

HISTORY COLORADO

COLORADO STATE REGISTER OF HISTORIC PROPERTIES NOMINATION FORM

SECTION I

Name of Property

Historic Name Union Pacific Flatcar No. 51207

Other Names Union Pacific Railroad 53000 series Intermodal car

Address of Property

[] address not for publication

Street Address 800 Seminole Road

City Denver County Denver Zip 80204

Present Owner of Property

(for multiple ownership, list the names and addresses of each owner on one or more continuation sheets)

Name Museum of Railway Workers

Address P.O. Box 3498 Phone 303-579-1506

City Boulder State Colorado Zip 80307-3498

Owner Consent for Nomination

(attach signed consent from each owner of property - see attached form)

Preparer of Nomination

Name Daniel Quiat Date 6/27/2011

Organization Museum of Railway Workers

Address P.O. Box 3498 Phone 303-579-1506

City Boulder State Colorado Zip 80307

FOR OFFICIAL USE:

_____ Nomination Received

Site Number 5DV.11240

Senate # _____ House # _____

1/20/2012 Review Board Recommendation
 Approval Denial

1/26/2012 CHS Board State Register Listing
 Approved Denied

Listing Criteria A B C D E

Certification of Listing: President, HISTORY COLORADO

Date _____

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SECTION II

Local Historic Designation

Has the property received local historic designation?

no

yes --- individually designated designated as part of a historic district

Date designated _____

Designated by _____ (Name of municipality or county)

Use of Property

Historic TRANSPORTATION/rail-related

Current VACANT/NOT IN USE

Original Owner Union Pacific Railroad

Source of Information Folio Sheet, Flatcar

Year of Construction April 1951

Source of Information Folio Sheet, Flatcar

Architect, Builder, Engineer, Artist or Designer Union Pacific Railroad

Produced in Denver, Colorado by Union Pacific railroad shop forces

Source of Information Folio Sheet, Flatcar, Waite book

Locational Status

Original location of structure(s)

Structure(s) moved to current location

Date of move December 20-29, 2009

SECTION III

Description and Alterations

(describe the current and original appearance of the property and any alterations on one or more continuation sheets)

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SECTION IV

Significance of Property

Nomination Criteria

- A** - property is associated with events that have made a significant contribution to history
- B** - property is connected with persons significant in history
- C** - property has distinctive characteristics of a type, period, method of construction or artisan
- D** - property is of geographic importance
- E** - property contains the possibility of important discoveries related to prehistory or history

Areas of Significance

- | | | |
|---|--|--|
| <input type="checkbox"/> Agriculture | <input type="checkbox"/> Economics | <input type="checkbox"/> Landscape |
| <input type="checkbox"/> Architecture | <input type="checkbox"/> Education | <input type="checkbox"/> Architecture |
| <input type="checkbox"/> Archaeology – prehistoric | <input checked="" type="checkbox"/> Engineering | <input type="checkbox"/> Law |
| <input type="checkbox"/> Archaeology – historic | <input type="checkbox"/> Entertainment/ Recreation | <input type="checkbox"/> Literature |
| <input type="checkbox"/> Art | <input type="checkbox"/> Ethnic Heritage | <input type="checkbox"/> Military |
| <input type="checkbox"/> Commerce | <input type="checkbox"/> Exploration/ Settlement | <input type="checkbox"/> Performing Arts |
| <input type="checkbox"/> Communications | <input type="checkbox"/> Geography/ Community Identity | <input type="checkbox"/> Politics/ Government |
| <input type="checkbox"/> Community Planning and Development | <input type="checkbox"/> Health/Medicine | <input type="checkbox"/> Religion |
| <input type="checkbox"/> Conservation | <input type="checkbox"/> Industry | <input type="checkbox"/> Science |
| | <input type="checkbox"/> Invention | <input checked="" type="checkbox"/> Social History |
| | | <input checked="" type="checkbox"/> Transportation |

Significance Statement

(explain the significance of the property on one or more continuation sheets)

Bibliography

(cite the books, articles, and other sources used in preparing this form on one or more continuation sheets)

SECTION V

Locational Information

Lot(s) N/A Block N/A Addition N/A

USGS Topographic Quad Map Fort Logan

Verbal Boundary Description of Nominated Property

(describe the boundaries of the nominated property on a continuation sheet)

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SECTION VI

Photograph Log for Black and White Photographs

(prepare a photograph log on one or more continuation sheets)

SECTION VII

ADDITIONAL MATERIALS TO ACCOMPANY NOMINATION

Owner Consent Form

Black and White Photographs

Color Prints or Digital Images

Sketch Map(s)

Photocopy of USGS Map Section

Optional Materials

Use of Nomination Materials

Upon submission to the Office of Archaeology and Historic Preservation, all nomination forms and supporting materials become public records pursuant to CRS Title 24, and may be accessed, copied, and used for personal or commercial purposes in accordance with state law unless otherwise specifically exempted. History Colorado may reproduce, publish, display, perform, prepare derivative works or otherwise use the nomination materials for History Colorado and/or State Register purposes.

