COLORADO HISTORICAL SOCIETY

COLORADO STATE REGISTER OF HISTORIC PROPERTIES NOMINATION FORM

SECTION I

Name of Property

Historic Name Denver & Rio Grande Western Railroad Boxcar No. 60294

Other Names Denver & Rio Grande Western Railroad Automobile Boxcar No. 65179

Address of Property ☐ address not for publication

Street Address 2333 Steel Street [home of the Colorado Springs Trolley Group]

City Colorado Springs County El Paso Zip 80907

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, President Date August 2008

Organization Museum of Railway Workers

Address 825 Meadow Glen Drive Phone 303-579-1506

City Boulder State Colorado Zip 80303

FOR OFFICIAL USE:

Site Number 5EP.6155

12/5/2008 Nomination Received

Senate # _____ House # _____

2/20/2009 Review Board Recommendation
☒ Approval ☐ Denial

2/26/2009 CHS Board State Register Listing
☒ Approved ☐ Denied

Listing Criteria ☐ A ☐ B ☒ C ☐ D ☐ E

Certification of Listing: President, Colorado Historical Society Date

COLORADO STATE REGISTER OF HISTORIC PROPERTIES

Property Name Denver & Rio Grande Western Railroad Boxcar No. 60294

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: Railroad Automobile Boxcar

Current Not In Use

Original Owner Denver & Rio Grande Western Railroad

Source of Information Folio Sheet

Year of Construction 1939

Source of Information Folio Sheet

Architect, Builder, Engineer, Artist or Designer Pressed Steel Car Company

Source of Information Folio Sheet; D&RGW Accounting

Locational Status

☐ Original location of structure(s)

☒ Structure(s) moved to current location

Date of move moved throughout its operational life

SECTION III

Description and Alterations

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

COLORADO STATE REGISTER OF HISTORIC PROPERTIES

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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

☐ Agriculture	☐ Economics	☐ Landscape Architecture
☐ Architecture	☐ Education	☐ Law
☐ Archaeology – prehistoric	☒ Engineering	☐ Literature
☐ Archaeology – historic	☐ Entertainment/ Recreation	☐ Military
☐ Art	☐ Ethnic Heritage	☐ Performing Arts
☐ Commerce	☐ Exploration/ Settlement	☐ Politics/ Government
☐ Communications	☐ Geography/ Community Identity	☐ Religion
☐ Community Planning and Development	☐ Health/Medicine	☐ Science
☐ Conservation	☐ Industry	☐ Social History
	☐ Invention	☐ 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 Colorado Springs

Verbal Boundary Description of Nominated Property
(describe the boundaries of the nominated property on a continuation sheet)

COLORADO STATE REGISTER OF HISTORIC PROPERTIES

Property Name Denver & Rio Grande Western Railroad Boxcar No. 60294

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. The Colorado Historical Society may reproduce, publish, display, perform, prepare derivative works or otherwise use the nomination materials for Society and/or State Register purposes.

For Office Use Only

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

Architectural Style/Engineering Type: Standard gauge railroad boxcar (automobile / DF)

Period of Significance: 1941

Level of Significance: [X] Local [ ] State [ ] National

Multiple Property Submission: N/A

Acreage less than one

P.M. 6th Township 14S Range 67W Section 1 Quarter Sections NE SE SE NE

UTM Reference: Zone 13 Easting 514681 Northing 4301810 NAD27

Site Elevation: 6093 feet

The UTMS were derived by OAHP from heads up digitization on Digital Raster Graphic (DRG) maps provided to OAHP by the U.S. Bureau of Land Management.

