

Advanced Traffic Light System – (ATLS) LCM Issue

Tutorial Updated March 2014

This issue of the ATLS Tutorial is abridged for those who only want to use the system to control level crossings. **To use the full ATLS capability including road traffic light control, see the ATLS Consolidated Tutorial 2014.**

Many of the latest versions of ATLS are now Trainz Build 2.9, (TS 2009 and up). Links to earlier versions that will work in TRS 2004, TRS 2006 and TC can be found on the ATLS page on my website. Note that these earlier versions may have minor bugs and less features. Some current, unmodified assets remain Build 2.4. All assets will work up to and including TS12 (SP1). The latest version allows for game-save and restore. Always use the latest version you can!

Overview

ATLS comprises several assets and was originally designed to control tram and traffic flow at a road junction. For Level Crossing Mode control, only 5 of the 7 ATLS assets are required, 2 of which may be considered optional.

They are...

- | | |
|--|--------|
| 1) A Controller | page 2 |
| 2) A Traffic Slave | page 3 |
| 3) A Specialized Trigger | Page 4 |
| 4) A Traffic Stopper (optional – use for custom crossings).... | Page 8 |
| 5) A Corrector Trigger (optional)..... | Page 9 |

The idea is to provide a set of separate assets that will work together to form a versatile system which can cope with fixed and custom crossings. Being versatile, the assets cannot be just placed quickly but they need to be set up carefully to your individual requirements.

Things to Understand

ATLS level crossings do not work like single normal MoCrossings. The ATLS assets are interdependent. In other words they won't do anything on their own. They communicate by 'radio link'. Each Level Crossing set up requires a different channel and it's the user's responsibility to set each asset to the correct channel for that crossing.

The first thing you should do with every asset, before you set anything else up is to open the Properties Dialogue Box and set it to the Channel you have designated for the particular crossing. By default, assets are set to 'Off' so they won't do anything. However, if you set the wrong channel, they *will* interfere with each other. This includes ATLS assets you may have set up to control traffic junctions.

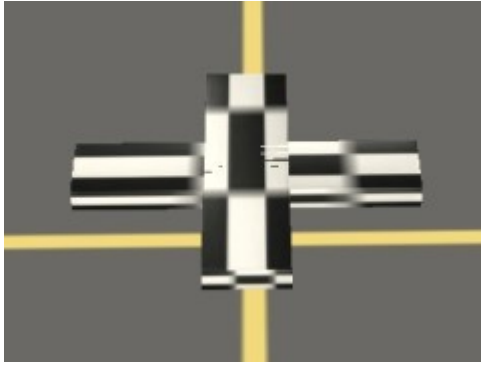
Saving to a map/route – [See page 11.](#)

All settings will be automatically saved with a session. However if you wish to save to a map/route, details of how to do that are at the end of these instructions.

Getting Started

If you are using an existing MoCrossing, fixed Level Crossing, (almost all are) then you need to first read the **Controlled Level Crossing Tutorial**. This will show you how to place the crossings so that they are disconnected from your normal track but appear as though they are not. It will also show you how to place the Slave. Once you have read that, return here and start with the Controller. Note - Newer crossings by Trainz users such as bnsf50 are not MoCrossings but are specially designed to work with ATLS. See instructions in those assets for set-up.

The ATLS CONTROLLER



This is the 'brain' of the system. It receives signals from the Triggers and then computes where trains are in relation to the crossing. It sends commands to the other assets to open the crossing, set the lights flashing or release traffic, etc.. Used only as a Level Crossing Controller, it is very easy to set up.

How to set up Level Crossing Mode, (LCM)

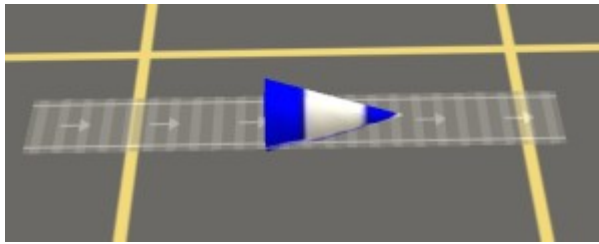
Note that you must have Version 2 Controller or later. Version 2 Slave and Triggers will also be required. (Version 1 ATLS is obsolete)

- 1) Assign a Channel to control a particular level crossing, here it is Channel 1.
- 2) Select Route '-1'. This will put the Controller into 'Level Crossing Mode'.

That's it – the Controller will do the rest. Now see the instructions for Slave & Trigger below.



The ATLS SLAVE V2.11 (also known as Traffic Slave) **Fixed MoCrossing Use**



The Slave is the asset that receives commands sent out by 'radio link' from the Controller. In modified fixed MoCrossings it is used to activate the level crossing *instead* of an approaching train. It should be correctly placed on your map or it will not work. **See the Controlled Level Crossing Tutorial.** For its use in Custom Level Crossings. Also, [see page 9](#).

