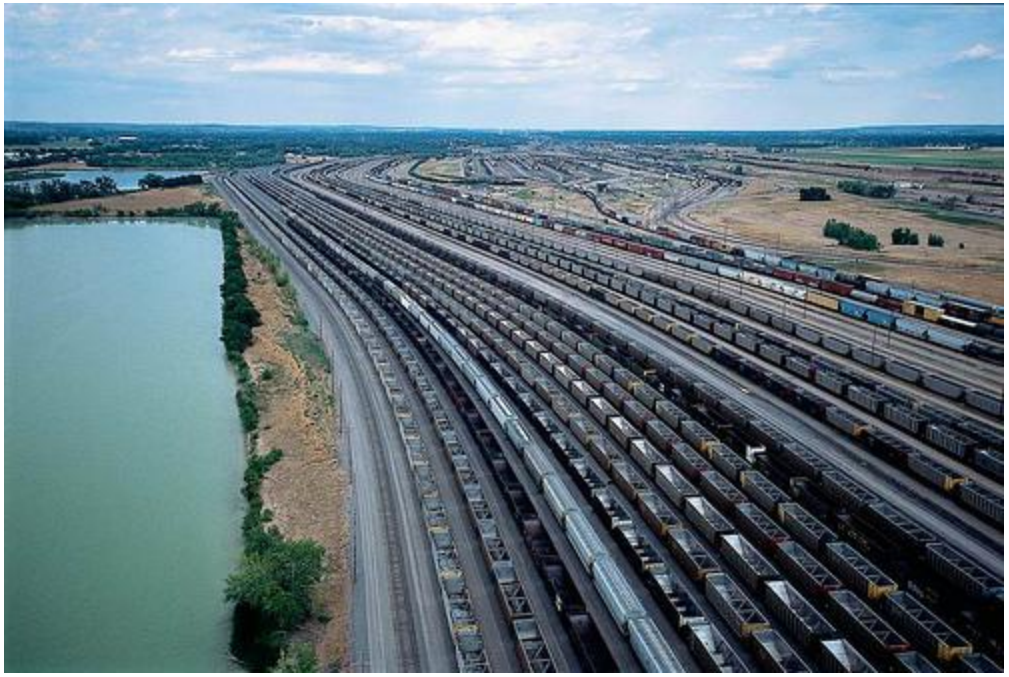
CH. 12

CLASSIFICATION AND BLOCKING

- Introduction flat & gravity (hump)

