

PLAINTIFF'S
EXHIBIT

ARO-177

From the Desk of
Ted Howell

Nov 2 19 63

Herb -
East Wks, Engrg.
Middlebush, Ohio.

Herb - Attached are copies of the
correspondence we discussed
yesterday. I hope this will
be of assistance when you get
into this.

The 364 ft² on the 4 1/2"
of castable lining on the hot
blast main & hot gas pipe should
be okay - Let me know when
we can be of any help. *Sub.*

A. P. GREEN FIRE BRICK COMPANY OF OHIO
1500 West Third Avenue, Columbus, Ohio
Phone: HU 6-4336

August 6, 1933

Mr. Kenneth Haley, Blast Furnace Superintendent
Middletown Works
Armco Steel Corporation
Middletown, Ohio

Subject: Special Runner Tile

Dear Ken:

Referring to our discussion regarding the subject matter during my last call at your plant, I have discussed with our Sales Engineering Department the problem and requested from them a recommendation regarding our various materials.

Considering other installations presently in operation, as well as cost and other factors, they have recommended our DV-38 quality material. This product is an 85% alumina material made in a rammed or dry press mix which contains a chemical bond, as well as being fired.

In regard to the making up of these tile, the longest tile that is practical for manufacture in this mix would be 12" overall. This would make a tile having the cross-section as you outlined and overall dimensions of 22" wide by 14" deep by 12" long. This would be the rammed mix, and the physical properties would be something less than those shown on the attached technical data sheet in terms of density, modulus, and cold crushing. The following would be the cost on this basis:

<u>DESCRIPTION</u>	<u>WEIGHT</u>	<u>PRICE</u> <u>FOB PHILADELPHIA</u>
DV-38 Runner Tile, 22x14x12" Overall	242# ea.	\$55.54 ea.
Mold Charge - \$207.00		

Although it would increase the number of individual tile involved, our Engineering Department recommends that you consider a tile which would have a maximum length of 4". This would make the overall dimensions of this tile 22" wide by 14" deep by 4" long. The advantage to this particular tile is that it could be dry press machine made and would have superior physical properties in terms of modulus, density, and cold crushing. It is further believed, based on previous experience, that the additional joints would give no problem if the recommended mortar, which will be discussed later, is used for laying up the tile and for coating the runners. The following is the price for these units.

<u>DESCRIPTION</u>	<u>WEIGHT</u>	<u>PRICE FOR PHILADELPHIA</u>
DV-38 Runner Tile 22x14x4" Overall	80.7# ea.	\$14.84 ea.
Minimum Order - 150 pieces		
Mold Charge - \$404.00		

One additional advantage in regard to the dry pressed tile is that the actual cost of equivalent volume would be less than the longer 12" shape.

In regard to a mortar to both lay up and coat this runner, our APO-2651W would be recommended. This is a 90% alumina mortar which contains a chemical bonding agent. Attached to this letter you will find a copy of the technical data sheet on this product. The price on this material for L.C.L. quantities is \$500.00 per ton f.o.b. Philadelphia, Pennsylvania.

One additional suggestion that we would like to make is in regard to the possible reluctance on your part to invest in mold charges before you have had an opportunity to previously make any preliminary evaluation on the material proper. We do manufacture this DV-38 quality in 3" straights, and we would suggest that you order enough of these 3" straights to, in a sense, pave your runner for approximately a 3 ft. length, utilizing the same APO-2651W mortar for this application. It would require approximately 32 3" straights to pave the 3 ft. section as indicated on my attached sketch. A 200# drum of the APO-2651W mortar would provide ample for both laying these brick and providing the coating. The price for the DV-38 3" straights is \$1.23 each in the quantity recommended. This will allow you to make your initial evaluation with a minimum cost outlay.

We hope that the above discussion and attached information will provide you with sufficient data to plan your test application in the runners. As I am sure you know, we will be very happy to assist you personally in any way possible with this installation and evaluation. We look forward to being of service to you in this matter.

Very truly yours,

T. R. Howell
Division Sales Engineer

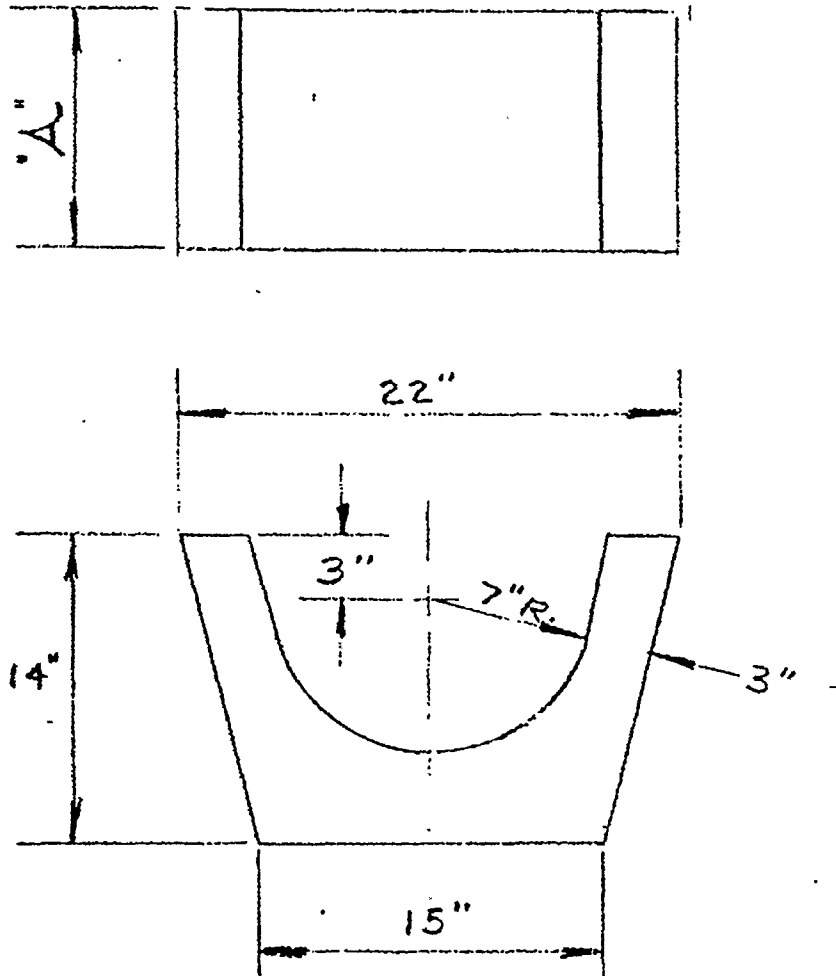
cc: Mr. C. M. Kneppshield - Arco Purchasing
Mr. Harry Holliday - Assistant General Superintendent

REMMEY DIVISION - A. P. GREEN FIRE BRICK CO.
PHILADELPHIA, PA.

FOR ARMCO STEEL CORP.
SUBJECT DV-38 RUNNER TILE

DWG. NO. SK 7266360-1
BY [Signature] DATE 3/14/42

REF DWG O-71963



ITEM	DIM. "A"
1	12"
2	4"