

The Baldwin Locomotive Works Philadelphia

Eddystone, Penna.
September 1, 1943

District Transportation Office,
U. S. Army,
Supply Branch,
208 James Street,
Textile Tower Building,
Room 805,
Seattle 1, Washington

Att: Lt. Col. Donald M. Jacques

Gentlemen:

Contract W-2789-tc-430
S. O. 42305

Pursuant to instructions embodied in Major Stanley
H. Butler's letter of August 24, Reference "SPTSY-RS-095, Baldwin
Loco. Works", copy of which was sent to you direct from Cincinnati,
we are sending you under separate cover today one set of blueprints
covering Locomotives 2-8-0 19 S 476 through 479, Road Nos. 2379
through 2382 for transmittal to Colonel Olsen at Anchorage, Alaska.

Together with the present, we are sending you one copy
of "As-Built" Specification for these locomotives.

Very truly yours,

C. G. Finney
C. G. Finney,
Foreign Sales Manager.

CCP:MMH

Encl.

to Mr. Olsen
Atk. Alaska Railway Co.
Hq. A. S. S.
Anchorage, Alaska.

92-5-503 9/2/43

DR 138

IND. AS BUILT

FILE TC:a

THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA July 20, 1943

Class 2-8-0, 19 S SPECIFICATION No. 43-F-19

Of a 2-8-0 Type Locomotive Engine having four pairs of coupled wheels, and a two-wheeled truck at front.

