NORTH #3

BETHLEHEM STEEL COMPANY

SPARROWS POINT (MD.) PLANT

This is a requisition plant - nothing made unless sold.

The Sparrows Point Plant of the Bethlehem Steel Company is located twelve miles from Baltimore City on the Patapsco River near its junction with the Chesapeake Bay.

The land on which the Plant stands was deeded by Lord Baltimore to Thomas Sparrow in 1652. About 230 years later, the Pennsylvania Steel Company selected the site as an ideal place to build blast furnaces to convert foreign ore into pig iron. The iron to be used at its Steelton, Pennsylvania, Plant in the manufacture of steel rails.

Records and photographs indicate windmills were erected to pump the marshes dry. In 1889, after the blast furnaces started operating, slag was used to raise the surrounding low lands above the water level. During construction of the plant facilities, the town of Sparrows Point was laid out to provide housing for the employees. In those days, the only method of transportation to and from Baltimore was by railroad or ferry, which made commuting very difficult. By 1891, the original plans to ship pig iron to Steelton had been abandoned, and Bessemer Convertors were installed.

The first pig iron was produced in 1889 and the first steel in 1891. The Bethlehem Steel Company took over the operation of the plant in 1916. At that time, the Plant covered 300 acres and had an annual steel ingot capacity of 672,000 tons.

None of these facilities exist today except a few small buildings. A long range program of modernization and expansion began at Sparrows Point in the early 1920's with a broadening range of products and the installation of modern automatic and continuous equipment to replace the older type mills, the Sparrows Point Plant grew rapidly. In 1958, it became the largest steel plant in the country with a rated capacity of 8,200,000 tons or 950 tons per hour. The real estate holdings in the Sparrows Point area

includes approximately 5,000 acres; of this amount, 3,000 acres constitute the Town, Plant and Shipyard, while the remaining 2,000 acres are reserved for steel-consuming industries and future plant expansions. The normal work force is 30,000, and the annual payroll is $190,000,000 (over 3-1/2 million dollars per week). There are forty miles of paved roads in Sparrows Point, including an elaborate new limited-access highway system with four interchanges connecting with the principle public roads. The parking lots for our employees have a capacity for 8,000 automobiles.

Daily water consumption approximates 655 million gallons. This exceeds by more than 50% the average amount consumed each day for all purposes in Baltimore and the Metropolitan Area. Of this amount we use 540 million gallons of salt water from the Patapsco River. 100 million gallons is special cooling water, known as Industrial Water, from the Baltimore City sewage treatment station, and approximately 15 million gallons of fresh water from the City of Baltimore and our own artesian wells.

Most of the steel plant's electrical power is generated by our own Pennwood Power Station. This station has a rated capacity of 132,000 KWs. Substantial amounts of power are also generated or obtained from the Baltimore Gas and Electric Company. The total amounting to approximately 1/400th of all the electricity generated in the entire United States per day. There are 20,000 electric motors that total over 800,000 horsepower.

Approximately 15,000 tons of soft coal are used daily. 150,000 gallons of paint, and 30,000 gallons of mastic material are used every year to protect the plant's 758 buildings, as well as machinery and other facilities.

There is a 38 foot deep channel that brings incoming ships, carrying iron ore from overseas, to the 2,200 foot ore dock paralleling the row of blast furnaces.

For exporting steel there is a shipping wharf 870 feet long with a 120 x 500 foot warehouse. The 33 foot deep access channel is almost two miles long with a width of 250 feet. Finished steel is shipped directly from the plant's docks to points on the Atlantic, Gulf and Pacific Coasts of this country and to ports all over the world. In addition to easy accessibility of the waterways, steel from Sparrows Point can also be delivered quickly by rail or highway to the great industrial areas of the Eastern Seaboard.

Bethlehem's terminal switching railroad, with ~~100~~ 104 miles of track and 47 diesel-electric locomotives, connects with the B & O, Pennsylvania and Western Maryland Railroads. Approximately 55% of produced products at Sparrows Point are shipped by rail, 25% by truck and 20% by water.

Services, maintenance, and transportation requirements for the plant demands of force of some 10,000 persons.

The steel-consuming industries to which Sparrows Point furnishes steel products cover the field all the way from small fabricating shops to huge enterprises in industry, construction and transportation.

Included among the steel products manufactured at Sparrows Point are sheared and universal plates; flanged and dished heads; many types of butt-weld and electric-resistance-weld pipe, black and galvanized pipe and structural fence pipe; concrete reinforcing bars, and a wide range of wire products, including low, medium and high carbon wire rods.

As many as 700 different types and sizes of nails alone are made on a large battery of automatic nail machines, some of them capable of cold-heading 600 nails per minute.

