

Roadway Worker Protection (RWP) Caltrain Training – Study Guide

Course: Caltrain Basic Roadway Worker Protection (RWP)

Overview: Roadway Worker Protection (RWP) training is required by federal regulation. Each railroad must provide this training to any individuals performing work on behalf of the railroad and are working near or with moving equipment on the tracks or off the tracks.

Students will learn the requirements for working on or near Caltrain tracks (known as the Right of Way). These requirements are intended to keep everyone safe and avoid harm to themselves and others, as well as to avoid damage to equipment and trains.

Class time needed: 3 hours plus time for test – ½ hour to 1 hour (total 4 hours or more if additional review and a second test is needed)

Class Objectives: provide the class an overview of Caltrain railroad requirements emphasizing:

- Recognition of hazards associated with working on or near railroad tracks,
- Understand what On-track Safety means and when it is required,
- Functions of persons involved with On-Track Safety,
- On-track Safety rules and compliance with instructions and signals provided
- Understanding On-track Safety protection (everyone needs to understand their role regarding how protection is provided)
- Procedures to follow, what to do in situations to be protected when working on or near the railroad tracks (Caltrain Right of Way)

Module 1: Introduction to Caltrain

The Roadway Worker Protection (RWP) Class

RWP training is federally required before any roadway worker duties can be performed. This includes all JPB employees and contractors, TASI contractors, and all third parties who will be working on the Caltrain Right of Way.

General Requirements

A person may only work on or near the Caltrain Right of Way when:

1. They have been trained
2. They have an approved Site Specific Work Plan (SSWP)
3. Work has been scheduled via the Right To Work (RTW) Process
4. They have and understand On-Track Safety (OTS) protection being provided

All four requirements must be met, this includes this RWP training (and passing the test at the end of the training session successfully) and any other relevant training (like machine operator training performed by employer). There must also be an approved work plan specific to the work and location being performed (Site Specific Work Plan).

Workers must have their RWP badge with them at all times when on Caltrain ROW and must have the required Personal Protective Equipment (PPE) – hard hat, safety glasses, orange retro-reflective safety vest, and Electrical Hazard safety toe boots.

You are responsible for ensuring that you have on-track safety.

You are a Roadway Worker if you inspect, build, construct, maintain, or repair anything related to tracks, signals, or any of the track and signal infrastructure and support systems.

Caltrain requires that anyone working on Caltrain property must have RWP training. RWP training expires and the class must be taken each calendar year.

Goals of the Training

1. Prevent workers from being struck by trains and on-track equipment.
2. Know the inherent danger of working near tracks.
3. Know your protection.

Be Alert

- Expect a train at any time,
- On any track and in either direction,
- At any speed,
- What looks like the back may actually be the front.

Caltrain trains travel in a push/pull mode and may be on either track as necessary; however the lights indicate which direction the train is traveling. It may be more difficult to see the lights during the day.

The Basics

- You should expect a train at any time, on any track, in any direction, at any speed.
- You can't always hear a train coming, especially if it is being pushed by the locomotive.
- You need on-track protection any time you or your equipment will be within 10 feet of the nearest rail.
- On-track protection may also be required for work that is greater than 10 feet from the nearest rail, depending on scope of work, equipment/materials being used, and site conditions.
- ***You are responsible for your safety.***

Common Railroad Terms (in alphabetical order)

Adjacent Controlled Track – two or more tracks within 19 feet of each other where movement is controlled by the dispatcher

Control Point (CP) – a location where switches and signals control trains and other equipment running on the track where the train or other equipment on the track can switch or cutover to another track

Controlled Track – track that can be controlled remotely by a Dispatcher, who authorizes movement of trains and other equipment running on the track

Fouling a track – is the placement of an individual or an item of equipment in such proximity to a track that the individual or equipment could be struck by a moving train or on-track equipment, or in any case is within 10 feet of the field side of the nearest running rail.