For UNITED STATES GOVERNMENT - WAR DEPARTMENT

This specification may be designated in cabling by code word LIFADUZXAF

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|-----------------------|---------|-------------|-----------|------|--|--|---------|--------|------|----|-------------|----|------|--|-------------------|----|-----------------------|-----|------|--|--|--|----------------------|--|--|----|-----|---|------|--|-----------|--|--|----|-----|---|------|--|------------------|--|--|----|-----|---|------|--|---------------------|--|--|----|-----|-------|------|--|--------|------------|--|---------|------|--|--|--|-------------|-------------|--|--------|------|--|--|--|-------------|-------------|--|------|------|--|--|--|---------------|--------------|--|---------|------|--|--|--|---------------|--------------|--|---------|------|--|--|--|--|--------|--|---------|------|--|--|--|--|-----------|--|--------|------|--|--|--|----------------|-------|---------|--|--|--|--|--|---------------|----|------|--|--|--|--|--|--|------------------------|--|-------------------|---------------------------|----------|-----------------------------------|---------------|---------------|------------|----------------------------------|-------------------------------|--|----------|-------------|--------------------|-----|------------------|------|---------|-----|-------------|-----|----------|--------|--------------|-------|-------|--------------|------------|---|----------------------|-------------|--|-------------|-------------------|-----|------------------------|-----------|
| <table border="0"> <tr> <td>Gauge</td> <td>4</td> <td>Boiler</td> <td>8-1/2</td> <td>Ins. Fuel</td> <td>Coal</td> <td></td> <td></td> </tr> <tr> <td>Boilers</td> <td>Simple</td> <td>Dia.</td> <td>19</td> <td>Ins. Stroke</td> <td>26</td> <td>Ins.</td> <td></td> </tr> <tr> <td>Revolving, Blower</td> <td>57</td> <td>Ins. Working Pressure</td> <td>225</td> <td>Lbs.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Wheel Base, For Ins.</td> <td></td> <td></td> <td>15</td> <td>Ft.</td> <td>6</td> <td>Ins.</td> <td></td> </tr> <tr> <td>" " Right</td> <td></td> <td></td> <td>15</td> <td>Ft.</td> <td>6</td> <td>Ins.</td> <td></td> </tr> <tr> <td>" " Total Engine</td> <td></td> <td></td> <td>23</td> <td>Ft.</td> <td>3</td> <td>Ins.</td> <td></td> </tr> <tr> <td>" " Engine & Tender</td> <td></td> <td></td> <td>51</td> <td>Ft.</td> <td>7-3/4</td> <td>Ins.</td> <td></td> </tr> <tr> <td>Weight</td> <td>on Drivers</td> <td></td> <td>141,000</td> <td>Lbs.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>" " " " " "</td> <td>on F. Truck</td> <td></td> <td>21,500</td> <td>Lbs.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>" " " " " "</td> <td>on B. Truck</td> <td></td> <td>----</td> <td>Lbs.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Working Order</td> <td>Total Engine</td> <td></td> <td>162,500</td> <td>Lbs.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(Approximate)</td> <td>Engine Light</td> <td></td> <td>147,100</td> <td>Lbs.</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Tender</td> <td></td> <td>126,450</td> <td>Lbs.</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>" " Light</td> <td></td> <td>39,400</td> <td>Lbs.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Water Capacity</td> <td>6,500</td> <td>Gallons</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Fuel Capacity</td> <td>10</td> <td>Tons</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> | Gauge | 4 | Boiler | 8-1/2 | Ins. Fuel | Coal | | | Boilers | Simple | Dia. | 19 | Ins. Stroke | 26 | Ins. | | Revolving, Blower | 57 | Ins. Working Pressure | 225 | Lbs. | | | | Wheel Base, For Ins. | | | 15 | Ft. | 6 | Ins. | | " " Right | | | 15 | Ft. | 6 | Ins. | | " " Total Engine | | | 23 | Ft. | 3 | Ins. | | " " Engine & Tender | | | 51 | Ft. | 7-3/4 | Ins. | | Weight | on Drivers | | 141,000 | Lbs. | | | | " " " " " " | on F. Truck | | 21,500 | Lbs. | | | | " " " " " " | on B. Truck | | ---- | Lbs. | | | | Working Order | Total Engine | | 162,500 | Lbs. | | | | (Approximate) | Engine Light | | 147,100 | Lbs. | | | | | Tender | | 126,450 | Lbs. | | | | | " " Light | | 39,400 | Lbs. | | | | Water Capacity | 6,500 | Gallons | | | | | | Fuel Capacity | 10 | Tons | | | | | | <table border="0"> <tr> <td colspan="2">O.S. at Largest Course</td> </tr> <tr> <td>Boiler, Diameter,</td> <td>70 Ins. Type Straight Top</td> </tr> <tr> <td>Fire Box</td> <td>84-1/8 Ins. Long 70-1/4 Ins. Wide</td> </tr> <tr> <td> Tubes No. 150</td> <td> Dia. 2 Ins.)</td> </tr> <tr> <td> Flues " 30</td> <td> "5-3/8" ") Length 13 Ft. 6 Ins.</td> </tr> <tr> <td colspan="2">Heating Surface (approximate)</td> </tr> <tr> <td>Fire Box</td> <td>128 Sq. Ft.</td> </tr> <tr> <td>Combustion Chamber</td> <td>---</td> </tr> <tr> <td>Fire Brick Tubes</td> <td>15 "</td> </tr> <tr> <td>Syphons</td> <td>---</td> </tr> <tr> <td>Circulators</td> <td>---</td> </tr> <tr> <td>2" Tubes</td> <td>1055 "</td> </tr> <tr> <td>5-3/8" Flues</td> <td>567 "</td> </tr> <tr> <td>Total</td> <td>1765 Sq. Ft.</td> </tr> <tr> <td>Grate Area</td> <td>41 Sq. Ft. Ratio to Heat. Surf. 1 to 43</td> </tr> <tr> <td>Superheating Surface</td> <td>471 Sq. Ft.</td> </tr> <tr> <td>Tractive Power (at .85 working pressure)</td> <td>31,500 Lbs.</td> </tr> <tr> <td>Ratio of Adhesion</td> <td>4.4</td> </tr> <tr> <td>Booster Starting Power</td> <td>---- Lbs.</td> </tr> </table> | O.S. at Largest Course | | Boiler, Diameter, | 70 Ins. Type Straight Top | Fire Box | 84-1/8 Ins. Long 70-1/4 Ins. Wide | Tubes No. 150 | Dia. 2 Ins.) | Flues " 30 | "5-3/8" ") Length 13 Ft. 6 Ins. | Heating Surface (approximate) | | Fire Box | 128 Sq. Ft. | Combustion Chamber | --- | Fire Brick Tubes | 15 " | Syphons | --- | Circulators | --- | 2" Tubes | 1055 " | 5-3/8" Flues | 567 " | Total | 1765 Sq. Ft. | Grate Area | 41 Sq. Ft. Ratio to Heat. Surf. 1 to 43 | Superheating Surface | 471 Sq. Ft. | Tractive Power (at .85 working pressure) | 31,500 Lbs. | Ratio of Adhesion | 4.4 | Booster Starting Power | ---- Lbs. |
| Gauge | 4 | Boiler | 8-1/2 | Ins. Fuel | Coal | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Boilers | Simple | Dia. | 19 | Ins. Stroke | 26 | Ins. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Revolving, Blower | 57 | Ins. Working Pressure | 225 | Lbs. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Wheel Base, For Ins. | | | 15 | Ft. | 6 | Ins. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " " Right | | | 15 | Ft. | 6 | Ins. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " " Total Engine | | | 23 | Ft. | 3 | Ins. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " " Engine & Tender | | | 51 | Ft. | 7-3/4 | Ins. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Weight | on Drivers | | 141,000 | Lbs. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " " " " " " | on F. Truck | | 21,500 | Lbs. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " " " " " " | on B. Truck | | ---- | Lbs. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Working Order | Total Engine | | 162,500 | Lbs. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Approximate) | Engine Light | | 147,100 | Lbs. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Tender | | 126,450 | Lbs. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | " " Light | | 39,400 | Lbs. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Water Capacity | 6,500 | Gallons | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fuel Capacity | 10 | Tons | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| O.S. at Largest Course | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Boiler, Diameter, | 70 Ins. Type Straight Top | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fire Box | 84-1/8 Ins. Long 70-1/4 Ins. Wide | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tubes No. 150 | Dia. 2 Ins.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flues " 30 | "5-3/8" ") Length 13 Ft. 6 Ins. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Heating Surface (approximate) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fire Box | 128 Sq. Ft. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Combustion Chamber | --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fire Brick Tubes | 15 " | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Syphons | --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Circulators | --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2" Tubes | 1055 " | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5-3/8" Flues | 567 " | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 1765 Sq. Ft. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Grate Area | 41 Sq. Ft. Ratio to Heat. Surf. 1 to 43 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Superheating Surface | 471 Sq. Ft. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tractive Power (at .85 working pressure) | 31,500 Lbs. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ratio of Adhesion | 4.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Booster Starting Power | ---- Lbs. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

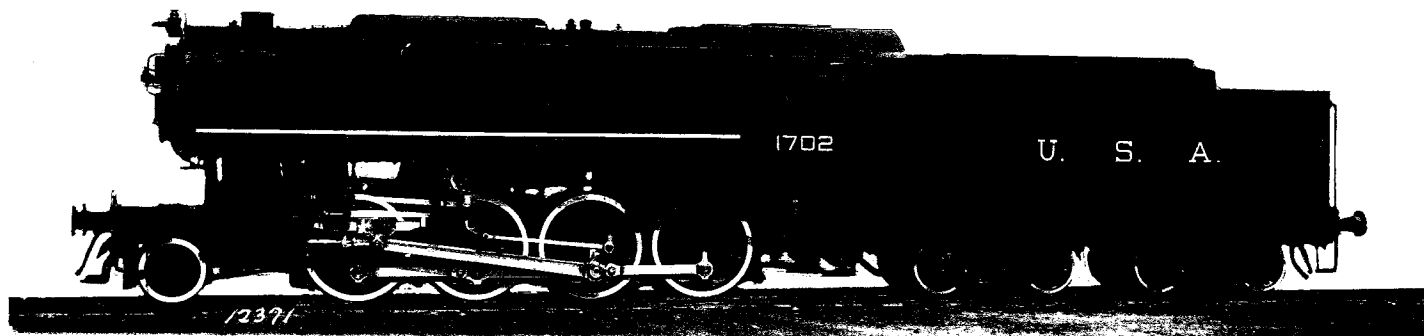
Limiting Height (See Supplement) Width (See Supplement)

Conditions Curves 25 degrees

Maximum Grade 2%

NOTE: Locomotives, Baldwin Class 2-8-0, 19 S 476 to 479, as built in 1943.

