

University of Wales Trinity Saint David
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Assignment Title:

Ethical Dilemma: The Compromised Concrete Mix

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3. Introduction

This report analyses the ethical dilemma that arose during the construction of a new government-funded hospital, where it was reported that the strength of the concrete supplied did not fully comply with the technical specifications of the contract. It has been noted that the differences in strength between the concrete supplied and that contracted are minimal, but in the long term they could affect the durability of the work, which would compromise the structural safety of the building when it is subjected to greater stresses.

The purpose of this report is to analyse, within the framework of professional ethics, how to make the best decisions to fulfil the scope of the project, which will mean meeting the needs and expectations of stakeholders, including hospital users.

4. The Ethical Problem

During the execution of the project, the engineer obtained the results of the strength tests carried out on concrete samples in the laboratory, which indicated that the supplier was supplying concrete with a lower strength than that stipulated in the contract. This leads to sections with lower design strength, which could jeopardise the safety of the structure. The site supervisor himself has stated that redoing the affected sections in which lower-strength concrete has been used will cause a delay in the schedule, which translates into significant economic losses in change orders, possible fines, and damage to the company's public image due to the delay in project delivery. Additionally, the concrete supplier considers that, as the difference in strength is minimal, the material still meets the standards for use in construction, and if both parties agree, it will offer a future discount if it decides to continue without informing the client.

4.1. People and groups involved:

- Project manager
- Engineer who detected the lack of concrete strength
- Site supervisor
- Concrete supplier
- Client (government)

- Hospital users

4.2. Potentially affected parties

- Hospital staff in the event of structural failure
- Patients who would be affected by structural failure and future repairs
- The state due to the economic damage caused to the public administration
- The professionals involved, whose reputation could be affected.

5. Options and Consequences

In a hierarchical format, our decision alternatives would be as follows:

5.1. Main Problem:

The concrete supplied for the hospital structure shows a slight difference between the strength specified in the design, although the difference is minimal.

Potential Risk: If this issue is ignored, it will affect the long-term durability and safety of the building.

5.2. Option 1: Formally report and reconstruct the affected areas.

Key Actions:

- Formally inform to the client about the difference in concrete strength.
- Request additional concrete tests in the laboratory for further confirmation.
- Demolish and remove the areas that do not comply and reconstruct them.

Advantages:

- The long-term building safety will be guaranteed.
- The Design and contract specifications will be met.
- The credibility of the company's and the long-term reputation is protected.

Disadvantages:

- There will be a considerable delay in the construction schedule.
- Generates additional cost related to demolition, change orders for new activities.
- May lead to client dissatisfaction due to delays and penalties.

Stakeholders Who Benefit

- Hospital users (medical staff, personnel, and patients).
- The client, particularly the government entity responsible for the project, in the long term.
- The project team's ethical and professional standing, including the project manager and engineers.

Stakeholders Who Are Negatively Affected

- The construction company, due to additional costs, change orders, and potential penalties.
- The concrete supplier, as their performance may be questioned.

5.3. Option 2: Intermediate Solution – Evaluate and Strengthen the Affected Areas.

Key Actions:

- Conduct a detailed structural assessment, preferably with an external consultant for independent verification.
- Develop engineering solutions to reinforce the specific areas where the concrete strength is below acceptable limits.
- Limit demolition to only those sections where the deficiency is significant and cannot be mitigated through strengthening.
- Inform the client about the minor reinforcement adjustments, focusing on transparency without causing unnecessary alarm.

Advantages

- Reduces technical risk compared to ignoring the issue or withholding information entirely.
- Minimizes additional costs and change orders, especially when compared to a full demolition and rebuild.
- Provides a reinforcement strategy supported by professional calculations or external expert recommendations.

Stakeholders Who Benefit

- The construction company, as costs and delays are reduced.
- The concrete supplier, who avoids the immediate consequences of full replacement.
- The project manager as long as the entire process is thoroughly documented to demonstrate due diligence.

Stakeholders Who Are Negatively Affected

- Hospital users, there is a risk in a long term.
- Client (Government), building safety risk, cost increases, lack of transparency.

In summary, it can be shown these two alternatives in the following diagram:

