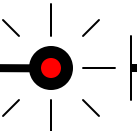


AMRS HO Division Signals



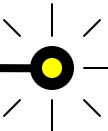
Steady Red: Stop – Do not proceed without Warrant from Dispatcher



Flashing Red: Stop – Check track ahead for obstructions and properly aligned turnouts. Proceed with caution if safe



Steady Yellow: Proceed with caution.



Flashing Yellow: Proceed with extreme caution. The track ahead is occupied with another train proceeding in your direction.



Steady Green: Proceed at safe speed.



Steady Red over Red: Stop – Do not proceed without Warrant from Dispatcher



Green over Red: At turnout, proceed at safe speed through straight leg of turnout



Red over Yellow: At turnout, proceed at restricted speed through diverging rout of turnout

WHISTLE SIGNALS shall be sounded during formal operating sessions or Open House sessions. All engines equipped with sound systems shall sound the proper whistle signals at appropriate times. It is the responsibility of each engineer to learn proper whistle signals.

O = Short - = Long

Ready to Proceed Forward O O

Ready to Proceed Reverse O O O

Danger, bridges, tunnels, etc. - - -

Grade Crossing - - O -

Switchman's Timetable

Arizona Model Railroading Society

HO Division

Rev 1.5

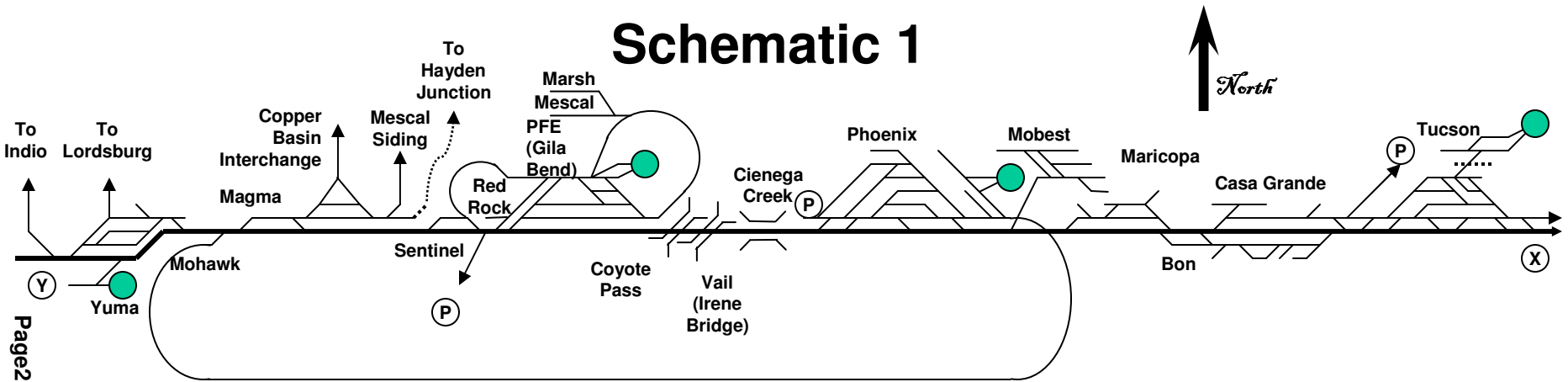
July 21, 2009



Note: Trains which are parked on the railroad while the engineer in not in attendance shall be tied down in accordance with the color coded instruction in this timetable. Trains or rolling stock should not be left unattended on any other track. To do so clogs the railroad and is considered rude to other members and is inappropriate.

Trains inappropriately parked are subject to operation by other AMRS Members in order to restore the operational capabilities of the layout.

Please see Operations or Design Lead with questions.



PASSENGER TRAINS should be restricted to movements on main tracks, sidings, cutoffs, staging, and designated receiving (arrival/departure) tracks at Passenger Depots only. Movement on any other track must be handled with extreme caution and during an operating session, must be authorized by the dispatcher or superintendent.

**AMRS HO Division Operating Rules
Part 2**

14. Engineers who are not able to observe track conditions directly require a mentor or spotter to assure that their route is clear. Members under the age of 18 not certified for solo operations must have an adult or certified mentor in close proximity at all times. The mentor is responsible for the behavior and actions of this Member and infractions of this Member will be the responsibility of the Mentor as well.
15. a. Wheel gauge
b. Coupler height
c. Coupler springs
d. Dragging equipment
e. Poorly operating locomotives
16. Adult members with handicapped communications skills must have a Mentor in close proximity at all times to communicate threats to equipment safety. Otherwise, a communication device that permits a Dispatcher to get the attention of the communication handicapped member is sufficient.
17. Members borrowing club equipment should sign out the equipment and relinquish it upon request of another member according to published time limits.
18. Warnings may be given for infractions of these rules.
19. A member who repeatedly violates these rules, or exhibits unreasonable or unsportsman-like conduct may be asked to leave the HO Division layout and building for one day, 7 days or 30 days, depending on the nature of the infraction and the behavior of the offending member. Names of offending members will be listed on the bulletin board so all members can help police the layout.
20. Members will clean up the work area when the work session is over so other members can subsequently run their trains in a safe manner.
21. For official runs and meets, a coordinator will determine the run schedule based on a sign-up sheet. Members wishing to run should sign up at least 3 days in advance (By 7:00 PM Wednesday evening.) No one will be permitted to run without advance sign-up or an okay from the coordinator.

