

The purpose of the Routing Matrix is to answer this QUESTION, **“If a car is here and it needs to go to there, where do I send it NEXT?”**

If two places are next to each other and connected by track, the answer is simple. Just send it directly there.

But two places are not always so close. As your track network gets more complex, you may find more and more places where can't get there from here (sometimes because the train the car is on is not authorized to go on the track to that place). As you create your Routing Matrix, you will answer the QUESTION from each place on your railroad to each other place. Using our example VIA names, here is what the initial work copy of our matrix would look like for that simple arrangement.

If a car is at	1 <sup>st</sup> destination (put it on a train to)	2 <sup>nd</sup> destination	3 <sup>rd</sup> destination	Final Destination (and it needs to go to)
OCEAN CITY	CENTER	>>=====>>>	>>=====>>>	CENTER
OCEAN CITY	SUNSET	>>primary route-->	>>primary route-->	SUNSET
OCEAN CITY	CENTER	SUNSET	>>alternate route->	SUNSET
OCEAN CITY	CENTER	HIGH	>>=====>>>	HIGH
CENTER	OCEAN CITY	>>=====>>>	>>=====>>>	OCEAN CITY
CENTER	SUNSET	>>=====>>>	>>=====>>>	SUNSET
CENTER	HIGH	>>=====>>>	>>=====>>>	HIGH
SUNSET	CENTER	>>=====>>>	>>=====>>>	CENTER
SUNSET	OCEAN CITY	>>primary route-->	>>primary route-->	OCEAN CITY
SUNSET	CENTER	OCEAN CITY	>>alternate route->	OCEAN CITY
SUNSET	CENTER	HIGH	>>=====>>>	HIGH
HIGH	OCEAN CITY	>>=====>>>	>>=====>>>	OCEAN CITY
HIGH	CENTER	>>=====>>>	>>=====>>>	CENTER
HIGH	SUNSET	>>=====>>>	>>=====>>>	SUNSET

As your railroad becomes more complex, you may need a 4<sup>th</sup> or 5<sup>th</sup> destination, especially to show all of your alternate routings.

Why do we want to put in all these intermediate destinations and alternate routes? Also, to help us understand our railroad. But primarily to make sure that we didn't forget anything. However, we don't need these extra work version columns in the final version of the matrix. Why not? Look at the entry for a car at OCEAN CITY that needs to go to HIGH. The matrix tells us to put it on a train to CENTER, its first destination from where it will then be sent to HIGH, its second destination. As HIGH is also its final destination, we need no entry in the third destination column.

But, now look at the entry for a car at CENTER that needs to go to HIGH. That entry shows us to put the car on a train to HIGH. Well, that is an identical “answer” to our routing question that we found by looking at the second destination column under the OCEAN CITY to HIGH entry. So, if we get the car to CENTER, we really no longer need to refer to the second destination on that row of the matrix, but instead, we can jump down to the CENTER entry and continue from there.

The same logic applies to alternate routings. Look at the entry for a car at OCEAN CITY that needs to go to SUNSET by its alternate routing. The matrix tells us to put it on a train it CENTER, its first destination from where it will then be sent to SUNSET, its second destination. But, now look at the entry for a car at CENTER that needs to go to SUNSET. That entry shows us to put the car on a train to SUNSET. Well, that is again an identical “answer” to our routing question that we found by looking at the second destination column under the OCEAN CITY to SUNSET entry. So, as before, if we get the car to CENTER, we really no longer need to refer to the second destination on that alternate routing row of the matrix, but instead, we can jump down to the CENTER entry and continue from there.

After making sure that you did not omit anything, you can now reformat your matrix and eliminate all but the first destination column. Let's also swap the order of the columns so that you can read the table as an English language sentence. Your matrix would then look like this.

If a car is at	and it needs to go to	put it on a train to
OCEAN CITY	CENTER	CENTER
OCEAN CITY	SUNSET	SUNSET
OCEAN CITY	HIGH	CENTER
CENTER	OCEAN CITY	OCEAN CITY
CENTER	SUNSET	SUNSET
CENTER	HIGH	HIGH
SUNSET	CENTER	CENTER
SUNSET	OCEAN CITY	OCEAN CITY
SUNSET	HIGH	CENTER
HIGH	OCEAN CITY	CENTER
HIGH	CENTER	CENTER
HIGH	SUNSET	CENTER

We can now further reformat this matrix into a summary form so that it looks like this.

If a car is at	and it needs to go to	put it on a train to
OCEAN CITY	CENTER HIGH	CENTER
	SUNSET	SUNSET
CENTER	OCEAN CITY	OCEAN CITY
	SUNSET	SUNSET
	HIGH	HIGH
SUNSET	CENTER HIGH	CENTER
	OCEAN CITY	OCEAN CITY
HIGH	OCEAN CITY CENTER SUNSET	CENTER

The same information is present, but it is consolidated. You can cut this matrix into four pieces, call each piece a Yard Classification Guide, and post one for reference at each VIA location. If you are staging at OCEAN CITY, then looking at the entries, you can build trains for CENTER using cars routed VIA either CENTER or HIGH (though, I would hope that you block the CENTER cars and the HIGH cars separately).

What happened to the alternate routings? Be aware that they exist in case you want to use them. I have omitted them here because most railroads won't need them, but if you want, you can make an additional summary matrix that includes alternate routings.