# Advanced Traffic Light System – (ATLS) LCM Issue
## Tutorial Updated Feb 2020

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 Full ATLS Tutorial 2019**.

ATLS has been updated to work in TRS19 'Streaming Mode'.  The following instructions will stand in TS12 and Tane for ATLS V2.7 and TRS19 for ATLS V3. **Note – ATLS V2.7 and V3 will not work together.  TRS19 users should update all assets to V3.**
If you are running a version of Trainz older than TS12 you should read the old version of this Tutorial.

*************************

**Overview**
ATLS set-up for Level Crossing Mode has been simplified.  For quick set-up only 2 types of asset are needed.

They are…

New ATLS assets can control most level crossings, either pre-built fixed assets or custom assets with separate lights, barriers etc.  The new Controller/Slave can be placed on the live track to override the function of normal Trainz Crossings.

Be aware though that there are currently a few crossings which do not respond correctly, e.g: Bloodnok's UK Crossings will not work and BNSF50's complete crossings may not respond correctly.  His separate NRC barriers/lights etc work OK with some slight issues.  This tutorial presumes you are using a compatible crossing.  If not, you will have to revert to the old ATLS method explained in the Old Tutorial.

Two options follow.

**Option 1** explains set-up for fixed complete crossings where a standard Trainz mocrossing asset is used.  This is the quickest set-up and just uses the new Controller/Slave asset.

**Option 2** uses separate assets to form custom crossings.  This will probably require the use of extra 'Slave Triggers' which receive commands from the Controller/Slave.

**A Reminder of Basic Concept**
In simple terms, an approaching train hits an ATLS Trigger.  The Trigger sends a message to the Controller or Controller/Slave.  The Slave in turn activates the Level Crossing.  You can therefore control a level (grade) crossing from anywhere on the route.  The train does not even need to be on the same track.

The system works on a 'Channel' system so each crossing and each set of ATLS assets work on a unique channel number.

## Option 1 – Fixed Crossings

## The ATLS CONTROLLER/SLAVE Appears in Tracks/trackside in Surveyor
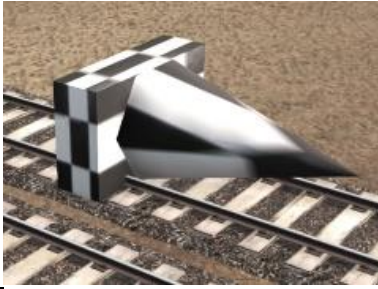


This is the 'brain' of the system.  It receives signals from the Triggers and then computes where trains are in relation to the crossing.  If you are using a fixed level crossing, this and Triggers are all you need as it will also act as a Slave to control the crossing it is placed next to.  It will also send messages to optional Slave Triggers or other ATLS assets you may choose to use