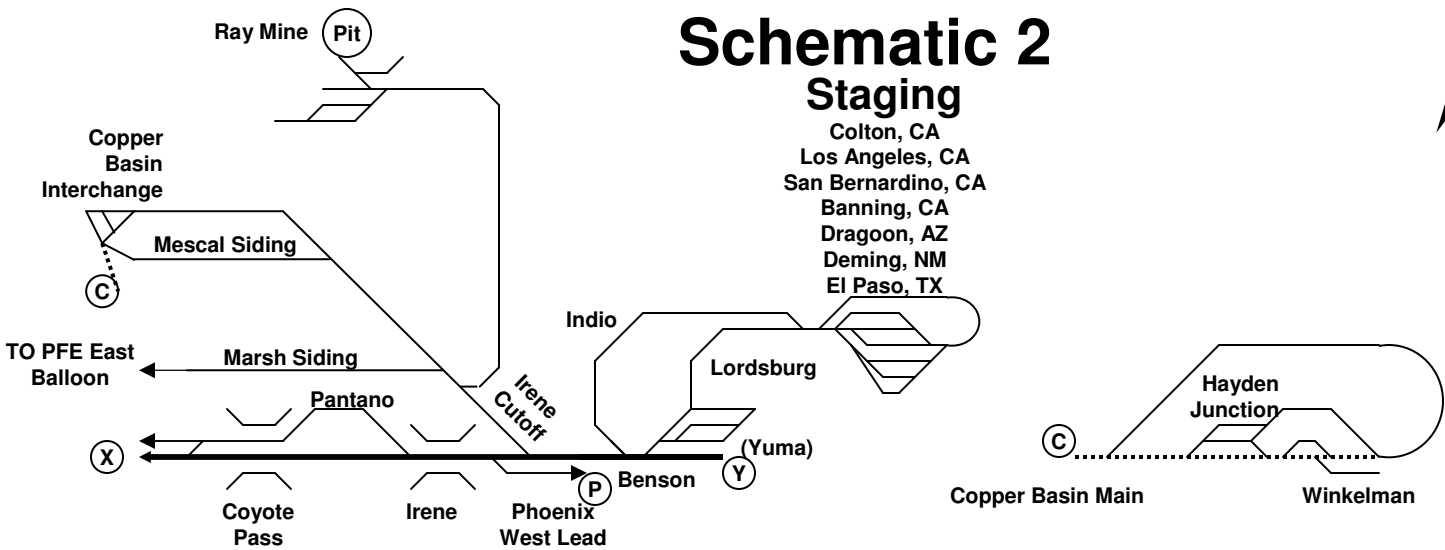
AMRS HO Division Operating Rules

As approved by vote at the August 12, 2006 HO Division Meeting

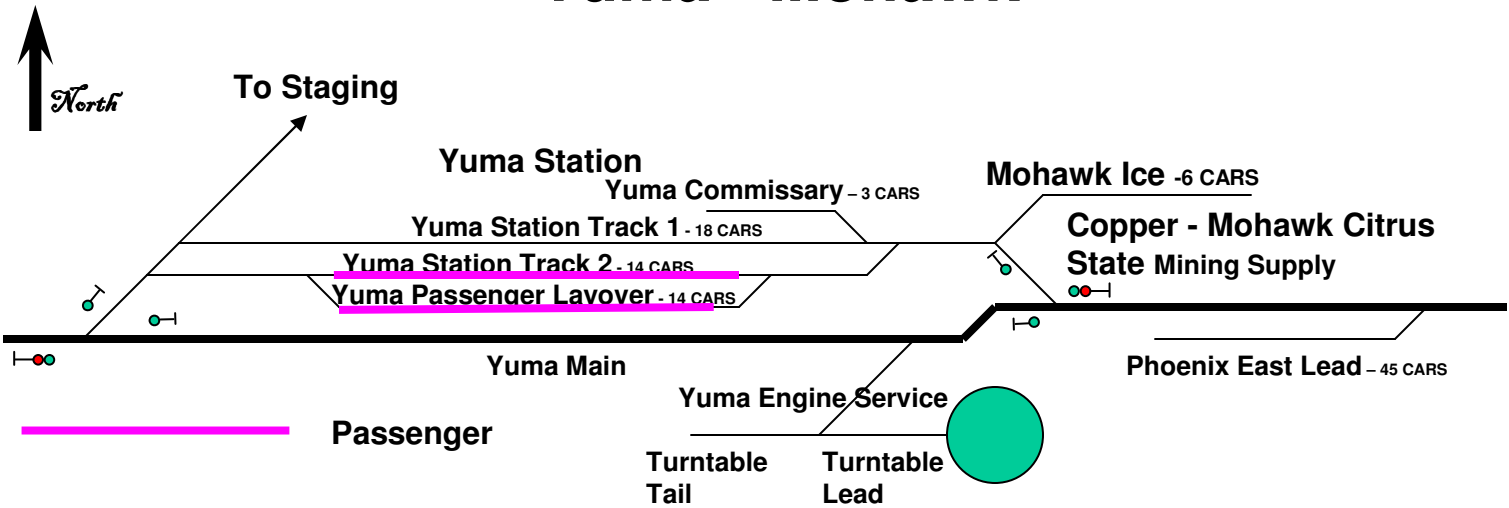
1. PLEASE NOTE – METAL WHEELS are REQUIRED for operating on the AMRS HO layout follow all the rules.
2. Make a reasonable attempt to understand and follow all the rules.
3. Treat other AMRS Members and Officers with respect at all times.
4. Treat AMRS and other members' equipment with respect at all times.
5. When running a train, keep a safe speed and distance from obstructions (including contrary turnouts) and rolling stock.
6. Engineers are restricted to running (in motion) only one train at a time.
7. Engineers will not "tie down" or abandon trains except in yard tracks not designated "lead", "thoroughfare", or "arrival / departure" tracks.
8. Respect work windows – work takes priority at these published times.
9. Respect operating windows – other than normal troubleshooting, running takes priority at these times.
10. Do not place boxes of rolling stock, food, beverages, or other obstructions on the layout, including track or scenery. Do not lean on the scenery.
11. Trains require appropriate, recognizable end of train (EOT) devices except for light engine movements. These EOT devices may be a caboose, FRED (flashing light on rear car), observation car, etc. Short passenger trains and switching movements are exempt from this rule, but lights are recommended and engineers are responsible to assure that their entire consist is in tow.
12. Rolling stock requires metal wheels except certain model engines where metal wheels may not be available.
13. Members are expected to keep their equipment (including any AMRS HO Division Equipment) in good working order so as to not foul the track or cause electrical short circuits that adversely affect other members. This includes, but is not limited to:

Schematic 2 Staging

Colton, CA
Los Angeles, CA
San Bernardino, CA
Banning, CA
Dragoon, AZ
Deming, NM
El Paso, TX



Yuma - Mohawk



Operation Restrictions – 3

TRAIN MAKE-UP RESTRICTIONS –Cont.

