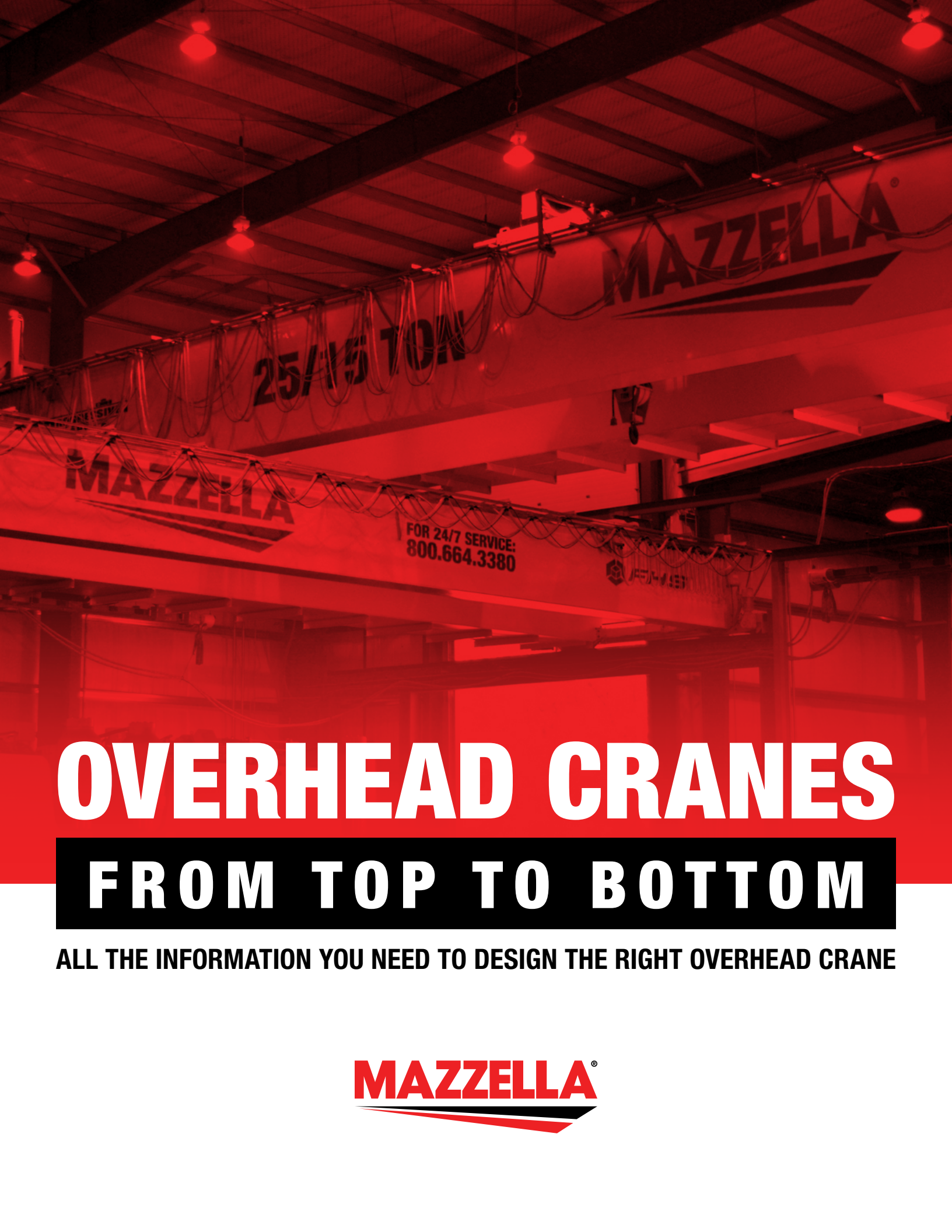




OVERHEAD CRANES

FROM TOP TO BOTTOM

ALL THE INFORMATION YOU NEED TO DESIGN THE RIGHT OVERHEAD CRANE

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WELCOME

Welcome and thank you from all of us at Mazzella for downloading our *Overhead Cranes: From Top to Bottom* e-book!

Are you looking to buy your first overhead crane system and need to know where to begin? Or, maybe you're looking to add another crane to your facility to expand your business' production or manufacturing capabilities?

Overhead cranes can vary so much in terms of specifications and configurations—no two crane builds are exactly alike! So, knowing how to select the right type of overhead crane for your business is critical to maximizing efficiency, streamlining workflow, and getting the best bang for your buck.

Our goal for this e-book is to provide as much information as possible about:

- The definition and components of an overhead crane
- The different types of overhead cranes
- The process of designing and buying an overhead crane
- The installation of an overhead crane system

We do believe that the more that you read, the better you'll understand how to design and specify the right overhead crane for your business' needs. The more you know, the better educated you'll be during the entire purchasing process.

We thank you for your time and we're here to help if you have any additional questions about overhead cranes, below-the-hook devices, or other lifting or material handling solutions. Don't hesitate to give us a call at **1-800-664-3380** or email us at cranequote@mazzellacompanies.com.

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CHAPTER ONE

WHAT IS AN OVERHEAD CRANE? DEFINITION, TYPES, AND COMPONENTS

A base-level explanation of overhead cranes and how you can select an overhead crane that is best suited for your business' needs.

WHAT IS AN OVERHEAD CRANE?

DEFINITION, TYPES, AND COMPONENTS

With over 50 years of experience in the engineering and manufacturing of overhead cranes, we've partnered with customers with all different levels of knowledge regarding overhead cranes.

We realize that each person we work with may need some help filling in the blanks regarding different aspects of what an overhead crane is, what an overhead crane does, what types of overhead cranes are available, and which class of overhead crane may be best for their business.

In this chapter, our goal is to unpack some of these questions and break them down into their simplest format. We want to help you establish a base-level understanding of overhead cranes and how you can select an overhead crane that is best suited for your business' needs.

In the simplest of terms, an overhead crane is a machine, or piece of equipment, that allows you to lift and move heavy objects from one location to another in a precise manner.

There is no "one size fits all" approach to defining an overhead crane, as each overhead crane is carefully designed and engineered for a specific purpose or application.

Overhead cranes can be designed and built in all kinds of configurations, and different components can be swapped out or engineered to improve its capacity and performance.

The most popular reasons for using an overhead crane:

Loading or unloading materials from a truck

Moving materials around a facility more efficiently than a tow motor or manpower can

Flipping or pulling dies in and out of stamping machines at a manufacturing facility

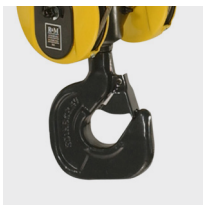
Feeding raw material into a machine at a manufacturing facility

Moving pieces or parts down an assembly line in a controlled fashion

Moving containers around a shipyard or railway

PARTS & COMPONENTS OF A CRANE

In order to get a better understanding of some terms we'll be using later when we describe the different types of overhead cranes, we'll discuss the different parts and components of a crane, and how they can affect performance and design.



HOOK

The lifted load is supported using a hook which connects to the hoist.



HOIST

The hoist is what makes the lift and holds, raises, or lowers the load using wire rope or chain. Hoists can be powered manually (by hand), with electricity, or with compressed air (pneumatic).



TROLLEY

The trolley supports the hoist and moves horizontally along the crane's bridge, to position the hoist and hook, prior to picking up or lowering a load. Trolleys can be configured in an Under Running or Top Running design.



BRIDGE

A load-bearing beam that runs the width of the building. This is the primary structural component that connects the runways and moves the hoist forward and backward using a trolley. A bridge can be comprised of one or two beams—more often referred to as a single girder or double girder design. Girders can be made of rolled steel or can be fabricated by welding the beams into a steel box design.

Benefits of using an overhead crane system:

Reduction in workplace accidents

Reduction of material or product damage

Improved workflow

Lowered costs

Green solution that reduces environmental impact

Cuts down on repetitive motion injuries and muscle strains

Can work up to 2-3 times faster than using workers or tow motors



RUNWAY

What the bridge crane travels on to move the crane up and down the bays. These are typically part of the building structure, as beams, and there are two (2) per overhead bridge crane system.



RUNWAY RAIL OR TRACKS

Rail supported by the runway on which the crane travels. Top-running cranes typically run on ASCE/ railroad rails. Gantry cranes can also utilize a rail or track system installed on the floor to move the bridge back and forth.



END TRUCKS

Located on either side of the bridge, the end trucks move the bridge up and down the runway utilizing a series of wheels that ride on the rail. Each end truck can have a configuration of 2, 4, or 8 wheels based on the crane's capacity.



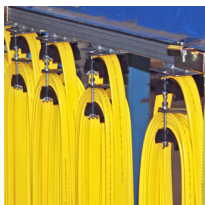
BUMPERS

Bumpers are designed to absorb the crane's energy and reduce impact—bringing the crane to rest in a controlled manner and minimizing forces when the crane or trolley reaches the end of its travel. Bumpers can be attached to the bridge, trolley, or runway stop.



CONTROLS

Controls are typically mounted in a panel on the crane or hoist and the pendant or remote console allows the operator to run the crane. The controls operate the drive and hoist motors, and can control Variable Frequency Drives (VFDs) to control hoist speed for precise load positioning.



ELECTRIFICATION

Insulated conductor bars, festoon systems (flat cables), or cable reels bring power to the crane from the building.





CHAPTER TWO

THE SIX DIFFERENT CLASSIFICATIONS OF OVERHEAD CRANES

Selecting the right class and duty cycle for an overhead crane is critical for balancing the initial investment of a crane system with the cost of future maintenance that will be required.

