

PLIDRICO REFINERY DIVISION
JOB HISTORY SURVEY
F. C. C. UNIT LINING INSTALLATIONS
FURNACE REVAMP AND CONSTRUCTION

DATE	CUSTOMER	LOCATION	SCOPE OF WORK	PLIDRICO SPECIFICATION
12-50	Shell Oil Co. (Foster-Wheeler)	Pernis, Holland	(1) Regenerator (2) Cyclones	A-1 C-1
5-51	Phillips Petroleum Company	Kansas City, Kansas	(1) Corrective Repair Tile Replacement	Mod. A-1
5-51	Pure Oil Company	Newark, Ohio (Heath Refinery)	(1) Corrective Repair Tile Replacement	Mod. A-1
10-52	Pan-Am Southern Corp. (The Lummus Co.)	Destrehan, La. (S. O. D. -4)	(1) Regenerator	A-1
11-52	Shell Oil Company	Wood River Unit #1	(1) Transfer System	C-1
2-53	Sinclair Refining Co. (Fluor - Thorp) Babcock-Wilcox	Houston, Texas	(1) CO ₂ Boiler Inlet Nozzles Boiler Throat	Proper Engineering

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PLAINTIFF'S EXHIBIT

PLI-136

DATE	CUSTOMER	LOCATION	SCOPE OF WORK	PLANTED SPECIFIC FROM
3-53	Phillips Petr. Company	Burger, Texas	(1) Corrective Repair Tide Replacement	Mod. A-1
4-53	British Petr. Co. Ltd. (Anglo Iranian Oil Co.) Kellogg International	Grangemouth, England	(1) Regenerator (2) Cyclones (3) Transfer System	A-1 (Mod.) C-3 (Mod.) C-3 (Mod.)
5-53	Shell Oil Company	Wood River Unit #2	(1) Transfer System (2) Regenerator Head	C-2 M-1
5-53	Pan-Am Southern Corporation	Destrehan, La. (S. O. D. -4)	(1) Corrective Repair Transfer System	C-2
7-53	Shell - Berre (The Lamson Co.)	La Made, France	(1) Regenerator (2) Cyclones (3) Transfer System	A-1 C-1 C-1
8-53	Phillips Petr. Company	Kansas City, Kans.	(1) Regenerator	Mod. M-1
10-53	Lyon Oil Company (The Lamson Co.)	El Dorado, Arkansas (S. O. D. -4)	(1) Regenerator (2) Cyclones (3) Transfer System	A-1 C-1 C-1

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<u>DATE</u>	<u>CUSTOMER</u>	<u>LOCATION</u>	<u>SCOPE OF WORK</u>	<u>PUBLICITY SPECIFICATION</u>
12-53	British Petr. Co. Ltd. (Anglo Iranian Oil Co.) Kellogg International	Isle of Grain, England	(1) Regenerator (2) Cyclones (3) Transfer System	A-1 (Mod.) C-1 (Mod.) C-3 (Mod.)
12-53	Pan American Refining Corp. (The Lummus Co.)	Texas City, Texas (S. O. D. -4)	(1) Regenerator (2) Cyclones (3) Transfer System	A-1 C-2 C-2
1-54	Sinclair Refining Co. (Petro-Chem. Dev.)	Marcus Hook, Penn.	(1) Air Heater Ducts (2) Vertical Heaters	C-1 (Mod.) VII-1 (Mod.)
2-54	British Petr. Co. Ltd. (Anglo Iranian Oil Co.) Kellogg International	Llandarcy, England	(1) Regenerator (2) Cyclones (3) Transfer System	A-1 (Mod.) C-1 (Mod.) C-3 (Mod.)
2-54	Richfield Oil Corp. (Hess-Thorp) Babcock-Wilcox	Watson, California	(1) CO ² Boiler (2) Inlet Nozzles (3) Burner Throat	Project Engineered
2-54	Far East Fuel Ind. Co. (Standard-Vacuum Oil, Ltd.) Tao-Nenryo Industries	Wakayama, Japan	(1) Esso - Hydroformer (2) Hydroformer (3) Furnaces	Esso (Mod.) Esso (Mod.) Furnaces (Mod.)

