

ENERGY & ATMOSPHERE: THERMAL EFFICIENT PRECAST WALL SYSTEM THERMAL IMAGING – UNIVERSITY COMMONS AT GEORGIA STATE UNIVERSITY

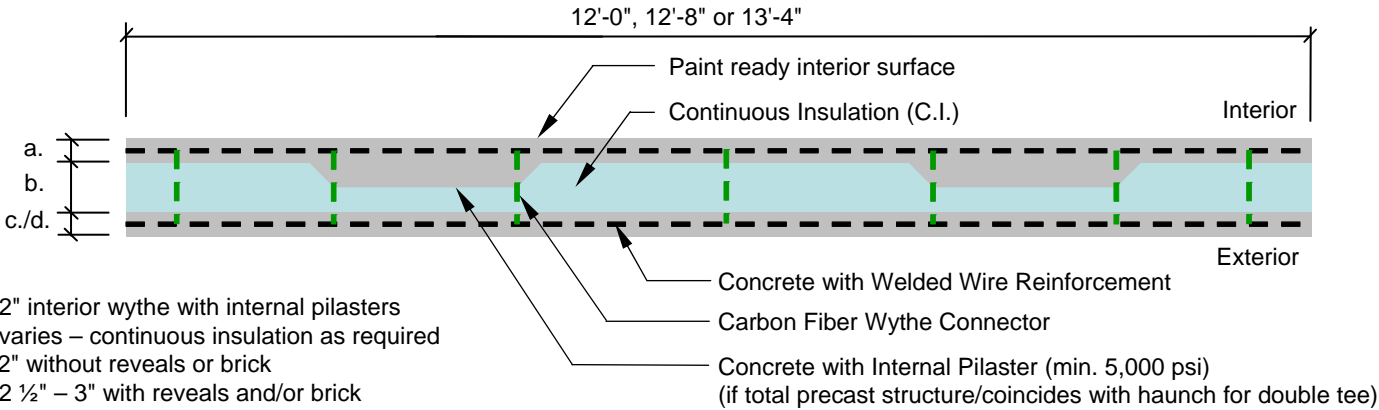
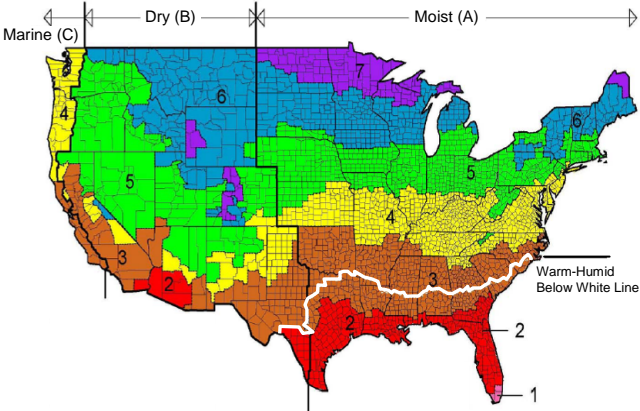
The ASHRAE Energy Standard provides minimum requirements for the energy efficient design of buildings. To support our innovation and advancement of building systems, a thermal imaging survey was conducted by Atlantic Southeast Infrared. The projects include, a 2,000 student residence hall at GSU and a dormitory built with cavity wall construction in the Atlanta market (see images on back).

The results show the thermal efficient precast/prestressed concrete mass wall system has “excellent and uniform thermal characteristics.” Measurement and verification by infrared imaging found the GSU project with a precast concrete mass wall to be an R-13.77. This value exceeds the ASHRAE 90.1-2007 Energy Standard for non-residential above grade mass walls in Zones 1 to 6. The cavity wall dormitory project measurement was an R-7.09, which would exceed the requirements of Zones 1 and 2.

The original project specification for GSU included steel studs, R-19 batt insulation (with an effective R-value of 7.1 per ASHRAE), brick veneer and drywall. However, after careful consideration and in depth analysis by the design team, a thermal efficient precast concrete mass wall system with continuous insulation and integral architectural finishes was selected.