Federal Railroad Administration (FRA) – the branch of the U.S. Department of Transportation that enforces rail safety regulations

Grade Crossing – anywhere another form of transportation legally crosses the railroad

Job Briefing – is the briefing or session conducted by Caltrain's designated Roadway Worker in Charge (RWIC) prior to start of work indicating the type of protection provided while working on or near Caltrain tracks

Main Track – the track (or tracks) that Caltrain trains run on from San Francisco, CA to San Jose, CA and back. There are two primary Main Tracks 1 and 2 so trains can travel in both directions running at the same time. At some locations, there are more than two Main Tracks

On-track equipment – any non-train equipment that operates on the tracks

On-Track Safety (OTS) – how roadway workers are protected (provided safety) so trains and other on-track equipment/machines do not strike workers or equipment. The formal definition is: a state of freedom from the danger of being struck by a moving train or other railroad equipment

Protection – also known as On-Track Safety (OTS) – the way to make sure that roadway workers are safe from being hit by a train

Positive Protection – at Caltrain, defined as providing safety by having trains and other on-track equipment/machines having to receive approval to enter the work zone limits. Approval must be provided by whomever has control of the track – Roadway Worker In Charge (RWIC) or Train Dispatcher

Protection Limits – the end points where the On-track Safety (OTS) protection is provided within

Roadway Worker – any employee or contractor to a railroad that is working on the right of way.

Roadway Worker In Charge (RWIC) – the TASI employee in charge of providing on-track safety to a work group.

The formal definition is: Roadway Worker means any employee of a railroad, or of a contractor to a railroad, whose duties include inspection, construction, maintenance or repair of railroad track, bridges, roadway, signal and communication systems, electric traction systems, roadway facilities or roadway maintenance machinery on or near track or with the potential of fouling a track, and flagmen and watchmen/lookouts.

Right of Way (ROW) – the land that is used for transportation purposes which includes the Caltrain's rails, track, crossties, ballast, bridges, underpasses, tunnels, wayside signals, communication, overhead catenary system, and substation facilities adjacent to or extending into the track zone, and station areas in or adjacent to the track zone.

Subgroup Coordinator (SGC) – the TASI employee who assists the RWIC in large work groups that are spread out inside Form B limits

Train – any combination of locomotives and rail cars

Train Approach Warning (TAW) – the type of On-Track Safety Protection that uses a Watchman to clear the Roadway Workers to a pre-determined area of safety at least 15 seconds prior to the arrival of a train or other on-track equipment

Watchman – the TASI employee in charge of providing warning to roadway workers on the tracks

Work Zone – the area or limits that workers are allowed to work in with the On-Track Safety protection provided (as stated during the Job Briefing) by the Roadway Worker in Charge (RWIC) or Watchman

Module 2: Rules of the Railroad

Basic Rules

Expect a train at any time, on any track, in either direction, in any direction, and at any speed.

As needed due to planned or unplanned circumstances, trains may have to travel in either direction on any track – learn to expect a train approaching the work zone from any direction. Trains and other equipment on the tracks, are not always on schedule; we also have freight trains using our tracks and some portions of the Caltrain ROW, other passenger railroads use tracks on or alongside Caltrain tracks.

Don't get hit by a train! Don't hit a train! Depending on train speed, a train hitting someone could result in a fatality or severe injury. The equipment you are using could hit a train.

Electronic Devices (Cell Phones, Headsets, Bluetooth, etc.)

An electronic device is defined as any electronic or electrical device used to conduct oral, written, or visual communication; place or receive a telephone call; send or read an electronic mail message or text message; look at pictures; read a book or other written material; play a game; navigate the Internet; navigate the physical world; play, view, or listen to a video; play, view or listen to a television broadcast; play or listen to music; execute a computational function; or, perform any other function that is not necessary for the health or safety of the person and that entails the risk of distracting the employee or another employee from a safety related task.

Cell Phones

- Are a distraction
- Personal cell phones not allowed on the ROW

What if you need it for work?

- The phone needs to be company issued
- The phone may only be used when more than 15 feet from the tracks

To keep workers focused and avoid distractions, personal cell phones are not allowed on the ROW. Company issued cell phones are allowed to be used when more than 15 feet from the tracks.