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PLUMBING
SPECIFICATION

DATE	CUSTOMER	LOCATION	SCOPE OF WORK	PLUMBING SPECIFICATION
5-54	Shell Oil Company (Foster-Wheeler)	Norco, Louisiana	(1) Cyclones (2) Transfer System	C-2 C-2
6-54	Shell Oil Company (J. F. Pritchard & Co.)	Norco, Louisiana	(1) Blow-Down Stacks	Mod. A-1
8-54	Sinclair Refining Co. (Petro-Chem Dev.)	East Chicago, Ind.	(1) Air Heater Ducts (2) Vertical Heaters	C-3 (Mod.) VII-1 (Mod.)
9-54	Australian Oil Rfg. Ltd. (California-Texas Ltd.) Badger & Foster-Wheeler	Kurnell, Australia (S. O. D. -4)	(1) Regenerator (2) Reactor (3) Cyclones (4) Transfer System (5) Flue Gas Stack	A-1 (Mod.) A-1 (Mod.) C-3 (Mod.) C-3 (Mod.) A-1 (Mod.)
9-54	Pan American Rfg. Corp. (American Oil Corp.) The Lummus Company	Texas City, Texas	(1) Regenerator Head (2) Cyclones (3) Plenum	M-1 C-2 C-2
10-54	N. V. Petr. Maatschappij (Royal Dutch Shell) Lummus, Ltd.	Bombay, India	(1) Regenerator (2) Reactor (3) Cyclones (4) Transfer System (5) Flue Gas Stack	A-1 A-1 C-1 C-1 C-1

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DATE	CUSTOMER	LOCATION	SCOPE OF WORK	PLUMBING SPECIFICATION
12-54	N. V. Petr. Maatschappij (Royal Dutch Shell) Lummus, Ltd.	Melbourne, Australia	(1) Regenerator (2) Reactor (3) Cyclones (4) Transfer System (5) Flue Gas Stack	A-1 A-1 C-1 C-1 C-1
1-55	Pure Oil Company	Heath, Ohio	Furnace Revamp (Alcorn)	III-1
1-55	Elk Refining Co.	Charleston, West Va.	Furnace Revamp (U. O. P. -Upshot)	III-1
2-55	Flintkote Corp.	Los Angeles, Calif.	Asphalt Heater Revamp	III-1
2-55	Bay Petroleum Corp.	Chalmette, La.	Boiler Enclosure	Standard Construction
2-55	Pure Oil Company	Heath, Ohio	Furnace Revamp (Hip Roof Sections)	III-1
3-55	Union Oil Corp.	Wilmington, California	P. O. C. Regeneration Corrective Repairs	A-1 (Alcorn)

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<u>DATE</u>	<u>CUSTOMER</u>	<u>LOCATION</u>	<u>SCOPE OF WORK</u>	<u>PHIBROCO SPECIFICATIONS</u>
3-55	California Oil Co. (Caltex)	Perth Amboy, New Jersey	T. C. C. Regenerator Kiln	M-1 (March)
3-55	Sinclair Refining Co. (C. F. Braun)	East Chicago, Ind.	Refinery Waste Disposal Unit	Project Engineer
5-55	Pan-Am Southern Corp.	El Dorado, Arkansas	Vertical Furnace Defforez Revamp	VII-1 (April)
6-55	Sinclair Refining Co. (Bahcock-Wilcox)	East Chicago, Ind.	(1) CO ₂ Boiler (2) Entire Enclosure (3) Air Inlets (4) Burner Throats	Project Engineer
6-55	Esso A. G. (Esso Standard) Largo - Frankfurt	Hamburg, Germany	(1) Hydroformer (2) Hydrofiner (3) FCC Unit (Mod. 4)	Esso Research R-111-4-1 March April 1955

NOTE:

- (1) If the Engineer-Contractor is listed below the customer, this designates a new installation.
- (2) All listed jobs have been completely installed or supervised by Phibroco Company - Refinery Division.
- (3) Phibroco specifications A-1, M-1, C-1, C-2, C-3, III-1 and VII-1 are attached for your information.

