

**Mega Project Excellence
Preparing for Alberta's Legacy -
An Action Plan**

**AACE Presentation
Calgary - Sept 14, 2005**

Construction Owners Association of Alberta



Agenda

- COAA – who are they and what are they doing
- Benchmarking Initiative
- What has been accomplished what is being proposed



About the COAA

Mission: Promotes safe, high quality, cost effective construction for the benefit of all industry stakeholders and Alberta

- Formed in 1977
- Board of Directors (12), Owner Members (23) Associate Members (55) and Supporting Members (9)
- Multi-stakeholder participation
- Best Practices efforts started in the late 80's
- First Best Practices conference in 1992
- Numerous concrete achievements improving the construction industry in Alberta

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COAA Activities

- Revising the Canadian Model – Alcohol and Drug Guidelines
- Industry Safety Standards & Safety Best Practices
- Annual Labour Workforce supply-demand forecasting
- Demand forecast for Major Projects >\$100MM
- Supervisory training and qualifications
- Effective use of apprentices
- Reducing Rework ... Eng', Construction Planning & Scheduling
- Measuring & benchmarking construction productivity
- Improving work face planning
- Developing a standard EPC Terms and Conditions document
- Common voice on industry/government initiatives

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COAA Activities

Canadian Model for Providing a Safe Workplace

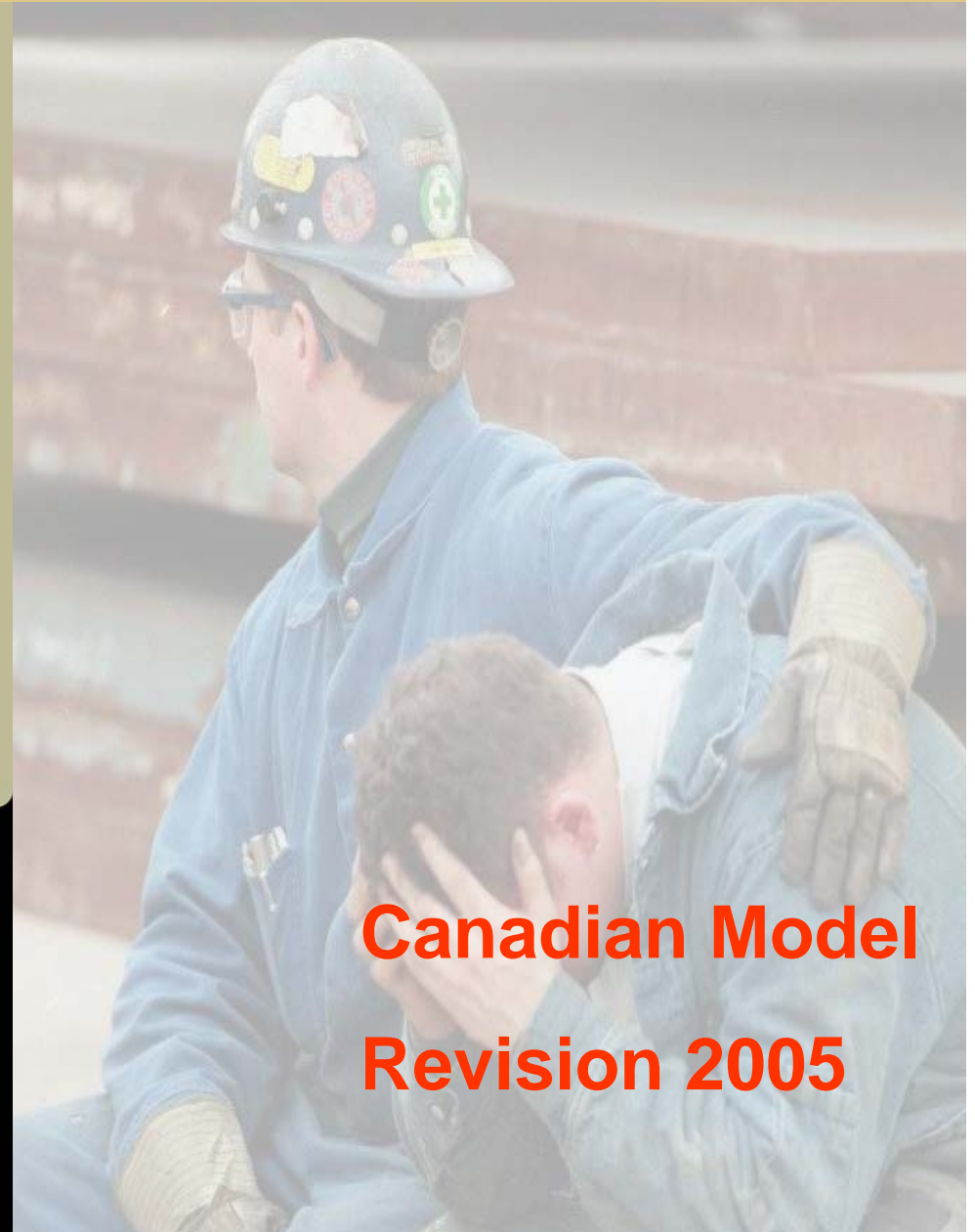
A best practice of the
Construction Owners
Association of Alberta

