



C. Cement Fireport Plant

Buffalo, NY

**Kiln Stack Inspection and
Repairs**
March 2024





1465 Ventura Drive
Cumming, GA 30040
770-255-1313
877-697-9337
www.industrialaccess.com

March 20, 2024

Mr. Troy S
Maintenance Manager

Subject: Kiln Stack Inspection and Repairs

Mr. S,

Thank you for your assistance during the performance of this project. Included you will find the "Inspection Report and Work Synopsis", containing labeled photographs, findings, recommendations for the maintenance of your stack, and descriptions of the repair work completed.

It was a pleasure to work with you on this project. If you need any further assistance, please do not hesitate to contact us. We will be glad to answer any questions you may have and to provide assistance with any or all of the repairs that are recommended.

Sincerely,

Dasheek Dennis
Engineering
Industrial Access, Inc.
(770) 255-1313
ddennis@industrialaccess.com
engineering@industrialaccess.com

Contents

1. Exectuvie Summary	4
1.1. Recommendations	4
1.2. Repair Services.....	4
2. Introduction	5
3. Structure Description.....	6
4. Inspection Procedures	7
5. Exterior Inspection	8
5.1. Exterior – Photographs.....	8
6. Interior Inspection	16
6.1. Interior – Photographs.....	16
6.2. Interior – UT Readings	25
7. Findings	27
7.1. Exterior Findings	27
7.2. Interior Findings	28
8. Recommendations.....	29
8.1. Recommendations	29
9. Repairs	32
9.1. Cracked Curb Repair.....	33
9.2. Grout Repair	35
9.3. Plate Reinforcement Ring Installation.....	37
9.4. Hole Repair	39
9.5. Splice Flanged Crack Repair.....	41

1. Exectuvie Summary

Industrial Access, Inc. was retained by C. Cement to conduct a condition assessment inspection of the Kiln Stack at Fireport Plant in Buffalo, NY. Industrial Access also performed repairs based on issues identified during the inspection.

Activities included reviewing pertinent documents, photographing anomalies, and an examination of the exterior and interior of the stack.

An evaluation was performed of the significance of any detected degradation, deterioration, malfunction or damage to the stack and any associated appurtenances.

The stack appears to be in **poor** condition. There are some issues that should be corrected and some preventative measures that should be taken to prolong the life of the stack. These items have been listed below:

1.1. Recommendations

- Annual inspections should be completed to maximize the potential life span of the stack
- Investigate, modify, and replace the guy wires
- Repair the damaged instrument on the 8th floor
- Remove the brick debris discovered on the 9th floor
- Replace the frayed LPS conductors on the roof
- Replace all missing port covers on the roof
- Power wash, clean oxidation, and coat stack
- Repair the torn duct on the 6th floor
- Repair the cladding on the breeching duct
- Repair and seal the remaining failed flanged joints
- Repair the various holes
- Obtain the design thickness of the stack and make a comparison with the UT readings in this report
- Power wash and clean oxidation from the stack

Please refer to the [Recommendations](#) section of this report for a comprehensive list of recommended maintenance and repair items necessary to maximize potential service life of the structure.

1.2. Repair Services

According to **IA Proposal No. P-23-448**, the following repairs were made.

- Repaired the cracks on the curb above the roof penetration
- Repaired the grout at the base of the stack
- Installed plate reinforcement rings at the at 190'±
- Repaired the cracked weld on the splice flanged above the 9th floor
- Repaired the horizontal gaps at the bolt flanged on floor 7 and 10

Please review to the [Repairs](#) section for more comprehensive details regarding the repair services performed.

2. Introduction

In accordance with C. Cement’s purchase order number FRE15999, Industrial Access, Inc. performed a “Class II” condition assessment inspection in compliance with ASCE “Chimney and Stack Standard Guidelines” on the Kiln Stack at the Fireport Plant in Buffalo, .

Activities included reviewing pertinent documents, photographing anomalies, and an examination of the exterior and interior of the stack.

An evaluation was performed of the significance of any detected degradation, deterioration, malfunction or damage to the stack and any associated appurtenances.

Based on the inspection findings, recommendations for maintenance and repairs are mentioned and assigned a corrective action factor, as explained in the [Recommendations](#) section.

