
SPECIFICATION

CURVED SIDED STEEL GRAIN CAR
5,450 Cubic Foot Capacity Short Car

Specification X-24031

for

PNW RAILCARS, INC.

March 8, 2024

Reference:
X-23129

125 South Wacker Drive, Suite 1500
Chicago, IL 60606 USA

312.928.0850
FAX 312.928.0890
www.freightcaramerica.com

Specification X-24031
Curved Sided Steel Grain Car
5,450 Cubic Foot Capacity

| <i>GENERAL DIMENSIONS</i> | |
|--|-------------------|
| LENGTH | |
| Truck Centers | 42' 7" |
| Inside Length | 50' 7-1/32" |
| Over Strikers | 52' 6-1/2" |
| Over Pulling Face of Free Couplers | 55' 2" |
| WIDTH | |
| Inside Width | 10' 7-5/8" |
| Extreme Width | 10' 8" |
| HEIGHT | |
| Extreme Height | 15' 6" |
| Bottom of Gate Adapter Above Rail | 1' 6-1/4" Nominal |
| Bottom of Gate Above Rail | 8-1/4" Nominal |
| FLOOR SLOPE | |
| Side Hopper Floors | 41 Degrees |
| Intermediate, Lower Hopper, and Crossridge Floors | 40 Degrees |
| End Floors | 38 Degrees |
| CAPACITY / WEIGHTS | |
| Cubic Capacity – (Estimated) | 5,450 Cubic Feet |
| Lightweight - (Estimated) | 59,950 Pounds |
| Gross Rail Load | 286,000 Pounds |
| Load Limit | 226,050 Pounds |
| Center of Gravity Above Rail – Empty Car (Estimated) | 59.0" |
| Center of Gravity Above Rail - 286,000# Gross Rail Load (Estimated at Eaves) | 93.0" |

GENERAL DESCRIPTION

The completed car is to be a steel covered hopper freight car for grain service designed with:

- All Steel Underframe
- Through Center Sill
- Welded Side Construction
- Three 42" x 42" Bolted on Discharge Gates
- Curved Roof with One 24" x 43' 8" Trough Hatch
- Safety Appliances per AAR S-2044 Appendix B1, Safety Appliances for Covered Hopper Cars and other House Cars with Roof Hatches

The car design is based on a 286,000 pound gross rail load operating on track meeting the requirements of the U. S. Department of Transportation Federal Railroad Administration 49CFR, Part 213 and the AAR Plate "C" clearance diagram.

This car design meets the AAR high mileage requirements per AAR C-II, CH. 7.

This car was designed to meet or exceed all applicable requirements of the Association of American Railroads and the U. S. Department of Transportation Federal Railroad Administration on the date the specification was written.

TRUCKS - AAR M-976 Compliant

| | |
|------------------------|--|
| CAPACITY | Designed for 286,000# Gross Rail Load, AAR M-976 Compliant |
| WHEELS | CH36 / H36, Class "C", One Wear AAR 2A Profile |
| WHEEL BASE | 5' 10" |
| AXLES | AAR Standard for 6-1/2" x 9" NFL Roller Bearings, Grade "F" |
| ROLLER BEARINGS | NFL 6-1/2" x 9" |
| BRAKE SHOES | 2" Thick Composition |
| BRAKE BEAMS | #24 Unit Type |
| BRAKE BEAM WEAR LINERS | Metallic Type |
| LEVERS | Plate or Drop Forged |
| BOTTOM ROD | Through Bolster |
| SIDE BEARINGS | Constant Contact – Long Travel |
| BOLSTERS | Light Weight Design Grade B+ Center Plate Bowl 16" Diameter x 1 3/4" Deep Above Horizontal Bowl Liner |
| SIDE FRAMES | Light Weight Design Grade B+ Column Wear Plate Applied by Grade 8 Bolts, No Welding |
| SNUBBING | AAR M-976 Compliant |
| SUPPLEMENTAL SNUBBING | Not Required |
| SPRING GROUP | Appropriate to Truck and Car - AAR M-976 Compliant |
| ADAPTERS | AAR M-976 Compliant |
| PEDESTAL FRAME KEYS | Not Required |
| PEDESTAL ROOF LINERS | AAR M-976 Compliant |
| CENTER BOWL LINER | Welded Stainless Steel Vertical Ring with a Drop-In Horizontal Manganese Liner |