For Office Use Only

Property Type: building(s) district site structure object area

Architectural Style/Engineering Type: Flatcar

Period of Significance: 1954-1967

Level of Significance: Local State National

Multiple Property Submission: N/A

Acreage Less than 1 acre

P.M. 6TH Township 4S Range 68W Section 4 Quarter Sections SW ¼ SE ¼

UTM Reference: Zone 13 Easting 499572 Northing 4397356 NAD27

Property Name Union Pacific Flatcar No. 51207

DESCRIPTION and ALTERATIONS

Setting

Union Pacific Flatcar No. 51207 is located at 800 Seminole, Denver, CO, which is the Burnham Yard, located at near the intersection of I-25 and 6th Avenue. Since the 1870s, various railroads have used this yard for freight cars, and it continues to host a variety of rail-related freight traffic.

Description

The Union Pacific Flatcar No. 51207 is a typical midcentury railroad flatcar, with a body measuring 42'-6"-long, 10'-6"-wide, and 3'-6"-high. Constructed in 1951, the lightweight car weighs 42,000 lbs and can carry up to 55 tons. Other than the wood decking and box enclosure, the rest of the body is made of steel. The support structure consists of steel sills that form a box (side sills connecting to end sills) with intermediate sills interspersed regularly along the length (parallel to the width) to provide additional support. The sills are painted orange with yellow lettering. The unpainted wood deck lies on top of the sills and is composed of oak boards that run parallel to the width of the body. Atop the decking are short wood walls (painted green) that create a box, with the plank walls held in place by wood supports that are inserted into the stake pockets on the decking.

There are steel couplers on either end of the car. On one end of the deck is the hand brake, which consists of a rod with a wheel that tightens the brakes. The rod connects to a chain that secures the brakes on one axle, and hand brake assembling is retractable to be flush with the car. The brakes utilize friction bearings, also known as plain journal bearings, which are still intact. The bearings consist of blocks of brass that rest on top of the wheel axle, which was lubricated by oil-saturated wool that was housed within a hinged-lid journal box.

The car has two sets of trucks that the car rests upon. Each truck consists of two axle sets (axle and two wheels) and the truck bolster that holds the entire truck together and provides ride suspension. Connected to one truck is the chain from the handbrake. Each axle has a tread brake that is activated by air from the locomotive.

Alterations

When the Union Pacific modified this car in 1954 for the intermodal experiment, they added channels to help guide the wheels of semi-trucks, sturdy rails to assist with tie-down of the trailer to the rail car's flatbed, and access ways on each end of a truck-and-trailer to drive from flatcar to flatcar. The railroad also re-numbered this flatcar into the 53000 series at that time. When the Union Pacific returned this car to general service in 1967, they removed modifications from the intermodal experiment, partially repainted it, and re-numbered the car for general service. Union Pacific then moved this car to work service at an undocumented date, installing short wood-plank sides (painted green) to form a box, and then utilized the car to carry and transport supply parts.

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Integrity

While some Union Pacific Denver-built flatcars remain, the Union Pacific Flatcar No. 51207 is the only remaining Denver-built car in such original condition, as it includes the friction-bearing trucks and has its original number still painted on the side. The flatcar demonstrates the evolving uses of flatcars in the mid-twentieth century, with its historic modifications apparent on the structure, providing this resource with a high level of integrity for design, materials, and workmanship. As it remains in a freight-related railroad setting, it retains a high degree of integrity to its setting, location, association, and feeling.

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SIGNIFICANCE STATEMENT

Union Pacific Flatcar No. 51207 is eligible to the State Register under Criterion A in the area of Transportation for both its history as a flatcar that transported freight in Colorado and for its use in an experiment with Trailer on Flatcar (TOFC) style of freight transportation, which ultimately changed out train-transported goods. After Union Pacific constructed the car in Denver in 1951, they modified it in 1954 in order to determine the requirements to place a trailer on a flatcar for service, hence collaborating with trucking companies rather than directly competing with them. Union Pacific used this flatcar in TOFC service until 1967, when they returned it to general service. Union Pacific Railroad flatcar No. 51207 is also eligible under Criterion C in the area of Engineering as an intact example of a mid-twentieth century flatcar, which includes its original friction-bearing trucks.

Background

Whereas most other railroads purchased their rolling stock from manufacturers, Union Pacific Railroad developed a reputation for constructing its own cars. They operated several major car shops that both performed maintenance on and manufactured rolling stock. During World War II, railroads had to greatly limit their production of new rolling stock due to governmental rationing of materials, like steel. After WWII, railroads needed to upgrade an outdated fleet and increase their capacity in order to meet the demands of an economic boom. As part of this post-WWII effort, the Union Pacific built entire series of rolling stock, including the boxcars and flatcars they produced in Denver (Waite, p. 1). Union Pacific decided to create 500 flatcars, numbered into the 51000-51499 series, at the Denver car shop in 1951 to replace their older pre-war flats (Bielawski interview). Although the railroad intended all of these flatcars for general service, they modified some of the cars in this series in 1954 to experiment with intermodal service (allowing freight to travel by a combination of rail and road in one shipping container).

While some of the cars produced at the Denver car shop before it closed in 1970 are still extant, the Union Pacific Flatcar No. 51207 is both one of those few remaining and it retains more of its original materials than others.

