

A/E Services for West Virginia Army National Guard, Adjunct General's Office

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WV PURCHASING  
DIVISION

# PRELIMINARY ENGINEERING STUDY- NITRILE GLOVE MANUFACTURING CEOI 0603 ADJ2100000005

EXPRESSION OF INTEREST BY:  
PICKERING ASSOCIATES

Date: August 24, 2020

**PICKERING  
ASSOCIATES**  
*Architects • Engineers • Surveyors*

EST. 1988

# OUR MISSION

Pickering Associates is a multi-disciplined professional architectural, engineering and surveying firm providing quality services that meet or exceed our clients' expectations. We are committed to the professional development and technical advancement of our employees. We will continuously improve the delivery of our services through innovation and an entrepreneurial spirit.

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Department of Administration, Purchasing Division  
Ms. Tara Lyle, Buyer Supervisor  
2019 Washington Street, East  
Charleston, WV 25305-0130



Ms. Lyle,

Pickering Associates is pleased to have the opportunity to submit this proposal for providing Architectural/Engineering services to complete the Preliminary Engineering Study-Nitrile Glove Production Line. We feel confident our design team is uniquely qualified to provide design services for this project.

Pickering Associates is a premier all inclusive A/E Firm located throughout West Virginia and Ohio and headquartered in Parkersburg, WV. The following proposal outlines our technical expertise, management, staff capabilities and experience for providing high-quality engineering and architectural services. Our approach will offer advantages in methodology and delivery, which will elevate the success of your project both now and for years to come. Our firm is capable of providing full architectural and engineering services in house to complete the scope of your project and has had the opportunity to provide comprehensive architectural and engineering services to multiple governmental agencies throughout our history.

As a firm, Pickering Associates has provided professional engineering/consulting services to various Polymer Manufacturing Process clients, as well as performed design services for several projects for the WVANG.

You will see that teamwork is the spirit and foundation of our organization. We acknowledge the importance of a quick turn-around and excellent quality services which our administrative procedures, overall organization and depth of experience are posed to provide you. As you will see from our resumes and company experience, we are uniquely qualified to offer the professional services required and to ensure that your project becomes a reality.

Some challenges that can occur with these types of projects can come from multiple sources, but most will stem from the uniqueness of each existing site and the conditions found in each. Through the years, Pickering has taken pride in finding unique solutions to some of the most challenging problems. From a concise delivery/need-based schedule for emergency work to limited and stretched budgets/funds. You will find a growing list of repeat clients who come back to Pickering because of the importance we place on every job we work on as well as every single client we interact.

Another challenge can come from multiple design firms on one project. With Pickering, our company can provide full services in all areas of architecture and engineering without stepping foot outside our company. Each project/client gets assigned a project lead who handles all coordination within our organization. This structure removes the traditional deflection of responsibility when an issue arises and gives the client, and the project lead a clear understanding of roles and responsibility on the project. We believe our experiences with Preliminary Engineering and Front End Loading (FEL) Studies will be a great fit to meet your expectations. A thorough Preliminary Engineering Study will set the Nitrile Glove Production Line up for success.

We look forward to personally discussing our qualifications to complete this project on time, within budget and exceeding the standards of any firm you may have worked with previously.

Respectfully submitted,



Mark Welch, P.E.  
Vice President of Construction  
mwelch@pickeringusa.com  
304-483-6415

# ABOUT THE COMPANY

*Founded in 1988, Pickering Associates has been providing architectural, engineering and surveying services throughout West Virginia and Ohio for the past thirty years.*

Our company is the product of three generations and more than 75 years of construction experience. This experience plus state-of-the-art engineering practices create a full-service, multi-discipline, architectural, engineering and surveying firm serving a wide range of needs and featuring innovative, customized solutions. Our highly qualified staff includes licensed professional engineers, professional surveyors, licensed architects, designers, and drafters as well as support personnel.

The disciplines we cover include architecture, surveying, project management, civil engineering, structural engineering, mechanical engineering, electrical engineering, piping and process engineering, automation and control, and construction administration. Pickering Associates specializes in the above listed disciplines with education, government, healthcare, industrial, oil & gas and private sector clients.



**“WE ARE  
COMMITTED TO THE  
PROFESSIONAL  
DEVELOPMENT AND  
TECHNICAL  
ADVANCEMENT OF  
OUR EMPLOYEES.”**

# ABOUT THE PEOPLE

In choosing Pickering Associates, your project will be performed to your specifications with frequent meetings and status reports to keep you up-to-date on the status of the project. Our sole focus is your full satisfaction with the completed quality installation.

Successfully executing more than 10,000 projects in its history, the firm has built a tremendous wealth of experience gaining insight into what works for each of our client types. Those lessons learned add substance to our work and provide our clients with unparalleled value. Our objective is to partner with our clients improving their performance, flexibility, life-cycle cost, sustainability and ultimately well-being.

## LEADERSHIP

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### V.P. of Marketing & Development

Traci Stotts, AIA, NCARB  
Architect

### C.E.O. & President

Ryan Taylor  
Sr. Project Manager

### Executive V.P. of Design

David Boggs, P.E., CPD  
Sr. Mechanical Engineer

### V.P. of Projects

Zac Campbell, P.M.P.  
Sr. Project Manager

### V.P. of Construction

Mark Welch, P.E.  
Sr. Project Manager

## DEPARTMENT LEADS

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### Civil Engineering

Spencer Kimble, P.E.

### Electrical Engineering

Carl Henson, P.E.

### Mechanical Engineering

Jeff Hosek, P.E. LEED AP (BD+C)

### Process/Piping Engineering

Patrick Flora, E.I.

### Structural Engineering

Eric Smith, P.E.

### Architecture

Traci Stotts, AIA, NCARB

### Building Information Modeling

Chris Algmin, AIA, NCARB

### Construction Administration

Ronald Arnold

### Surveying

Bill Showalter, P.S.

## BRANCH MANAGERS

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### Athens

John Bentz, P.E.

### Fairmont

Pamela Wean, AIA

### Charleston

Sean Simon, AIA, NCARB

# YOUR PROJECT

Pickering Associates has experienced personnel available to provide consulting services to provide a Preliminary Engineering Study for the requirements of a Nitrile Disposable Glove Manufacturing Production Line. We have all of the engineering, surveying and construction administration services needed to ensure a successful project. We have experience in providing Preliminary Engineering for a wide variety of clients.

Our company prides itself on making sure that we clearly understand our customer's project scope of work, goals, schedule, and available budget prior to beginning design. We also understand the importance of meeting a schedule for a project. We will sit down with you in the beginning of the project to discuss your project schedule, desires and goals and communicate any concerns that we may need to discuss early in the project so they can be properly addressed and planned out.

## Goals:

**1) Provide, in consultation with Agency personnel and applicable state and federal laws, a detailed review of production plant requirements, including a general layout of production line and support equipment, process flow layout, outline of support equipment and tooling required, daily/hourly utility requirement estimates to support standard production line equipment and associated support equipment as needed. Overview of estimated labor and task as well as estimated manpower required to achieve proposed production rates, based upon the level of automation proposed.**

Pickering Associates is very familiar with early project life-cycle tasks such as preliminary engineering (also called FEED, FEL or Basic Engineering). We will apply our methodology and experiences from past projects to analyze the entire production process. Our Process Design and Automation groups will be

included in the design team from the beginning. The first step will be the identification of major equipment and generation of process flow diagrams to make sure all pieces of equipment are accounted for and gain agreement on the process steps. We will engage vendors for early budgetary quotes and technical details for engineered equipment. Our experience with polymer processing, production plants, equipment specification and selection will guide our efforts to develop this production line layout. We will then utilize BIM and 3D modeling to generate a variety of process layouts to fit various constraints of the site and equipment. Support equipment and tooling will also be addressed at this time. Utility loads will be determined once major equipment is defined. Review will also include the tasks and manpower required to operate at the proposed level of automation. Our extensive experience with production operations and standard operating procedures will help us to define the tasks. Our background in production engineering on the shop floor will also help guide our efforts to make the production line safe and efficient. We will provide a capital cost estimate for the total purchase and installation cost of the project to assist in obtaining funding.