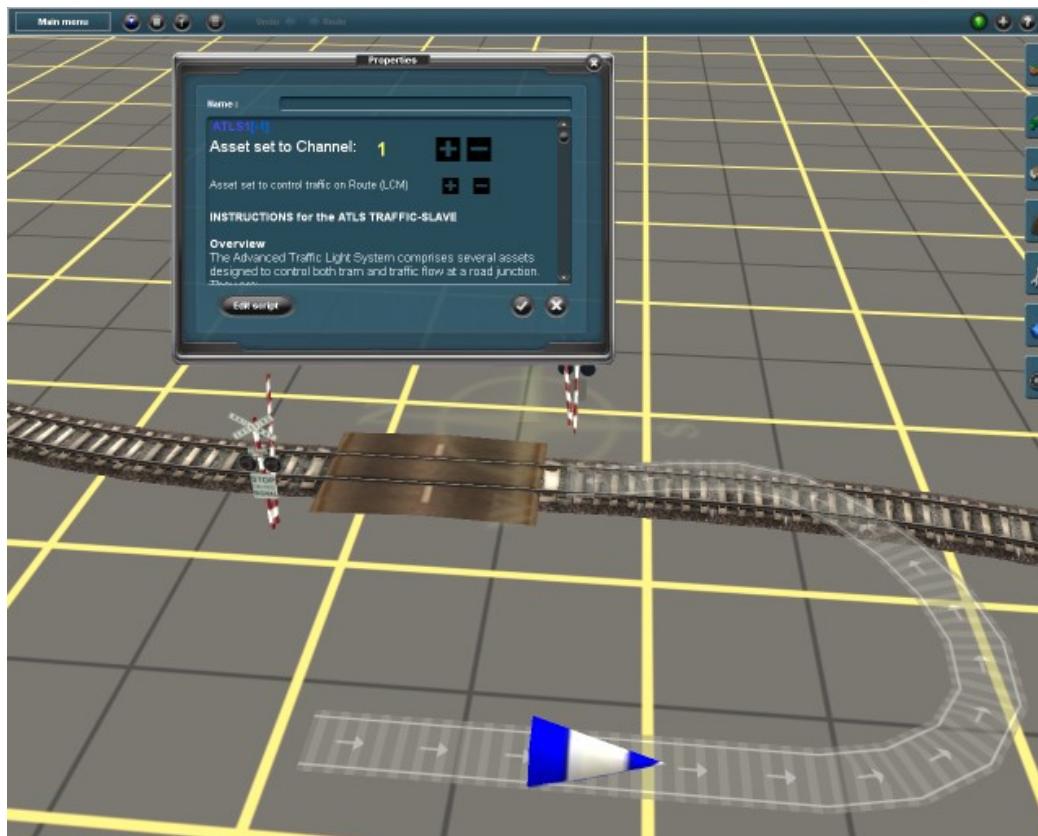
This asset generates an invisible train. It should never be placed where it is possible that a visible train could run into it. If it does, program errors may occur.

Setting up the SLAVE for Level Crossing Mode

Note that you must have Version 2 Slave or later. Version 2 Controller and Triggers will also be required.

- 1) Assign the same Channel as you chose for the Controller for this level crossing, here it is Channel 1.
- 2) Select Route '-1'. This will put the Slave into 'Level Crossing Mode'.

From V2.1 on, you may also set a delay in seconds before this asset will activate the 'clear' command from the Controller. This advanced setting is intended for Custom Level Crossings or other assets that require extra time to re-set. Default delay is '0'. [See Page 9](#).



The ATLS TRIGGER V2.1 (Also known as Tram-Trigger)



This Trigger is a specialized version of the green Auran Trigger. It (probably) does everything that does, plus it sends out a message by 'radio link' to the ATLS Controller to tell it that a train is arriving. At least two Triggers are required per track. They can be placed as far away from the level crossing as you like.

Setting up a Trigger for Level Crossing Mode

Note that you must have Version 2 Trigger or later. Version 2 Controller and Slave will also be required.

- 1) Assign the same Channel to each Trigger associated with this level crossing, as you chose for the Controller. Here it is Channel 1.
- 2) Select Route 'SPL' on each Trigger. This is the default setting and is correct for 'Level Crossing Mode'.
- 3) From V2.1 on, you may also select which 'Train Priority' the Trigger will react to. See Auran's Trainz Manual for an explanation of 'Train Priority'. If in doubt, leave the settings at default, with all 3 boxes ticked.
- 4) There is a choice of 3 Methods to set up your map for Level Crossing Mode. Choose one and place the Triggers, following the details below.

