NMRA 2024 National Convention – Long Beach

Prototypical Operations in T-TRAK

Bob Schaffer
Green Valley Railroad Club

Prototypical Operations in T-TRAK – NMRA 2024

So, What is T-TRAK?

Video Shot at the
2023 National Train Show
North Texas T-TRAK
Model Railroad Hobbyist

https://www.youtube.com/watch?v=gd7kBwU2ugE

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So, What is T-TRAK?

- The “T” in T-TRAK means several things:
- Trams, Trolleys, Trains, Two-Track, and Table-Top
- Presented at a train convention in Japan in 2000
- Exact size and track placement standards
- The use of Kato sectional Unitrack
- Modules are placed on both sides of standard folding banquet tables that are 30” wide and 8' long creating long loops of track

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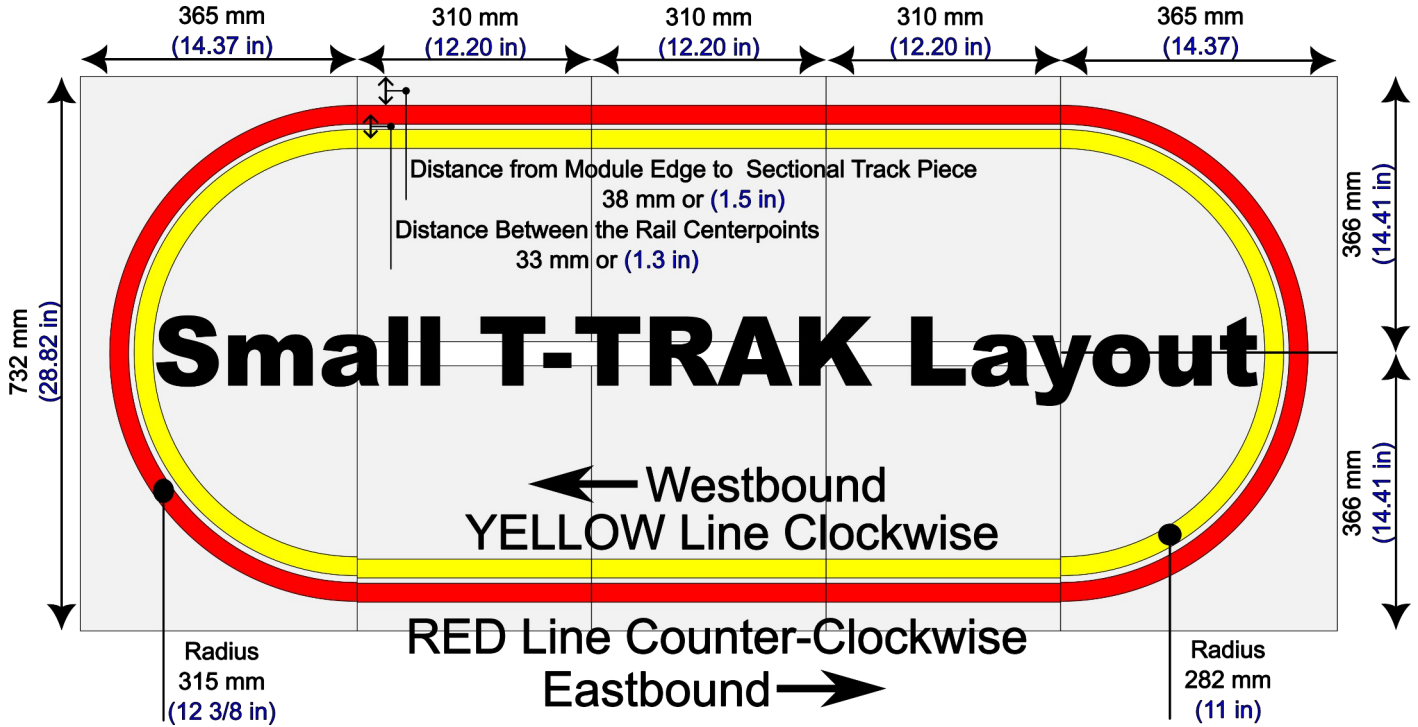

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Advantages of T-TRAK

Opens model railroading:

- No benchwork
- Kato Unitrack
- No wiring (most modules)
- Small size, ease of construction, and low cost of each module

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Advantages of T-TRAK

Practical for the space-challenged

- Need just four corner modules (plus 2 or more straight)
- Store in closet, bring out to work on modules or run trains, then put back

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Advantages of T-TRAK

Finally, and most importantly:

- A group of modelers can get together, each bringing their own modules, and be running trains within a short time
- Each session will be different: depending on available modules, and the whims of the group

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Types of Operations

1. Roundy-Round
2. Yard Operations
3. Mainline
4. Local/Industrial
5. Passenger

Which is More Important to Prototypical Operations?

1. Doing What Railroads Did
2. Doing It How the Railroads Did It

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Special Problems of T-TRAK Operations

1. Limited Depth of Scene - 14” inches max – unless you

- Provide an opposite shallow depth module
- Create a full-depth module
- Design layout with only one row of modules on a table

2. Both Red and Yellow lines are Community Tracks

- If you bring a module, you can run your train
- Junction modules allow for more Yellow Line loops
- If you bring all of the modules that contain a single Yellow Line loop, that loop can be considered dedicated

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Special Problems of T-TRAK Operations

3. **Authority to use the main Red Line varies from layout to layout**
   - Mother may I
   - Strict timetable
   - Operations will require considerable consultation, coordination, and cooperation
4. **Spectators**
   - Both rail and non-rail people/children
   - Teaching moment

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Special Problems of T-TRAK Operations

5. Trains travel only CW or CCW around the layout

- Red Line direction is counter-clockwise
- Yellow Line direction is clockwise
- Eliminates meets – unless……..
  1) The entire layout consists ONLY of modules that have an operations focus, brought by people who want to operate, or
  2) The layout organizer(s) will dedicate specific times for two-way traffic on the Red Line without any other trains permitted

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Importance of Era to Operations

Time and Place: defines more than just the look and feel of the layout

- Authority to use the mainline
- How train is blocked (livestock, hazardous/heavy loads, caboose, passenger)
- How train is worked

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Importance of Era to Operations

Why I like the late 1930's (Spring 1939)

This era has the greatest variety of operations activities and modeling opportunities. (IMHO)

- Ignoring the war years (which for the RR's started in late 1939-1940); railroads carried more ton-miles and more passenger-miles, as a percentage of the US total, than at any other time in history
- The depression had ended for most industries
- I consider this to be the true transition era: with minor exceptions, Steam ruled the mainline and Diesel was used almost exclusively in the yards; yards needed both Steam and Diesel servicing facilities

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Importance of Era to Operations

Why I like the late 1930's (Spring 1939)

- Most Class I railroads had completed dieselization by the late 1940's or early 1950's; the last Steam locomotive used in Class I revenue service was in 1956
- Authority to use the mainline varied depending upon railroad and location; telegraph operators would still OS along the line, radio communications was still rudimentary on most lines
- Livestock still moved by rail, handling rules required feed/water/rest facilities along the main
- Private/Business cars were the private jets of today
- REA and Pullman were dominate
- Mail service was a vital part of the RR business model

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Importance of Era to Operations

Why I like the late 1930's (Spring 1939)

- Ice was still used for refrigeration and railroads needed icing facilities
- Some places in the NE still had milk trains
- Cabooses were assigned to crews
- Livestock handling rules required feed/water/rest facilities along the main
- Trains were shorter and had a greater variety of car types
- Interchanges were more frequent and more varied
- Steam power required more frequent stops and yards were closer to each other than in the modern era

- I probably could come up with more bullet points, but the idea should be clear: I like the late 1930's for both operations and modeling

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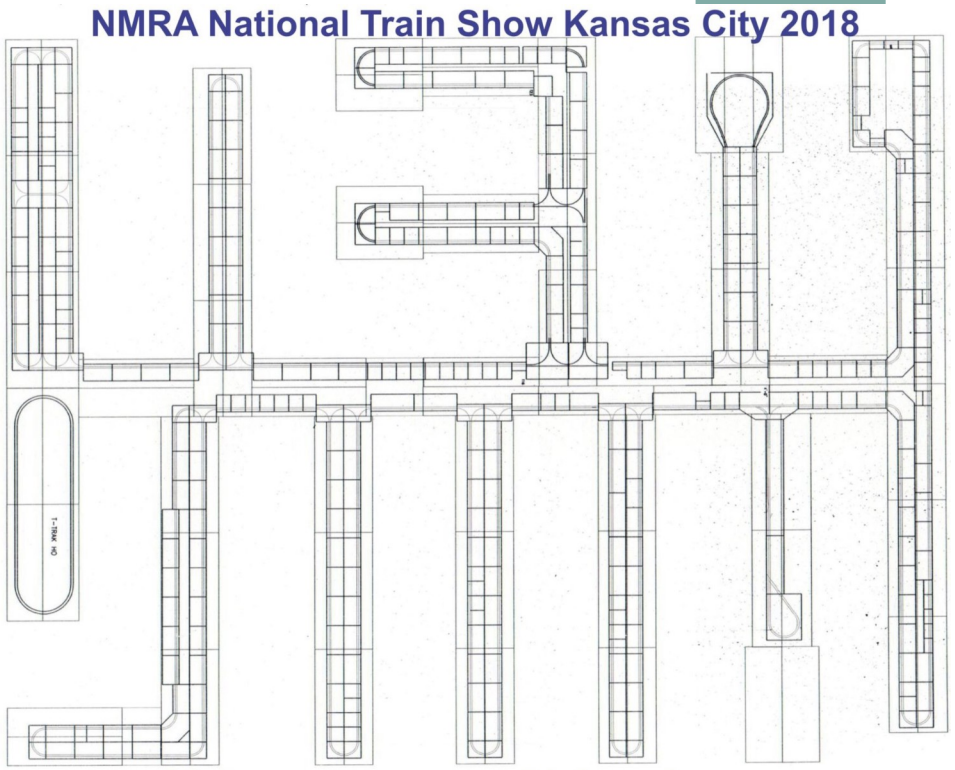
- There have been several very large layouts at national shows that have several hundred single-module-equivalents and over 15 scale miles of Red Line trackage
- Red Line traces the full exterior
- There are about 12 Yellow Line loops, some short, some long



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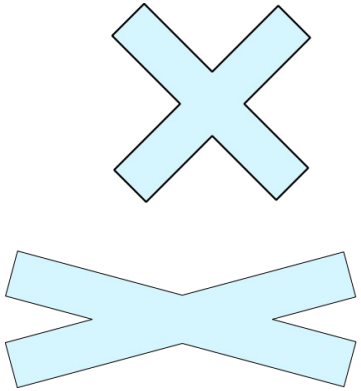
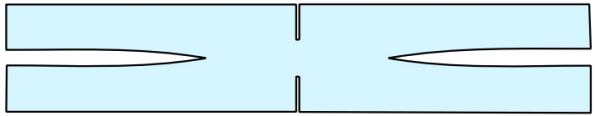
T-TRAK Building Blocks





Double-Crossover
Maintains 33mm Spacing

#6 Turnout
Creates 49.5mm Spacing

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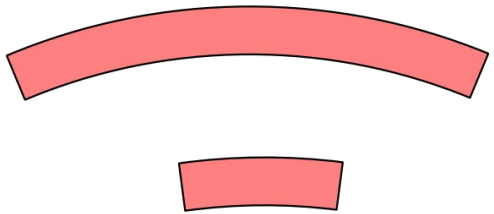
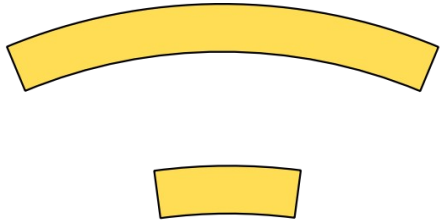
T-TRAK Building Blocks



Radius = 315 mm
45º or 15º



Radius = 282 mm
45º or 15º

Radius = 718 mm
15º

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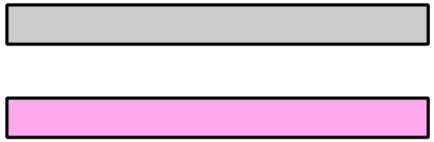
T-TRAK Building Blocks

Non-Operational Track



Almost any straight length is possible

78-108 mm Expansion Track

Signals / Sensors

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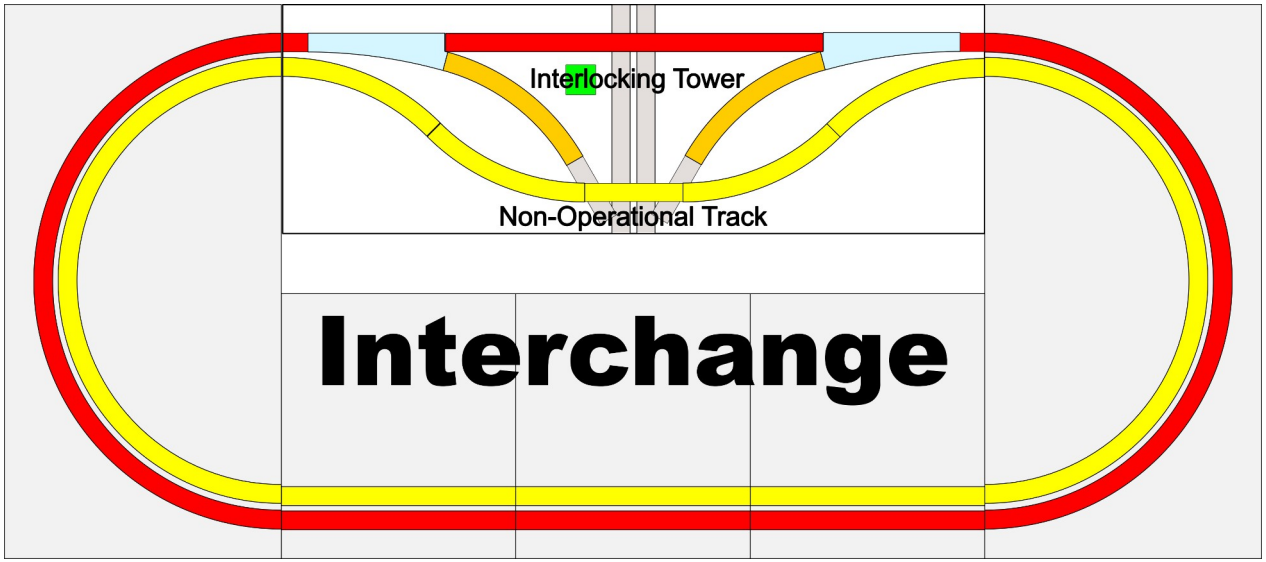
Basic Concept:

