Town of Renfrew

Water Pollution Control Plant Upgrade

Lessons Learned from a first Value Engineering Study

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This Presentation...

- Project location
- Project Issues
- Why did Town choose VE
- The Study
- Feedback from Town and Design Team
- Lessons Learned
Project Location

Town of Renfrew – Population 7600
Project Requirements

- **Current plant**
  - Primary treatment plant includes primary clarifier and disinfection by chlorine gas
  - Plant constructed in 1966
  - MOE and Town concerned with increasing non compliance events
  - MOE issued provincial order for plant upgrade to minimum secondary treatment – facing potential development freeze

- **Planning**
  - EA defined constraints and proposed plant upgrade
  - Capital budget established – early in process
Existing Plant

Site Constraints:
- Small site
- High groundwater table
- Poor soil conditions
- Room for future expansion
- Downstream Hydro Development Proposed

Funding Issues

- COMRIF funding
  - $28 million received from COMRIF (Intake 2 after unsuccessful Intake #1)
  - 10% contingency included in funding applications
  - Project cost is capped (The grant is the grant)

- Municipal Commitments
  - Commitment to ratepayers “project will not go $1 over budget” as not to repeat experience with Water Treatment Plant Experience of 2005
  - Town developed a review committee to track project
Why did the Town Choose Value Engineering?

- **Primary Concerns**
  - Council feels accountable for project cost control
  - Poor experience on WTP project required greater cost control be planned into project
  - Town has $18 million debt capacity
  - Inflation pressures for prices makes original budget unlikely which places us over budget out of the gate
  - Project overruns are funded 100% by Town and overruns will cut into other project commitments
  - Independent review and accountability
Issues organizing the VE Study

- Best to complete preliminary design
- Short time allowance for VE and resulting changes to meet COMRIF deadlines
- Reduced Schedule may cut into construction season and increase costs
- COMRIF funding – How can you fund VE in a competitive environment?
- Effective and timely selection of participants

The Study

- SAVE International Job Plan
- 3 day Workshop June 2006
- Site Visit during workshop (during wet day)

VE Team
- Design Team Participants
- Municipal
- Independent Designers
- MOE
- Contractor
- OCWA
- External Municipal Operator
Facilitator’s Role

- Clear Understanding of Problem
- Generation of Quantity of Ideas
- Focus on Value (Performance/Cost)
- Decision Making

FAST Diagram
Workshop Tools

- Function Analysis
- Function Cost Model
- Quality Modeling
- Independent Cost Estimate Review

Function Cost Model and Cost /Worth Analysis

- Capital Cost $28 million all in (with Engineering)
- Budget 24 million
- Worth (Target Cost $23 million)
- Future Operating LCC $13 million
- Town of Renfrew Cost
  - $9.3 Million - Capital
  - $13 Million - Operating
Quality Model

TOWN OF RENFREW
WATER POLLUTION CONTROL PLANT UPGRADES
VALUE ENGINEERING STUDY

QUALITY MODEL

Summary of Ideas

- Constructability
- Electrical
- Tendering
- Geotechnical
- Architectural
- Process/Mechanical
- Instrumentation and Control
- Structural
- 202 ideas (long list) to 25 final proposals
Key Idea – Relocation of Site

- Initial Site selection on island
- Small footprint
- Constrained by topography and founding conditions
- Constraints increase capital cost of project

Initial Plant Layout

- Original Plant
- Preliminary Treatment
- Process Tanks
- Proposed Process Upgrade
- Proposed Screen and Digest
Post VE layout

Old Plant
To be Abandoned

New Plant
Location

VE planned into Proposal
Feedback from the Town

- Will use this process on all major projects
- Process does cause some pain to incorporate (shift gears) after the VE
- Be prepared for scope and budget changes in Engineering fees (negotiation)
- Involvement of political representatives build confidence in design team, staff and project
- Great for public accountability
- Great benefits from technical expert review to confirm direction of project

Feedback from the Design Build Team

- This is the 3rd study the design team has had taken to a VE review
- Adding Design team to workshop improved consensus building
- Reduced the increasing expectations of owner
- Relationships were build that persist through the design period
- Set tone of being open and respectful to new ideas through remainder of project
Lessons Learned

● **Do Early**
  – Consider VE at planning stage
  – Determine participants at proposal stage - get quotes for time and expenses
  – Budget for VE (time and money)
  – Good to include in funding applications to get best value for money
  – Results make good substantiation for advancing components of the project in a certain direction

● **Manage Risks**
  – VE is a tool to manage risky project in today’s environment