

The 3-rail O-scale Shelf Layout

This is a shelf layout 42 inches wide and nearly 40 feet long, which is just fractionally short enough that it will fit snugly inside a truck trailer. Because the layout is perfectly straight, it is conceivable to make your bench work from two parallel laid closet doors. You can bend the shelf to create an "L" or "U" shape. Potential locations to cut the main line are just behind the bottling plant and just to the right of the freight house. The bench work should be built so the mainline height is just below armpit level. Sufficient overhead lighting must be installed. This lighting should ideally be able to be turned down for simulated twilight, and turned almost off for night time (lights in your scenery make a cool night effect).

This is a 24 hours of activity switching layout suggesting a grimy urban Great Lakes environment such as Cleveland Ohio. Due to prototypical high property values customers tend to be crushed together, and all track is laid down as compactly as possible. "Off stage" to the left are the downtown office buildings with the main passenger terminal, while off stage to the right is the inner city industrial zone.

Local traffic will be handled by diesels without cabooses. Through traffic can be any type of locomotive, and could include cabooses. The layout is near the shoreline (where most traffic funneled), and the city contains a steel mill. A light rolling stock / engine maintenance facility is located off stage to the East.

The downtown main passenger station is not modeled, because it is simply a loading / unloading zone and therefore a waste of precious layout space. Contrary to popular belief, trains are neither cleaned or "parked" there. This same reason is why a freight yard is also not modeled. Passenger trains are indeed parked in a passenger yard (just as freight is on spurs), which is why a coach yard has been modeled.

The main line is double tracked the entire length. It is ridiculous to only use single track on a 3-rail O-scale model due to the extremely high traffic volumes every train lover runs. Besides, double track is prototypical for this kind of urban environment. Running speeds through this layout will be extremely slow, and this also applies to all through traffic. Full CTC control (simulated) allows trains to use either track as conditions require. It is assumed that you will install a full set of signals, even if they are only non-functioning scenery items! Turnouts as envisioned are intended to be thrown locally as needed. All track is O-scale Atlas 3-rail, with a small bit of Lionel K-Line SuperStreets for the track in the paved alley.

The layout is a Dog Bone configuration, with the two loops off stage behind view blockers. Unfortunately the loops had to be reduced to O-36 diameter to fit on the shelf. If you have the space, they should be replaced with O-45 or larger loops. The return loop centers have been supplemented with a O-54 termination track, which doubles as a layover and staging "fiddle" track. To accommodate full O-scale through equipment, the visible main line uses only extremely gentle curvature.

On the visible portion of the layout, the minimum diameter curve / switch is O-45 diameter, with all crossovers being O-54. The number of switches and flex-track pieces were kept to a minimum. It is strongly recommended that you do not put any bridges / walkways across the main line tracks. For easy reach by human hands spurs are set as close to the layout front as possible, and many are angled in order to give a psychological sense of a larger space. As a convenience, the harder to access areas were given automatic uncouplers, but it is assumed that most uncoupling will be performed by touching your rugged rolling stock (this also allows uncoupling cars anywhere). Besides, your locomotive is probably equipped with couplers you can open and close remotely. Adding and removing locomotives and rolling stock in the staging area will be accomplished by physically hand lifting them on-to and off-of the layout.

A Quick Tour from Left to Right

It is very early Autumn, and facing the layout you face North. Off stage to the left is the downtown main passenger terminal, as well as a connection for freight traffic to / from points West and Southwest. Along the main line is an unsheltered paved area, which is used as an Express Commuter train station.

The first spur leads to the Coach Yard. Although it looks a lot like a passenger terminal, passengers will never be allowed here. Along the left wall are "flats" of passenger equipment support buildings, including cleaning services, linen services, and commissary services. Arriving mono-direction passenger cars will **already be turned** to their proper East or West orientation. Here trains are broken up, cars are cleaned and restocked, and then trains re-assembled for loading at the downtown passenger terminal. This spur is serviced with the terminals switcher. (TIP: Select a prototypically short length locomotive such as an EMD SW9). The switcher can park on the yard ladder when not actively involved in switching. This switcher and all passenger engines fuel off stage West (freight engines fuel off stage East).

The last track on this spur is reserved for the U.S. Postal Service. RPOs, high speed "baggage", and express cars of mail for the city will be loaded / unloaded here. The Lionel Operating Freight Station makes a good depot building. No mailmen work delivery routes out of the small post office building.

The next spurs lead to the Express Depot. This is where express packages (think FedEx or UPS) are loaded or unloaded onto high speed baggage / express cars, which are then attached (using the terminals switcher here also) to the first available passenger train heading in the correct direction.

The next spur leads to the Freight House. This is where lower priority packages that won't completely fill a freight car (think Greyhound Bus Freight) are loaded / unloaded into boxcars. In the evening the cars will be assembled into its own East direction train, which operates on a timetable like a passenger train.