Typically illustrated by Photograph 12371, except to have Automatic Couplers, Pilot, Electric Headlight and Bell.



DETAILS OF CONSTRUCTION

BOILER
(See Supp)

Made of plates of homogeneous **basic** steel for a pressure of **225** lbs. per square inch, and tested with steam to at least 20 lbs. per square inch above the boiler pressure, and with hot water to one-third above the boiler pressure.
Waist **68-3/4** inches in diameter ^{outside} at smoke box end. **70"** O.S. dia. at largest course.
Waist plates **5/8"** thick.
All longitudinal seams, butt jointed, double covering strips. **Front tube sheet 9/16"** thick.

Dome
(See Supp)

Of open-hearth steel, pressed out in one piece. Dome cap of forged steel.
Auxiliary dome **None**.

Tubes (See Supp)
Flues (See Supp)

Of **steel** No. **12** B. wire gauge, minimum.
Of **steel** No. **9** B. wire gauge, minimum.
with copper ferrules, swaged at ends in firebox tube sheet, and welded.
150 in number **2** inches in diameter, } and **13** feet **6** inches in length
30 in number **5-3/8** inches in diameter, }

Comb. Chamber
Fire Box
(See Supp)

None.
84-1/8 inches long and **70-1/4** inches wide inside, of homogeneous ^{basic} steel, side sheets **3/8** inch thick, crown sheet **3/8** inch thick, back sheet **3/8** inch thick, flue sheet **1/2** inch thick. Crown and side sheets in **one** piece.

Fire Door
Water Space (See Supp)

Operated by **air**, with foot pedal. **Franklin fire door**. (See Supplement)
4 inches front, **3-1/2** inches sides and back. Water space frame ^{electric welded} **single riveted** and,

Cleaning Holes
(See Supp)

Located where necessary for proper cleaning of boiler. **Two** Fusible plugs located in crown sheet. Steel collars riveted to jacket around cleaning holes.

Fire Brick Arch
Stay Bolts
Crown Staying
Flexible Bolts

Supported on three 3" O.D. #7 BWG hot-rolled seamless steel tubes.
Water space stay bolts of iron, screwed and riveted to inside and outside sheets. (See Supplement)
Radial stay bolts of iron, screwed through crown sheet and roof of fire box. (See Supplement)
(See Supplement)

Boiler Covering
(See Supp)

Boiler and backhead lagged with ^{85%} sectional magnesia boiler covering, neatly jacketed with **#22 gauge sheet steel**, and secured by steel bands.

Boiler Fittings
(See Supp)

Whistle **Nathan 5" dia** Blow-off cock **Okadee 2"** Blower valve (See Supp)

Injector
(See Supp)

Safety valves **Two Coale 3"**, one muffled type set to open at **225 lbs.** and one open type set to open at **228 lbs.**
Steam gauge (See Supp), Glass water gauge **Nathan BX-5 type**, with ^{electric} lamps, gauge cocks.
Two Nathan injectors, non-lifting type, each having a minimum capacity of **3,200 gallons per hour** with feed water at **70° F.**, and of **2,133 gallons per hour** with feed water at **135° F.** at boiler operating pressure.

~~Fire Water Header~~

Steam Pipes
Throttle Valve
Grates
~~Stack~~

Of **cast iron** ~~inside~~ outside. (See Supplement)
Balanced throttle valve located **in dome**.
Hulson removable finger, rocking type grates, arranged to operate from the cab, in two sections.

Smoke Stack (See Supp)
Smoke Box
(See Supp)

Of **steel plate with welded collar**, and extended into smokebox, suitable for either coal or oil burning.
Extended smoke box, with single high exhaust.

Superheater

Superheater Company's type **"A"** located in **5-3/8"** flues, connecting to top header in smokebox and with outside steam pipe connections to valve chambers. Superheater units to have forged return bends, and **Tee-bolt header**.
Superheater units of hot-rolled seamless steel.

CYLINDERS
(See Supp)

Of **cast iron**.
Cylinders 19 inches diameter and 26 inches stroke.

~~Cylinders~~ and valve chambers bushed. (See Supplement)

Cylinder Heads

Front, cast **iron**; back, cast **iron** (See Supplement), neatly covered.

Main Valves

Type **Piston valves**, 10" diam., light type with "L" shaped cast iron packing ^{rings.}

Cylinder Cocks

Prime; hand-operated.

Cylinder Covering

Cylinders lagged with same material as boiler and neatly cased with painted steel.

Lubricator

Two **Nathan eight-feed mechanical lubricators**; one on each rear steam chest head.

(See Supp)

Pistons

Heads of **cast iron**, ^{type} **rectangular** box, fitted with cast iron packing rings.

(See Supp)

Piston rods of ^{O.H.} steel, ground and keyed to crossheads, and securely fastened to piston heads.

Packing

For piston rods and valve stems, **Paxton-Mitchell metallic** with oil cups and swab holders.

Guides (See Supp)

Of ~~cast~~ forged **O.H. steel**, finished all over and ground smooth with wearing edges rounded.

Crosshead

Of cast steel, **Laird type** with ~~bearing~~ **cast iron gibs**, babbitted, and **hard bronze side liners**.

(See Supp)

Valve Motion

Walschaert graduated to cut off equally at all points of stroke. (See Supplement)

Reverse Gear

Baldwin type "GM" air operated power reverse gear.

DRIVING (See WHEELS Supp)

EIGHT in number, 57 inches in diameter. Centers of cast steel, turned to 51 inches diameter. Tires held by **shrinkage and lip**.

Tires (See Supp)

Of steel, 3 inches thick when finished: **All** pairs flanged 5-1/2 inches wide, ~~type---plain---~~ ~~inches---wide---~~

Driving Axles

Of hammered ^{O.H.} steel, journals { main 8 inches diameter and 11 inches long. others 8 inches diameter and 11 inches long.