Substitute Operations-Modules into an Existing T-TRAK Layout



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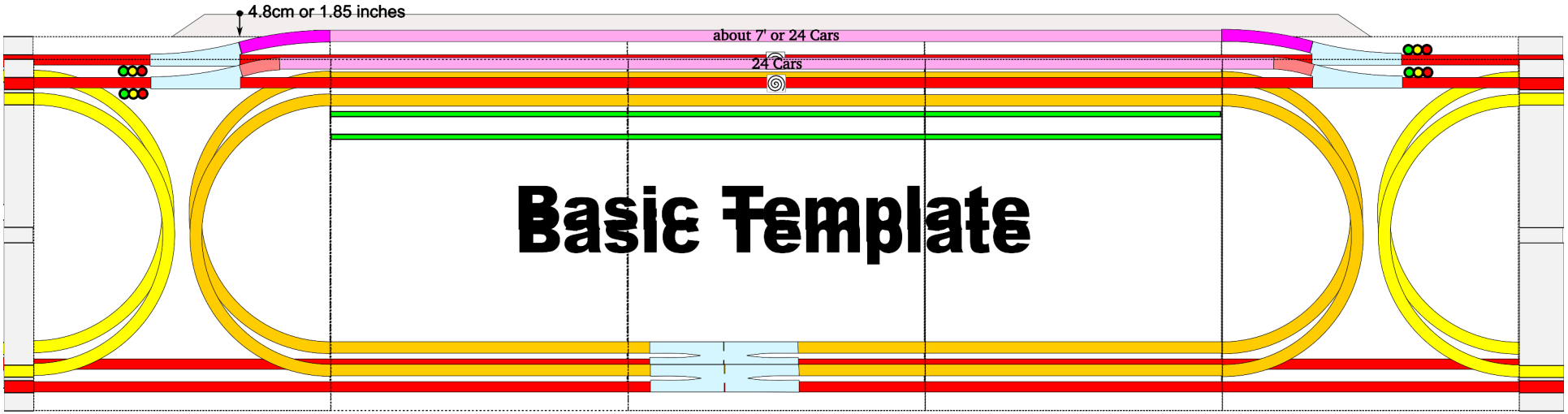
Version One



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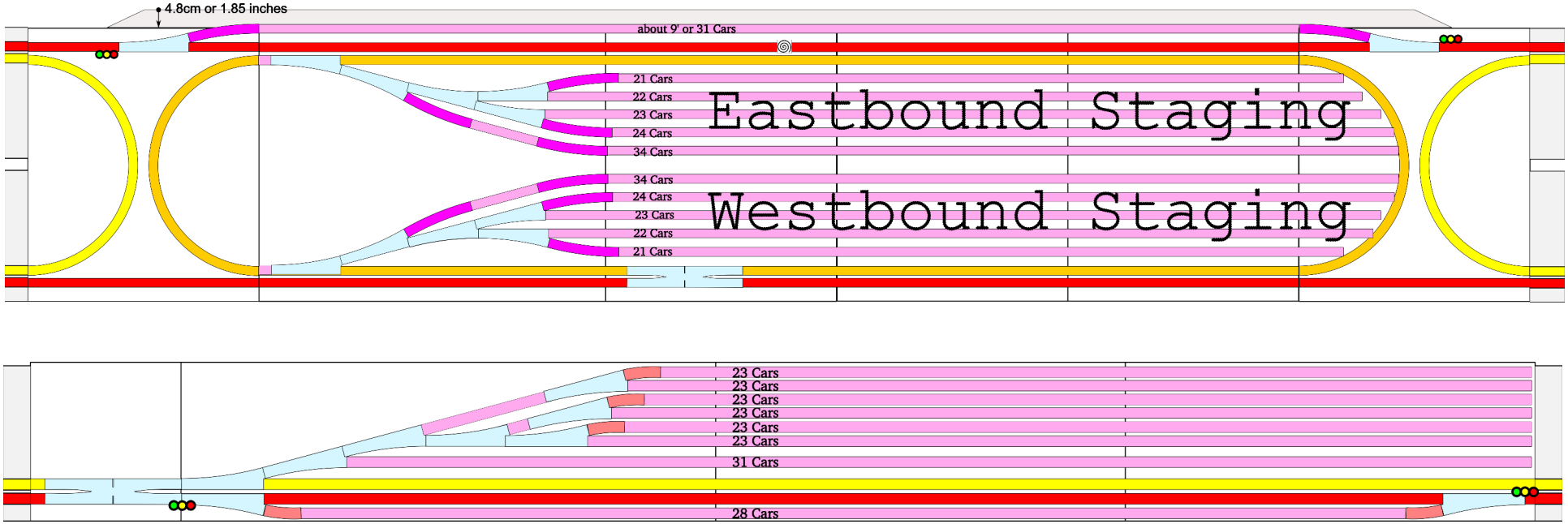
Staging Yard



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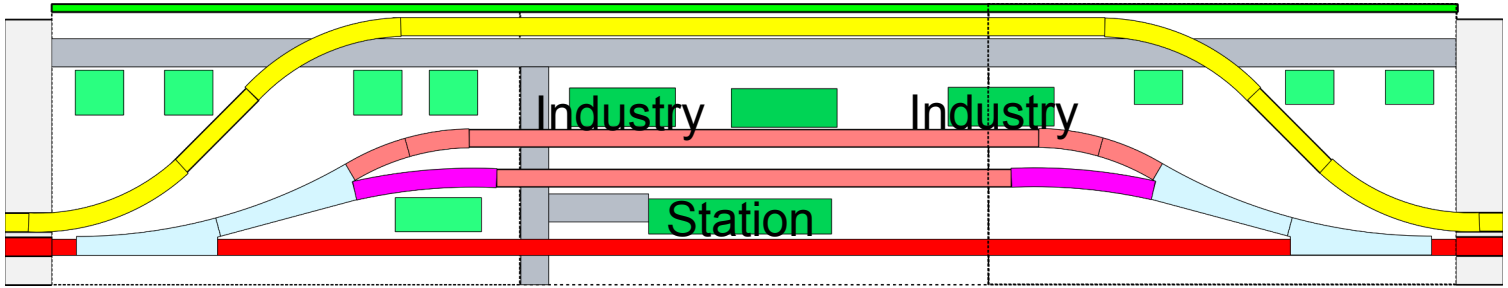
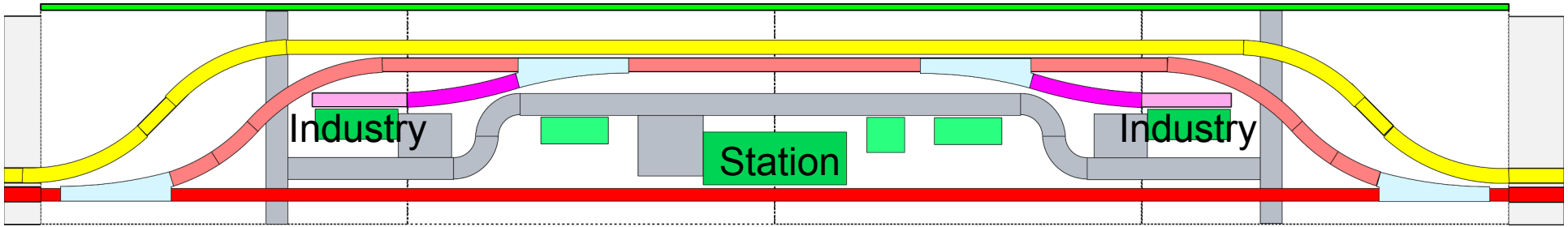
Sidings with Station and Local Industries





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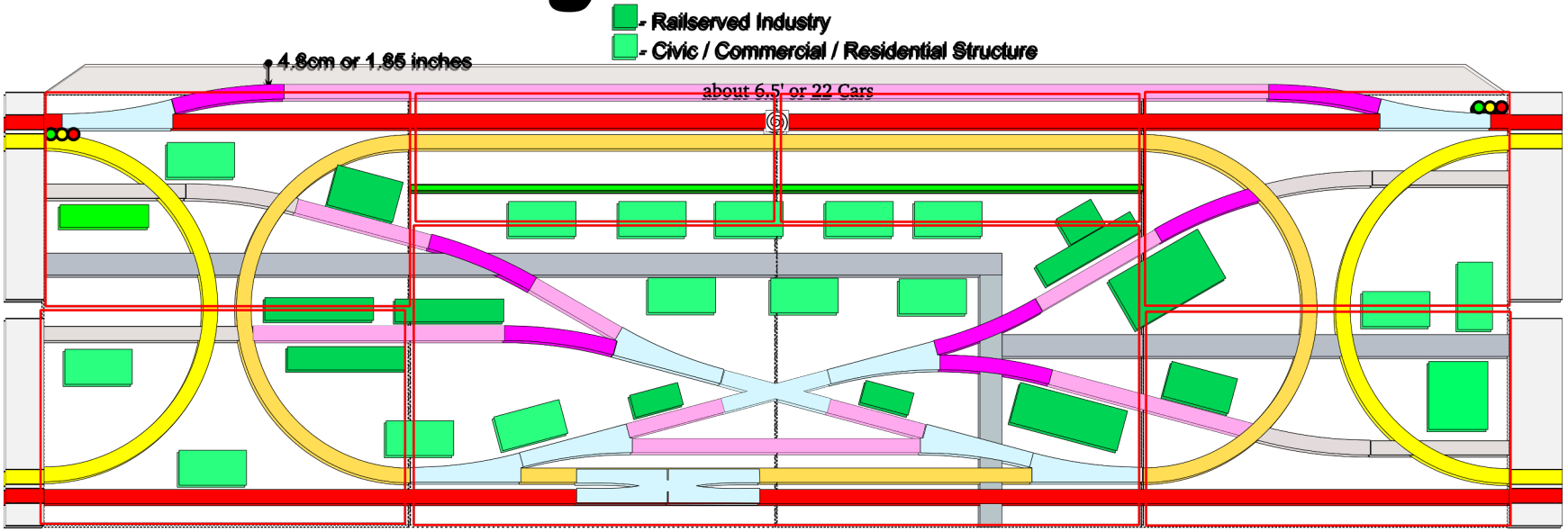
Village of Smallville



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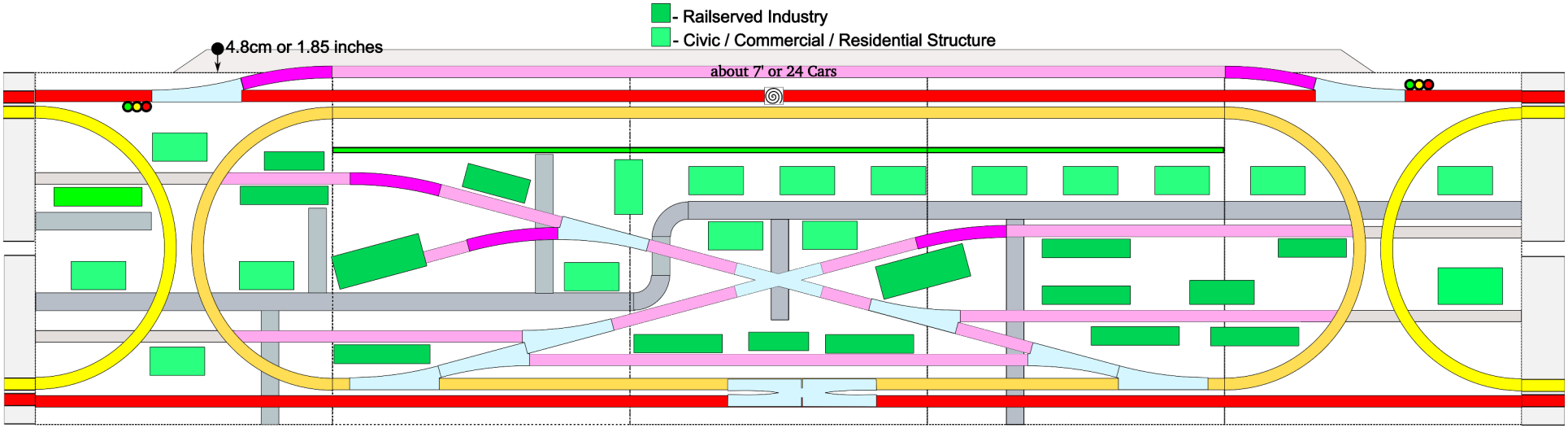
Town of Midville



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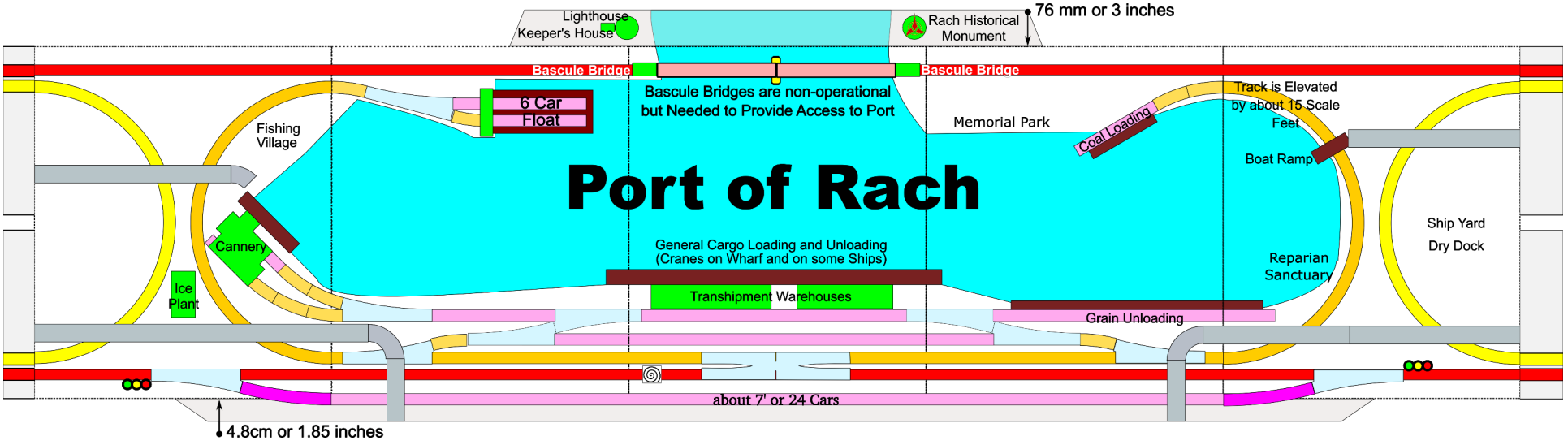

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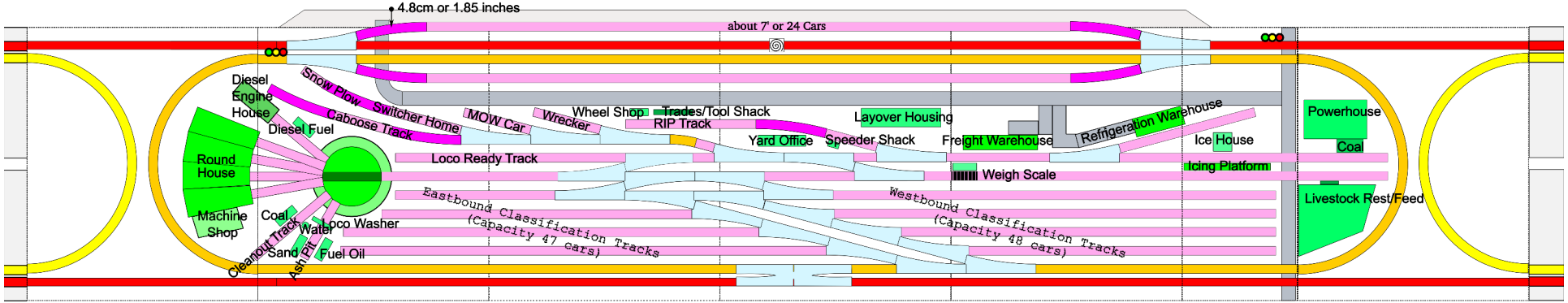
Division Yard



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Passenger Operations

ASSUMPTIONS:

- It is Spring of 1939
- Both REA and Pullman are dominant
- Most trains will be a mix of heavyweight and streamliner cars
- Pass-Through - Trains will not be turned
- Stub-End – Trains terminate and need to be turned
- Road engines will be steam
- Yard switchers will be diesels; they may be owned by the terminal or their respective clients

Passenger Operations

TYPICAL PASSENGER OPERATIONS ACTIVITIES:

1. A train arrives, stops to permit easy passenger/baggage unloading on the platform
2. The locomotive escapes to the engine service facility
3. Switchers pick-up the Head-End cars
4. ● RPO car(s) to the Post Office
5. ● Express freight to REA and/or the railroad's own freight house
6. ● Refrigerator cars (flowers/fruit/etc.) to the cold warehouse
7. ● Private/Business cars to a dedicated private car track

4. Coach cars with continuing passengers and baggage are serviced in place on the platform (cleaning/restocking)
5. Terminating coach cars are moved to the coach yard *

Passenger Operations

TYPICAL PASSENGER OPERATIONS ACTIVITIES: (cont.)

