VIRTUAL ASSET PRIORITIZATION RESOURCE

WHITE PAPER

From Asset Condition to Better Capital Decisions



ASSET CONDITION + DECISION CONTEXT

A connected view of the decision

A practical guide to connecting condition observations, inspection evidence, and asset history to an investment decision that can be explained and revisited.



Original editorial diagram: asset, evidence and decision remain connected; condition alone is not a funding priority.

Three ideas to take into your next review

01 Condition describes an observation; priority requires a decision context.

02 Compare feasible interventions on a consistent basis, including uncertainty.

03 Keep the decision, its evidence, and its review trigger connected.

For: Infrastructure asset managers, engineering reviewers, and capital planning teams.

October 2026 · Editorial draft for review. Cover image: AI-generated illustration, not documentary evidence.

01 / FRAME THE QUESTION

Start with the decision

A condition label can identify a concern without explaining what to fund next. A planning team also needs to know which service is affected, what response is feasible, and which unknowns could change the recommendation. This paper proposes a small decision record for that conversation. It is an editorial workflow, not a scoring standard.

For water systems, EPA separates the current state of assets from service expectations, criticality, life-cycle costs, and long-term funding. That distinction is useful: an inventory is an input to a decision, not the decision itself. Its water-sector guidance should be adapted to the asset owner's context. [1]

Question	Evidence to bring	Decision it informs
What was observed?	Dated inspection, component/location, method and limitations.	Whether the evidence is adequate for this review.
Why does it matter?	Service function, consequences and operational dependencies.	Which outcomes the owner is trying to protect.
What could be done?	Feasible interventions, constraints and further investigation.	Which alternatives deserve comparison.
What changes the choice?	Cost assumptions, uncertainty and approval conditions.	What to verify before committing funds.

Name the decision before collecting more data

Write a sentence with an owner, a question, and a review date: "The capital planning team will decide whether to develop an intervention proposal for Asset A after the evidence review." Avoid combining immediate operational decisions with a multiyear funding choice. Each may need different evidence and authority.

> **Use a clear boundary.** A capital planning record does not establish that an asset is safe to operate. Suspected urgent hazards belong in the owner's established engineering and operational escalation process.

02 / CONNECT THE INPUTS

Build a traceable evidence chain

FHWA's research on data collection recommends defining decision needs before choosing data detail and collection methods. The study also describes a feedback loop to refine inputs after their use. It concerns project selection; it does not prescribe a universal inventory schema. [5]

01	02	03	04
Asset identity	Dated evidence	Interpretation	Decision record

In the proposed record, keep these four objects distinct. The asset establishes what the discussion concerns. Evidence records what was captured. Interpretation explains what a qualified reviewer concludes. The decision records the selected next step and who accepts it. A photograph should not silently become a verified diagnosis.

Minimum evidence packet — editorial template

- ☐ **Identity:** stable asset and component identifiers; location precise enough to find the observation again.
- ☐ **Observation:** capture date, author or role, method, units, access limitations, and linked originals.
- ☐ **History:** relevant earlier observations and interventions, with dates and a note on comparability.
- ☐ **Review:** interpretation, reviewer, unresolved questions, and the status of each material assumption.
- ☐ **Decision:** alternatives considered, rationale, responsible owner, and next review trigger.

Separate "not inspected," "not accessible," and "no issue observed." These states have different meanings. If a critical location is missing from the evidence packet, record the gap explicitly and decide whether the comparison can proceed with a stated limitation or needs additional investigation.

Original diagram and template. The recommended fields support traceability; they are not claimed as mandatory fields or verified features of any software product.

03 / EVALUATE ALTERNATIVES

Compare interventions consistently

FHWA's life-cycle planning handbook examines sequences of treatments over time and distinguishes network-level planning from project-level analysis. For pavements and bridges, the initial expenditure alone does not describe the longer-term implications of an intervention strategy. [2]

For a specific proposal, first screen whether an option is technically and operationally feasible. Then compare alternatives against the same service objective, analysis period, price basis, and cost boundaries, while stating each option's scope explicitly. Record the source of each assumption. A detailed estimate for one option and a rough allowance for another should not appear equally certain.