- Flat
  - World's Largest – Bailey Rail Yard
  - North Platte, NE



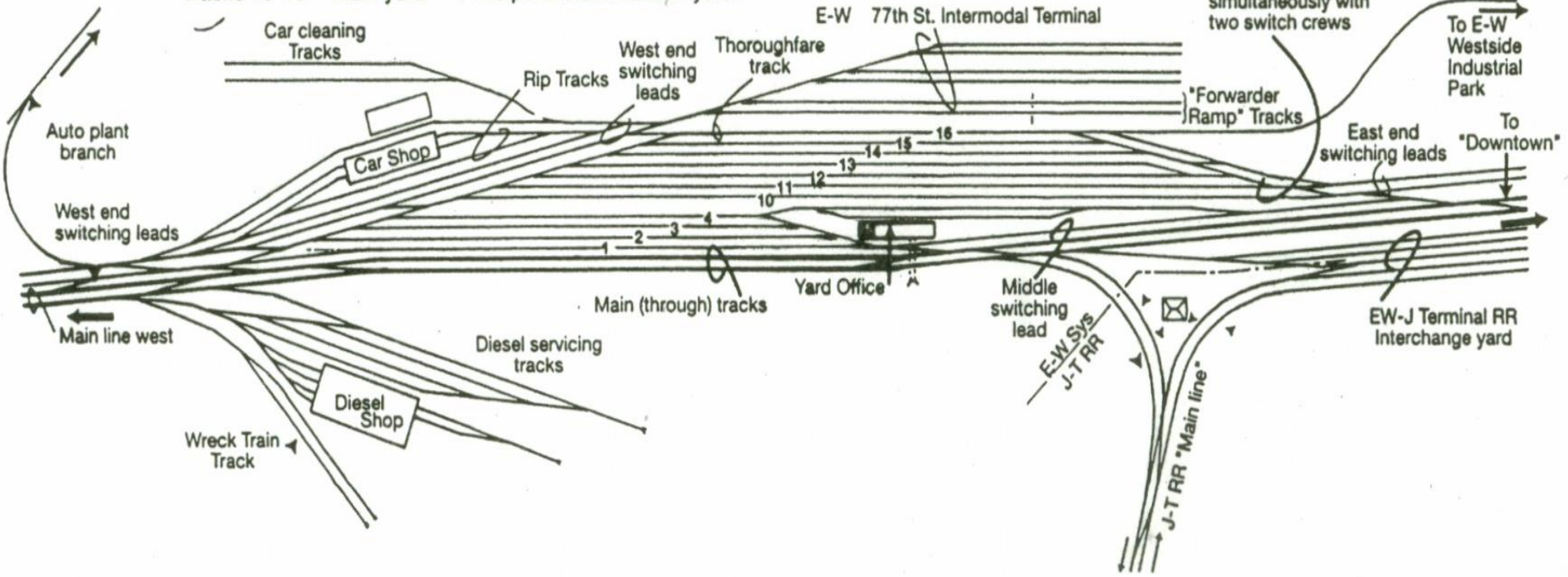
- Yards, Subyards, Tracks, and Leads
- Switch List
- Station Order
- Batting (Pushing)

East-West System – J 77th St. Yard

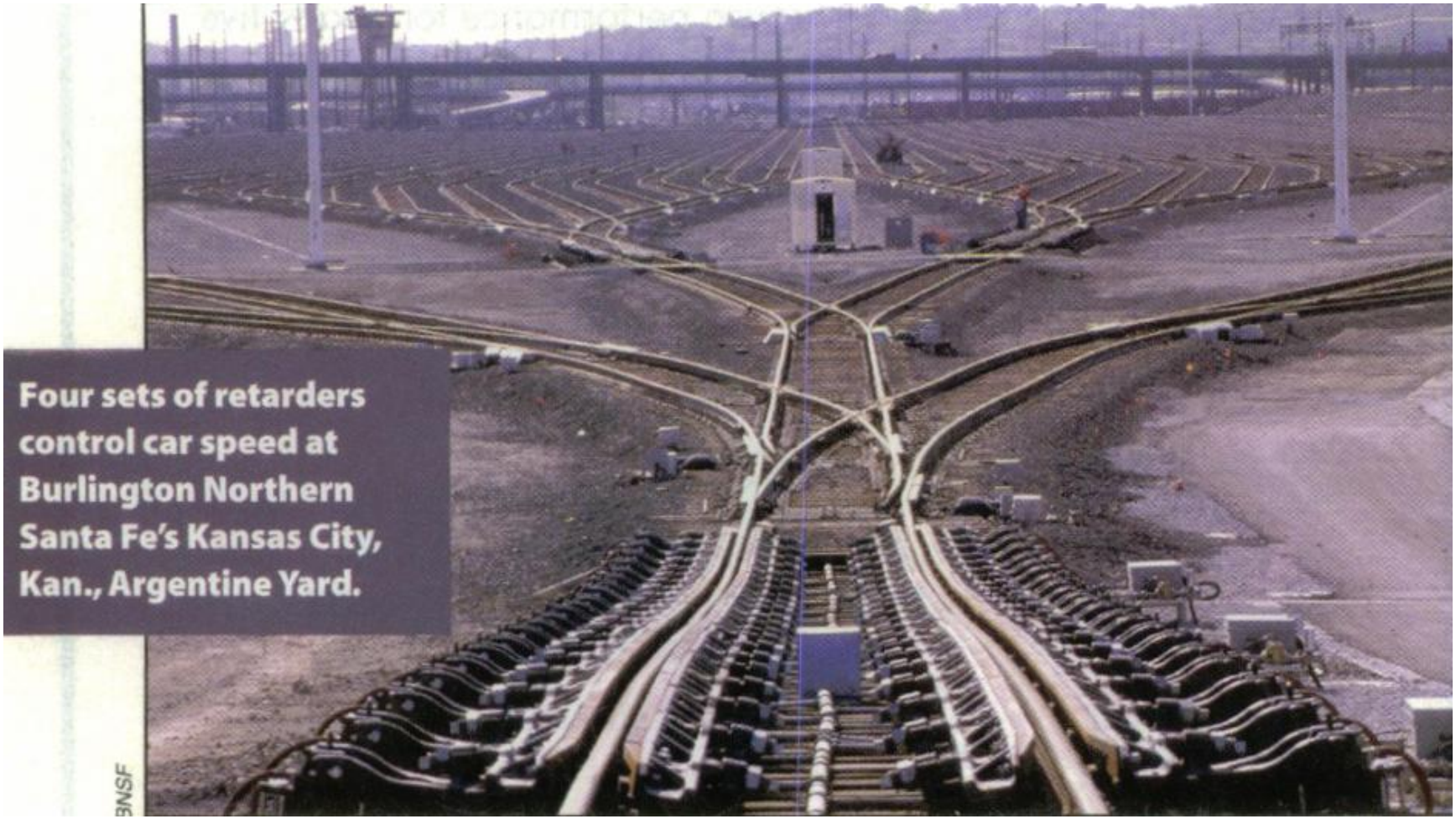
(Condensed & shortened)