Property Name Denver & Rio Grande Western Railroad Boxcar No. 60294

DESCRIPTION and ALTERATIONS

In 1939 the Pressed Steel Car Company built Denver & Rio Grande Western (D&RGW) Boxcar No. 65179. The car was part of a 100 car order placed in the 65100 series (Denver & Rio Grande Western inventory card: January-December 1940). (Please note- for ease of reading, Denver & Rio Grande Western, Denver & Rio Grande, and Rio Grande are used interchangeably.) The car was considered "new" technology at the time. The car is 40 feet in length, 14 feet 10 inches from the rail to the roof and about 10 feet 8 inches wide. The base of the car was made of a steel frame consisting of a center-sill, two side frames, and end sills to connect each part. A Duryea Cushioned Underframe (the center-sill), consisting of a series of springs, provided shock absorption in order to protect the goods being transported (See photo H2). Reinforcement for the frame came from cross-members. A horizontal steel skeleton was attached to the frame using rivets and the steel sheets riveted to the skeleton. A seamless steel roof and seamless ends were riveted to complete the exterior structure. The interior sides and roof were covered in wood while the flooring consisted of wood planks. Designed to handle 50 tons of weight, friction bearing trucks (wheel assemblies) held the weight of the car. Each truck had two axles connected to the sides using a brass bearing (much like an automobile engine). The utilization of brass bearings required constant attention to avoid a derailment; they had to be oiled to operate correctly.

Given the purpose of the car, it displayed a most unusual characteristic: double boxcar doors on each side. The "main" door is 8 feet in width, but a second adjacent door is 15 feet wide. The doors can be opened at the same time to create a larger opening of 23 feet.

According to the *1940 Car Builders' Cyclopedia of American Practice*, the D&RGW 65100 series was designed with a special door arrangement to provide for the transportation of automobiles or grain and other boxcar commodities. Despite this description, some knowledgeable sources dispute that these cars could be used to haul grain given that the large doors would make it impractical for that purpose. As the boxcar did not receive its automobile loaders until 1941 it is possible the car initially served a different purpose. With the installation of the Evans Automobile loaders and the extra wide entrance, the boxcar could hold four automobiles (See photos H3, H5, & H6). Two vehicles were suspended above the floor in the automobile loaders while two more fit underneath the loaders.

Once the car was retired from automobile service in 1954, the D&RGW fitted the car with damage prevention equipment and returned it to service. This equipment helped to control the movement of freight inside the car. During its lifetime, the car had different types of such equipment. While the original damage protection loaders are not present, the interior still has the belt rails used for the service. Damage Free loaders, the kind used in the car, were discovered by the Pikes Peak Historical Street Railway Foundation (PPHSRF) while replacing a fence. The loaders were being used as poles.

Alterations

D&RGW Automobile Boxcar No. 60294 (originally No. 65179) mechanically and physically appears essentially as it was built. It even retains its original friction bearing trucks. The original Boxcar Red of the car was replaced in 1954 with the classic Rio Grande silver, gold and black color scheme. After the car's retirement, the new owner cut a door on the side to store furniture (Howard Noble interview). When the car was donated to the PPHSRF, it was still in this paint scheme. Since its purchase by the Museum of Railway Workers, the car has been repainted.

The interior has seen modifications over the years. The car first received its "car loaders" in December

1941 at a cost of $686.96. In 1948, the car received a newer design of auto loader. According to D&RGW accounting records, the car remained in automobile service until 1954. In that year the auto loaders were removed and the cars of the entire 65100 series received two different kinds of loading devices installed in their place. Some cars received Sparton Easy Loaders; such cars were marked “SEL” on the outside of the car. Other cars received the Evans “Damage Free” or “DF” loaders. The converted cars then returned to dedicated service moving auto parts or appliances (Eager 1996:38 and D&RGW accounting).

Cars converted for damage prevention service were also renumbered into the 60200 or 60300 series and repainted. In this case, D&RGW No. 65179 became No. 60294 circa 1954. It also received a coat of the Rio Grande gold, silver and black color scheme. To advertise its loader, a large “DF” was painted on the upper left side of the car. This series remained in service until just after 1980, but in small numbers.