Preparing for Your Workday

Employees need to arrive fit for duty

- 1) Sober includes prescription and over the counter drugs
Any contractor employee under suspicion of being under the influence of drugs or alcohol, or in the possession of same, will be removed from the immediate job site and subsequently released to the custody of a representative of contractor management
- 2) Well-rested - Alert and attentive
- 3) Trained in all aspects of job assignment (RWP and any contractor provided training)

These are essential fitness for duty requirements before working so that you are focused and remain focused throughout the work day. PPE is also required to protect you and needs to be in good

functioning condition and worn whenever on the Caltrain ROW as a minimum, as well as in compliance with OSHA requirements.

Personal Protective Equipment (PPE)

Hard Hat

Hardhats are to protect against possible head injury from impact from falling or flying objects or from electrical shock and burns.

Safety Vest

Caltrain MOW OTS Rules require a high-visibility orange retro-reflective safety vest since the RWIC is the only one allowed to wear a green vest.

Eye Protection ANSI Z87.1

Eye and face protection equipment is required and must meet the minimum standard (ANSI Z87.1)

Safety toe boots with defined heel

Required foot protection per Caltrain is Electrical Hazard Safety toe boots with a defined heel. Boots must be 6-inch high with composite toe.

Crossing the Tracks

Do not walk, step, sit or stand on the rail as this could result in a fall, trip, or slip hazard resulting in injury, as well as difficulty clearing the track and you may be struck by a train or other on-track equipment. Similar hazards can be avoided by not sitting on a rail.

Switches can catch someone with a lot of force, and most of Caltrain switches are activated by the Dispatcher remotely. Stay at least 25 feet away from track switches when crossing the tracks.

Other Basic Rules

- Do not use metallic measuring tapes or drag other metallic objects across tracks.
- Park your vehicle as far from the tracks as possible and leave room for passing vehicles.

Grade Crossings

- Do not direct traffic at crossings unless authorized by Caltrain staff.
- Report any traffic problems on the tracks to the RWIC or Watchman.

Heavy Equipment and Overhead Lines

Equipment operators must observe this table when working close to power lines.

Power line voltage Phase to phase (kV)	Minimum Safe Clearance (ft)
50 or below	10
Above 200 to 350	20
Above 350 to 500	25
Above 500 to 750	35
Above 750 to 1,000	45

Always use non-conductive tag lines, power tools, etc. when near power lines
If the voltage is unknown, the minimum clearance is 45 feet.

Working around Equipment

- While working around equipment, stay at least 15 feet away. Note that this references a **MINIMUM** distance and workers should stand as far away as needed depending on whether the equipment operator can see you. Machines move, so the “circle of safety” moves with it, so stay far away to prevent the potential from harm.
- Maintain communication with the operator
- Job briefings for roadway workers – 15-foot “circle of safety”
- Machines may have the potential to foul even if they are more than 10 feet away from the nearest rail.
- Contractors need to train their employees on the safe operation of machines
- Machine operators require additional training prior to operating equipment on Caltrain ROW
- Do not operate machines which you are not trained and qualified to operate!



Machine Operators are required to have additional training specific to the machine they are operating. The training is the responsibility of worker’s employer (the contractor) and should meet OSHA requirements. In addition to this training, Machine Operators will need to pass RWP training and will need to bring proof of machine training to the class in order to receive the special designation on their RWP card.

Module 3: On-Track Protection

Types of Tracks

Main Tracks

Almost all of Caltrain tracks, including stations, are main tracks. Caltrain has two Main Tracks, Main Track 1 and Main Track 2. These are referred to as MT1 and MT2.

Adjacent tracks, such as MT1 and MT2, are tracks within 25 feet of each other. Along the Caltrain ROW, in some places, there are more than two adjacent tracks.

Controlled tracks refers to tracks under the control of a Dispatcher. The Dispatcher CONTROLS who is on the tracks (trains and equipment).

Other than main tracks

Trains and equipment can move without permission from the dispatcher/ NON-CONTROLLED

Example of Other than Main locations on Caltrain

- San Francisco (yard)
- South San Francisco
- Redwood Junction
- Dumbarton
- CEMOF

Non-controlled tracks can still have on-track equipment or a train and still present the potential for harm to a roadway worker or damage to equipment.

