

Can a building envelope be engineered to be 2" thick with a 250-mph impact rating?
Absolutely





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About

[PANTHEON]

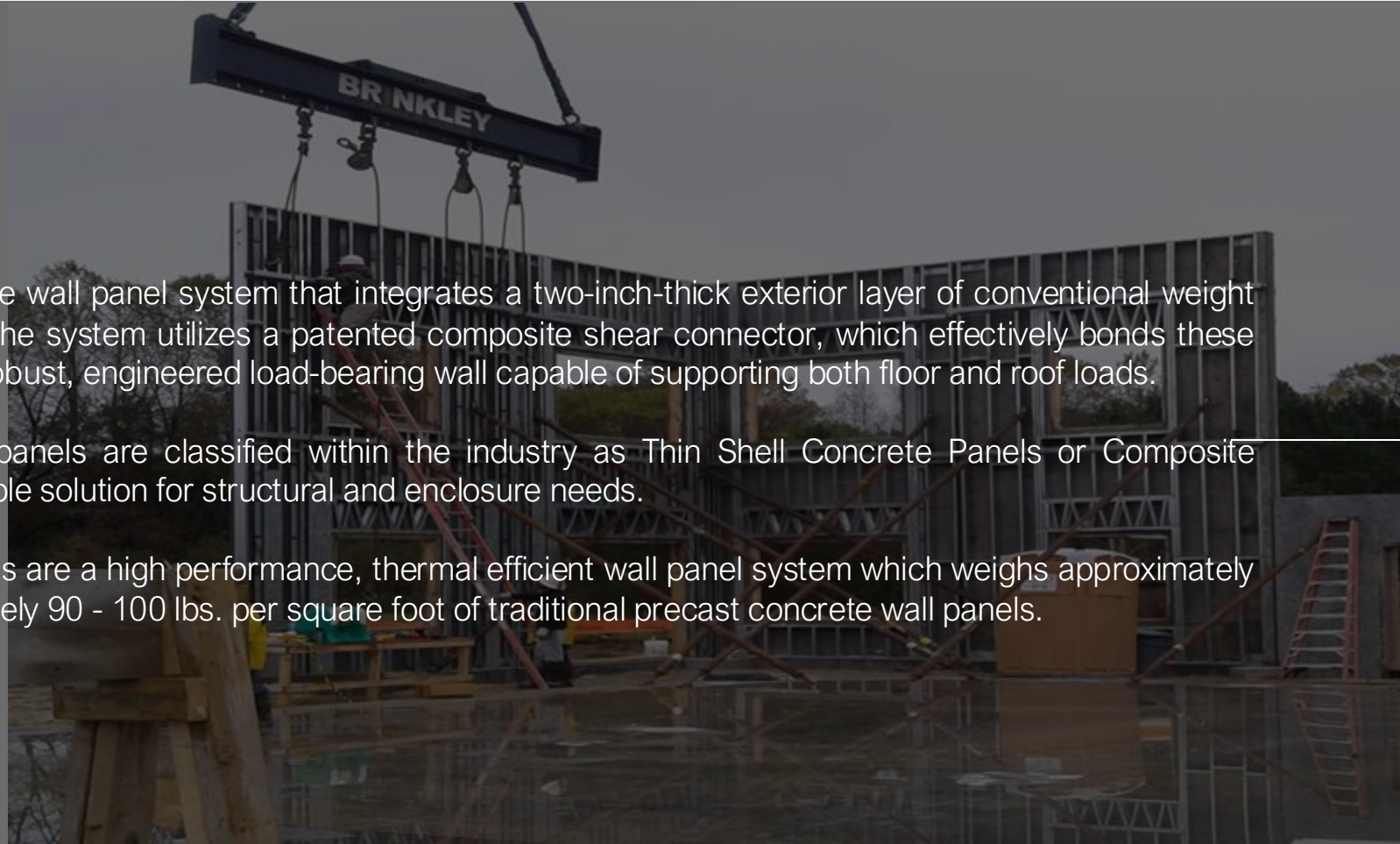
01

About Pantheon

Pantheon is a high-performance concrete composite wall panel system that integrates a two-inch-thick exterior layer of conventional weight concrete with a standard light-gauge steel frame. The system utilizes a patented composite shear connector, which effectively bonds these two widely-used construction materials, creating a robust, engineered load-bearing wall capable of supporting both floor and roof loads.

Designed for rapid building enclosure, Pantheon panels are classified within the industry as Thin Shell Concrete Panels or Composite Concrete Panels, offering a highly efficient and durable solution for structural and enclosure needs.

Pantheon Architectural Precast Concrete Wall Panels are a high performance, thermal efficient wall panel system which weighs approximately 35 - 40 lbs. per square foot compared to approximately 90 - 100 lbs. per square foot of traditional precast concrete wall panels.