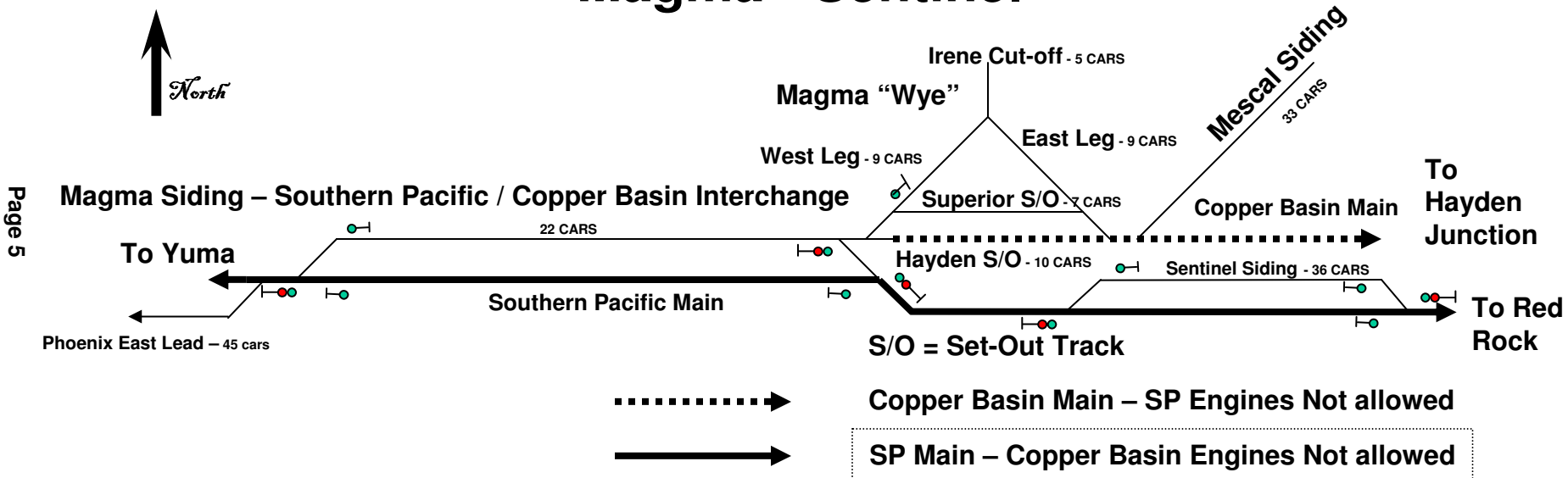
10. Consideration must be given to the overall distribution of weight within the train with heavier cars placed toward the head end of the train and lighter cars placed towards the rear. (Note - consider absolute weight as well as ratio of actual car weight as a fraction) of NMRA Rp 20.1.)
11. Loaded multi-platform double-stack cars should be entrained at the head end of the train. These are to be considered loaded when they are carrying containers or show as loads on the train make-up list.
 - Blocks of 5 or more loaded cars should be placed near the head end.
 - Any block of 10 or more conventional TOFC (Trailer on Flat Car) or COFC (Container on Flat Car) should be placed as close to the rear of the train as train make-up will permit.
12. Any questions concerning train make-up in relation to the preceding guidelines within this section need to be referred to an AMRS HO Trainmaster.
13. **PLACEMENT OF HELPER ENGINE** - Unless otherwise instructed, placement of helper engine(s) will be governed by the number of total powered axes in the helper as shown below:
 - 13.1 - 8 axes or less - behind the caboose or on the rear of a caboose less train.
 - 13.2 - 12 axes or less - ahead of caboose or on the rear of caboose-less train *
 - 13.3 - More than 12 axes - Must be cut in ahead of one half the tonnage rating for the helper locomotive **,
 - * Exception: Solid loaded bulk commodity trains only may use up to 16 axes in helper engine ahead of the caboose or on the rear of a caboose less train.
 - ** For this purpose, the tonnage rating of an engine is considered to be 2 loaded cars or 3 empty cars per powered axle.
 - 13.4 - When a helper engine has over 16 axes of power, the first five cars ahead of the helper must each be a loaded car and be 73 feet or less in length.
 - 13.5 - An entrained helper engine must not exceed 32 axes of power.
 - 13.6 - Multi-platform articulated spine car or a two axle car must not be nearer than the tenth car ahead of a helper engine.
 - 13.7 - Helper engine must be entrained ahead of empty 2-axle cars, scale test cars or cars designated as "rear enders".
 - 13.8 - If necessary, placement of helper engine may be varied a few cars in either direction to comply with the above restrictions or to provide separation from restricted cars.
 - 13.9 When rear-of-train helper engine has more than eight axes of power, each of the first five cars ahead of the helper must be loads and be less than 73 feet in length. When rear-of-train helper must be entrained to avoid restricted cars, it must be entrained as a helper having more than 12 axes.