(See Supp)

Driving Boxes

Of **cast steel**, with bronze bearings. **Driving boxes arranged for oil lubrication.** Equalizing beams of wrought steel or cast steel.

(See Supp)

Rods

Connecting and Parallel rods of hammered ^{O.H.} steel. Connecting rods forged solid; ~~front end furnished with necessary keys and bushes.~~ ^{Front and} Back end of main rod and the parallel rods to have solid ends and heavy bronze bushings, put in by hydraulic pressure and well secured from turning in rod.

(See Supp)

Grease cups ~~on~~ on connecting rods, **except at knuckle pins.**

Wrist Pins

Of ~~cast~~ forged **O.H. steel**. **Main crank pin hollow-bored with 2" hole.**

(See Supp)

FRONT ENGINE TRUCK

T W O wheeled truck (See Supplement)
Truck frame of **cast** steel, well braced, fitted with swing bolster, with center bearing.

Wheels

Rolled steel wheels 33 inches diameter.

Axles

Of hammered ^{O.H.} steel, with journals 6 inches in diameter and 10 inches long.

Boxes of cast **iron**, with bronze bearings, **lined with Satco metal.** (See Supplement)
Front truck wheel rims 2-1/2" thick x 5-1/2" wide.

BACK ENGINE TRUCK

N O N E wheeled truck
Truck frame of steel, well braced, fitted with swing bolster, with bearing.

Wheels

wheels inches diameter.

Axles

Of hammered steel, with journals inches in diameter and inches long.

Boxes of cast , with bronze bearings.

BOOSTER

N O N E

| | |
|-------------------------|---|
| Engine Springs | Of steel, tempered in oil. Standard Steel Works' make. |
| FRAMES (See Supp) | Of cast steel, securely braced and provided with pedestal caps fitted and bolted to bottom of pedestal. |
| Gibs and Wedges | Of cast iron. |
| PILOT | Of steel, short type, with steps on both sides. |
| Bumpers | Front, of steel plate. Back, cast steel foot plate. |
| Buffer | Spring type buffer. |
| Draw Bar | Single draw bar, with safety chains. |
| CAB (See Supp) | Of steel, #12 U.S. gauge. Cab roof lined with wood. |
| | Hand rails of steel. (See Supplement) |
| | Running boards of steel. (See Supplement) Cab boards of ^{3/16" plate} steel, covered with wood. |
| Bell | With; hand operated. |
| Sand Box and Sander | Pressed steel sand box applied on top of boiler with air operated Graham-White sander valves, and piping arranged to supply sand front of front drivers and rear of third drivers. Sand box combined with dome casing. |
| Headlight | One 14" round case headlight, fitted with Pyle-National Type K-240 incandescent electric equipment, at front of engine. |
| Power Brake | Westinghouse-American outside equalized, combined automatic and straight air brake, Schedule 6-ET, N-140-81, and 1212, on all driving and tender wheels, with train connections front and back. One 9-1/2" air pump. |
| Couplers | A.A.R. standard coupler, 6" x 8", top operating, from National Malleable & Steel Castings Company. Coupler 33-1/2" center above top of rail. |
| Steam Heat | Gold steam heat equipment applied, with connections front and back. Steam heat line 2". |
| Wearing Bearings | Magnus Metal Corporation. |
| Material Specifications | (See Supplement) |

TENDER

Wheel base of tender 16' 10"

Frame (See Supp) Substantially built of cast steel, strongly braced

Bumpers Of cast steel, integral with frame.

Tank (See Supp) Of steel, riveted and well braced.
Water capacity 6500 gallons of (231 cubic inches). Fuel capacity 10 tons.
Shape of tank Rectangular "U" shaped water bottom.

Trucks Two four-wheeled center bearing trucks, with cast steel side frames, with boxes cast integral. Trucks A.A.R. spring plankless quick-wheel-change type.
Wheel base of truck 5' 6"

Bolsters Bolsters of cast steel.

Springs Additional bearings at sides of both trucks
Of steel, tempered in oil. Standard Steel Works' make.

Wheels Chilled cast iron, 650# wheels 33 inches diameter.
Brakes on all wheels. (See Supplement)

Axles (See Supp) Of hammered ^{O.H.} steel, outside journals, 5 inches diameter and 9 inches long.
Oil tight boxes, with bronze bearings.

Tool Boxes Of steel, fitted with locks and keys, applied on top of tank back of coal board.

Coupler A.A.R. standard coupler, 6" x 8", top operating, from National Malleable & Steel Castings Company. Coupler 33" center above top of rail.

Draft Gear None.

Floor Of wood.

(SEE SUPPLEMENT)

THE BALDWIN LOCOMOTIVE WORKS

SUPPLEMENT TO SPECIFICATION No. 43-F-19

CLASS 2-8-0, 19 S

FOR UNITED STATES GOVERNMENT - WAR DEPARTMENT

GENERAL

Locomotives shall be suitable for satisfactory road operation at any speed up to 40 miles per hour, and any grade up to 2%, and on 25° curve. The general design shall be such as to produce a workmanlike, practical and satisfactory locomotive without novel or untried devices, and with a minimum of critical raw materials. Locomotives shall be constructed to permit conversion between coal burning and oil burning, with a minimum of work. All parts shall be readily accessible for inspection and maintenance without removal of major parts. Suitable provision shall be made to screen fire glare. Tapered fitted bolts shall be taper 1/16" in 12", fitted to gauges having a small diameter equal to the nominal diameter of the bolt, and of lengths in multiples of 3" with 3/8" to 1/2" allowance for driving. All finished removable nuts shall be case-hardened. Boiler studs shall have a minimum diameter of 5/8" and tapered 3/4" in 12" in the boiler shell. The equipment supplied under this specification shall be new and unused and shall be in regular production. All locomotives constructed under this specification are of approved design and interchangeable in whole and in part.

