

AIA Best Practice

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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentations.





Understanding K-12 Design



Your K-12 Experts



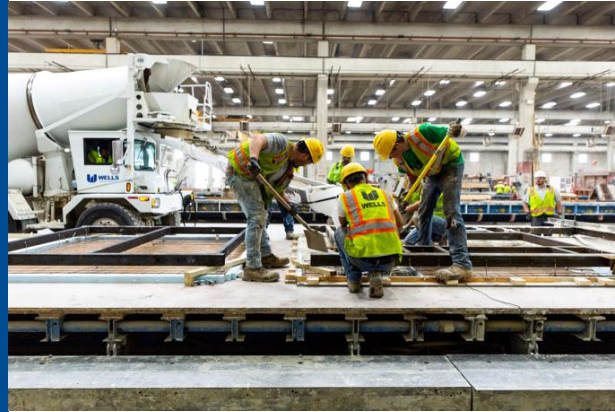
Jace Rossow
Sales Representative



Reid Mordhorst
Sales Representative



We Are Wells



70
years



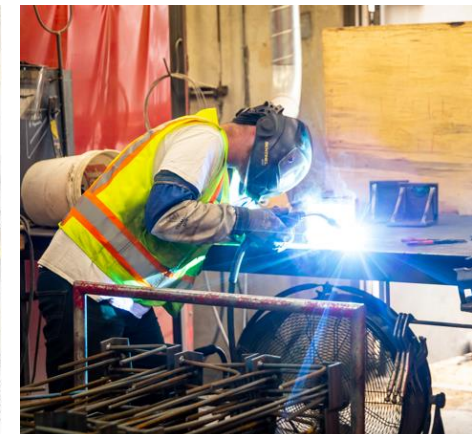
1300+
employees



500+
annual projects



80%+
repeat customers



Manufacturing Locations & Reach

Wells is a leader, serving over 16 states with 884,000 sq ft of facilities on over 570 acres.

Albany, MN: 185,000 sq ft facility on 80+ acres

Brighton, CO: 127,000 sq ft facility on 60+ acres

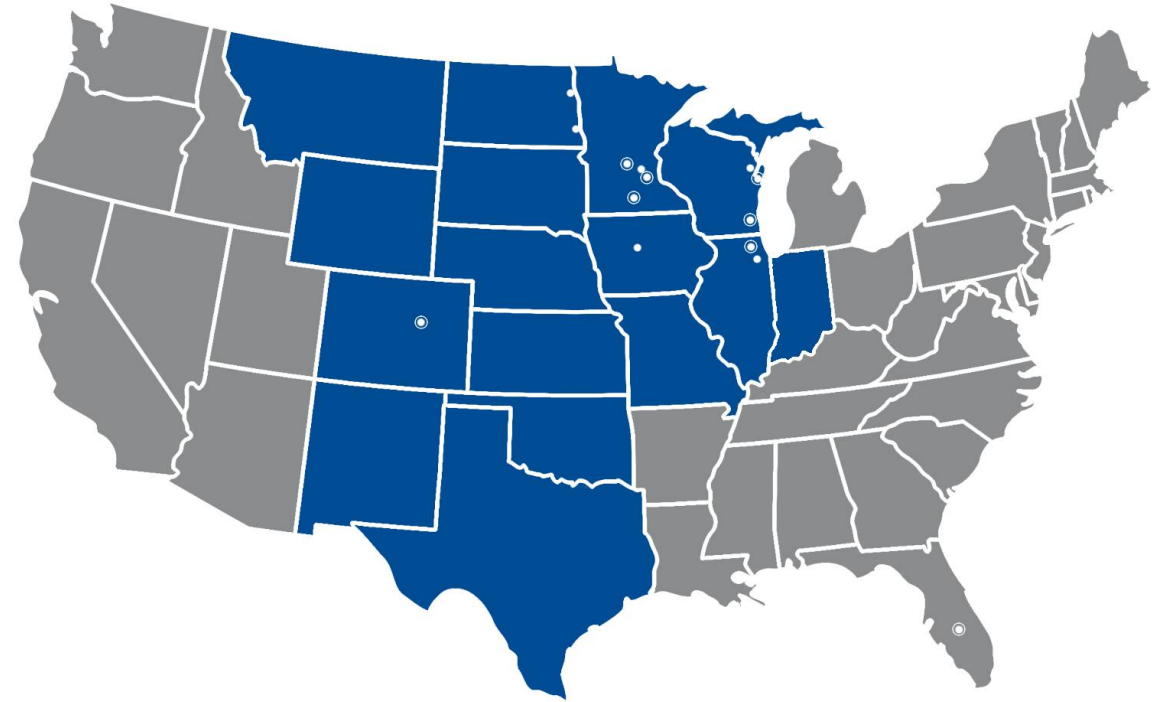
Crystal Lake, IL: 76,000 sq ft facility on 50+ acres

Rosemount, MN: 55,000 sq ft facility on 30+ acres

Wells, MN: 193,000 sq ft facility on 35+ acres

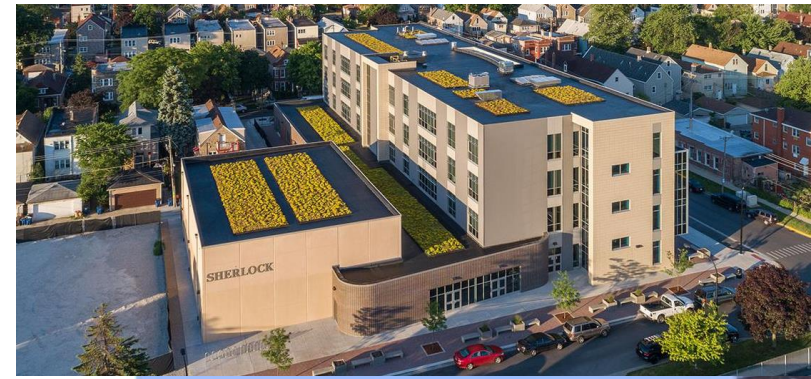
Valders, WI: 213,000 sq ft indoor & 220,000 sq ft outdoor facility on 320+ acres

See more at wellsconcrete.com/video-manufacturing



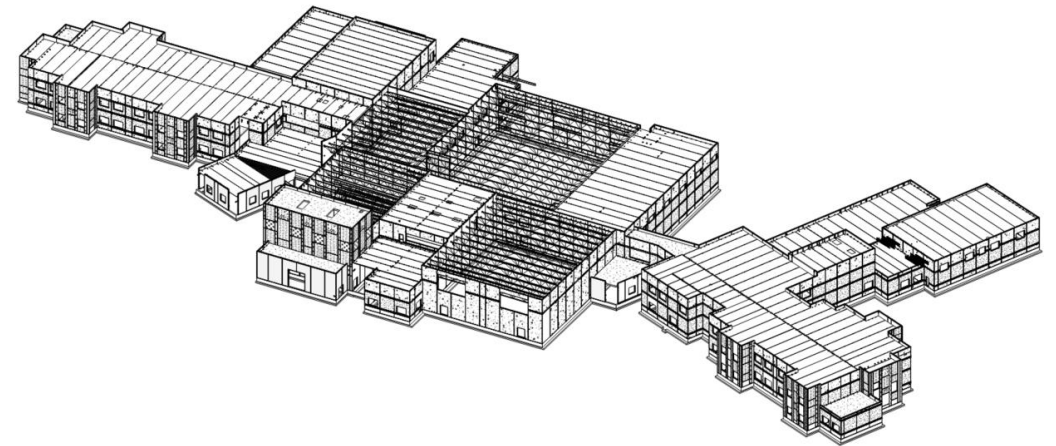
Education –

Since 2015 Wells has completed 300+ Education projects totaling \$300m+ in precast scope Including 60+ storm shelters.