CSI Master Format Numbers and Titles

Precast Architectural Concrete
03 45 00

Precast Concrete Parking Bumpers
03 48 33

Site-Cast Concrete
03 47 00

Wall Panels
07 42 00

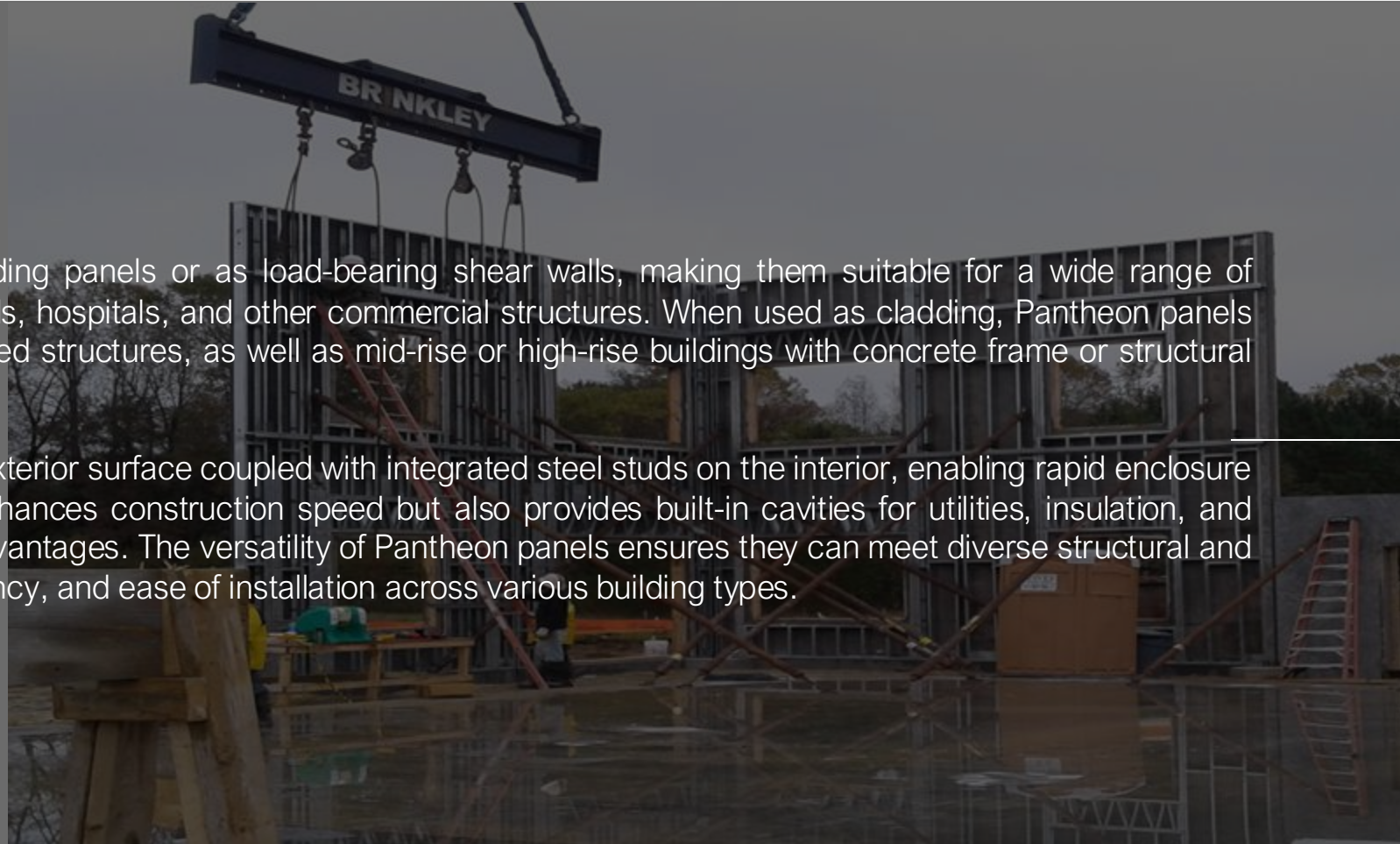
Composite Wall Panels
07 42 43



When to use Pantheon

Pantheon walls can be engineered either as cladding panels or as load-bearing shear walls, making them suitable for a wide range of applications, including office buildings, schools, malls, hospitals, and other commercial structures. When used as cladding, Pantheon panels provide an ideal solution for enclosing pre-engineered structures, as well as mid-rise or high-rise buildings with concrete frame or structural steel superstructures.

The Pantheon system features a durable concrete exterior surface coupled with integrated steel studs on the interior, enabling rapid enclosure of any building type. This configuration not only enhances construction speed but also provides built-in cavities for utilities, insulation, and drywall, offering both functional and architectural advantages. The versatility of Pantheon panels ensures they can meet diverse structural and design requirements, delivering performance, efficiency, and ease of installation across various building types.



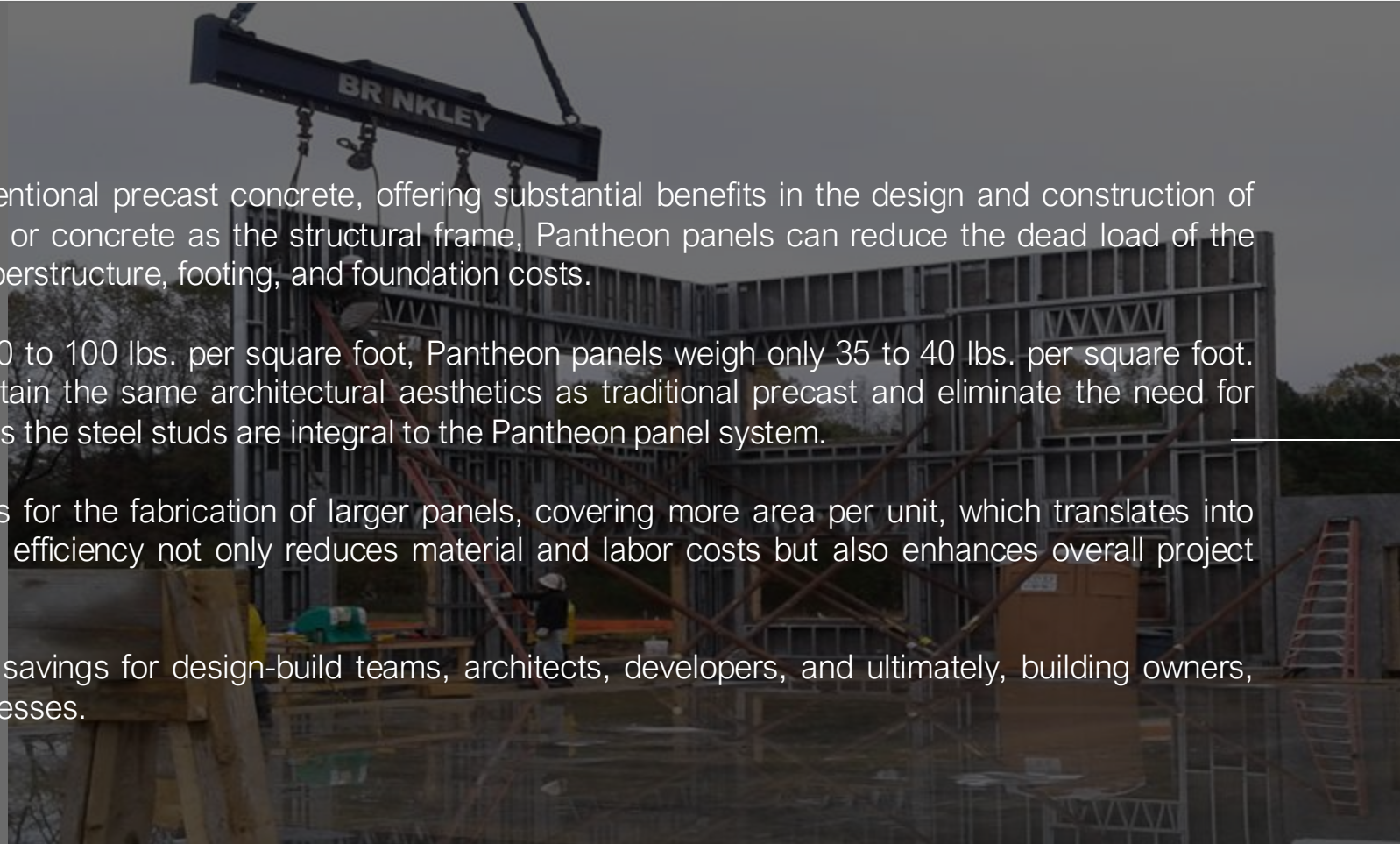
Why use Pantheon

Pantheon panels are significantly lighter than conventional precast concrete, offering substantial benefits in the design and construction of mid-rise and high-rise projects. When utilizing steel or concrete as the structural frame, Pantheon panels can reduce the dead load of the exterior skin, resulting in potential savings on the superstructure, footing, and foundation costs.

