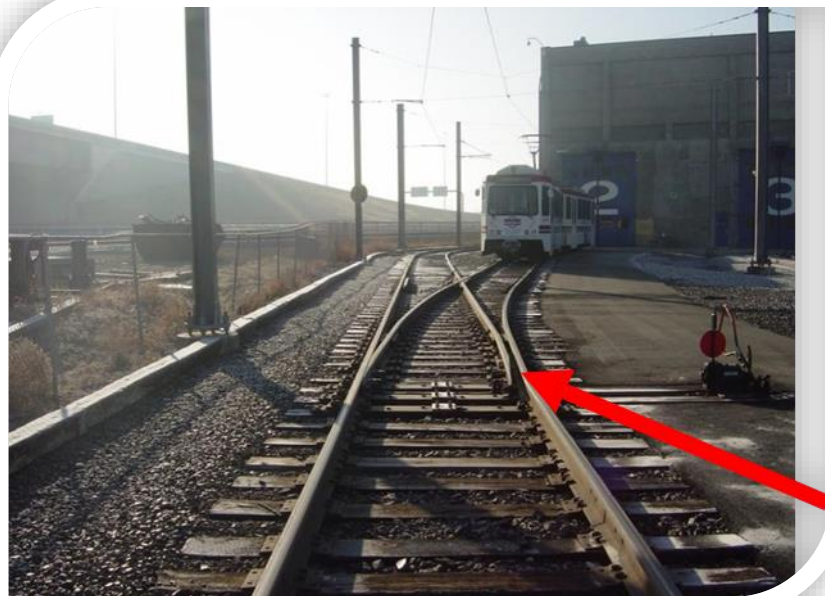
A device used for establishing a route from one track to another.



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Switch Position

The switch point is in one of two positions:



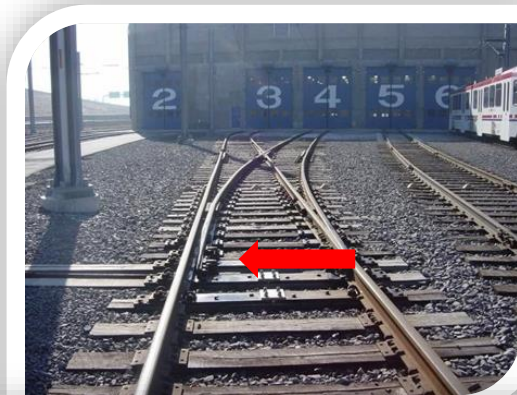
Normal allows for a straight route.

Reverse allows for a diverge route.

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Movement Through Switches

There are two types of movements through switches: Facing and Trailing:



Facing Movement: The movement of a train over a switch whose points face in the direction opposite to which the train is moving.

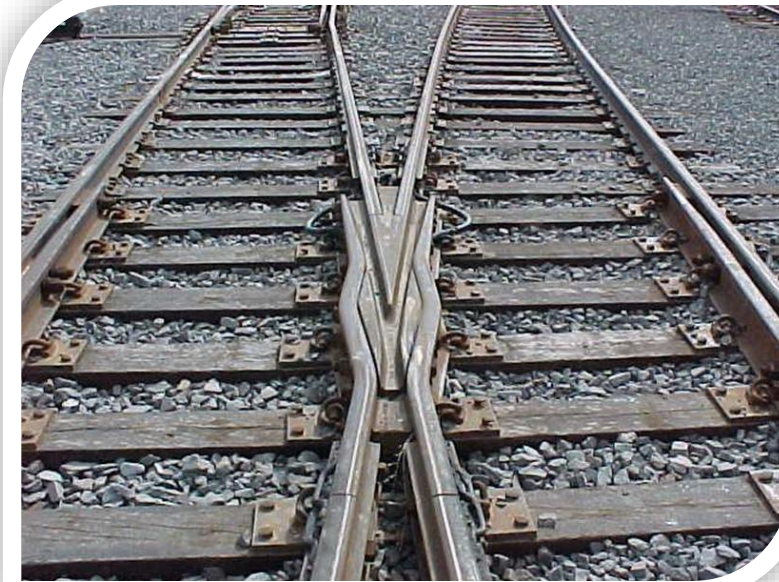


Trailing Movement: The movement of a train over a switch whose points face in the direction the train is moving.

