

GREAT NORTHWESTERN RAILWAY

OPERATIONS ORIENTATION



History of the GNW

- **Connects UP/SP Overland Route and the AT&SF Santa Fe Trail - As the C&S Collapsed, GNW purchased the old DSP&P R.O.W. to provide a connection into Denver**
- **Set between 1970 and 1980**
- **Strong ties and commonality with the Southern Pacific**
- **First and Second Generation Diesels - GNW necessarily utilizes second hand units**

Green River
*Connection to the
Rio Grande and
Western Pacific RRs*

Denver
*Connection to the Burlington
Northern and Union Pacific
RRs*

Denver, South Park & Pacific Route

Northwestern Gateway Route

Valley Gate Division

Bernalillo
*Connection to
the Santa Fe
Rwy*

Tucumcari
*Connection to the
Southern Pacific and
Rock Island RRs*

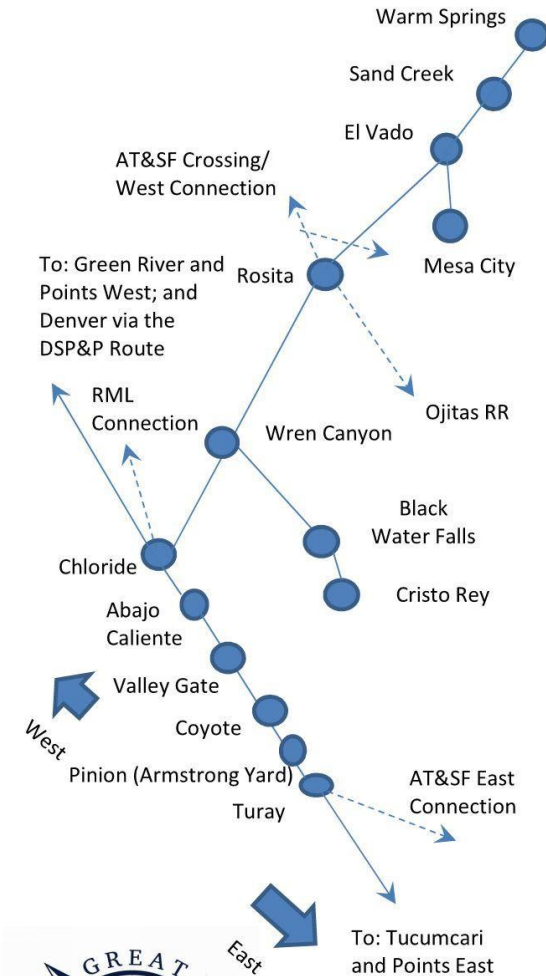


WARM SPRINGS DISTRICT/ NEW MEXICO DIVISION

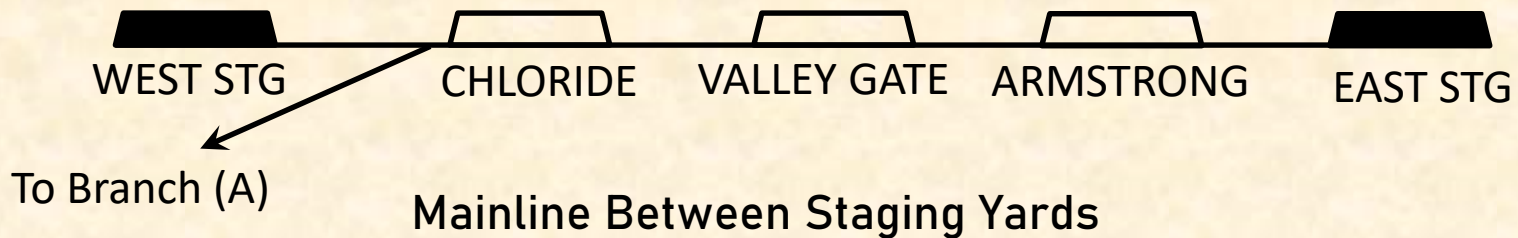
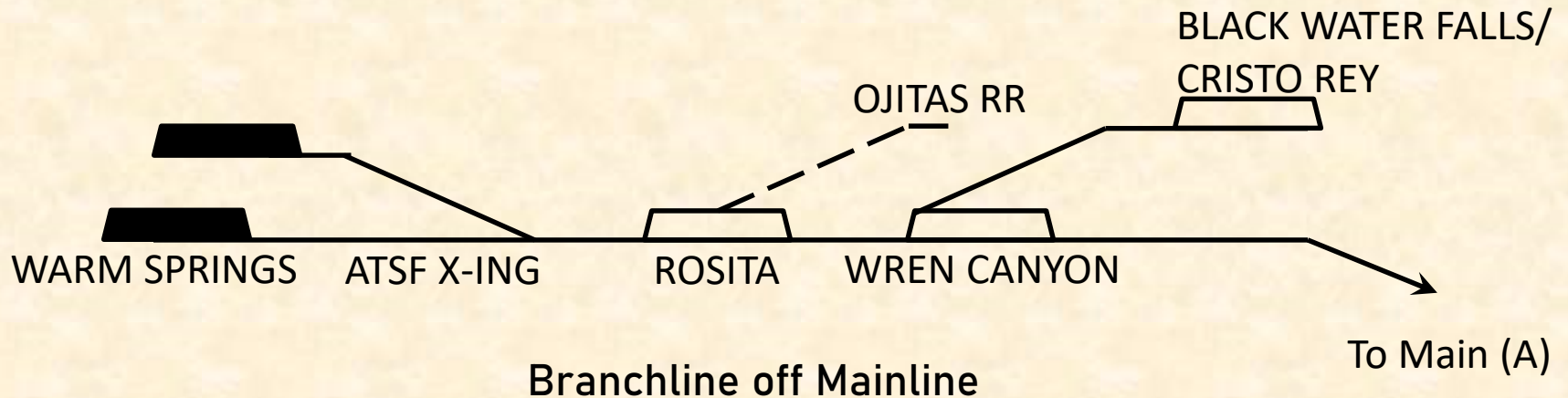
- Segment of bridge line between Utah and New Mexico
- Branch line to Warm Springs
- Three Yards – Armstrong, Valley Gate and Warm Springs
- Staging yards represent points east and west

WARM SPRINGS DISTRICT

AREA MAP



The LAYOUT of the Layout



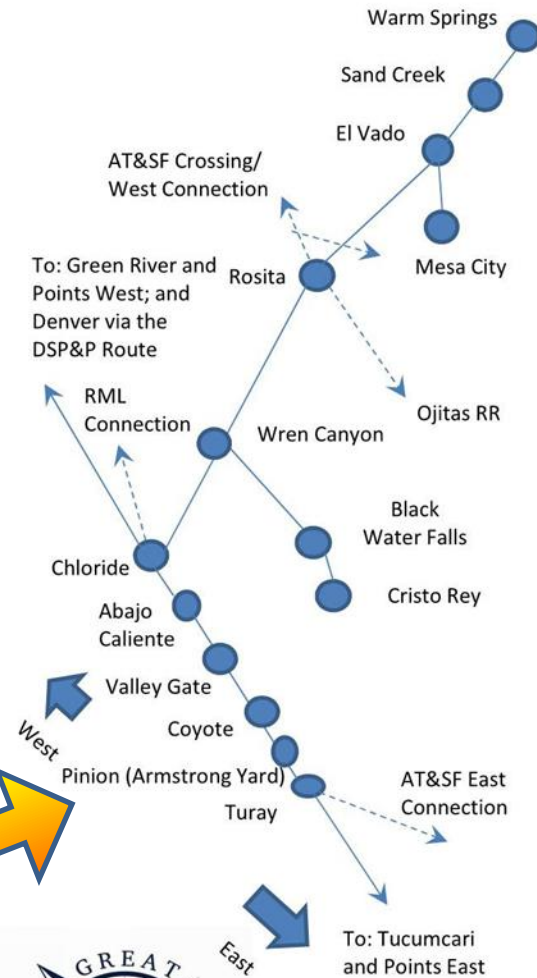
ARMSTRONG

- Armstrong is primary train assembly and departing yard



WARM SPRINGS DISTRICT

AREA MAP



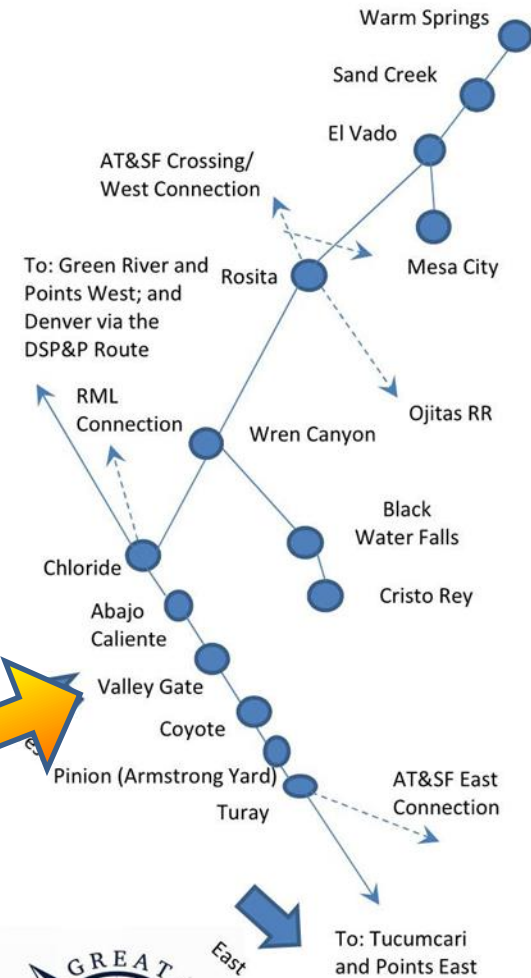
VALLEY GATE

- Valley Gate is primary train receiving and classification yard



WARM SPRINGS DISTRICT

AREA MAP



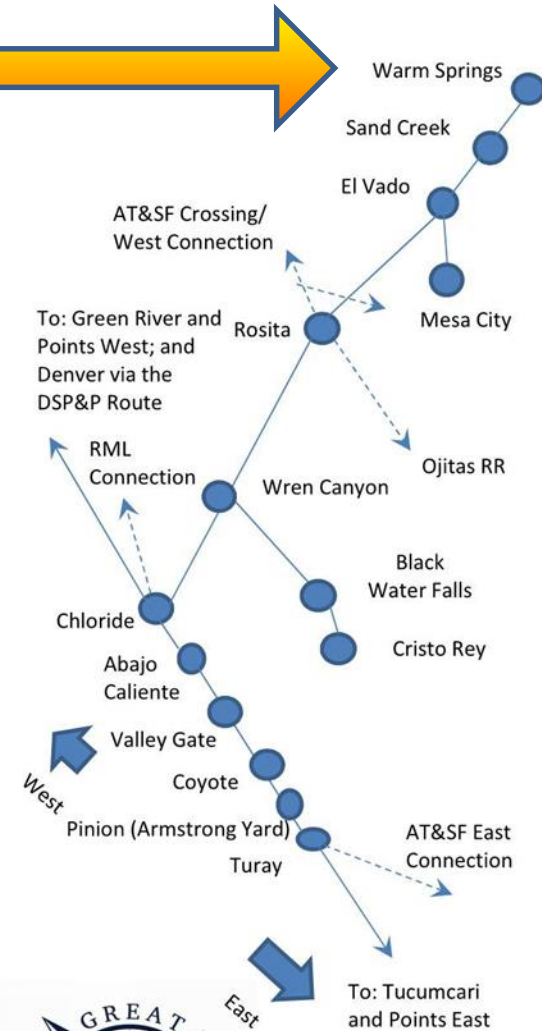
WARM SPRINGS

- End of branch line
- Warm Springs switches (services) cars from surrounding industry.
- “Hauler” freights transfer cars to Valley Gate and from Armstrong.