On-track Safety/On-track Protection

On-track safety is the freedom from the danger of being hit by a train or other on-track equipment. ***It is your responsibility to know your protection if you are working within 10 feet of the nearest rail.***

On-track protection is needed anytime you will "foul" the track...

Fouling the Track is defined as: the placement of an individual or an item of equipment in such proximity to a track that the individual or equipment could be struck by a moving train or on-track equipment.

On-Track protection may also be required for work that is outside of the "foul zone" if it has "the potential to foul". This determination is made by the JPB and/or the TASI RWIC.

"Positive protection" must be established prior to fouling the track with equipment. Train Approach Warning is not a permissible means of On Track Safety for equipment.

Train Approach Warning

Train Approach Warning, known as "TAW" is provided by a Watchman who looks for a train approaching the work zone. The watchman gives a signal to tell workers that a train is coming. The workers go to the designated place of safety. ***The workers must be clear of the foul zone and in the area of safety at least 15 seconds prior to the train passing by the work zone.***

- No machinery/equipment!
- Must listen/watch for warning signal – air horn, whistle and/or tap on the hard hat “Hot Rail”
- Clear at least 15 seconds prior to the arrival of the train
- Acknowledge approaching train by facing the train and raising your hand

**Your
Reaction Time.**

**Crew's
Reaction Time**

**Crew's pace to
stop working and
get off the tracks
and walk to the
place of safety**

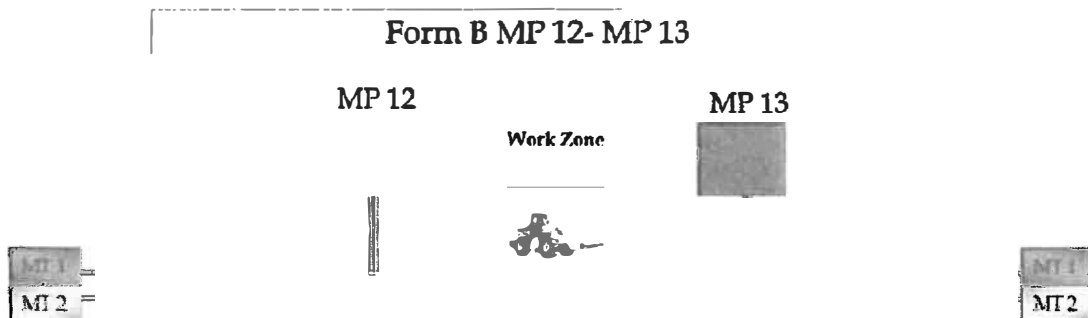
**15 seconds in the place of safety
before the arrival of the train**

Positive Protection

Positive Protection is **MANDATORY** prior to fouling with machinery or equipment. Positive Protection: a form of protection that prevents trains or on-track equipment from entering a track segment.

Form B

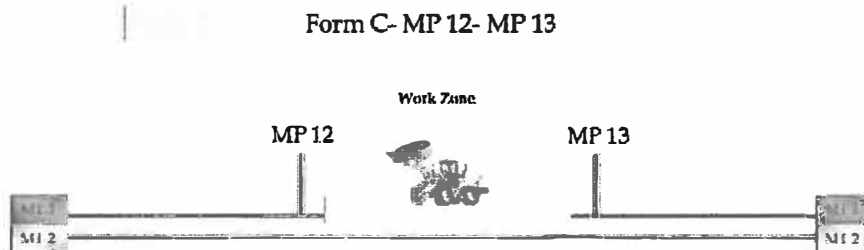
The work zone is always within the protection limits set up by the RWIC. The red flags represent a prohibition to train crews indicating they must first get approval from the RWIC to pass beyond the red flag. When the train crew contacts the RWIC for approval, the RWIC (and when applicable, Subgroup Coordinator) will clear the workers and equipment outside the foul zone prior to allowing the train crew to proceed past the red flag and through the work zone.



- A train is not allowed to pass the red flags without permission from the RWIC/Flagman
- All trains must stop before the limits until given permission from the RWIC/Flagman to enter the area
- Used most frequently for major projects with work on or near the tracks
- Can use equipment off the tracks within Form B limits

Form C – Track Out Of Service

The track is taken out of service and not available for trains to use unless the RWIC provides permission. (When trains are running, if the other Main Track is available, the train or other on-track equipment will have to use the other track usually under Form B or possibly under Track & Time OTS protection.)

