Acme Coke
11236 S. Torrence Ave.
Chicago IL 60617

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Pinion Wall Inspection
Dated: 1998

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June 30, 1998
(Revised)

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Mr. M. T. McCarthy
Manager of Project Engineering
Acme Steel Company
Chicago Coke Plant
10730 Burley Avenue
Chicago, IL 60617

Attention: Mr. R. Martello

Subject: ***Acme - Chicago Coke***
Coke Plant - Battery
South Pinion Wall
Floor Steel & Concrete Dock
1998 Inspection

Project No. 05-8126
ACME P.O. No. 7000000-880
CSMP ID No. 10-2-1146

Gentlemen:

In reference to the above subject, we are submitting this letter report to present the inspection results of the alleyway floor steel and concrete deck located adjacent to the south pinion wall of Battery No. 1. The inspection was requested by the Acme Engineering Department after noticeable deterioration was observed by plant personnel. The inspection was conducted on May 7, 1998 in cooperation with the Coke Plant Operations Department.

INTENT/SCOPE OF WORK

The intent of this project was to search out and define any readily discernible deficiencies and provide recommendations for any repairs that may be required.

The scope of work included a detailed visual inspection, with random ultrasonic thickness testing, of the alleyway floor steel framing members at Elevation 14'-5", in the alley between the Coal Bunker and Battery No. 1. Also, a visual inspection of the underside of the concrete deck was conducted.

HISTORY/GENERAL DESCRIPTION

The subject alleyway floor steel is located between the Coal Bunker and Battery No. 1 at Elevation 14'-5". The alleyway is approximately 50'-0" long by 14'-3" wide and is comprised of S12, S10 and C10 framing, which in turn support a 6" thick concrete deck. The alleyway was designed and built by the Wilputte Coke Oven Division of New York, New York; circa 1955.

HISTORY/GENERAL DESCRIPTION - continued

This was the initial inspection conducted by Orbital Engineering, Inc. of this structure.

Reference Drawings

37089
37136

FINDINGS AND RECOMMENDATIONS

The following is a list of Inspection Findings (F) and corresponding Repair Recommendations (R) for the deficiencies which were encountered during the May 7, 1998 structural inspection. The Repair Recommendations are accompanied by Suggested Repair Priority (P) designations. Also, Standard Repair Procedures are included with the recommendations, where applicable. For descriptions of the Suggested Repair Priorities and the Standard Repair Procedures, refer to Attachment "1". For specific locations of the inspection findings, refer to the inspection drawing located in Attachment "2".

Alleyway Floor Steel

F1) The S12 is heavily rust layered and rusted thin and through throughout.

R1/P3) Replace the deficient S12 "in-kind" as required.

F2) The S12 and related seat assembly is rusted thin and through at the south end 24".

F3) The remainder of the S12 bottom flange exhibits approximately 50% section loss.

Recommendations "R2" and "R3"

P3) Replace the S12 and seat assembly "in-kind" as required.

FINDINGS AND RECOMMENDATIONS - continued

Alleyway Floor Steel - continued

F4) Ultrasonic thickness testing was conducted on the S12 web ranging from .47" to .48", indicating 0% section loss (.428" [7/16"] original thickness). The top and bottom flanges exhibit only slight section loss.

F5) Ultrasonic thickness testing was conducted on the S12 web ranging from .46" to .47", indicating 0% section loss (.428" [7/16"] original thickness). The top and bottom flanges exhibit only slight section loss.

F6) Ultrasonic thickness testing was conducted on the S12 web ranging from .45" to .47", indicating 0% section loss (.428" [7/16"] original thickness). The top and bottom flanges exhibit only slight section loss.

F7) Ultrasonic thickness testing was conducted on the S10 web ranging from .25" to .27", indicating 13% to 20% section loss (.311" [5/16"] original thickness). The top and bottom flanges exhibit only slight section loss.

F8) Ultrasonic thickness testing was conducted on the C10 web ranging from .46" to .47", indicating 0% section loss (.428" [7/16"] original thickness). The top and bottom flanges exhibit only slight section loss.

Recommendations "R4" thru "R8"

P5) No repair is required at this time. Monitor condition during future follow-up inspections.

F9) Typically, the framing/support members are moderately rust layered by 1"± behind the existing coating/paint (peeling off) and are slightly rust pitted throughout.

R9/P4) Sandblast and clean members of all rust layering and existing coating/paint. Reapply an appropriate coating/paint as per manufacturer's recommendations (existing condition is one of high humidity and dampness). Work with Recommendations "R10" through "R18".

