



## Research & Development Engineer for Concrete Formwork

### Company Overview and History:

Western Forms is a leading designer, manufacturer, and integrator of aluminum formwork systems for concrete construction. We help builders, concrete contractors, and precast companies build concrete structures ranging from apartments buildings to residential foundations to precast box culverts – faster, better, and easier while optimizing construction costs. Western Forms serves customers in the United States and Internationally has completing sales of concrete formwork system in over 40 countries in its history. The company operations manufacturing operations in Kansas City, Missouri and Queretaro, Mexico.

Western Forms was founded in 1955 by E.B. Ward, a metal fabricator, in the basement of his Raytown, Missouri home. In 1962 he invented the fabricated aluminum form and in effect created the aluminum formwork industry now with competitors in Kansas City and in multiple countries around the world. The company has a rich history in product development, innovation, and quality and is well recognized within the industry for strong technical expertise, a solution orientation, and a customer-centric approach. Western Forms and team members throughout the years have been awarded multiple patents. Western Forms is looking to add engineering talent to play a key role in helping to continue the product development and innovation into the future.

### Summary of Role:

This position is primarily responsible for the **research, development, and design & implementation** of new products / systems, improvements to existing products / systems, new product application, and new or improved processes. The role is hands-on requiring creativity & ideation, technical product design and engineering skills, aptitude, and orientation to engage in prototyping and testing, and follow through to complete the detailed design, launch, and implementation. The role will be to work with customers, sales, engineering, materials & equipment providers, 3<sup>rd</sup> party engineers on certain projects, manufacturing and field / technical services. Part of the role will include leading, documenting, tracking, and managing the steps in the innovation and product development process.

### Details of the Role: Research, Development, and Design & Implementation

#### Research: (~15%)

- 1. Research: Industry, Customers Projects, and Products / Systems:** Conducts research and investigation to discover and uncover solutions that are required or would be of benefit to the industry, a customer specific project need(s), or to the evolve of product line(s).
- 2. Research: Processes & Methods:** Reads industry product and technical information to stay on current on trends and development, researches competition on-line, conducts Western Forms customer job site visits and interviews, conducts competition job site visits and interviews, completes in-depth analysis of competing systems, makes manufacturing plants visits, acquires and test competitive processes. Works with our products / equipment, sales team, engineering, and technical teams through these processes.
- 3. Research Documentation, Communication & Team Engagement:** Documents research in writing with narratives, visuals, and executive summaries support by photos, schematics, observations, and data to provide others with information and insights to engage them in the development process. Facilitates and conducts formal and informal communications and working session with the cross function team members to review development lists, priorities, project plans and program, and the status, next steps, and constraints / issues.
- 4. Focus in New Product Development and Improvements to Existing Products:** Applies the scope of the research efforts around typically three primary scenarios: a) new products & systems, b) improvements to existing products & systems, and c) new applications with existing products with some customizations. The focus typically will be around improving the means and methods of system use in the field with a focus on improving safety, quality, efficiency, or ease of use in the field. The focus could also be around improving manufacturing process and cost efficiencies in the making of the products. At times, there will be focuses on the integration of our system with other existing construction systems often in the areas of equipment handling, shoring, and/or scaffolding / access.
- 5. Conduct Initial Economic Feasibility Analysis:** Conducts analysis and studies in costs and benefits, market value, time of development, risk assessments, and other impact studies and information to help facilitate decision making processes with the development team.



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### Development: (~15%)

1. **Guides, Energizes, and Organizes the Ideation Process:** Leads the ideation process with a focus on solving the customers (or company) challenge in an optimal, practical manner that is right sized for the situation and potential. Applies research and market knowledge of existing systems and means and methods to seed the process, stimulate thinks, and avoid reinventing those solutions already developed and available. Facilitates a process with engagement, inputs, concepts, and vetting with a small team.
2. **Conceptualizes Solutions, Designs, and Digitally Models:** Generates and creates specific ideas, answers, and direction to solve the problem or create the solution. Illustrates with written models (schematics) and/or models solutions in Inventor (Product Design Suite). Brings solutions and designs forward tangibly with photos, schematics, and digital models for further understanding, evaluates, and make decisions around. Develops and models preliminary designs to be further vetted.
3. **Evaluates & Vets Conceptual Designs and Facilitates Decision Making:** Conducts criteria, idea, and solution generation sessions and then works through the iterative process with individuals or group(s) involved to enable a broader range of inputs, ideas, feedback, observations, and comments to obtain counsel and guide decision making. Engages with customers about the designs either because it is for a specific project for them or because they fit into the target customer use group for the solution.
4. **Updates the Economic Feasibility Analysis:** Create and communicate an estimated cost of development including materials, labor, and outside resources to complete a design. Further expand on the initial economic feasibility analysis based on having specific designs and further information.

### Design & Implementation: (~70%)

1. **Develops Detailed Designs in Inventor:** Develops and provides designs, details, processes, and illustrations to create & manufacture prototypes or samples that represent the final intent of the solution. Provides proficient designs, modeled, and developed on a product design platform.
2. **Plans, Models, and Completes Engineering Calculations:** Generates the mechanical and structural calculations of members / system designs to meet or exceed intended loads, applicable codes, regulations, use, misuse / abuse, and reliability requirements. Incorporate industry and federal safety standards into the products and verify compliance with designs, materials, manufactured products, and usage direction and guidance in the field.
3. **Leads and Manages Prototyping and Launch in Manufacturing:** Lead and manage the prototype testing, evaluation, and prove-out process from formation through physical testing, including final documentation and communication(s). Facilitates communication across the cross-functional team. When the product is ready for production, launches into manufacturing with engineering.
4. **Participates Actively in Hands-On Manner in Prototyping and Testing:** Ability and desire to work physically in a hands-on manner at times with team members to create, craft, test, set-up, perform, and manipulate work associated with ideation, prototyping, testing, or demonstration scenarios.
5. **Develops Product Specs, Details, and Usage Instructions:** Develop, drafts, and creates raw material and product specifications, with capacities, and create assembly, operational, storage, and maintenance instructions / manuals as needed for the system or product. When the product is ready for field use, launches into field implementation with customers, sales, and field services.
6. **Manages Product Design Projects with a Framework, Process, and Communications:** Provides written and verbal communication internally and externally that provides for the efficient and effective flow of the research, development, and the design and implementation process. Drives putting the framework in place, updating with others, and moving projects forward in structured, iterative, and systematic manner.

### Education & Other Skill Requirements:

1. **Education:** Bachelor's degree in Mechanical Or Civil Engineering (or related Engineering Degree) – required.
2. **Years of Experience:** Minimum 5 years experience in an Engineering role. – required.
3. **Industry:** Experience in construction or manufacturing. – required.
4. **Software:** AutoCAD (Inventor or Solid Works); Finite Element Analysis (FEA); Excel, PowerPoint, and Word.
5. **Professional Presence and Communication Skills:** Ability to effectively speak & present information, listen, and respond to questions from groups of managers, clients, customers, or employees of the organization.