While conventional precast panels typically weigh 90 to 100 lbs. per square foot, Pantheon panels weigh only 35 to 40 lbs. per square foot. Despite their lighter weight, Pantheon panels maintain the same architectural aesthetics as traditional precast and eliminate the need for additional furring to accommodate interior finishes, as the steel studs are integral to the Pantheon panel system.

The reduced weight of Pantheon panels also allows for the fabrication of larger panels, covering more area per unit, which translates into fewer panels to manufacture, ship, and erect. This efficiency not only reduces material and labor costs but also enhances overall project timelines.

As a result, Pantheon panels offer significant cost savings for design-build teams, architects, developers, and ultimately, building owners, through streamlined production and installation processes.

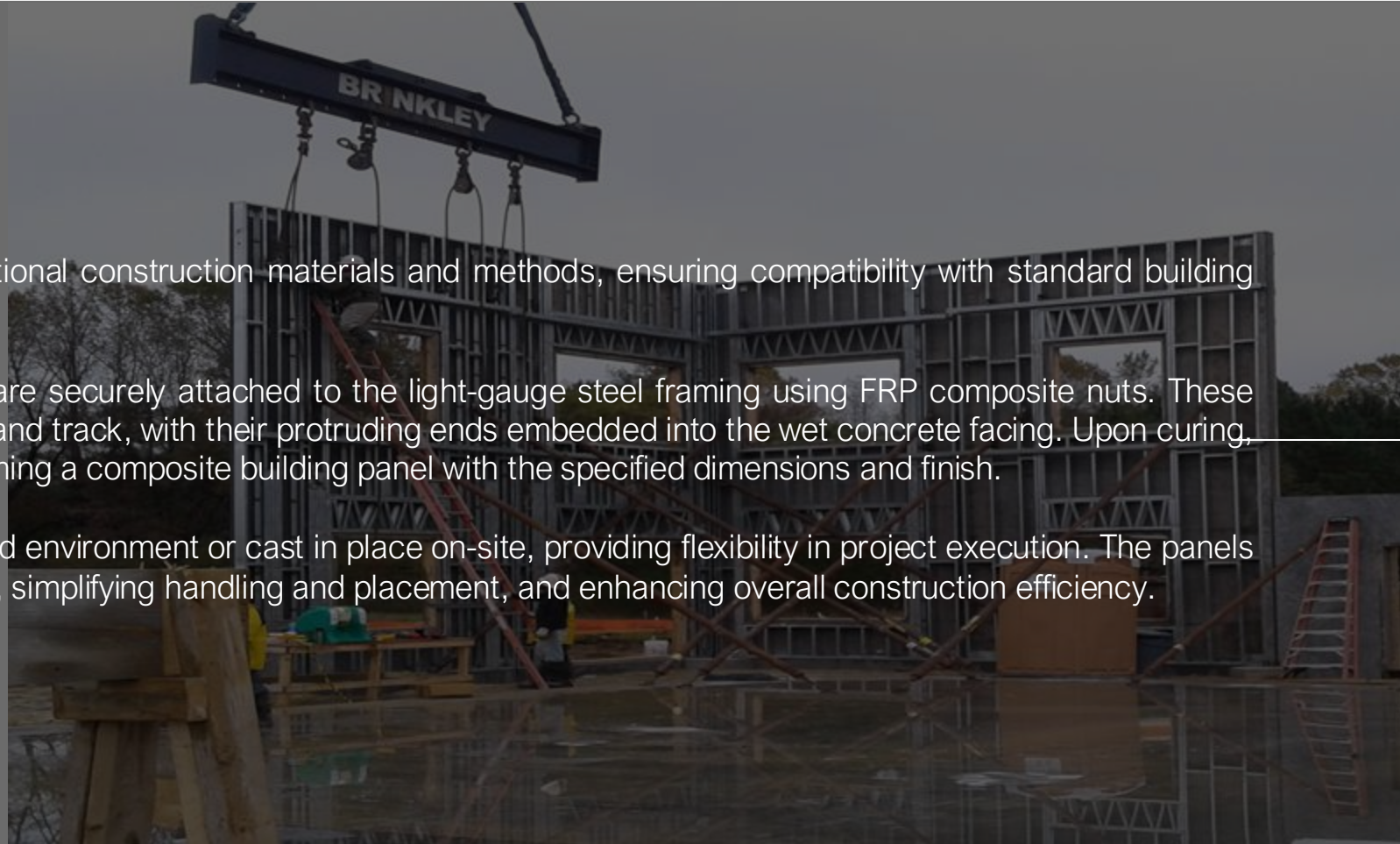


How Pantheon Works

Pantheon walls are framed and cast using conventional construction materials and methods, ensuring compatibility with standard building practices.