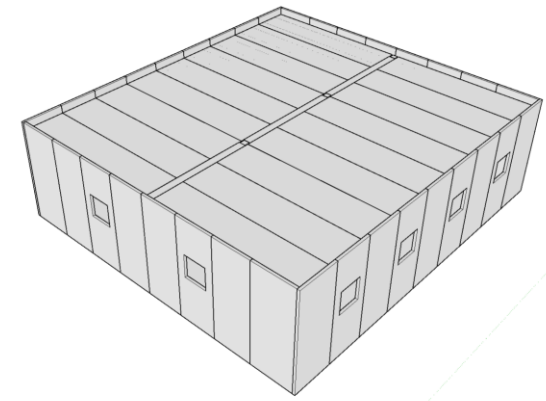
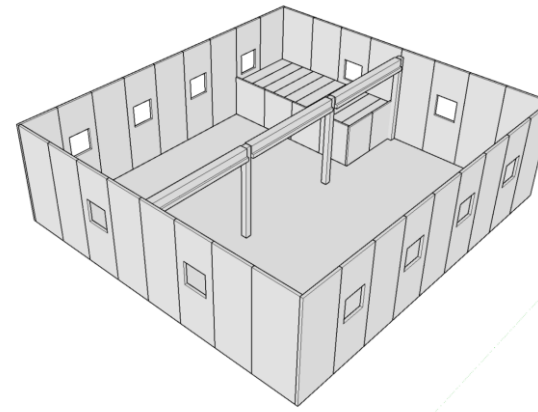
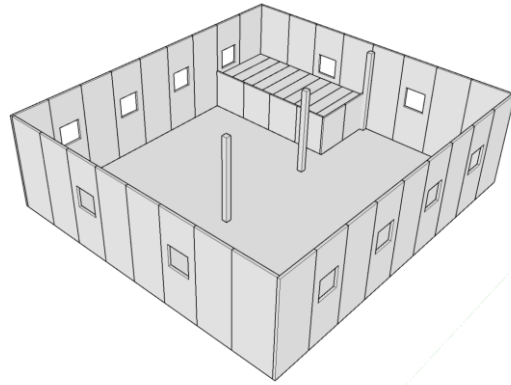
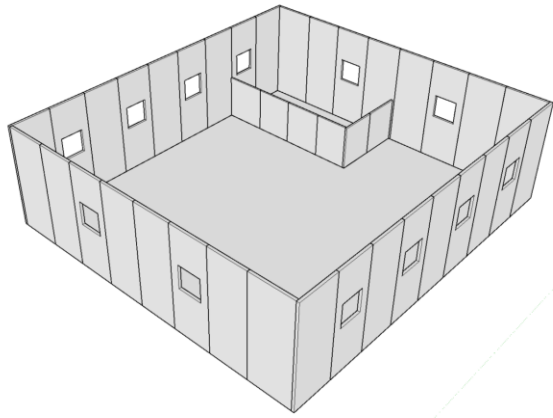


Learning Objectives

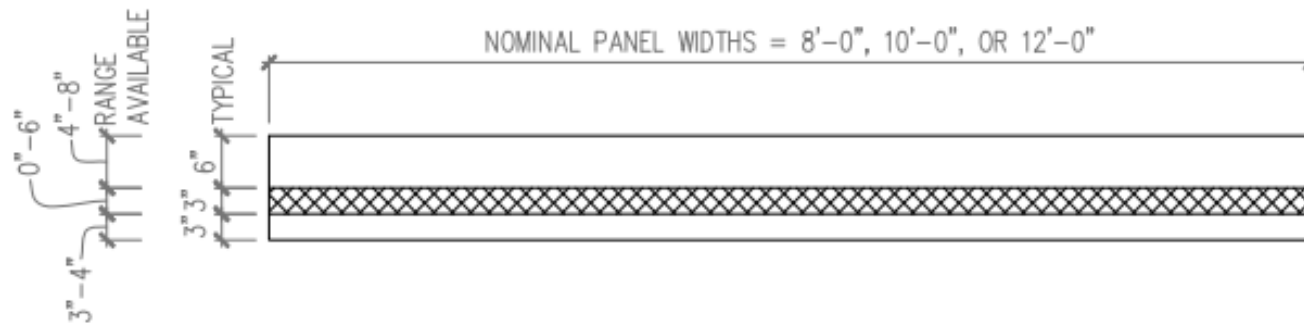
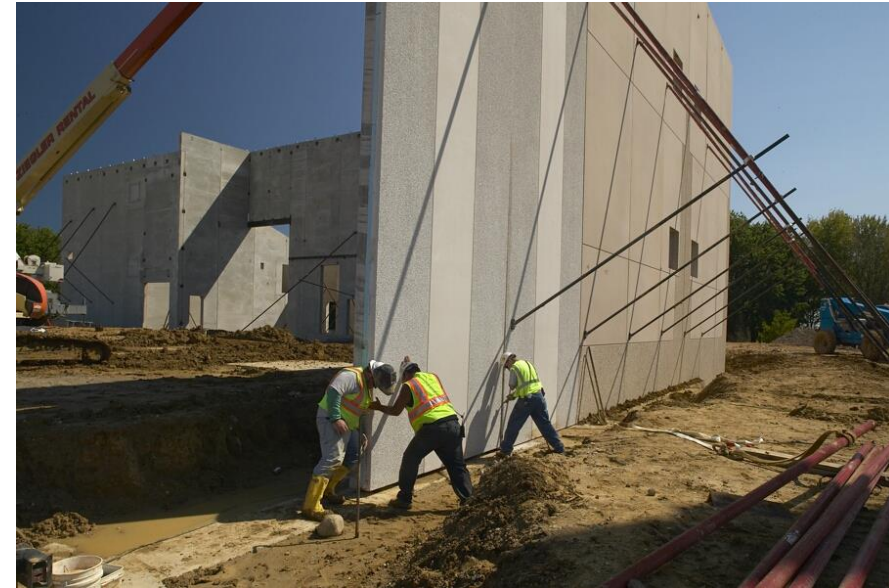
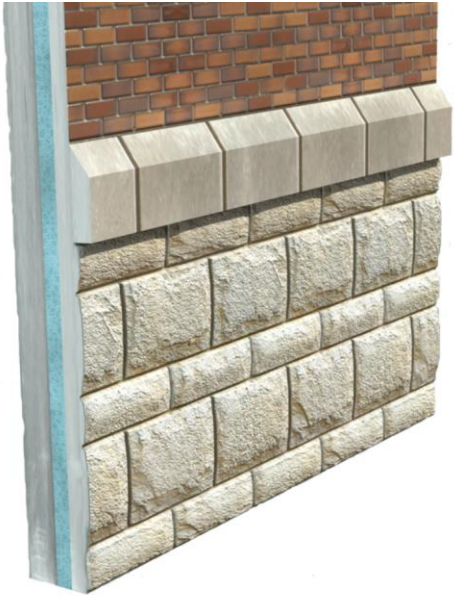
1. Precast Concrete Building Elements for Schools
2. Design Elements Unique to K-12
3. K-12 Market Specific Strategies
4. Project Examples



