Developing an Asset Management Plan for Highway DBFO Projects

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Contents

• BC Highway DBFO Projects
• Specification Performance Measures
• Asset Management Plan Framework
DBFO Projects in British Columbia

- Several major P3 highway improvement initiatives
- All Design-Build-Finance-Operate (DBFO) models
- Outcome performance based contracts over a 25 to 30 year period
DBFO Projects in British Columbia

Sea-to-Sky Highway Improvement Project

- 25 year performance based contract
- $600 million capital + OMR
- 2010 Winter Olympics
- 320 lane-km of highway / 155 major structures
- Status: Awarded and capital works now 50% complete
William R Bennett Bridge Project

- 30 year performance based contract
- Replacement of unique Floating Bridge Structure
- Integral part of transportation system in Kelowna
- Status: Awarded and underway
Kicking Horse Canyon Project

- 25 year performance based contract
- Key highway corridor that traverses thru the Rocky Mountains
- Severe mountainous terrain and conditions
- Replacement of Park Bridge, highway improvements and OMR
- Status: Proponent selected and contract underway
DBFO Projects in British Columbia

Gateway Program

- Response to the impact of growing regional congestion and traffic demands throughout Greater Vancouver
- Four major highway corridor improvement initiatives to complement other regional road and transit projects
- Pitt River Bridge Design Build project underway
- Port Mann / Highway 1 in tender period
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DBFO Contract Requirements

DBFO Agreement (OMR Specification):

- Development and submission of an initial AMP
- Annual updates to the AMP
- Review Procedure defined
- Specifies Core AMP requirements
- References to international AMP documents
DBFO Contract Requirements

Frustrations

- Concessionaires not complying with AMP requirements
- Several AMP iterations without much progress towards compliance

Solution

- Guideline on developing AMP’s for Concession Projects
- Education
Delivery of OMR performance obligations are guided by three levels of performance measures:
Objectives

• Limiting asset consumption
• Achieving design life expectations
• Sound asset management that guides long-term rehabilitation work
• Utilizes existing BCMoT condition rating systems
Asset Preservation

Preservation Performance Requirements

Service Level

(Structural condition)

Minimum Acceptable Condition

Annual Preservation Performance Measures

Time (annual)

End of Term

Handback Criteria

Preservation Performance Requirements
Asset Preservation

Asset Categories

Highway Running Surfaces:
- Annual measures
- Surface distress, roughness, rutting
- RPMS specifications

Major Structures:
- Annual and 5 Year measures
- BMIS specifications
- Extensive audit/ calibrations

Drainage Structures:
- Annual & 5 Year measures

Electrical Systems
Contents

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AM Value Ladder

Community Outcomes

Asset Outcomes

Levels of Service

Intervention Levels

Work Instructions

Physical Work

Setting the right objectives

DBFO Level

Strategic

Tactical

Operational

Doing the right things

Doing things right
Why an AMP from the DBFO Contractor?

- Demonstrates that the Contractor has a planned approach to maintaining the structural integrity (& value) of the assets.
- Provides the basis for due diligence in terms of strategy completeness.
- Creates confidence to Agency.
- Provides work schedule information for the owner to disseminate to the public.
Asset Management Plan

Generally:

- Is a cornerstone strategic planning document.
- States how a group of assets are to be managed over a period of time.
- Defines the practices, processes and systems that are being applied.
Asset Management Plan

Some Key Questions

1. What are the required service levels?
2. What assets are required to deliver this service?
3. What assets do we have?
4. What condition are the assets in?
5. What do we need to do to the assets?
6. When do we need to do it?
7. How much will it cost?
8. What new assets do we need?
9. What are the assets worth?
• AM is a process
Key Questions

- **BCMoT** - what are the Ministries goals?
- **Priorities** - what are the AM priorities?
- **KPM’s** - what are the KPM’s?
- **Availability** - what are the highway availability requirements?
- **Risk** - what is the risk policy for the project?
- **Culture** - how to create a cooperative project culture?
- **Demands** - how to mitigate against the effects of demands?
Asset Inventory

Key Questions

- **Assets** - what assets are covered by this plan?
- **Data Quality** - how complete, accurate and up to date is the current data?
- **Installation Date** - what was the installation date?
- **Components** - what are the asset components?
- **Growth** - is the asset growing?
- **Updating** - how and when will the data be updated?
- **Validation** - does the data need validating?
Key Questions

- **Condition** - what is the current condition?
- **Monitoring** - what is the utilization, reliability, and performance?
- **Outcome** - What is the desired condition?
- **Data Collection** - how is data collected & managed?
- **Assessment** - how is the data assessed?
Performance Assessment

Key Questions

- **Quality** - what are the current quality management processes?
- **Monitoring** - what are the current performance monitoring processes?
Lifecycle Planning

Key Questions

- **Strategies** - what are the strategies for addressing routine maintenance, rehabilitation, & replacement?

- **Usage** - what is the current and future use?
Forecast Performance Gaps

Key Questions

- **Modelling** - how will the condition deteriorate over time?
- **Useful Life** - what is the potential useful life?
- **Coordination** - how can future work be coordinated to create efficiency and maximize road availability?
- **Confidence** - what is the level of confidence with predicting future work?
Key Questions

- **Intervention** - what is the intervention strategy for maintenance?
- **Rehabilitation** - what features indicate the need to rehabilitate?
- **Economics** - when does rehabilitation work become economically viable?
- **Maintenance Schedulers** - what guidance needs to be provided to Maintenance Schedulers?
Risk Assessment

Key Questions

- **Context** - what is the context?
- **Management** - how will risks be managed?
- **Risks** - what are the risks?
- **Analysis** - how are risks analyzed?
- **Evaluation** - how are risks evaluated for criteria and priority?
- **Mitigation** - what are the risk mitigation options?
- **Monitoring** - how will risks be monitored?
Key Questions

- **Economics** - what is the most cost effective strategy to manage the assets?
- **Level** - can optimization be performed at single or network level?
Key Questions

- **Performance Measures** - will all the specified performance measures be achieved?
- **Procurement** - how will the physical work be delivered?
- **Resource** - can the annual physical work identified be adequately resourced?
- **Compliance** - how will the physical work be measured for compliance?
Quality Management

Improvement Actions

• Asset Management and the framework in particular is structured to support a process of continuous improvement

• Review activities should include:
  • Ongoing Performance Reviews - looking at results and factors contributing to performance and options for dealing with substandard results
  • Asset Management Plans
Like Good Wines

- They take time to mature

- But you have to lay the vintage before any improvement can start!!!
  - write down assumptions and make a start
  - the next plan will definitely be better!!
Thank you