Passenger Terminals and Servicing Facilities: Prototype Examples

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SERVICING PASSENGER TRAINS

Passenger trains have been discounted as the basis for a personal size layout largely because scale 85' passenger equipment does not look good on the small radius curves used by many modelers. Most track plans minimize passenger train service trackage. This is common to virtually all writings on layout design, and leads to the usual layout with its two or three track passenger station with the tracks being used for car storage as well as arrivals, departures, and servicing. This is selective compression with a vengeance.

Although there have been articles on passenger train operation on model railroads (see references from the handout for my clinic **Layout Design with a Passenger Train Emphasis** given at this convention), and some published track plans emphasizing passenger terminals, model railroading (much as the prototype) has concentrated on the freight train. This clinic concentrates on the specialized tracks, yards, and facilities associated with passenger trains and terminals, because the subject appears to have been neglected. Much of the situation may be due to a lack of information as the era is past. This article deals with the time period 1920-1971, preceding AMTRAK. The focus is on modeling a major passenger terminal complex in a large city.

Freight trains appear to offer a lot of switching possibilities compared to passenger trains because most model rails think of passenger service as it is today. Fixed consists that are run from originating city to destination city undisturbed by switching enroute are now normal, although they were once quite rare. As late as 1967 you might have found yourself riding in a car switched into as many as five trains in a through service between Houston/Dallas and Richmond (California)/Los Angeles operated by the Santa Fe, which necessitated much switching enroute (see my California Special article in the NMRA Bulletin).

However, other than the widespread practice of neglecting passenger trains in model railroading, there appears to be no reason a layout should not feature passenger train terminals and operation as an alternative to freight. Freight traffic and yards could be included in a subordinate status just as easily as passenger service is now.

PASSENGER TERMINAL FACILITIES

Terminal switching, track design, and building construction opportunities on a passenger-oriented layout should be excellent if the coach yards and related service facilities are modeled more fully than usual, in keeping with prototype rather than model railroad practices. What are the specialized service facilities than would be appropriate? The following list is suggestive only. Functions of these facilities will be explained in a following section:

1. passenger station trackage and structures
2. related baggage facilities
3. express company facilities
4. mail (post office) facilities
5. private or business car tracks
6. car washer

7. coach yard
8. inspection pits
9. repair tracks
10. repair shops for car repair trades and crafts (e.g. plumbing, electrical, air conditioning, upholstery)
11. commissary (diner servicing)
12. Pullman Company facilities (sleeper servicing)
13. extra and pool car storage yard
14. commuter coach yard if appropriate

Why is there a perhaps unexpected diversity of single purpose trackage and facilities for passenger cars? Most of the techniques for terminal operation were developed during the era of heavyweight cars, between 1910 and 1950, although much the same patterns of trackage and facilities were used in the lightweight car era between 1935 and AMTRAK. Modeling the period of overlap between heavyweight and streamlined cars would be most interesting because of the contrast and diversity of equipment used, often mixed in the same train. Heavyweight equipment was used right up until AMTRAK took over most of the services; a heavyweight diner was a regular car on the GM&O's otherwise streamlined (but much rebuilt) *Abraham Lincoln*.

If one has a large collection of passenger cars and wants to design a passenger train oriented layout, the proliferation of passenger service tracks for each type of car at terminals would become a virtue. The variety of service facilities to match each passenger car type is analogous to the freight terminal facilities such as icing platforms, freight house, stock pens, team tracks, piggyback tracks, etc., associated with various freight car types. There was, however, a change by the 1920s from separate tracks for diners and Pullmans to servicing in place with the rest of the consist, and supplies being brought to the consist rather than switching out diners and sleepers/Pullmans to dedicated building locations. No matter what sort of layout is designed, engine facilities will be needed. Nothing is lost in handling and display of the all-important motive power by reason of modeling a passenger pike.

PASSENGER TRAIN CONSISTS

To understand passenger terminals, we need to understand passenger train consists. Each type of car had to have a facility to service it. The consists of trains varied by function. Car types were picked with an eye to the services to be provided (market). The Pullman Company designed certain cars for particular classes of service, such as short overnight trips as distinguished from long transcontinental runs of more than one night. In the streamlined era, sleepers were often hand tailored to expected demand for sleeper space: this lead to such unusual configurations as 4 section, 7 duplex roomette, 3 bedroom, 1 compartment cars on Great Northern's streamlined Empire Builder.

Wooden Car versus Steel Car Era Coach Yard Operation

Prior to the steel car era, passenger trains at the end of their runs tended to be broken up into specialized tracks and sub yards handling the various car types. The list of facilities set out above indicates just how complex the array of trackage might be. By the 1920s when terminals and their servicing yards like Chicago Union Station were designed, passenger trains tended to be serviced on a single track in a “coach” yard (although mail and express cars still were detached from the train and taken to the post office and Railway Express Agency facilities). After the mid-1930’s, Instead of the cars going to the commissary or Pullman building, the cleaning, resupply, and repairs were done with the train left intact on a service track in the coach yard.

Lightweight Consists

In the lightweight, streamlined era, a more diverse and colorful train could be put together. A much wider variety of equipment evolved than before, such as dome cars, slumbercoaches, etc.. Streamlined trains were more colorful because of the break away from Pullman green to varying paint schemes for each streamliner (even on the same railroad - e.g. Southern Pacific's City, Sunset, Daylight, Golden State, and Cascade/Lark schemes), and greater interchange of cars with other railroads with different colors (e.g. through B&O, NYC and PRR cars to the Southwest painted in foreign road paint schemes). This mixture of colors was especially notable on the head-end. And don't forget the rainbow effect in AMTRAK's first years of operation when equipment was dispersed across the country.

Researching Consists

It can be difficult to determine what the consists of many passenger trains actually were. The **Official Guides** give timetable style equipment lists that give a general idea of car types and sleeper accommodations included in a train, but often fail to define the exact configuration of Pullman cars used. Head-end cars are not listed. Unless one can find car by car pictures of a train, or has a powerful reading glass to look at prints or slides, it is generally impossible to determine car names, numbers and type from train photos. The latter approach requires a good knowledge of how to determine car type from window patterns (or a vivid imagination!). A few fans have managed to obtain consist books which railroads issued to their passenger service and yard employees to tell them what kinds of cars went in each train on what days. These can be bought from railroadiana dealers (rarely), and a few consist books have been published. Increasingly, the railroad historical societies are filling this gap with copies of consist books or articles about individual trains in their periodicals. A number of books describing the passenger trains and services of railroads have been published. There is considerable research material available but, in the end, the modeler may still feel that he hasn't really answered the question as to what cars might typically appear in a particular train at various points in time. If you freelance, your life is much easier. For more information, see my **Model Railroading** article or Sperandeo's monograph.