WARM SPRINGS DISTRICT

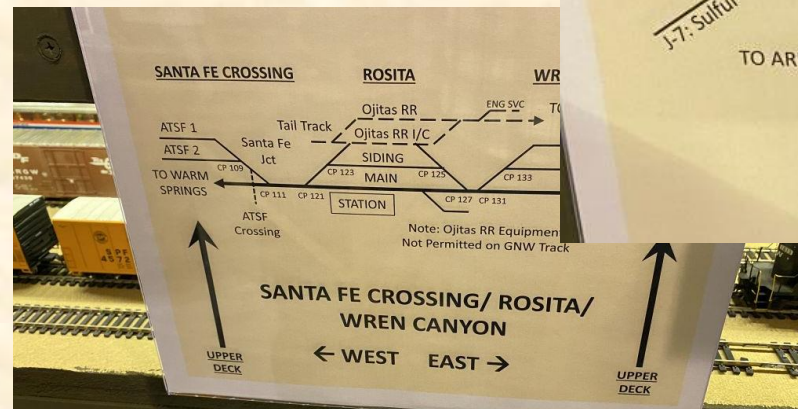
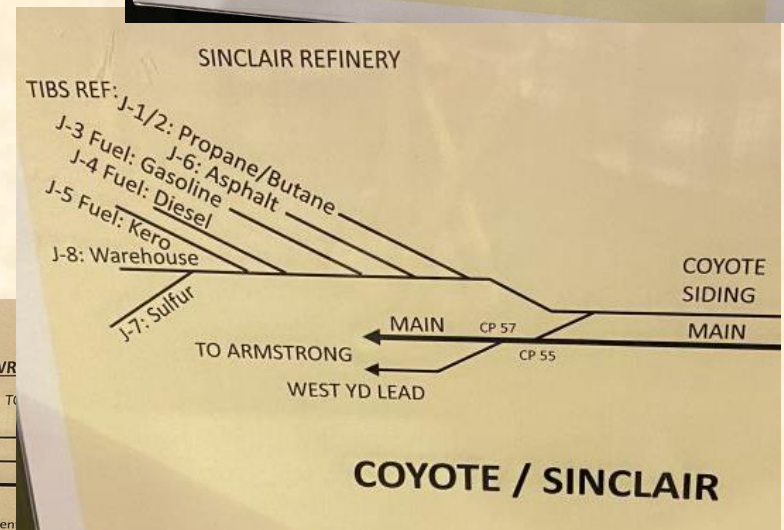
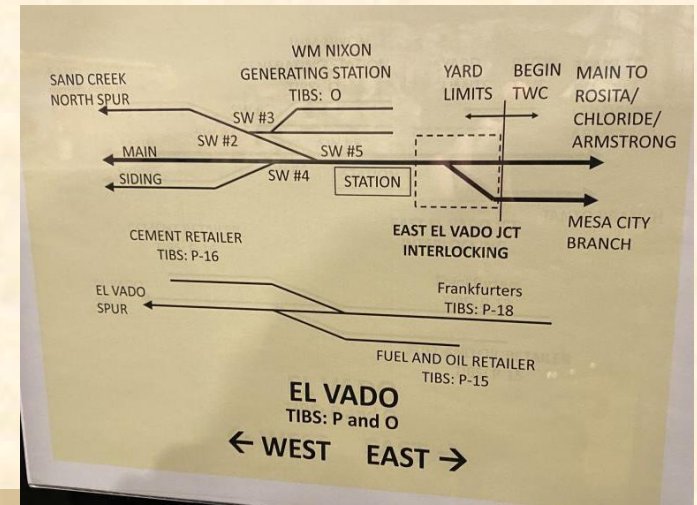
AREA MAP



LAYOUT SIGNAGE

Signs located around layout indicate:

- Location
- Direction
- Track Names
- Industry Names and TIBS Numbers



PHONE SYSTEM

PABX – Private Automated Branch Exchange

- Direct communication between locations
 - True phone system, but dial tone is not same as “Bell System.”
- Yardmasters should use phones for communications
- Reference extension #'s on fascia



Great Northwestern Railway	
PABX Extensions:	
Dispatcher:	602
Armstrong:	603
Valley Gate:	604
Mesa City:	605
Warm Springs:	606



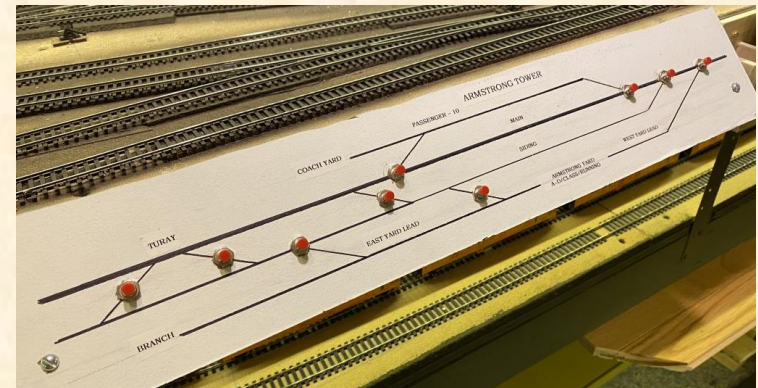
Access to Upper Deck

If Needed...
Step stool available at room entry.



LOCAL CONTROL PANELS

- Warm Springs (East El Vado): Permission to Enter Yard
- Armstrong: Local Override of DS Controlled Turnouts
- Upper Deck: Local Override of DS Controlled T/Os – Note Amber LED indicate “off normal” position
- Turay: Remote Control And Visual Monitoring Of Wye



THIS AND THAT

- ***Locomotives***

- Yards have one or more dedicated switcher locomotives
 - You pick and choose!
- Trains from staging have pre-assigned power
- Trains originating at yards will get power assignments from DS.

- ***Communications***

- Walk over to the Dispatcher's Office
- Phone System (PABX): reference extension #'s on fascia
 - Yardmasters should use phones for communications
- Option of FRS radio for Road Crews (Ch 11, Sub 1)

- ***Obtain Track Warrant***

- Contact DS either by visiting office or via phone.

OPERATING POSITIONS

- ***Armstrong Yardmaster*** – Primarily an assembly and outbound yard.
- ***Valley Gate Yardmaster*** – Primarily an inbound and classification yard.
- ***Warm Springs Yardmaster*** – End of branch – classification and local industries.
- ***Road Engineer 1 and 2*** – Handles all train movements outside of yards, including throughs, locals and transfers.
- ***Dispatcher*** – Responsible for the orderly release and control of trains and road power.

ROAD CREWS

- Move trains across district.
- Through trains from Staging to Staging, dropping cars at Valley Gate and picking up at Armstrong as required.



- Locals out and back from yards to service industries.
- Operates commute and Amtrak passenger trains.

ALL movements on main track by Track Warrant!



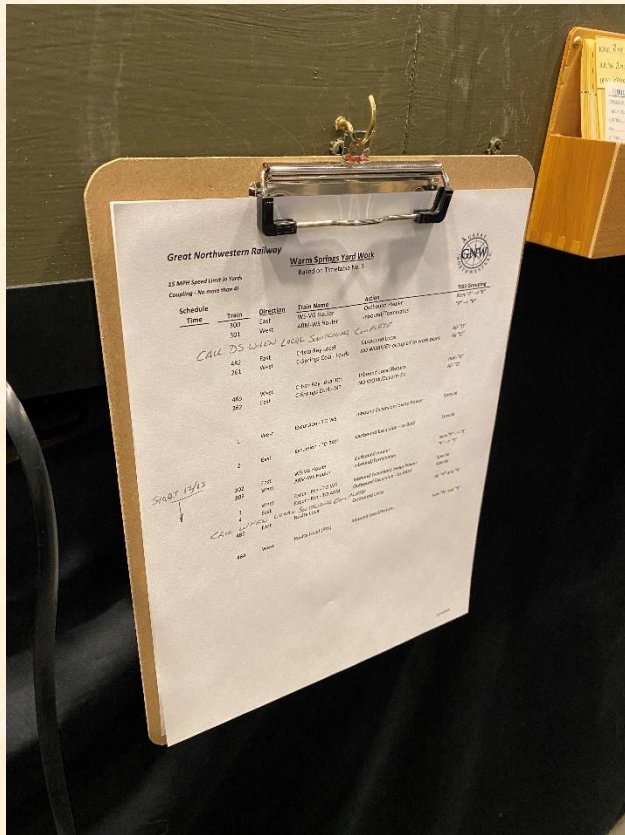
ROAD CREW: TRAIN ASSIGNMENT

ROUTINE

- ***From Dispatcher*** – Ask for the next train – you will be handed a train pack which includes locomotive assignment. Review and familiarize.
- ***Locate Train*** – Find power. Typically ROAD crew brings power from service tracks to train.
- ***Check Consist*** – Before leaving, check car cards against train.
- ***Obtain Track Warrant*** – Contact DS either by visiting office or via phone.
- ***Run Train*** – Follow instructions. READ THEM!
- ***Hostle Power to Engine Tracks (or tie up on staging)***
– Shut off power when completed (E-Stop).
- ***Return to Dispatcher*** – Train pack AND locomotive card.

YARD CREWS

- Blocking/ Classifying
- Track Train Sequence



- May have some local industries.
- Check Op Handbook.

