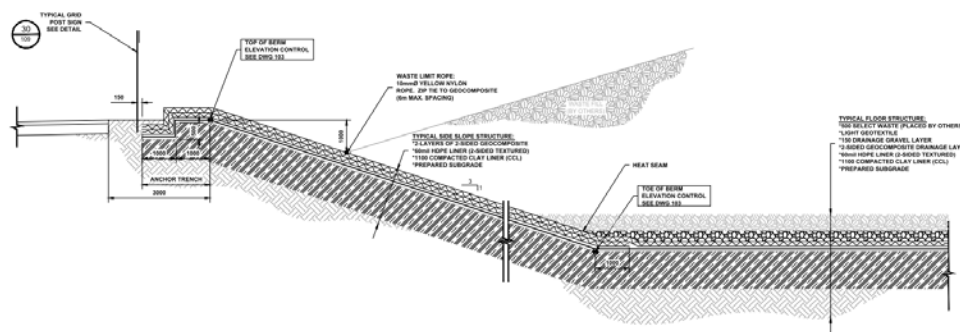




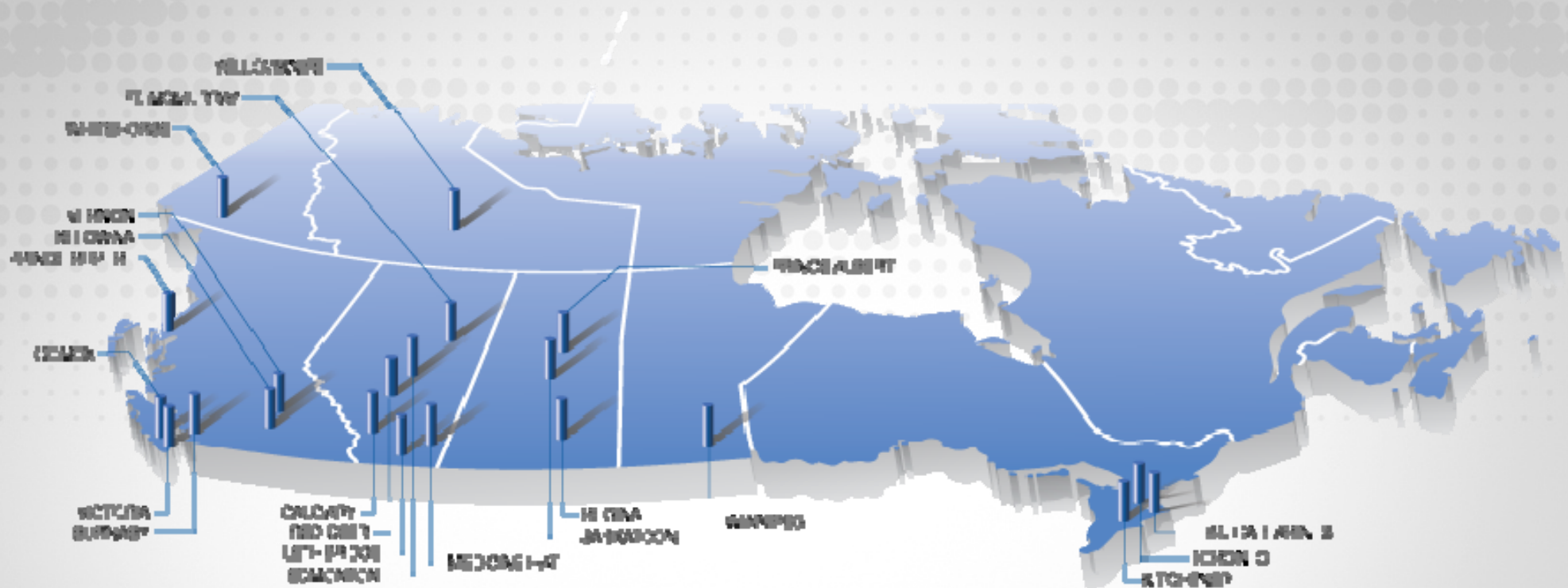
Associated
Engineering



Designing and Constructing Landfills In Remote Communities

Bob Jardine, C.E.T.