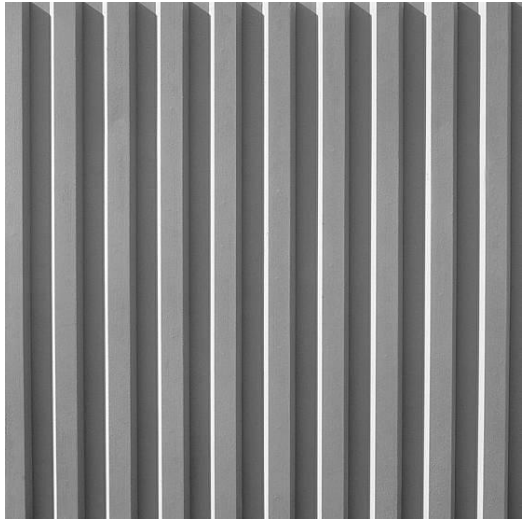
Precast Building Elements for Schools



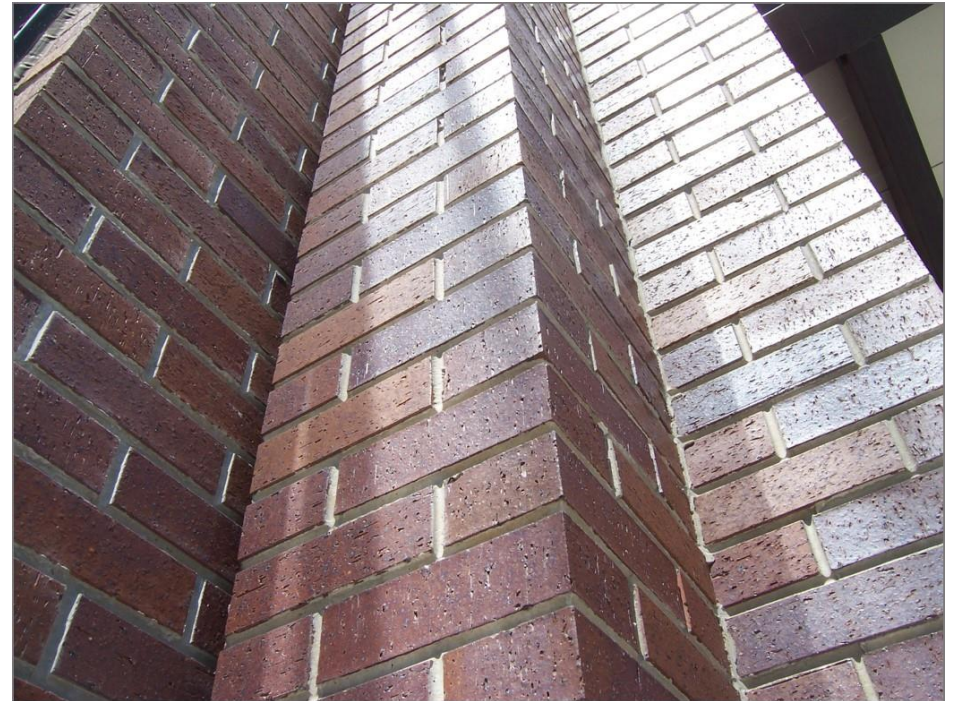
Insulated Precast Walls



Form Liner



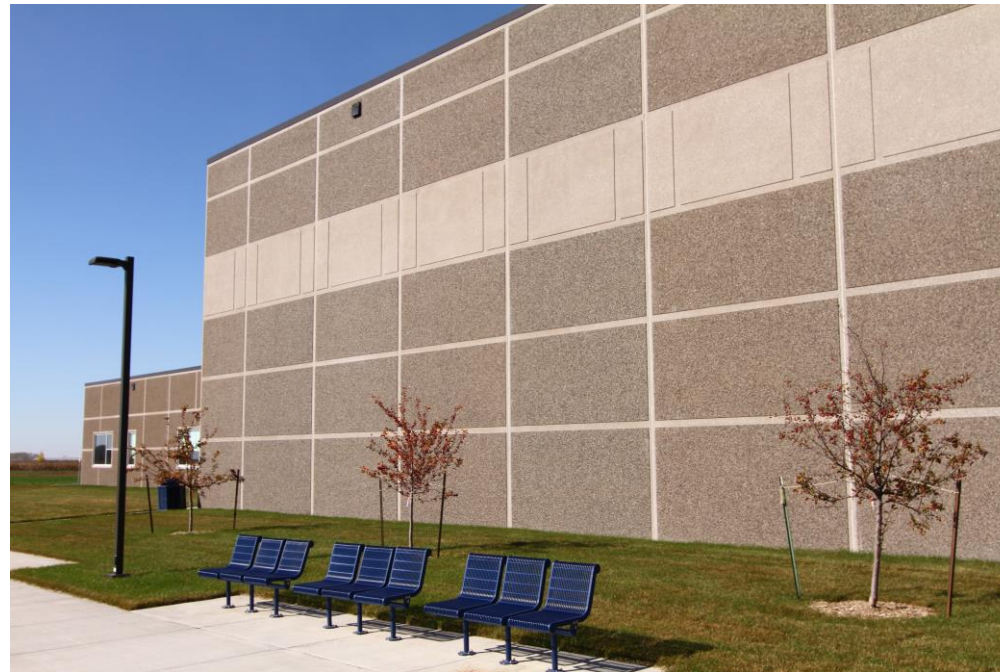
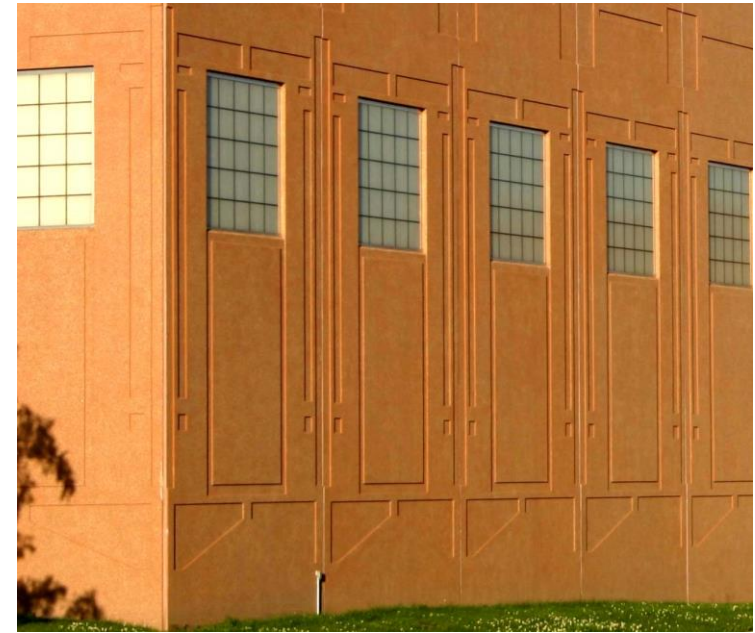
Cast-in Thin Brick



Polishing



Reveal Pattern



Reveal Pattern – Efficient Example



- Poured 3 walls per day
- 3 forms
- Able to flip top of wall in the form
- 6 different reveal patterns

Exposed Finish

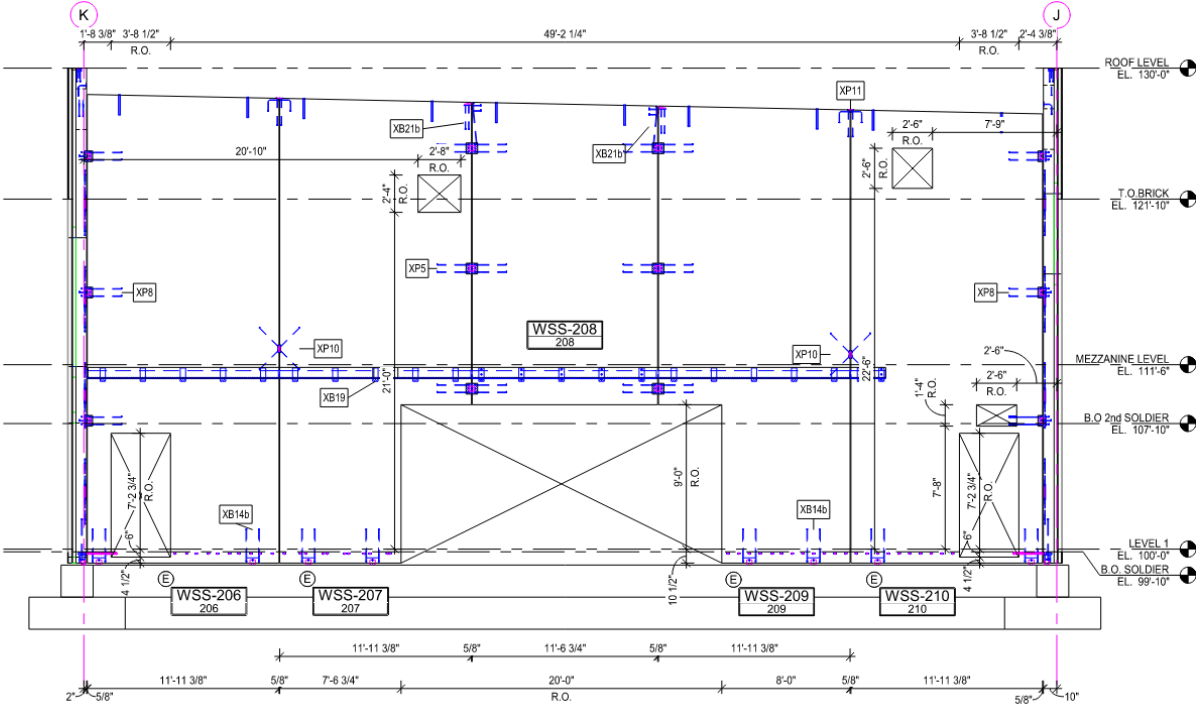
1. Sandblast
2. Acid-Etch
3. Surface Retarder w/ Water Wash



Micro Etch Imprints



Solid Precast Walls



1 NORTH ELEVATION - INTERIOR
4.02 3/16" = 1'-0"



Double Tees and Hollowcore Plank

Double Tees:

- Long span applications
- Pre-topped or field topped
- Erection speed



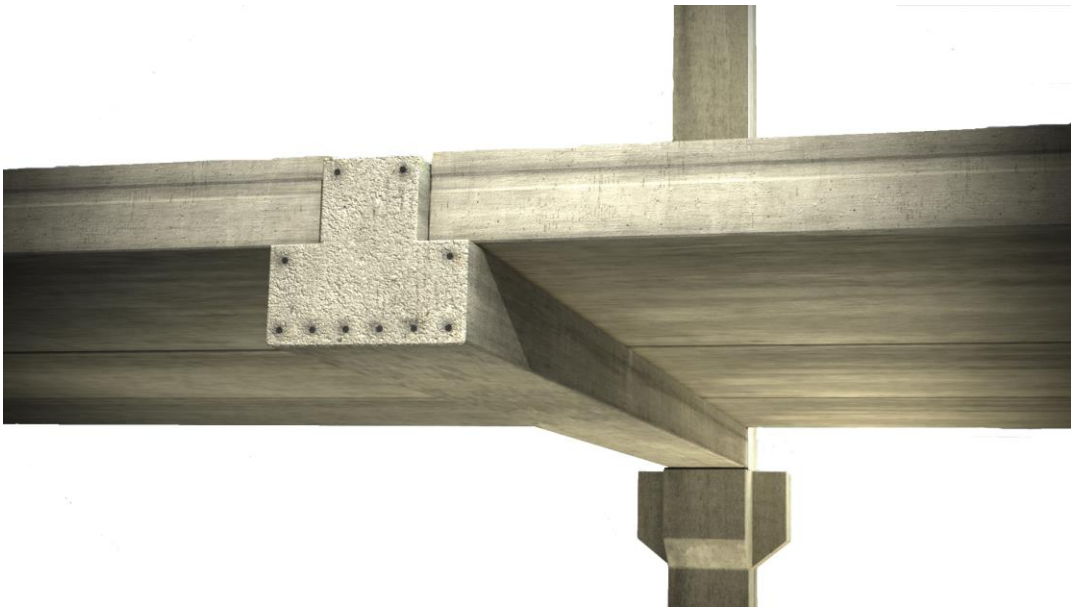
Hollowcore Plank:

- Economical and versatile
- Shorter spans (20'-30')

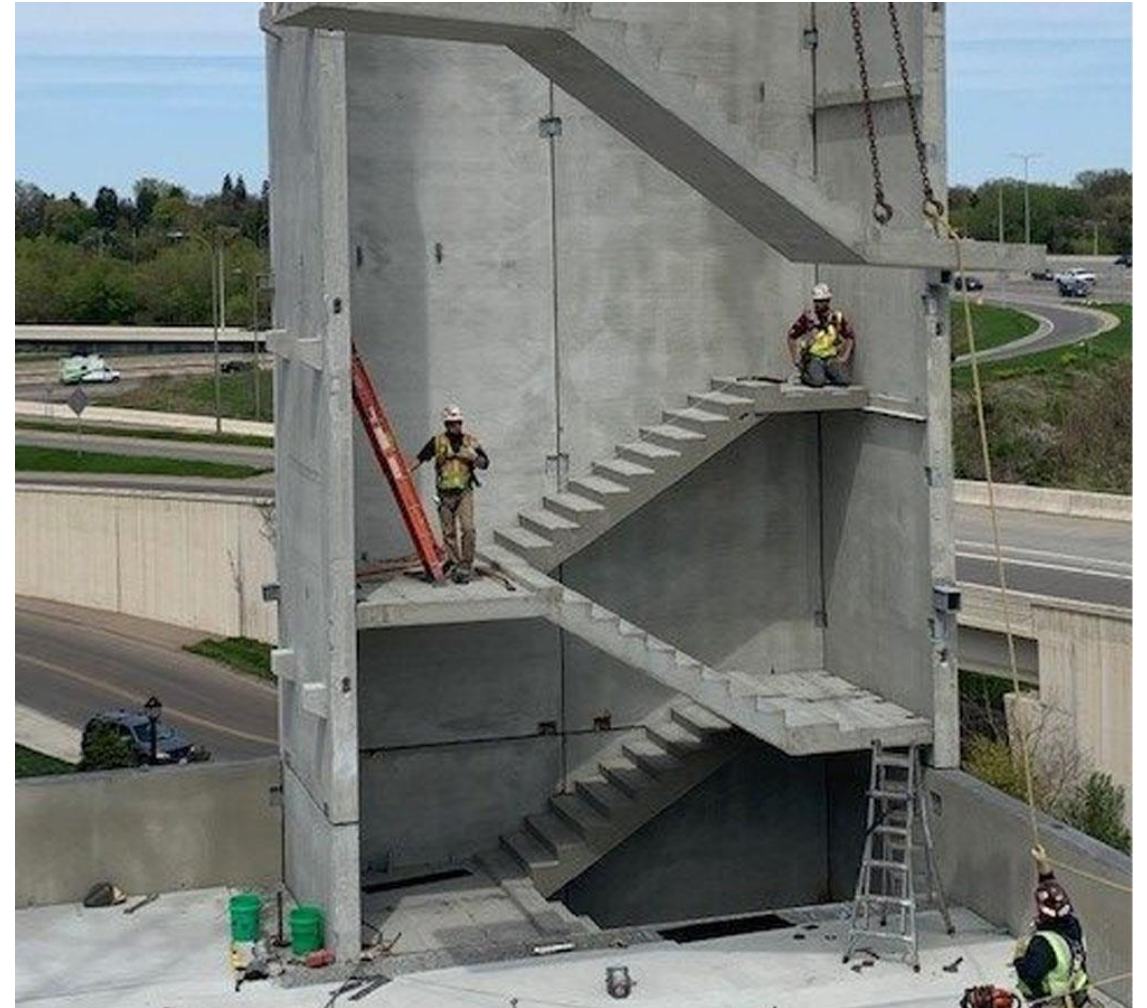


Beams and Columns

- Structural Framing



Stairs



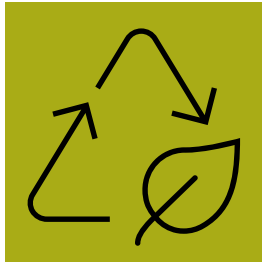


Design Elements Catered to K-12

- Sustainable Building
- Precast Benefits in K-12
- Standard Details



Sustainability and Precast



Energy Efficient:

- ✓ Different insulation types
- ✓ Continuous insulation



Low Carbon Footprint:

- ✓ Small on-site crews
- ✓ Type 1L Cement



Durable and Resilient:

- ✓ Storm shelters
- ✓ Impact Resistant



Low Maintenance:

- ✓ No Painting or routine repairs
- ✓ Natural color is integrated in mix
- ✓ Easy to clean