DESIGNING PASSENGER TRAIN FACILITIES

The modeler can translate the variety of cars in a train consist directly into passenger terminal facilities. A good understanding of basic track plans for model railroad passenger stations is available from several sources. Track diagrams are available for some major railroad stations. However, unless you have seen some of these stations, you do not realize that the platform tracks were vacant until an hour or so prior to train time and only briefly after arrivals. The train seldom stayed in one piece in the station.

The station trackage is usually the only passenger facility on model railroads. But there had to be more facilities.

Droege lists the following components of a "coach yard":

1. Ladder tracks to provide for trains leaving the station platform for the yard and arriving from the yard.
2. Classification tracks for separating and remaking trains.
3. Car sheds with the necessary tracks to reach them (I interpret this to mean repair tracks which were sometimes covered against the elements.)
4. Make-up tracks for through trains and for dining and sleeping cars (what I have called sub yards

or specialized tracks and facilities).
5. Storage tracks holding ordinary coaches for fluctuating traffic.
6. Tracks for storage of set-out and additional cars (e.g. tracks for sleepers or diners that might be added or subtracted from a through train at the station).

Droege was writing about design before the 1920s. As noted above, switching practices in coach yards were changing after World War 1.

What became of the trains between arrival and departure time? A list similar to a freight yard switch list was used to direct the terminal crews in breaking up the train and distributing the cars to various facilities within the terminal complex. Another switch list-like set of orders was issued to the switching crew to reassemble the train. The consist book mentioned above would furnish overall guidance on assembling the train. And, undoubtedly, the terminal superintendent or yardmaster and the Pullman supervisor had to maintain a constantly updated inventory of passenger cars available to construct trains.

A typical sequence of operations might be as follows. Assume that a combination coach and sleeper train has arrived, heading into the typical stub terminal on a model railroad. After our mythical passengers have unloaded, the terminal switcher moves up to the observation car, couples on, and pulls the string of passenger carrying cars away from the road engine and from the head-end cars. The coaches, diner, Pullmans, and observation are taken a mile or more back up the main line and enter a passenger yard complex (coach yard) made up of a variety of specialized sub yards or tracks.

Meanwhile, another switcher grabs the head-end cars away from the locomotive and distributes the RPO and storage mail cars to the Post Office sidings and the express cars to a Railway Express Agency facility. The road motive power then was free to go the engine servicing location. In some terminals, such as Los Angeles, engine escape tracks were provided, allowing the road power to back out on a third track between the platforms after using a crossover. Or, as in some Hudson River commuter terminals, double crossovers permitted the road power to escape if the adjacent platform track was vacant.

Baggage cars carrying passengers' luggage typically were unloaded on the station platform as quickly as possible and bags taken to the baggage room in the station. Typically, the carts carrying the bags shared platform space with passengers, although with the 1927 Chicago Union Station, platforms set aside for baggage, express, and mail carts alternated with passenger platforms so as to segregate the traffic while an incoming train unloaded passengers on one side and baggage and mail on the other side.

The process of loading an outgoing train was generally the reverse of the arriving process above. See the exhibit on the City of St. Louis at St. Louis Union Station. One interesting variation was provided at Cincinnati where a third track was placed between the platform tracks to hold headend cars and coaches and sleepers to be placed in departing trains. These tracks were called "parking" tracks and had crossovers at each end for switchers to pick the cars up and cut them into the departing train.

At the coach yard, the passenger carrying cars are turned on a "balloon" loop or wye, go through the washer, are inspected, and are sorted out. The coaches and observation go to a home road coach yard, the diner to the home road commissary, the Pullmans/sleepers to the Pullman Company yard, and any cars needing a wheel change or repairs to a repair track. (As noted, coach yards designed in the 1920's and later such as Cincinnati, Los Angeles, New Orleans, did not practice switching out diners and sleepers). If one of the coaches or sleepers won't be needed the following day, it is switched to a storage sub yard. If there is a business or official or private car on the train, it goes to the private car track, which

may be a track at the station or within the home road coach yard. The activity described is at least as complicated as any freight train would experience.

Large terminal cities (such as Chicago and Los Angeles where several railroads shared stations) had massive sub-yards. Each railroad might have its own coach yard or use a common coach yard provided by the terminal company and there were mail and express sub-yards shared by all railroads. One exception was Chicago Union Station where the Burlington had its own express facility, the Pennsylvania and the GM&O shared tracks for express cars in the Pennsy's freight house, and the Milwaukee had its own express building. However, a railroad might run only one train per day into the terminal and not be able to justify the expense of its own yard, so it would have its train serviced by a larger railroad. Switching might be performed by each line's engines or by those of a terminal company (e.g. Washington, Dallas, St. Louis, New Orleans). Creation of a terminal company gives the modeler a chance to use switchers lettered for the terminal company (e.g. Dallas Union Terminal).

The functions served by this complex of facilities were:
1. car inspection
2. repairing of the mechanical, electrical, and air conditioning systems
3. battery charging
4. cleaning, both exterior and interior
5. icing and watering
6. servicing, including lubrication, fueling, rewheeling
7. replenishment of supplies such as food for the diners and linen for the sleepers
8. repairs to car exterior and interior such as upholstery, carpets, paint

The size and capacity of these facilities were determined by:
1. the number of cars and trains to be handled
2. the type of equipment
3. the standard of maintenance/was this the maintenance location?
4. the scheduling of equipment/length of layovers
5. the frequency of cleaning

TERMINAL TRACKAGE

Station Platforms

In passenger stations, either combined or separate platforms for passengers and mail and baggage wagons were used instead of special tracks and facilities. Where the platforms were jointly used, the recommended width of the platform was 20 feet. Where there were separate platforms, the passenger platform was to be 13 feet wide and the "trucking" or wagon platform was to be 11 feet (without columns), or 16 feet if volumes were high. These standards are taken from the Manual of the American Railway Engineering Association, 1993. It was recommended that, where there was combined use, access for the baggage wagons be provided from a subway by elevator or ramps, and that baggage wagon ramps or elevators be located at the normal positions of head-end cars in trains (in through stations, this meant both ends of the platforms, and in stub stations where trains backed in, at the outer end of the platform. Head-in stub stations were not recommended because this implied the use of separate platforms for passengers and wagons in order to avoid mixing them on the platform and the concourse, which increased the cost of land and construction. Baggage, mail, and express at such stations was handled at track side, the wagons moving to ramps or elevators and then by subway to the

baggage room within the station, or mail and express buildings within the terminal complex. The loads were transferred by hand from the baggage wagons (whose floor was more or less at door sill height) through the car doors into the head-end cars.