Method 1 – (Old Version 1 method)

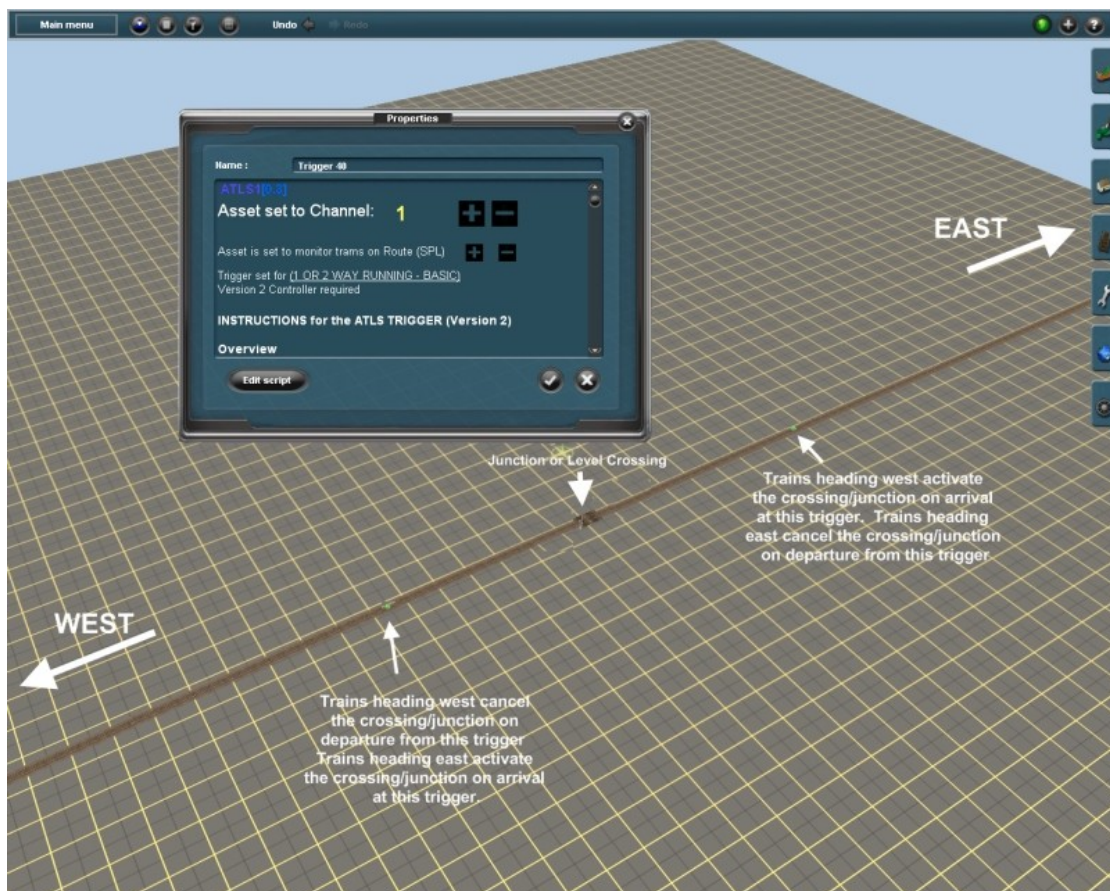
TWO triggers are required per track. Place one Trigger on each *before* the crossing, so trains will pass it with enough time to activate the crossing. Then place another Trigger on each track that trains will leave just *after* the crossing. Now set the first Trigger to 'Arriving' and the second to 'Leaving', (on each track).



This is the simplest set-up but is limited to only single direction trains on each track, (one way running).

Method 2 – (1 or 2 Way Running - Basic)

This is the default method which allows for trains to approach in either direction. Just place 2 triggers *per track*, one either side of the crossing at the point where you want the train to trigger events. As above, make sure its set to SPL and set it's Channel to the one chosen for this crossing. **There is no need to do anything else.** The arriving and leaving function is now automatic. The train coming from afar will hit the first trigger, (whichever side of the crossing it is) and trigger the event. When it leaves the trigger on the opposite side of the crossing/junction it will cancel events. **This is all computed by the Controller on the same channel. Just place the triggers and set the Channel – Trigger Job done. [See Limitations!](#)**