May, 2017

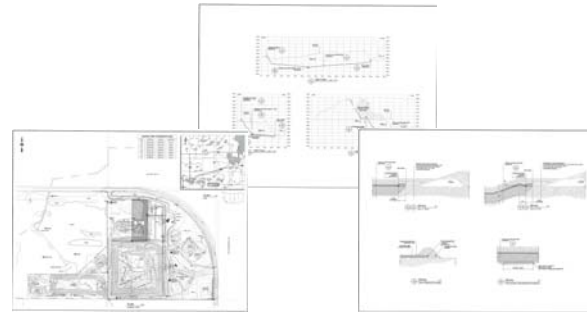


Founded in the mid 1940's, Associated Engineering has over 900 staff in 21 offices across Canada.

Staff with landfill experience spread across the country.

Introduction

- Landfill Design Challenges
- Construction Process
- Quality Assurance/Quality Control (QA/QC)
- Quantity and Material Balancing
- Designing for Closure and Post Closure
- Managing Clients Expectations



Landfill Design Challenges

- Managing Background Data
- Consistency is Key
- Managing the Earthworks Materials
- Understanding what Happens Next



The Construction Process

- Be a Team Player
- Consistent Approaches
- Product Availability
- Quick Response to Requests
- Adaptability
- Site Safety



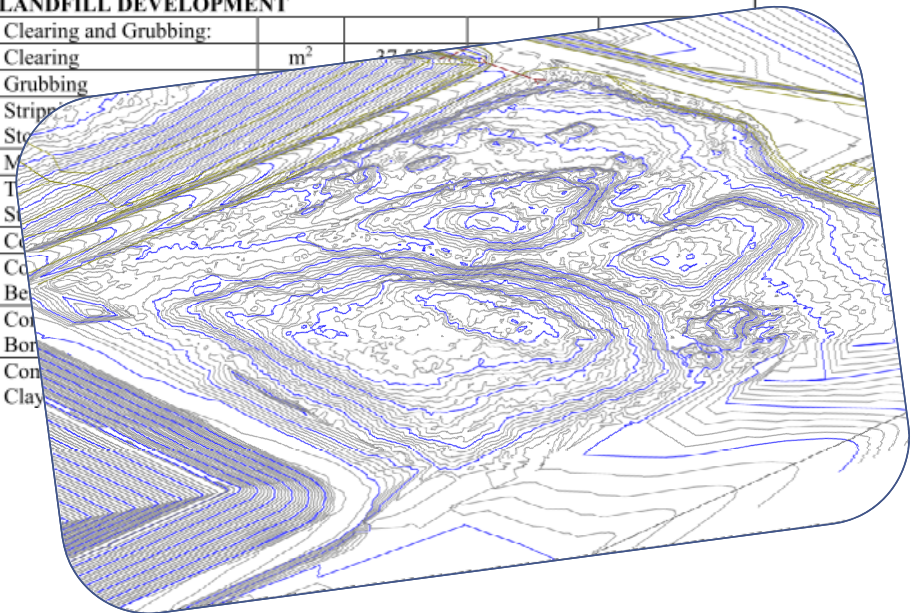
- Site Inspection Challenges
- Tracking Changes
- Geotechnical Testing

10/10/Rev. 3

Quantity and Material Balancing

- 10% is not good enough
- Too much – Restocking
- Too little – Product availability and delays
- Think about future requirements?

Item	Description	Unit	Estimated Quantity	Unit Rates	Estimated Amount
PART A - GENERAL REQUIREMENTS					
1.0	Mobilization and Demobilization	L.S.	1		
2.0	Layout and Record Survey	L.S.	1		
3.0	Safety	L.S.	1		
4.0	Geosynthetic Installation Contractor Support (re: Novation Agreement)	L.S.	1		
Part A Sub-Total					
PART B - LANDFILL DEVELOPMENT					
5.0	Clearing and Grubbing:				
5.1	Clearing	m ²	27,500		
5.2	Grubbing				
6.0	Strip				
6.1	Strip				
6.2	Strip				
7.0	Co				
7.1	Co				
7.2	Co				
7.3	Co				