Members of the Industrial Access Inspection Site Team were:

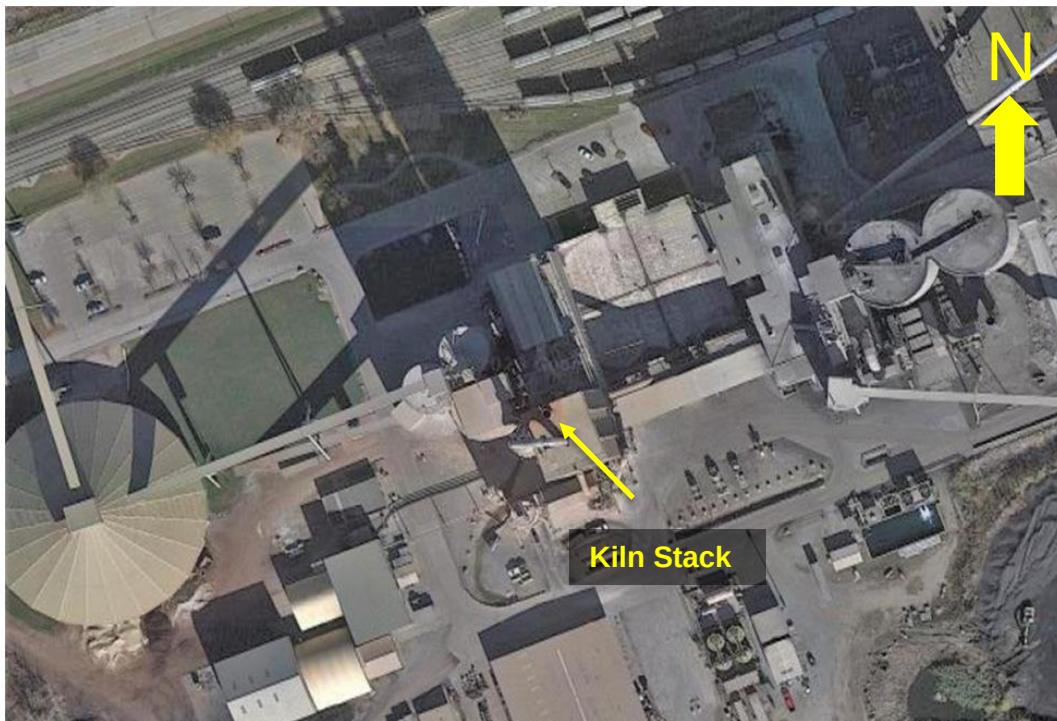
Bob R.	Project Manager
Quinton R.	Assistant Project Manager
Jon P.	Foreman
Adam T.	Technician
Brandon M.	Technician
Kevin M.	Technician
Matthew M.	Technician
Rickey S.	Technician
Shane T.	Technician
Tyler H.	Technician

This report presents our observations together with our findings, photographs and rehabilitation recommendations.

3. Structure Description

Kiln Stack Description:

- Construction:** Approximately 213' tall steel stack with an I.D. of 9'5" constructed through the floors and the roof of the preheater tower. The stack is built on the 6th floor of the preheater tower.
- Test Ports:** Test ports above the floors.
- Aircraft Warning Lights:** N/A
- Breeching:** Two (2) Rectangular and circular breeching ducts
- LPS:** The stack is interconnected to the preheater's LPS on the roof



Location of Kiln Stack

4. Inspection Procedures

Upon arrival of our crew and equipment to the job site, safety devices, all in accordance with prevailing safety regulations, were installed to carry out the work.

Industrial Access, Inc. performed inspections of the exterior and interior of the stack utilizing rope access techniques and existing floors. Observations were made, taking photographs and documenting any anomalies, while also assessing the existing condition of the exterior and the interior. Two (2) drops were performed on the interior, one drop on the East side of the stack and the other drop on the West side. Ultrasonic Thickness (UT) measurements were also taken on the interior. Scaffolding was erected by others prior to the inspection to gain access to the top of the stack.

After the inspection was completed, our crew removed all our debris from the area and disposed of the remains at an authorized dumpsite, leaving the site in an “As Found” or better condition.



5. Exterior Inspection

The exterior inspection was completed by Industrial Access from the existing floors of the preheater tower. Photographs were taken of the exterior of the stack. During the inspection, anomalies were identified, photographed, and recorded. Detailed results can be found in [Findings](#) section of this report. The following sample photographs document the exterior of the structure.

5.1. Exterior – Photographs



EXT 1 – View of the stack above the roof.



EXT 2 – View of the stack above the roof. Heavy oxidation present.



EXT 3 – EL. 200± - View of access door opening



EXT 4 – EL. 200± – View of access door opening

5.1. Exterior – Photographs (Continued)



EXT 5 – Roof – Access door removed from access opening for inspection purposes



EXT 6 – Oxidation on the backside of the access door



EXT 7 – EL. 200± – Roof port showing signs of corrosion.



EXT 8 – Drop #1 EL. 70'± – Closeup on port



EXT 9 – Guy wire anchor



EXT 10 – EL. 200± – Failed coating on guy wire

5.1. Exterior – Photographs (Continued)



EXT 11 – EL. 200± – Failed coating on guy wire



EXT 12 – EL. 200± – Guy wire.



