

THOMAS F. CAREY CO. INC.

120 LIBERTY STREET

NEW YORK

NO. 692

BALDWIN LOCOMOTIVE WORKS SPECIFICATIONS --- CLASS 12-38 $\frac{1}{4}$ E LOCOMOTIVE

GENERAL DIMENSIONS

GAUGE: 4'8 $\frac{1}{2}$ " FUEL: Soft coal CYLINDERS Simple DIA: 22" STROKE 28"

**Boilers:** DIA. 78" TYPE: Straight top

FIRE BOX: 108-1/8" long, 84" wide

TUBES: NO. 428 DIA. 2" LENGTH: 18'6"

HEATING SURFACE: FIRE BOX: 197 sq. ft.

TUBES 4126 sq. ft.

TOTAL:- 4323

GRATE AREA: 63 sq. ft. RATIO TO HEAT SURFACE: 1: 68.6

WHEEL BASE: DRIVING 14'0" TOTAL ENGINE: 31'3"

WHEEL BASE: Engine and tender: 62'8 $\frac{1}{4}$ "

WEIGHT IN WORKING ORDER: (On drivers, 171,000#  
(On F truck 18,700#  
(On B truck 35,700#  
(Total engine 225,400#  
(Tender about 154,000#

TRACTION POWER: 43,000# RATIO OF ADHESION: 4

WATER CAPACITY: 8000 gals. FUEL CAPACITY: 10 tons

LIMITING CONDITIONS: Grade 5%, curves 26° (288') radius. Rails 90#  
per yd.

TRACTION POWER: Calculated at 85% of working steam pressure.

NOTE: Locomotive class 12-38 $\frac{1}{4}$ E 121-122, road #70-71, as built (1917)

DETAILS OF CONSTRUCTION

BOILER: Center line of boiler 9'1 $\frac{1}{8}$ " above top of rail. Made of plates of homogeneous steel for a pressure of 200# per sq. in., and tested with steam to at least 20# per sq. in. above the boiler pressure and with hot water to 1/3 above the boiler pressure. Safety valves set at 190#, working pressure. Waist 78" dia. at smoke box end, made straight top with one dome placed centrally. Waist plates 3/4" thick. All longitudinal seams butt jointed, double covering strips, sextuple riveted, 90% seam.

DOMES: Of open hearth steel pressed out in one piece or built up with separate top, base and body section. Dome cap of forged steel. Auxiliary dome for safety valves and whistle.

TUBES: Of iron, #12 wire gauge. with copper ferrules and swaged at ends in fire box tube sheet. 428 in number, 2" dia. 18'6" length.

FIREBOX: 10'-1/8" long and 64" wide inside of homogeneous-steel, side sheets 3/8" thick, back sheet 3/8" thick, crown sheet 3/8" thick, flue sheet 1/2" thick. Water space 4" wide and back, 5" front, water space frame double riveted.

FIRE BRICK: Arch supported on studs.

STAY BOLTS: Water space staybolts of iron, screwed and riveted to inside and outside sheets.

CROWN STAYING: Radial staybolts of iron screwed thru crown sheet and roof of fire box.

BOILER COVERING: Boiler and backhead lagged with approved magnesia sectional boiler covering, neatly jacketed with #18 W.G. planished steel and secured by iron bands. Dome lagged with same material as boiler with painted iron casing. Helmet shaped dome and sandbox casings.

BOILER FITTINGS: Whistle: Chime Blow off cocks, two Everlasting, Safety valves 2-3 1/2" Crosby encased. Blower valve, 1 Crosby, brass steam gauge and Klinger glass water gauge with lamps, gauge cocks. American Steam Gauge & Valve Co.'s chime whistle.

FEEDWATER: Supplied by 2 Hancock type A #11 injectors.

SUPERHEATER: None. Enameled pressed steel collars riveted to jacket around cleaning holes.

CLEANING HOLES: Located where necessary for proper cleaning of boiler. Fusible plug located in crown sheet and 1 spare fusible plug furnished extra.

STEAM PIPES: Of iron in smoke box. Dry pipe of steel, inside boiler.

THROTTLE VALVE: Balance poppet throttle valve of cast iron in vertical arm of dry pipe.

GRATES: Rocking bars and drop plate.

ASH PAN: With dampers suitably located right and left.

SMOKE STACK: Straight stack.

SMOKE BOX: Extended smoke box with nesting 1/4" screen mesh, deflecting plates and spark hopper.

CYLINDERS: Close grained iron as hard as can be worked. High pressure cylinders 22" dia. and 28" stroke.

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CYLINDER HEADS: Of cast iron at front and of cast steel at rear, nearly covered.

STEAM VALVES: Balanced with vacuum valves type operating in suitable steam chests.

CYLINDER COVERING: Lagged with same material as boiler and neatly faced with painted iron.

LUBRICATOR: Detroit Triple Bulls Eye #22 automatic sightfeed lubricator, placed in cab and connected to steam chests by suitable pipes of copper outside of jacket.

PISTONS: Heads of cast iron fitted with approved form of steam packing. Piston rods of steel, ground and keyed to crossheads and securely fastened to piston heads.

PACKING: Metallic packing for piston rods and valve stems. U. S. King type.

