Covering such large areas needed a better-engineered solution. It made more sense to Don Bucklin to break the roofing system into smaller sections and firmly attach them to the trusses. By segmenting the roof panels, the risk of losing massive portions of your covering is eliminated and each smaller section can be addressed independently.

**Bucklin Buildings' roof system** involves free-span steel trusses spaced every 8-feet with a 24-foot wide fabric section covering every three trusses. A 312-foot long building will have thirteen of these 24-foot wide sections. Should a weather mishap or damage occur, the odds are that only one section would need repair or replacement, and only a small percentage of your grain would be exposed. Patching or replacement is easier and quicker as well.

**The Bucklin Track system** involves a flex rod welded into both edges of each fabric panel and the entire panel is fed into the receiving tracks, much as an awning on a storefront. The fabric panels are anchored continuously to every third truss, over the full width of the building, preventing all wind and weather from entering the joint between panels. To completely safeguard this seam or joint, a patented aluminum track cover is clipped in place. This creates a watertight, wind-tight roof from end to end, side to side. With trusses every 8-feet, the fabric roof has plenty of support beneath it which prevents sagging and stress during heavy snowfall and windy conditions. This provides in effect a serviceable, segmented yet continuous membrane.

---

**Bucklin Buildings also offer standing seam steel roof panels!**

**BUCKLIN BUILDINGS DETAILS**

- "Bucklin Track" molding every 24 Feet along the entire length of the building, with patented weatherproof cover.
- Panelized roofing with 24-foot sections. Single panels can be repaired or replaced should damage occur.
- Poured-in-place side walls, 4 feet below grade, 10 feet above, are able to withstand outward pressure of grain load.
- Tie-downs every 8 feet with tensioners keep the entire roof weather and wind tight.
- In-floor aeration tunnels with suction or forced-air ventilation from outside walls to control grain temperature and moisture content.
- NovaShield II w/Armorkote: The 4 mil. fabric membrane has a 20-year non-prorated replacement guarantee.

---

**FLAT STORAGE IS A DEPARTURE FROM THE OLD STANDARD...**

Flat storage offers major benefits when compared to vertical storage systems. First, in safety, flat open spans drastically reduce the danger of often deadly grain explosions and grain entrapments so common in vertical facilities. Ventilation and cooling in flat storage is also more effective, preserving more value and quality in the product.
Since 1954, Lightowler Johnson Associates has been providing high quality professional services for projects throughout the upper Midwest and nationwide. Our experience has encompassed a wide range of projects including hospitality, industrial/biodiesel, governmental, correctional, recreational, educational, historical, medical, commercial, and housing facilities. Our past projects have ranged from simple site investigations and reports, to complex remodeling and renovation projects, to the construction of new multi-million dollar structures.

With professionals registered in over 40 states, we have completed projects in several locations. Our ability to effectively communicate across distances allows us to provide our clients with exceptional attention regardless of location.
Our Flat Storage Buildings are perfect for agricultural grains such as:

- Corn storage
- Wheat storage
- Soybean storage
- Fertilizer storage

Bucklin Buildings offers cost effective and efficient Grain Storage.

Concrete & Steel Flat Storage
Bucklin Buildings specializes in storing grain. We are the Workhorse of storage complex. We have High Quality and Experienced Builders serving South Dakota and the Midwest States. To date we have three widths that we offer: 80, 124, and 135 feet.

Fabric Structures for grain storage have many benefits. Bucklin Buildings are very competitive and are built to be the strongest available.
We use 4,000# concrete, fiber mesh and truckloads of rebar. Our structural steel is made into our *special* designed trusses at our own fabrication plant in South Dakota.
Flat Grain Storage has become one of most popular ways to store grain. Flat Storage Buildings with 13’ concrete sidewalls can handle the . . . biggest pay loaders . . . fastest skid steers . . . best floor sweepers.

Flat Storage is efficient agricultural storage solution for grains, corn, wheat soybeans and fertilizer.

Bucklin Buildings uses the best flat storage engineering including many ideas from grain equipment companies, elevator managers and years of Bucklin construction experience.

Here are some of the important things that make the work horse of the Bucklin Building grain storage facility.

Ray Mac fan transition to the wall mount- These are made by Ray Mac for us-notice they use stainless steel-nothing cheap about these guys - top of the line equipment made to last many years.

