

Cover Page on Survey Monkey

To understand the current state of design documents and its impact on project delivery efficiency, Ryerson Institute for Infrastructure Innovation (RIII) was commissioned to undertake this study. The study is supported by a number of construction associations as well as Mitacs, a national research funding agency that supports applied research and industry-academia collaboration.

As a part of the study, this nation-wide online survey aims to collect data and opinions from construction professionals on questions relating to the quality of design documents. Professionals representing project clients, architects and engineers, as well as general contractors and subcontractors are invited to participate in this survey.

Your participation is critical to the success of this project. The survey results will be confidential, and no identifiers of any participant will be published.



Canadian
Construction
Association



The Impact of Pre-Project Investment and Quality of Documents on Project Delivery Efficiencies

General Instructions

This survey is divided into three sections. The first section comprises four basic background questions. The second section focuses on project-specific questions based on the most recently completed project in which you participated prior to the COVID-19 lockdown. It would be beneficial to have project details such as contract, cost and schedule details readily available to facilitate the completion of this survey. The third and last section seeks your opinion in relation to the trend of design document quality. The survey should take approximately 15 minutes to complete.

Section 1: Background

1. How many years have you been working in the construction industry?

- Less than 5 years
- Over 5 years and less than 15 years
- Over 15 years

2. In which construction sector have you worked? (select all that apply)

- Residential Building
- ICI Construction (Industrial, Commercial and Institutional)
- Transportation and Transit (e.g. roads, bridges, transits, airports)
- Heavy Industrial Construction (e.g. water treatment, mining, chemical processing, power generation)
- Municipal Utilities/Civil (e.g. sewers, water mains)
- Other (please specify)

3. Which category best describes your current role? (please select one)

- Owner – Project Manager
- Owner – Facility Operator
- Owner's Construction Manager
- Project Investor
- Consultant – Architect
- Consultant – Engineer
- Consultant – Other (e.g. cost, environmental)
- General Contractor
- Subcontractor
- Supplier/Manufacturer
- Other (please specify)

4. How many years have you been working in the role identified in the previous question?

- Less than 5 years
- Between 5 and 15 years
- Over 15 years

Section 2: Project Specific Questions Based on Your Most Recent Project

The questions in this section seek to elicit your experience of the most recently completed subcontract in which you participated prior to the COVID-19 lockdown. All your answers in this section should be based on this one subcontract. For questions where you are uncertain of the answer, please provide your best estimate.

5. In what trade did you work as a subcontractor? (e.g. excavation, concrete, masonry, steel, wood framing, mechanical, electrical, sheet metal)

6. In which year was your subcontract work completed?
[Dropdown]
Before 2015
2015
2016
2017
2018
2019
2020

7. Which sector did the project fall into?
 - Residential Building
 - ICI construction (Industrial, Commercial and Institutional)
 - Transportation and Transit (e.g. roads, bridges, transits, airports)
 - Heavy Industrial Construction (e.g. water treatment, mining, chemical processing, power generation)
 - Municipal Utilities/Civil (e.g. sewers, water mains)
 - Other (please specify)

8. Where was the location of this project?
[Dropdown]
Alberta
British Columbia
Manitoba
New Brunswick
Newfoundland and Labrador
Nova Scotia

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Ontario

Prince Edward Island

Quebec

Saskatchewan

Northwest Territories

Yukon

Nunavut

9. What was the value of your original subcontract? (CAD\$ millions, HST excluded)
10. What was the original duration of your subcontract work for this project? (months)
11. In comparison with subcontract work based on similar dollar value, type and complexity, how would you categorize the number of Requests for Information (RFIs) you submitted that were related to design drawings and specifications during the **bidding** stage?
 - None (Skip Q12)
 - Fewer than average
 - Average
 - More than average
 - Not applicable (e.g. the work was not obtained by bidding) (Skip Q12)
12. What was your level of satisfaction with the responses to the RFIs you submitted based on the design drawings and specifications during the **bidding** stage?
 - Satisfied
 - Neutral (neither satisfied nor unsatisfied)
 - Unsatisfied
 - Not sure
13. In comparison with other subcontract work of similar dollar value, type and complexity, how would you categorize the number of Requests for Information (RFIs) you submitted that were related to design drawings and specifications during the **construction** stage?
 - None (Skip Q14)
 - Fewer than average
 - Average
 - More than average
 - Not sure (Skip Q14)
14. What was your level of satisfaction with the responses to the RFIs you submitted based on the design drawings and specifications during the **construction** stage?
 - Satisfied

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- Neutral (neither satisfied nor unsatisfied)
- Unsatisfied
- Not sure

15. In comparison with subcontract work based on similar dollar value, type and complexity, how would you categorize the number and scope of Change Orders and Change Directives related to the subcontract during the construction stage?

