

Routing Through Staging and Connecting Trains.

By Joe Brann with Jim Moir

What is “routing through staging on connecting trains”?

Staging, in ProTrak, is considered to model the rest of the world, the un-modeled portion of the railroad network. Upon arrival in staging, a loaded car is unloaded and becomes empty; these cars, as well as any cars that arrived empty in staging, can be reloaded for the next operating session.

Between operating sessions, the cars that arrive on a train that terminates in staging are swapped over to the corresponding train that leaves staging in the next operating session. These inbound and outbound trains in ProTrak are called “connecting” trains. Connecting trains are always a pair of trains, with the exception of the “/” train job¹ which may be its own connecting train. The connecting train function is the method by which the equipment, i.e. the cars, locomotive and caboose, that arrived in staging later leave staging.

By program design, ProTrak explicitly does not allow routing through connecting trains in staging. With connecting trains ProTrak considers staging the **final terminal** of the inbound train, and not an intermediate terminal. A “routing through staging on connecting trains” would occur when the only possible route, from shipper to consignee, would be through connecting trains in staging. An example of this routing through staging would occur when a train leaves a yard, travels into staging, exits staging as the connecting train, and then serves a local customer that could only be served by a train outbound from staging.

By program design a car cannot be routed so as to enter staging loaded and exit staging with the same load (i.e. with the same waybill).

Allowable routing traffic though staging

ProTrak does allow several forms of routing of cars through staging that may or may not involve connecting trains.

As mentioned above, loaded cars arriving in staging are unloaded and emptied. Those cars have arrived at their ultimate / final destination. These emptied cars are now available to be assigned another waybill with a new destination, or routing. Any empty cars that arrived in staging would also now be available to be assigned a waybill.

The essential feature of an allowable “routing through staging” is that the destination of a car will change in staging. The destination may change as a result of the waybill changing (unloading one waybill then perhaps assigning another waybill) or the loaded

¹ A “/” train job is one which has two different symbols on either side of the “/”, e.g. 525/528 each of which represents a train. However to the program the “/” train is a single “train” in that the equipment that went into staging comes out of staging still assigned to the same “train”. In that sense a “/” train job is its own connecting train.

status changing (the assigned waybill changes from “empty for load” to “load”, which changes the destination from waybill shipper to waybill consignee).

For example, a shipper may be in the un-modeled portion of the country (e.g. in staging) and ProTrak may send an empty car from the visible, modeled railroad to staging where that car is loaded at the shipper, and returned to the consignee on the visible modeled railroad.

Likewise, a shipper located on the visible modeled railroad may receive an empty car that is loaded at the on-line shipper. The loaded car then moves to staging where it reaches its ultimate destination. It is then unloaded and becomes an empty car that is available to be assigned another waybill.

As well, a car in overhead traffic may enter staging loaded, and later exit staging on a connecting train loaded but with a different waybill (load).

Turns, Routing and Staging

A special case occurs with a turn train job whose turning point is in staging. A turn is a train that usually originates at a yard, travels to an outbound point, and then returns to the yard from which it originated. What defines a turn is that the first and last reporting locations (siding-numbers) are the same².

If the turning point of the train is a staging track (called an intermediate staging track), on reporting the turn at the intermediate staging track all cars are loaded and unloaded. If the turning point is a Yd (yard), “y” track, or an interchange track then the cars will not be unloaded/loaded and no special routing occurs.

ProTrak, automatically, does some special handling of cars picked up by a turn, before an intermediate-staging turning point, to avoid routing the cars through staging and having them unloaded/loaded. No cars are routed through staging; rather cars not destined to the turning point staging track are setoff before staging, and may be routed back on the return leg of the job. For example, suppose a train is routed from A to B to C to D (which is actually a staging track), then back to C, B and then to A. Suppose there are cars at B routed to A. The train will pick up those cars at B, take them to C where they will be set off. On the return leg of the job, the cars just set off at C, will be picked up at C and carried to A. The cars will not be carried through to the staging track at D; there will be no cars routed through staging.

Customers fully defined within Staging

The design of the model railroad may assume that staging includes some portion of the railroad that is fully defined, but is just not physically (actually) modeled. For example, ProTrak allows for customers in staging that are as fully defined as the usual visible customers, and with the usual car-orders. Empty or loaded cars will be routed into

² A special case of turn uses the “/” train job designation. A job with a “/” in the job symbol, for example “525/528”, changes its symbol at the turning point, in this example from 525 to 528. The advantage of the “/” type of job, over using two separate jobs, is that the “/” format uses only one position in the train line-up.

staging to such a customer. Such cars will be either unloaded or loaded at the customer.

Routing through a yard in staging – a better idea!

Alternatively the design of the model railroad, while it may not have explicitly defined customers in staging, may have switching trains that work on and off the modeled portion of the railroad (i.e. into and out of staging). This special routing also is allowable and is done by creating yards within a staging zone.

The staging zone³ is the station where the terminal staging track for the inbound train is located. Recall that switching trains typically work yard-to-yard, so this technique is simply providing the “missing” yard, which is in staging.