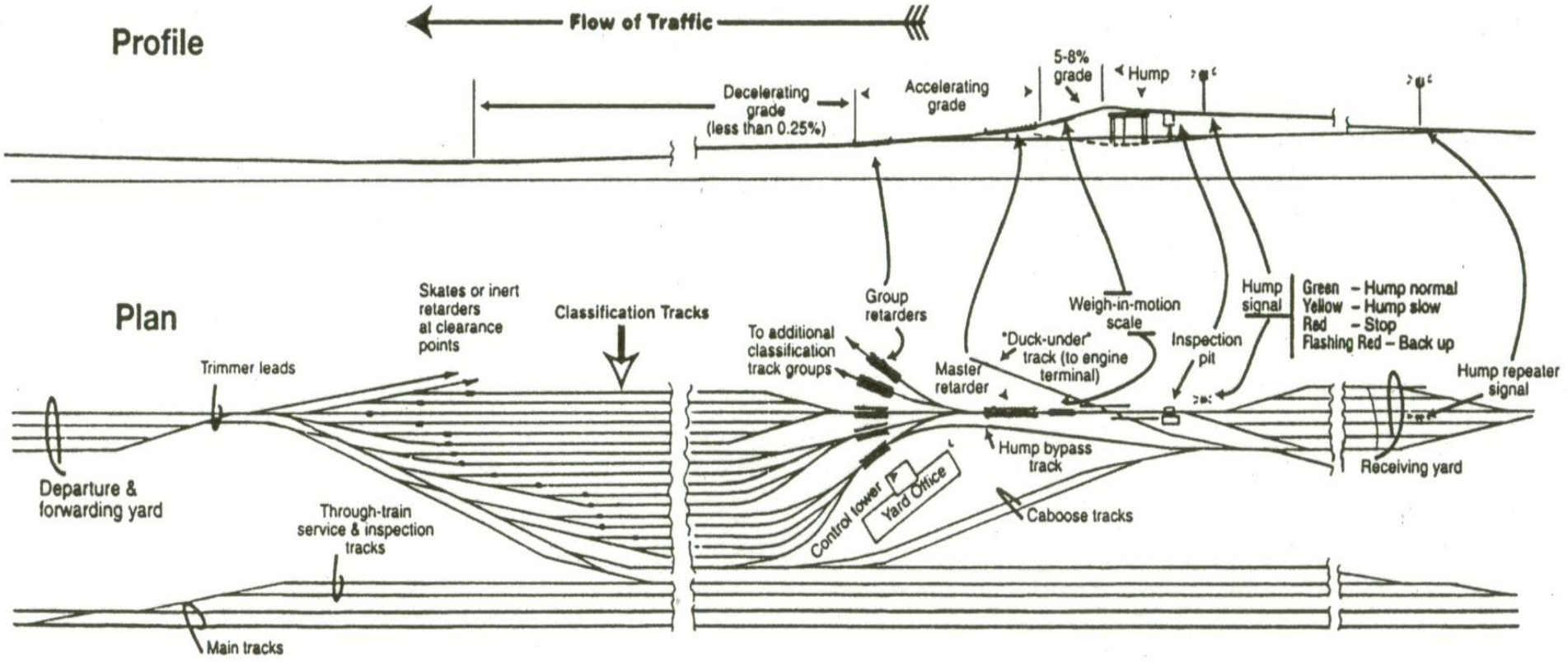
Tracks 1-4 "Forwarding" yard – Traffic from J-T RR to west.