Also made at Sparrows Point are special-annealed bale ties; wire strand, cable and stress-relieved strand for pre-stressed concrete; hot-rolled and cold-rolled sheets, galvanized sheets, enameling sheets, tinplate and blackplate.

A major phase of the Sparrows Point Plant operation is the storage of raw materials. About four million tons of ore, received principally from Venezuela, Chile South America and Labrador, can be stored at the plant at one time. The capacity for storing coal, which comes by rail or by rail and water from mines in Pennsylvania, Kentucky and West Virginia, is 700,000 tons. Normal operations require about five and one-half million tons of coal per year. There are also storage facilities for vast quantities of limestone, which comes by rail from quarries in Pennsylvania and West Virginia.

Besides steel, an important phase of Sparrows Point's business is its output of by-products such as coal chemicals recovered during the coke-making process. These chemicals are sold to other manufacturers who use them in such products as plastics, dyes, synthetic fabrics and drugs.

Work has been completed at Sparrows Point on one of the country's largest tar distillation units. The plant was built to recover chemicals from coke oven tar for further processing. The distillation plant has a capacity to process more than 50 million gallons of tar per year into a chemical fraction containing crude naphthalene in quantities estimated in excess of 42 million pounds annually.

Slag from the blast furnaces is sold to manufacturers of mineral-wool insulating products, road materials, concrete and other building materials. Some slag has been sold to the State of Maryland for use in propagating oyster beds in the Chesapeake Bay.

Among points of interest at Sparrows Point are the ore dock, sintering plant, ore screening station, blast furnaces and the coke oven areas. There are 10 blast furnaces having hearths that vary from 19'-9" to 28'-9" in diameter and in height from 95'

to 105'-3". Pig iron production exceeds 16,000 tons per day. There are 12 coke oven batteries, each containing from 60 to 65 air-tight chambers for the coking of soft coal. The No. 2 coke oven battery has been recently rebuilt.

Coke oven chambers measure 40 feet in length, 13 feet in height and approximately 18 inches in width. Each oven holds about 17 tons of crushed coal. Coking time usually takes from 18 to 20 hours. Total coke production amounts to 11,000 tons per day.

By-products recovered in the coking process are coal tar, ammonia, ammonium sulphate, naphthalene, benzol, toluol, xylol, sulphur and small amounts of pyridine. The Sparrows Point plant consumes all of its coke oven gas for use in the open hearth furnaces, for underfiring coke oven batteries and soaking pits as well as in various mill and shop furnaces.

There are 35 open hearth furnaces at the Point. This is where pig iron and scrap are refined into steel. The rated capacity of the furnaces ranges from 167 to 380 tons per heat. Heats of 430 tons are tapped from the large furnaces equipped with oxygen lances. The largest furnaces are about 25 feet wide and 100 feet in length. Heat time varies from five to ten hours, depending on the size of the furnace and the process being used.

Another point of interest is the soaking pits where the ingots, varying in weight from 13,000 to 80,000 pounds, are heated to a uniform rolling temperature. There are four soaking pit buildings containing a total of 85 pits. Each pit holds about 12 ingots, depending on their size. There are 40 rows of two-hole bottom-fired regenerative pits and one five-hole row of recuperative, which are top-fired. Rolling temperature varies from 2,250 to 2,450 degrees Fahrenheit, depending on the carbon content of the steel.

The soaking process takes three to five hours for hot steel and eight to fourteen hours for cold steel.

From the soaking pits, the ingots are sent to the blooming and slabbing mill operations for reduction to either slab or billet form before being shipped to the finishing mills. There are two blooming and two slabbing mills. They are referred to as the 40-inch and 54-inch bloomers and the 40 x 80-inch and 45 x 90-inch slabbers.

Blooms are usually rolled to a 10 x 10-inch cross-section for processing into billets for the Rod and Wire Mills or into skelp for the Pipe Mills. Slabs range from 4 to 8 inches in thickness and from 16 to 72 inches in width. They are rolled into either plate or strip.

The 60-inch and 160-inch plate mills are where steel is converted into plates for use in ship hulls, structural shapes, storage tanks and flanged heads. Plate sizes range from 3/16 to 14 inches in thickness, from 48 to 154 inches in width and up to 150 feet in length.

There are approximately 800 different sizes, types and grades of pipe made at Sparrows Point by the butt-weld and electric-weld processes. The Electric-weld Pipe Mill produces pipe from 4-1/2 to 16 inches in diameter at speeds ranging from 60 to 120 feet per minute, while the Butt-weld Pipe Mill produces pipe from 1/2 to 4 inches in diameter at speeds ranging from 120 to 360 feet per minute.

The Sheet, Tin and Strip Division, which covers some 300 acres, processes two-thirds of the total steel produced at Sparrows Point. Facilities of the division include the 56-inch and 68-inch hot strip mills; 48-inch tin mill, the 56-inch and 66-inch sheet mills and two 42-inch cold reducing mills; the temper mills; pickling and annealing sections; galvanizing and tinning lines; trimming, slitting and shearing equipment; coil preparation lines and facilities for inspection, warehousing and shipping.