Operating Restrictions - 2

TRAIN MAKE-UP RESTRICTIONS

1. The following train make-up guidelines are be considered when making up trains
2. When train tonnage exceeds 100 ounces, the first 5 cars behind the road engine must be loaded cars. For application of this train make-up restriction, two consecutive loaded platforms of an articulated car are to be considered the equivalent of one loaded car.
3. The following cars must be entrained with no more than 80 trailing ounces.
 - Empty Tank Cars measuring less than 35 feet in length.
 - Car measuring less than 42 feet in length coupled to an empty car longer than 73 feet in length.
4. Trains containing a solid block of 10 or more loaded multilevel (50 "double-stack" units) must not exceed 3000 feet in length excluding engines.
5. The following restrictions apply to 2 axle freight cars:
 - Empty cars must be entrained at the rear of the train.
 - Loaded cars must be entrained as close to the rear as the train make-up will permit.
 - When the total train length excluding engines exceeds 3000 feet, do not entrain any loaded 2-axle cars
 - When the total train length excluding engines exceeds 2250 feet, do not entrain more than 10 loaded and/or empty 2-axle cars.
6. Caboose are not to be moved other than at the rear of the train, unless specifically authorized by the dispatcher, except when handling 12 or less cars in local or road switcher service.
7. The following train make-up restrictions apply to crane cars:
 - They must be handled in work trains or special trains composed entirely of MoFW (Maintenance of Way) equipment.
 - Train must not exceed 80 ounces and/or 1500 feet; and
 - When train make-up will permit, the crane car must be entrained not less than 3 cars nor more than 5 cars from the head end of the train.
8. Scale test cars and cars designated as a "rear-ender" (e.g. FRED, etc.) must be entrained within the rear five cars of the train. A scale test car must not be handled as the rear car of the train.
9. Ballast cars are to be moved only in unit trains or in MoFW trains.

Magma - Sentinel



Operating Restrictions - 1

AMRS HO Train Operating Restrictions

SCOPE

These Restrictions apply to the make-up and operation of trains during Formal and Demonstration Operating Sessions of the AMRS HO Layout. These restrictions are also recommended for informal fun operations by individual members to assure satisfactory operation.

DEFINITIONS

Train - One engine coupled to at least one other engine or car.

Car - an individual freight or passenger car, or one unit of an articulated freight or passenger car.

Engine - A single locomotive which cannot be subdivided. A steam locomotive and tender is considered one engine. An articulated steam locomotive is considered two or three engines depending on the number of independent sets of driving cylinders. A 2, 4, or 6 axle diesel locomotive is considered a single engine. A coupled locomotive such as EMD FT set is considered to be the number of units engines, even if permanently coupled. An articulated diesel locomotive such as EMD DD35 or DD40 is considered two engines.

Empty Car - A car weighing less than 65% of the weight recommended in NMRA RP 20.1.

Loaded Car - A car weighing more than 65% of the weight recommended in NMRA RP 20.1.

Foot/Feet - HO Scale Units if Linear Measure. One Foot = 1/87*12 inches = 0.138 inches

ENGINE TONNAGE RATINGS

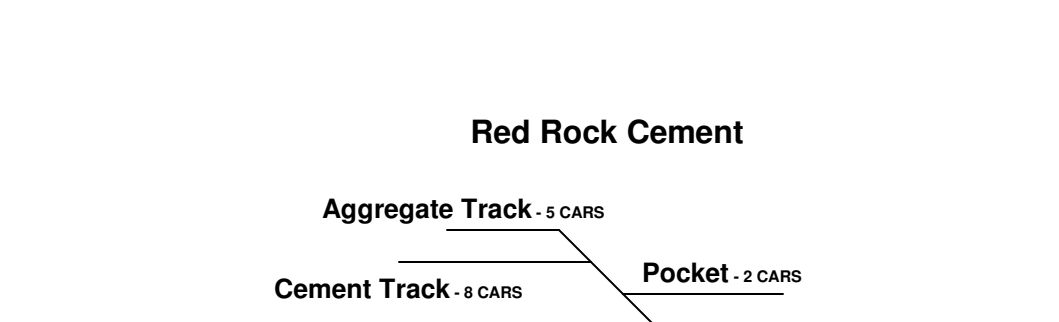
The locomotive tonnage ratings are guidelines only. To determine the recommended power requirement of a train, calculate the total "weight" of the train. Each empty car counts "2" and each loaded car counts "3". The recommended diesel power is one powered axle for each "6" load units. The recommended steam power is one powered axle for each "6" load units. Dummy locomotives are considered "Loaded Cars".

LOCOMOTIVE MOVEMENTS

Power transfers are limited to 8 coupled locomotives.

Unless otherwise provided, no more than eight coupled locomotives may be moved or switched within locomotive facilities including movement between service tracks and train yards.