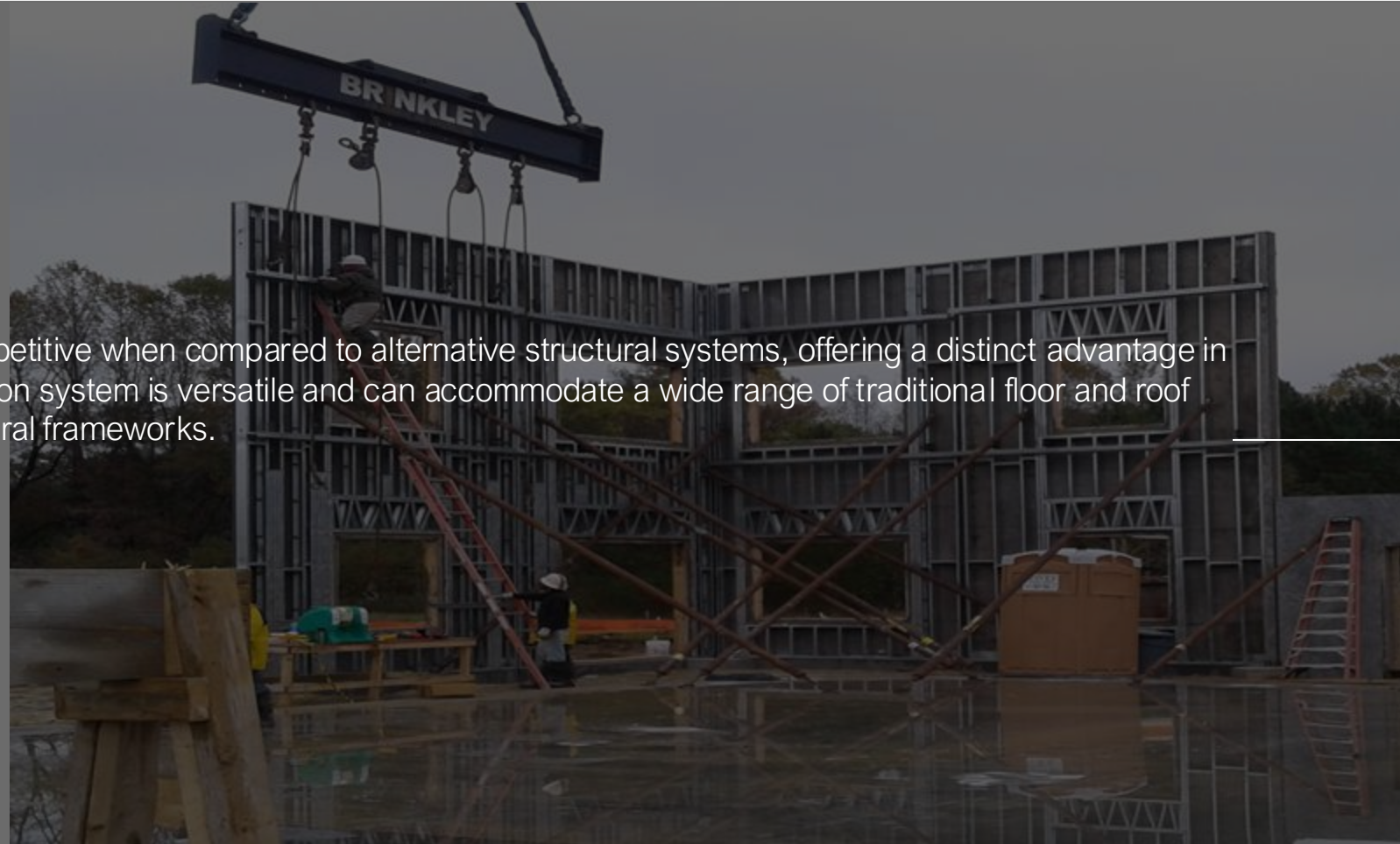
The Pantheon structural shear embed connectors are securely attached to the light-gauge steel framing using FRP composite nuts. These embed connectors, are fastened to the metal studs and track, with their protruding ends embedded into the wet concrete facing. Upon curing, the concrete bonds with the embed connectors, forming a composite building panel with the specified dimensions and finish.

Pantheon panels can be either precast in a controlled environment or cast in place on-site, providing flexibility in project execution. The panels are then installed using lightweight crane equipment, simplifying handling and placement, and enhancing overall construction efficiency.



Cost-Competitiveness

Pantheon composite panel walls are highly cost-competitive when compared to alternative structural systems, offering a distinct advantage in projects requiring furring of interior walls. The Pantheon system is versatile and can accommodate a wide range of traditional floor and roof assemblies, making it compatible with various structural frameworks.



Pantheon Thinshell Embed Advantage

Our Pantheon patented embed connector is made from high-strength glass-fiber-reinforced-polymer composites. Pantheon embed connectors are optimized for bonding with concrete while providing high shear strength.

Pantheon vs. Competitors

Pantheon is the only 100% zero thermal transfer thinshell wall panel system in the industry.

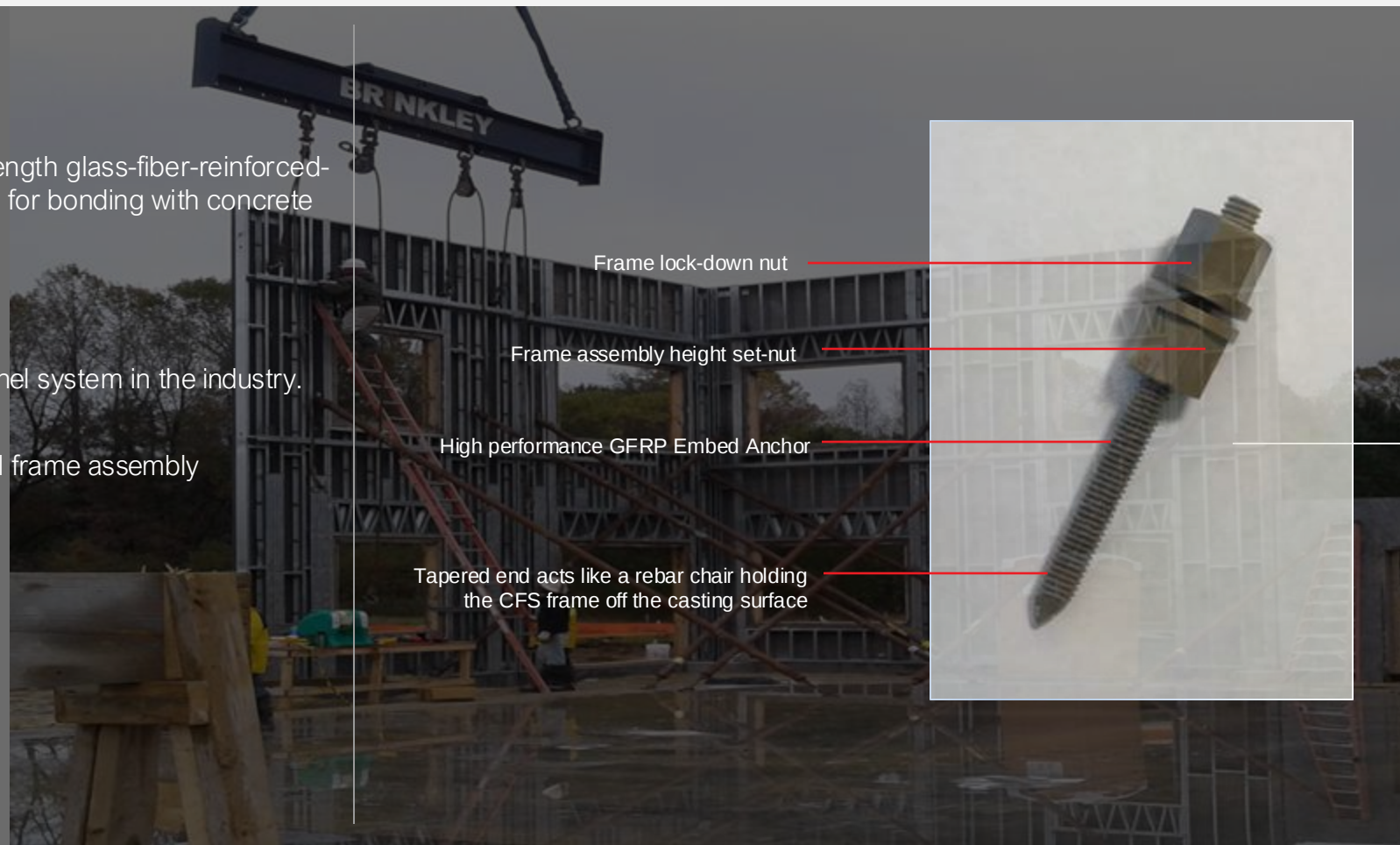
Reduces labor costs by eliminating the need to support the metal frame assembly