Place the asset on the live track pointing towards the crossing you want to control.  Rotate if necessary.
Open the Properties Dialogue Box, (?) and choose a Channel for this Crossing by clicking the large + - icons.  Each crossing on your route requires a new Channel!
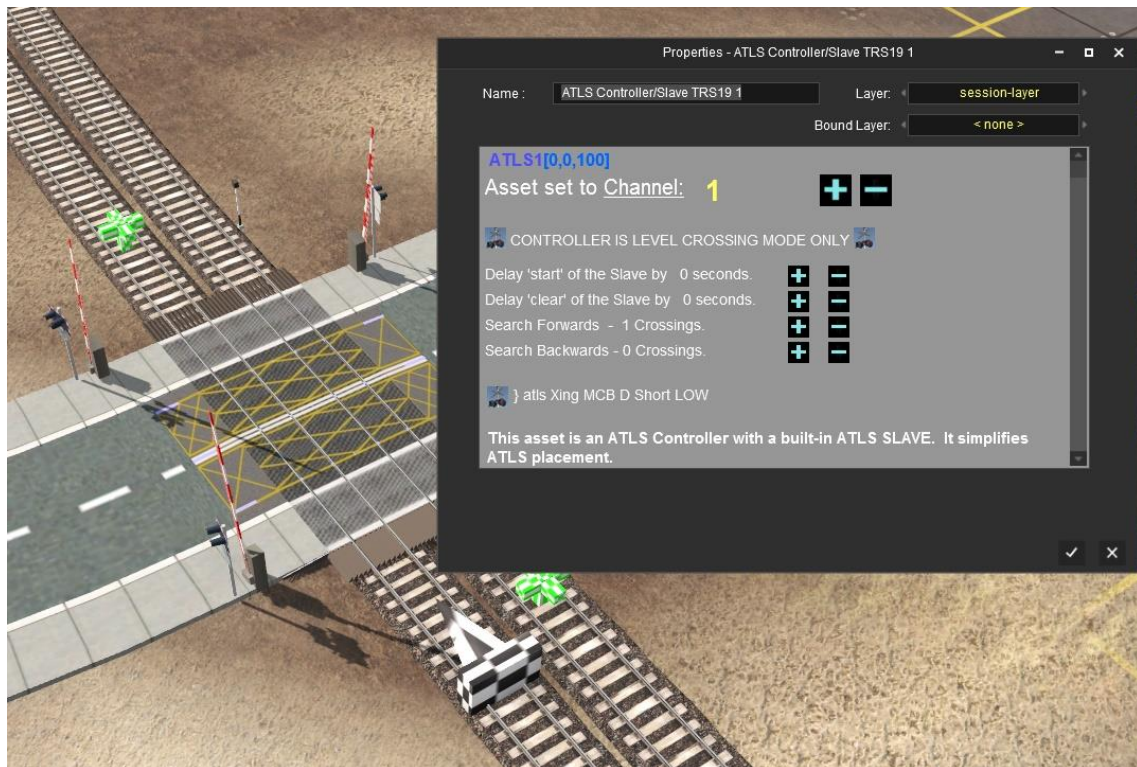


You can delay the 'start' of the crossing activation and also delay the 'clear'. These are options you may choose to use later.

By default, the asset will search forwards and connect to the first level crossing it sees.  You can however choose to connect to up to 3 crossings in either direction. For now leave all these settings as they are.

You will see a crossing icon and the asset name of the crossing displayed.  If this does not show, there is a problem.  You may be using an incompatible crossing.

That completes Controller/Slave set-up for fixed crossings.  Go to ATLS Trigger.

## Option 2 – Custom Crossings

Custom crossings use separate assets to form a truly flexible level or grade crossing. These separate assets will require the use of an ATLS 'Slave'  This asset receives signals from the Controller on the same Channel to duplicate ATLS activation.

A basic Custom Crossing may use a fixed un-gated mocrossing like this Yarnish one shown here.
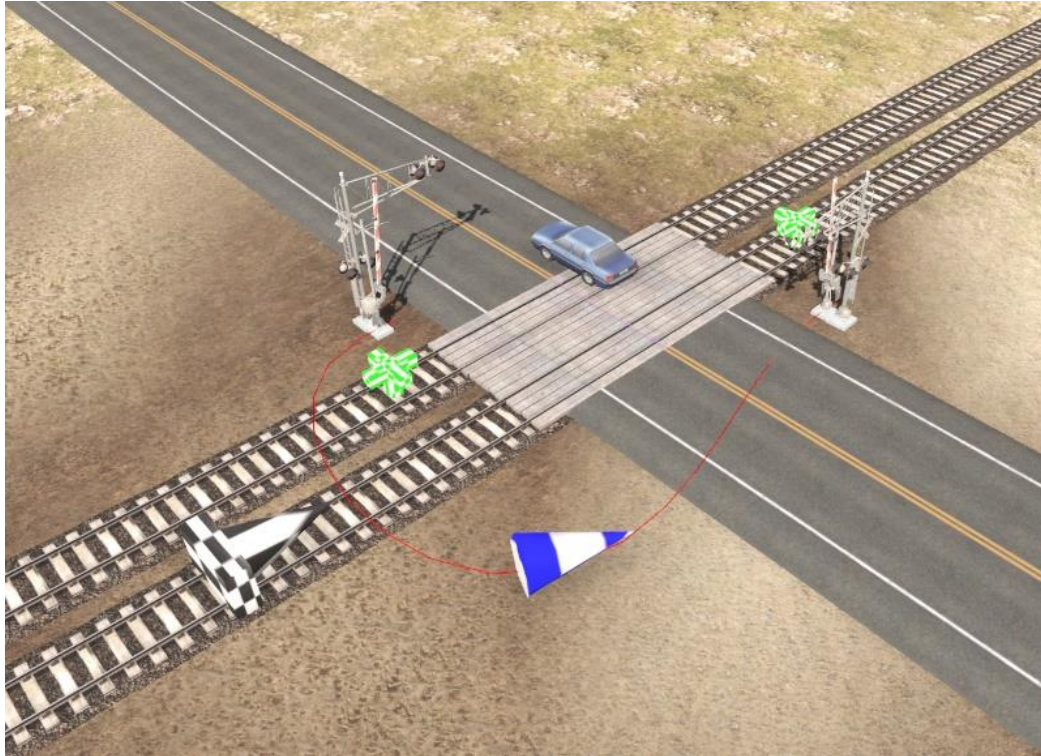