Express

Express was often handled very close to the station. A typical pattern appears to have been a set of express tracks near the station. A long shed or warehouse-appearing building with tracks having platforms at car floor level was served by the railroads. The cars for outgoing or from incoming trains were placed at varying intervals during the day that corresponded to passenger train arrival and departure times without having to disturb the ones already alongside the building. At some terminals, as diagrams in Droege indicate, the express facility consisted of numerous short spurs at a diagonal to a switching lead serving several express companies in separate quarters (prior to formation of Railway Express Agency in 1918, companies such as Adams, American, Southern, and Wells Fargo express served various parts of the country and in competition). Another alternative was a number of crossovers from a parallel lead track (as is common with wharf trackage). When parallel sidings were used, the express cars typically were placed adjacent to each other with their doors aligned so that bridge ramps could be used, allowing workers to pass through from the platform or building into the car on the second track.

Baggage Cars

One rather fine point in selecting head-end equipment that some modelers may wish to note is that a baggage-type car was not necessarily used to carry baggage. Three functions – mail storage, express, and baggage - were handled in cars of similar construction and appearance, and probably generally interchangeable in use. However, your favorite railroad may have lettered some such cars as "mail storage" and others as "express" or "baggage". Photos of these cars commonly show "baggage" lettering on one end of a double door car and "Railway Express Agency" (or one of its pre-1918 predecessors) on the other end. Cars used for these three purposes were railway-owned and supplied to the user (Post Office or Railway Express Agency) for a charge.

The two following quotations are from Edward M. DeRouin's Chicago Union Station, page 64.
"Some {head end} cars were easily distinguished from the traditional baggage, or storage car: the Railway Post Office car (RPO), horse cars, box cars assigned to express or mail service, former W.W.II troop and kitchen cars, and express refrigerator cars. Horse cars often contained additional doors on the sides and/or had end doors. The box cars and former troop cars were of a design easily distinguishable from baggage cars. [Ed: the troop cars were derived from 50' box cars]. The express refrigerator cars contained ice bunkers on each end and smaller, insulated doors associated with refrigerator cars."

"____. Some [baggage/storage] cars, known as Destination Relay Cars, could be partially loaded or unloaded at designated stations. These cars were identified by the placement of a pink or salmon colored placard on the cars placard holder located on the car's exterior near a door. (Some) Storage cars _____were packed solid. Known as Destination Cars, they were loaded and moved intact to their destination and identified by a blue placard.[These cars were sealed or locked while in transit] The third classification of storage car and identified by a white placard was the Full Working Storage Car. Pouches and parcels would be removed or added to these cars at stations enroute." Modelers should note that these placards are a detail that can be added to baggage cars to increase their operational interest.

The mail storage car was loaded with mail sacks at the point of origin, and then either sealed and set out

at a destination point, or coupled next to a railway post office car and end doors kept open (unlocked) so that sacks of mail could be sorted enroute, moving back and forth between the mail storage car and the RPO, until all mail for the mail storage car's destination had been "worked". Similarly, the side doors of express cars, indistinguishable in appearance from baggage cars, could be either loaded and locked at origin and run through between end points or kept unlocked to handle local traffic over the train's route.

Note that Railway Express also had its own wood or steel express refrigerator cars, and that many railroads had express refrigerator cars and express box cars, painted in colors to match passenger equipment and lettered for the railroad, to handle express. If you want to refine your passenger train operations, letter your baggage cars for baggage and express, or mail storage, uses, and place in the train or switch in your terminal appropriately: mail storage cars to the mail dock or post office building; express cars to the REA building. Prior to departure, mail, express cars, and baggage cars were moved to the station track after the passenger carrying part of the train has been placed.

Mail

Many major terminals had a separate post office facility within the complex (sometimes the main city post office was built right over the tracks as at Chicago Union Station and New York's Pennsylvania Station). A 2014 email "thread" by the RailwayPO Yahoo group listed the following terminals as having post offices adjacent to the station: Los Angeles, Kansas City, Chicago (Union Station), Washington, Philadelphia (30th Street), Seattle (King St.), Cincinnati, Omaha, St. Paul, Toronto, Jacksonville, Denver, St. Louis.

Some mail was handled in sacks in mail storage cars (indistinguishable in appearance from baggage cars) and full length RPOs and combination RPO-baggage cars with 15' or 30' post office compartments were switched to the mail facility. The practice was to spot such mail cars consistently day after day at the same loading/unloading position, and to pull loaded cars going into outgoing passenger trains about a half-hour before the train was to depart, putting these cars on the head end of the train, along with the express and baggage cars after the passenger cars had been placed for passenger loading. Last minute loading of pouches used a maze of tunnels, ramps, and elevators to get to the outgoing cars as they stood in the consist at the station platform.

Chicago Union Station was unusual in that platforms for passengers alternated with platforms for baggage, mail and express. The passengers walked down a ramp from the concourse to their platform: baggage, mail and express came up a ramp from under the concourse through a set of tunnels/passageways. According to DeRouin, more use of this system of separate platforms was made for loading/unloading mail and express on the Milwaukee (north) side as the intensity of train use on this side of CUS was lower, but the three railroads on the south side also used this arrangement to handle mail and express as well as at the separate mail and express facilities. Meeks notes that such an arrangement of separate platforms for passengers and mail/express/baggage was unusual and used only at Chicago Union, Copenhagen, and one German station.

Mail handling at terminals where the cars did not get switched directly to the post office was accomplished by transfer of the outgoing mail sacks from post office trucks to carts of the four wheel baggage wagon type. The carts/wagons were towed to the platforms and the mail loaded in the cars at track side. In some terminals (notably St. Paul), some tracks at the station were used largely for mail loading and unloading (at least at certain times of the day). Access from street to platform was either by

paved crossings at rail height where mail facilities were at the side of the terminal, from the station concourse where mail facilities were in the head house (station), or by tunnel under the tracks with elevator or ramp access to each platform. Where moved along the platform, the movement of the wagons was performed at the risk of interference with either passengers or train movements. The railfan going to the end of the platforms for a picture of the motive power became adept at avoiding the activity around the head-end cars.

Some mail and express trains were assembled within the station trackage and dispatched on their runs from there (e.g. slides taken of New York Central mail and express trains departing La Salle St. Station in Chicago). At other stations, such as Chicago Union, mail and express trains were assembled on Pennsylvania or Burlington yard tracks and left from there.

Business Cars and Private Varnish

At the station or in a small sub yard at the coach yard might be short tracks accommodating private cars or official/business railroad cars. These tracks would have steam hose connections for keeping cars heated (or air conditioned) and electrical and water connections, and sometimes sewage arrangements such as “honey buckets”.

Through Terminals

For the modeler who is basing his plan on a division point or intermediate, through terminal concept (e.g. Kansas City, Omaha, Lincoln) instead of a "dead end" or stub terminal, a passenger-oriented terminal is also possible. (See the example in Armstrong’s Track Planning for Realistic Operation.) In the era before fixed consists and streamliners, it was common to exchange and drop/pick up a diner and sleepers at intermediate city stations. In the case of diners, it made good sense to drop off the diner for resting the crew at a facility along the way after the evening dinner had been served, especially if the train arrived at its final destination before normal breakfast hours. This pattern was common to overnight trains on railroads between New York/Washington and Chicago/St. Louis. For diners, this practice changed over time as labor laws changed in the 1930s, labor costs for switching increased, and time lost in switching became a factor in transit time. Dining crews were accommodated in dormitory facilities designed into a variety of car types by the 1930s.