Precision frame heights for consistent thermal gaps

Pantheon CFS frames are manufactured with pre-punched holes

Superior concrete bonding the entire length of the embed

Average peak Tensile strength of 2,270 per embed



Pantheon Advantage

Smaller foundations & structural requirements - Pantheon components are 40% lighter than traditional tilt-up, precast, and CMU block construction reducing foundation and structural system requirements

Smaller cranes – Pantheon wall panels can be erected with a 70 ton hydro crane at \$200/Hr port-to-port, compared to traditional tilt-up and precast that require a 250 ton plus cranes at a cost of \$3,000 - \$5,000 / per day and a min of \$18,000 in/out mobilization charge.

Eliminates water leaks - Pantheon Thinshell Wall Panels come standard with finished window and door punched openings with monolithic returns which eliminates the need for wood bucks which are a major cause of water leaks

System features

- 250 - 350 Mph wind rating
- Meets Miami-Dade High Wind Velocity Building Codes
- Meets Seismic Requirements
- Panel weights range from 35 - 40 Lb. per square foot
- Integrates with Traditional bar joist floor and roof systems

Pantheon Thinshell Wall Panel Product Line

- Structural load-bearing wall panels
- Architectural Cladding

2" Thick 5,000 PSI
Pantheon concrete face panel

2" x 6" 16-gauge CFS frame
assembly

2 1/2" Thick 5,000 PSI
Pantheon concrete face panel

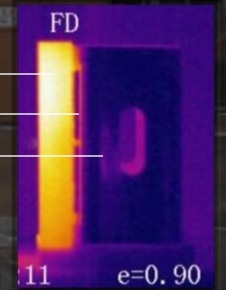
2" x 6" 16-gauge CFS frame assembly

1/2" – 3/4" Thermal break

Frozen concrete face

1/2" – 3/4" Thermal break

2" x 6" 16-gauge frame
assembly shows zero thermal transfer
from the frozen concrete panel



Embed Testing

[PANTHEON]

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Pantheon Embed Connector Pull-out Test



Sample #	Max Load (lbs)	Failure Mode
1	2270	Upper stud pulled out of the concrete
2	2350	Upper stud pulled out of the concrete
3a	2190	Upper stud threads stripped by nuts, some concrete damage
3b	1870	Retest: Upper stud pulled out of the concrete

Table 1: Test Data

RESULTS SUMMARY:

Double Nut Max Pull-Out Strength in Concrete	Average	2,270 lbs
	Std. Deviation	80 lbs

Projects

[PANTHEON]

03

PANTHEON

HIGH PERFORMANCE CONCRETE COMPOSITE WALL PANEL SYSTEM



Reflections Dermatology



U.S. Southern Command SOUTHCOM



Group President Electronics



Fort Harrison Hotel

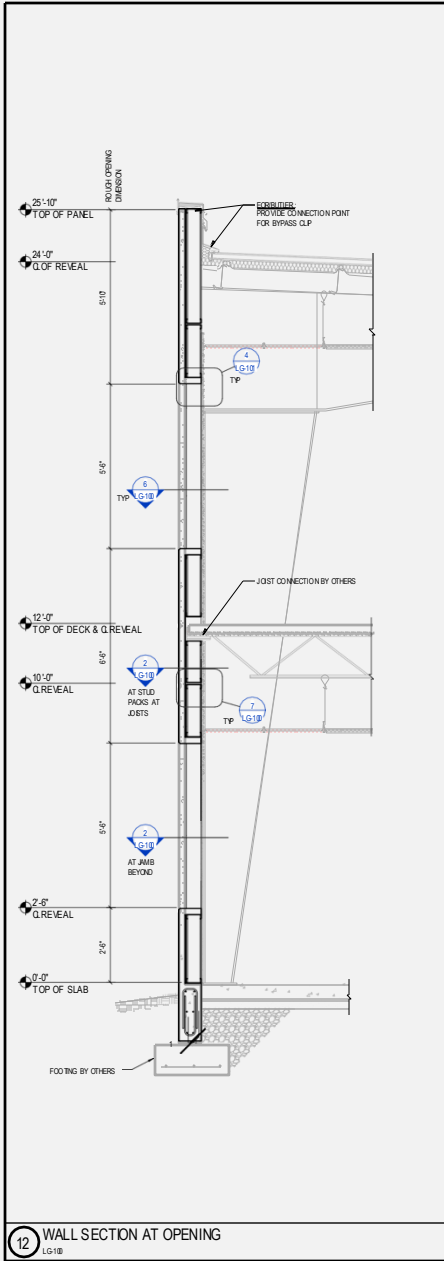


ALM

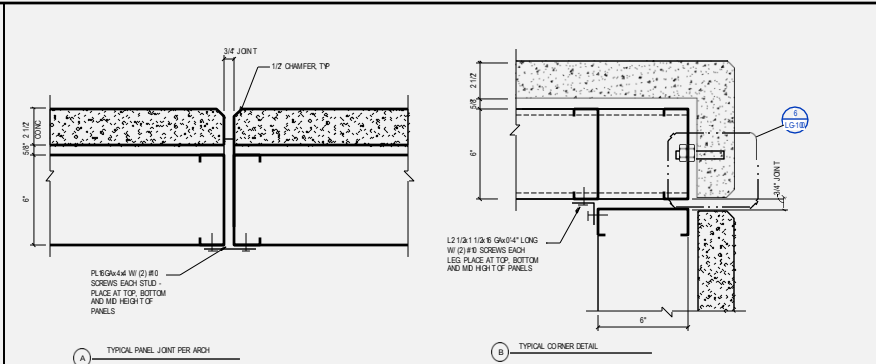
Typical Details

[PANTHEON]

