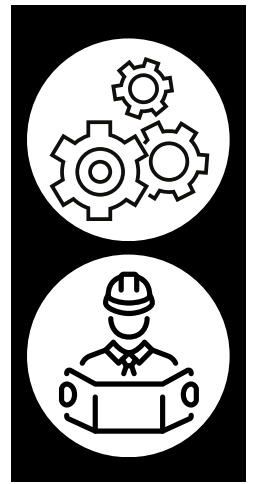


Engineering Inspection Report User Guide



Abstract

A thorough analysis by a qualified engineer is essential to construct accurate and comprehensive inspection reports. This process enhances the efficiency of report writing, mitigates unqualified judgments, and ensures that clients receive an accurate understanding of their structures. Inspection findings, analyses, and repair recommendations must be performed and/or reviewed by a professional engineer.

This guide provides engineers with clear guidelines on the information required by report writers. By following this reference sheet, engineers can ensure that report writers have the detailed data necessary to compile precise and effective inspection reports.

1. Scope of Work

In this section, the purpose of the inspection should be provided. This is typically found in the proposal, but providing this information to the assigned writer helps clarify the full scope of the expected inspection.

Example: A visual inspection was performed on the liner interior with photos taken at every 10' vertical interval. We completed liner hardness testing (Barcol) in four (4) quadrants every 50' elevation; any blistering, or areas of distress was documented. All results were tabulated and included in this report. A visual inspection was performed on all opening reinforcement, test ports, access doors, breeching...

2. Inspection Summary

Discuss how the inspection was completed. Inform the writer if there were rigs used or if scaffolding had to be built for the case. This can be used to convey how the inspection went or if any difficulties arose during the process. This does help to inform the writer if onsite repairs transpired as well.

Example: An inspection of the silo at Mocksville facility was completed. Possible causes for material leaks were identified and repaired. The concrete and connection were cleaned as well. The concrete spalls were repaired and a thickness test on the metal cone was recorded...

Construction:	390'-0" tall free standing reinforced concrete column with a base O.D. of 63'-2" and top O.D. of 55'-7".
Liners:	Two (2) 280'-5" tall FRP liners with an I.D. of 20'-0".
Interior Platform:	One (1) annular platform and multiple partial platforms.
AWL:	Two tier AWL system, with four (4) strobe lights each at EL. 205'-0" and EL. 390'-0".
Test Ports:	Multiple test ports at EL. 191'-0".
Interior Ladder System:	Full height steel caged ladder with safety climb device.
Elevations	All elevations mentioned above are established from the top of the foundation which was set at 0'-0"

3. Structure Description

Provide a detailed description of the structure. Interpret diagrams, when necessary, as writers may not understand them.

Example:

Add a detailed description here.

4. Findings

Discuss the findings discovered during the inspection according to the photos taken.

4.1 Exterior

Since stack inspections might have multiple drops in different directions, focusing on where findings occur according to elevation can be very helpful. Aim to show the approximate elevation of the anomaly, the finding, and then the reference picture file name.

4.1.1 North

- **Example:** EL.120' – Minor staining along shell – DSCF7009, 7010
- **Example:** EL.110' – Corroded instrument – DSCF6009, 6010
- **Example:** EL.80' – Failed coating stack – DSCF1058

4.1.2 South

- **Example:** EL.120' – Minor staining along shell – DSCF7009, 7010
- **Example:** EL.110' – Corroded instrument – DSCF6009, 6010

4.1.3 East

- **Example:** EL.120' – Minor staining along shell – DSCF7009, 7010
- **Example:** EL.110' – Corroded instrument – DSCF6009, 6010

4.1.4 West

- **Example:** EL.120' – Minor staining along shell – DSCF7009, 7010
- **Example:** EL.110' – Corroded instrument – DSCF6009, 6010

4.2 Platforms

Discuss findings discovered on platforms and platform members, guardrails, and grating from the top-most platform to the lowest (ideally). Provide the elevation of the platform when applicable.

- **Example:** Top platform @ EL. 120' – Most of the grating is corroded and falling which prompts a drop object hazard – DSCF6009, 6010
- **Example:** Top platform @ EL. 120' – The guardrails were missing on the west side– DSCF6009, 6010
- **Example:** Rest Platform @ EL. 60' – The guardrails were missing on the west side– DSCF6009, 6010

4.3 Ladders

Discuss findings discovered throughout the ladder system.

Example: EL. 120' – The ladder was entirely missing – DSCF6009, 6010

4.4 Lightning Protection System

Discuss findings discovered throughout the Lightning Protection System.

Example: EL. 120' – Downlead cable is frayed – DSCF6009, 6010

4.5 Aircraft Warning Lights

It is helpful to convey the cardinal direction of the AWL if an anomaly is discovered.

- **Example:** EL. 60' – West – Unit is non-functional – DSCF6009, 6010

4.6 Breeching Ducts

Discuss findings discovered throughout the breeching duct.

Example: EL. 120' – Downlead cable is frayed – DSCF6009, 6010

4.7 Interior

Since stack inspections might have multiple drops in different directions, focusing on where findings occur according to elevation can be very helpful. Aim to show the approximate elevation of the anomaly, the finding, and then the reference picture file name.