Tracks 10-15 "Main yard" – Principal J classification yard.



- Gravity (Hump)




Profile
Flow of Traffic
Decelerating grade (less than 0.25%)
Accelerating grade
5-8% grade
Hump
Plan
Skates or inert retarders at clearance points
Classification Tracks
Group retarders
To additional classification track groups
Weigh-in-motion scale
"Duck-under" track (to engine terminal)
Inspection pit
Hump signal
Green – Hump normal
Yellow – Hump slow
Red – Stop
Flashing Red – Back up
Trimmer leads
Master retarder
Hump repeater signal
Hump bypass track
Receiving yard
Departure & forwarding yard
Through-train service & inspection tracks
Control tower
Yard Office
Caboose tracks
Main tracks

- Receiving (Arrival) Yard
- Retarders
- Trimming
- Departure Yard

- Local Yard

- Intermodal / Team / BIDS , Etc.

Mathematically, the railroad blocking problem is designing a network, called a *blocking network*, and routing shipments over this network so as to optimize the total shipment cost. Figure 1 gives a sample blocking network, where there are three types of nodes: *origins* (where shipments originate), *yards* (where shipments are reclassified), and *destinations* (where shipments terminate). We show here a simplified network as in practice yards can be origins as well as destinations, and nodes can send as well as receive shipments.) Each arc in the network represents a *block* with the origin at the tail of the arc and destination at the head of the arc.