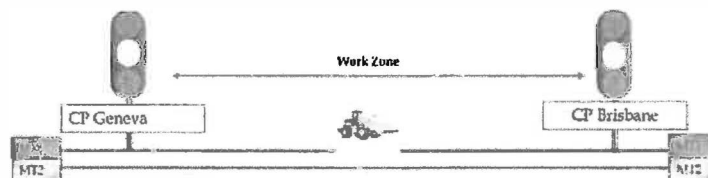


- Form C - Track Out of Service
- Track is removed from service and identified by times, i.e. 9:30am-3:15pm
- Trains cannot use out of service tracks without receiving permission from RWIC
- Trains may “single track” on the other MT
- The remaining track in-service will often be protected via a track bulletin – Form B or T&T
- Can use equipment with T&T

Unless the RWIC provides permission to a train (such as a work train bringing ballast or on-track equipment doing work on the track being worked on) to proceed on the track that is designated out of service, train crews do not use this track and instead use the adjacent track. This is known as single tracking since it is the only track in service (of the two Main Tracks 1 & 2 still in service) and trains or other on-track equipment traveling in either direction will be coordinated on the single track that is in service. This will be under Form B or Track & Time OTS protection as needed.

Track & Time

Track & Time (T&T) places control of that portion of track into the RWIC’s authority for the specified time requested. CP stands for Control Point, which is a cross-over point for trains and other on-track equipment to switch onto the other/adjacent track.



- A train cannot pass the signals until the work group has cleared the track.
- Is a form of protection in which the dispatcher gives an RWIC/Flagman a certain “amount” of time to work between two Control Points
- Trains cannot enter the protection limits during this time
- Used mainly for short durations
- Can use machinery or equipment
- Note that the work zone is within two Control Points (CP’s). Trains cannot enter this work zone until the T&T is released by the RWIC. T&T is typically used for shorter time limits than a Form C.

Adjacent Controlled Tracks

Adjacent controlled tracks are controlled main tracks within 19 feet of each other when measured from center of one track to the center of the other track. Due to a high number of deaths related to working on adjacent controlled tracks, the FRA created rules to prevent people from working on one track and being hit by a train on the next track when work is being done around On-Track Equipment.

On-Track Protection is often required on the Adjacent Controlled Track, in addition to the occupied track, when there is at least one roadway worker on the ground engaged in a common task with on-track self-propelled equipment.

Operators of on-track equipment working adjacent to a controlled live track will place a standard sign reading "Danger – Live Track" across the entrance/exit on the live track side of their machines if so equipped. This includes using a removable sticker on hrrail vehicles.



Do not operate on-track equipment while a train is passing on the adjacent track:

- Stop the equipment
- Secure the equipment against movement
- Inspect the passing train

This rule also applies to on-ground workers who are within 25 feet of any on-track, self-propelled equipment, or couple equipment permitted to move on the occupied track.

"Inaccessible Track Protection" for Other Than Main Tracks

- Flagman with instructions and capability to hold all trains and equipment clear of the working limits.
A switch or derail lined to prevent access to the working limits, tagged, spiked, and secured with an effective locking device.
- A discontinuity in the rail (remove or cut rail).
- A remotely controlled switch that's blocked by dispatcher.

Module 4: Working in the Field

Job Briefing

A job briefing is a chance for everyone to be on the same page. It occurs at the beginning of the shift or whenever work conditions change. Work conditions that can change:

- New people on the work site
- New RWIC or watchman on the work site
- A change in the type of work – use of hand tools to the use of heavy equipment
- A change in the location of the work – from beside the track to on to the track
- When protection changes or is released

A job briefing is complete only when each roadway worker has acknowledged understanding of the on-track safety procedures and instructions.

The job briefing is given by the Roadway Worker in Charge (RWIC), who is a Roadway Worker employed by Caltrain and is qualified to provide and is responsible for OTS protection. The RWIC's Job Briefing provides instructions to all the Roadway Workers as to what they need to do to be safe when a train (or other on-track equipment) approaches. The RWIC also explains the type of On-track protection that will be used.