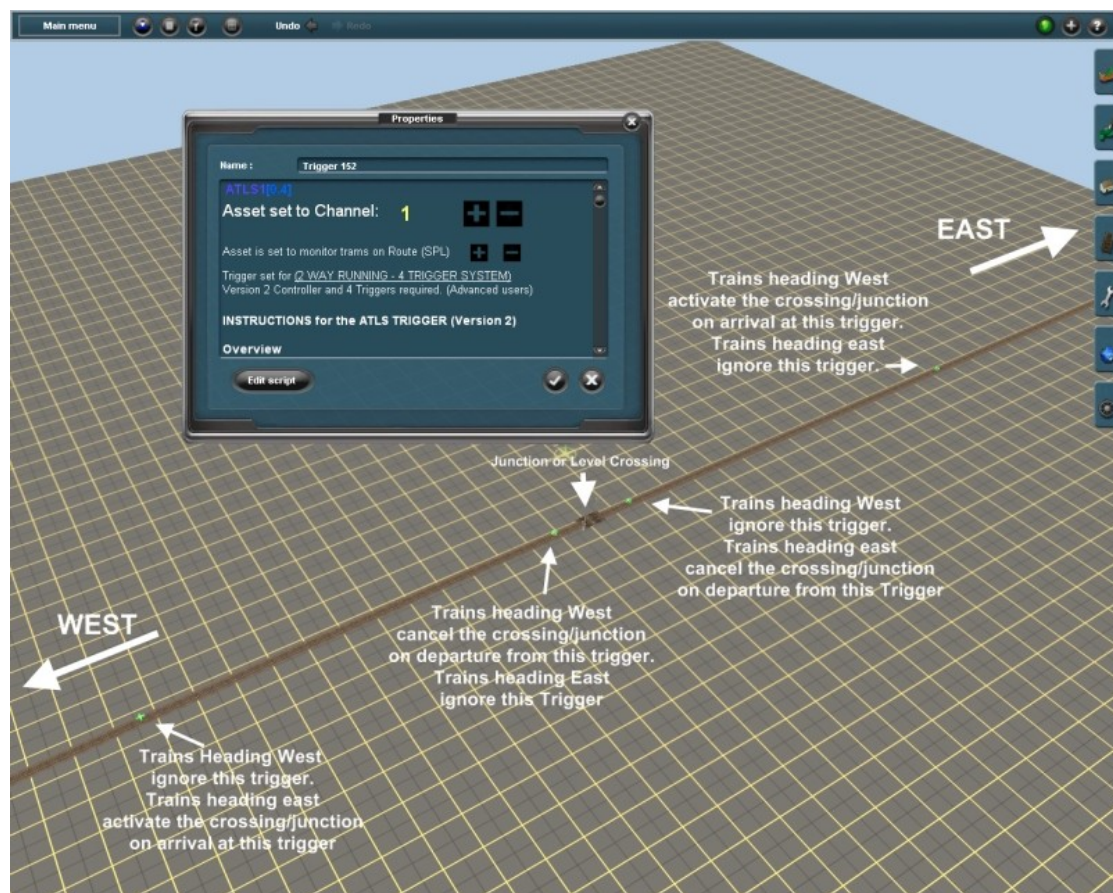


Two Trigger Method

Method 3 – (2 Way Running – 4 Trigger System)

This is an advanced **alternative** way of doing things, only an advantage if you *are* running trains in both directions on the same track. If trains only ever run in one direction per track, just use the BASIC version above or even the old 'Arriving/Leaving' system. The reason for 4 Triggers is that if you *are* running trains in both directions, you probably want the crossing event to trigger a long way before the junction.... but you will want the crossing to re-set quickly after the train has gone. If you only have 2 triggers that can't be done, with 4 it can! First, place 2 triggers *per track* a long way, either side of the crossing where you want the train to **ACTIVATE** the crossing. Then place another 2 triggers *per track*, again either side of, but *near* to the crossing where you want the event to cancel as the train leaves. **Set the Trigger to '4 Trigger System'**, then as before just set the Channel to the correct one for this crossing, make sure it's on SPL and all will happen automatically, taken care of by the associated Controller.

[\(See Limitations\)!](#)