**2) Provide a general outline of equipment and steps necessary for chemicals and compounds required to produce the desired gloves. Provide an estimate of raw material utilization, labor and utilities when utilized with cost/rate information to generate a cost for the production of gloves at a given time.**

Pickering Associates has project experience in polymer production and processing. This includes not only unique production equipment, but also various feed systems to make sure the feed rates are accurate and consistent throughout production. Our experience with quality control systems and automation will allow us to define the key tasks and operational steps, including the time required to produce a given number of gloves. This will allow us to calculate the raw material usage rates, utility costs and labor to produce a given rate of gloves from the line.

# YOUR PROJECT CONTINUED...

3) Provide a detailed review of local, state and federal code and law requirements or governing agencies from which the agency may be required to obtain permitting or approval from before proceeding with the project.

Having worked on many production facilities throughout West Virginia, Pickering Associates is familiar with applicable state and federal regulations as well as industry codes and standards. We will perform a code review process to assure that Preliminary Engineering assumptions will comply with NFPA, OSHA, WVDEP, building codes, and other similar requirements. We have assembled an experienced project team that has in-house access to all this information and extensive experience in applying it to project work.

4) **Engineering/Consulting service tasks will include but not be limited to; collection of information, provide basic outlines for production of Nitrile Disposable Gloves produced on a continuous motion drag chain line, technical review of production and support equipment.**

Pickering Associates will work with the WVANG to outline the process and the required equipment for the continuous production of the Nitrile Disposable Gloves. We will engage vendors for early budgetary quotes and technical details for engineered equipment and review this information thoroughly with WVANG for common understanding of the scope of work. As the production line and support equipment is better defined during preliminary engineering, we will work diligently and communicate clearly with the team to assure that stakeholder requirements are met. This includes review and understanding of the process and associated design data, such as flow rates, pressures, temperatures, line speeds, etc. This will help assure that the desired production rates, operating costs, and manpower requirements are well-understood and obtained.

## *Our Unique Qualities:*

We believe that Pickering Associates has many unique qualities that set us apart from other firms. Below is a list of qualities that we feel are worth calling attention to:

1) **Full Service Firm:** Pickering Associates is a Full-Service A/E firm. We have all architects and engineers in-house, including surveyors. Being a full-service design firm, we can effectively and efficiently communicate with our entire team thus ensuring a well-coordinated design effort.

2) **Our Experience:** We have completed other design projects that are similar to your renovation project and have assembled an experienced project team that works well together. We understand the needs of your facility and believe that our work with the WVDNR on prior projects gives us an insight to the scope and design that other firms may not offer.

3) **Our Technology:** Pickering Associates uses Building Information Modeling (BIM), 3D Scanning, Virtual Reality, and 3D printing technology in developing our project concepts throughout the design process, as needed. These tools also allow for us to better communicate the final layout and look of the project with our clients and allows our clients to experience what the project will look like prior to construction.

4) **Our Communication:** Our Project Manager will provide consistent communication with all project stakeholders throughout the project design. We make sure that the project scope and schedule are aligned with the project requirements, and the client's desires and expectations.



## YOUR PROJECT

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### Project Owner

West Virginia Army  
National Guard

## LEADERSHIP

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### Design Lead

Patrick Flora, E.I.  
Process/Piping  
Department Manager

Since Patrick started with Pickering Associates, he has implemented Plant 3D to assist industrial clients in taking full advantage of BIM. He places a strong emphasis on utilizing technology on process and plumbing design. His skill in combining 3D scanning of existing conditions with an accurate 3D model of new designs reduces installation time and field rework. He has led the design team of a variety of industrial projects from preliminary engineering, through detailed design, to completion of construction.

### Project Manager

Mark A. Welch, P.E.  
Project Manager

Mark coordinates and manages teams that provide planning, engineering and development to industrial and commercial Clients. He has contributed to 1000s of projects and has a wealth of experience with engineering and construction processes ranging from initial site selection to detailed design all the way through to construction management. He places a strong emphasis on communication and coordination work as a team to bring successful projects to all stakeholders.

## DESIGN TEAM

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### Process Engineering

Mike Swope

### Piping Engineering

David Boggs, P.E.

### Structural Engineering

Eric Smith, P.E.

### Electrical Engineering

Carl Henson, P.E.

### Mechanical Engineering

Jeff Hosek, P.E. LEED AP (BD+C)



# WHAT FULL SERVICE MEANS

## INDUSTRIAL

### Manufacturing

Pickering Associates has decades of experience serving the manufacturing sector and offers full service support to an array of manufacturing industries. We are very experienced with the Preliminary Engineering, Front-End Engineering Design (FEED) process and Front End Loading (FEL). We routinely implement these steps in our project execution, from concept to start-up of operations. Relying on our significant manufacturing experience balanced with our roots in construction, our team of design professionals provides detailed fieldwork required to prepare the construction drawing package needed to turn the vision into reality.

### Chemical Industry

Pickering Associates is a trusted resource to the chemical industry of the Mid-Ohio Valley. Our multi-discipline engineering staff enables us to follow a project from concept through preliminary and then detailed design to the construction and commissioning of the final product. We are a fully integrated EPCM (Engineering, Procurement, Construction, Management) firm. We use the FEED process to establish the cost viability of the project. All of this work will be accomplished using your standards and preferences. Our Process Safety Management (PSM) experience allows us to ensure the completed project is in compliance with OSHA 29 CFR Part 1910.119, where applicable. Our certified facilitators can lead the Process Hazard Analysis (PHA) or revalidation required for covered processes.

### Metals & Other Industries

Pickering Associates experience extends beyond basic manufacturing and chemicals. The procedures and tools we use for the manufacturing and chemical industry sectors allow us to successfully completely projects in

other sectors as well. Whether it is a small maintenance project or a multi-million dollar capital project Pickering has the skill and experience to deliver it to successful completion.

We have direct project experience in:

- Aluminum Smelting & Reduction
- Electric Arc Furnaces
- Carbon Black Processes

## OUR APPROACH

With the selection of Pickering Associates, your organization gains the full depth of our organization. All projects are scheduled out through all phases of delivery by our resource manager and the project manager, assigning the necessary resources to perform to the schedule necessary for that project and highlight major milestones long before they could become an issue. With more than 60 professionals on staff, you can be confident that Pickering Associates has the resources to meet your project schedule.

Because we are a full-service firm, we are able to provide a better coordinated project than firms who are required to use outside consultants. We organize regular in-house project team coordination meetings throughout the design phases of a project to discuss and resolve any issues or concerns that may arise.



We feel that this face-to-face coordination with our design team is more effective and efficient than coordinating via email or over the phone. Our close coordination efforts have proven valuable in many cases where the design schedule is accelerated and/or where there is equipment in the project that requires the effort and coordination of several disciplines.

Pickering Associates has invested in state-of-the-art 3D Scanning technologies to more quickly and accurately document existing site conditions. This helps our design teams capture existing site data in more detail and in a format that blends well with our 3D modeling and BIM workflows. This tool allows us to send a small scanning team into an existing building/space and virtually document the conditions of the area in three dimensions, including detailed color photographs throughout the scanned area for design teams to reference throughout the project. This data capture implementation is safer and more efficient for our designers. It reduces the time and equipment needed for traditional hand-measuring that our industry has been accustomed to throughout the years.

By working with Pickering Associates you will see that teamwork is the spirit and foundation of our organization. We acknowledge the importance of a quick turnaround and excellent quality services which our administrative procedures, overall organization and depth of experience are poised to provide you. As you will see from our resumes and company experience, we are uniquely qualified to offer the professional services required and to ensure that your vision becomes a reality.