- None
- Fewer than average
- Average
- More than average
- Not sure

16. In comparison with subcontract work based on similar dollar value, type and complexity, how would you rate the quality (completeness, clarity and accuracy) of the technical specifications used in this project in each of the following areas? Indicate your evaluation of each area on a scale of 1 for excellent to 5 for very poor.

- Provisions in the general requirements (Division 1)
- General specifications
- Product specifications
- Execution specifications (specified standard of workmanship)

17. How would you rate the degree of completeness of the overall design documents originally issued to you in this subcontract?



0

100% (show the selected percentage in a box)

- Not sure

18. How would you rate the original drawings and specifications provided by architects/engineers and other consultants for the preparation of your shop drawings in this subcontract?

- Poorer than average
- Average
- Better than average
- Not applicable

19. Comparing the technical specifications to the construction drawings in this subcontract, which had more issues on Errors and Omissions?

- Technical specifications
- Construction drawings
- Not sure

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20. Comparing the *actual* date of substantial performance of the subcontract work with the completion date stipulated in the original subcontract, when was your subcontract work completed?

- Ahead of schedule (skip question 23 and 24)
- On time (skip question 21, 22, 23,24)
- Behind schedule (skip question 21 and 22)
- Not sure (skip question 21, 22, 23,24)

21. If ahead of schedule, by how much time approximately? (weeks)

22. If ahead of schedule, list 3 factors that contributed to this achievement.

23. If behind schedule, by how much time approximately? (weeks)

24. To what extent do you consider the following factors contributed to project schedule delays during this subcontract? For each factor selected, indicate your evaluation on a scale of 1 for a minor extent to 5 for a major extent.

- Owner-initiated scope changes during construction
- Design errors and omissions in bid/design documents
- Unforeseeable/site conditions (e.g. subsurface conditions, soil contamination)
- General contractor's management issues in the execution of construction
- Shop drawing approval process
- Scheduling issues with other trades
- Others (insert your answer here)

25. Was the original construction cost of this project increased or decreased through change orders?

- Increased (skip question 28)
- Decreased (skip question 26 and 27)
- Not sure (skip question 26,27 and 28)

26. If increased, what was the percentage of the cost increase?

- 0-10%;
- 11%-30%;
- 31%-50%;
- Over 50%
- Not sure

27. If costs for the project increased, to what extent did the following factors contribute to the cost increase for this subcontract? For each factor selected, indicate your evaluation on a scale of 1 for a minor extent to 5 for a major extent.

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- Owner-initiated scope changes during construction
- Design errors and omissions in bid/design documents
- Unforeseeable/site conditions (e.g. subsurface conditions, soil contamination)
- General contractor's management issues in the execution of construction
- Shop drawing approval process
- Scheduling issues with other trades
- Others (please specify)

28. If decreased, what was the percentage of the cost decrease?

- 0-10%;
- 11%-30%;
- 31%-50%;
- Over 50%
- Not sure

29. In comparison with other subcontract work of similar dollar value, type and complexity, how would you rate the extent of inefficient use of resources (time, money and materials) caused by design issues during the construction stage of this project?

- Higher than average
- Average
- Lower than average
- No waste
- Not sure

30. A number of recommendations have been identified by researchers that could improve construction productivity. Based on your experience of this project, please select and rank 3 recommendations from the list below that you believe would have benefited your project most. Identify them in the order of effectiveness using 1 for the most effective recommendation and 3 for the least effective.

- Limit the number of scope changes
- Improve the quality of the drawings
- Improve the quality of the specifications
- Improve the shop drawing review process (time spent and quality of drawings)
- Improve the management skills of the general contractors
- Improve collaboration and communication between stakeholders
- Build trust between stakeholders
- Use BIM tools and technologies
- Use prefabricated components
- Others (please specify)

Section 3: Opinion

The following question seeks your opinion on the trend in the quality of design documents.

31. Based on your years of work experience in the construction industry, what is your opinion of the overall quality of design documents over the last 10 years?
- Getting better
 - Remaining about the same
 - Getting worse
 - Not sure