THE SIX DIFFERENT CLASSIFICATIONS OF OVERHEAD CRANES

There are six (6) different classifications for overhead cranes, specified by the Crane Manufacturers Association of America (CMAA). If you can answer or define each of the criteria below, it will be much easier to determine the type of overhead crane that works best for your business or industry.



SERVICE

How often will the crane be used?



SPEED

How quickly can the crane transfer materials or equipment? How many lifts per hour can the crane perform?



MAINTENANCE REQUIREMENTS

Will the crane need to be serviced regularly and how will maintenance or repair affect production and downtime?



DISTANCE

How far does the crane need to move material in your facility?



RATED CAPACITY

What is the average rated load of the materials that your crane will be moving? How often will the crane be lifting fully-rated loads?



SERVICE CONDITIONS

In what type of environment will the crane be operating?

THE DIFFERENT TYPES OF OVERHEAD CRANE CLASSIFICATIONS

CLASS A

Standby or
Infrequent
Service

This service class covers cranes where precise handling of equipment at slow speeds with long idle periods between lifts are required. Capacity loads may be handled for the initial installation of equipment and for infrequent maintenance.

Typical examples: cranes used in powerhouses, public utilities, turbine rooms, motor rooms, and transformer stations. This is the lightest crane as far as the duty cycle is concerned.

CLASS B

Light
Service

This service class covers cranes where service requirements are light and the speed is slow. Loads may vary from no load to occasional full-rated loads with 2 to 5 lifts per hour, averaging 10 feet per lift.

Typical examples: cranes in repair shops, light assembly operations, service buildings, light warehousing, etc.

CLASS C

Moderate
Service

This service class covers cranes where service requirements are deemed moderate, handling loads which average 50 percent of the rated capacity with 5 to 10 lifts per hour, averaging 15 feet, with not over 50 percent of the lifts at rated capacity.

Typical examples: cranes used in machine shops, paper mill machine rooms, etc.



DIFFERENT TYPES OF OVERHEAD CRANE CLASSIFICATIONS

CLASS D

Heavy
Service

This service class covers cranes where service requirements are deemed moderate, handling loads which average 50 percent of the rated capacity with 5 to 10 lifts per hour, averaging 15 feet, with not over 50 percent of the lifts at rated capacity.

Typical examples: cranes used in machine shops, paper mill machine rooms, etc.

CLASS E

Heavy
Service

This type of service requires a crane capable of handling loads approaching the rated capacity throughout its life with 20 or more lifts per hour at or near the rated capacity.

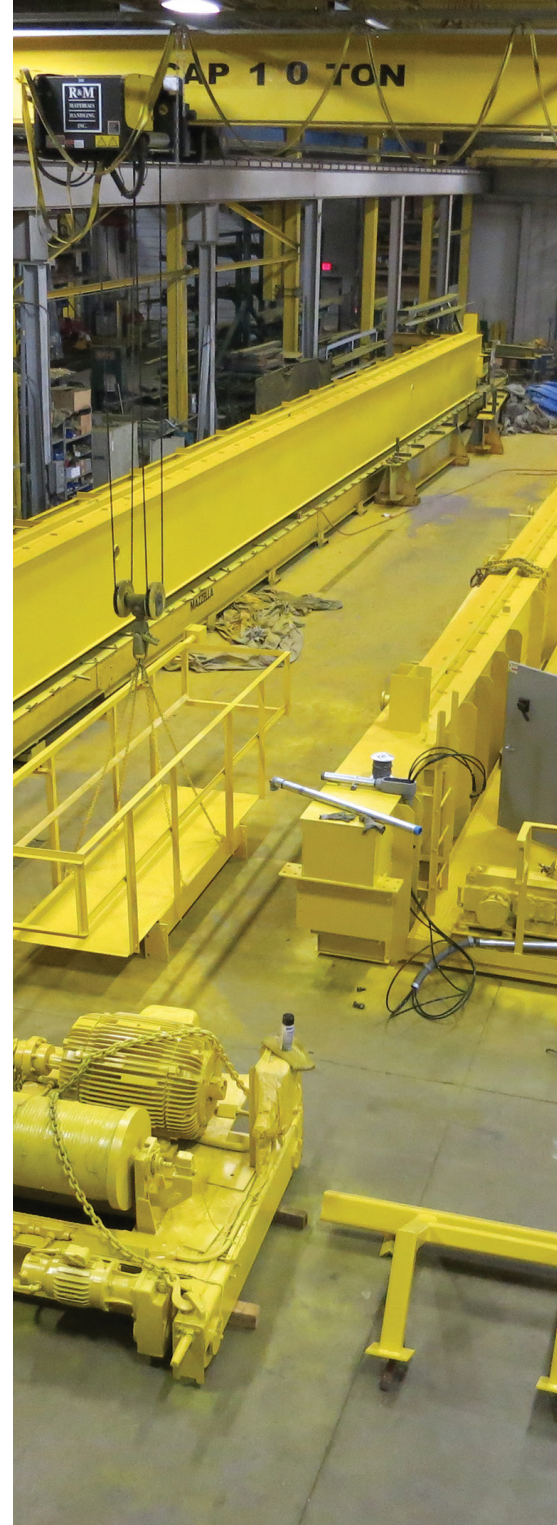
Typical examples: magnet, bucket, magnet/bucket combination cranes for scrap yards, cement mills, lumber mills, fertilizer plants, container handling, etc.

CLASS F

Heavy
Service

In this type of service, the crane must be capable of handling loads, approaching rated capacity continuously under severe service conditions throughout its life.

Typical examples: custom-designed specialty cranes essential to performing the critical work tasks affecting the total production facility, providing the highest reliability with special attention to ease of maintenance features.





CHAPTER THREE

WHAT ARE THE DIFFERENT TYPES OF OVERHEAD CRANES?

Selecting the right type of crane for your business is critical to maximizing efficiency, streamlining workflow, and getting the best bang for your buck.

WHAT ARE THE DIFFERENT TYPES OF OVERHEAD CRANES?

Overhead cranes come in all different sizes, shapes, and capacities and selecting the right type of overhead crane is essential to streamlining your production processes. There is no “one size fits all” approach to identifying the right type of crane for your business’ lifting needs.



BRIDGE



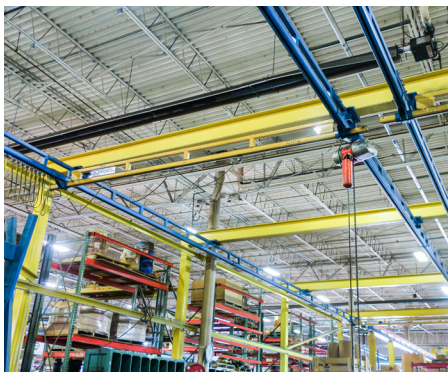
GANTRY



MONORAIL



JIB



WORKSTATION

Things to consider when choosing an overhead crane:

Motion of the crane structure

Weight and type of material / load

Location of the crane: indoors or outdoors

How often will the crane be used?

Length or span of the crane

Estimated height of the crane

Length of your runway

Will the building structure support a crane?

Lifts per hour

BRIDGE CRANES

A bridge crane is a type of crane that includes two overhead runways built into the building's support structure. A single or double girder configuration, called a bridge, moves the crane up and down the runways, and the trolley and hoist run side-to-side along the bridge. The trolley allows the operator to position the hoist and hook, prior to raising or lowering a load.

Bridge cranes have different configurations including single girder and double girder designs, and the trolley and hoist can be designed to be top-running or underhung depending on the design of the building structure and the requirements needed to make the lift.



SINGLE GIRDER

The bridge consists of one girder beam supported on each side by an end truck. The trolley and hoist are underhung—meaning they run on the bottom flange of the single girder. Single girder cranes are typically less expensive due to:

- Reduction in freight expenses
- Faster installation
- Simpler hoist and trolley design
- Lighter runway beams



DOUBLE GIRDER

There are two girder beams that make up the bridge and they are supported by an end truck on each side. The trolley and hoist run on a rail installed above or below the bridge girders. Double girder cranes are recommended for heavier-duty applications where the crane has to handle heavier capacities and longer spans.

PROCESS CRANES

A process crane is built for a specific need, and these types of cranes are heavy-duty (mainly Class D, E, and F cranes) and in constant, or near-constant, operation. They're typically a top-running, double girder design and have a lot of engineering built-in to perform high capacity lifts, or to perform a very specific task over and over again. Process cranes can be found in places like automotive assembly plants, steel mills, container yards, lumber mills and are performing anywhere from 10-20 lifts per hour at around 50-75% of their rated capacity.

MODULAR CRANES

Modular cranes are typically found in smaller manufacturing facilities, smaller-sized mills, or machine shops, and have a design consisting of a more base-level hoist, trolley, and bridge. They're economical and affordable solutions to moving material through a facility and don't normally come with a lot of extra bells and whistles. These cranes are typically Class C and are being used at around 40% capacity, but can be bumped up to Class D with extra engineering built-in if the lifting application requires it.

TOP RUNNING VS. UNDER RUNNING CRANES

When it comes to defining clear differences between bridge cranes, you will want to consider if you require a top running or under running crane. On a top running crane, the bridge runs on rails along the top of the runway beams. On an under running, or underhung crane, the bridges are supported by the bottom of the runway beams and the wheels run along the bottom of the lower beam flange.



TOP RUNNING CRANES

These cranes have no limiting capacity—meaning they can be built to go from small capacities to very large capacities. They include a rail installed on top of each runway, and the bridge wheels move on the rail instead of the bottom flange of the runway beam. These cranes are supported by the building structure or runway support columns, or sister columns, and are ideal for moving extremely heavy loads.

