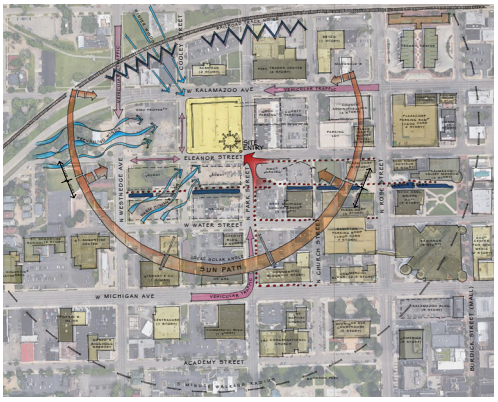
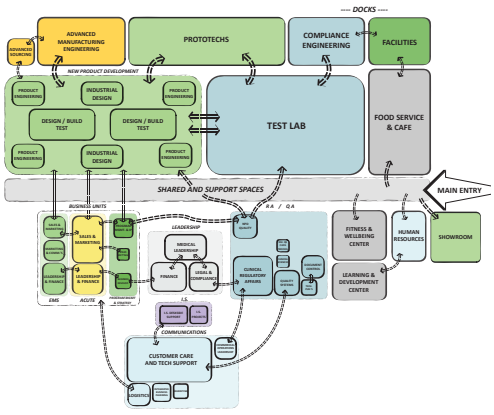
SITE SELECTION







Establishing parameters for site selection early on is essential to evaluating properties and existing buildings. With that information, we can begin to understand what the locale, topography, infrastructure, and potential expandability will be for a given project. Working with our industrial and manufacturing clients to understand and catalog considerations inherent to their desired use is one of the first steps to set a plan in motion. Then, these parameters can be overlaid on the sites under consideration to create a proper valuation of these many factors.

By first working through a high-level programming discussion, our team can establish the approximate footprint of a building area to start. Working with that area and use, we can also quickly ascertain the size of other site areas needed to support the building, most importantly parking areas, service, shipping and receiving locations, any outdoor storage needs, or employee areas. We will also consider dedicated land areas for preserving greenspace and landscape areas, as well as space for stormwater management strategies. Many of these items are dictated by local zoning and planning requirements. Lastly, when reviewing raw land area allocation, we will discuss plans for future expansions or additional stand-alone buildings. Those ideas must be considered and implemented into site planning studies to make sure this potential is not missed. Our experiences across many industrial and manufacturing projects have led us to recommend searching for sites three to six times the original building footprint as a starting point for property searches.

Once overall potential size parameters have been established, we then have to consider infrastructure and access needs. The internal flow and function of staff and materials in the existing space will help us understand how the new building should function. We then encourage our clients to consider the ease of access to and from the site for raw materials, finished goods, and staff. We will discuss a need for daily trucking trips, needs for a potential connection to railways, or other shipping means. The ability and capacity for public infrastructure to be brought to the site must be considered, not only to support the initial use but also for future expansions. Our team can evaluate capacities, estimate building uses, and ensure that all the necessary support infrastructure is in place for a successful project.

Other worthy discussion points for site selection can include: evaluation of unique or challenging topography to understand constructability and onsite waterways to understand wetlands, natural waterways, and drainage. Employee use of the site should be considered to allow health, wellness, and outdoor connections to be made, creating a more engaged, productive workforce. By making improvements in the site that are focused on employee wellbeing, employers can see improvements in morale, satisfaction, and productivity.

Creating a comprehensive understanding of site needs, amenities, and capacities will ensure the project is set up for successful development.



By: Jason Novotny
AIA, NCARB, LEED AP, CPTED
Director of Design

CONCEPT DESIGN







The TowerPinkster team is committed and responsive to execute capital improvement projects as quickly as possible to support our client's production process. Our programming and conceptual design process starts with a thorough immersion into our clients' process flow and operations. We review all background information available to our team in advance of meeting with the client, expediting the transfer of knowledge. This preparation allows our team to respond with dialogue, posing questions and providing initial reactions regarding the project execution. Together, we establish a critical path to decision making by establishing goals, scheduling milestones and documenting operational requirements.

