

Acme Coke
11236 S. Torrence Ave.
Chicago IL 60617



acmecoke.com

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Fosbel Refractory Repair data

Dated: 9/17/2001

Mr. Jack Garzella
Mr. Art Arroyo
Mr. Pete Medvid
Acme Staff

September 17, 2001

TRIP REPORT – ACME STEEL SEPTEMBER 2001

A visit was made to ACME July 2001 for the purpose of identifying heating problems in the C16 through C24 area. Combustion problems in B6 through B12 ovens that required immediate attention were discovered at that time. Time constraints did not permit complete resolution of problems in both areas during the July visit, but recommendations were made to resolve the problems. The September visit was scheduled to check progress.

Mr. Arroyo's implementation of recommendations to temporarily vent flues and blow bus flues has resulted in complete resolution of the problems in the B6 through B12 problem area. Considerable progress has been made in the C16 through C24 area. Attached for reference is a listing of significant individual flue problems that were identified in the July inspection. All of these problems except for a restricted air port in CS 1 flue of C19 wall have been corrected. Combustion problems in C18 have been corrected by removing a layer of checkers in PS C18 regenerator and welding cracks between the pusher side inner and outer division wall, but the draft is still set about 2 mm higher than normal.

In spite of significant progress, problems persist. Operators report that the coke temperature in the flue PS 7 through PS 11 flue area for ovens C18, C22 and C23 is marginal when the ovens are scheduled at the lower range of the coking time window. Observations of pushes on September 16 and 17 confirm the operators' description. A cool spot was evident in the area toward the end of the pusher side outers in C22 oven. The cool spot would have been green if the ovens were pushed at a shorter time than the approximate 20-hour coking time. There was a pocket of raw coal at the coke side face of ovens C20, 22 and 24 attributed to bad door plugs on those oven. Several plugs (especially that of C22) were damaged or sheared even with the metal retainer box. Otherwise pushes for C16, 20 and 24 looked good. C23 oven has been sticking frequently.

Because the repair work in PS C18 regenerator made a tremendous combustion improvement in C18 wall, it was decided to inspect PS C19 and CS C18 & 19 regenerators. PS C19 and CS C18 both have significant leakage joints in their respective division walls and have, or probably have, debris on top of the checkers. It is recommended that similar repairs to those made in C18 PS regenerator be made. The regenerator for CS C19 has had previous work performed and has a problem in the corbel near the fourth flue. This damage was previously braced. Corrective action for this regenerator is not recommended because efforts may result in loss of the corbel. As a temporary respite, smaller pins in the problem areas may provide relief until the regenerator work is completed.

It is theorized that the cross-flow at the regenerator division walls may be disturbing the pull on the flues in that area causing low temperatures. The location corresponds to the sensitive heat areas in the coke mass. Similar action to that detailed above for regenerators C22 through C24 is recommended if heating improvements result for C18.

In the author's opinion the sticker problems for C23 oven are a result of oven conditions. Pushing problems with this oven were experienced about 1 ½ years ago which were attributed to a bulge in the North wall and rough mail boxes, especially in the south wall. An oven inspection made September 16 reveals similar oven conditions persist. Examination of crosswall data obtained by ACME personnel does not display temperature abnormalities that would contribute to C23 sticking.

The problem of broken tie rods and repair techniques were discussed with Mr. Arroyo and Mr. Medvid. It is not surprising that tie rods are failing after 20+ years service. Tie rod longevity is a function of temperature exposure. Consequently, it was recommended that temperature data be obtained for a failed and a repaired tie rod. The life of the tie rod can be predicted from its temperature exposure. It was further recommended that the present practice of insulating over the tie rod be discontinued --- this contributes to holding heat in, elevating the tie rod temperature. Insulation below and on the sides of the tie rod is desirable if there is sufficient room for installation. A copy of an AIME conference paper presented by the author will be forwarded to your attention. Successful repair techniques are described. The author could work with you in developing an appropriate tie rod repair technique if temperature data indicates the present methodology is inadequate.

James O. Pettrey



Consultant, Fosbel, Inc.

July 2001
JUNE 1999

WALL No.	FLUE NUMBER																				WALL No.		
	Pusher Side										Coke Side												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
-1																					-1		
-2	<i>Re-inspected 9-15-01</i>																				-2		
-3																					-3		
-4																					<i>Problems circled still exist</i>		
-5	-5																						
-6	-6																						
-7																					-7		
-8																						-8	
-9																						-9	
-10																						-10	
-11																						-11	
-12																						-12	
-13																						-13	
-14																						-14	
-15																						-15	
C-16																B						C-16	
C-17	←		G	→												BB						C-17	
C-18	←		G	→												B	B	B			BCBCCC	C-18	
C-19							B									BB					(A)	C-19	
C-20																B	B					C-20	
C-21																						C-21	
C-22			G														G					C-22	
C-23																						C-23	
C-24																BB		B				GA	C-24
C-25																	B		B			A	C-25

LEGEND: A(a) Air Port Restricted
 B(b) Gas Bottle Restricted
 H(h) Need Slide Brick adj.
 C(c) Combustion Problem(Draft)
 N(n) Flue Not Inspected
 D(d) Suspect Worn Orifice
 G(g) Gas Supply Problem
 T(t) Gas Bottle Off Seat