Four Trigger Method

Limitations

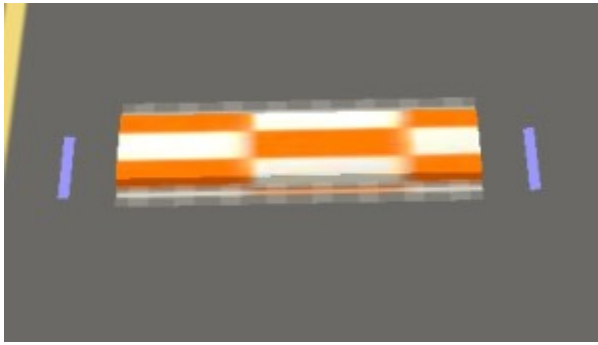
- 1) There is only one Route (SPL) on each channel.
- 2) **Method 1** - If you decide to use the old 'Arriving/Leaving' system, (Method 1), then the rail track can only have trams running on it from a single direction. i.e., Two Way Running on the same track is not possible.
- 3) **Method 2 or 3** - If you use Method 2 or Method 3 then Two Way Running is OK.... BUT be careful how you place trains/trams when you build your map or save a session. See 4 & 5 below.
- 4) **THERE MUST NOT BE ANY TRAINS PLACED IN-BETWEEN TRIGGERS AT THE START OF YOUR BASE SESSION.** Ensure all trains approach a crossing/junction from afar when the session begins or errors will occur. This only applies for a new session start-up. If you are using the latest ATLS assets, in-game saves will now retain save-data so trains on restored sessions may start anywhere. (Only applies to games saved after the latest Controller and Slave were installed). See also - [Corrector Trigger](#) later.
- 5) **Don't mix and match Triggers on the same Channel until you fully understand the system.** If you do, only mix and match Method 2 with Method 3. For these Methods, your train route should always cross 4 Triggers per Channel. M2 Triggers represent a factor of '2'. M3 Triggers represent a factor of '1'. Add them up and make 4! ATLS Driver Commands may be used **instead** of Triggers but always make the combination add up to '4'!
- 6) **The system is NOT designed to run a train to the crossing or junction, then stop it and reverse it!** Once a tram or train hits the first Trigger it must complete the journey through the crossing, passing both Triggers (or all 4 if you're using the 4 Trigger System). Failing to complete the sequence in order will cause unpredictable results, particularly with bi-directional methods. It's permissible to have a turnout but extra Triggers must be placed so the train can complete the correct sequence whatever path it takes.
- 7) **Rogue Messages.** Trainz Triggers seem to occasionally send out extra 'rogue' messages which can confuse ATLS. From Trigger V2.6 on, these bad messages are filtered. When a train leaves an ATLS Trigger it will now ignore messages from that Trigger for 10 seconds. This should not be a problem unless you are intending to reverse that train back into that Trigger within 10 seconds. If you are, you can turn off the filter by un-ticking the box at the bottom of the asset's instructions. Note that these 'rogue' messages are rare.

ATLS DRIVER COMMANDS. (Advanced users)

In some cases you may wish to 'trigger' the Controller at a specific *time* in your Session which may be different to the time a train actually arrives. For this reason ATLS Driver Commands are available in the three Trigger Methods. These may be inserted into your train's Driver Command List and used INSTEAD of a similar Trigger. If you use a Driver Command then you must count it as a Trigger when adding up to '4', if necessary removing an already placed Trigger from your map. (Note, from V2.1, you can make Triggers invisible to trains of different Priorities if you wish. This may help!).

The ATLS TRAFFIC-STOPPER V2.1

(V2.1 is only essential for TS 2010 and above)