Facilities Assessment:

We conduct a walkthrough of your facility to confirm the existing conditions. Staff members will be invited to provide additional insight and assist in prioritizing goals and initiatives. Our approach is to learn our clients process and constraints; focusing on process flow, building code, life-safety, space needs, infrastructure condition/capacity, mechanical, electrical, plumbing, and technology systems. We deliver a document with descriptive narratives and existing condition ratings in a consistent, reliable, and usable format.

Programming and Planning:

Work sessions will be conducted with each user group to allow the design team to become informed of the needs and operational requirements of each entity. Building on our initial facility assessment, we will engage with your process leaders in scheduled sessions to allow the team to walk through the existing facility, document and quantify their needs, gain an understanding of the desired operational practices, and explore improvements to improve efficiency.

Initial design concepts are developed concurrently with the space programming process. The relationships between each function will be graphically shown to indicate the desired operational process and location within your facility. Space program tables will be prepared that specify the net square footage required for each function or department. In addition to guiding this building program, the tabular summary will also enable the team to determine the approximate building area, thus allowing consideration for cost projections and phasing concepts.

Conceptual Design:

Once the building program and budget estimate are approved, the design team will produce conceptual design options based on interactive work sessions. The goal is to begin to narrow the paths of possible options by determining massing, site arrangement, significant functional relationships, and circulation. TowerPinkster believes that plan illustrations, workflow diagrams and the development of 3-Dimensional renderings assist in healthy discussion and adoption of these concepts by leadership during this phase. We illustrate the benefits of the new construction and renovation to make clear the rationale for these approaches. Early decisions have the most significant potential for budgetary impact, so options will be weighed carefully for initial long-term costs. The project is further defined in this phase to achieve the scope of the project.

A final Building Program Document containing narratives, tabular data of space needs, conceptual designs, and a conceptual cost estimate will be provided for use in leadership presentations, decision-making efforts, and change management for the company.



By: Adam Doubblestein
PE, CPMP, LEED AP BD+C
Principal

EXPEDITED SCHEDULE







Inherent to manufacturing and industrial processes, a critical component to success is the ability to capture market share when entering a geographic marketplace or expanding products within your existing marketplace. Lean principles such as “speed to market” or “just in time” delivery are commonly utilize, which drive the importance of schedule in the completion of a facility. We excel and respond to this expedited process as paramount to the success of our clients and the future of their business. That is why we work closely with our clients at the start of our engagement to listen and define the two to three critical success factors that the client desires in a project and then help them prioritize accordingly.

Recently, we engaged with a client to review and discuss the scope, scale, and complexity of a potential project to significantly increase their production capacity. After listening to them, it was clear that an expedited schedule and maintaining existing 24/7 operations were the highest priority amongst the success factors outlined.

After an all-day planning session with the client team, we recommended the pursuit of a design-build delivery strategy. This allowed us to customize our team by adding a trusted construction partner to facilitate the goal of achieving the quickest “speed to market.” On behalf of our client, we reached out to the construction partner, met with them one-on-one, and devised a phased approach to design, develop, and deliver the project in the shortest possible time while also achieving the client’s vision for a renovated and expanded facility. This partnership allowed for our broader team to bring on significant subcontractor trades to work in the design-assist role, to develop critical systems within the building, and focus on selecting and purchasing long-lead items in a fluid sequence. The project schedule was developed as a real-time document that evolved and advanced throughout the design phase as components of the project moved forward.

Decisions were made along the way to fast-track the site work, utilities, footings/foundations, and major structural packages in the first phase of work and divide the project into a series of bid packages to expedite the construction process. We then focused on the exterior shell of the building, followed closely by the major mechanical, electrical, and plumbing systems. The final phase of work was interior architecture and interior design. Ultimately, the project was completed ahead of schedule, which exceeded the goals and expectations of the client for the future of their operations.

Through this experience and many similar successful projects with clients, our multidisciplinary design team of architects, engineers, and interior designers has adapted and evolved our processes to customize the best solution for every client.



