Kelly Klosure®

Small Span Specifiers Guide

KELLY GROUP, INC.
800-228-7230
402-727-1344 PHONE
402-727-1363 FAX
www.kellyklosure.com
inquire@kellyklosure.com

800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

SMALL SPAN SPECIFIERS GUIDE

Kelly Group, Inc.
1-800-228-7230
402-727-1344 phone
402-727-1363 Fax
www.kellyklosure.com
inquire@kellyklosure.com

Date: March, 2008

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

KELLY KLOSURE SMALL SPAN SPECIFIER'S GUIDE	

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

-Introduction-

The **Kelly Klosure Small Span** building is a premium product engineered to the highest standard. Kelly constantly tests and re-engineers their buildings to stay up-to-date with current building codes and engineering practices. As a standard, all Kelly Klosure buildings are quoted based upon the International Building Code version 2006 (IBC 2006) and the wind, snow, and seismic loads for a building's general location. However, it is the responsibility of the buyer to verify building code and design load.

While Small Span buildings are designed for IBC 2006 from a structural aspect, Kelly is not able to do a complete code review of each building. Code related requirements outside the structural elements of the building are the responsibility of the buyer. These requirements include, but are not limited to, energy efficiency, egress, fire safety, electrical, mechanical and ventilation, foundation, and occupancy.

This guide includes suggestions and guidelines for insulation, door types and hardware, ventilation options and foundation types. However, local building code requirements should always be consulted.

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

-Introduction-

This Small Span Specifier Guide is intended to provide sufficient product data from which an informed purchase requisition/ specification or question request can be written.

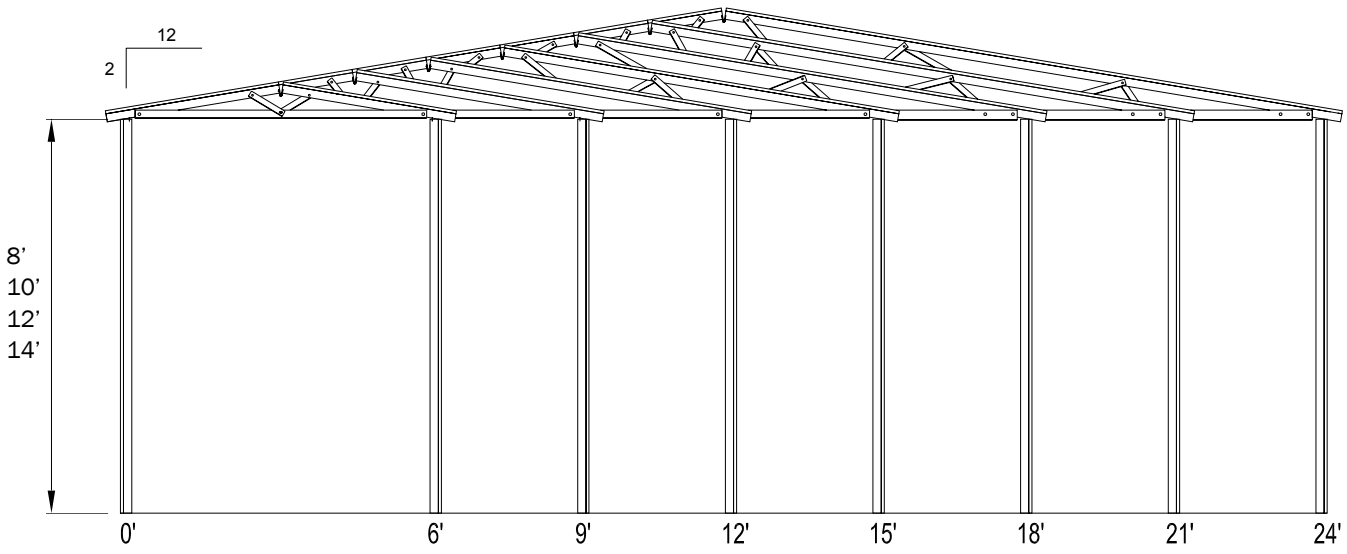
This booklet provides only technical information on basic Small Span panels and buildings. Where possible, an explanation of the related, accepted engineering principals is presented to provide objective background information from which an educated decision can be made regarding insulation, ventilation and structural requirements. Information on sheeting material, insulation, building geometry, doors, light-transmitting roof panels, design features, factory installed options, foundations, structural load capacity and ordering specifications is included.

Before printing this booklet, care was taken to ensure that this reference guide is as complete and easy to understand as possible. However, we will continually strive to maintain Small Span as the state-of-the-art, easy-to-assemble panel building system, so we reserve the right to update portions of this document periodically.

Remember, answers are just a phone call away. If you have any questions or would like to confirm your interpretation, please contact a Kelly customer service representative at 800-228-7230 or outside the U.S. at 402-727-1344.

Kelly Klosure Small Span defines easy-to-assemble panels manufactured in integral units of pre-framed structure, exterior sheeting and optional rigid insulation, where the exterior sheeting is factory attached to the face of the structure with an anti-siphon overlapping edge to prevent leaks.

Kelly Klosure Small Span panels bolt together to form gable buildings with a 2 to 12 roof pitch in clear span widths from 6’ to 24’ and eave heights up to 14’.

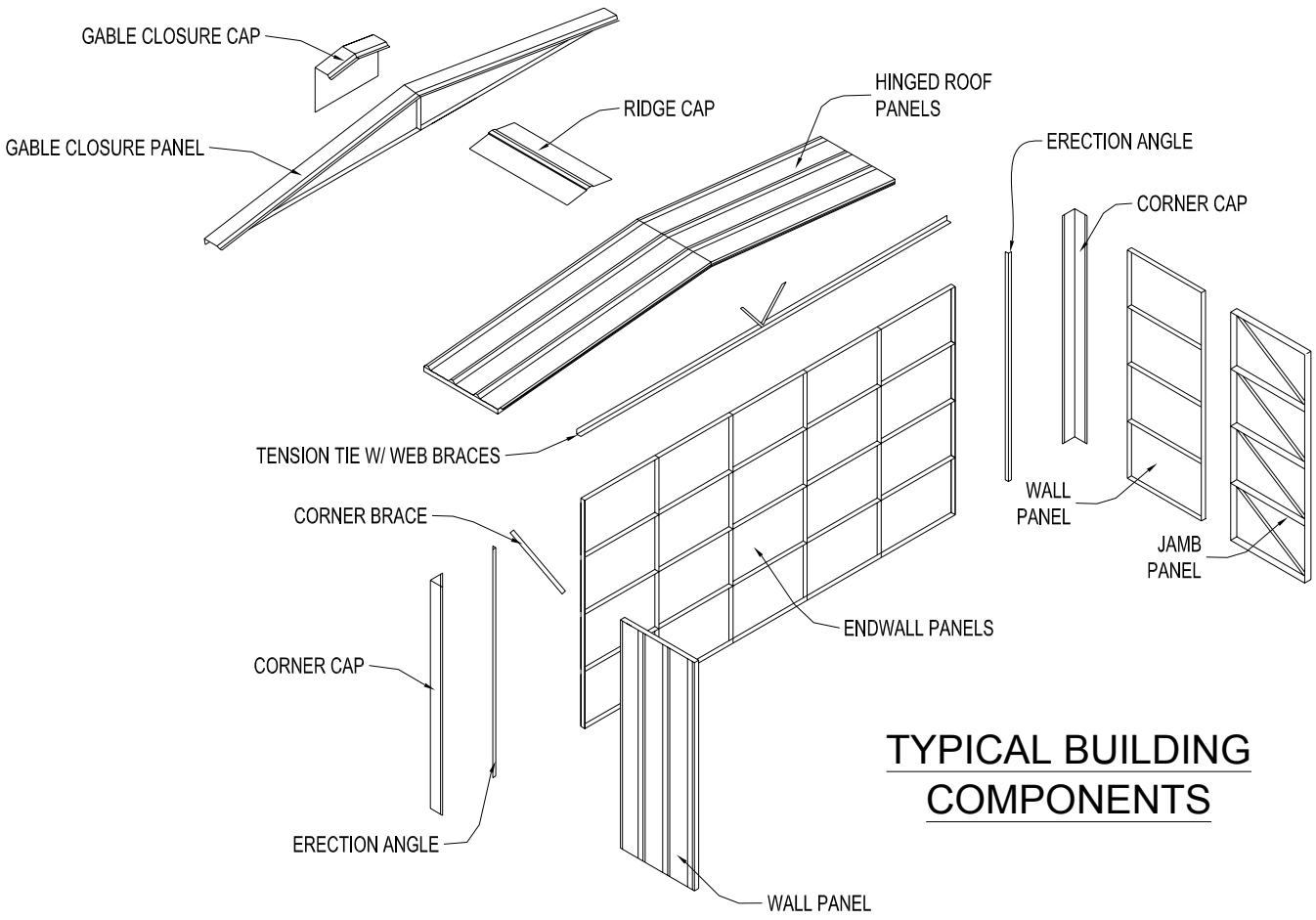


Available Clear Span Widths

Small Span Buildings

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

-Small Span Basic Components-



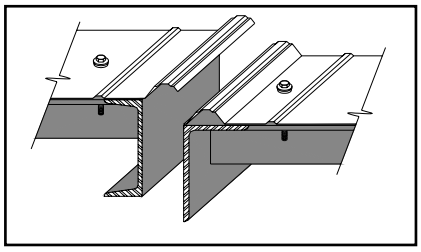
TYPICAL BUILDING COMPONENTS

Simple Pre-Framed Assembly

Kelly Klosure Small Span relocatable buildings are assembled from the simple basic components illustrated and labeled above.

PRE-FRAMED PANELS

Ribbed steel sheeting with anti-siphon overlapping edges form the exterior surface of Kelly Klosure Small Span panels. This material, *sometimes referred to as "steel siding or roofing panels" in conventional metal building construction is termed "exterior sheeting"* here. **This is done so it is not confused with the complete, factory-fabricated Kelly Klosure Small Span panel that is an integral modular panel unit of exterior sheeting, pre-framed structure and optional rigid insulation.**



Patented Anti-Siphon Overlapping Edge Prevents Leaks

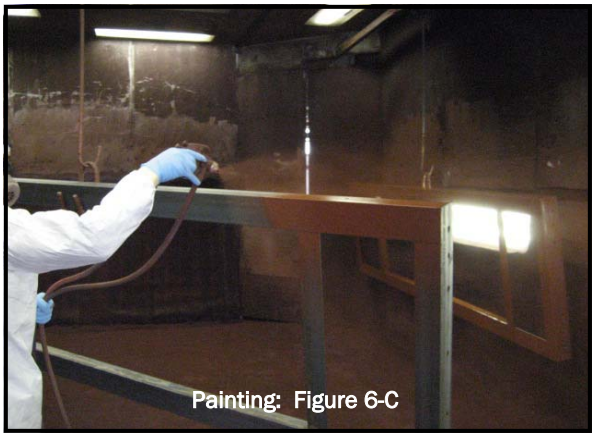
Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

-Pre-Treatment and Coatings-

The Kelly Klosure Small Span Panel frames and steel accessories, prior to being painted (Figure 6-C), are ground to remove sharp edges (Figure 6-A) and washed with a phosphitizer to increase adhesion of the coating (Figure 6-B). The standard coating is one coat of red primer. The primer is a high grade, hi-corrosion, waterborne, alkyd acrylic emulsion. It has a salt spray rating of more than 500 hours.


Grinding: Figure 6-A


Washing: Figure 6-B


Painting: Figure 6-C

In addition to the standard red primer coating, Kelly offers upgraded coatings that may be required in certain applications. (White primed frames shown.)

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

For applications where interior appearance is important, a second coat of primer can be applied in colors to match or accent a painted interior insulation liner.

For applications where extreme corrosion resistance is required, the structural steel panels and accessories can be hot dip galvanized.

(System 2 buildings shown for example only.)

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

EXTERIOR SHEETING OPTIONS.

Two types of steel exterior sheeting profiles are used with Small Span buildings. **The ¾" depth ribbed profile or "Imperial Rib Profile" sheeting is illustrated in Figure 8-A. "Imperial Rib" is available in 29 and 26 gauge. The optional 3/4" depth ribbed profiles or "U-Panel Profile" is shown in Figure 8-B. "U-Panel" is available in 26 gauge and is used when the "Kynar" Flouropolymer paint finish is required. Heavier gauges are available as special order items.** Both profiles are rolled from high tensile ASTM A-446 steel with minimum yield strength of 80,000 psi.

