

Creating an Operating Session

Personality, Interaction, Balance

Operations: Meaning and Myths

“Operation” includes:

- Purposeful movement of railcars and trains
- Simulation of some aspects of real railroading
- Fun and challenge

Operations: Meaning and Myths

“Operation” is not :

- Joyless and stressful
- A chance to make fun of the newbie
- Only for elitists
- Defined by standards besides your own
- Dictated by a single set of universal rules, requirements, and regimens
e.g., Fast Clock, TT&TO, etc., etc.

Elements of Operation

- Three keys to realism and fun
 - Personality
 - Interaction
 - Balance
- Functional components
 - Distribution
 - Transportation
 - Control & Communications
- Start simply, add challenge over time

Personality

- Trains
 - Consist and activity
- Signature industries / scenes
- Town character
- Unique operator roles
- Layout theme / concept
 - e.g., Class 1 vs. terminal vs. shortline

Interaction

- Between trains
 - e.g., local with through trains
- Beyond the layout
 - Interchange and competition
- Interplay of job roles

Balance

- Traffic with staging capacity
- Through vs. local
- Yard vs. road
- Mix of towns, trains, job roles
- Fun *and* challenge

Theme and Concept

- What story are you telling?
- How will the crew experience it?
Formality, sense of purpose, intensity
- Where is the focus?
e.g., over the road, terminal, locals?

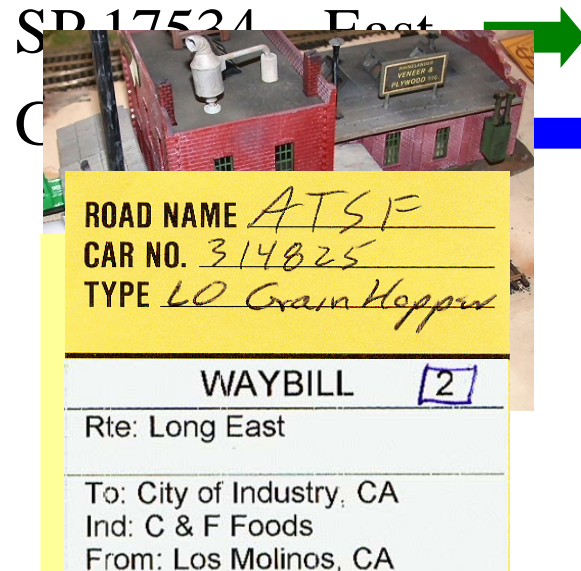
Though it is tempting, you can't have everything

Distribution (and Collection)

- Moving cars to- and from specific industries and spots
 - Major cost factor on the prototype
 - Major fun factor on the model
- Purposeful movement is more than “pick up two, set out two”
- Systems and tools generate this movement

Systems and Tools

- Simple rules
e.g., “Evens and Odds”
- On-car indicators
Tabs or tacks
- Sequence systems
Car card with check-off list
Car cards and waybills
- Switchlists
Manual
Automated
- Self-correcting?



Western Pacific RR						
SWITCH LIST						
6th St Job			Date Sep. 3, 1955			
	Initials	Car ID	Type	From	To	Track
1	SFRD	346	RS		Mayfair Fruit	Spot 32
2	DRGW	224	XM		Mayfair Whse	Spot 1
3	SN	625	XM		Mayfair Whse	Spot 3
4	ART	Yellow	RS	Mayfair	SP	
5	FGEX	Yellow	RS	Mayfair	SP	
6	UP	Brown	XM	Mayfair	SP	
7	SP&S	Brown	XM	Mayfair	William St	
8	GN	Red	XM	Canco	William St	

Transportation

- Moving trains of cars over-the-road from place to place
- Types of trains (many variations)
 - Locals -- deliver to-and-from industries
 - Through trains -- move between locations with fewer or no stops en route
 - Passenger trains --moving people with few or many stops en route
- Systems and tools to create and control train movement

Control and Communications

- Define in what order trains move
- Manage interaction (meets, passes, etc.)
- Prioritize traffic
- Means for crews and leader to communicate
- Orientation guides on and around layout
- Wide variety of systems and tools

Control / Communication

Not a status symbol

- “Holler and hope” / “Mother, may I?”
- Sequence Timetable
- Yard Limits everywhere
- Track Warrant (TWC) ★
- Direct Traffic Control (DTC)
- Timetable and Train Order (TT&TO)
- Centralized Traffic Control (CTC)

Start simply and quickly, add complexity

Track Warrants

4th District Track Warrant

No: 7 March 15; 19 73

To: Eastbound Pick-up At: Los Molinos

Mark "X" in box for each item instructed

1. Track warrant No. 6 is void
2. Proceed from Los Molinos to Orchard Yd Limits on S Main Track
3. Proceed from _____ to _____ on _____ Track
4. Work between _____ and _____ on _____ Track
5. Work between _____ and _____ on _____ Track
6. Hold _____ Main track at _____
7. Take siding at _____
8. Not in effect until after arrival of _____ at _____
9. This authority expires at _____ M
10. Other instructions Contact Chico Tower on yard channel at Orchard Yard Limits

OK 8:32 A M Dispatcher BBH

Reported clear at _____ M by _____

Form TW310771

Preparing the Layout

- Interim / temporary staging and connections
- Access and reach
 - Uncoupling, mishaps
- Reliability (**#1**)
 - “if they don’t run, it’s no fun”
- Orientation on the layout
 - Names, maps, signs
 - Crew instructions, blocking charts, etc.
- Places for paper and space to work

The Operator's Questions

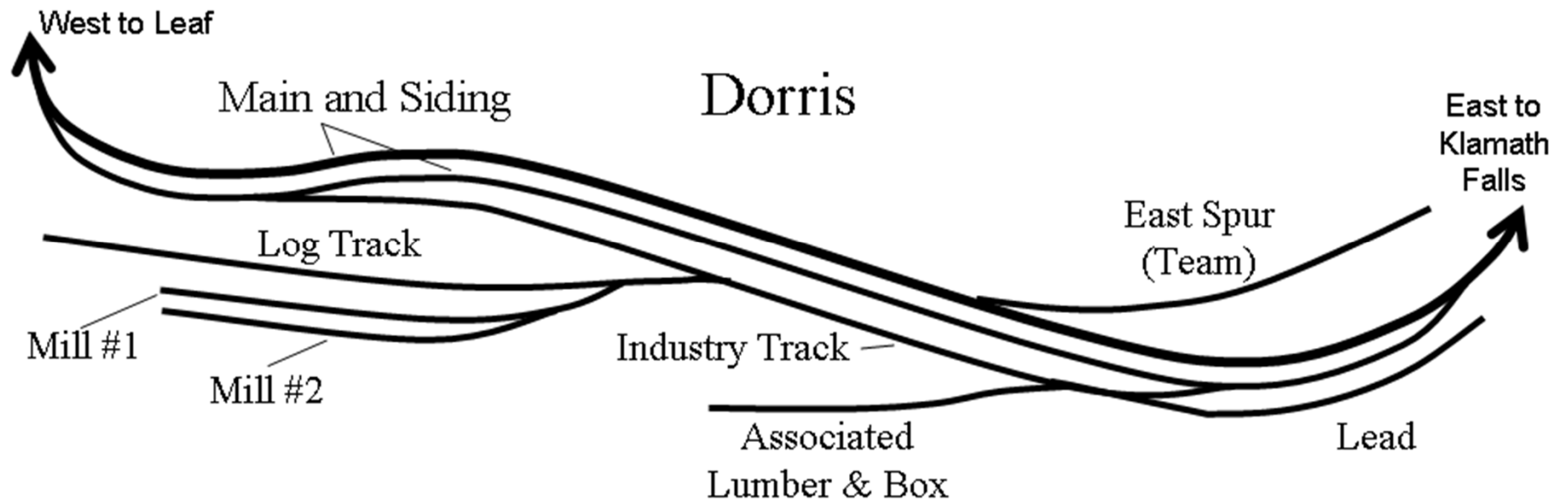
- Who am I?
- Where am I?
- What am I supposed to do?
- Where do I go next?
- Which way is East?

