



Constructability Counts

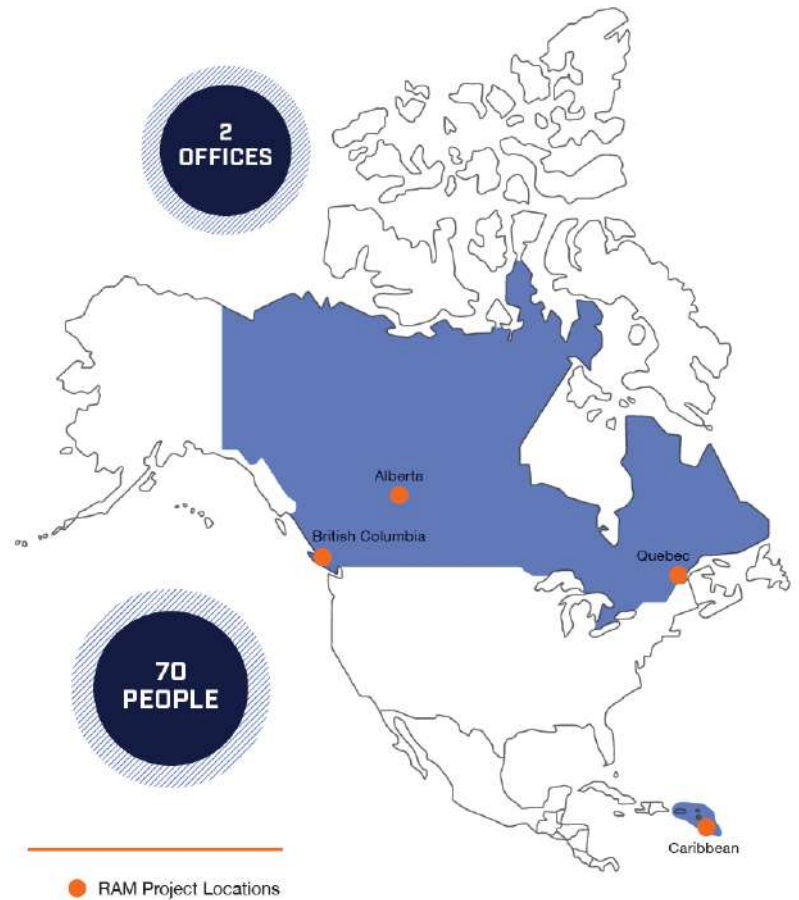


Your Project. Our Passion.

Who is RAM?

As a leading multi-disciplinary firm, our team provides project management, construction management, procurement, and engineering services throughout Canada, US, and the Caribbean. Experts in heavy civil and infrastructure solutions, our people specialize in the transportation, utility, infrastructure, and energy sectors.

Since its foundation 13 years ago, RAM has been involved in major municipal infrastructure projects as construction and project managers, designers, field engineers, inspectors, and quality managers. Our goal is to provide personalized services tailored to each individual client's needs supported by a multidisciplinary team of specialists and professionals.



Constructability Reviews

A Constructability Review is the process of optimally incorporating construction knowledge, experience and practices into the design, engineering, procurement and construction project phases. Constructability Reviews can help determine if there are built-in problems or flaws that may impede construction or factors that may cause impacts to any stakeholder in terms of time, cost or quality. As a result, owners may incur costs in the form of change orders that could have been avoided had the bid documents been reviewed more carefully.

Constructability Counts



Owners manage the design and construction process to control financial risks associated with a new project. However, problems can often occur when unexpected changes happen to the scope, schedule or budget in projects. RAM's Constructability Counts service provides detailed reviews of draft construction plans and specifications of bid documents during the design phase. RAM's Constructability Counts documents consist of Constructability Review Checklists and Constructability Input and Programs Procedure.

