



THE TOP CONSIDERATIONS FOR

Designing and Constructing a Grain Handling System

Grain handling systems are essential to modern agriculture, allowing operators of commercial grain terminals and farmers to manage, transport, and store their crops efficiently. A well-designed and constructed grain handling system can significantly improve productivity, reduce losses due to spoilage or damage, and ensure product meets quality standards. However, designing and constructing a grain handling system requires careful consideration of several factors to ensure that it is safe, efficient, and cost-effective. This guide will discuss the top considerations for designing and constructing a grain handling system.

| TYPE AND VOLUME OF GRAIN

The type and volume of grain that will be handled are critical factors that will significantly affect the design and construction of the grain handling system.

Different types of grain have different physical properties, such as size, weight, density, and moisture content, which affect the flow characteristics and storage requirements. The volume of grain also determines the capacity of the handling system, which affects the type and size of equipment required. Before designing the grain handling system, it is essential to determine the type and volume of grain that will be handled and the storage and transport requirements.

When selecting the type of grain handling system you'll need, be sure to consider the different types of grains, including corn, wheat, soybeans, barley, canola rice, and others. These grains have different physical properties – like density, weight, and moisture content – which must be considered in the design of the handling system.

The volume of grain is also an important consideration in the design and construction of the handling system. It is necessary to determine the size and capacity of the storage bins, transport equipment, and handling equipment that will be required to accommodate the volume of grain that will be handled.

TYPE AND VOLUME OF GRAIN CHECKLIST

- ☐ **What type of grain will be handled?**
- ☐ **What is the volume of grain to be handled?**
- ☐ **What are the physical properties of the grain, such as size and weight?**
- ☐ **What are the storage requirements for the grain?**

SITE LAYOUT AND ACCESS

The site layout and access are critical factors in designing and constructing a grain handling system.

The site layout should provide sufficient space for the handling equipment, storage bins, and transport vehicles while allowing for the safe and efficient movement of personnel and other vehicles. Access to the site should be suitable for heavy vehicles, and there should be adequate clearance and turning radius to prevent accidents. The site layout and access should also comply with relevant regulations and safety standards.

The site layout should consider factors such as the distance between the storage and handling equipment, the location of access roads, and the proximity to water and power sources. The site should also allow for expansion of the handling system, considering future growth plans.

The access road to the site should be designed to accommodate the weight and size of the transport equipment, including trucks and trailers. This access road should also provide adequate clearance for turning and maneuvering the equipment.

SITE LAYOUT AND ACCESS CHECKLIST

- ☐ What is the site layout, and how will the handling system fit into it?
- ☐ What are the access requirements for the handling system?
- ☐ What are the site-specific safety considerations?
- ☐ Are there any environmental or zoning restrictions to consider?



EQUIPMENT SELECTION

The selection of equipment is crucial in designing a grain handling system that is efficient, safe, and cost-effective.

The equipment chosen should be capable of handling the type and volume of grain being handled and should be compatible with the storage and transport requirements. The equipment should also be designed to minimize grain damage, contamination, and spoilage and be easy to operate and maintain. When selecting equipment, it is necessary to consider factors such as the capacity of the equipment, the speed of operation, the efficiency of the equipment, and the cost.

The conveyor system is the backbone of a grain handling system and should be designed to transport the grain efficiently and safely. The conveyor system should be designed to minimize the risk of grain damage, contamination, and spillage.

The elevator system is another essential component of a grain handling system and should be designed to move the grain between different levels. The elevator system should also be designed to minimize the above mentioned risks.

Grain cleaners remove foreign materials and impurities from the grain, ensuring it meets quality standards. The selection of a grain cleaner will depend on the type of grain and the level of cleaning required.

Storage bins are used to store the grain before transport or processing. The storage bins should be designed to prevent spoilage, contamination, and insect infestation and equipped with appropriate ventilation systems.