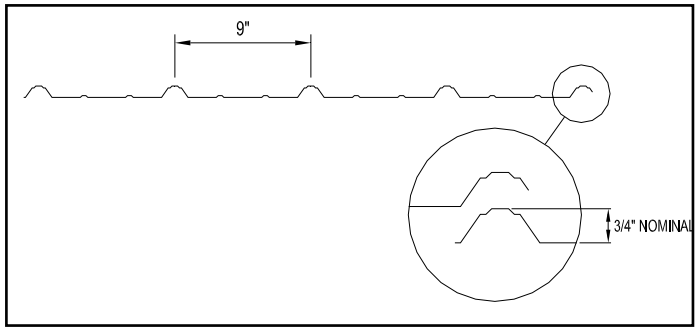


Figure 8-A — "STANDARD" 3/4" Sheeting

Unlike conventional metal buildings where sheeting is typically only supported across the corrugated ribs, Small Span sheeting is supported both across the corrugated ribs and along the underlap and overlapping edges, thus making a complete perimeter support. This makes it structurally possible to use 29-gauge where 26-gauge steel sheeting material would typically be required. For buildings with higher wind loads, heavier gauge exterior sheeting will automatically be quoted.

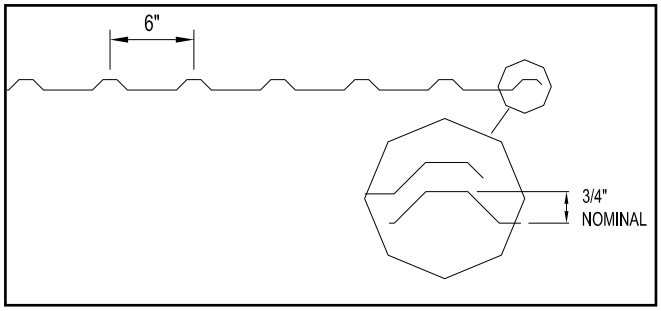
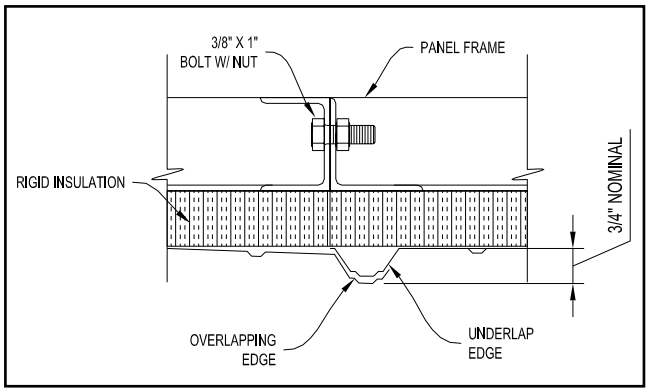


Figure 8-B — "Optional" 3/4" Sheeting

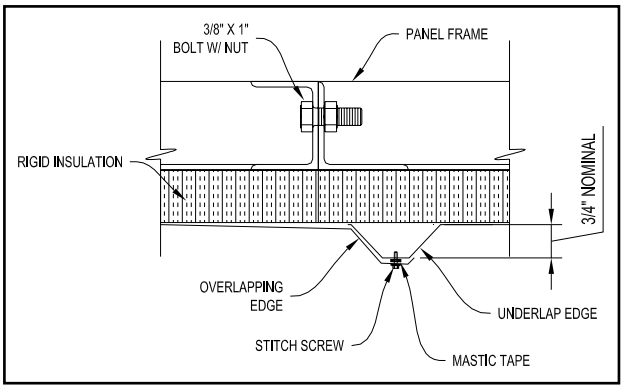
Exterior Finish Options:	
Plain Galvalume:	(25 Year Limited Warranty) This is the standard economical finish for Small Span buildings. It is a superior finish to standard galvanized used on many other buildings.
Silicone Modified Polyester:	(30 Year Warranty) Galvalume coated base metal with epoxy modified primer and 30% Silicone Modified Polyester Top Coat. This is the standard painted finish for Small Span buildings.
Kynar:	(20 Year Warranty) Galvalume coated base metal with PolyVinylidine DiFlouride (PVDF) paint system. (Also referred to as "two-coat Flouropolymer paint system".) Kynar is an alternate painted finish that is only used at the customer's request. This finish system is available only on "U-Panel" profile sheeting.
Flashing, Trim, Gutters & Downspouts:	These accessories will be made from the same material and finish as the building exterior sheeting.

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

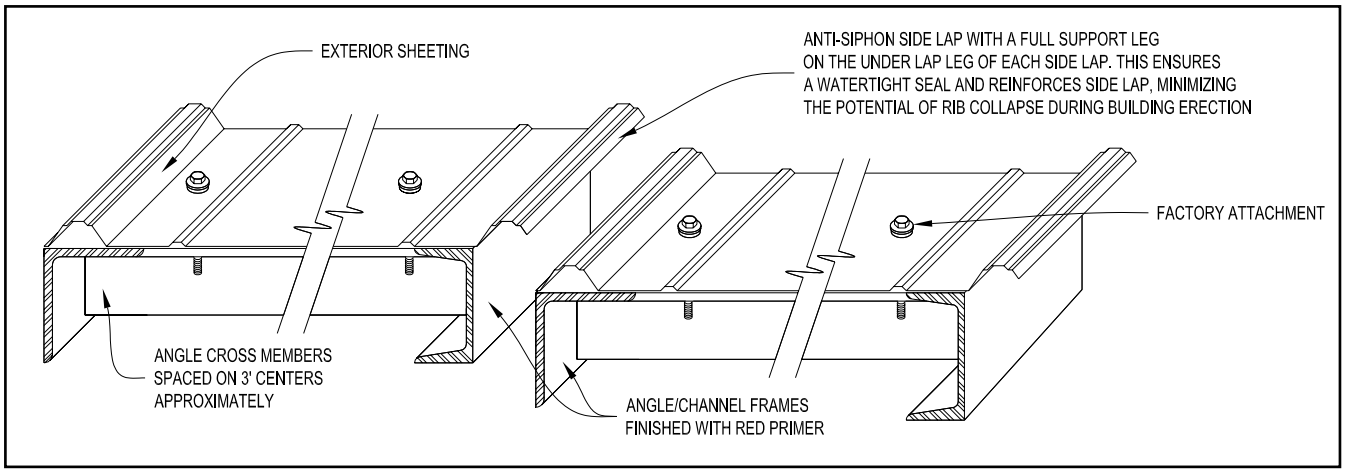
-Panel Cross Sections-



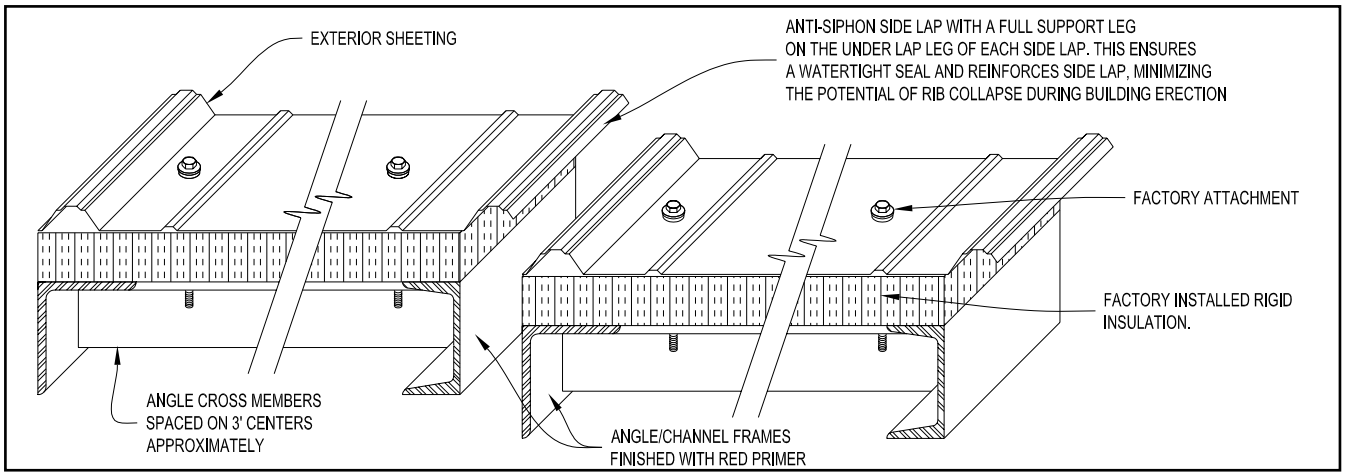
Standard 29 Gauge "Imperial Rib" Sheeting
Note: Mastic Tape and Stitch Screws not Required



Standard 26 Gauge "U-Panel" Sheeting
Note: Mastic Tape and Stitch Screws are Required



"Non-Insulated" Pre-Framed Small Span Panel—Cross Section



"Insulated" Pre-Framed Small Span Panel—Cross Section

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

FACTORY FABRICATED PRE-FRAMED INSULATED PANELS ARE THE KELLY KLOSURE SMALL SPAN ADVANTAGE

Kelly Klosure Small Span panels can be specified as insulated or non-insulated. In either case, the panels are shipped to the jobsite as integral, prefabricated units. In other words, the exterior sheeting and insulation are attached at the factory so no field attachment is required. The position of the insulation is as illustrated below. Rigid insulation in a variety of R factors (thicknesses) are available.

KELLY KLOSURE SMALL SPAN INSULATED PANELS are manufactured with foil-faced, rigid insulation. They are typically produced in 1-1/2 (R-11) or 2-1/2" (R-19) insulation thicknesses. A rigid insulation board is factory installed between the Small Span structural steel frame and the steel sheeting, as shown in Figure 10-A. This premium insulation board consists of a glass fiber reinforced polyisocyanurate foam plastic core. The foam core has a uniform, closed cell structure and is exceptionally resistant to the flow of heat.

Standard aluminum foil facers laminated to each side of the product help provide an effective moisture barrier.

Conventional metal buildings use field installed batt insulation that is compressed at the girts and purlins. This greatly reduces the efficiency of the insulation. Insulated Small Span buildings are extremely efficient due to their uninterrupted layer of rigid insulation around the building shell.

R-VALUES represent a material's resistance to heat flow. **The higher the R, the higher the insulating value of the material.**

HOW TO SELECT INSULATION THICKNESS.

Local building codes will often have their own requirements based on the climate for that area. However, the following are some suggestions based on Kelly's past experience.

For industrial type buildings that will be heated only, 1-1/2" thick (R-11) rigid insulation is suggested in the walls and roof.

For buildings where air-conditioning will be employed or where solar heat gain is a concern, it is recommended to upgrade the roof to 2-1/2" thick (R-19) insulation.

For buildings in extremely cold climates or where maximum energy efficiency is required, it is recommended to insulate the entire building with 2-1/2" thick (R-19) insulation.

If no code criteria applies, local experience in weighing the economies of additional insulation versus the additional cost of local fuel or electricity could serve as a guide.

Note: Mineral Wool Insulation is available as an alternate to the standard rigid insulation. This is used in cases where 100% non-combustible construction is more critical than insulation efficiency. See the Non-Combustible construction features on page 28.

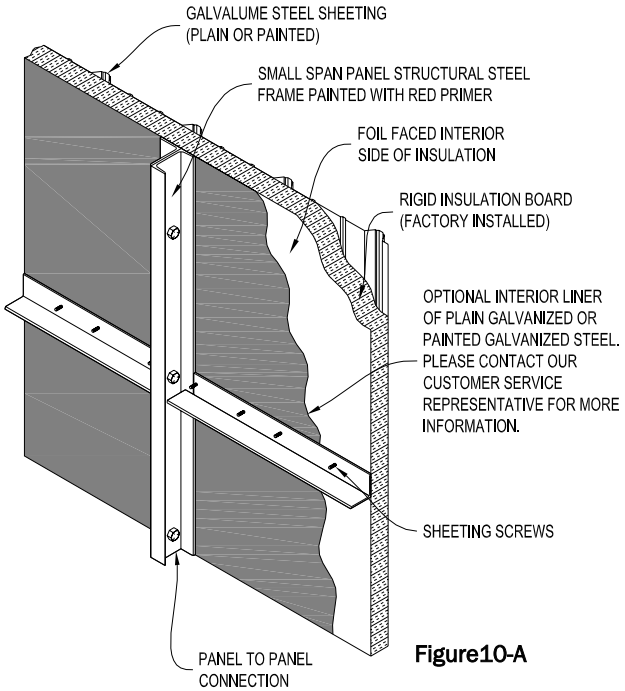


Figure10-A

Small Span structures are available with light-transmitting roof panels. Light-transmitting roof panels are fabricated with corrugated glass fiber reinforced plastic sheeting manufactured to nest with adjacent metal sheeting. See Figure 11-A and 12-B.