Answer these -- only where and when needed

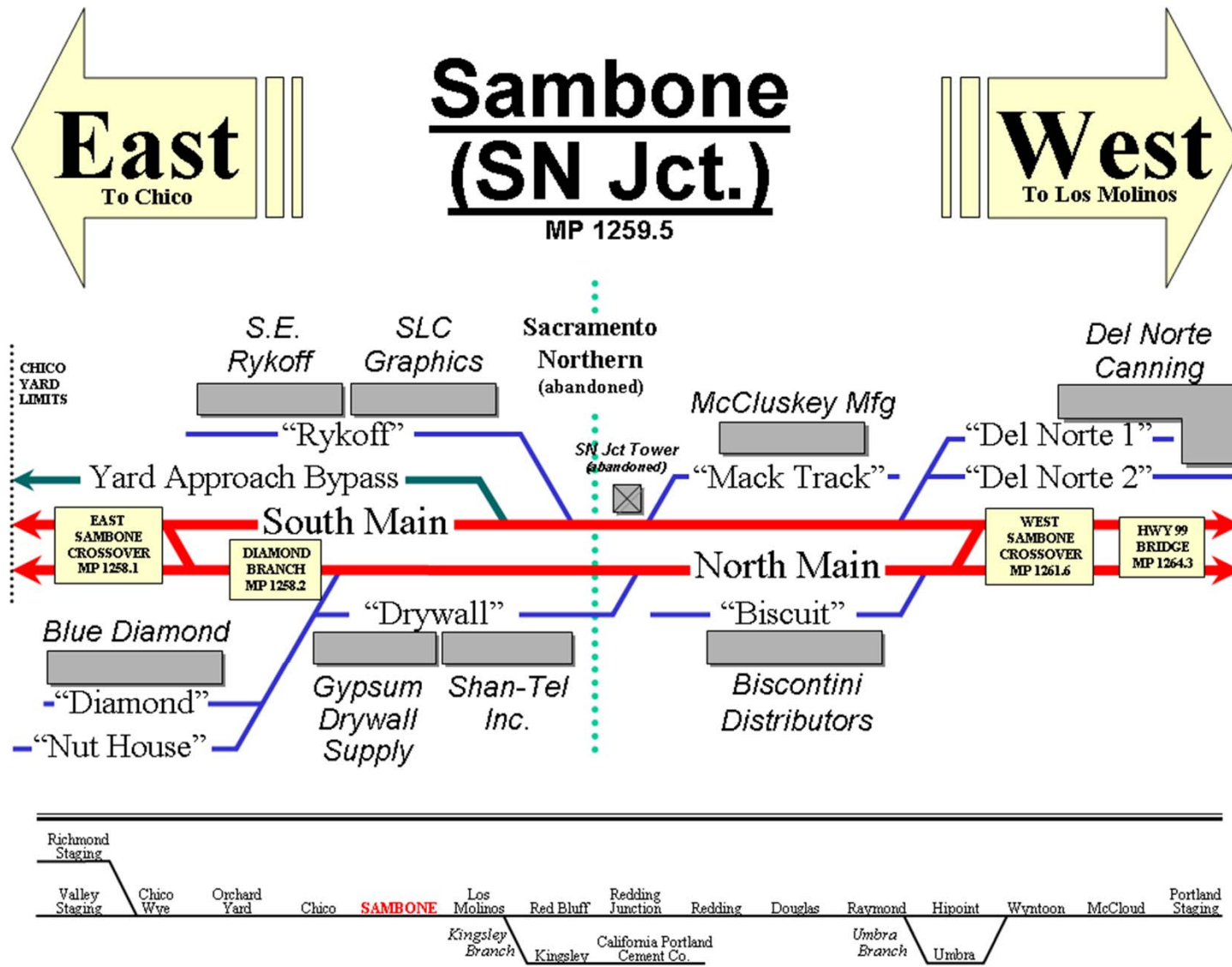
Orientation and Controls



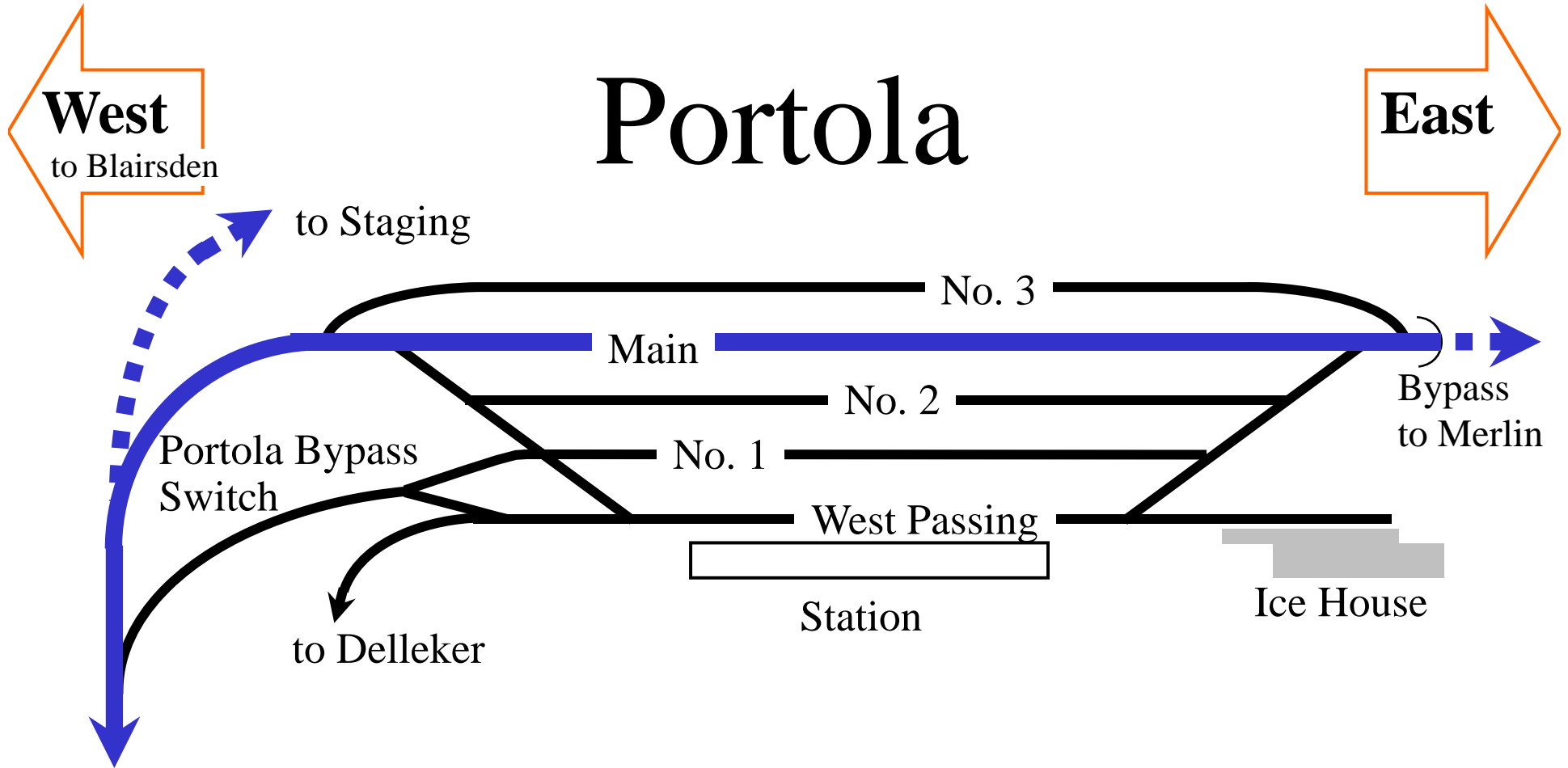
Maps and Guides



Maps and Guides

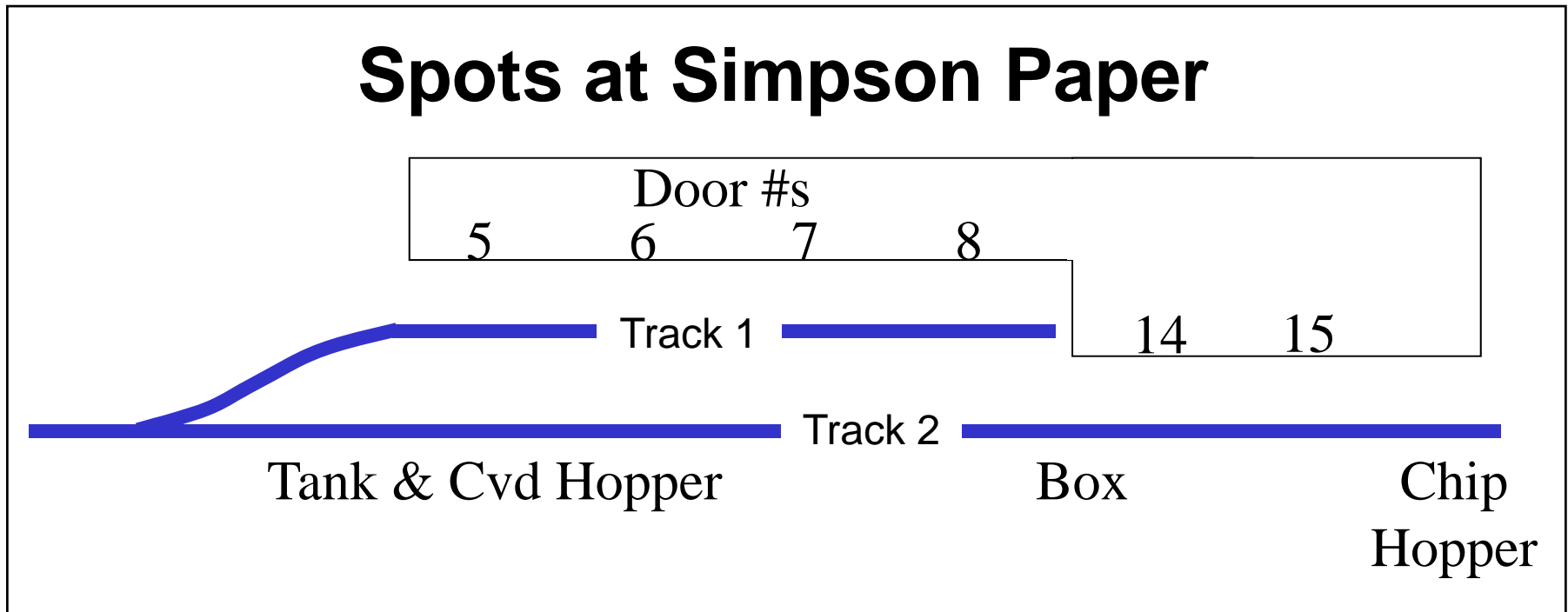


Maps and Guides



Spotting Guide

Spots at Simpson Paper



As Needed, Where Needed

VSC – Valley “Super C”

Train originates in Stockton/Valley staging

The Valley Super C represents an extension of the ATSF’s famous “Super C” expedited freight service. Hot freight from Midwest and Southern California markets is combined in Barstow for a fast run through Tehachapi, up the Central Valley, and across the visible portion of our layout, with destinations in the Pacific Northwest. Loads are exclusively trailer-on-flat-car.

A few hot cars bound for local (on-layout) destinations will be set out in Orchard yard and a few “hot” cars added. The VSC makes no other stops on the visible layout, terminating in McCloud staging.

Like the original Chicago-LA Super C, the VSC is the hottest train on the railroad and the Dispatcher will treat it accordingly.

Procedures

- Run west to Orchard Yard
- Local block (“no symbol” waybills) at the rear end of the train pulled by switcher
- “Hot block” added by yard job to rear of train

To maintain horsepower/tonnage rating, no more than twelve 90-foot cars permitted in consist departing Orchard Yard. Leave any additional cars for later westbounds.

- Run west to McCloud and tie up [All trains bound for McCloud must double-check length in Raymond, leave excess cars on Raymond industry lead]
- Go off duty—crew change

KGT – Kingsley Turn

Train originates in Orchard Yard, Chico

The Kingsley Turn works its namesake town, the “cement” side of the large Cal Port Plant, and the town of Red Bluff on main. The KGT is blocked so that it is easiest to work the California Portland Cement (Cal Port) plant west of Kingsley, then Kingsley itself, and finally Red Bluff, before returning to Orchard yard.

Procedures

- Check consist
- Obtain clearance (access to branch is from North Main in Los Molinos)
- Run west to Kingsley
- Pull outbound cars based on waybills (pick up *only* covered hoppers or boxcars from Cal Port [track 3], not open coal hoppers)
- Spot inbound cars based on waybills
- Make up train of all outbound traffic
- Back caboose-first to Los Molinos, obtain clearance for entering main and for run to Red Bluff
- Run WB to Red Bluff, work industry spur from siding, spotting inbounds and pulling outbounds
- Run around and reassemble train headed East
- Run engine-first EB to Orchard Yard, Chico
- Tie up train on A/D track as directed
- Go off duty

“Will Run” List

Will Run list v 3.3c (TT 57.1)

		Description	Power needs
1:00 P	TT	# 622 Redding East to Dunsmuir..	Valley power terminates
	EX	Grass Lake Turn departs Klamath Falls for <u>Dorris</u>	
1:15 P	TT	Daylight #10 Redding East to Dunsmuir	
	EX	Ex _____ West Klamath Falls West to Dunsmuir.	Mountain power terminates
2:06 P	TT	Daylight #10 departs Dunsmuir East for Klamath Falls. Helper runs to Grass Lake.	Helper for Daylight
2:25 P	TT	#328 passenger (Scoot) departs East for Weed. Turned on <u>wye</u> , backed into Weed staging to become #327.	
*	EX	Helper(s) return light West to Dunsmuir	Turn helper(s)
*	EX	When yard makes ready, Mt. Shasta Turn has Mountain power and caboose applied to depart Dunsmuir East	Mountain power for local
3:35 P	TT	Daylight #9 departs Klamath Falls West for Dunsmuir.	
3:50 P	TT	#327 passenger (Scoot) departs Weed West for Dunsmuir. Station Stop, terminates. Yard crew places consist in yard.	
5:00 P	TT	Daylight #9 departs Dunsmuir West for Redding.	
6:00 P	TT	#634 Dunsmuir East to Klamath Falls (Cascade line) line made ready, departs. Helper runs to Grass Lake.	Mountain power + helper
7:00 P	TT	#637 Departs Weed Westbound for Dunsmuir.	Mountain power terminates

“Yard” -- a Four-Letter Word?

- Yard productivity will often determine op session flow
- For early sessions, don't overload yard
- Chose car-routing scheme with yard in mind
 - Manual or automated switchlists sometimes a challenge
- Stage when you can, yard if you must

A Place for Yard Work



Yard Docs at Hand



Reset Realities

- Must be considered in designing session
- More personality and interaction usually means more reset work
- Issues
 - Staging configuration (space vs. flexibility)
 - Active (mole) vs. passive
 - Car-routing method
 - What about mistakes?

First Session Ideas

- Start with a few trains and an uncrowded layout (i.e., fewer than max # of cars)
- It won't be perfect the first time
- Bring in a group -- preferably with some experience
 - Orientation before
 - De-brief after (this info is gold)
- Make some decisions beforehand
 - Rerailing, notes for bad orders, etc.

More First Session Ideas

- Keep it light and fun
- Have a helper to “run interference”
 - Taking notes
 - Solving non-train problems (where’s the coffee?)
 - Fixing some basic electrical / equipment issues
- Stop the first session *early*, if it makes sense
 - When you have enough data
 - If everyone looks a little pooped (or you are!)
- Add new trains, jobs, procedures over time
- Try not to forget -- the journey *is* the reward

When You are Ready to Add ...

... more fun and challenge

- Personality
- Interaction
- Balance
- Sharpening Theme and Concept
- “Fine Scale” operations

Fine-Scale Ops Examples

- Based on prototype practices & situations
- Timing and sequence of moves
 - Shifts and access to private tracks
 - Perishables / icing
 - Intra-plant moves
 - Repair-in-place (RIP)
 - Weighing cars
 - Cleaning cars & testing ladings
- Seasonal and time-of-day variations

Fine-Scale Ops Examples

- “Sure spots”
 - Positioning cars to doors, spouts, dumps
 - Re-spots, off-spots
- Simulating crew roles
 - Positions on the ground
 - Uncoupling, throwing switches
- Cutting train for grade crossings
- Less time-focused

Engaging Op Sessions

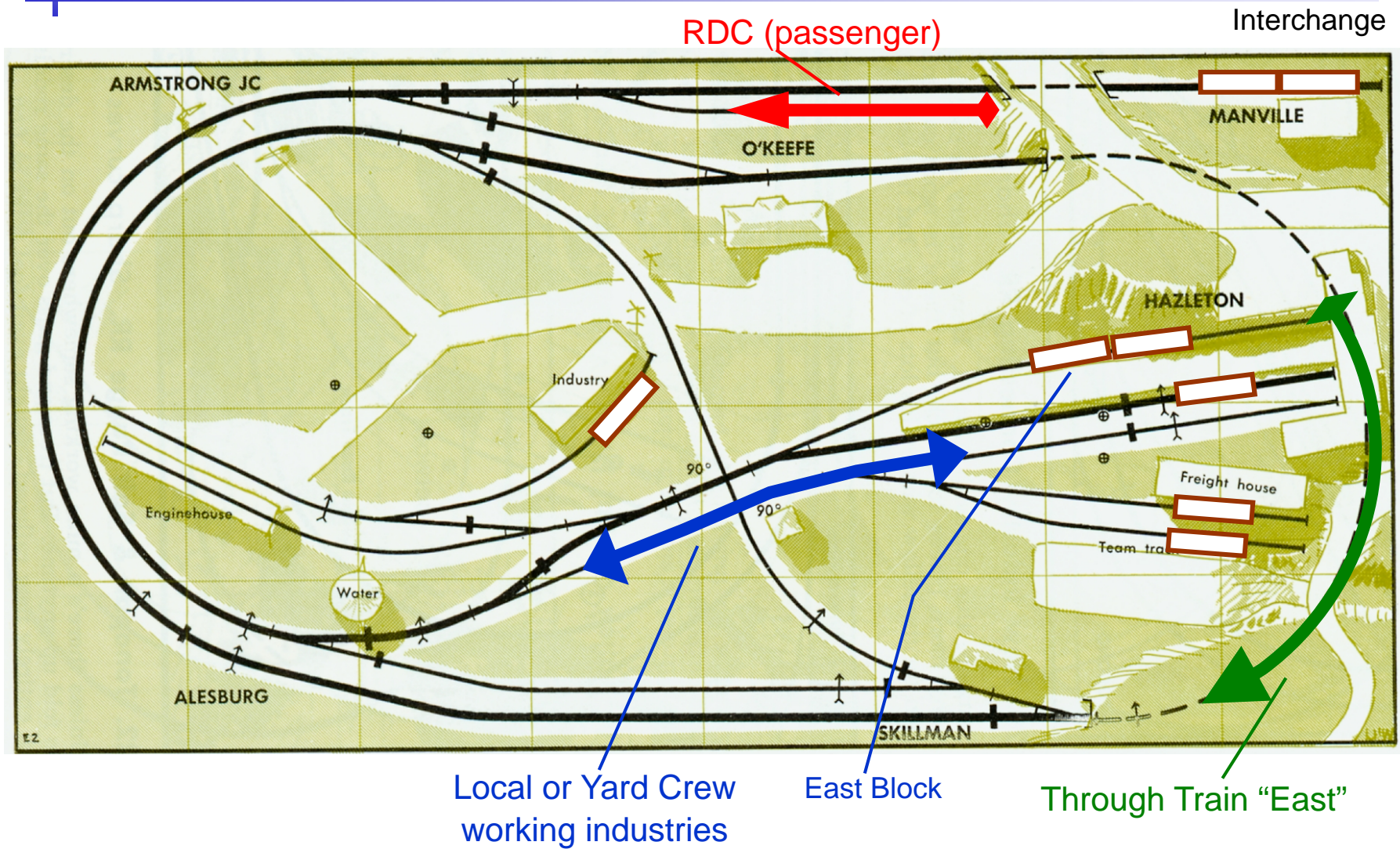
- Know the story you want to tell
- Think Personality, Interaction, Balance
- Pick a place to start
 - Prototype layouts -- timetables, etc.
 - Or pick trains for interaction, go from there
 - Starting* matters more than where you start
 - Begin simply, add challenge over time
- Operate early and often for feedback

For more info ...

