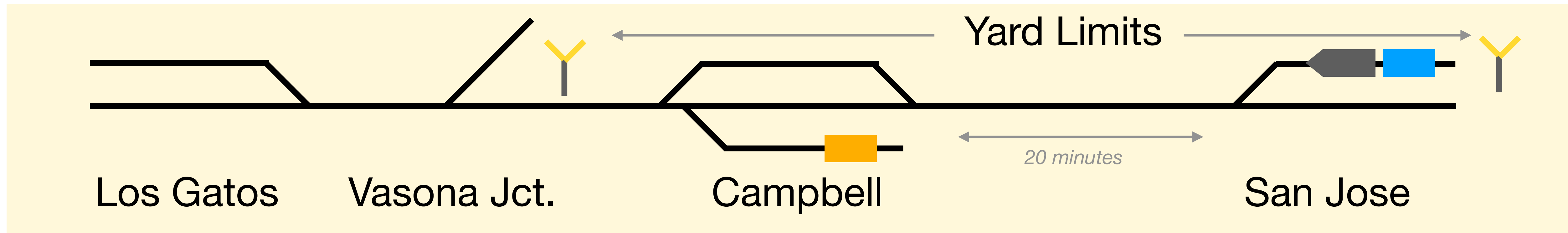




TT&TO Teaser: Can I Move?

Switching Campbell on the Vasona Branch



- * Yardmaster tells you to switch at Campbell
- * You need 20 minutes on main track at Campbell to drop off  and pick up 

You'll take 20 minutes to get to Campbell.

- * It's 8:40 am. When can you leave? When can you switch? Why?

What's TT&TO?

- Historic way to run trains with limited communication by giving defined set of constraints to all trains and letting crews work out what's possible.
- Not used now by real railroads, but used in model railroads to understand history and to make a fun challenge.
- Rulebooks (online and physical copies) show historic rules.
- Telegraph messages provided “train orders” for the specific constraints of the day.
- “19 East, Copy Three” (Sprau and King) describe their use on model railroads.

Timetable

	EASTWARD				Distance from San Francisco	Time Table No. 136 April 24, 1932 SAN JOSE-SANTA CRUZ BRANCHES		Distance from Santa Cruz	WESTWARD			
Capacity of sidings and spurs in car lengths	THIRD CLASS		FIRST CLASS			STATIONS			FIRST CLASS		THIRD CLASS	
		304	34 Redwood	168 Passenger					31 Passenger		303	
		Leave Daily	Leave Leave Daily	Leave SUNDAY and HOLIDAYS					Arrive Daily EX SUNDAY & HOLIDAYS		Arrive DAILY	
BKWYOITP		9:30AM	s 9:15AM	s10:30AM	45.7	TO-R SAN JOSE 1.1	33.5	5:30AM		7:20AM		
15					46.8	WEST SAN JOSE 0.2	32.4					
10					47.0	AUZERAIS ST. 0.6	32.2					
I					47.6	W.P.R.R. Crossing 2.1	31.6					
WP		9:45 AM	9:25AM	10:45AM	49.7	CAMPBELL 2.1	29.5	s5:15AM				
P					51.8	R VASONA JCT. 2.5	27.4					
10 P		10:00AM	s9:35 AM	s10:55AM	54.3	TO-R LOS GATOS 2.7	24.9	s5:00AM		7:00AM		
10					57.0	ALMA 4.3	22.2					
WP					61.3	WRIGHTS 3.5	17.9					
10 WP					64.8	GLENWOOD 12.4	14.4					
					79.2	TO-R SANTA CRUZ	0.0					
		Leave Daily	Leave Daily	Leave SUNDAY and HOLIDAYS				Arrive Daily EX SUNDAY & HOLIDAYS		Arrive DAILY		

Westward trains are superior to trains of the same class in opposite direction.