In this case, a Controller/Slave will connect with the mocrossing and a Slave Trigger is used to operate the NRC barriers.  Note the 7 second 'clear' delay on the Controller/Slave to allow the NRC barriers to rise before releasing the traffic.
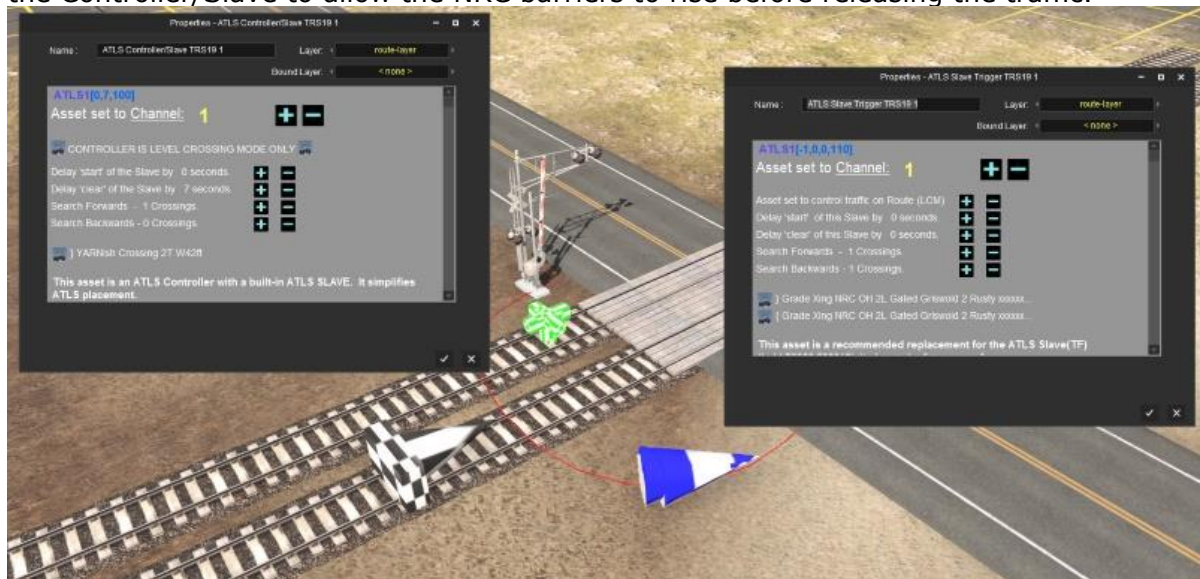


Note also that we are searching both forwards and backwards in the Slave Trigger.  The Slave Trigger is sitting on a section of invisible track, (red) which is connected between the two barriers.  See more on the Slave Trigger later.