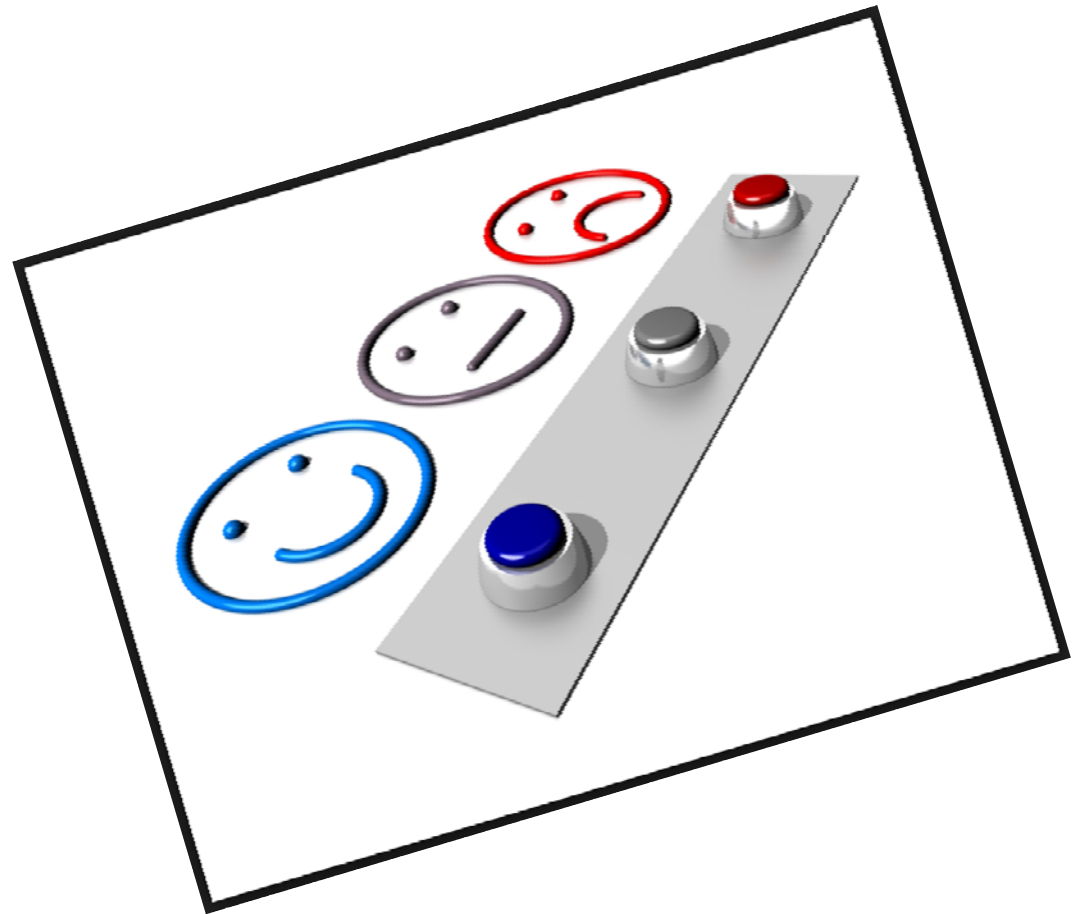
Designing for Closure and Post Closure

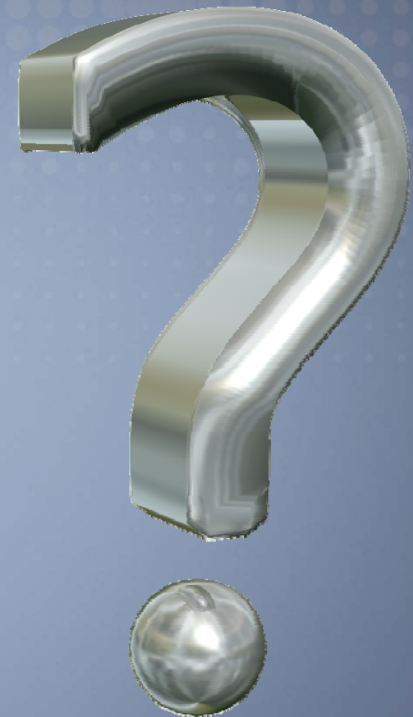
- Developing a Long-Term Plan
- Looking at Final product early on
- Capping Requirements
- Leachate Management



Managing Client Expectations

- Quick Design Turnarounds
- Multiple Designs
- Schedule
- Budget – Design and Construction





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