Ray Mac patent pending in floor grating system is used as standard equipment with a Bucklin Building. These are made in Gwinner, N,D at the Ray Mac plant. Ray Mac is a ISO-9000 company- They also make many parts for Kabota Tractors -ATVs. and many parts for Mel-Roe Bob Cat company this is a top of the line company- nothing cheap in their equipment. All in floor grating systems are tested for heavy pay loaders and bucket machines driving over them before it is shipped to us.

www.bucklinbuildings.com
EZ Kleen Aeration

Lifting hooks can insert into all 4 corner blocks for lifting channel frames back into air tunnels when tunnel clean out is complete...

Clean your aeration tunnels often and easily with Ray-Mac’s EZ Kleen aeration floor grate system.

Typical flat storage grain facility where grain floor air tunnels and fan air supply tunnel intersect. EZ Kleen frames in place in tunnel and at intersection.
Here's a typical in floor aeration system designed for our buildings by AirLanco of Nebraska. They are a quality company with one of the best fans on the market. These air flow designs are all done by their engineers with all the proper amount of air flow needed for each building. This is the standard equipment for our buildings - top quality stuff.
Our Hutchinson grain pump system showing an overall basic layout of a 12” grain pump loop. Also shown are the dimensions for each of the components and some suggestions for trench dimensions. These are recommendations only and not a detailed design.

**What this Hutchinson grain pump does:**
- It eliminates all conveyor systems- eliminates all legs- and eliminates receiving pits which can fill up with water when it rains.
- The grain pump has a great advantage-It is a lot safer for your employees.
- Saves you a lot of money over conveyor systems.
- Eliminates the retrieval tunnel under the floor of the building.
Divider Walls
– Maximize your storage capabilities!

Flat grain storage buildings create new possibilities for economical and efficient grain storage. Our precast Divider Walls can help maximize layout options and store multiple grain types under one roof.

The precast reinforced concrete walls are heavy duty and built to last, yet easily moved with two lift holes that accept forks for handling and with a flexible cover to keep grain from penetrating through the lift holes.
**PRECAST FLAT STORAGE SOLUTIONS**

**Precast Trenches**
- Built-in sill for steel grating
- Exposed steel ties into surrounding floor
- Tongue and groove connection

**Conveyor Box Tunnel**
- 90% faster installation than cast-in-place concrete
- Steel channels for conveyor connection
- Openings allow grain to drop directly onto the conveyors

**Door Defender**
- Solid protection from door collapse
- Specially designed interlocking connection
- Fork lift holes with flexible covers

**Divider Walls**
- Maximize storage versatility
- Several sizes available
- Multiple configurations

_Bucklin BUILDINGS_
The 2012 season..

Here we are, at the start of a new year. Farm land prices are skyrocketing and we all know what happened to feed and food prices in 2011. Farming will get its due in terms of appreciation and profits, but we still need to have the best tools and techniques in order to maximize that potential.

Storage methods more important as a gauge by which a food crop is valued as consumer markets become more demanding and concerned about food safety and origin. Old standards in storage methods need to give way to more food-friendly storage systems.

The difference between delivering an acceptable commodity and providing a superior product is like comparing night and day.

ELEVATOR OR FLAT STORAGE??

Fabric-roofed buildings are not new to the grain storage business. The vertical vs flat storage debate goes on, but demand for flat storage increases every year with the food, feed and bio-fuel industries all growing at the same time at a rapid pace.

Some improvements needed to be made on the earlier designs. Those large tarps used on some flat storage building designs just don’t work. Improved design and better materials have made flat storage a practical alternative to the old standard elevators. The versatility of flat storage and a lower cost per bushel also make a big difference to independent farms and agro-business operators who don’t have humongous budgets to work with. The race to meet storage demand is on.
THE PROS AND CONS OF FLAT AND VERTICAL STORAGE...
Bucklin Buildings of South Dakota manufactures and erects flat storage grain facilities. In fairness, we wrote this article to point out the pros and cons of both conventional vertical storage and our flat storage structures.

In light of the recent tragic deaths of six Kansas grain co-op employees on 10/30, attention needs to be directed toward solutions for the elimination or vast reduction of such horrible disasters. According to OSHA statistics, there have been 600 grain tower explosions over the past 40 years in the US alone, with 1000 deaths. In addition, Purdue University research determined that between January and November of 2010, there were 46 reported grain “entrapments” of personnel, 25 of those resulting in death. These statistics must be addressed.