EXT 13 – Roof – LPS conductor



EXT 14 – Roof – Frayed LPS conductor



EXT 15 – Frayed LPS conductor, crack on curb. Debris present on rooftop



EXT 16 – Roof – Conductors connected to the building's LPS

5.1. Exterior – Photographs (Continued)



EXT 17 – Roof – West of rain hood



EXT 18 – Southeast of rain hood



EXT 19 – Roof – Cracks present on curb **before** [repairs](#)



EXT 20 – 10th Floor – Roof penetration, leakage through flanged joint. Gaps are present in splice flanged **before** [repairs](#)



EXT 21 – 10th floor – Stack showing oxidation and stains from leaking



EXT 22 – 10th floor – Oxidation and stains from leakage

5.1. Exterior – Photographs (Continued)



EXT 23 – 9th floor – showing stains from leakage



EXT 24 – View stack and test port



EXT 25 – 9th floor – oxidized test port and heat shield



EXT 26 – 9th Floor – Cracked weld on splice flanged before [repairs](#)



EXT 27 – 8th Floor – Leakage stains through flanged joint



EXT 28 – 8th Floor – Debris on Floor

5.1. Exterior – Photographs (Continued)



EXT 29 – View of test platform



EXT 30 – Exposed wiring on instrument



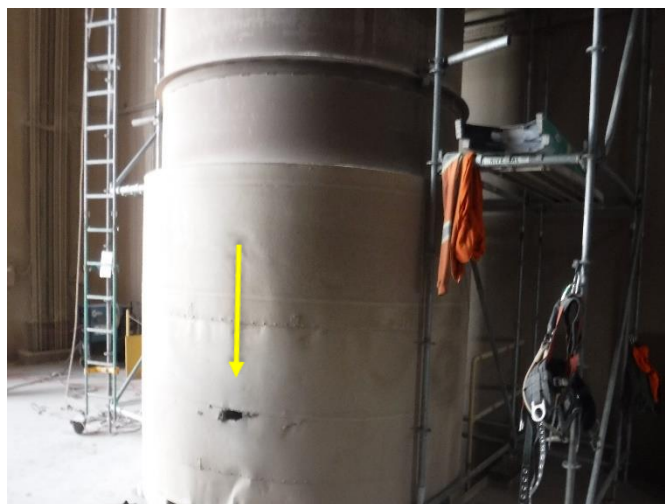
EXT 31 – Instrument missing covers



EXT 32 – 7th Floor – Floor penetration point



EXT 33 – 7th Floor – Leakage stains from cracked flanged joint; scaffolding and repairs in progress



EXT 34 – 7th Floor – Heat shield with perforation

5.1. Exterior – Photographs (Continued)



EXT 35 – 6th Floor – View of penetration point



EXT 36 – View of stack base



EXT 37 – Access point



EXT 38 – Access door removed for inspection purposes



EXT 39 – View of stack



EXT 40 – View of duct with perforation on the bottom

5.1. Exterior – Photographs (Continued)



EXT 41 – 6th Floor – Breeching duct and support frame



EXT 42 – 6th floor – Expansion joint and Breeching duct with mild debris on floor



EXT 43 – Breeching showing oxidation and damaged cladding



EXT 44 – Breeching showing oxidation and torn cladding



EXT 45 – Breeching duct with torn cladding on the underside



EXT 46 – Breeching showing oxidation and torn cladding

6. Interior Inspection

The interior inspection of the stack was completed by Industrial Access using rope access techniques. Two (2) drops were performed at 180° (East and West). Observations were made and encountered anomalies were documented. Results are discussed in [Findings](#) section. These photographs are meant to document the current condition of the interior of the structure. Ultrasonic Thickness (UT) measurements were also made. The elevations were measured from the stack base.

6.1. Interior – Photographs



INT 1 – W EL. 213'± – Top of the stack, buildup heavy oxidation present



INT 2 – EL. 213'± – Top of the stack, buildup heavy oxidation



INT 3 – EL. 213'± – Top of the stack, buildup heavy oxidation



INT 4 – EL. 213'± – Top of the stack, buildup

6.1. Interior – Photographs (Continued)



INT 5 – EL. 213'± – Buildup and oxidation present on surface



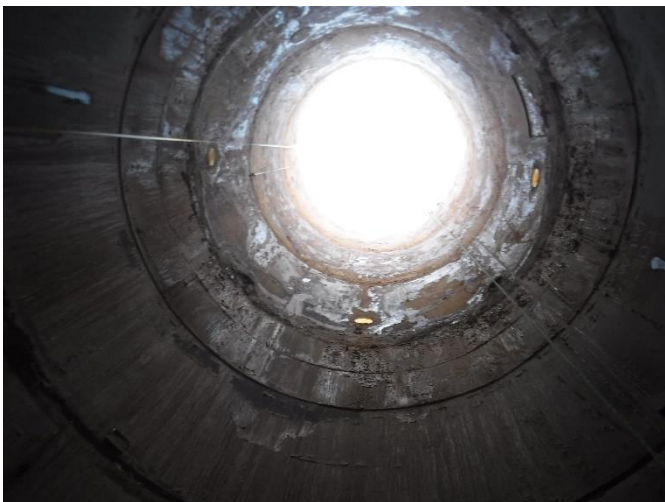
INT 6 – EL. 190'± – Buildup on steel plates