Top running cranes can be designed in a single-girder or double-girder configuration:

SINGLE GIRDER	DOUBLE GIRDER
■ Typical Load Capacity: 1/4 ton-20 tons ■ Typical Span: Under 65 feet ■ Typical Service: Light ■ Low deadweight ■ More overhead space ■ High speed ■ Lower production cost / lower overall price	■ Typical Load Capacity: 20-400 tons ■ Typical Span: Over 65 feet ■ Typical Service: Heavy ■ Ideal when extremely high hook height is necessary ■ Better hook height ■ Most overhead space ■ More lift ■ High speed

UNDER RUNNING CRANES

Under running cranes are often called “underhung,” because the crane wheels are supported by the bottom flange of the crane runway beams acting as the crane rail.

These types of cranes can allow you to maximize your facility’s floor space for production and storage of material because they are supported by the ceiling trusses or the roof structure. Or, they can be designed to utilize an existing support structure (if adequate), or run on a newly-engineered support structure.

- Typically designed for lighter service / lower capacity applications
- It can become impractical and expensive to engineer an under running crane to make it a high-capacity piece of equipment
- Offers excellent side approaches and maximize utilization of the building’s width and height when supported by roof or ceiling structures
- Hook height is less than top running because bridge and hoist hang underneath runways

WHAT IS A MONORAIL CRANE?

Most commonly found in a production or assembly line, this type of crane uses a trolley to carry the hoist along a single path. Monorail cranes do not utilize a bridge or girder design—instead, the trolley is designed to connect to an I-beam, often already built into the ceiling structure, and runs along the flat surface (flange) on the bottom of the beam. They can also utilize a configured support structure as well.



Material can be run back and forth in a straight line, or the rails can be designed with curves, branches, switches, and with changes in elevation. Monorail cranes follow a singular path and are designed for lifts that do not require the side-to-side trolley movement provided by the bridge in an overhead or gantry style crane.

Monorail cranes are perfect for lifting applications where a full-blown crane design is not required. They're a cost-effective and versatile solution for many assembly line and production applications.

WHAT IS A WORKSTATION CRANE?

Workstation cranes are designed to allow the operators an ergonomic means of moving or lifting loads with limited effort in a smaller size work area. Workstation cranes are typically lighter-duty systems—lifting materials from 150 lbs. up to 2 tons in capacity. They're designed for repetitive lifting of loads, the positioning of loads, increasing worker productivity and ease of work flow.



They can be built and installed easily using a modular design for greater flexibility and do not require an existing support structure for installation.

Workstation capacities and features:

Capacities from 150 to 4,000 lbs.

Rectangular coverage with up to 34' bridge and 124' runway standard

Standard support distances of 20, 25, and 30 feet

Custom support distances are available

Easy to move and position loads

Modular design for greater flexibility

Doesn't require existing support structure

WHAT IS A GANTRY CRANE?

A gantry crane is similar to a bridge crane, but instead of moving on suspended runways, the crane uses legs to support the bridge, trolley, and hoist. These legs travel on rails that are embedded in, or on top of, the floor or ground structure.

A gantry crane is ideal when you require a lightweight and quick knockdown crane for applications that require portability and corrosion resistance. They are also considered when there is a reason not to incorporate an overhead runway system and are most traditionally used in outdoor applications where full beams and columns can't be installed, or they can be used below an existing bridge crane system. Gantry cranes are commonly found in shipyards, railyards, special construction sites like where a bridge is being built, or in places like steel mills where overhead room may be an issue.



ADJUSTABLE GANTRIES

Used for warehousing applications requiring the movement of materials through aisles, doorways, around obstacles, and over or under obstructions. Welding and fabrication shops can use gantry cranes for lifting parts and equipment into position.

PORTABLE GANTRIES

Used for plant maintenance applications requiring replacement and relocation of equipment and machinery. Service truck applications requiring quick knockdown for fast, easy movement to and from a work site.

TRACK-MOUNTED GANTRIES

Used for applications requiring lifting and moving heavy loads over a fixed route, either manually or motorized.

Moving and lifting heavy materials doesn't have to involve installing expensive equipment or permanently changing your facility. Gantry cranes do the job efficiently and economically and are ideal lifting solutions because:

- No permanent installation is required—making gantry cranes ideal if you rent or lease your facility
- Quick and easy assembly and tear-down
- Portable design allows for use in more than one facility or work area

WHAT IS A JIB CRANE?

Jib cranes come in a number of different styles and types but do not utilize a runway or track system. They can be stand-alone or column / wall-mounted and offer a wide variety of capacities, heights, and spans. Jib cranes are space-saving, economical, and are ideal for jobs like maneuvering or moving items for assembly within a smaller radius. They can typically offer 180-360° of rotation, and even small ones can hoist several tons of material.



The best way to determine what type of jib crane is best for your application is to consider the following:

- What type of operation or usage will this equipment see?
- What height clearances or spans are required in this work area?
- Is there an available support structure for mounting, or will this be a standalone unit (floor, wall, and ceiling)?
- What other special options or considerations are required?
- What is the available budget for the system and installation?



“

Overhead cranes come in all different sizes, shapes, and capacities and selecting the right type of overhead crane is essential to streamlining your production processes.

WHICH TYPE OF OVERHEAD CRANE IS BEST FOR YOUR BUSINESS?

Hopefully, you have a better understanding of the best type of overhead crane for your business’ specific lifting requirements. You may realize now that you don’t need a full overhead crane installation, and maybe a workstation crane or monorail crane is the ideal setup for your specific material handling needs.



Or, maybe you realize that there will be some additional fabrication or engineering required to install an overhead bridge crane into the existing structure of your building.

Take the time to consider the following:

Number of cranes required

Crane capacity

Hoist capacity

Number of lifts per hour

Percent of lifts at or near capacity

Span hook height

Existing runways / support structure in place

Operating conditions

Other special considerations



CHAPTER FOUR

PURCHASING AN OVERHEAD CRANE: FROM CONSULTATION TO INSTALLATION

Understanding the process and expectations of buying an overhead crane—from the first contact with an overhead crane manufacturer, through the consultation and quote processes, and all the way up to installation.

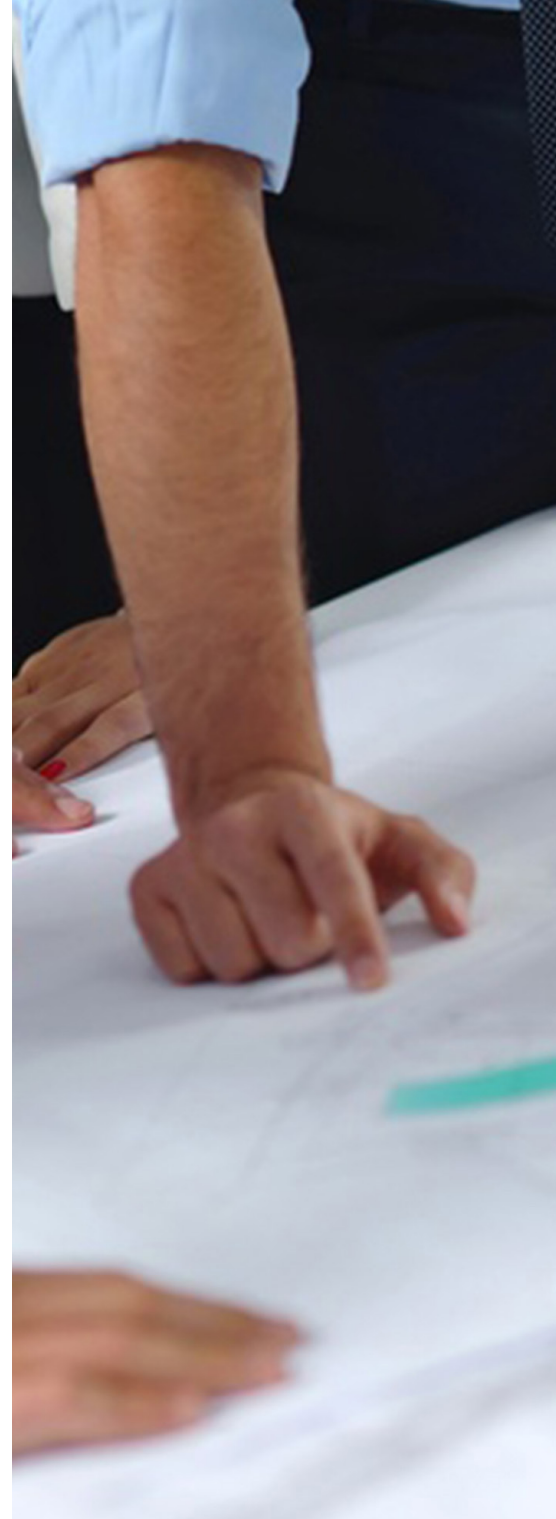
PURCHASING AN OVERHEAD CRANE: FROM CONSULTATION TO INSTALLATION

If you've determined that your business can benefit from the installation of a new overhead crane system, then you're probably in the beginning stages of researching companies who make or build overhead cranes. An overhead crane is a complex and expensive piece of equipment. Prior to financing an overhead crane, your bank may want you to meet with a couple of different overhead crane manufacturers to receive multiple quotes on the installation of an overhead crane system.

An overhead crane is a complex and expensive piece of equipment. Prior to financing an overhead crane, your bank may want you to meet with a couple of different overhead crane manufacturers to receive multiple quotes on the installation of an overhead crane system.

Even if you aren't financing your new crane equipment, it's still a good idea to bring in a couple of different overhead crane companies to look at your facility and provide a scope of work and provide their expert opinion on the right overhead crane for your business' needs.

The goal of this chapter is to help you understand what you can expect from an overhead crane consultation and walk you through the process from the first contact with a crane manufacturer up into the installation of the overhead crane system.