***Stay off main track UNLESS
obtain Track Warrant!***

GENERAL CODE
OF
OPERATING RULES
- AND -
Operator's Handbook
For The
GREAT NORTHWESTERN
RAILWAY COMPANY



OPERATING
DEPARTMENT

Revision 1

Effective December 1, 1979

For More Information

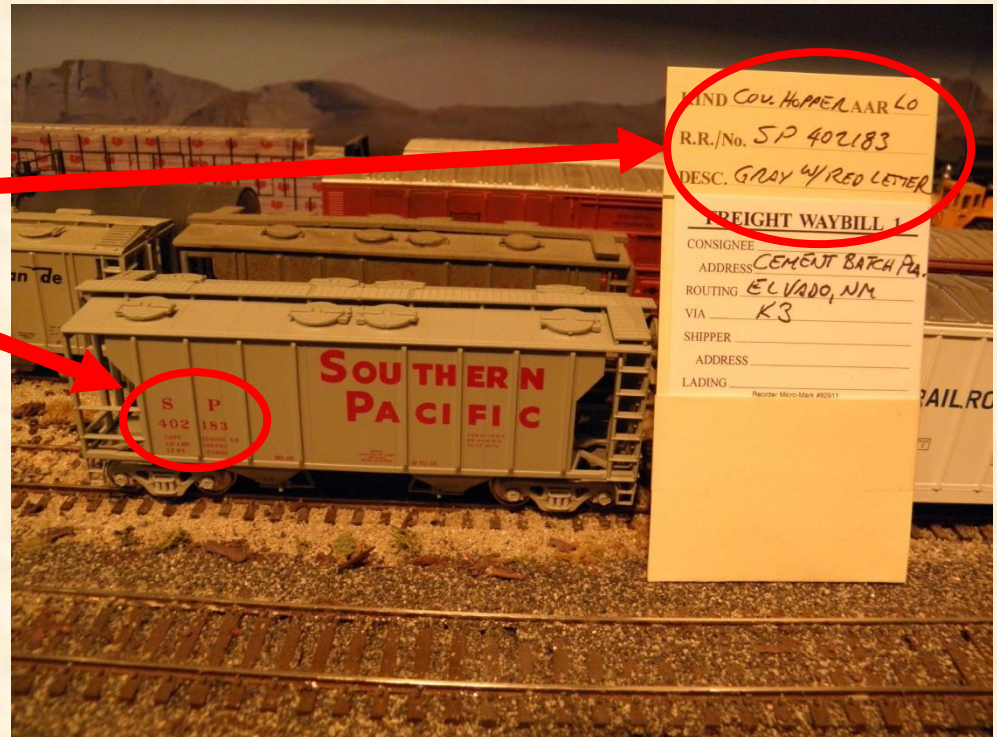
Check out the:

*Railroad General Code
of Regulations and
Operator's Handbook!*

Car Cars and Waybills

All Freight Traffic Moves via CC/WB

Reporting Marks
and Description
Match Car to Card



How To Read A Car Card/Waybill

- Each Car Card...
has an associated
Waybill.
- The Waybill identifies
the car's destination...
the destination city...
and the "TIBS" location.

KIND Box AAR XM
R.R./No. HSW 1010
DESC. RED/YELLOW STRIPE

FREIGHT WAYBILL 1
CONSIGNEE SHERWIN-WILLIAMS
ADDRESS SHIP/RECV
ROUTING TURAY, NM
E-3
ADDRESS
LADING XM

Reorder Micro-Mark #82911

Train/Industry Blocking System **(TIBS)**

- To simplify car routing and locating industries, the GNW uses the Train/Industry Blocking System.
- Every city or off layout destination receives a LETTER CODE.
- Within each city, each possible car destination receives a specific NUMBER code.

TIBS Listing

Turay is TIBS Letter ID
“E”

Orchard Supply is TIBS
Number ID “1” for
yard area and 2 for
warehouse.

Therefore, all cars
destined for
Orchard Supply will
have TIBS ID E1 or
E2.

Off-Layout (Staging) Destinations

Eastbound

<u>A</u>	East Staging	SP (Red)
<u>B</u>	East Staging	ATSF (Yellow)

On-Layout Destinations

PINION DISTRICT - ALL CARS WITH TIBS "E" THRU "L"

<u>E</u>	Turay
E-1	Orchard Supply Hardware - Yard Area
E-2	Orchard Supply Hardware - In Materials Building
<u>F</u>	E Turay
F-1	Bend Brewing Co - Grain
<u>G</u>	Halcon Cement
G-1	Cement
<u>H</u>	Armstrong
H-1	GNW Engine Service - Sand
<u>I</u>	(Spare)
<u>J</u>	Coyote/[Sinclair Refinery]
J-1/2	LNG - Propane/Butane
J-3	Fuel - Gasoline
J-4	Fuel - Diesel

Off-Layout Destinations

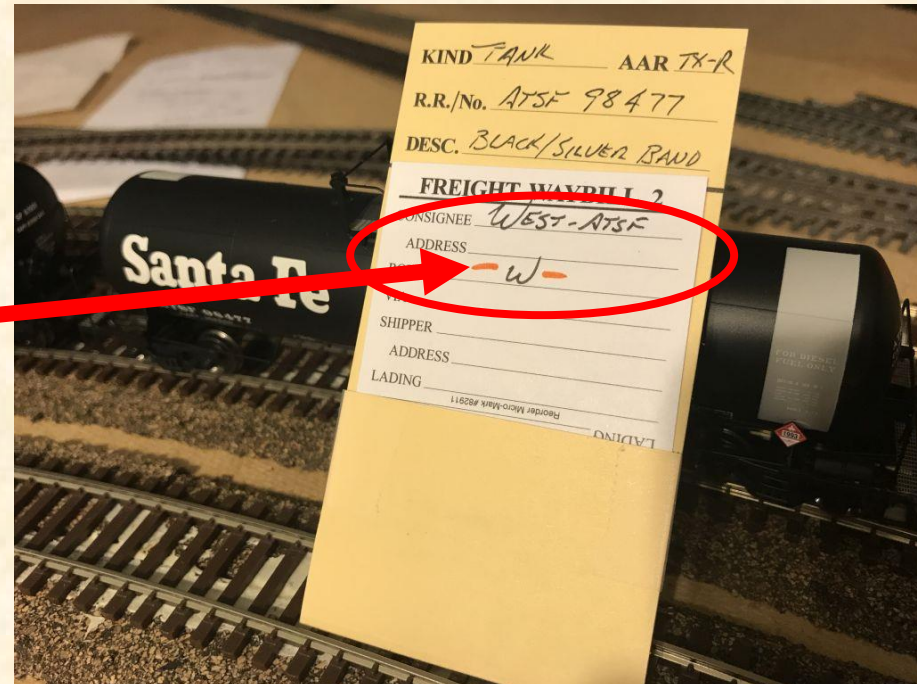
Generally off-layout destinations are only the TIBS Letter ID

Off-Layout (Staging) Destinations

Westbound

<u>W</u>	ATSF Staging	ATSF via Rosita (Orange)
<u>X</u>	West Staging	(Reserved)

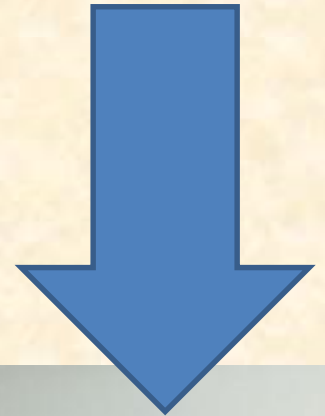
Waybill is color coded to make it easy to see the destination is off layout.



STAGING...

...Resides Under Armstrong...

- *9 Tracks*
- *3 Trains per Track*



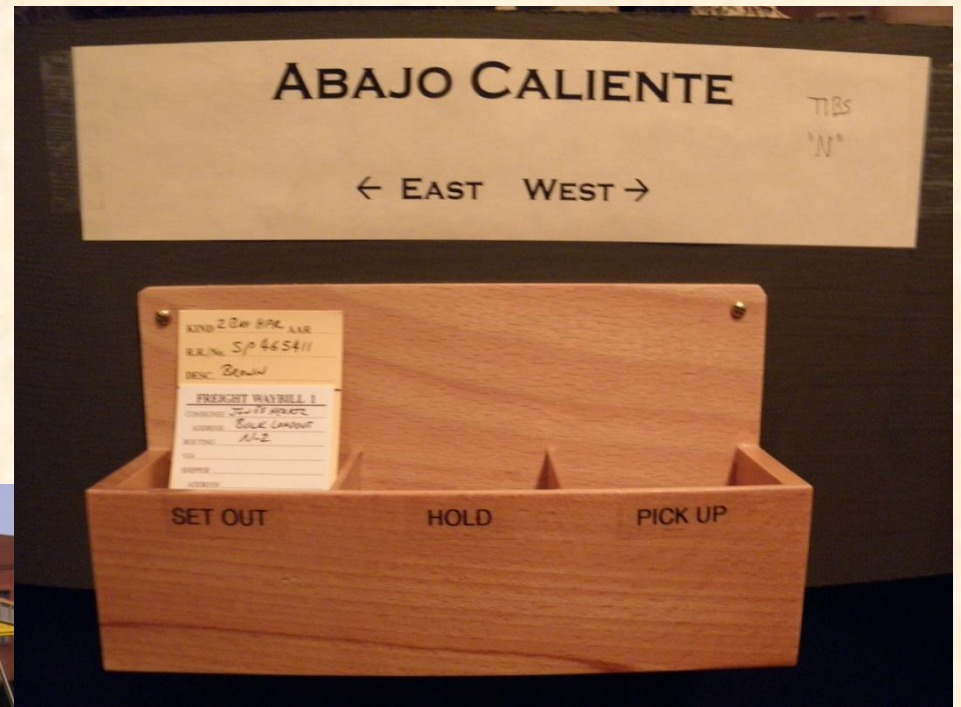
Using TIBS

- Group cars with same TIBS designations; letters then numbers. (Called “BLOCKING”)
- Don’t need to know every industry destination; locals will get it there.
- Yards should be blocking all cars.