Alcohol and Drug
Guidelines and Work Rule



MAY 2001

Canadian Model
Revision 2005



COAA Activities

PRRT  **COAA**
PROJECT REWORK REDUCTION TOOL
Leveraging the 'Alberta Advantage' on Industrial Projects



Report available at:
www.coaa.ab.ca

ALBERTA CONSTRUCTION WORKFORCE

Supply/Demand Forecast

2005 - 2009 SUMMARY REPORT

MAY 2005

A COLLABORATIVE EFFORT INVOLVING

The Alberta Construction Contractors and Labour Organizations ■ The Construction Owners Association of Alberta ■ Alberta Advanced Education ■ Alberta Human Resources and Employment ■ Alberta Economic Development

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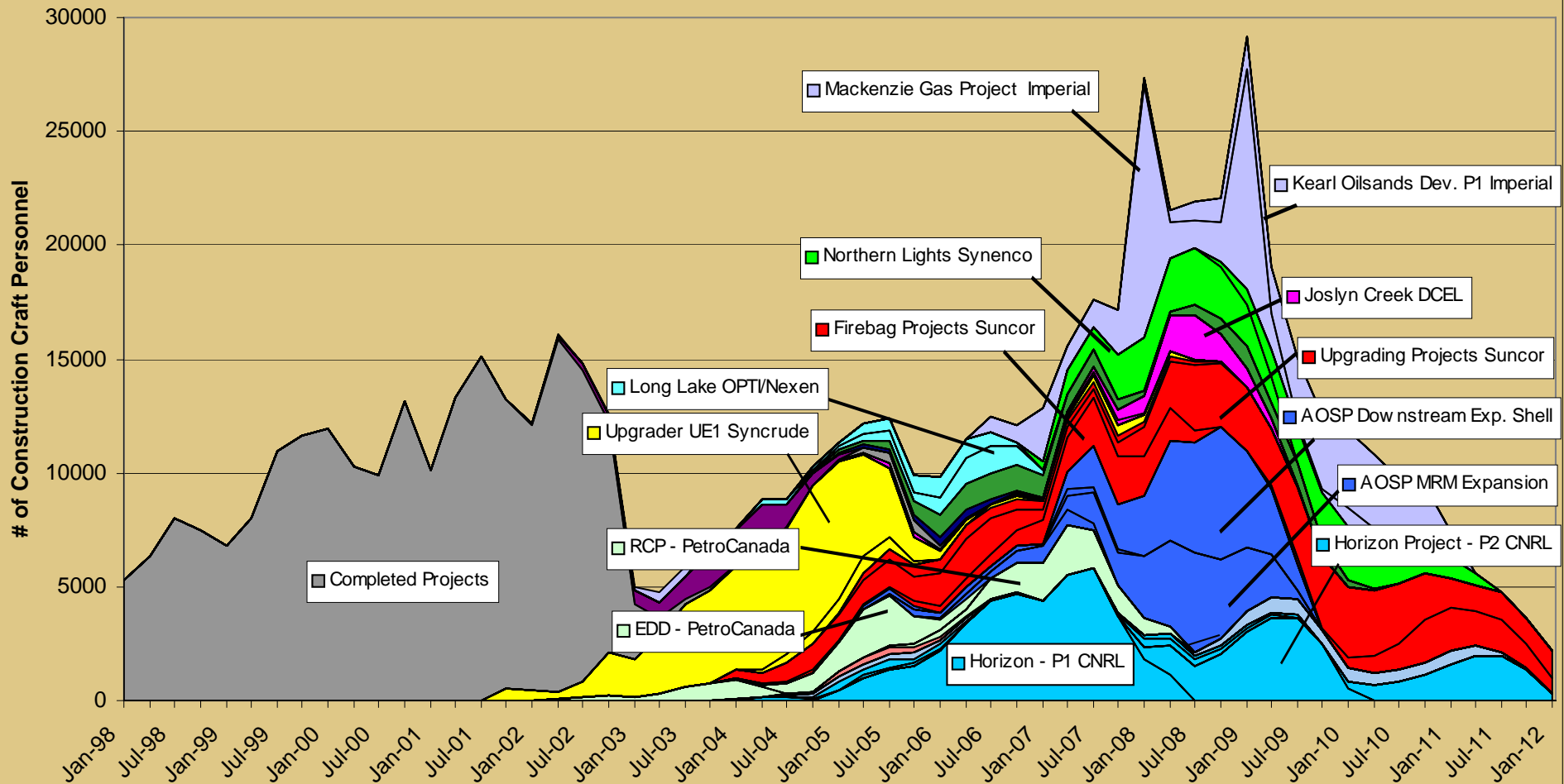


Labour Shortage

- 400,000 new jobs will be created in Alberta between now and 2014.
- Only 300,000 will be entering Alberta leaving shortfall of 100,000.
- In 2004, 16,494 immigrants entered the province (of which only 5% have trade certificates [approximately 825 trades people]).
- We are projecting a shortage of heavy industrial trades people (boilermakers, electricians, pipefitters, welders, etc.).