FIRST CONTACT WITH AN OVERHEAD CRANE MANUFACTURER

So, you've done your research, and you're ready to take the next steps and bring in a couple of different overhead crane builders to come to your facility and bid on the project. If you filled out a contact form on an overhead crane manufacturers' website, then a salesperson will reach out via email or telephone to establish contact and introduce themselves. What they're trying to do is build a customer profile with some base-level information, so that they can get you set up in their system and understand how they can best help you solve your lifting problems.

The next step will be to schedule a time and day for them to visit your facility. They'll typically want to schedule a time to come out when production is up and running—so, don't worry about scheduling a consultation on the weekends or during off-hours.



It's actually more beneficial to the overhead crane sales team to see what equipment is currently in use, see how it operates, and see where it's located in the building. This helps them to understand how they might fit a new crane system into your building's existing infrastructure and cause as little disruption to your existing processes as possible.

What to expect during the first contact:

They'll introduce themselves and their company and discuss their capabilities

Learn a little bit about who you are and what you do

Learn about who your company is and what your business does

Learn about the different types of industries you serve

Learn more about your current lifting or material handling capabilities and ask about any problems, or inefficiencies, that you're currently experiencing

WHAT HAPPENS DURING AN OVERHEAD CRANE INSTALLATION?

Things to consider before meeting with an overhead crane manufacturer:

- ✓ A description of the lifting application and the environment
- ✓ Will the crane be installed indoors or outdoors?
- ✓ Are there any environmental factors like a chemical or hot metal environment?
- ✓ Are there any noted obstructions that may hinder access during installation?
- ✓ Existing cranes in facility—quantity, brands, and capabilities of existing equipment
- ✓ Total number of cranes needing to be installed
- ✓ Crane capacity / max hoist capacity
- ✓ Number of picks, or lifts, per hour
- ✓ Span, or length, of crane and runway system
- ✓ Will this be a new runway system, or can they utilize existing support structures?
- ✓ What is the distance between columns? Will the runway be ceiling mounted?
- ✓ Can it be mounted to building columns or can it be tied back to the building?
- ✓ Hook height / total lift height required
- ✓ Power supply (480V, 230V, etc.)
- ✓ Radio controls—yes / no?

Before the consultation, make sure the crane builder knows:

Is there any specialized safety training required for a third-party to enter your facility? Will there be any type of drug screening required before they can come on-site?

Will they need to provide their own personal protective equipment (PPE), or is there any special PPE required to gain access to your facility (hard hats, steel toe shoes, Kevlar sleeves, heat or fire resistant clothing, etc.)?

Is this a new construction project or will the crane be going into an existing structure? If it is a new construction project, they may only need to see the prints for the new construction to provide a quote or bid on the project.



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Even if you aren't financing your new crane equipment, it's still a good idea to bring in a couple of different overhead crane companies to look at your facility and provide a scope of work and provide their expert opinion on the right overhead crane for your business' needs.

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ADDITIONAL CONSIDERATIONS

Other optional information that they may gather can include customer preferences on the speed of the bridge, trolley, and hoist, and any preferences on upgrades like walkways, cabs, variable speed controls, or anti-collision technologies.

It may be beneficial to have some of your shop employees speak with the sales rep during their walkthrough. Your employees are the most knowledgeable about the jobs or tasks that they perform, and how they do them. They can provide additional insight into how their job's efficiency and production can be improved with the installation of an overhead crane system.

The sales rep will also take some general measurements and may sketch out some quick drawings of the building layout, or take pictures to take back with them to their office. Typically, they're looking to provide visual or written documentation of the following items:

- The space or area where the crane is going
- Any obstacles that need to be worked around
- Distance and access to the building where the crane will be installed
- Floor clearance and overhead clearance
- The area where the girders will be taken from the floor to the crane level

If the salesperson can provide as much detail as possible to their team of estimators and engineers, then they can ensure that their team has a full understanding of the project and they can spec out and design a crane that is suitable for your unique building and lifting requirements.

Once the salesperson has gathered all of the information needed to design an overhead crane system for your facility, they'll head back to regroup with their team and begin the quotation process for your crane installation project.

WHAT HAPPENS AFTER AN OVERHEAD CRANE CONSULTATION?

Overhead crane manufacturers will typically have their sales reps, engineers, estimators, and project managers all involved in the quotation process. They'll review the notes or worksheet completed by the salesperson, any prints or drawings provided by the customer, and any sketches or pictures taken during the site assessment.



From there, they'll begin filling in the blanks and putting an estimate together of how much the project will cost.

What's included in an overhead crane quote?

Project management

Engineering and design of the overhead crane system

Sourcing of all overhead crane parts and components

Design and manufacturing of new overhead runway systems (if there are no existing runways that can be utilized)

Any disassembly and removal of existing overhead crane systems

Load test at time of electrical start-up

Timeframe of project

Payment terms

TURNAROUND TIME FOR AN OVERHEAD CRANE QUOTE

There are all different types of overhead cranes, and the turnaround time of the quote can vary depending on the type of crane, the complexity of the crane's design, and what service classification it falls under.

Simpler cranes like jib cranes and workstation cranes have a quick turnaround time—manufacturers can typically turn a quote around for a jib or workstation crane in 1-3 business days. A simple modular crane with a base trolley, hoist, and bridge design may take 5-7 business days to produce a quote.



A quote for specially-designed cranes, or cranes with extra engineering built-in, can take 10-14 business days, or even a month, to produce for projects with a large number of cranes or distinct characteristics. The reason for this is that the design of the crane is more complex—meaning that the engineering team may need extra time to develop a solution to a lifting challenge, or they may need extra time to contact vendors and receive pricing or specifications for specific crane parts and components. If the manufacturer does not do the overhead crane installation themselves, they may also need time to sub-contract an installer and get an estimate from them as well.

Additional charges related to tax, freight, and any fees associated with obtaining permits may or may not be built into the quote, so make sure that you clarify whether there are any additional costs that are not included in the quote. You'll also want to make sure that you clearly understand the crane builder's payment terms, including any money or deposit required upfront, and also what project milestones will require additional payment along the way.

SELECTING AN OVERHEAD CRANE COMPANY TO PARTNER WITH

Once you've received a satisfactory number of quotes from overhead crane builders, the next step is to compare the quotes and select the company that you feel most comfortable with.

Remember, the price shouldn't be the only determining factor when selecting an overhead crane company to partner with. An overhead crane system is a complex and critical piece of equipment used to improve your business' efficiencies and production flows and you should only partner with a company that you truly feel comfortable with.

When reviewing overhead crane quotes, consider the following:

- ✓ Did the company or salesperson take the time to explain the quote and walk you through it to make sure that you understand and are comfortable with the breakdown of costs?
- ✓ Did they quote the project to your exact specifications? Make sure that any specific details or requirements that you provided them during your consultation are addressed in the quote.
- ✓ Have they committed to meet your project's specific deadline /timeframe?
- ✓ Ask for references and contact them to ask the following questions:
 - Were they happy with their partnership?
 - Were they happy with the quality of work?
 - Did the project stay on track and within budget?
 - Did the manufacturer meet agreed-upon specifications?

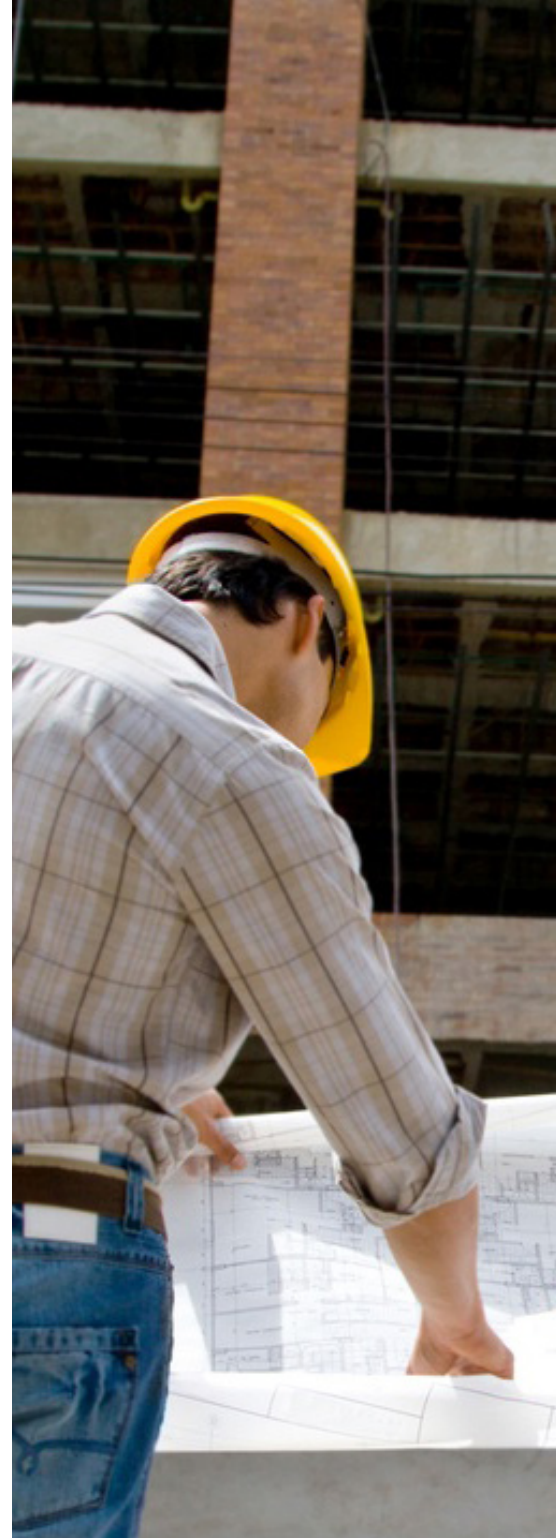


WHAT HAPPENS ONCE YOU'VE CHOSEN A COMPANY TO WORK WITH

Once you've selected who you want to partner with, you can reach out to them and let them know that you want to work with them moving forward. They may have to schedule another meeting so that you can meet more members of their team and they can meet additional members of your team. You'll review and finalize the scope of the project and then they will provide you with an agreement that will be signed—binding both parties to the agreements within.