The last track on this spur leads to a Produce Broker. Here reefers of assorted perishable produce are sold by the case to wholesalers, who take their purchases to restaurants or small grocery stores.

The next spur is a single track Trailer on Flat Car area. This facility is only a downtown satellite of the big off stage facility (which also handles cars loaded with containers). Here truck trailers are physically side unloaded / loaded from special flat cars with the "five fingered forklift". It is suggested that you include a trailer loading "piggy packer" forklift as scenery to imply this spurs purpose. (TIP: As an adjunct, if you just want to goof around, this area offers space for setting out your toy Space Age cars and accessories).

The next spur contains three urban businesses. A Flower Wholesaler, a Newspaper, and a Cold-storage. The flower wholesaler does not have a loading dock, so unloading onto carts occurs on the end of the street itself. The newspaper building actually extends further beyond the layouts back wall. This unmodeled portion is also where the newspaper delivery vehicles are loaded. Hanging meat is the product usually kept in the cold-storage warehouse.

We have now reached the half way point on our layout. Along the main line is a small station with a waiting room. This station services both local and commuter passenger trains. This station predates the newer downtown terminal, which is why it also has an unused baggage room. The Lionel Passenger Station makes for a great waiting room, and two Lionel Station Platforms make a great complement.

The next spur leads to a heavy weight carrying public transloading platform. Most items can be transloaded here (the Western side of the platform is paved, so you can park a flatbed or pickup truck beside it), but usually you will see exotic cars destined for a specialty downtown dealership and cans of milk (you can automatically unload milk cans or packages onto the platform from Lionel animated cars). This platform is used daily by an offline creamery. Vehicles on flatcars can be self-unloaded to the platform, so the National Guard will sometimes load / unload their smaller vehicles here. Autoracks can be "circus unloaded" from the end of the spur. On the Eastern side of the spur, backed-in tanker trucks can be filled directly from tank cars. Typical tank car loads are non-volatile chemicals and milk.

The next spur leads to a commercial area. The spur partially parallels the previous spur, so it is possible to also fill tanker trucks from here if the previous spur is occupied. The spur then turns onto a paved street to service two businesses. The bottling plant will have trucks using the same loading doors as the train cars, with the trucks backing across the tracks for access. The builders supply lumber yard can access both sides of a parked train car, allowing center-beam flatcars to be sent.

Along the main line is a livestock sprayer, to cool-down slowly passing cars of live animals on hot days.

The next spur leads to two light industries. An injection molding plant and a petroleum wholesaler. The wholesaler handles multiple grades of gasoline, as well as diesel and ethanol.

The next spur leads to a quay, and contains a train to ship corn storage and transloading facility.

The next spur leads to an industrial area. An oil storage and packaging facility, a small manufacturing plant of your own choosing, and a scrap yard. A lighted Lionel Oil Drum Loader is a good centerpiece to the oil facility. The scrap yard crane does not have to be modeled, and can instead be shifted southward slightly so that it lies unseen (now as a side loader) off the front of the layout. (TIP: The empty area across from the oil storage facility is large enough that you could place the semi-believable Lionel Barrel Loader #362. The loader can fill either a gondola, or the non-operating Lionel Barrel Ramp Car #6343).

The next spur leads back to a cement mixer, which can also be owned by the builders supply business.

Finally we have a commuter passenger platform alongside the main line. It is suggested that for visual differentiation you use something other than the common Lionel platforms. Off stage to the right is the engine / car light maintenance facility, and a connection for traffic to / from points East and Southeast.

Designed for Rolling stock Variety

3-railers often have a wide variety of rolling stock. The destinations were selected in order to accommodate as many different types of cars as possible. Room was provided so that you could physically "five-finger" load / unload objects from gondolas and flatcars. The Cleveland-like location legitimately allows virtually any type of through traffic to appear on the layout (so you can display your "open" loads such as Iron ore, Coal, and big flatcar loads), with the possible exception of raw timber.

The following are typical cars that commonly appear at the various destinations. Note that for operation purposes it matters not a bit what road name is stamped on locomotives or rolling stock. Only locomotive pulling power (simulated) and load carrying car type are of concern. As much as possible though, you should field equipment with different ID numbers stamped on their sides.