FINDINGS AND RECOMMENDATIONS - continued

Concrete Deck

The underside of the concrete deck is spalled as follows:

F10) 17'-0" long by 3'-0" wide area by 3" deep with exposed rusted thin and through rebar.

F11) 6'-6" long x 2'-6" wide area by 3" deep with exposed rusted thin and through rebar.

F12) 6'-0" long by 6'-0" wide area by 3" deep with exposed rusted thin and through rebar.

F13) 3'-0" long by 2'-0" wide area by 3"± deep with exposed rusted thin and through rebar.

F14) 18" long by 18" wide area by 3"± deep with exposed rusted thin and through rebar.

F15) 5'-0" long by 4'-0" wide area by 3"± deep with exposed rusted thin and through rebar.

F16) 2'-0" long by 2'-0" wide area by 3" deep.

F17) 2" diameter hole through concrete deck.

Recommendations "R10" thru "R17"

P4) Monitor deficient area of concrete on a monthly basis with the intent of removing and replacing the concrete slab "in-kind" in the next twelve (12) months. Refer also to Finding "F18".

FINDINGS AND RECOMMENDATIONS - continued

Concrete Deck - continued

F18) The underside of the concrete deck is sporadically cracked throughout.

R18/P4) Monitor deficient area of concrete on a monthly basis with the intent of removing and replacing the concrete slab "in-kind" in the next twelve (12) months. Refer also to Finding "F17".

Miscellaneous Appurtenances

F19) The stairway is rusted thin and through at the lower 8" (stringers and tread).

R19/P3) Replace the deficient section of stairway "in-kind" as required.

F20) The utility supports, which are attached to the bottom flanges of the S12's and S10, exhibit 25% to 50% section loss throughout.

R20/P3) Replace the deficient utility supports "in-kind" as required.

Note: All the recommendations contained within this report should be worked in conjunction with each other.

OVERVIEW

Upon review of the inspection data, the overall structural integrity of the alleyway floor steel (Elevation 14'-5") is judged to be "Poor".

During the course of the inspection, two (2) S12 x 40.8's were found to be severely rust deteriorated and require replacement. (Refer to Findings "F1" thru "F3"). Also, approximately 150'-0" square feet of concrete deck was found to be spalled by 3"± deep with exposed rusted thin and through rebar (underside). (Refer to Findings "F10" thru "F17".) Along with the sporadic cracking present (Finding "F18"), it is our opinion that removing and replacing the concrete deck "in-kind" would be the most prudent, long term repair option. In the interim, we are recommending that the subject area be inspected monthly, until such repairs are made.

Although not included in the scope of work for this project, additional deficiencies were observed to exist during our inspection. The lower 18" of the stairway stringers and tread are rusted thin and through and the utility supports, attached to the bottom flange of the floor framing, exhibit 25% to 50% section loss (Findings "F19" and "F20").

The results of the inspection has been entered into the Critical Structures Management Program (CSMP). This program is designed to effectively track and record repairs that are implemented and to provide a historical record of the structures inspection/repair efforts. For an itemized listing of findings and recommendations that need to be implemented, refer to the CSMP information located in Attachment "3". Upon completion of future repair efforts, please fill out the forms located in Attachment "3" and forward them to the Orbital Engineering Program Coordinator and/or Acme Engineering Department.

In conclusion, it is recommended that the results of this inspection be reviewed by the Acme Steel Engineering and Coke Battery Maintenance Departments and that a remedial course of action be established and implemented.

If you have any questions concerning any aspect of this letter report, please contact our office.

