Chapter 5: SIP Layout Drawings

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Introduction

SIP layout drawings illustrate the size, shape, connection details, and other information needed to properly install a SIP package. For some builders, it is easiest to think of a SIP layout drawing as similar to an engineered truss drawing—it deals with one particular pre-engineered component of the building.

SIP layout drawings are typically provided by the SIP manufacturer or dealer/distributor. These companies often have designers who create the SIP layout drawings based on the architectural drawings for each project. The SIP layout drawings can then be reviewed by the building owner, the architect, the builder or SIP installer, and the local governing body for permit review.

Once approved by all parties, SIP layout drawings can be plugged directly into automated fabrication equipment or used to fabricate the panels by hand. The same drawings will then serve as an installation guide on the jobsite.

Definitions

SIP layout drawings:	Drawings that illustrate the size, shape, rough openings, connection details, and other information needed for SIP installation
By others:	Notation on SIP layout drawings indicating the information for a particular detail or component is provided by another source
Field cut:	Notation on SIP layout drawings designating an element that must be fabricated on the jobsite
Ventilation notes:	Notes referencing a whole-building ventilation standard, specification, or methodology on a SIP layout drawing

Permitting

When applying for a building permit, builders need to submit several pieces of documentation on the SIP system that will be used on the project. It is important to note that these requirements will depend on local building codes and the discretion of the code official.

Code officials may request to see copies of the SIP manufacturer's product data, evaluation report, and load design charts. These materials are readily available from all SIPA member manufacturers.

If the local building code contains strict energy efficiency requirements, code officials may also require SIP performance data or energy modeling of the building.

In other cases, building code officials will request a completed set of SIP layout drawings that have been approved by a licensed architect or engineer. This adds a significant amount of time and money that must be invested prior to receiving a building permit for the project.

Types of SIP Layout Drawings

The level of detail provided on the SIP layout drawings will depend on the SIP provider. Some SIP providers offer colored layout drawings and isometric view, while others may only offer black and white drawings. All SIP layout drawings will include:

- Dimensions of each panel
- Dimensions and location of all rough openings
- Connection details
- Labeling system corresponding to the labels on the SIPs themselves
- Location of electrical chases
- Edge treatment
- Connections with other structural components such as posts, beams, and floor systems

Reviewing SIP Layout Drawings

Reviewing SIP layout drawings is one of the most critical parts of building a SIP project. SIPs can be modified onsite, but to take full advantage of the speed and efficiency of a prefabricated system, it is vitally important that the SIPs arrive at the jobsite cut to the correct dimensions.

Plan review is always done before the panels are fabricated, giving the builder, installer, or other reviewing parties an opportunity to catch mistakes or potential conflicts. Conflicts often occur when SIP

installers fail to realize what they are getting, such as expecting SIP overhangs and realizing the panel designer has stopped the SIPs at the roof line and the builder needs to frame the overhangs.

Here is a list of things that SIP installers should examine when reviewing SIP layout drawings:

- Dimensions and locations of rough openings
- Connection details
- Building dimensions
- Overhangs
- Roof pitch
- Fastening schedule

Areas of Concern

In addition to verifying that the SIP layout drawings match the design of the building, builders should also look for the following items and plan their installation accordingly:

"By Others" or "Field Cut"

If a detail is labeled as "By Others" the SIP installer should make sure he has obtained the supporting information. "Field Cut" indicates that a particular panel or other component needs to be fabricated onsite. Both these notations have the potential to cause unexpected delays on the jobsite if they are not acknowledged beforehand.

Over-engineering

On some occasions, an inexperienced architect or engineer may specify unnecessary headers, lumber splines, or posts to increase the structural strength of a SIP system far beyond what is required. An experienced SIP installer will ask the architect or engineer if these features are truly necessary, as they can add significant labor and materials costs.

Roof Support Structure

If the project involves a SIP roof, it is important to review how that roof is being supported and how the SIPs will be connected to the beams, purlins, trusses or other supporting members. If structural beams are included in the SIP package, check the layout drawings to make sure they are the correct size.

Ventilation Notes

Some SIP providers include ventilation notes on the panel layout drawings that require a verification of adequate whole-building ventilation. Adequately exhausting water vapor from the interior of a SIP building is important for long-term durability. Verifying proper ventilation is often tied to the SIP manufacturer's warranty for this reason.

Ventilation notes may list acceptable humidity levels or reference a ventilation standard published by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE). If the note mandates a specific ventilation method or technology, it may be best to

consult a qualified HVAC professional to determine if that method is appropriate for the climate zone.

Summary

SIP layout drawings play an important role in the design, fabrication and installation of a SIP package. Working with prefabricated SIPs requires attention to detail during the design phase before panels are cut and shipped. Costly delays can occur if mistakes need to be fixed on the jobsite. To take full advantage of the speed and precision capable with prefabricated SIPs, installers need to carefully review SIP layout drawings and plan their installation accordingly.