Precast Benefits



- Easily integrate precast w/ other finishes

Precast Benefits



- Match Existing Construction



Precast Benefits



Saint Thomas Academy

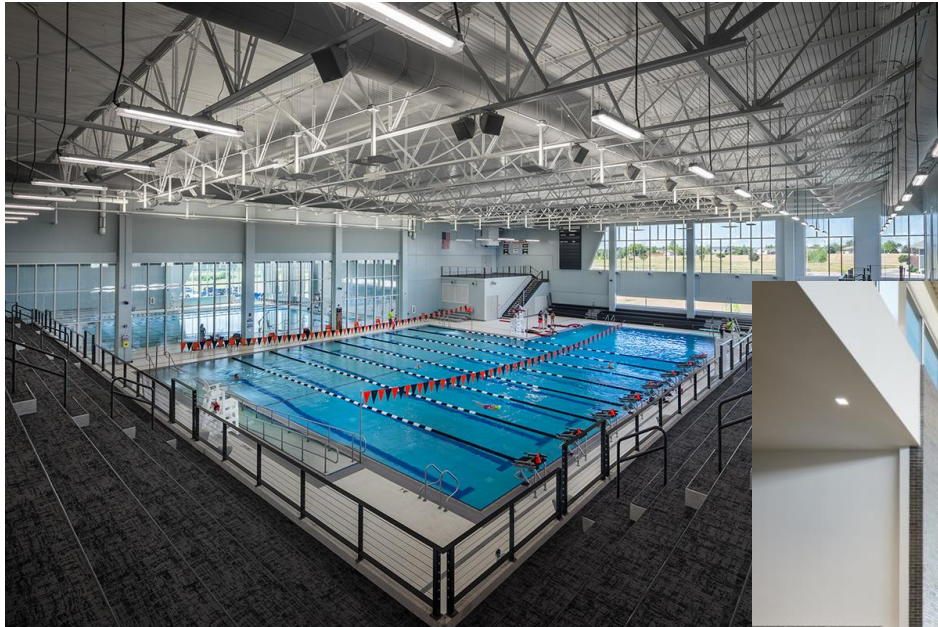
➤ Interior Finish



United South Central School

➤ Daylighting

Precast Benefits



Verona High School

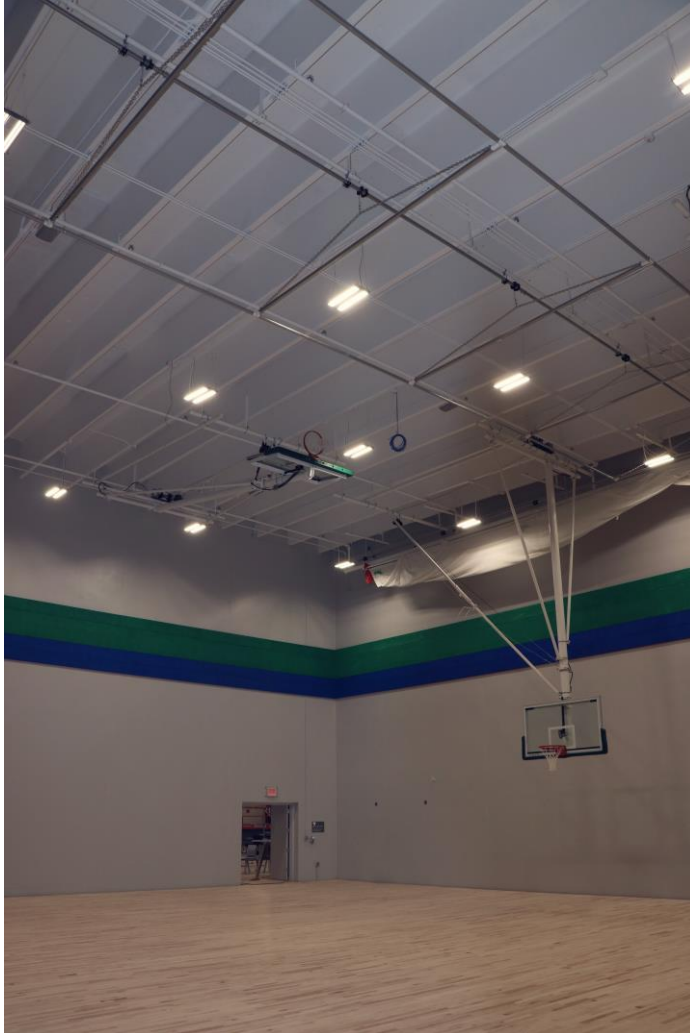


St. Stephen High School



United South Central School

Precast Benefits



- Unique Elements to K-12

Precast Benefits

➤ Fire Protection

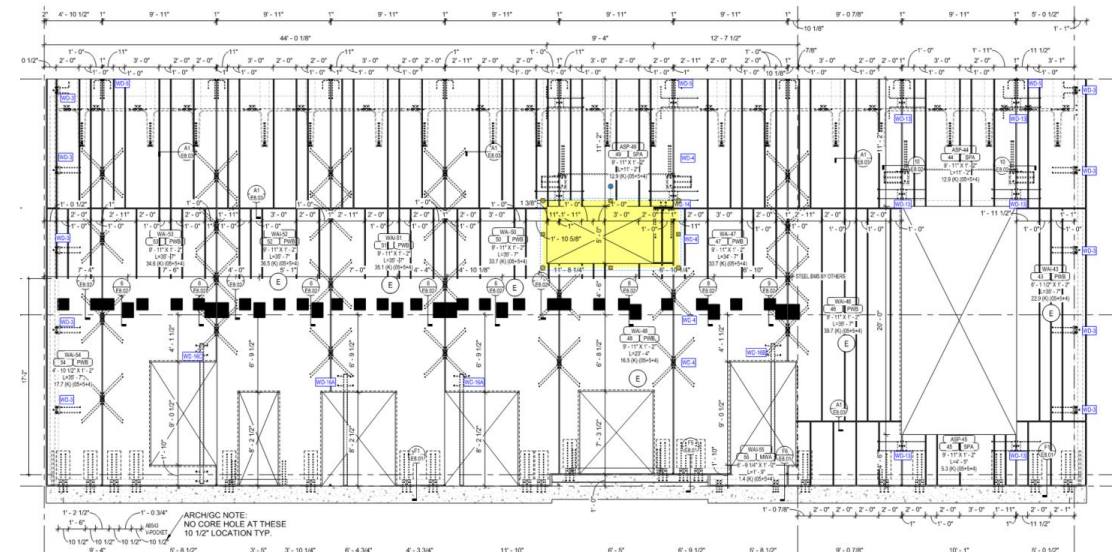
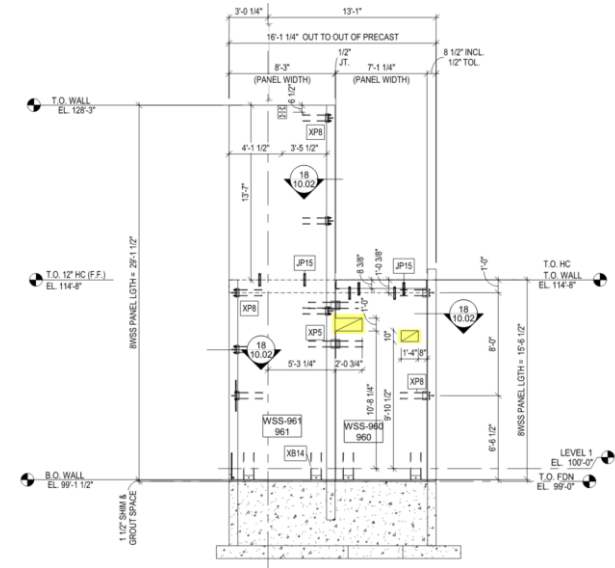
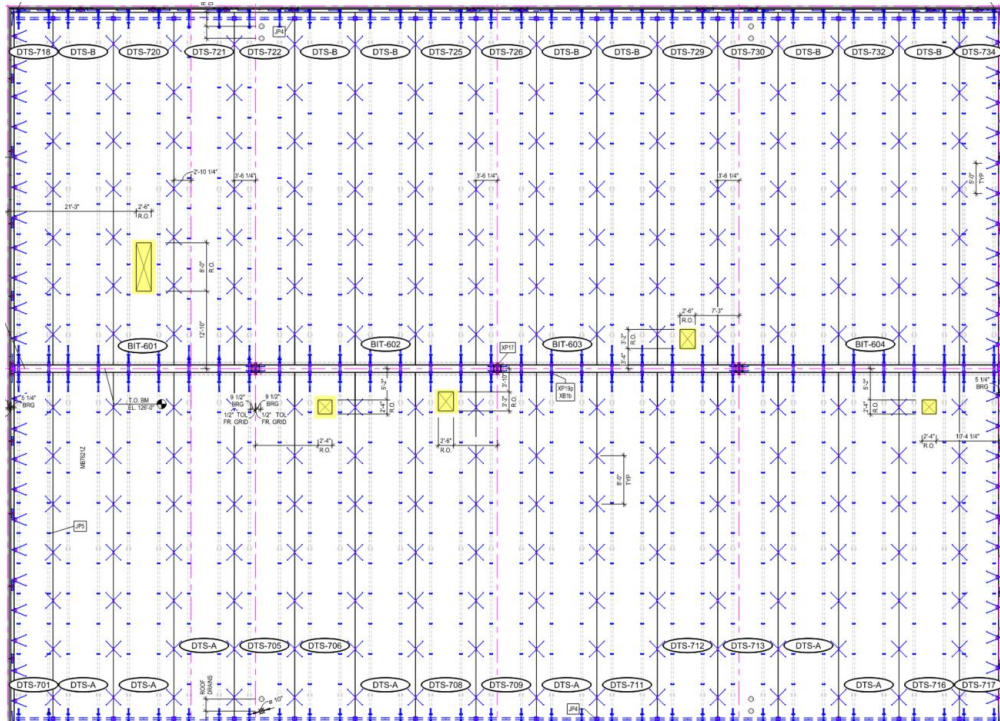
Thickness of concrete slabs or wall panels faced with 5/8 in. Type X gypsum wallboard to provide fire endurance of 2 and 3 hours.