Car No. 60294 was very fortunate. The railroad retired the car in 1980, selling it to Weberg Furniture in Colorado Springs, who purchased the car for furniture storage. The furniture company cut a door into the side of the car to provide easier access. Howard Noble, President of the PPHSRF discovered the car as it sat at the end of the store’s railroad siding. Some time around 2000, the furniture company went out of business and Howard Noble was able to persuade the company to donate the car to the PPHSRF. Howard approached the local switch crew about moving the car to the Foundation’s site. After undergoing an airbrake test and a little truck work, the car was moved to their site at the former Rock Island Roundhouse in Roswell, Colorado. (The Rio Grande served this site after the Rock Island Railroad went out of business and the Union Pacific, the Rio Grande’s successor, continues to serve the site.) In July 2008 the Museum of Railway Workers purchased the car; in August the car was repainted and will be re-lettered shortly.

SIGNIFICANCE STATEMENT

Denver & Rio Grande Western (D&RGW) Boxcar No. 60294 is eligible for the State Register under Criterion C for its Engineering significance as a rare example of railroad rolling stock designed specifically to transport automobiles. From 1941 to 1954 this boxcar was outfitted with special devices that allowed the shipping of automobiles. The 40-foot boxcar has an unusual double door (the main door is 8' wide, the adjacent door is 15' wide) that provides an overall 23-foot wide opening. Evans automobile loaders installed in 1941 accommodated four automobiles—two suspended from the ceiling with two on the floor below. The automobile loaders were replaced by newer versions six years later. The car remained in automobile service until 1954. It was then adapted to special purpose cargo (moving auto parts and appliances) with other damage prevention devices, such as the Evans "Damage Free" or "DF" loaders. Boxcar No. 60294 remained in service another 26 years in this capacity, being retired in 1980. While the DF bars have been removed, the belt rails along the interior walls are still intact. The car served as both an experiment in the success of DF loaders and into moving auto parts and appliances.

Built in 1939 and originally numbered 65179, this boxcar with its steel siding and roof is also indicative of a period of construction. The 65100 series represents pre-World War II boxcar design when car designers and builders shifted from composite car construction- wood siding and roof with exterior metal framing- to all-steel construction, building the entire exterior of metal, typically steel, in an effort to provide more strength and longevity. The cars often still displayed wood interiors. The car was designed from a prototype built by the Kansas City Southern (KCS), which was not only made but tested to allow auto-loading (Nehrich, 1991:1-2). The KCS tested the car in 1934, but used a composite wood and steel car (Nehrich, 1991:1-2). After the success of KCS's car, car-builders began producing automobile boxcars. The Pressed Steel Car Company was one of the builders to make an automobile boxcar. The car also utilized a new kind of suspension technology: the Duryea suspension system. This was a method of protecting the car and its cargo against shocks. Although eventually outlawed for interchange, some railroads like Rio Grande continued to use cars with this underframe suspension system for non-revenue service.

HISTORICAL BACKGROUND

> *Romance and beauty are almost never associated with freight cars. Plain, ponderous, and work-a-day, these faithful servants, which function so efficiently as breadwinners for the railroad industry, receive little attention and less compassion. Their cheerless and dowdy appearance—for most look old long before their time—have won them few admirers.* (White 1993:4)[1]

Boxcar Design

Railroad companies generate their revenues by transporting passengers and freight. Passenger and freight cars, which are designed for this purpose, are often referred to as revenue cars. Cheap transportation is the essence of railroad freight service. However the ability to move large quantities of goods long distances is not enough. Capacity has to be coupled with the ability to economically

[1] John H. White's monumental book, *The American Railroad Freight Car: From the Wood-Car Era to the Coming of Steel*, provided much of the general discussion about boxcar design that follows.

transport those goods. Many considered freight cars as money boxes, but only if they were carefully managed and driven hard.

The provisioning of America was a major task that involved transporting, on a continental scale, the products of farms, forests, factories and mines. This was not a “Mom-and-Pop” operation but a big business that employed hundreds of thousands of workers, millions of dollars in tracks and equipment, and a bureaucracy comparable to that of the federal government. Railroads and the nation grew and prospered together. When the railway age opened in 1830, the United States was largely an unexplored and undeveloped land with agriculture as its basic industry. As the pace of industrialization quickened, the national wealth soared. By 1865 railroads began to dominate the nation’s freight business. By 1890 the United States was a formidable economic power, out-producing the other great industrial nations of the world. This rapid economic growth was the prime mover in creating the vast network of American railroads. The dramatic changes in the national economy were directly reflected in railroads, their operating procedures and their equipment.

