



GENERAL OFFICES, CARNEGIE, PENNSYLVANIA



BOX 2222-PITTSBURGH, PENNSYLVANIA 15230-TEL 412/922-2200

November 25, 1964

Armco Steel Corporation  
Middletown, Ohio

Attention: Mr. R. A. Ward  
Purchasing Agent

Gentlemen:

Slab Heating Furnaces  
Project 600  
Our Proposal No. 6105-A

Enclosed is our Proposal No. 6105-A and Proposal Drawings  
FP-6105A-1 and FP-6105A-2 covering Three (3) Five (5) Zone, Natural  
Gas or Bunker "C" Oil and #2 Fuel Oil Fired Continuous Pusher Type  
Slab Reheating Furnaces with Rust-Escher Recuperation.

If any additional information is required, please contact us.

Very Truly Yours,

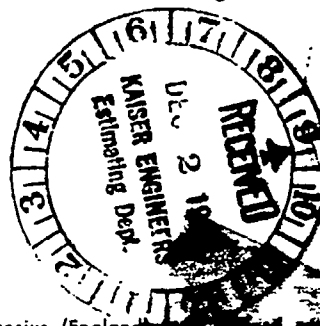
SALEM-BROSIUS, INC.

*J. F. Munster*

J. F. Munster  
Sales Engineer

JFM:mh

cc: Mr. V. L. Frankson (4)  
Armco Steel Corporation  
Middletown, Ohio



Salem-Brosius (Canada) Ltd., Rexdale, Ontario • Salem-Brosius (England) Ltd., Millwall, London, England  
Salem-Brosius (France) S. A. Paris 1, France • Salem-Brosius (Luxembourg) S. A. Luxembourg

KEN 005857

3.0 PRODUCTION

- 3.1 Mill rated production -- 800 tons per hour.  
Furnace capacity -- 300 tons per hour.

4.0 FURNACE DESIGN

- 4.1 The furnace will be recuperative type arranged for end charge and end discharge. Slabs to be discharged into the mill delivery roll table by a mechanical slab extractor which is to be furnished and installed by the Purchaser.
- 4.2 The furnace has five (5) Firing Zones as follows: Top Charge Heating Zone, Bottom Charge Heating Zone, Top Center Heating Zone, Bottom Center Heating Zone and Soak Zone. Soak Zone is arranged for roof firing and will be fired with natural gas or #2 fuel oil utilizing cold air.
- 4.3 The waste gases are drafted at the charge end through off-takes that lead to a recuperator and stack.

5.0 REFRACTORIES AND INSULATION

- 5.1 Suspended arch and  
Nose Construction: 9" Special Super Ramtite #25,  
or approved equal, with necessary  
refractory anchors and anchor  
attachments.
- 5.2 Side Walls: 12" of Special Super Ramtite #25  
plastic, or approved equal, and  
1-1/2" Superex block insulation.  
The plastic side walls extend from  
the top of the arch to a point 4-1/2"  
below the hearth paving brick in the  
Bottom Heating Zones.
- 5.3 Soak Hearth: Top Course: 4-1/2 of 70% Alumina  
fire brick (France-Corindon, or  
approved equal).



November 25, 1964

Proposal No. 6105-A Page 4

## 5.0 REFRATORIES AND INSULATION ---- contd.

- |       |                                         |                                                                                                                                                                               |
|-------|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.3   | Soak Hearth:                            | 12" of high heat duty fire brick,<br>7-1/2" JM C-22, or approved<br>equal, insulating fire brick.                                                                             |
| 5.4   | Furnace Bottom:<br>(Flat Section)       | 12" of high heat duty fire brick,<br>5" of JM C-22, or approved<br>equal, insulating fire brick.                                                                              |
| 5.5   | Furnace Bottom:<br>(Sloped Section)     | 12" of super duty fire brick,<br>5" of JM C-22, or approved<br>equal, insulating fire brick.                                                                                  |
| 5.6   | Burner Walls:                           | Soak, Top Center, Bottom Center,<br>Top Charge and Bottom Charge -<br>18" of special Super Ramtite #25<br>plastic, or approved equal, and<br>1-1/2" of block insulation.      |
| 5.7   | Downtake:                               | Rust-Escher recuperator<br>arrangement                                                                                                                                        |
| 5.7.1 | Side Walls: (Walls<br>encased in steel) | 13-1/2" high heat duty<br>fire brick,<br>4-1/2" 2000° F. insulating<br>fire brick (B & W K-20, or<br>approved equal),<br>2-1/4" red brick for ventila-<br>tion and drainage.  |
| 5.7.2 | Bottom:                                 | 7-1/2" of high heat duty fire<br>brick,<br>5" 2000° F. insulating fire<br>brick (B & W K-20, or approved<br>equal),<br>2-1/4" of red brick for ventila-<br>tion and drainage. |