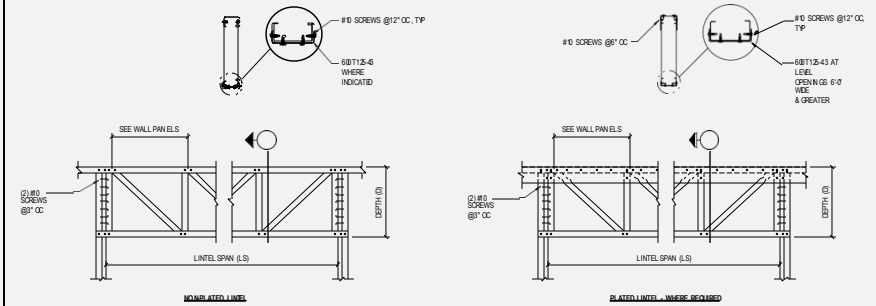
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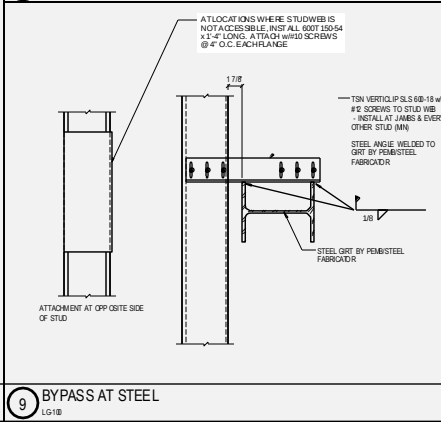
12 WALL SECTION AT OPENING
LG-100



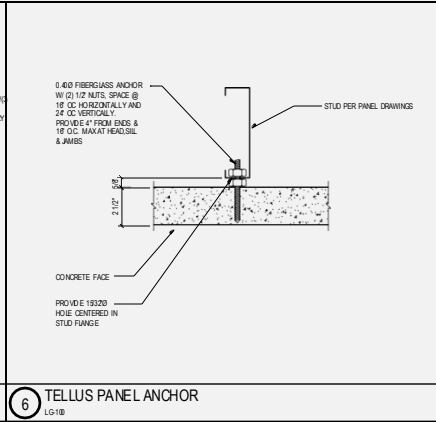
7 TYPICAL PANEL JOINT AND TYPICAL CORNER DETAIL
LG-100



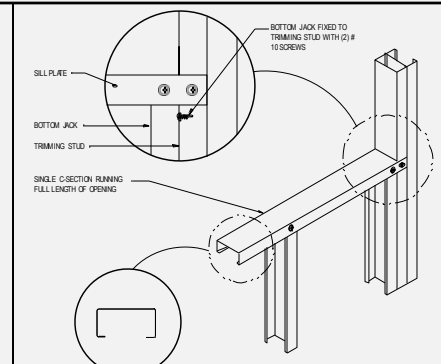
8 TYPICAL WEBBED HEADERS - P
LG-100



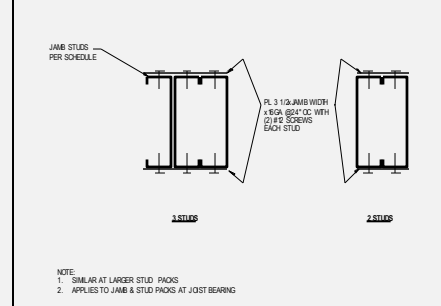
9 BYPASS AT STEEL
LG-100



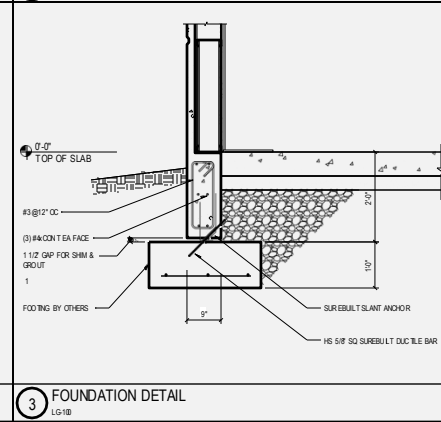
6 TELLUS PANEL ANCHOR
LG-100



1 TYPICAL SILL REQUIREMENTS - P
LG-100



2 TYPICAL EXTERIOR STUD JAMB - P
LG-100



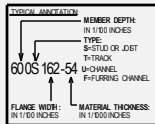
3 FOUNDATION DETAIL
LG-100

COLD FORMED STEEL SHOP DRAWINGS



ABBREVIATION LIST

ANCH	Anchor	PEN	Penetration
BCT	Bottom	PL	Plate (Steel)
CF	Cold Formed	PF	Points per Lineal Foot
CL	Cladding	PSF	Pounds per Square Foot
CONT	Continuous	PS	Pounds per Square Inch
DL	Dead Load	SCHED	Schedule
DM	Diameter	SH	Shank
EL	Elevation	SHL	Shank Leg Horizontal
EP	Each Face	SHL	Shank Leg Vertical
EL	Elevation	STR	Structural
EMBED	Embedded	T	Top
ENR	Engineered/Revised	T&B	Top and Bottom
EW	Each Way	VERT	Vertical
EXP	Expansion	W	Wind Load
GA	Gage or Gauge		
HCO	Hot Dipped Galvanized		
HRZ	Horizontal		
IL	Live Load		
ILH	Long Leg Horizontal		
ILV	Long Leg Vertical		
NOM	Nominal		
OC	On Center		
OP	Opposite		
OPND	Opening		
PAF	Power Actuated Fastener		