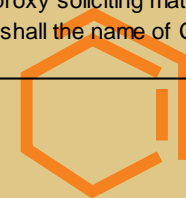
Alberta Industrial Construction Projects >100 MM Cdn 1998-2012



This graph was prepared by Construction Owners Association of Alberta (COAA) in November 2004 and is based in part on information not within the control of the COAA. COAA has not made an analysis, verified, or rendered an independent judgment of the validity of the information obtained from outside sources. COAA does not guarantee the accuracy of this graph and use or reliance upon this graph for any reason by any party shall constitute a release and agreement by such party to defend and indemnify COAA against any liability (including but not limited to liability for special, indirect, consequential damages) in connection with such use whether arising in contract, tort, strict liability, or other theory of legal liability to the maximum extent, scope or amount allowable by law.

Notwithstanding the foregoing, neither the graph nor any information contained therein may be used in connection with any proxy, proxy statement, proxy soliciting material, prospectus, Securities Registration Statement or similar document without the express written consent of COAA, except as may be required by law. In no event shall the name of COAA be used without COAA's prior written consent.

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Research and Education

- Support the establishment of an Alberta center of Excellence in Project Management
 - project benchmarking – support COAA's benchmarking Initiative with CII
 - best practices – support COAA's BP initiatives & committees ... e.g. workforce demand and supply forecasts with CSC
 - project management training / certification
 - recognition of project management as a specialty, including both professional and non-professionals



Bench Marking Proposal for the Alberta Industrial Construction Industry

The COAA Benchmarking Committee

- What has been achieved (past)
- What is current (present)
- What is in store (future)

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Results of a Survey of Performance
Deviations on Major Industrial Construction
Projects in Alberta (1990-2003)

Construction Industry Performance -
Measurement and Benchmarking Sub-
Committee

in collaboration with
Hole School of Construction Engineering
University of Alberta
Spring 2005

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Construction Industry Performance - Measurement and Benchmarking Sub-Committee Members

- **Don Mousseau : Suncor Energy**
- **Steve Revay: Revay and Associates**
- **Doug Rowan: Shell Canada**
- **Bruce Morrison: Syncrude**
- **Dave Williams: Bantrel**
- **Ron Genereux: Suncor Energy**
- **Bob Montgomery: Colt Engineering**
- **Aminah Robinson-Fayek: University of Alberta**
- **Randy Pepler: North American Construction**
- **Dave Widdifield: Shell Canada**
- **Don Stefiuk: Chemco Electrical Contractors Ltd.**
- **Patricia Armitage: Alberta Economic Development**
- **Martyn Piper: Regional Council of Carpenters and Allied Workers**
- **Denis Dubord: PCL Constructors**



Acknowledgements

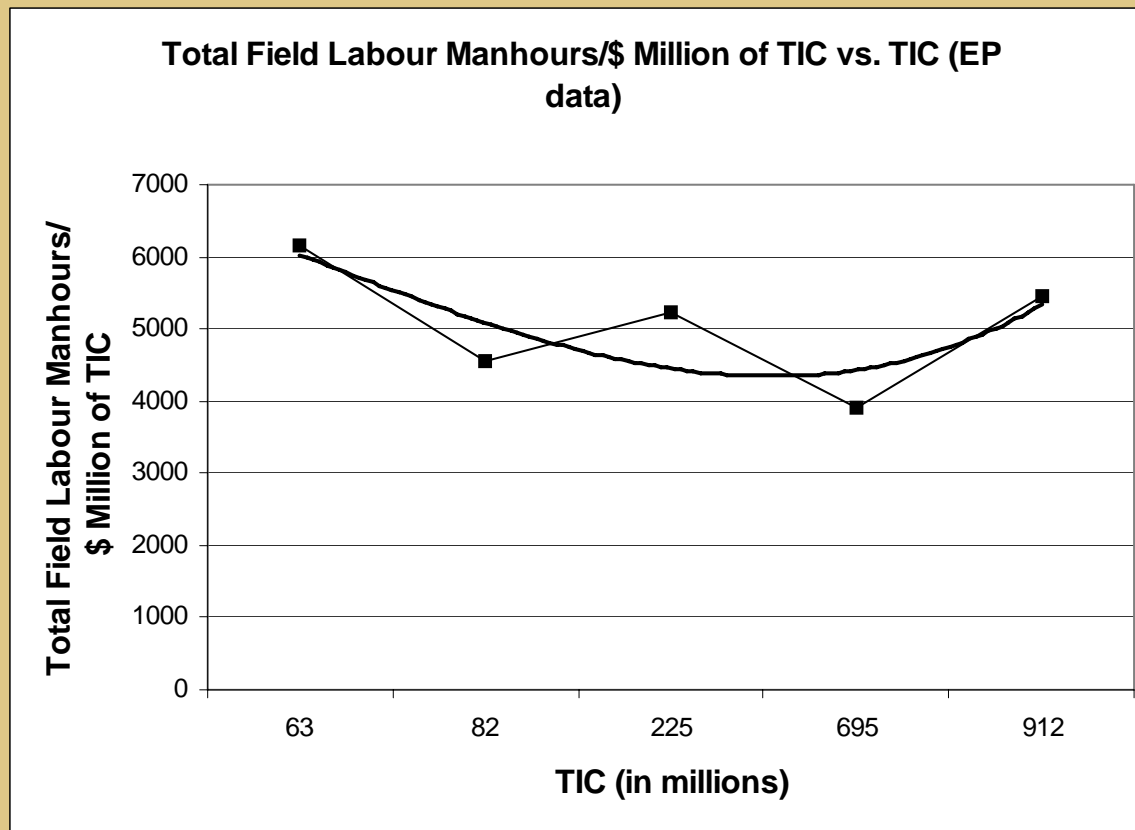
- Dr. Aminah Robinson-Fayek: University of Alberta
- Survey participants – key to success.
- Alberta Ministry of Human Resources and Employment – initial analysis and report.
- Cam Fraser and Michel Allouche, University of Alberta – data collection and preliminary analysis.