As can be seen from Figure 11-A, light-transmitting fiberglass may be positioned in Small Span roofs. **The standard nominal size fiberglass used is 3' wide x 8' long**. In narrow width buildings, shorter lengths may be required.

In an effort to satisfy customer requests for Light Transmitting panels in insulated buildings, we have developed a double glazed system with air space shown in Figure 12-B. The exterior translucent material is a UL-25 fire-rated fiberglass and the interior transparent material is a CC1 fire-rated Thermal Lexan sheet.

Fire safety requirements for glass fiber reinforced plastics vary depending on type of building occupancy, site plan, and any applicable local fire safety requirements. Small Span owners and those considering a Small Span purchase should consult with local building officials to determine which fire safety requirements apply.

Our Standard Fire-Rated Light Transmitting panels for Small Span are fabricated from fiberglass with a flame spread rating of 25 or less and a smoke rating less than 450. Flame spread and smoke ratings are established by independent testing laboratories using ASTM E-84 tunnel tests. The Thermal Lexan interior flat sheet is CC1 rated.

In addition, the fire-rated fiberglass and optional Thermal Lexan flat sheet used in Kelly Small Span buildings conforms to the International Building Code's (IBC) definition of Class CC1 plastic. In other words, both have a flame rate ("flammability" not "flame spread") of less than 1.00 inch/minute as defined by ASTM D-635.

This fiberglass has a flash ignition temperature greater than or equal to 650 degrees Fahrenheit, as determined by ASTM D-1929.

In other words, the fire-rated material used in Small Span structures conforms to both IBC "Class 1" and "CC1" criteria. These are the best fire classifications the IBC gives to light-transmitting plastics.

These references do not imply that fiberglass panels will not burn. Flash temperatures as low as 650 degrees F can ignite them. All fiberglass panels will burn under certain conditions and certainly in a full scale fire. Once ignited, they may burn rapidly, releasing dense smoke.

The IBC and other fire safety requirement documents place restrictions on the maximum length and square footage of a single fiberglass panel, the maximum fiberglass surface area as a percentage of covered floor or wall area, and the minimum vertical and horizontal separation distances between fiberglass panels. Figure 12-A has been drawn in compliance with many fire safety requirements. Consult your local fire safety specialists for requirements on your specific job.

"STANDARD" - Uninsulated Light-Transmitting Panel Cross Section

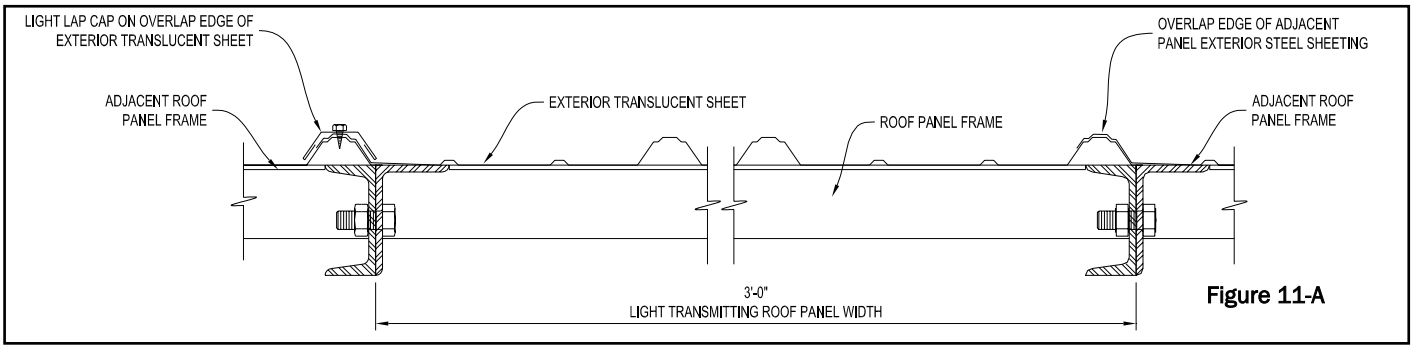
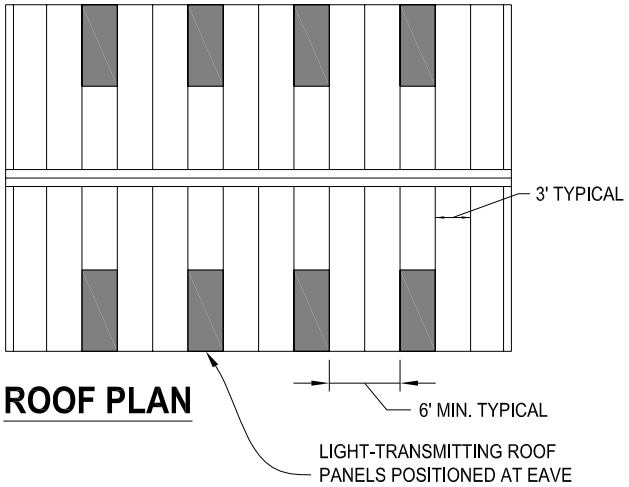


Figure 11-A

LIGHT TRANSMITTING ROOF PANELS

The fiberglass for Kelly Klosure Small Span is eight ounces per square foot. This material is heavier than the five ounce per square foot material used by most metal building manufacturers. **Under no condition should a fiberglass panel be allowed to support a person's undistributed weight.**



ROOF PLAN

Figure 12-A

PLEASE NOTE:

In narrow, short buildings, fiberglass lengths can be cut as required to comply with the maximum plastic roof panel percentages established by some fire safety requirements. Typically for roofs the maximum percentage is 25% of floor area.

"Optional" - Double Glazed Light-Transmitting Panel Cross Section

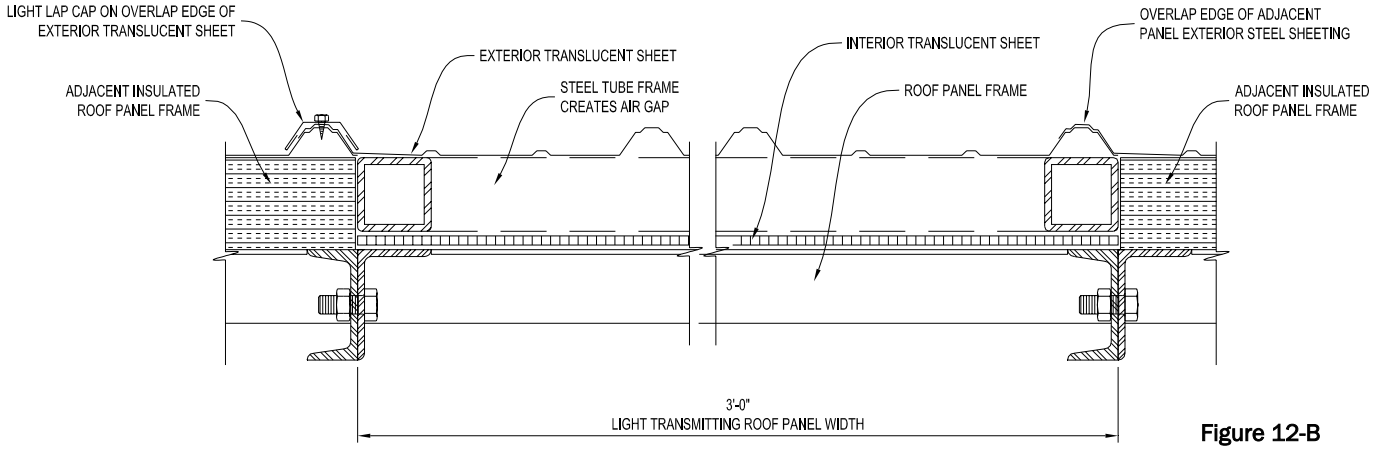


Figure 12-B

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

Personnel Doors are the "exits" in a building. It is imperative that those considering the purchase of a Small Span building consult their local governing building officials prior to purchase to ensure any applicable regulations on egress are met.

The "standard" personnel door for a Small Span building is 3'-0" wide x 7'-0" high, which is factory installed in a 3'-9" wide Small Span wall panel. An adjoining panel is a 2'-3" narrow filler panel as illustrated in Figure 13-A.

The standard door swing, with the lockset on the left, is illustrated in Figure 13-A and 13-B. An alternate right knob position can be provided when a "special feature" note is included in the building description.

Standard 3'-0" Wide x 7'-0" High System 2 Personnel Door

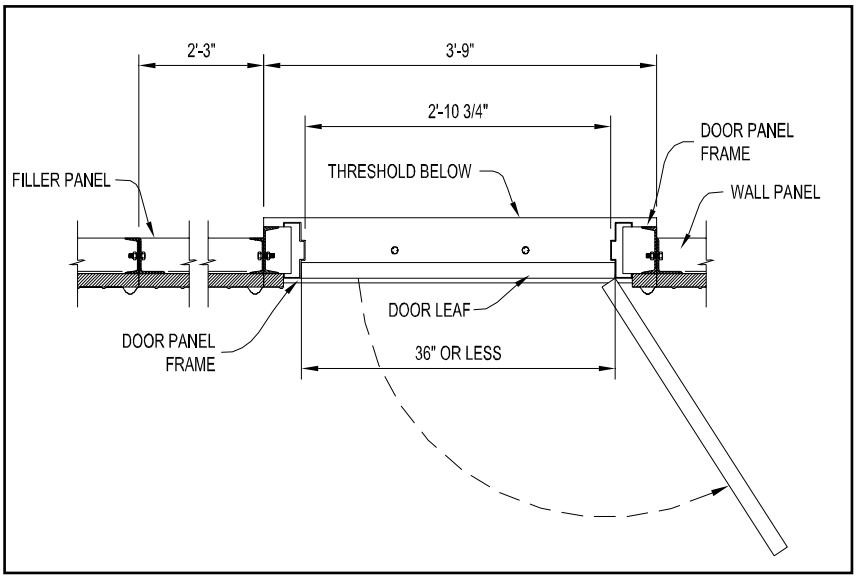


Figure 13-A

Personnel Door Options

OPTIONAL DOUBLE PERSONNEL DOORS are shipped as (1) one 6'-0" wide panel. The cold rolled steel door frame for a 5'-8" x 7'-0" double hollow metal door is pre-installed in this double wide (6'-0") Small Span wall panel as shown in Figure 14-A. The 2'-8" wide and 3'-0" wide hollow metal door leaves are shipped installed and are square and fit properly when they leave production. Unless otherwise specified, the wide leaf is active and the narrow leaf is inactive. *The standard lockset arrangement, with the handle on the right leaf, for an "Optional" Double Personnel Door is illustrated in Figure 14-A. An alternate handle position on the left leaf can be provided when a "special feature" note is included with the building description.*

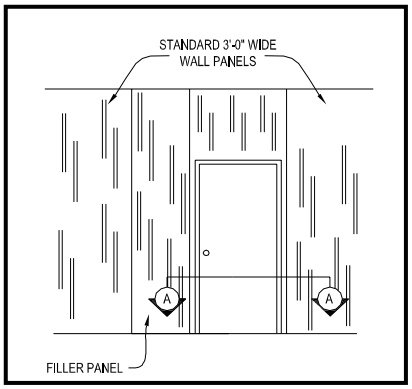


Figure 13-B

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

DOOR CLOSERS (Figure 14-B) are provided with all doors.

RECESSED DOORS (Figure 14-C) designed to be flush with the slab when a building is placed on a curb can be supplied upon request.

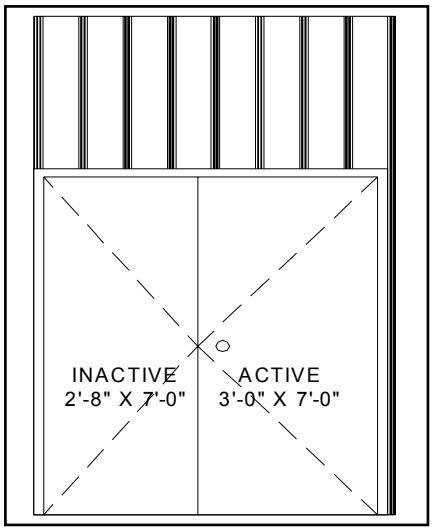


Figure 14-A
5'-8" Wide x 7'-0" High Double Door Factory Mounted in a 6' Sidewall Panel (Exterior Elevation)

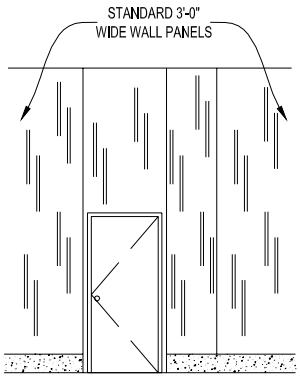


Figure 14-C

The bottom of a "Standard" Small Span Personnel Door Panel is designed to be positioned at the same location as the adjacent sidewall panels as shown below. Only when noted as a "Special Feature" on the building description will a depressed door be provided, as shown above.