UPPER CASE LETTER A PRIORITY; lower case letter b priority

A priority Flue Maintenance Items

COST OF REPAIR PER OVEN

AMOUNT SPENT PER OVEN									
FOSBEL CERAMIC WELDING 1997									
MRA # RI-7416			PO#		AMOUNT:\$193,000.00				
OVEN#	DAYS	START	FINISH	MATERIAL	P/S	C/S	MB	ZB	COST-PER-OVEN
C-23	1	3/31/97	3/31/97	175	X		X		\$1,630.50
A-3	4	4/1/97	4/4/97	700	X	X			\$6,522.00
A-18	5	4/7/97	4/11/97	825	X	X			\$7,987.50
B-19	5	4/14/97	4/18/97	1300	X	X			\$9,555.00
D-6	5	4/21/97	4/25/97	1075	X	X			\$8,812.50
A-19	3	4/28/97	4/30/97	350	X	X			\$4,314.00
A-13	1	5/1/97	5/1/97	25		X			\$1,135.50
A-23	6	5/2/97	5/9/97	1250	X	X			\$10,443.00
A-25	1	5/12/97	5/12/97	200		X			\$1,713.00
C-3	4	5/13/97	5/16/97	1500	X	X			\$9,162.00
D-19	4	5/19/97	5/22/97	725	X	X			\$6,604.50
A-7	4	5/27/97	5/30/97	825	X	X			\$6,934.50
C-25	5	6/2/97	6/6/97	1450	X	X			\$9,837.00
D-7	4	6/9/97	6/13/97	500	X	X			\$5,862.00
A-2	3	6/16/97	6/18/97	250	X	X			\$3,984.00
B-3	7	6/19/97	6/27/97	1700	X	X			\$12,981.00
A-5	4	6/30/97	7/3/97	1150	X	X			\$8,007.00
D-24	5	7/7/97	7/11/97	1200	X	X			\$9,225.00
D-23	5	10/27/97	10/31/97	2375	X	X			\$13,102.50
C-21	5	11/3/97	11/7/97	2225	X	X			\$13,615.00
B-15	2	11/10/97	11/11/97	700	X	X			\$4,416.00
B-22	3	11/12/97	11/14/97	450	X	X			\$4,644.00
DAYS= 86 TOTAL MAT USED									\$160,487.50
									20950 lbs
									x3.30lb
									\$69,135.00
Date: November 19, 1997									
Report generated by Ovens Operations									
cc: D.Podgorny									
J.Garzella									
D.O'hearn									

WEEKLY

FOSBEL WEEKLY SPENDING TOTAL 1997						
FOSBEL WEEKLY SPENDING 1997						
	DATE		WEEK	BILLED	TOTAL	INVOICE #
WEEK 1	3/31/97	4/4/97	\$8,152.50	YES		19599
WEEK 2	4/7/97	4/11/97	\$7,987.50	YES	\$16,140.00	19612
WEEK 3	4/14/97	4/18/97	\$9,555.00	YES	\$25,695.00	19630
WEEK 4	4/21/97	4/25/97	\$8,812.50	YES	\$34,507.50	19645
WEEK 5	4/27/97	5/2/97	\$6,915.00	YES	\$41,422.50	19678
WEEK 6	5/5/97	5/9/97	\$8,977.50	YES	\$50,400.00	19696
WEEK 7	5/12/97	5/16/97	\$10,875.00	YES	\$61,275.00	19709
WEEK 8	5/19/97	5/22/97	\$6,604.50	YES	\$67,879.50	19721
WEEK 9	5/26/97	5/30/97	\$6,934.50	YES	\$74,814.00	19746
WEEK 10	6/2/97	6/6/97	\$9,837.00	YES	\$84,651.00	19756
WEEK 11	6/9/97	6/13/97	\$5,862.00	YES	\$90,513.00	19770
WEEK 12	6/16/97	6/20/97	\$7,410.00	YES	\$97,923.00	19782
WEEK 13	6/23/97	6/27/97	\$9,555.00	YES	\$107,478.00	19795
WEEK 14	6/30/97	7/3/97	\$8,007.00	YES	\$115,485.00	19830
WEEK 15	7/7/97	7/11/97	\$9,225.00	YES	\$124,710.00	19838
WEEK 16	10/27/97	10/31/97	\$13,102.50		\$137,812.50	
WEEK 17	11/3/97	11/7/97	\$13,615.00		\$151,427.50	
WEEK 18	11/10/97	11/14/97	\$9,060.00		\$160,487.50	
Date: November 19, 1997						
Report generated by Ovens Operations						
cc: D.Podgorny						
J.Garzella						
D.O'hearn						