Background to the Study

- Construction Industry Performance - Measurement and Benchmarking Sub-Committee established need to collect and analyze summary level project data to help explain performance deviations on major industrial projects in Alberta.
- 2 survey questionnaires developed to collect data from owners and EP firms on major industrial projects completed after 1990, exceeding \$50 million CAD.
- Data collected from 8 owner firms and 6 EP firms for 30 projects.
- Correlation analysis performed to answer questions relating variables to project performance measures.

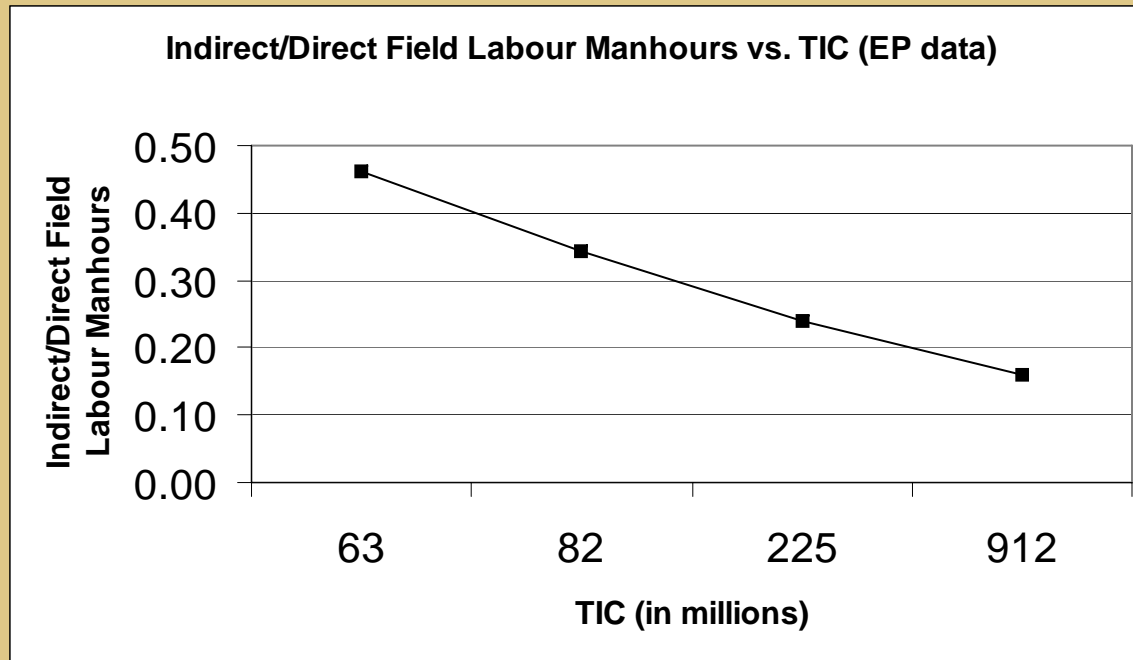




Trend of decreasing (up to a certain point) and then increasing value of manhours/\$ million of TIC as TIC increases.

