



# Trussbilt

## TrussWall



**Steel Security Wall System**

***Leading Innovator of Security Products for Over 80 Years***

**Trussbilt****Steel Security Wall System**

# Trussbilt sets the standard for products that cost-effectively meet today's high security requirements.

TrussWall, Trussbilt's steel security wall system, sets the standard for meeting the highest security requirements in the most cost-effective manner. TrussWall's innovative approach builds on Trussbilt's unique core design to provide a lightweight, highly secure wall system that easily integrates with other Trussbilt products for a total security solution.

TrussWall's double-skinned, hollow metal wall panels with interlocking rabbeted edges are manufactured from heavy gauge galvanized steel. Built with Trussbilt's unique TrussCore technology, TrussWall's 2" thick panels, compared to 6" or 8" thick concrete wall systems, result in sizable weight reduction for the facility, greatly reducing footing and foundation requirements.

This smaller footprint means overall space requirements can be reduced or existing space can be optimized. In Maricopa County, AZ, an entire floor in the new 4th Avenue jail was eliminated by using TrussWall, a savings of 30,000 square feet of floor space and 300,000 cubic feet of building volume. The county also realizes ongoing benefits from reduced staffing and energy requirements.

General laborers can easily erect lightweight TrussWall panels without scaffolding, forms or an army of masons. The facility's superstructure and roofing system can be completed before TrussWall is installed, giving more flexibility during construction when compared to both CMU block and precast concrete modular installations. This flexibility allows General Contractors

to minimize lost work days by preventing delays during cold and rainy seasons.

A special concrete grout is pressure-pumped into TrussWall panels after they are installed, minimizing the "wet work" found with block and pour-in-place concrete installations. With the superstructure and roof in place, all other trades can realize early starts -- something that is virtually unheard of

with pre-engineered modular systems. The TrussWall panel system achieves the same Sound Transmission Class (STC) rating as an 8" block wall and meets all ASTM requirements. When used with the Trussbilt TrussDek ceiling system and Trussbilt's security hollow metal, the result is an integrated, secure solution that is the most cost-effective in the industry.



**Maricopa County 4th Avenue Jail, Phoenix, AZ – DEC: Norment Security Group**

**(right page) Northwest Detention Center, Tacoma, WA – DEC: CML Specialties**







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# The TrussWall System

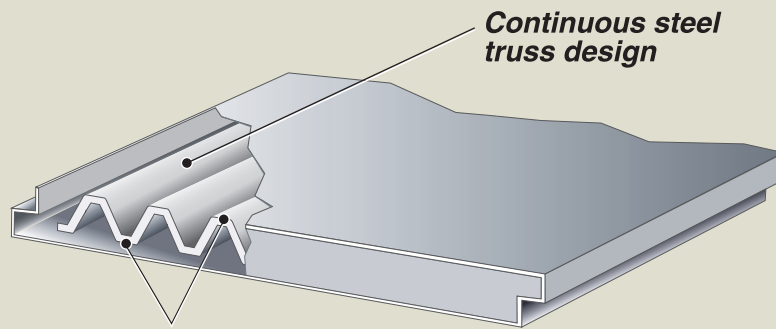
TrussWall's 2" thick steel panels use Trussbilt's unique TrussCore construction. TrussCore is a truncated, triangular-shaped, roll-formed steel truss that spans the full width and height of the panel; it is internally welded to both face sheets every 3" vertically and 2-3/4" horizontally.

Trussbilt has used this unique core welding process for nearly 80 years and has the capacity to produce over 100,000 panels annually.

This panel-stiffening approach prevents the de-lamination that may occur with hat sections or other core materials, and TrussCore prevents bowing and bulging when the panels are pressure-filled with grout.

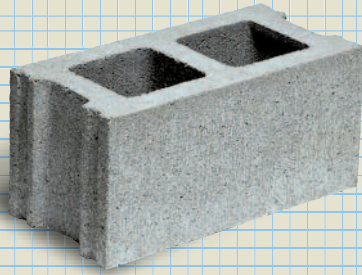
Trussbilt uses a state-of-the-art, German-designed, high pressure, high volume pump to grout the panels after they are erected at the job site. This specially designed machine can pump grout as high as 11 stories. Trussbilt's proprietary concrete grout mixture decreases sound transmission, increases bullet and blast resistance, and enhances overall security. The mixture is specifically formulated to resist internal corrosion and gives TrussWall its premier status of being the lightest security Level 1 wall system manufactured today.