THE TIME PACKAGE BUILDER	TYPE	FINISH	CONSTRUCTION FINISH	FINISH CHARACTER
Pouco Pak	All types	Lining-Pilbrico Super	None	Wet back, no refractory.
Johnson	All types	Lining-Pilbrico Super	None	Wet back, no refractory.
Eclipso	All types	Lining-Pilbrico Super with 1/4" Asb. board on dry sheet.	None	Arch-Pilbrico Super with anchors. Apron-Pilbrico with anchors. Back door-Pileast LWI 24 or #31 with 2" Pileulate block.
Powmaster Orr & Sembower	All types	Lining-Pilbrico Super with 1/4" Asb. board on dry sheet.	None	"A" Frame-Pileast J1 with rods. (or E1 Mix). Floor-Pileast J1 with 1/4" Asb. board. Back Door-Pileast LWI-24 with 2" Pile. block and chrome anchors.
Emcity	All types	Lining-Pilbrico Super	Pilbrico Super	Arch-Pilbrico Super (chrome arch). Lining-Pilbrico Super with 1/4" Asb. board. Backwall Pilbrico Super with 2" Pileulate block.
York Shipley	All types	Lining-Pilbrico Super	Pilbrico Super	"A" Frame-Pilbrico Super with 1/4" Asb. board. Back door-Pilbrico Super with 2" Pileulate block and chrome anchors.