In order to accommodate the delivery of car(s) to the local customer by a train outbound from staging, i.e. to route through staging in ProTrak, a separate and unique logical reporting point, a Yd (yard), “y” track or interchange track within the staging zone needs to be created. This logical reporting point must be listed in the train yard blocking or reporting points. For the inbound (to staging) train this logical reporting point must be listed immediately before the terminal staging track for the inbound train. For the outbound (from staging) train this logical reporting point must be the second reporting point, the first reporting point being the originating staging track. In addition, to prevent cars being inadvertently exchanged to other trains, the in-staging logical reporting points must be **unique for each pair of connecting trains**.

It does not matter whether this logical reporting point is a Yd (yard), a “y” track or an interchange track. A Yd (yard) has an infinite capacity, whereas a “y” track and an interchange track each have specified capacities. Because a staging track also has a limited capacity it makes sense to make this in-staging logical reporting point a “y” track⁴.

A “y” track reporting point consists of zone, a track number and the suffix “y”. Any track number can be used, but the “y” track number must be unique for each pair of connecting trains. If several pairs of connecting trains use the same station, with a common zone part of the siding-number, then track numbers must be unique for each pair of connecting trains. Therefore, to avoid confusion, you should avoid using “02” as the track number.

The purpose of this logical “y” track is to provide a reporting point where the inbound and outbound “connecting” trains can “exchange” cars, thus presenting the appearance of

³ A siding-number consists of three parts, the zone, a track number and perhaps a specific spot location. For routing ProTrak uses the zone portion of the siding-number. The word “zone” here refers to the zone portion of the siding-number.

⁴ However, if you want to play it really safe, use a Yd (yard). All trains that call at any one Yd (yard), “y” track or interchange track can, and will, exchange cars if the routing suggests it. In that sense there is no advantage to using a “y” track for this logical reporting point yard. By using a Yd (yard), you eliminate any possible issue with capacity problems. However if the “y” track is given twice the capacity (length) of the staging track, then potential capacity issues also will be avoided.

“routing through staging”. This “exchange “of cars, without any unloading and then loading, occurs in the same way and with the same timing as it would occur at any other Yd (yard) or “y” track.

The sequence of car / train movements could be as follows:

1. Outbound train leaves staging and arrives at an on-line yard – Session X.
2. Inbound train leaves the on-line yard headed for staging – Session X,
3. Train is reported at the new logical “y” track reporting point – Session X, and cars to be routed outbound are “setoff” at the logical “y” track; classified and routed as pickups for the outbound train. Each car is located at the logical “y” track;
4. Train terminates the run on a staging yard track – Session X, with remaining cars routed to staging destination;
5. Cars routed to staging destination are swapped to the outbound “connecting” train during the Daily Summary processing,
6. Outbound train departs staging and is reported at the new logical “y” track reporting point – Session X+1, where cars, setoff in #3 above, are “picked up”;
7. Cars are delivered to the local customer by the outbound train – Session X+1

Alternatively if the inbound-to-staging train is run before the outbound-from-staging train runs, the cars will be set off at the logical “y” track and will be picked by the outbound train and delivered in the same session. The switchlist for the outbound from staging train, when it is reported at the new logical routing-through-staging point will contain the cars that were shown on the switchlist for the inbound to staging train from the PRIOR session when the switchlist for that train was printed when the train left the yard at the start of its run.

How to detect “routing through staging on connecting trains”

a) From debugging operations session results

If you were unaware of the “routing through staging” concept, had planned on having some customers served by an outbound-from-staging train, and thus had not created the logical routing-through-staging reporting point then the symptom that you are actually “routing through staging” will be a large number of “Waybilled cars that could not be delivered” with Reason = “No ConXns” for the customer SPOTs served by the outbound train. The list of “Waybilled cars that could not be delivered” is a print option on the second window during the Daily Summary processing.

Example from Joe Brann’s Susquehanna Valley Line (SVL) railroad.

- Train #42 is an Inbound-to-staging train that departs from Riverside Yard (RVS-Yd), and terminates in staging on a track representing St. Louis.
- Train #41 is an Outbound-from-staging “connecting train” that originates on the St. Louis staging track, serves two customers along the route, and terminates at RVS-Yd.
- Logical routing-through-staging “y” track reporting point for this pair of connecting trains is EN-41y. (The staging yard for the SVL is at Enola, PA.)
- The yard blocking (i.e. reporting points) for train #42 are
 - o RVS-Yd

- EN-41y
- STL1s
- The yard blocking for train #41 are
 - STL1s
 - EN-41y
 - RVS-Yd

The switchlist for train #41 when train #41 is reported at EN-41y will contain the cars shown on the switchlist for train #42 when train #42 was reported at RVS-Yd during the **prior** session.

Similarly for connecting train pair #26 and #45 which use the Pittsburgh staging track, and the logical routing-through-staging “y” track reporting point named EN-45y, the yard blocking for train #26 would be:

- RVS-Yd
- EN-45y
- PITT1s
- The yard blocking for train #45 would be
 - PITT1s
 - EN-45y
 - RVS-Yd

b) Planning traffic

i) As noted above, a sure fire way to set up “routing through staging on connecting trains” is to set up a switching train that works only outbound from staging.

Although allowed and supported, this form of traffic will require the use of a yard within the staging zone. Local service (switching) trains typically work yard-to-yard so this technique is simply providing the “missing” yard, which is in staging.

ii) A second way is to physically have a customer as a facing point switch, with the switch facing staging, and no yard or runaround between the customer and the staging area. Regardless, the customer will have to be served from, or through, staging. As above, a service yard will have to be established within staging.