TrussWall panels are de-mountable and reusable. Available custom sizes mean you can design the layout to fit your needs.

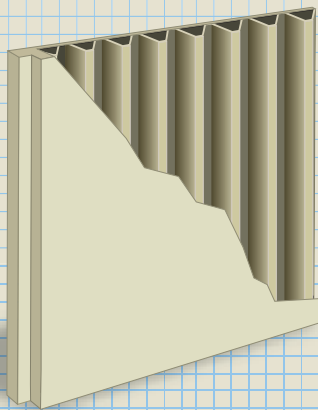
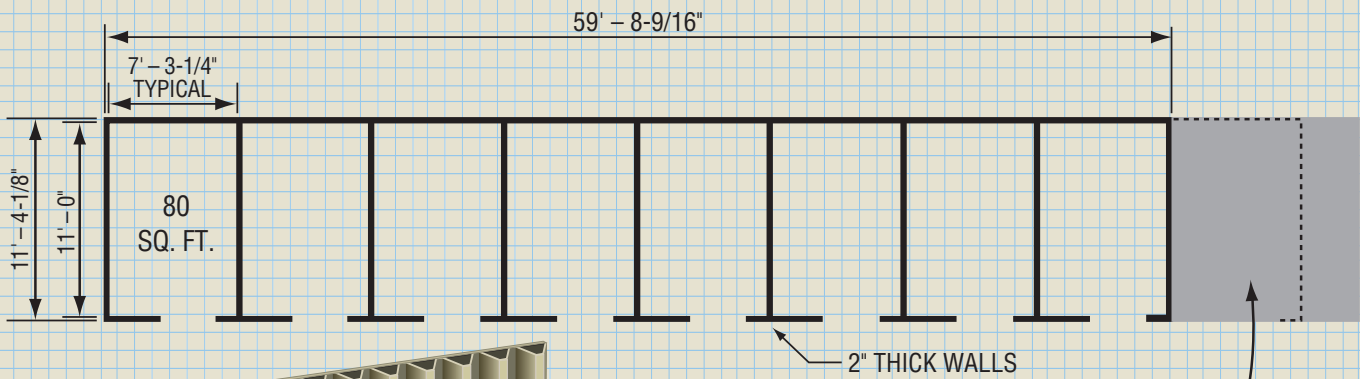
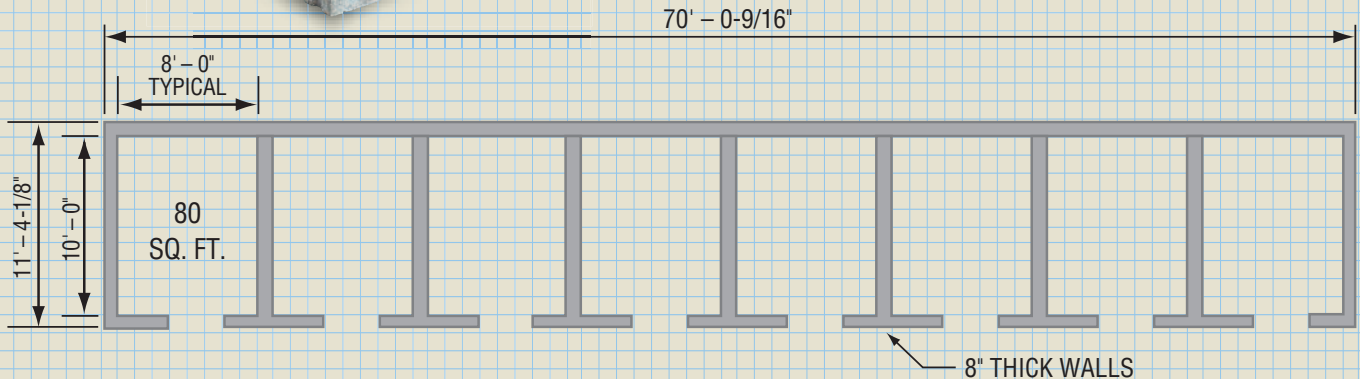