Thickness (in.) of Concrete Panel for Fire Endurance of				
	With no air space		With 6 in. air space	
	2 hr	3 hr	2 hr	3 hr
Aggregate				
Sand-lightweight	2.5	3.6	2.0	2.5
Carbonate	2.8	4.0	2.0	2.7
Siliceous	2.9	4.2	2.0	2.8



Standard Details

➤ MEP Opening Flexibility

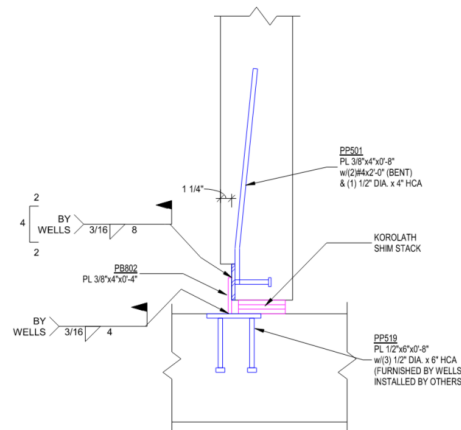


➤ Clean Connection Details



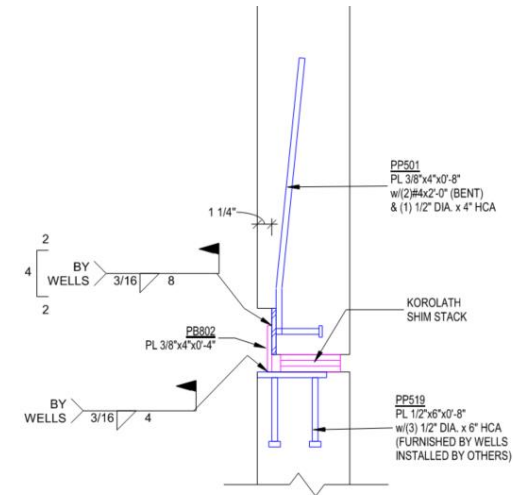
Standard Details

➤ Bearing Flexibility



JB1 FTG EMBED
1 1/2" = 1'-0"

Bear on top of
footing



Bear on CIP stem
wall



K-12 Market Specific Challenges

Unique Schedules

- Preconstruction Challenges
 - Community involvement
 - Design timeline is expedited
 - Complete specs and drawings before bid
- Engineering design assistance
- All inclusive work scope minimizes scope gaps between trades
- Early precast bid packages

[illegible]

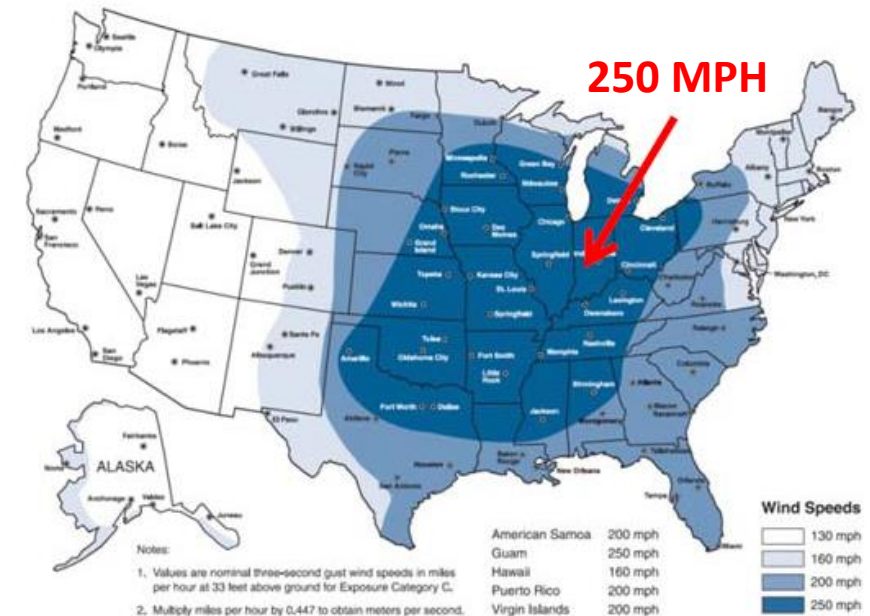
Unique Schedules

- Construction Challenges
 - Tight construction schedules.
 - Working around school holidays.
 - Substantial Completion Dates are firm.
- Construction Precast Solutions
 - Manufactured offsite
 - Minimal site congestion
 - Fast & secure enclosure
 - MEP coordinated upfront
 - Finished product



2018 IBC Code Requirements for ICC 500 Storm Shelters

423.3 Critical emergency operations. In areas where the shelter design wind speed for tornadoes in accordance with Figure 304.2(1) of ICC 500 is 250 MPH, schools, 911 call stations, emergency operation centers and fire, rescue, ambulance and police stations shall be provided with a storm shelter constructed in accordance with ICC 500



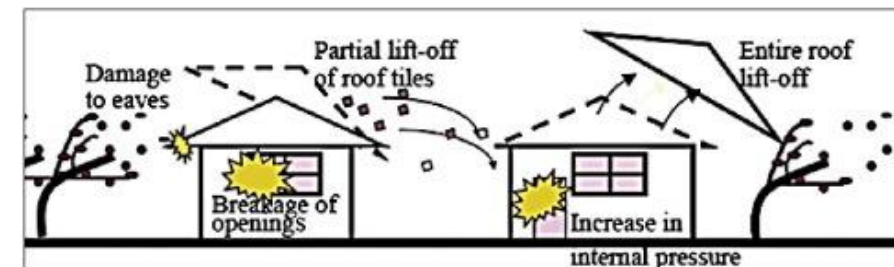
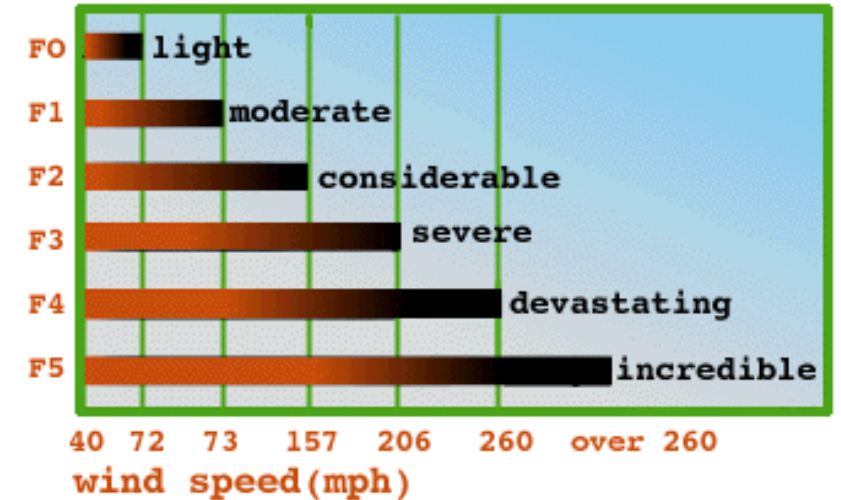
ICC 500 Storm Shelters

- Need to create safe space for all students and faculty in the event of a storm up with up to 250 mph winds.
- Unique Design Elements



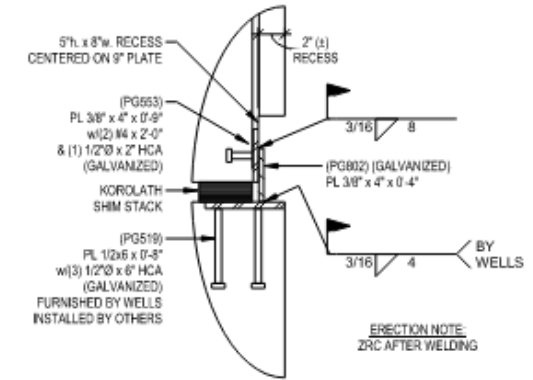
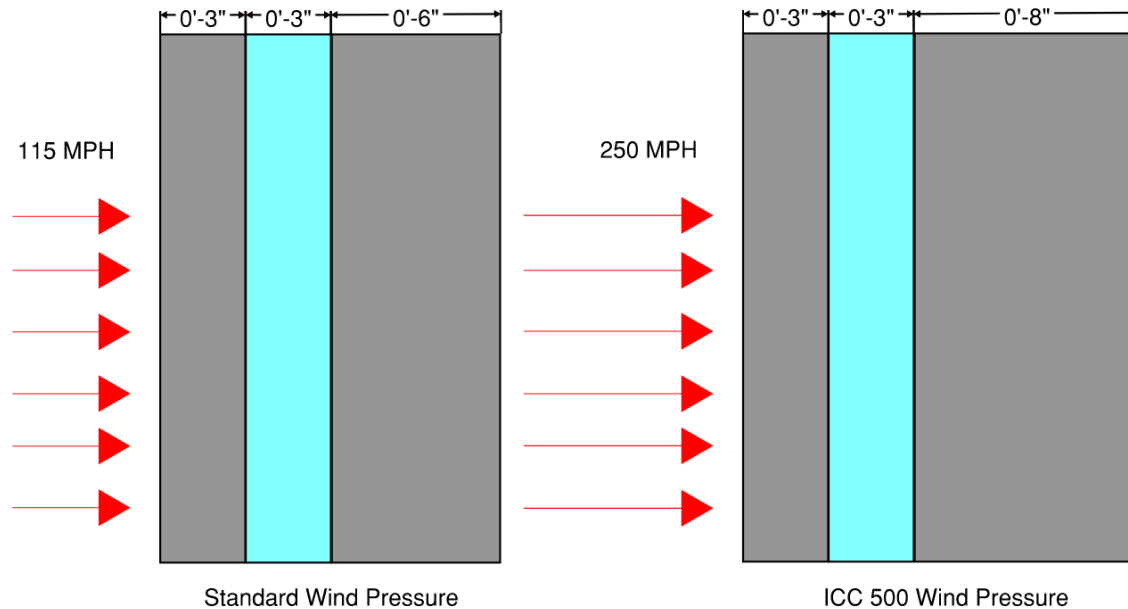
- Benefits of Concrete
 - Self Weight
 - Durability