You should be able to identify:

- Who your RWIC is
- Your working limits or location
- The type of protection, time limits, what track, place of safety, method of warning
- What to do in case of an emergency

The RWIC will also ask if you have any questions to give you an opportunity to ask questions. If you need clarification about your OTS protection, ask the RWIC. It is your responsibility as a Roadway Worker to understand your OTS protection as you are responsible for your own safety.

Contractor Job Safety Briefings

Contractors are required to conduct and document their own daily job safety briefings with all employees working on their project. This is the contractor's responsibility to cover non-OTS protection safety requirements. The Safety Briefing by the contractor is in addition to the Job Briefing conducted by the RWIC/Watchman. There may be an overlap regarding information.

- Tasks to be accomplished
- Inspect the job site or work area
- Break each task into step-by-step procedures
- Discuss potential hazards
- Determine tool, equipment, material needs and applicable safety rules and procedures
- Establish the 15' Circle of Safety around mobile construction equipment and tool operations

Good Faith Challenge

A Good Faith Challenge is made by any Roadway Worker when the Roadway Worker determines in good faith instructions by the RWIC violate OTS rule. There is a formal procedure to make this Good Faith Challenge, also known as your right to challenge.

You have the right to challenge:

1. On-track safety to be used when you believe the On-track Protection provided is insufficient
2. On-track Equipment does not comply with FRA regulations or has a condition that inhibits its safe operation

Any worker may file a right-to-challenge “in good faith” without retaliation or retribution from their employer or Caltrain. The RWIC will have the form with instructions. An individual that files a Good Faith Challenge must not be forced to do the task until the issue is resolved. However, the individual may continue to work on tasks not related to the challenge.

When a train is passing

When you are standing waiting for the train to pass by your work zone, face the train so the Train Engineer can see you. Do not make any moves in front of a moving train that would make the Engineer think you are going to cross or otherwise foul the track.

When working close to tracks with equipment:

- Stop all movements.
- Dismount the machine/equipment when practical.

When working close to the tracks NOT with equipment:

- Clear the “foul” of the track to the pre-designated area of safety.
- Acknowledge approaching train by facing the train and raising your hand.

Wait until the last car of the train has passed and you receive an “all clear” signal. ***It is important to wait for an “all clear” signal because another train might be coming.***

All workers in equipment and around the job site should face the train to watch for flying debris.

Part 5: Other Important Information

Emergencies

If a railroad emergency arises, always notify your RWiC who will make the necessary calls. If your assessment indicates a need to stop the trains and other on-track equipment the number to call is:

TO STOP TRAINS IN EMERGENCY: 1-800-872-4660

This will call the Dispatch Center who will notify trains and railroad personnel accordingly. Calls to 911 go to the CHP center in Vallejo, they will not know how to respond to railroad calls.

The violent movement of arms will be taken as an indication by train Engineers to **stop**.

REMEMBER – It may take a train up to 1/2 mile to stop, often longer. There are risks to passengers, crew members, and damage to the train so please ensure if you make a decision to stop a train, you have a true emergency.

If an emergency arises, always notify your RWiC who will make the necessary calls.

If RWiC is unavailable or the matter is urgent, the number to call is:

TRANSIT POLICE: 1-877-723-7245 (SAF-RAIL)

This will call the San Mateo County Sheriff's Office Dispatch Center who will call for appropriate local response. Calls to 911 go to the CHP center in Vallejo.

These numbers will be on the back of your RWP card.

Enforcement

Enforcement is performed by:

- FRA (Federal Railroad Administration)
- CPUC (California Public Utilities Commission)
- TASI and Caltrain Staff

You will be asked:

- For your RWP card
- Who your RWiC is
- What your working limits are
- What type of protection you have (time limits, what track if multiple, track speed, place of safety, method of warning, etc.)

Failure May Result in

- Ejection from the Property
- Work Stoppage
- Personal Fines
- Employer Fines

TASI safety assessment teams, safety and rules personnel, project representatives WILL conduct unannounced and unscheduled assessments. On-site contractor and JPB Project Managers will be notified of assessment findings.