***TrussWall panels are self-supporting, easily accommodating one or two mezzanine levels.***

## Designing with TrussWall vs. CMU/Concrete



*(8) 8' x 10' cells with 8" CMU/concrete walls require 795 sq. ft.*



*(8) 8' x 10' cells with 2" TrussWall require 678 sq. ft.*

***This is a savings of 117 sq. ft. – more than enough for (1) additional cell.***

***Using 8" CMU in a typical cell pod of 64 cells (16 cells, 2 levels, both sides of the dayroom) requires 6,360 sq. ft., compared to only 5,424 sq. ft. when using TrussWall. This is a savings of 936 sq. ft. At a construction cost of \$250 per sq. ft., using TrussWall saves \$234,000.***

***Alternatively, for a 64-cell pod, 8 additional cells could be placed in the same space required by the CMU block system. For those facilities which rent cell space, the 8 additional cells will pay for the entire 74 cells in less than 3 years.***





# TrussWall installations are substantially lighter, more durable, and more space-efficient than concrete wall systems.

## TrussWall vs. Its Competitors

While filled block and poured or precast concrete have been used for many years, TrussWall has substantial advantages over concrete construction approaches. TrussWall has proven to be more flexible under challenges such as poor soil, lack of skilled masons, retro-fit weight restrictions, lack of funding, space restrictions, or the desire to use the skills of locally available labor.

## TrussWall vs. Concrete Block and Pour-in-Place Concrete Walls

- TrussWall's reduced weight and smaller footprint can mean substantial savings at the time of construction (see upcoming Cost Savings section) and more flexibility for retrofits.
- TrussWall does not depend on the availability of masons.
- TrussWall is manufactured under rigid ISO 9001:2000 standards, resulting in consistent quality vs. the varying results that multiple concrete laborers can produce.
- TrussWall minimizes the amount of wet work.
- TrussWall greatly minimizes or eliminates scaffolding and shoring.
- Steel TrussWall panels will not crack as the building settles.
- TrussWall panels are delivered prime painted, requiring only a finish coat of paint.
- Steel TrussWall panels are longer lasting and will not degenerate with age.



*TrussWall construction site - walls erected after building is enclosed*



*CMU block construction site - exposed to weather and subject to delays*

- There is no need for re-bar with the TrussWall steel panel system, assuring owners of the strength of steel in every cell.
- TrussWall cell fronts are true and straight, eliminating the shimming required with concrete units for sliding door device applications.

## TrussWall vs. Pre-cast Concrete Cell Modules

TrussWall has these additional advantages over pre-cast concrete modules:

- Delays due to inclement weather are reduced because TrussWall panels can be installed after the superstructure is complete.
- The General Contractor is back in control of the construction schedule, no longer dependent on the precaster's delivery schedule.

## Cost Savings with TrussWall

TrussWall's lightweight, thin wall technology yields substantial savings both at the time of construction and over the life of the facility. Given current issues with concrete costs and availability, steel wall panels provide significant advantages. TrussWall panels weigh from 1/4 to 1/3 of the weight of CMU block, substantially reducing footing and foundation requirements and providing more flexibility in site selection. Because the system is self-supporting and can easily be stacked, structural beams can be minimized.



**Maricopa County Jail, Phoenix, AZ – DEC: Norment Security Group**

In most cases, existing building load ratings can easily accommodate remodels. Retrofit applications with TrussWall have proven successful across the country. Just as importantly, TrussWall's smaller footprint reduces overall space requirements while providing superior security. TrussWall saves 10 sq. ft. per cell compared with CMU block construction. And, reduced space means dollars saved, both at time of construction and over the life of the facility.

### Construction savings include reduced requirements for:

- Footings and foundations
- Building structural components
- Electrical conduit and wiring

- HVAC equipment
- Plumbing
- Finish painting
- Other components such as framing, scaffolding, shoring
- Overall time to completion (general conditions)

### Resulting operational savings include reduced costs for:

- Staffing (when floors or cell pods are eliminated)
- Cooling and heating
- Maintenance

*"DLR's design experience using the TrussWall steel panel system has demonstrated many advantages over precast concrete cell systems. One example of these advantages is scheduling. Typically, precast cell units must be installed before the roofing system. This means that the cell erection schedule impacts the overall project schedule for the housing units. In contrast, since **TrussWall panels can be installed after the building shell is complete, contractors can schedule early completion of the building shell to allow the steel panel cell construction to proceed during inclement weather.** On one large DLR correctional project the contractor is considering the pre-assembly of common plumbing chases and adjacent walls into singular units that can be installed as sub-assemblies, potentially creating "assembly line" efficiency. Another advantage of the steel wall system is its flexibility for change. Detention furniture such as steel beds, shelves and desks can easily be attached to the walls to accommodate future changes."*