DESIGN

All boilers will be built suitable for using either oil or coal as fuel, which will necessitate the application of arch tubes, hollow staybolts where required, also providing studs in the bottom of firebox ring which will be suitable for the attachment of either the oil or coal pans. Front bumper shall be of steel plate suitable for application of center buffers, automatic couplers, or hook and link couplings with side buffers with coupler heights from 34" to 42" above top of rail.

WEIGHTS

The load on the driving axles shall be distributed so as not to exceed 36,000 lbs. on the rail at any axle and the total weight on drivers shall not exceed 143,000 lbs.

CLEARANCES

7" Clearance above rail for a distance of 1' 7-11/16" each side of center.

I. C. C. REQUIREMENTS

Locomotives to meet I. C. C. Requirements.

ACTUAL DIMENSIONS OF LOCOMOTIVE

Extreme height over all, 12' 10-1/2".
Extreme width, cab boards, 8' 8-1/2".
Extreme width, valve motion, 9' 0".
Length outside face front bumper of engine to face of tender wedge, 32' 10".
Length face of tender wedge to outside face back bumper of tender, 24' 8-1/4".
Length outside face front bumper of engine to outside face back bumper of tender, 57' 6-1/4".

MATERIAL AND WORKMANSHIP

The materials for each part of the locomotive shall be as specified herein. Where a definite material is not specified, the material used shall be of the best quality normally used for the purpose in good commercial practice, and shall be in accordance with American Society of Mechanical Engineers Specifications, and Association of American Railroads Rules and Recommendations that are applicable.

(Continued)

THE BALDWIN LOCOMOTIVE WORKS

SUPPLEMENT TO SPECIFICATION No. 43-F-19

CLASS 2-8-0. 19 S

FOR UNITED STATES GOVERNMENT - WAR DEPARTMENT

MATERIAL AND
WORKMANSHIP
(Continued)

All parts of these locomotives manufactured and finished in a thoroughly workmanlike manner. All dimensions held as close as is consistent with good shop practice. All flanging done by pressure over dies to insure uniform size. All fits, workmanship and design in accordance with A.A.R. recommended practice as are applicable. Parts subject to renewal so designed and constructed that replacement parts will be interchangeable. Specialties and appliances applied in accordance with the recommendations or instructions of their respective manufacturers.

BOLTS, NUTS AND
THREADS, ETC.

Unless otherwise specified, one heavy nut and one jam nut applied for securing the parts noted in the following list:

ENGINE

Brake cylinders to cylinder support
Brake rod supports to frame pedestal cap.
Buffer to foot plate of back bumper.
Bumper step to bumper.
Engine steps.
Cab handles.
Grab irons or hand holds.
Injectors to bracket.
Injector bracket to support.
Pilot to bumper.
Pilot brace to bracket.
Pipe brackets to support.
Pipe clamps.
Runboard to running board bracket or support.
Equalizing beam fulcrums to cylinder.
Engine truck (front).
Pedestal caps to frame.
Air pump to bracket or support.

TENDER

Pipe clamps.
Brake cylinder to cylinder support.
Cab apron.
Flexible joint supports.
Spring buffer to rear bumper.

Two American Standard heavy semi-finished hexagon nuts shall be used. Double nuts NOT to be applied on studs in the pressure section of the boiler. Bolt threads to be American (National). Pipe threads American Standard.

PIPES AND FITTINGS

All small pipes outside of cab ordinarily made of copper to be seamless steel tubing. Copper pipes used where required inside of cab.

THE BALDWIN LOCOMOTIVE WORKS

SUPPLEMENT TO SPECIFICATION No. 43-F-19

CLASS 2-8-0. 19 S

FOR UNITED STATES GOVERNMENT - WAR DEPARTMENT

TOOLS AND TOOL BOXES

The following tools furnished with each locomotive:

- 1 Bar, pinch, 1" x 36"
- 1 Broom, corn
- 1 Bucket, G.I.
- 1 Bucket, sponge
- 1 Can, oil, 1-gal.
- 1 Can, oil, 5-pt.
- 1 Chisel, cold, 3/4" octagon
- 1 Crowbar
- 1 Filler, lamp, 1-pt.
- 2 Flags, railway signal, green
- 2 Flags, railway signal, red
- 1 Hook, packing
- 1 Iron, packing
- 1 Oiler, pump
- 1 Pr. Rerailers, 75# rail
- 1 Screw driver, heavy duty handle
- 2 Torches, engineer
- 1 Lb. Waste, cotton
- 1 Set of wrenches, for all removable nuts on the locomotive
- 1 Wrench, monkey, 12" with steel handle (or 15", alternate)
- 1 Wrench, monkey, 21"
- 1 Wrench, pipe, adjustable, 10"
- 1 Wrench, pipe, adjustable, 18"
- 1 Spanner wrench
- 1 Bar, -shaker, grate
- 1 Bar, slice
- 1 Pick, coal
- 1 Poker
- 1 Shovel, scoop

Suitable tool boxes provided in the cab and on the tender tank in back of coal board, provided with hasps and padlocks with keys. Rerailers shall be hung under the tender frame.

PAINTING, LETTERING, NUMBERING, ETC.

Locomotives finished in accordance with best commercial practice. All surface except smokebox and stack, suitably primed. Interior surface of water tank and exterior surface of boiler to receive one coat of red lead. The prime coat of red lead to be applied to outside of boiler after testing. The prime coat of red lead to be applied to inside of tank and tank angles and tees before these are applied. After cleaning and before being put in place, the inside of boiler jacket, casing and cylinder jackets given one coat of red lead primer. Smoke box and stack given two coats heat resistant black and one coat of lusterless black enamel. Interior surfaces in the cab shall receive two (2) coats, and exterior surfaces shall receive three (3) coats of paint as follows:

1. Black - All exterior surfaces, except finished parts; last coat to be lusterless.
2. Green - Inside of cab and cab fittings.
3. Black, Heat Resistant - Smokebox and stack.
4. Finished Parts - Pins, piston rods, guides and all finished parts shall be slushed with 50% white lead, 50% tallow compound (rust-resisting compound).