Fujita damage scale

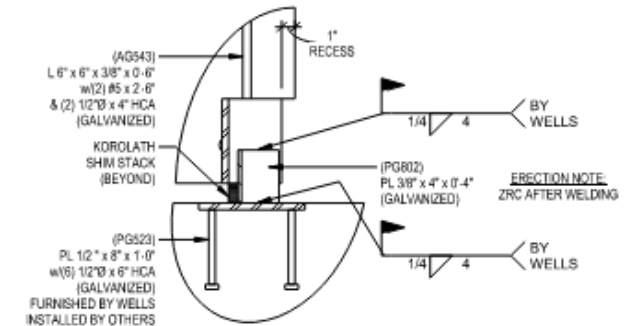


Wind Resistance

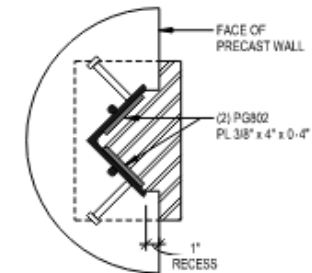
Prestressed concrete wall panels can economically be designed to exceed the 250 mph design wind speed requirements.



3 BASE CONN. DETAIL
1.01A 1 1/2" = 1'-0"



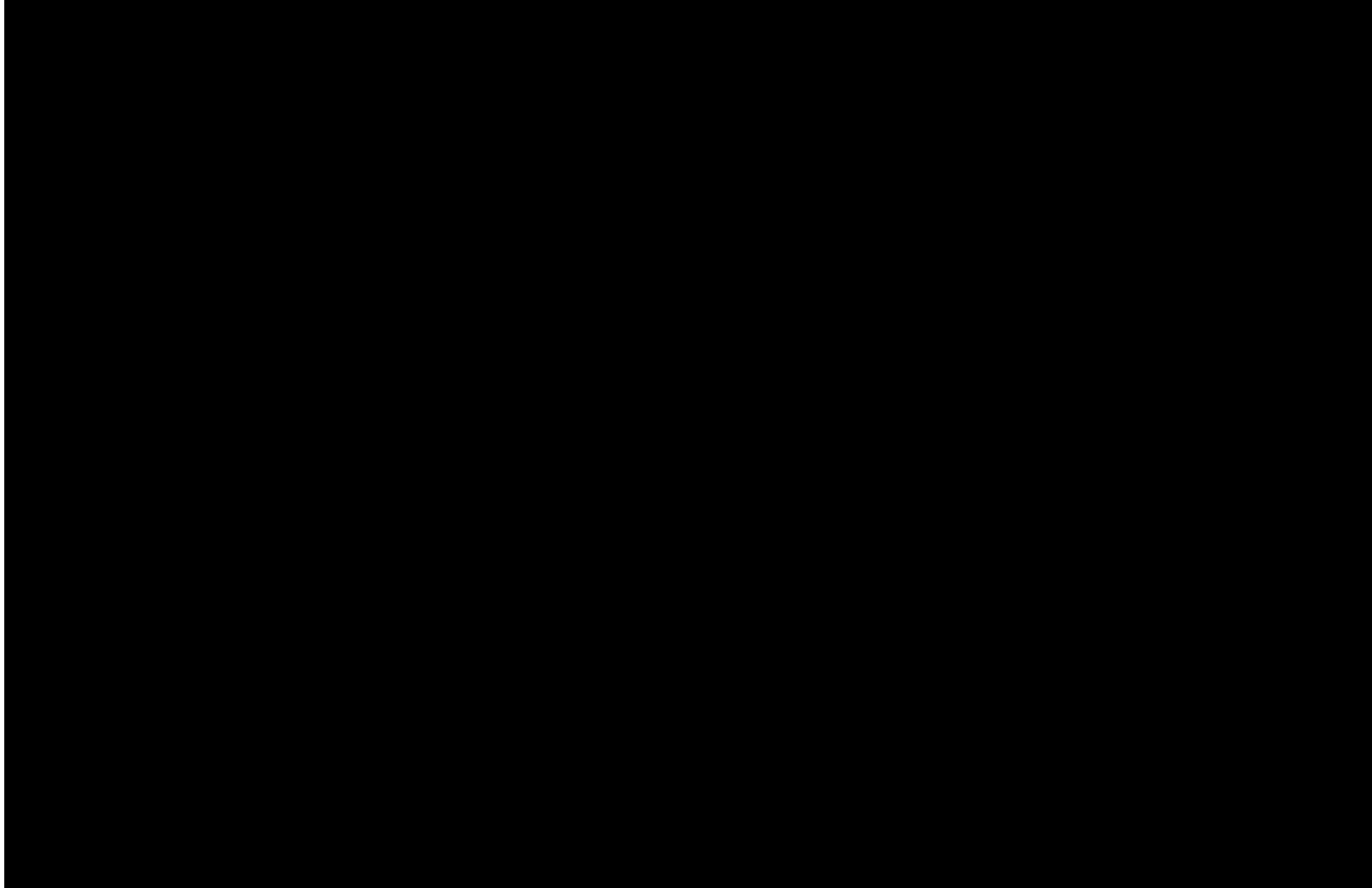
SECTION VIEW



PLAN VIEW

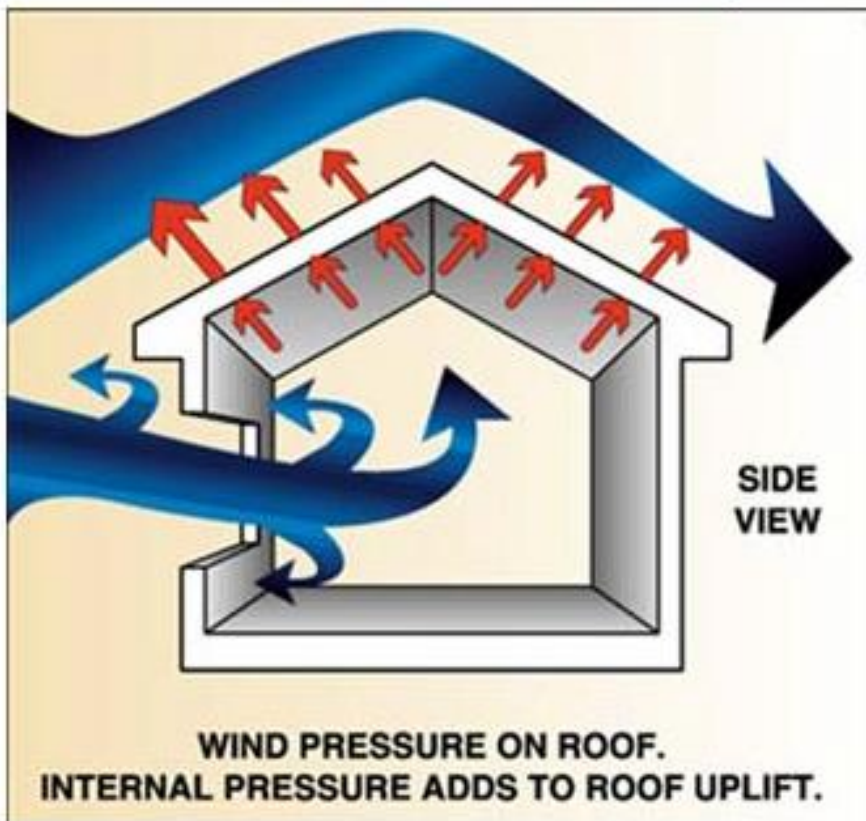
2 BASE CONN. DETAIL
1.01A 1 1/2" = 1'-0"