**Joseph F. Haines, AIA, Senior Principal, DLR Group, Inc.**





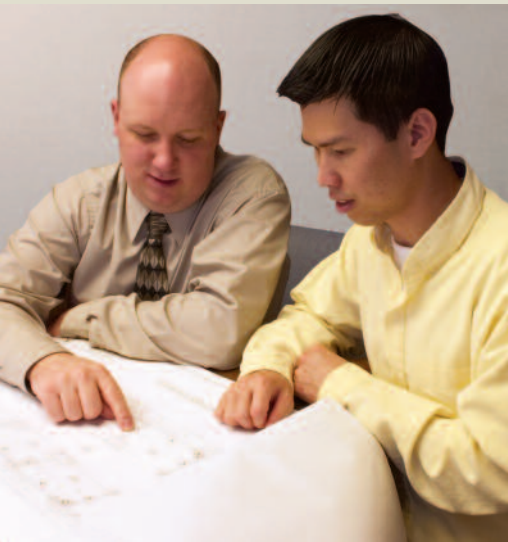
# Ease of installation makes TrussWall ideal for retrofits, enhancing design options for maximizing available square footage.

## Coordination and Integration

TrussWall easily integrates with Trussbilt-manufactured frames, doors, windows, ceilings, and cell furnishings, greatly reducing coordination issues. Also, Trussbilt coordinates all hardware preparations, HVAC, plumbing and electrical access and/ or penetrations, and glazing preparations, through our long term relationships with the most experienced Detention Equipment Contractors (DEC) in the country. Trussbilt and the DEC are able to greatly reduce the probability of errors and delays caused by scheduling conflicts, integration incompatibility issues, and communication breakdowns by limiting the number of subcontractors and suppliers needed to deliver the facility's security package.

## Unmatched Versatility

TrussWall is available in both standard and custom sizes, giving you total flexibility in designing your facility. Its light weight and ease of installation make it ideal for retrofit projects, saving on labor costs, enhancing design options, and maximizing current space. Using TrussWall as an internal



security perimeter allows the designer to use a more affordable superstructure, such as a pre-engineered metal building. And, with the dollars saved by using the TrussWall system, you can afford to use more aesthetically appropriate facades to accommodate surrounding structures.

- 1** *Panel distribution and floor channel layout, retrofit in existing building  
(Harris County Juvenile Facility, Houston, TX)  
DEC: CCC Group, Inc.*
- 2** *TrussWall panel erection,  
(Maricopa County Jail, Phoenix, AZ)  
DEC: Norment Security Group*
- 3** *Construction of Building G  
(Limestone County, TX Detention Center)  
DEC: CCC Group, Inc.*
- 4** *Typical cell  
(Northwest Detention Center, Tacoma, WA)  
DEC: CML Specialties*
- 5** *Visitation area using TrussWall  
(Northwest Detention Center, Tacoma, WA)  
DEC: CML Specialties*
- 6** *TrussWall dorm room application  
(Northwest Detention Center, Tacoma, WA)  
DEC: CML Specialties*

*"The beauty of the TrussWall system is that it can go up before, during or after the construction of the shell, giving enormous flexibility in the scheduling process. Trussbilt's concise engineering and on-time deliveries make TrussWall a viable alternative to conventional construction. "*

**Mike Langersmith**  
Owner, CML Specialties, Inc.







# Code and Specification Compliance

## Fire Wall Compliance

Fire-rated TrussWall is marketed under the name ThermaWall and is fire code compliant with all building code entities including: International Building Code (IBC), United Building Code (UBC), and Southern Building Code (SBC). ThermaWall complies with the following firewall standards:

- ASTM-E119, Standard Methods of Fire Tests of Building Construction and Materials
- CAN/ULC-S101, Standard Methods of Fire Endurance Tests of Building Construction and Materials
- NFPA-251, Fire Tests of Building Construction and Materials
- UBC-7-1-94, Uniform Building Code Standard
- UL-263, Fire Tests of Building Construction and Materials

## ACA Compliance

TrussWall meets and exceeds the American Correctional Association's suggested requirements for Sound Transmission Class (STC) rating of 45 – 49.