INT 7 – W EL. 190'± – Corrosion and buildup on stack



INT 8 – W EL. 180'± – Gap in flanged joint



INT 9 – W EL. 180'± – Upward view



INT 10 – E EL. 180'± – Downward view

6.1. Interior – Photographs (Continued)



INT 11 – W EL. 170'± – Buildup and stains present on surface of interior



INT 12 – E EL. 170'± – Gap in flanged joint



INT 13 – E EL. 170'± – Splice separated at flange



INT 14 – E EL. 170'± – Holes and gap near flanged joint



INT 15 – E EL. 170'± – Gap in flanged joint



INT 16 – W EL. 170'± – Hole in top of flange

6.1. Interior – Photographs (Continued)



INT 17 – E EL. 160'± – Downward view of stack interior



INT 18 – W EL. 160'± – Upward view of stack interior



INT 19 – W EL. 160'± – Buildup/ warped flanged joint



INT 20 – E EL. 160'± – Buildup on flanged joint



INT 21 – W EL. 150'± – Buildup on flanged joint



INT 22 – E EL. 150'± – Buildup on flanged joint

6.1. Interior – Photographs (Continued)



INT 23 – W EL. 140'± – Upward view of stack interior; flanged joint exhibiting buildup



INT 24 – E EL. 140'± – View of flanged joint



INT 25 – W EL. 130'± – Stack plate appears warped around flanged joint



INT 26 – E EL. 140'± – Hole present in instrument port nozzle



INT 27 – E EL. 140'± – Corrosion hole present in instrument port nozzle



INT 28 – W EL. 127'± – Gap in flanged joint

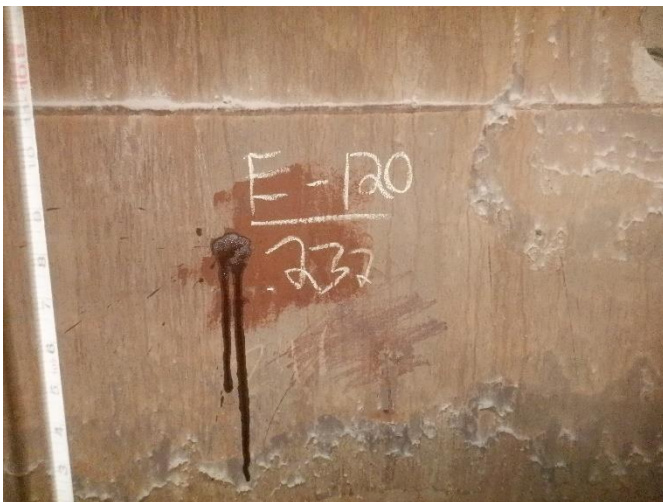
6.1. Interior – Photographs (Continued)



INT 29 – E EL. 127'± – Flanged joint exhibiting buildup



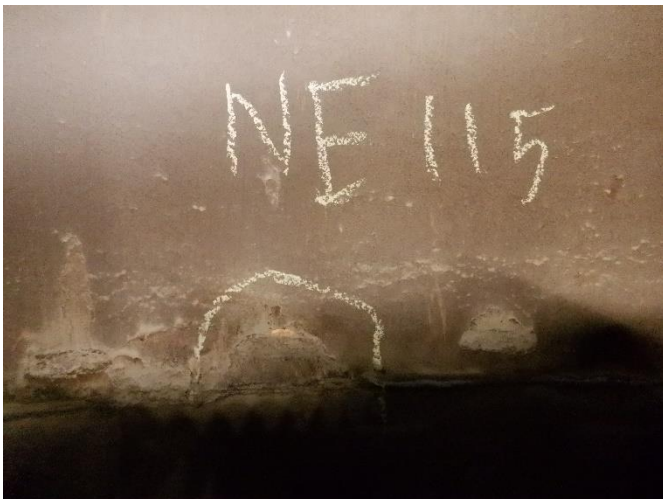
INT 30 – E EL. 127'± – Gap in flanged joint