#### **OFFICE LOCATION:**

**HEADQUARTERS**

11283 Emerson Ave.

Parkersburg, WV 26104

#### **CONTACT INFORMATION:**

Mark Welch, P.E.

Vice President of Construction/

Project Manager/

Civil/Structural Engineer

(P) (304)464-5305 EXT: 1301

(E) mwelch@pickeringusa.com

#### **SERVICES:**

Architecture

Interior Design

3D Model Design

Landscape Architecture

Civil Engineering

Structural Engineering

Electrical Engineering

Automations & Controls

Mechanical Engineering

Piping Engineering

Process Engineering

Surveying

Marketing Development

Construction Services

Project Management

Rated as one of the  
**TOP**  
Engineering Firms in  
West Virginia.

- *The State Journal*



Pickering Associates "IDEA" is our Integrated Design Execution Approach.

**Integrated** - we want our clients, contractors and end users engaged in the process of design. When the right people are involved, accessing the best information, good decisions are made.

**Design Execution**- refers to how we develop and optimize your project. We focus on the questions that have the most impact. We assign the right staff with the right tools

**Our Approach**- recognizes that projects are constantly changing and evolving as the project progresses. We tailor a plan for the project objective, then maintain and monitor it so it remains optimized to achieve project goals, faster.

Pickering Associates' Integrated Design Execution Approach - our "IDEA", is a big deal, and will help your project be successful.

Building Information Modeling (BIM) is a process that aligns to all aspects of our "IDEA". It is integrated, allowing easy access to project information. The software we use helps us understand the proposed design, coordinate, and identify the critical problems that need answers. Most importantly, BIM is a process that fits with our Approach, allowing the project team to evolve seamlessly as more information is available and new stakeholders are brought onto the team.

Efficient visual communication and an in-depth design understanding are the greatest assets that BIM brings to the table at Pickering Associates. The composite model allows our team to accelerate project development and simplify conversations during design reviews. Having the capability to visualize all of the design models together in a single review session aides both inter- and intra-department collaboration with all

project stakeholders like never before. Capturing all client and designer comments and feedback within a 3D model live during a review session saves countless hours of paging through "redlines" generated from traditional 2D physical paper reviews. The added capacity to search and export reports of these digital comments allows our team to capture and track design communications more efficiently than ever before.

Pickering Associates has invested in state-of-the-art 3D Scanning technologies to more quickly and accurately document existing site conditions. This helps our design teams capture existing site data in more detail and in a format the blends well with our 3D modeling and BIM work flows.

This tool allows us to send a small scanning team into an existing building/space and digitize the as-built conditions of the area in three dimensions, including detailed color photographs throughout the scanned area for design teams to reference throughout the project. This data capture implementation is safer and more efficient for our designers. It reduces the time and equipment needed for traditional hand-measuring that our industry has been accustomed to throughout the years. Granting our designers the ability to measure from a 360 degree image or point cloud with higher accuracy and faster than field measurements.

Building Information Modeling is a process that starts with integrating the team, provides access to project information, incorporates tools to understand design execution, and allows teams to focus on what matters most for the project. It perfectly complements Pickering's Integrated Design Execution Approach, and we can't wait to show you BIM and our "IDEA"s!

## **West Virginia Army National Guard Charleston, WV**

Kenova Vehicle Exhaust HVAC Upgrades  
 Camp Dawson Building 215 Windows and Door Replacements (out for bid Fall 2020)  
 Camp Dawson Rappel Tower Renovation (out for bid Fall 2020)  
 Camp Dawson Structural Repairs  
 Camp Dawson Cottage Renovation (in progress)  
 Eleanor Readiness Center HVAC Renovation (in progress)  
 Camp Dawson Bldg 215 Medical Wing Renovations (in progress)

## **West Virginia Air National Guard Charleston, WV (Yeager Airport)**

Fire/Crash Rescue Station 130th Airlift Wing

## **West Virginia DNR Chief Logan State Park**

Park Recreation Center

### **Parkersburg, West Virginia**

District 6 Office Complex

### **North Bend State Park**

Lodge Renovations

## **West Virginia State Capital Complex Charleston, West Virginia**

Building 22 HVAC Renovation  
 Governor's Mansion Roof Replacement

## **Industrial Client in Marietta, OH**

General Support Needs  
 Update HMI and PLC Programs  
 Laser Scanning Furnace Operations  
 Baghouse Foundation Design  
 NESHAP Implementation  
 Chute Modifications  
 Drone Stockpile Volume Inventory Measurements  
 Retention Dam Monitoring Points  
 NESHAP Electrical Support  
 C3F Low Cost Modifications  
 Mix Bin Modifications  
 C2F Push Pull Hood  
 Furnace Renovations  
 C2F Scrubber Control  
 Rio Panel Fabrication  
 Main Sub Blast Walls  
 Pond Surveys  
 Mix House Phase II  
 Motor Sta Isolation  
 Plant Transformers  
 Furnace Evaluations  
 OSHA Fall Protection  
 Truck Loading Design Conceptual Design

## **Industrial Client in Belpre, OH**

PHA Boiler Shutdown  
 G2 PSA PHR  
 G1 Cooling Tower PHR  
 G1 NXT Generation Wash

PHA Automatic Steam Shedding  
 Colling Tower Replacement  
 Tea Level Mitigation  
 IR Contamination Reduction  
 Grounding of Site Nitrogen Foundation Project  
 G1 Cement Strainers  
 G1 Wash Vent Condenser  
 Free Flow G Crumb 1 BulkBag loading  
 Convert to V-623 to Degrassing  
 Replace Software Pump  
 H2 Compressor Overpressure Mitigation  
 Site Vulnerability Analysis  
 G2 Process Sewer Line Replacement  
 G1 Vent Condenser  
 Reboiler Steam Conversion  
 Vessel and Instrument Refurbishing  
 Pond Civil Design  
 Boiler Enclosure  
 SS Flare Project PHA  
 G1 Capacity PHA

## **Industrial Client in Washington, WV**

HVAC Emergency Exhaust Duct Rework  
 Condenser A Upgrades  
 Installation of Heat Trace A&B  
 Locker Room Renovations  
 Administration Office Renovations  
 Condenser Platform Design  
 Lab HVAC Replacement  
 Resin CC R HVAC Replacement  
 South Tank Farm Power Panel Upgrade  
 Condenser Replacement Design  
 ESL Relocation  
 Fire Suppress Control Panel Relocate  
 PVA Blower Instrument  
 Railcar Ramp Replacement  
 PVA Monorail Evaluation  
 R&D Resin Synthesis  
 Lab Renovations  
 R&D Relocation  
 Gorator Base Design