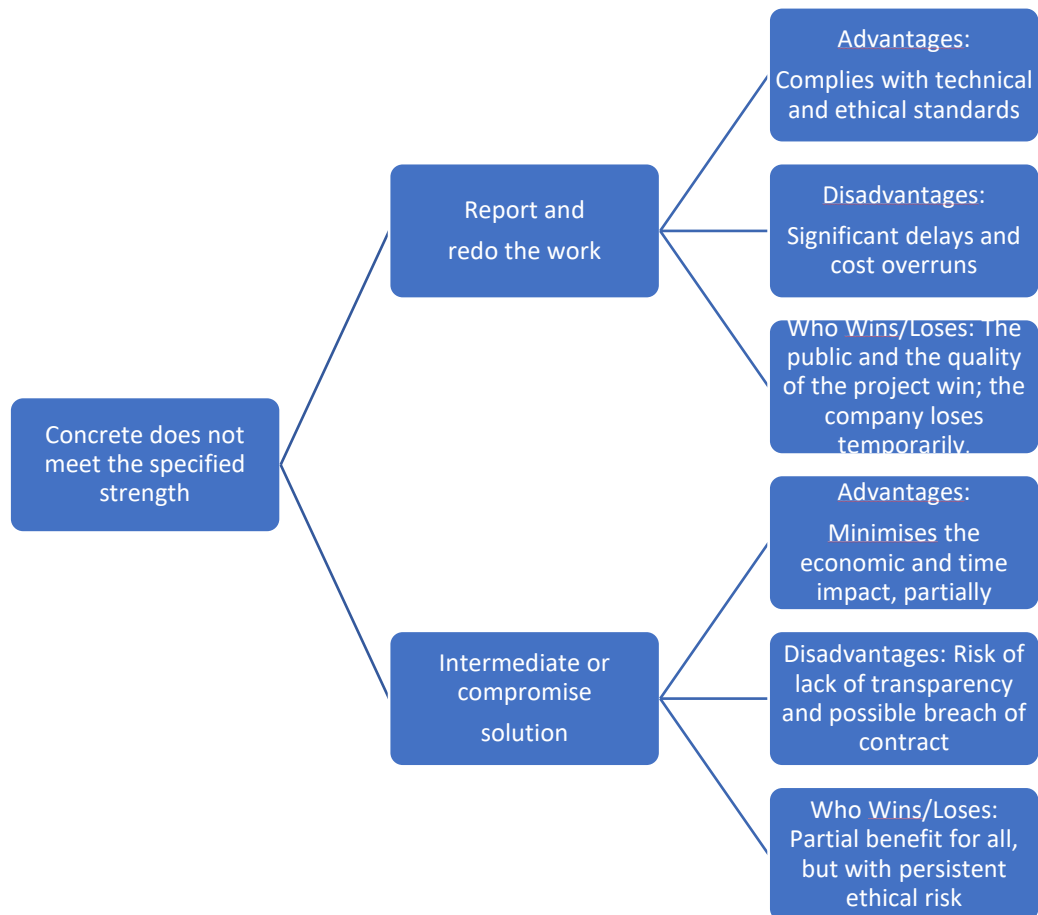


Figure 1. Hierarchical structure of decision alternatives

Source: Own elaboration

If we further develop this decision diagram into a matrix, we will give us a clearer idea of the decision we could make:

Table 1. Summary of decision alternatives

Source: Own elaboration

Option	Advantages	Disadvantages	Benefits/Loses
Report the irregularity and redo the affected sections	Complies with technical and ethical standards; protects public safety and professional reputation	Significant delays and cost overruns; possible loss of customer confidence in the short term	The public, professional ethics and project quality win; the company loses temporary
Search for an intermediate technical solution (through structural assessment and reinforcement of affected areas)	Attempt to minimise the economic and time impact, partially complying with regulations.	There would be a risk of lack of transparency and possible breach of contract; reputation compromised.	Partial benefit for all, but with persistent ethical risk.

6. What is the Right Thing to Do? (Ethical Thinking)

According to deontology, which is a normative theory that judges the morality of a decision, “we must act in accordance with the rules (Jeanes, 2019). In this sense, the project manager must act in accordance with ethical techniques and codes and the provisions of the law, i.e., in accordance with the contract, ensuring the quality of the project, the design, public safety, and their integrity as a professional.

7. Rules and Responsibilities

As stated in the ICE Code of Professional Conduct, “All members shall discharge their professional duties with integrity and shall behave with integrity in relation to all conduct bearing upon the standing, reputation and dignity of the Institution and of the profession of civil engineering”. (ICE 2025). Therefore, according to the code of ethics, one must act with honesty, integrity and professionalism.

The CIOB, in its position on Ethical Standards states, “Maintaining ethical principles improves the transparency of the industry and encourages quality construction.”(CIOB, 2025). Therefore, according to the ethical standards of the Chartered Institute of Building a professional must:

- Act in accordance with applicable technical and contractual standards.
- Ensure the safety of people.

According to Rule number 1 of the Royal Institution of Chartered Surveyors (RICS 2015) several principles guide ethical behaviour in professional practice. These can be summarised as follows: breaks down several statements, which we can summarise as follows:

- Members and firms are open and transparent with clients about their fees and services. (RICS, 2015, Rule1.6)
- Members and firms do not take unfair advantage of others. (RICS, 2015, Rule1.8)

8. Final decision

As a project manager, after thoroughly analysing the alternative solutions, we note that both options could be technically feasible and could achieve the project scope. However, the ethical and professional decision is to immediately report the non-compliance to the client and halt the affected works.

This decision:

- Complies with ethical codes and professional standards.
- Protects the safety of hospital users.
- Even if there are short-term losses, the company's reputation and image will be maintained.
- It will prevent major lawsuits in the future.

9. Conclusions:

- The dilemma analysed shows us that although it is difficult to take short-term risks, ethical decisions in construction will be the most convenient in the long term.
- Moral thinking based on principles of honesty and transparency in our profession helps us make the right decisions for the benefit of others, even if they are not favourable for us.
- Professional ethics must be the foundation for sustainability among professionals, clients and society, thereby ensuring safe infrastructure works for people.

10. References

Chartered Institute of Building (CIOB), 2025-last update, Ethical Standards. Available: <https://www.ciob.org/industry/policy-research/policy-positions/ethical-standards>.

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