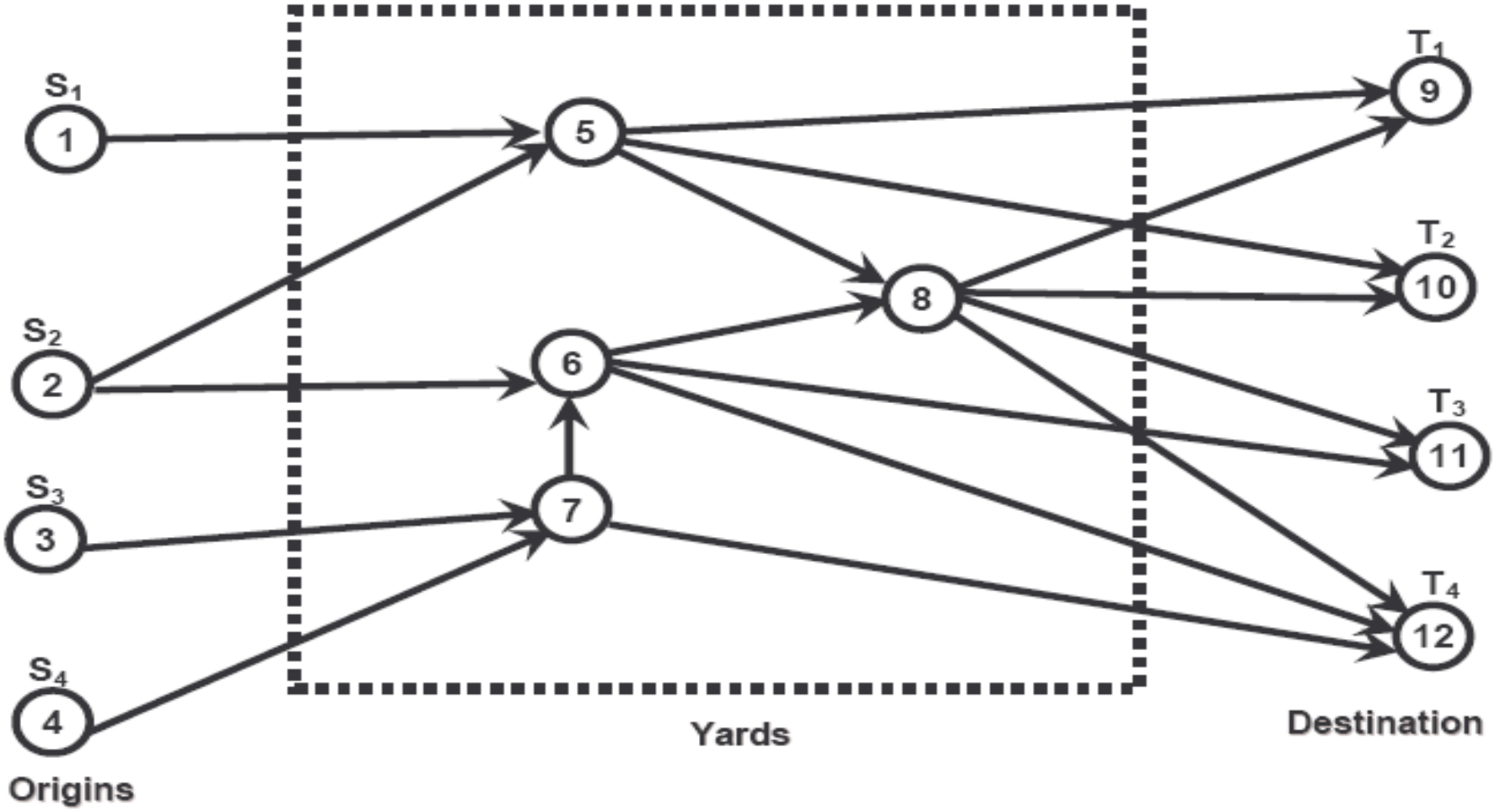
