Estimating Costs for Shoreline Installation

Brian Majka
3/11/2015
Overview

- Why does cost estimating matter?
- What goes into a natural shoreline project cost?
- How are costs generated?
- Project Example
Why does everyone here need to understand this?

- Regulators—bonding, cost assurances
- Grant Reviewers and Applicants
- Contractors
- Landowners
Why does everyone here need to understand this?

- Regulators—bonding, cost assurances
  - Need to verify costs on permitted projects for cost assurances
Why does everyone here need to understand this?

- Grant Reviewers and Applicants
  - Reviewers need to be able to verify the validity of costs in grant applications
  - Grant applicants need to understand how much to apply for
Why does everyone here need to understand this?

• Contractors
  – Need to understand how much to charge for a project
  – Need to understand liabilities and risks
Why does everyone here need to understand this?

- Landowners
  - Need to understand if they’re being charged fairly or not
  - Need to know what questions to ask
  - Have an understanding of warranties and liabilities
Something to keep in mind...

- Most contractors aren’t trying to get rich off of this kind of work
- If they are, they picked the wrong industry and should have become bankers instead
How is your project coming together?

- Has it already been designed?
- Has it already been funded?
- What is your role?
- Do you have any flexibility?
- What are you trying to actually accomplish?
- Is it a bid, a grant, a private design-build?
Bottom line—there are real dollars involved with these projects

- With real dollars come real risk
- Anyone involved must balance risk with cost
- Higher risk = higher cost
- Goal is to get a fair product at a fair price for all involved
Three main components of any project:

- Labor
- Materials
- Expenses
How do you get started?

- Are you estimating design, construction, or both?
- Do you have the right team? Do you need to add expertise?
- What are the risks and liabilities?
- What is known? What is unknown?
- When will the work be done?
- Where will you get the material?
- WHAT ARE THE EXPECTATIONS!
## Project Name: Ford Lake Shoreline Restoration

**3/11/2015**

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<thead>
<tr>
<th>Task</th>
<th>Task Description</th>
<th>CAD Drafting</th>
<th>Technician 1</th>
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<th>Project Manager</th>
<th>Labor Cost</th>
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**Total Project Budget**: $24,085

**Total Cost**: $24,085
Labor

• What tasks are needed to complete the project?
  – Project management
  – Design
  – Permitting
  – Installation
  – Maintenance/Warranty
How are labor costs determined?

- “Multiplier”
  - Businesses will typically charge 2-4 times the employees pay rate to cover business expenses
- Contractor must estimate how many hours each task will take, based on each task
Labor

• Project Management
  – Meetings
  – Project coordination
  – Invoicing and contractor management

• Project Design
  – Site survey
  – Site analysis
  – Drafting and design
  – Review
Labor

- Permitting
  - Application
  - Drawings
  - Agency negotiations and review

- There’s a lot that goes into a project before anything goes in the ground!
Labor

• Installation
  – Site preparation
  – Travel
  – Installation of bioengineered materials
  – Planting
  – Seeding

• Production Rates
  – Linear ft/man hour
  – Blankets/man hour
  – Plants/man hour
• **Warranty/Maintenance**
  – Weeding
  – Repairs
  – Questions
  – Reporting for permit
  – Contingency
• Get actual quotes from vendors when possible
• Each material needed for the project must be accounted for
  – Bioengineering materials
    • Erosion blankets
    • Coir logs
    • Stakes
    • Rope
  – Plants
  – Seed
Expenses

- Contractor must charge for expenses associated with the project
  - Mileage to/from site
  - Equipment rental
  - Subcontractors
  - Food/lodging
  - Surveying
  - Permit fees
Tricky things to think about

- What are expectations?
- What will site access be like?
- Will site conditions slow construction?
- How many meetings will you actually need?
- Are there warranties?
- What is the risk if the project fails?
- Are there safety concerns?
- Ummm...bioengineering isn’t always the right solution
Some typical costs

- Construction labor=$45-70/hr
- Skidsteer=$200-$300/day
- Erosion blankets=$1.50-$2.50/SY installed
- Stone=$50-$100/TON installed
- Plants=$3.50-$5.00/each, installed
Some Typical Costs

- Coir logs typically $25-$40/l.f. installed
- Brush bundles $20-$40/l.f. installed
- Bioengineered lifts=$100-$400, depending on height
- Silt fence=$2.00-$3.00/L.F.
Project Example

- 80 linear ft. on Gull Lake at Kellogg Biological Station
- ~4’ high vertical cut bank
- Limited access
Project Example

MSU Extension Bulletin E3198, 12/2013
Project Example

• So, what do we need?
  – Labor
  – Materials
  – Expenses
Project Example

- So, what do we need?
  - Labor

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So, what do we need?

- Materials
  - 25 ton stone x $60/ton = $1,500
  - 2 100’ erosion control blankets x $200/each = $400
  - Geotextile fabric = $100
  - Plants = $500
So, what do we need?

- Materials
  - 25 ton stone x $60/ton=$1,500
  - 2 100’ erosion control blankets x $200/each=$400
  - Geotextile fabric=$100
  - Plants=$500
• So, what do we need?
  – Expenses
    • Barge to haul stone=$500/day x 2 days=$1,000
  • Mileage

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### Project Name: Gull Lake Shoreline Restoration

3/11/2015

| Total Project Budget | $ 25,295 |

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**Total Cost: $25,295**
### Project Example

$25,295 for design, permitting, installation /80 l.f.

= $316/l.f. for the whole shebang!

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| Total Cost | 25295 |
• Gull Lake=$316/l.f. for lifts, buffer—constructed by barge
• Coir logs typically $25-$40/l.f.
• Brush bundles $20-$40/l.f.
• Bioengineered lifts=$100-$400, depending on height
A few last thoughts

- Document your assumptions
- Don’t be afraid to ask questions—of the landowner, vendors, subcontractors, regulators—anyone
- Show your work! You’ll be glad you did after you’ve re-priced the project 4 times
- Don’t be afraid to walk away if it’s not the right fit—establish your go/no-go criteria and stick with it

It’s better to annoy someone with questions than piss them off with incompetence.
In summary

• Understand expectations
• Understand risks and liabilities, regardless of your role in the project
• Remember Labor, Materials, Expenses
• Get the right expertise on your team if needed
• Don’t cut corners--Do good work!
Thank You!

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