BRAKE EQUIPMENT

| | |
|------------------------|--|
| TYPE | Foundation brake rigging, utilizing an aluminum single-sided pipe bracket with a four-port test receiver, a fabricated reservoir, a 10" x 12" brake cylinder, and AAR approved brake hoses with wide lip gasket. A cylinder pressure port is included. |
| SLACK ADJUSTER | Double-acting, mounted above the center sill. |
| HAND BRAKE | AAR 1993 approved, Group N mounted low with long release lever. |
| SAFETY APPLIANCES | Crossover platform on both ends. |
| EMPTY / LOAD DEVICE | Slope sheet mounted, 50% proportioning. |
| AIR & HAND BRAKE RATIO | Per AAR S-401 specification, latest revision. Calculated Forces: Loaded = 12.7% of GRL, Empty = 26.6% of LW, Handbrake = 11.4% of GRL |

MATERIAL SPECIFICATION

Material used in the construction of the car and not specifically mentioned will meet the following minimum specifications. FreightCar America has the option to substitute equivalent material specification to items shown in this specification.

| | | |
|-----------------------|---------------------|--|
| Steel Bars | ASTM A-36, Q235 | |
| Steel Plates | ASTM A-36, Q235 | |
| Steel Shapes | ASTM A-36, Q235 | |
| Steel Strips | ASTM A-1011, Gr. 33 | |
| Steel Sheets | ASTM A-1011, Gr. 33 | |
| Brake Pipe & Fittings | ASTM A-53 | |

| #/CAR | PART DESCRIPTION | MATERIAL SIZE | MATERIAL SPECIFICATION |
|-------|------------------|---------------|------------------------|
|-------|------------------|---------------|------------------------|

DRAFT AREA

| | | | |
|---|---------------------------------------|--|----------------------------|
| 2 | Draft Sill | Fabricated Steel | Manufacturer's Standard |
| 2 | Center Plate | 15-7/8" Diameter "Low Profile" Center Filler Plate | Forged Steel AISI C-1030 |
| 4 | Rear Draft Lugs | Cast Steel | AAR M-201, Gr. "B+" |
| 2 | Combined Striker and Front Draft Lugs | Cast Steel | AAR M-201, Gr. "B+" |
| 2 | Coupler & Yoke | Type "E" SBE60EE Coupler, Y40AE Yoke | AAR M-211 & M-216, Gr. "E" |
| 2 | Uncoupling Device Lever | Standard for Type "E" | Manufacturer's Standard |
| 2 | Draft Gear | For 24-5/8" Pocket | AAR M-901-E |
| 2 | Coupler Carrier Wear Plate | | Manganese Steel |

UNDERFRAME

| | | | |
|---|--------------------------------|-------------|-------------------------|
| 1 | Center Sill | Fabricated | Manufacturer's Standard |
| 2 | Center Sill Tie - Near Bolster | 3/8" Plate | ASTM A-572, Gr. 60 |
| 2 | Bolster Web | 5/16" Plate | ASTM A-572, Gr. 60 |
| 2 | Bolster Shear Plate | 1/2" Plate | ASTM A-572, Gr. 60 |
| 4 | Bolster to Center Sill Gusset | 5/16" Plate | ASTM A-572, Gr. 60 |
| 8 | Side Bearing Web | 5/16" Plate | ASTM A-572, Gr. 50 |
| 4 | Side Bearing Tie Plate | 3/8" Plate | ASTM A-572, Gr. 50 |
| 4 | Side Bearing Face Plate | 3/8" Plate | ASTM A-572, Gr. 50 |