Figure 14-B

Standard 3'0" W x 7'-0" H Personnel Door placed in a Small Span building.

Standard 5'-8" w x 7'-0" H Double Door placed in a Small Span building.

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

Standard 3070

Door Panel	3'-9" Wide Small Span Panel with 2'-3" Filler Panel Adjacent
Door Leaf	1-3/4" Thick 18 Ga. w/ Honeycomb Core
Door Frame	5-3/4" Deep 16 Ga. Steel
Door & Frame Finish	Steel Primer and Painted with Corrosion Resistant Top Coat
Door & Frame Color	Standard Gray (Painted to match exterior sheeting for an extra charge)
Hardware Finish	US26D (Satin Chrome) or Plain Aluminum Finish is standard depending on item
Hinges	Qty = 3 Stanley FBB179 4.5 Ball Bearing Hinges
Entry Lock	S. PARKER B9160 SERIES Stainless Steel Light Commercial Entry Lock
Closer	S. PARKER 954 AL Light Commercial Closer
Door Sweep	MD DCV134 AL
Weather Stripping	None
Threshold	Standard 3/16" Formed Steel

Standard 5870 & 6070

5870 Door Panel	6'-0" Wide Small Span Panel
5870 Door Leaf-Active	3'-0" Wide 1-3/4" Thick 18 Ga. w/ Honeycomb Core & Lockset Prep
5870 Door Leaf-Inactive	2'-8" Wide 1-3/4" Thick 18 Ga. w/ Honeycomb Core & Flushbolt Prep
6070 Door Panel	7'-6" Wide Small Span Panel w/ 1'-6" Filler Panel Adjacent
6070 Door Leaf-Active	3'-0" Wide 1-3/4" Thick 18 Ga. w/ Honeycomb Core & Lockset Prep
6070 Door Leaf-Inactive	3'-0" Wide 1-3/4" Thick 18 Ga. w/ Honeycomb Core & Flushbolt Prep
Door Frame	5-3/4" Deep 16 Ga. Steel
Door & Frame Finish	Steel Primed and Painted with Corrosion Resistant Top Coat
Door & Frame Color	Standard Gray (Painted to match exterior sheeting for an extra charge)
Hardware Finish	US26D (Satin Chrome) or Plain Aluminum Finish is standard depending on item
Hinges	Qty = 3 Stanley FBB179 4.5" Ball Bearing Hinges per Leaf
Entry Lock	S. PARKER B9160 SERIES Stainless Steel Light Commercial Entry Lock
Closer	S. PARKER 954 AL Light Commercial Closer
Door Sweep	MD DCV134 AL
Weather Stripping	None
Flush Bolts (Inactive Leaf)	(2) IVES 458B 12"
Threshold	Standard 3/16" Formed Steel

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

Upgrades for Personnel Doors and Double Doors

In lieu of Entry Locks Above:

Heavy Duty Entry Lock:	Schlage D-Series or Best 83K
Heavy Duty Lever Lock:	Schlage D-Series or Best 90K
Panic Hardware-3070 Doors:	Von Duprin Series 22 Exit Only (Light Duty)
	Von Duprin Series 22 w/ Lever Outside Entry and Schlage Lock Cylinder (Light Duty)
	Von Duprin Series 99 Exit Only (Heavy Duty)
	Von Duprin Series 99 w/ Lever Outside Entry and Schlage Lock Cylinder (Heavy Duty)
Panic Hardware- 5870 & 6070 Double Doors Single Active Leaf Only	Von Duprin Series 99 Mortise Exit Only (Heavy Duty) Von Duprin Series 99 Mortise w/ Lever Outside Entry and Schlage Lock Cylinder (Heavy Duty)
Panic Hardware- 6070 Double Doors Upgrade to Double Active Leaves	Dual Von Duprin Series 99 Vertical Rod Type Panic Hardware w/ Lever Outside Entry and Schlage Lock Cylinder (Heavy Duty)
Best Cylinders:	Best Lock Cylinders can be supplied on all panic hardware if required. Note: Best Locksets or cylinders are supplied WITHOUT the actual lock core. Core is by others.

In lieu of Hinges Above:

Hinges:	Qty = 3 FBB191 NRP US32D
	Heavy Duty Bearing, Stainless Steel with Non-Removeable Pin

In lieu of Closer Above:

Closer:	LCN 4041 Heavy Duty Closer
Weather Stripping:	Reese 815-C Aluminum w/ rubber bulb seal
Door Frame:	Upgrade to Galvanized Base Metal w/ Primer & Top Coat
Door Leaf:	Upgrade to Galvanized Base Metal w/ Primer & Top Coat Upgrade to Polystyrene Insulated Core (R 7.7)

UFC 4-010-01 Anti-Terrorism Doors are the same as above except:

Door Frame:	14 Ga. Galvanized Steel
Door Leaf:	16 Ga. Galvanized Steel w/ Honeycomb Core
Entry Lock:	Schlage ND53PD Lever Lock
Hinges:	Qty. = 3 FBB191 NRP US32D per Leaf
Closer:	LCN 4041 Heavy Duty Closer

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

"Standard" and "Optional" Equipment Doors

"STANDARD" NON-SLAT CONTINUOUS CURTAIN EQUIPMENT DOORS (Figure 17-A) are constructed from 26 gauge galvanized steel roll formed in continuous corrugation. Galvanized according to A.S.T.M. A653-G60 and finished with baked epoxy primer and baked polyester topcoat. Each end of alternate slats to be fitted with endlocks to act as a wearing surface in the guides and to maintain slat alignment. Thickness of slat material to be as required by width of opening and windloading conditions. Bottom bar curtain to be reinforced with a bottom bar consisting of 14 gauge galvanized steel angle. Counterbalance is housed in a steel pipe of diameter and wall thickness to restrict maximum deflection to .03" per foot of door width. Springs are to be helical torsion.

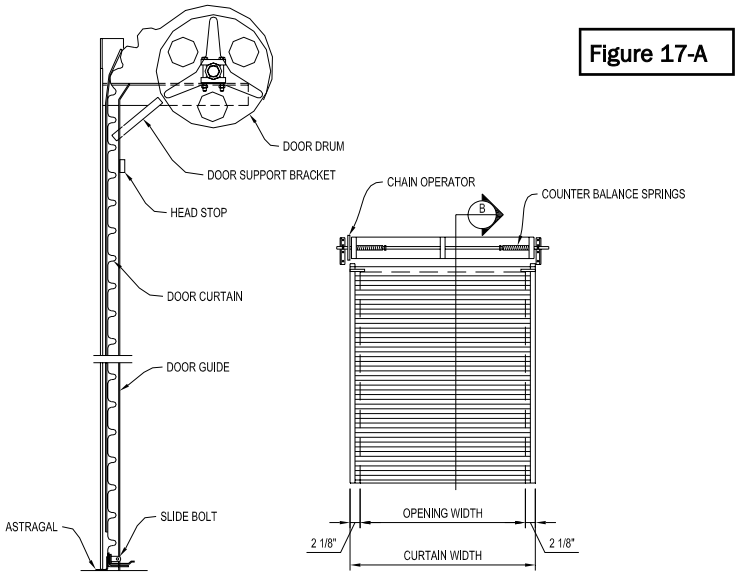
All doors are manually chain operated 12'-0" wide, available in heights up to 12'-0" and painted with a white primer. Finish painting, if required, to be done in the field by others. Standard Equipment doors are not supplied with insulation, motor operator or steel hood to house coil.

"OPTIONAL" INSULATED NON-SLAT CONTINUOUS CURTAIN EQUIPMENT DOORS (Figure 17-B) have two fire retardant layers of mylar film laminated to the outside of two layers of heavy duty polyethylene air bubble cushioning laminated to the door. It has a 0.171 U-Value or 5.24 R-Value. The side air to be minimized by factory installed closed-cell ethafoam. Top draft stop is field installed at the header.

"OPTIONAL" EQUIPMENT DOOR ACCESSORIES. "Windlock" endlock attachments at the guides are designed to efficiently increase the windload resistance of non-slat continuous curtain doors. Using windlocks, equipment doors can be supplied that resist a 120 mph windload. "Motor Operators" can also be supplied if power is available.

Non-Insulated

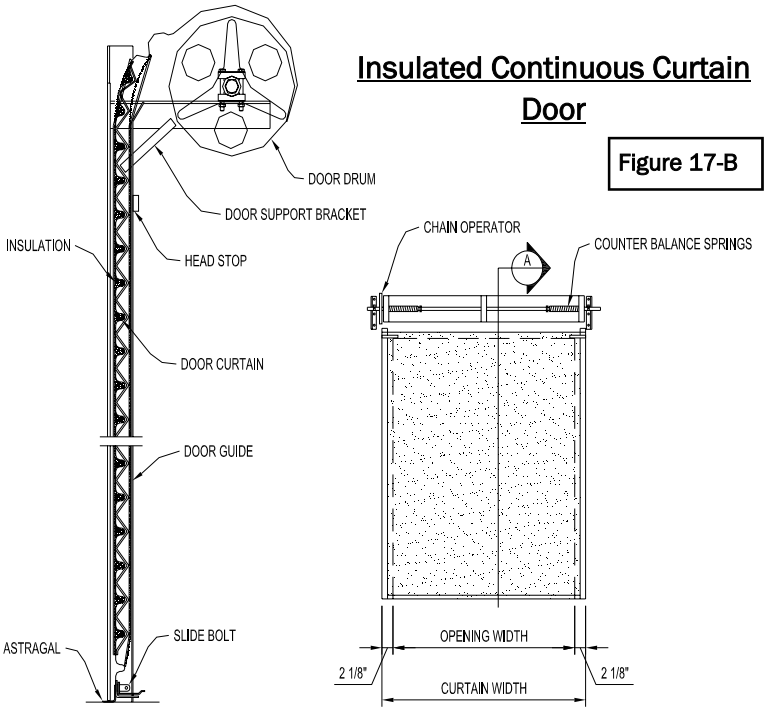
Figure 17-A



Section A | View from Inside of Building

Insulated Continuous Curtain Door

Figure 17-B



Section B | View from Inside of Building

"Optional" Non-Insulated Roll-Up Door

"OPTIONAL" NON-INSULATED SLATTED CONTINUOUS CURTAIN EQUIPMENT DOORS (Figure 18-A) are constructed from cold rolled formed steel slats in continuous lengths of galvanized steel interlocked to form curtains. Slats are prime coated by the manufacturer. Each end of alternate slats to be fitted with endlocks to act as a wearing surface in the guides and to maintain slat alignment. The door is designed to resist 90 mph windload in the fully closed postion. Thickness of slat material to be as required by width of opening and windloading conditions. Galvanizing is zinc coated in accordance with ASTM A525. Bottom bar curtain to be reinforced with a bottom bar consisting of steel angles. Counterbalance is housed in a steel pipe of diameter and wall thickness to restrict maximum deflection to .03" per foot of door width. Springs are to be helical torsion. Finish painting, if required, to be done in the field by others.

"OPTIONAL INSULATED SLATTED CONTINUOUS CURTAIN EQUIPMENT DOORS (Figure 18-B) are constructed from two-sided cold rolled formed galvanized steel slats formed in place to fill voids with polyurethane foam to achieve an Insulation Value of R-9.

"OPTIONAL" EQUIPMENT DOOR ACCESSORIES.
"Windlock" endlock attachments at the guides are designed to efficiently increase the windload resistance of slatted curtain doors. Using windlocks, equipment doors can be supplied that resist a 130 mph windload
"Motor Operators" are available upon request.