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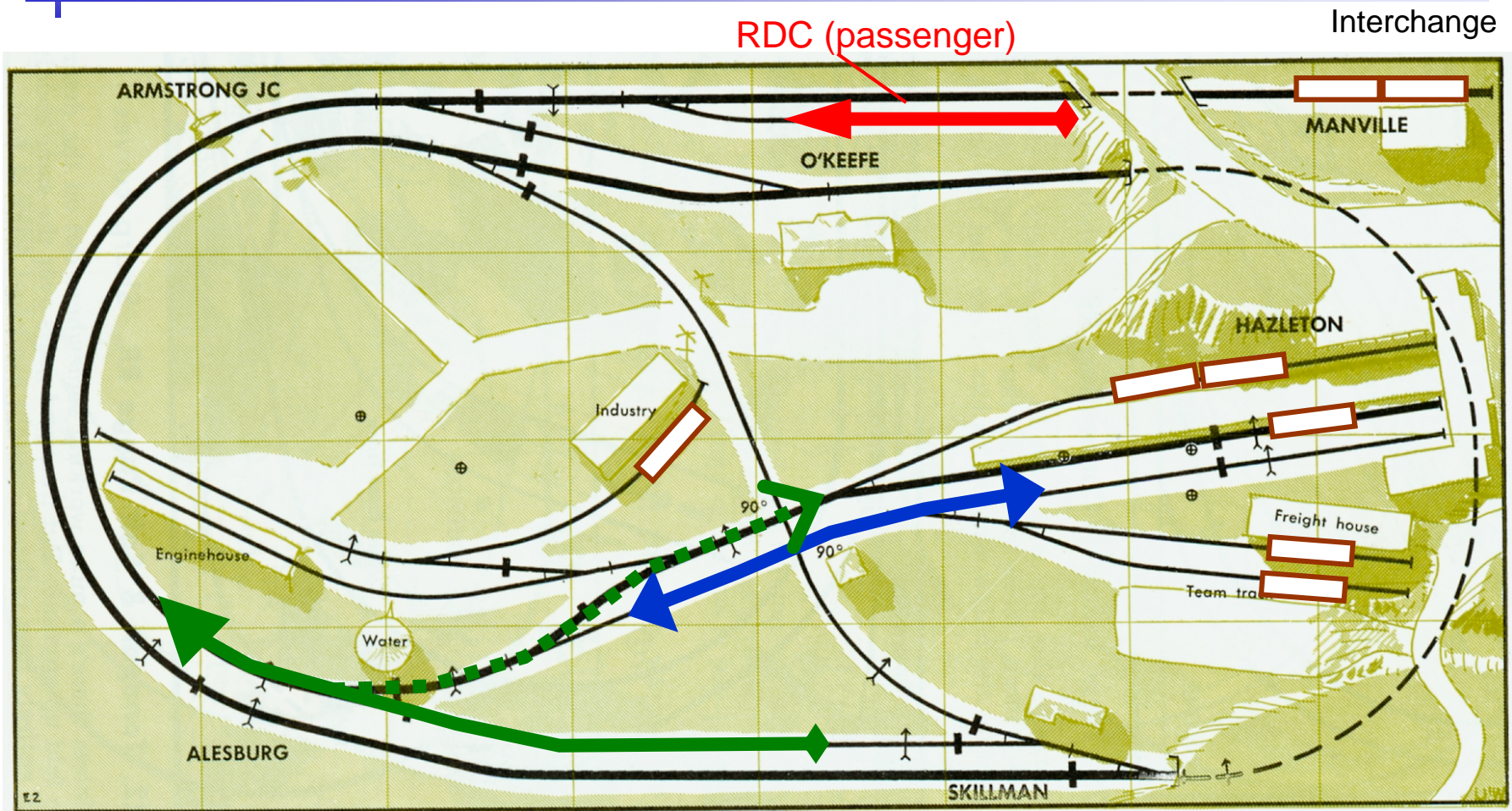
Extras

Ops on a 4X8 -- At Start



John Armstrong's Pennsylvania and Potomac; #26 from *101 Track Plans*

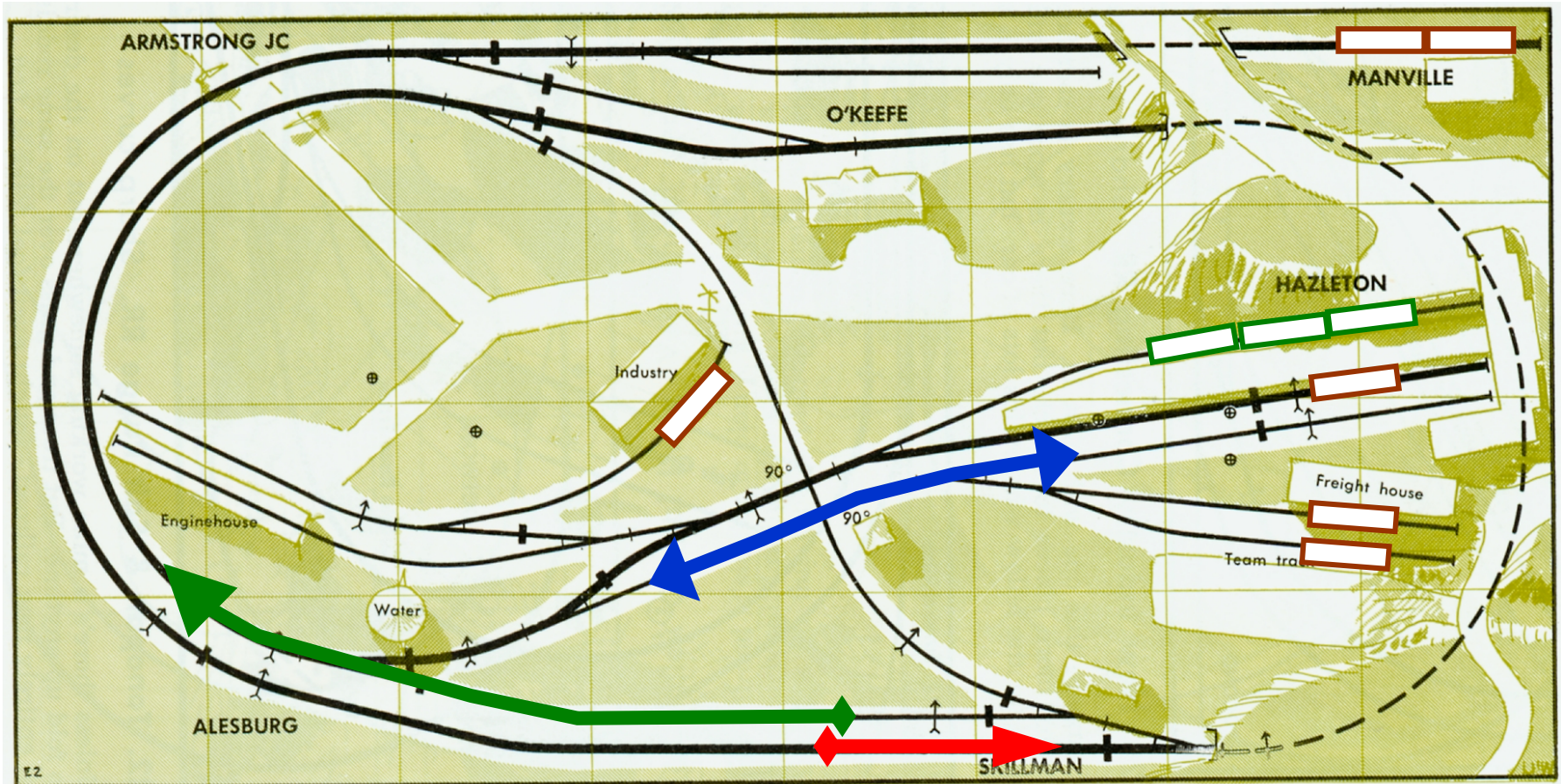
Through Train Arrives



Through train picks-up and sets-out cars for local

Passenger Meets Freight

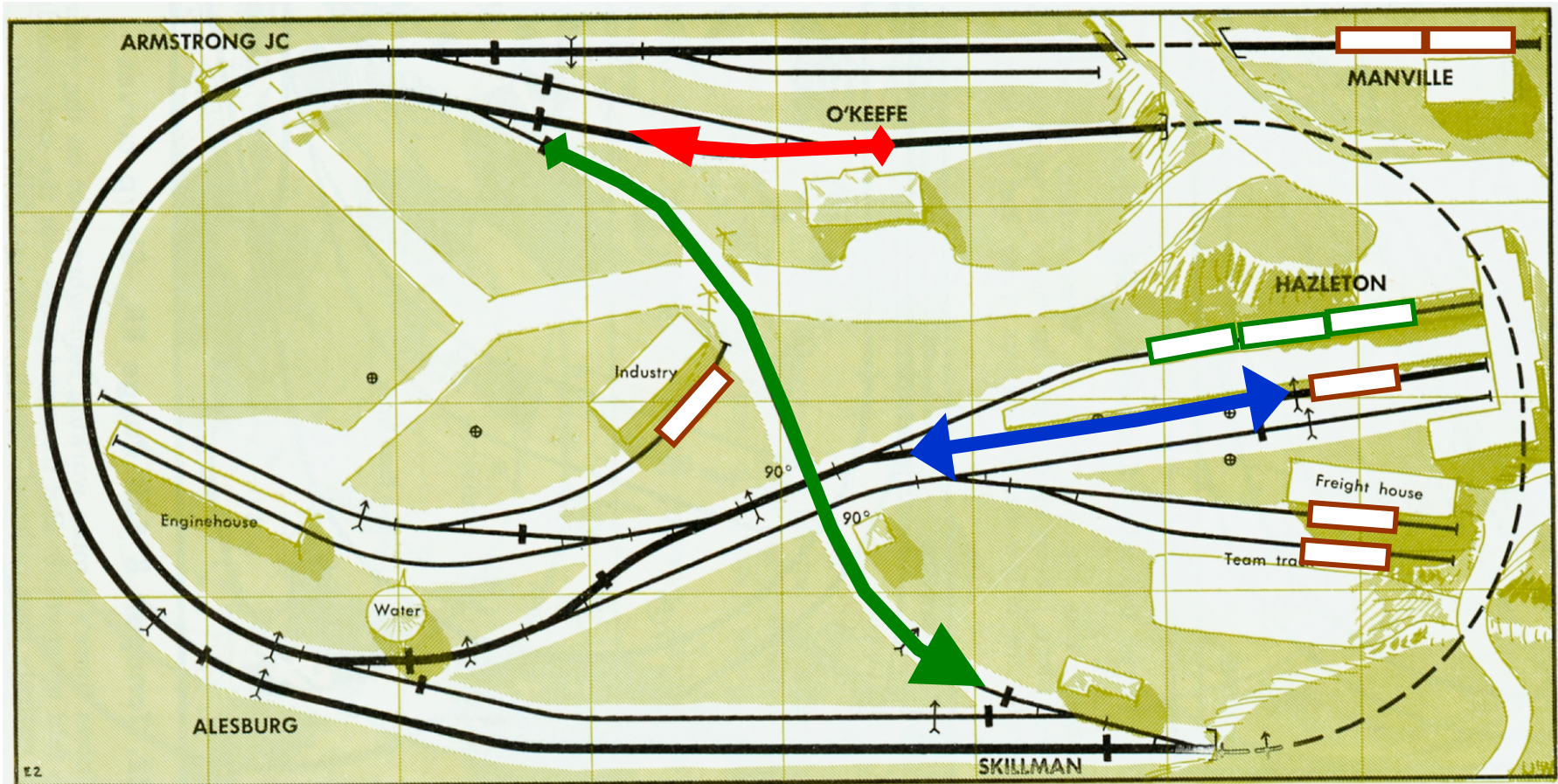
Interchange



Passenger takes a lap or two,
making station stops, ending
at Skillman

Through Freight Reverses, Becomes “Westbound”

