

NTSA Forensic Principles Series

Separate Observation from Interpretation

Why Facts, Inferences, and Conclusions Must Remain Traceable

We have reviewed reports in which the conclusion appears inside the first sentence.

A field note may state, "The waterproofing failed at the curb," or, "The tile cracked because the substrate moved." Each statement may eventually prove correct.

But neither statement is only an observation.

The inspector may actually have observed water outside the shower, a gap at a transition, a crack crossing several tiles, or a crack in the substrate exposed after removal.

The explanation comes next. It requires analysis of location, sequence, testing, interfaces, project history, and reasonable alternatives.

When the observation and the explanation are written as though they are the same fact, the reasoning becomes harder to test and easier to attack.

That distinction supports another essential forensic principle:

Separate observation from interpretation.

Observation Describes the Record

An observation describes what was seen, heard, measured, felt, exposed, or documented under identified conditions.

It should answer practical questions: What condition was present? Where was it located? How extensive was it? What test was performed? What result was obtained? What changed when material was removed?

A diagonal crack crossed three tiles and continued through two grout joints.

Several mosaic pieces moved when hand pressure was applied.

Removal exposed mortar attached to the substrate and mounting material attached to the backs of the tile.

Those statements describe conditions. They do not yet explain why the conditions developed.

A good observation does not have to be simplistic. It can be technical and precise. It should still remain faithful to what the investigation actually established.

Interpretation Explains Significance

Interpretation is not a flaw in expert work. It is one of the reasons an expert is retained.

The expert must determine what the documented conditions mean, how they relate to the reported distress, and which explanation or combination of explanations, if any, is best supported by the available evidence.

The distinction matters because interpretation adds reasoning to fact.

For example, an exposed crack in the substrate that aligns with cracking in the tile may support an opinion that substrate movement contributed to the distress. The alignment is observed. The causal significance is interpreted.

Sometimes the evidence supports a firm interpretation. Sometimes it supports only a qualified one.

The objective is not to weaken every opinion with cautious language. It is to make the path from evidence to conclusion visible.

Reported History Must Remain Attributed

Many investigations depend on information supplied by owners, installers, contractors, manufacturers, and counsel.

A reported water event, installation date, repair sequence, or change in use may be important. It is still different from a condition personally observed by the expert.

The report should identify the source whenever reported history is material to the analysis or opinion.

The owner reported that discoloration appeared after the plumbing leak.

Project photographs dated before the leak show no visible discoloration in the photographed area.

Those are not equivalent statements. One is reported history. The other is documentary evidence that can be evaluated on its own terms.

Attribution does not make the information irrelevant. It prevents reported history from quietly becoming an established fact.

Labels Can Smuggle Conclusions Into the Record

Words such as failure, defective, improper, leak, settlement crack, inadequate bond, and moisture intrusion may sound descriptive even when they contain an opinion.

A tile may sound hollow during a sounding survey. Calling it debonded identifies a condition that may not be established until removal or other reliable evidence confirms the separation.

A darkened stone surface may be consistent with moisture exposure. Calling it a waterproofing leak identifies a source and mechanism that the appearance alone may not establish.

A crack may align with a control joint or substrate discontinuity. Calling it a structural crack may imply a level of structural analysis outside the evidence or the expert's scope.

The solution is not to ban technical terminology. It is to use each term only after its basis has been established and to distinguish description from conclusion when the term could carry both.

Test Results Must Be Reported Before They Are Interpreted

Tests produce results. Experts explain their significance.

A sounding survey may identify areas with a different acoustic response. It does not, by itself, identify the separation plane, measure bond strength, or establish the cause of the response.

A moisture instrument records a result under the conditions present at the time of testing. The result does not automatically establish the source, duration, or historical level of moisture.

A pull-off or bond-strength test may document the measured load at failure and the observed failure mode, including the interface or interfaces where separation occurred. Whether that result demonstrates acceptable performance depends on the method, applicable criteria, specimen condition, and the question being evaluated.

The test result should remain identifiable even if the expert's interpretation later changes.

That separation allows another expert, attorney, judge, or jury to evaluate whether the conclusion follows from the data.