Non-Insulated Flat Slat

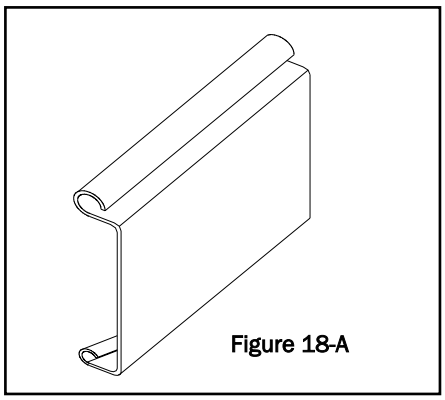


Figure 18-A

Insulated Flat Slat

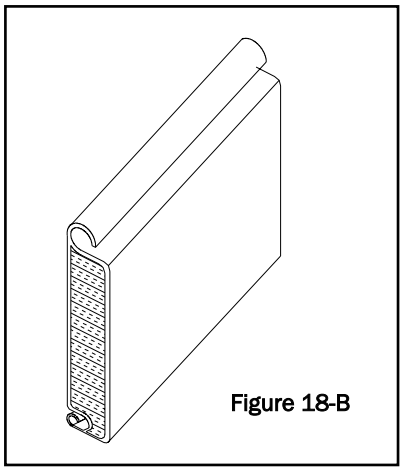


Figure 18-B

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

Small Span pre-framed, modular, relocatable building panels are fabricated using 2" steel angle. Taller wall panels will use angle/channel construction or are upgraded to 3" angle. The bolting of adjacent panel members creates a combined member and is the basis for the Small Span structural system.

The basic structural system for snow and roof loads is the truss system in the roof and the vertical members in the sidewall panels. There are roof trusses every 3'-0" on center down the length of the building. The top chord of the truss is formed by the combined member of two adjacent hinged roof panels. A tension tie spanning from eave to eave forms the bottom chord. Web bracing finishes the truss structure. Refer to Page 5 for the Small Span Component Parts diagram. Snow load on the roof is transmitted through the roof truss to the sidewall panel vertical members. The sidewall panel members transmit this load to the foundation as a "gravity" load.

The basic structural system for wind and seismic resistance in the Small Span building is the shear strength created in the plane of the roof and walls. The shear strength refers to the ability of a Small Span wall or roof panel to resist loads parallel to the panel. Windload against a wall of the building is resisted by the roof and the adjacent wall. For example, wind against the sidewall of the building is transmitted through the roof to the endwalls. The shear strength of the endwall transmits the load to the foundation. Buildings with higher seismic requirements will include "braced" wall and roof panels to resist seismic forces.

The shear strength of Small Span panels has been completely tested, and the results are used in the design and layout of Small Span buildings. The width, length and height of the building will result in a certain number of "clean" panels in each wall to resist the wind and seismic loads for the building's location. Clean panels refer to panels that are not interrupted by personnel doors, equipment doors, windows or large openings. A Kelly representative will work with you to determine a building layout that will meet your needs.

SMALL SPAN SHEAR STRENGTH TESTING
(Being conducted with professional engineer's supervision at the Kelly Klosure facility in Fremont, NE, 2005)

BRACED WALL PANELS IN A SEISMIC DESIGNED SMALL SPAN PUMP HOUSE
(Building shown being assembled at customer's facility on customer supplied skid)

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

Roof loads are typically governed by snow loads and are established by local building officials. Snow loads are given in terms of the Ground Snow Load. The actual snow load used for building design is determined by applying Code-prescribed load formulas given the Ground Snow Load and building characteristics. For the design tables developed for the Small Span building, ASCE 7-05 was used to determine the design loads. ASCE 7-05 is a document issued by the American Society of Civil Engineers and is referenced by several model building codes, including the International Building Code.

Wind loads on buildings are typically established by local building officials and are given in terms of Basic Wind Speed (BWS). The BWS, along with other parameters, are applied to Code-prescribed load formulas to determine the design wind pressures for buildings. ASCE 7-05 was used to determine the design wind pressures.

Seismic Design of buildings is governed by the requirements of ASCE 7. Seismic Category (from A to F) is assigned to a given building application depending on the seismicity of the site, the soil condition at the site, and the properties of the building. Due to the lightweight construction of the Small Span building, seismic lateral loads rarely govern over lateral wind loads, but in higher seismic design categories (D, E and F), steel detailing requirements can affect the design of the building. The Small Span building can be designed to conform to the seismic requirements of almost any site.

Building codes use **Importance Factors** to increase the load capacity of buildings in critical applications such as hazardous waste storage, emergency power enclosures and water treatment facilities. The IBC 2006 building code uses Occupancy Categories to figure the Importance Factors, the standard being Occupancy Category 2. Kelly buildings are quoted as Occupancy Category 2 unless otherwise specified by the customer.

Professional Engineering Services:
Kelly Klosure Systems buildings are professionally engineering by registered structural engineers. Engineer stamped drawings, design certificates or complete structural calculations are available at an additional charge. Complete foundation design services are also available.

Base Reactions:
Due to the many variables that affect the base reactions of a Small Span building, no simple method of determining the specific reactions of a building is available for this guide. Base Reactions or Anchor Bolt Reactions are available for your specific building upon request to assist in your foundation design.

Building Code:
The Small Span Building System is a pre-engineered system designed for the latest building code, the 2006 International Building Code or IBC 2006. The Small Span framing system has been designed for loads up to 130 MPH wind and 50 PSF snow. This will allow for Small Span building to be used in the vast majority of locations throughout the country. However, if a building is required to meet loads beyond those listed, Kelly Klosure will recommend a System 2 building in lieu of a Small Span. System 2 buildings have been designed for loads in excess of 180 MPH wind, and 100 PSF Snow.

Due to the Small Span Building System relying on the shear strength of each wall to resist wind loads, there are limits to the length of a building compared to its width. As a general rule, the 4:1 ratio of length to width is the limit to a Small Span building's size. When a building's length is over twice the width, there may be limits as to the number of openings or doors that are possible in the endwall. Panel construction, wind load, eave height and seismic design category are some of the variables that affect a Small Span building's maximum length and restrictions on endwall openings. For this reason, there is no way to produce simple charts stating these restraints; however a Kelly Klosure representative will help with creating a layout that fits your needs and meets the required building design loads.

Note: When a building is required that exceeds the Small Span limits, a System 2 building is recommended. System 2 buildings can handle higher design loads and a theoretically infinite length.

SMALL SPAN IBC 2006 DESIGN LIMITS	
WIND	130 MPH (3 SEC GUST)
SNOW	50 PSF (GROUND SNOW LOAD)
SEISMIC	DESIGN CATEGORY 'E'
BUILDING SIZE	4:1 LENGTH TO WIDTH RATIO

CLASSIFICATION OF BUILDINGS AND OTHER STRUCTURES FOR IMPORTANCE FACTORS

CATEGORY[a]	NATURE OF OCCUPANCY	SEISMIC FACTOR I_E	SNOW FACTOR I_S	WIND FACTOR I_W
I	Buildings and other structures that represent a low hazard to human life in the event of failure including, but not limited to: • Agricultural facilities • Certain temporary facilities • Minor storage facilities	1.00	0.8	0.87[b]
II	Buildings and other structures except those listed in Categories I, III and IV	1.00	1.0	1.00
III	Buildings and other structures that represent a substantial hazard to human life in the event of failure including, but not limited to: • Buildings and other structures where more than 300 people congregate in one area • Buildings and other structures with elementary school, secondary school or day care facilities with an occupant load greater than 250 • Buildings and other structures with an occupant load greater than 500 for colleges or adult education facilities • Health care facilities with an occupant load of 50 or more resident patients but not having surgery or emergency treatment facilities • Jails and detention facilities • Any other occupancy with an occupant load greater than 5,000 • Power-generating stations, water treatment for potable water, waste water treatment facilities and other public utility facilities not included in Category IV • Buildings and other structures not included in Category IV containing sufficient quantities of toxic or explosive substances to be dangerous to the public if released	1.25	1.1	1.15
IV	Buildings and other structures designed as essential facilities including, but not limited to: • Hospitals and other health care facilities having surgery or emergency treatment facilities • Fire, rescue and police stations and emergency vehicle garages • Designated earthquake, hurricane or other emergency shelters • Designated emergency preparedness, communication, and operation centers and other facilities required for emergency response • Power-generating stations and other public utility facilities required as emergency backup facilities for Category IV structures • Structures containing highly toxic materials as defined by Section 307 where the quantity of the material exceeds the maximum allowable quantities of Table 307.7(2) • Aviation control towers, air traffic control centers and emergency aircraft hangars • Buildings and other structures having critical national defense functions • Water treatment facilities required to maintain water pressure for fire suppression	1.50	1.2	1.15

a. For the purpose of Section 1616.2, Categories I and II are considered Seismic Use Group I, Category III is considered Seismic Use Group II and Category IV is equivalent to Seismic Use Group III.

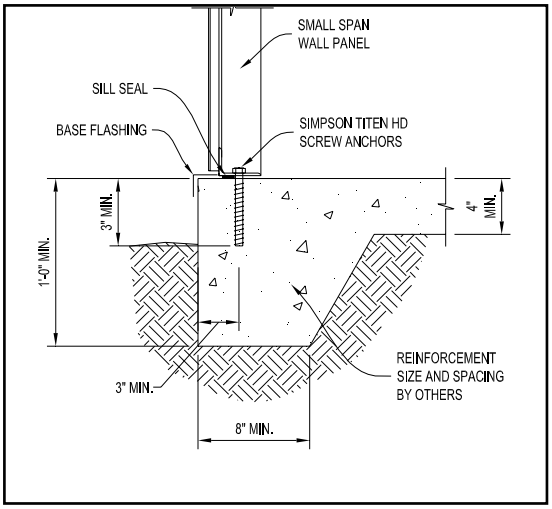
b. In hurricane-prone regions with $V > 100$ miles per hour, I_w shall be 0.77.

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

-Typical "Permanent" Foundation Options-

Small Span purchasers are responsible for foundation installation and design. Purchasers need to establish foundation concrete depth dimensions and reinforcement requirements based on specific site soil conditions and frost depth. The foundation dimensions shown here are minimum geometry requirements to accept building base. The concrete anchors shown here are considered customer supplied items; however, they can be supplied if requested. Approval drawings are supplied before fabrication of all orders, these drawings will include a recommended minimum foundation size to accept the building size and standard base flashing.

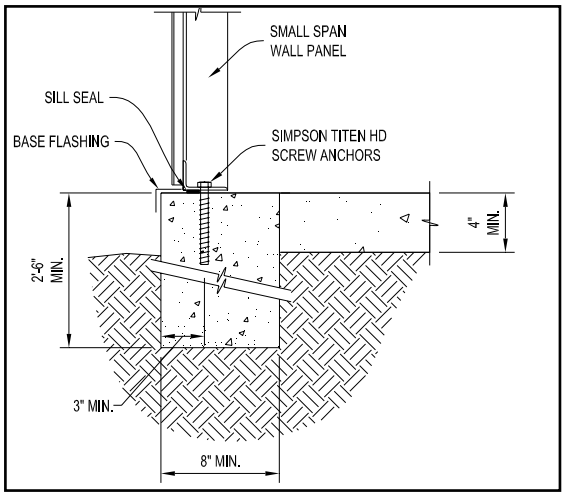
Thickened Edge Slab Foundation Option



This **Thickened Edge Slab Foundation Option** is commonly used in warm weather regions when the intended use of the Small Span structure requires a slab anyway.

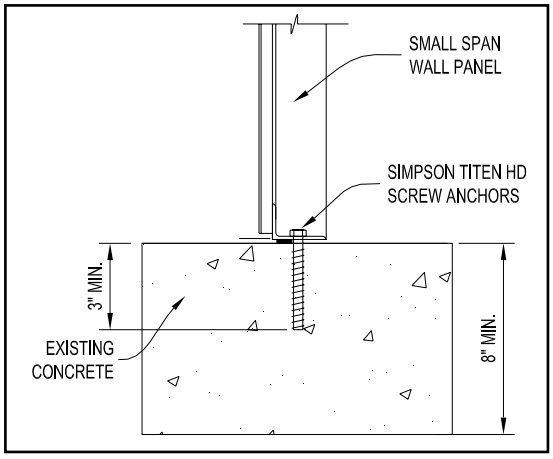
Anchor Bolt Pre-Setting Not Required

Trench Wall Foundation Option



This **Trench Wall Foundation Option** is typically used with or without an adjacent interior slab in cold weather areas where frost heave is a concern.

Existing Slab Foundation Option

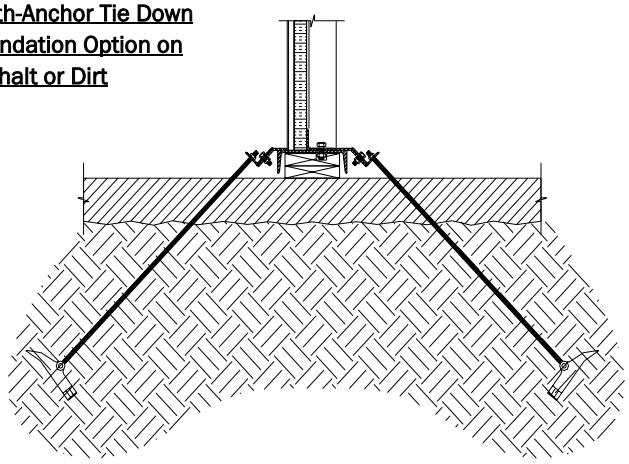


This **Existing Slab Foundation Option** has been successfully used to support Small Span buildings on existing roadways and runway slabs in warm weather regions.