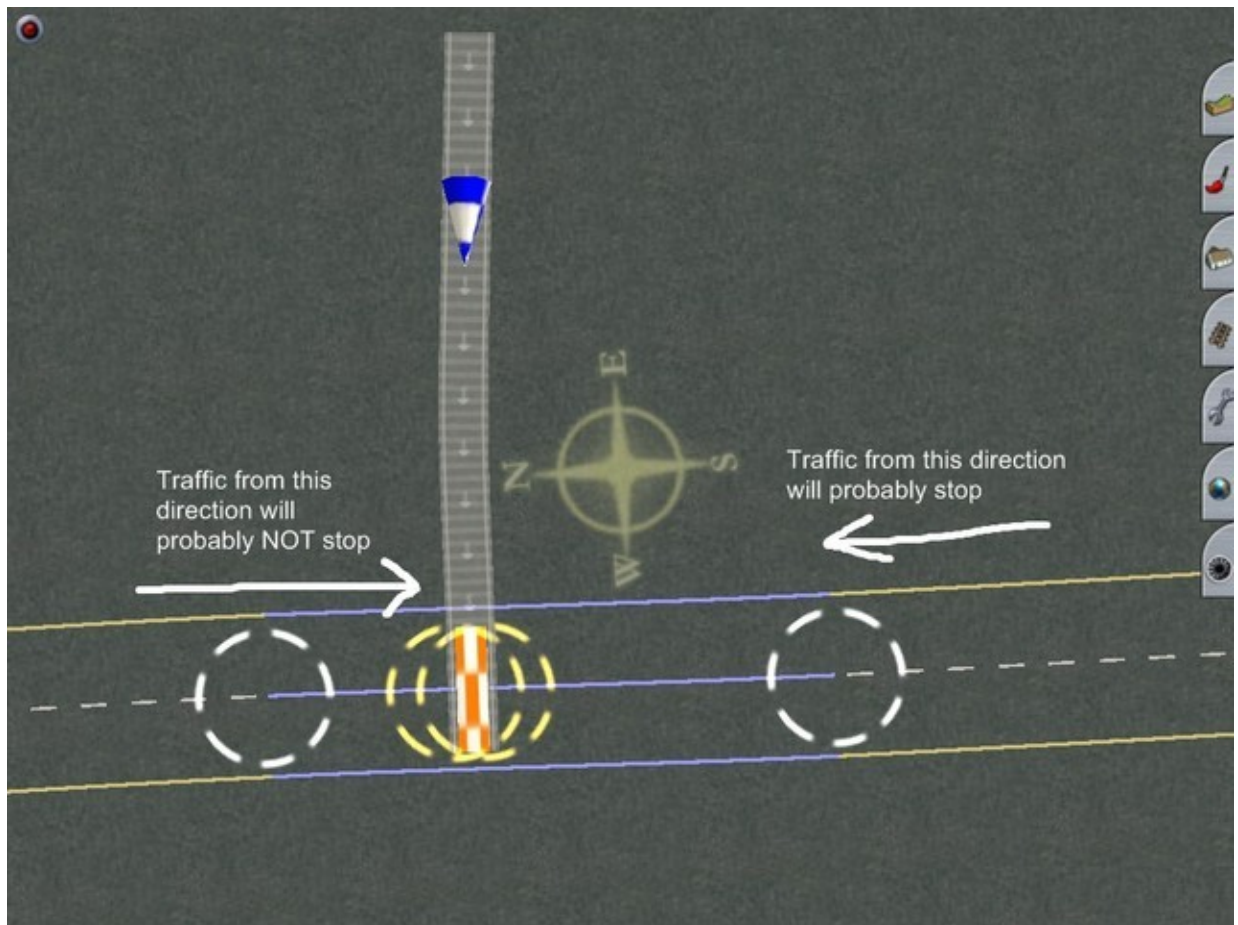


This asset is intended for use in custom level crossings. When cut-in to a roadway and 'energised' by a Slave, the 'Traffic Stopper' will stop traffic entering a custom level crossing area. See Page 10. It is obviously not needed if you are using a fixed MoCrossing as that asset will do this job.

Placing the ATLS TRAFFIC-STOPPER

The section of roadway where you 'cut-in' the Traffic Stopper is critical. If a road Spline Point is too close to the Stopper, it will not stop traffic. It is possible to use this phenomenon to our advantage to effectively make the Traffic Stopper one-way. Useful if you don't want traffic to stop ON the crossing!

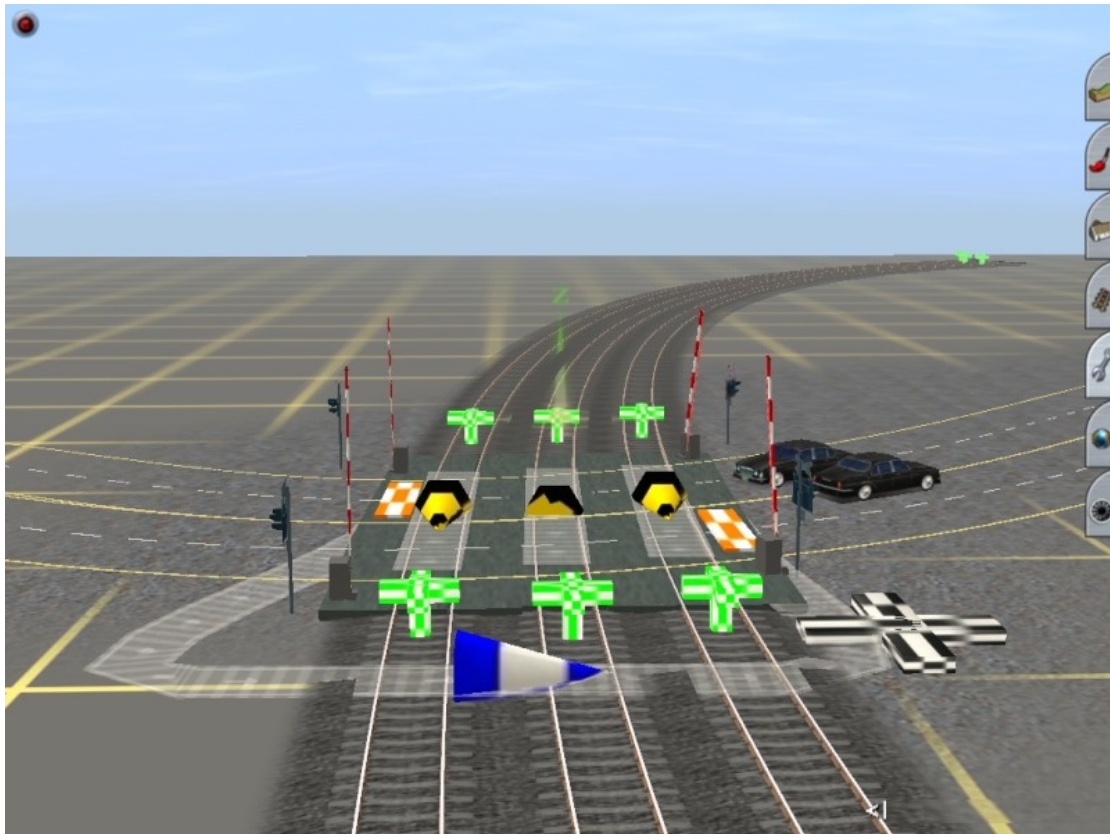
The critical point is found by trial and error.