Transportation

Railroads offered their customers a choice of rolling stock to move their products, but rarely allowed customers to move products that were less than a full carload. While railroads did at one time offer less-than-carload (LCL) service, road-based trucking companies largely took over this market. In addition to having more flexibility in the quantity of goods they could ship via trucking companies, more companies were building in areas that were not located along railroad sidings (*Railway Age*, pp. 46-47). While urban development in the United States from 1880 to 1930 largely centered on access to rail transportation, the shift to road-based automotive transportation decentralized all types of development (Stilgoe, pp. 339-345).

For the Union Pacific, moving a trailer of goods was a profitable idea similar to moving a boxcar. Railroad workers began referring to this as "piggyback service" and various railroads

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painted images of pigs on the sides of flatcars that they utilized for TOFC service. The first piggyback service on the Union Pacific was from Los Angeles to Salt Lake City, and Seattle to Salt Lake City in 1954. The railroad was quite pleased in its success and by July of 1955, they added Chicago to Denver via St. Louis to its routing (*Railway Age*, p. 46). The success of the service was that the railroad could offer service at the same price a trucker could haul the same trailer and on a competitive delivery schedule (*Railway Age*, p. 46). For the railroad, this opened up a new freight market that allowed them to collaborate with trucking companies, tapping into road-related transportation rather than struggling against it. Additionally, this allowed the railroads to only ship full carloads, with trucking companies taking on the burden or organizing LCL services (*Railway Age*, p. 47).

In order to truly take advantage of intermodal service, railroads experimented with how to best design the rolling stock to carry trucking trailers, while also constructing other infrastructure elements that would make transfer between modes of transportation more feasible. Union Pacific, like other railroads, modified existing flatcars to determine if this service could be profitable and how to best maximize that type of operation. Retired Union Pacific worker Bill Brunskil summed up the situation by saying, "It made no sense to spend a lot of money until the railroad knew it was going to work" (Brunskil interview).

For the Union Pacific Railroad, they rebuilt 133 cars from the Denver-built 51000 series for the first generation of piggyback/intermodal service. So that a truck could drive a trailer onto the deck of a flatcar, they installed channels on the deck to help guide the wheels, and sturdy rails to assist with tie-down. While this first round of intermodal service was moderately successful, the modifications to existing flatcars were too extensive to make modification of existing rolling stock a financially feasible option, and ultimately the labor to tie the trailer down was extensive (Waite, pp. 2-3).

The period in intermodal service varied for each of the modified cars. Union Pacific modified a second set of flatcars (85 cars) in 1964 to test other design options, and that experiment overlapped with the railroad's continued use of modified cars from the first experiment. In the case of Union Pacific Flatcar No. 51207, its service in the intermodal experiment ended in 1967, when Union Pacific removed most of the intermodal service modifications and returned it to general service as a typical flatcar. In most instances, once the experiment was over, the railroads returned to the experimental cars to original design specifications and then to general service (Waite, p. 2-3). While the experimental cars were not ideal, the piggyback service was ultimately very profitable and railroads developed new rolling stock that they specifically designed for TOFC transportation. Today, intermodal service for both trailers and containers is a significant component of the railroad industry.

Engineering

Union Pacific Flatcar No. 51207 is one of the few, and one of the most intact, flatcars constructed at the Union Pacific's Denver car shop. Additionally, it is an excellent example of a typical mid-twentieth century flatcar. Designed for simple and functional freight transport, this car exhibits standard rolling stock dimensions and features a steel support frame topped by a level wood deck, all supported by a pair of steel trucks. While most of these functional cars

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were either scrapped over time or greatly modified to fit ongoing uses, this flatcar retains the majority of its original look and form, with the exception of the added short wood walls atop the deck. Despite this addition, the rest of the original materials are evident and as the railroad only partially repainted it, much of the original paint-scheme and numbering is evident, with the layers of painting speak to its changes in use over time.

Railroad cars rest upon trucks, which provide support and mobility for the car. At the load-bearing end of a truck is an axle, which topped by a journal box that contains either friction bearings or roller bearings. Early rolling stock exclusively used friction bearings because they were very efficient, particularly when it came time to replace them (one person could replace a friction bearing in three minutes while using only a jack and minimal tools). The main problem with friction bearings is that they wear at different rates and are unable to dissipate heat well, particularly in high speed conditions. The resulting fires in the journal box could ultimately derail a train. Railroad workers began to call journal boxes that contained friction bearings “hot boxes” due to this problem (Schneider 2006).

Advances in engineering technology resulted in the roller bearings, which gradually started to replace friction bearings due to their decreased maintenance needs and the markedly decreased incidence of fire. Friction bearings rely on two smooth surfaces sliding against each other, with oil lubrication mitigating the heat from the friction. Roller bearings roll the rotating surface on a number of small diameter pins placed between the stationary surface and the rotating surface. Because there is little sliding, there is less heat produced and greater speeds are possible (Rochat interview).

For safety reasons, the U.S. government required roller bearings rather than friction bearings on all newly constructed rolling stock starting in 1963, and while most railroads began to phase out friction bearings on existing rolling stock on their own (Union Pacific banned them in the late 1990s), the government finally banned them from interchange use in 1995 (Schneider 2006). As such, is rare for rolling stock to still retain friction bearings.