| #/CAR | PART DESCRIPTION | MATERIAL SIZE | MATERIAL SPECIFICATION |
|---------------------------------|------------------------------------|------------------------------|-----------------------------|
| <i>SIDE DESIGN</i> | | | |
| - | Side Sheets | 4 mm (0.157") Plate | ASTM A-1011 HSLAS, Gr. 60 |
| 4 | End Side Sheets | 3/16" Plate | ASTM A-1011 HSLAS, Gr. 60 |
| 2 | Side Top Chord | 11 GA (0.120") Formed Sheet | ASTM A-1011 HSLAS, Gr. 50 |
| 2 | Side Sill | 4 mm (0.157") Formed Plate | ASTM A-572, Gr. 50 |
| <i>END DESIGN</i> | | | |
| 2 | End Sill | 5" x 5" x 3/8" Angle | ASTM A-529, Gr. 50 |
| 2 | End Post | 5/16" Formed Plate | ASTM A-572, Gr. 60 |
| 2 | End Sheet/Floor | 8 GA (0.164") Formed Sheet | ASTM A-1011 HSLAS-F, Gr. 50 |
| 4 | Ladder Stiles | 1/4" Formed Plate | ASTM A-572, Gr. 60 |
| 4 | Corner Post | 3 1/2" x 3 1/2" x 1/4" Angle | ASTM A-529, Gr. 50 |
| <i>FLOORS</i> | | | |
| 2 | Sloped Intermediate Floor | 8 GA (0.164") Sheet | ASTM A-1011 HSLAS, Gr. 50 |
| 6 | Sloped Lower Hopper Floor | 8 GA (0.164") Sheet | ASTM A-572, Gr. 60 |
| 4 | Sloped Crossridge Floor | 8 GA (0.164") Sheet | ASTM A-572, Gr. 60 |
| 1 | Longitudinal Hood | 3/16" Plate | ASTM A-572, Gr. 60 |
| 6 | Side Hopper Sheet | 1/4" Plate | ASTM A-572, Gr. 60 |
| <i>ROOF CONSTRUCTION</i> | | | |
| 2 | Roof Sheet with Integrated Coaming | 3/16" Formed Sheet | ASTM A-1011-HSLAS, Gr. 60 |
| 2 | End Roof Hatch Coaming | Formed Section | Steel |
| 1 | Roof Hatch Cover | 24" wide x 43' 8" Trough | Manufacturer's Standard |
| 5 | Roof Hatch Locks | | Manufacturer's Standard |
| <i>CENTER PARTITION</i> | | | |
| 2 | Center Partition Sheet | 8 GA (0.164") Formed Sheet | ASTM A-1011 HSLAS, Gr. 60 |
| 2 | Center Sill to Crossridge Gusset | 1/4" Plate | ASTM A-572, Gr. 60 |
| - | Partition to side Connection | 3/16" Plate | ASTM A-1011 HSLAS, Gr. 60 |

| #/CAR | PART DESCRIPTION | MATERIAL SIZE | MATERIAL SPECIFICATION |
|----------------------------|--|---|-------------------------------------|
| <i>MISCELLANEOUS PARTS</i> | | | |
| 2 | AEI Tag | Applied with a Fabricated Bracket | AAR Approved – Standard Temperature |
| 2 | Route Card Holder | Fabricated Bracket | AAR Approved |
| 1 | Brake Badge Plate | Per AAR S-910 | Aluminum |
| All | Grab Irons / Ladders / Handholds | Under 36" Long - 3/4" Diameter Over 36" Long - 1" Diameter | ASTM A-576, Gr. C-1015, C-1020 |
| 4 | Sill Step | 2" x 1/2" Bar | ASTM A-36 |
| 2 | Kingpin | 1-3/4" Diameter | ASTM A-36 |
| 3 | Discharge Outlet Gates | 42" x 42" Bolt-On | Manufacturer's Standard |
| 6 | Vibrator Brackets and Reinforcement Pads | FCA | Manufacturer's Standard |
| 4 | Valley Plates Included in Hopper Area | | Manufacturer's Standard |
| All | Running Boards | Galv. Open Grating | AAR Approved |
| 2 | End Vents | Behind End Post | Incorporated into End Sheet |
| 4 | Roping Staples | 1-1/2" Diameter | ASTM A-36 |