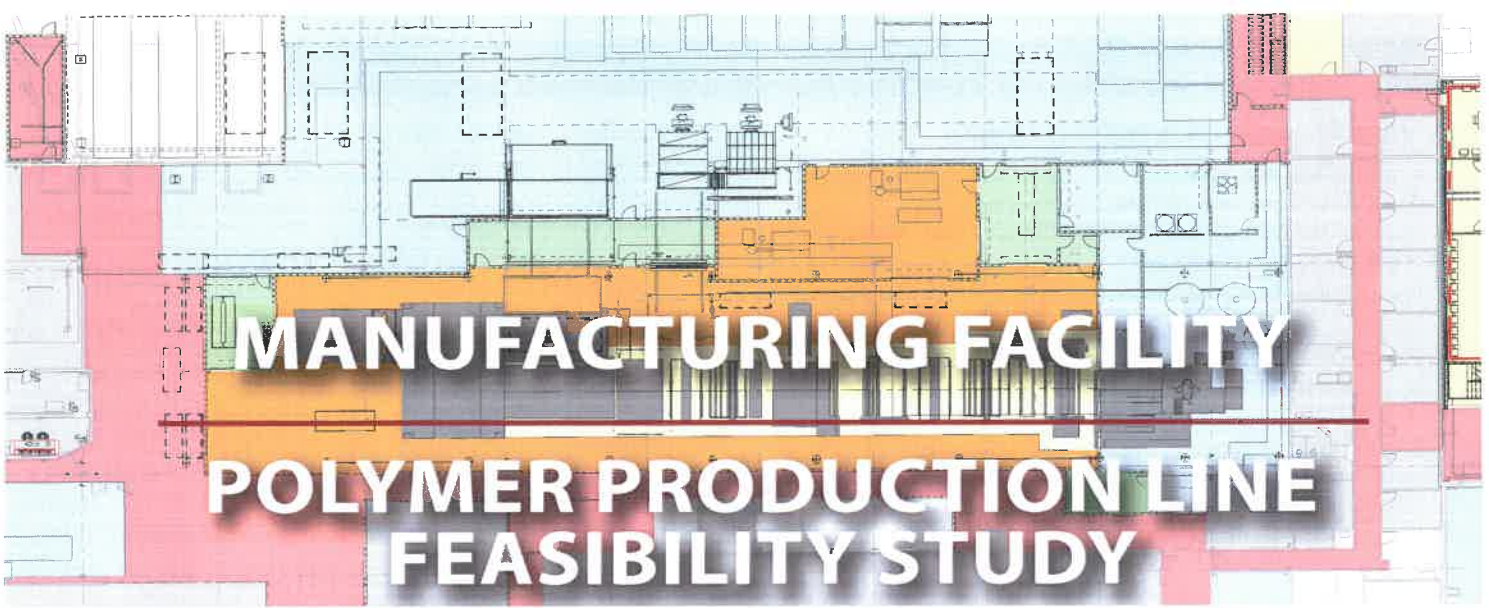
Zone 3 Cooler Replacement

## **Industrial Client in Belle, WV**

Spare Suction Line Design  
 Line Upgrade Design  
 Existing Condition and Design Analysis  
 Safety Shower Addition Design

## **Industrial Client in Willow Island, WV**

TAR Shutdown Scheduling  
 Dust Collection Process Hazards Study  
 Dust Collect Ductwork Redesign  
 Water Tower Renovation  
 Cal Particle Process  
 TEA Electrical Service  
 Desolvation PHA  
 Roof Analysis  
 Code Review  
 PHA Facilitation



## PROJECT SPECS:

PROJECT COST  
\$35MM (ESTIMATED)

SQUARE FOOTAGE  
28,750

DESIGN COMPLETION  
2018

CONSTRUCTION COMPLETION  
N/A - FEL STUDY

## SERVICES PROVIDED

PROCESS  
ARCHITECTURE  
BIM DESIGN  
ELECTRICAL  
MECHANICAL  
STRUCTURAL  
PIPING  
PROJECT MANAGEMENT  
COST ESTIMATION

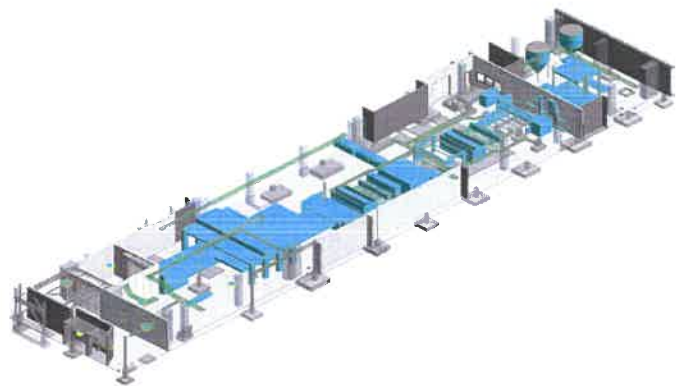
## CLIENT CONTACT

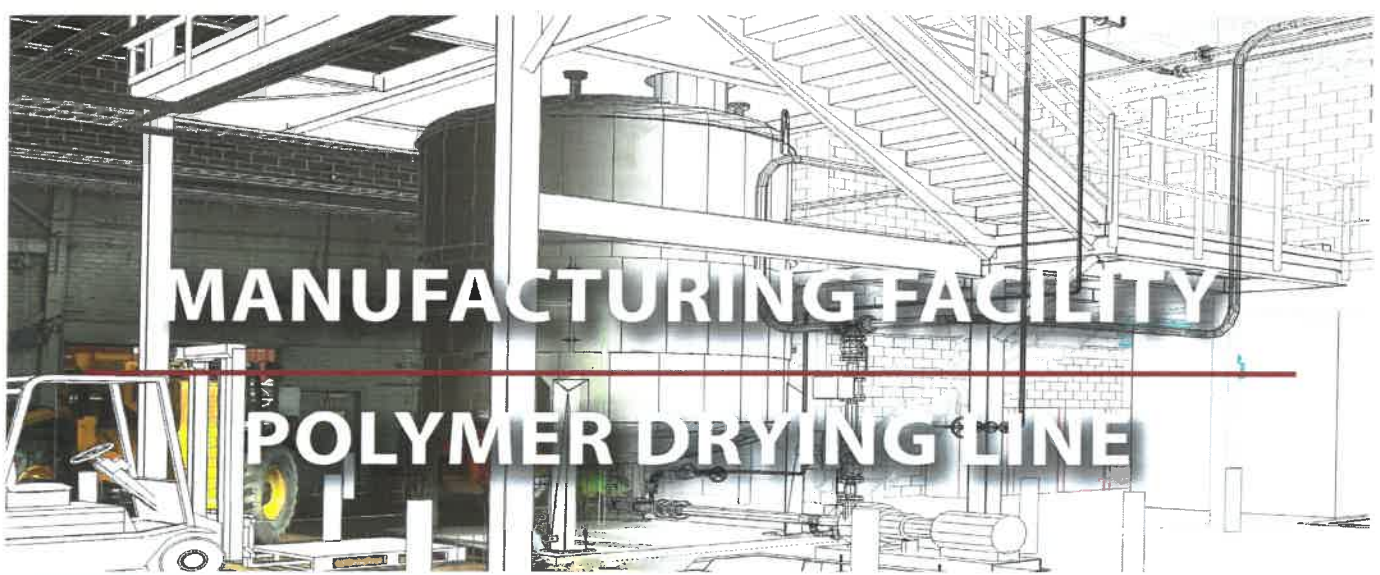
AVAILABLE UPON REQUEST

Pickering Associates was tasked with completing a Preliminary Engineering/FEL/FEED study to evaluate the feasibility of a new polymer extrusion line at an existing manufacturing facility. The overall deliverables of the project included a total project authorization estimate, preliminary layout of production equipment, and vendor coordination to confirm equipment requirements and costs.

This project utilized Pickering Associates IDEA process and BIM capabilities to utilize a project team spread between different sites and included representatives of the Pickering Associates design team, owner representatives, and equipment vendor representatives. By completing the preliminary design in 3D, all parties were confident that not only would the project layout fit inside the existing area, but that it was optimized for final product flow and worker ergonomics.

The cost estimate for this project was compiled using Aspen Capital Cost Estimator and Pickering Associates' project experience in the field. By utilizing model takeoffs, a very detailed estimate was assembled. By using this method, it allowed not only optimization in building techniques, but also in labor rates and material sourcing. To further develop certainty in the estimate, a gap analysis was performed to identify potential areas and items that could impact the cost estimate. Specialized equipment quotes were able to be loaded and their installation costs incorporated into the estimate.





