



Tools and techniques to create an operating scheme

BY DOUG LEE

**MEMBER OF LAYOUT DESIGN (LDSIG) AND
OPERATIONS (OpSIG) SPECIAL INTEREST GROUPS**

**PRESENTED TO CALGARY MODEL RAILWAY SOCIETY
MARCH 4 2018, GLENMORE INN, CALGARY ALBERTA**



What are our objectives?

A layout is typically a commitment of thousands of hours and dollars

-To obtain sustained value for our efforts and outlays I believe we should seek to create a reliable, operation-based layout that satisfies the owner's explicit design criteria

Reliable—run trains without the burden of mechanical and electrical problems



Operation-based

Exploit an underutilized facet to maintain our interest, long term

- Our perspective shifts from observing static scenes to operating moving trains
- Complements other goals like R&D, detailing
- Easier to built into original design than to try retrofit a layout
- Save multi-thousand \$ cost of building anew



Mimic the business of the prototype

Create a working model that appears to function as part of a multi-railroad, continental rail system

- Interactions of local and through freights
- Car interchange with connecting railroads
- Scheduled connections of passenger trains

What are your operating priorities?



- Long freight, 20+ cars
- Medium frt, 10-15 cars
- Local freight operations
- Helper operations
- Engine terminal activity
- Mainline psgr, 8-12 cars
- Branchline psgr, 3-4 cars
- Psgr train switching
- Commuter trains
- Timetable/fast clock

Pick your top four to six operating priorities; tailor the design of the ops scheme to match priorities



Sources of prototype operating information

- Model train swap meets / clinics (CMRS)
- Historical society and SIG websites – look for scanned copies of prototype's commercial freight marketing brochures, operating procedure books, employee timetables
- RR employees, working or retired



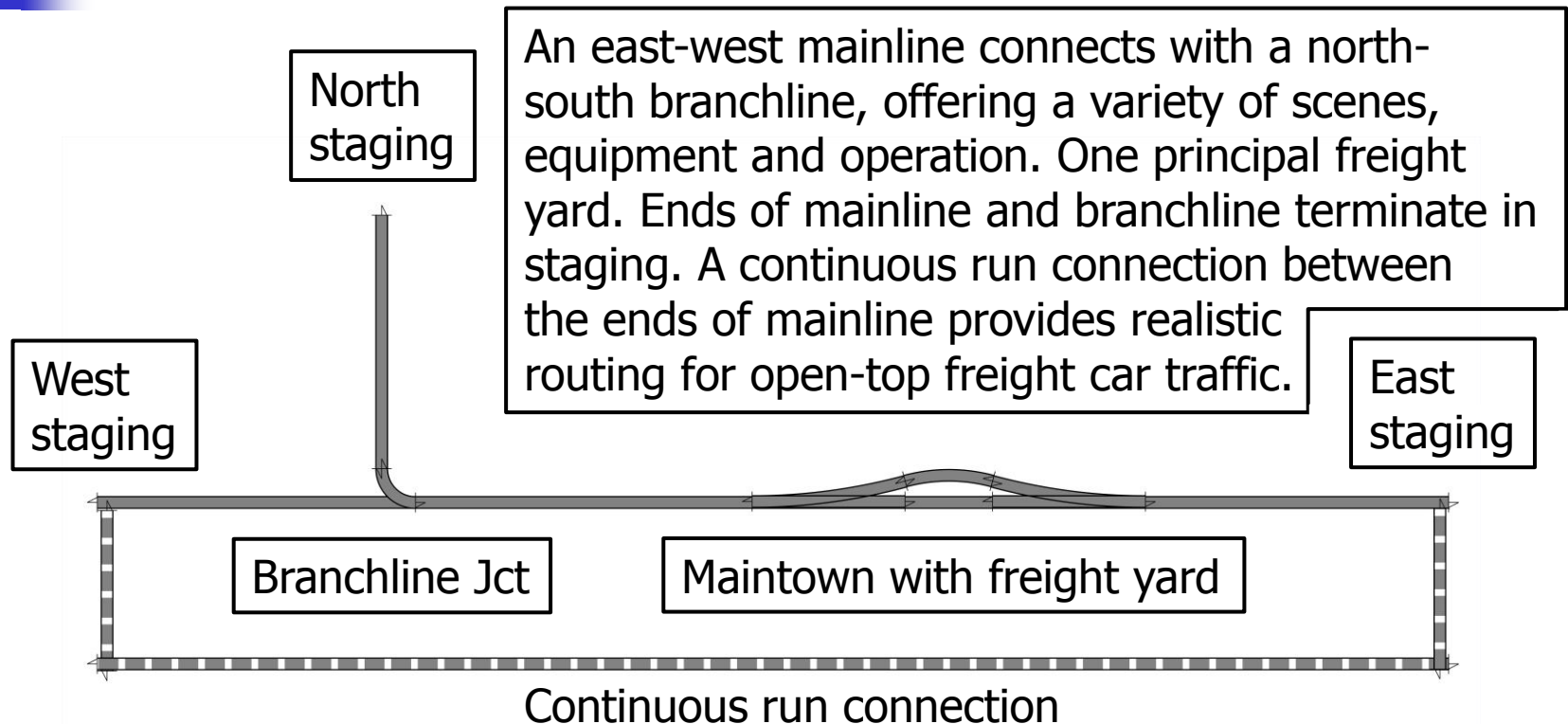
Sources of prototype operating information