CLEANING & PAINTING

| | |
|-----------------------|---|
| CLEANING | Exterior surface of the car to be prepared for painting per specification SSPC-SP6, commercial blast cleaning. |
| INTERIOR CLEANLINESS | Interior hopper compartments are to be clean of weld slag, blast medium and excess dust/dirt prior to installation of gates and hatches. Additionally, interior hopper compartments are to be final inspected after all work has been completed to ensure all debris is removed and interior cleanliness requirements are met. Interior of hopper compartments will not be washed or swept. |
| LAPS & JOINTS | One coat of primer 2 mils DFT minimum to be applied to all fastened steel-to-steel surfaces prior to assembly. |
| INACCESSIBLE SURFACES | All steel surfaces, including draft gear pocket which will be inaccessible after assembly, to be given one coat of primer 2 mils DFT minimum unless it interferes with welding. |
| CAR BODY & UNDERFRAME | Exterior of car to receive one coat of gray water base finish paint, 4 mils dry film thickness per SSPC-PA 2. Additionally, the top surface of the roof will receive 6 mils dry film thickness per SSPC-PA 2. |
| TRUCKS | To receive one, light bodied, coat of black paint at the foundry. |
| LETTERING | White lettering on dark or black surfaces, black lettering on lighter contrasting colors. All lettering except those placed on castings to be decals. Lettering placed on castings will be stenciled. |
| DELINEATORS | The sides consist of yellow retroreflective sheeting to meet the requirements of FRA 49CFR Part 224. The end of car will receive two additional reflective delineators applied to each end. |
| MISCELLANEOUS | Ends of release rod, retainer valve handle, end cock handles, ends of cut lever handles, hand brake release handle and top four links of hand brake chain, in the released position, to be painted white. Cut out cock pull rod handles to be painted orange. Hand brake to be painted with black finish paint from hand brake manufacturer. Top grab iron to be painted yellow. Anti-skid paint to be applied to top surfaces of bottom ladder tread, sill step and sill step tread. Trucks to be removed for blast/paint. |
| WATER TEST | All cars to be water tested for leaks. |

FASTENERS

Location and type of fasteners to be FreightCar America's option.

WELDING

All welds to be in compliance with AWS D15.1, Class 2, unless otherwise specified.