After its tenure in the Union Pacific’s intermodal service experiment, the railroad repaired and returned the flatcar to general service. In a series of 500 cars — while other cars in the series were scrapped, or placed in work service — Union Pacific Flatcar No. 51207 remained on the railroad’s active car roster until 2010, about 60 years after its construction. Even cars built in Denver that might still exist in work service have been modified to the point where they are no longer recognizable as a Denver-built car, save for its railroad classification.

In general service, whether used in the intermodal experiment or not, the Denver-built flatcars quickly became obsolete. The railroad purchased 70-ton capacity flatcars, with higher capacity cars soon following, and ultimately Union Pacific retired the 50-ton flatcars. By 1975, when the cars were only 24 years old (out of a 40-year service life) there were 380 flatcars still in service and by 1978 there were 340 (Waite, p.1; UP Rolling Stock Guide). By 1989, the railroad had essentially retired the entire series (Waite, p. 1). The exception was Union Pacific Flatcar No. 51207, which they did not retire from revenue service until 2010.

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Union Pacific Flatcar No. 51207

Based upon car markings, the railroad built Union Pacific Flatcar No. 51207 in April 1951. They placed it into the Omaha rebuild program in September 1954 and converted it to TOFC experimental service. Car markings clearly indicate a rebuild occurred in Los Angeles in May 1967. Based on its appearance, Union Pacific repaired the car (based on welding marks) and then renumbered it (based on the limited repainting). Due to the minimal repainting at that time the old numbers are beginning to show through.

It is uncertain how long the Union Pacific actually used the car in revenue service. According to the "Official Equipment Register," the car was listed as being in service as late as July 2001, when it was 50 years old and well past its permitted usage. Ultimately, the railroad never officially retired the car to work service, but simply used in work service. Typically, when the Union Pacific converted a car to work service, they replaced obsolete parts, then renumbered and repainted the car. Union Pacific Flatcar No. 51207 is in almost original condition with its original number and original colors. The most intriguing feature, though, is that the car has its original trucks, which is exceptional. Union Pacific replaced friction-bearing trucks with roller bearing trucks when they serviced cars and they have been banned from interchange service since 1995.

The railroad placed Union Pacific Flatcar No. 51207 on a freight train December 20, 2009, with stops in Salt Lake City and Grand Junction before someone recognized it as a friction bearing truck in Denver on December 29, 2009. In an interview with Sam Shuman, the Denver Service Unit Car Department Foreman was stunned it arrived in one piece from such a distance. One reason why it has remained in service was because it was still on the active Union Pacific Roster of Cars and no one had verified what type of bearings it used, assuming that all friction-bearing trucks had long been replaced (Umler car reporting).

Once in Denver, the Union Pacific moved the car to a storage track. On March 11, 2011, the railroad traded Union Pacific Flatcar No. 51207 to the Museum of Railway Workers for a less historic flatcar that the museum had in its fleet.

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BIBLIOGRAPHY

Interviews

Bielawski, Chris. Union Pacific Carman. Interviewed multiple times 2011, by Daniel Quiat.

Brunskil, Bill. Former Union Pacific Railroad employee, retired. Interviewed 3/16/2011 and other interviews during 2011, by Daniel Quiat.

Hartley, Dick. Union Pacific Historical Society, discussion through e-mail on the cars by Daniel Quiat.

Rochat, Gabriel. Mechanical Engineer, E.I.T., Knoxville, TN. Personal communication with Heather L. Bailey, History Colorado.

Shuman, Sam. Foreman Denver Service Unit Car Department, interviewed multiple times during December 2009 by Daniel Quiat.

Written Sources

Metcalfe, Terry. *Union Pacific Freight Cars 1936-51*. Englewood, CO: Metcalfe Publications, 1989, Second Edition.

"Official Railway Equipment Register," *R.E.R. Publishing* (July 2001): RR-724

Schmitz, Lou, *UP Color Guide to Freight and Passenger Equipment, Volume 2*. NJ: Edison: Morning Sun Books, 1996.

Schneider, Paul D. "Freight Car Trucks and Carbodies: Key Components of a Freight Car," *TRAINS Magazine* (1 May 2006):

Stagner, Lloyd and Robert J. Yanosey, *UP Color Guide to Freight and Passenger Equipment*. Edison, NJ: Morning Sun Books, 1993.

Stilgoe, John R. *Metropolitan Corridor: Railroads and the American Scene*. New Haven, CT: Yale University Press, 1983.

"TOFC – Helping Hand for Boxcars," *Railway Age* (8 August 1955):. 46-47

Union Pacific Railroad. *Union Pacific Rolling Stock*. Omaha, NE: Union Pacific, 1979.

Waite, Thornton. "UP Class F-50-15 Flatcars," *Freight Car Journal Magazine* (1992).

Online Resources

UMLER. Online database of rolling stock. Accessed at www.railinc.com.

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GEOGRAPHICAL DATA

VERBAL BOUNDARY DESCRIPTION

The State Register nomination includes only Union Pacific Flatcar No. 51207 as it sits in the boundaries of the Denver Burnham Yard shops of the Union Pacific Railroad located at 800 Seminole Road. No real property (i.e., land) is included in this nomination.