## PROJECT SPECS:

PROJECT COST  
\$30MM

SQUARE FOOTAGE  
SF NEW - 18,800  
SF RENOVATION - 8,500

DESIGN COMPLETION  
2017

CONSTRUCTION COMPLETION  
2018

## SERVICES PROVIDED

ARCHITECTURE  
BIM DESIGN  
CIVIL  
ELECTRICAL  
MECHANICAL  
STRUCTURAL  
SURVEYING  
PIPING  
CONSTRUCTION MANAGEMENT  
PROJECT MANAGEMENT  
COST ESTIMATION

## CLIENT CONTACT

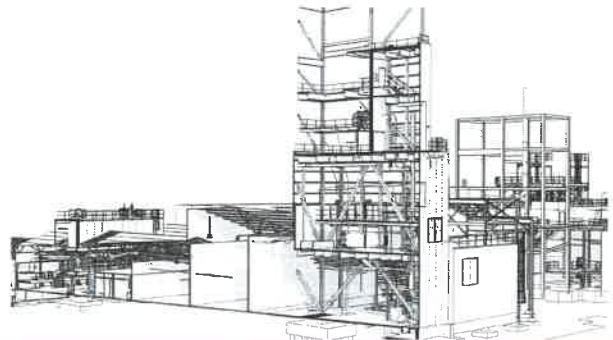
AVAILABLE UPON REQUEST

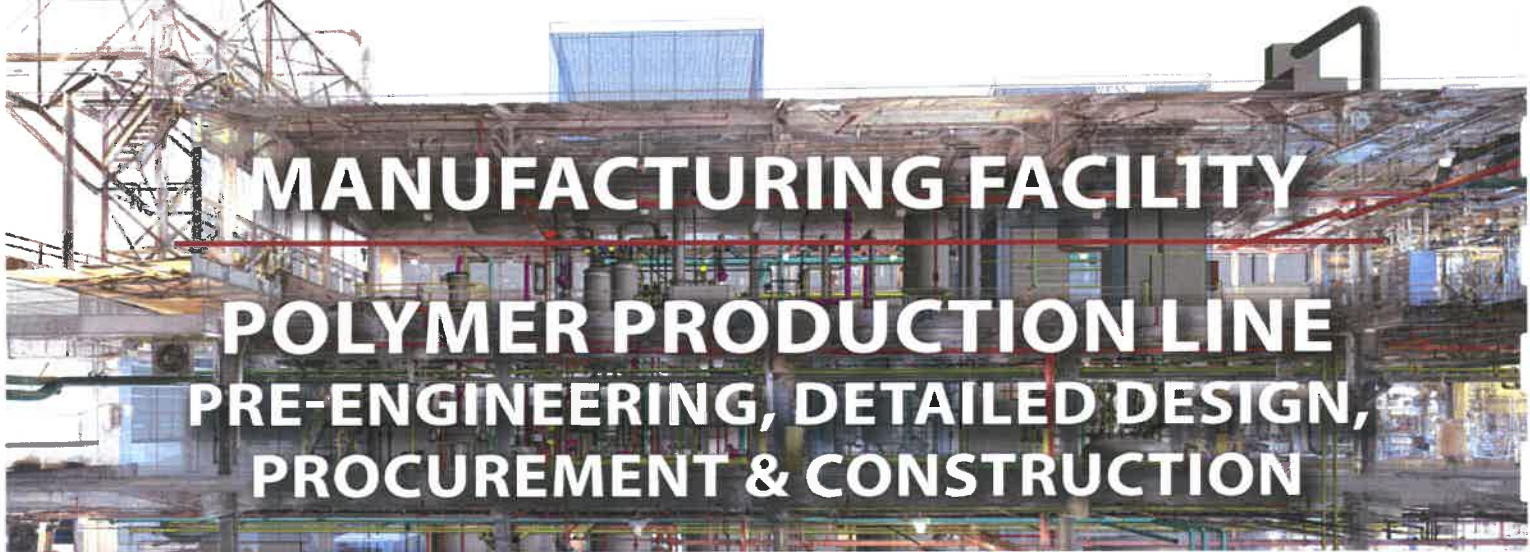
Pickering Associates was engaged by the client to assist with a new production line based on a 1.4X capacity expansion of an existing line. The project began with and followed FEL/FEED processes to analyze the existing line to identify bottleneck equipment that would need scaled up to facilitate the expansion. Once the equipment was identified, PFDs and P&IDs were developed as the basis

of the project. Vendors were contacted for the specialty equipment and preliminary models were arranged in the 3D model to begin generating the capital cost estimate. The final deliverables of this phase were process drawings, preliminary layout, and a capital cost estimate for authorization. Pickering Associates was heavily involved in the Authorization Process from start to finish.

Once the project was authorized, Pickering Associates was then selected to begin detailed design for the entire process. This included all in-house disciplines as well as code review and compliance. This design was completed in 3D with routine review meetings with the owner team. The 3D information provided a virtual mock-up of the design, which accelerated approvals and SOP development. The process was also optimized for operations ergonomics by engaging mechanics and operators throughout design. A revised capital estimate was provided at this phase gate.

At the completion of design, Pickering Associates was involved with the bidding, Construction Administration services through project completion, and finally assisted with commissioning. This allowed for a streamlined approach of communication between Pickering Associates, the owner team, and the contractor in the field. The 3D model was again utilized to compare with the construction. This had a great impact on the final project and overall success of the design.





# MANUFACTURING FACILITY

## POLYMER PRODUCTION LINE

### PRE-ENGINEERING, DETAILED DESIGN, PROCUREMENT & CONSTRUCTION

#### PROJECT SPECS:

PROJECT COST  
\$23MM

SQUARE FOOTAGE  
5,700

DESIGN COMPLETION  
2019

CONSTRUCTION COMPLETION  
2020

#### SERVICES PROVIDED

PROCESS  
EQUIPMENT SPECIFICATION  
COST ESTIMATION  
ARCHITECTURE  
BIM DESIGN  
CIVIL  
STRUCTURAL  
ELECTRICAL  
CONTROLS  
MECHANICAL  
PIPING  
PROJECT MANAGEMENT  
CONSTRUCTION MANAGEMENT

#### CLIENT CONTACT

AVAILABLE UPON REQUEST

Pickering Associates was tasked with completing several phases of a large capital project to produce a new polymer product in a refurbished building on an existing site.

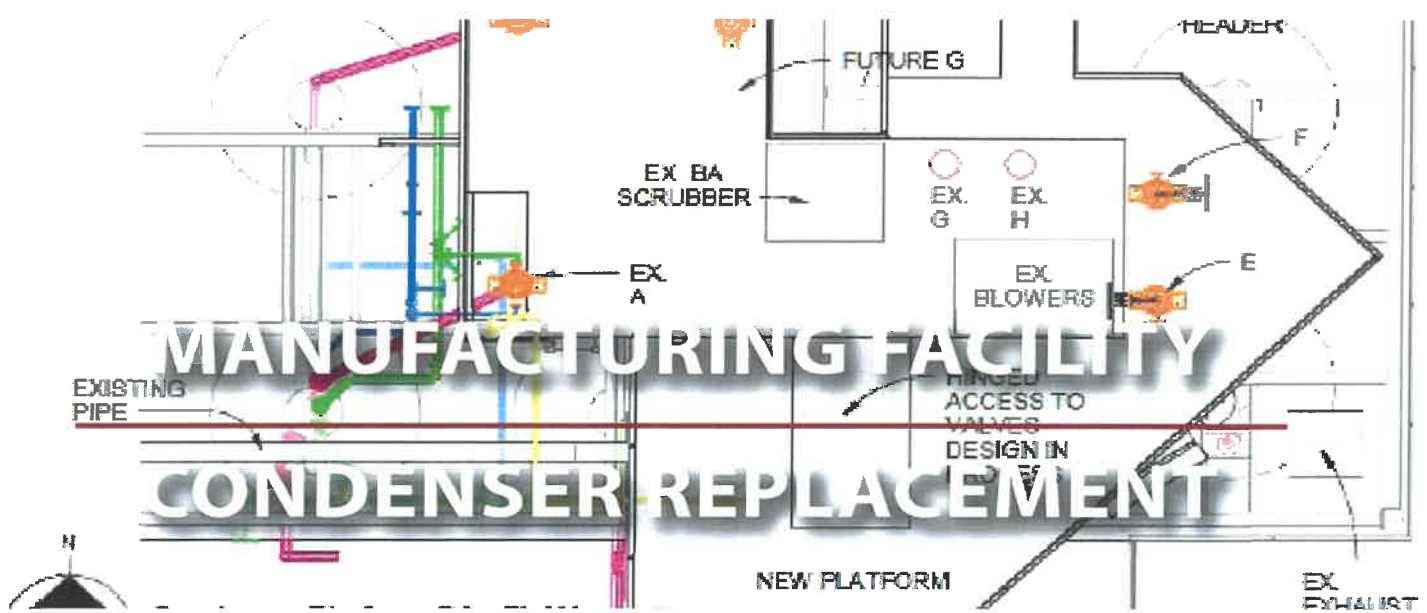
The first phase was to complete preliminary engineering on the process and produce an authorization cost estimate. This included preliminary flow layout of the facility and an initial physical layout of the process, which spanned 4 levels and 5 bays of the building, plus additional area outside the building. The cost estimate accuracy was improved by use of thorough equipment purchase specifications and obtaining early quotes for most of the major equipment. Preliminary flow layout was accomplished using "Smart" design software, which accelerated the process and provided input to the 3D modeling that followed to produce a complete virtual layout for review.