From there, the crane manufacturer will provide you with any approval drawings and/or calculations. Depending on the magnitude of the project, approval drawings take 1-3 weeks to complete. Once authorized signatures are provided on the drawing, they will begin sourcing all of the crane components and begin building the crane(s).

If the manufacturer isn't doing the installation or is receiving assistance from a third-party during the installation, they'll typically schedule an appointment prior to the scheduled date to come out and look at your facility. This helps to ensure that all parties can view the area where the crane will be installed, identify any obstructions that may require special equipment for installation, and familiarize themselves with the facility so that there aren't any surprises when they show up to do the installation.





CHAPTER FIVE

HOW TO COMPARE OVERHEAD CRANE QUOTES

Price shouldn't be the only factor when selecting an overhead crane company to partner with. Read on to get a comprehensive understanding of an overhead crane quote and what criteria you should use to compare multiple quotes.

HOW TO COMPARE OVERHEAD CRANE QUOTES

Partnering with an overhead crane manufacturer is a big decision and one that should not be taken lightly. The design, manufacturing, and installation of an overhead crane system is an enormous investment, but a necessary one if you want to improve your company's efficiency and workflows.



We understand that you'll want to take your time and do your research and due diligence before selecting an overhead crane company to partner with. We also know that each overhead crane project is unique and needs to be quoted accordingly.

For this reason, we wrote this article to help you better understand the overhead crane quotation process. We hope this will allow you to partner with an overhead crane company that you feel most comfortable working with!

GET MULTIPLE QUOTES FOR AN OVERHEAD CRANE INSTALLATION

If you're looking to finance your overhead crane equipment, then your bank may require you to have at least three overhead crane manufacturers bid on the project.



Even if you know you won't be financing the equipment, you should do your due diligence and have a couple of different crane companies look at your facility, provide a scope of work, and provide their expert opinion on the right overhead crane for your business.

GAIN PERSPECTIVE

Getting a couple of fresh sets of eyes on the project will help provide different options and opinions on the project. Each overhead crane builder may have a different idea or approach to go about solving your lifting and material handling challenges. For example, one company may identify a potential problem or issue that another company overlooked. Or, if you have existing cranes in your facility, one company may want to completely replace them with new units, while another company may have a strategy for upgrading or modernizing your existing equipment at a significant cost-savings to your business.

KEEP COSTS COMPETITIVE

By having multiple manufacturers bid on your project, you will get a better sense of the true cost of buying and installing an overhead crane. Also, if a company knows that they aren't the only ones bidding on the project, they will tend to provide a more comprehensive and competitive estimate and may be more willing to negotiate on the final purchase price to get your business.

HOW TO FIND COMPANIES WHO MAKE OVERHEAD CRANES

It's important to find the right company to partner with for your overhead crane project. There are a couple of different resources that you can use to research overhead crane manufacturers including referrals, industry events or trade shows, and utilizing the internet for research.



ASK FOR REFERRALS

Utilize industry connections to find out if other companies you know or work with have an overhead crane on-site.

Reach out to current customers, vendors, or suppliers and find out if they utilize overhead lifting devices. If so, find out who they worked with, if they were happy with the partnership, and ask them if they'd be willing to provide a contact or make an introduction on your behalf.



ATTEND INDUSTRY TRADE SHOWS OR EVENTS

You may luck out and find out that an overhead crane company that specializes in lifting equipment is already scheduled to exhibit at an industry show you'll be attending.

Take a few minutes to visit the trade show's website prior to the event and look at the list of exhibitors. See if there are any companies you'd be interested in speaking with—you may be able to contact them and schedule a quick introduction or consultation during the event.



DO YOUR RESEARCH

Use Google or other search engines to find local crane manufacturers that you might be able to work with. You may want to use search terms like, "overhead crane companies Cleveland OH" or "overhead crane builders Charlotte NC."

Adding in a qualifier, like a city or a state that you're located in will help to return companies that are located nearby. This could result in significant cost-savings to coordinate travel and freight when it comes time for the installation.

WHAT FACTORS AFFECT THE COST OF A CRANE?

When a crane manufacturer comes on-site for a consultation, they'll try to identify your specific lifting challenges, as well as evaluate your facility to get an understanding of the building's floor space, support structures in place, and the size and capacity of the crane that they'll be building.



Prior to their individual visits, it may help to put together some notes or a cheat sheet about your overhead lifting project. This will remind you to ask each company the same questions and also to provide them with the same specifications for your project so that each company builds their quote off of the same information.

WHAT FACTORS AFFECT THE COST OF A CRANE?

TOTAL NUMBER OF CRANES

How many cranes will need to be designed, built, and installed?

POWER

Will the crane be powered by electricity, hand-powered, or air-powered (pneumatic)?

NUMBER OF LIFTS PER HOUR

What is the duty cycle of this crane? Will it be making 2-5 lifts per hour at only 50% of its rated capacity? Or, will it be making 10-20 lifts per hours at, or near capacity, each time?

Cranes in higher service classifications will require additional engineering and specialized components to solve complex lifting challenges.

HOOK APPROACH

This is how close the crane's hook can get to the end of a bridge or runway and considerations for the trolley hook approach, as well as the crane/runway hook approach. An under running crane will have a better trolley hook approach than a top running crane, so that may be a consideration if your crane needs to pick, or place, material near the walls or support structure within your facility.

LIFT

Lift is how high into the air your material needs to be raised. When a team is calculating the lift capabilities of a crane, the following is taken into consideration:

- The height of any machinery or equipment on the floor that needs to be cleared
- The height of any racks or shelves that the material needs to be placed on
- The height or elevation of any pits, mines, or excavation sites that material will be lifted out of
- Overhead obstructions that can limit the hook height
- Elevation of an existing runway

CAPACITY

The capacity is the maximum load which may be applied to the crane, the hoist, or below-the-hook lifting device, in a particular working configuration and under a particular condition of use. A crane's capacity is a variable that takes many different factors into consideration and can best be calculated by the crane manufacturer. They can determine capacity based on their understanding of:

- The weight of the material that you'll be lifting
- The rigging or below-the-hook lifters that will be attached
- Any other considerations for future use or capabilities

WHAT FACTORS AFFECT THE COST OF A CRANE?

RUNWAY LOCATION

Is there an existing runway in place? Is it sufficient to support the new crane structure? If a new runway system needs to be built, it will need to be determined if it will be mounted to new support columns, or if it can be tied back to the building.

- Is the building capable of supporting the new crane system? Is the flooring able to support the loads of the crane?
- Consider any overhead or wall obstructions that may require additional design and engineering considerations. OSHA requires 3" clearance above the crane and 2" of clearance on the sides of the crane.
- Support columns cannot be put over drains, or on cracked or broken concrete.

OPERATING ENVIRONMENT

A severe, obstructed, or dangerous operating environment will affect the cost of an overhead crane:

- Environmental factors such as high heat, the presence of chemicals or fumes, steam, dust, or excess moisture can require special metal coatings to protect and enhance the operating life of the crane. It can also require special equipment or protection (PPE) for the installers during installation.
- Obstructions can affect the cost of an overhead crane if the installers don't have clear access to the area to remove an existing structure or install a new one.

OPERATING SPEED

The faster that the crane needs to operate, the more it will cost to design, source, and configure the individual crane components. A process crane making 10-20 lifts per hour will need a faster bridge, trolley, and hoist than a maintenance crane that requires more precision and slower speeds.

SPAN

The horizontal distance center-to-center of the runway rails.

Cranes with large spans will be more expensive than smaller-span cranes due to the need for engineered girders.

RECEIVING PROPOSALS

Once you've gone through the consultation process, a crane manufacturer will re-group with their team of estimators, engineers, and draftsmen and begin putting together a comprehensive proposal.

This process can take anywhere from 3-30 business days depending on the number of cranes being quoted, the complexity of the project, and the sourcing of crane components. Once they've completed this process, they'll get back in touch with you to submit their official bid for the project.



Keep in mind that price should never be the only factor when selecting an overhead crane company to partner with. An overhead crane system is a complex and critical piece of equipment used to improve your business' efficiency and production flows, and you should only partner with a company that you truly feel comfortable with.

THINGS TO EVALUATE WHEN COMPARING OVERHEAD CRANE QUOTES

INCIDENTALS

Any additional charges that may not appear in the quote. These can include:

- Price increases or surcharges tied into materials—like steel, for example
- Taxes, or freight charges, that may not have been included in the estimate
- Any additional fees related to obtaining permits, special equipment, or obstructed access for installation that may increase the cost of the project

REFERENCES

Have they provided, or can they provide, references for you to reach out to? Ask other companies that they've done business with if they were satisfied with the following:

- Overall relationship with the crane builder
- Overall quality of work
- Builder's commitment to keeping project on track and within budget
- Delivery of crane to agreed-upon specifications

PROJECT SPECIFICATIONS

For a project of this scale, it's so important that each company bases their quotes off of the same information and specifications so that you can make a true side-by-side comparison of each company's capabilities and pricing.

If you get one bid that seems extraordinarily high or low, review their quote carefully and make sure that the specifications look right.

You can also black out any pricing information from quotes you received from other bidders, and ask the outlying company to review the other quotes that you received—this ensures that what they're quoting is a true apples-to-apples comparison and may allow them to adjust their quote, if necessary.

WARRANTY

Make sure you have a clear understanding of the manufacturer's warranty policies on workmanship, components, and materials.