Express Commuter Pavement = Express commuter passenger train.
Coach Yard = Dining car, Sleeping car, Lounge car, Chair car, Coach, Rail-Diesel car (RDC).
Mail Depot = Railway Post Office (RPO), Baggage car, Express boxcar.
Express Depot = Baggage car, Express boxcar.
Freight House = Boxcar.
Produce Broker = Produce reefer.
TOFC = Trailer flatcar.
Flower Wholesaler = Express reefer.
Newspaper = Double-door boxcar, Boxcar.
Cold-storage = Meat reefer.
Station = Local passenger train, Commuter passenger train.
Public Transloading Platform = Autorack car, Flatcar, Milkcan reefer, Boxcar, Insulated tankcar.
Bottling Plant = Beer reefer, Boxcar, CO2 tankcar.
Builders Supply Store = Center-beam flatcar, Staked flatcar, Bulkhead flatcar, Boxcar.
Livestock Sprayer = Livestock train.
Injection Moulding Autopart Plant = High-cube boxcar, Covered airslide hopper.
Petroleum Dealer = Petroleum tankcar.
Corn Silos = Covered grain hopper, Grain boxcar.
Oil Storage = Gondola, Oil tankcar, LPG tankcar.
Wildcard Manufacturing = [cars for whatever you make the business]
Scrap Yard = Gondola, Flatcar, Depressed-center flatcar.
Cement Mixer = Side-dump gondola, Covered cement hopper, Boxcar, Flatcar.
Platform = Commuter passenger train, Express commuter passenger train.

Example of Operations

Although you could certainly operate a layout of this size with more than one person, it was designed so it could be operated by just one. Trains will run on a timetable, but movement will be sequential. In other words, clock time equals next scheduled event time. When one activity has finished, such as switching a spur, then it is time for the next activity on the schedule, such as moving a passenger train. One operating day is a full 24 hour timetable (you can take a break at any time), starting at around 3 AM. Equipment is pre-staged, or left as they are when you stopped (days progress through a 7 day cycle).

Car movement is done using a car forwarding system of your choosing. Cars assumed to have developed mechanical issues (such as a hotbox) will be sent off stage to the East. O-scale trains are big enough that you can actually read the numbers on the car sides. Every car on the layout will be assigned a unique identifier of needed length. First is the car type, then car number. For duplicates you also note the road name, then car color, and finally some other distinguishing feature of (or added to) the car.

For passenger cars needing to be refreshed, you need to know how far along work has progressed. To assist, create several small cardboard "H" shapes with short legs, wide enough to fit over a passenger car roof. Color the inside of the upper legs of the "H" Red, and the lower legs Blue. When parking a passenger car in the yard; if it needs a lot of work (such as pullmans or diners), put an "H" on its roof so the Red side shows. If it needs moderate work (such as lounges or chair cars), put an "H" on its roof so the Blue side shows. If it needs little work (such as coaches), don't put anything on the roof. Later when the operating schedule says it is time to look at the yard, you first remove any Blue markers from roofs. Then you flip all Red markers to their Blue side. You can now take cars to build a train, or park new cars.

RETURN LOOP and LAYOVER TRACK area=

For both visual demarcation and safe handling reasons, carpet this area with low pile carpeting.

Express Commuter Pavement =

This open paved area is used only by express commuter trains (Mon-Fri, morning and evening service).

Coach Yard =

Cars arrive / leave to the West. Arriving cars will be pre-oriented (the off stage loop can simulate the stations "Y" track) to the direction they will be heading when they leave the downtown main station. The point of the coach yard is to clean cars between runs, and to have a pool of cars from which to build a train (passenger train lengths CAN vary slightly on a day to day basis, and besides sometimes cars will have to be substituted due to mechanical issues). Only cars that terminate in the downtown station are sent to the coach yard (road locomotives needing their checkup travel to the maintenance facility off the Eastern layout edge), but there is sometimes a need to take a car from the coach yard (such as a diner) and send it to the station so that it can be added to a through train. Note that due to their improper orientation or state of refreshing, some pool cars may be temporarily ineligible to send to the station!

Mail Depot =

Cars arrive / leave to the West. RPOs can layover here during the night, and on Sundays / holidays. Sealed mail cars will be loaded / unloaded during the day Monday - Saturday, but never on holidays.

Express Depot =

Cars arrive / leave to the West. Cars are loaded / unloaded Daily. 3rd shift and Sundays / holidays there is a reduced workforce, so loading / unloading times increase.

Freight House =

Train arrives overnight from East. Boxcars are loaded / unloaded 10 - 6 Mon - Fri, except for holidays. A car is filled before the next is started. Empty cars are left standing when the evening train departs East.

Produce Broker =

Before dawn delivery. Slowly unloaded from sunrise till noon. Any leftover loads are disposed of.

TOFC =

24 hour operation, with cars loaded / unloaded as they (and their loads) arrive. No container service!

Flower Wholesaler =

Express reefer is dropped Tue-Sat by a morning Eastbound passenger train, and then swiftly unloaded.

Newspaper =

Paper roll delivery every morning. Another paper roll delivery every evening, except for weekends / holidays. Ink is also separately delivered Tue / Thu / Sat evening.