A commissary for restocking the diner and storage and laundry facilities for linen could easily be accommodated in the large division point station (e.g. Lincoln, Nebraska). Diners and sleepers could be set out on or picked up from spurs backing up to the station structure. Hand trucks and wagons could be moved to and from the cars and commissary building along wide service platforms at ground level between the tracks needed to handle the number of cars to be served. At the opposite end of the building might be a similar set of tracks for handling mail, express, and baggage cars.

COACH YARDS

Coach yards are the most commonly recognized component of passenger servicing facilities. "Coach yard" has at least two meanings in the literature. The first meaning probably stems from the wood car era (terminals built before the 1920s). Then, trains were turned and coaches pulled from the train and taken to a yard for coaches. The rest of the cars were switched to facilities serving the various car types (diners, sleepers) as explained previously. The classic coach yard was probably used by a single railroad only (each line probably having its own in a large city). The coaches were cleaned here and stored until

the next use.

Second, it may mean a facility to which the passenger carrying part of the consist was taken for cleaning and restocking, including diners and sleepers. This usage may reflect the streamline era in which consists were relatively fixed, cars changed only if repairs could not be made in time to go out on the next train, and once the train was pulled from the station and turned (a loop or wye capable of handling a full length train would be needed), the train was not broken up except for removal of head-end cars, or replacement of "bad order" cars or cars scheduled for maintenance. Turning loops are conspicuous components of yards such as Pennsylvania's Sunnyside (New York) or Santa Fe's Archer Avenue (Chicago). Typically, the trains were turned by going around a loop or by a wye, pulled into the yard, and then serviced before going on their way back to the station.

Many services had to be performed, on a variety of cycles or intervals:

1. laundry
2. wheels and trucks inspected
3. brake systems inspected
4. steam lines inspected
5. propane cylinders replaced
6. air intake filters changed
7. air ducts blown out
8. batteries tested
9. water provided
10. ice for dining and lounge cars, and ice air conditioning
11. car exterior painted and waxed
12. floors swept, mopped, and waxed
13. carpets cleaned
14. supplies restocked

There are several photographs in the clinic showing "coach yards" in the more general meaning of the term. The photos illustrate the variety of small details that can be added easily in wood, styrene, cardboard, and wire to give your passenger yards authenticity in appearance.

The following specifications for the physical design of such facilities are derived from the Manual of the American Railway Engineering Association. The Manual notes that coach yards may be either through (turnouts and yard leads at both ends of tracks) or stub. However, through yards were considered to be more efficient on the prototype, although as in the case of freight yards on model railroads, model railroaders tend to favor stub yards for our layouts. The tracks were recommended to have their length equal to the longest train to be serviced and it was suggested that tracks of equal length give the greatest operating efficiency. This suggests the "diamond" shaped yard.

Large yards should group leads to facilitate switching with auxiliary leads and tail tracks of ample length. Curvature in yard leads and tracks should be gentle. The length of passenger cars was as much a problem to the prototype as it is to modelers. A wide radius, such as 48" curve in HO, will help appearances and operation. The yard should be level. Special tracks for making up or breaking up trains (arrival and departure tracks) may also be needed.

Car Washers

Mechanical car washers replaced hand washing of cars in the coach yard as streamliners came into use. Fixed location mechanical car washers (as shown in clinic) were usually placed on an inbound lead to the coach yard. Typically, at least one lead track bypassed the washer. Track passing through the car washer should be straight through the car washer and one car length in each direction from the washer.

Servicing Platforms

Many prototype coach yards alternated wide with narrow platforms and track spacings. The wide platform accommodated service vehicles and carts. Service platforms should be placed between all tracks on which cars are to be serviced. The edge of the platform should be approximately 5'6" from track center. Concrete was preferred for the platform surface, with the top of the platform level with the top of the rails. Facilities such as light posts, brake shoe racks, and service outlets located on the platform should be off center in order to provide wider passageways on one side for service vehicles.

Supply lines and service outlets provided the water, low and high pressure air, DC and AC electricity, and steam needed for servicing the cars. These facilities should be modeled. In large yards, the supply lines were placed underground in tunnels or conduits with outlet boxes placed to service each track. The location of each is described here briefly.

Water

Cold water hydrants located on the platform were placed at car length intervals, for drinking water and cleaning supplies. Hot water was also supplied at less frequent intervals. Low pressure air connections (for cleaning) should be spaced at the same intervals as cold water hydrants, and located on the platform.

Compressed Air

High pressure air connections (for brake charging and testing) should be provided by either a double connection at the middle of each track or a single connection at each end of each track. These connections were located between the rails.

Steam

Steam connections (for heating and cooling cars) should be provided in the same way as high pressure air connections.

Electrical Outlets

Electrical outlets may be located either at the center of the platform (thereby serving two tracks and therefore needing two receptacles), or at platform edge (serving one track with single receptacles), and spaced at car length intervals. Both direct current outlets for battery charging (32 volts usually) and 220 volt alternating current for air conditioning are needed. Therefore, the number of receptacles needed at each location is doubled (one DC, one AC).

Pullman Company – Servicing Sleepers

Pullmans/sleepers were cleaned and linen exchanged at a Pullman Company facility. In terminals serving

multiple railroads, there might be a single facility serving all railroads, or at separate facilities at each coach yard if each railroad had its own yard. At its peak (about 1940) Pullman had 10 laundries and used 23 commercial laundries, had 39 commissaries, 80 storerooms, 113 sub storerooms, 6 repair and maintenance shops - Calumet (Chicago), St. Louis, Buffalo, Wilmington (Delaware), Richmond (California), Atlanta - 1 factory, and 5,3000 cars on regular lines plus 1,600 reserve cars. According to Welsh and Howes, up to 300 yards serviced Pullmans, reflecting the pattern of sleeping car set out service to small cities and ends of branch lines.

The Pullman facility should include a building for storing linens and other supplies, and perhaps a laundry. Pullman also had commissaries independent of the railroads, provided within the Pullman building. Pullman had a central commissary in Chicago in addition to commissaries at 4 other terminals in Chicago. There were major commissaries at Sunnyside (PRR, Long Island), Mott Haven (NYC, NH, Bronx), St. Louis, and Washington, and nearly two dozen other locations.

Note that after the anti-trust case in 1946 breaking up Pullman, most of the sleeping cars were owned by the railroads but leased by Pullman (although Pullman retained a car pool it owned) and continued to be serviced, staffed, and operated by Pullman. The name on the center of the letterboard changed from Pullman to the railroad name with “Pullman” moved to both ends.