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PHOTOGRAPH LOG

The following information pertains to photograph numbers 1-15 except as noted:

Name of Property: Union Pacific Flatcar # 51207
Location: North Yard, Denver, Colorado
Photographer: Daniel Quiat
Date of Photographs: 3/16/2011
Negatives: Digital photo

Photo No. Photographic Information

- 1 3/4 view of flatcar with portable boom on car.
- 2 Side view of flatcar
- 3 The reporting marks for the flatcar indicating the ownership and number. Note the older number is coming through. (Photo taken December 29, 2009)
- 4 This is a photo of the flatcar designation: F for flatcar, 50 for tonnage capacity, 15 for the series of flatcar. (Photo taken December 29, 2009)
- 5 3/4 view of car at North Yard.
- 6 Original builder's stamp.
- 7 SPRG. 21/2 IN TRAVEL: spring travel distance. Hulson 202: spring type. OM. 9-54: gear inspected in Omaha in September 1954.
- 8 Repair modifications made to the car frame to restore the side towards the end and the repair modifications made to the stake pocket.
- 9 Differences between the areas repainted and not repainted.
- 10 Information on carrying capacity of the car.
- 11 Los Angeles repair markings (LA 5 67).
- 12 During the 1970s, the railroads tried an identification system called Automatic Car Identification (ACI), which used a series of colors to help provide the car ownership and number. While the system was a failure, Union Pacific 51207 (along with many other cars) still has those tags.

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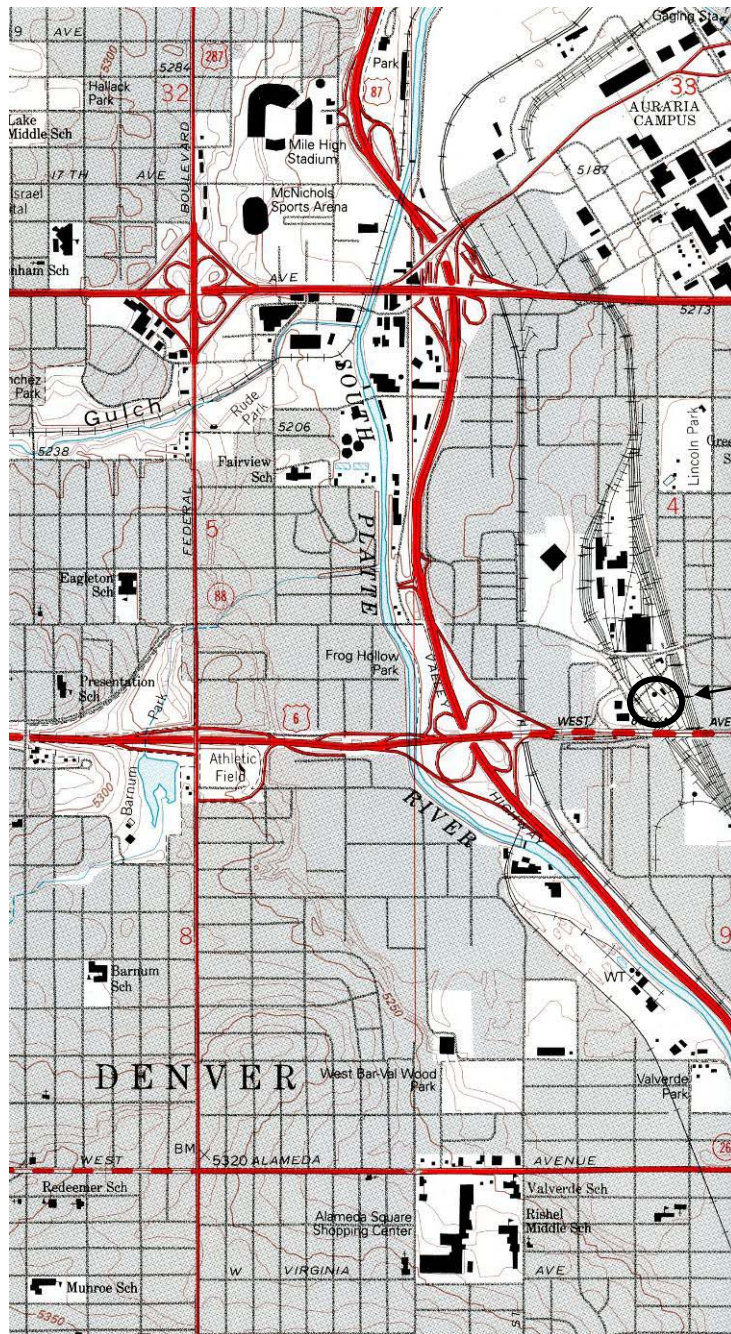
- 13 Evidence of how the car was informally placed into work service with the "MW 33" designation that they did not officially record, with only parts of the car receiving green paint (to denote work service) and parts retaining orange paint (denoting revenue service).
- 14 The friction (or plain) bearing, and the 1967 modifications to the car (all of the red-painted welds), and the work-service modifications painted green.
- 15 Fiction bearing location. Note the truck says it was made 12-50, or December 1950.