This is a more complex custom crossing. Here the road is not connected to the live track at all but uses a 12 meter Traffic Stopper. The Controller/Slave is connected to the Stopper by a short piece of invisible track, (red).
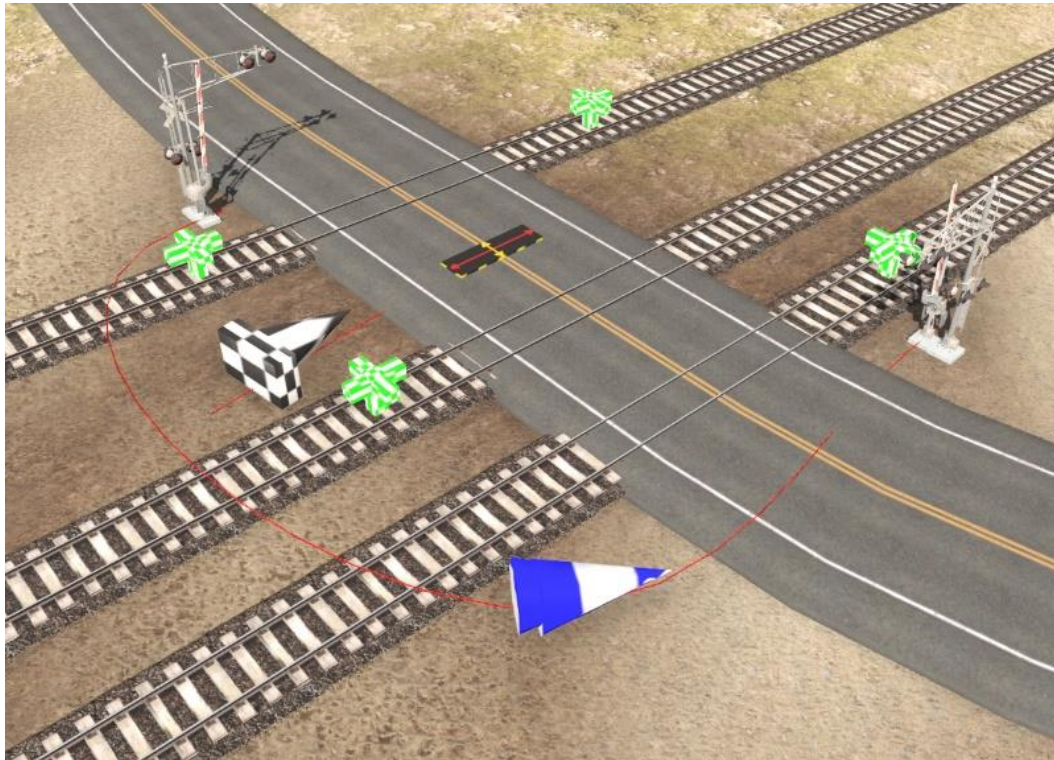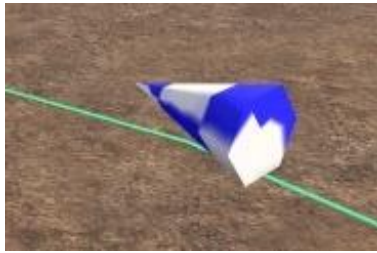


As before the Controller/Slave has a 7 second clear delay to allow the barriers to rise. Also, the Slave Trigger searches forwards and backwards '1' crossing to connect to the 2 barriers.
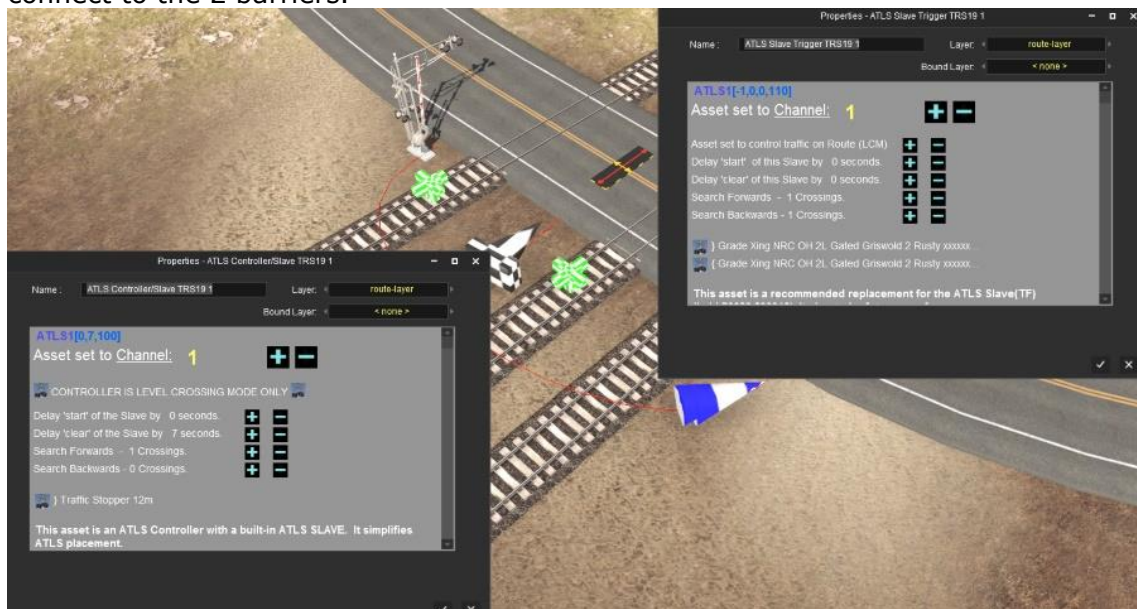


You can make your crossings as complex as you wish. The original Controller may also be used in LCM mode. Experiment!