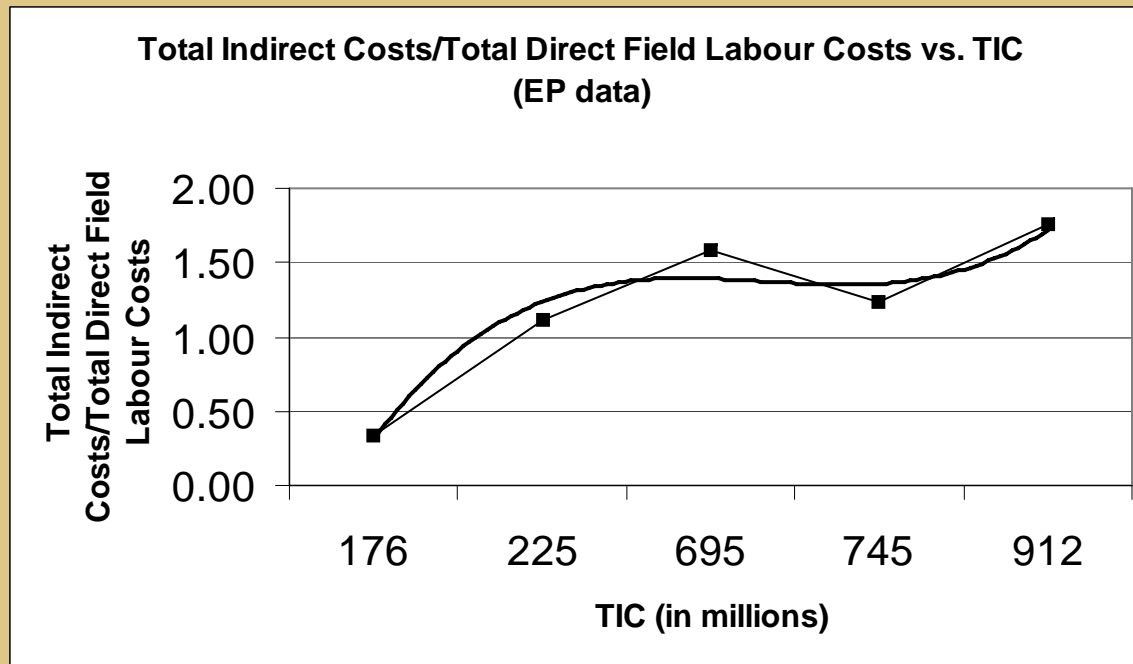
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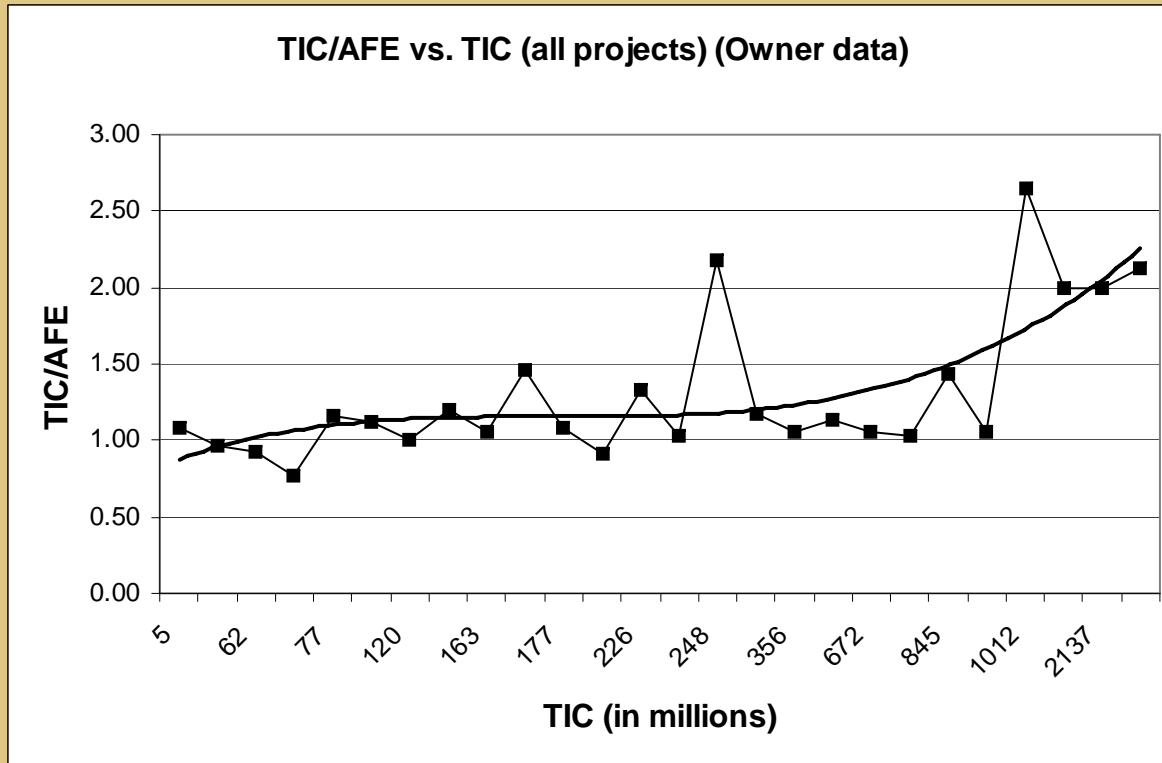
Significant trend of decrease in indirect/direct field labour manhours as TIC increases.





