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innovation | versatility | reliability

Presented to:

SPRUNG INSTANT STRUCTURES (EASTERN) LTD.
#202-2 Director Court Vaughan Ontario L4L 3Z5 Tel: (905) 829.1600 Fax: (905) 829.1555 Toll Free: 1 800 528.9899 www.sprung.com

innovation | versatility | reliability

July 10, 2012

Town of Collingwood
PO Box 157, 97 Hurontario Street
Collingwood, ON L9Y 3Z5

To whom this may concern,

We are pleased to introduce an innovative, relocatable building alternative providing cost effective solutions for a multitude of sports and recreation applications.

The Sprung Structure is a stressed membrane structure consisting of a series of aluminum arched ribs integrally connected by modular architectural membrane panels. The Sprung Structure's patented technology is utilized by diverse industries throughout the world.

Selected applications include: pool enclosures, gymnasiums, hockey arenas, racquet sports facilities, venue event centers, dining and entertainment facilities and equestrian riding arenas.

Features and Benefits:

- Relocatable, adding value for future projects.
- Quickly assembled and erected.
- Limited or no foundations.
- Standard clearspan widths ranging from 30 ft wide to 200 ft wide.
- Extremely durable and maintenance free.
- Full insulation packages available.
- Easily air conditioned or heated.
- Over 2 million square feet of structures in inventory.
- **Flexible leasing** with option to purchase.
- Generous guarantee program.
- Optional graphics packages.
- Seasonal openings.

Ultimately the exclusive relocatable features of this product provide maximum future flexibility making a Sprung Structure the right choice.

Sprung Instant Structures is a member of the Sprung Group of Companies, in business since 1887.

Our web site www.sprung.com is an excellent source for product information and recent projects of note. For additional information call us at 1-800-528-9899.

Sincerely,

SPRUNG INSTANT STRUCTURES

David MacNeil
Territory Sales Executive

SPRUNG INSTANT STRUCTURES (EASTERN) LTD.
2 Director Court, Suite 202 Vaughan, Ontario L4L 3Z5 Tel: (905) 829.1600 Fax: (905) 829.1555 Toll Free: 1 800 528.9899 www.sprung.com

1 Letter of Introduction
Sprung Guarantee
Hockey Canada Letter

2 Sprung Performance Arena Presentation
Edge School Presentation

3 Sprung Performance Gym Presentation
Redemption World Presentation

4 Kearns Pool Project Report

5 Dynamic Presentation

6 Environmental Stewardship
Aluminum vs. Steel
Energy Report
Oranges vs. Oranges

7 Hurricane Report
Cold Weather Reference

8

Sprung Instant Structures

H 0100

Guarantee

The architectural membrane and aluminum materials utilized in Sprung Structures have been selected for their proven strength, durability and longevity. To show our sincere confidence in our product, Sprung Instant Structures is pleased to issue the following guarantees.

A. ARCHITECTURAL MEMBRANE WITH TEDLAR ® PVF FILM

All membranes used are water and mildew resistant, insect proof and flame retardant. They withstand extreme climatic variations and contain ultra-violet inhibitors to reduce degradation by the sun's rays. Flame retardant status has been warranted by the membrane suppliers.

*Sprung Instant Structures guarantees to supply new replacement membrane, on a pro-rata basis at the then current price, for all colors of Tedlar® membrane which deteriorate from any of the aforementioned factors within **TWENTY (20)YEARS** from the date of delivery of the structure(s).*

B. ALUMINUM

*Aluminum used is professionally engineered and is of the highest quality and structural capability. Sprung Instant Structures guarantees to replace, on a pro-rata basis at the then current price, any aluminum which deteriorates from normal usage within **THIRTY (30)** years from the date of delivery of the structure(s).*

The guarantee will not be valid if a Sprung technical consultant is not present during all erections and dismantlings of the structure during the guarantee period or if any payments associated with the structure(s) are not made on time.

P.D. Sprung, Jr., President

Tim Sprung, Vice President

"The Sprung Group of Companies have been in business for over 123 years."

HOCKEY CANADA
2424 University Drive NW, 2424, promenade University N.O., Calgary, AB T2N 3Y9
Phone/Tél : (403) 777-3636 Fax/Téléc : (403) 777-3635 www.hockeycanada.ca

November 4, 2010

HOCKEY CANADA ENDORSES SPRUNG PERFORMANCE ARENAS

Hockey Canada and the Hockey Canada Foundation recognize the need for new arenas across Canada to allow more Canadian children to play our great game of hockey and our desire to allow as many children to play hockey as possible cost effectively. Hockey Canada and the Hockey Canada Foundation are pleased to provide our support and endorsement to the initiative of the Sprung team with its Sprung Performance Arenas.