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

-Unique "Temporary" Foundation Options-

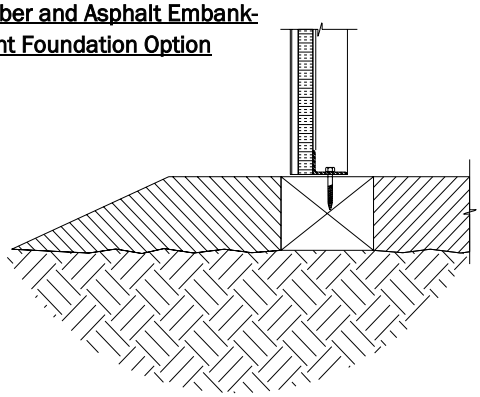
Steel Base Plate and Earth-Anchor Tie Down Foundation Option on Asphalt or Dirt



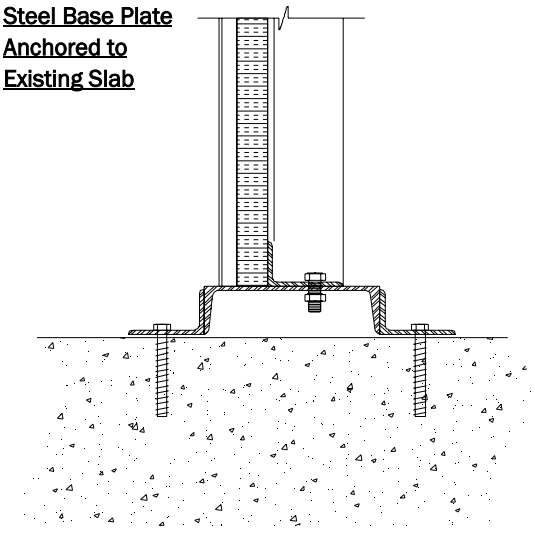
The unique **temporary foundation** options shown here have actually been successfully used. Some were sold as a special feature with Small Span buildings, while others were fabricated locally by the customer. In all cases, a Kelly technical representative provided design input. Each job is in some way unique. We at Kelly strive to be of assistance. You can be assured we will do what we can to assist you in solving your unique problem.

Small Span buildings are designed structurally to meet code when anchored to a permanent foundation, even when quoted with temporary foundation options. Today's temporary enclosure can be tomorrow's fully permanent building.

Timber and Asphalt Embankment Foundation Option



Steel Base Plate Anchored to Existing Slab



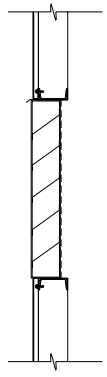
Kelly Klosure Small Span buildings are commonly used for unheated, uninsulated storage buildings. In many situations electric power may not be available. On other projects, power is available and the buildings are insulated. The following basic engineering guidelines are included as an aid for selecting the Kelly Klosure ventilation component that will normally maintain interior moisture at an acceptable level. Kelly Klosure customer service representatives are not trained HVAC engineers. The purchaser is advised to consult a licensed professional in their area for specific mechanical design.

Standard Kelly Klosure Small Span Ventilation Component Options:

STANDARD 2'X2' INTAKE LOUVER – Gravity/ Wind Driven. These fixed vane louvers are preinstalled in Kelly Klosure Small Span endwall panels as low as practical, usually about 6' to 8' above the floor level (see Figure 24-A). These components provide 700 cfm (cubic feet/minute) of gravity or wind driven ventilation air flow.

These louvers are formed from galvanized sheet metal with bird screen and waterstops. Units are available only on plain galvanized finish.

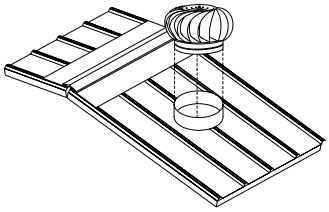
Figure 24-A



Wall Panel Cross-Section with Standard 2' x 2' (Fixed Vane) Intake Louvers

STANDARD 12" DIAMETER EXHAUST TURBINE VENTILATORS – Gravity/Wind Driven. A flashed attachment collar sleeve is pre-installed in the Kelly Klosure Small Span roof panel located as close as practical to the roof's ridge. Turbine Ventilators are then field attached to the pre-installed collar sleeve with self-tapping sheet metal screws. These internally braced turbines are constructed of plain galvanized sheet metal. Each unit should be able to provide 631 cfm of gravity or wind driven exhaust at a 4 MPH wind. Turbine units are available only in plain galvanized
finish. (See Figure 24-B)

Figure 24-B



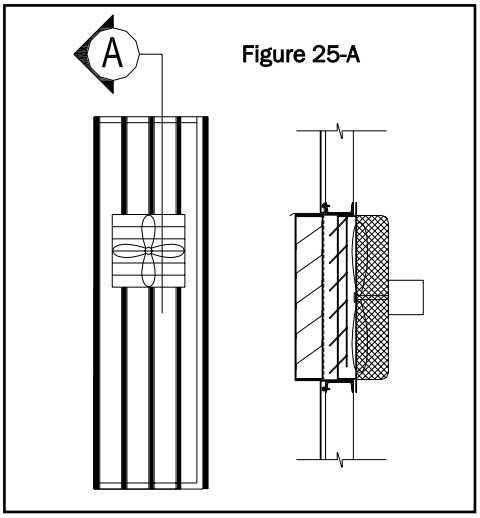
Roof Panel withStandard 12" Diameter Exhaust Turbine Ventilators

STANDARD 20" ELECTRIC POWERED EXHAUST FANS. These fans have the capacity of 1400 cfm of ventilating air. Fans with dampers are shipped separately. They are typically field mounted to the inside surface of the 2'x2' intake louver. The fixed vane 2'x2' louver is pre-installed in Kelly Klosure Small Span endwall panels. Exhaust fans are installed as high as practical above the floor level. Fans are 2-speed 60 HZ, 115 volt and draw 4.4 amps. Purchaser must provide the electrical hook-up and appropriate power source.

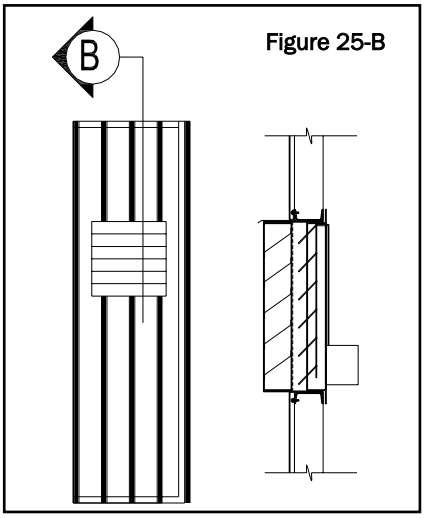
Specs for 20" Fan w/ Gravity Damper Mounted on 24" x 24" Fixed Louver

2955 CFM @ 0.0 In SP
1960 CFM @ 0.25 In SP
Single Speed
1725 RPM 1/4 HP Totally Enclosed Motor
115 Volt/ 60 HZ/4.5 Amp

STANDARD 2'X2' LOUVER WITH MOTORIZED DAMPER. These motorized intake dampers and fixed vane louvers are pre-installed in Kelly Klosure Small Span endwall panels as low as practical, usually about 6' to 8' above the floor level. The motorized dampers are electrically controlled by a standard power exhaust fan at another location
(See Figure 25-A and 25-B)



Endwall Panel Elevation and Section with Standard Power Exhaust Fan with Damper and Standard 2'x2' Fixed Vane Intake Louver



Endwall Panel Elevation and Section with Standard 2'x2' Louver with Motorized Damper

STANDARD 2' WIDE X 3' HIGH SLIDING WINDOWS.

Side sliding frame 2' wide x 3' high window units with screens are pre-installed in Kelly Klosure Small Span sidewall panels with the top of opening at 7' from the floor. Glass glazing is "standard". This window, in the fully opened position, will theoretically provide 1500 cfm of gravity or wind driven ventilation. However, screens are commonly used and they often become clogged over time. Therefore, the actual ventilation value is difficult to determine. (See Figure 25-C)

Note: **UFC 4-010-01 Anti-Terrorism** rated windows are available upon request. These units have significant lead time.

Special size fixed and sliding windows in economical vinyl or upgraded aluminum frames are available upon request. Kelly recommends windows no wider than 2'-6" for factory installation.

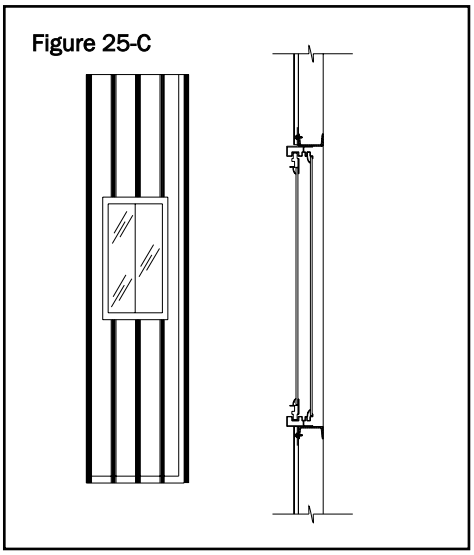
SUMMARY

Table 1 on page 26 includes a summary of the intake and exhaust rates for the components described above.

During the winter months, the air is relatively dry and moisture usually doesn't present a problem. However, in the summer when the air is moisture laden, the ventilation helps prevent interior moisture buildup. *A reasonable ventilation rate to be considered for moisture removal in a dry storage structure is one (1) air change per hour. This rate is based on having a vapor barrier floor system.*

If it is the intent to provide a degree of comfort for the personnel working in the dry storage warehouse or simple assembly facility, then ventilation and/or heating should be considered as suggested in Tables 2 and 3 on page 27.

NOTE: In addition to the standard ventilation options shown here, a complete array of Greenheck ventilation components can be supplied and factory installed in Small Span buildings.



Sidewall Panel Elevation and Section Panel Elevation with Standard 2'W x 3'L Sliding Window

Table 1

Component	Force Driving Wind	Intake or Exhaust	Air Flow Rate (CFM
Std. 2x2 Louver (Fixed Vane)	Force Gravity/ Wind	Intake	700
Std. 2x2 Louver and Motorized Damper	Remote Power Exhaust Fan Controlling Damper	Intake	700
Std. 12" Diameter Roof Turbine	Gravity/ Wind	Exhaust	650
Std. 20" Power Fan with Damper and Std. 2x2 Louver	Electric Power 115 Volt 60 Hz 4.5 Amp	Exhaust (Intake Reversible Fan Also Available)	2950 @ 0.0 in s.p.

Outside view of Window

Interior View of Exhaust Fan

Factory Installed 2x2 Louvers

Factory Installed 2x2 Louvers

Table 2

Summer Ventilation Data

Construction Type	Suggested Ventilation Rate
Uninsulated	*20 Air Changes/Hr.
Insulated @ R-11	**20 Air Changes/Hr.
Insulated @ R-19	20 Air Changes/Hr.

* Not recommended where personnel comfort is a consideration. In other words, building should be evaluated if comfort is a concern.

** Suggested that spot air conditioning be considered in heat sensitive critical areas.

Table 3

Winter Ventilation Data

Construction Type	**Probable Heating Rate
Uninsulated	* Not Applicable
Insulated @ R-11	60 BTUH/Sq. Ft. (Output)
Insulated @ R-19	40 BTUH/Sq. Ft. (Output)

* Not recommended where personnel comfort is a wintertime consideration. In other words, building should be evaluated if comfort is a concern.

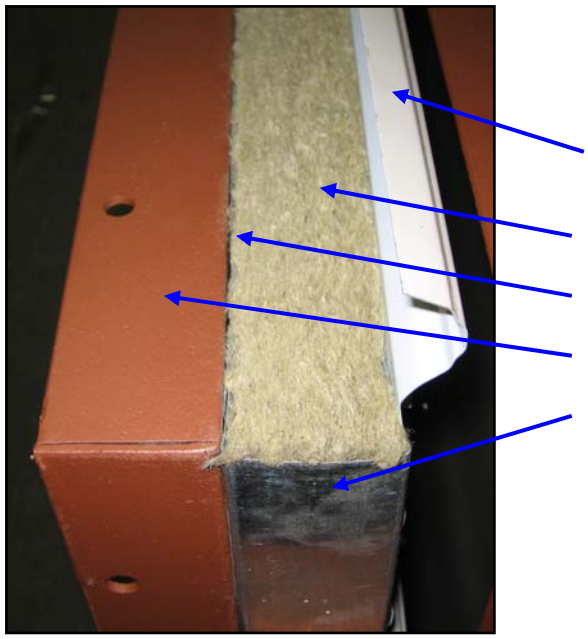
** Based on 90 degree temperature difference between space temperature and outdoor design temperature with 15-MPH wind velocity. Heating must be increased to compensate for space makeup air heating for ventilation or infiltration.

