

**PLAINTIFF'S  
EXHIBIT**

**ARO-133**

**ENGINEERING REPORT**

**PROJECT NO. 7183**

**WASTE WATER TREATMENT - STEEL MAKING**

**FOR**

**NO. 2 OPEN HEARTH FUME ABATEMENT FACILITY  
(Ref. : Report 7185)**

**MIDDLETOWN WORKS**

**JUNE 1 , 1969**

**PREPARED FOR**

**ARMCO STEEL CORPORATION**

**BY**

**McGRAW CONSTRUCTION COMPANY, INC.  
ENGINEERS AND CONSTRUCTORS**

# Armco Steel Corporation

LOCATION Middletown Works

DATE June 1, 1969

SHEET 53 OF 54

PROJECT Waste Water Treatment - #2 D.H.

PROJECT NO. 7183

BY H.K., R.P., N.S., R.P.

CONTRACTOR McGraw Construction Company, Inc.

ESTIMATE NO. 2527

NOTED V.O.I.

| COST ACCOUNT<br>acct. unit. | DESCRIPTION                              | QUANTITY |    | UNIT PRICE |    |  | LABOR<br>MAN-<br>HOURS | LABOR<br>DO  | BURDEN<br>10 | EQUIPT.<br>USAGE<br>20 | MATERIAL<br>30 | SUB-<br>CONTRACT<br>50 | ENGINEERED<br>EQUIPMENT<br>60 | TOTAL   |
|-----------------------------|------------------------------------------|----------|----|------------|----|--|------------------------|--------------|--------------|------------------------|----------------|------------------------|-------------------------------|---------|
|                             |                                          | L        | EU | M          | SC |  |                        |              |              |                        |                |                        |                               |         |
|                             | <u>SUMMARY</u>                           |          |    |            |    |  |                        |              |              |                        |                |                        |                               |         |
| 600                         | CONSTRUCTION START-UP AND SPARES         |          |    |            |    |  |                        |              |              |                        |                |                        |                               |         |
| 604                         | Vendor Assistance - Mechanical           |          |    |            |    |  |                        | Not Required |              |                        |                |                        |                               |         |
| 605                         | Construction Start-Up - Mechanical       |          |    |            |    |  |                        | 6,000        | 800          |                        | 1,500          |                        |                               | 8,300   |
| 606                         | Vendor Assistance - Electrical           |          |    |            |    |  |                        | Not Required |              |                        |                |                        |                               |         |
| 607                         | Construction Start-Up - Electrical       |          |    |            |    |  |                        | 3,000        | 400          |                        | 500            |                        |                               | 3,900   |
| 608                         | Mechanical Spares                        |          |    |            |    |  |                        | 500          | 70           | 100                    |                |                        | 10,000                        | 10,670  |
| 609                         | Electrical Spares                        |          |    |            |    |  |                        | 200          | 15           | 50                     |                |                        | 5,000                         | 5,335   |
|                             | - TOTAL CONSTRUCTION START-UP AND SPARES |          |    |            |    |  |                        | 9,700        | 1,365        | 150                    | 2,000          |                        | 15,000                        | 28,265  |
| 700                         | PIPING                                   |          |    |            |    |  |                        |              |              |                        |                |                        |                               |         |
| 701                         | Resinsulating Water Piping               |          |    |            |    |  |                        | 37,000       | 5,180        | 4,500                  | 93,000         |                        |                               | 140,180 |
| 702                         | Make-Up Water                            |          |    |            |    |  |                        | 7,965        | 1,115        | 350                    | 4,550          |                        |                               | 13,980  |
| 703                         | Potable Water                            |          |    |            |    |  |                        | 1,525        | 270          | 500                    | 850            |                        |                               | 3,545   |
| 704                         | Compressed Air                           |          |    |            |    |  |                        | 3,200        | 455          |                        | 965            |                        |                               | 4,660   |
| 705                         | Sludge Piping                            |          |    |            |    |  |                        | 102,305      | 5,500        | 3,500                  | 66,300         |                        |                               | 117,845 |
| 706                         | Blow-Down Piping                         |          |    |            |    |  |                        | 11,870       | 1,665        | 1,000                  | 6,630          |                        |                               | 21,265  |
| 707                         | Gaumatic Soda Piping                     |          |    |            |    |  |                        | 4,165        | 585          |                        | 5,300          |                        |                               | 10,050  |
| 708                         | Painting, Color Coding, Tagging          |          |    |            |    |  |                        | 5,000        | 700          |                        | 1,000          |                        |                               | 6,700   |
| 709                         | Freeze Protection                        |          |    |            |    |  |                        | 2,000        | 200          |                        | 1,500          |                        |                               | 3,700   |
| 710                         | Pipe Hangers and Supports                |          |    |            |    |  |                        | 2,000        | 200          |                        | 1,500          |                        |                               | 3,700   |
|                             | TOTAL PIPING                             |          |    |            |    |  |                        | 117,310      | 16,350       | 9,850                  | 102,035        |                        |                               | 235,545 |
|                             | TOTAL                                    |          |    |            |    |  |                        |              |              |                        |                |                        |                               |         |