- Passenger train operations – public timetables (eBay), Official Guide
- Specialty RR books (Four Ways West, Morning Sun Books)

Extract from industries database on OpSIG website

Era	Industry	City	Railroad	Commodity
1956	Greif Containers Inc.	Lloydminster AB	*CN,CP	Fiberboard
1990	United Oil Products	Lloydminster AB	CN	Soybean meal
1990	CanCarb	Medicine Hat AB	CP	Carbon black
1990	Alberta Sugar	Taber AB	CP	Sugar
1997	Trus Joist MacMillan	Annacis BC	SRY (BNSF)	Wood strand
1955	Canadian Kenworth Ltd	Burnaby BC	CN	Trucks
1998	Georgia Pacific Inc.	Canal Flats BC	CP	Gypsum
1956	Parris Hunt & Behrens	Dawson Creek BC	NAR	Oats
1962	Co-op Growers Exchange	Grand Forks BC	CP	Potatoes

Good generic track schematic



East staging track capacities (HO scale)

Staging area and min curve radius	Track length (ft)	# of tracks	Total length (ft)	# of cars 40' / 85'	Typical track assignment
East staging double-ended reversing loops					St. Paul for NP; Omaha or Kansas City for CB&Q
East-1 22 ⁷ / ₈ "	11.1	1	11.1	22 / 11	NP or CB&Q freight of 20 cars + 2 F-units or Geeps
East-2 25 ¹ / ₄ "	12.8	1	12.8	25 / 12	1953 <i>North Coast Limited</i> (psgr NP 25 / 26) of 11 LW cars + 3 F-units and 12.7 feet long; or NP or CB&Q frt of 23 cars + 2 F-units
East-3 27 ⁵ / ₈ "	15.3	1	15.3	30 / 15	Psgr CB&Q 42 / 43 of 13 HW cars + 2 E-units and 13.8 feet long; or NP frt of 27 cars + 3 F-units or single 4-6-6-4; or CB&Q frt of 27 cars + 3 F-units
East-4 30"	<u>17.7</u>	<u>1</u>	<u>17.7</u>	<u>35 / 17</u>	NP frt of 32 cars + 3 F-units or single 4-6-6-4; or typical summer 1953 <i>Mainstreeter</i> (psgr NP 1 / 2) of 15 HW cars + 3 F-units and 15.8 feet long
Sub totals	56.9	4	56.9	112 / 55	30% of total layout staging