Cold-storage =

Deliveries Monday and Thursday. Unloading same day (car might sit until the next day if a holiday).

Station (local and commuter stop)=

Local trains will be heading in either direction. Push-Pull commuter trains head outbound East and Inbound West. Commuter trains run every day. This station is skipped by all express commuter trains.

Public Transloading Platform =

Milk will be delivered daily for unloading. Sometimes it will have to be diverted to the adjoining spur.

Bottling Plant =

Business hours Mon-Fri. Daily, cars to unload are spotted at the West dock, while cars to load are spotted at the East dock. CO2 is only required for soda, so only ordered on an infrequent needs basis.

Builders Supply Store =

Lumber is ordered at least once a week. All other deliveries are on an infrequent needs basis. Unloaded during business hours Mon-Fri, and half-day Sat.

Livestock Sprayer =

Used occasionally by a train brakeman in summer / fall to cool livestock on his very slowly passing train.

Injection Moulding Autopart Plant =

1st and 2nd shift, Mon-Fri. Pellets unloaded 1st shift Wednesday. Boxcar loaded every 2nd shift.

Petroleum Dealer =

Deliveries several times a week on a needs basis. Unloaded during the morning.

Corn Silos =

Harvest delivery at railroads convenience around noon, with another possible delivery a few hours later. For added operational interest, you can specify that a locomotive can not enter the unloading shed (you would have to use another freight car as a "handle" to reach through to couple the empty grain cars). Grain cars will have to be manually shifted to the right as they are unloaded (simulating a car puller).

Oil Storage =

Ten hour evenings, Tue-Fri. Propane is only required to be delivered once a week. Oil a bit more often. For after dark Tue-Fri, a gondola will be delivered whenever you want to play "load the drums".

Wildcard Manufacturing =

[What is made / stored here is totally up to you. It could even be an unserviced or abandoned building.]

Scrap Yard =

For daytime, a car with / without a load will be parked whenever you want to play "swing the crane".

Cement Mixer =

For any time, a loaded side-dump gondola can be delivered whenever you want to play "dump the aggregate". Unloading of powdered cement, bags of cement / grit, and pallets of bricks / cinder block will occur during the business hours of Mon-Fri, and half-day Sat. Powdered cement is required every business day. Aggregate whenever a few times a week. Other deliveries on an infrequent needs basis.

Platform (commuter stop)=

Push-Pull commuter trains head outbound East and Inbound West, and the trains run every day. Except for holidays, regular traffic is supplemented by Mon-Fri morning / evening express commuter trains.

Note that commuter trains can be as small as one locomotive pulled car, or even a single RDC unit.

APPENDIX

Most customers are straight forward load / unload situations. Heated asphalt tank car arrives at public transloading platform. Road construction tanker truck pumps out tank car. The end. Some customers require a few more steps, but the process is still basically the same. Grain boxcar arrives inside corn unloading shed. Grain doors are removed and boxcar is raked out. Car puller winch pulls boxcar out of shed. Car is swept clean. The end.

The centerpiece Bottling Plant however was designed to be a symphony of movements, so it needs to have a back story: Vintage building started as a brewery bottling plant, was converted to soft drink bottler during prohibition when nearby brewery was demolished, nearly closed when soft drink bottling regionalized, but gained new life when it returned to its roots and started bottling micro-brewed beer. Building contains a bottling machine, and holding areas for supplies and product. Within the basement is the holding tank for CO2 gas, which nowadays is used mostly to refill local soda fountain canisters.

The spur parallels the front wall of the building, and is covered by a building length overhang. It runs through a wide alley, and is embedded so the rail heads are at the same level as the alleys paving. This is so that delivery trucks can smoothly back over the rails to a service door (when a train car is not there obviously, although pass-through is an option), to load full beer bottle cases or exchange kegs for local delivery. The freight car height service door on the left is closest to the head of the bottling machine. Unloaded through this door are full barrels and empty bottles. The freight car height service door on the right is where the packaged bottles are loaded onto freight cars (the alley level regular door just to its right is where a worker can push kegs or bottle cases on a hand truck for automobile loading). Modelers choice as through which of these service doors the packaging material is unloaded.

This is an on-demand business, with one day turnaround (some packaging material and empty bottles are about the only thing you will find in the building over night). A typical work day would have inbound freight cars of micro-brewed beer barrels / kegs from one of several rotating micro-breweries, freight cars of empty no-return bottles, and freight cars of cardboard shipping cartons and labeling materials, arriving in the morning (locally made metal bottle caps arrive by truck). The same reefers that bring full barrels will typically be reloaded with empty return barrels. Mid-day is when the beer is then bottled, labeled, and cased. Local beer delivery trucks arrive and are loaded in the afternoon. Empty freight cars for all the remaining bottled beer leaving town arrive towards evening.