Red Rock - PFE



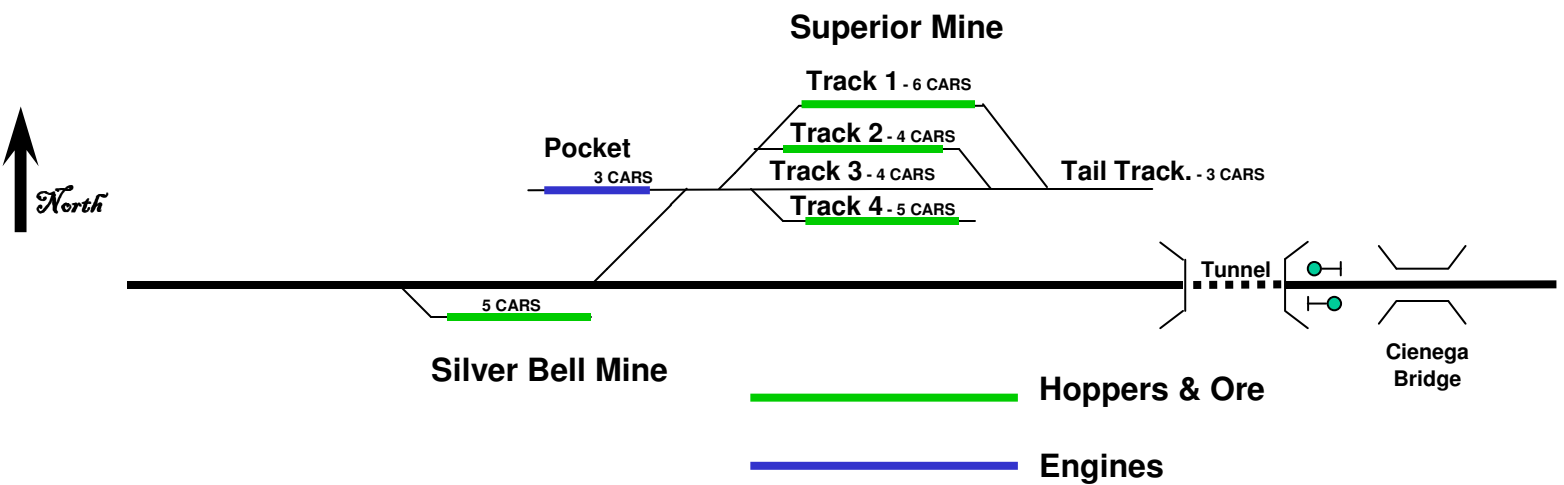
Equipment Restrictions

- Couplers must be magnetically operated Kadee compatible knuckle type (Kadee, McHenry, or equivalent) set at the NMRA standard height. This will allow compatibility across club and member's equipment.
 - Car weight must not exceed the recommended weight given in NMRA RP 20.1 by more than 20%. Lesser weights are allowed. Cars used in operating sessions shall be of known weight and must be entrained according to the limits provided in the Operating Restrictions. It is the responsibility of the Trainmaster at yards, and the Engineer on the road to assure proper train make-up.
 - Wheels (including engines) coming in contact with the rail must of a non-porous metal material and must comply with NMRA standard gauging and size. This will improve operation of equipment, minimize dirt on the rail during the operating session and reduce damage to track and switches.
- Note – This requirement applies to all operation on the AMRS HO layout and is not restricted to formal operating sessions only.

Exceptions

- Engines with "traction tires" should have these tires removed and replaced with solid wheels, or certified by an Equipment Committee to be of a hard rubber-like material that will not rub off and foul the track. Each such engine shall be inspected, identified and receive a special approval marking when approved. When such engines are used, care should be exercised to prevent wheel spinning caused by excessively long trains and/or steep grades. (TBD – Standards should be developed to measure tractive effort of these locomotives prior to wheel slip and train limits imposed accordingly)
- Engines with porous metal wheels (such as Athearn sintered iron) should be carefully inspected for cleanliness prior to use on the layout. These engines, when operated extensively under load on DC create an electro-chemical oxide material that tends to foul the track and accumulate on the track and wheels. Dirty wheels should be cleaned PRIOR to placement on the layout. It is not known whether the electronic filtering of electrical current in a DCC equipped engine will prevent this build-up.
- Prior to use in a formal HO division operations session, each engine and car will be inspected, weighed and gauged for compliance to the above standard. Once this has been completed for a particular piece of equipment, a AMRS HO Division seal of approval will be placed on the bottom of the item.