Summer 1953 Billings MT passenger train schedules

Arrive Billings		Leave Billings	
1:45 am	NP 2 from Seattle 16 cars	2:10 am	NP 2 to Chicago 15 cars
4:00 am	NP 1 from Chicago 15 cars	4:25 am	NP 1 to Seattle 16 cars
7:00 am	GN 42 from Great Falls 4 cars	---	Train terminates at Billings
---	Train originates at Billings	8:00 am	CB&Q 24 to Cody WY 3 cars
---	Train originates at Billings	9:00 am	CB&Q 42 to Kansas City 13 cars
10:23 am	NP 25 from Chicago 11 cars	10:28 am	NP 25 to Seattle 11 cars
12:53 pm	NP 26 from Seattle 11 cars	12:58 pm	NP 26 to Chicago 11 cars
---	Train originates at Billings	1:00 pm	CB&Q 30 to Denver 10 cars
5:25 pm	CB&Q 29 from Denver 10 cars	---	Train terminates at Billings
8:00 pm	CB&Q 43 from Kansas City 13 cars	---	Train terminates at Billings
11:00 pm	CB&Q 23 from Cody WY 3 cars	---	Train terminates at Billings
---	Train originates at Billings	11:30 pm	GN 43 to Great Falls 4 cars

Sample car movements between passenger trains

Arrive Billings		Leave Billings	
1:45 am	NP 2 from Seattle 16 cars	2:10 am	NP 2 to Chicago 15 cars
Set out	>Seattle-Billings-K.C. baggage express and Livingston-Billings-K.C. HW sleeper for train CB&Q 42 >Livingston-Billings-Denver HW sleeper for train CB&Q 30	Pick up	>Cody-Billings-Chicago 10-1-1 HW sleeper from train CB&Q 23 >Billings-St. Paul baggage express from Billings station track
4:00 am	NP 1 from Chicago 15 cars	4:25 am	NP 1 to Seattle 16 cars
Set out	>Chicago-Billings-Cody 10-1-1 HW sleeper for train CB&Q 24 >St. Paul-Billings baggage express on Billings station track	Pick up	>K.C.-Billings-Seattle baggage express and K.S.-Billings-Livingston HW sleeper from train CB&Q 43 >Denver-Billings-Livingston HW sleeper from train CB&Q 29
7:00 am	GN 42 from Great Falls 4 cars	---	Train terminates at Billings
Set out	>Great Falls MT-Billings-Kansas City 10-1-2 HW sleeper for train CB&Q 42 >Great Falls MT-Billings-Denver HW sleeper for train CB&Q 30		