Spotting Cars/Handling Cards

- *Once car is spotted, place car-card in Set-Out pocket*
- *Car-Cards for cars to be picked-up are in Pick-Up pocket*



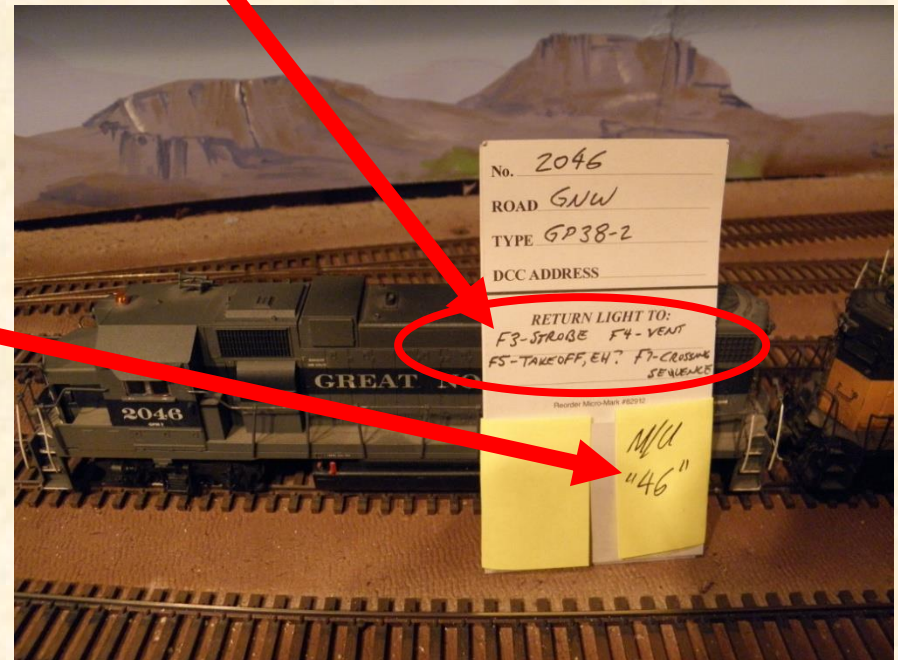
Spotting Cars/Handling Cards

- *IF car cannot be spotted, place car on clear and available track and car-card in “HOLD” pocket.*
- *HOLD indicates car to be spotted when space available.*



Non-Revenue Rolling Stock

- Engine, Caboose and other equipment
- Follow same Car-Card format
- Includes loco operation info
- “MU” locos –
CC’s bound together
with sticky indicating
consist address.
(Use as LOCO number)



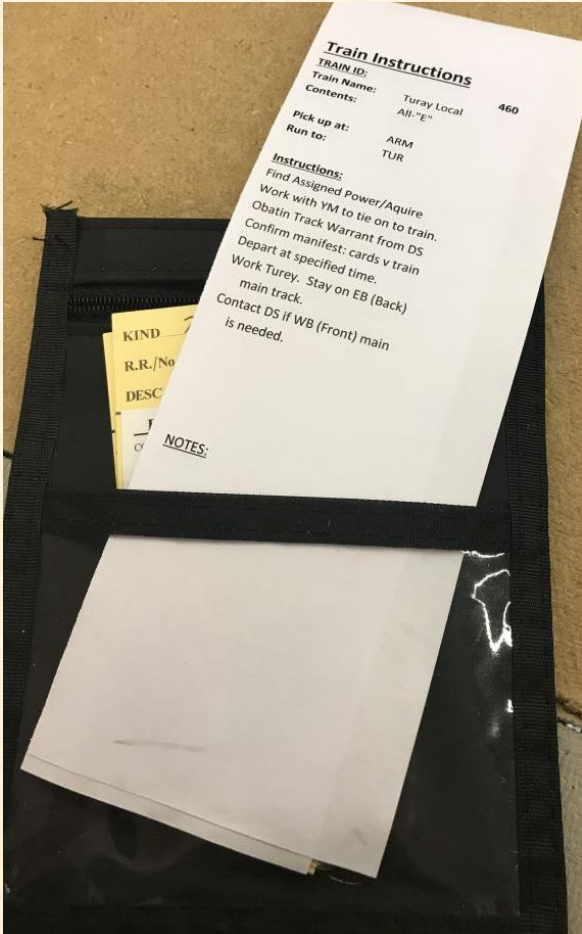
MAKING UP TRAINS

- Cars for a particular destination are collected to form trains.
- Trains are made up and released on a sequence, the Train List.
- Scheduled trains are run on a timetable.



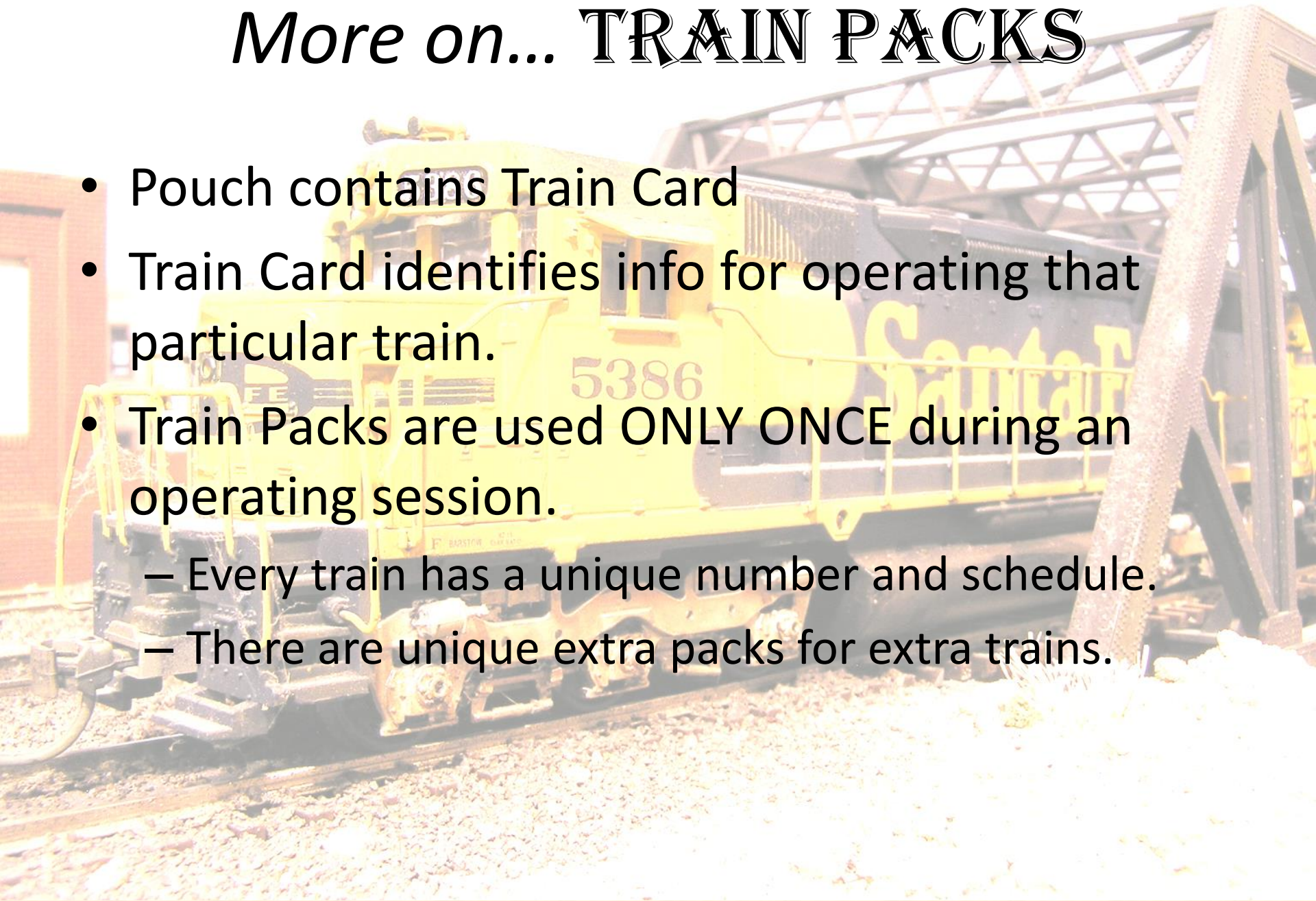
TRAIN PACKS

- Car-Cards are collected for a particular destination.
- The collected cards form the basis of a train.
- Cards are placed into a pouch called a “TRAIN PACK.”



More on... TRAIN PACKS

- Pouch contains Train Card
- Train Card identifies info for operating that particular train.
- Train Packs are used ONLY ONCE during an operating session.
 - Every train has a unique number and schedule.
 - There are unique extra packs for extra trains.





Train Card

*Identifies all
relevant info for
operating a train:*

Train Name
And TIBS contents

Train From/To
and
General
Description of Work

Use the NOTES section for a scratch
pad, or ID issues surfaced during your
run. (They WILL be read!)

Train Number

Train Instructions

TRAIN ID: 300

Train Name: WS-ARM Hauler

Contents: Non-"P" --> "R"

Pick up at: WS

Run to: ARM

Instructions:

Find Assigned Power/Acquire
Work with YM to ID power/train.
Obtain Track Warrant from DS
Couple onto train; airtest.
Confirm manifest: cards v train
Depart at specified time.
Run to destination.
If possible, call in cleared.
Terminate train with DS
Work with YM to park power

NOTES:

Dispatching ...and Control of Trains



THE GNW OPERATING CONCEPT

- Trains from staging bring cars onto the layout:
 - SP and ATSF through trains; CRIP and RML transfers
- Balance of car movements are made by trains that originate and terminate on the layout.
 - Locals
 - Haulers
 - Yard Transfers
- Amtrak
- Commutes



VALLEY GATE SUBDIVISION

TRAIN LIST

All trains with designations greater than 199 are run as extras unless otherwise noted.
First Class and Commuter Trains are run per Time Table Schedule and have all rights unless otherwise superseded.
Based on Timetable No. 9