Coyote Pass

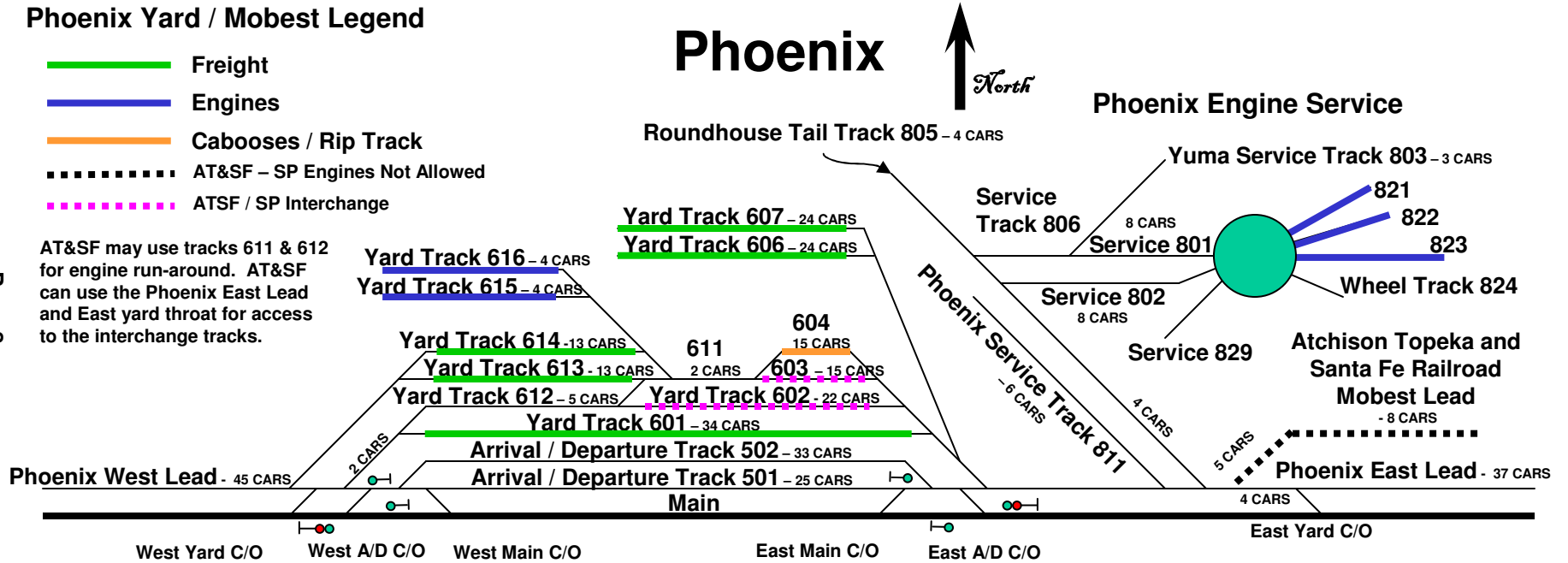


Phoenix Yard / Mobest Legend

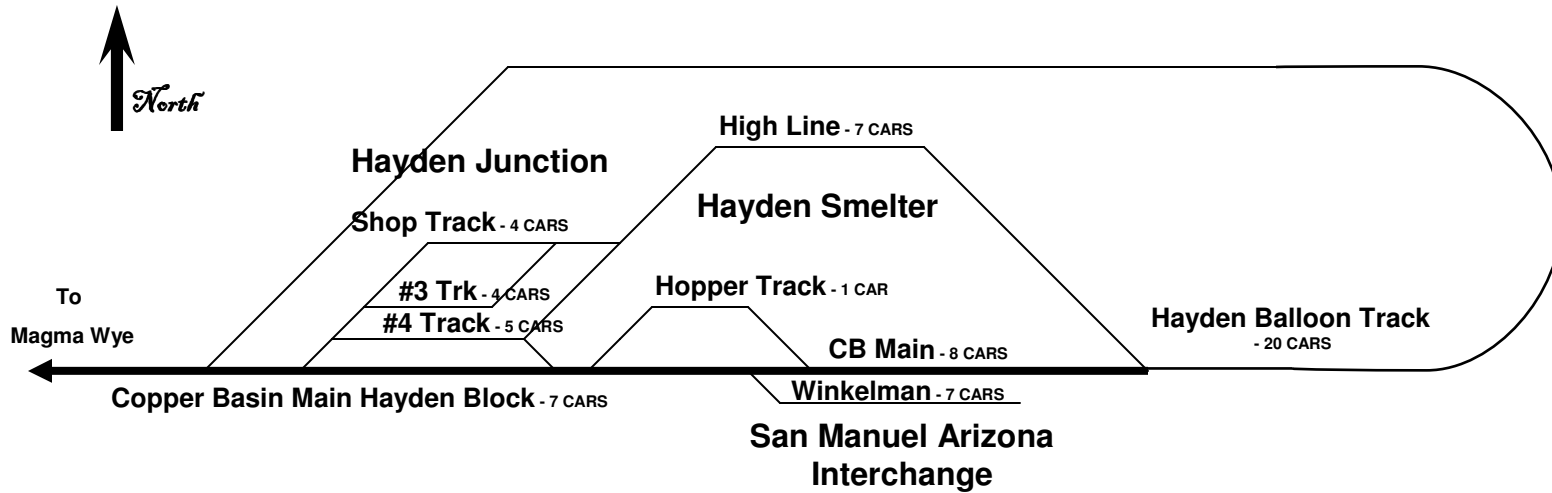
- Freight
- Engines
- Caboose / Rip Track
- - - - - AT&SF - SP Engines Not Allowed
- - - - - ATSF / SP Interchange

AT&SF may use tracks 611 & 612 for engine run-around. AT&SF can use the Phoenix East Lead and East yard throat for access to the interchange tracks.

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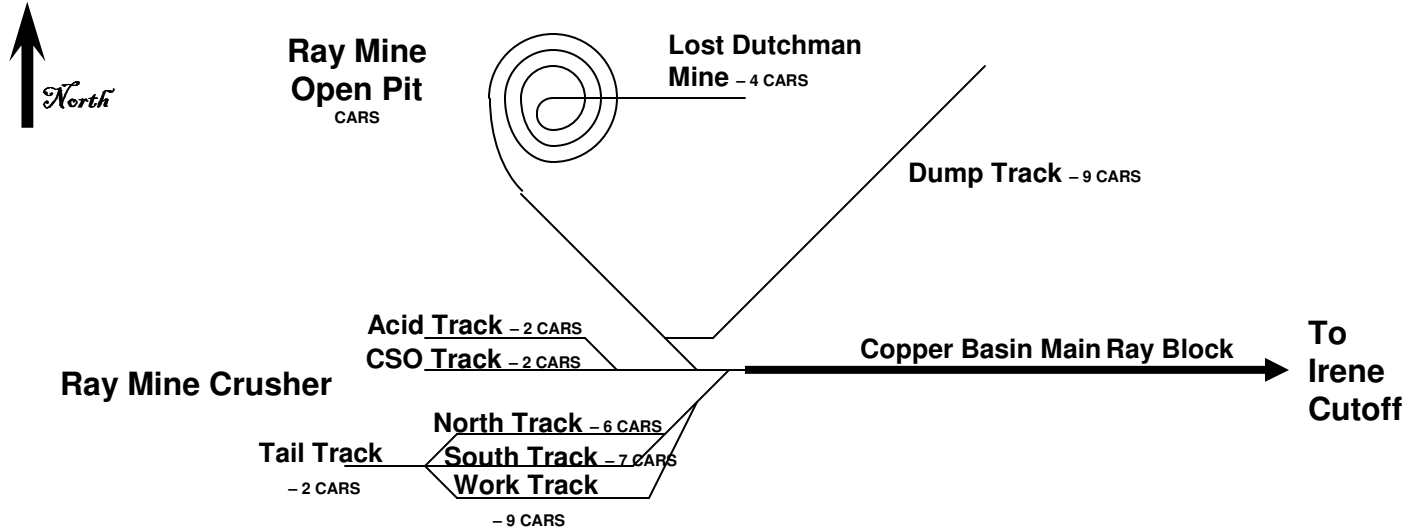