American freight car design was a conservative, craft-dominated trade. The majority of freight car builders/ designers were practical individuals, faithful to traditional methods and steeped in utilitarian values. New designs were based on old designs. Car builders’ conservatism can be explained by several factors. First was the obvious fact that the main business of the railroad was transportation and not technical innovation. Its fundamental goal was the dependable and economical movement of goods and people. Reliable equipment was essential to fulfill this mission and consequently experimentation was discouraged (White 1993:134).

Cost was another constraint to innovative design. Because so many cars were needed, by necessity they had to be cheap. Cheap cars tended to be those produced on conventional plans, again discouraging innovation. Railroad cars were seen as short-term vehicles. Why build a heavy, expensive car when it would be in the scrap heap after 16 years of service? Lightness and short service life seemed to go together. “In their effort to balance strength against carrying capacity, car builders adopted the doctrine of just good enough. The vehicle should be made no more durable than was necessary for it to do its job in the short run. This philosophy was indigenous to the American railway as a whole” (White 1993:135).

Despite these constraints, American car builders managed to produce a very practical vehicle that performed with great dependability. Low-cost cars were built from simple native materials. They were cheap rather than durable, had a short service life, and were a credit to the journeymen who created them. “In terms of their dead-weight ratio—that is, the weight of the car compared with the load it could safely carry—the American boxcar had no rival. It was strong, yet light. If a part failed because it was too light, it was made heavier in the next lot of cars” (White 1993:135).

The basic boxcar design that evolved was little more than a box on a bridge carried by sets of wheels (called trucks) that were clustered together at each end of the car. The trucks’ frames were fabricated from a large number of small iron straps, bolts and castings. The floor frame was made from 4” x 8” timbers (called sills) bolted on top of heavy cross-timbers (called bolsters). The frame did not just support the cargo; it was also responsible for sustaining the pulling stresses of the train.

The open, four-wheel gondola was the standard freight car during the first years of American railroading. It was capable of transporting just about every class of goods. Bulk materials were simply dumped in. Those materials packaged in barrels (like flour, whiskey and oil) were easily loaded. More fragile goods were transported utilizing a canvas cover or tarpaulin because wood-burning locomotives

threw out showers of glowing embers and sparks. Although an open (uncovered) car of merchandise provided nooks and crannies for sparks to lodge and burn, tarpaulins were equally susceptible to incineration.

In its 1832 published report, the Baltimore & Ohio Railroad concluded that valuable merchandise, even when protected by canvas, suffered in open cars. The report noted that 70 “house” or enclosed cars, had been placed in service. Other railroads were quick to adopt the covered freight car. Early cars from this period were four-wheeled with highly pitched roofs and outside body framing.

During this same time that the shift from open to closed bodies was under way, another fundamental transformation in American railroad freight cars occurred. The double-axle truck or eight-wheel car displaced the single-truck four-wheel car. By 1840 most U.S. lines had come to adopt the double-truck car because it was much better suited to our special operating problems. American rail lines were built cheap and fast with meager capital and low earnings that forced the construction of inferior track and bridges. Grading was minimal, ballast was sparse, rails were light and ties were widely spaced. Four-wheel cars tended to be short and rigid with its weight concentrated on a shorter length of track which could crush and break down. Only a flexible vehicle, with its load spread over as long a distance as was practical, could run on such flimsy uneven track. Double-axle truck cars could be long, spreading the load over a longer distance. Yet they could still navigate short curves because the individual wheel sets of each truck could be placed close together. Because the trucks were connected to the car frame by center pins, they were free to turn or swing, creating a vehicle with remarkable flexibility. The eight-wheel car also offered more opportunities for carrying larger individual items and larger overall loads (e.g., pieces of machinery or long beams). “All these advantages made the eight-wheel car attractive for both passenger and freight vehicles. However, it was found especially advantageous for freight service” (White 1993:165).