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

NON-COMBUSTIBLE CONSTRUCTION

Kelly Klosure Small Span Buildings can be manufactured with a few special materials to meet requirements for non-flammable construction.

1. Mineral Wool Insulation in lieu of standard polyisocyanurate rigid insulation. (This insulation is not designed to meet energy code requirements.)
2. Aluminum Frame Windows in lieu of standard vinyl frame windows.



SMALL SPAN MINERAL WOOL INSULATED PANEL COMPONENTS

- Painted of Galvalume Exterior Sheeting with Anti-Syphon Overlapping Edge
- 2" Mineral Wool Insulation
- Galvanized or Painted Steel Insulation Liner
- Small Span Panel Frame
- Protective End Cap at Top and Bottom of Panel

Delta 12 Mineral Wool Insulation Specifications:

- **"Incombustible" [ASTM E136 Test Method]**
- **Service Temperature [ASTM C411] : up to 1200°F (649°C)**
- **Corrosion [Steel, Aluminum, Copper, ASTM C665] : None**
- **Moisture Sorption [Vapor, ASTM C1104] : Less than 1%**
- **Water Wicking Resistant & Non-Hygroscopic**
- **Does not promote growth of fungi or bacteria.**
- **Surface Burning Characteristics [ASTM E84 Test Method]:**

  Flame Spread Index = 5
  Smoke Developed Index = 0

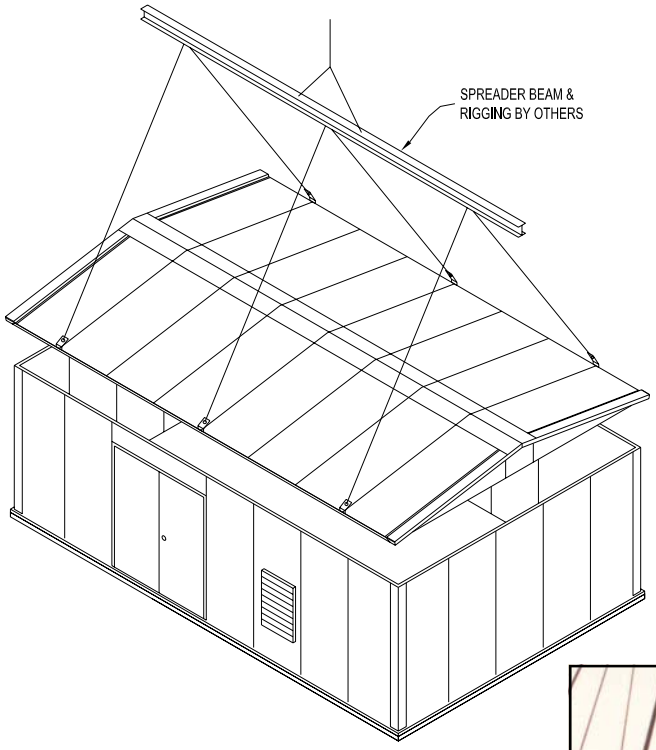
- **2" Thickness R-Value: R-9**

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

Kelly Klosure Small Span Buildings are engineered for maximum versatility. In addition to being able to reconfigure a building as needs change, entire sections of the building can be removed by crane. A building can even be designed to be picked by a crane completely intact!

Note: All rigging, spreader beams, and lifting accessories should be sized and supplied by others. Wall stiffener channels will be provided by Kelly to stabilize the walls when the roof is removed.

Removable roof isometric



Crane Liftable Building

Crane Liftable Building

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

Kelly Klosure Small Span Buildings are available with pre-wired electrical packages. These electrical packages are manufactured by licensed electricians and include a 100 amp single phase main panel, fluorescent lighting, duplex outlets and HVAC circuits. Simple field installation of the pre-wired system by clamping the conduits and junction boxes to the steel frames of the building and attaching the main panel to your power source. Call a Kelly Klosure representative for layout drawings for you building.

Main Panel:	Square D QO Series, 100 Amp, Single Phase, 20 Spaces
Lighting:	F32T8 Wet Location 4' Fixture, Lamps Included Pre-Wired with Cord for Connection to Duplex Outlet
Outlets:	Standard 20 Amp Duplex Outlets
Conduit:	1/2" & 3/4" Non-Metallic Liquid Tight Flexible Conduit
Special Needs:	240 Volt Single Phase Outlets for HVAC and Basic Ventilation Controls Available Upon Request
Installation:	Main Panel, Outlets and Switches are Factory Wired with Flexible Conduit. Main Panel Factory Mounted to Small Span Wall Panel, Clamps are Provided for Attaching Conduits and Boxes to Panel Frames

Simple Installation

Factory Wired Main Panel

Modular Lighting System

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

Factory installed features save valuable time in the field and provide for a professional result without the need for highly skilled installation crews!

It is impossible to list all the possibilities. Call Kelly Klosure and let us help you solve your challenging building needs!

This partially completed Small Span Building for FAA has a factory installed Orange & White paint scheme for use in close proximity to aircraft runways as an emergency generator enclosure.

This Small Span Building has factory installed framing to accept multiple pipe penetrations.

This Small Span Building has factory installed framing to support wall-mount HVAC units. It is installed under a large transmitter tower and has factory installed roof clips to accept bar-grating for ice protection.

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

SHORT FORM SAMPLE SPECIFICATIONS

This specification covers the general requirements for a pre-engineered structured panel building system with the following features:

Minimum Inside Plan Dimensions.....18'Wide x 24'Long
Nominal Eave Height.....10' Eave
Exterior Sheeting (Profile and Gauge).....Standard Profile and Gauge
Exterior Finish.....Unpainted Galvalume
Interior Finish.....Panel Frames Prime Painted Red
Structural Design:
- Model Building Code.....2006 IBC
- Roof Load.....30 psf (Drift Not Applicable)
- Wind Load.....90 MPH (3-second Gust)
- Exposure.....C
- Engineering Registration.....State of _____
- Submittals.....(1) Mfg. Std. Approval Drawings (Standard)
  (2) Drawings Stamped by an Engineer Registered in the State of _____.
  (3) Design Certificate Stamped by _____.
  (4) Structural Calculations by an Engineer registered in the state of ____.

Personnel Doors (No. and Size).....2 EA 3'0" wide X 7'0" High
Endwall Equipment Door (No., Size & Location).....None
Factory Installed Rigid Insulation (walls).....R-11 (1.1/2")
Factory Installed Insulation Liner (walls).....28 Ga. Galvanized Steel
Factory Installed Rigid Insulation (roof).....R-11 (1.1/2")
Factory Installed Insulation Liner (roof).....28 Ga. Galvanized Steel
Skylights (No. & Type).....4 EA Optional 3x8 Double Glazed
Special Features.....Design Structure and Supply required picking/brackets and steel base plate to gang-lift the entire building at 6 points with a crane and spreader bar provided by others.
Acceptable Product.....Kelly Klosure Small Span, Fremont, Nebraska, 402-727-1344 or approved equal including the above features and meeting the following specifications.

The pre-engineered panelized building described above shall be capable of being easily and quickly assembled or disassembled from pre-framed modular panels with a crew which has no pre-exposure to the system. The term pre-framed modular panels, as used here, shall mean easy-to-assemble structured panels manufactured as integral units of pre-framed structure, exterior steel sheeting, and rigid insulation, if applicable. The exterior sheeting and insulation shall be factory attached to the face of the structure with anti-siphon overlapping edge to prevent leaks. Attaching exterior sheeting and insulation with self-tapping screws or other devices at the erection site shall not be acceptable. Pre-framed panels shall be fabricated by a manufacturer experienced in the business of engineering, producing, and field servicing structured panel buildings. A complete set of drawings tailored to this application shall be provided to illustrate assembly. The building described herein shall be capable of being easily dismantled, packaged, and transported by standard highway vehicle without special load permits and then reassembled at a new site.

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

-Structured Panel = Versatility-
Ideal for Specialty Needs

A survey of Kelly Klosure owners identified the system's "versatility" as a big reason they have become repeat customers. Versatility or flexibility means different things to different customers. When questioned further, these customers identified sidewall panel access and removable roof sections as their definition of "versatility". (Figure 33-A) Others identified the potential to gang-lift the entire building (Figure 33-B), and still others mentioned the ability to reconfigure sidewall and roof panels as their concept of "versatility".

Kelly Klosure structural panel buildings are specified by engineers and facility managers who need a "Lift-Off Roof Building". (see Figure 33-A & Figure 33-C)

Plant maintenance managers, general construction contractors, industrial contractors and environmental remediation contractors are also Kelly customers. They have projects to complete or equipment to house and maintain, where a Kelly Klosure "Lift Off Building" ideally satisfies their needs

Some of these applications require temporary relocatable structures and others require a versatile permanent facility.

These same customers sometimes have construction, maintenance and remediation work requiring a structure which can be "gang-lifted as a unit" or "lifted in sections" with sidewall and roof sections intact. (See Figure 33-B)

Lift-Off Roof Buildings or buildings which can be "gang-lifted intact" or "lifted in sections" are options easily accommodated in the design of versatile Kelly Klosure System 2 structured panel buildings. Just let a Kelly Klosure customer service representative know your specialty needs, and he or she will work with Kelly engineers to develop a design that solves your problem.

Figure 33-A

Removable Roof Building

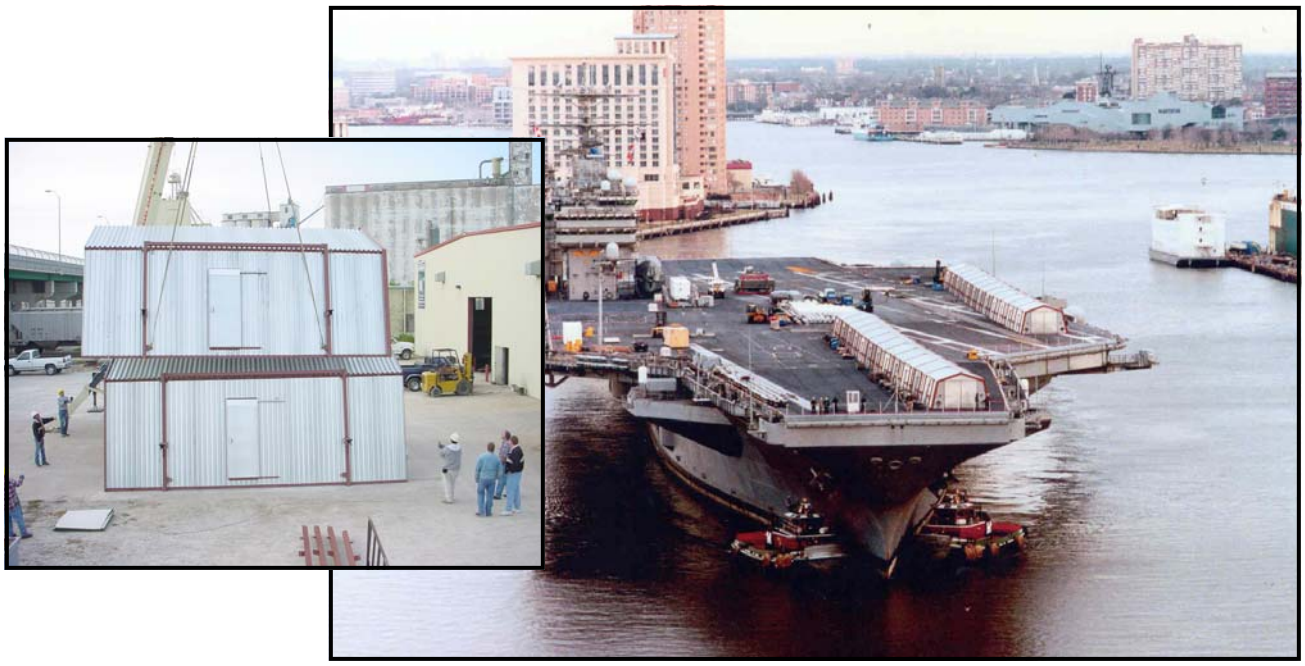
Roofs can be lifted off the building to allow large rotors to be set inside away from the weather.