## The ATLS SLAVE-TRIGGER  Appears in Tracks/trackside in Surveyor



This asset replaces the old Traffic Slave(TF).  Its function is much the same but it should be used in preference to the old asset since it does not produce an invisible train! (This is a good thing!)

Connect a section of any invisible track to the ATLS asset you want to control and place the Slave Trigger on that track, pointing towards the asset.  It can also be placed on live train track.
The Slave Trigger set-up is similar to the Controller/Slave but it does not calculate train movement.  It merely echoes the instructions sent from its associated Controller/Slave on the same channel.



By default the Slave will search forwards to the first crossing it sees.  But you can control up to 6 in-line crossing assets.  All will respond at the same time.  They must all be within 100 meters of track distance.
If you do not see your crossing displayed as above, it may be incompatible.

The asset defaults to LCM mode but you can change it to a Route number for specialist use if you wish.

## The ATLS TRIGGER   Appears in Tracks/trackside in Surveyor



This Trigger is a specialized version of the green Auran Trigger. It may be called a 'Tram Trigger'.  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.

Trigger placing may seem complicated but most functions are optional.  Basically you just need a Trigger on the approach to the crossing, far away.  Plus, another Trigger just after the crossing to clear the train.  Open the Properties Dialogue box (?) and select the Channel you are using for the crossing.  That's it!

### More Detail on the Trigger.
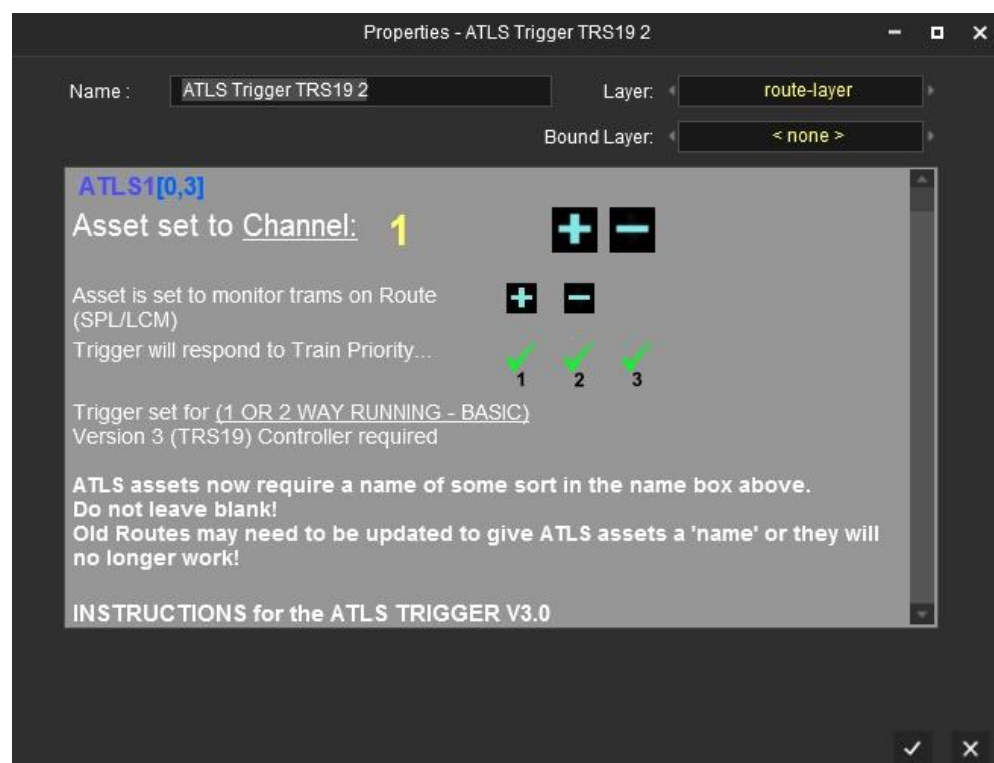


### Route Selection
By default, the ATLS Trigger will monitor trams (trains) on Route SPL/LCM.  This is correct when using the system to control a level crossing so just leave it.  The other Route options are for the advanced Signal Guard mode.  See the full ATLS Tutorial for more information.