Commissary – Servicing Diners and other Food Service Cars

The commissary was the place to restock diners. Each railroad tended to have its own building in an originating city like Chicago. Each railroad had its own central kitchens, bakeries, grocery warehousing, laundries, and meat coolers. Ice was also a needed major supply, along with cooking fuels such as coal, coke, Presto logs, or propane. By the 1920s, diners usually were serviced on the coach yard tracks with the rest of the consist, and not cut out and switched to the commissary – the supplies came to the car on carts. An exception was the Northern Pacific’s North Coast Limited on which diners were set out for major restocking and cleaning at the St Paul commissary from the westbound train originating from Chicago, and a fresh diner inserted for a cycle running to Seattle and back to Chicago before being replaced again at St. Paul. Presumably, commissaries at Seattle and Chicago provided minor cleaning and resupply at those termini.

It is not clear from the literature whether or not, prior to the 1920s, car types having auxiliary eating facilities - such as buffets in lounge or observation cars - were also switched to the commissary for restocking at the end of a run or if they were treated as coaches and serviced in the coach yard (if railroad owned and operated instead of Pullman operated). Pullman did own and operate combination cars with food service such as lounge/sleepers and observation/buffet/sleepers. In these cases, the cars probably were switched to the Pullman facility with its own commissary.

Car Inspection and Repair

Cars were sometimes inspected from a small pit (so that the underbody could be seen), located on the yard lead or lead to the car washer. As the moving cars were inspected, any needed repairs could be noted and the car diverted to repair tracks if the repairs could not be handled at track side. Only light ("running") repairs were made in the coach yard itself.

For repairs, one or more full train length pits might be justified for inspection and repair of standing trains. This arrangement became more common in yards where streamliners were involved that had

fixed consists such as the C&NW's Chicago "Streamliner Ramp" (early streamliners were articulated) and short turnaround times so that maximum speed of servicing and repairs was needed. Such pits might include wheel drop pits or tracks with jacking pads spaced so that several cars could have wheels changed in trucks with minimum need to move ("spot") individual cars.

Pits should be concrete, with depths of 39" to 45" below the top of running rails, and about 3 feet wide. Jacking pads might be continuous or spaced at car length intervals. The rails for such tracks were often set on top of the concrete walls of the pit.

As a covered car repair area was desirable, with the degree of enclosure and heating arrangements dependent upon the climate, the modeler has the chance to build another rather unique building for his passenger yard. Wheel or truck change areas particularly needed protection.

Other Facilities

A number of other buildings and facilities were needed. Storehouses and buildings providing space for each repair specialty and craft were needed. Crew buildings providing offices, toilets, washrooms, lockers, and lunchroom were common. Lighting for night operation was desirable with high mountings to reduce shadows and glare or street light like structures. Wheel and truck storage tracks were provided, adjacent to the wheel drop and repair track.

Storage Yard

A sub yard for storage of extra or pool equipment needed for substitutions and peaks (seasonal, holiday, weekend, or special movements such as conventions) might be close by. Such storage yards needed only steam for cold weather storage and possibly electricity for battery charging and air conditioning. Some terminals had a subyard for railroad business cars and private cars. Narrower track spacing was common, with narrow service platforms or none at all.

Commuter Cars

Finally, commuter equipment (if the terminal was used by railroads providing this service) might be kept during the day between morning arrival and evening departure in the same coach yard for through equipment or a separate yard. There might be a separate yard closer to the station because of the large number of otherwise time-consuming movements and short headways involved in a commuter operation. A storage yard at the end of commuter service territory would also be needed on your railroad for overnight storage.

SUMMARY

In summary, while model railroaders must selectively compress their imitation of the prototype, there appears to be an opportunity for the passenger car "nut" to design a layout (especially the many terminal facilities) that will capture the flavor of the prototype and offer at least as much excitement as a freight oriented layout. Articles on passenger train route switching and operation out on the line indicate that the modeler need have no fear that passenger trains can't be as much fun to operate as a way freight. Today, a passenger terminal could be the central feature, using extensive staging tracks to feed trains into the station and store trains arriving from the station (giving the modeler the opportunity to have two sets of equipment for each train - one for the arriving train and one for the departing train if

the timetable sets this up.)

The author is disappointed in not being able to present more photos showing examples of the architecture and construction of facilities such as commissaries, Pullman Company buildings, and mail and express buildings. However, railfans don't seem to have photographed these kinds of buildings and railroad publicity files either aren't open or don't contain this kind of photo. It is probably too late already for the fan to preserve on film such structures, as the decline of passenger service coincided with the progressive disinvestment by demolition of unneeded structures by the railroads in order to save property taxes. The people who worked in such facilities are also now almost gone: it is very late for oral history to capture the missing information.

CREDITS

The primary source for the black and white photographs of the Chicago passenger facilities used in this clinic were provided by John Szwajkart, author of the Train Watchers Guide to Chicago. Plans for stations in Chicago were purchased from Rail Line, a company that is probably no longer in business. Plans for other terminals around the country appeared originally in sources listed below. Many of the color slides were purchased from Al Chione.

The major reference for engineering details is:

> American Railroad Engineering Association, Manual for Railway Engineering (fixed properties): Manual of Recommended Practice. Washington, D. C.: American Railway Engineering Association, 1993. See Chapter 14 Yards and Terminals, Part 6 – Passenger Facilities (Rewritten 1985)

References consulted in preparing this clinic and sources of photos and track plans are listed below. The best single reference is Chicago Union Station by Edward M. DeRouin. While there are numerous books on passenger terminals, the focus tends to be on equipment photos or engineering and architecture of stations, not servicing facilities or operations, although there are a number of monographs published by the Terminal Railroad Association of St. Louis Historical and Technical Society on St. Louis that cumulatively cover this great terminal.

Expanded information on consists and layout design appears in published form in a four part article in Model Railroading magazine's January, February, March, and April 2002 issues: "The Passenger Train Oriented Layout". Model Railroading followed up my article with a three part article in the May, June, and July issues by V.S. Roseman: "Passenger Servicing Facilities – Their Construction on Your Railroad". Vic's article is a splendid augmentation that features examples of adaptation and kit bashing of structures and additional description of servicing activities. These two articles were put on a CD by Highlands Station and issued as Modeling Passenger Operations and Facilities. Highlands Station is now out of business. Another comprehensive look at passenger trains appears in Sperandeo's publication from Kalmbach.