(Continued)

THE BALDWIN LOCOMOTIVE WORKS

SUPPLEMENT TO SPECIFICATION No. 43-F-19

CLASS 2-8-0. 19 S

FOR UNITED STATES GOVERNMENT - WAR DEPARTMENT

PAINTING, LETTERING,
NUMBERING, ETC.
(Continued)

Road number stencilled with grey paint in Gothic figures 7" high on each side of cab and rear of tender.

The letters U. S. A. stencilled with grey paint in Gothic caps 9" high on each side of tender.

Name Plate: Each locomotive provided with a name plate, permanently attached to the right side of the smokebox, of cast iron:

Transportation Corps

U. S. Army

2333

Specification No. T-1569

W-2789-TC-430

Manufactured by

The Baldwin Locomotive Works

*No. _____ February 1943**

* Manufacturer's Serial Number

** Approximate date of manufacture (month and year only)

Locomotive provided with one cast iron Builder's plate applied to left side of smoke box, bearing B.L.W. Construction Number, date of manufacture and the name of manufacturer.

Each specialty and appliance shall carry the manufacturer's serial number, and such other pertinent information usually furnished by the manufacturer for identification.

Letters and numbers to be stencilled with grey paint, conforming to U. S. Army Q.M.C. Tentative Specification HQD-ES-680, Class 9 Grey, and should match the Color Plate 44-A-5, Page 111, in the Dictionary of Color by Maerz & Paul. Road Numbers, 2379 to 2382, inclusive.

Construction Numbers, 69636 to 69639, inclusive.

All parts of locomotive, including valve motion and rods, are to be painted all over, except at wearing or rubbing surfaces.

INSPECTION & TESTS

Inspection of construction Baldwin Locomotive Works, except U. S. Army Engineers to have one or more inspecting engineers at The Baldwin Locomotive Works Plant, witnessing the progress of the work in The Baldwin Locomotive Works Shops.

Each locomotive will be inspected to see that it is constructed, finished and packed in accordance with the requirements set forth in this specification. No inspection of materials will be made by the United States Army Engineers in outside plants. Manufacturers to furnish The Baldwin Locomotive Works with certified test reports covering the materials, so that The Baldwin Locomotive Works may submit these to the Customer.

One copy of each purchase order for materials is to be forwarded to Major J. W. Marsh, Purchasing and Contracting Officer, Railway Procurement Branch, Transportation Corps, Room 4-D 734, Pentagon Building, Arlington, Va.

Tests: Each piece of equipment shall be tested under operating conditions, and the complete equipment will be given such operating and other tests as may be necessary to insure compliance with this specification. Material tests in accordance with detailed specifications may be made at the discretion of the Contracting Officer. Where material tests are not made, the contractor shall furnish such information and certificates of inspections and tests necessary

(Continued)

THE BALDWIN LOCOMOTIVE WORKS

SUPPLEMENT TO SPECIFICATION No. 43-F-19

CLASS 2-8-0, 19 S

FOR UNITED STATES GOVERNMENT - WAR DEPARTMENT

INSPECTION & TESTS (Continued)

to determine whether or not the materials used are in accordance with the specifications. Tests necessary to demonstrate conformity to these specifications and to the manufacturers' guarantees shall be conducted in the manner prescribed by the Inspector. When tests are made at the factory, the contractor shall furnish all the necessary facilities therefor, without expense to the Government. The contractor will be held responsible for any defects in material or workmanship which are of such a nature that they could not be detected by reasonable inspection or tests.

Each boiler shall be tested in conformance with A.S.M.E. Locomotive Boiler Code. Any leaks developing may be caulked, but the test shall be repeated until all leaks are stopped. After A.S.M.E. tests the boiler shall be fired and the pressure raised to 245 pounds per square inch, and shall be steam-tight at this pressure. After steam test the boiler shall be blown down and allowed to stand until it is cooled. It shall then be refilled with water about 150 degrees F. and the pressure raised to 245 pounds by firing. The boiler shall remain steam-tight until thoroughly cooled down.

Each cylinder casting shall be subjected to a hydrostatic test pressure of 225 pounds per square inch. Application of cylinder bushings to correct defective cylinders will be permitted at the discretion of the inspector. No bushing less than 1/2" in wall thickness will be permitted. Cylinders having wall thickness of less than 3/4" after reboring will be rejected. Hydrostatic test shall be applied after application of bushing.

Air brake equipment shall maintain 70 pounds pressure in the train line with air compressor operating at 120 strokes per minute against 11/64" diameter orifice. Leakage in complete air system shall not exceed 3 pounds per minute from operating pressure.

CATALOGUES, BLUEPRINTS, ETC.

Copy of full and complete instructions covering assemblage, description, operation, adjustment and maintenance of all specialties furnished with each locomotive by The Baldwin Locomotive Works. The instruction books will be composed of sets of specialty catalogues prepared in same manner as those supplied for locomotives Baldwin Class 2-8-2, 21 S 30 to 99, 2-8-0, 19 S 190 to 339, 2-8-0, 19 S 340 to 429, and 2-8-0, 19 S 430 to 475, i.e., specialty catalogues to be separated into sets but not bound, and each set is to be wrapped individually in heavy paper and well secured by heavy twine or cord. One complete set of blueprints furnished for these locomotives.

BOILER

Boiler built to comply in all respects with the A.S.M.E. Boiler Code, except that the shell shall have a factor of safety of 4.

Boiler stud threads, 12 per inch, A.N.F. taper 3/4" in 12".

DOMES

Dome to be double-riveted to the boiler shell. Dome cap shall be of pressed steel plate applied with copper gasket.

CLASS 2-8-0. 19 S

FOR UNITED STATES GOVERNMENT - WAR DEPARTMENT

TUBES AND FLUES

Tubes swedged to 1-7/8" O.D. at the firebox end, set in copper ferrules and electric arc welded to the firebox sheet. Tubes expanded to 2-1/16" O.D. at smokebox end, and expanded in front tube sheet, with at least 10% of tubes beaded over. Flues swedged to 4-1/2" O.D. at firebox end, set in copper ferrules, prossered, beaded and electric arc welded to firebox sheet. Flues expanded to 5-7/16" O.D. at smokebox end, expanded in tube sheet and beaded over.