Sincerely,

John A. Konarski, III
Crew Chief - Field Services

Attachments

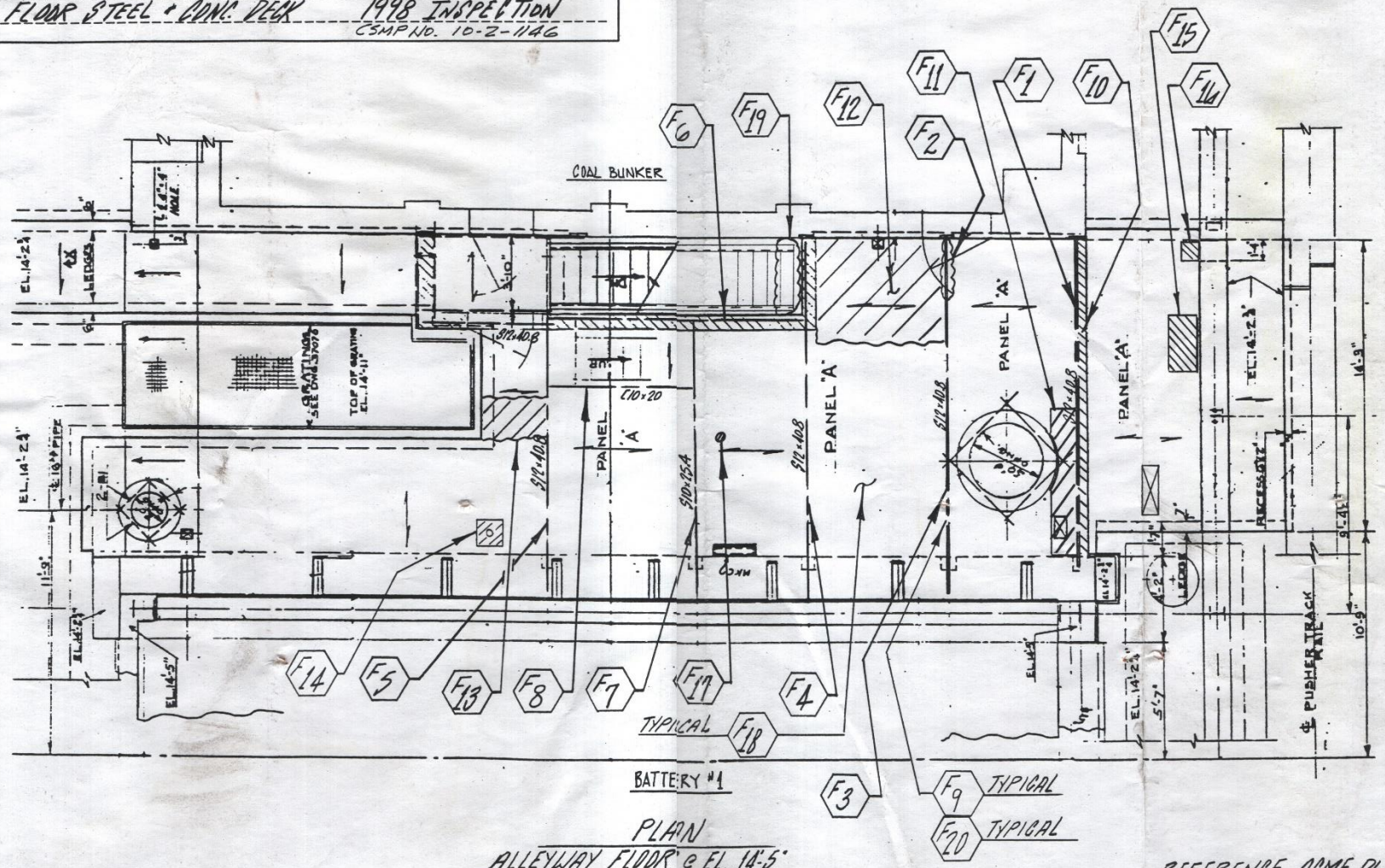
JMK/JAK:bal

BY JAK DATE 6-9-98
CHK'D [illegible] DATE 6-12-98

ORBITAL ENGINEERING®, INC.
PITTSBURGH • CHICAGO • CLEVELAND • PHILADELPHIA
OAK BROOK • TOLEDO

SHEET 1 OF 1 PAGE

SUBJECT ACME STEEL - CHICAGO COKE PLANT JOB NO. 05-8126
SOUTH PINION WALL / #1 BATTERY
ALLEYWAY FLOOR STEEL + CONC. DECK 1998 INSPECTION
CSMP NO. 10-2-1146



BATTERY #1

PLAN
ALLEYWAY FLOOR @ EL. 14'-5"

REFERENCE ACME DWG 37134

Orbital Engineering, Inc.

ACME STEEL COMPANY

SECTION 1 - GENERAL INFORMATION

Facility: ACME - RIVERDALE
DIV : COKE PLANT DIVISION
DEPT: COKE BATTERIES
Item: SOUTH PINION WALL
Item: FLOOR STEEL & CONCRETE DECK

Type Of Struc: ACCESSWAYS
Type Of Const: STEEL FRAME
This Insp Date: 05/07/98 Type: DETAIL
Next Insp Date: **05/07/00** Type: DETAIL
(Unless Adjustment Is Approved)
CLIENT INFO: R. MARTELLO
:

Current OEI Proj. No.: 05-8126
Other OEI Ref.:

Identification No.: 10 - 2 - 1146
Classification No.: C- 9-B- 0
Reg. Codes: 1.0,1.1

Year Installed: 1955
Current Status: IN-SERVICE

Insp. Requirements: DETAIL
Frequency: 24 MO.