Interchange



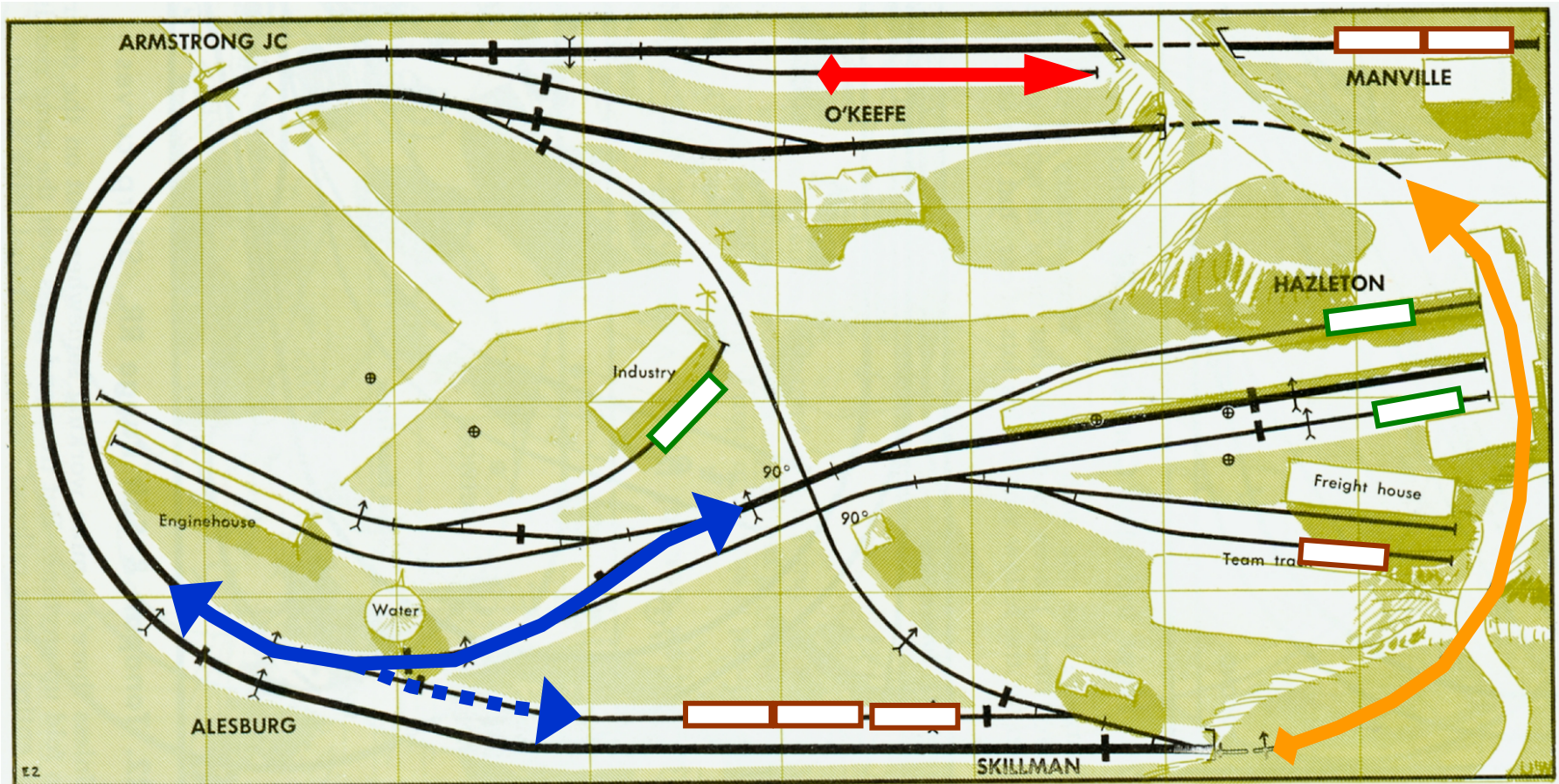
Reversing freight holds at Skillman for another meet with Passenger

Passenger makes another lap in opposite direction (optional)