Note – The critical point is much closer and less reliable in TS 12.

CUSTOM LEVEL CROSSINGS

Having the Level Crossing set-up as separate assets opens the way to more complex custom built level crossing areas, on bends, at road junctions etc.. Various assets are now being developed by a several Trainz community members to make assets that will take commands directly from the ATLS controller. In the set-up below for example, the lights and booms will fire from 'radio link' commands. The Slave has a 4 second delay, (to allow the barriers to close) before it releases the road traffic. The yellow and black 'slaves' are the Inverse Slaves. They are 'off' when a normal slave is 'on' and vice versa. They produce an invisible train which will cause track signalling to go red when the crossing is open to road traffic.



In a Custom Level Crossing with new ATLS assets, the Slave is only used to stop road traffic. Search the DLS for assets by Trainz user, bnsf50!

CORRECTOR TRIGGER



This optional asset should only be placed if using ATLS in LCM mode or with trams using SPL mode.

As previously mentioned, you should normally design a Session so that no trains or trams are in-between Triggers at start-up. This is because trains/trams hitting Triggers in the wrong order will get stuck. Originally this was also a problem after a save-game restore. However, Controller and Slave V2.6 or above (see the asset's dialogue box), will save and restore game data automatically. The ATLS Corrector trigger is now only needed if you design a Session with trains starting in between Triggers!

Also as the Corrector is a method for clearing-out stuck trains/trams, these first ones could run through a level crossing or jump traffic lights at Start-Up. After that, ATLS should begin to work correctly.

For details on optimal Corrector Placement, see the plans below.

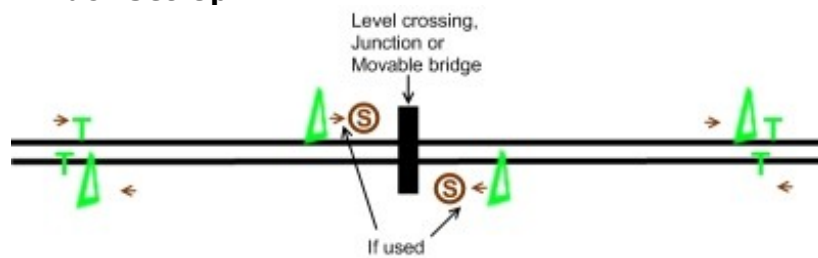
Setting Up the Corrector

The only set-up needed for the ATLS Corrector is to set the Channel to the one allocated for this junction/crossing by the Controller.

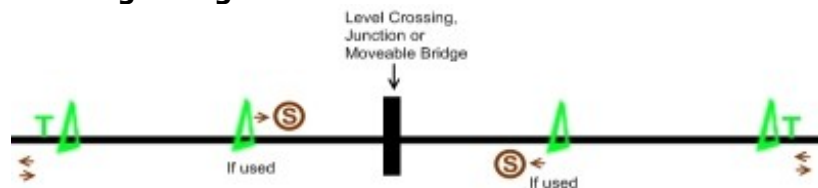
Placing the Corrector for best results

A Corrector should be placed on each track, just before the 'downstream' ATLS Trigger. If you are using an ATLS controlled signal (for example to protect a level crossing) or an ATLS controlled Tram Stopper, then a second Corrector will be needed in front of that signal too. Note - do NOT use the obsolete Arriving/Leaving method for ATLS triggers!

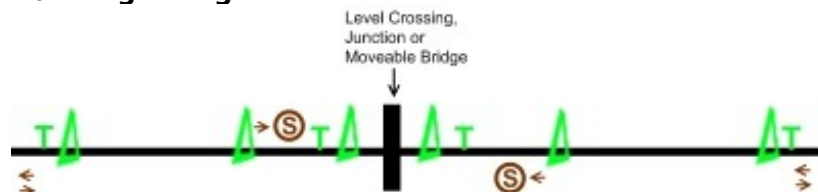
Basic Twin Track Set-Up



Two Way Running 2 Trig



Two Way Running 4 Trig



SAVING TO THE MAP/ROUTE (if required)

All the settings you make in the ATLS will be saved to a Soup, so if you are running a Session that's all you need to do. In most cases you *may* name an asset to your choice and it will have no impact on its working, settings still being saved to a Soup. However, if you are saving purely for identification purposes, then you must avoid using the Control Characters. These characters are [] ().