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REFERENCES: TERMINALS AND STATIONS

Symbols preceding reference: M=plan or map; R=primary reference

General

R-Armstrong, John, Track Planning for Realistic Operation: Third Edition, Kalmbach Publishing, 1998
Barrett & Barrett, Boston's Depots and Terminals 1834-1995
Benson, Ted, "Third & Townsend", Passenger Train Journal, June 1980, (SP's San Francisco station)
Blaszak, Mike. "Observations", Passenger Train Journal, June 1984 (Remembering the depot switcher), October 1984 (Chicago's North Western Station), November 1984 (El Paso's elegant station)
Boudreau, Robert, "Springfield (Massachusetts) Union Station", PTJ, April 1988
Brown, Christopher, Still Standing: A Century of Urban Train Station Design. Indiana University Press, 2005
Brown, Greg, "Portland Union Station", PTJ, November 1991
Clark, Robert A., "Passenger Train Operation, A Prototype Example from 1967", NMRA Bulletin, August 1972, 38-41
R-Clark, Robert A., "The Passenger Train Oriented Layout – Parts 1-4", Model Railroading. January, February, March, April 2002, 48-53, 40-45, 26-31, 38-43
Clark, Roy G., "Sunshine on the Southland", Trains, October 1947, 27-34 (Atlanta stations)
Crist, Edward, Erie Memories, Quadrant Press, 1993
R-DeRouin, Edward M., Moving Mail and Express by Rail, Pixels Publishing, 2007
Doughty, Geoffrey H., "Glass City (Toledo) Gets Its Station", Dream Trains – Classic Trains Special Edition No. 1, 2003, 86-92
Doughty, Geoffrey H., New York Central's Great Steel Fleet 1948-1967. TLC Publishing, 1995.
Doughty, Geoffrey H., New York Central's Lightweight Passenger Cars, Trains, and Travel, TLC Publishing, 1997.
R-Droege, John A., Passenger Terminals and Trains, 1916. (Kalmbach reprint, 1969).
Drury, George, "Yesterday's Fed Ex: Railway Express Agency", Trains, August 1996, 75
Educational Facilities Laboratories, Reusing Railroad Stations, 2 vols., Educational Facilities Laboratories, 1974, Book 2, 1975
R-Frailey, Fred W., Twilight of the Great Trains. Kalmbach, 1998 (Expanded Edition published by Indiana University Press, 2010
Flippen, Alan, "A Tale of Two Terminals: Part 2, Jersey City", Passenger Train Journal, October-November 1986
Flippen, Alan, "Louisville and its Passenger Trains", Passenger Train Journal, May 1987, 17-28
Forrest, Kenton, and Albi, Charles, Denver's Railroads, Colorado Railroad Museum, 1981
French, Kenneth, Railroads of Hoboken and Jersey City, Arcadia Publishing, 2002
Gosney, Phil, "Memphis and Its Passenger Trains: Part 1 and 2", PTJ, 4th Quarter 2007, 1st Quarter 2008
Grasso, Jack, Operation CUT [Cleveland Union Terminal]: The First 30 Years. RAE Publishing Inc., 2003
Griffin, William E., Jr., Richmond, Fredericksburg & Potomac Railroad – The Capital Cities Route, TLC Publishing, 1994 (map Richmond Broad St. Station)
Grow, Lawrence, Waiting for the 5:05, The Main Street Press, 1977
Hediger, Jim, "Information Desk: 50-foot express reefers", MR, February 2012, 23
Hediger, Jim, "Information Desk: A Stub-end Terminal Built for Efficiency", MR, March 2013, 20-21
Hediger, Jim, "Information Desk: Stub End Station for Passenger Service", MR, November 2010, 22
Hediger, Jim, "Tips for Modeling a Major Terminal", Model Railroader, August 2009, 23
"Jacksonville Terminal in the 1940's". Classic Trains, Fall 2006, 88-91

Johnson, Carla, Union Pacific and Omaha Union Station, J. & L. Lee Company, 2000
Komelski, Twenty-six Miles to Jersey City (CNJ)
R-Maiken, Peter T., Night Trains: The Pullman System in the Golden Years of American Rail Travel, Lakme Press, 1989
McGonagall, Robert S., editor, "More Great Train Stations", Supplement to Classic Trains magazine, Kalmbach, 2010
McQuigg, Jackson, Tampa Union Station, Arcadia Publishing, 1998
Meeks, Caroll L.V., The Railroad Station, Yale University Press, 1956
Middleton, William D.,When the Steam Railroads Electrified, Kalmbach, 1976
Nelligan, Tom, "Boston's South Station," Passenger Train Journal, March 1981
Nesvig, Jonathan, "Tacoma Union Station", Passenger Train Journal, April 1987
Patterson, John, "Omaha and Council Bluffs", PTJ, September 1989
Pendergast, Kenneth, "Cleveland Union Terminal", PTJ, November 1994
Potter, Janet Greenstein, Great American Railroad Stations. Preservation Press, 1996.
Pounds, Santa Fe Depots: Western Lines
Railroadians (Pub.), The Next Station Will Be: Vol. 1-10 (Erie)
Rehor, John A., The Nickel Plate Story, Kalmbach Publishing Co., 1965
Reisdorff and Barth, Railroad Stations in Nebraska
Roseman, V. S., "Baggage Car Operations with ICC Class BE and Related Cars", RMJ, October 2002, 20
Roseman, V. S., "How To Turn Passenger Trains", Model Railroad Planning 2010, 32-35
Roseman, V.S., "Passenger Servicing Facilities – Their Construction on Your Railroad: Parts 1-3", Model Railroading, May, June, and July 2002, 44-49, 30-33, 44-47
R-Roseman, V.S., Railway Express: An Overview, Rocky Mountain Publishing, Inc, 1992
RRAV (pub.), Railroad Stations in New England: The Boston and Maine
Schwieterman, Joseph P., "Midwest Metamorphosis", Railroad History, Spring-Summer 2008, 42-59 (fate of major city terminals after Amtrak)
Scull, Ted, "Hoboken Terminal," Passenger Train Journal, September-October 1982
Scull, Ted, "30th Street Station", PTJ, October 1991
Scull, Theodore, Hoboken's Lackawanna Terminal, Quadrant Press, 1987
Shaw, Robert B., "Decline and Decay of REA", Trains, July 1979, 22-25
R-Shrady, Theodore, The Sleeping Car, ACL and SAL Railroads Historical Society, 2004
Shrady, Theodore, For Pullman Eyes Only, ACL and SAL Railroads Historical Society, 2012
Smith, Douglas, "Gare du Palais (Quebec City Terminal)", PTJ July 1988
Smith, Douglas N.W., "Long Island Railroad's Jamaica Station", PTJ, March 1989
Smith Douglas N.W., "Utica's Union Station", PTJ, May 1990
Smith, Douglas N.W., "Windsor Station", PTJ, June 1993
Solomon, Brian, Railroad Stations. Metro Books, 1998
Solomon, Brian, Railway Masterpieces: Celebrating the World's Greatest Trains, Stations, and Feats of Engineering. Krause Publications, 2002
R-Sperandeo, Andy, The Model Railroader's Guide to Passenger Equipment and Operation. Kalmbach, 2006
Sperandeo, Andy, "The Operators: Servicing Passenger Trains", Model Railroader, September 2007, 122 (reprinted in "Workshop Tips: Layout Design for Operation", A Supplement to Model Railroader magazine, 2012, 9)
Sperandeo, Andy, "Standards for Passenger Operations", MR, November 2006, 54
Sperandeo, Andy, "The Operators: Switching Mail and Express", Model Railroader, July 2010, 90
Stegmaier, Harry, Baltimore and Ohio Passenger Service, 1945-1971, Vol. 2: The Route of the Capitol Limited, TLC Publishing, 1997

