

Sourcing Strategy

Bath Iron Works: Launching the Ergonomics Program

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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.

Resource Lists

Materials List:

- Safe Pneumatic Tools Concepts: Concepts for the new tools must be developed similar to blueprints.

- Steel Plates: steel plates will be used to test equipment. Material that these tools will be required to modify at BIW.
- Welding track systems and carriage materials: materials from this manual hand grinding and high vibratory tool will be used to construct the Fisette 2000.
- Jigs: material added to materials from the welding track systems and carriage used to hold the pneumatic tool and allow it to move horizontally and vertically down steel plates without employees holding the tool.
- Custom drill bits: added to a portable magnetic base drilling tool which will bevel holes faster and with low ergonomic risk.

Equipment List:

- Fisette 2000 (grinders): hands-free grinding tool built from a welding track system and carriage and a jig. Eliminates manual hand grinding and high vibratory tool usage; is 60% faster than by hand; uses 50% less consumables; creates a consistent, repeatable process that improves quality.
- Danimal (drills): Built using a portable (110lb) magnetic base drilling tool and a custom drill bit, which bevels holes 80% faster and with a low ergonomic risk.
- Edge Prep Tool (EPT): Tool used to mechanically prepare edges of steel platers; designed to reduce the costs of building Navy ships and reduce the risk of injury to employees.
- Surface Prep Tool (SPT): a walk-behind, hands-free tool used to prepare flat plates of steel; also designed to reduce the costs of building Navy ships and reduce the risk of injury to employees. (McGlothlin, 2014)

Human Resources List:

- William Breckwoldt (Project Manager): responsible for all project management activities.
- Certified Professional Ergonomist (Ben Zavitz): supports the project manager in initiating and planning the project. The CPEs will help form agreements between BIW and OSHA.
- Supervisors: responsible for overseeing and evaluating labor work.
- BIW Resident Ergonomist: responsible for executing the ergonomics program.
- Financial Analyst: responsible for analyzing the finances of the project; supports the project team in financial decision making.

Make vs. Buy Analysis

The ergonomist consultant will be outsourced because OSHA asked that BIW obtain a consultant who was certified as a CPE to assist with the development of the program and mitigating work hazards. The custom drill bits will also be outsourced as BIW does not have the means of producing them themselves and it would be more cost efficient to outsource to a manufacturer.

Sourcing Strategy

BIW (buyer) will make a Request for Proposal from known Certified Professional Ergonomists. Bids and their sellers will be evaluated by their past projects and whether it effectively and efficiently addresses the requirements of the OSHA citation and additional OSHA and BIW agreements. The chosen CPE will sign a fixed price contract that will account for initiating agreements between BIW and OSHA, identifying safety hazards, and working with

the PM to develop a sustainable ergonomics program. The fixed price is \$40,000 and the contract requires that the CPE work from July 19th, 2021, to December 13th, 2021. If the CPE performs well and is interested in the position, they may be considered for the BIW Resident Ergonomist.

BIW will make a Request for Information, then a Request for Proposal for the custom drill bits from known custom drill bit suppliers. The information provided by suppliers should be specific to shipbuilding and should describe the best material and best shaped drill bits that will reduce vibration, thus, reducing workplace injuries. The proposal provided by the manufacturers will describe manufacturing, distributing, and installing process, tools, and techniques, as well as time and cost estimates. The RFI will be open from the project start to the execution; from July 19th to August 17th and the RFP will be available from August 18th to December 13th, 2021. The chosen manufacturer will sign a fixed price contract, yet to be determined, with BIW.

Source Selection Criteria

Certified Ergonomics Specialist

Criteria	Weight	Rating	Score
Cost Effective	.25	##	## x .25
Addresses OSHA Requirements	.4	##	## x .35
Experience	.2	##	## x .15
Reputation	.15	##	## x .15
	1		

Custom Drill Bits:

Criteria	Weight	Rating	Score
Overall Cost	.6	##	## x .6
Drill Speed	.1	##	## x .1
Drill Vibration	.1	##	## x .1

Safety	.1	##	## x .1
Installation Time	.1	##	## x .1
	1		

Glossary

- Agreement: “Any document or communication that defines the initial intentions of a project.” An agreement may be used to express and outline intentions of projects.
- BIW: Bath Iron Works.
- Buyer: one who is seeking a good or service to be performed.
- Contract: Legally enforceable agreement between two more parties with obligation for both the buyer and seller. A buyer may utilize multiple types of contracts and the contracts may be written or verbal. The type is determined based on the nature of the goods or services being sourced. Examples: Fixed Price Contract, Time & Material, Guaranteed Maximum Price, etc. (Bolick).
- CPE: Certified Professional Ergonomist.
- OSHA: Occupational Safety and Health Administration
- Request for Information (RFI): “a type of procurement document whereby the buyer requests a potential seller to provide various pieces of information related to a product or service or seller capability” (PMI, p. 718).
- Request for Quote (RFQ): an invitation for sellers to submit a bid on specific goods and/or services. RFQs are primarily price driven through quality of goods and services delivered.

References

- Bolick, C. *Module 5 Instructor Perspective: PJM6025_Lesson 5_Procument*. Northeastern University. https://northeastern.instructure.com/courses/83484/pages/module-5-instructor-perspective?module_item_id=5927693
- McGlothlin, James D. (25 Sep 2014) *Prevention Through Design Ergonomics Program at Bath Iron Works*. Journal of Occupational and Environmental Hygiene. <https://www.tandfonline.com/doi/full/10.1080/15459624.2014.946516?scroll=top&needAccess=true>.
- Project Management Institute (6th Edition). (2017). *PMBOK guide*. Project Management Institute, Inc. LCCN 2017032505