PROJECT TIMELINE

Have they committed to meeting your project's specific timeframe and the window for installation?

FOLLOW-UP

Did a representative from the company contact you to explain their quote and make sure that you understand and are comfortable with the breakdown of costs?



CHAPTER SIX

WHAT IS THE COST OF AN OVERHEAD CRANE?

The type of crane, the span, the capacity, the duty cycle, operating environment, and any additional building or structural considerations can all add to, or lessen, the cost of an overhead crane.

WHAT IS THE COST OF AN OVERHEAD CRANE?

If you're just starting your research, we understand that the process of buying and installing an overhead crane can seem somewhat overwhelming. Every day we get customers who reach out to us to quote a new overhead crane installation. They may be moving into a new building, replacing an old or outdated piece of equipment, or may be buying an overhead crane for the first time and are looking to expand their business' material handling capabilities.



First, we'll discuss the factors that affect the cost of any type of crane, and then we'll dive into the prices of common types, sizes, and configurations of overhead cranes.

WHAT AFFECTS THE PRICE OF AN OVERHEAD CRANE?



To make sure that you get the right type of overhead crane for your business, you should be ready to address the following information when you contact an overhead crane manufacturer to bid on your project:

- | | |
|---|---|
| ✓ The type of crane you need | ✓ How fast the crane will need to be |
| ✓ The capacity, or maximum rated load, your lift requires | ✓ If you need a runway, the length of your bay that the crane will need to traverse |
| ✓ The estimated height of your crane, or required lift | ✓ How often you will use your crane |
| ✓ Any disassembly and removal of existing crane systems | ✓ The environment that your crane will be operating in |
| ✓ The span you need to cover under the crane, or horizontal distance center-to-center of the runway rails | ✓ Any special building or structural requirements |

WHAT TYPE OF OVERHEAD CRANE DO YOU NEED?

An overhead crane is a complex piece of equipment, and there are many different types of overhead cranes to choose from. The complexity of the overhead crane components required to operate the crane, the engineering required to design the crane, and the application (industry or materials being lifted) will determine what type of crane you will need.



For example, an 80 foot, 20-ton double girder bridge crane will cost significantly more than a 40 foot, 10-ton double girder bridge crane.

WHAT IS THE SPAN OF THE OVERHEAD CRANE?

The span, or distance between the runway rails, is one of the biggest contributing factors to the cost of an overhead crane.



The longer the crane's span, the more material is required to build the crane girders. This added material increases the crane's weight, which will also increase the cost of the runway if required.

WHAT IS THE CAPACITY OR MAXIMUM RATED LOAD?

An overhead crane's capacity is the maximum load which may be applied to the crane in a particular working configuration, and under a particular condition of use.

When the manufacturer comes on-site to provide a consultation, they can calculate the capacity based on their understanding of:

- The size and weight of the material that you'll be lifting
- Below-the-hook lifting devices that may need to be used
- Single hoist or double hoist configuration
- Any other considerations for future crane usage or capabilities



A crane that requires a large capacity, a large span, or severe service classification, may require a double girder design—meaning there are two beams that make up the bridge. These girders can be designed in a rigid welded steel box girder design for added reinforcement. This type of setup will be the most expensive, as there are significant increases in labor and material charges to weld and fabricate the girders.

WHAT IS THE LENGTH OF THE RUNWAY?

The runway length is the largest contributor to the runway cost itself. This length can also play into the cost of the crane.



If you need to make multiple picks per hour and have a long runway, then you may need a faster trolley and hoist to move up and down the runway quickly. The additional speed may require the components of the crane to be sized to a higher capacity. A faster crane that travels the length of the building may also require the operator to work from within an exposed or enclosed cab—which is more expensive than radio or pendant controls.

WHAT IS THE OPERATING ENVIRONMENT?

A severe, obstructed, or dangerous operating environment where the crane will be installed and running will affect the cost of an overhead crane in several different ways. Environmental factors such as high heat, the presence of chemicals or fumes, steam, dust, or excess moisture can require special metal coatings to protect and enhance the operating life of the crane. The individual components of the crane will also need to be sourced to ensure that they can hold up and withstand the operating environment.



Facilities like wastewater treatment plants, fertilizer plants, and oil and gas processing facilities require explosion proof cranes. This means that the equipment cannot generate any type of spark. These types of cranes can utilize a specific pneumatic air-powered system, or a specially-designed electrical system to make them explosion proof—however, these can be expensive to design and install.

Cranes that will be used outdoors will need additional protective coatings to prevent corrosion and will require weatherproofing to seal out moisture and dust or dirt. Stainless steel or galvanized components will also need to be sourced to ensure that they can handle exposure to the elements and don't rust. A dangerous operating environment will also require special equipment and protection (PPE) for the installers during installation. Any obstructions to the installation area can add to the cost if the installers don't have clear access to the area to remove an existing structure or install a new one.

WHAT IS THE SERVICE CLASSIFICATION OR DUTY CYCLE?

There are six different classifications of overhead cranes, specified by the Crane Manufacturers Association of America (CMAA).

An overhead crane manufacturer will determine what type of crane classification they'll need to build for your specific lifting application, using the following criteria:

- How frequently will the crane be used?
- How quickly will the crane need to transfer equipment or materials?
- How many lifts per hour will the crane need to perform?
- Will the crane be needed for regular or frequent service?
- How far does the crane need to move material in your facility?
- What is the average rated load of the materials that will be moving?
- How often will the crane be making lifts at full capacity?
- In what type of environment will the crane be operating?

Class A and Class B Cranes will be your least expensive option because they'll be used mostly for maintenance or the initial installation of equipment. They're used infrequently, and there are long periods of idle time between lifts.

Class C Cranes will be a middle-of-the-road type crane. There may be some additional engineering built-in to the project for a specific need, but they typically utilize a basic hoist, trolley, and bridge design. They're used moderately to handle loads at or around 50% capacity and are in service for about 5 to 10 lifts per hour.

Class D and Class E Cranes, often referred to as process cranes, are built for a specific need and are more heavy-duty. They may be constantly running in excess of 50% of the rated capacity, and they're making 15 or more lifts per hour. They have more engineering or customized solutions built into the design for the specific lifting application—which increases initial design and engineering costs for the project.

Class F Cranes must be capable of handling loads approaching rated capacity continuously, under severe service conditions, throughout their lifetime. They'll be extremely expensive due to additional costs related to design and engineering, sourcing of heavy-duty components, materials and labor, and installation.

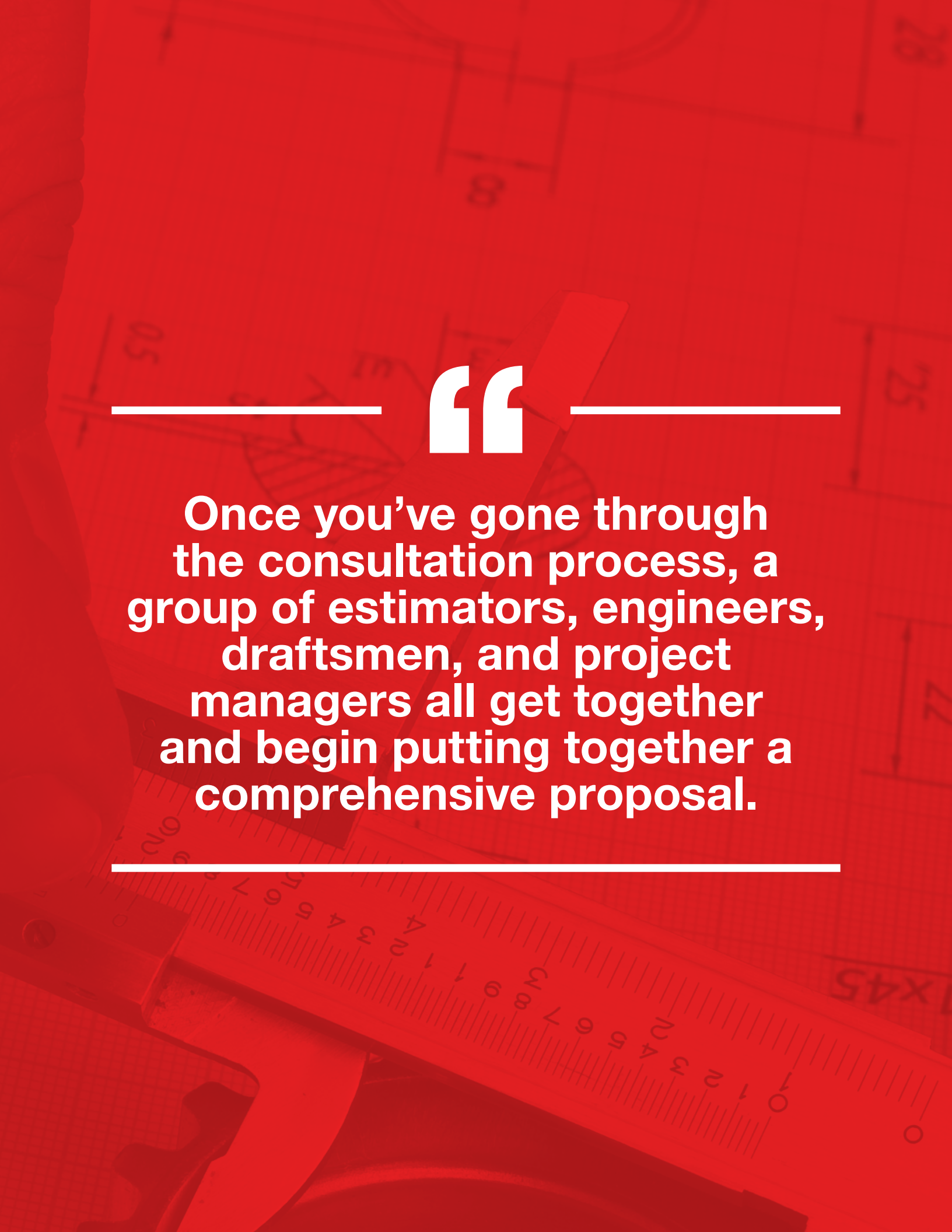
WHAT ARE THE BUILDING OR STRUCTURAL REQUIREMENTS FOR OPERATION OR INSTALLATION?