### Train Priority
Trainz trains have a switchable 'Priority'.  A better word would be category!  This can be switched in Surveyor on each train. By default the ATLS Trigger responds to all 'Priorities'.  However if you want to make a train invisible to a particular Trigger, you can select that by clicking the 'ticks'.  Useful if you have a train that crosses a trigger but is not heading for the crossing.

The Trigger can be set for 3 working options. They can be accessed by clicking through the underlined option.

**1 or 2 Way Running – Basic 2 Trigger System**
This is the default method which allows 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. i.e; Far enough away so the crossing has time to close to traffic before the train arrives and immediately after the crossing so it will quickly open.
Check the Trigger is set to SPL/LCM, (default) and set its Channel to the one chosen for this crossing. That's it!

**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.
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 all the Triggers 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.

**Arriving & Leaving**
Obsolete method. Do not use.

The 2 Way Running – 4 Trigger system works like this.
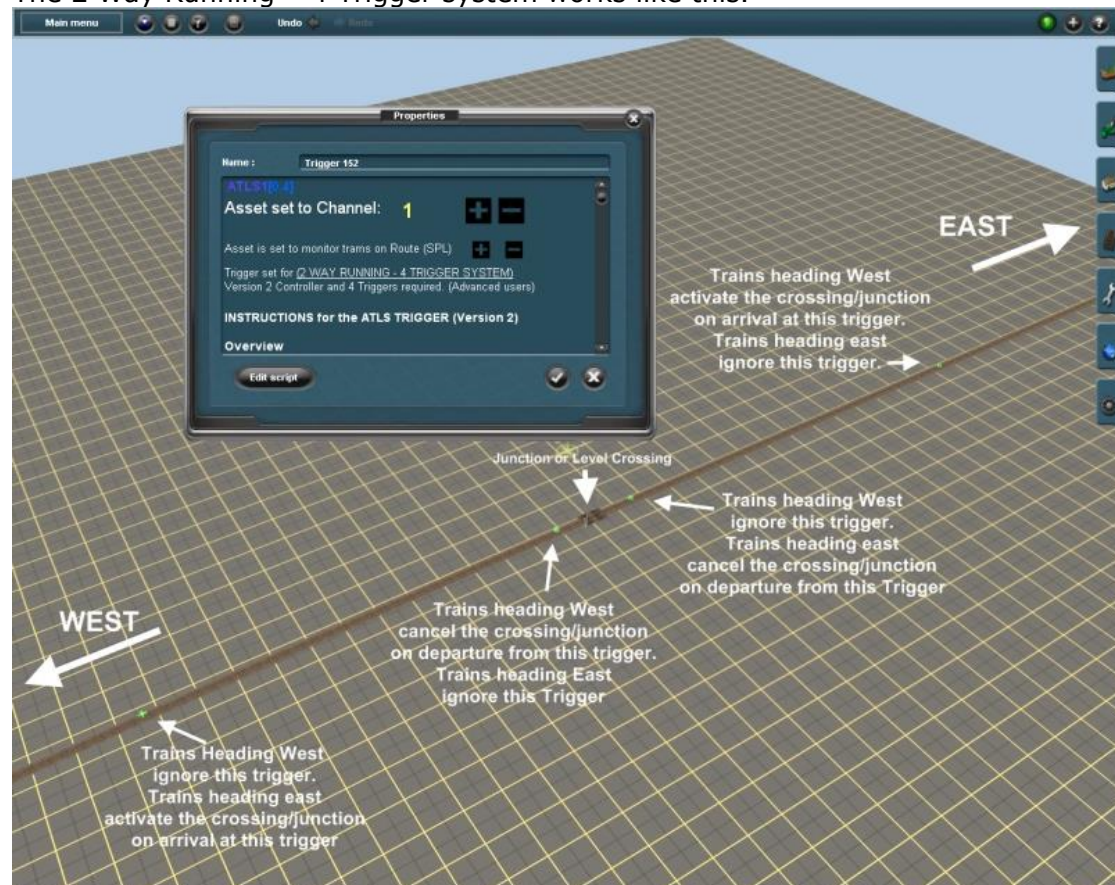
**NOTE**

There must not be any trains placed between Triggers and their crossing at new session start-up  Ensure all trains approach a crossing/junction from afar when the session begins or the Triggers will have an identity crisis.  They won't know whether the train is coming or going – literally!