Description	Direction	Symbol	Train No.	Departure	Meet	Notes
20 Mile to Vado Coal	West	TMEVC	211	12:20 AM	300 at Chloride	Coal Unit Train to Wm Nixon Gen Station; No stop in Valley Gate
Warm Springs to Valley Gate Manifest	East	WSVGM	300	12:25 AM	301 at Mesa City	GNW Manifest Freight, from Warm Springs to Valley Gate
Valley Gate to Warm Springs Manifest	West	VGWSM	301	12:26 AM	300 at Mesa City	GNW Manifest Freight, from Valley Gate to Warm Springs
Montrose to Tucumcari Manifest (SP/GNW)	East	MOTUM	200	2:50 AM		Through freight; stops in Valley Gate - West
Tucumcari to Montrose Manifest (SP/GNW)	West	TUMOM	201	4:25 AM	212 at Chloride	Through freight; stops in Valley Gate - West
Vado to 20 Mile Coal (Empties)	East	EVTMC	212	5:27 AM	201 at Chloride	MT Coal Unit Train from Wm Nixon Gen Station; No stop in Valley Gate
Commute	East	Commute	110	6:00 AM	110 turns to become 113	Originates in Warm Springs, Terminates in Valley Gate-East
Amtrak - San Juan	West	San Juan	9	7:05 AM	110 at Valley Gate East	Stops in Valley Gate - East ONLY
Commute	East	Commute	112	8:07 AM	113 at Chloride	Originates in Warm Springs, Terminates in Valley Gate-East
Commute	West	Commute	113	8:30 AM	112 at Chloride	Originates in Valley Gate-East, Terminates in Warm Springs
Abajo Caliente Local	East	ACL	402	10:00 AM		GNW Local from Warm Springs to Abajo Caliente; Works Mesa City
Pacific Fruit Express	East	PFEX	172	10:20 AM		Express Refrigerated Train from West to East; Drop Del Monte Cars in VG
Valley Gate to Albuquerque Transfer (ATSF)	West	SFVGT	501	11:20 AM		AT&SF Transfer Return; Originates in Valley Gate goes to staging.
RI to Valley Gate Transfer (CRI&P)	East	RIVGT	602	1:05 PM	211 at Chloride	Rock Island Transfer from Staging; Terminates in Valley Gate
Albuquerque to Valley Gate Transfer (ATSF)	East	SFVGT	502	1:33 PM		AT&SF Transfer from Staging; Terminates in Valley Gate
Abajo Caliente Local	West	ACL	403	1:53 PM		GNW Local from Warm Springs to Abajo Caliente; Works Mesa City
RI to Valley Gate Transfer (CRI&P)	West	RIVGT	603	2:27 PM		Rock Island Transfer Return; Originates in Valley Gate goes to staging.
Montrose to Tucumcari Manifest (SP/GNW)	East	MOTUM	204	2:55 PM		Through freight; stops in Valley Gate - West
Warm Springs to Valley Gate Manifest	East	WSVGM	302	3:30 PM		GNW Manifest Freight, from Warm Springs to Valley Gate
Commute	West	Commute	115	5:18 PM	116 at Mesa City	Originates in Valley Gate-East, Terminates in Warm Springs
Commute	East	Commute	116	5:50 PM	115 at MC /8 at VG-E/Becomes 117	Originates in Warm Springs, Terminates in Valley Gate-East
Valley Gate to Warm Springs Manifest	West	WSVGM	303	6:30 PM	116 at Chloride	GNW Manifest Freight, from Valley Gate to Warm Springs
Amtrak - San Juan	East	San Juan	8	7:00 PM	117 at Valley Gate East	Stops in Valley Gate - East ONLY
Commute	West	Commute	117	8:30 PM	8 at Valley Gate East	Originates in Valley Gate-East, Terminates in Warm Springs
Tucumcari to Montrose Manifest (SP/GNW)	West	TUMOM	205	9:20 PM		Through freight; stops in Valley Gate - West

Release of Trains through **TRACK WARRANT AUTHORIZATION**

- Two kinds of track:
MAIN LINE and Everything Else...
- Yard Areas Under Yard Master Control
- Mainline Under Dispatcher Control
- Need Authorization to Enter and Use Mainline



TRACK WARRANTS

- Depending on Session, May Be Verbal or Paper
- Defines Limits of Authorization
- Authorizations should be read back to assure understanding
- Once given, train OWNS that track

GREAT NORTHWESTERN RAILWAY TRACK WARRANT

No. _____, 19 ____

To: _____ At: _____
(Mark "X" in box for each item instructed)

1. ☐ Track Warrant No. _____ is void.
2. ☐ Proceed from _____ To _____
On _____ Track
3. ☐ Proceed from _____ To _____
On _____ Track
4. ☐ Work between _____ & _____.
5. ☐ Not in Effect Until Arrival Of _____ At _____.
6. ☐ Joint Authority Between _____ And _____.
Note: Trains must move at RESTRICTED speed.
7. ☐ This Authority Expires at _____.
8. ☐ Hold Main Track At Last Named Point.
9. ☐ Clear Main At Last Named Point.
10. ☐ Do Not Foul Limits Ahead of _____, _____.
11. ☐ Between _____ & _____
Make all movements at restricted speed.
Limits occupied by train, engine, men or equipment.
12. ☐ Do Not Exceed _____ MPH Between _____
& _____
13. ☐ Track Bulletins In Effect _____, _____,
_____, _____, _____, _____
14. ☐ Other Special Instructions: _____

OK _____, M Disp. _____ Copied By _____

With the understanding that all mainline track switches within the limits released are lined for the main track:

Reported Clear _____ at _____, M By _____
(Location) (Time) (Crew Member)

Reported Clear _____ at _____, M By _____
(Location) (Time) (Crew Member)

Reported Clear _____ at _____, M By _____
(Location) (Time) (Crew Member)

TRACK WARRANTS

PART 1: Header

- Sequence number

- Date

- Train No.

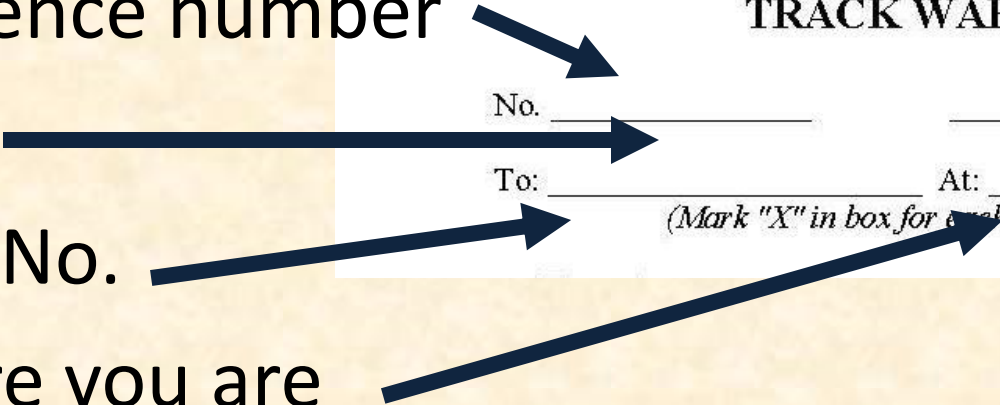
- Where you are

GREAT NORTHWESTERN RAILWAY
TRACK WARRANT

No. _____, 19 _____

To: _____ At: _____

(Mark "X" in box for each item instructed)



TRACK WARRANTS

PART 2: Authorizations

- Provides SPECIFIC authorizations for train to use Main Track
 - Not all blocks will be checked
- Train HOLDS the authority listed as defined in the Warrant

Segment 1:

1. ☐ Proceed from _____ To _____
2. ☐ Not in Effect Until Arrival Of _____ At _____
3. ☐ Hold Main Track At Last Named Point.
4. ☐ Clear Main At Last Named Point.

Segment 2:

5. ☐ Proceed from _____ To _____
6. ☐ Not in Effect Until Arrival Of _____ At _____
7. ☐ Hold Main Track At Last Named Point.
8. ☐ Clear Main At Last Named Point.

Segment 3:

9. ☐ Proceed from _____ To _____
10. ☐ Not in Effect Until Arrival Of _____ At _____
11. ☐ Hold Main Track At Last Named Point.
12. ☐ Clear Main At Last Named Point.

TRACK WARRANTS

PART 3: Other Instructions

- Provides additional instructions to crew.
- These are not optional and must be authorized, adhered to.

Other Instructions:

13. ☐ Work between _____ & _____.
14. ☐ Joint Authority Between _____ And _____.
Note: Trains must move at RESTRICTED speed.
15. ☐ This Authority Expires at _____.
16. ☐ Do Not Foul Limits Ahead of _____, _____.
17. ☐ Do Not Exceed _____ MPH Between _____
& _____.
18. ☐ Other Special Instructions: _____

TRACK WARRANTS

PART 4: Readback and OK

OK _____, __M Disp. _____ Copied By _____

Track Warrant is now in effect!

PART 5: Cleared/Roll-up

With the understanding that all mainline track switches within the limits released are lined for the main track:

Reported Clear _____ at _____, __M By _____
(Location) (Time) (Crew Member)

Reported Clear _____ at _____, __M By _____
(Location) (Time) (Crew Member)

Reported Clear _____ at _____, __M By _____
(Location) (Time) (Crew Member)

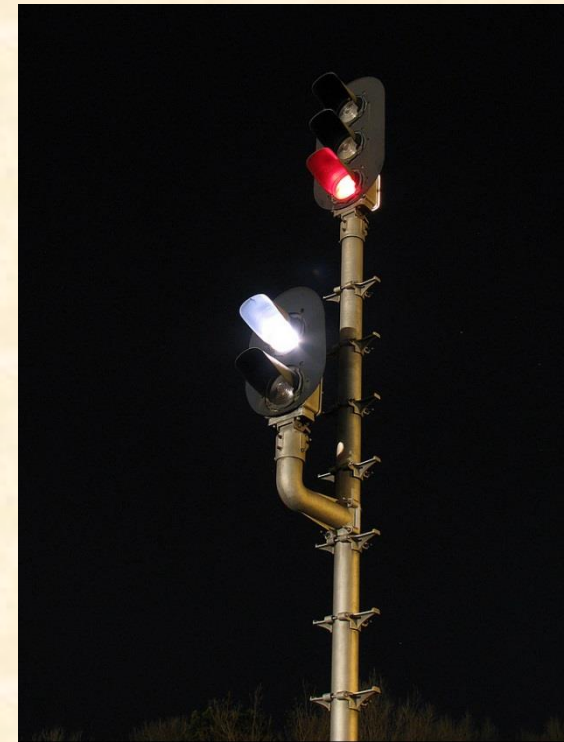
ABS / APB Signals

- ABS / Interlocking Signals Exist on Warm Springs Branch
- ABS: Automatic Block Signals
APB: Absolute Permissive Block
 - Indicates OCCUPANCY
 - NOT Track Authorization
- Red = Stop
- Not Red = Look at your Track Warrant



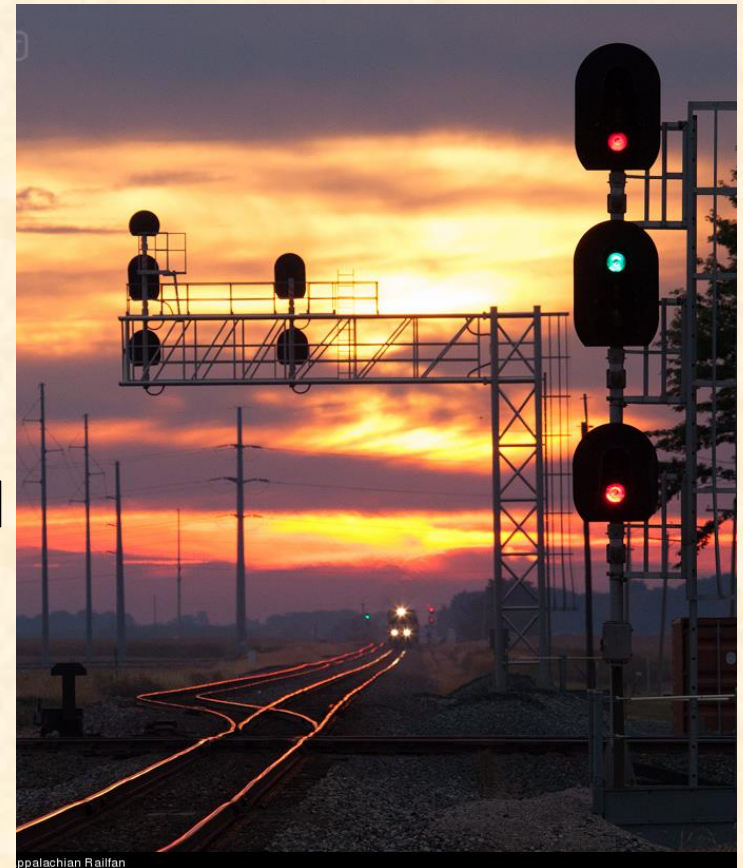
Interlocking Signals

- Interlocking Signals Exist at East El Vado Jct
 - Provides PERMISSION to ENTER Yard Limits
 - Provides ROUTE INFORMATION to LEAVE Yard
- Entering:
 - Red: Stop
 - Lunar White: Restricted
 - Red Flashing: Restricted



Interlocking Signals (Cont'd)

- Interlocking Signals
 - Multi-Head Signals
 - Indicates ROUTE AND OCCUPANCY
 - Does NOT Convey Authority
 - Upper Head: Primary Route
 - Lower Heads: Secondary and tertiary routes
 - “Impossible” Routes always Red
- Located At:
 - Leaving Warm Springs
 - More to come....