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Frog

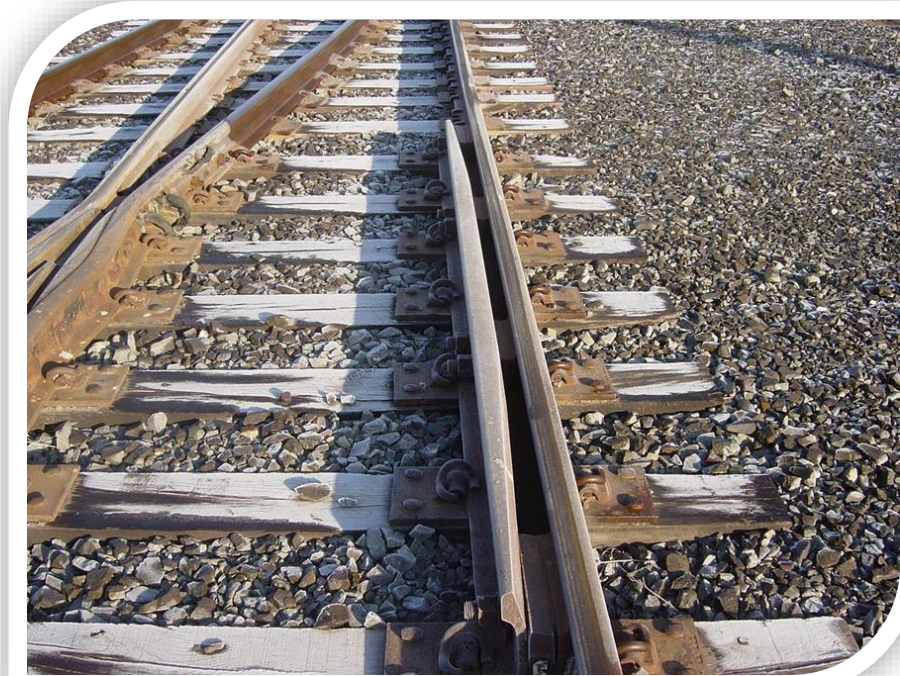
A track structure used at the intersection of two running rails to provide support for wheels and passageways for flanges, thus permitting wheels on either rail to cross the other.



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Guard Rail

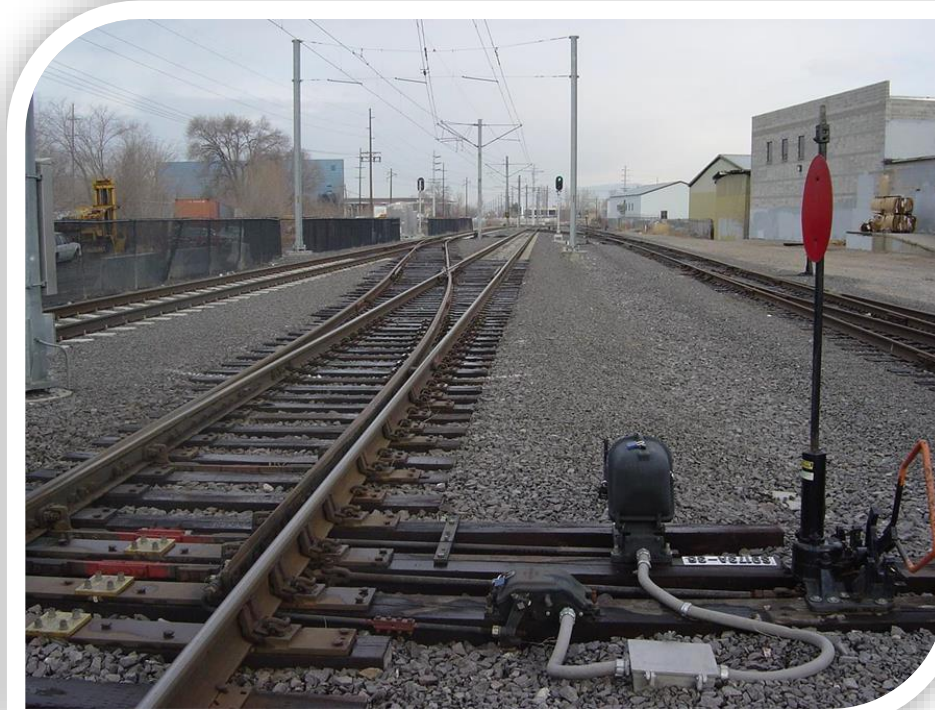
Mounted to the inside of the running rails to keep wheels in-line with the track and prevent a derailment.



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Crossover

The switches and tracks arranged to provide a route from one set of tracks to another.



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Signal

A method or device conveying visual and/or audible information affecting the movement of a train, rail car, or other on-track equipment.



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Block Signal

A fixed signal at the entrance of a block that governs trains entering and using that block.

Note: Block signals are also called “Intermediate Signals”.



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Signal Designator

The number or location title of a signal.