Historic Image Log

- H001 Union Pacific Folio sheet from 1951– copy from *Union Pacific Records*. Courtesy Colorado Railroad Museum.
- H002 This is a close-up of the builder's stencil and capacity rating on a 51000 series car. Courtesy Colorado Railroad Museum.
- H003 This is Union Pacific photo showing a modified car carrying a secured trailer. Note the support was a piece of rail added to the car. While the car still had a wood deck, it was modified with a center metal portion to align the wheels to the car so the trailer was centered. On the edges of the car metal was added to extend the deck, and align the tires in place, hold the trailer and ratchet it down. Courtesy Colorado Railroad Museum.
- H004 This is another press photo of a trailer on a flatcar. Note - The flatcar designation F-50-15 consistent with the series of Denver-made flatcars. The photographed car also stated the work occurred in Omaha in 9-1954. Note below: Omaha 9-1954 on the car. Courtesy Colorado Railroad Museum.
- H005 This is a photo taken in 1958 in San Bernardino, California. It is a Richard Yenke photo. Daniel Quiat Collection.
- H006 This is an ad by the Union Pacific demonstrating its piggyback service. Daniel Quiat Collection.

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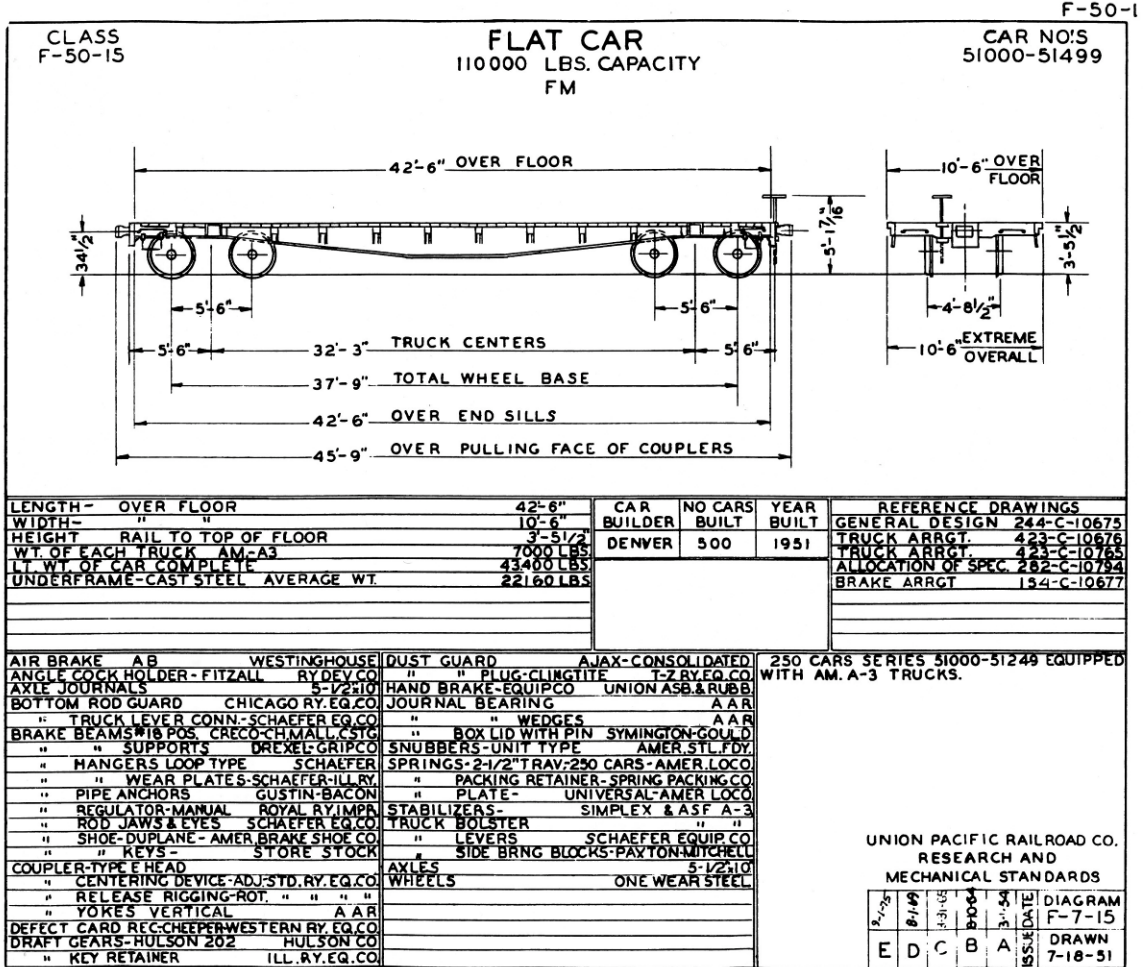
USGS TOPOGRAPHIC MAP
Fort Logan Quadrangle, Colorado
7.5 Minute Series