Local in clear for meets

Meets Done, Local's Back to Work

Interchange

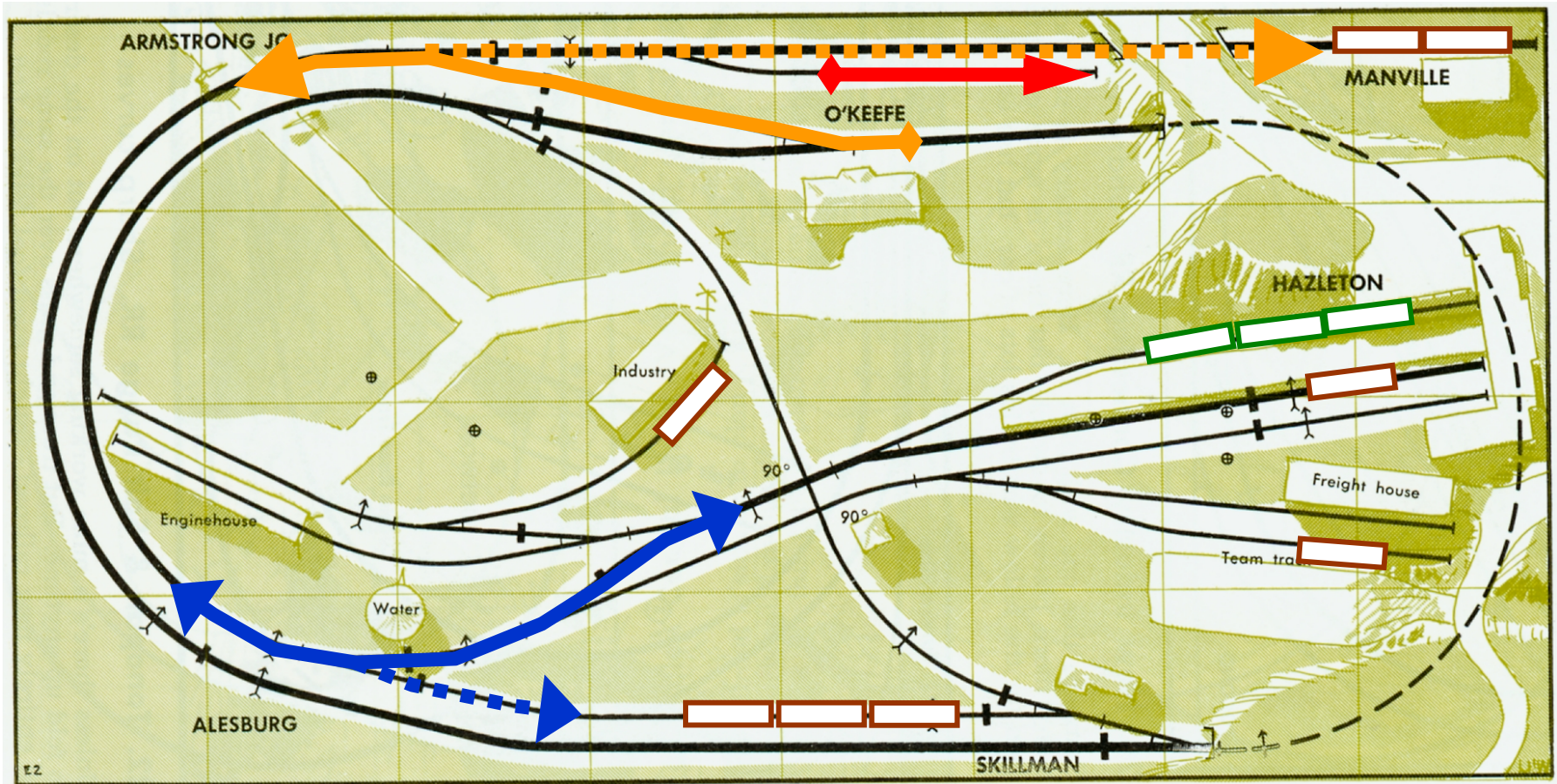


Local sets up
"Wests" in siding

Eastbound has
become Westbound

“Westbound” Works Interchange

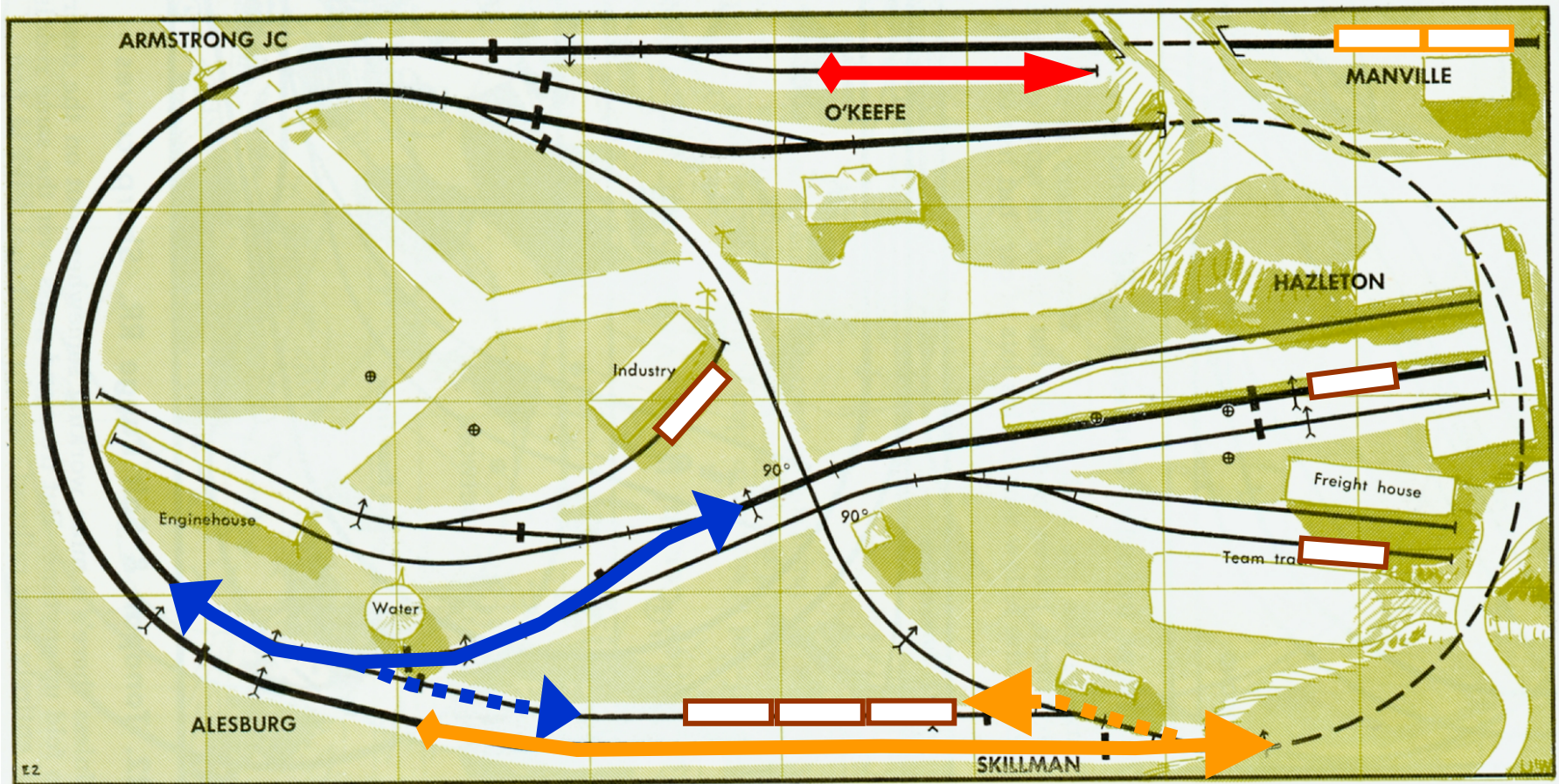
Interchange



Local sets up
“Wests” in siding

“Westbound” Works w/ Local

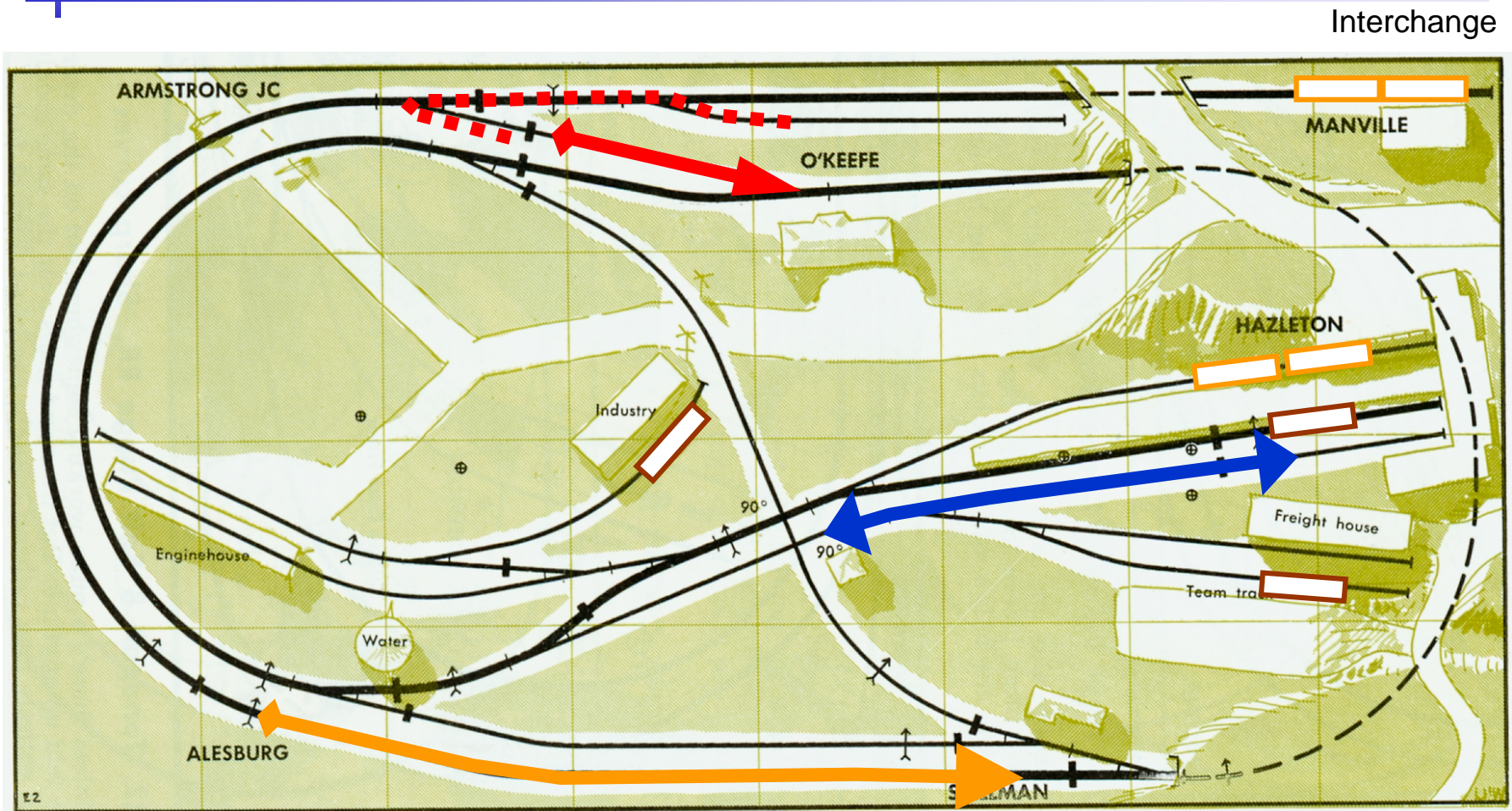
Interchange



Local ready to
grab inbound
cars

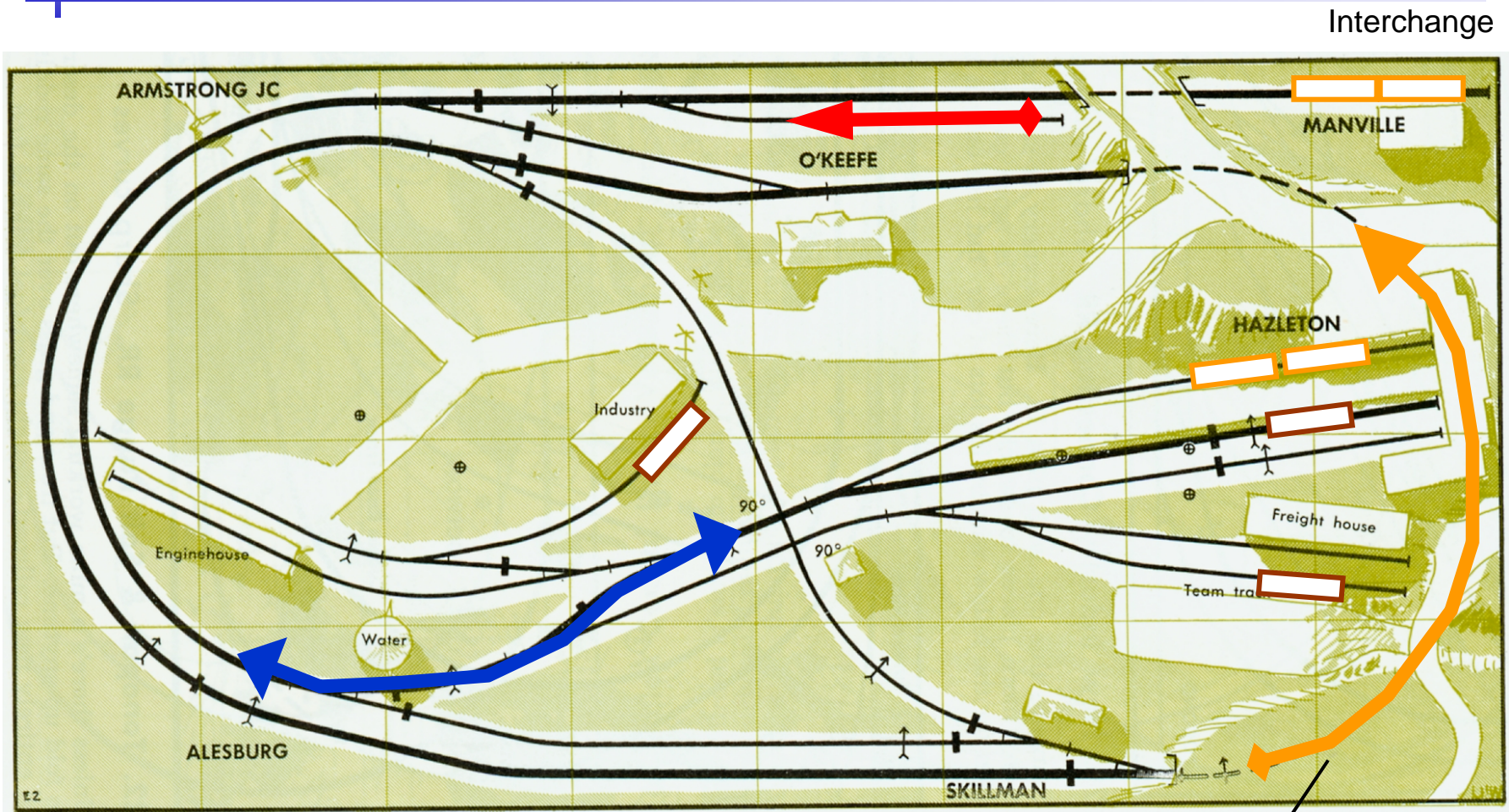
Through Freight sets-out
interchange and other “local”
cars, picks up “Wests”

Both Trains Clear for Meet



Passenger makes a lap or two
with station stops, reverse
loop move

Westbound Departs



Local may keep working

Note: A quick back-up reversing move or end-for-end swap "between sessions" resets for next time!

Prototype example

Jim Dias' beautiful 1930s WP

- Circumstances

 - Nearly finished layout

 - Garage-sized space

 - Not designed for ops -- staging, et al

- Desires

 - Story: recreate WP trains of era

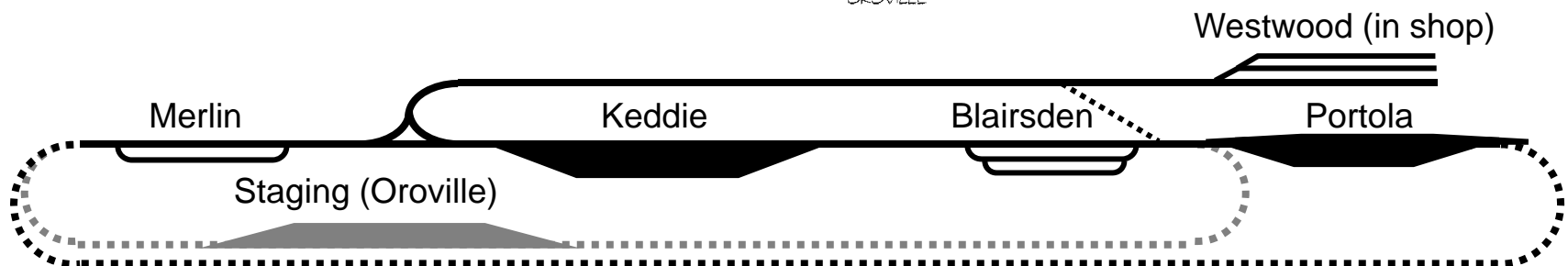
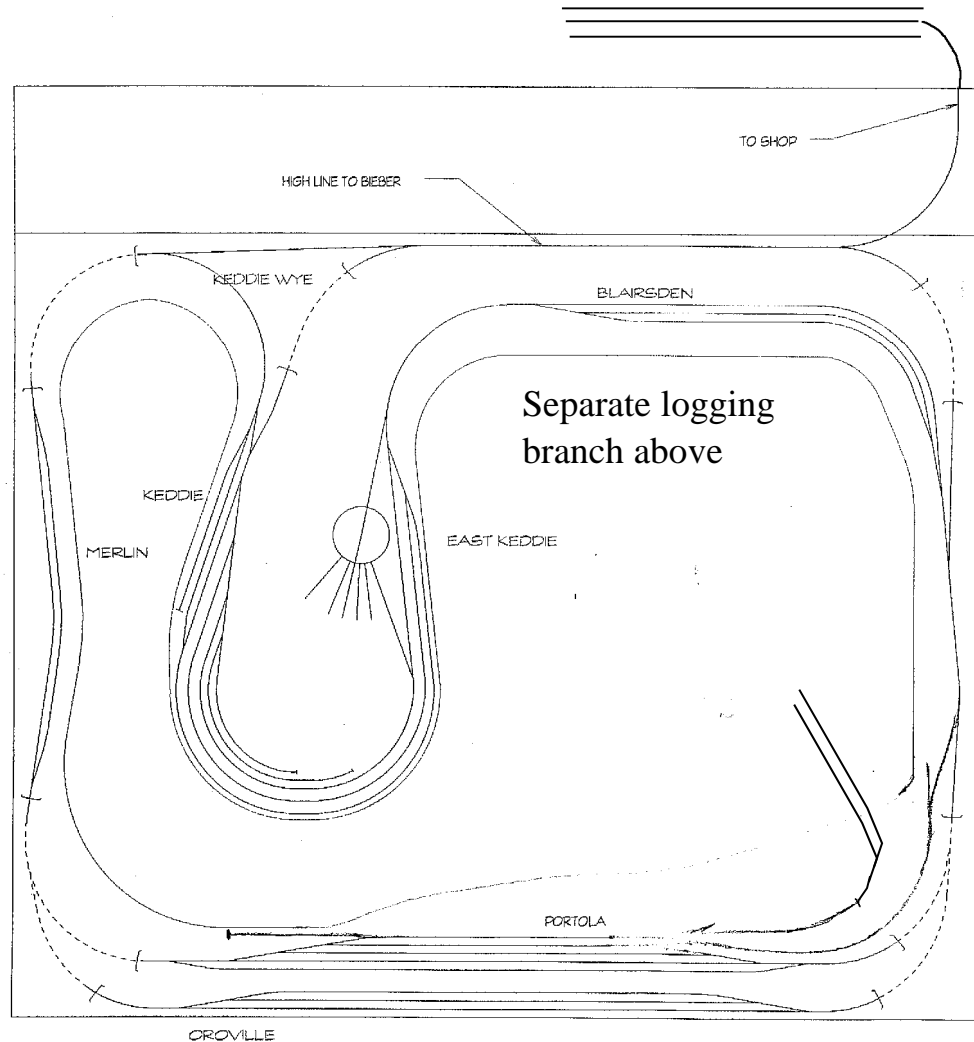
 - Switchlists

 - TT&TO

 - 3-5 operators, 2-3 hour session

WP layout

- Runs great!
- Passive staging only -- 3 tracks
- Portola isolated from staging
- Yard is few tracks but long



Mechanics -- prototype

- Draw layout schematic
- Review prototype timetable
- Pick key trains for personality and interaction
- Choose car-routing and traffic control
- Signs, labels, ops aids
- Call the round-robin and let's try 'er out!

Prototype timetable

- 2 passengers daily
- 5 scheduled “Fast Freights” daily
- 2 freights daily on High Line
- 4 Locals:
 - Three days per week: Portola - Keddie;
Keddie-Portola
 - Three days per week: Oroville - Keddie;
Keddie-Oroville

Ten pounds of sugar and a five-pound bag ...

