Introducing the "Panel-Block"

Reusable Modular Panel-Block Wall Assembly System

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System Overview

1. A reusable/sustainable line of products,
2. A high-performance (energy efficient) building envelope,
3. Flexibility in the installed shape,
4. An easy interface with accessory building materials,
5. A secure building system,
6. Ease and speed of construction.

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Comparison Overview

- Aesthetics: The finished product will look and feel like conventional construction, but with wider window sills.
- Performance: The installed Panel-Blocks will out-perform conventional construction.
- Installation: The Panel-Block System will go up faster than conventional construction.

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Meets these Needs

1. Provides a complete modular wall system,
2. Compatible with other common building components (windows, doors, etc.),
3. Includes an integral fastening system for speed and ease of construction and reuse,
4. Provides a molded structural assembly that provides the insulation and structural characteristics of the component. The use of the insulation as the structure will allow the cost-effective use of much higher than normal insulation values,

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Meets these Needs

5. Includes a gasket system that provides an airtight envelope to reduce air infiltration to levels much lower than conventional construction,

6. Provides a completely weather-tight assembly including a water-shedding interlock profile complete with capillary breaks,
7. Provides integral raceways for normal in-wall electrical wiring,
8. Includes provisions for managing concentrated loads,
9. Provides adequate security for the inhabitants of the structure,

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Meets these Needs

10. Provides a means of structurally interlocking and connecting the components to each other and to the foundation to form a continuous reinforcing network capable of meeting high wind loads, earth quake loading, and provides a secure attachment and resistance to wind uplift for the roof structure. This provision also reinforces the assembled blocks by means of post-tensioning the blocks together.

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Advantages vs. other types of construction:

- Low tech.
- Competitive overall installed cost (based on estimates) while providing a high-performance envelope.
- Allows the builder to downsize central heating and AC systems.
- Efficient construction – faster than conventional stick-built construction.
- Reliable installation. Structure, closure, insulation, and finishes in a simple one-step process.
- Weather resistant – doesn't require temporary weather protection.
- Year-round installation. Can be effectively assembled in any conditions.
- Provides better sound isolation – in-to-out.

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Advantages vs. other types of construction:

- Components can be shipped in small vehicles and assembled and demounted without special tools or heavy equipment. The units are manageable for one person.
- Meets the current industry-wide need to meet sustainability goals. While the materials may or may not be 100% recycled content, the product itself will be 100% reusable, unlike any other building system currently on the market. The minimal energy and resources required to install/assemble this system is also an advantage in this market. Increased energy performance will reduce fossil fuel use and emissions.
- The high-performance nature of the product (2 to 3 times more energy efficient than other systems) will make it a material of choice for the new "zero energy" market.

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Experience and Prospects

South Pole projects

First ARRO (A prototype Autonomous Real-time Remote Observatory) Project (for The Cold Regions Research and Engineering Laboratory (CRREL). Tested at 200 watts for –70F outside, 70F inside.

Second ARRO (Autonomous Real-time Remote Observatory) Project (for University of New Hampshire Aerospace Research Department). Under contract.

SBIR / NSF Panel-Block Grant

Proposal submitted for new product development - National Science Foundation grant (Phase 1).

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The first ARRO Project being tested at the U.S. Cold Regions Research Environmental Laboratory