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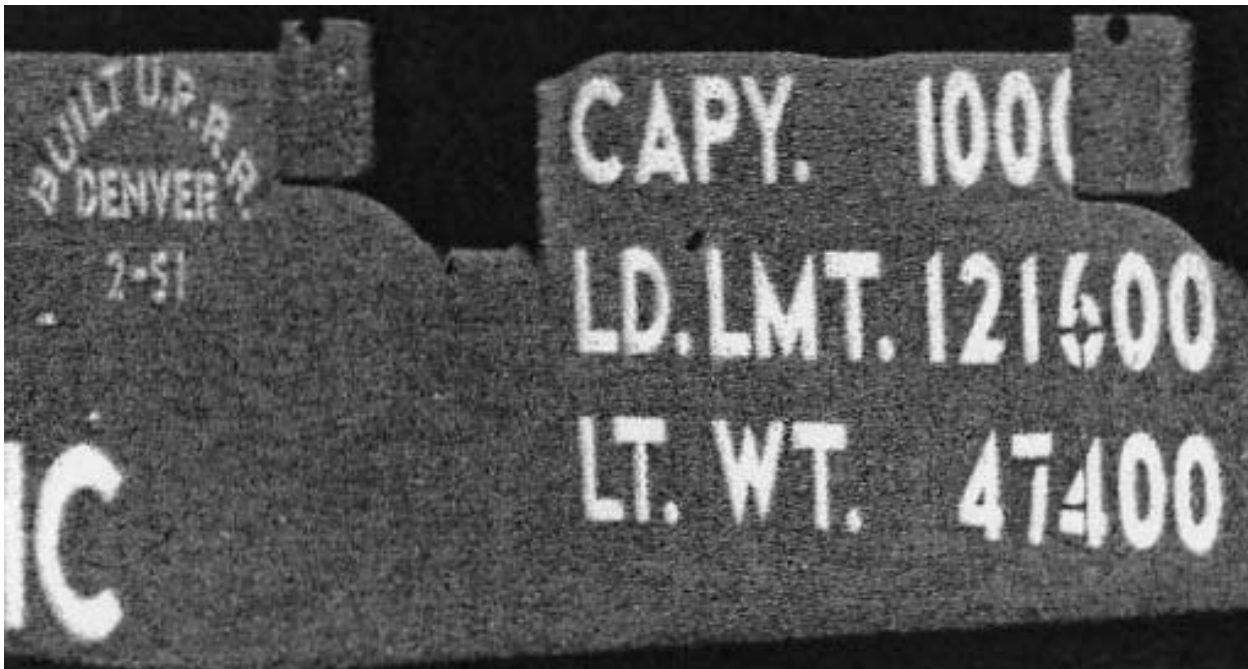
Historic Images

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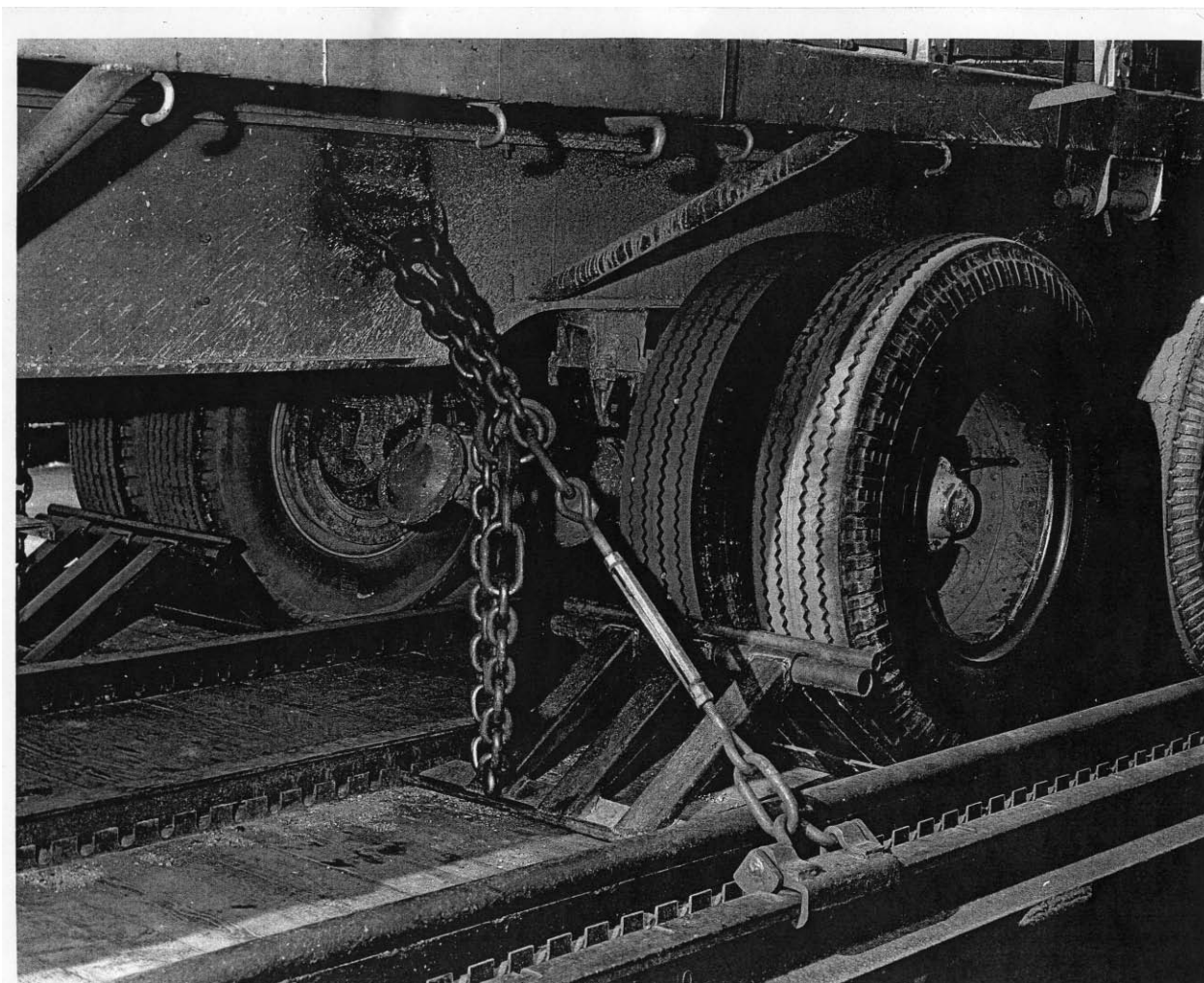
H001