4.7.1 North

- **Example:** EL.120' – Minor staining along liner – DSCF7009, 7010
- **Example:** EL.110' – Corroded instrument – DSCF6009, 6010

- **Example:** EL.80' – Damaged gutter– DSCF1058

4.7.2 South

- **Example:** EL.120' – Minor staining along liner – DSCF7009, 7010
- **Example:** EL.110' – Corroded instrument – DSCF6009, 6010
- **Example:** EL.60' – Exposed steel – DSCF6009, 6010

4.7.3 East

- **Example:** EL.120' – Minor staining along liner – DSCF7009, 7010
- **Example:** EL.110' – Corroded instrument – DSCF6009, 6010

4.7.4 West

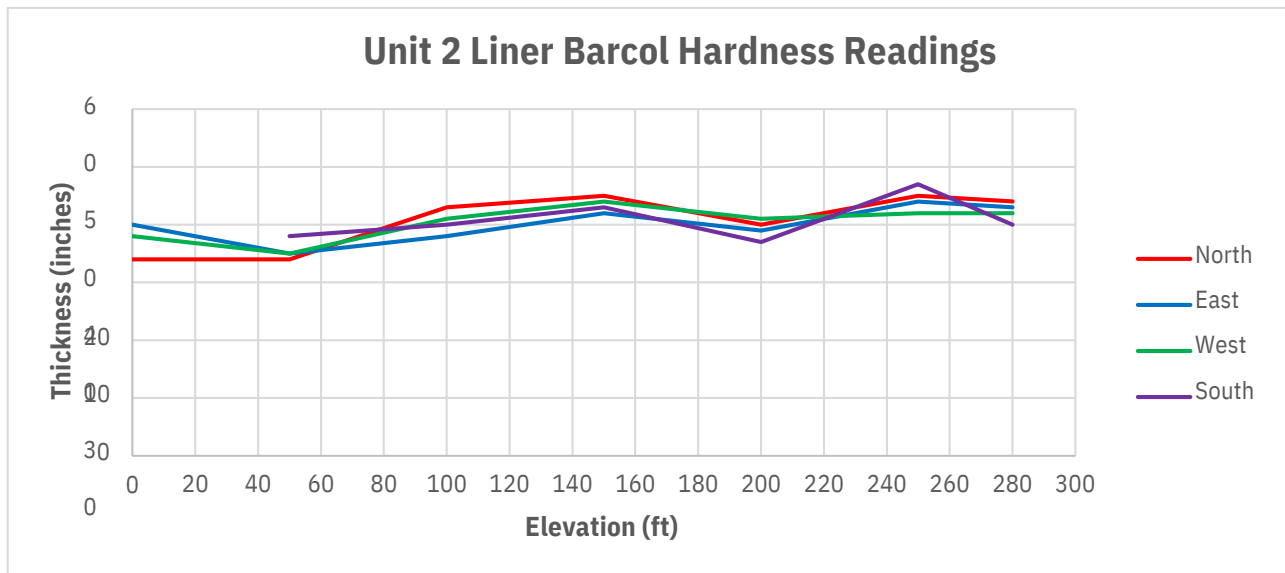
- **Example:** EL.120' – Minor staining along liner – DSCF7009, 7010
- **Example:** EL.110' – Corroded instrument – DSCF6009, 6010

4.8 Readings/Graph

Regarding UT, Barcol, rebound hammer, and Schmidt hammer readings, it is helpful to not only compile the readings and graph but also compare them to the design thickness of the material when applicable. Sometimes this information can be gathered from the diagram which may not be easily understood by the writer. It's also helpful to put somewhere on the analysis if the readings indicate a potential problem or not.

Example:

Unit 2 Liner Barcol Hardness Readings				
Elevation (ft)	North	East	West	South
280	44	43	42	40
250	45	44	42	47
200	40	39	41	37
150	45	42	44	43
100	43	38	41	40
50	34	35	35	38
0	34	40	38	55



5. Evaluation

An overall evaluation of the structure and its components is extremely helpful. It would be most appropriate for either the PM or engineer to determine if the structure or components are in poor, fair, or good condition. Inform the writer of the overall condition and tell them why you've determined it to be so.

5.1 Overall Condition

Give a brief conveyance of the general condition of the entire stack here.

Example: The overall condition of the stack was assessed as poor. A detailed examination of the following components provides insight into this determination:

5.2 Exterior

Give a brief conveyance of the general condition of the exterior of the stack. Go into more detail, giving the reasoning for this determination for this specific component.

Example: The overall condition of the stack exterior was assessed as poor. The coating was failing in several areas on the stack, revealing that much of the steel had corroded. Stack appurtenances are falling off or are on the verge of falling off from the stack.

5.3 Platform

Give a brief conveyance of the general condition of the platforms here. Go into more detail, giving the reasoning for this determination for this specific component.

Example: The overall condition of the platforms was assessed as fair. The guardrails had failed coating throughout and the grating on the rest platform was highly oxidized.

5.4 ETC.

Give a brief conveyance of the general condition of the ETC. Go into more detail, giving the reasoning for this determination for this specific component.

Example: See the above examples.

6. Recommendations

Provide recommendations for work needed to increase the structural integrity of the structure. Include how the work should be carried out and assign a rating. Since much of our future jobs as a company are contingent on these recommendations, it's vital to have proper input from a qualified individual.

Example: (2B): Repair Damaged Patches on the Interior Liner – Clean and coat all oxidized pipes on the CEMS platform with a rust-inhibiting primer and protective topcoat.

Example: (2B): Patch Plate Areas of Thinning Steel – Areas where material thickness was determined to have great loss should be repaired using stainless steel patch plates. The plates should be strategically placed to bring the thinning area back to the design thickness.

Example: (2B): Clean the Trash from the Platform– Clean all platforms by removing trash and abandoned items.