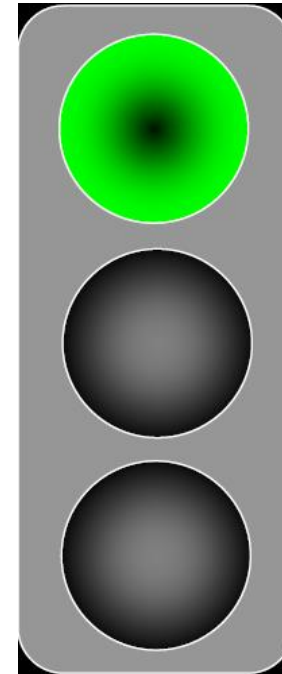


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Signal Aspect

The appearance of any signal as viewed by the Operator of a light rail vehicle.

Signal Aspect: Green

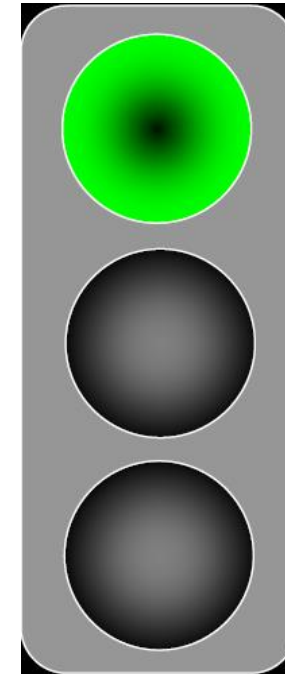


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Signal Name

The word or phrase that describes a signal aspect.

Signal name: Clear

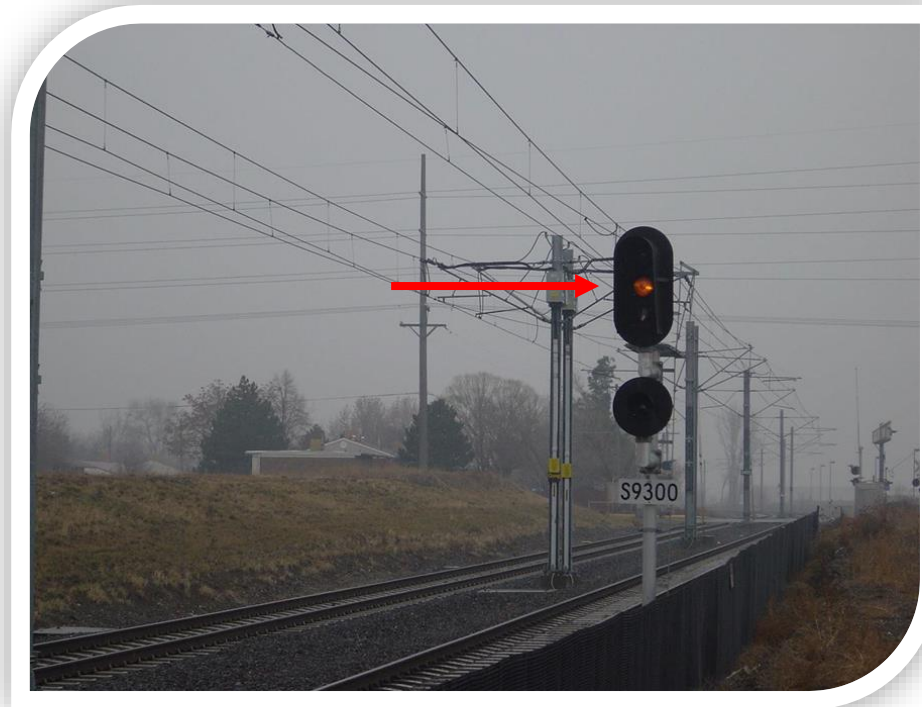


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Signal Indication

The operating information conveyed by the aspect of a signal.

Signal Indication: Reduce speed to no greater than 45 mph. Prepare to stop or diverge at next signal.



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Dwarf Signal

A low interlocking or block signal.



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Interlocking

An arrangement of signals, switches, and signal appliances interconnected so that train movements must succeed each other in a prearranged sequence. They are designed to prevent conflicting train movements.



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Interlocking Signal

The fixed signals that protect the limits of an interlocking.