**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 <u>INSTEAD</u> of a similar Trigger.  If you use a Driver Command then you must count it as a Trigger when adding up to '2' or '4', if necessary removing an already placed Trigger from your map.

New – ATLS Re-Set Command.  Place in the Driver Schedule of any train to 'zero' ATLS.  Use if the system gets out of sync.  It shouldn't!

## <u>The ATLS TRAFFIC-STOPPER</u> Appears in Objects/ObjectsO in Surveyor
(There are other options available on the DLS)
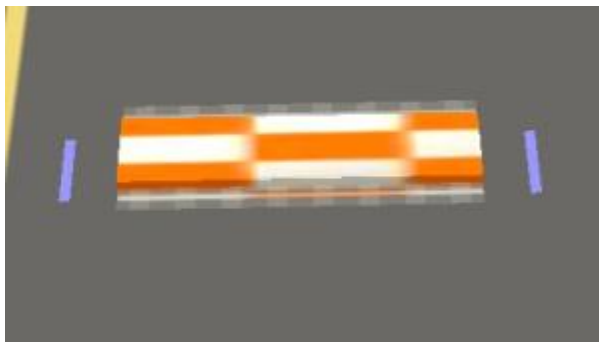


This asset is intended for use in custom level crossings.  When cut-in to a roadway and 'energised' by a Slave, the 'Traffic Stopper' will stop traffic entering a custom level crossing area.  It is obviously not needed if you are using a fixed MoCrossing as that asset will do this job.

The problem with the Stopper is that traffic can get stuck on the wrong side of it.  A solution to this is a long traffic stopper which straddles the entire crossing or junction.

Search 'Stopper' on the DLS.  There are several versions available by various authors.  Always use the latest version!

## ATLS CORRECTOR   Appears in Tracks/trackside in Surveyor



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 ensure that no trains or trams are in-between Triggers at Session start-up because trains/trams hitting Triggers in the wrong order will get stuck.  This does not apply however if you use this ATLS Corrector trigger!
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!
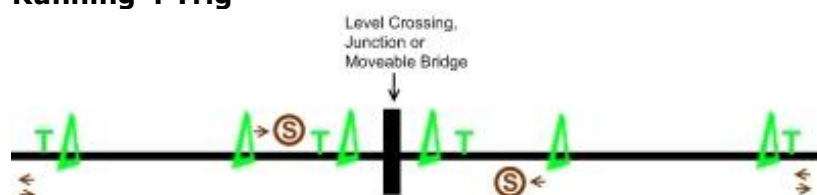
### Basic Twin Track Set-Up
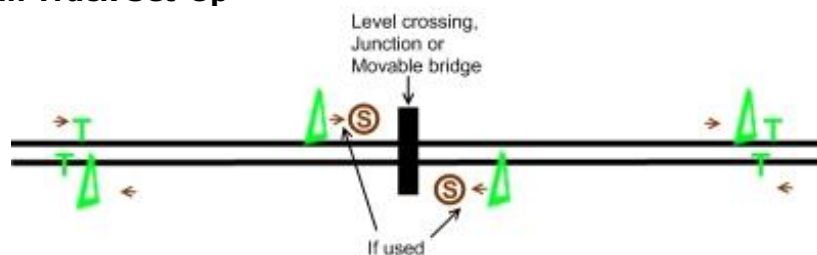


### Two Way Running 2 Trig
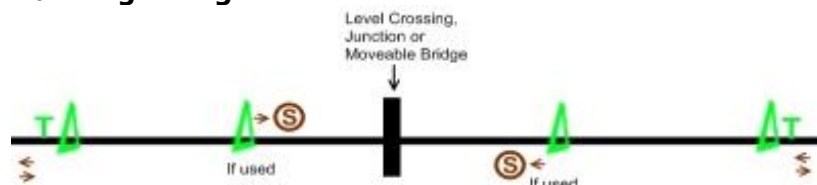


### Two Way Running 4 Trig

## SAVING TO THE MAP/ROUTE (if required)

ATLS assets MUST have a name of some sort in the 'name' box or they will not work. You can use the name box to store all the settings you make to ATLS assets. If you do this at Route Level, it makes them portable between Sessions!