GUIDES: Of steel fitted to guide yokes of mild wrought steel or cast steel. Needle oil cups.

CROSSHEAD: Of cast steel with suitable tinned bearings. Alligator type.

VALVE MOTION: Walscherts graduated to cut off equally at all points of stroke.

DRIVING WHEELS: Eight in number, 51" dia. Centers of cast steel turned to 45" dia. Driving wheel hub liners of brass.

TIRES: Of steel, 3" thick when finished; front and rear pairs flanged  $5\frac{1}{2}$ " wide, intermediate pairs plain  $6\frac{1}{2}$ " wide.

DRIVING AXLES: Hammered steel, journals main  $9\frac{1}{2}$ " dia. 12" long. Others 9" dia. and 12" long.

DRIVING BOXES: Cast steel with bronze bearings. Equalizing beams of wrought or cast steel.

RODS: Connecting and parallel rods of hammered steel, connecting rods forged solid and furnished with all necessary straps, keys and brasses. Parallel rods with solid ends and heavy bronze bushings put in by hydraulic pressure and well secured from turning in rod. Grease cups on rods.

WRIST PINS: Steel.

FRONT ENGINE TRUCK: Two wheeled truck. Truck frame of wrought steel or cast steel well braced fitted with swing bolster with center bearing.

WHEELS: Rolled steel 30" dia.

AXLES: Of hammered steel with journals 6" dia. and 10" long. Boxes of cast steel with bronze bearings. Wheel rims  $2\frac{1}{2}$ " thick. Hub liners of brass.

BACK ENGINE TRUCK: Two wheeled truck, Hodges outside bearing type. Truck frame of wrought steel or cast steel well braced, fitted with radiating mechanism.

WHEELS: Cast iron spoke center steel tired wheels, 36" dia.

AXLES: Of hammered steel with journals 2 8" dia. 14" long. Boxes of cast steel with bronze bearings. Hub liners of brass.

ENGINE SPRINGS: Steel tempered in oil.

FRAMES: Of cast steel securely braced and provided with front and back lugs for cylinder connections and with pedestal caps fitted and bolted to bottom of pedestal.

GIBS AND WEDGES: Of cast iron.

PILLOT: Steps on pilot

BUMPERS: Front of wood. Back of bar steel.

CAB: Substantially built of steel well finished and substantially put together. Crystal plate glass windows. Steam turret in cab. Gong in cab. Cab roof extended for protection of firemen. Ventilator in cab roof. Hand rails protection of firemen. Ventilator in cab roof. Hand rails of iron. Running boards of steel. Cab boards of steel.

FIXTURES: Engine furnished with two sand boxes, bell and cord. Two traversing jacks with ratchet heads.

HEADLIGHT: Two 18" round case headlights, fitted with Pyle Natl. incandescant electric equipment with headlights arranged so that either one or the other, or both headlights can be lighted at the same time.

POWER BR. KIT: Westinghouse American outside equalized combined automatic and straight air brakes, schedules #6-ET WN-2 and 1412 applied to all driving and tender wheels with train connections front and rear. One  $8\frac{3}{4}$ " cross compound air pump. American Steam Gauge & Valve Co's. brake gauge. Brake apparatus approved by the Westinghouse Air Brake Co.

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COUPLERS: MCB automatic couplers with slotted knuckles,  $34\frac{1}{2}$ " center above top of rail on engine and tender.

SANDER: Beach trap 4-1 air sanders to sand front of forward and back of rear drivers.

STEAM HEAT: None.

#### TENDER

FRAME: Substantially built of 12" steel channels.

TANK: Of steel strongly put together with angle iron corners and well braced. Capacity (water) 8000 gal. (231 cu.in.)

FUEL CAPACITY: 10 tons, tank to be U shape straight top, 4mc design.

TRUCKS: Two four wheeled center bearing trucks made with steel side bars and cross beams of steel channels. Arch bar trucks, steel bolsters, truck channel bars laid flat. Additional bearings at sides of back truck.

SPRINGS: Steel tempered in oil. Elliptic.

WHEELS: Rolled steel wheels 33" dia. Brakes on all wheels.

AXLES: Hammered steel outside journals  $5\frac{1}{2}$ " dia. 10" long, oil tight boxes with bronze bearings. Rims of wheels  $2\frac{1}{2}$ " thick.

TOOL BOXES: Of steel fitted with locks and keys.

DETAILS: Tank cock and hose. Floor of tank flanged up and made of not less than  $\frac{3}{8}$ " plate. Pilot of iron at rear of tender. Miner --18 draft gear having a two part cast steel yoke and key connection to coupler. Tender floor of steel.

#### TUBES

Tubes projected through front tube sheet and a uniform distance  $1\frac{1}{2}$ ".

STAYBOLTS: Tate flexible staybolts 5- 425 in number located in breaking zone. Water space stays projected thru sheets  $\frac{5}{16}$ " for riveting.

INJECTORS: ETC: Hancock swing line injector checks. Injector steam check and feed pipes of copper; overflow pipes of iron. Brace tee on each injector feed pipe about 12" back of check with opening full size of pipe, fitted with bronze screw plug standard pipe thread looking away from the boiler.