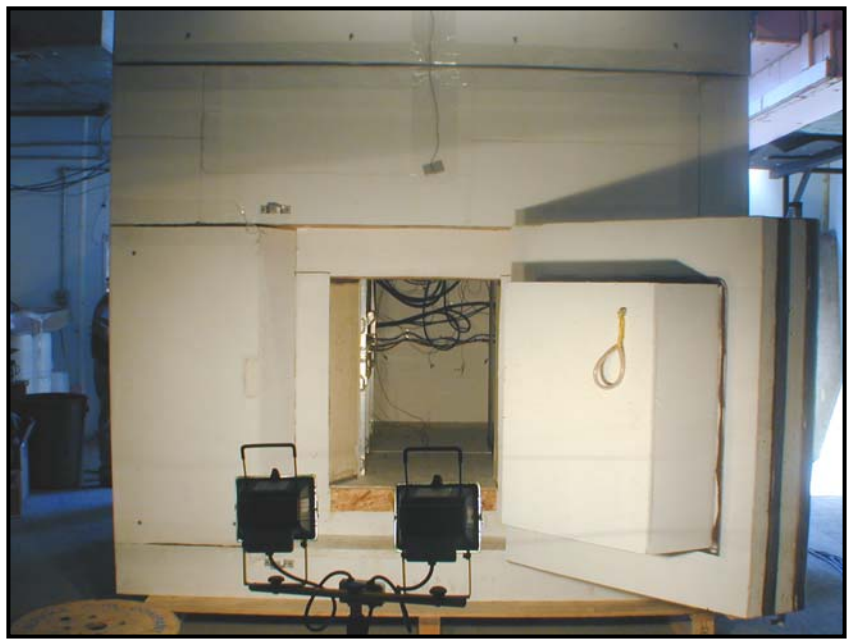


~200 watts total energy for –70F outside, 70F inside.

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The first ARRO Project being tested at the U.S. Cold Regions Research Environmental Laboratory





~200 watts total energy for –70F outside, 70F inside.

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General Project Information	
Project/Client Name	ARRO 1
Location	Antarctica
Date project completed	January-08
Type of construction	Prefabricated panels
Total sq. ft. - Useable floor area	81
Total sq. ft. - Above-grade shell	
Total sq. ft. - Roof	81
Total sq. ft. - Walls	312
Total sq. ft. - Floor	81
Total sq. ft. - Glazing area and doors	12
Total	486

ARRO 1 Performance Data

R=110, .06 cfm50/sq. ft. air infiltration rate

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The Summer Environment for the ARRO in Antarctica



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Initial McMurdo Installation – ARRO 1





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Initial McMurdo Installation – ARRO 1