If an overhead crane is being installed in a new construction facility, then typically the runway beams will be installed during the construction process, and the crane manufacturer won't need to include the runway structure in the quotation process. Care must be taken with your construction contractor, as crane runway tolerances are much tighter than standard construction codes. Repairing a runway that is out of tolerance can add significant cost to the installation.



If a crane is being retrofitted into an existing building, there will be added costs for the design, fabrication, delivery, and installation of the crane's runway system.

Most crane manufacturers don't offer in-house structural repair or certification services, so you'll also have to consider any additional costs related to having concrete contractors or structural engineers provide a consultation of your facility. They'll need to determine if the existing building structure and foundation can handle the additional loads generated by the installation of an overhead crane system.



“

Once you’ve gone through the consultation process, a group of estimators, engineers, draftsmen, and project managers all get together and begin putting together a comprehensive proposal.

WHAT IS THE COST OF AN OVERHEAD CRANE?

Once you've gone through the consultation process, a group of estimators, engineers, draftsmen, and project managers all get together and begin putting together a comprehensive proposal.

The quotation process can take anywhere from 3-30 business days depending on the number of cranes being quoted, the complexity of the project, and the sourcing of crane components. Once they've completed this process, they'll get back in touch with you to submit their official bid for the project.

Now that you have an understanding of all of the different considerations and factors involved in determining the cost of an overhead crane, here's what you can expect to pay, on average, for the most common sizes and configurations of overhead cranes.

BRIDGE CRANE

\$25,000-
\$30,000

- 5-ton capacity
- Span of 40 feet or less
- Base design trolley, hoist, and bridge

PORTABLE GANTRY CRANE

\$6,000

- Capacities range from 1 ton to 5 tons
- Spans from 8 feet to 30 feet
- Heights under boom from 10 feet to 20 feet



ENGINEERED GANTRY CRANE

\$70,000-
\$80,000

- 5-ton capacity
- 40-foot span
- Typically 1.5 to 2 times the cost of an equivalent bridge crane
- Hoist, trolley, and railway included
- Can be single-leg or double-leg design

MONORAIL CRANE

\$10,000

- 2-ton capacity
- 20-foot span
- Includes hoist
- Cost is most dependent on the length of the track and support structure: will it be floor-mounted or hung from the ceiling?

WORKSTATION CRANE

Anywhere from
\$2,000-\$80,000

- Capacities range from 150 lbs. to 2 tons
- Coverage with up to 34-foot bridge span and 124-foot runway
- Up to 17 feet high clearance for free-standing design
- Free-standing or ceiling-mounted can affect price
- Wide price range is very dependent on span and length of runways

JIB CRANE

Anywhere from
\$500-\$25,000

- Capacities from 150 lbs. to 5 tons
- 4-foot to 30-foot spans
- Height under boom from 8 feet to 30 feet
- There are many different types of jib cranes, including: free-standing workstation (typically lighter capacity) and structural (can be designed up to 10-ton capacity)
- Do you need a motorized crane, or will it be manually-powered?
- What is the degree of rotation required?

Note: These prices do not include installation costs unless otherwise specified.





CHAPTER SEVEN

TOP 10 REASONS TO CONSIDER FINANCING YOUR OVERHEAD CRANE

Investing in an overhead crane system can be one of the most useful and utilized pieces of equipment you can add to your business to increase production, workflows, and bring in more profit.

TOP 10 REASONS TO CONSIDER FINANCING YOUR OVERHEAD CRANE EQUIPMENT



If you're considering adding an overhead crane to your facility, then you already know that having the right equipment in place can be the difference between maintaining the status quo and struggling to make ends meet, or continuing to grow and improve your business.

An overhead crane can be a critical piece of equipment for a business' manufacturing or material handling operations. However, paying the full amount of money upfront for an overhead crane can be a significant investment that may seem out of reach for many small to mid-sized business owners.

One of the concerns that many of our customers have is how to pay for the crane equipment that they know will increase their productivity and save them money in the long run. In this article, we're only going to discuss securing a loan from a lender to purchase a new overhead crane system. Typically, an overhead crane would not be a piece of equipment that would be leased because the installation of an overhead crane is a semi-permanent to permanent operation tied into the structure of the building. Removing and replacing the crane every couple of years would not be a feasible option for most businesses.

Benefits of using an overhead crane:

A crane works 2-3 times faster and more efficiently than a tow motor or group of workers can

Overhead cranes can work in extreme environments

Cranes can handle hazardous materials like hot metals, chemicals, and heavy loads

They help workers cut down on repetitive motion injuries, reducing workplace accidents and workers' compensation claims

An overhead crane can help your business increase production, workflows, and bring in more profit

THE TOP TEN REASONS TO FINANCE AN OVERHEAD CRANE

1

IMPROVE CASH FLOW

When you finance an overhead crane system, you don't have a significant amount of cash tied up in your equipment. You're free to use your available cash for other investments that will help to grow or improve your business, produce revenue and income, and ensure that the crane system that you purchase improves your efficiency and earns more profit.

2

INCLUDE SOFT COSTS IN YOUR FINANCING

Many lenders will allow you to roll in and include 100% financing for other "soft costs" associated with the cost of an overhead crane, including things like:

- User or operator training
- Freight and delivery
- Any modifications or additions to building structure
- Installation costs

By rolling in allotments for these added expenses, you can ensure that you'll have the money to cover them, and their associated costs won't disrupt your cash flow.

3

PRESERVE OTHER LINES OF CREDIT

Financing your overhead crane system leaves other credit options available from your bank or other sources to take advantage of future opportunities to invest in the growth and development of your business.

4

FLEXIBLE FINANCING

A business' income tends to see ups and downs over the course of a year. Some lenders will customize a lending plan unique for their customer's business that's built around their needs and sets them up for success. This can include a combination of options including varying monthly payments to match seasonal ebbs and flows in revenue, as well as varying payments based on accounting and tax schedules.

5

STABILIZE YOUR MONTHLY EXPENDITURES

By setting a fixed or variable monthly payment, you set yourself up for more accurate budgets and forecasts because you know exactly how much you'll be paying towards your overhead crane loan each month.

This also gives you a better understanding of what you can and cannot afford when it comes to growing your business, including:

- Payroll and hiring decisions
 - Overhead and operating expenses
 - Inventory and material costs
 - Acquiring or upgrading additional equipment
 - Marketing and sales support
-

6

MORE EQUIPMENT OPTIONS AVAILABLE TO YOU

Because you aren't absorbing the full cost of the overhead crane system upfront, financing allows you to truly select the right crane for your business. Instead of making cost-based decisions like going with a lower capacity crane, or selecting a crane design that's not ideal for your facility, you can select the right type of crane for your business needs.

Because the monthly payment is a small portion of the total cost of the equipment, financing allows a greater amount of equipment for a given dollar allocation. This means you may be able to plan more for the future and select a higher-end crane system that allows room for your business to grow into its full capabilities and capacities.

7

BENEFIT FROM INFLATION

If your business does well due to inflation and you begin to see an increase in profits and revenue, you can actually benefit from inflation. For a fixed-term payment, if you already owed the money before inflation occurred, the inflation actually benefits the borrower. Because you now have more money available to you, and your payment is still the same, this can result in less interest for the lender if you use the extra money to pay off the loan early.

8

UPGRADE OR MODERNIZE EQUIPMENT YOU OWN

While leasing allows you to temporarily use a piece of heavy-duty equipment, leasing an overhead crane doesn't make as much sense because you're installing a fairly permanent piece of equipment into the actual support structure of your facility.

An advantage to owning an overhead crane system is that you can always upgrade or modernize the components of your crane to extend the investment in the equipment, should your production or material handling needs change down the road.

Older cranes can be improved to a higher level of productivity and safety through a modernization upgrade and refurbishment program, including upgrades to:

- New and more efficient hoists and drives
- Increased capacity
- Speed and motion controls
- Cab to pendant conversions
- Radio and infrared remote controls
- Electrification systems
- Major mechanical components

9

SHOP LENDERS FOR COMPETITIVE RATES

Most lenders will require you to get multiple quotes before providing a loan for an overhead crane or another piece of heavy-duty equipment. The reason for this is that it provides a more complete price range for the project and also identifies any outliers.

However, you can also do your due diligence and solicit multiple offers from different lenders to find the best loan for your business. By contacting multiple lenders, you can select a lender to partner with based on the following criteria:

- Most competitive interest rates
- Terms
- Willingness to provide flexible or varying payments
- What other "soft costs" can be included in the loan

10

PAY OFF CRANE EQUIPMENT EARLY, NO PENALTIES

By financing your crane equipment through a loan, you receive ownership of the crane from the start and pay back the cost to the lender each month. The nice thing about financing is that most banks loan out the money without prepayment penalties. So, if you're able to pay off the loan before the agreed-upon terms, it won't cost you anything extra and will save you a significant amount of money in interest payments. In comparison, leases are for a fixed period of time and are set up so that you owe payment during the entire course of the lease terms.



CHAPTER EIGHT

OVERHEAD CRANE INSTALLATION: FROM CONCEPTION TO INSTALLATION

Learn more about the timeline for an overhead crane installation—including what takes place between a signed purchase order, and the day that the installers roll up to your facility with your crane on their trucks.