1. 6. “Bad-Order” cars to the appropriate repair facility
2. 7. Coach/Chair cars will be serviced in the coach yard
3. 8. Diner/Lounge cars will go to the commissary
4. 9. Sleeper cars will go to the Pullman facilities
5. 10. The next train to depart is built up on the appropriate platform track
6. 11. All cars need to be inspected
7. 12. Most cars will go through the car-washer
8. 13. Coach cars are added as needed
9. 14. Head-End cars are added as needed
10. 15. Road locomotive is added / The next train departs

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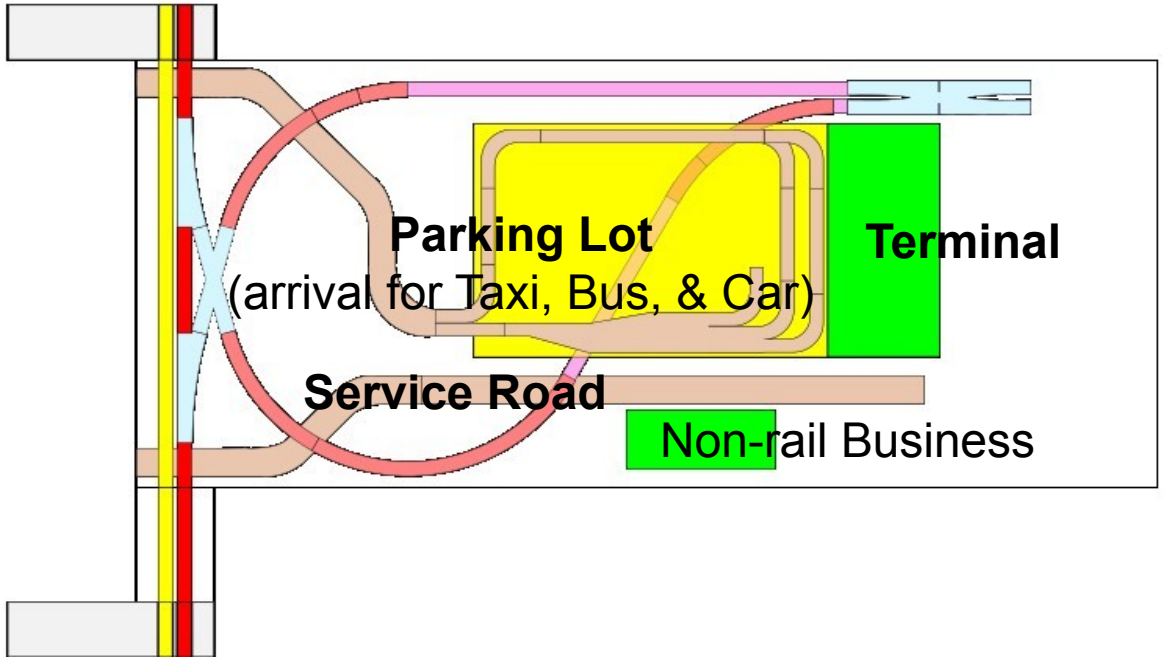
Getting into a Passenger Stub-End Terminal



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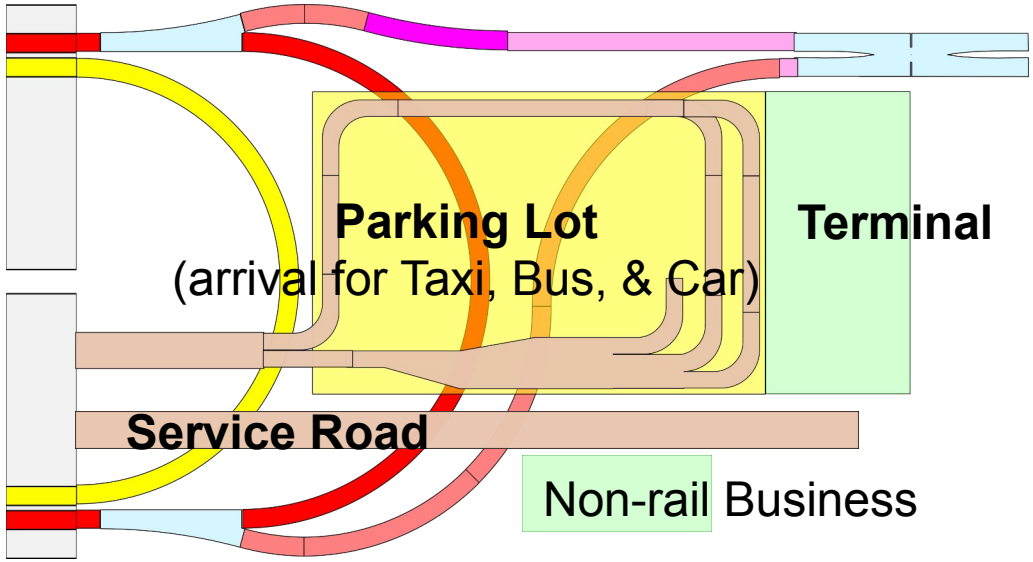
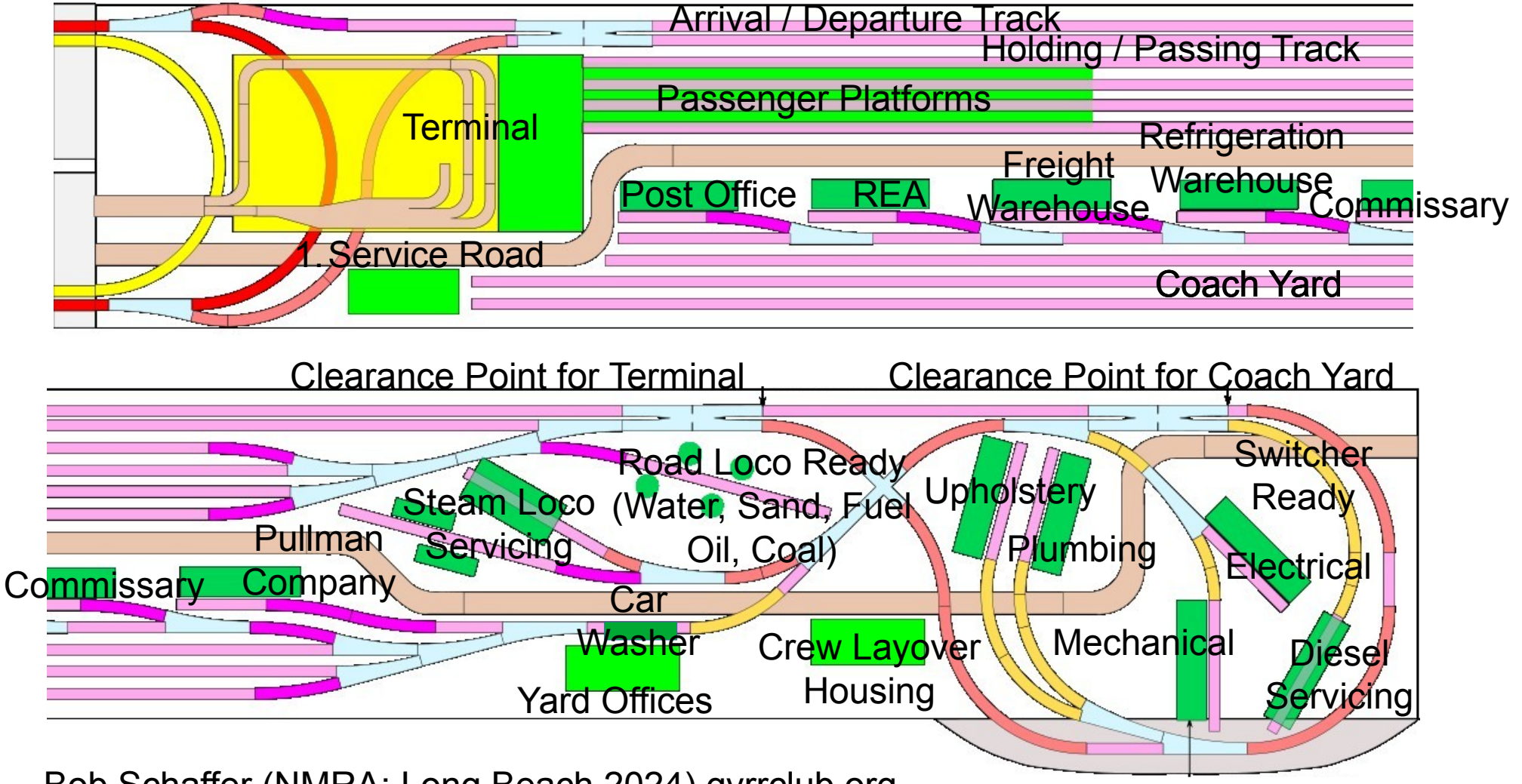
Getting into a Passenger Stub-End Terminal





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An Operating Session

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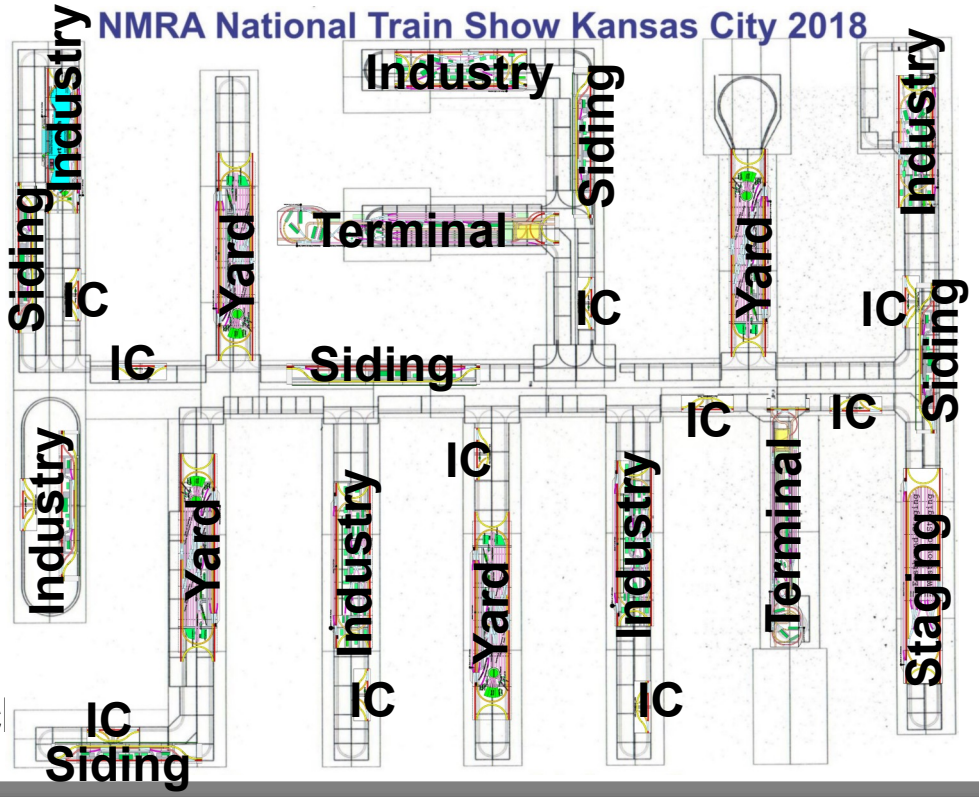
Let's Scatter Some Operations Related Modules within the Existing T-TRAK Layout

One Staging Yard – (1x26=26)
Two Passenger Terminals – (2x40=80)
Four Division Yards – (4x20=80)
Six Industries – (6x20=120)
Five Sidings -- (5x4=20)
Ten Interchanges – (10x3=30)

We have 356 Single-Module-Equivalents
Which represent about 11 scale miles of trac



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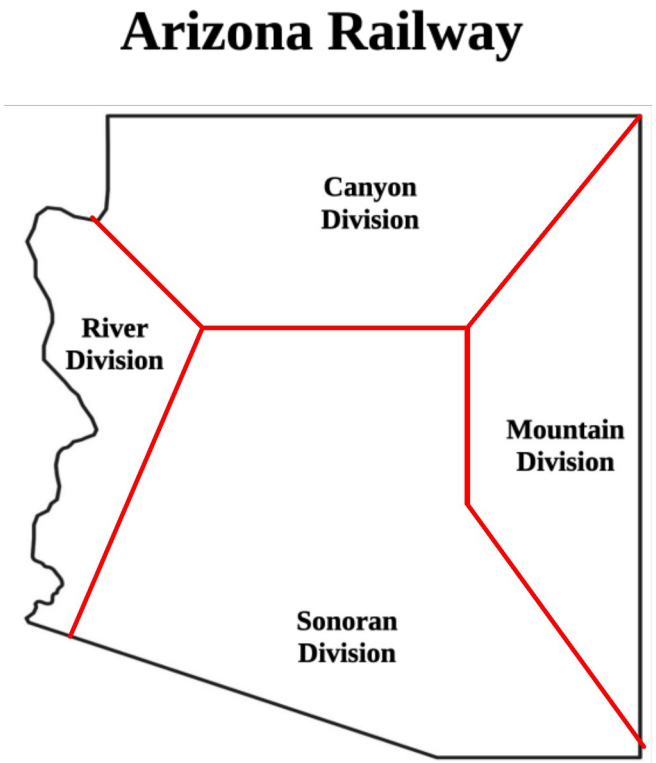

Interchanges

- Arizona Eastern Railroad
- California Arizona and Santa Fe Railway
- Central Arizona Railway
- El Paso and Southwestern Railway
- Grand Canyon Railway
- Southern Pacific Railroad
- Verde Valley Railway
- Western Arizona Railway