Photographs Do Not Explain Themselves

Photographs are powerful because they preserve visual information. They can also appear more conclusive than they are.

A photograph may show a crack, residue, incomplete contact, discoloration, corrosion, or a transition detail. It may not establish scale, depth, sequence, movement, timing, or causation unless those elements are separately documented.

A caption that reads "waterproofing failure at curb" states a conclusion. A caption that reads "opening at the inside curb transition after tile removal" describes what the photograph shows.

The analysis may then explain why the opening is significant, what other evidence supports the interpretation, and what limitations remain.

The photograph and the interpretation can appear next to each other. They should not be confused with each other.

Keep the Field Record Clean

Interpretations often begin forming during the inspection. That is normal and useful.

The risk arises when a preliminary theory is recorded as a final fact.

Field notes should preserve locations, dimensions, test conditions, sample identifiers, removal sequence, observed interfaces, and attributed statements made by others. Preliminary thoughts can also be recorded, but they should be identified as questions, hypotheses, or items requiring follow-up.

A note such as "possible separation at mounting adhesive, confirm during removal" preserves the developing analysis without pretending the interface has already been established.

Later evidence may confirm the hypothesis, narrow it, or disprove it.

The field record should allow the reasoning to develop without rewriting what was actually observed.

The Same Observation May Support a Different Interpretation

We have encountered loose mosaic installations in which the first interpretation focused on field-applied mortar coverage.

Removal may show limited coverage in some areas. It may also show substantial mortar transfer while the separation occurred between the tile and the factory-applied mounting material.

The observation that the mosaic pieces were loose does not change.

The interpretation of the principal separation interface does.

Changing the interpretation is not a weakness when it results from better evidence. It is the investigation doing its job.

A report becomes vulnerable when the initial interpretation has been written so completely into the facts that the expert cannot revise the conclusion without appearing to contradict the underlying record.

The Distinction Does Not Depend on Report Format

Some reports use separate Findings and Opinions sections. Others present the analysis in a continuous narrative.

Either format can work.

The important issue is whether the reader can identify the evidentiary step.

Observed: a continuous crack was exposed in the substrate beneath the cracked tile.

Interpreted: the alignment and continuity support the opinion that movement at the substrate contributed to the tile cracking.

Qualified: the available evidence does not establish when the substrate crack formed or whether another mechanism also contributed.

These statements can appear in the same paragraph. Their different functions should remain clear.

Traceable reasoning is more important than a particular report heading.

The Distinction Matters Under Oath

Opposing counsel often tests this boundary directly.

You did not observe the substrate moving, correct?

You did not see water pass through the waterproofing, correct?

You were not present when the tile was installed, correct?

Those questions do not necessarily defeat the opinion. They identify the point where observation ends and inference begins.

A defensible answer explains the distinction without retreating from supported reasoning: the movement itself was not personally observed, but the crack alignment, exposed interface, project records, and distribution of distress may support the opinion.

The difficulty arises when the report described the inferred mechanism as something personally observed.

An expert should be able to identify which statements are direct observations, which come from records or reported history, which are interpretations, and which are final opinions.

When that structure is clear, disagreement with the interpretation does not erase the underlying facts.

Do Not Confuse Interpretation With Certainty

Separating observation from interpretation does not require every conclusion to be tentative.

Some evidence is direct, well preserved, and highly persuasive. An exposed separation plane, documented installation detail, applicable requirement, and consistent test results may support a strong opinion.

The expert can state that opinion clearly.

Clarity comes from showing why the conclusion follows, not from writing the conclusion as though it were an observation.

Where the evidence is incomplete, the interpretation should remain proportionate to the limitations. Where the evidence is strong, the opinion need not be weakened simply because it is identified as an opinion.

Final Thoughts

Forensic work requires more than accurate observation and more than experienced interpretation. It requires a visible connection between the two.

Facts should remain identifiable after the analysis is complete. Reported history should remain attributed. Test results should remain separate from the conclusions drawn from them. Photographs should show what they show, not more.

The expert's value lies in explaining meaning. That value becomes more defensible when the reader can trace each opinion back to the evidence supporting it.

Describe first. Interpret second.

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