

# Final Cost Management Document

Bath Iron Works: Launching the Ergonomics Program

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## DRAFT COST MANAGEMENT PLAN

### **Project Overview**

On November 30, 2007, Bath Iron Works (BIW) was cited by the Occupational Safety and Health Administration (OSHA) for “not furnishing employees a workplace that was free from recognized hazard” (McGlothlin, 2014, p. D189). OSHA determined that musculoskeletal injuries and illnesses were associated with the use of painters and grinders. The citation required that the shipyard develop a comprehensive ergonomics program using worksite analysis, hazard prevention and control, medical management, and training and education. It also required that BIW receive input from shipyard managers, health care providers, Safety & Health committees, ergonomic teams, and employees, as well as hire a Certified Professional Ergonomist (CPE) as a consult for the program design.

Not only did BIW fulfill OSHA requirements, but it also established long-lasting, safe shipbuilding practices. After identifying the major work hazards, engineers developed new tools and machinery that allowed for hands-free grinding and drilling (pp. D192-D193). In fact, incident rates were reduced by nearly 20% from 2007 to 2013 (p. D190). This project will describe the processes involved in establishing the ergonomics program following the 2007 citation and transforming BIW from a workplace with excessive worker injury and illnesses to a workplace that has won multiple safety awards.

### **Estimation Process Description**

Researching historical and market data was done while preparing the parametric cost estimates. Updated cost estimates will incorporate further analysis of the cost of replacing the pneumatic tools. For the schedule, I used parametric estimating. Bottom-up estimating will also be incorporated for scheduling work packages and activities and could have an impact on the

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schedule. This will improve the cooperation between labor and management and encourages the creative efforts for workers and managers in helping the project succeed.

Bath Iron Works has both a project manager and estimating analyst position. The project manager and the estimating analyst will work together to aggregate estimates. The estimating analyst will be responsible for creating parametric estimates. These estimates will be compared to the bottom-up and top-down estimating and any significant differences in timing will be reviewed.

The project manager will be responsible for acquiring top-down and bottom-up estimates and communicating the findings of the estimating analyst to project team members and high-level management. The final schedule and cost estimates that will be defined before review and approval will incorporate these parametric, top-down, and bottom-up schedule estimates and parametric and bottom-up cost estimates. The project sponsor, a member of high-level management, will review and approve the estimates. Updates to estimates will be made by the project manager.

**Cost Baseline**

Resource	Baseline Cost
Project Manager	<b>\$58,520.00</b>
Ergonomics Consultant	<b>\$17,600.00</b>
BIW Ergonomist	<b>\$14,000.00</b>
Estimates Analyst	<b>\$4,160.00</b>
Supervisor	<b>\$8,320.00</b>
2000 Pneumatic Tools (Grinders and Sanders)	<b>\$1,700,000</b>
Maintenance	<b>\$2,560.00</b>
Financial Analyst	<b>\$6,480.00</b>
Engineer	<b>\$480.00</b>

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Entire Project	<b>\$1,812,120.00</b>
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**Cost Baseline Statement**

The estimated cost of the entire project is \$1,812,120. The cost of replacing the pneumatic tools is the largest cost to the project but is ambiguous. The estimate and estimate accuracy were based on market research but are subject to change as more information is available. For instance, competitive vendors may offer discounts and/or safe tools could increase in value. The cost estimate of replacing the tools has been assigned a ROM level of accuracy of -20% to +25%.

Costs from wages were determined using dollars per hour wages of BIW employees from glassdoor.com. I am less confident of initial scheduling and timing and numbers of team members assigned to single work packages and therefore, will give a ROM level of accuracy of -20% to +30% to work costs.

**Reserve Statement**

I will be requesting \$43,856 for the contingency reserve fund. To calculate this amount, I performed a reserve analysis using Expected Monetary Values of cost uncertainties. These funds will be used to pay for increases in market price of safe pneumatic tools and/or for additional wages and will be authorized by the project sponsor (BIW Board of Directors).

**Funding Request**

I will be requesting \$1,812,120 for the budget with a \$43,856 contingency reserve for a total of \$1,855,976.

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**Funding Schedule**

Date	WBS Code	Deliverable	Amount	Aggregate Amount
7/19/21	3	Project Initiation	\$6,920	\$6,920
8/17/21	20	Project Plan	\$74,520	\$81,440
12/13/21	85	Program Execution	\$1,706,280	\$1,787,720
12/20/21	98	Project Monitoring and Tracking	\$18,400	\$1,806,120
1/24/22	105	Project Closeout	\$6,000	\$1,812,120

**Appendix: Reserve Analysis**

Risk	Probability	Impact	EMV
<b>Actual Cost of Tools are Greater than Estimates</b>	<b>25%</b>	<b>-\$425,000</b>	<b>--\$106,250</b>
<b>Actual Cost of Tools are Less than Estimates</b>	<b>20%</b>	<b>\$340,000</b>	<b>\$68,000.00</b>
<b>Actual Cost of Work is Greater than Estimates</b>	<b>30%</b>	<b>-\$33,636</b>	<b>-\$10,090.80</b>
<b>Actual Cost of Work is Less than Estimates</b>	<b>20%</b>	<b>\$22,424</b>	<b>\$4,484.80</b>
<b>Total</b>			<b>-\$43,856</b>

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