By: Jason Novotny
AIA, NCARB, LEED AP, CPTED
Director of Design

PHASING STRATEGY







Is it critical to remain operational during the renovation and expansion of your existing facility, or will production shift to another one of your facilities? If your production needs to remain operational then at what capacity?

These are just a couple of the many questions that our team openly discusses with manufacturing clients at the start of a capital investment project. We understand that remaining operational may be paramount to business success and future growth. As such we will work together to develop a customized phasing strategy to achieve this goal. To begin the project, we will walk the facility with the client to get an understanding of the current production process and map out the existing flow and future flow that is desired for the project. Our engineers will also review the existing mechanical, electrical, plumbing, and structural infrastructure systems which are key aspects to consider as we analyze and review phasing options, solutions, and potential cost implications.

Phased approaches consist of a variety of strategies based on the client's business model, the existing facility layout, the site dynamics for future expansion, the age of the building systems, the physical location of the business, and other key components. Given our understanding of process, workflow, building infrastructure, and spatial requirements, we are able to work together with a client to develop quick conceptual solutions that visualize the final desired outcome. Then, we take the final solution and the current state of the facility and develop a logical phasing strategy which may consist of two, three, or even multiple phases of expansion and renovation.

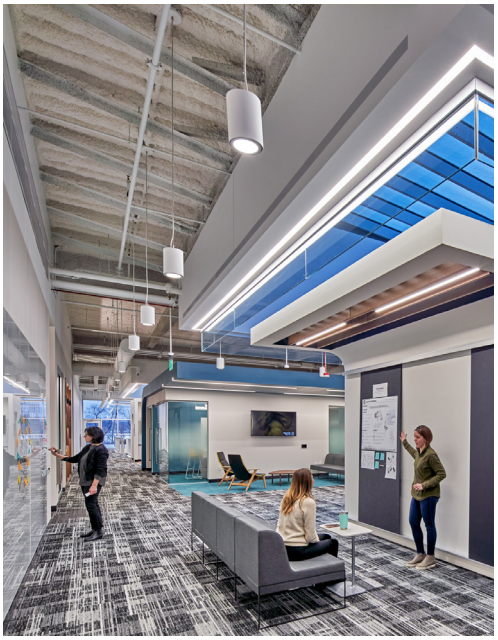
For a large-scale industrial client, we were able to develop a two-phase expansion and renovation project which then allowed for multiple sub-phases to occur inside the facility over a broader time horizon. The first phase was the expansion of the production space which was an extension of the building enclosure and the addition of a new production entry and common gathering space. This allowed for the creation of some 'flex-space' within the production side to then be able to expand the office and research and development spaces.

For a smaller-scale manufacturing client, we added a 40,000 SF addition to expand and relocate the assembly area and then remap the flow of inbound and outbound product to the facility. This allowed for the repositioning of the quality control space and the expansion of the staff area for the increased jobs that were created at the company.



By: Adam Doubblestein
PE, CPMP, LEED AP BD+C
Principal

SPECIALIZED ENGINEERING







TowerPinkster worked alongside design partner HOK to create 485,000 square foot research and development facility in Portage, Michigan. This facility features research and development space, lab and testing areas, and customer engagement spaces such as an operating room showroom.

To encompass all of the client needs, TowerPinkster and HOK went through the extensive process of meeting with multiple user groups. Before meeting with these teams, TowerPinkster sat down with leaders to establish five core values for the project – flexible, connected, energetic, engaging, and productive. These five values were created to help address the deficiencies of having staff in multiple locations, lacking adequate meeting space, and not having areas for different teams to collaborate. These core values fueled the design process and gave inspiration creating the space for innovation, visibility, growth, and collaboration. Design ideas evolved throughout these meetings to create a space that was comfortable and functional for over 1300 employees.

The design process goal was to break down a massive space into different categories and capture each element. While meeting with the user groups, teams focused on the end goals of each space. Once the design elements were recognized, they were leveraged through Revit.

For effective research, this organization has multiple labs throughout the building. The TowerPinkster team designed the lab spaces with viewing windows for everyone to feel connected to other teams. The viewing windows also allow them to bring in clients to watch products being made.