INT 31 – E EL. 120± – Buildup and oxidation present on interior of the stack



INT 32 –W EL. 115'± – Upward view of stack; gap in flanged joint



INT 33 – NE EL. 115± – Hole near joint



INT 34 –W EL. 115'± – Hole near joint

6.1. Interior – Photographs (Continued)



INT 35 – E EL. 102± – Gap in flanged



INT 36 – E EL. 102± – Gap in flanged



INT 37 – W EL. 102± – Gap in Flanged



INT 38 – E EL. 90± – Upward view of weld joint and buildup



INT 39 – E EL. 85± – Port openings and test probe



INT 40 – W EL. 85± – Test ports & probes

6.1. Interior – Photographs (Continued)



INT 41 – N EL. 80± – Perforation



INT 42 – W EL. 60± – Gap in joint



INT 43 – E EL. 40± – View of buildup at flanged joint



INT 44 – E EL. 40± – Breeching duct opening

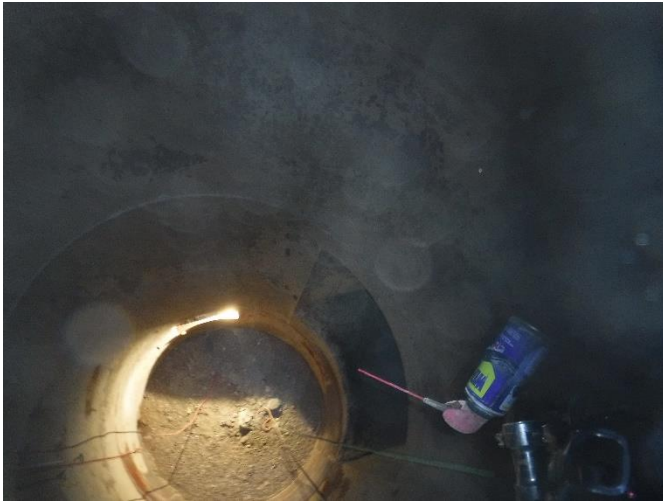


INT 45 – E EL. 40± – Breeching duct opening



INT 46 – W EL. 85± – Downward view of false floor

6.1. Interior – Photographs (Continued)



INT 47 – W EL. 20± – Downward view of stack floor



INT 48 – E EL. 20± – Interior of breeching duct



INT 49 – EL. 20'± – Interior of breeching duct



INT 50 – E EL. 0± – View of stack base with debris present



INT 51 – E EL. 0 ± – Stack floor and access opening



INT 52 – W EL. 0± – Stack floor

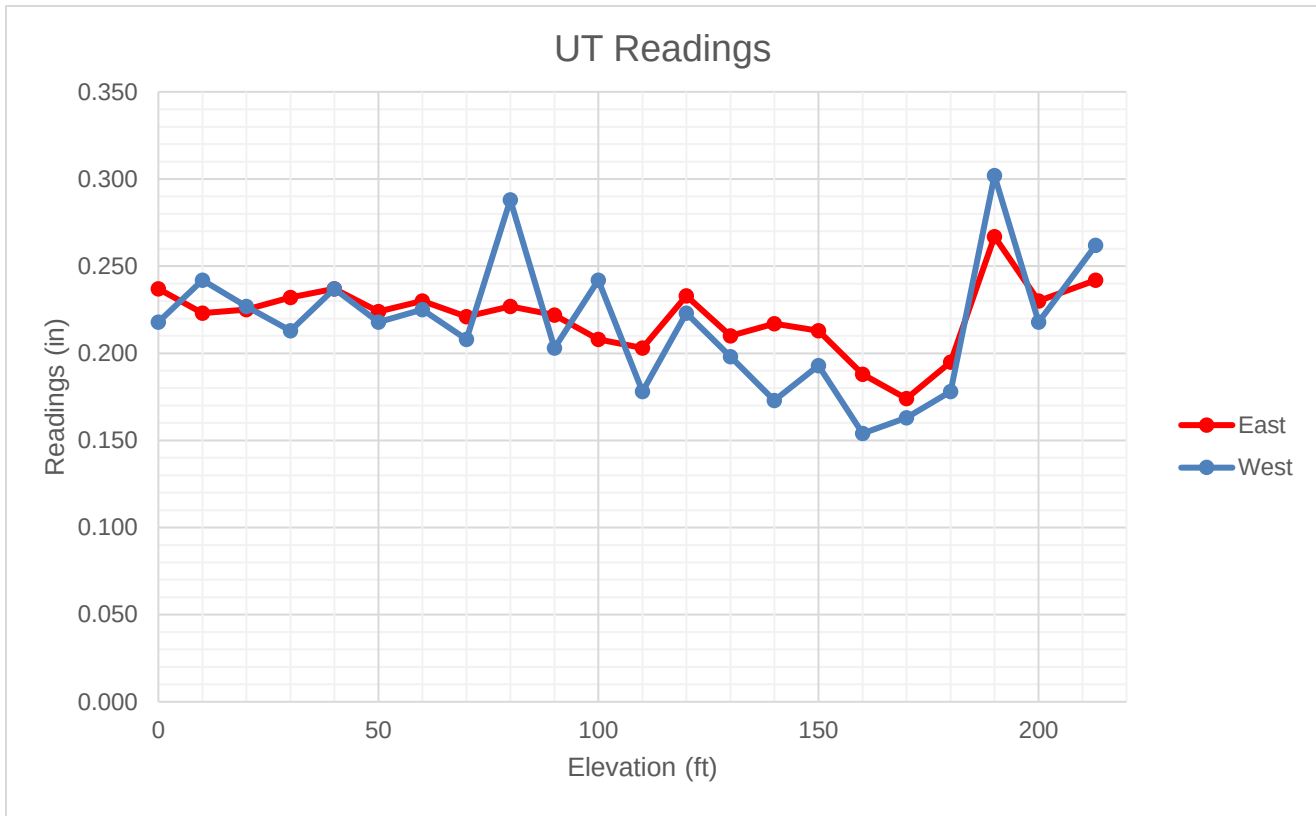
6.2. Interior – UT Readings

UT readings were taken on the interior of the Kiln Stack at two sides at 10' vertical intervals throughout the height. The data below indicates the side, elevation (ft), and reading.

All readings were taken from the top of the stack down.

UT Readings		
Elevation (ft)	Readings (in)	
	East	West
213	0.242	0.262
200	0.230	0.218
190	0.267	0.302
180	0.195	0.178
170	0.174	0.163
160	0.188	0.154
150	0.213	0.193
140	0.217	0.173
130	0.210	0.198
120	0.233	0.223
110	0.203	0.178
100	0.208	0.242
90	0.222	0.203
80	0.227	0.288
70	0.221	0.208
60	0.230	0.225
50	0.224	0.218
40	0.237	0.237
30	0.232	0.213
20	0.225	0.227
10	0.223	0.242
0	0.237	0.218

6.2. Interior – UT Readings (Continued)



*The results of the Ultrasonic Thickness tests are an estimate of material thickness based on the timing of an ultrasound pulse echo through the material. Results are subject to variation based on coatings or buildup, corrosion, and surface roughness.

7. Findings

This section provides a comprehensive overview of the findings discovered during the initial inspection, offering a detailed layout of the identified issues **before** any onsite repairs were conducted.

*This item was performed during the same mobilization following the inspection; refer to the [Repairs](#) section of this report for more details.