Gang-Lifted Intact - Figure 33-B

Lift-Off Roof Building - Figure 33-C

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

Kelly Klosure can *customize* your building to fit almost anywhere in any way. We are constantly building structures to fit in tight spaces, stack on top of each other, or retrofit to your special needs. In many situations, Kelly will test the application at our manufacturing plant, so it works perfect when it arrives at your site. See below for some of our **"custom"** building applications.



Stackable buildings for aircraft carrier maintenance.

System 2 Walk-way for Pedestrian Traffic at an International Airport.

Test Stacking One Roof Section on Top of Another at our Manufacturing Plant in Fremont, NE.

Field Erection

Kelly Klosure Small Span

Rack of Small Span Pre-Framed Panels. Optional Insulation is Already Factory Installed.

VS.

Conventional Metal Building

Conventional metal building is delivered in parts and pieces of structural frame, loose insulation and sheeting.

MANY MORE HOURS OF FIELD LABOR & CONTRACTOR EXPERTISE.

We are often asked to describe the difference between a conventional metal building and a Kelly Klosure pre-framed modular panel building. It's a good question!! The terminology for both systems is similar, but they have different meanings. As an example, it is customary for other building manufacturers to describe their sheeting (corrugated or ribbed sheeting material) as panels. As can be seen from the pictures on page 36, this sheeting material or exterior surface material is attached to purlins and girts, usually with self-tapping screws. The purlins and girts are shipped separately and installed at the job site separately. When we describe a Kelly panel, we mean a factory fabricated panel of exterior sheeting or surface material, structural frame, and rigid insulation, if specified. In other words, they are integral modular

Kelly Klosure Small Span Panels delivered factory-assembled in convenient shipping frames.

Figure 35-A

Kelly Klosure Small Span end-wall panels bolt together.

Figure 35-B

Kelly Klosure Small Span hinged roof panels quickly bolt together to form the gable roof structure.

Figure 35-C

Assembled building looks similar, but requires less time and expertise to assemble.

Figure 35-D

panel units shipped ready to use as illustrated in Figures 35-A through 35-D.

Both building systems can be supplied with insulation, however, insulation provided in a Kelly Klosure building, as mentioned previously, is factory-installed and is a rigid polyisocyanurate fire-rated material. It is not damaged when exposed to moisture. On the other hand, when a metal building manufacturer refers to insulation, they are typically talking about batt insulation, usually with a craft paper of vinyl backing draped over the purlins. Then, their sheeting material is attached in the field to the girt or purlin through the insulation. As illustrated in Figure 36-B, this creates a thermal leak, because the insulation is compressed over the purlins and girts which reduces its thermal efficiency. Where, as illustrated in Figure 36-A, Kelly Klosure insulation has a uniform thickness mounted to the panel structural frame.

The table included on page 37 notes the difference and similarities between a conventional rigid frame metal building and a Kelly Klosure pre-framed structured panel building.

A conventional metal building is delivered in pieces (purlin/girt structure with loose sheeting and insulation).

Anchor bolt pre-setting required and erecting rigid frame columns and endwall structure with crane time and experienced contractor.

Field framing of window and door openings are required. Loose sheeting is field-attached to wall girts and roof purlins.

End result looks similar.

INSULATION

Kelly Klosure Buildings

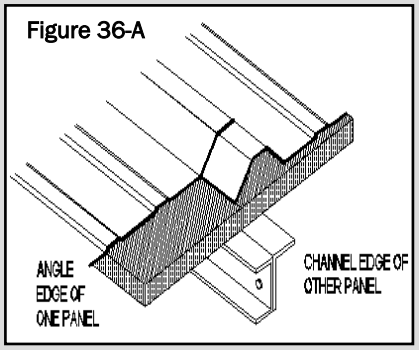


Figure 36-A

Moisture-Resistant Rigid Insulation is Factory-Attached to Steel Panel Frames

VS.

Conventional Metal Building

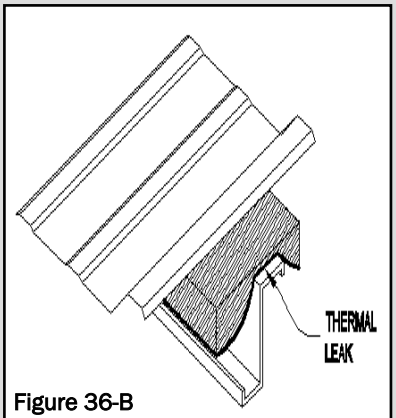


Figure 36-B

If field conditions are wet during installation of batt insulation, deterioration and loss of thermal efficiency may occur.

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

-Conventional Metal Buildings vs. Kelly Klosure Small Span Specialty Buildings-

BUILDING CHARACTERISTICS	CONVENTIONAL PRE-ENGINEERED RIGID FRAME STEEL BUILDING	KELLY KLOSURE SMALL SPAN PRE-ENGINEERED STRUCTURED PANEL STEEL BUILDING
Primary Structural System	Separately erected steel rigid frames spaced on 20' to 30' centers	Adjacent bolted roof panels and angle accessories create roof trusses and roof diaphragm. Adjacent bolted wall panels create shear walls to resist lateral loads.
Secondary Structural Support System	*Separately erected purlins and girts*	*Structural angle cross members factory fabricated into pre-framed structural panel frames*
Load Carrying Capacity	**Per applicable model building code for permanent applications**	**Same**
Sheeting Gauge	Typically 26-gauge supported on only two sides by girts and purlins spaced about 5' to 6' on center	Typically 29-gauge with equivalent 26-gauge strength supported by structural panel frame members spaced no further than on 3' centers on all 4 sides
Sheeting Finish	*Plain galvanized, plain galvalume or standard color, painted finish with 20 year limited warranty for wall panels and roof panels*	*Same*
Insulation	**Separately installed. Paper or vinyl backed fiberglass batt insulation**	**Foil-faced, fire-rated, rigid insulation pre-installed in pre-framing structural panels**
Interior Liner to Protect Insulation	Independently installed painted ribbed sheets field fastened to girts. Liners typically not provided for roof.	Flat, painted or plain galvanized steel sheets pre-installed in pre-framed structured panels
Skill Level of Erection Crew	*Requires workers experienced erecting and sheeting rigid frame structures*	*No special skills required. Designed to be constructed by crews without pre-exposure to assembly procedures.*
Foundation Requirements	**Individual spread footings to support large rigid frame column loads. Sometimes tension ties are required through floor slab to handle rigid frame lateral loads. Pre-setting anchor bolts required.**	**No heavy vertical point loads so only simple thickened edge slab required in warm climates or perimeter trench footings in cold climates. No lateral point loads, so no slab required. System 2 can be supported and tied down with simple temporary wood or steel base plate foundation. Expansion or screw anchors without presetting.**
Relocatability	Theoretically yes, but practically, no, since matching sheet sections and self-tapping screw holes in sheeting is difficult and time-consuming	Field proven easy relocatability
Personnel Doors and Windows	*Independently field-framed and installed*	*Pre-installed in pre-framed structural panels*
Intact Relocatable	**Special custom design not typically available**	**Routinely available with appropriate crane and spreader bar**
Removable Roof Option	Not typically available	Routinely available
Wall Access	*Not typically available*	*Routinely available by removing pre-framed structured panel*
Reconfiguration Possibilities	**Not typically available**	**Routinely available for sidewall panels**
Expandability	Available, but typically 6 week lead time.	Available with 3 to 4 week lead time.

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

-Kelly's Full Line of Structured Panel Building Systems-

CLASSIC SYSTEM

Classic System Gable Building
Available Standard Options:
4' Wide Pre-Framed Panels

Widths:	12, 20
Heights:	8, 12, 16, 20
Lengths:	Divisible by 4
Insulation:	None
Interior Liner:	None
Doors:	4'w x 8'h Panel/Hinge 8' or 12' sliding panel
Skylights:	Roof or Wall Panels
Ventilation:	Wind Turbine, Windows, Louvers
Ext. Finish:	Corrugated Galv.

Light Load Capacity

Weather Enclosure can become a Gable Building

SMALL SPAN

Small Span Gable Building Statistics
Available Standard Options:
3' Wide Pre-Framed Weathertight Panels

Widths:	9, 12, 15, 18, 21, 24
Heights:	8, 10, 12, 14
Lengths:	Divisible by 3
Insulation:	1-1/2" or 2-1/2"
Interior Liner:	28 Ga. Galv. Steel or Painted
Doors:	Hollow Core Personnel 6'w, 9'w, or 12'w Rollup Equipment
Skylights:	Roof Panels
Ventilation:	Wind Turbine, Windows, Louvers
Ext. Finish:	Galvalume Or Factory Painted

Designed to Meet Building Code

SYSTEM 2

System 2 Gable Building Statistics
Available Standard Options:
3' Wide Pre-Framed Weathertight Panels

Widths:	18, 24, 30, 36, 42, 48, & 54
Heights:	10, 13, 16, 19 & 22
Lengths:	Divisible by 3
Insulation:	1-1/2" or 2-1/2"
Interior Liner:	28 Ga. Galv. Steel or Painted
Doors:	Hollow Core Personnel 9'w, 12'w, 15'w, or 18'w Rollup Equipment
Skylights:	Roof Panels
Ventilation:	Wind Turbine, Windows, Louvers
Ext. Finish:	Galvalume Or Factory Painted

Designed to Meet Building Code

SECURITY STRUCTURES & CONTAINMENTS

EXPANDED METAL OR WOVEN WIRE
Heavy-duty "see-through" access control/ security modular panels. Use free-standing!!!

PERMA-CON
Panelized Containment System you can decontaminate and reuse to reduce waste generation.

Kelly Klosure® difference
800-228-7230 • www.kellyklosure.com
402-727-1344 • FAX 402-727-1363
inquire@kellyklosure.com

PK Structures' steel mezzanine systems are compliant with the 2006 International Building Code (IBC 2006). Compliance with the code is accomplished in part through PK Structures utilization of an exclusive Type 3 beam to column connection. Only PK Structures uses this unique design to create an incredibly rigid mezzanine platform with outstanding resistance to sway, while eliminating the need for additional bracing.

PK Structures mezzanine systems are designed to enable faster, easier installation than competing mezzanines. Additional fabrication of components at the factory equates to up to 40% less time needed for field assembly. PK Structures Mezzanines immediately add needed floor space by going up, not out, and you maximize the use of existing environmental controls (heating, cooling, lighting, ventilation, etc.).

PK Structures mezzanines cost a fraction of new construction and also qualify for a shorter depreciation schedule. Perfect for parts/inventory storage, work platforms, manufacturing space, catwalk structures, observation platforms (Figure 41-B), office space (Figure 41-A), bin and rack support, archive storage, sorting station platforms, conveyor bridges, and the second level for two story Kelly Klosure buildings (Figure 41-C).

Figure 41-A

Figure 41-B

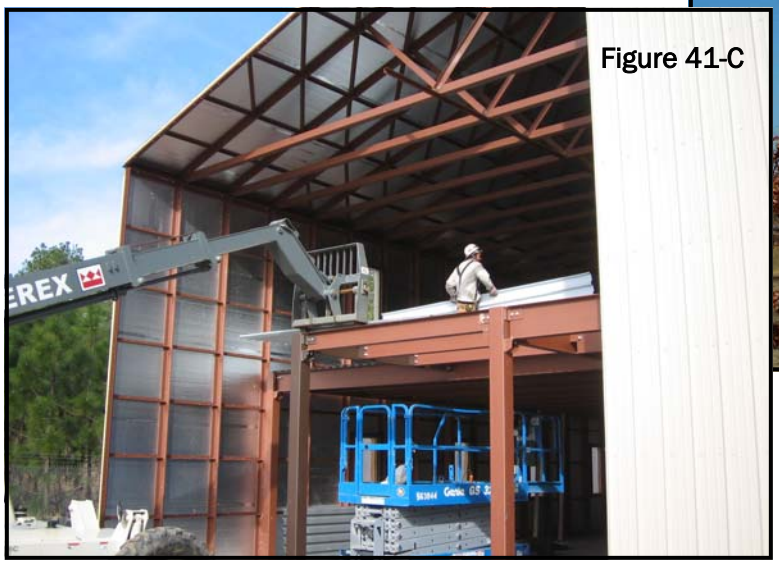


Figure 41-C

Kelly Klosure Systems

Mfg. By Kelly Group, Inc.

P.O. Box 1058

220 N. “H” Street

Fremont, NE 68026-1058

1-800-228-7230

(402) 727-1344 Phone

(402) 727-1363 Fax

Website: www.kellyklosure.com

E-mail: inquire@kellyklosure.com