Comparison lens	Question for the review	What to retain
Service	What outcome is expected, and for whom?	Service objective and relevant constraint.
Whole-life implications	What later work, disruption, or replacement is assumed?	Intervention sequence and cost boundaries.
Risk and uncertainty	What could prevent the expected outcome?	Assumptions, response and accountable role.
Deliverability	Can the work be scoped, accessed and delivered?	Dependencies, approvals and timing conditions.

FHWA's risk case study describes how agencies make risks visible through registers, responses, and assigned responsibilities. Funding uncertainty and incomplete information can matter alongside physical condition. A register should therefore support follow-up, not merely produce a colored category. [3]

Ask what would reverse the recommendation

An editorial stress test is to vary one uncertain assumption at a time: intervention timing, expected service effect, or the scope of a known defect. If the preferred option changes, identify the assumption that needs better evidence. Do not invent failure probabilities to make an incomplete comparison look quantitative.

04 / APPLY THE METHOD

An illustrative review meeting

Illustrative example. An owner is preparing a capital program for a hypothetical infrastructure asset. A recent inspection contains a localized condition observation. Earlier maintenance records exist, but the location of one historical photograph is uncertain. No safety conclusion, cost estimate, or funding commitment is assumed.

Candidate next step	Reason to consider it	Evidence needed before selection
Clarify the evidence	A location mismatch could change the scope.	Confirm the component and link the original inspection record.
Develop a maintenance option	A limited intervention may address the identified need.	Qualified assessment of applicability, access and recurring work.
Develop a rehabilitation option	A broader service or condition objective may justify comparison.	Scope, dependencies, life-cycle assumptions and estimate basis.
Develop a replacement option	A different asset strategy may need evaluation.	Service need, alternatives, constraints and long-term implications.

The team first resolves the identity mismatch. It then records which options remain feasible and why. An option can be excluded because it does not meet the stated service objective, rather than because its rough cost looks unfavorable. The reviewer retains that exclusion rationale so a later team can understand the choice.

FHWA's financial-planning case study connects asset strategies with available resources and investment choices. Its state examples show why planning assumptions and expected outcomes need to be explicit. Historical agency examples do not establish results for this hypothetical asset. [4]

> **Output of the meeting:** a scoped next step, an accountable owner, the unresolved evidence request, and a date or event for reconsideration. The output is not an invented numerical priority or a structural condition certification.

05 / DECISION CHECKLIST

Make the recommendation reviewable

Use this editorial checklist before a proposal enters the capital review. A “no” answer does not automatically reject the work; it identifies the limitation that the decision owner must address or explicitly accept.

- ☐ Can a reviewer identify the exact asset, component, and evidence date without asking the author?
- ☐ Is the service objective stated separately from the condition observation?
- ☐ Are the alternatives feasible and compared on consistent scope and cost assumptions?
- ☐ Are uncertainties visible, with a responsible person for each material follow-up?
- ☐ Does the record explain why the preferred next step was chosen and why others were deferred?
- ☐ Is there a review trigger if new evidence, a scope change, or a funding change affects the rationale?

Keep a short decision note

A useful note has five headings: decision question; evidence reviewed; alternatives and tradeoffs; accepted limitations; next action. Link to the evidence rather than copying fragments into an untraceable summary. Record the note’s date and revision, and preserve the previous rationale when the choice changes.

Limits of this guide

This is a planning aid, not asset-specific engineering advice, a compliance assessment, or an investment guarantee. An observation does not establish structural capacity. Water-system concepts and highway planning methods have different scopes. Use the owner’s applicable procedures, competent professional review, and current requirements for the asset class.

> **Practical next step:** try the decision note on one real proposal using authorized evidence. Ask another reviewer to reconstruct the rationale, then improve the record where they cannot.

REFERENCES

Sources and editorial notes

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[3] Shobna Varma and Gordon Proctor; FHWA. Case Study 4—Managing Risks to Assets. FHWA-HIF-20-086. February 2021. Printed pp. 2, 5 and 9–10.
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[5] Gerardo W. Flintsch and J. W. Bryant, Jr.; FHWA. Asset Management Data Collection for Supporting Decision Processes. March 2009 (prepared May 2006). Chapter 4: data needs, collection methods and feedback.
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How this paper uses the sources

The cited publications provide sector context. The evidence-chain diagram, comparison questions, checklist, and hypothetical meeting are original editorial synthesis. No figures or case-study results have been copied. Source dates identify the publications, not a claim that all policies described remain current.

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