All the settings you make in the ATLS asset will be saved to a Soup so if you are running a Session that's all you need to do. You can leave the asset with its default name.
If you want to save the settings you have made to Route in addition to the Session, then this may be done by saving the name of the asset using special 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]' in blue.
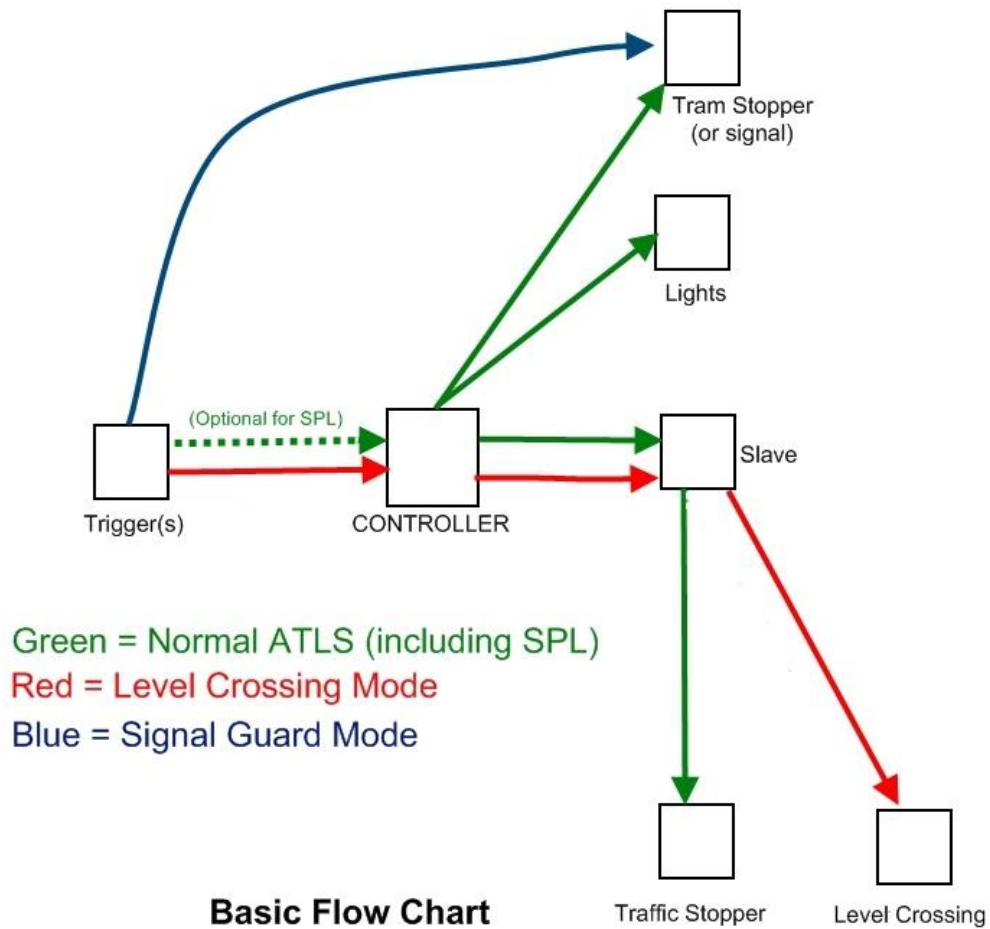
This is an encoded representation of all the settings you have made to the asset. If you save the *name* of this asset EXACTLY as shown, the settings will be retained and recovered when you re-load the map, (route).

**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. Each name MUST be unique.

If you want to change the 'saved name' or delete it you will probably have to open and close the Proerties Dialogue box a few times for it to take effect.

(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.)

**Basic Flow Chart**

Green = Normal ATLS (including SPL)
Red = Level Crossing Mode
Blue = Signal Guard Mode