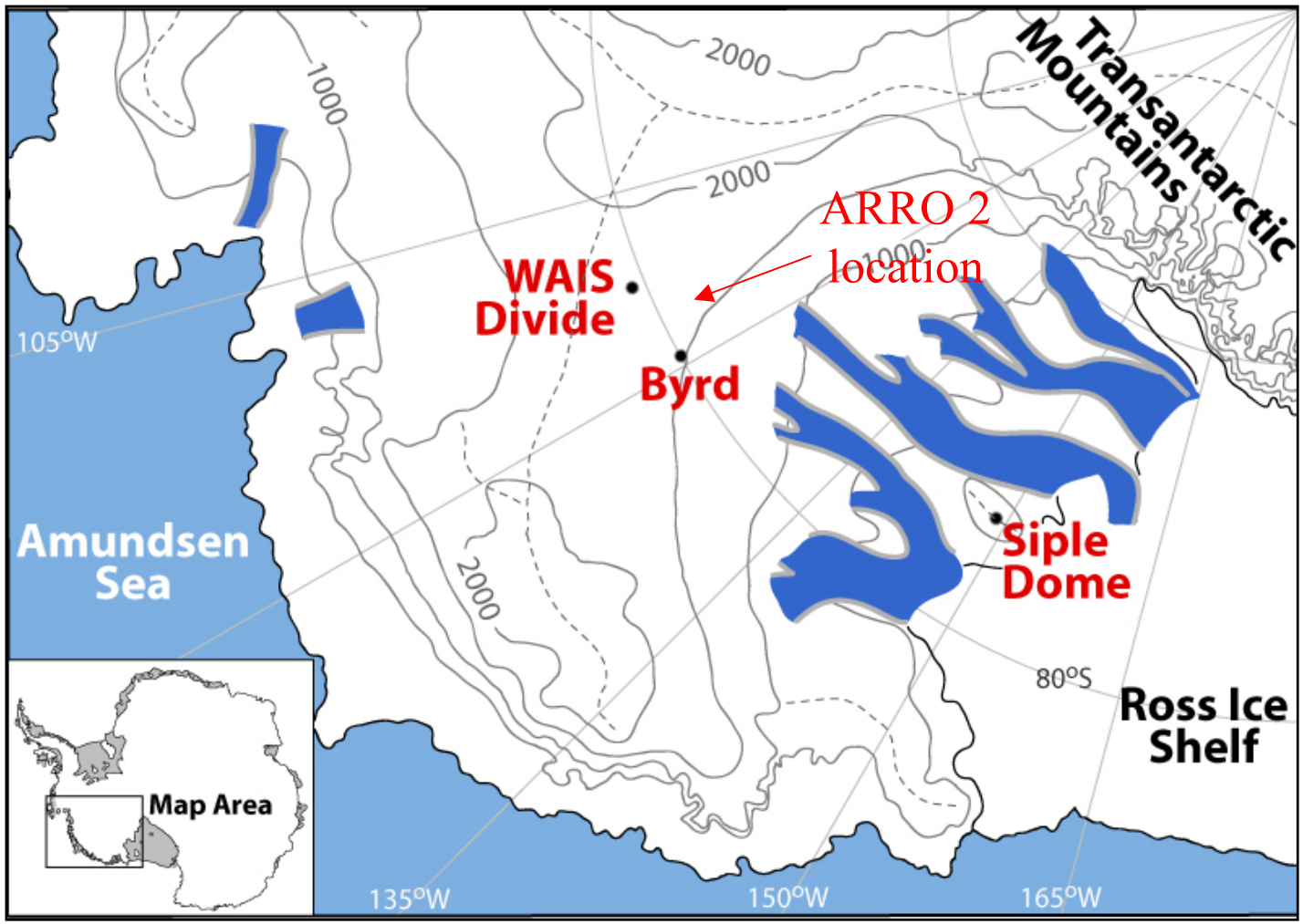


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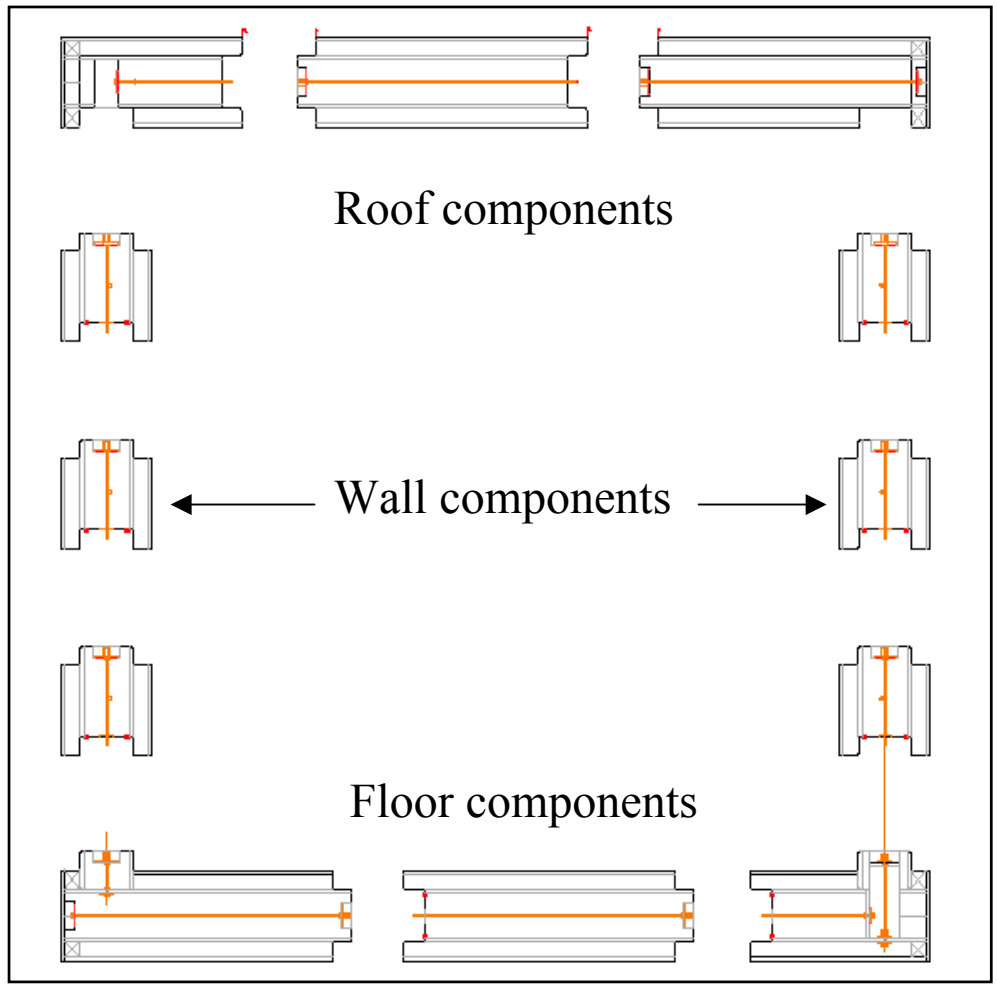
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Initial McMurdo Installation – ARRO 1



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The second generation ARRO project for the WAIS Divide is modular, reusable, and can be installed in multiple design configurations