7.1. Exterior Findings

1. Stack has heavy oxidation throughout the exterior. This can be seen at the top of the stack (EXT 1 & 2) and throughout the stack on each floor. Much of the oxidation throughout the stack is the cause of leakage from the flue gasses.
2. Cracks were found in various areas along the curb of the rain hood (EXT 14, 15, &19). *
3. The guy wires around the anchors on the stack appear to be oxidizing and the coating present are failing. (EXT 10 & 11).
4. The LPS conductor near the roof is fraying (EXT 14 & 15).
5. There are flue leakage stains and oxidation around almost all splice flanges, but most noticeably on floors 7, 8, 9 , & 10. This is due to the gaps discovered on the splice flanges. (EXT 20, 21, 22, 23, 24, 25, 26, & 27).
6. 9th floor – There is heavy oxidation on the test port and mild oxidation on the heatshield. (EXT 25)
7. 9th floor – The welding on the splice flange appears to be cracked. (EXT 25) *
8. 8th floor – There is a pile of bricks and debris present on the floor (EXT 27 & 28)
9. 8th floor – An instrument on the test platform is missing both side covers, and the wires are exposed (EXT 31). This could pose a potential electrical hazard.
10. 7th floor – There is a hole punctured in the heatshield. (EXT 34)
11. 6th floor – There is a perforation present on the duct towards the roof penetration.
12. Breeching duct area – The cladding on the breeching duct joint is damaged and missing in various areas. The breeching duct has succumbed to heavy oxidation.

7.2. Interior Findings

1. There is heavy buildup present at the top of the stack (INT 1 – 8)
2. Oxidation was found throughout the stack, mainly at the top (EL 213'± – 180'± and from EL 40'± to 0'±).
3. Gaps were found at various flanged joints at EL 180'±, 170'±, 127'±, 115'±, 102'±, 60'±, (INT 8, 12, 13, 14, 15, 16, 28, 30, 32, 35, 36, 37, & 42).
4. Holes were discovered from the interior of the stack, noticeably around flanges (INT 14, 16, 26, 27, 33, & 34).
5. Warped stack plates were seen around the flanged joints and buildup has intruded into the space between the plates and flanges. This can be observed at EL. 180'±, 170'±, 160'±, 150'±, 140'±, 127'±, 80'±, 40'±. (INT 8, 15, 16, 20, 21, 23, 25, 39, & 43,). The flanged angles at each joint are intermittently welded to the stack plates, resulting in the warping, and upward bending of the top section of the splice. This poses a risk of failure in the intermittent weld and, consequently, in the splice itself. Such a potential structural compromise warrants attention and remedial action to enhance the integrity of the stack.

