Cost Benchmarking for Real Property Construction Projects

(Performance, Benchmarking, Monitoring)

November 2016
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Who we are

Turner & Townsend is an independent professional services company specializing in program management, project management, cost management and consulting across the real estate, infrastructure and natural resources sectors.

With 97 offices in 41 countries, we draw on our extensive global and industry experience to manage risk while maximizing value and performance during the construction and operation of our clients’ assets.
Presence in Canada

Toronto
Ottawa
Calgary
Edmonton
Vancouver
What is benchmarking?

**Benchmarking**: the process of comparing a project (or project elements) to similar projects (or project elements) to validate cost estimates, schedules and performance.

**Benchmarking - accepted standard and best practice**

The Royal Institution of Chartered Surveyors (RICS) is the world's leading professional body for qualifications and standards in land, property and construction.

In 2013, RICS produced a global Guidance Note, 1st edition, for Cost analysis and benchmarking. This report has been prepared in accordance with RICS principles by professional Quantity Surveyors who are members of the RICS.
Benchmarking Reports

Benchmarking

We have completed benchmarking reports for clients in all business sectors including real estate, infrastructure and energy.

We provide:

- Performance benchmarking
- Schedule benchmarking
- Cost benchmarking
- Insight & context
Building our Benchmarking Capability

Benchmarking Capability

We are currently building up our benchmarking capability by capturing the data on all our live and legacy commissions. The data capture focuses on the following:

- High level cost data
- Milestone dates
- Project context
- Key metrics
- Key attributes
How is it used?

Benchmarking reports which are used for a number of purposes, including cost comparisons between projects and across industry sectors.

- Benchmarking forums allow participating organizations to see trends and respond accordingly. Benchmarking forums include the Retail Bank Cost Benchmarking Forum and the Performance Forum for oil & gas projects.

- Cost Benchmarking Analysis and Modelling for major Metropolitan regions.

- Our international construction market survey provides a comprehensive overview of cost data gathered from major programs and projects in 35 markets around the world.

- Benchmarking elementary and secondary schools for Alberta Infrastructure.

- Researching, analyzing and presenting international unit cost benchmarks for the expansion of Hong Kong International Airport.
Practical application

- Global benchmarking of 40 recent mega projects with metrics covering cost, time, quantities, safety and technical.

- Canadian benchmarks covering cost, time and productivity used to challenge the assumptions of a mining Feasibility Study.

- Provide capital cost benchmarking at capacity, functional and component level to allow analysis of the feasibility estimate for the proposed project.

- Benchmarking of regional design & build contractor costs.

- Major program benchmarking of client/owner’s costs as a % of the total project costs and assessment of the cost drivers.
Approach & methodology

- Turner & Townsend benchmarking studies use client data, internal Turner & Townsend data, supplemented with public domain data.
- We use the data to identify themes and trends.
- Benchmarking provides context behind the data.
- 90% context, 10% numbers.
Benchmark steps

- Detailed review and understanding of current cost estimate.
- Assemble long-list of domestic and international projects with similar scope characteristics.
- Filter long list to short-list of projects with similar scope and similar cost drivers.
- Using escalation factors, normalize the project costs to 2016 dollars.
- Using location factors, normalize the project costs to account for geography (see following slides).
- Compare the various projects and situate the subject project within the data sets.
- Assess and analyze to explain the relative position of the subject project; identify any themes or trends in the data.
Location adjustment factors

Location Factor adjustments

Data can be adjusted to a common location to take into account regional differences in wages, productivity, material costs, shift hours and market factors

- Allows a more realistic comparison on a global basis

The Turner & Townsend location factor model considers these factors and prepares a set of single location factors, one for each region considered, that are useful for comparing the cost of developing a project in various locations.
Data Driven Success

Data Driven Decisions

Our cost database allows us to build statistical models. This is the next step, where data is converted into information and finally knowledge. Our data is enabling clients to truly understand the scenarios they are facing and empower them to make the best decision they can.

Our own understanding

Improving our data repository will not only allow our clients to make the best decisions possible, but it will also allow us to improve our service delivery.
Case Study

Heathrow Terminal 5B

New Satellite
Location: Europe
Project Stage: Completed

Cost Information
Project Cost: GBP £350m

Functional Design Detail
Terminal MPPA: 18m
GIFA: 91,500m²
Stands: 12
Our Role: Cost Manager

Milestone Dates
Option Decision: November 2001
Contract Award: December 2002
Practical Completion: August 2007
First Passenger: June 2008

Context
Satellite per serving T5A in a "toast rack" configuration. Constructed in landscape environment.
Contains Shuttle station in basement that connects with TSA and C.
Procurement route was Cost reimbursable. Contract option was a bespoke Client contract.
Logistics and site access were major complications which lead to the development of a logistics management system.

Heathrow T2A – Queen’s Terminal

New Terminal Building
Location: Europe
Schedule: 2007 - 2010
Project Stage: Completed

Cost Information
Normalised Project Cost: €1,142m

Functional Design Detail
Terminal MPPA: 20
Area: 212,416m²
Stands: 12
Our Role: Project Controls

Context
New replacement terminal building constructed in a landscape environment.
12,260m² of retail space provided throughout the terminal.
The procurement route was lump sum, fixed price. The contract option was bespoke based on NEC3 Option C (Target cost).
T2 utilises the T1 BHS. Safeguarding has been built in to T2B phase 2 to accommodate for the future BHS system.
Case Study

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Average (Mean)

- Dublin Pier D: 13
- Dublin T2: 35
- Gatwick Pier 1: 3
- Dubai C4: 4
- Heathrow T5C: 1
- Heathrow T5B: 1
- T2B Phase 2: 1
- T2B Phase 1: 1

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Months

- 0
- 20
- 40
- 60
- 80

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Thousands

- 0
- 6
- 3
- 5.69
- 5.90

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Turner & Townsend
Some practical benefits

- Evidence based decision making
- Informing delivery strategy
- Supporting lean implementation with schedule benchmarking
- Assessing value for money
- Supporting gateway approval
- Predictive modelling (pre-design)
Specific considerations for Federal Real Property

Availability of relevant information

- Government of Canada has significant relevant data
- Government of Canada may be spread across multiple Departments, Crown Corporations and Agencies
- Data from other jurisdictions (international, Provinces) may be publicly-available, or data may be confidential and unavailable

Key Federal cost drivers

- Security
- Heritage
- National Capital Region construction market
- Internal costs
Benchmarking and project approvals

Cost benchmarking can specifically support project approval decision by Treasury Board (or Boards of Directors for Crown corporations).

- The Treasury Board *Guideline on Cost Estimation for Capital Asset Acquisitions* published in July 2015 recommends that risk-adjusted cost estimates provided to decision-makers should have at least a 50% confidence level.
Case study: Centre Block
Intelligent data = Better decisions

- **Ability to make better decisions**
  - Prepares evidence for business case and TBS project approvals
  - Increases your confidence in evidence-based decisions

- **Earlier decision making with confidence**
  - Produces more accurate and predictable estimates
  - Assesses how long projects should take and how much they should cost

- **Insight into how you’re performing against your peers**
  - **Multi project data normalized** for time, geography, environmental and economic conditions.
  - More easily identifies value improvement opportunities

- **Intelligent, external comparisons**
  - Allows for better value-for-money comparisons
  - Confidence in Risk Assessment
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