After review and approval of preliminary engineering, the project moved to detailed design. The team used BIM capabilities to perform engineering across the Pickering design team as well as owner representatives and equipment vendors. The project details were optimized, and design reviewed and approved in 3D, which accurately described the operation and allowed evaluation of operator tasks, ergonomics and plant/process safety.

As detailed design progressed and early bid packages were developed, procurement and construction began. Pickering provided procurement services to place orders and manage deliveries, as well as construction management for the project and owner support for material receiving, logistics and QA/QC. Our vast experience in construction management allowed the project to be completed with less than 2% in construction change orders.

Our extensive support for this project resulted in successful completion of construction in 2020 and turnover to the owner for their polymer product qualifications.





## PROJECT SPECS:

PROJECT COST  
\$415,000

SQUARE FOOTAGE

DESIGN COMPLETION  
FEBRUARY 2017

CONSTRUCTION COMPLETION  
JULY 2017

## SERVICES PROVIDED

ARCHITECTURE  
CIVIL  
ELECTRICAL  
MECHANICAL  
STRUCTURAL  
PIPING  
CONSTRUCTION MANAGEMENT  
PROJECT MANAGEMENT

## CLIENT CONTACT

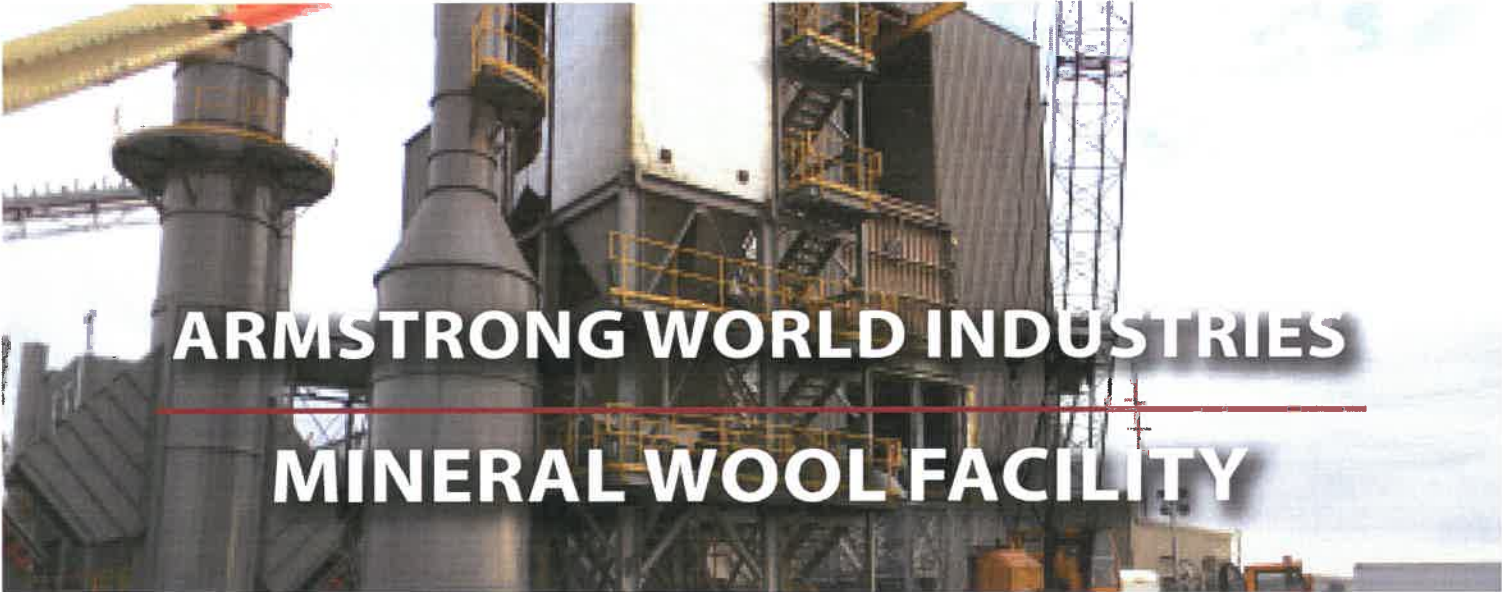
AVAILABLE UPON REQUEST

Pickering Associates was asked to lead the design of the replacement of obsolescent reflux condenser systems on five kettles. Existing condensers were at their end of life and limited the production plant's capacity. The condenser design for the five replacements copied the work of a successful replacement completed a few years ago.

The engineering was separated into the following main parts:

1. Layout design to relocate the condensers to the roof area/ mezzanine for improved maintenance access
2. New support structure for the condensers and new piping to/from the new condensers and relocation of several instruments associated with each condenser.
3. Complex pipe design in an existing facility that required maintaining minimum pipe slope for optimal reflux condenser design.
4. Upgrade the cooling water supply system with a new booster pump design and larger piping.
5. Electrical tracing design for all outdoor pipe sections.
6. Updating equipment specs and competitive equipment quotations from multiple fabricators.
7. D&R Scope (Piping, mechanical, electrical and instrumentation) with the general philosophy that instrumentation may be re-used.

Pickering took lead role in the construction bid process. Overall installed-price per condenser is half the cost for the initial condenser replacement project (which did not include any additional platforms). Extremely complicated pipe design was assisted through the use of 3D scanning of the project area.



# ARMSTRONG WORLD INDUSTRIES MINERAL WOOL FACILITY

## PROJECT SPECS:

PROJECT COST  
\$8 MM

SQUARE FOOTAGE  
27 ACRES

DESIGN COMPLETION  
2010

CONSTRUCTION COMPLETION  
2012

## SERVICES PROVIDED

- ARCHITECTURE
- CIVIL
- ELECTRICAL
- MECHANICAL
- STRUCTURAL
- PIPING
- CONSTRUCTION MANAGEMENT

## CLIENT CONTACT

AVAILABLE UPON REQUEST

Armstrong World Industries (AWI) had a desire to develop a brownfield facility for the manufacture of mineral wool. Pickering Associates was hired to help AWI evaluate potential sites throughout the area and research potential processing systems.

Once the site was selected in the Jackson County Industrial Centre located in Millwood, West Virginia, Pickering Associates was again contracted to provide design, bidding and contract assistance and construction administration. This multi-phase project contained separate design packages for the site development, deep foundations, office building, production building, maintenance shop, bagger building and furnace building.