8. Recommendations

Based on the inspection findings, the following recommendations for maintenance and repair of the stack are submitted.

1A-	Immediate concern or significant structural deficiency with imminent potential for loss of life or personal injury.
1B-	Immediate safety concern or significant structural or non-structural deficiency with future potential for loss of life or personal injury.
1C-	Immediate concern or significant structural or non-structural deficiency which does not pose imminent potential for loss of life or structural collapse, but whose condition should either be corrected in the near future or be closely monitored in the future for evidence of further deterioration.
2A-	An examination scheduled as per the procedure guideline or sooner based on recommendations made by plant observations or examinations.
2B-	Moderate structural or non-structural deficiency which does not pose imminent potential for loss of life or structural collapse, but whose condition should either be corrected in the near future or be closely monitored in the future for evidence of further deterioration.
3A-	Minor structural or non-structural deficiency, which does not pose any threat to loss of life or structural integrity. Functional deficiency, which may affect the structure's performance.
3B-	Non-structural deficiency, which does not pose any threat to loss of life or structural integrity. Repairs are intended for better appearance.

8.1. Recommendations

(1B) **Repair and Seal the Failed Flanged Joints**

To remediate the warped flanged joints, the flanged joints at EL. 180'±, 170'±, 127'±, 102'±, and 60'± should be repaired with properly sized splice rings on the interior to allow proper load transfer. Any gaps at other flanged joints should also be sealed properly to prevent leakage of flue gases and corrosion of the steel. Any gaps present on the exterior should be welded shut.

(1B) **Repair the Corroded Sections of Stack Plates Around the Roof Penetration ***

The heavily corroded section of the stack around the roof penetration at EL. 192'± should be

(1B) **Repair the Instrument on the 8th Floor**

The instrument located on the test platform of the 8th floor requires immediate attention due to its exposed wiring, which poses a potential electrical hazard. The functionality of the instrument should be investigated, and it should be repaired, replaced, or removed to mitigate the risk of electrical accidents.

8.1. Recommendations (Continued)

(1C) Investigate, Modify, and Replace the Guy Wires

A structural analysis should be performed to determine the requirements of the guy wires and they should be removed if deemed unnecessary as the stack seems to be experiencing excessive compression due to thermal growth, demonstrated from the damaged grout at the base. If they were deemed essential to support the stack, the designs of the existing guy wire anchors without proper anchor plates should be reviewed and revised. The guy wires with corrosion and fray should also be replaced with new ones.

(1C) Remove the Brick Debris

The pile of brick debris should be removed from the 9th floor.

(1C) Repair the Various Holes Discovered Throughout the Interior

The holes at EL. 170'±, EL. 140'±, and EL. 115'±, should be patched after cleaning the surface.

(2B) Replace the Frayed LPS Conductors on the Roof

The Lightning Protection System (LPS) conductors are exhibiting signs of fraying, which poses a significant risk to safety of the stack. Frayed conductors compromise the effectiveness of the LPS, increasing the likelihood of lightning-induced damage and subsequent failure. It is crucial to repair or replace the frayed conductors and ensure the LPS is properly installed.

(2B) Repair the Cracks on the Curb Above the Roof Penetration *

The cracks on the curb above the roof penetration should be repaired with a suitable epoxy product after removing any loose material and prepping the surface.

(2B) Power Wash, Clean Oxidation and Coat Stack

Extensive oxidation is evident on the stack's exterior, largely attributed to flue gas leakage through the splice flanges. It is strongly recommended to clean and coat these areas promptly to prevent oxidation from progressing into corrosion.

(2B) Repair the Heat Shield on the 7th Floor

The cause of the hole in the heat shield should be further investigated. Following assessment, prompt repairs are recommended to facilitate the optimal performance of the heat shield in safeguarding adjacent structures from the stack's excessive heat emissions.

(2B) Repair the torn Duct on the 6th Floor

The hole in the duct near the 7th floor penetration should be repaired.

(2B) Repair Cladding on the Breeching Duct

Repair the torn and damaged cladding on the breeching duct found.

(2B) Repair the Cracked Weld on the Splice Flange Above the 9th Floor *

The cracked weld on the splice flange above the 9th floor should be with new plate rings.

8.1. Recommendations (Continued)

(2A) Obtain the Design Thickness of the Stack and Make a Comparison with the UT Readings in this Report

The original design thicknesses of the stack should be located to make a comparison with the UT readings in this report and to determine the extent of any thinning.

(2A) Annual Inspections Should be Completed to Maximize the Potential Life Span of the Stack

This should identify anomalies and suggest recommendations for preventative measures that should be taken to provide routine maintenance and/or necessary repairs to mitigate extensive future repairs.

*This item was partially performed during the same mobilization following the inspection; refer to separate the [Repairs](#) section of this report.