AMT-LFT

FOSBEL AMOUNT LEFT TOTAL 1997					
	DATE		WEEK	TOTAL	PO AMOUNT
START					\$193,000.00
WEEK 1	3/31/97	4/4/97	\$8,152.50	\$8,152.50	\$184,847.50
WEEK 2	4/7/97	4/11/97	\$7,987.50	\$16,140.00	\$176,860.00
WEEK 3	4/14/97	4/18/97	\$9,555.00	\$25,695.00	\$167,305.00
WEEK 4	4/21/97	4/25/97	\$8,812.50	\$34,507.50	\$158,492.50
WEEK 5	4/27/97	5/2/97	\$6,915.00	\$41,422.50	\$151,577.50
WEEK 6	5/5/97	5/9/97	\$8,977.50	\$50,400.00	\$142,600.00
WEEK 7	5/12/97	5/16/97	\$10,875.00	\$61,275.00	\$131,725.00
WEEK 8	5/19/97	5/22/97	\$6,604.50	\$67,879.50	\$125,120.50
WEEK 9	5/26/97	5/30/97	\$6,934.50	\$74,814.00	\$118,186.00
WEEK 10	6/2/97	6/6/97	\$9,837.00	\$84,651.00	\$108,349.00
WEEK 11	6/9/97	6/13/97	\$5,862.00	\$90,513.00	\$102,487.00
WEEK 12	6/16/97	6/20/97	\$7,410.00	\$97,923.00	\$95,077.00
WEEK 13	6/23/97	6/27/97	\$9,555.00	\$107,478.00	\$85,522.00
WEEK 14	6/30/97	7/3/97	\$8,007.00	\$115,485.00	\$77,515.00
WEEK 15	7/7/97	7/11/97	\$9,225.00	\$124,710.00	\$68,290.00
WEEK 16	10/27/97	10/31/97	\$13,102.50	\$137,812.50	\$55,187.50
WEEK 17	11/3/97	11/7/97	\$13,615.00	\$151,427.50	\$41,572.50
WEEK 18	11/10/97	11/14/97	\$9,060.00	\$160,487.50	\$32,512.50
Date: November 19, 1997 Report generated by Ovens Operations cc: D.Podgorny J.Garzella D.O'hearn					

MONTHLY

FOSBEL MONTHLY SPENDING 1997	
JANUARY	\$0.00
FEBRUARY	\$0.00
MARCH	\$0.00
APRIL	\$34,507.50
MAY	\$40,306.50
JUNE	\$32,664.00
JULY	\$17,232.00
AUGUST	\$0.00
SEPTEMBER	\$0.00
OCTOBER	\$0.00
NOVEMBER	\$0.00
DECEMBER	\$0.00
TOTAL	\$124,710.00

OVEN WELDING REPAIR REPORT

OVEN NUMBER B-15 START DATE 11-10-97 COMPLETED DATE 11-11-97

OVEN TEMPLATE CLEARS WELD YES NO

OVEN WALL TEMPERATURE BEFORE CHARGE PSI 2187 PSO 2144 CSI 2263 CSO 2202

DAYS OUT OF SERVICE 2

WELDING MATERIAL USED 700 LBS

BULKHEADS INSTALLED YES NO

CONDITION OF NORTH WALL OK

CONDITION OF SOUTH WALL OK

CONDITION OF OVEN FLOOR OK

DUST FLOOR YES NO

BLOW FLOOR YES NO

POUR FLOOR YES NO

OVEN PLANKED YES NO

TYPE OF CHARGE FULL LIGHT CUT EAST

C\S OVEN FLUES 1 thru 6 OK CLEANED

DATE & TIME OVEN CHARGED 11-11-97 2.30 AM PM

HEATING DEPT NOTIFIED HEATER OLSON HEATER HELPER LARSON

SUPERVISORS ON TURN OVEN S.C. SEFFERSON CHARGING R. DENARDO

HEATING SUPERVISOR A. ARROYO

REFRACTORY SUPERVISOR R. MEDVED

AREA MANAGER D. BOGORNAY

COMMENTS:

OVEN WELDING REPAIR REPORT

OVEN NUMBER B-22 START DATE 11-12-97 COMPLETED DATE 11-14-97

OVEN TEMPLATE CLEARS WELD YES NO

OVEN WALL TEMPERATURE BEFORE CHARGE PSI 2140 PSO 2100 CSI 2201 CSO 2240

DAYS OUT OF SERVICE 3

WELDING MATERIAL USED 450 LBS

BULKHEADS INSTALLED YES NO

CONDITION OF NORTH WALL OK

CONDITION OF SOUTH WALL OK

CONDITION OF OVEN FLOOR OK

DUST FLOOR YES NO

BLOW FLOOR YES NO

POUR FLOOR YES NO

OVEN PLANKED YES NO

TYPE OF CHARGE FULL LIGHT CUT EAST

C\S OVEN FLUES 1 thru 6 OK CLEANED

DATE & TIME OVEN CHARGED 11-14-97 12:08 AM PM

HEATING DEPT NOTIFIED HEATER OLSON HEATER HELPER LARSON

SUPERVISORS ON TURN OVEN SEFFERSON CHARGING DENAROO

HEATING SUPERVISOR A. ARROYO

REFRACTORY SUPERVISOR P. MEDVED

AREA MANAGER D. DOOGORNY

COMMENTS:

OVEN WELDING REPAIR REPORT

OVEN NUMBER D-23 START DATE 10/27/97 COMPLETED DATE 10/31/97

OVEN TEMPLATE CLEARS WELD YES NO 1878

OVEN WALL TEMPERATURE BEFORE CHARGE PSI 2091 PSO 2148 CSI 2083 CSO 2135

DAYS OUT OF SERVICE 5

WELDING MATERIAL USED 2375 LBS

BULKHEADS INSTALLED YES NO

CONDITION OF NORTH WALL OK

CONDITION OF SOUTH WALL OK

CONDITION OF OVEN FLOOR OK

DUST FLOOR YES NO

BLOW FLOOR YES NO

POUR FLOOR YES NO

OVEN PLANKED YES NO

TYPE OF CHARGE FULL LIGHT CUT EAST

C\S OVEN FLUES 1 thru 6 OK CLEANED

DATE & TIME OVEN CHARGED 1.30 AM PM

HEATING DEPT NOTIFIED HEATER D. HUNT HEATER HELPER

SUPERVISORS ON TURN OVEN BROWN CHARGING BLAIR

HEATING SUPERVISOR A. ARROYO

REFRACTORY SUPERVISOR H. THOMAS

AREA MANAGER

COMMENTS:

OVEN WELDING REPAIR REPORT

OVEN NUMBER C-21 START DATE Nov-3 COMPLETED DATE Nov-7

OVEN TEMPLATE CLEARS WELD YES ✓ 18 1/2" NO _____

OVEN WALL TEMPERATURE BEFORE CHARGE PSI 211 PSO 2225 CSI 2314 CSO 2207

DAYS OUT OF SERVICE 5

WELDING MATERIAL USED 2225 LBS

BULKHEADS INSTALLED YES ✓ NO _____

CONDITION OF NORTH WALL ok

CONDITION OF SOUTH WALL ok

CONDITION OF OVEN FLOOR ok

DUST FLOOR YES _____ NO ✓

BLOW FLOOR YES _____ NO _____

POUR FLOOR YES _____ NO ✓

OVEN PLANKED YES ✓ NO _____

TYPE OF CHARGE FULL _____ LIGHT _____ CUT EAST ✓

C\S OVEN FLUES 1 thru 6 OK ✓ CLEANED _____

DATE & TIME OVEN CHARGED Nov-7 2:50 _____ AM ✓ PM

HEATING DEPT NOTIFIED HEATER M OLSON HEATER HELPER K PUSTY

SUPERVISORS ON TURN OVEN O'Rourke CHARGING FELICIANO

HEATING SUPERVISOR ARROYO

REFRACTORY SUPERVISOR MEDVED

AREA MANAGER Podgorny

COMMENTS:

700-lbs $\frac{1}{3}$ & $\frac{4}{3}$

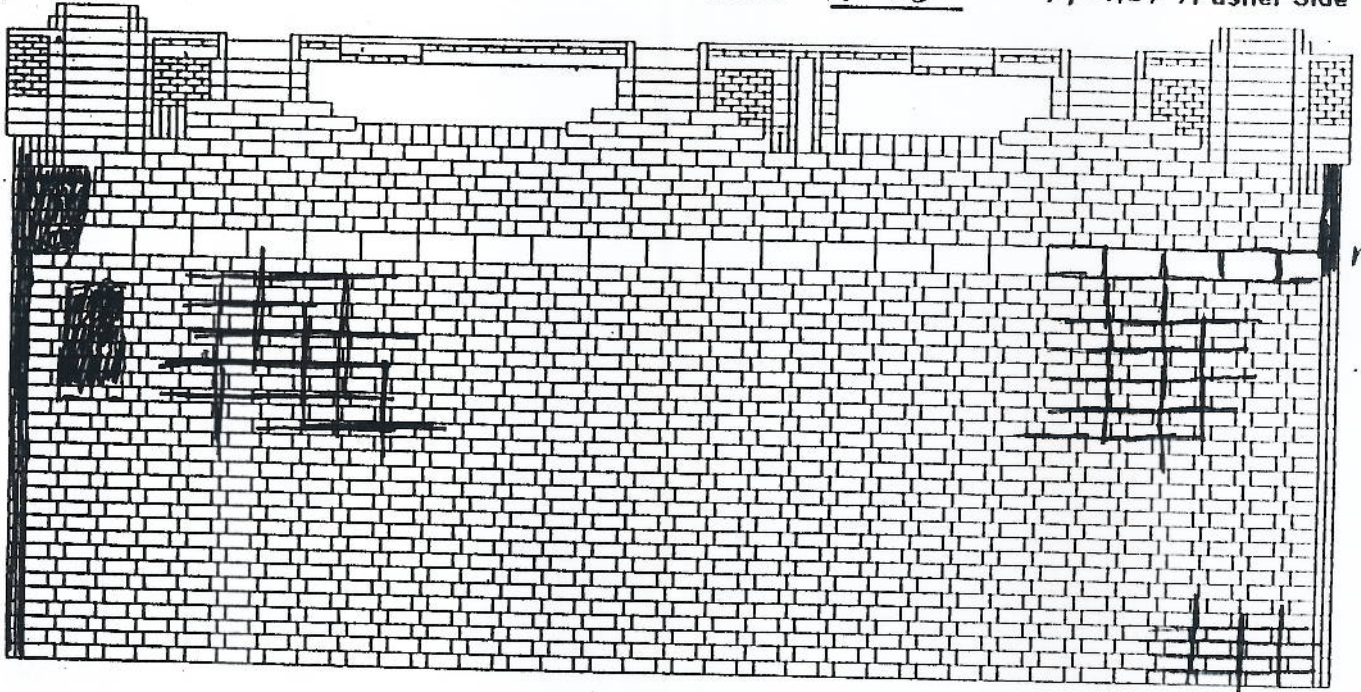
W. Estes

ACME WILLPUTTE BATTERY

Coke Side

OVEN # B-15

DATE 11-10 — 11-11-97 Pusher Side



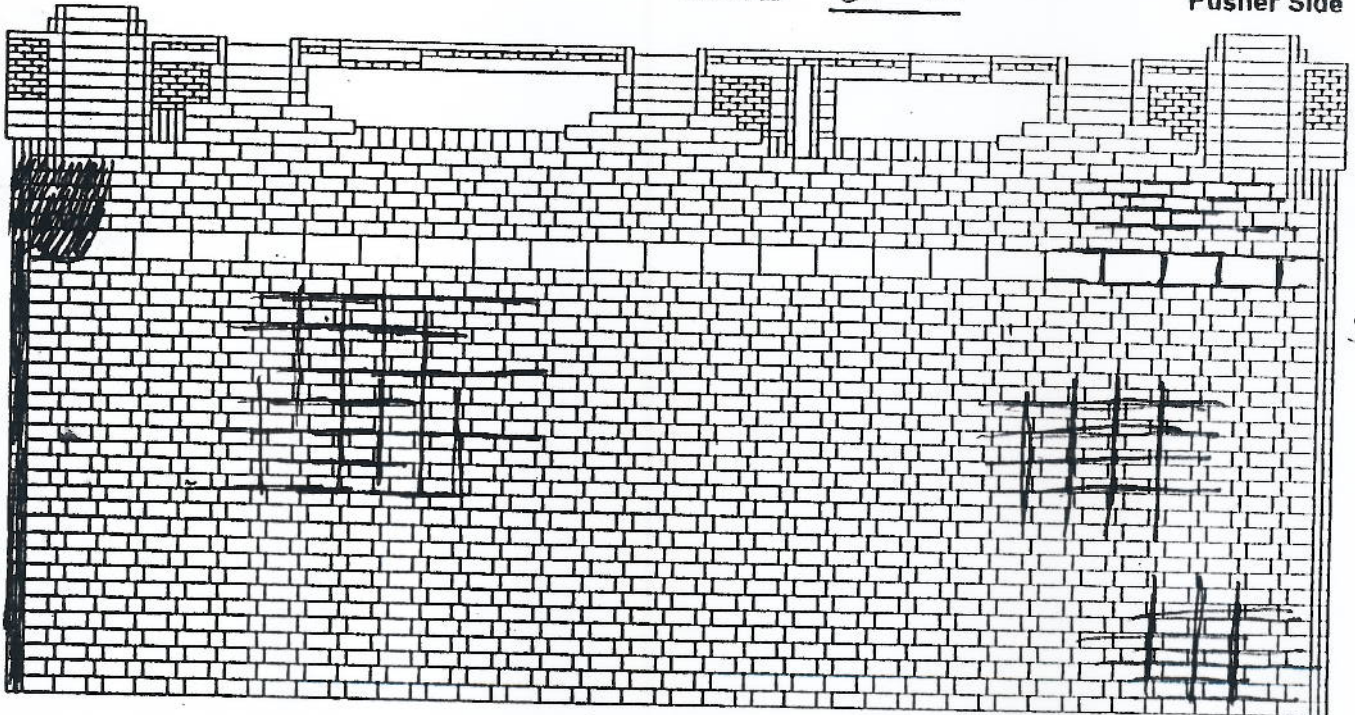
ACME WILLPUTTE BATTERY

Coke Side

OVEN #