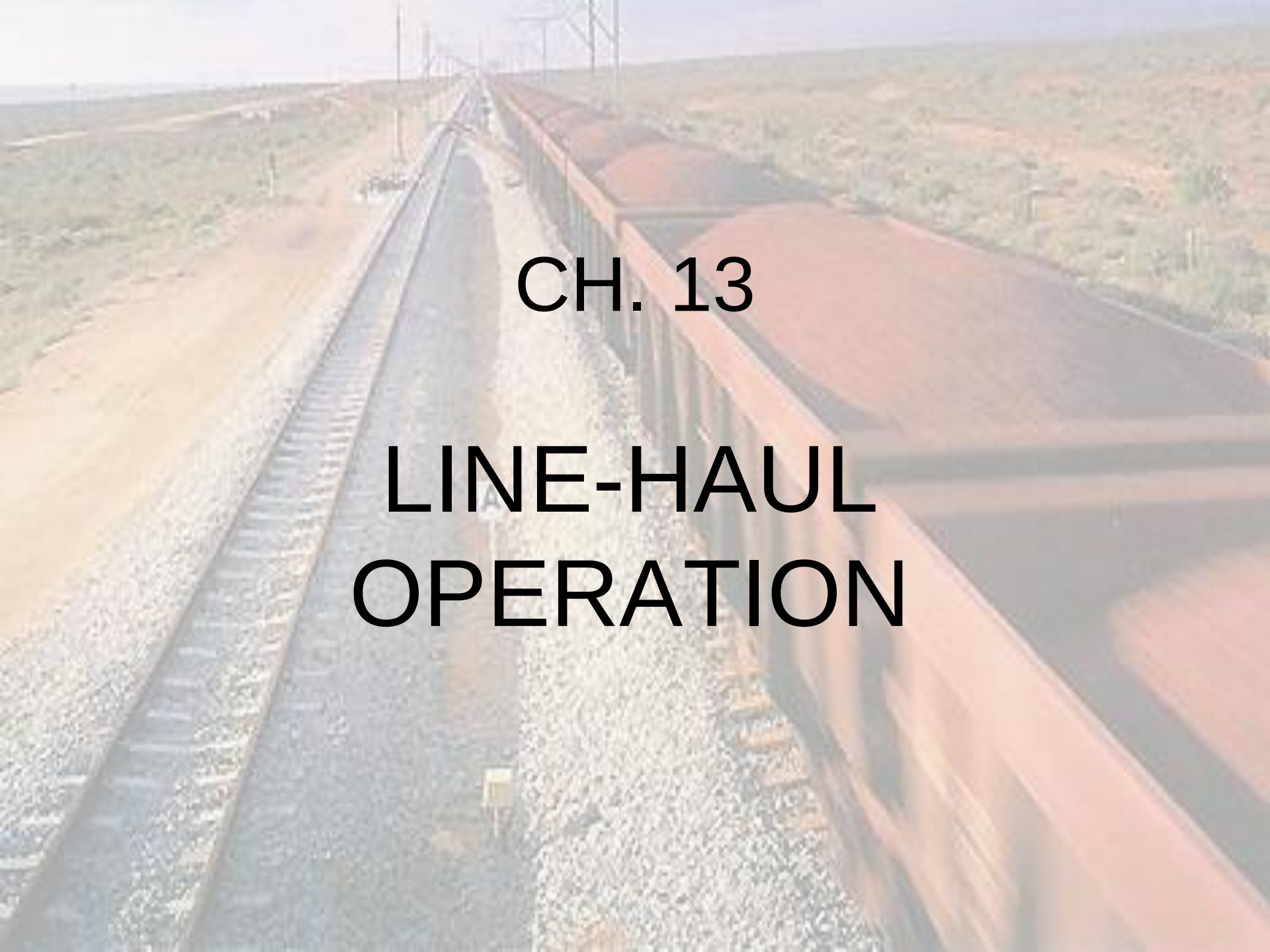