The mineral wool is manufactured from slag acquired from smelting operations. The slag is then melted in a submerged arc furnace, passes through two processing lines to create the fiber, a collection chamber, shot removal system and finally packaged in bags or bales. The facility utilizes various dust collection systems for fiberization, processing and material handling.

Complete mechanical, electrical and plumbing design for each building is included in the design. The scope included provisions for cooling water piping systems, polyethylene glycol piping, and instrument air. Electrical scope not only included primary service and distribution for the new facility power, lighting, communication systems and life safety but also plant-wide security, lightning protection and arc flash analysis.



## MARK WELCH, P.E.

V.P. OF CONSTRUCTION  
SENIOR PROJECT MANAGER  
CIVIL/STRUCTURAL ENGINEER  
PROJECT MANAGEMENT

### BACKGROUND:

#### EDUCATION

MARSHALL UNIVERSITY  
M.S. ENGINEERING MANAGEMENT  
WEST VIRGINIA UNIVERSITY  
B.S. CIVIL ENGINEERING

#### LICENSES

PROFESSIONAL ENGINEER  
WV, OH, LA, PA, IN, TN

#### YEARS EXPERIENCE

14 YEARS

- Project Manager and Construction Manager for a \$23 million-dollar capital improvement project at a manufacturing facility in West Virginia.
- Project Manager and Construction Manager for a \$14 million environmental compliance project at a manufacturing facility in West Virginia.
- Project Manager and Construction Manager for over 20 different capital improvement and maintenance projects at a manufacturing facility in West Virginia.
- Civil/Structural lead and Project Manager for the construction of a \$20 million-dollar NGL storage facility in Louisiana.
- Lead Civil and Structural Engineer and project manager for development of numerous oil and gas well pads and production facilities throughout the Ohio/W.Va.
- Lead Civil and Structural Engineer in designing high voltage (138-69kV) substations.
- Project Manager and Civil Engineer for a brownfield development of approximately 30 acres for a new manufacturing facility.
- Civil Engineer for a polymer recycling facility located in the Polymer Alliance Zone in Davisville, W.Va.
- Civil Engineer for an expansion of operations at a refinery in Marietta, Ohio.
- Designed storm water system and new grading layout for a fire department annex in Vienna, W.Va.
- Lead Civil Engineer for a new 930 square foot equipment room addition for a cath lab renovation at a hospital in Parkersburg, W.Va.

THE JOY OF ENGINEERING IS TURNING TODAY'S DREAM INTO TOMORROW'S REALITY.



## PATRICK FLORA, E.I.

PIPING ENGINEERING DEPARTMENT MANAGER  
PROJECT MANAGER  
PIPING ENGINEERING  
PROCESS ENGINEERING

### BACKGROUND:

#### EDUCATION

MARSHALL UNIVERSITY  
M.S. ENGINEERING MANAGEMENT

WEST VIRGINIA UNIVERSITY  
B.S. CHEMICAL ENGINEERING

#### YEARS EXPERIENCE

6 YEARS

- Process Engineer and BIM Specialist for fluidized bed dryer expansion project.
- Piping Engineer and BIM Specialist for new process train at a global chemical manufacturer.
- Detailed pipe design for an industrial waste water treatment plant.
- Piping Engineer and Project Manager for a trial process in an existing facility.
- Piping Engineer and Project Manager for an oil filtration project.
- Project Manager for a debottlenecking process to improve overall process capacity for a manufacturing process.
- FEL study of a new packed bed scrubber. Explored the cost impacts of the installation of a new packed bed water scrubber to an existing train.
- Project Manager and Piping Engineer to remove and replace existing expansion joints in a manufacturing process.
- Piping Engineer and Project Manager for a solvent recovery operation.
- Developed P&IDs for green-field oil and gas sites. Developed PFDs and P&IDs for various oil and gas sites based on clients well data.
- Preliminary pipe design to decrease manual hose process connections.
- BIM Specialist for industrial equipment and pipe design for multiple industrial sites.

THE ONLY WAY TO DO  
GREAT WORK IS TO LOVE  
WHAT YOU DO.

Steve Jobs



## MIKE SWOPE

SENIOR PROCESS ENGINEER / CHEMICAL ENGINEER  
LEAD CAPITAL COST ESTIMATOR  
FRONT END ENGINEERING & SCOPE DEVELOPMENT  
EQUIPMENT SPECIFICATION & DETAILED DESIGN LEAD  
POLYMER EXTRUSION & PROCESSING EXPERIENCE

### BACKGROUND:

#### EDUCATION

WEST VIRGINIA UNIVERSITY  
B.S. CHEMICAL ENGINEERING

#### YEARS EXPERIENCE

27 YEARS

- Lead Capital Cost Estimator for a new \$100MM production line in Marietta, Ohio
- Senior Process Engineer / Equipment Lead for a new \$23MM chemical and polymer process in Willow Island, WV
- Lead Capital Cost Estimator for a new \$27MM production line in Marietta, Ohio
- Aspen Capital Cost Estimator Certified User
- Process Design and Procurement Lead for a \$20MM Midstream LPG storage and truck loading station in Napoleonville, LA
- Implemented a \$3.4MM capital project as process and area technical lead to upgrade a polymer extrusion line in Washington, WV
- 10 years experience as a Senior Manufacturing Technology Engineer in polymer extrusion compounding
- New product development, statistical analysis and statistical process control, R&D collaboration, process optimization, process development, production engineering, maintenance, and other technical roles
- Numerous quality improvement, cost savings and revenue-generating projects saving \$1.2MM/year, capturing \$2MM in revenue and implementing high-value small projects
- Lead process engineer for engineering and construction of a new \$1MM polymer production line in Friendly, WV
- Process engineering and procurement lead for several upstream natural gas and condensate production facilities in WV and OH

FOR MANY THINGS WE  
CAN FIND SUBSTITUTES,  
BUT THERE IS NOT NOW,  
NOR WILL THERE EVER BE,  
A SUBSTITUTE FOR CRE-  
ATIVE THINKING.

Crawford Greenewalt



## DAVID BOGGS, P.E.

EXECUTIVE VICE PRESIDENT OF DESIGN  
SENIOR MECHANICAL ENGINEER,  
SENIOR PLUMBING ENGINEER

### BACKGROUND:

#### EDUCATION

MARSHALL UNIVERSITY  
M.S. ENGINEERING MANAGEMENT  
VIRGINIA TECH.  
B.S. MECHANICAL ENGINEERING

#### LICENSES

PROFESSIONAL ENGINEER  
WV & OH

#### YEARS EXPERIENCE

23 YEARS

- Over 20 years of progressive project management and mechanical engineering services to Industrial Clients.
- Project Manager for design of an \$20MM liquid butane truck unloading station located in Louisiana.
- Project Manager for FEL development of an industrial plant expansion.
- Mechanical Engineer of record for \$30 MM green-field mineral wool manufacturing facility in Millwood, W.Va.
- Multiple years of assisting local industrial facilities with TAR planning and scheduling.
- Mechanical Engineer for the development of multiple construction bid packages to convert existing four large industrial dust collectors to a new technology in metals manufacturing facility.
- Lead Mechanical Engineer for the design of utility piping systems in plastics manufacturing facility.
- Lead Mechanical Engineer for \$8 MM quality control laboratory and administration building at a chemical facility in Belpre, Ohio.
- Lead Mechanical engineer for the design of new Steam Plant Facility for industrial client in Willow Island, W.Va.
- Lead Mechanical Engineer of record for a new \$30MM plastics manufacturing facility in Mineral Wells, W.Va.

DETERMINE THAT THE  
THING CAN AND SHALL  
BE DONE, AND THEN WE  
SHALL FIND THE WAY.