DATE B-15

Pusher Side

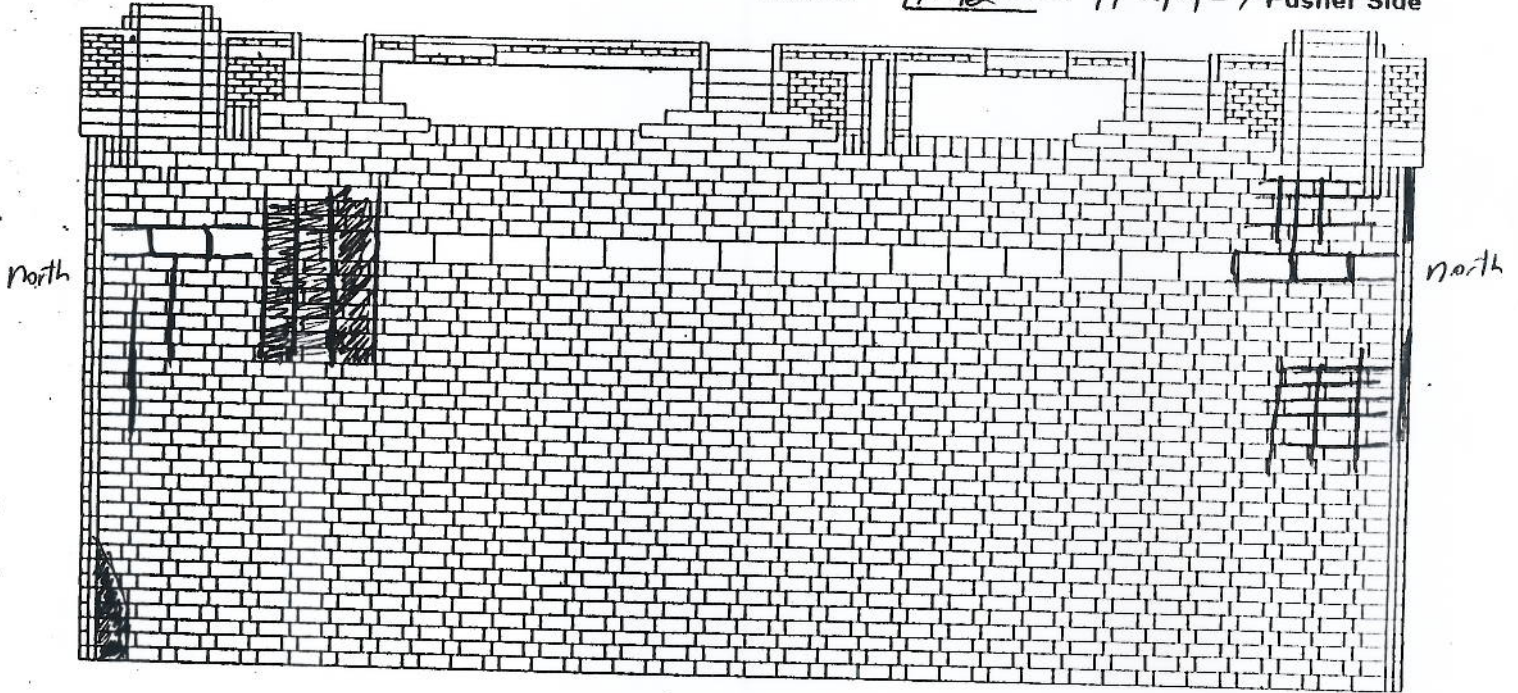


ACME WILLPUTTE BATTERY

Coke Side

OVEN # B-22

DATE 11-12-11-14-97 Pusher Side

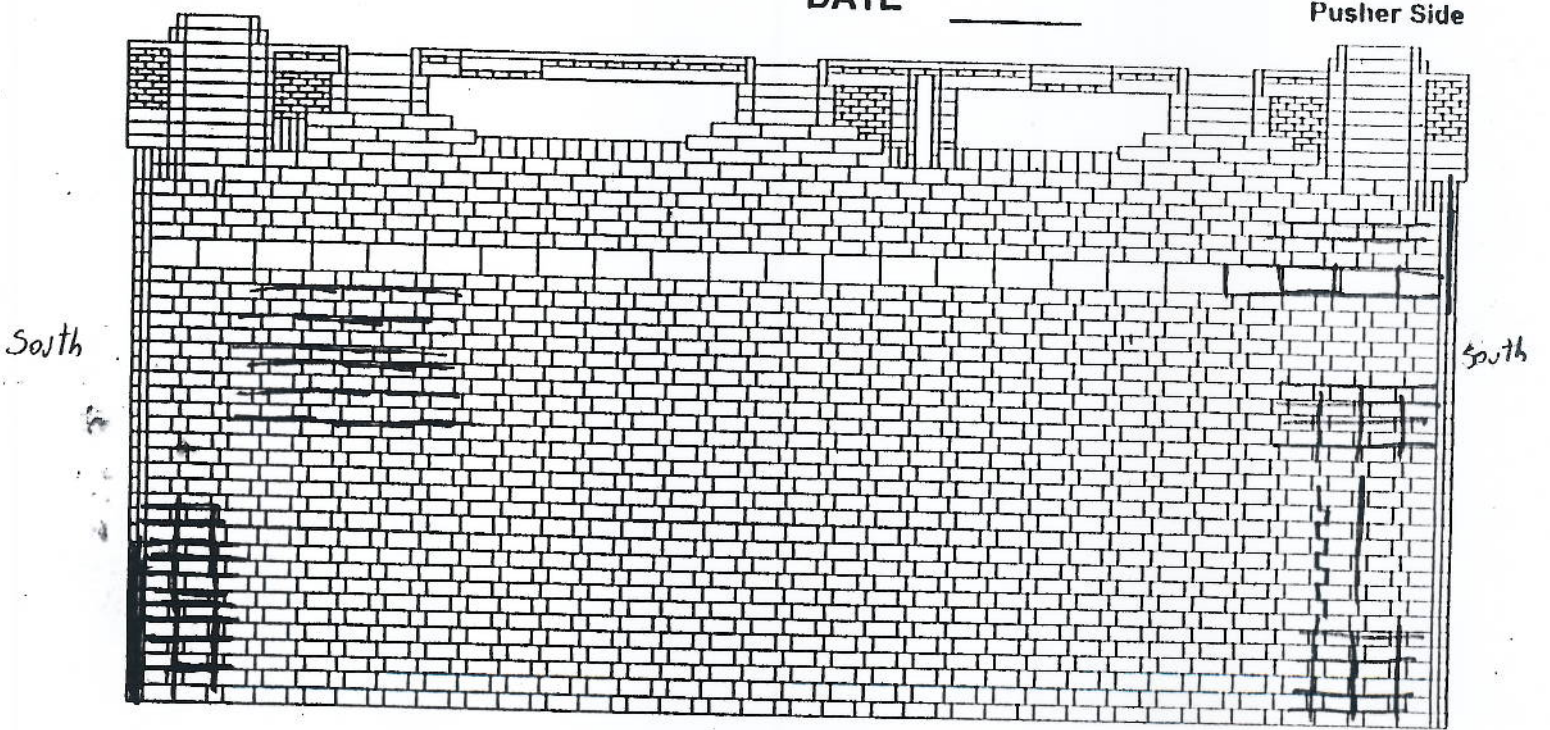


ACME WILLPUTTE BATTERY

Coke Side

OVEN # B-22

DATE _____ Pusher Side