Challenges

- Staging capacity and connection is limiting
- No segment of the actual WP timetable “lines up”
- Mainline too short and too visible for TT&TO
- Keddie can’t build all the trains we need (and wouldn’t have)

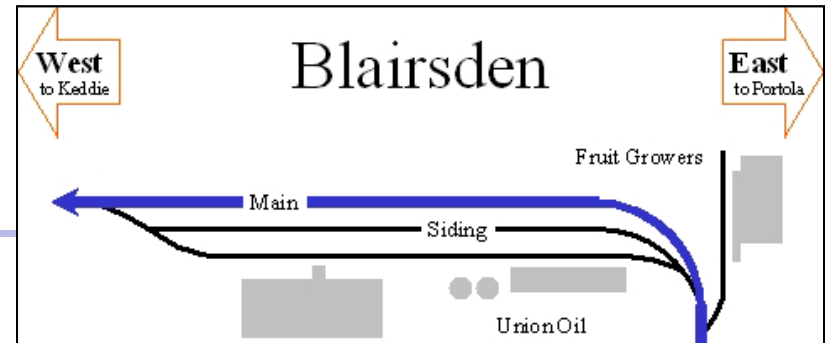
Decisions

- Prioritize key trains for personality
 - 1 Mainline local - Portola to Keddie
 - 1 passenger
 - 1 long Fast Freight
 - 1 Highline train

Balance of schedule -- move cars as needed, interaction, atmosphere
- Stage on visible layout
- Sequence timetable
- Manual switchlists

Ops aids

- Town maps indicate “virutal” industries
- Manual switchlists include instructions
- Yard lists track cars three ways
- Sequence timetable



Sequence Timetable		Operator				Notes
Train	Starting Location	A	B	C	D	
Yard Job	Keddie					Start Yard Job 5-10 Minutes ahead of the rest of the crew
#96 East	Oroville	96				Start at same time as # 61
#61 West	Portola		61			Start at same time as # 96
#97 West	Portola			97		Start #97 West Local as soon as #61 leaves Portola
#182 East	Westwood	182				Start #182 when the first op finishes # 96
FRLC	Upper Deck					

Western Pacific Railroad Company						
Switch List						
No. 97 West		At Portola		date: June 6 1938		
Initial	Car No	Type	From	To	Track	
1	PFE 36171	RS	Portola	Portola	Ice House	
2	MSCX 2023	SM	"	Blairdsen	Stock Pen	
3	COSX 237	TA	"	"	Union Oil	
4	OSKX 458	TA	"	"	Union Oil	
5	AT&SF 117940	XM	"	Delleker	Mould #1	
6	PFE 50468	RS	"	Portola	Ice House	
7	UP 1840FB	XM	"	Delleker	Box #5	

Train No. 97 west Second Class Crew goes on duty in Portola Yard

This local freight originates and works the industry in Portola. Departing westbound, No. 97 then works industries in Blairdsen before terminating in Keddie.

Board assigned power in Portola, work all local in and yard tracks as indicated by switchlist. This includes two Delleker spurs. Note that there are specific notes for the Delleker set-outs.

All westbound trains are required to turn up retail pick-up cars. 15 seconds per car.

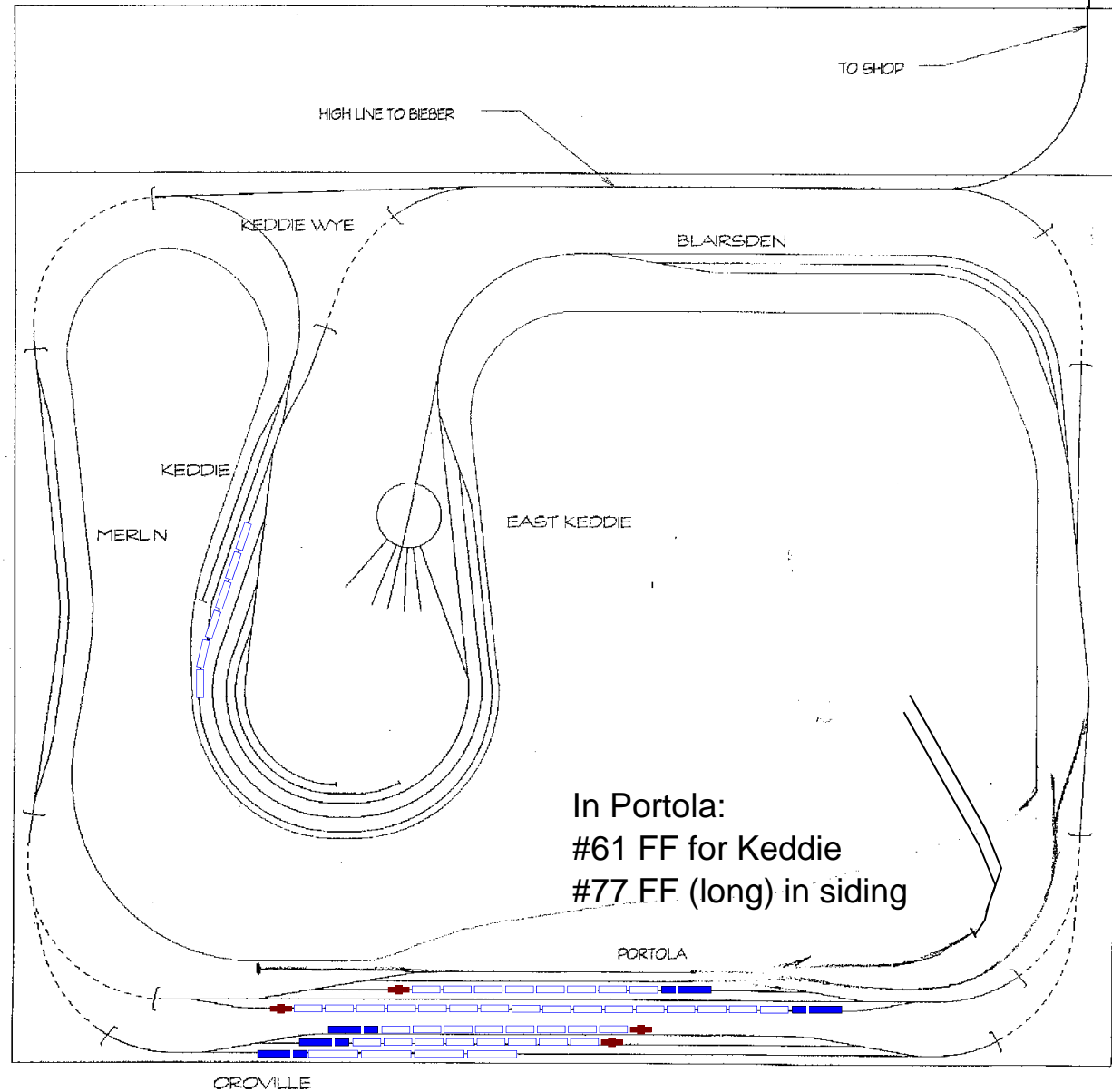
Western Pacific Railroad Company						
Car List						
Keddie Yard Job		At Keddie		date: June 6 1938		
Initial	Car No	Type	To	Track or Notes	From	
ATSF	122635	XM	62 E		No. 182 E.	
ATSF	124874	XM	Keddie	Back Trk	No. 96 E.	
ATSF	128741	XM	98 E		KD Bck Trk	
ATSF	235478	XM	95 W		No. 96 E.	
B&O	110017	SM	Keddie	Back Trk	No. 96 E.	
CB&Q	26323	XM	95 W		Keddie #3	
CB&Q	42293	XM	98 E		No. 62 E	
CN	141387	GB	95 W		No. 61 W	
CP	236378	XM	Keddie	Back Trk	No. 61 W	
GN	50762	XM	181 W		KD Bck Trk	
GN	55171	SM	95 W		No. 182 E.	
IC	341970	XM	61 W	KD Trk 3	No. 62 E	
MP	89014	XM	61 W		Keddie #3	

At start

Cars for #61 in Keddie

In staging:
#62 FF for Keddie
#96 LF for Keddie
#2 "Scenic Limited" East

#182 LF to work Westwood

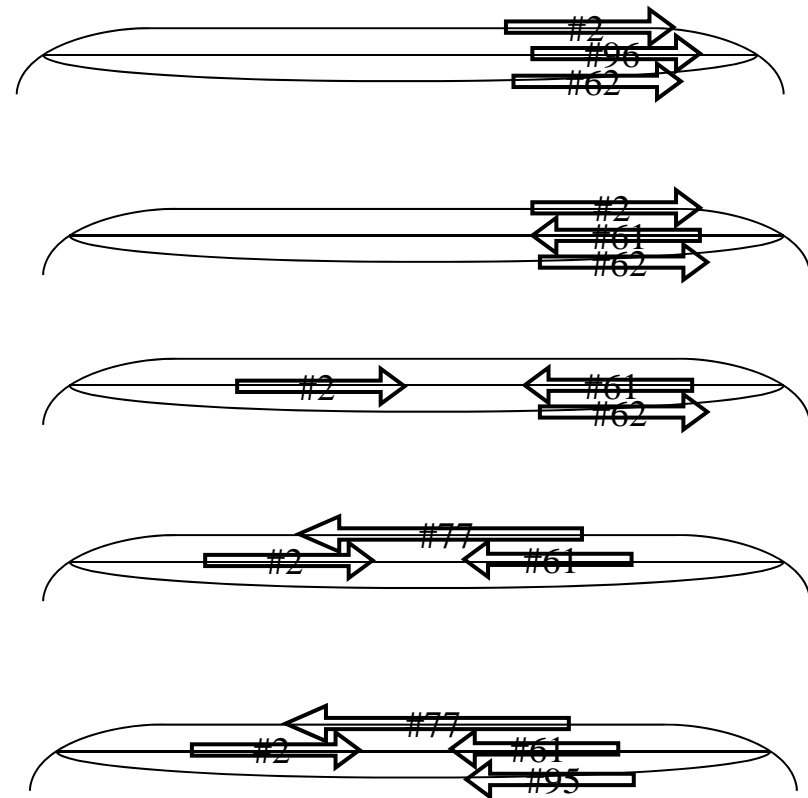


In Portola:
#61 FF for Keddie
#77 FF (long) in siding

Getting the most from staging

- Tracks are long, so most trains can be doubled up
- Specific order needed
- Works best with sequence timetable

Staging Sequence



Building blocks -- WP

Theme and concept	WP Third Sub, 1938
Trains	9 out of 11 (!), including key locals
Schedule	Sequence Timetable (doesn't match prototype)
Job roles & crew size	4 crew: 1 yard, 1 local, 2 mix of local and through
Car routing	Manual switchlists
Traffic control / communication	Informal verbal dispatching by owner
Reset realities	Wait 'till you hear!

Three keys -- WP

- Personality

 - Mix of trains suggests prototype

 - Stops for water, retainers, etc. reinforce era

 - Unique jobs (Highline, Keddie yard, #97)

- Interaction

 - Primarily in yard, although meets and passes on the road

- Balance

 - Yard workload manageable through paperwork and flow

 - All four operators active most of session

Proto-freelance example

Rick Fortin's fabulous early-70s ATSF

- Circumstances

Under construction multi-deck

Large space, 20-year plan

Intended for ops from outset -- start early

- Desires

Story: Mainline mountain railroading with plausible alternate history

Involved op sessions (18-20 ops, 5 hours)

Major emphasis on personality

Challenges

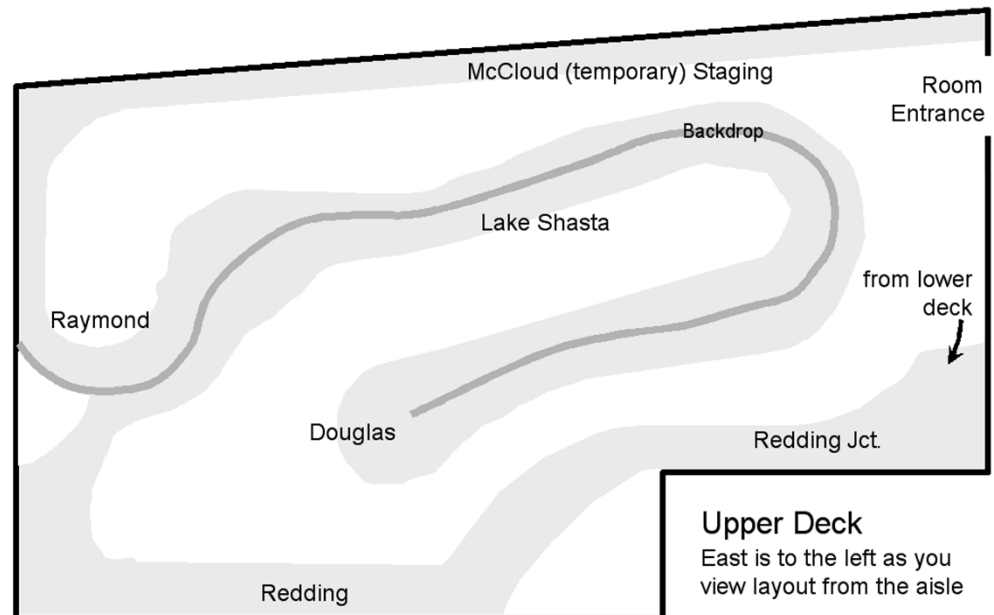
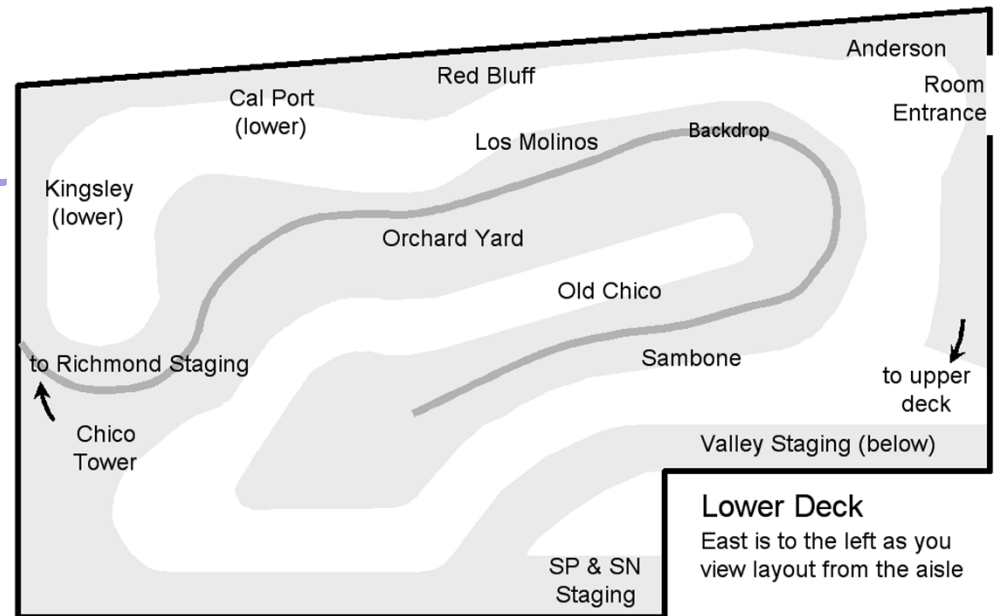
- Only portion of railroad was done
 - But still want to express concept
 - Staging at one end only
 - Layout, towns, industries would change radically over time -- flexibility necessary
- Crew had widely varied levels of ops experience
- No real railroad to “copy”
- Where to start?