Abraham Lincoln



## JEFFREY HOSEK, P.E. LEED AP

MECHANICAL ENGINEER  
LEED PROJECT ENGINEER  
MECHANICAL ENGINEERING DEPARTMENT MANAGER

### BACKGROUND:

#### EDUCATION

UNIVERSITY OF AKRON  
B.S. MECHANICAL ENGINEERING

#### LICENSES

PROFESSIONAL ENGINEER  
WV, OH, KY, PA, LA, VA, MN  
LEED AP (BD&C)

#### YEARS EXPERIENCE

21 YEARS

- LEED Commissioning Project Manager on a design/build project for Washington Electric Cooperative in Marietta, Ohio.
- LEED Commissioning Project Manager for Kent State University which included a complete renovation to the fine arts building.
- LEED Mechanical engineer for a new 500,000 square foot distribution center and administration building for Honda American Motors.
- LEED Project Manager for converting a downtown Columbus, Ohio fire station into a local family health center.
- Mechanical Engineer for a new FBI field office in Cleveland, Ohio.
- Mechanical engineer for a new two story annex to the Vienna Volunteer Fire Department in Vienna, West Virginia.
- Mechanical Engineer of record for the design of a new \$25M high-rise dormitory at Glenville State College, in Glenville, W.Va.
- Project Manager performing an intense study to assess redundant cooling to Ohio University's Computer Center in Athens, Ohio.
- Lead Mechanical Engineer for an area of the hospital to be leased by a Physical Therapy provider.
- Project Manager and Mechanical Engineer for a new medical office building for O'Bleness Hospital in Athens, Ohio.

SOMETIMES THE QUESTIONS ARE COMPLICATED AND THE ANSWERS ARE SIMPLE.

Dr. Seuss



# CARL HENSON, P.E.

ELECTRICAL DEPARTMENT MANAGER  
ELECTRICAL ENGINEER

## BACKGROUND:

### EDUCATION

NEW JERSEY INSTITUTE OF TECHNOLOGY

M.S. ELECTRICAL ENGINEERING

WEST VIRGINIA INSTITUTE OF TECHNOLOGY

B.S. ELECTRICAL ENGINEERING

### LICENSES

PROFESSIONAL ENGINEER

WV, OH, PA, IN, LA

### YEARS EXPERIENCE

31 YEARS

ONE MAN'S 'MAGIC' IS ANOTHER MAN'S ENGINEERING.  
'SUPERNATURAL' IS A NULL WORD.

Robert A Heinlein

- Responsible for the electrical design and auditing of safety systems in industrial and commercial facilities.
- Trained by the National Fire Protection Association (NFPA) in evaluation of industrial hazardous area classification for flammable liquids and vapors, NFPA 497, and combustible dust, NFPA 499.
- Responsible for evaluation of industrial process documentation and determination of area classification for both hazardous vapors and dust.
- Over 15 year of hazardous area review and classification at local industries such as KRATON Polymers, American Styrenics, Solvay Specialty Polymers, Markwest, Zoetis and other industrial and commercial clients.
- Trained by NFPA 70E Electrical Safe Work Practices.
- Over 15 year experience in utilizing SKM Power Tools software for electrical system modeling to produce short-circuit, arc-flash, coordination and equipment evaluation studies for industrial and commercial applications.
- Over 15 of experience in developing NFPA 70E compliant arc-flash tags and training of qualified and non-qualified personnel for industrial and commercial safety programs.
- Responsible for electrical design for several oil and gas production facilities, including design of site power services, distribution and control wiring.
- Lead Electrical Engineer in designing high voltage (138-69kV) substations.
- Lead Electrical Engineer for a new 69 kV substation at a barge unloading facility in South Point, Ohio.
- Lead Electrical Engineer for a proposed new 138 kV substation at a solar silica manufacturer in Caldwell, Ohio.





## ERIC SMITH, P.E.

STRUCTURAL ENGINEER  
DEPARTMENT MANAGER

### BACKGROUND:

#### EDUCATION

MARSHALL UNIVERSITY  
M.S. ENGINEERING MANAGEMENT  
WEST VIRGINIA UNIVERSITY  
B.S. CIVIL ENGINEERING

#### LICENSES

PROFESSIONAL ENGINEER  
WV & OH

#### YEARS EXPERIENCE

14 YEARS

- Structural Engineer on Eureka Hunter Pipeline, L.L.C. Low Water Crossing.
- Civil Engineer on several projects for the City of Marietta.
- Generated detailed engineering drawings, quantities, and material estimates for bridge replacements for various counties in Ohio.
- Reviewed drawing designed for The Point Commercial Park for Lawrence Economic Development Corporation.
- Reviewed structural drawings for a new addition of the Holzer Clinic and evaluated adequacy of the structural members and connections.
- Senior Project Manager and Structural Engineer of Record for Catwalk repairs at Ohio University in Athens, Ohio.
- Structural Engineer of Record for NESHAP improvements at Eramet Marietta, Inc.
- Structural Engineer of Record for the Ohio Department of Transportation Facility of Washington County, Ohio.
- City of Marietta City Hall Renovations, Marietta, Ohio.
- City of Marietta Wastewater Treatment Plant Renovations, Marietta, Ohio.
- Marietta City Armory Renovations, Marietta, Ohio.
- Bridge Project for Orion.
- General Projects for Local Industrial Plants.
- Roof and Elevator Project for Christ United Methodist Church Marietta, Ohio.

PERFECTION IS NOT ATTAINABLE, BUT IF WE CHASE PERFECTION WE CAN CATCH EXCELLENCE.

Vince Lombardi



# REFERENCES



**Eramet Marietta Inc.**  
**Marietta, OH**

Frank S. Vallera, Manager -Engineering and Capital  
Investment Strategic Projects.  
(P) (740) 350-1510  
(E) frank.vallera@erametgroup.com



**Polymer Alliance Zone**  
**Davisville, WV**

Keith Burdette, President & CEO  
(P) (304) 428-1622



**Mark Mondo- Building and Excavating, Inc.**  
**Marietta, Ohio**

John H. Anderson, Project Manager, Business  
Development  
(P) (740) 376-9396  
(E) john@mondobuilding.com

**DESIGNATED CONTACT:** Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

Mark A. Welch, P.E., VP of Construction  
(Name, Title)  
Mark A. Welch, P.E., VP of Construction  
(Printed Name and Title)  
11283 Emerson Ave Parkersburg, WV 26104  
(Address)  
P (304) 464-5305 / F (304) 464-4428 / C (304) 483-6415  
(Phone Number) / (Fax Number)  
mwelch@pickeringusa.com  
(email address)

**CERTIFICATION AND SIGNATURE:** By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

Pickering Associates  
(Company)

 Mark Welch, VP of Construction  
(Authorized Signature) (Representative Name, Title)

Mark Welch, VP of Construction  
(Printed Name and Title of Authorized Representative)

August 24, 2020  
(Date)

P (304) 464-5305 / F (304) 464-4428 / C (304) 483-6415  
(Phone Number) (Fax Number)

STATE OF WEST VIRGINIA  
Purchasing Division

# PURCHASING AFFIDAVIT

**CONSTRUCTION CONTRACTS:** Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

**ALL CONTRACTS:** Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

**EXCEPTION:** The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

**DEFINITIONS:**

**"Debt"** means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

**"Employer default"** means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

**"Related party"** means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

**AFFIRMATION:** By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

**WITNESS THE FOLLOWING SIGNATURE:**

Vendor's Name: Pickering Associates

Authorized Signature: *Shacif Dotts* Date: August 24, 2020

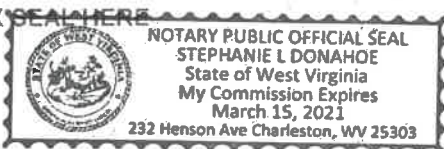
State of West Virginia

County of Kanawha, to-wit:

Taken, subscribed, and sworn to before me this 24<sup>th</sup> day of August, 2020.

My Commission expires March 15<sup>th</sup>, 2021.

AFFIX SEAL HERE



NOTARY PUBLIC *Stephanie L. Donahoe*