Risk Factors... Farming is loaded with risk. Some risk is beyond control, some is manageable, and some is preventable. In today’s legalistic society, we need to mitigate the risks we have control of because they can often be the most costly. Accidental deaths and serious injuries not only destroy victims’ families, they often destroy businesses as well. Flat storage or elevator, “safety first” is a universal lifesaver.

VERTICAL OR FLAT STORAGE? Vertical grain storage has been around since the 1840’s in America. It has certainly served the industry well; what goes up, must come down. Gravity is a great thing; it has loaded many millions of wagons, trucks and trains. Elevators are rather expensive to build, but there is still a sizable global market for elevators and bins. With proper maintenance and careful management, vertical storage is still an acceptable and dependable method to preserve your harvest.

However, flat storage, although it currently has a smaller market share, is becoming a more desirable alternative to the old standard. Admittedly, there are some real “turkeys” out there in the flat storage market which are rather worthless. Before an investment is made, it’s best to do some serious tire kicking to get your self into the right product. There is ongoing debate between vertical and flat storage devotees, but the market is steadily moving toward flat storage for many significant reasons.
Costs... Budget is primary, right? After we find a product we like, the price becomes a motivating factor. Bucklin Buildings, for example, can run 50% lower in cost per bushel than flat metal bins or standard grain towers in terms of capital investment. When you have a million bushel harvest to protect, this savings can be a very serious amount of money.

Grain Quality... Whether you work through the standard commodity markets or have specific clients, the delivered grain product from a Bucklin Building will be superior to the same grain stored in the vertical mode. Insufficiently aerated commodities stored in a confined vertical space will not withstand the comparison test. Buyers and consumers who seek superior quality are much more savvy today about food quality and purity than in the past.

Profitability... Farmers and co-ops have an opportunity in today’s more sophisticated markets to seek out and target the consumer “niche” markets. That can mean supplying a specialty foods manufacturer, a government food security program in a foreign country, or a distributor for such clients. We’re not limited to just “commodities” anymore. The higher the quality of grain, the higher the potential price you could receive per pound, per bushel, per ton. Your focus is up to you, but you must deliver top quality. Upscale markets are out there.

A well-designed flat storage system will provide the highest quality grain in short or long term storage. The substantially lower capital investment for a Bucklin building, for example, will immediately reduce the cost of your crop and will, long term, enhance your crop’s value each harvest. Here’s another point to consider... whether your market is in cereal grains, ethanol or feed crops, high nutrient/caloric is important. Flat storage done right is the superior method for optimal results and good return on your investment.

Risk Issues... More valuable than capital cost, grain quality and profitability is the health and safety of you and your employees. If the grain handling industry can evolve to radically reduce explosions, fires and entrapments in storage bins, any investment in modernization and improvement will have been worth it. According to Purdue University data, our 135 ft. width, 50 ft. peak and minimum 200 ft. length classify Bucklin Buildings as non-enclosed, low risk structures for explosions involving dust density. In-floor high-volume aeration tunnels and end-wall venting further mitigate combustion risks. Using a Hutchinson grain pump loop system with remotely controlled grain ports for filling and emptying, the personnel required to operate a Bucklin facility are minimal, also reducing health risks to employees and liability for the business owner.

Insurance issues... Question: Can a fabric roof storage building withstand the scrutiny of the insurance company? Answer: Yes. We know there are lesser quality products out there which have not measured up to wind and weather; lightweight hoop buildings have not done performed well. Bucklin’s concrete and steel construction is superior; we are working with an independent insurance underwriter to document and substantiate Bucklin’s superiority. A Bucklin Building erected in Minnesota near a national weather service station, in 2010, withstood 100 mph winds according to their data with no ripping, tearing or leaking. Our buildings have proven themselves in adverse conditions, and our tops are made of the best UV-rated materials to eliminate sun-related problems. The 20-year guarantee on our 24 ft wide roof panels is not pro-rated, and our ketter track system with patented joint covers is virtually leakproof.
Corn Storage

1.2 MILLION BUSHELS AND 1.7 MILLION BUSHELS OF CORN BEING STORED IN BUCKLIN BUILDINGS

www.bucklinbuildings.com  605-742-0877
BUCKLIN BUILDINGS
Serving South Dakota and the Midwest States, we are your Midwest Grain Storage Solution.

605-742-0877

www.bucklinbuildings.com