SHEET TITLE:
TYPICAL PANELIZED
CFS DETAILS

SHEET NUMBER:
LG-100 - B

11 SHORING DETAIL
LG-10I

12 BRACE CONNECTION AT PANEL WITHOUT OPENING
LG-10f

4 TYPICAL PANEL REVEAL DETAILS

5 PANEL STRONGBACK
LG-10I

2 PANEL ERECTION DIAGRAM
LG-101

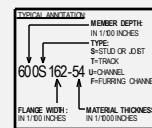
6 SLAB CONNECTION
LG-101

3 LIFTING DEVICE
LG101

COLD FORMED STEEL SHOP DRAWINGS



ABBREVIATION LIST			
ANCH	Anchor	PEN	Penetration
BCT	Bolt	PL	Plate (Steel)
CF	Cold Formed	PF	Pounds per Lineal Foot
CG	Casting	PSF	Pounds per Square Foot
CONT	Continuous	PSI	Pounds per Square Inch
DL	Dead Load	SOED	Schedule
DM	Diminished	SM	Similar
(E)	Ending	SH	Shoe, Left Horizontal
EF	End Face	SH	Shoe, Right Horizontal
EL	Elevation	SH	Shoof
EMBED	Embedded	T	Top
ECR	End of Core Record	VB	Vertical Bottom
EW	End Weld	VERT	Vertical
EXP	Expansion	W	Wind Load
GD	Ground		
HDS	Hot Dipped Galvanized		
HORIZ	Horizontal		
ILH	Live Load		
ILV	Live Load Horizontal		
LONG	Long Leg Vertical		
N	Nominal		
OP	On Center		
OPND	Opposite End		
PAF	Power Actuated Fastener		

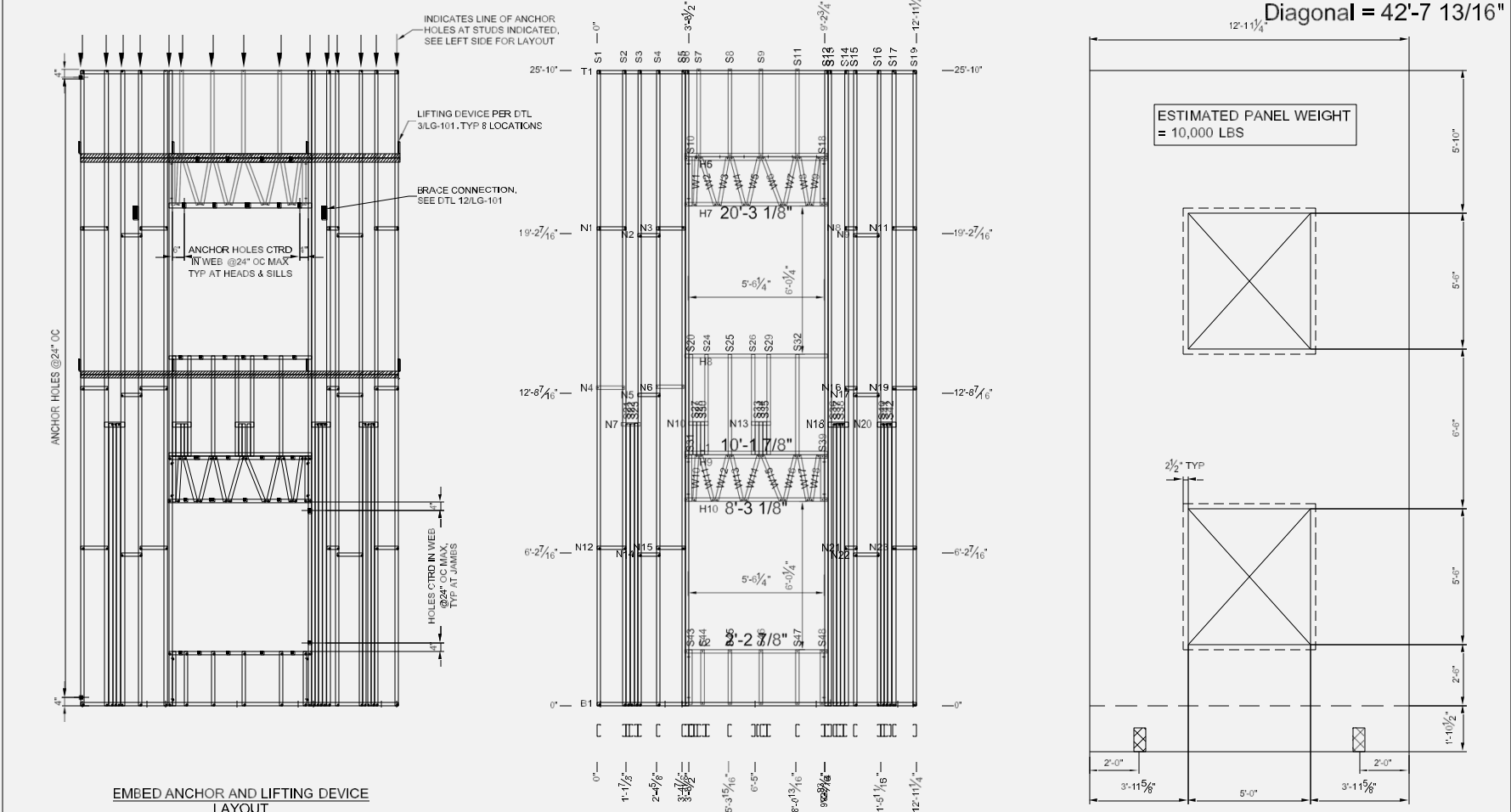


SHEET TITLE:
**TYPICAL PANELIZED
CFS DETAILS**

SHEET NUMBER:
LG-101

600S162-54-50	4	3' 6 5/8"	600S162-54-50	6	4' 3/4"	600S162-54-50	3	5 7/8"	600S162-54-50	8	5' 9 7/16"	600S162-54-50	4	9 5/16"
600S162-54-50	1	9 7/16"	600S162-54-50	3	10 3/8"	600S162-54-50	3	11 7/16"	600S162-54-50	3	1' 13/16"	600S162-54-50	3	1' 1 9/16"
600S162-54-50	3	1' 1 3/4"	600S162-54-50	9	11' 5 3/4"	600S162-54-50	4	12' 11 1/4"	600S162-54-50	2	12' 11 11/16"	600S162-54-50	6	1' 3 7/8"
600S162-54-50	1	1' 10"	600S162-54-50	1	1' 10 1/4"	600S162-54-50	1	1' 10 5/16"	600S162-54-50	2	1' 10 1/2"	600S162-54-50	2	1' 10 9/16"
600S162-54-50	1	1' 10 5/8"	600S162-54-50	1	1' 10 11/16"	600S162-54-50	1	1' 10 13/16"	600S162-54-50	1	1' 11 1/4"	600S162-54-50	1	1' 11 7/16"
600S162-54-50	2	1' 11 9/16"	600S162-54-50	1	1' 11 11/16"	600S162-54-50	2	1' 11 3/4"	600S162-54-50	1	1' 11 3/4"	600S162-54-50	1	1' 11 13/16"
600S162-54-50	1	2' 0"	600S162-54-50	1	2' 5/16"	600S162-54-50	1	2' 13/16"	600S162-54-50	6	2' 2 5/8"	600S162-54-50	13	25' 9 3/4"