222-105

Wesley

11-3-11-7-97

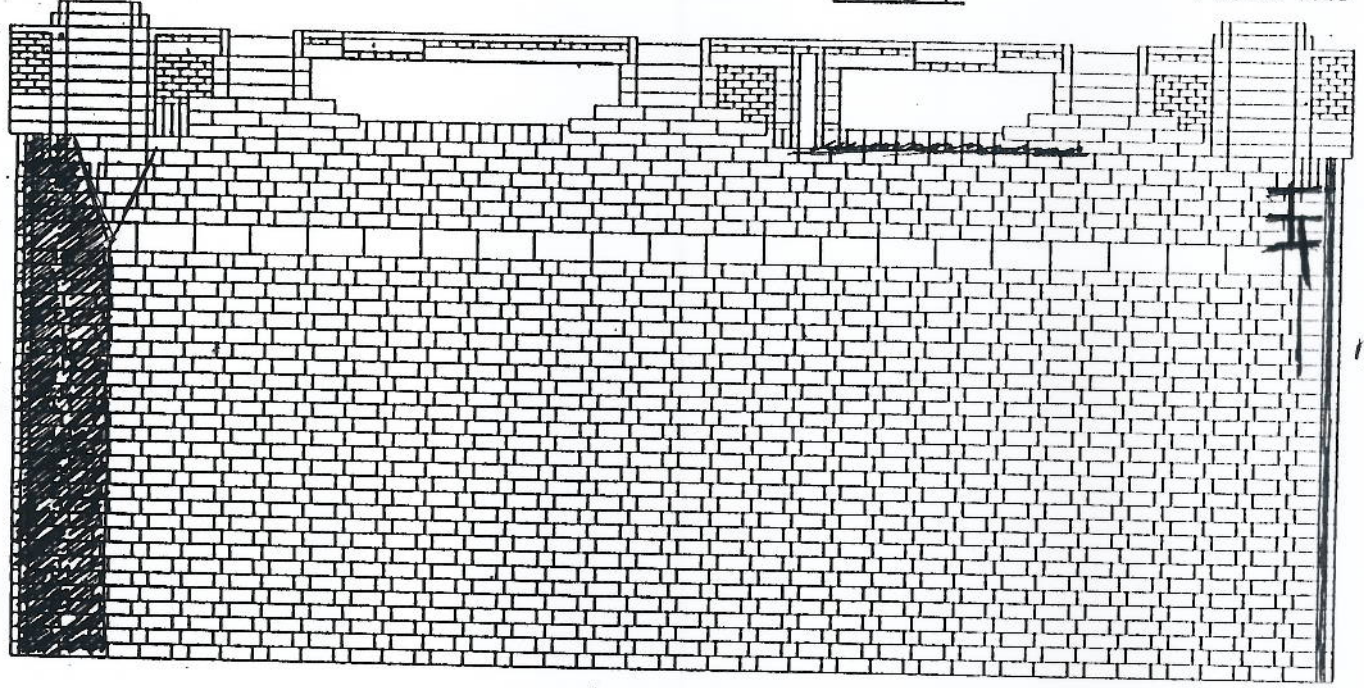
ACME WILLPUTTE BATTERY

OVEN #

Coke Side

DATE C-21

Pusher Side



Oven C-21 Has a lot of Open Joints in The Horizontal Fluss. They were not welded Due To lack of Time.