EQUIPMENT SELECTION CHECKLIST

- ☐ **What handling equipment is required, and what are the specifications?**
- ☐ **What are the requirements for cleaning and grading the grain?**
- ☐ **What storage bins are required, and what are their specifications?**
- ☐ **What ventilation systems are required for the storage bins?**

SAFETY CONSIDERATIONS

Safety is paramount when choosing the design and construction of your grain handling system.

The handling of grain can be hazardous due to the risk of dust explosions, fires, and entrapment. The handling equipment should be designed to minimize the risk of accidents and should comply with all relevant safety standards.

The design of the handling system should include appropriate safety features, such as fire suppression systems, explosion relief vents, and emergency stop switches. The handling equipment should also be designed to prevent grain entrapment by incorporating safety ladders, guardrails, and safety harnesses.

In addition to equipment design, it is essential to have appropriate safety procedures in place for personnel working in and around the handling system. Training should be provided for all personnel, and safety protocols should be clearly communicated and followed.

SAFETY CONSIDERATIONS CHECKLIST

- ☐ What are the safety hazards associated with grain handling?
- ☐ What safety features are required for the handling equipment?
- ☐ What safety procedures are required for personnel working in and around the handling system?
- ☐ What training is required for personnel working with the handling equipment?



ENVIRONMENTAL CONSIDERATIONS

Environmental considerations are becoming increasingly important in designing and constructing grain handling systems.

Grain handling can produce dust, noise, and emissions, which can have significant environmental impacts. The handling system should be designed to minimize these impacts and comply with relevant environmental regulations.

The handling system design should include appropriate measures to prevent dust emissions, such as dust collection systems and dust suppression methods. The handling system should also be designed to minimize noise levels in order to avoid disturbing nearby residents.

In addition to reducing environmental impacts, it is essential to consider sustainability in the design and construction of the handling system. This includes using renewable energy sources, such as solar or wind power, and implementing energy-efficient equipment and practices.

ENVIRONMENTAL CONSIDERATIONS CHECKLIST

- ☐ **What environmental impacts are associated with grain handling?**
- ☐ **What measures are required to minimize dust emissions?**
- ☐ **What measures are required to reduce noise levels?**
- ☐ **How can renewable energy sources be incorporated into the handling system?**
- ☐ **What are the sustainability considerations for the handling system?**

MAINTENANCE AND REPAIR

To ensure the grain handling system's long-term efficiency and safety, always consider any potential repairs that may arise, as well as routine maintenance of the system and equipment.

The handling equipment should be designed to be easy to maintain and repair, with readily available replacement parts.

Regular maintenance and inspection of the handling equipment should be carried out to prevent breakdowns and ensure that the equipment operates efficiently and safely. Maintenance schedules should be established, and personnel should be trained in maintenance and repair procedures.

MAINTENANCE AND REPAIR CHECKLIST

- ☐ What is the maintenance schedule for the handling equipment?
- ☐ What are the maintenance requirements for each piece of equipment?
- ☐ What is the repair process, and who is responsible for carrying out repairs?
- ☐ How are replacement parts ordered and installed?
- ☐ What records are kept of maintenance and repair activities?

Designing and constructing a grain handling system requires careful consideration of several factors to ensure that it is safe, efficient, and cost-effective.

The type and volume of grain being handled, site layout and access, equipment selection, safety considerations, environmental considerations, and maintenance and repair are all critical factors you must consider when preparing to design and construct your grain handling system.

If you're looking to design and build a safe, efficient, and reliable grain handling system, look no further than Flynn Bros Projects. Our experienced team has the expertise and knowledge to handle all aspects of the design and construction process, from site evaluation and equipment selection to installation, maintenance, and repair.

We understand that each project is unique, and we work closely with our clients to develop customized solutions that meet their specific needs and requirements. Whether you're looking to upgrade an existing system or build a new one from scratch, we have the skills and experience to get the job done right.

Don't take any chances when it comes to your grain handling system. Contact Flynn Bros Projects today to learn how we can help you design and construct a safe, efficient, and reliable handling system that meets your needs and exceeds your expectations.