YARD LIMITS

- Do not need Track Warrant for Movements Within Yard Limits
- Cannot move into Yard Limits without Yard Master Authorization.



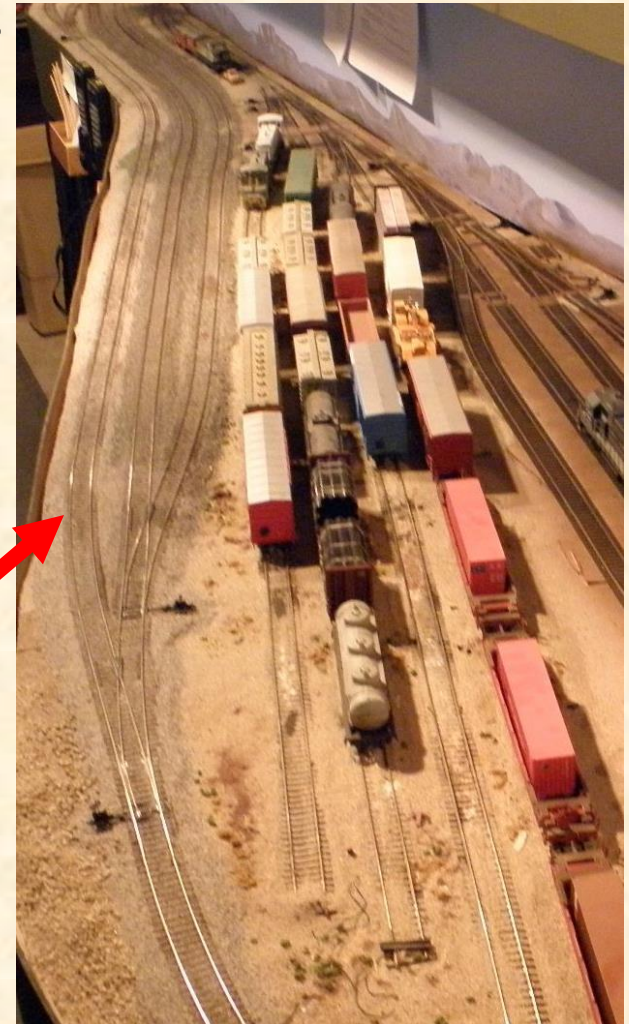
YARD LIMITS

- YARD LIMITS DO NOT EXIST AT ARMSTRONG
 - The Main Line and Siding are under control of the Dispatcher
 - Yard tracks, ARE under ARM YM control
 - “Armstrong Tower” can override DS, but ask permission first.



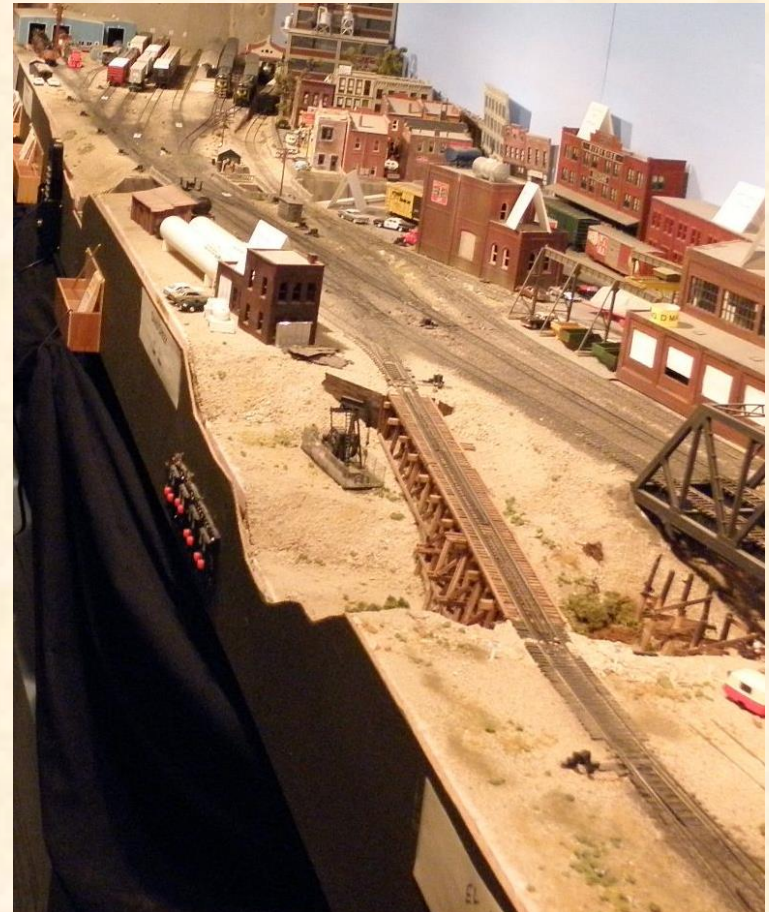
YARD LIMITS

- YARD LIMITS DO NOT EXIST AT VALLEY GATE
 - The Main Line Is Under Control of the Dispatcher
 - However, sidings, yard tracks, etc ARE under Valley Gate YM control
- Mainline Denoted by LIGHT COLOR BALLAST through Valley Gate



YARD LIMITS

- Yard Limit DO EXIST at WARM SPRINGS from El Vado to End-of-Track at Warm Springs.
- All movements within Warm Springs District are under control of Warm Springs YM.



Industrial Switchers

- Abajo Caliente has a captive switcher.
 - Limits of operation are to derail.
- Rosita interchanges with private mining Ojitas RR.
- Foreign/Private RR power not permitted to operate on GNW tracks.



TRAIN HANDLING

- Throttles
- Sound
- Techniques



The MRC Prodigy Handheld

- Easy to Operate
 - Instructions are on back!
- Press LOCO, type in number, and touch enter to capture a loco.

Speed control – either by “+” or “-” buttons or by knob.

Direction between + and – keys...

Railroad time

- Yard Master throttles are tethered, road throttles are wireless.



Sound Equipped Loco Controls

In general:

F0 – Headlight

F1 – Bell

F2 – Long Horn

F3 – Short Horn

F4 – Dynamic Brake Sound

F5 – Gyra Light or Beacon

F6 – Backup Light

F7 – Brakes

F8 – Silence (Mute)

F9 – Dim (Headlight and B/U Light)

STOP – Shutdown – Also stops loco when moving

(See Loco cards for specifics on each engine)



LOCOMOTIVE OPERATION

- Power is on the tracks at all times.
- Digital Carrier Control (DCC) sends signals over the rails to the loco to command actions.
- All locos are addressed by their number.
- All are sound equipped; most are Soundtraxx Tsunami. Refer to Loco Card for commands.
- All are programmed with momentum!
 - If lights and sound are on, power is getting to the unit.

MOMENTUM

- Prototype locos weight between 150 and 250 tons – they don't start and stop easily.
- Simulated within the decoders.
- Road units have more.
- Slower is better.
- Plan your moves.



SPEED

How Fast Is Fast Enough?

- 25-45 MPH on Mainline
 - Note Signage
- 10 MPH in yards



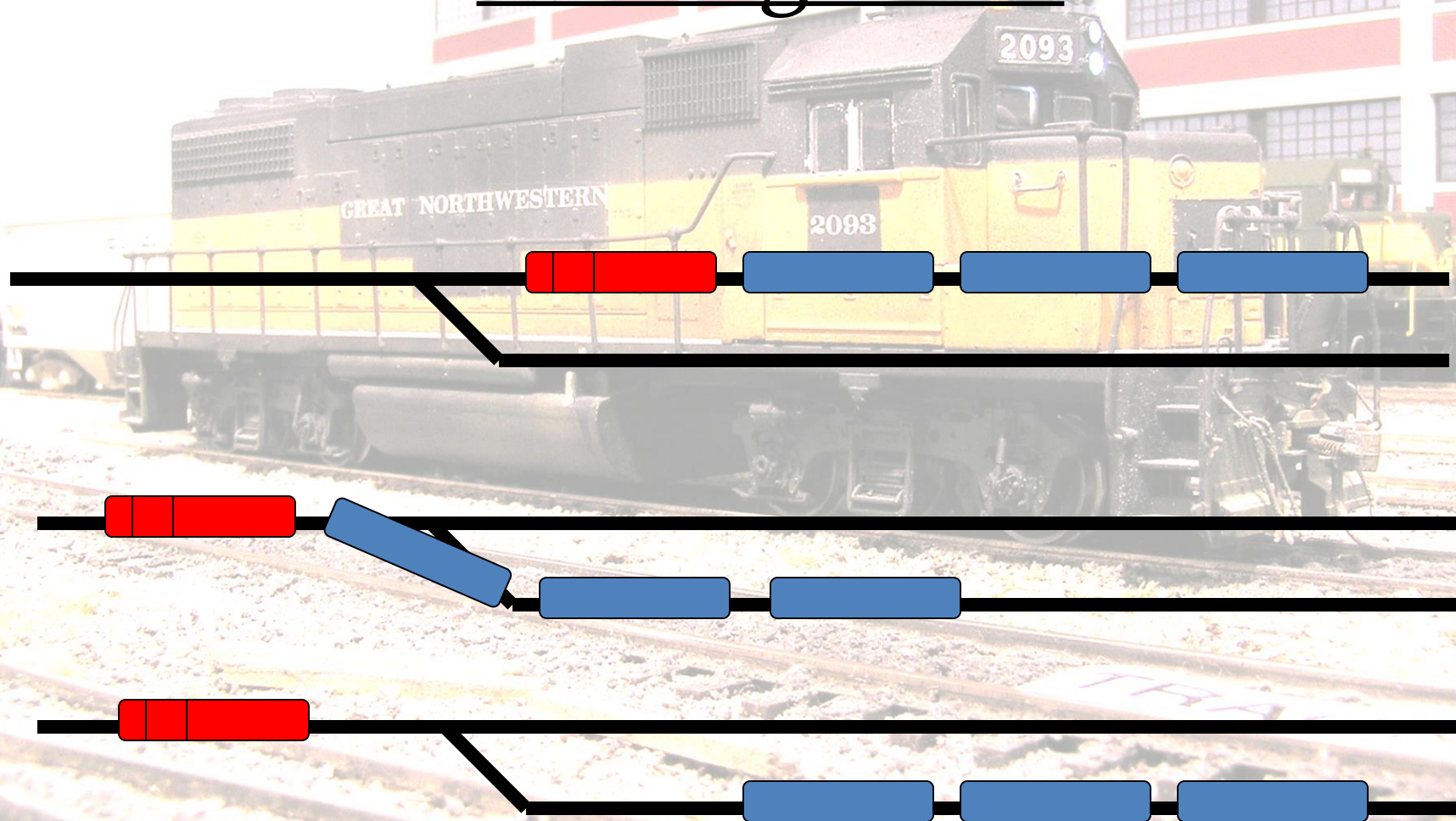
Speed Table	
MPH	Seconds per 50'
5	6.8s
10	3.4s
15	2.3s
20	1.7s
25	1.4s
30	1.1s
40	0.9s
50	0.7s
60	0.6s