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Pre-assembly at the University of New Hampshire
Aerospace Department

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Shipping the assembled unit from the University of New Hampshire Aerospace Department to Antarctica

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On site at McMurdo in Antarctica

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On site at McMurdo in Antarctica

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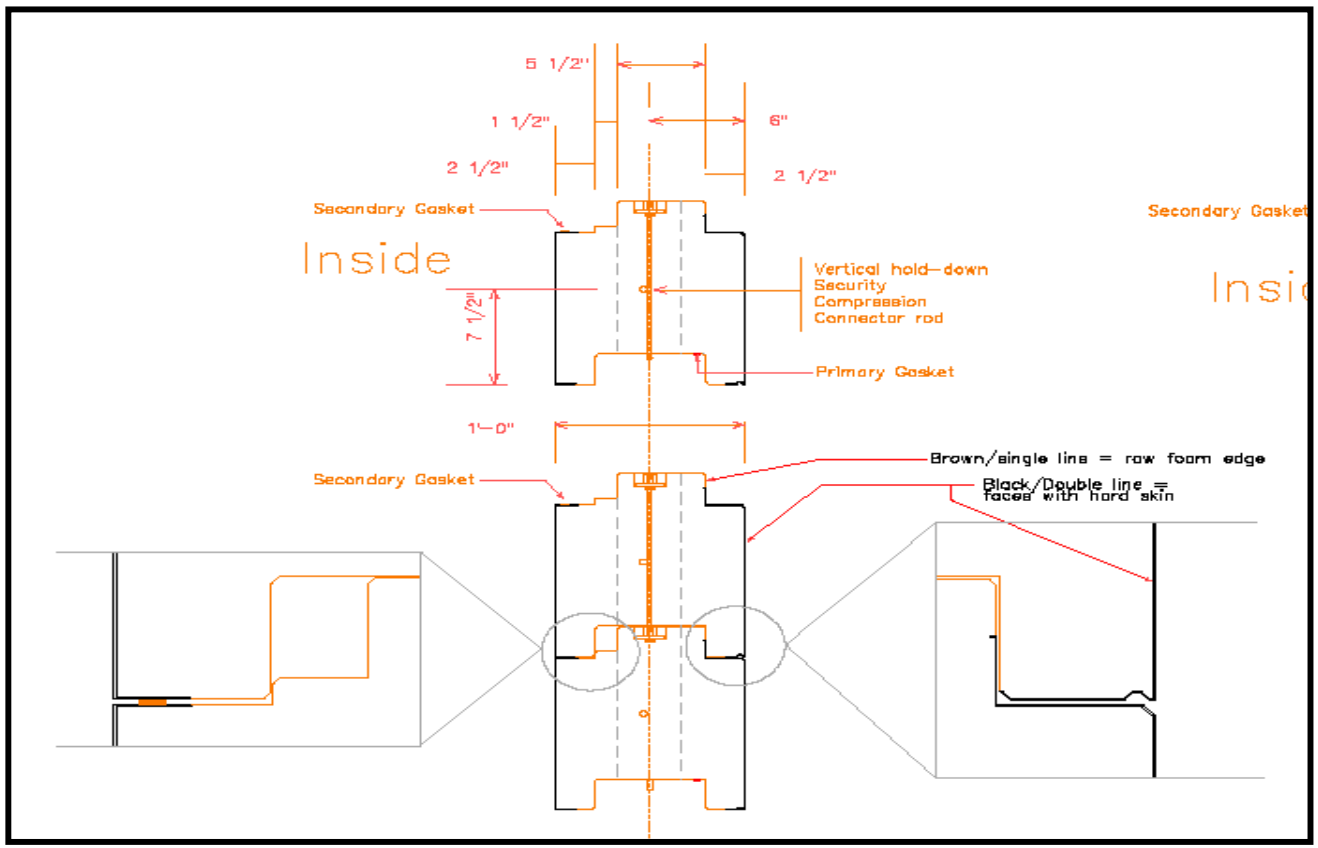
The ARRO 2 Project is part of the development of a new high-performance building system intended to be made available to the general public.

ARRO 2 “Panel-Block” Performance Data

R=70, .06 cfm50/sq. ft. air infiltration rate, competitive construction costs.

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The basic unit: 4’ X 1’ X 1’
(with electrical chases)



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Mockups showing vertical galleries





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Mockups showing vertical galleries



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Mockups showing vertical galleries