TowerPinkster's team designed the labs with different types of electrical outlets because of their international presence, special rooms, and proper ventilation. Mechanical engineers focused on developing the most energy-efficient solution to heat and cool the facility. Because the labs use a significant amount of energy, the engineers designed a heat recovery chiller plant, including chiller plant optimization. The system captures the waste heat generated by autoclaves in the labs and moves it to other areas of the building where it can be used for building heat or snowmelt. The large battery test room also features energy recovery to capture heat from discharging batteries to allow that heat to preheat other areas of the building, reducing energy costs.

In total, over 28 miles of piping was used in the plumbing systems, and 14.5 miles of piping was used for the HVAC piping systems. The building's snowmelt covers more than an acre and ensures that water and salt will not be tracked into the building lobbies.

On the electrical side, there are over 15 miles of underground wiring, 440 miles of building wire, 165 miles of communication wire, and 5,600 light fixtures. Because the labs test a lot of equipment on European style controls, they required specialized electrical areas. Additionally, a unique fire system was installed to help protect lab equipment and supplies.



By: Jon Rumohr
PE, HBDP, LEED AP BD+C
Senior Mechanical Engineer

PROCESS IMPROVEMENT











By: Marika Hawes-Ruhrup, PE, CPMP, LEED AP BD+C
Project Manager

The TowerPinkster team utilizes the Lean Six Sigma training and certifications to improve our design process and increase efficiencies for our clients. Lean Six Sigma is a strategy that focuses on team knowledge sharing and participation to produce an operational distinction.

The Lean Six Sigma process is a disciplined, data-driven approach and method for eliminating defects in the process – which is always our goal at TowerPinkster. The purpose of process utilization is to decrease production and service time to control costs.

There are two variations of Six Sigma – DMAIC (define, measure, analyze, improve, control) and DMADV (define, measure, analyze, design, verify). TowerPinkster uses the DMADV framework because it primarily focuses on the development of new or improved existing products, which is most of the work we do – designing new spaces for our clients or renovating existing spaces to increase production power. An outline of our DMADV process is below:

Define – The goal of the first phase is to identify the purpose of the project and set realistic, reasonable, and measurable goals from the perspectives of the organization and the stakeholders. We then work to create a schedule and guidelines to the review, identify, and assess the potential project risks. Identifying risks early on helps designers pivot to avoid creating additional costs later in the project. Our process starts with client meetings that feature different user groups and stakeholders. These meetings help our team understand the variety of needs and hear from groups who may not typically interface with each other.

Measurement – After we define the goals, we identify and measure the factors that are critical to quality. These factors are things such as essential parameters of design, market segments, reassessing risks, and assessing the final product capability. This phase is where the TowerPinkster team identifies the elements of the project that are critical to our clients and how to translate the client requirements into clear goals.

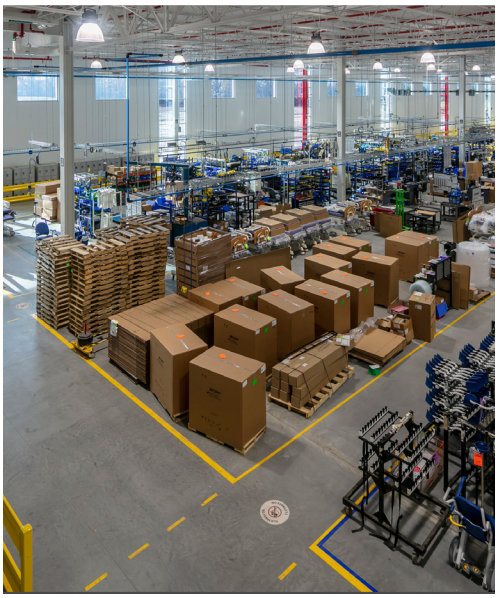
Analysis – At this stage, we work to develop design alternatives, identify the optimal combination of requirements to achieve value, develop conceptual designs, and finalize the paramount design. This piece includes estimates of the total life cycle cost of the model after thoroughly exploring multiple alternatives.