The basic, general-service car to emerge from the pioneer period of American railroading was the familiar boxcar. This standard workhorse of the fleet changed little from the late 1830s, when the first eight-wheel boxcars were introduced, to the end of the Civil War. The essential characteristics—a rectangular body with sliding doors above an eight-wheel undercarriage—were well formed before 1870. During this time most boxcars looked the same. Typically they had a body length of 24 to 28 feet, an arched roof, wood-beam trucks with no truss rods and an eight to ten ton capacity (White 1993:176).[2]

The single most obvious change in freight car design over the years was size. White notes that until about 1870 car size seemed frozen at a 10 ton capacity. Tonnage increased during the post-Civil War period and bigger cars were seen as a quick solution to the traffic problem. “In rapid succession 15-ton cars were replaced by 20-tonners, and so on until the 40-ton car came into being in the early years of the twentieth century” (White 1993:137).

The wooden boxcar evolved from a small carriage for modest local traffic into large, rugged vehicles moving vast interstate tonnage. Critics of the wooden freight car cited its obvious defects—flammability, subject to rot, and structurally weak. Proponents for wooden cars cited the obvious advantages: the relative ease and speed of building with wood; the fairly simple and inexpensive carpentry tools needed to do the job; the largely unskilled labor pool which was better adapted to carpentry; and the abundant

[2] Although the arched roof prevailed during the early years, the simpler and more effective slightly peaked roof would become the standard.

supply of prime timber. While America's virgin forests offered an abundance of superb building material, the typical boxcar used approximately 3300 to 4300 board feet. Imagining entire forests vanishing, some car builders became nervous about available supplies.

By 1890 American car builders must have sensed that the wooden age was coming to an end. Although wood remained the predominant material, more and more metal was being worked into the structure. Freight cars were roughly 60 percent wood and 40 percent iron; most of the metal was in the trucks, notably the wheels, but the body was nearly 25 percent metal (White 1993:230).

The metal freight car would prove to be an impressive vehicle for commerce, but only after a lengthy development period. By the 1880s iron came to play an increasing role in wood car design. "Tie and truss rods were by then well accepted. Iron-reinforced body and truck bolsters did much to increase the durability of boxcars that had floor sills the same size as those used in an earlier time for cars of half the capacity" (White 1993:135).

Economic changes probably had more impact on this shift to metal construction than the engineering details. Bigger cars were seen as a solution to the enormous growth in railroad traffic, but wooden cars were reaching a practical size limit. Cheaper steel coupled with the scarcity of framing timber effected the decision to go with the metal car. Metalworking tools improved with pneumatic tools, particularly hand-held riveting guns, accelerating car fabrication.

John H. White, noted railroad author, claims that there is no clear division separating the history of the wood/ metal (composite) car from the steel car; the iron car drifted into the age of steel. Although he cites a convenient but not precise date of 1890 as the beginning of the steel-car era, wooden freight cars "remained firmly on the throne." Falling costs due to better production methods and availability of more varied stock shapes and sizes enhanced the increasing popularity of steel. White notes that rolled beams once selling for $70 per ton were $40 per ton by 1891. More common by 1890, steel working tools and their operation became more familiar to a larger number of workers. "The advent of air-powered tools is one of several developments outside the railroad industry that had a direct effect on the decision to adopt steel freight cars" (White, 1993:580).

The railroad industry was gaining experience with metal cars even while still maintaining that they were unacceptable. By 1890, iron body bolsters and all-iron trucks were common, and half of all locomotives were pulling steel-framed tenders. Introduced in the late 1880s, huge steel-framed flatcars, special-service cars meant to carry naval guns or huge rolls of wire, were the biggest freight cars in service.

The burgeoning steel industry, pneumatic tools, a new generation of master car builders and greater experience with metal framing were all factors in the successful transition from wood to steel construction. "But there was an even more powerful argument for this radical change in car building…. It was the economics of scale" (White 1993:581). That fundamental element was key in American freight car development—big cars versus small cars.