## Seismic Zone Compliance

The TrussWall system has been engineered to meet the requirements of the nation's most fierce seismic environments, like those of Alameda and San Mateo Counties in California. TrussWall's light weight means there are smaller seismic loads to consider, potentially reducing the overall size of the foundation needed to resist seismic loads. When TrussWall is attached to the building's floor and into the primary building structure the system provides lateral support, which helps other building components resist seismic loading. And, TrussWall's light weight means cell walls will induce a smaller seismic reaction on the building structure than would concrete, further reducing requirements for reinforcement and footings. TrussWall designs can be certified by licensed structural engineers in all 50 states.

## Security Compliance

The TrussWall system complies with:

- ASTM F 2322 Physical Assault on Fixed Horizontal Barriers for Detention and Correctional Facilities (passes Security Level 1);
- ASTM F 1450-97 (2004), Standard Test Methods for Hollow Metal Swinging Door Assemblies for Detention and Correctional Facilities (passes security Level 1);
- ASTM F 1592-01, Standard Test Methods for Detention Hollow Metal Vision Systems (passes security Level 1);
- Wall De-lamination Test (passes 3,000 pound pull apart test);
- Cell Furnishing Static Load Test (passes static loads of 1,500 pounds for items welded directly to the TrussWall face sheets);
- UL 752 -00 10th Edition Bullet Resisting Equipment (Level 8); and
- Standard Test Methods for Physical Assault on Overhead Fixed Barriers for Detention and Correctional Facilities (passes 3,000 pound static load uplift and 400 blow impact test).



# Thinner is better.


## TrussWall Benefits

- TrussCore technology provides high security with superior quality.
- Lightweight, thin panels mean substantial weight reduction in the facility.
- Small footprint means space can be reduced or optimized.
- Panels can be erected by general laborers.
- Installation process allows more flexibility during construction, minimizing lost work days and facilitating early starts by other trades.
- Concrete grouting decreases sound transmission and enhances security.
- Panels are load-bearing and self-supporting.
- Light weight and custom design possibilities make TrussWall ideal for retrofits.
- Trussbilt coordinates all accesses and penetrations, minimizing chances for errors.
- Sliding door devices can be installed in TrussWall in half the time required for installation in concrete cells.
- TrussWall can easily be integrated with other Trussbilt products for a total security solution.

- Substantial savings at time of construction and over the life of the facility can be achieved.

See why TrussWall can provide the security you require while reducing the cost of your project, both at time of construction and over the life of your facility. And, Trussbilt's ceilings, hollow metal, and detention furnishings offer integrated additions to your design, all with Trussbilt's industry-leading quality and backed with our outstanding customer service. For nearly 80 years, Trussbilt has responded to your needs with innovative security solutions, and we believe TrussWall is in a class of its own in the security market.

## TrussWall vs. Competitors

	TrussWall	Precast Modules	Cast-in-Place	Grout-Filled CMU	Plate Steel Modules
Installed Cost	\$\$	\$\$	\$\$\$	\$*	\$\$
Operating Life-Cycle Cost	\$	\$\$\$	\$\$\$	\$\$\$	\$\$
Speed of Construction					
Project Scheduling Flexibility					
Light Weight					
Space Usage					
Impact Resistance					
Product Quality and Consistency					
Ability to be Customized					
Appropriate for Retrofits					
Ability to use Local Labor					
Facilitates Coordination with Other Trades					

\* This metric is relative to the availability of journeymen masons.

## **Leading Innovator of Security Products for Over 80 Years**

Trussbilt has designed and manufactured high quality security products since 1926. Trussbilt's products are used in over 2,000 prisons throughout the world.

- TrussWall Security Walls
- Security Ceilings
- Detention Doors and Frames
- ViewAll Wire Mesh/Screening
- Detention Furnishings
- Safe-T-Feed Food Pass System

We have developed and pioneered performance tests that demonstrate the superiority of hollow metal fabrication for security. Trussbilt's racking load test, static load test, impact test and edge crush load test have become industry standards.

Our expertise and experience position us as the detention industry's market leader.

### **ISO 9001:2000 Certified**

The product detail and specification information provided herein reflects past experience and is for reference purposes. Trussbilt reserves the right to modify designs and specification requirements. Details will be provided to meet project specification requirements or upon request for specific applications.



# Trussbilt

[www.trussbilt.com](http://www.trussbilt.com)

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