Design – During the design phase, the TowerPinkster team will develop a high-level plan for the selected model. We will prioritize critical elements in the chosen solution and then develop the detailed design. Once this stage is complete, we can identify where errors may occur and where necessary modifications are needed.

Verify – In this final stage, the team validates the design with all stakeholders to confirm that it will be productive and successful. At this point, we confirm all expectations, and document lessons learned for the TowerPinkster team, as well as our client. This helps our designers not repeat mistakes and expedite the process for the next project. This step includes a plan to transition the project to a sustainable, routine operation by the client.

The goal for all DMADV projects is to address identified issues early in the design process and produce desired results that can be maintained through normal operations. Our team takes pride in implementing this approach into our industrial and manufacturing work. At TowerPinkster, we strive to create unique and efficient spaces for our clients, so when we can work together to identify potential problems early and work through them, it allows us to create the best outcome for their organizations.

DESIGN-BUILD TEAM







Often, projects in the Industrial and Mechanical realms are focused on efficient, cost effective measures to build a space that generates revenue by the manufacture and sale of the goods within these spaces. Thus, the building as a resource to the company becomes a part of the overall equation on whether the cost of the project is validated by the revenue that will be increased by its very own construction.

In situations where this is the case, cost control to ensure that the project is delivered at or below the allocated capital outlay can be the most important success factor. When this is established, we often recommend that a relationship between our team as Designers/Engineers and the Construction Manager is formalized into a single Design Build agreement with the Client. Our team has worked successfully with this model of cost and risk management to the Client to deliver projects quickly and predictably with a close eye on the final cost throughout.

By working in a Design Build relationship, there is a direct and greater relationship between the project cost and design parameters. This forces many critical discussions early in the process and requires the Owner to be direct in their funding and their priorities. TowerPinkster actively facilitates these discussions occurring, and with our past experience and knowledge of systems and costs, we can help guide the Owner towards maximizing their value.

TowerPinkster can also work in a hybridized model of Design Build with specific subcontractors in a Design Assist relationship with a focus again on cost and maximizing value to the Owner. In this relationship, TowerPinkster is still the Architect/Engineer of Record, but the specific subcontractor takes on a larger role in the design and costing during design documentation. This leads to fewer changes, greater understanding of the design goals, and cost containment. When the facility has a high degree of technical requirements for a specific system [ie temperature, power, spatial considerations], a Design Assist model can help to ensure the correctly skilled labor force is also in place early.



By: Jason Novotny
AIA, NCARB, LEED AP, CPTED
Director of Design

TARGET VALUE DESIGN







Our team is committed to controlling the cost of our client's projects. Using an integrated design approach, we fully engage with the client and construction partner early-on to establish an allowable project budget, goals and criteria. Throughout the design process, our team will collaborate to provide creative and innovative solutions that enhance efficiency, functionality, and operations within the targeted budget. Consistent, real-time budgeting with the construction partner is critical to achieving the targeted project cost. Our proactive approach results in designs that meet your project's goals and budget parameters, using the following strategies:

- Development of a complete Program Statement and Conceptual Cost. This provides a solid foundation and roadmap for goals and expectations throughout design and construction. The program and budget must be in balance before proceeding to the design phases.
- Real-time cost estimate updates influence each design decision, with budget resolution meetings as required. Our team will work with the construction partner in establishing and documenting design criteria to support accurate, complete estimates. We collaborate with the construction partner to review costs, identify potential savings, and make sure that the project design, scope, and budget remain on target. We offer expertise from years of experience with similar projects.
- Development of adequate budget contingencies and options to cover unforeseen items that can occur, particularly in phased projects or renovations of existing facilities. This helps protect the Client from unexpected requests for additional funds later.
- Development of complete drawings and specifications for tight bidding. Well-defined designs and specifications result in lower, tighter bidding, with the most favorable results.
- Development of alternate design items that can be implemented if funding is available. This gives you maximum flexibility if bids are favorable.



By: Adam Doubblestein
PE, CPMP, LEED AP BD+C
Principal