9. Repairs

In accordance with the task detailed in **IA Proposal No. P-23-448** the following tasks were completed and approved prior to demobilization:

- **Repaired the cracks on the curb above the roof penetration**
- **Repaired the grout at the base of the stack**
- **Installed plate reinforcement rings at the at 190'±**
- **Repaired the cracked weld on the splice flanged above the 9th floor**
- **Repaired the horizontal holes at the bolt flanged on floor 7 and 10***

* **Note:** Although repairs were made to address the horizontal holes found on bolt flanges on floors 7 and 10 of the kiln stack, similar issues were identified on all bolt flanges across every floor. Further repairs are required on the remaining floors to ensure the structural integrity of the stack. For more details, refer to the [recommendations](#) section.

The following provides a detailed synopsis of the work performed:

9.1. Cracked Curb Repair

The IA team repaired the cracks in the curb above the roof penetration. The IA team began by removing a significant section of the damaged curb and installing new reinforcement steel (rebar) for added strength. Afterward, fresh mortar was applied, smoothed, and finished to complete the repair. Subsequently, any remaining cracks were addressed with repair mortar, followed by a final layer to seal and revitalize the curb.



IMG 1 – Typical view of cracked curb before repair



IMG 2 – Typical view of cracked curb before repair



IMG 3 – Curb being chiseled out



IMG 4 – Curb after damaged section removed

9.1. Cracked Curb Repair (continued)



IMG 5 – New rebar installed



IMG 6 – Mortar after drying



IMG 7 – Final view of curb repair



IMG 8 – Final view of curb repair

9.2. Grout Repair

The grout at the base of the stack on floor 6 was significantly damaged and some sections were missing altogether. The IA team repaired it by removing the damaged concrete and applying new repair mortar.



IMG 9 – The base before repair process



IMG 10 – Reconstructed base after repair process



IMG 11 – Damaged sections of mortar removed



IMG 12 – Reconstructed base after repair process

9.2. Grout Repair (continued)



IMG 13 – The base before repair process



IMG 14 – Reconstructed base after repair process



IMG 15 – The base before repair process



IMG 16 – Reconstructed base after repair process

9.3. Plate Reinforcement Ring Installation

The IA team installed new reinforcement rings around the roof penetration at EL. 190'± due to the presence of heavy corrosion.



IMG 17 – View of interior before plate installation



IMG 18 – View of interior after plate installation



IMG 19 – View of interior before plate installation



IMG 20 – View of interior after plate installation

9.3. Plate Reinforcement Ring Installation (continued)



IMG 21 – View of interior before plate installation



IMG 22 – View of interior after plate installation



IMG 23 – View of interior before plate installation



IMG 24 – View of interior after plate installation

9.4. Gap Repair

After inspecting the kiln stack, we discovered horizontal holes at every bolt flanged throughout the entire stack. Repairs were made on the outside of the bolt flanges on the 7th and 10th floor. Further repairs are required on the remaining floors to ensure the structural integrity of the stack. For more details, refer to the [recommendations](#) section.



IMG 25 – View of hole with buildup present (caused by flue leakage)



IMG 26 – Buildup removed



IMG 27 – Hole being welded shut



IMG 28 – Hole being welded shut

9.4. Gap Repair (continued)



IMG 29 – View of stack after holes repaired



IMG 30 – View of stack after holes repaired



IMG 31 – View of stack after holes repaired

9.5. Splice Flanged Crack Repair

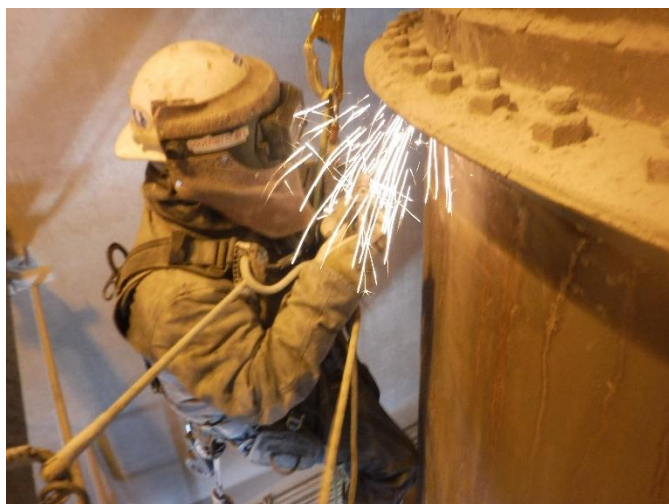
The IA team repaired the cracks present on the exterior of the stack at the splice flanged on the 9th floor.



IMG 33 – View of cracked weld on splice flanged



IMG 34 – Closeup of cracked weld



IMG 35 – Crack repair process



IMG 36 – Crack and weld sealed shut



IMG 37 – Crack and weld sealed shut