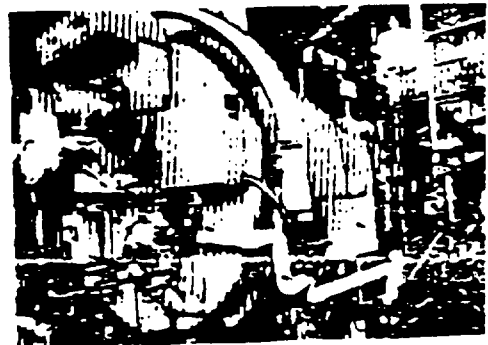
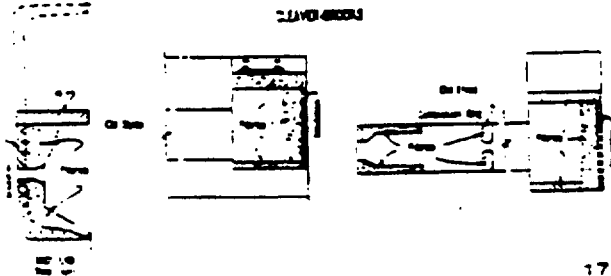
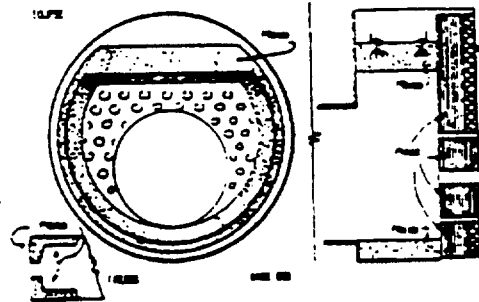
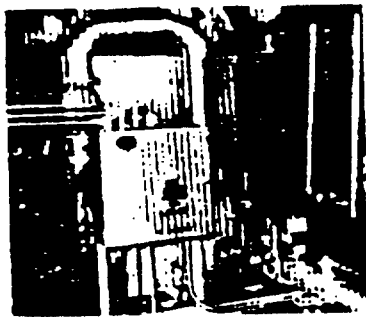
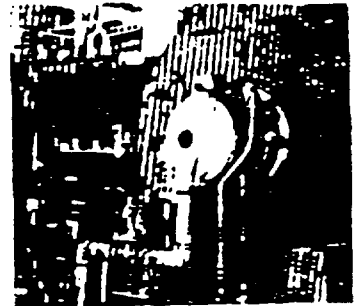
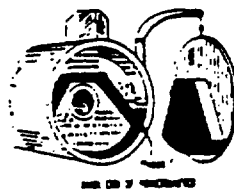
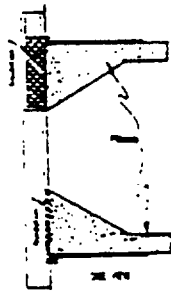
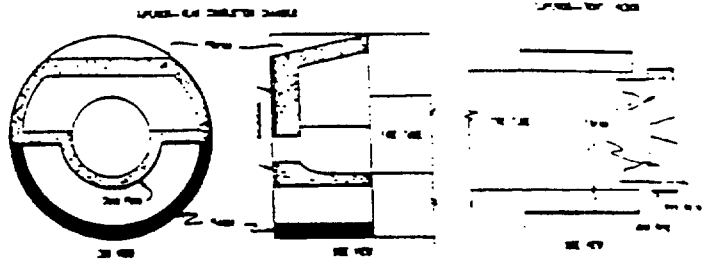
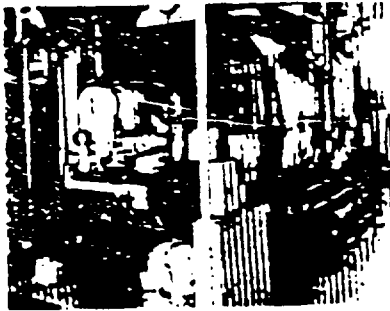
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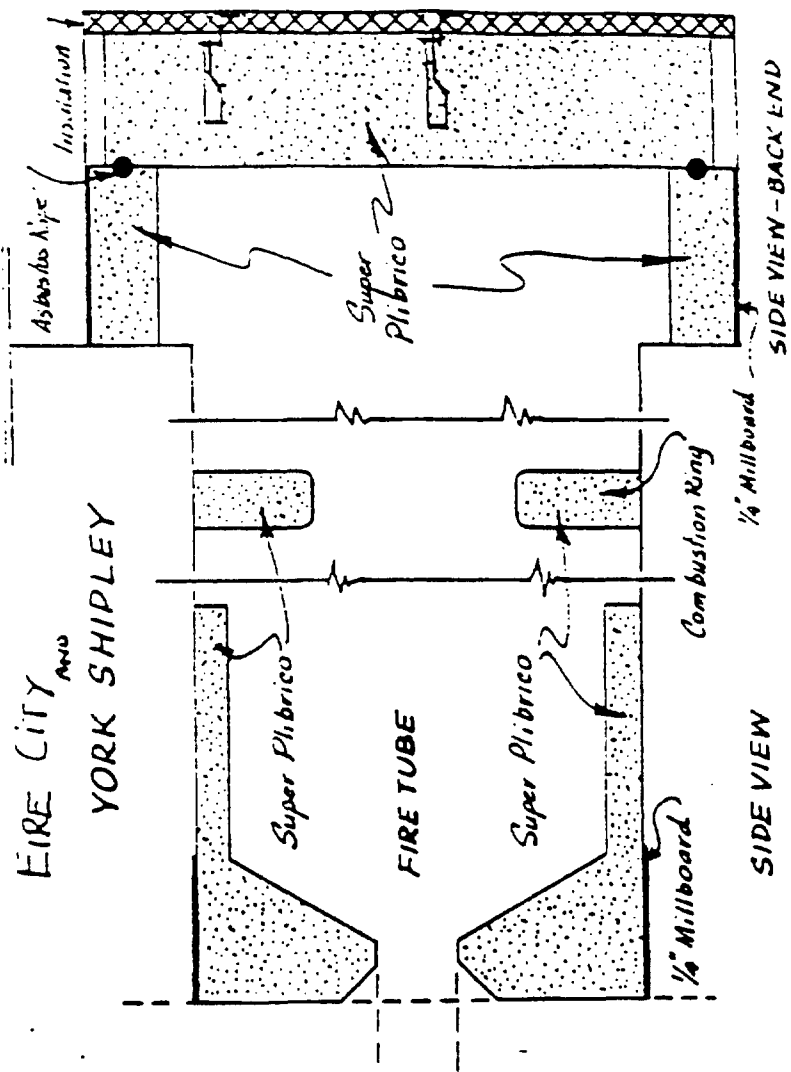
PRODUCT PACKAGE	ROLLER	TYPE	PIREBOX	COMBUSTION REF.	REAR CHAMBER
Rowman Ray		All types	Lining-Pilbrico Super	None	Arch-Pilbrico Super (curved), Lining- Super with 1/4" Ash, board, back Wall-Pilbrico Super with 2" Pilsulate Block.
Cleaver Brooks		Old type	Burner Cone Pilbrico Super, Lining-Silicon Carbide or Carborun- dum.	Pilbrico Super	Arch-Pilbrico Super with chrome anchors, Back Wall-Pilbrico Super with 2" Pilsulate block, Lining-Pilbrico Super with 1/4" Ash, board.
Cleaver Brooks		O. B. type	Burner Cone & Lining Pilbrico Super.	Pilbrico Super	Same as old type Cleaver Brooks
Cleaver Brooks		New type	Burner Cone Pilbrico Super, Lining-Silicon Carbide or Carborun- dum. (Pilbrico Super lining only 500 HP size or larger)	None	Back door-Pilbrico Super with 2" Pilsulate block and chrome anchors, Sheet tile by Cleaver Brooks
Amus		All types	Same as Cyclotherm	None	Back door - Pilbrico Super with 2" Pilsulate block and chrome anchors.
Cyclotherm		All types	Lining-Pilbrico Super	None	Back door-Pilbrico 31 with 2" Pilsulate block and chrome anchors.