Property Name Union Pacific Flatcar No. 51207



H002

Property Name Union Pacific Flatcar No. 51207



H003

Property Name Union Pacific Flatcar No. 51207



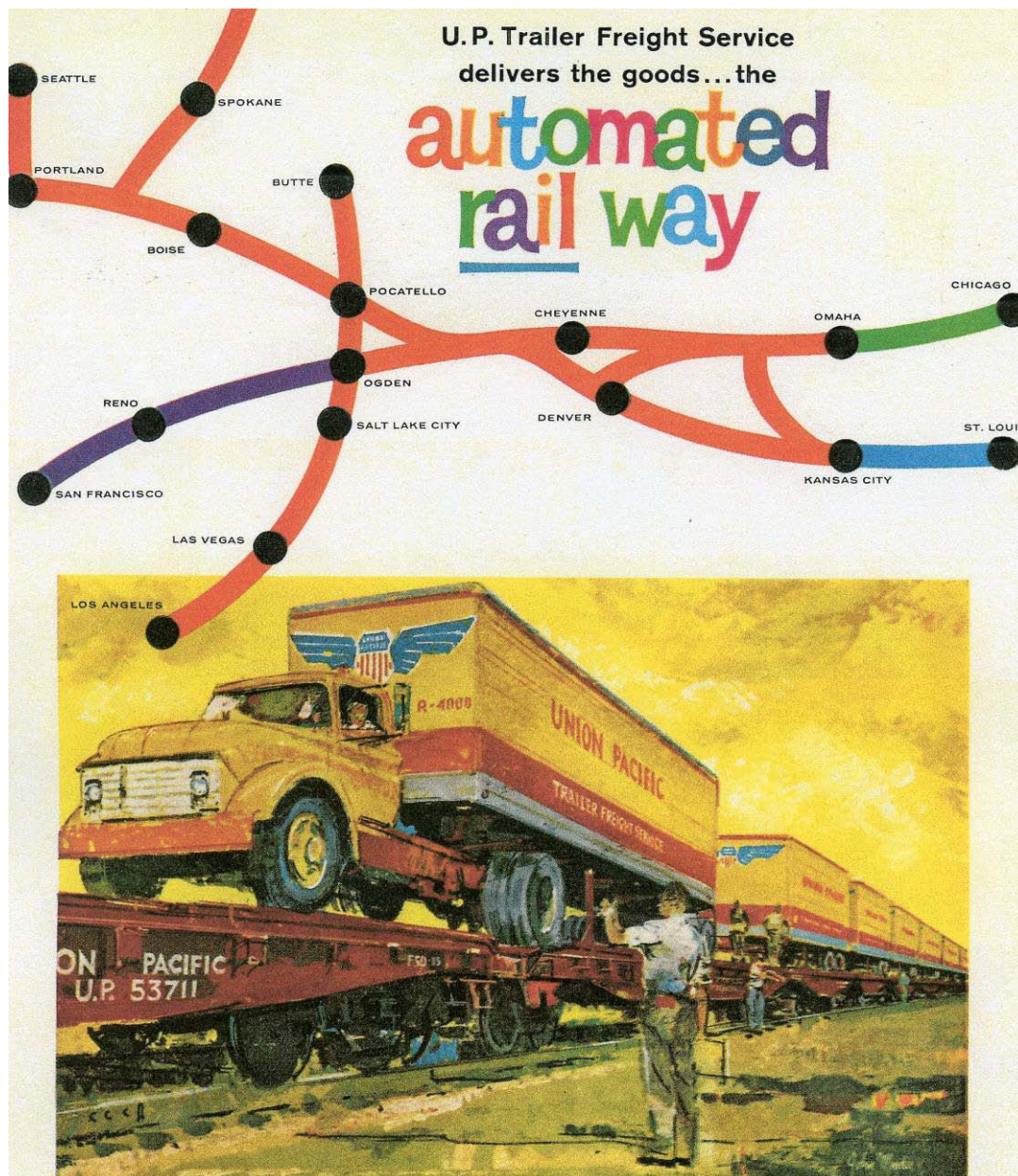
H004

Property Name Union Pacific Flatcar No. 51207



H005

Property Name Union Pacific Flatcar No. 51207



H006