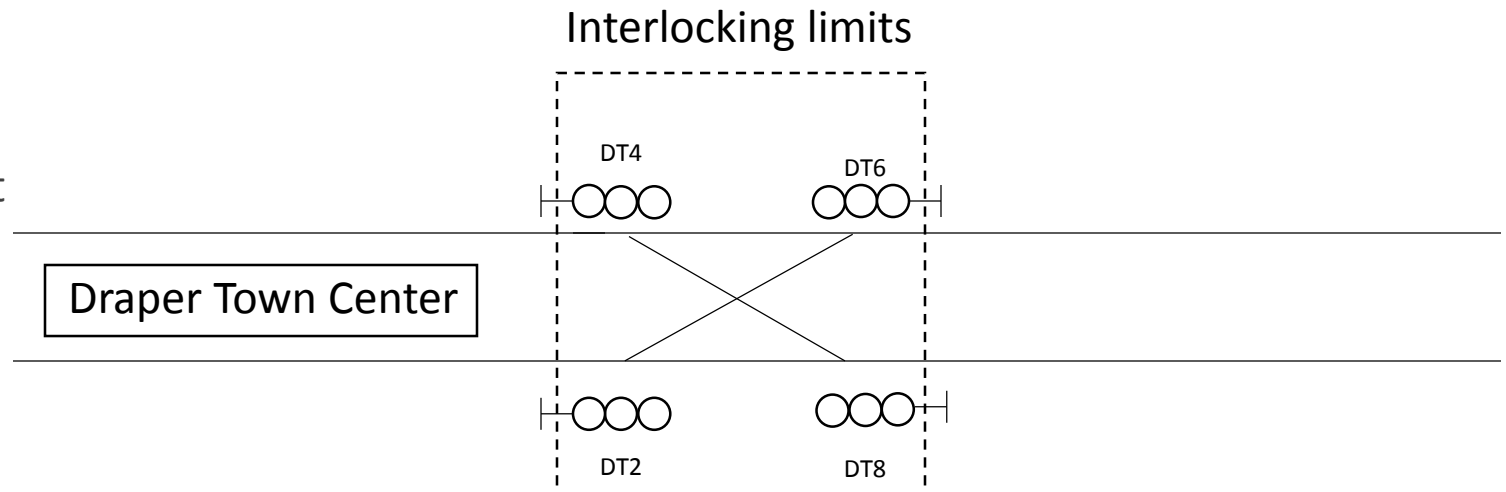
NOTE: Interlocking signals are also called “home” signals.



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Interlocking Limits

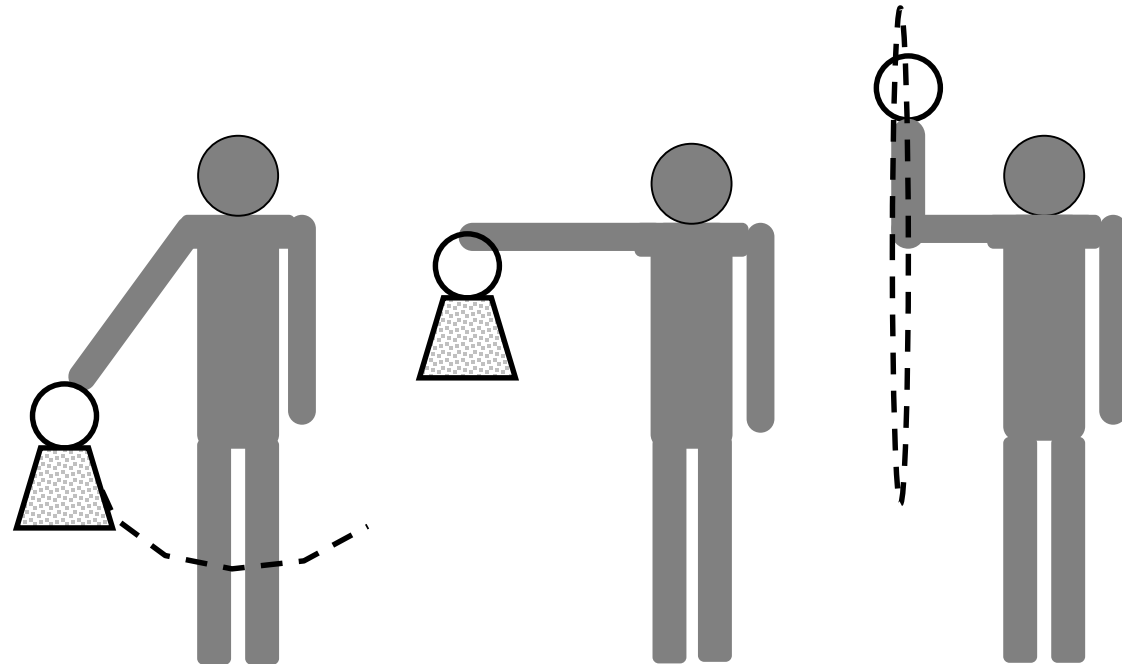
The tracks between outer opposing signals that protect the interlocking.