Thompson, Anthony, "The Oakland Mole", Railmodel Journal, January 1998, 56-59
Uckley, John, "Hard Times For A Dowager", Passenger Train Journal, July 1980 (Indianapolis Union Station)
US DOT, Recycling Historic Railroad Stations, 2 vols., USDOT, 1978
R-Welsh, Joe and Howes, Bill, Travel by Pullman, MBI Publishing Co., 2004
R-White, John H. Jr., The American Railroad Passenger Car, Johns Hopkins University Press, 1978
Zimmermann, Karl R. and Scull, Theodore C., "A Tale of Two Terminals: Part I, Newark Penn Station, Passenger Train Journal, September 1986, 13-22

References on dining cars and commissaries

Loveland, Jim A., Dinner Is Served: Fine Dining Aboard the Southern Pacific. Golden West Books, 1996.
Luckin, Richard W., "Zephyr Memories", Railroad History, Spring-Summer 2012, 78-90 (outstanding Interview on D&RGW dining car operations)
McDonald, Paul R., Forty-One Years in the D. C. & H. Paul R. McDonald, 1983. (Union Pacific)
McKenzie, William A., Dining Car Line to the Pacific, Minnesota Historical Society Press, 1990. (Northern Pacific) Available now from a different publisher)
Porterfield, James D., Dining by Rail, St. Martin's Press, 1993. Available now in paperback edition.

Chicago

Alstadt, A.W., Robert Janz, "C&NW Operations, Part 4: Erie Street Coach Yard", MM, December 2004, 22
Ash, Fred, "Great Stations of Chicago I", Passenger Train Journal, August 1985, 32-37
Ash, Fred, "Great Stations of Chicago II", Passenger Train Journal, September 1985, 32-37
Bach and Wolfson, Chicago's Train Stations
Casey, Robert J., "Renaissance At 12th Street", Passenger Train Journal, April 1980 (Amtrak's new Chicago yard)
"Chicago Railroads, 1928 – How the Passenger Trains Reached the Loop", Trains, July 2003, 42-44
'The Chicago Story", Passenger Train Journal, July, August, September (three issues), 1985
R,M-DeRouin, Edward M., Chicago's Union Station: A Look At Its History and Operations Before Amtrak, Pixels Publishing, 2003
Donovan, Frank P., "Chicago's Stations", Trains, August 1948, 22-29
Hoover, Gary, "Modeling Chicago's Dearborn Station", Modeling Railroads of the 1950s, 2005, 34-41
Johnson, Bob, "Chicago Union Station", PTJ, October 1991
Keefe, Kevin P., "Chicago: City of Six Stations", Trains, July 2003, 59-71
Kelly, John, Chicago Postwar Passenger and Commuter Trains, Iconografix, 2012
Kelly, John, Chicago Stations & Trains: Photo Archive, Iconografix, 2008
Koeller, Jeffrey M., "Union Pacific Streamliners In Chicago", The Streamliner, Spring 2007, Vol. 21, No. 2, 6-38, and "RPO", The Streamliner, Summer 2007. Vol. 21, No. 3, 4 (Note: text omitted from Spring 2007 issue p. 7)
McKinney, Kevin and Hilbrun, John, "Chicago and Western Indiana", PTJ, August 1985, 26-29
Olmstead, Robert R., Railroading in Downtown Chicago 1958-1969, Vol. 1 and 2, The Railroad Press, 2006, 2007
Schaefer, Mike, "Chicago Union Station", Passenger Train Journal, July 1985, 22-27
Schaefer, Mike, "Mapping Chicago", Passenger Train Journal, August 1985, 19-25
Schneider, Paul, "C&NW Chicago Terminal Rehabilitation", PTJ, March 1990
Schneider, Paul, "Ghost Story," Passenger Train Journal. March 1983 (Remembering La Salle Street Station)
Schneider, Paul, "Rethought, Rebuilt, Reborn (renovating Chicago Union Station)", PTJ, December 1989
Solomon, Brian, "Chapter 2. Chicago's Classic Passenger Terminals and Trains", in Chicago: America's

Railroad Capital: The Illustrated History 1836 to Today, Voyageur Press, 2014, pages 80-121
Welsh, Joseph, Passenger Trains of Yesteryear: Chicago Eastbound, Kalmbach, 2002
Welsh, Joseph, Passenger Trains of Yesteryear: Chicago Westbound, Kalmbach, 2002

Cincinnati

Abbey, Wallace W., "Temple of Transportation", Trains, May 1953, 14-19 (Cincinnati Union Terminal)
R,M-Cincinnati Railroad Club Inc. (publisher), Cincinnati Union Terminal, 1999
Thornburgh, M.D., "Cincinnati Union Terminal", Trains, March 1941, 14-19
R,M-Tipton, Rick, and Blardone, Chuck, The Pennsylvania Railroad in Cincinnati.,PRRT&HS, 2004. chapters on the Cincinnati Limited, Cincinnati Limited Pullmans, and Cincinnati Union Terminal.

Dallas

R-Lusk, Brian, "Grand Lady of 'Big D'", Trains, April 1997, 58-65 (Dallas, aerial)

Detroit – for plan see Droege

Kavanaugh, Kelli B., Detroit's Michigan Central Station, Arcadia Publishing, 2001

Kansas City

M-Hansen, Peter A., "Give the People a Monument", Trains, April 1999, 62-72 (Kansas City Union Station)
Kuchinsky, Wayne, "Kansas City: Her Trains, Her Railroads, Her Stations", PTJ, October 1988
R-Spivak, Jeffrey, Union Station Kansas City, Kansas City Star Books, 1999.