OVERHEAD CRANE INSTALLATION: FROM CONCEPTION TO COMPLETION



So here we are...you've done all of your research, decided on the type of crane you need for your facility, selected a manufacturer to partner with, signed an agreement, and cut the deposit check. So what happens next? Installation.

Our hope is that this chapter will give you a better understanding of the following:

- The timeline of the overhead crane installation—including steps that take place between a signed purchase order, and the day that the installers roll up to your facility with your crane on their trucks
- The communications that take place between your team and the installers prior to installation
- What the installers need to know about your facility or construction site prior to installation

As one of the leading manufacturers and installers of overhead crane systems, we understand how many moving pieces and parts there are during the course of a crane installation. Whether this is your first time going through an overhead crane installation, or you've gone through multiple crane installations, we hope you can learn something to help keep your next install on schedule, within budget, and your workers safe.

WHAT OCCURS BEFORE THE INSTALLATION OF AN OVERHEAD CRANE SYSTEM?

Any special considerations for an overhead crane installation actually begin during the quotation process. During that process, the overhead crane installer will review generic drawings of the crane equipment and review blueprints or building floor plans to give their best estimate of what it will take to install an overhead crane in the customer's facility.

In the quote, the crane installer will provide a window or time frame that they think they'll need to complete the crane installation. This can range anywhere from 2-10 business days, to a longer time period for more extensive or complex crane installations. This estimated installation window will be consecutive working days—once they've brought the cranes, trucks, materials, and all installation equipment on-site, they can't break up their time, or stop and re-start the installation, without significant increases to cost of the crane installation.

Once a purchase order is received, the overhead crane manufacturer will begin building and assembling the crane itself—a process that can take anywhere from 2 to 12 months.

Before an overhead crane can be installed, the installer will want to visit and analyze the proposed building or job site to get their bearings, understand the layout, and identify potential hazards or obstacles. While they're on site, they'll consider and evaluate the following things:

- Scope of work
- Installation area
- Identify potential hazards
- Details for existing runways or new construction runways

Keep reading, as we'll break down what each of these means, as well as provide you with some additional considerations to make sure that your overhead crane installation goes as smoothly as possible.

Things that are established during the first contact with an installer:

Introductions between the installers and the general contractor, or staff who will be involved during installation

A time to come out and perform an analysis of the job site or facility

An anticipated installation date. Know that this is a fluid process and the date can change due to production schedules and/or construction delays

A weekly status call to determine if the project is still on track. This helps to keep an open line of communication so any issues or challenges can be addressed that may affect the installation time frame.

EVALUATE THE **SCOPE OF WORK**

Once you've signed an agreement to purchase an overhead crane, the installer will receive a copy of the purchase order. Once they receive the purchase order, your overhead crane installer will contact you and arrange to come to the job site and meet with your team. This meeting typically involves a Maintenance Supervisor or Plant Manager for an installation at an existing facility, or a General Contractor at a new construction site.

The installers will want to review any signed approval drawings and building prints to get an understanding of the space that they'll be working in, as well as the span and length of the runway structure that the overhead crane will be utilizing.

They'll also begin compiling a list of equipment and materials that will need to be brought on site for installation:

- Semi trucks, trailers, and flatbeds
- Mobile installation cranes to lift the bridge and runway beams
- Generators
- Scissor lifts
- Fall protection equipment and other personal protection equipment (PPE)

The crane installer also wants to identify where they can access the building to bring in their equipment and materials. The cranes will be loaded onto flatbed trailers and hauled onto the site, so they will need free and clear access for trucks, mobile cranes, and personnel to move freely in and out of the facility without disruption.

Working with the General Contractor or Production team at the facility, the installer will want a clear picture of the timeline for the overhead crane installation. They'll need to know what production or construction issues may occur that could cause a delay in scheduling the crane installation.



REVIEW THE AREA WHERE THE CRANE WILL BE INSTALLED

During their site visit, the overhead crane installers will spend a good amount of their time reviewing the area where the crane will actually be installed. On a new construction project, they'll start roping off the area to give the General Contractor an understanding of the area that they will need to be cleared out during the crane installation process.

The crane installers will also identify any equipment or machinery that needs to be moved out of the way so that their trucks and equipment can get onto the grounds of the facility, set up a staging area, and have free and clear ground access to the site.

During the site visit, the installers hope to speak with as many sub-contractors as possible, so they understand what timeline is for construction and what other work might be going on around them during the install. They'll need to consider the timing and installation windows of other items like:

- Electric and gas line installation
- Concrete or other masonry work being performed
- Overhead light fixtures
- Duct work/roofing work
- Plumbing

In an existing building, they'll rope off or mark the area that they will be using for the installation. Typically, they have other sub-contractors spray or mark load ratings on the floor and structural supports so they can identify those once all of the equipment and trucks arrive. The crane installer also makes note of any obstacles they may need to maneuver around and takes pictures of the building layout to share with their team so that they can develop an action plan.

Potential obstacles for a crane installer:

Identifying the type of flooring (concrete, dirt, etc.) and also understanding the load requirements for bringing in heavy-duty equipment and trucks

Identifying load requirements for structural support beams for existing runways

What equipment or machinery will be operational during the installation process and what employees, if any, will be working near or around the area?

IDENTIFYING POTENTIAL HAZARDS

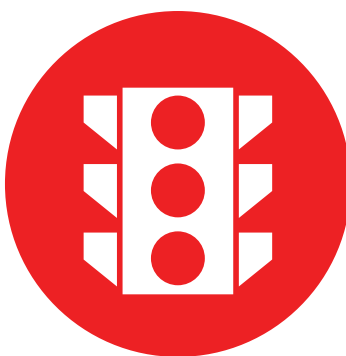
The overhead crane installer will need to identify any and all potential hazards so that they can plan and prepare their team accordingly. Different types of hazards may require specialized protection (PPE) for their team, specialized permits, and other special considerations to make sure that the crane installation is performed safely.

These are the types of hazards that an overhead crane installer will look to identify prior to the overhead crane installation:



ENERGY SOURCES

Overhead electrical or gas lines, power / conductor bars, lighting fixtures, etc.



TRAFFIC SOURCES

Forklifts, manlifts, trucks and semis, personal vehicles, pedestrian walking paths, foot traffic, etc.



ENVIRONMENT

Presence of excessive heat, hot metals, chemicals, etc.



WORKING AT HEIGHTS

Anything over 4 feet, ladders, scaffolding requires proper fall protection



HAZARDOUS ENERGY

Identify any equipment requiring lock-out/tag-out per OSHA 1910.147



OTHER

Any additional hazards identified by the customer or installer

REVIEW DETAILS FOR THE CRANE'S RUNWAY SYSTEM

Whether the overhead crane installer is building a new runway system or utilizing an existing runway system, the installer will want to plan accordingly to make sure that the crane installation goes smoothly. For an existing system, the installer will want to verify the span measurement per the approval drawing. They will also inspect the runway beams and any type of electrification system to make sure that everything is in proper alignment. A runway system that is out of alignment can cause operation problems and cause premature wear on the components of an overhead crane.



For a new installation of a runway system, the installer will review all approval drawings and specifications, verify measurements and support loading ratings, and also identify any process lines, machinery, or other items that may interfere with installation. The installer will also need to verify that the crane will be able to pull power from the building and all electrical work will be complete prior to the scheduled install date.

Consider the different people that will be involved in the installation process:

Truck drivers

Mechanical installers and mechanical assemblers

Riggers, who do the majority of the unload and setup of equipment

Crane operators

Electrical specialists

Crane technicians

COMMIT TO THE CRANE INSTALLATION DATE

As you get closer to the actual installation date, phone calls and conversations with the installers will become more frequent—possibly even occurring daily. Everyone will want to be on the same page so that any changes in scheduling, staffing, or production can be communicated so that adjustments can be made to the scheduled crane installation time frame. Once you get within an agreed-upon window prior to the scheduled installation date, everything begins moving full speed ahead in order to coordinate the logistics, transportation, and scheduling of workers, material, and equipment.



Some overhead crane manufacturers require 30 days change notice to the scheduled install date, and other manufacturers may only require 7 days prior to make any changes to the scheduled install date. Make sure that you have a clear understanding of the “point of no return” for your overhead crane installation. Once the process gets rolling, there’s really no way to stop it as the crane and installation equipment is probably en route to your facility. Your agreement or contract with the installer will specify that if any type of delay occurs within that 7-30 day cancellation window, you will incur significant charges related to paying employee wages, and rental of equipment. It is so important that you keep in constant communication with the crane installer and notify them immediately of any issues or concerns that could delay their installation time frame.

LOAD-TEST YOUR NEWLY INSTALLED CRANE SYSTEM

Once the crane has been erected and installation is complete, the crane will need to be started up and load-tested to make sure everything is in working order. A third-party testing company may be brought in to perform the test and ensure that the crane will operate safely and productively. The load testing of the crane can be performed with a variety of materials including concrete, steel, or water weight bags.

Per OSHA 1910.179 Overhead Crane & Gantry Cranes Regulations, your new crane system will need to have two operational tests, plus a rated load test performed prior to initial use:

- Testing of the hoist operation up and down; trolley travel; bridge travel; locking and safety devices.
- Testing of the trip setting of the hoist limit switches to make sure the actuating mechanism of the limit switch is functioning properly.
- Load test the crane at no more than 125% of the rated load and keep test reports on file where readily accessible.

The installation of overhead lifting equipment requires experience and attention to detail to prevent potentially dangerous safety issues. Mazzella offers unparalleled experience and expertise in erection and start-up installation of the following:

- Cranes
- Electrification systems
- Runways
- Hoists





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