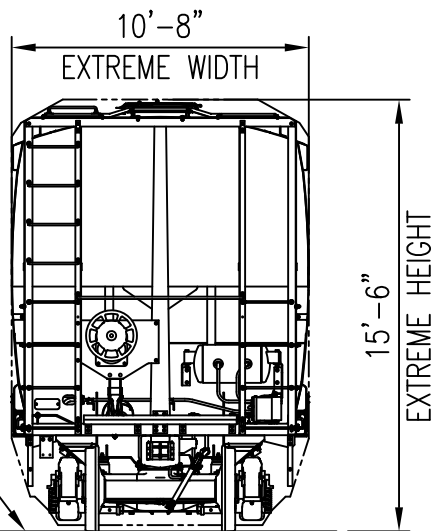
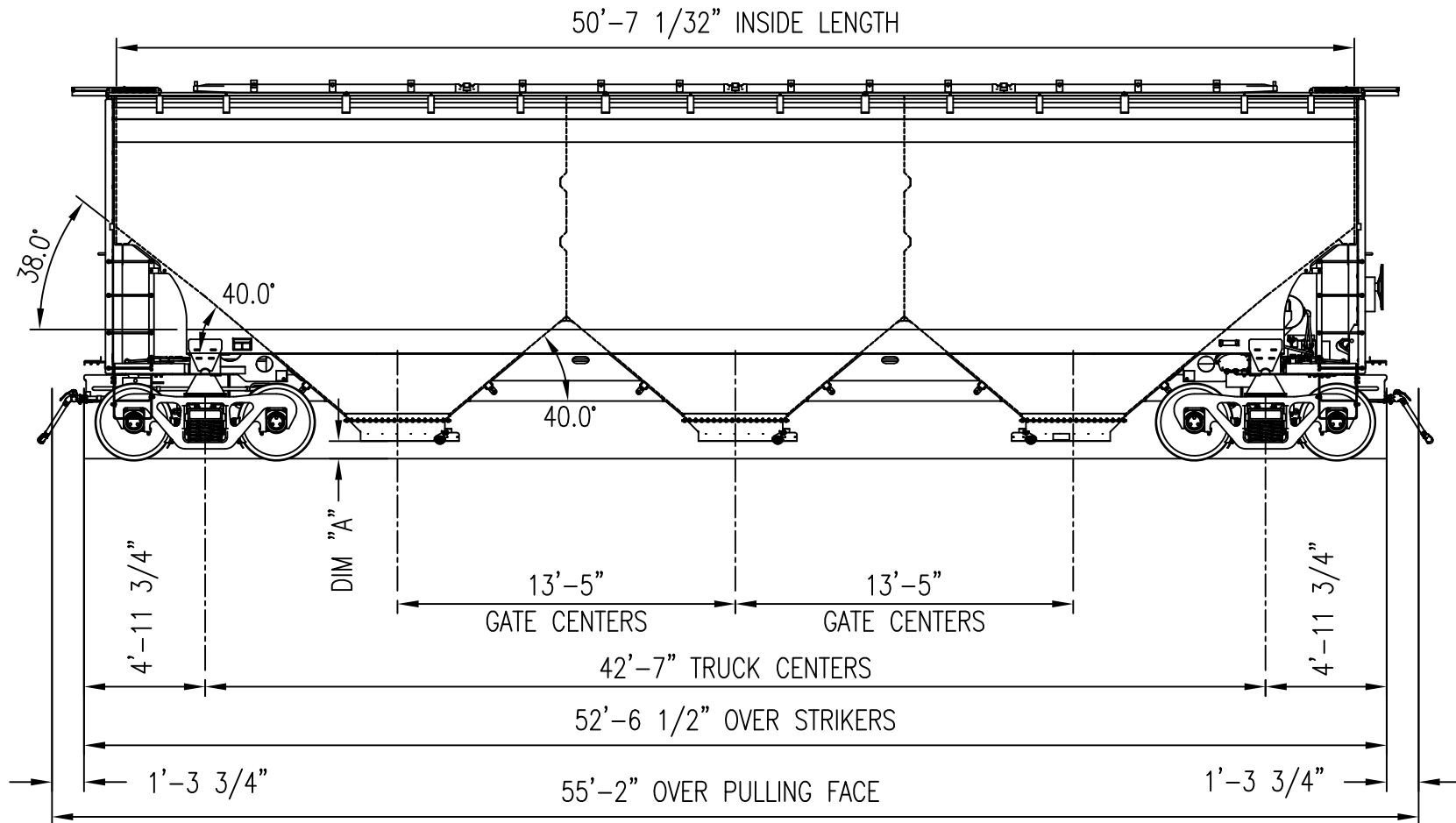
ORDER COMPLETION DATA

At completion of order, the following data will be furnished:

-1 Set of Sample Car Photos – in JPEG Format

-1 "As Built" Specification – in PDF Format

-1 Set of arrangement drawings including (General, Brake, Safety Appliance and Stencil) in PDF Format



OUTLET GATE SIZE & DIM "A"

- 30" X 30" STD HEIGHT GATES DIM "A" = 8 1/4"
- 42" X 42" STD HEIGHT GATES DIM "A" = 8 1/4"
- 30" X 30" LOW PROFILE GATES DIM "A" = 10 3/4"

CUBIC CAPACITY - ESTIMATED
5,450 CU.FT.

ESTIMATED CENTER OF GRAVITY
FOR 286,000 LB. GROSS RAIL LOAD = 93.0"



CURVED SIDED STEEL GRAIN CAR

MARCH 8, 2024

X-24031