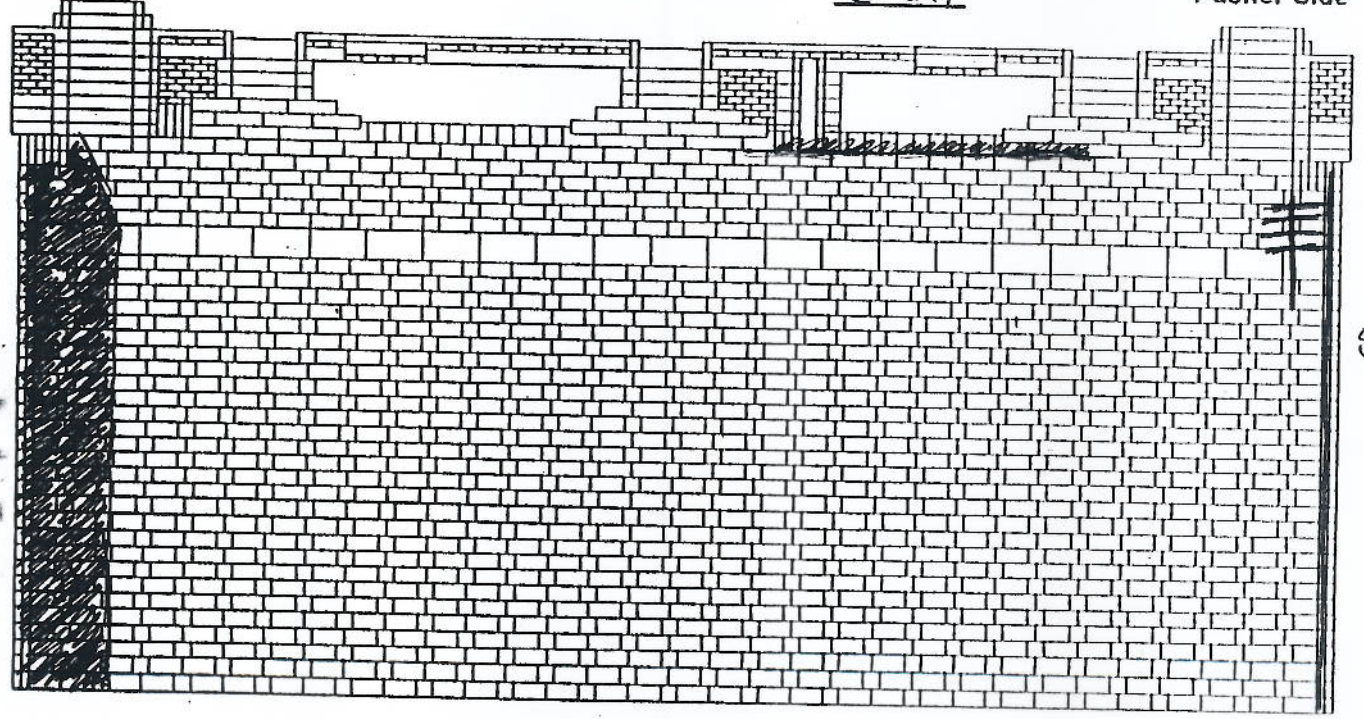
ACME WILLPUTTE BATTERY

OVEN #

Coke Side

DATE C-21

Pusher Side



10-27-10-31-97 - W. L. S. 1993

23.75 lbs of material

ACME WILLPUTTE BATTERY

Coke Side

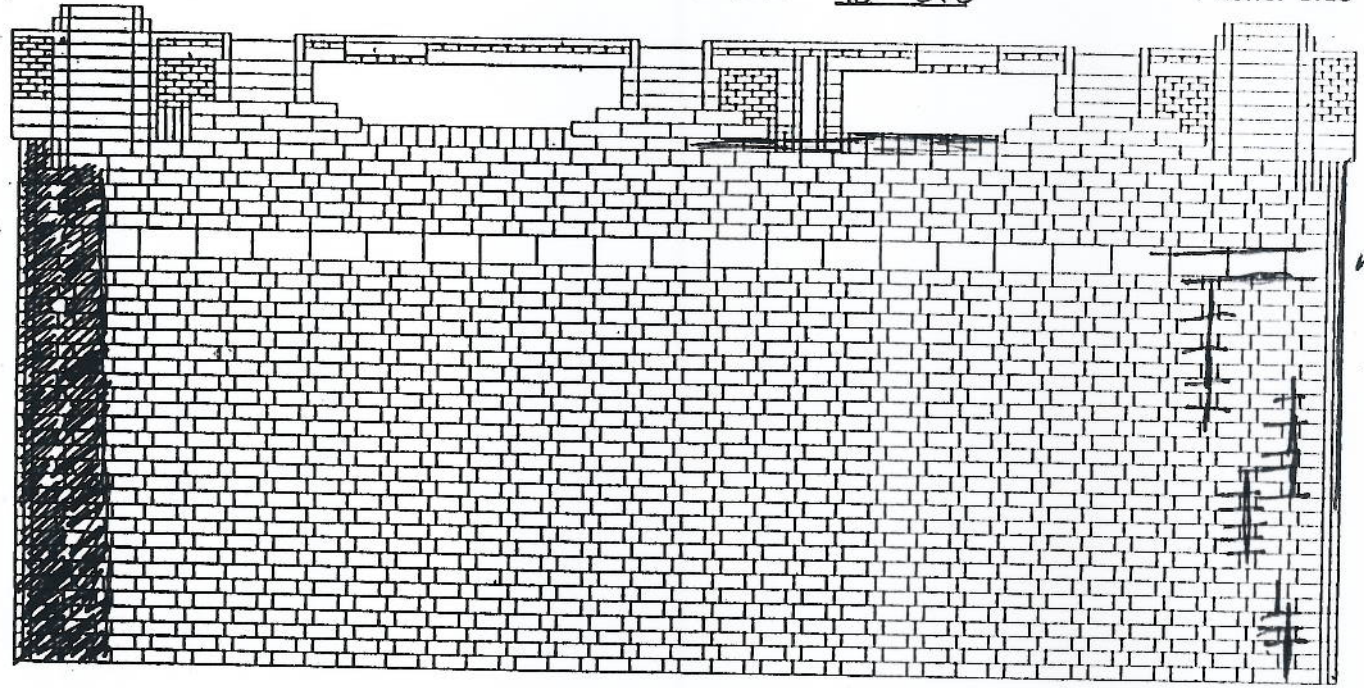
OVEN #

DATE D-23

Pusher Side

North

North



ACME WILLPUTTE BATTERY

Coke Side

OVEN #

DATE D-23

Pusher Side

South

South