PIPE/TUBE PACKAGE BOILER	TYPE	PIPE BOX	CONSTRUCTION RING	REAR OF CONSTRUCTION CHALLENGER
Preferred	All types	Lining-Pilbrico Super with 1/4" Asb. board	None	Arch-Pilbrico Super with 3/8" anchors. Back-Pilbrico Super with Pileulate block. Lining-Pilbrico Super with 1/4" Asb. board
Superior	All types	Same as Preferred May have to remove burner wire mesh with Pilbrico Super	None	Same as Preferred
Ray	All types	Lining-Pilbrico Super	None	Arch-Pileast 31 with chrome anchors; Lining-Pilbrico Super with 1/4" Asb. board. Back door Pileast 3" LWI-24 3" Verrillite with chrome anchors.
Hopkine Volcano	Oil Heater	Burner Cone Pilbrico Super. Remainder of Casing, including back door-Pileast LWI-24 with anchors.		
WATER TUBE				
PACKAGE BOILERS		FRONT & BACK WALLS	SIDE WALL	SIDEWALL BEHIND TUBES
Wickes Water Tube	Pilbrico Super with 2" Pileulate block	Pilbrico Super	Pilecast LWI 20 or Tile with Pileulate block	Pilecast - #11
Kocher Water tube	Pilbrico Super with Pileulate block	Pilbrico Super	Pilecast LWI 20 or Tile with Pileulate block	Pilecast - #11
Erie City (Keystone) Water Tube	Pilbrico Super	-----	Pilecast LWI 20 or Tile with Pileulate block	Pilecast - #11