If you want to save the settings you have made to a map (Route) in addition to the Session, then this may be done by saving the name of the asset as follows, *using* those Control Characters.

Open the Properties Dialogue Box of the ATLS asset you want to save and set it up as required. Then, look in the top left corner and you will see something like 'ATLS1[65,E,O]'.

This is an encoded representation of all the settings you have made to the asset. If you save the *name* of this asset EXACTLY as shown, the settings will be retained and recovered when you re-load the map, (route). They will also work in an old fashioned Scenario!

It's important to keep the format exactly, including the square brackets and commas or it will either just not work, or may cause errors.

On occasions you may encounter the '*That Name Is Already In Use*' message. If you do, don't save it but add '(A)' to the name you are saving. So you will save: 'ATLS 1[65,E,O](A)'. Use the letter (B), (C) etc., for subsequent clashes. The brackets are important.

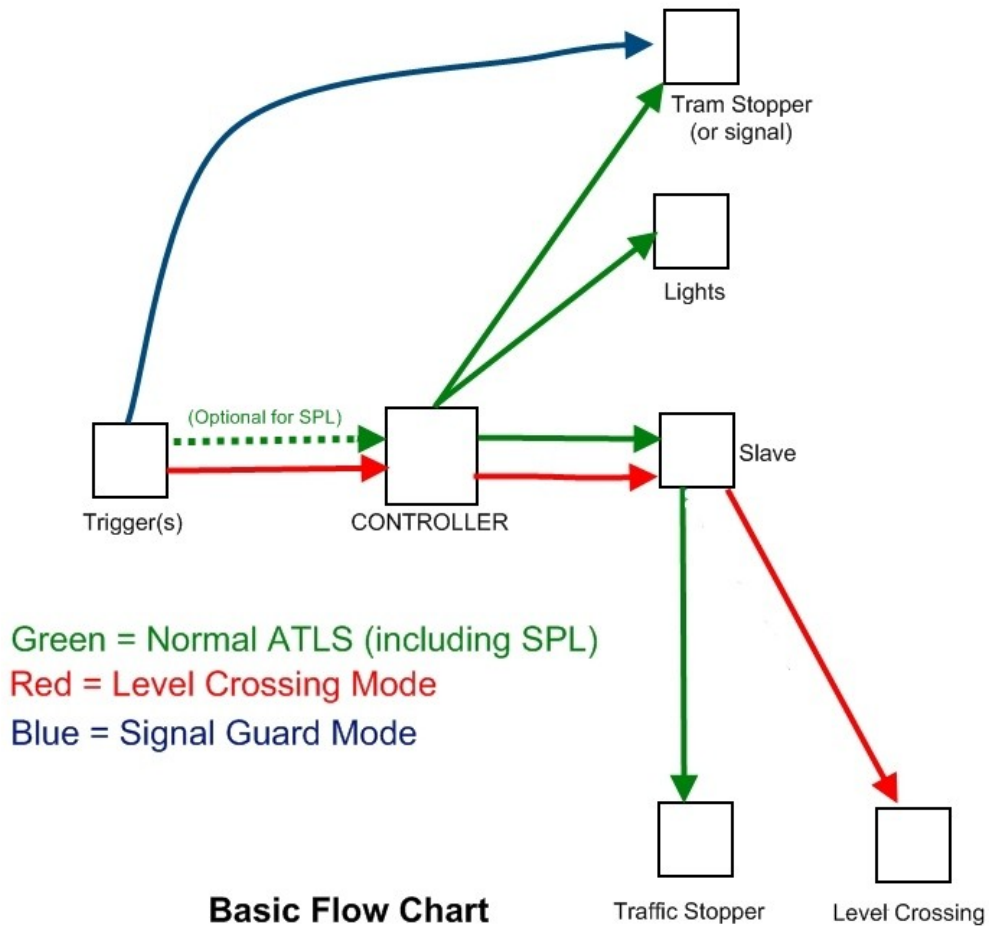
If you want to change the 'saved name' or delete it, its always best to save the map and re-load afterwards. Otherwise errors may occur.

Remember, you don't need to save if you are just running normal Sessions.

(Special warning for the Controller asset. The generated name in this asset will get very long if you have lots of Routes and Phases. Note also that the Phase Timing durations are 'rounded' when saving to a map.)

Important Technical Note

The Slave contains an invisible train which should have been downloaded automatically. Derailments of this train may occur after game-save restores IF you have the wrong version of the invisible train installed. For the latest version of the Slave, the invisible train must be kuid2:76656:1158:2. If you are using the latest TRS 2004 version of the Slave then the invisible train must be kuid:76656:1158. If your version of the invisible train is kuid2:76656:1158:1 then you should download the latest invisible train AND Slave from the DLS!



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