The Rod and Wire Mill is another important part of the Sparrows Point operation. The two rod mills have a combined capacity of 60,000 tons per month of coiled rod and reinforcing bars. Wire products made at the Point include nails and staples, barbed wire, bale ties, wire for welding rods, strand and cable, to name a few.

35 open hearth in 4 bldgs

750 000 000 gal water/day

plant uses 1/100 of entire US electricity

25000 - 30000 people in mill

35 - 36 thousand people work in the plant

Steel Plants

Pennsylvania
Bethlehem
Johnstown
Lebanon
Steelton
Williamsport

Maryland
Sparrows Point

New York
Lackawanna

California
Los Angeles
So. San Francisco

Washington
Seattle

Shipbuilding and Ship Repair Yards

Massachusetts
East Boston
Quincy

New York
Brooklyn

New Jersey
Hoboken

Maryland
Baltimore
Sparrows Point

Texas
Beaumont

California
San Francisco
San Pedro

Fabricating Works

Pennsylvania
Bethlehem
Johnstown
Leetsdale
Pottstown
Rankin
Steelton

New York
Buffalo

Illinois
Chicago

Texas
Beaumont

California
Alameda
So. San Francisco
Torrance

Washington
Seattle

Other Manufacturing Units

Massachusetts
Boston

New York
Buffalo
Staten Island

New Jersey
Dunellen
Elizabeth

Pennsylvania
Philadelphia

Maryland
Baltimore
Fairfield

Virginia
Richmond

North Carolina
Charlotte
Raleigh

South Carolina
Anderson

Florida
Hallandale
Jacksonville
Miami

Illinois
Clearing

Michigan
Detroit
Romulus

Minnesota
Minneapolis

California
Los Angeles

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

Sparrows Point PLANT

BETHLEHEM STEEL

The Sparrows Point Plant

Located on tidewater near Chesapeake Bay, the Sparrows Point Plant of Bethlehem Steel is the largest steelmaking plant in the world.

The standard products include blooms, billets, slabs, and skelp (semi-finished forms of steel used in further processing); rods, wire, pipe, plate, sheets, tinplate and blackplate; and by-products, such as coal chemicals and blast-furnace slag.

Specialty products include flanged-and-dished heads, and pressed-plate products; concrete reinforcing bars; barbed wire; nails and staples; bale ties; formed roofing and siding sheets; corrugated galvanized culvert sheets; and wire strand.

Typical Uses for Sparrows Point Plant Products

Bed springs, paper clips, and fencing made of wire. Rain gutters and heating ducts of galvanized sheet steel. Toys and venetian blinds of blackplate, "tin" cans for vegetables and beverages . . . these are but a few of the myriad end uses for steel produced at Sparrows Point. Thousands of items are formed from wire alone. Steel plates form the hulls and decks of merchant and naval ships, and are used to fabricate bridges and heavy machinery. Steel pipe carries water, steam, gases, and fuel oils in homes and industrial plants.

Steel produced here is shipped to users along the length of the Atlantic Seaboard, to the Pacific and Gulf Coasts, and to ports across the seas. Much of the finished steel is loaded on board ships berthed at our own deepwater docks.

Facts about the Plant

- in January 1958 it became the largest steel-producing plant in the world.
- its normal work force is 31,000 men and women, who draw an annual payroll of about $190,000,000.
- every day the plant consumes 100 million gallons of industrial water, 15 million gallons of fresh water, and 540 million gallons of salt water.
- within the plant are 40 miles of paved roads and 100 miles of railroad track. The plant covers an area of over 2,500 acres.
- to supply its 20,000 electric motors as well as its other electrical needs, the plant draws 1/400th of all the electric power generated in the United States.
- the 15,000 tons of coal burned every day would heat 2,000 average Baltimore homes for a year.
- the entire cargo of one 30,000-ton ocean-going iron ore carrier is the approximate requirement for one day's operation at capacity.
- the Sparrows Point Plant has a major shipyard as its next-door neighbor. Operated by Bethlehem, this yard builds merchant ships of all types.

Steel

for strength . . . economy . . . versatility

Look for this steelmark when you buy. You'll see it in appliance stores, furniture and hardware stores —wherever products of steel are sold.

Highlights of Bethlehem Steel Company

- *Bethlehem is the nation's second-largest steel producer.*
- *Normal total employment is about 140,000.*
- *Number of stockholders is about 230,000.*
- *Bethlehem is the world's largest privately owned shipbuilding and ship repair organization.*
- *13,000 regular customers buy Bethlehem's steel products which range from nails to forgings weighing hundreds of tons.*