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TYPICAL LINING ARRANGEMENTS

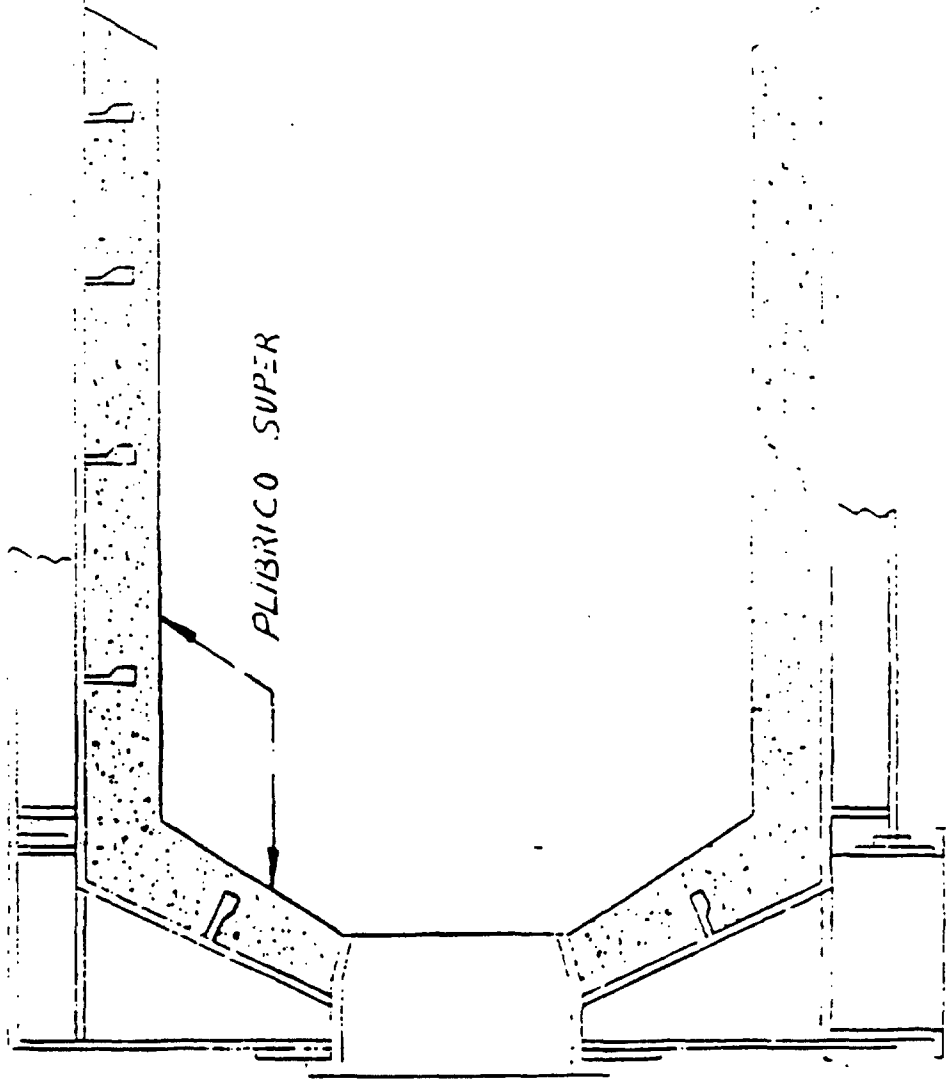




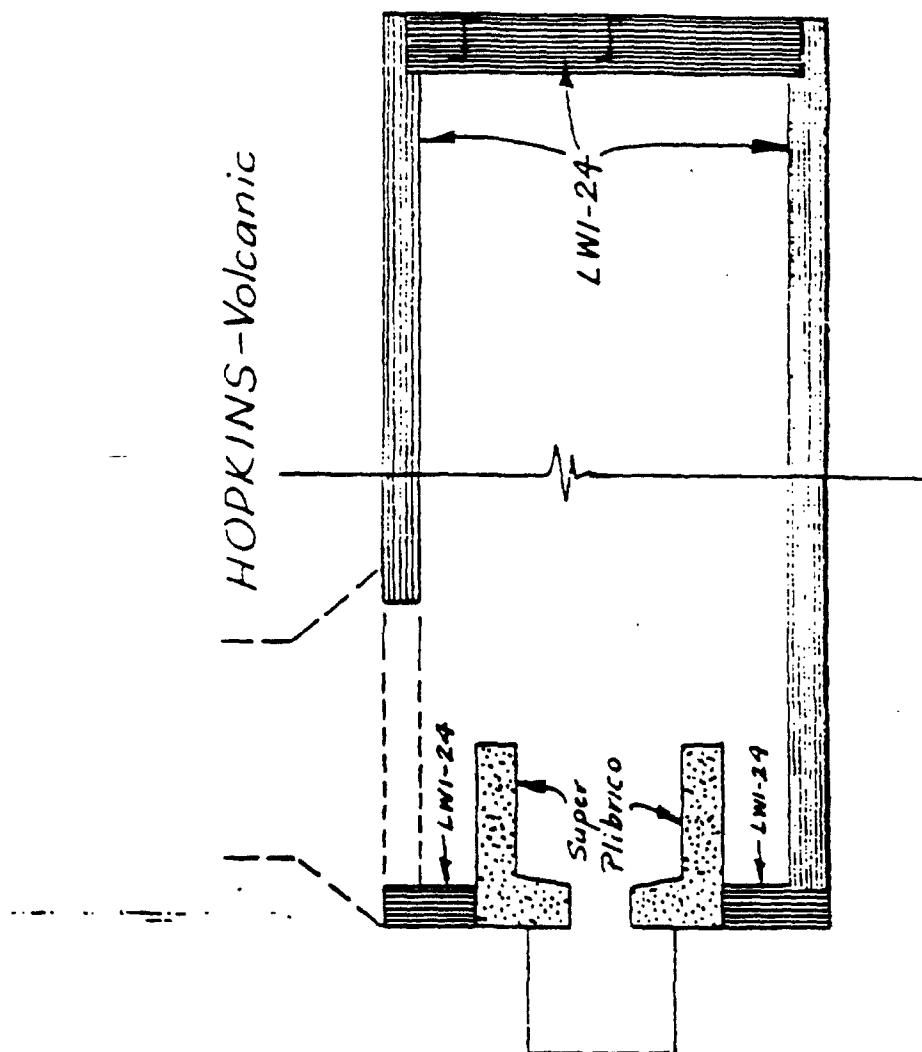
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JOHNSTON