Gas area (minimum net area through tubes and flues) 5.39 square feet.

FIREBOX DETAILS

Firebox seams to be electric arc welded. Seal-weld applied at each corner of outside sheets, extending 10" up from the bottom.

All staybolt threads, Whitworth, 12 per inch, and continuous in sheets. Firebox volume, 139 cubic feet.

WATER SPACE FRAME

Mud ring of cast steel with integral lugs for application of expansion plates.

WASHOUT PLUGS

Prime composite washout plugs. Washout plugs, two, to be applied over tubes, one back of front tube sheet, and one ahead of back tube sheet on opposite sides of boiler. Washout plug threads, 12 per inch, A.N.F. taper 3/4" in 12" Pressed steel plug thimbles applied. (All lagged surfaces of boiler). Caps to be applied to all plug thimbles except those located below center line of barrel of boiler.

FUSIBLE PLUGS

Fusible plugs applied on center line of crown sheet, one near each end.

STAYBOLTS

Water space stays, 15/16" diameter, with tell-tale holes drilled in outer ends. Radial stays 1" diameter. Radial stays to have tapered heads below crown in six central rows. Two rows of flexible expansion stays over crown sheet. Also welded sleeves with caps applied to all expansion stays.

BOILER COVERING,
ETC.

Lagging on firebox of sufficient thickness to provide for future application of flexible staybolts. Cylinders, cylinder heads and steam piping outside of smokebox lagged with 85% magnesia. Exposed pipes carrying live steam to be suitably lagged and covered. A sheet steel jacket applied over boiler, cylinder steam pipes outside of smokebox, and cylinders. Cylinder heads cased with sheet steel with stud nuts exposed. Thimbles provided in boiler jacket at washout plug openings. Suitable covered openings provided in cylinder jacket at plugs.

STEAM TURRET

Steam turret applied for supply of auxiliary steam, with turret valve handles readily accessible in the cab, and turret pipe extending into the dome.

WHISTLE

Whistle of cast iron, mounted on side of dome. Whistle cord, 3/8" diameter sash cord, from the whistle into the cab, through a thimble on the left side, across the cab, terminating in a pear-shaped drop, suitable for operation by engineman or fireman.

BLOW-OFF COCKS

Blow-off cocks, two, one right side and one left side of firebox, arranged so they can be operated by rigging from inside of cab.

THE BALDWIN LOCOMOTIVE WORKS

SUPPLEMENT TO SPECIFICATION No. 43-F-19

CLASS 2-8-0, 19 S

FOR UNITED STATES GOVERNMENT - WAR DEPARTMENT

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| BLOWER VALVE | Two-way plug cock. |
| BLOWER | Ring type blower, applied above exhaust pipe. |
| SAFETY VALVES | Overall height 8-5/8". Valve springs, valves, and related parts to be interchangeable between the two safety valves. |
| GAUGES | Gauges fitted with oil-burning lamps. |
| STEAM GAUGE | Certified Gauge & Instrument Company's 6" diameter steam gauges, graduated to 500 pounds and having phenol cases. Steam gauge conveniently located in plain view of engineman and fireman. Steam gauge stand of steel plate. |
| WATER GAUGE AND GAUGE COCKS | Water gauge, reflex type, located on left side of backhead, fitted with quick-closing shut-off valves. Thimble applied around water gauge bottom connection to backhead. Three Nathan gauge cocks located on right side of backhead. Water gauge and gauge cocks located suitable for 2% grade operation, which locates the first gauge cock and lowest reading of gauge 4-1/4" above highest point of crown on level track. |
| INJECTOR DETAILS | Starting valve, Nathan, Type 1921, applied on firebox ahead of cab. Injector steam pipes, steel, 2". Injector check pipes, steel, 2". Injector feed pipes, steel, 2-1/2". Injector overflow pipes, steel, 2-1/2". Injectors to have built-in check. Combination stop and check valve applied at each side of boiler with line check at each injector. Steam, water and overflow controls extended into the cab. Thimble applied around injector check, right and left. |
| DECK SPRINKLER | Deck sprinkler applied. |
| STEAM PIPES | Steam pipes to have cast iron ball joints and air-tight casings. |
| DRY PIPE | Dry pipe between throttle and superheater header to be of steel, with sepafate cast iron ball joint rings. |
| ASH PAN | Ash pan of steel plate, 3/16" thick, self-cleaning double hopper, with swinging self-cleaning cast iron doors. Doors operated by suitable rigging from outside of locomotive frame. |
| SMOKE STACK | Smoke stack base seal-welded to smokebox to secure air-tight connection to smokebox. |