Hayden Junction

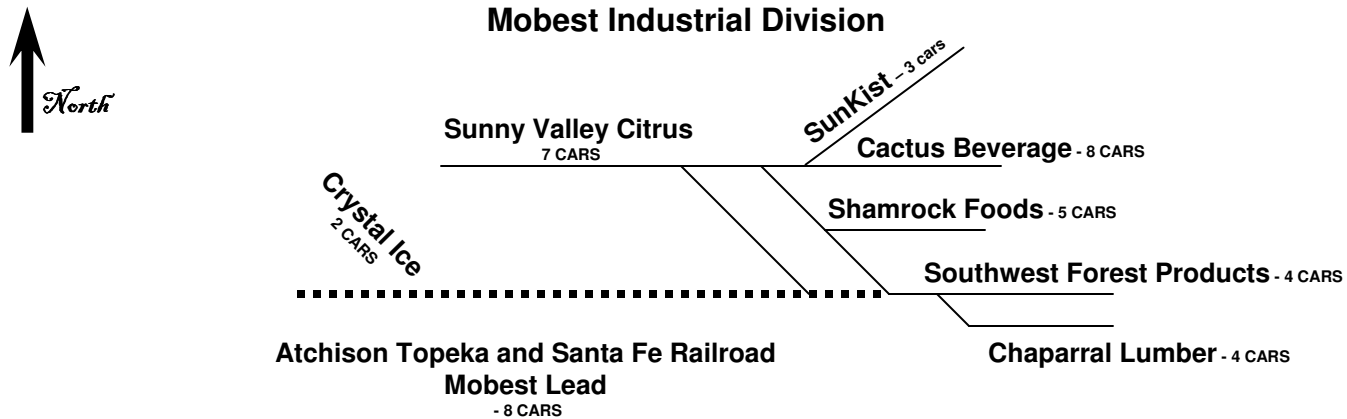


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Ray Mine



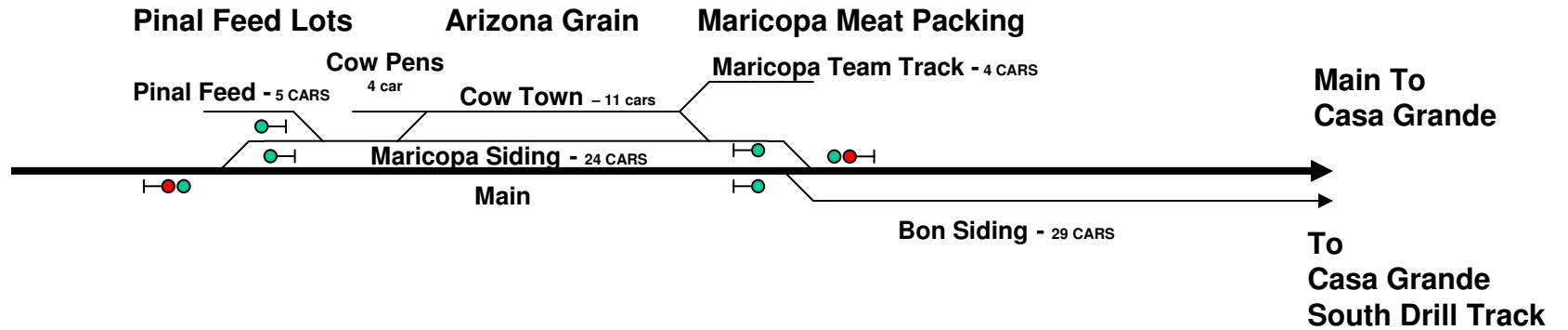
Mobest



Maricopa – Bon



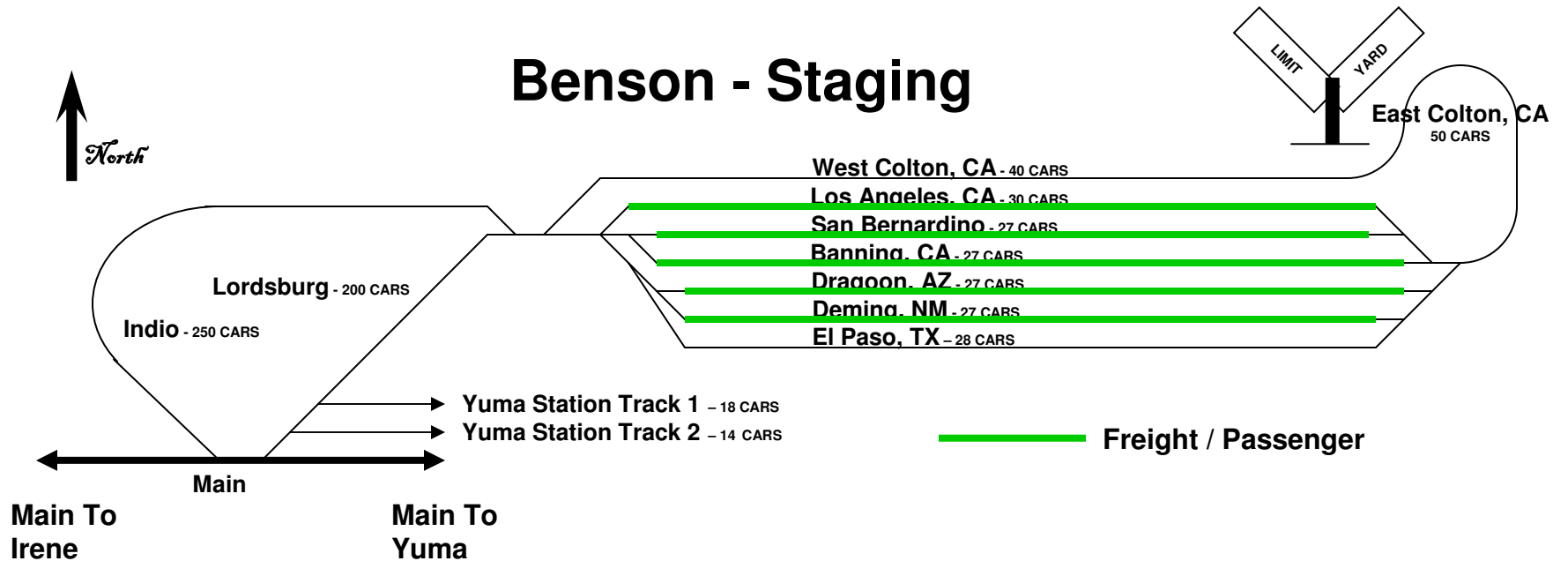
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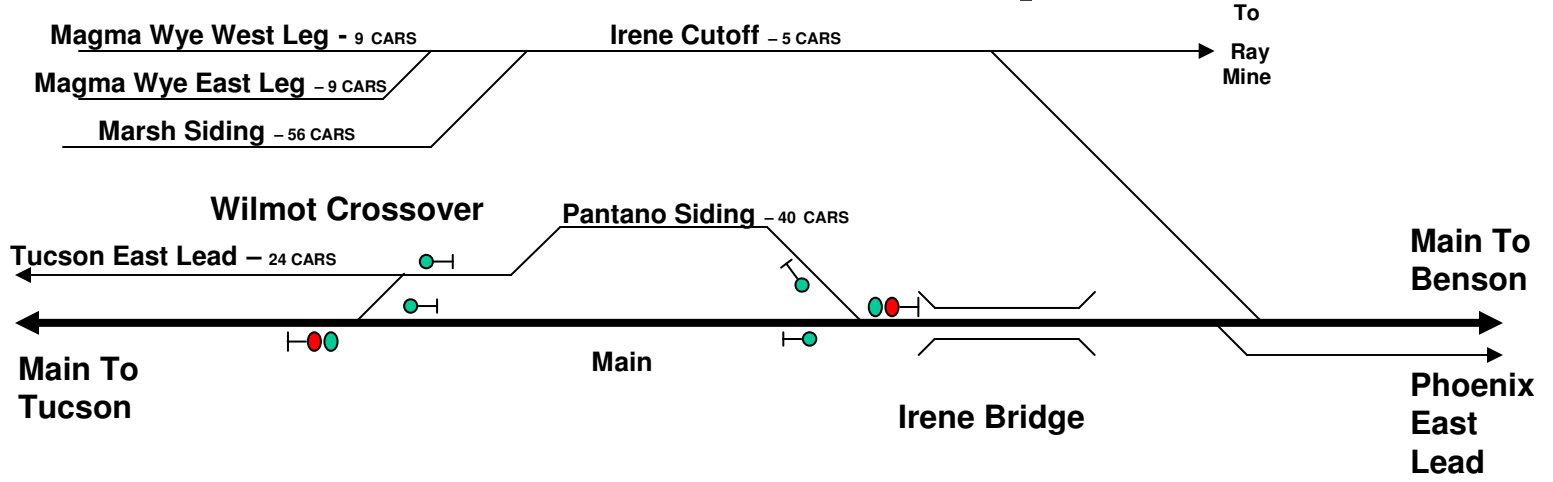