By one circuitous route or another, all are now part of either the: BNSF or UP

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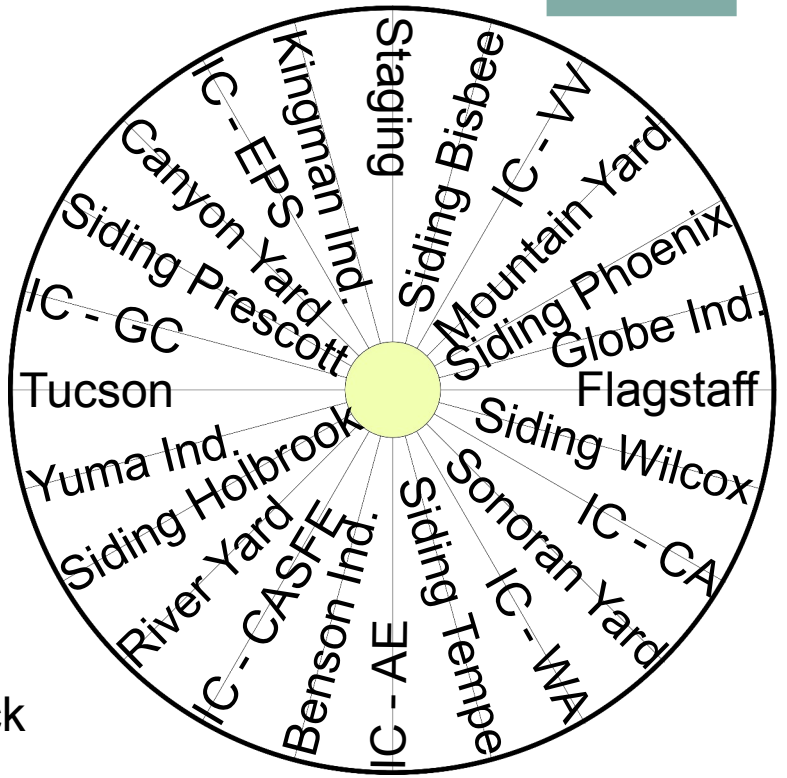
An Operating Session

One Staging Yard – (1x26=26)
Two Passenger Terminals – (2x40=80)
Four Division Yards – (4x20=80)
Four Industries – (4x20=80)
Six Sidings – (6x4=24)
Seven Interchanges – (7x3=21)

- We have 24 named locations on the layout
- We have 311 Single-Module-Equivalents
- Which represent about 10 scale miles of track



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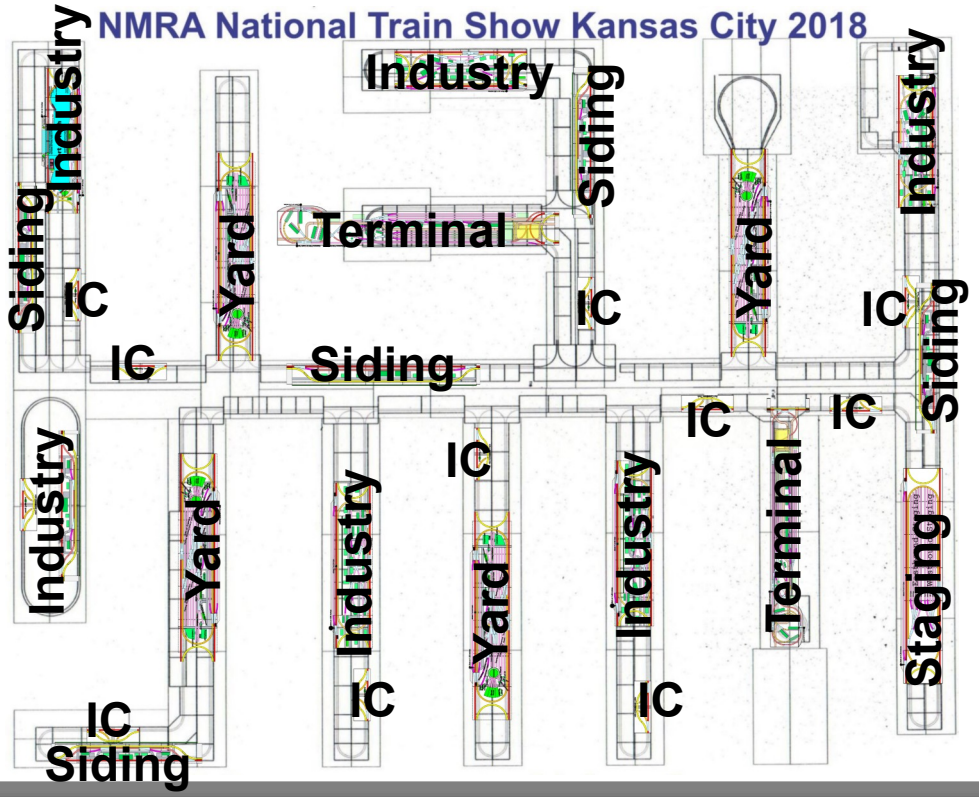
Some Assumptions

One Lap Around the Entire Layout is about 15 Scale Miles.

Therefore, at an average scale speed of 45 MPH, it would take 20 minutes to complete one lap.



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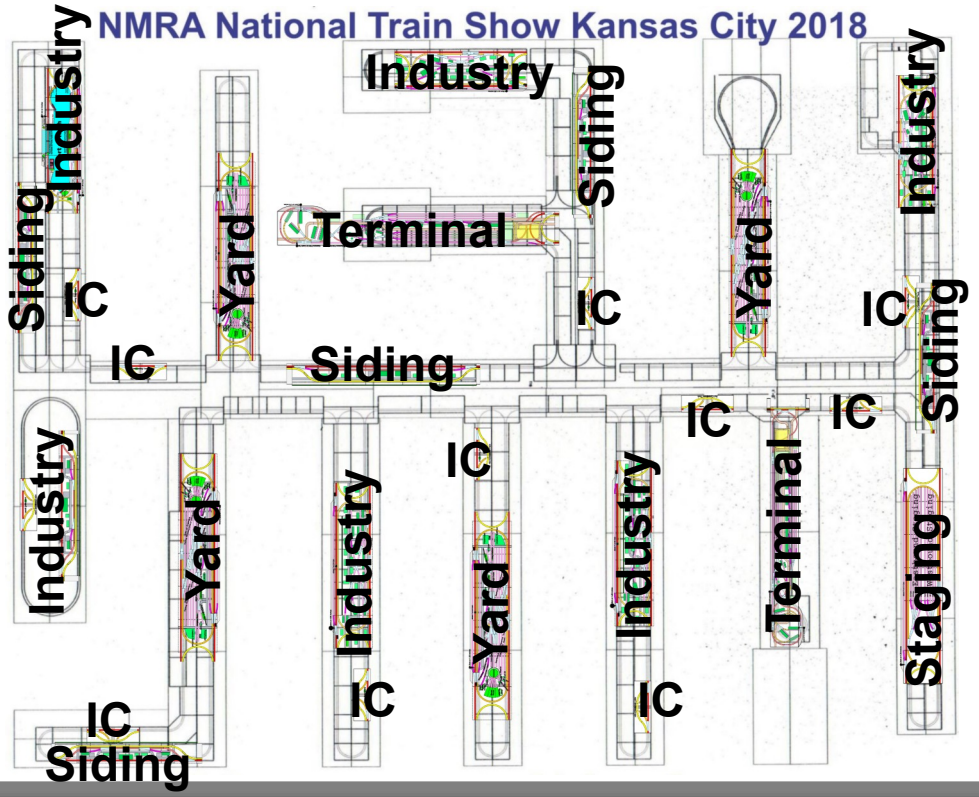
Some Assumptions

Although there will be other trains moving around the layout, those trains involved with our Operations Session will be able to freely enter the Red Line and service the Interchanges.



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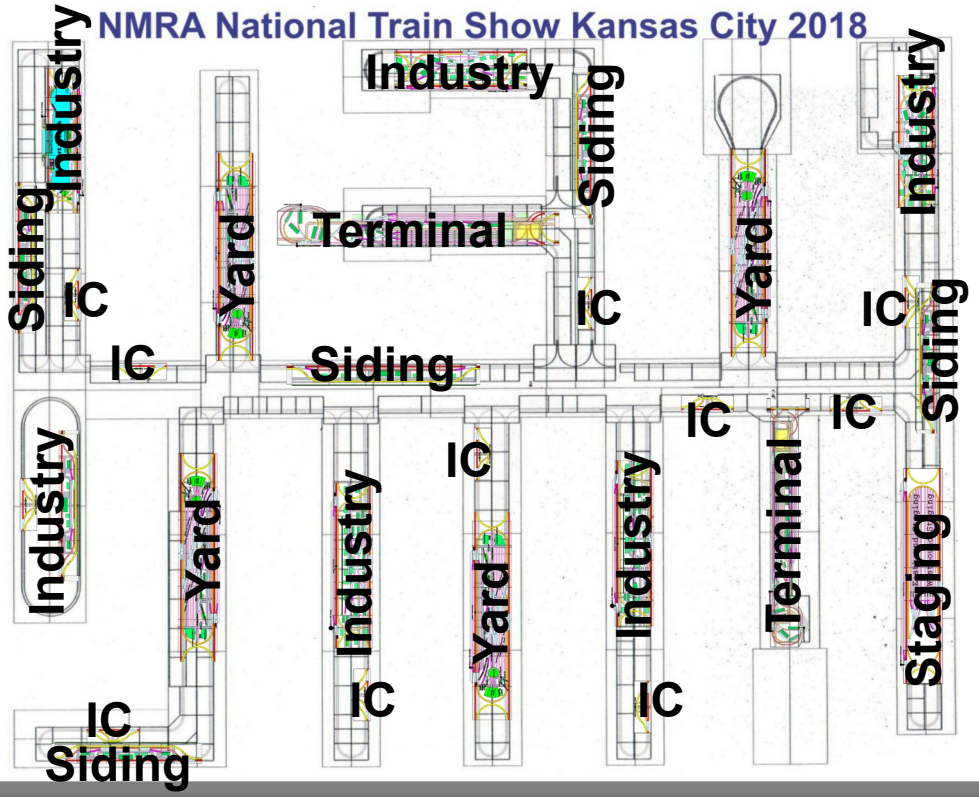
Some Assumptions

We will be able to have four Operating Sessions each day:

8am – 11am
11am – 2pm
2pm – 5pm
7pm – 10pm

Each job will be configured to take about two hours; leaving time for the late finishers as well as to set up for the next session.



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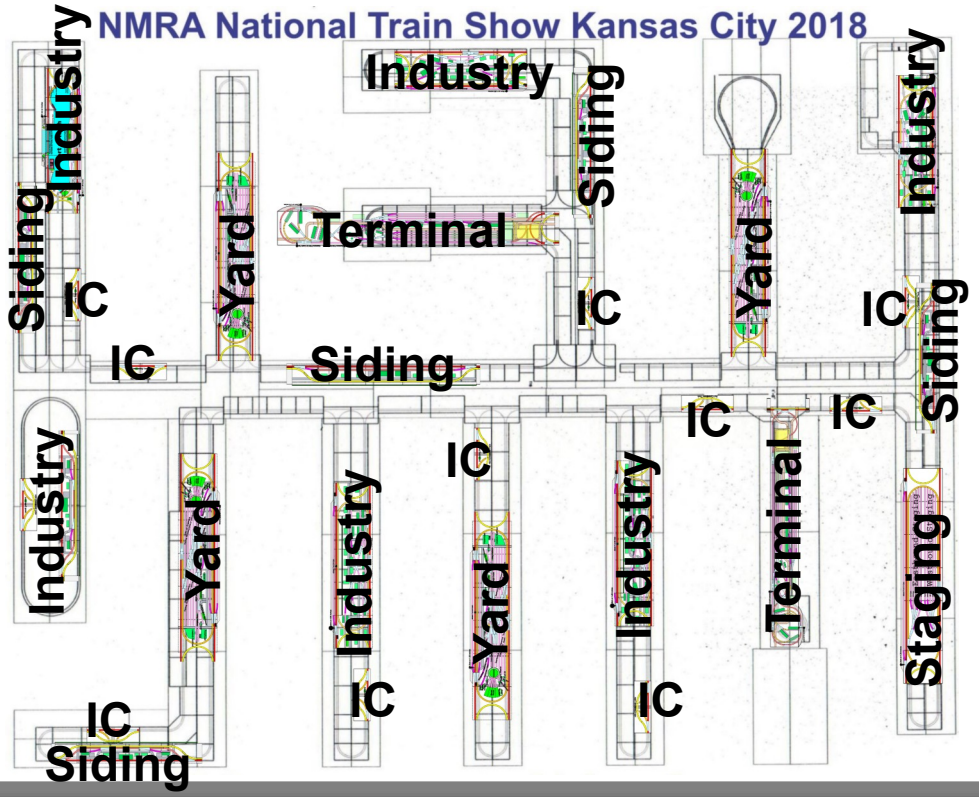
Some Assumptions

Although, most of the time we will be constrained to Eastbound traffic on the Red Line, we will be able to have at least one Operating Session each day in which there will be both Eastbound and Westbound traffic consisting of only trains participating in the operating session.



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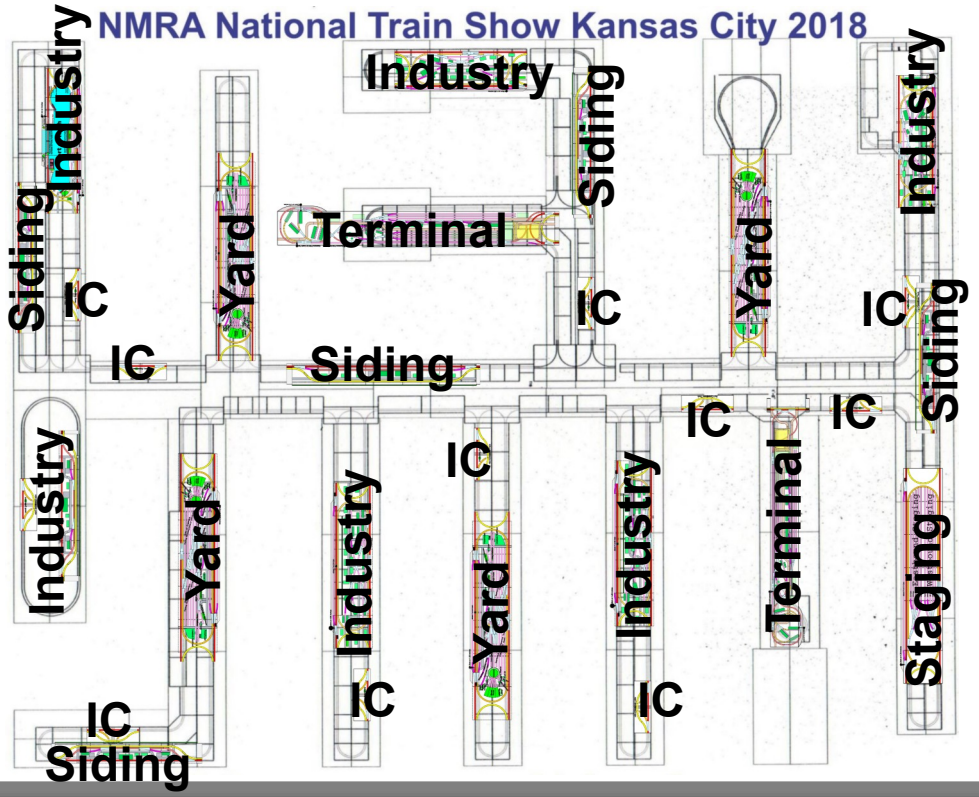
Some Assumptions

Our Sensors and Signal Lights will provide adequate information to the Engineer to manage Meets when we are able to have both Eastbound and Westbound traffic.