American freight cars grew steadily larger from 1830. Larger cars were more productive in moving a given quantity of goods, particularly bulk materials (such as coal, sand and grain). Because fewer big cars were needed in trains of equal capacity, it reduced the number of wearing parts and the time spent oiling and inspecting those parts. Big cars resulted in shorter trains. Fewer cars per train meant fewer locomotives, smaller operating crews and lower labor costs. The big car trend dominated because it increased the railroad's capacity and efficiency with a relatively modest investment. In addition, the repair costs for wooden cars became a burden. Frames required the best grade of timber for maximum

strength and durability and, by the late 1890s, the virgin forests were almost gone.

At the beginning of the twentieth century the railroad industry had come to accept metal freight cars. “In 1901, 15 percent of new cars built were of steel. Four years later the figure jumped to 45 percent, and there were now [1908] about 150,000 of them in service. This represented 12 percent of the entire fleet—a major achievement for just seven years” (White 1993:598).

Composite boxcars, made of both wood and steel, were built principally during the 1920s to the 1940s. While all-steel cars were already being manufactured by the late 1930s, the lower cost of the composite cars no doubt led to their continued popularity. During World War II, the diversion of steel to war material production left little for civilian use. Composite boxcars required less of the valuable war material than the all-steel version.

The adoption of the steel car was not as revolutionary as it appeared. Most so-called steel cars were actually composite construction. While the framing for the floor and body was all metal, the floor and body were still wood. Up until relatively modern times, boxcars had wooden interiors as they protected cargo and allowed for easy fastening. The composite construction was a very rational decision as wood made a perfect secondary material—it was cheap and easily replaceable. White noted that “the short life of freight equipment made expendable wood components ideal” (1993:598). Gradually less and less wood was employed in car construction. The better class of boxcars was constructed with steel ends and roofs. By 1940, most major railroads had universally given up on exterior wood siding. However, interiors tended to remain wooden (White, 1993:598).

Damage Prevention in Boxcars

The boxcar became the catchall freight car for goods requiring protection from the elements. Items from grains to wood would be loaded into the car and moved by rail. For bulk goods moving in a boxcar, any excessive jolts did little harm to the product, provided it didn’t destroy the car. However, transporting fragile items in the large open space of a boxcar was a different matter, as former Rio Grande employee Marv McCall recalled. When McCall’s father, who worked for the Moffat Road, received a new assignment, it often required the family to move. To assist with the move, the railroad provided a boxcar for the family’s belongings. When the family and the boxcar arrived at their new location, they searched in the car through the rubble and debris for what wasn’t destroyed by the move. McCall also noted that anything not destroyed by the move was covered in coal dust since the boxcars were often used to move coal on the Moffat (Marv McCall Interview, 8/7/2008).

While some of the movement a car might encounter is due to the unevenness of the rail, another more jolting movement is from “slack action.” The sudden starts and stops of a train can cause each car to lose about four to six inches in the space between couplers. Another way to get slack action is by going over a hill and having the last cars push into the train. The accumulation of slack action over an entire train would leave the last cars to be affected receiving a sudden and strong jolt. This became a greater problem as trains got longer and was one of the reasons that the caboose was eliminated from the rear of trains as the slack action caused injuries and even death to personnel (Marv McCall, Interview 8/7/2008).

Several methods have been employed to attempt to reduce the damage problem on railroads. The simplest method which was quickly utilized involved placing a draft gear behind the coupler and in front of the frame. This draft gear acted as a cushion to eliminate some of the motion and is now found in every type of car.

The second method which helped improve the ride was the creation of a cushioned frame on the car. A rigid center-sill car experienced a jarring ride from the smallest and simplest movements of the train. A car with a cushioned center-sill was able to take the motion of the train and release some of the pressure acting on the car, even if the rest of the car had a solid frame. One of the earliest cushioning frames was the Duryea Cushioned Underframe, which Boxcar No. 60294 possesses (Wright, 1940: 382). The Duryea Corporation touted the cushioning frame as a way to reduce damage claims, increase the life of the equipment and reduce the cost of equipment maintenance (Wright, 1940:382). The Duryea frame utilized a series of springs to absorb the shock. Although the concept appeared sound, in practice repairs to the cars were dangerous and the frame was eventually outlawed for interchange, although some railroads like the Rio Grande still used cars with the Duryea frame for non-revenue service (John Tudek Interview, 8/6/2008). Such was the case with Boxcar No. 60294.