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CLASS 2-8-0. 19 S

FOR UNITED STATES GOVERNMENT - WAR DEPARTMENT

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| SMOKE BOX DETAILS | Smokebox front of pressed steel, with lifting lug. Smokebox door of pressed steel, hinged and clamped to front. All smokebox joints air-tight. Smokebox liner 1/2" thick. Exhaust pipe and nozzle of cast iron with ground joint at cylinder saddle. Exhaust pipe provided with ring blower piped to connection on the smokebox for roundhouse attachment and piped to blower valve in the cab. |
| CYLINDERS | Cylinders cast with half saddle and arranged for separate outside steam pipes. Cylinder peep-hole plugs of brass. |
| STEAM CHEST HEADS | Front steam chest heads of cast iron; back, of cast steel. |
| MAIN VALVES | Piston valve bushings of Hunt-Spiller Gun Iron, bored after insertion. |
| LUBRICATION | Right-hand lubricator marked "Valve Oil". Left-hand lubricator marked "Engine Oil". Valve oil lubricator connections provide an individual feed to right steam chest, left steam chest, right cylinder barrel at top, left cylinder barrel at top, right guide, left guide, right engine truck box, left engine truck box. Engine oil lubricator connections provide an individual feed to each driving box. All feeds provided with terminal checks. Oil pipe 3/8" O.D., covered with waterproof asbestos tubing, and properly clamped. Flexible connections to be of hose suitable for 5000 lbs. per square inch internal pressure. Link motion pins lubricated by oil fed from suitable cups, filled with curled hair. Suitable oil holes provided for reverse lever and reach rod pins, reverse shaft and spring rigging pins. Mechanical lubricator oil lines to be Bundyweld steel tubing, 3/8" outside diameter, wall thickness .042", applied to sweat fittings with "Handy-Flux" and "Easy-Flo" 1/16" diameter silver solder. |
| PISTON AND ROD | Piston ring groove in head, .750" wide. Piston rings .747" wide. Piston rods to be of such length as to permit replacement of piston packing without disconnecting the piston rod from the crosshead. |
| GUIDES | Provision made on the wearing surfaces of guides for overtravel at the ends of the stroke. Striking points between piston and cylinder heads plainly marked at front and rear ends of crosshead shoe travel. Sheet steel liners provided at both ends of the guides for adjustment. Guide yoke of bar steel mounted on frame knees and braced to the boiler. |
| CROSSHEAD | Crosshead pins of forged O.H. steel, arranged for outside application with provision for easy removal. Crosshead key of high-carbon steel. |
| VALVE GEAR | Link motion rods and pins shall be of forged O.H. steel with hard bronze bushings. All rods shall be interchangeable right and left, arranged with minimum offset. Eccentric cranks of cast steel. |
| REVERSE SHAFT | Reverse shaft provided with counterbalance spring. |

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| DRIVING WHEELS | Steel plate hub liners on driving wheels. Radius of 1/8" provided in bottom corners of counterbore for hub liner. |
| TIRE SPACING | Distance between driving tire flanges: Drivers 53" Trucks 53-3/8" |
| DRIVING AXLES | Main driving axles to be quenched and tempered medium carbon steel in accordance with A.S.T.M. Specification A-236-40T; hollow-bored and heat-treated to provide: Minimum Yield Point 55,000 lbs. P.S.I. Minimum Tensile Strength 90,000 lbs. P.S.I. Minimum Elongation in 2" 20% Minimum Reduction in Area 45% |
| DRIVING BOXES | All driving boxes to be interchangeable. Driving boxes to have babbit hub faces. |
| RODS AND DETAILS | Main rods "I" section, smoothly finished with 1/2" minimum fillets and 1/8" corner radii. Connecting rods painted all over, except at wearing and rubbing surfaces. Oil cups applied to crosshead for additional oil to front end of main rod. Side rods rectangular section, smoothly finished, with 1/8" corner radii. Knuckle pins of forged open-hearth steel. Boss on side rod eye applied both top and bottom. All rods interchangeable right and left. |
| GREASE GUN | One Prime grease gun, No. 1076, furnished with each locomotive. |
| WRIST PINS | Front pins to have flush collar secured by bolt inserted from the inside, and castle nut countersunk into the collar. |
| FRONT ENGINE TRUCK | Engine truck to be radial type, double three-point swing link, inside bearing. Front truck to swing 4" each side of center. |
| FRONT ENGINE TRUCK BOXES | Bearings arranged for force feed lubrication with one line to each bearing. |
| SPRINGS & SPRING RIGGING | Spring Rigging: Engine truck, front and intermediate drivers to be equalized together. Rear and main drivers to be equalized on each side. Driving springs to be semi-elliptic type with coil springs in front of main drivers. Engine truck spring to be coil type. |
| FRAMES | Engine truck center pin guide to be cast iron, having a minimum tensile strength of 30,000 lbs. per square inch. |

CLASS 2-8-0. 19 S

FOR UNITED STATES GOVERNMENT - WAR DEPARTMENT

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| CAB | <p>Cab provided with roof ventilator, and sliding metal cased side sash. Front of cab provided with steel plate door having Prime panel on right and left sides. Prime Company's clear vision panel applied in door on right side. Doors and windows glazed with 3/16" laminated glass. Side window sash to be of wood, reinforced with light sheet steel. Cab side windows provided with blackout curtains. Cab back opening provided with canvas curtain. Box seat provided on left side for brakeman, without back rest and equipped with a 16" x 16" spring cushion. Box seat provided on right side, with back rest and with a 16" x 16" spring cushion. Cab provided with a rack for railway signal flags, and container for fuses and torpedos.</p> |
| HANDRAILS, STEPS & RUNNING BOARDS | <p>Handrails and steps applied, with run boards on each side of boiler of 3/16" diamond-tread plate with "T" edging, providing runway over locomotive and access to the sand box, safety valves and lights.</p> |
| CLASSIFICATION LAMPS | <p>Three electric classification lamps with standard A.A.R. clear lenses with red color slide, and blackout hoods furnished. Lamp brackets installed; three on front bumper, one on front of smokebox at top center, three at rear of tender and one at top center of tank.</p> |
| <u>TENDER</u> | |
| FRAME | <p>Tender frame to have continuous center sill and provision for transferring side buffer forces to center sill. Tender end sill suitable for application of center buffer and coupler, or hook and link couplings with side buffers or for automatic coupler with draft gear with coupler height 34" to 42" above top of rail.</p> |
| WATER TANK | <p>Tank constructed of 3/16" steel plates, suitably braced, except in coal space which shall be 1/4" plate. Water outlet fitted with strainer and tank valves of commercial gate type. Tender tank provided with one long filling hole with triple sectional hinged cover and drain pipe at each rear corner. Coal space provided with removable coal boards, and provision made for application of oil tank and necessary fittings.</p> |
| DUST GUARDS | <p>Dust guards, Jenkins, applied in tender boxes.</p> |
| AXLES | <p>Tender axles, 6" diameter wheel fit.</p> |
| BRAKE DETAILS | <p>Buffalo tender brake beams, with A.A.R. standard brake heads and shoes from American Brake Shoe & Foundry Company. Brake hangers, loop type. Hand brake applied on tender.</p> |
| BRAKEMAN'S STEP | <p>Brakeman's step only at rear of tender.</p> |