PLIBRICO SUPER

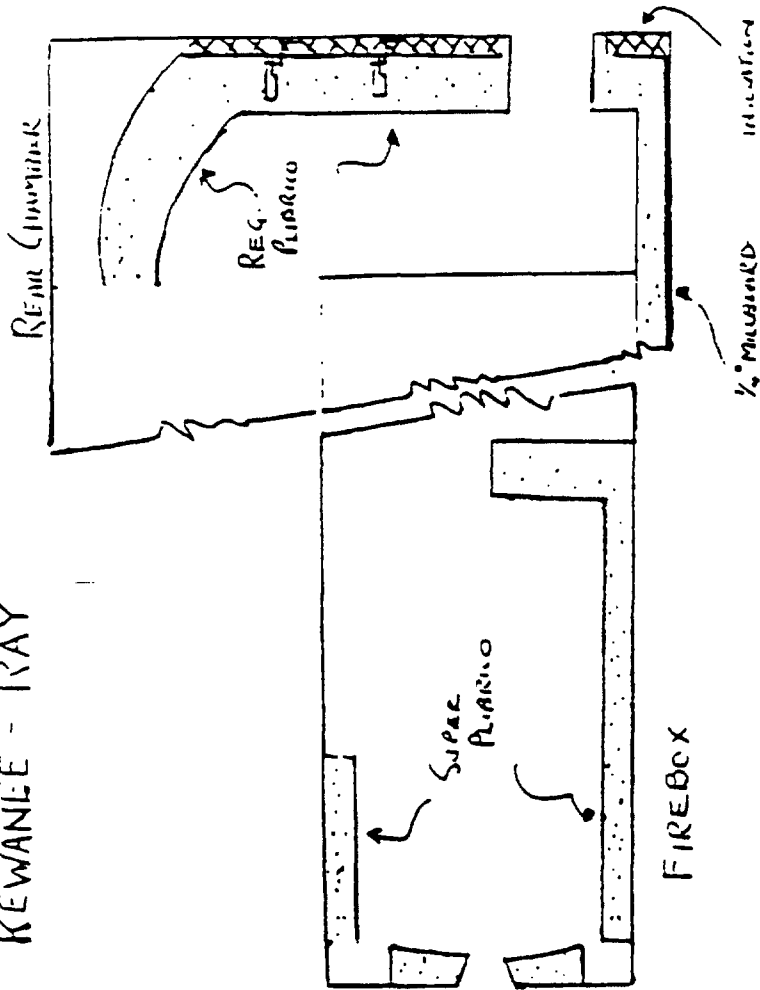


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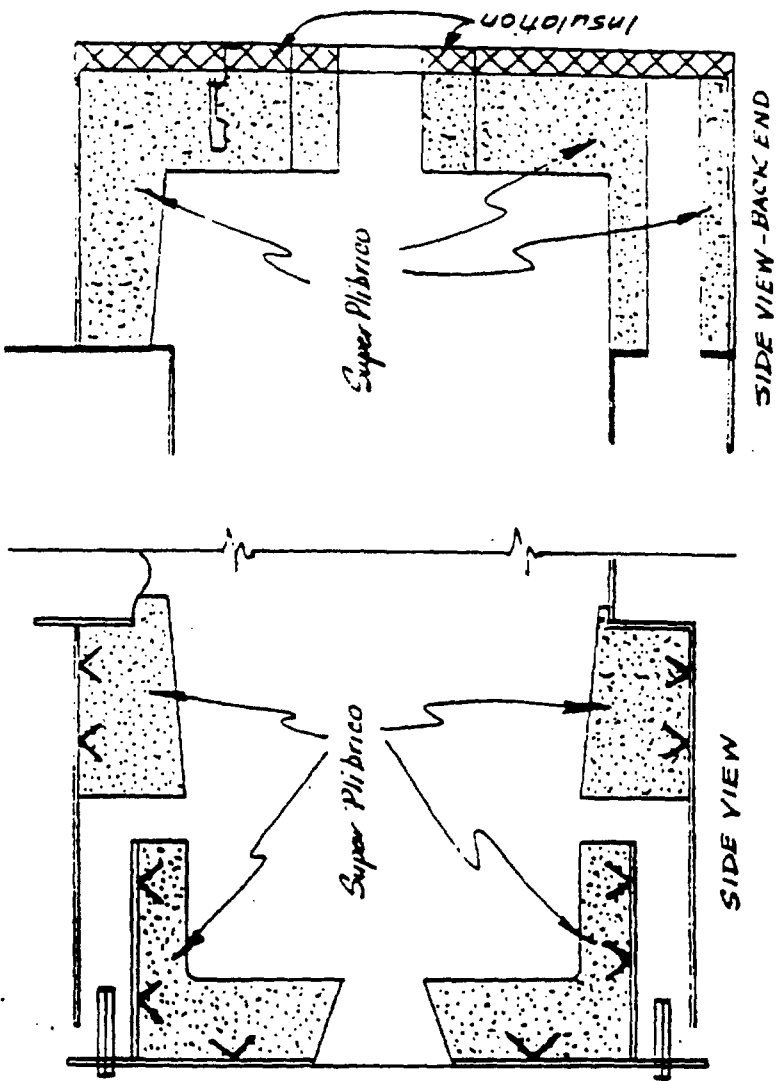
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KEWANEE - RAY



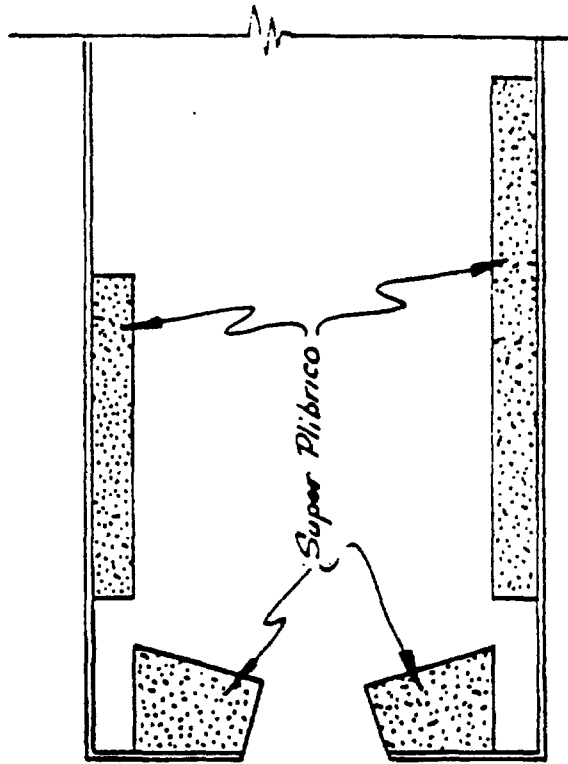
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PREFERRED



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PETRO-PAC



SIDE VIEW

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