SWITCHING OPERATIONS

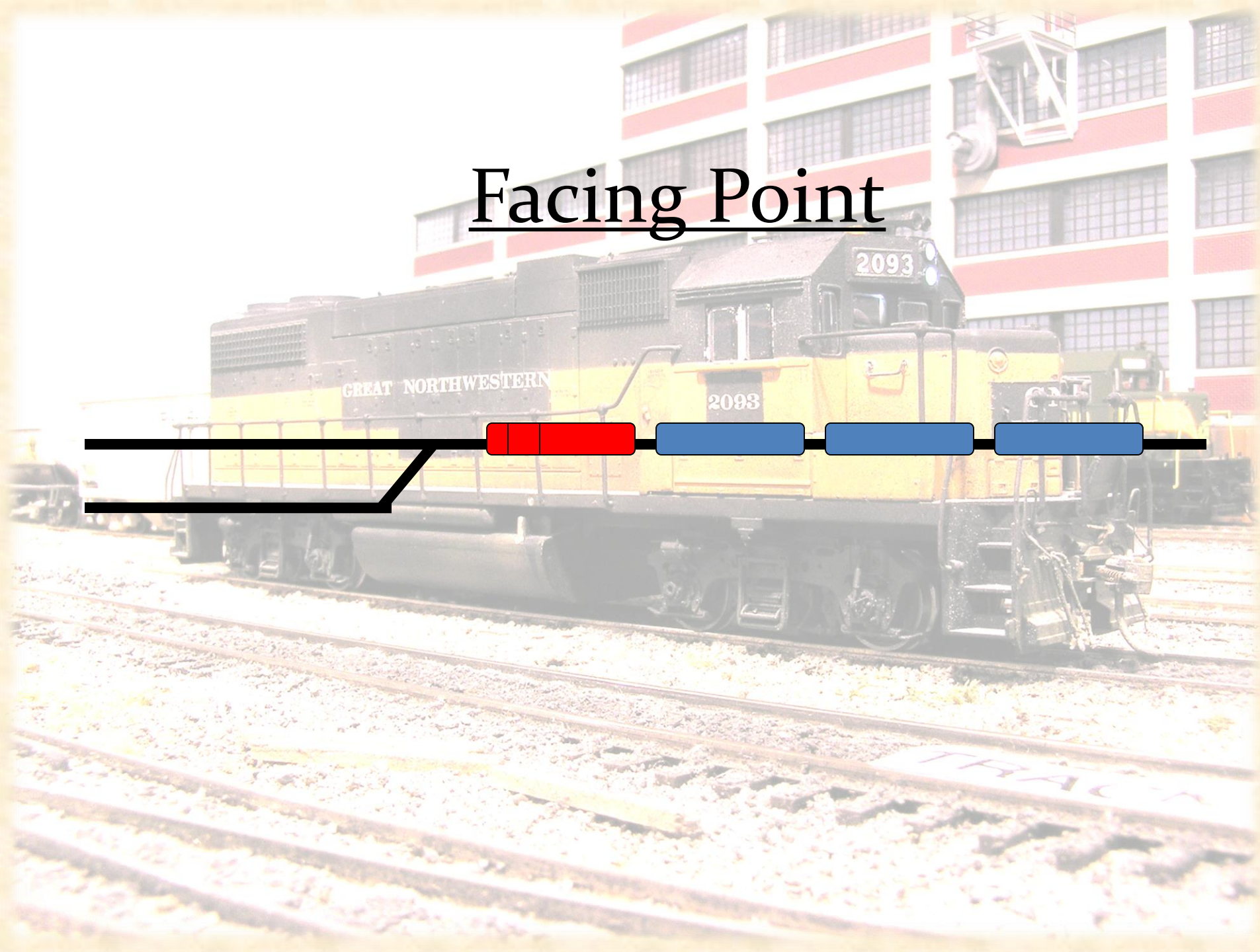
- Group Movements
 - Preferably work everything as a trailing point movement.
 - Group all facing point movements and make just one run-around.