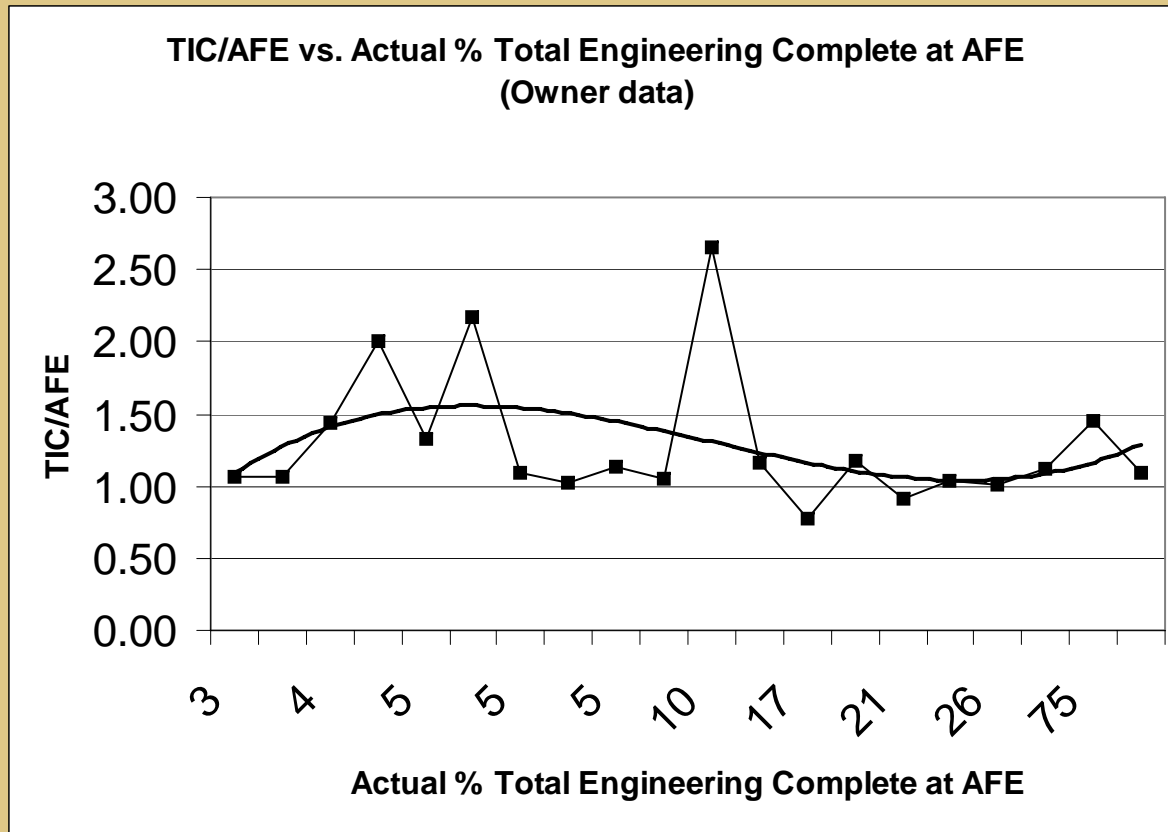
Significant trend of increase in total indirect costs/total direct field labour costs as TIC increases.





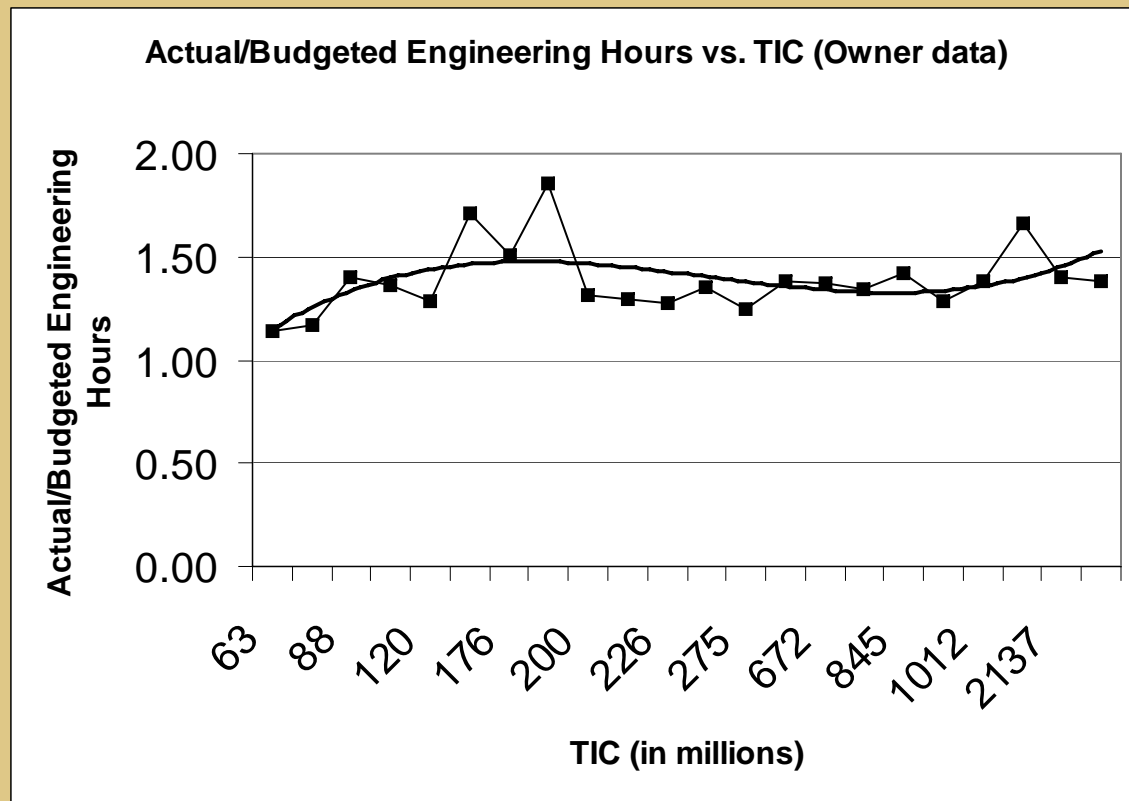
Greater variability of TIC relative to AFE with increasing project size.





Less variability of TIC relative to AFE with increasing % total engineering complete at AFE.