Projectile Missiles



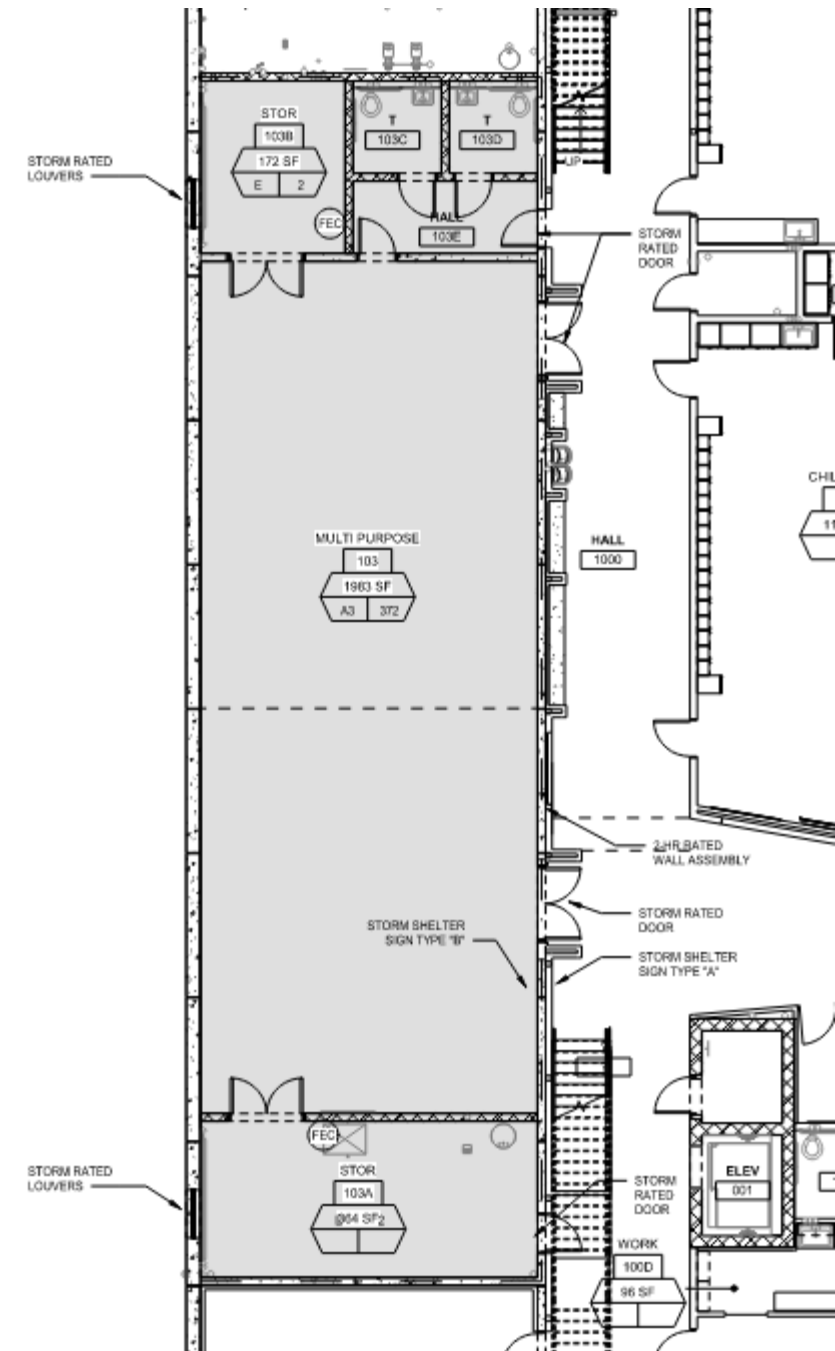
Uplift

Utilize self weight of concrete products to resist uplift loading.



Other Requirements

- 2 – hour potential occupancy
 - Ventilation
 - Fire and life safety requirements
 - Sanitation facilities
 - Lighting





Project Examples

Maple River K-12

195,855 SF Building Area

486 pcs – 147,777 sf - Insulated architectural exterior wall panels

125 pcs – 21,476 sf - Solid interior walls

55 pcs – 1,301 lf - Precast columns

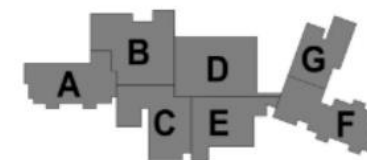
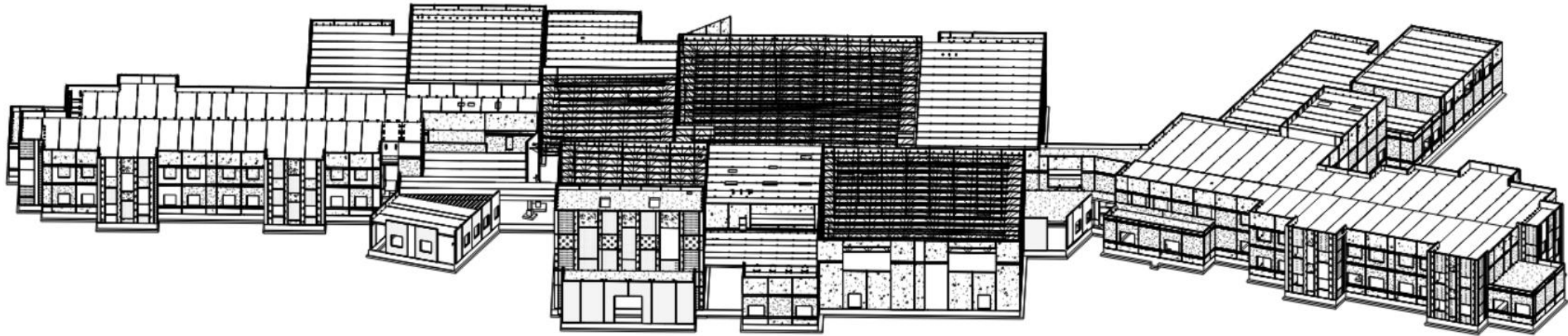
55 pcs – 1,403 lf - Precast beams

489 pcs – 50,420 sf - Hollowcore plank at 2nd Level

247 pcs – 105,847 sf - Roof double T's

22 pcs – 459 lf - Precast stadia in auditorium

1,479 pcs Total



KEYPLAN



Maple River

Aesthetic Versatility

- Exterior finishes
 - 2 different mix designs
 - Acid etch, sandblast, water wash
 - Cast in thin brick
- Interior Finishes
 - Polished
 - Hard trowel



Maple River

Schedule

Early Precast Bid Package

30 Weeks D&E

12 Weeks Production

13 Weeks Erection

40 Weeks from precast award to
completion of precast



United South Central

166,740 SF Building Area

253 pcs – 66,295 sf - Insulated architectural exterior walls

79 pcs – 20,128 sf - Solid interior architectural walls

27 pcs – 4,221 sf - Solid interior gray walls

67 pcs – 1,247 lf - Precast columns

39 pcs – 1,098 lf - Precast beams

82 pcs – 6,190 sf - Hollowcore plank at 2nd Level

257 pcs – 152,541 sf - Roof double T's

804 pcs Total



United South Central



Silver Creek

9,140 sf Addition area





Questions? Please contact.

jace.rossow@wellsconcrete.com

reid.mordhorst@wellsconcrete.com

Thank you.



Upcoming Webinar

November 16, 2022 at 11am CDT

Designing Unique Facades

with Prefabricated Building Systems

The world of architectural design continues to advance, with new and modern techniques introduced every year to shift the design landscape. With a wide variety of aesthetically versatile architectural finish options available, prefabricated building solutions are transforming ordinary buildings into works of art that create a sense of community pride. Learn about the limitless finish possibilities from formliners, imprinted designs and some of the newest finishes available that simulate terrazo and limestone or a stained metal panel appearance. Join us on November 16th and earn CEU credits while you learn about the range of resources and possibilities and with any luck, leave inspired to try something new in your next design.

Speakers: Clinton Krell | Gary Pooley