Figure 1. An example of a blocking network.



CH. 13

LINE-HAUL OPERATION

- Introduction
- Scheduled, Advertised & Extra Trains
- Fast / Not-so-Fast Freights
- Keeping the Line Moving

	Station			Schedule (First Class)					Advertised Fgt. Service (Extras on Timecard)										Extras (Example)						
Train	Main Line	Branch		ATK 17	RTK 19	FWDR 151	TTX 153	JD1	HA1	JH3	HD3	HSW	OH5	PMH	PRH	TA-1	HB-5	DDD	ORE Extras	Unit Coal MTY	JH Pick up	ADV JD-1	Grain MTY	Mini Barge	Auto Parts
Frequency				Daily	Daily	Daily Ex Sun	Daily Ex Mon	Daily	Daily Ex Sun-Mon	Daily Ex Sun-Mon	Daily Ex Sun-Mon	Daily Ex Sun-Mon	Daily	Daily	Daily	Daily	Daily	Daily Ex Mon	8 Trains 2/wk	10/wk	2/wk	As Req'd	5/wk	2/mo	4/wk
Atlantic Division	J	Terminal 77th St.	LV.	1800	0900	–	–	–	(Daily From D)	–	–	–	–	–	Pen, By Yard	–	–	–	Ore Pier	Coal Dock	–	–	–	–	–
			LV.	–	–	2000	0100	2300		0315	–	–	–	–	0600	–	–	–	0400	0900	0330	–	–	0045	1900
	I	–	LV.	1915	1115	Pass 2200	Pass 0315	0215	–	0615	–	–	–	–	0930	–	–	–	Pass 0800	Pass 1130	0700	0015	–	Pass 0245	Pass 2200
	–	P	LV.	↓	↓	↓	↓	↓	–	↓	–	–	–	0800	↓	–	–	–	↓	↓	↓	↓	–	↓	↓
	–	O	LV.	↓	↓	↓	↓	↓	–	↓	–	–	0600	↓	↓	–	–	–	↓	↓	↓	↓	–	↓	↓
	–	L	LV.	↓	↓	↓	↓	↓	–	↓	–	–	↓	LV. M 0945	↓	–	–	Run Thru	↓	↓	↓	↓	–	↓	↓
	H	–	AR.	2100	1330	0001	0500	0430	–	0915			1115	1130	1145	–		From SE RR	1400	1300	1030	0300		0445	0130
			LV.	2110	1340	0015	0520	0530	0900	↳	1230	1245	⇐	⇐	⇐	→	1400		1430	1315		0515	From	0500	0200
Allegheny Division (Eastern Standard Time)	–	K	LV.	↓	AR 1600	↓	↓	↓	↓	–	↓	↓	–	–	–	–	↓	0800	↓	↓	–	↓	SW&AA RR	↓	↓
	G	–	LV.	2340	–	Pass 0300	Pass 0810	Pass 0830	1330	–	Pass 1500	1515	–	–	–	Run-	Pass 1610	↓	Pass 1800	Pass 1545	–	0840	Pass 1000	Pass 0750	Pass 0450
	F	–	LV.	0040	–	Pass 0415	0950	1050	1500	–	Pass 1830	Pass 1900	–	–	–	Thru From AA	Pass 1935	1800	2200	1915	–	1130	1250	0940	0650
	E	–	LV.	Pass 0430	–	Pass 0900	Pass 1440	Pass 1800	Pass 2300	–	0030	Pass 0100	–	–	–	(NW & NE RR)	Pass 0115	Pass 2400	Pass 0630	Pass 0300	–	1845	Pass 1850	Pass 1430	Pass 1330
	–	T	LV.	↓	–	↓	↓	↓	↓	–	↓	To HH	–	–	DV-1	0100	↓	↓	↓	↓	–	↓	↓	↓	↓
	D	–	AR.	0645	–	1115	1750	2230	0300	–	0415	and	–	–		0500	0430	0400	1030	0700	–	2315	0100	1730	1650
			LV.	0700	–	1130	1830	↳	0350		↳	STU	→	→	0750	0800	0515	↳	To	0830		–	0215	1800	2000
	–	V	AR.	↓	–	↓	↓	–	↓	–	–	RR Pts.	–	–	1530	↓	↓	–	Steel Mill RR	↓	–	–	0915	↓	↓
Western Division (Central Standard Time)	C	–	LV.	0745	–	Pass 1230	Pass 1930	–	0650	–	–				–	Pass 1000	0730	–	–	Pass 1045	–	–	Set out	Pass 1900	Pass 2245
	–	W	AR.	↓	–	↓	↓	–	↓	–	–	–	–	–	–	↓	↓	–	–	Pass 1245	–	–	at U;	↓	↓
	B		AR.	0925	–	1415	2115		0900							1201	0900		–	To Mine	–	–	MNO R. R.	2050	0100
	A	–	AR.	–	–	Run-Thru to PDQ RR	2300	–	1200	–	–	–	–	–	–	1500		–	–		–	–	Conn. To A	2250	

- Balancing the Power
- Moving the Blocks
- Pre-Blocking
- Synchronized Arrival
- Assigning Motive Power

- Helpers and Doubling
- Locomotive Selection
- Computerized Scheduling
- Car Scheduling

CH. 14

UNIT – TRAIN OPERATION

- Introduction
- Multi-Car Rates
- The Unit-Train
- Specialized Equipment
- Equipment Utilization
- Mini-Trains