Calculating ROI for SHM Projects

Two Simple Ways to Make the Case for Investing in SHM Technology to Safely Extend Operating Life

Presentation by LifeSpan Technologies to SHM Subcommittee 1/12/15
• Simple and rapid; gets owners “in the ballpark”.
• Conservative assumptions:
  – Weighted average cost of owner capital, e.g. 5% (public entity)
  – Full replacement investment deferred
  – SHM solution cost to owner is $200,000 (very conservative)
  – Bridge replacement cost estimate = $10,000,000
• Calculations:
  – $10,000,000 x 0.05/12 = $41,667 per month for capital cost savings.
  – Simple payback in ~5 months
• Extended operating life drives actual return on investment:
  – 12 month extension IRR = 18.0%
  – 24 month extension IRR = 20.6%
  – 36 month extension IRR = 20.8%
Recover Multiple of SHM Cost

- Simple and rapid; different way to assess.
- Conservative assumptions:
  - Weighted average cost of owner capital, e.g. 5% (public entity)
  - Full replacement investment deferred
  - SHM solution cost to owner is $200,000 (very conservative)
  - Bridge replacement cost estimate = $10,000,000
  - Replacement deferred for 60 months (5 years)
- Calculations:
  - $10,000,000 x 0.05/12 = $41,667 per month capital cost savings
  - $41,667 x 60 = $2,500,020
  - 60 months, or 12.5x original investment (IRR = 20.8%)
  - 12 months, or 2.5x original investment (IRR = 18.0%)
Conclusions

• SHM solution cost relatively insensitive at bridge replacement costs in excess of $25 million.
• Operating life extension >1 year will generate a robust IRR for bridges >$5 million.
• The larger the replacement cost, the more dramatic the IRR.
• Financial ROI technique also works for repair deferrals, or repair vs. replacement decisions.
• Consider using expected values for capital cost savings based on probability of success, e.g. 50% P(success) halves the IRR.