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Hand Signal

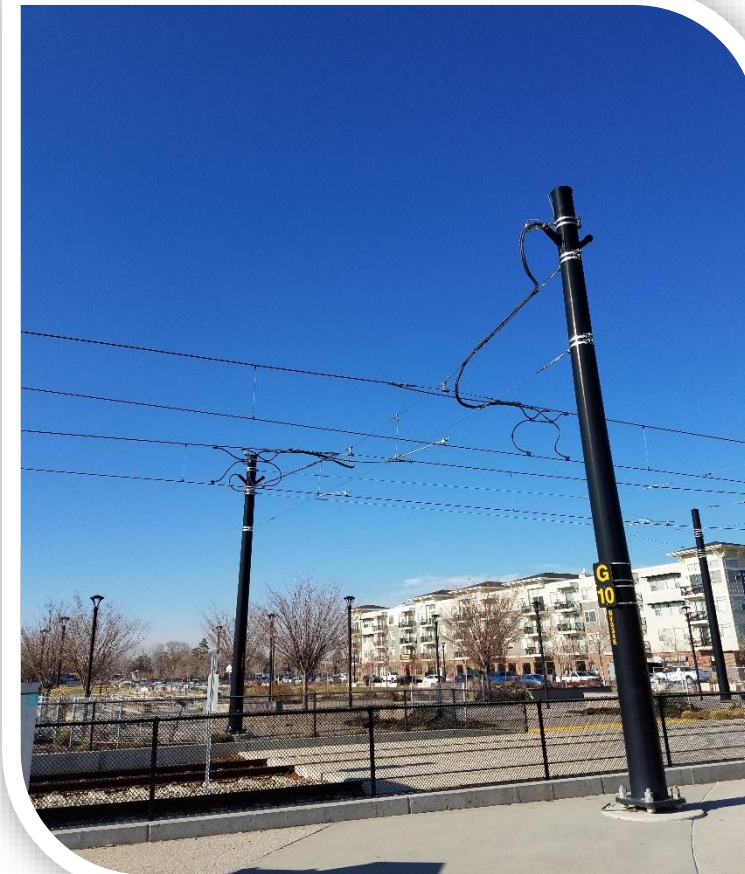
A signal given by the motion or position of a person's hand, arm, flag or light.



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Catenary

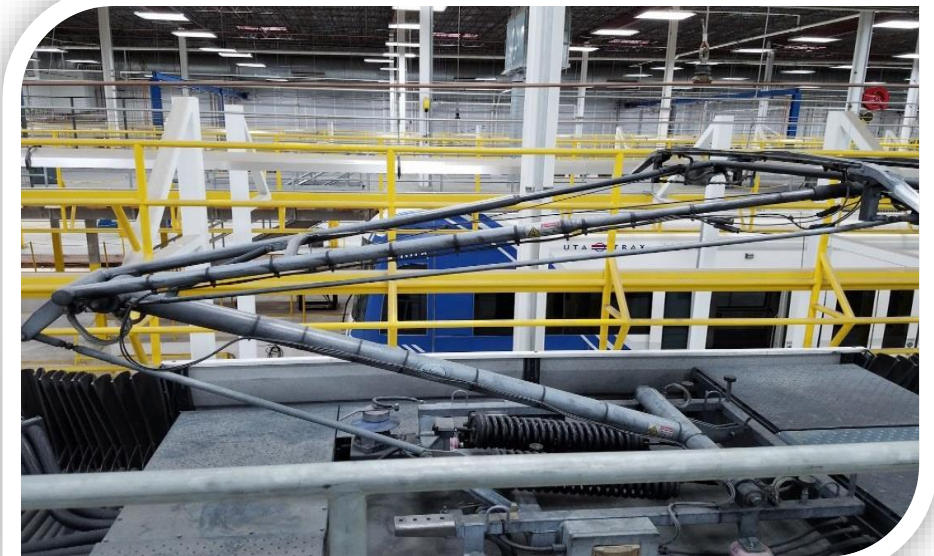
A system of overhead wires in which the contact wire is supported from one or more longitudinal messengers either directly by hangers or by hangers in combination with auxiliary conductors or clamps.



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Pantograph

A device, affixed to the top of a Light Rail Vehicle, used to conduct electric power from the overhead contact wire.



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Common TRAX Acronyms

- ABS Automatic Block System
- ATMS Automatic Traffic Management System
- TVM Ticket Vending Machine
- TCU Traction Control Unit
- BCU Brake Control Unit
- SOP Standard Operating Procedure
- IJ Insulated Joint
- TCC TRAX Control Center