Devising ways to control the movement of freight inside the car was the final method employed. In early cars, loads were strapped and tied to nailed points on the wood floor and wood sides of the car. This simple method initially helped restrict the movement of the load within the boxcar, but as freight train speeds increased and more fragile goods were carried, invention of other devices to better secure cargo came along. One such device was the Evans automobile loader, utilized in boxcars that carried automobiles. Although today it seems odd that railroad boxcars would move automobiles across the country, it was the most effective method of transportation at the time. By the 1930s most railroads had an automobile boxcar.

The Rio Grande ordered 100 automobile boxcars which arrived in late 1939. The cars were numbered in the 65100 series. Boxcar No.60294 originally was No. 65179. The Rio Grande's cars, like most others, had two doors which could open as wide as 23 feet and were ten feet high (see folio sheet). These boxcars were designed to also be used for grain and other commodities; this may explain why the railroad waited until 1941 to add the special automobile loaders on the cars (D&RGW Accounting; Wright, 1940:141).

These automobile boxcars utilized an Evans automobile loader attached to the ceiling; when not in use it would fold up almost completely flat. After driving in the first car, the loader would drop and the car would maneuver onto the loader. The device was lifted up and secured. Another car would then be driven underneath it. By using two loaders, the 40 foot boxcars of the 65100 series could carry four cars (Wright, 1940; Marv McCall Interview, 8/7/2008). The Rio Grande installed an early design, Type "D," and then began replacing it with the Type "F" loader a little at a time. The Rio Grande continued to use the auto loaders in the series until 1954 when the devices were retired (D&RGW Accounting book). The auto loaders turned out to be quite dangerous as the cables used to support the car swung back and forth during travel. This motion weakened the cables which could snap at inopportune times (Marv McCall Interview, 8/7/2008). In addition, by this time newer and more economical methods of moving automobiles arrived. The complete 65100 series was re-numbered into the 60200 and 60300 series after the removal of the automobile equipment.

In addition to transporting automobiles around the country, railroads shipped parts for automobiles, which also needed to be contained within the boxcar. Seizing the opportunity, manufacturers introduced various kinds of securing devices for boxcars. The first securing devices were quite simple and included the use of stanchions, poles thrust into place vertically to prevent movement. Another simple method was the use of steel bands. Each of these methods had major limitations in terms of how much weight it could control from moving.

Two companies, Sparton and Evans, came out with new devices that utilized horizontal bars connected

to belt rails. The belt rails were secured to the sides of the car and the bars were locked in. The system was strong enough that the bars served as a floor to create a second level of storage space. The Rio Grande utilized devices of both companies. Boxcar No. 60294 received multiple versions of the Evans automobile/DF loaders. These devices remained in the cars until they were retired.

By the 1960s car builders started including damage protection in specific cars and typically these cars had moveable bulkheads. These bulkheads could be adjusted in whatever location the shipper wanted. While this essentially ended the experiment into damage prevention products, the Rio Grande continued to keep its older modified cars in service until the 1970s, and in some cases the 1980s. The continued use of these cars was no doubt due to the fact the railroad could not afford to be wasteful and had to stretch its use of equipment as long as possible.

D&RGW Boxcar No. 60294

In 1939, the Rio Grande entered into receivership. The receivers, Judge Wilson McCarthy and Henry Swan, realized that an expected merger between the Rio Grande and Moffat Road railroads would bring benefits only if the railroad could gain bridge traffic. (Bridge traffic is the traffic that begins from a point off the system, runs over the D&RGW and then terminates off the system.) They realized bridge traffic depended on the quality of the equipment and the track. The receivers spent a great deal of money to improve both railroads. While a great deal was spent on the infrastructure, part of the purchase for new cars was for automobile cars, an important part of bridge traffic at the time. With double doors, the cars built by Pressed Steel were a particularly good choice since they could be used for many more goods than a standard single-door boxcar. Indeed, the cars did not receive their automobile loaders for about two years. In the meantime the cars were likely used in general service.