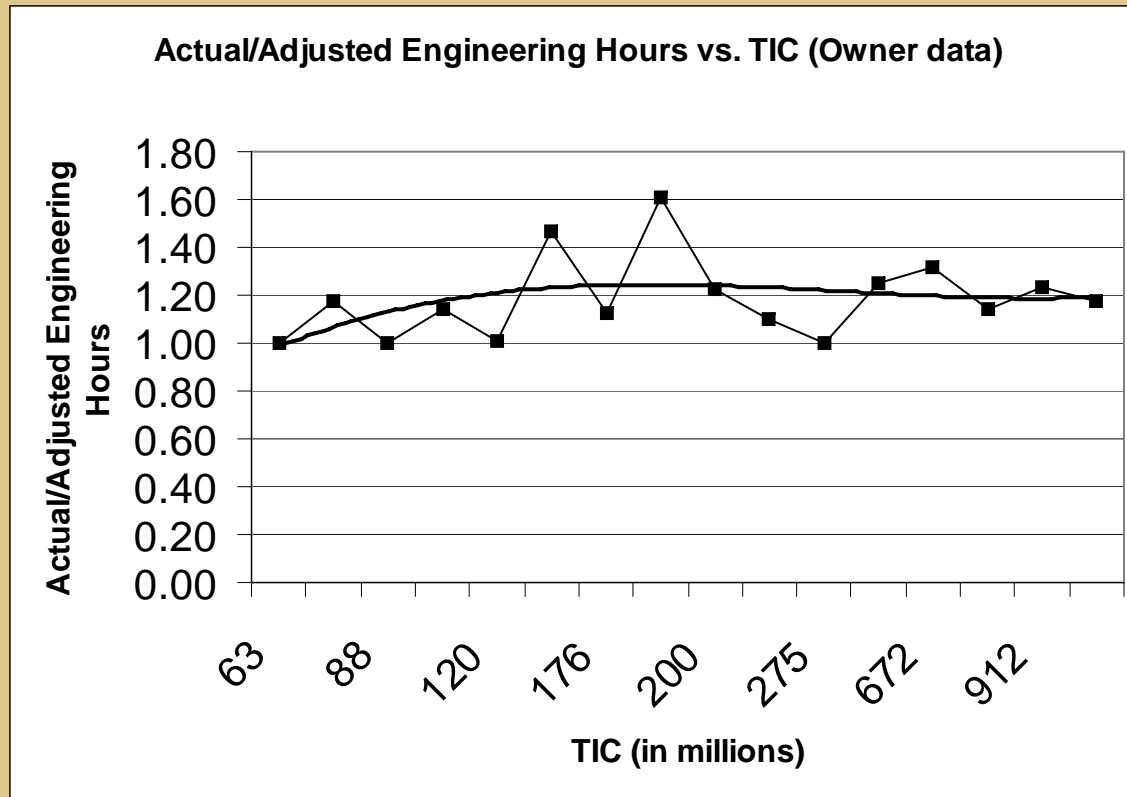




Actual engineering hours are greater than budgeted engineering hours for all project sizes.

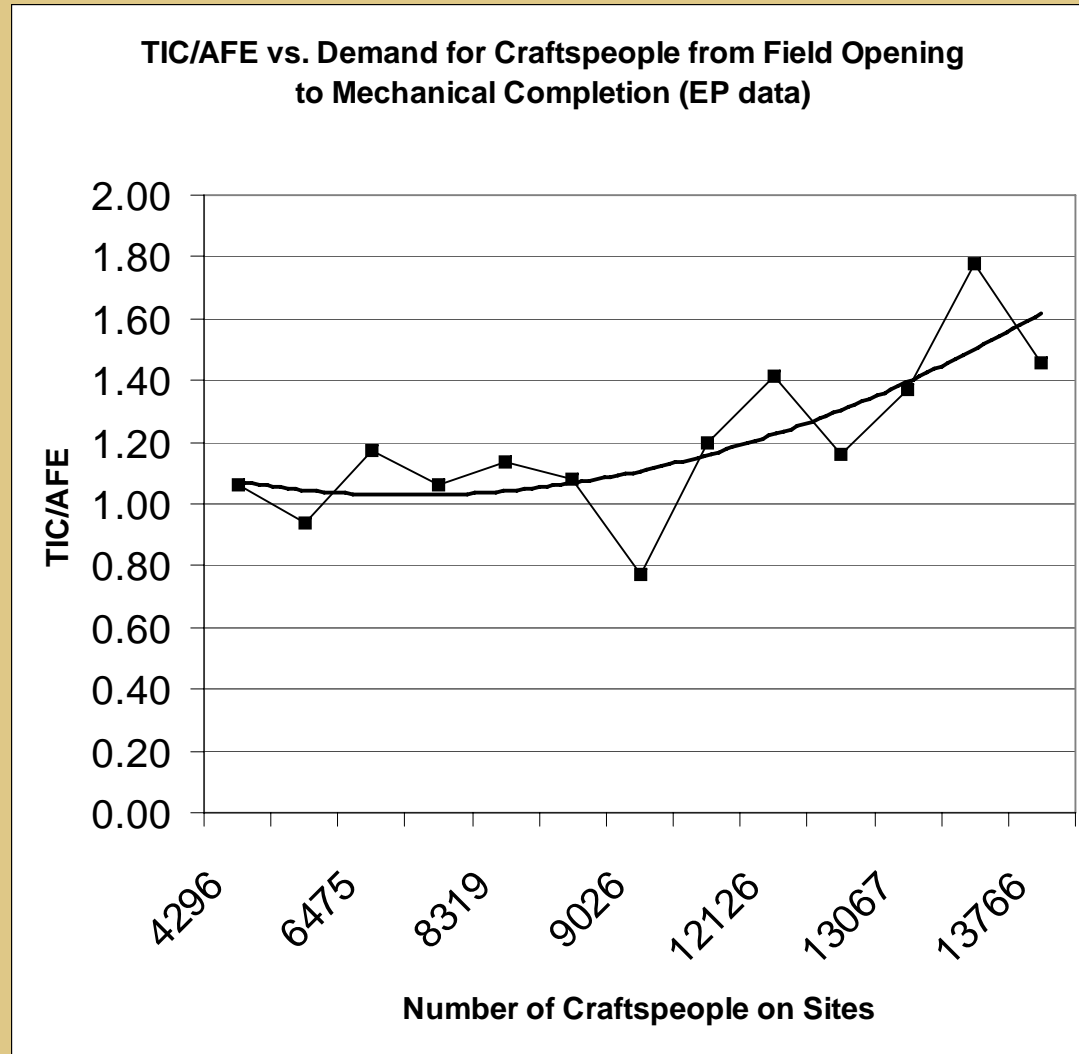
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Actual engineering hours are greater than adjusted (for scope changes) engineering hours in most cases.