Mechanics -- freelance

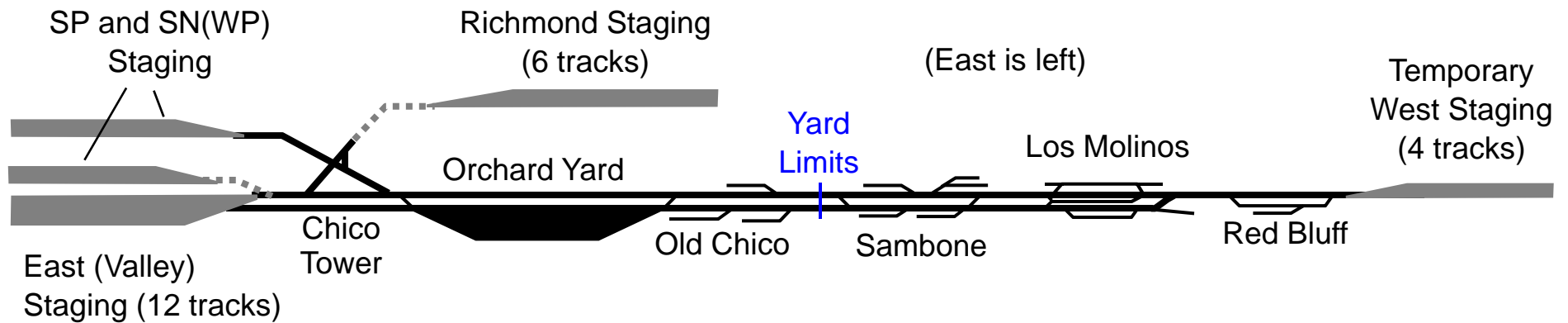
- Draw layout schematic
- Define key trains for personality and interaction
- Choose car-routing and traffic control
- Temporary staging to get started
- Grow crew op skills from early sessions
- Add trains, op roles, sophistication as layout expands

ATSF layout

- Runs perfectly
- Ops began with only lower deck
- Substantial staging at East end, none at West to start
- Substantial classification yard (or so I thought!)



Beginning schematic



- Temporary west staging added to allow more flexible operations

Getting started -- trains

- Personality Rick's highest priority
 - “Know the train and its work by the consist”
- ATSF-inspired trains
 - Shasta Fruit Express (after GFX)
 - Valley Super C (extension of Super C)
- Locals to three switching areas
- Pick-ups (“sweepers”) end-to-end

Looking at Los Molinos

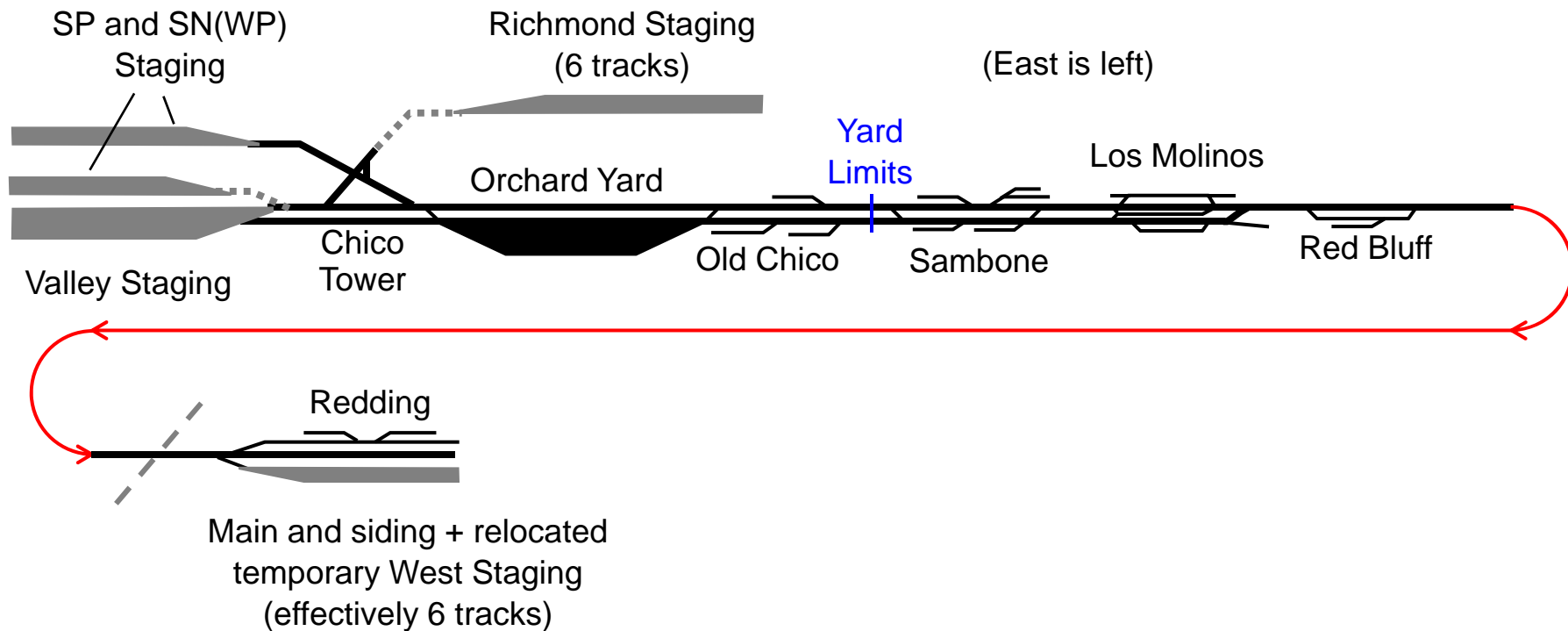
- Goal to make job unique, add interaction with other trains
 - Make it seem “remote” from other areas
- Set-up work related to two through trains
 - Shasta Fruit Express
 - Eastbound pick-up
- Rest of schedule built around this

Starting matters ... where you start does not

Incremental complexity

- “Holler and hope” dispatching for first session or two
- Added Track Warrants
- Adjusted jobs, timing, staging to accommodate experience
 - Balancing yard and road constant focus
 - Careful dispatching to manage staging
- ... and, loving it!

Expansion

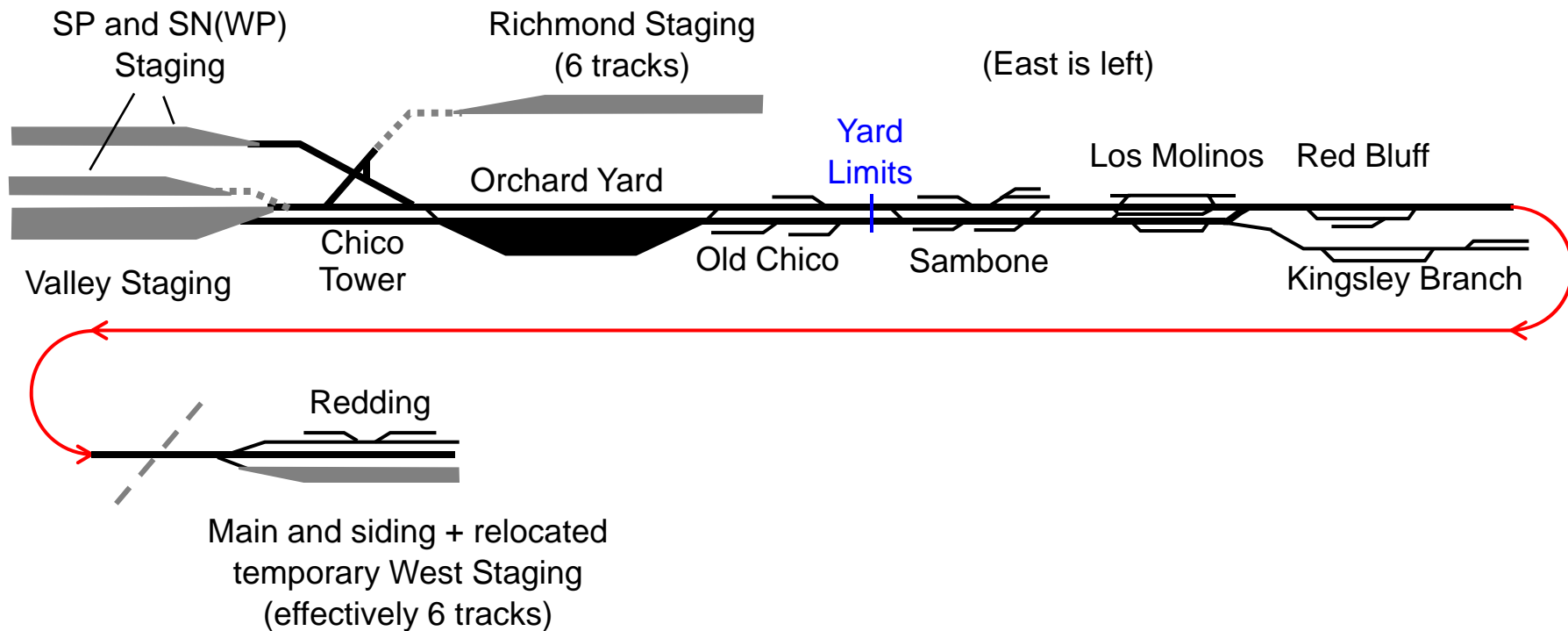


- Temporary Redding trackage to add switching location and staging capacity

Add more personality

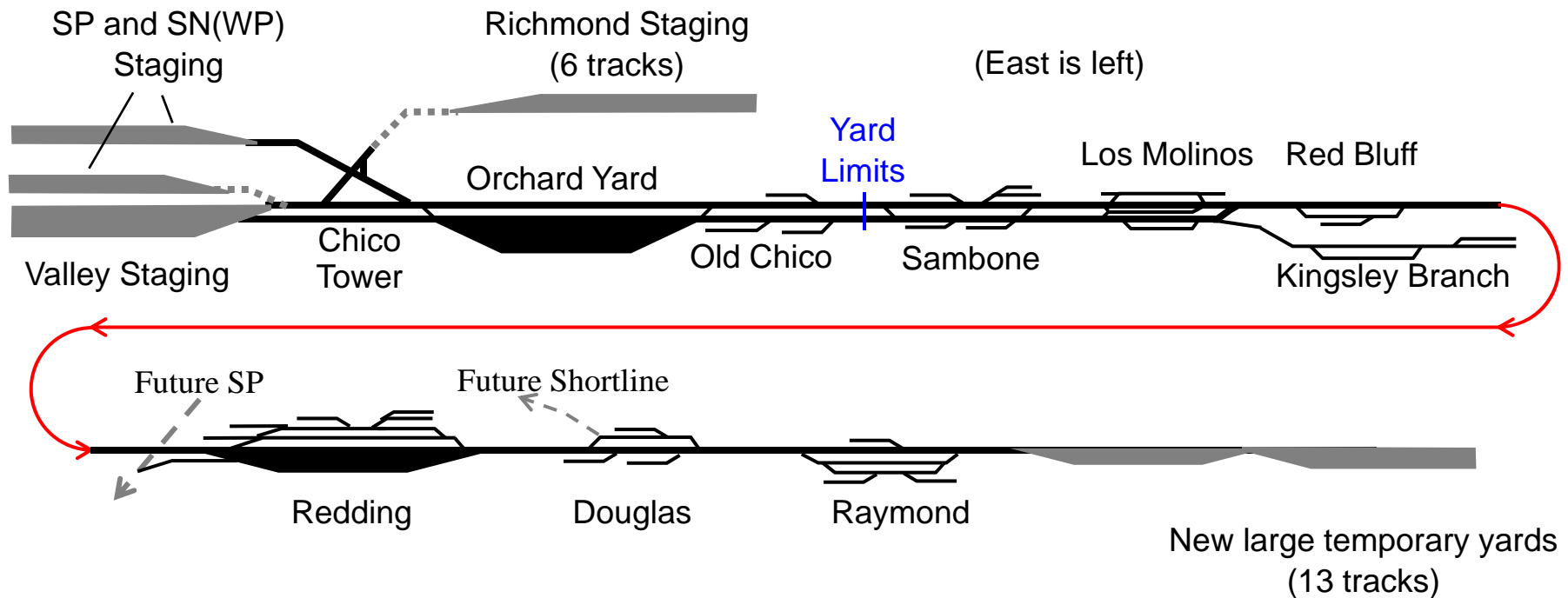
- “Red Dog” local (Redding and Red Bluff)
Staged “en route” in Redding
Did its own blocking
- Additional through trains
- Turned some through trains during lunch break to work around staging limitations

Another town, another railroad



- Kingsley Branch includes Cal Port cement plant served by SP over trackage rights

Big push and Redding's a satellite



- Redding now hosts a full-session switch job and is home to Douglas/Raymond Turn (the DRT or “Dirtbag”)

Mountain personality

- New segment is separate physically and ops-wise
- Redding Yard handles block swap interactions
- New mountain locals feel isolated
- Balancing yard and road still challenging
- Most of the early CC&WB and schedule work still useful

Three keys -- ATSF

- Personality

ATSF-inspired trains (SFX, VSC)

Unique consists, jobs, roles -- even in beginning!