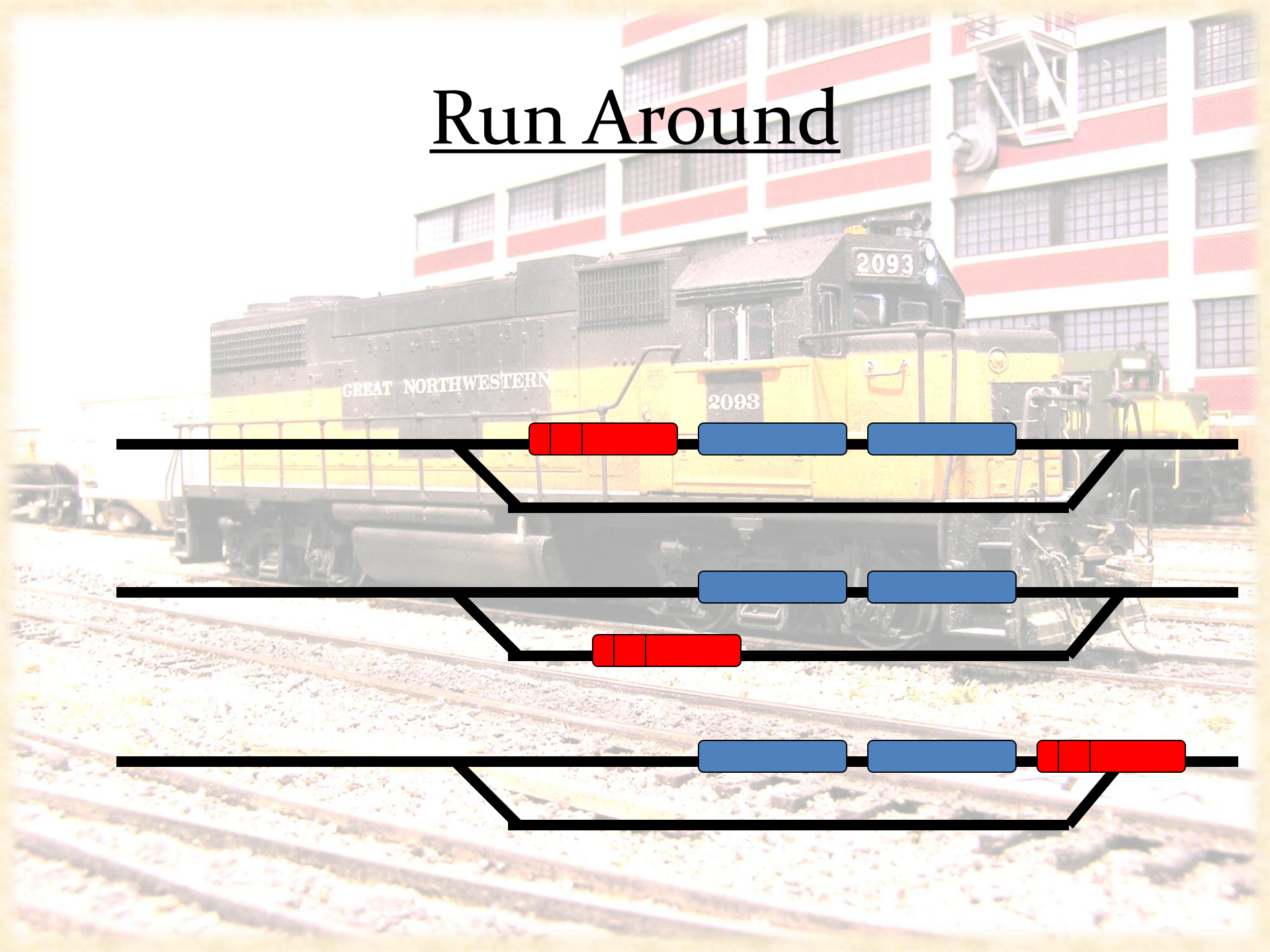
Trailing Point



Facing Point



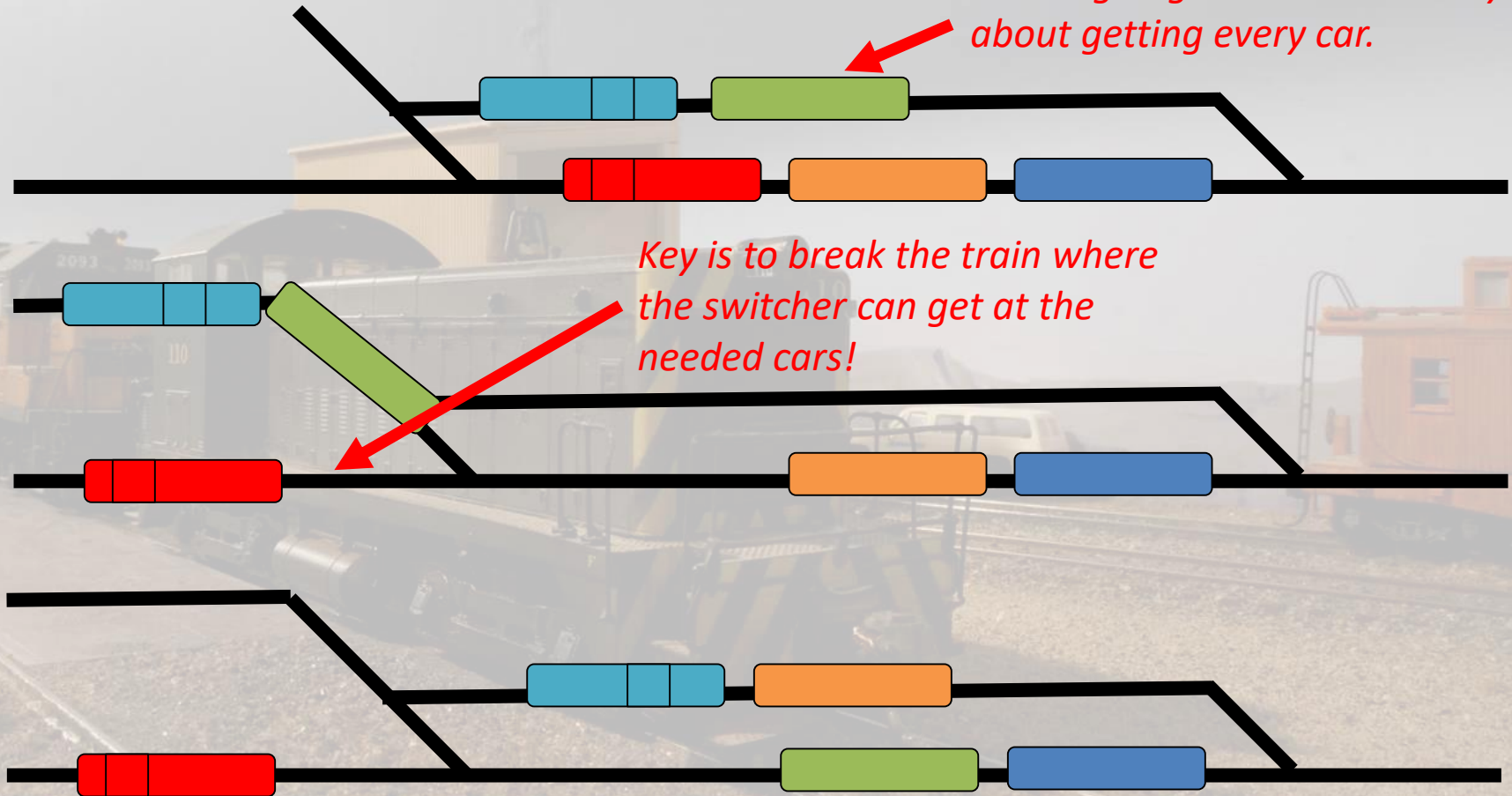
Run Around



Thru Trains at Valley Gate

- Should not take much time – at most 6 moves
 - Shown for Eastbound.

Switcher needs to be ready with the outgoing cut.... Don't worry about getting every car.

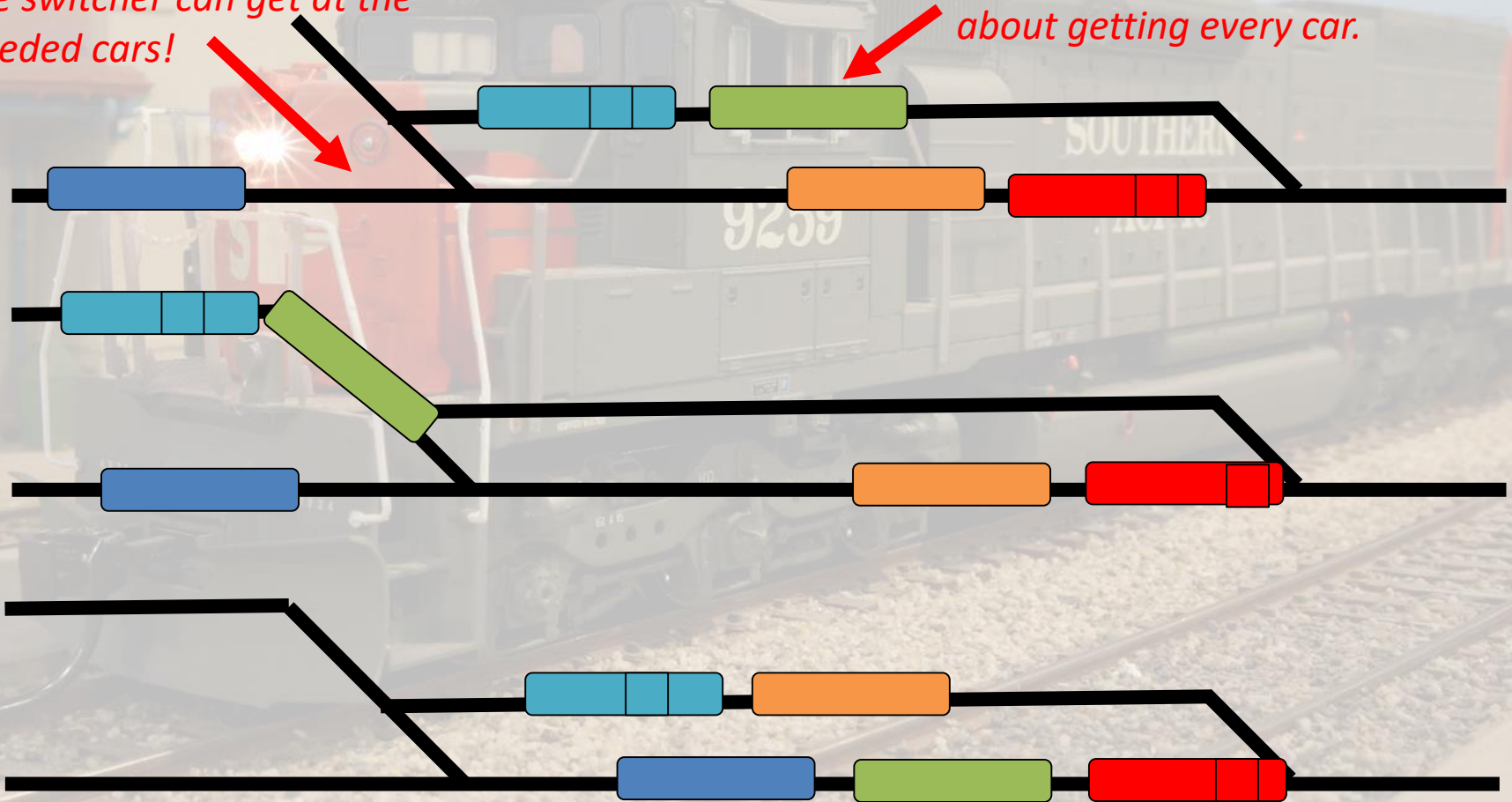


Thru Trains at Valley Gate

- Similar for Westbound trains

Key is to break the train where the switcher can get at the needed cars!

Switcher needs to be ready with the outgoing cut.... Don't worry about getting every car.



ADDED ELEMENTS FOR REALISM

- Deliberate moves. Plan before working.
- Group facing/trailing point moves.
- Slower is better.
- Other ideas:
 - Time to pump up air in cars. Typ 1 min per car.
 - Think about where your brakeman is, and pause to drop him, pick him up, plan cuts where his is...
 - Blow Horn: Before moving, RR crossings, etc.
 - Ring Bell: Stations, engine facilities, grade crossings.

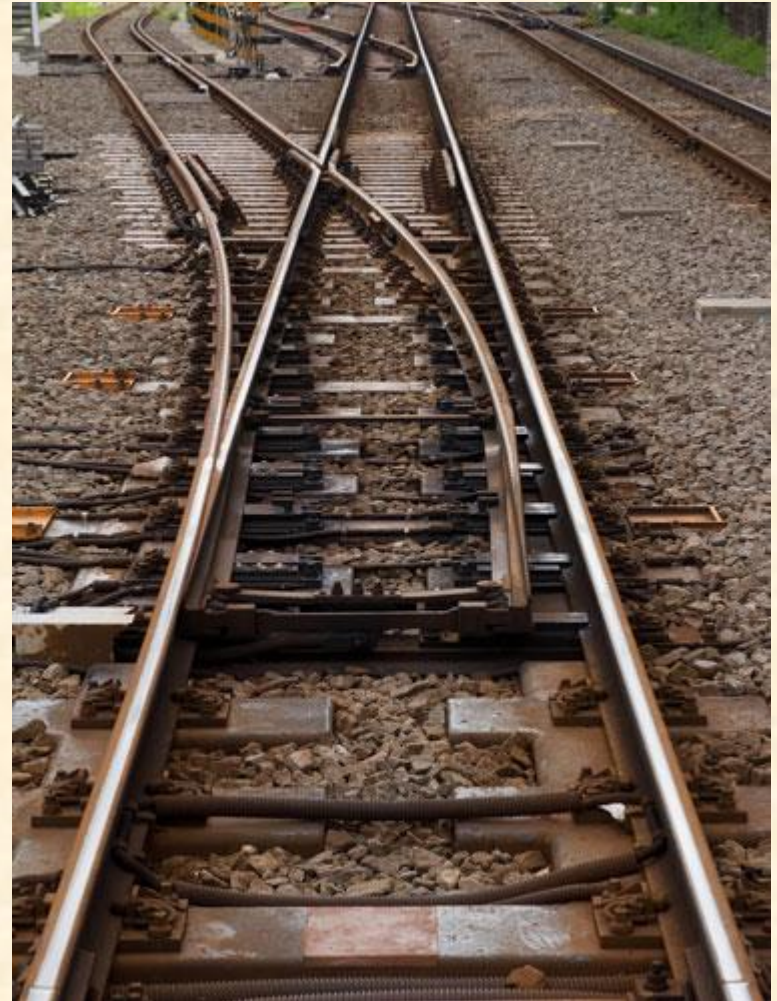
Clean up after switching...

- Return all Switches to the NORMAL or MAINLINE position.
- Leave Car-Cards in proper locations.
- Verify Train-Packs that you have correct cards.



Reduce Derailments...

- Check – Align - Check



GNW MISCELLANEA

- No Food or Drinks in the RR Room
 - Water OK - We have water bottles for you!
- Tight Quarters – Make Room for each other
- Bad Order Cars –
 - Flag with Pink Slip
 - Set out at first convenient location.
- Bathroom – Next to RR entrance or upstairs
- Aprons – Available if desired
- Evening/Night Lighting



Closing Thoughts....



- *Goal is to simulate a rail transportation system in scale.*
- *Operate realistically:*
 - *Speed is not as much a factor as deliberate and safe movements.*
 - *Follow prototype practices as much as possible.*
- *Have fun!*