The system was made possible with the utilization of CarbonCast® technology and C-Grid®. The low conductive C-Grid connects the inside concrete wythe to the outside concrete wythe, reducing thermal bridging, while providing a structurally composite panel with load bearing capabilities.

Below is a typical section of a high performance thermal efficient precast concrete mass wall panel with continuous insulation.



Section - High Performance, Structurally Composite Precast Wall Panel

THERMAL IMAGING - UNIVERSITY COMMONS AT GEORGIA STATE UNIVERSITY

OWNER:

Board of Regents, University of Georgia System

DEVELOPER:

Ambling Development Company

ARCHITECT:

Niles Bolten Associates, Inc.

ENGINEER:

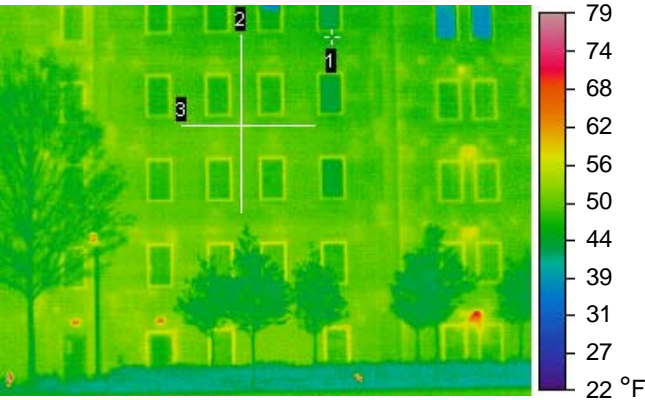
Browder + LeGuizamon and Associates

CONTRACTOR:

Hardin Construction Company

PROJECT DETAILS

- CIP structure with a thermal efficient architectural precast concrete mass wall system for the building envelope
- Mass wall includes continuous insulation and integral architectural finishes; cast-in brick, reveals, sandblasting and pigmented concrete
- Wall system has a durable paint ready interior concrete surface
- Five buildings; 8 to 15 stories
- 370,000 square feet of thermal efficient walls
- 2,500 precast panels erected in 10 months at night with tower cranes



*Note:
Red areas on left are lights, on right are bathroom vents*

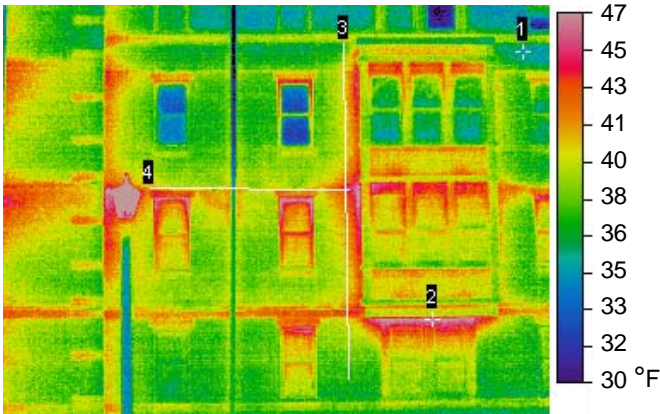


The precast concrete wall system has "excellent and uniform thermal characteristics."

Jerry Wilkinson – Atlantic Southeast Infrared

THERMAL IMAGING: PRECAST WALL SYSTEM

University Commons at GSU built with a thermal efficient precast concrete mass wall system. Calculations by infrared imaging found the system to be an R-13.77.



THERMAL IMAGING: CAVITY WALL SYSTEM

A dormitory built with cavity wall construction in the Atlanta market. Calculations by infrared imaging found the system to be an R-7.09.



MEASUREMENT & VERIFICATION – ANNUAL OPERATING COST, UNIVERSITY COMMONS AT GSU

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|--|-------------|
| ▪ Design case - energy simulation of all building loads (original design: brick/steel studs/batt insulation) | \$1,244,000 |
| ▪ Actual energy cost for first year (precast concrete mass wall with continuous insulation) | \$833,000 |
| ▪ Savings in year one (33%) | \$411,000 |



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