Significant trend of increasing ratio TIC/AFE as demand for craftspeople in Alberta increases.

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Conclusions

- Survey is an important first step in providing support for common industry theories regarding project performance.
- There is room for improvement in how projects are executed, especially larger projects.
- Results provide an important benchmark, from which change on future projects can be measured.
- Need a more efficient method of collecting project data for future benchmarking studies.
- Quality and quantity of data point to the need to initiate industry-wide project benchmarking during project execution.



Bench Marking Proposal for the Alberta Industrial Construction Industry

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Benchmarking Sub-Committee Members

- **Don Mousseau : Suncor Energy**
- **Steve Revay: Revay and Associates**
- **Doug Rowan: Shell Canada**
- **Dave Williams: Bantrel**
- **Bob Montgomery: Colt Engineering**
- **Aminah Robinson-Fayek: University of Alberta**
- **John Croft : Suncor Energy**
- **Dave Widdifield: Shell Canada**
- **Majendra Bhatia: Jacobs Canada Inc.**
- **Patricia Armitage: Alberta Economic Development**
- **Martyn Piper: Regional Council of Carpenters and Allied Workers**
- **Peter Janson: CNRL**
- **Larry Illicki & Greg Sillack: Petro Canada**
- **Greg Davin: Opti-Nexen**



The Need for Industry Wide Benchmarking

- Two major industry studies, commissioned by the COAA, in the past 20 years have attempted to document the factors that affect industrial projects in Alberta
 - CONSTRUCTION PRODUCTIVITY STANDARDS by Revay and Associates (1981)
 - Results of a Survey of Performance Deviations on Major Industrial Construction Projects in Alberta (1990-2003) by COAA/University of Alberta



The Need for Industry Wide Benchmarking

- Both reports commented on the difficulty in collecting historical data.
- Both reports recommended the need for industry wide benchmarking to continuously monitor performance as the industry develops
- We must have reliable and current data in order to demonstrate performance and to lobby for change



Benefits of Benchmarking

- Improves project and company performance when used in an ongoing manner
- Establishes improvement based goals on external/competitive benchmark
- Enables the company/project team to understand the drivers of project performance
- Is a fundamental building block of a continuous improvement program
- Provides quantitative documentation of the benefits obtained through implementation of best practices
- Provides quantitative documentation of the impact(s) of external factors on project performance



Our projects are all to some degree impacted by the following influences:

- Distance from tide water
- Winters
- Workforce skill level
- Remote locations
- Camps/bussing
- Lack of infrastructure (Fort McMurray)
- Modularization
- Typical project size
- Competing projects
- Kyoto Impact



Bench Marking Proposal for the Alberta Industrial Construction Industry

- The COAA Benchmarking Committee will lead the effort in developing a Benchmarking questionnaire which will be customized to our specific requirements
- We will work with the Construction Industry Institute to develop the Questionnaire. They have been running a similar program for 20 years and have over a 1000 projects in their data base.
- CII has developed customized questionnaires for other industry sectors:
 - The Pharma Industries in the US (five participants)
 - European Construction Institute



Bench Marking Proposal for the Alberta Industrial Construction Industry

- Development costs are estimated at \$300,000 and will take place over the next 18 months
- Cost for individual company participation will be approximately \$5,000.
- Both Alberta Energy and AED have expressed interest in participation and cost sharing



Bench Marking Proposal

Future Tasks

- Finalize questionnaire
- Get commitment to complete questionnaire



Benchmarking for Alberta Projects

Questions?



**Thank
You**

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