As mentioned previously, new cars came out with incorporated damage protection in the 1960s, not the after-market materials used in the 60200-60300 series cars. The purchase of new cars by the Rio Grande and the car series' age led to a rapid drop in numbers. In 1971 only 38 cars remained in service with their DF loaders removed. The remaining cars spent their last years in service as standard boxcars (*1971 Official Railway Equipment Register*, 1971:647). By 1980, the car total was 12 and shortly thereafter went quickly down to zero as the cars hit their 40 year retirement mark in 1979. While at least one car made it into work service, RGAX 60283, modifications made include changing wheel sets and the airbrake system as well as interior modifications to carry parts and materials for derrick service. Shortly after its retirement by the Union Pacific Railroad (UP), the car was listed in the Colorado State Register of Historic Properties (5AH.1561, listed 3/10/1999) for its significance as a work car.

While the two cars still exist it is very unlikely that any others are extant. In 1999 the UP began a program to scrap any older cars received by prior mergers that were obsolete, including their own equipment. This program has since accelerated with the high value for scrap steel.

For the Denver & Rio Grande Railroad, the 65100 series of boxcars played an important role in the sustainability of the railroad. D&RGW Boxcar No. 60294 is a rare example of a 1930s boxcar that served a crucial function of moving materials and automobiles across the country. The car maintains its "as built" appearance, and even though the DF bars have been removed, the belt rails are still intact.

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Interviews

McCall, Marv [former System Car Foreman for the D&RGW, retired]. Interviewed by Daniel Quiat on 7, 23 August 2008 and other various occasions in 2008.

Noble, Howard [President of the Pike's Peak Historical Street Railway Foundation]. Interviewed by Daniel Quiat in August 2008.

Tudek, John [Carman D&RGW, currently Union Pacific]. Interviewed by Daniel Quiat on 6 August and other occasions in 2008.

GEOGRAPHICAL DATA

VERBAL BOUNDARY DESCRIPTION

The State Register nomination includes only the structure of the rail car as it sits within the boundaries of the home of the Colorado Springs Trolley Group at 2333 Steel Street in Colorado Springs. No land is included with this nomination.

Property Name Denver & Rio Grande Western Railroad Boxcar No. 60294

PHOTOGRAPH LOG

The following information pertains to photograph numbers 1- 3 except as noted:

Name of Property: Denver & Rio Grande Western Railroad Boxcar No. 60294
Location: Colorado Springs, Colorado
Photographer: Daniel Quiat
Date of Photographs: August 8, 2008
Negatives: Digital images in tif format on CD

Photo No.	Photographic Information
1	Side view of Boxcar No. 62094 showing double loading doors
2	Oblique view of Boxcar No. 62094
3	Interior view of Boxcar No. 62094 showing part of metal bars for damage prevention

PHOTOGRAPH LOG - HISTORIC

These photographs may not be included in Internet posted documents and other publishing venues due to copyright restrictions.

Photo No.	Photographic Information
H1	Folio Sheet, courtesy of owner Daniel Quiat
H2	Image of Duryea Cushioned Underframe from company publication, unknown date and source.
H3	Interior of a boxcar showing Damage Free (DF) loaders. Taken from *1940 Carbuilders' Cyclopedia of American Practice,* left image page 151; right image page 139.
H4	Image of Denver &Rio Grande Western Boxcar No. 65149 circa 1940. Taken from *1940 Carbuilders' Cyclopedia of American Practice*, page 141.
H5	Kansas City Southern Boxcar- circa 1936. Image taken from *The Best of Mainline Modeler's Freight Cars, Book 1, Volume1*, page 78.
H6	Images of the Evans Automobile Loader/Rack. Image taken from *The Best of Mainline Modeler's Freight Cars, Book 1, Volume1*, page 80.

Property Name Denver & Rio Grande Western Railroad Boxcar No. 60294

USGS TOPOGRAPHIC MAP
Colorado Springs Quadrangle, Colorado
7.5 Minute Series