Assembly Weight	1337lbs	Working Sheet: 600S162-54 LB (102517)	10g-16mm Flathead	28	10g-19mm XDrive	308
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<<< Joins L7

Quantity Required = 1 Mark as L8

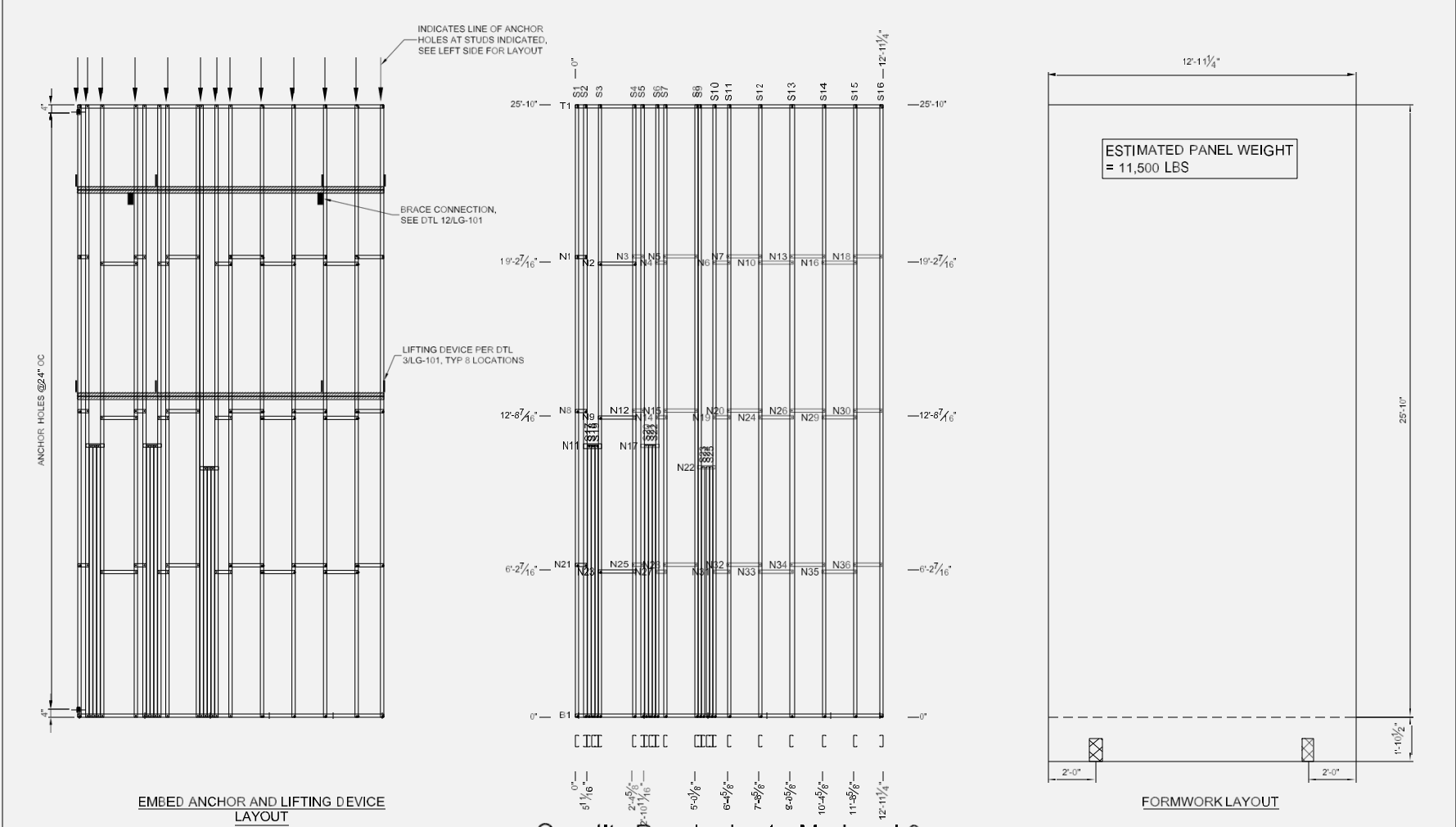
Joins L9 >>>

System Name: Panel RL:	Wall Type: Envelope:	Load Bearing 25'-10"h x 33'-11 1/4"w	Design Wind Speed: W179	Design Code: AISI S100-07 LRFD	Loading Code: IBC 2012 LRFD
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Company Name	Dwg	View 8 of 9	Client	Job No.
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600S162-54-50	3	5 7/16"	3	5 1/2"	600S162-54-50	3	5 13/16"	600S162-54-50	3	8 1/2"	600S162-54-50	3	9 5/16"
600S162-54-50	3	10' 6 1/2"	6	11' 5 3/4"	600S162-54-50	3	1' 2 3/8"	600S162-54-50	6	12' 11 1/4"	600S162-54-50	3	1' 4 15/16"
600S162-54-50	12	1' 5 7/16"	3	1' 6 1/2"	600S162-54-50	16	25' 9 3/4"						

Assembly Weight	Working Sheet: 600S162-54 LB (102517)	10g-19mm XDrive	232	Diagonal = 42'-7 13/16"
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<<< Joins L8		Quantity Required = 1 Mark as L9				Joins NA >>>	
System Name: Panel RL:	Wall Type: Envelope:	Load Bearing 25'-10"h x 33'-11 1/4"w	Design Wind Speed:	W179	Design Code:	AI SI S100-07 LRFD	Loading Code: IBC 2012 LRFD
Company Name	Dwg	View 9 of 9	Client	Job No.			

PANTHEON

HIGH PERFORMANCE CONCRETE COMPOSITE WALL PANEL SYSTEM

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