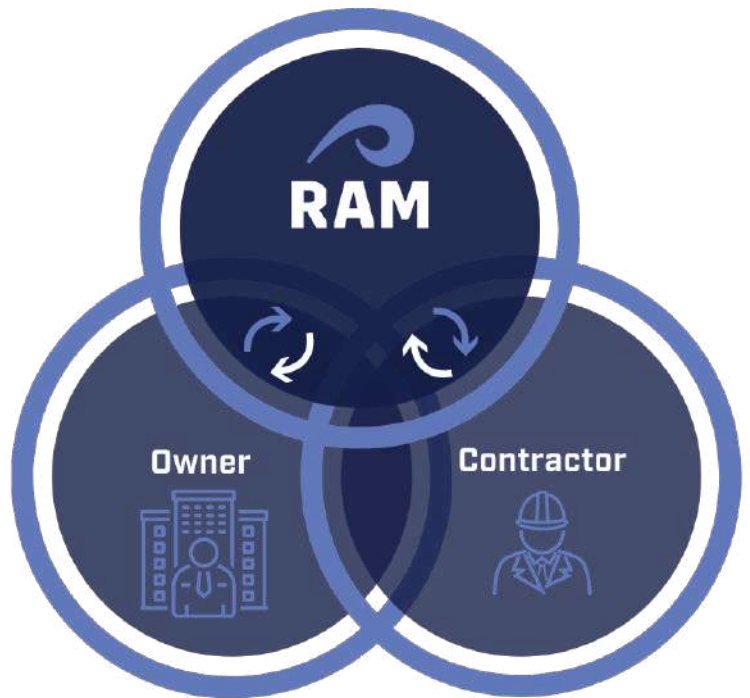
RAM's team of experienced project and construction professionals can help identify conflicts, lack of information, and constructability problems within bid documents, specifications and drawings. RAM has "boots on the ground" construction experience in the field representing owners as well working directly for contractors, giving us a comprehensive view of projects from both perspectives. The experience our team has gained with contractors allows us to provide a second set of eyes for constructability reviews of proposed designs.





Project Experience with Both Contractors and Owners

RAM provides project leadership to both Owners and Contractors, in doing so, RAM has developed a unique perspective and experience enabling our team to have a holistic approach in executing project reviews and related contracts. Our experienced professionals can recognize clauses within contracts that are ambiguous and could be subject to further disputes. In this capacity, we have a competitive edge in being able to mitigate claims and delays in the delivery of projects.



Benefits to All Parties

Constructability Counts brings the team together early so the Owner and Contractors are on the same page to ensure the project is successful. This creates a collaborative environment for the team to produce a clear set of documents for the Owner. Constructability Counts helps all parties recognize potential discrepancies within the bid document, specifications and drawings. This will help mitigate potential future risks of unexpected construction costs and change orders.



Other benefits include:

- **Competitive bid prices -**
With plans and specifications now clear and concise, ambiguity is eliminated to enable a simpler bidding process for contractors and an easier bid evaluation for owners.
- **Reduced claims during construction -**
Plans and specifications have been vetted to ensure consistency well coordinated and constructability to avoid possible claims.
- **Better Schedule and Resource Management -**
Project resources and schedule will be reviewed to ensure they meet requirements and identify activities that present a risk to the schedule and help develop strategies to help mitigate.



Lower Mainland Intermediate Pressure System Upgrade (LMIPSU)

FortisBC upgraded their existing natural gas system in the Lower Mainland. The LMIPSU project was a replacement of approximately 20 km of intermediate pressure gas line that has reached the end of its service life with a new 30 inch gas line. The LMIPSU line runs from the FortisBC Coquitlam Station in the City of Coquitlam, through the City of Burnaby, ending at the FortisBC Woodland Station in the City of Vancouver.

RAM's Role

RAM assisted with pipeline design review, permitting and construction planning/management, and project management. Our scope of work included design review (focusing on constructability issues related to installing a pipeline through a major urban centre), stakeholder (City of Burnaby/City of Vancouver/City of Coquitlam/TransLink/MoTI/Third Party Utilities) engagement and management, liaising/obtaining crossing agreements and construction services agreements with project stakeholders/utility owners, traffic plan/consultant management, utility relocation management and design, and general project and construction leadership/management.



*Excavation Along Lougheed
Highway in City of Burnaby*

Constructability Reviews

RAM performed Constructability Reviews of the contract documents, design drawings, traffic management plans, and stakeholder engagement and management approach. RAM's team proactively helped the development of a traffic management plan by the Owner.

Our team also assisted in the implementation and management of a utility relocation program for the Owner, helping validate the design and identify potential conflicts with existing utilities prior to construction.



Utility Locate Program

Benefit to the Client

By performing Constructability Reviews, RAM was able to save the Client money and time through:

- **Traffic management planning along the 20 km pipeline during the design stage;**
- **Material and equipment lay down area planning and evaluation along the 20 km pipeline during the design stage;**
- **Leadership of a comprehensive utility locate program during the design stage to proactively identify potential and existing utility conflicts along the 20 km pipeline; and**
- **Prior to construction, negotiation and implementation of comprehensive municipal infrastructure memorandums of understanding with the City of Coquitlam, City of Burnaby, and City of Vancouver.**



FortisBC's Traffic Management Approach



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