Ref. Drawings: 37089 37136

Remarks:

SECTION 2 - SUMMARY OF INSPECTION

General Condition Assessment

POOR

Qnty.	Suggested Repair Priorities (Refer To Priority Desc. Attached)
[0]	P1-Emergency Repairs Required
[0]	P2-Repair Within 30 Days
[5]	P3-Repair Within 6 Months
[10]	P4-Repair Or Reinspect Within 1 Yr
[5]	P5-No Repairs Required (Ref. Only)
[20]	Total Quantity Of Priorities

Recommended Course Of Action (Refer To RCA Desc. Attached)	
[ ]	0-No Action Required
[X]	1-Implement Recommendations
[ ]	2-Detailed Inspection
[ ]	3-Engineering Evaluation
[ ]	4-Design And Detail
[ ]	5-Adjust Inspection Freq.
[ ]	6-Further Investigation Req.

Previous Inspection History And Assessments

	OEI Proj.	Date	GCA	# Recom		OEI Proj.	Date	GCA	# Recom
1)		/ /		0	3)		/ /		0
2)		/ /		0	4)		/ /		0

SECTION 3 - DISTRIBUTION AND SIGN-OFF

Distribution:

R. MARTELLO

INSPECTED BY: JAK/EES

PREPARED BY: J. KONARSKI

APPROVED BY: J. KIRK

DATE/ENTERED BY: BAL 6/24/98

ACME STEEL COMPANY
CRITICAL STRUCTURES MANAGEMENT PROGRAM
CURRENT MAINTENANCE REPAIR & COMPLETION NOTICE

VISION COKE PLANT DIVISION REPORT DATE 06/24/98

DEPARTMENT COKE BATTERIES

ITEM DESCRIPTION SOUTH PINION WALL
FLOOR STEEL & CONCRETE DECK

ID. NO. 10 - 2 - 1146 CLIENT INFO R. MARTELLO

FREQUENCY 24 MONTH(S) LAST INSPECTION TYPE DETAILED

ORIG. DATE FINDING ENCOUNTERED	RECOMM. NO.	PRIORITY CODE	S,M,E OR O	REPAIRS IMPLEMENT BY	DATE REPAIR COMPLETED	VERIFIED BY	VERIFIED DATE
05/07/98 D	R1	P3	S		/ /		/ /
05/07/98 D	R2	P3	S		/ /		/ /
05/07/98 D	R3	P3	S		/ /		/ /
05/07/98 D	R4	P5	S				
05/07/98 D	R5	P5	S				
05/07/98 D	R6	P5	S				
05/07/98 D	R7	P5	S				
05/07/98 D	R8	P5	S				
05/07/98 D	R9	P4	S		/ /		/ /
05/07/98 D	R10	P4	S		/ /		/ /
05/07/98 D	R11	P4	S		/ /		/ /
05/07/98 D	R12	P4	S		/ /		/ /
05/07/98 D	R13	P4	S		/ /		/ /
05/07/98 D	R14	P4	S		/ /		/ /
05/07/98 D	R15	P4	S		/ /		/ /
05/07/98 D	R16	P4	S		/ /		/ /
05/07/98 D	R17	P4	S		/ /		/ /
05/07/98 D	R18	P4	S		/ /		/ /
05/07/98 D	R19	P3	S		/ /		/ /

ACME STEEL COMPANY
CRITICAL STRUCTURES MANAGEMENT PROGRAM
CURRENT MAINTENANCE REPAIR & COMPLETION NOTICE

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FREQUENCY 24 MONTH(S) LAST INSPECTION TYPE DETAILED

ORIG. DATE FINDING ENCOUNTERED	RECOMM. NO.	PRIORITY CODE	S,M,E OR O	REPAIRS IMPLEMENT BY	DATE REPAIR COMPLETED	VERIFIED BY	VERIFIED DATE
05/07/98 D	R20	P3	S		/ /		/ /

COMMENTS: _____

NOTE: Recommendations Not Listed Have Been Previously Checked & Verified