Mountain segment feels different (and is popular)

- Interaction

Most trains have implied or actual connection with others (blocks of cars, etc)

Staged and live trains interact

- Balance

Yard workload manageable through pre-staging and remote jobs

Through and locals in balance by size of trains

Reset complexity vs. Personality and Interaction

Challenging but fun atmosphere

Building blocks -- ATSF

Theme and concept	1973 ATSF 4 th Dist.; visible Chico to McCloud (Sacramento to Portland)
Trains	Many unique ATSF-inspired trains: Fruit Express; Super C; et al
Schedule	Approx 30 trains + specials; 1:1 "railroad time"
Job roles & crew size	Started with 10-12, now 18-20; many varied roles
Car routing	Car-cards and waybills
Traffic control / communication	Track Warrants; FRS radios
Reset realities	Significant due to stub-end staging and unique train characters

Some issues and challenges

	Personality	Interaction	Balance
Car Routing	Non-Symmetry		
Traffic Control	Priorities		
Reset	Tweak & tune		

Some issues and challenges

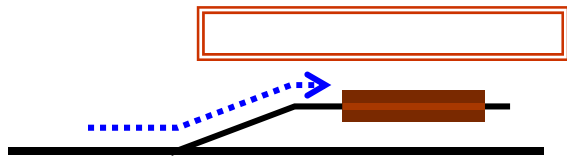
	Personality	Interaction	Balance
Car Routing	Non-Symmetry	Self-Recovering	
Traffic Control	Priorities	Dwell time / capacity	
Reset	Tweak & tune	Lots 'o blocks	

Some issues and challenges

	Personality	Interaction	Balance
Car Routing	Non-Symmetry	Self-Recovering	Yard Workload
Traffic Control	Priorities	Dwell time / capacity	Challenge vs. stress
Reset	Tweak & tune	Lots 'o blocks	Ops vs. reset time

Distribution -- Moving Cars

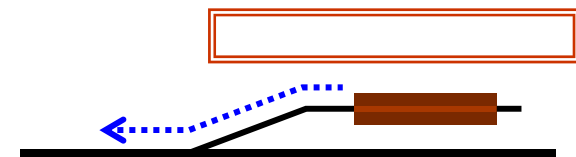
- Simulates flow of loads and empties
- Typical flow



Empty car to on-layout Industry



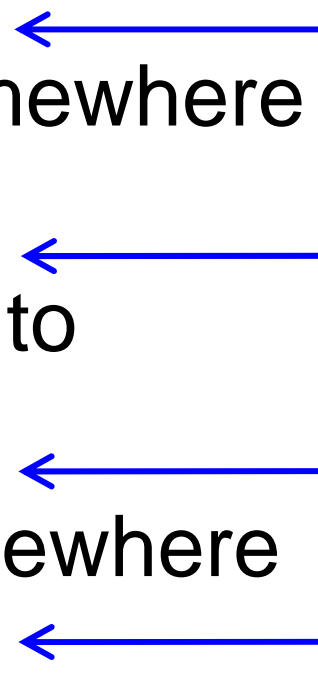
("loaded" between sessions)



Loaded car to "somewhere else"
Staging or another industry

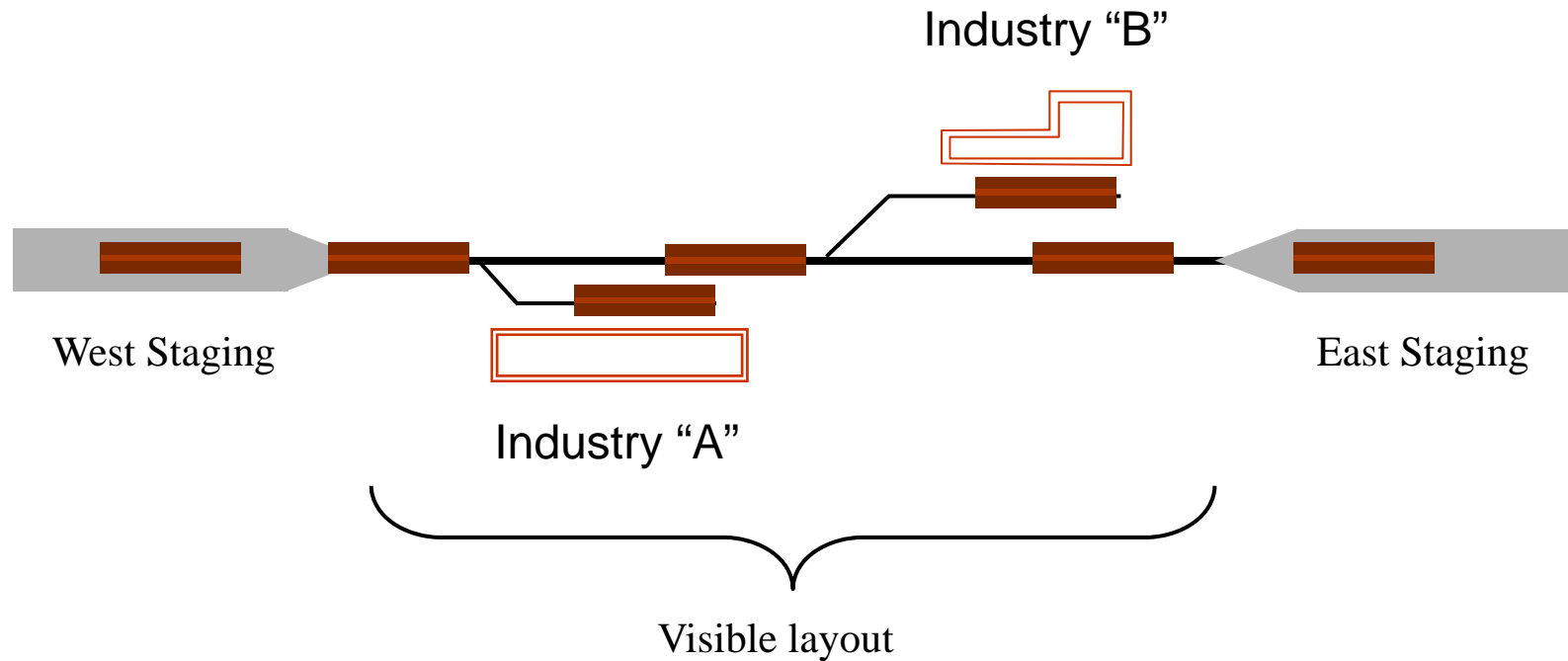
- And vice-versa, with loads being delivered and empties taken away

Sample Pattern for a Car

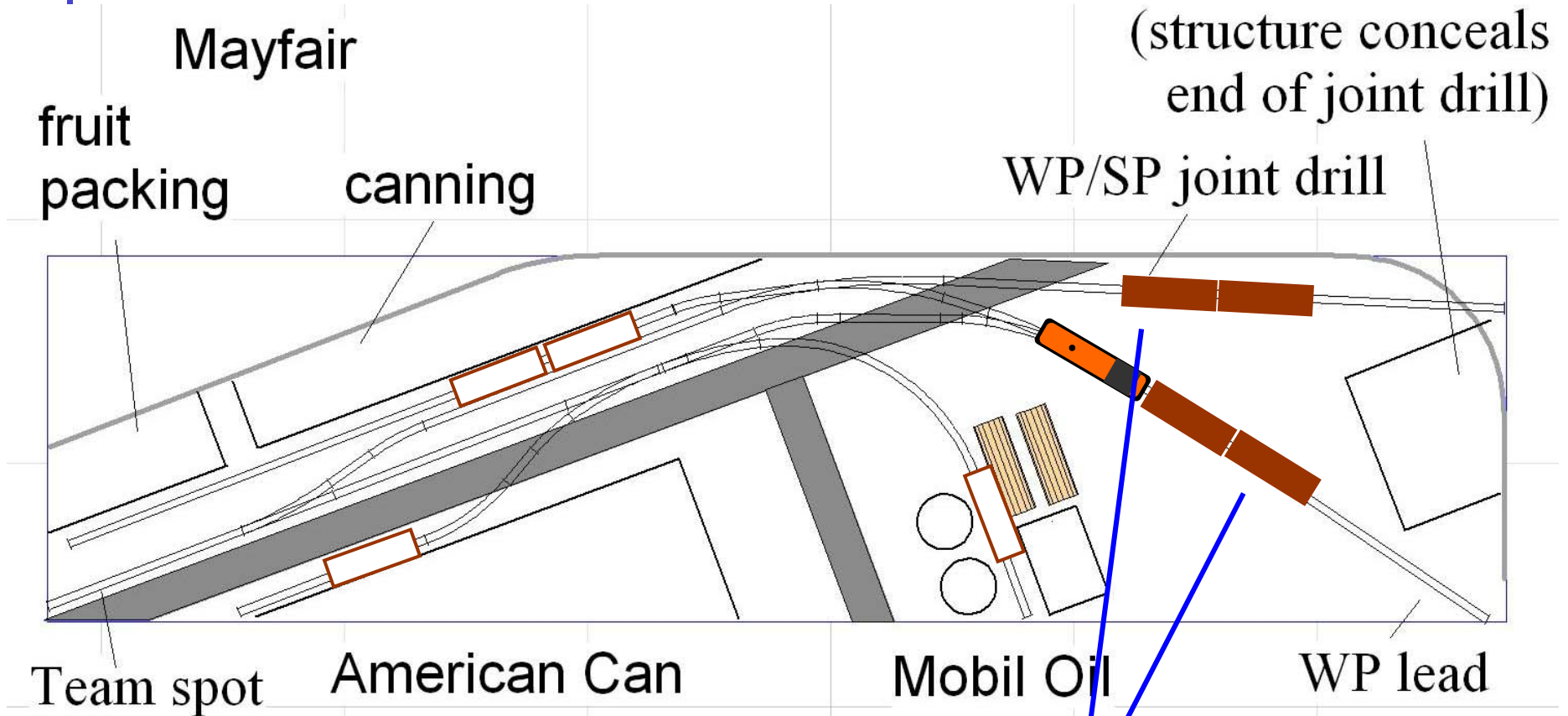
1. Load from “somewhere else” to on-layout Industry “A”
 2. Empty from Industry “A” to somewhere else
 3. Empty from “somewhere else” to Industry B
 4. Load from Industry “B” to “somewhere else”
- 
- A diagram consisting of a vertical blue line on the right side. Four horizontal blue arrows point to the left from this line, each aligned with one of the four list items. The arrows indicate a clockwise cycle: from step 1 to 2, 2 to 3, 3 to 4, and 4 back to 1.

Imagine loaded or unloaded between “sessions”

“Somewhere else” may be Staging



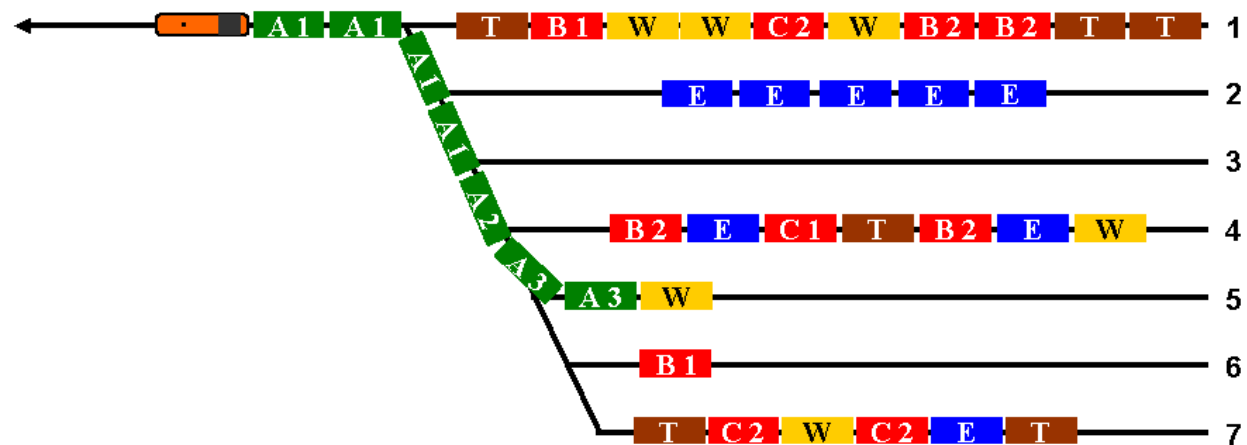
Movement on a Switching Layout



“Somewhere else”

Classification

- Links distribution and transportation
- Organizes cars for efficient delivery or handling over-the-road
- Often in yards, elsewhere as needed



Transportation -- Adding Trains

- Locals to deliver and collect cars
 - May be point-to-point or “turns”
 - On a small layout, these may be the only trains
- Through trains swap “blocks” of cars
 - Moving cars “somewhere else”
 - May swap in yard or along the line
- To begin, add a small number of each
- Add passengers and “pass-through” freights for personality, interaction