Los Angeles

M-Asay, Jeff, "East Yard: An Aerial Study: Union Pacific' Yard and Shop Complex in East Los Angeles", The Streamliner, Winter 2012, 30-39 (Union Pacific Historical Society journal)
R,M-Bradley, Bill, The Last of the Great Stations: 40 Years of the Los Angeles Union Passenger Terminal. Interurbans Publications, 1979.
Jarel, Michael, "Behind the Scenes: Southern Pacific Passenger Service, Part 1 and Part 2", Trainline, No. 35, 5-12, No 36, 5-11 (1993?)
R,M-Jarel, Michael, "Mission Road Coach Yard: Parts 1 and 2", Trainline, No. 25, 8-15 and No. 26 13-22. (Southern Pacific's Los Angeles coach yard in SP Historical and Technical Society magazine)

New Orleans

Gross, Arthur, "Come Together: the Story of New Orleans Union Passenger Terminal", CTC Board, October 2005, 53
R,M-LaVake, James G., "Union Passenger Terminal (New Orleans)", Trains. September 1954, 14-19
Sperandeo, Andy, "New Orleans Union Passenger Terminal", Model Railroader, October 2002, 72-3

New York – Grand Central Terminal – for plan see Droege

Condit, Carl W., The Port of New York: A History of the Rail and Terminal System from the Grand Central Electrification to the Present, (vol. 2), The University of Chicago Press, 1981
Fazio, Alfred E., and Bridget M. Hodgson, New York City Electrified Railroads in Color: Volume 1; Lines into Grand Central Terminal, Morning Sun Books, 2010
Fischler, Next Stop, Grand Central
R,M-Middleton, William D., Grand Central, the World's Greatest Railway Terminal, Golden West Books, 1977.
Nelligan, Commuter Trains to Grand Central Terminal

New York – Pennsylvania Station and Sunnyside Yard – for plan see Droege

Condit, Carl W., The Port of New York: A History of the Rail and Terminal System from the Beginnings to Pennsylvania Station, (vol. 1), The University of Chicago Press, 1980
Diehl, Lorraine B., The Late Great Pennsylvania Station. Houghton Mifflin, 1985
Fabrizi, Carl Tony, "Show of Shows", Keystone (PRRT&HS), Autumn 2011, 56-79
Fazio, Alfred E, New York City Electrified Railroads in Color: Volume 2: Lines Into Pennsylvania Station, Morning Sun Books, 2012
Johnston, Bob, "Penn Station: How Do They Do It?", Trains, January 2010, 22-29
R-Kalis, Nicholas, "Sunnyside: The World's Greatest Passenger Railroad Yards", The Keystone, Spring 1996, 15-62
M-Long, E. John, "Pennsy's Sunnyside Yard", Trains, June 2003, 30-38
Middleton, William D., Manhattan Gateway: New York's Pennsylvania Station. Kalmbach, 1996
Scull, Ted, "Pennsylvania Station," PTJ, August 1991
Waytell, Ed, "Pennsylvania Station, Sunnyside, Manhattan Transfer", Rails Northeast, October 1979, 12-45
R-Welsh, Joe, Pennsy Streamliners: the Blue Ribbon Fleet. Kalmbach, 1999. See Chapter Four: "Home from the Road: Sunnyside-The Largest Coach Yard in the World", 115-123
Westing, Fred, Penn Station, its Tunnels and Side Rodders. Superior Publishing Company, 1978
Yanosey, Robert J., Pennsylvania Railroad Facilities in Color; Volume 1; New York Division Sunnyside to Lane, Morning Sun Books, 2008

St. Louis

"Gateway to the Southwest", Trains, July 1948, 12-16 (St. Louis Union Station)
M-Grant, H. Roger, Hofsommer, Don L., and Overby, Osmund, St. Louis Union Station. The St. Louis Mercantile Library, 1994.
Leeman, Wayne, "St. Louis Union Station", Trains, March 1978, 20-29
Montesi, Albert and Deposki, Richard, St. Louis Union Station, Arcadia Publishing, 2002
"Pullmans to St. Louis", Terminal Railroad Association of St. Louis Historical and Technical Society, Issue 63, Summer 2003
Sandrin, James, Trackside Around St. Louis 1952-1959 with Jim Ozment , Morning Sun Books, 2000
Sarno, Don and Shacklette, Norbert, "The Trains (and Trackage and Station and Bridges) of St. Louis, Part 1, Part 2, and Part 3" PTJ, June, July, August 1990
R,M-"Special St. Louis Union Station Issue", Terminal Railroad Association of St. Louis Historical and Technical Society, June-July 2001, 4-43
Stout, Greg, Terminal Railroad Association of St. Louis in Color, Morning Sun Books, 2007
Stuart, Greg, "The Eagle's Nest: St. Louis Union Station", in Route of the Eagles: Missouri Pacific in the Streamlined Era. White River Productions, 1995, 65-69
Thomas, Lawrence N., "Getting from There to Here: A History of Baltimore and Ohio Pullmans on Their Way West", Terminal Railroad Association of St. Louis Historical and Technical Society, Issue 35, Autumn 1995, 4-27
Thomas, Lawrence N., "Going to California on the Overland Route: The Wabash-Union Pacific's City of St. Louis", Terminal Railroad Association of St. Louis Historical and Technical Society, Issue 38/39, Spring/Sumer 1996

St. Paul/Minneapolis

R,M-Diers, John W., St. Paul Union Depot, University of Minneapolis Press, 2013
Glischinski, Steve, "From Gophers to Lakers: Passenger Trains and Stations of Minnesota's Two Largest

Cities", Passenger Train Journal, March 1990, 17-35
Glischinski, Steve, "The Twin Cities, Part 1 and Part 2", PTJ. March, April 1990
Hofsommer, Don L., Minneapolis and the Age of Railways, University of Minnesota Press, 2005
Isaacs, Aaron, Trackside Around the Twin Cities with Joe Elliott 1968-1972, Morning Sun Books, 2008
Prosser, Richard S., Rails to the North Star, University of Minnesota Press, 2007
Strauss, John F. Jr., "St Paul Great Northern Passenger Train Service 1862-1970", Reference Sheet No. 300, December 2001 (GNRHS)

Seattle

R-Grecula, Walt, "Seattle's King Street Coach Yard", Reference Sheet No. 355, June 2009 (GNRHS)
R,M-Holmquist, Stuart R., "King Street Car Facilities", Reference Sheet No. 193, September 1992 (GNRHS)
Pinkepank, Jerry A., "Seattle's King Street and Union Stations", Classic Trains, Fall 2014, 64-65

Washington

Cupper, Dan, "Washington's Union Station: Back from the Brink", Trains, May 1989, 30-38
Highsmith, Carol M. and Ted Landphair, Union Station: A History of Washington's Grand Terminal, Second Edition. Chelsea Publishing and Union Station Ventures, `1998

West Oakland

California Department of Transportation, Historic Property Survey Report, I-880 Reconstruction Project, Oakland and Emeryville, Alameda County, CA, 1990
Cape, Randall E, and McKeen, Robert G., The Ghost Trains of Southern Pacific's Overland Route: Train Nos. 21-21, Mil, 1947-1967, Southern Pacific Historical and Technical Society, 2006
R., M-Signor, John R., Southern Pacific's Western Division, Signature Press, 2003

Terminals handout 2015, 2/26/15, 2/27/15, 2/28/15, 3/14/15,5/2/15, 6/17/15