KEN 005859

November 25, 1964

Proposal No. 6105-A Page 5

5.0 REFRACTORIES AND INSULATION ---- contd.

5.8 Flue: Downtake to Recuperator (Flue encased in concrete)  
Rust-Escher Recuperator Arrangement

- 5.8.1 Walls: 9" high heat duty fire brick,  
4-1/2" 2000° F. insulating fire  
brick (B & W K-20, or approved  
equal),  
2-1/4" of red brick for ventilation  
and drainage.
- 5.8.2 Bottom: 7-1/2" of high heat duty fire brick,  
5" of 2000° F. insulating fire brick  
(B & W K-20, or approved equal)  
2-1/4" red brick for ventilation and  
drainage.
- 5.8.3 Arch:  
(Sprung) 9" high heat duty fire brick,  
4-1/2" 2000° F. insulating fire  
brick (B & W K-20, or approved  
equal),  
1" plastic insulating cement  
(JM-500, or approved equal)

5.9 Stack Lining: Rust-Escher Recuperator Arrangement

- 5.9.1 The entire stub stack is lined with 4-1/2" of  
2000° F. insulating fire brick (B & W K-20, or  
approved equal).
- 5.10 Hot Air Pipe Lining: 4-1/2" B & W K-1620 (or approved  
equal) insulating fire brick
- 5.11 Door Lining: (Side  
Doors) 7" of high temperature castable  
(JM high temperature firecrete,  
or approved equal)
- 5.12 Discharge Door: 9" 2800° F. insulating fire brick,  
1" block insulation.

# SALEM-BROSIUS, INC.

CARNEGIE, PA.

Proposal No. November 25, 1964  
6105-A Page 36

## PURCHASER SUPPLIES AT HIS EXPENSE

### TESTS

All tests as desired by the Purchaser will be conducted at his expense under Company supervision if conducted at the time of installation. Supervision will be supplied at no expense to Purchaser.

### ALTERATIONS OF PURCHASER'S FACILITIES

Purchaser shall make such changes in and alterations of its existing facilities as shall be necessary to permit the erection and installation of equipment covered by this proposal including without limitation, all necessary openings in walls, roofs and floors plus necessary reinforcement of same. The restoration of any of these items to their original or final condition shall be for the account of the Purchaser.

### SURPLUS MATERIALS

Refractories, insulating materials and plastics are subject to breakage and loss in shipping, unloading and handling. Company provides for this by supplying these items in quantities in excess of actual requirements. Purchaser agrees to purchase from the Company at current published prices all normal surplus of these items remaining at completion of work under this proposal.

### DELAYS BY PURCHASER

Should the Company incur additional costs because of the inability of the Purchaser to ( I ) accept delivery of materials or ( II ) to permit normal and unrestricted installation of the equipment covered by this proposal, such additional costs shall be for the account of the Purchaser.

### INSURANCE

The Purchaser shall protect the property of the Company from all losses by fire or otherwise until the Purchase Price is paid in full. The responsibility of the Company as to material damaged in transit ceases upon delivery of the material in good condition to the common carrier at point of shipment.

### SALES TAXES

Prices quoted herein do not include present or future sales, income, nor use taxes, duties, nor excise levies on imports or exports. Such items are all for the account of the Purchaser.

KEN 005861

# SALEM-BROSIUS, INC.

CARNEGIE, PA.

November 25, 1964

Proposal No. 6105-A Page 40

## GENERAL TERMS AND CONDITIONS

### INSTALLATION

The Company shall furnish all labor, both skilled and common, and engineering and erection supervision for the installation of the equipment specified herein except as enumerated on the pages titled, "Purchaser Supplies at His Expense."

Unless otherwise agreed upon, all installation work by the Company will be carried on during straight working hours at the published wage rates in effect in the area involved at the date of this proposal.

If, for any reason, overtime work is mutually agreed upon and performed, or if it is mutually agreed that it is necessary to pay wages above scale, traveling or living costs, the actual increases in cost of these items over the standard time cost, plus Welfare, Old Age Benefit, Insurance, and any premium payments applicable to these additional costs are for the account of the Purchaser.

If, during the time period the Company is installing, starting up, or testing the equipment covered by this proposal, this work is delayed by the Purchaser and the Company's personnel is removed from the plant, the Purchaser shall pay all expenses involved in returning Company's personnel to Carnegie, Pennsylvania, and back to Purchaser's Plant, plus travel time at the rate of \$85.00 per day.

### PRICE

#### FOR APPROPRIATION PURPOSES ONLY

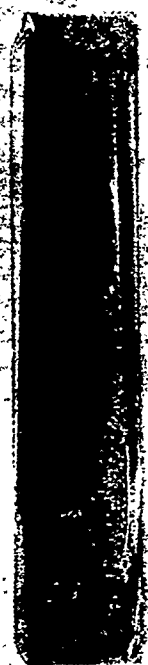
**Three (3) Five - Zone Natural Gas or Bunker "C" Oil and #2 Fuel Oil Fired Continuous Pusher Type Slab Reheating Furnaces with Rust-Escher Recuperators complete as described herein including all materials, engineering, erection labor and supervision of erection on Purchaser's foundations --**

**FOUR MILLION, FOUR HUNDRED THOUSAND DOLLARS  
(\$4,400,000.00)**

KEN 005862

130

=



KEN 005855

**SALAM**  
**BROS. & CO.**  
INDUSTRIAL FURNACES  
MATERIAL HANDLING EQUIPMENT

1000 1000  
1000 1000 1000 1000

KEN 005856