HOLIDAYS INDICATED ARE:
New Year's, Washington's Birthday, Decoration Day, Fourth of July, Labor Day, Thanksgiving Day, and Christmas

Yard Limits

- Operating in “yard limits” is good for model railroads.
 - More chances to move in congested environment.
 - Dispatcher doesn't need to get involved.

Puzzle rules

- Assume Southern Pacific rules.
- Timetable as provided.
- You are a yardman, working for the yardmaster at San Jose.
- Yard limits from San Jose to Vasona Junction.
- Pair up with neighbors to discuss answers.

Questions for audience

- As a yard switch crew, do you need permission to move?
- What trains do you need to avoid initially?
- Can you move immediately?
- What happens if train 34 hasn't arrived?
- What happens if train 32 hasn't arrived?
- What happens if train 304 hasn't arrived?
- Is there time to do the switching before 301 arrives?
- Do you need to be done by a specific time?

Question: Need permission to move?

- As a yardman, instructions from the yardmaster are sufficient to operate within yard limits. Generally, non-first class trains must travel at a speed where the train can stop for any obstacles.

93. Within yard limits the main track may be used, clearing first class trains when due to leave the last station where time is shown, but not less than five minutes. In the case of failure to clear the main track, protection must be given as prescribed by Rule 99.

YARD LIMIT: The territory between signs placed adjacent to main tracks to designate the points between which engines may operate on main track without train-order or timetable authority, and within which limits engines and certain trains are restricted in their movement on all tracks.

(Definition of yard limits from SP rulebook.)

... “but subject to the direction of a yardmaster.” (Definition of yard)

Question: Who do we need to avoid?

- **We definitely can't get in the way of the first class train, but we're allowed to flag down second class trains.**

93. Within yard limits the main track may be used without protecting against second and inferior class, extra trains, and engines.

When running against the current of traffic or on a portion of two or more tracks used as a single track, all trains and engines must move within yard limits at reduced speed.”

(1939 CCOR)

Question: can we move immediately?

- **First class train #34 leaves San Jose at 9:15 am, so we need to be clear of the San Jose-Campbell track before 9:10 am.**

93. Within yard limits the main track may be used, clearing first class trains when due to leave the last station where time is shown, but not less than five minutes. In the case of failure to clear the main track, protection must be given as prescribed by Rule 99.

99. When a train stops under circumstances in which it may be overtaken by another train, the flagman must go back immediately with flagman's signals a sufficient distance to insure full protection...

Any other reasons not to dash to Campbell?

- **Did any other trains on the timetable already arrive in Campbell? We should check the register at San Jose before leaving to confirm that train 31 has arrived.**

MOVEMENT OF TRAINS

82. Time-table schedules, unless fulfilled, are in effect for twelve hours after their time at each station.

- 83 A train must not leave its initial station on any division or subdivision or a junction or pass from one of two or more tracks to single track, until it has been ascertained whether all trains due, which are superior or of the same class, have arrived or left.

What happens if train 303 hasn't arrived?

- **They should be running at limited speed, but having a cornfield meet seems inappropriate...**
- **MOVEMENT OF TRAINS**
 - 82. Time-table schedules, unless fulfilled, are in effect for twelve hours after their time at each station.
 - 83 A train must not leave its initial station on any division or subdivision or a junction or pass from one of two or more tracks to single track, until it has been ascertained whether all trains due, which are superior or of the same class, have arrived or left.

Is there time to work before 304 arrives?

- Leave for Campbell immediately (if trains 301 and 31 have arrived), and arrive in time to clear tracks for 34.
- We would arrive at 9:00, and have 15 minutes to do any work before we would conflict with 34. Either do work before, or work after 9:25 once 34 passes through.
- We can work on the main after 9:25 and before 10:30 (train 168's departure, if Sunday or a holiday) and flag to block train 304.

Do we need to be done before a certain time?

- Timetable doesn't show any conflicting trains that are doing a meet at Campbell.
- What happens if second class train is running behind and needs siding at Campbell to meet another train?