Leadership in Sustainable Infrastructure

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Case Study

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SHARING THE EXPERIENCE OF EXPLORING ENVISION: A CASE STUDY OF THE NORTH EAST FALSE CREEK PROJECT

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1 Introduction

The development of sustainable rating systems for the construction industry was initiated with Paasive House and BREEAM in the 1990s and LEED in the 2000s. The focus of these initial rating systems was vertical structures i.e. buildings, houses, hospitals, etc. Recently, there has been an increased interest in sustainable rating systems for all civil infrastructure projects. This has resulted in the development of systems such as Envision, BREEAM Infrastructure, CEEQUAL, and GreenRoads. There is limited literature available on the infrastructure rating systems and tools themselves, particularly with regard to critical analysis of outcomes and experiences related to field use (Griffiths et al, 2015). For the present, although none of the systems are recommended as a universal panacea, a study of any or all of them would help in developing an understanding of the subject (ACEC, 2014). This case study presents the City of Vancouver's experience with initial exploration of Envision, an infrastructure rating system developed in the US in 2012. The main objective of this case study is to share the processes related to decision making on selecting a rating system, training of employees and provide insights on the exploring the potential of using Envision during the design phase of the project.

1.1 Project Overview

The City of Vancouver delivers capital infrastructure projects that vary in complexity, value and sustainability. To explore sustainable rating systems, the North East False Creek (NEFC) Project was selected. The project is currently in the detailed design phase and pending Council approval at the end of 2017, construction is scheduled to commence in mid-2018. This significant city-building project includes the replacement of the Georgia and Dunsmuir Viaducts with a new street network that includes an extension of Georgia Street down to False Creek, utility network relocations and expansions and public realm improvements.

2 Innovation on Project

2.1 Why did we choose to explore Envision?

The City of Vancouver has ambitious goals, outlined in the Greenest City Action Plan (GCAP) 2020, to become the Greenest City by 2020. One of the goals of the GCAP 2020 is for the City to demonstrate leadership in greening their own internal operations. Further, in continually striving to improve project and infrastructure delivery, City of Vancouver Engineering wanted to explore further opportunities to incorporate sustainable principles on their capital projects. To this end, a rapid review of the various infrastructure sustainability rating systems was conducted. A comparison of the systems currently available in the market is shown in Table 1. The data was collected from publicly available shared information on the respective

websites of these rating systems as of October 2016. The High, Medium and Low ratings are based on the judgement of the authors. For the sector coverage, the authors observed that Envision was applicable for all relevant sectors for this Project i.e. Water, Sewers, Transportation, Energy, and partially applicable to Neighbourhoods. The results are tabulated below:

Table 1 Comparison of Infrastructure Rating Systems (As of October 2016)

	Envision	**LEED-ND**	**CEEQUAL**	**BREEM Infrastructure**	**BREEAM Communities**
3rd Party Evaluation	Yes	Yes	Yes	Yes	Yes
Total Projects	19	160	260+	Piloting	Unclear
Origin	USA, 2012	USA, 2010	UK, 2003	UK, 2015	UK, 2008
Projects in Canada	2	17	0	0	0
International Recognition	Medium	High	Medium	Low	Medium
Recognition in Canada	Medium	High	Low	Low	Low
Estimate Learning Curve	Medium	Low	High	High	High

2.2 How are we exploring the Envision Framework (so far)?

In order to explore the Envision rating system and framework, the project team identified that a fulsome understanding the system was critical and enrolled City staff in Envision Training. The training spanned over two days and included the accreditation training and a workshop that applied the Envision framework to the NEFC Project. The workshop allowed staff to apply the Institute for Sustainable Infrastructure (ISI) training materials, which are fairly generic, and Envision credit framework to the NEFC Project and critically estimate what level of achievement could be achieved.

2.3 Lessons Learned so far/ Impact of Envision on the Project

The initial explorations of Envision have provided the project team with a new sustainability lens for the project. The key learnings so far have been:

1. Envision training and related project sustainability discussions have resulted in capacity building of the project team and the organization
2. It was observed that several existing sustainability and infrastructure policies of the City of Vancouver, the Province of British Columbia and Metro Vancouver are well aligned with some of the Envision credits
3. The Envision Framework provides varying levels of achievement within each credit that provide good motivation and a basic methodology to improve project performance
4. Envision provides a structured approach to address sustainability on the project
5. Most of the Envision criteria can be translated to a Canadian context
6. Managing the Envision project documentation is anticipated to be one the main challenges as it requires an added investment of time and funding.

3 References

Association of Consulting Engineering Companies (ACEC) (2014). “Sustainable Development for Canadian Consulting Engineers”, Ottawa, Canada

Griffiths, K. A., Boyle, C., and Henning, T. F. P. (2015). “Infrastructure sustainability rating tools – how they have developed and what we might expect to see in the future.” IPWEA 2015