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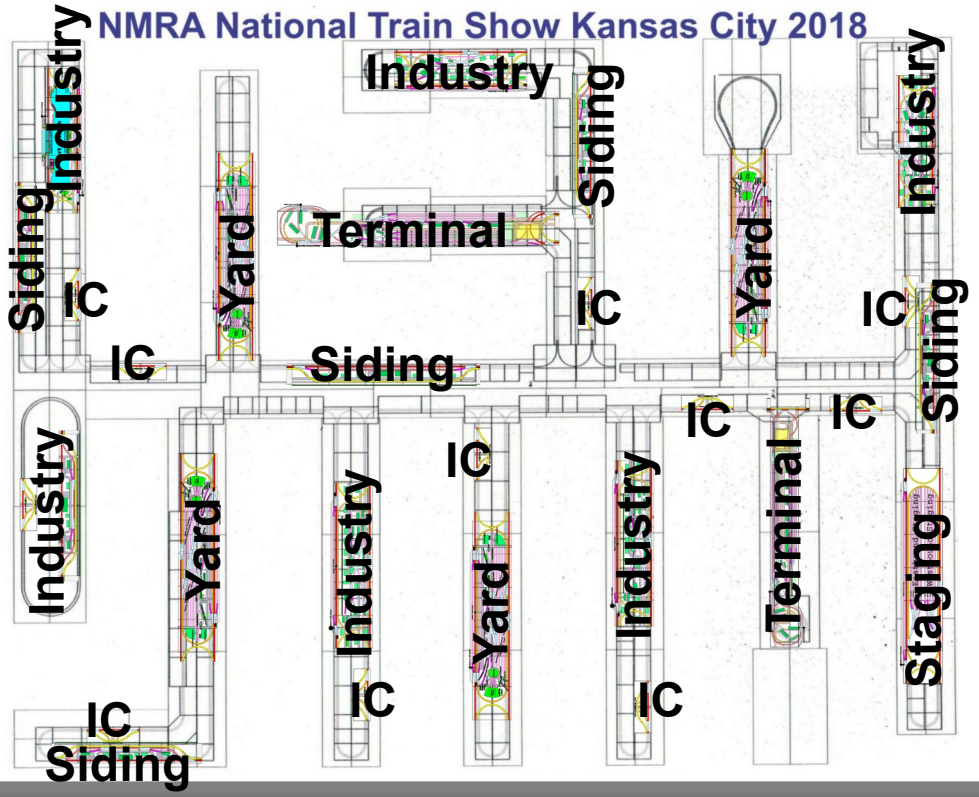
Some Assumptions (Timing)

It will take about five minutes to service an Interchange.

It will take the Industry two-person crew about 90 minutes plus travel time to service their industry.



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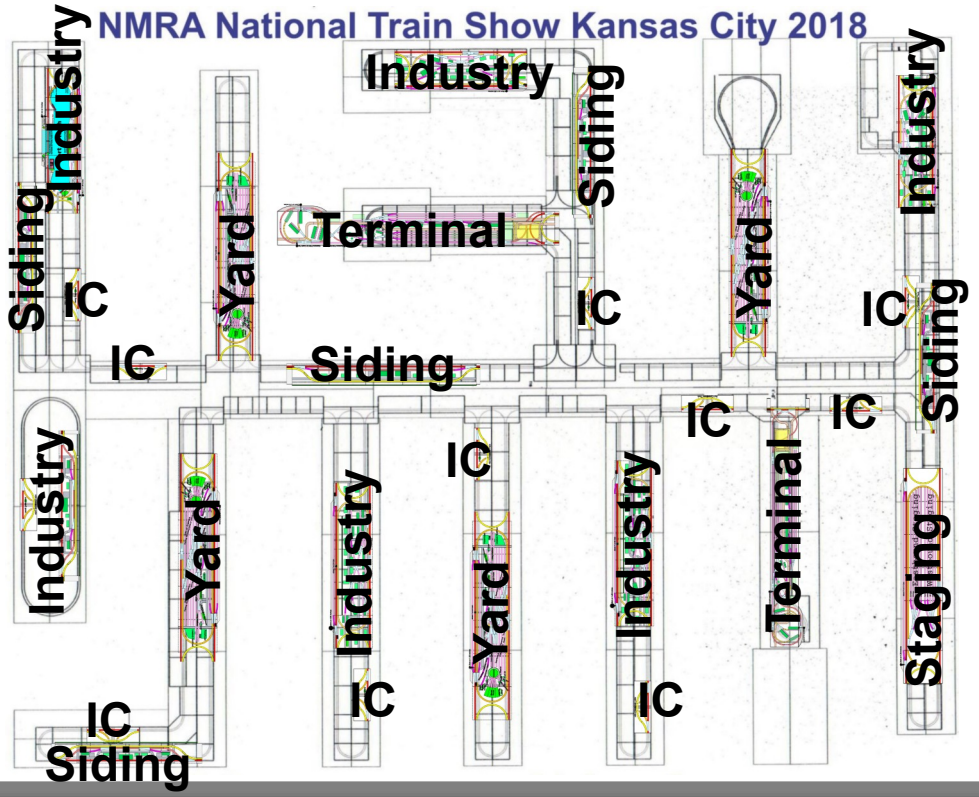
Some Assumptions (Timing)

It will take each Yard two-person crew about 20 minutes to classify an arriving train and about 20 minutes to build a departing train.

It will take the Passenger Terminal two-person crew about 30 minutes to service an arriving or departing train.



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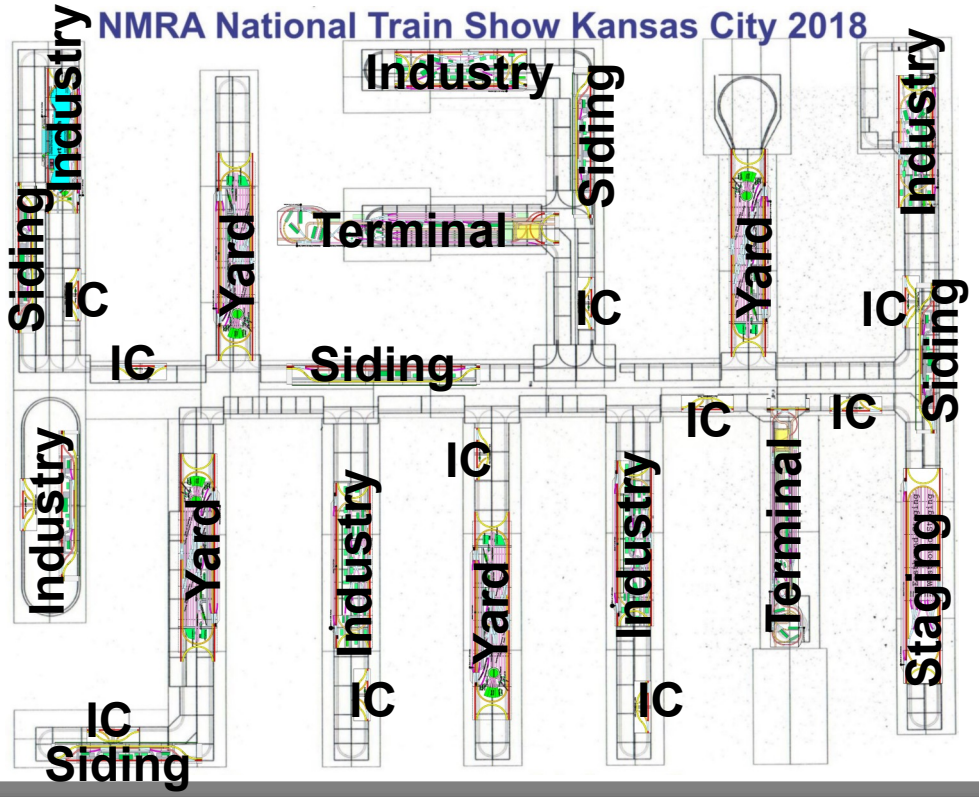
The Operating Session

Starting Conditions:

- There will be 10 trains in Staging, 8 of which will fit into all passing sidings, and 2 of which will not, creating the need for Saw-by's.
- There will be 6 trains, ready in yards, which will service the Industries.



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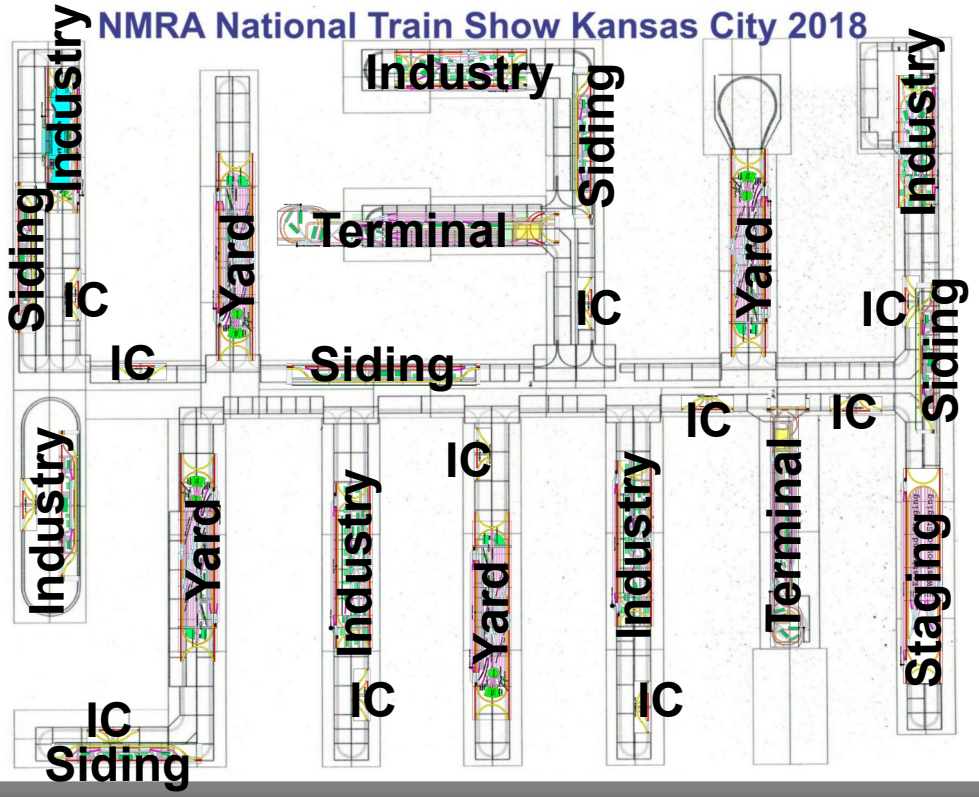
The Operating Session

Starting Conditions:

- There will be one train ready to depart from each Terminal.
- There will be sufficient cars in Yards and Terminals for the crews to build the next train to depart.



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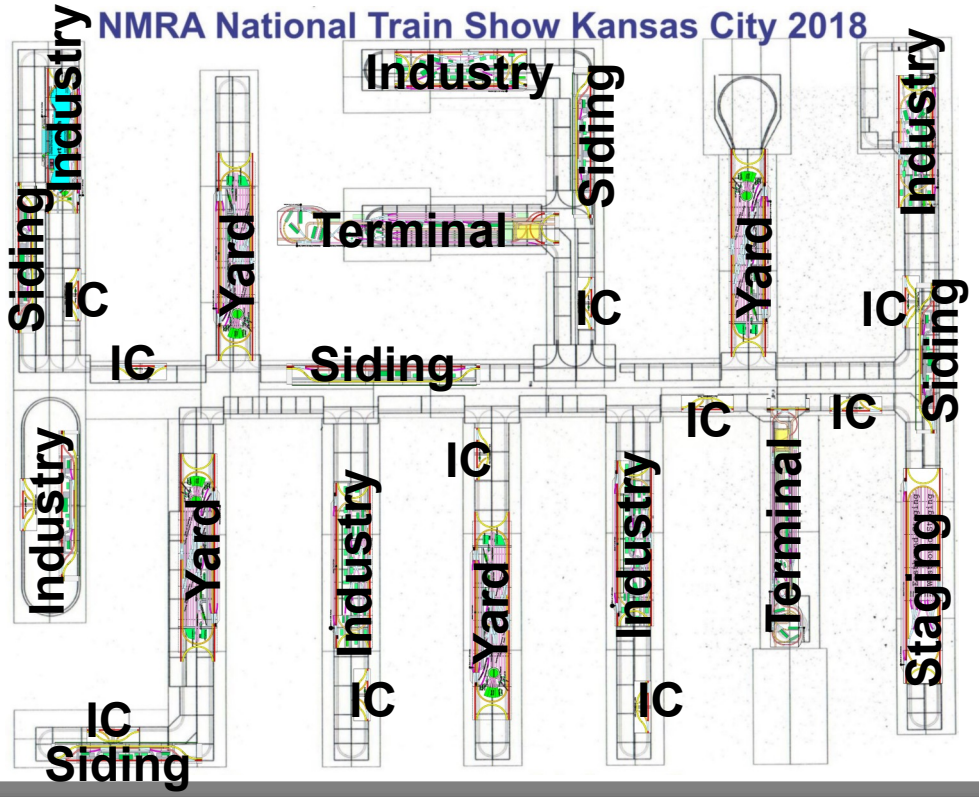
The Operating Session

Crews:

- Staging: One-person Crew
- Industries: Two-Person Crew
- Yards: Three-Person Crew
- Terminals: Three-Person Crews



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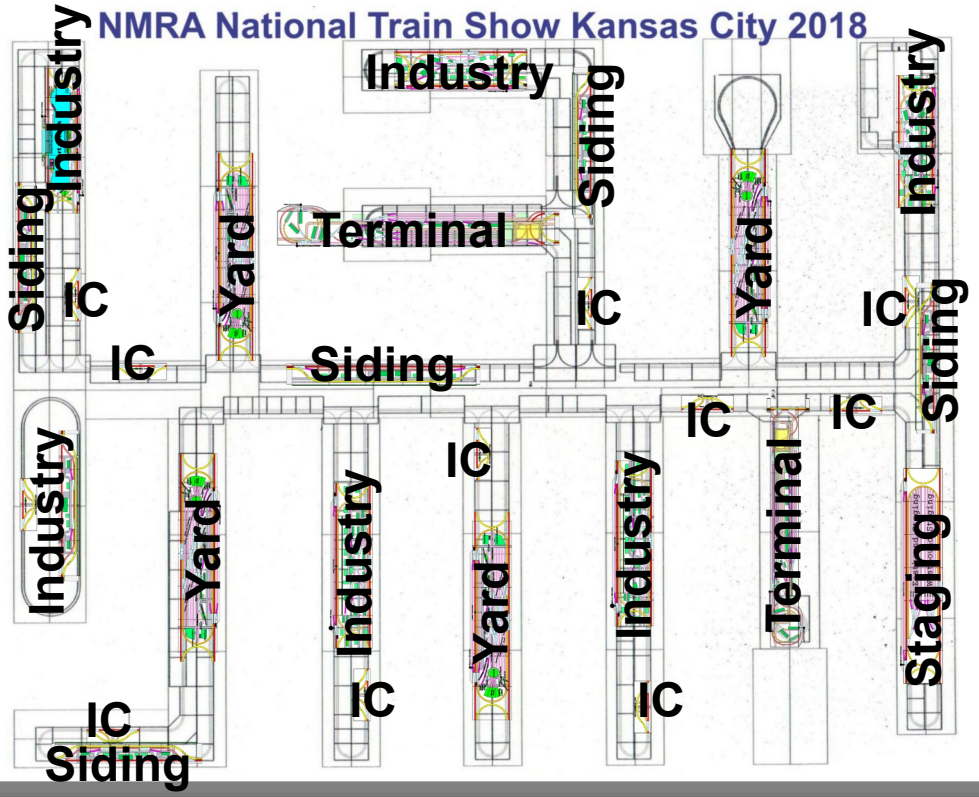
The Operating Session

<u>Crew Instructions</u>:

Need to be simple, no one will be familiar with “this” layout. Some may not have much previous operating experience.