Benson - Staging



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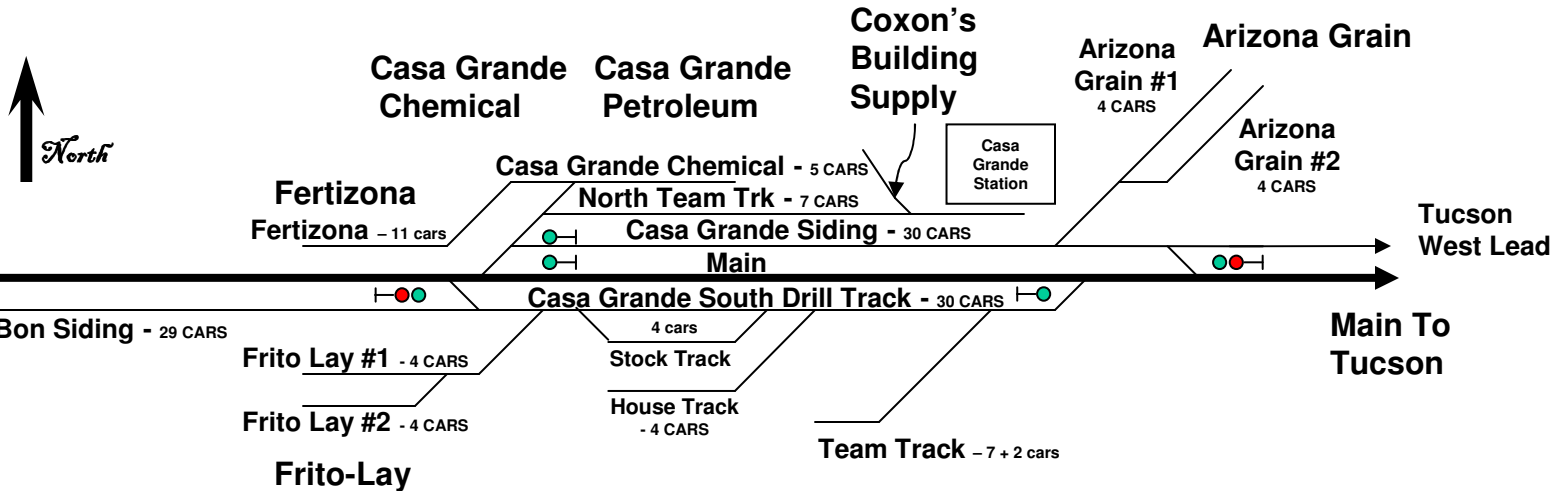


Wilmot - Irene



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Casa Grande



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PFE - Tucson