Partial list of freight trains to be operated

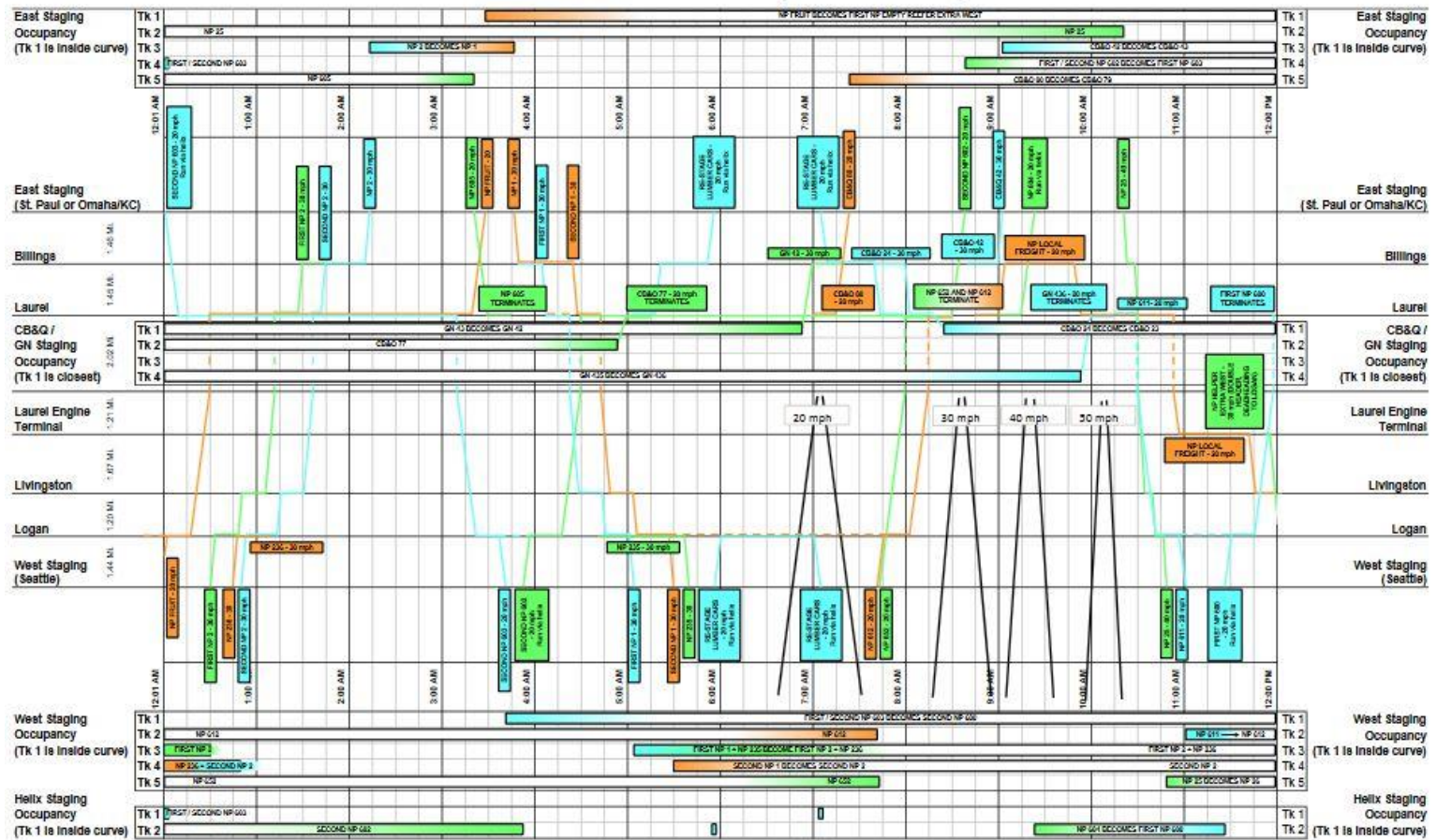
Train #	Route	Freq	Sec	Len	Helper	
NP high priority general merchandise + fruit between St. Paul and West Coast						
NP 602 East	Pasco – St. Paul	Daily	2	32 cars	Down grade	Only one set of equipment needed to model all sections of NP 602 / NP 603. The first sections are not switched at Laurel so the first sections can be annulled if not enough crews
NP 603 West	St. Paul – Auburn	Daily	2	32 cars	Up grade	
NP Fruit Manifest East (loaded)	Yakima – St. Paul	Daily	1	32 cars	Down grade	
NP Empty Reefer Extra West	St Paul – Yakima	Daily	1	32 cars	None	
CB&Q general merchandise between Omaha / Kansas City and Laurel Montana						
CB&Q 79 West	K.C. – Laurel	Daily	1	20 cars	None	CB&Q Denver – Laurel freight unmodelled due to limited staging capacity
CB&Q 80 East	Laurel – K.C.	Daily	1	20 cars	None	

Morning schedule of all trains

3:1 Fast Clock Ratio
February 1 2018

Northern Pacific in Montana, 1953 MORNING SCHEDULE OF TRAINS (12:01 AM TO NOON)

Timetable in Effect
12:01 A.M. Mountain Standard Time
Sunday, June 28, 1953





References

Any book or article by John Armstrong including:

1. Track Planning for Realistic Operation (Kalmbach 1979 or 1998)

Other authors/references

2. Layout Design (LDSIG) and Operations Special Interest Group (OpSIG)
3. Articles by Doug Lee, *Northern Pacific in Montana 1953*, Layout Design Journal 59 / Second Quarter 2016 (LDSIG). *Develop an Operating Scheme, Parts 1 and 2*, The Dispatcher's Office, April and July 2017 issues (OpSIG)
4. Clinic by Doug Lee, *Layout Design and Operations Bootcamp*. Can be downloaded from the CMRS website. Look under *Mini Meets and Clinics / Mini Meet Resources* for the October 15 2017 Mini Meet
5. A Compendium of Model Railroad Operations (book from OpSIG 2017)
6. How to Operate Your Model Railroad (Bruce Chubb / Kalmbach 1977)
7. Realistic Model Railroad Operation (Tony Koester / Kalmbach 2003 or 2013)
8. SIGs and historical societies (CN Lines SIG, CP / CNR Historical Associations)