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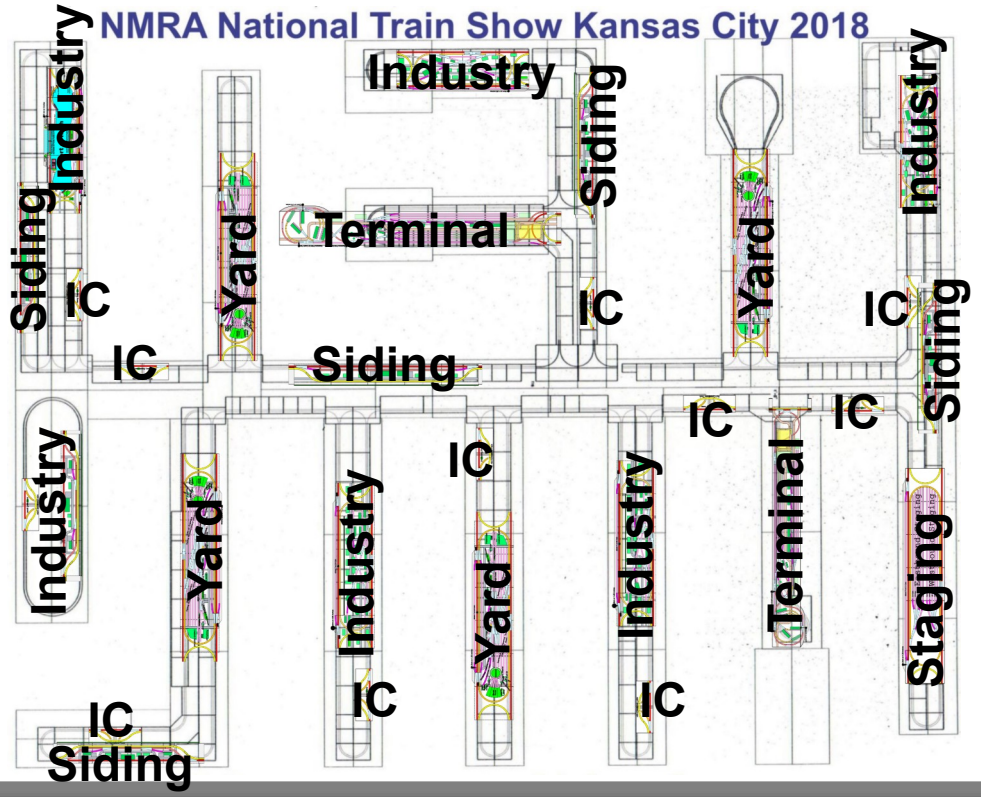
The Operating Session

Crew Instructions:

Each train will have a “switch list” listing the cars in the train, blocking order if it is important, and what is to happen to each car during the session.



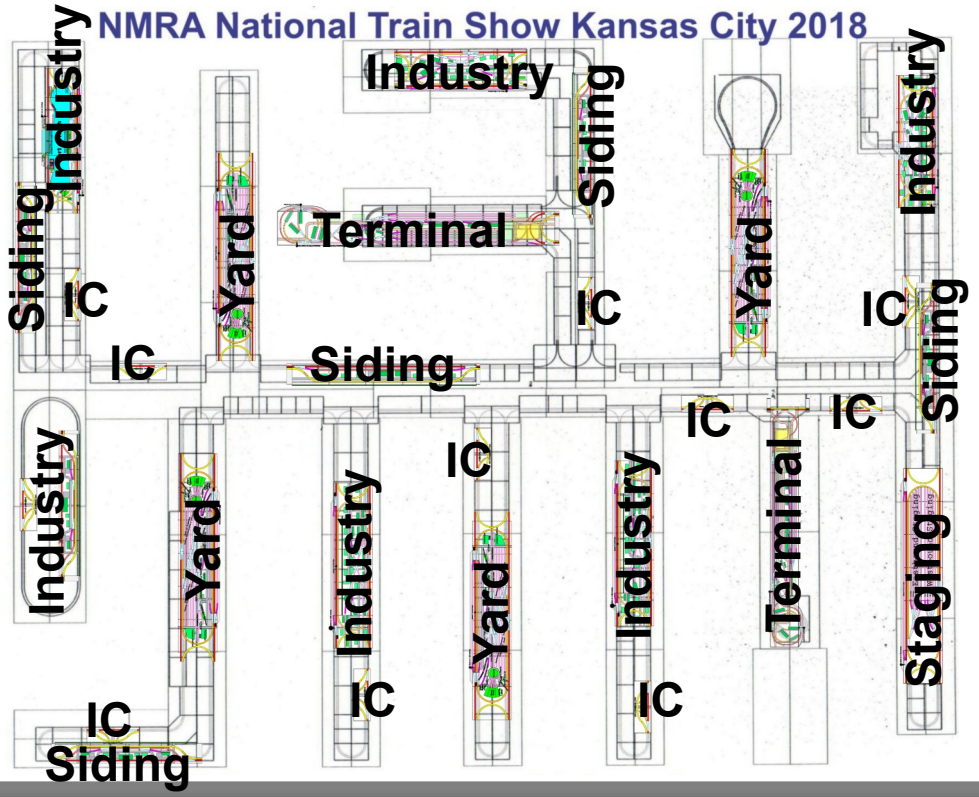
Prototypical Operations in T-TRAK – NMRA 2024

The Operating Session

Crew Instructions:

Staging –

- Each train will be identified by the locomotive
- The engineer will be told direction of travel (E/W)
- Two or three Interchanges will be identified listing which cars are to be set-out or picked-up
- The train will return to Staging



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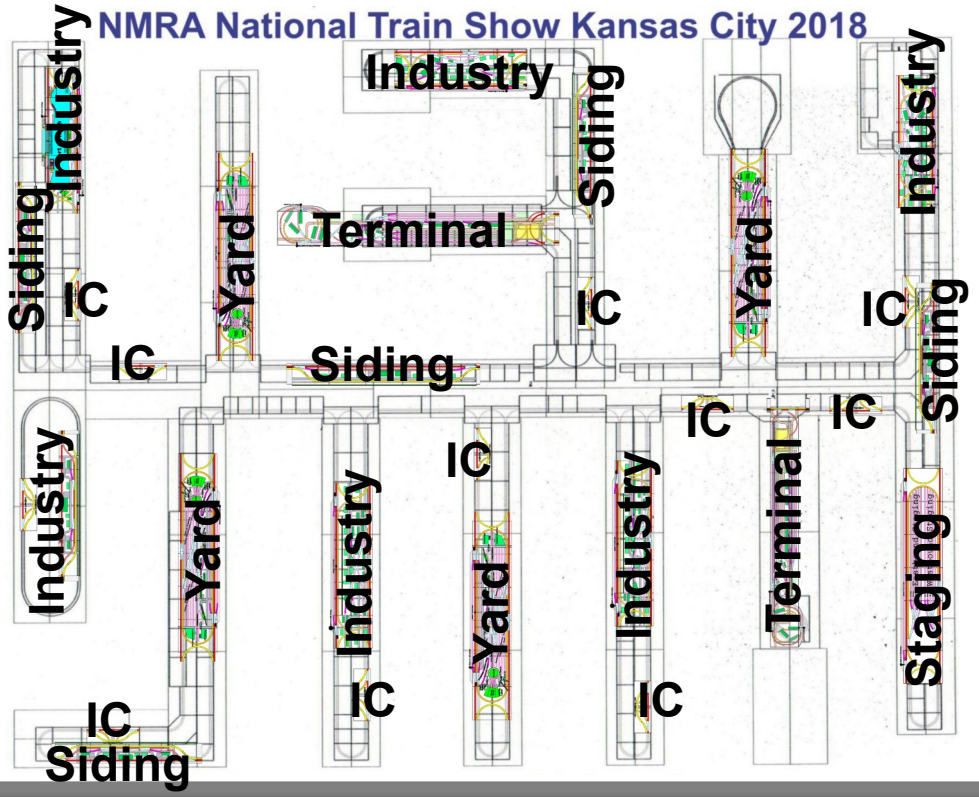
Prototypical Operations in T-TRAK – NMRA 2024

The Operating Session

<u>Crew Instructions</u>:

Industries –

- Each train will be identified by the Industry
- The train will leave the yard in the correct direction of travel (E/W)
- The crew will work the Industry following the switch-list
- The train will return to a specified Yard at the end of the session for classification



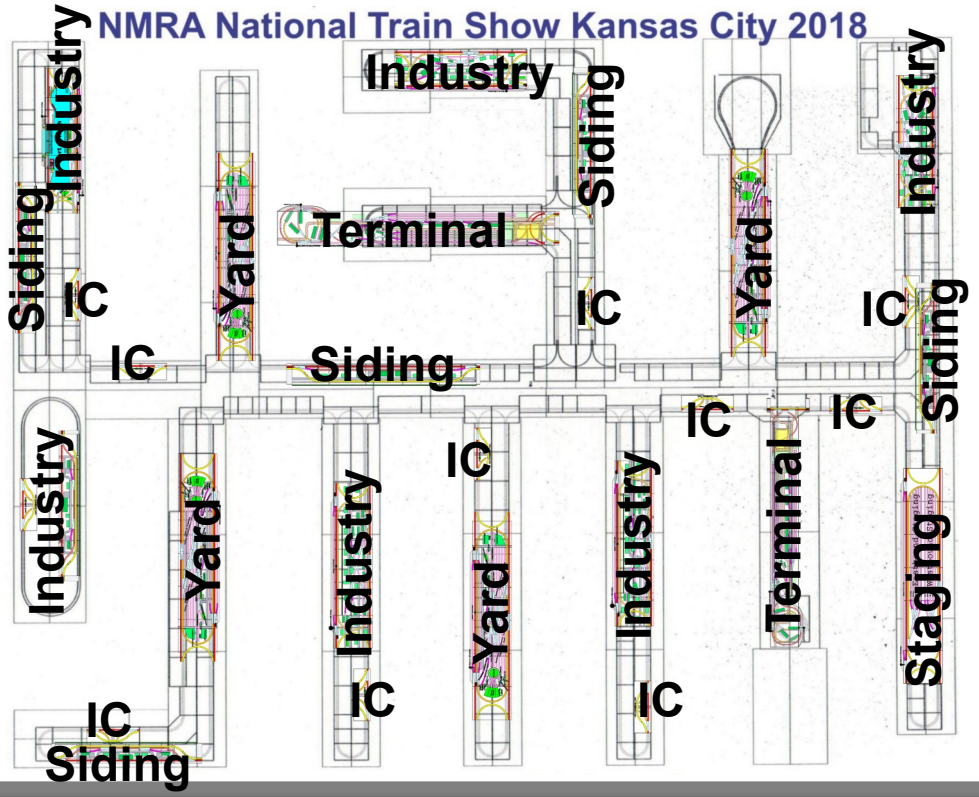
Prototypical Operations in T-TRAK – NMRA 2024

The Operating Session

<u>Crew Instructions</u>:

Yards –

- Each train will be identified by the destination Yard
- A two-person crew will build each train following the switch list for that train
- When a train arrives at the yard, the crew will classify those cars for use in a future train



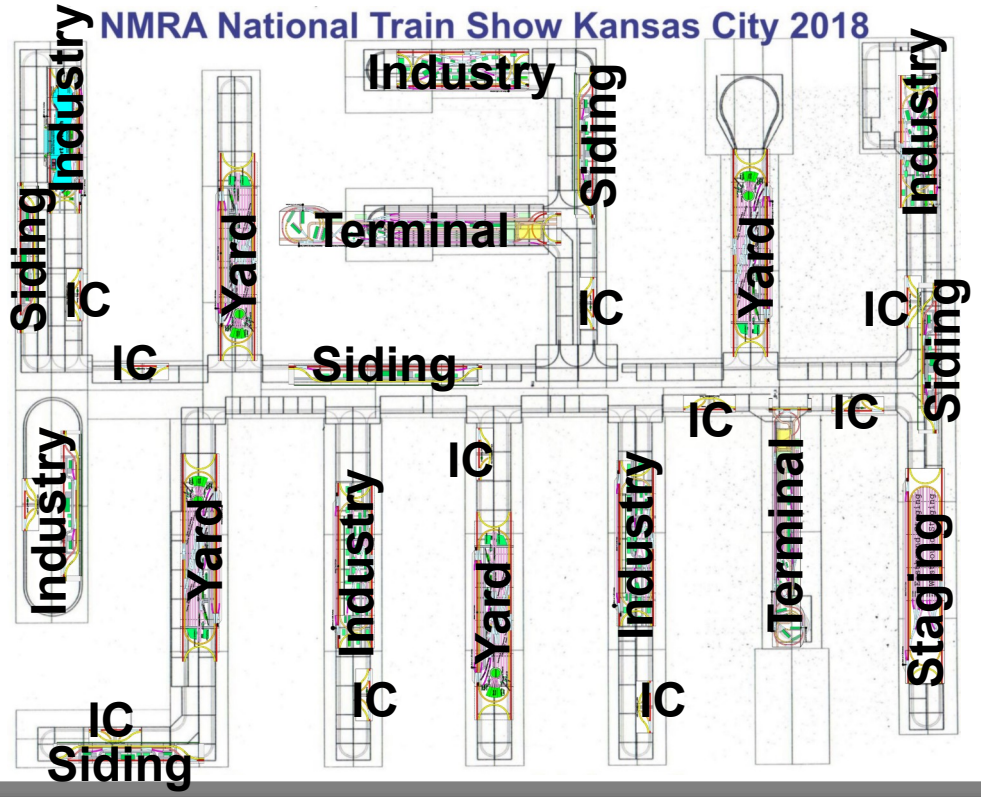
Prototypical Operations in T-TRAK – NMRA 2024

The Operating Session

Crew Instructions:

Yards –

- The third crew member will take the departing train, leaving the Yard in the correct direction of travel (E/W) around the layout; perhaps also servicing one or more Interchanges
- The train will arrive at the specified Yard where its cars will be classified and used in one of the next trains to depart



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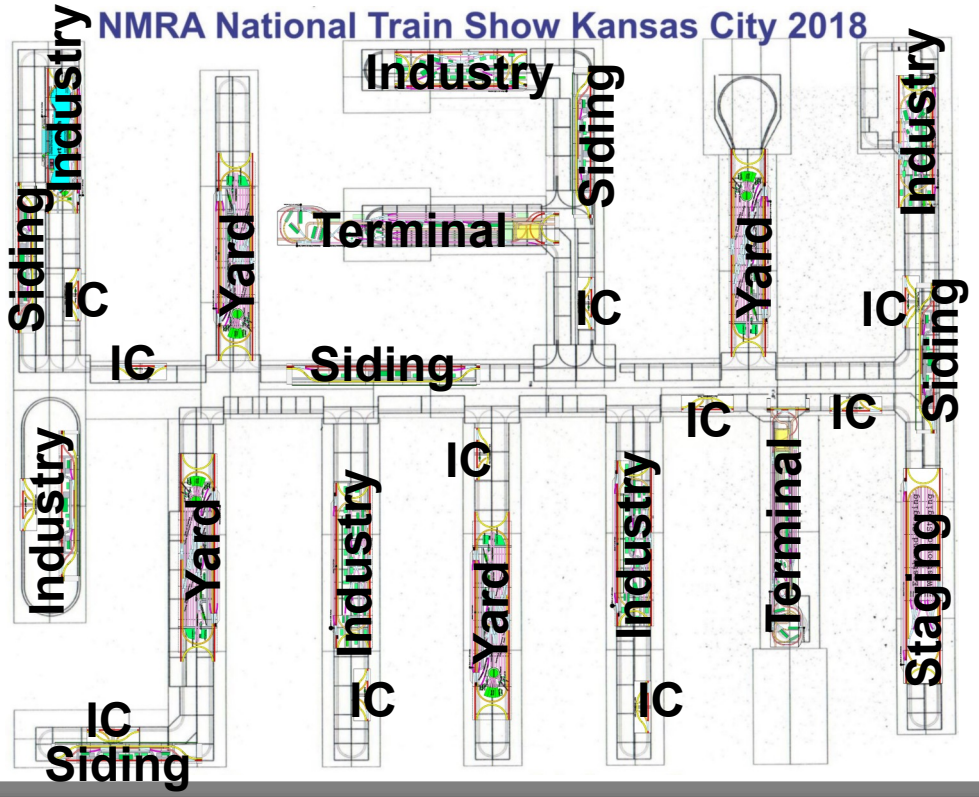
Prototypical Operations in T-TRAK – NMRA 2024

The Operating Session

Crew Instructions:

Terminals –

- Each train will be identified by the destination Terminal
- A two-person crew will build each train following the switch list for that train



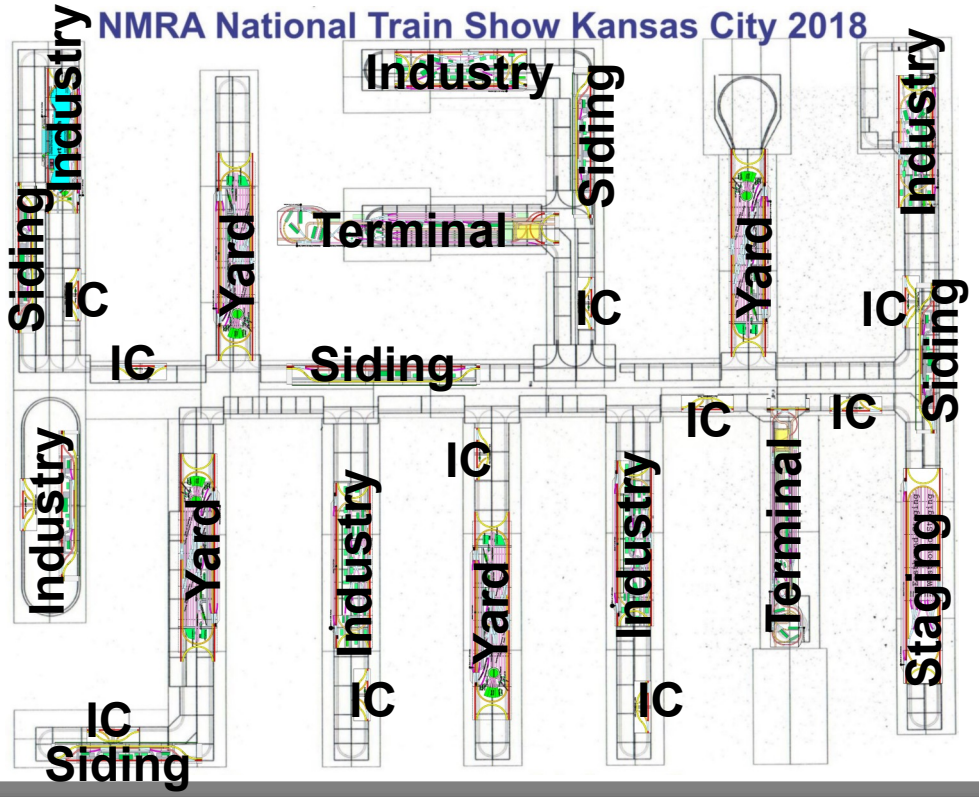
Prototypical Operations in T-TRAK – NMRA 2024

The Operating Session

Crew Instructions:

Terminals –

- The third crew member will take the train, leaving the Terminal in the correct direction of travel (E/W) around the layout
- The train will arrive at the specified Terminal where it will be broken down and used in one of the next trains to depart



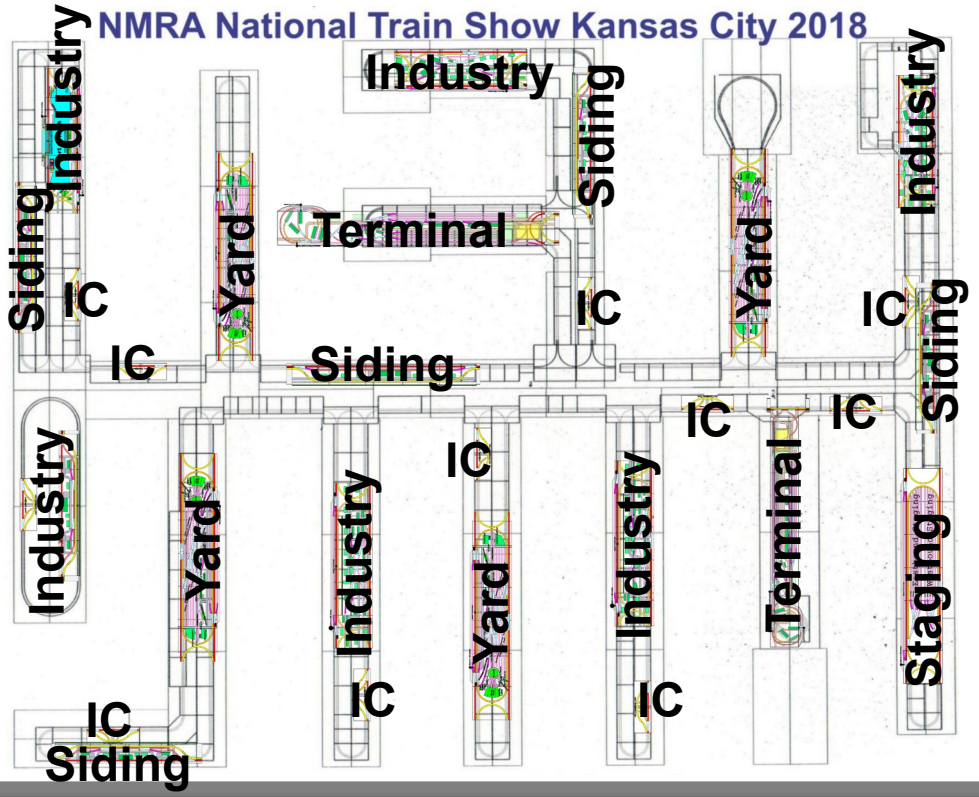
Prototypical Operations in T-TRAK – NMRA 2024

The Operating Session

Timetable:

Staging –

- A train will depart every six minutes and return in about thirty minutes
- Therefore, twenty trains can be run from Staging during the operating session



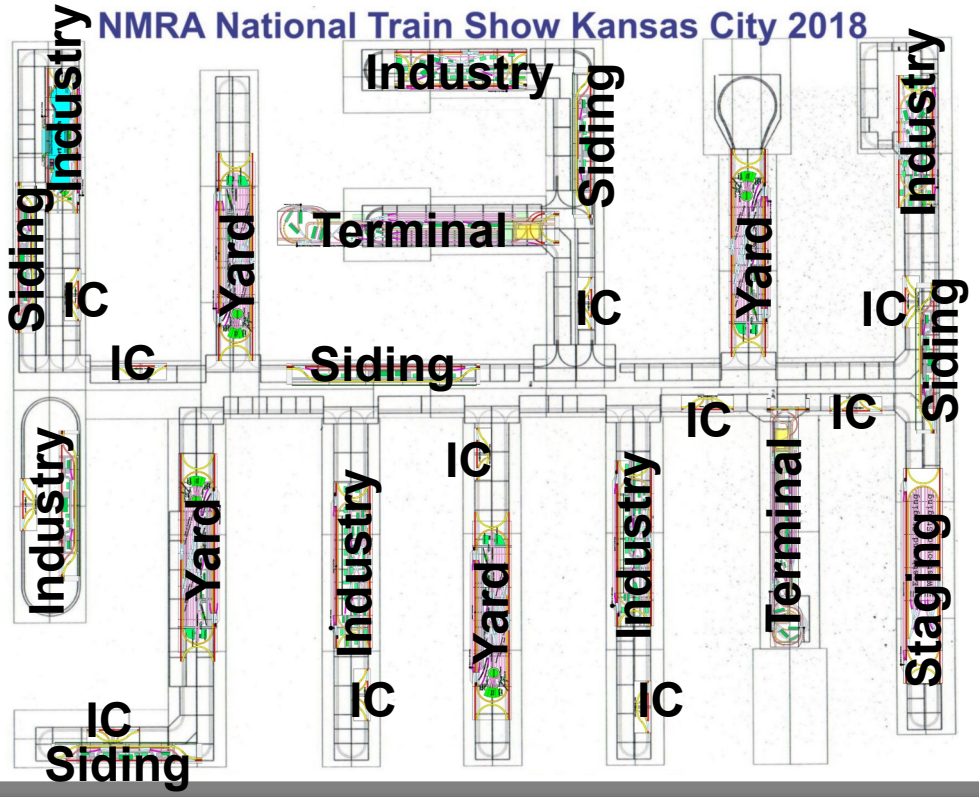
Prototypical Operations in T-TRAK – NMRA 2024

The Operating Session

Timetable:

Industries –

- The train will depart the yard at the very beginning of the session and return to a yard at the end of the session
- The Industry switch list should be just complicated enough to keep the crew busy for most of the session



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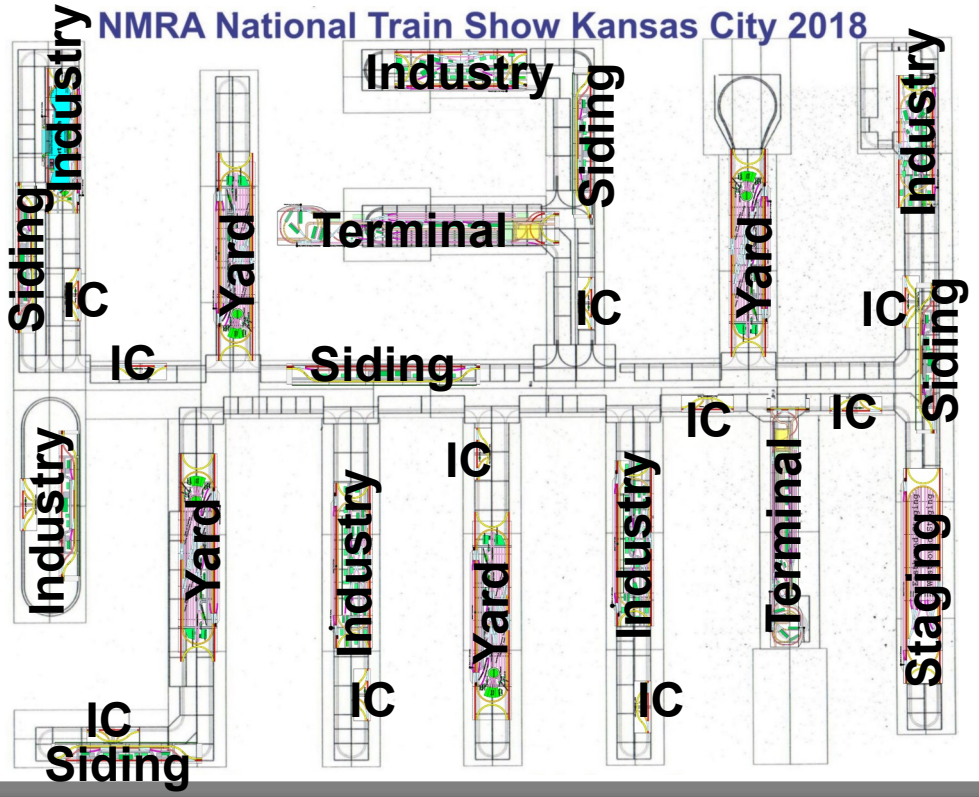
Prototypical Operations in T-TRAK – NMRA 2024

The Operating Session

Timetable:

Yards –

- The crew can classify and/or build a train in 20 minutes
- Therefore, six trains will have left each yard during the operating session and another six will have arrived



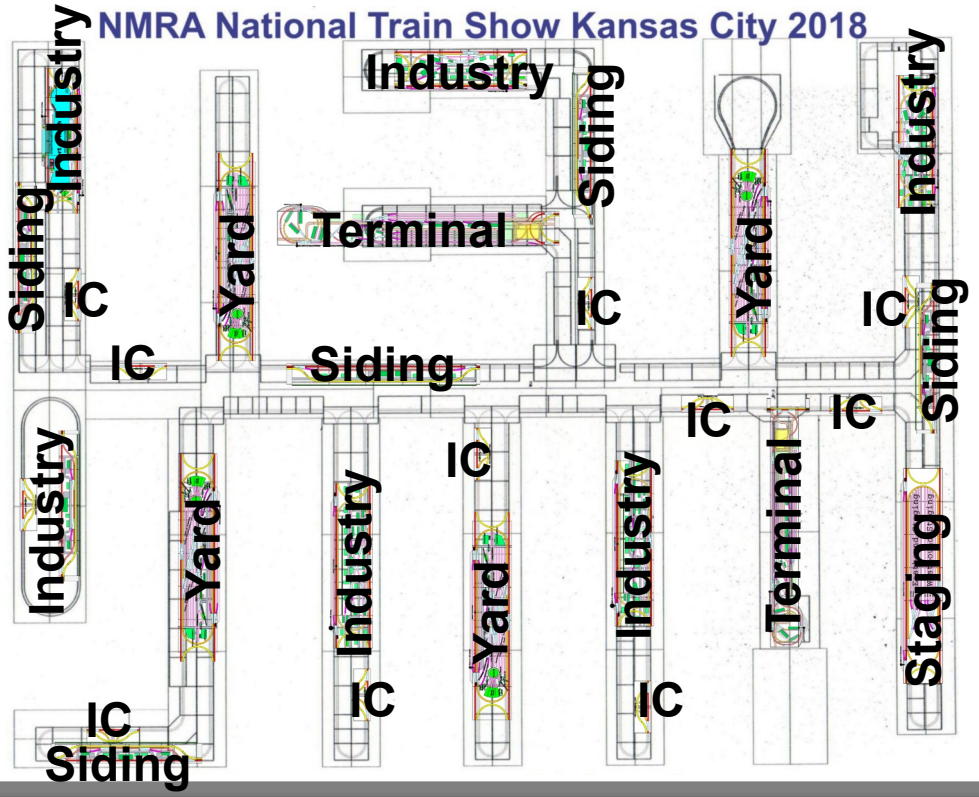
Prototypical Operations in T-TRAK – NMRA 2024

The Operating Session

Timetable:

Terminals –

- The crew can build or break down a train in about thirty minutes
- One train will depart the terminal at the very beginning of the session and return to a terminal within about twenty minutes



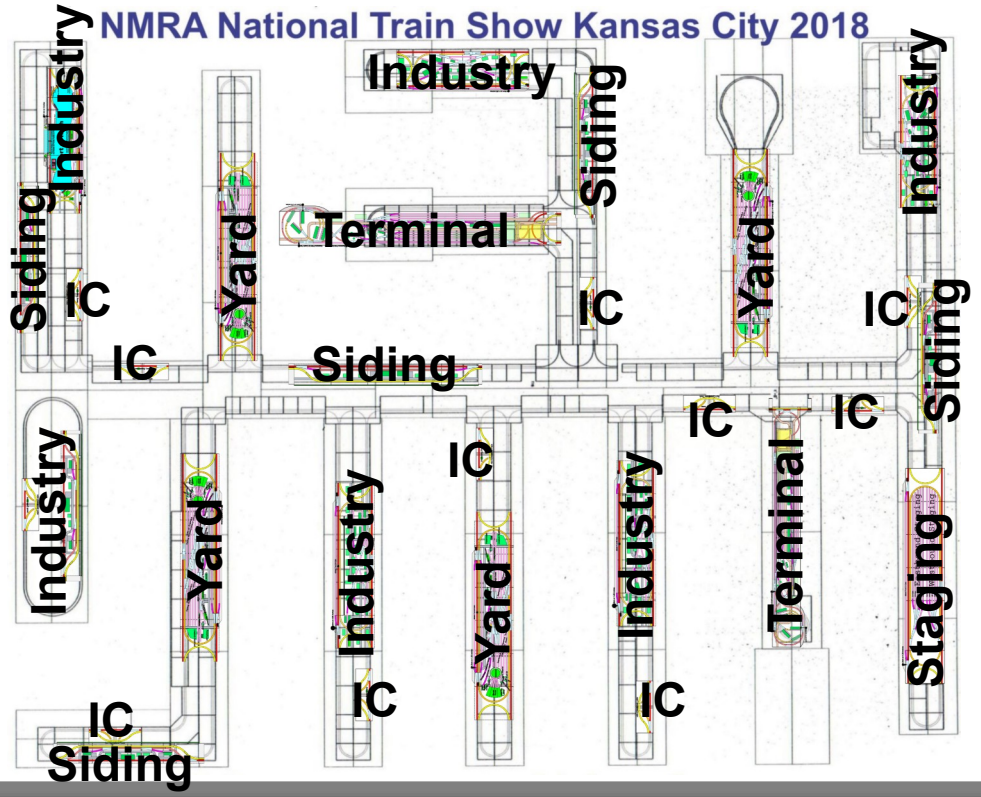
Prototypical Operations in T-TRAK – NMRA 2024

The Operating Session

Timetable:

Terminals –

- Each subsequent train will depart the terminal at thirty minute intervals, and arrive at their destination in twenty minutes
- Therefore, each terminal can originate five trains during the session



Prototypical Operations in T-TRAK – NMRA 2024

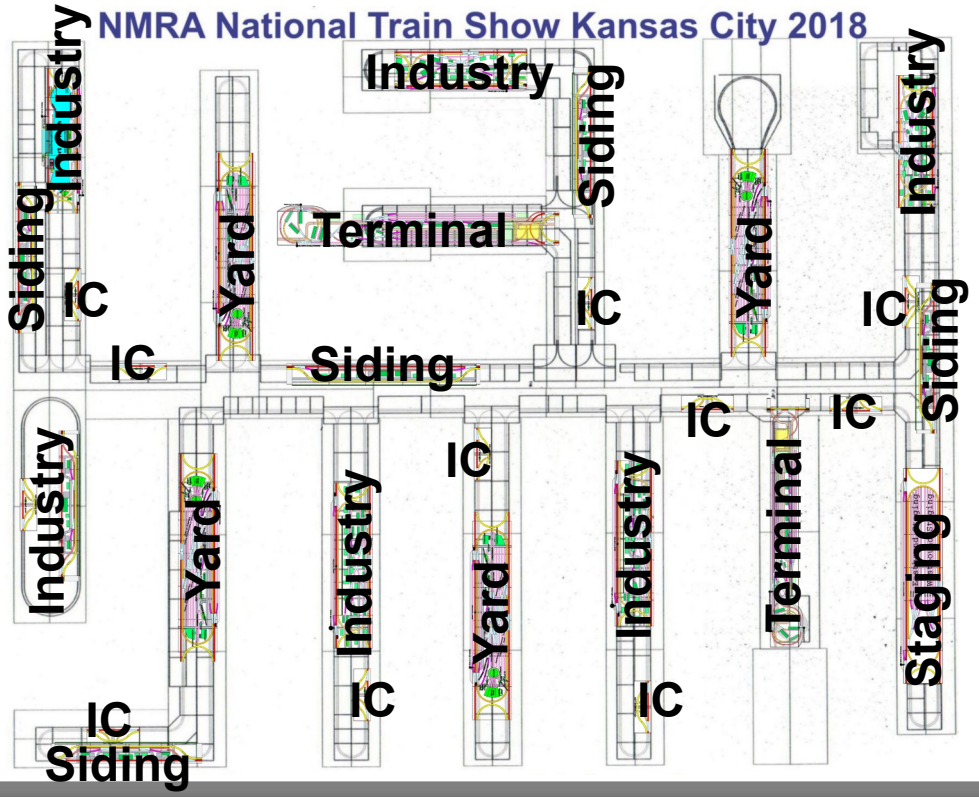
The Operating Session

Summary:

Trains –

- Staging – 30 trains
- Industries – 6 trains
- Yards – 24 trains
- Terminals – 10 trains

Total = 71 trains per session



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Prototypical Operations in T-TRAK – NMRA 2024

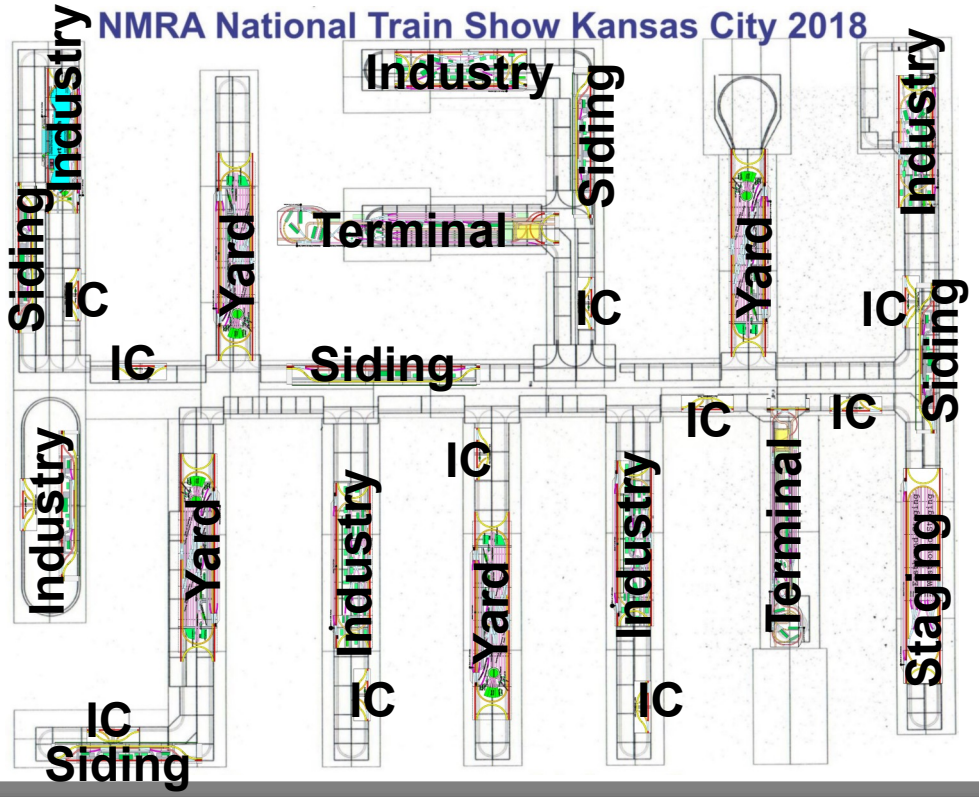
The Operating Session

Summary:

Crews –

- Staging – 30 Jobs
- Industries – 12 Jobs
- Yards – 12 Jobs
- Terminals – 6 Jobs

Total = 60 jobs per session



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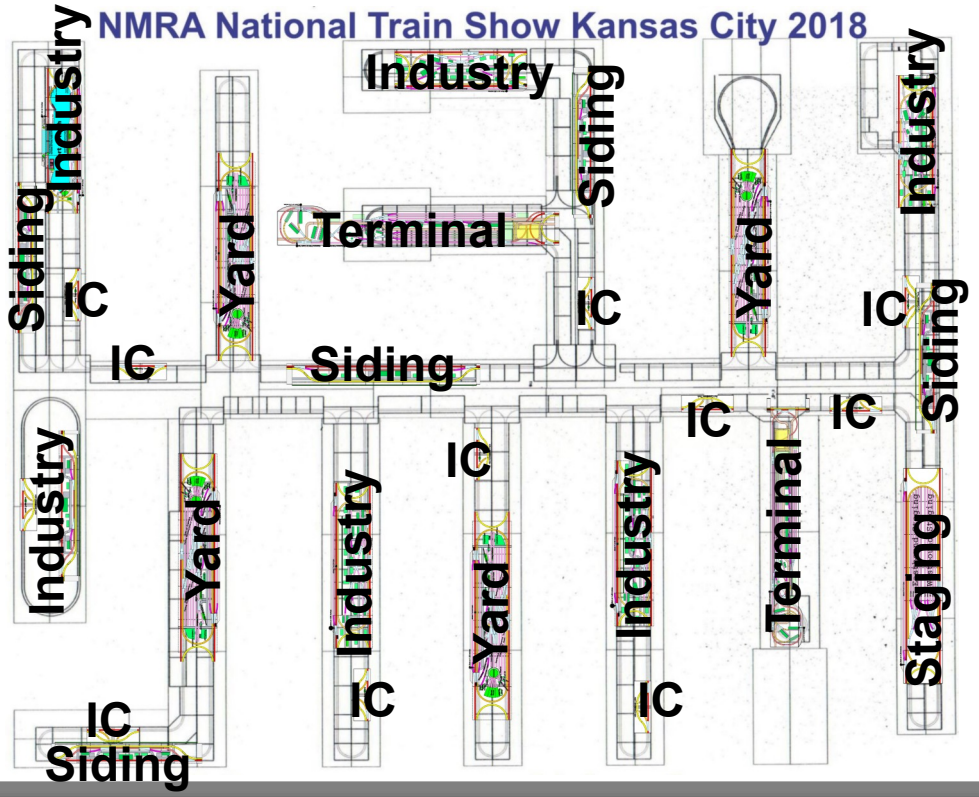
Prototypical Operations in T-TRAK – NMRA 2024

The Operating Session

Summary:

- At the end of the day, we will have run 284 trains using 240 jobs. Of course many of the jobs in Staging can be done by the same person who would then be crewing a different train.
- The problem may be getting enough total crew members.



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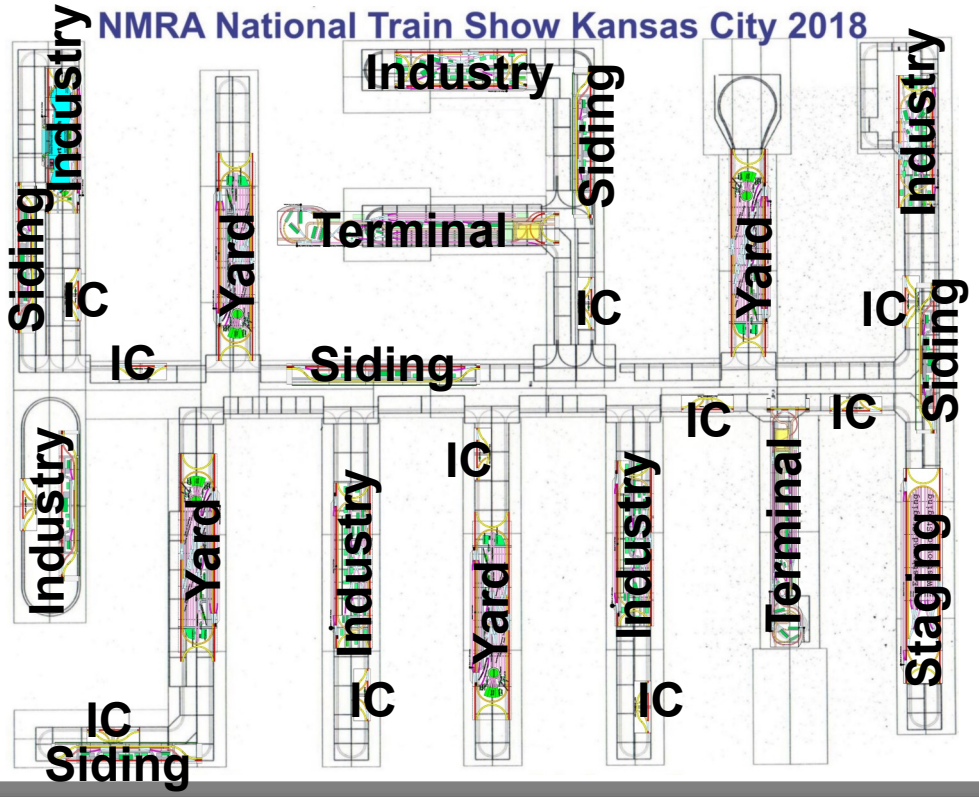
Prototypical Operations in T-TRAK – NMRA 2024

The Operating Session

Summary:

- Of course, creating the various switch lists will require considerable time and effort as well as consultation
- Each switch list can be reused, perhaps with on-the-fly modifications for observed problems, in each session using the same layout
- In future operating sessions with a different layout, the switch lists could be modified based on where the various operating components are then located



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