Quote: "It is with the initiative of private companies like Sprung Instant Structures in the construction of new arenas across Canada that more Canadian children will be able to enjoy playing the game of hockey and continue with our tradition of hockey superiority in Canada" commented Bob Nicholson, President of Hockey Canada.

Bob Nicholson
President and CEO
Hockey Canada

sprung Performance Arenas

Let's talk about what's possible for your community.

Let's talk about what's possible for your community

with a Sprung Performance Arena

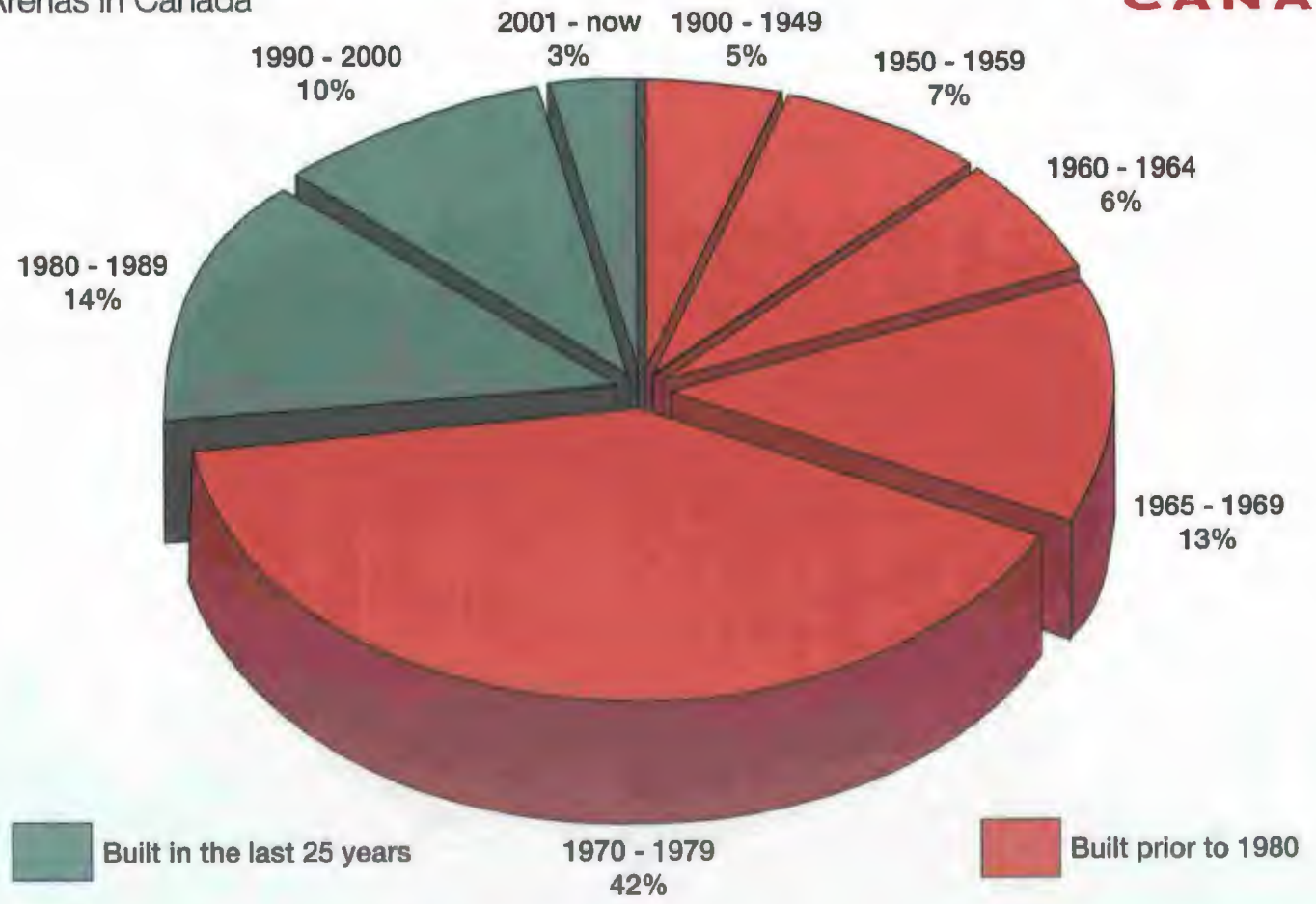
sprung Performance Arenas

Let's talk about what's possible for your community.

CANADA

Hockey Canada Facility Overview

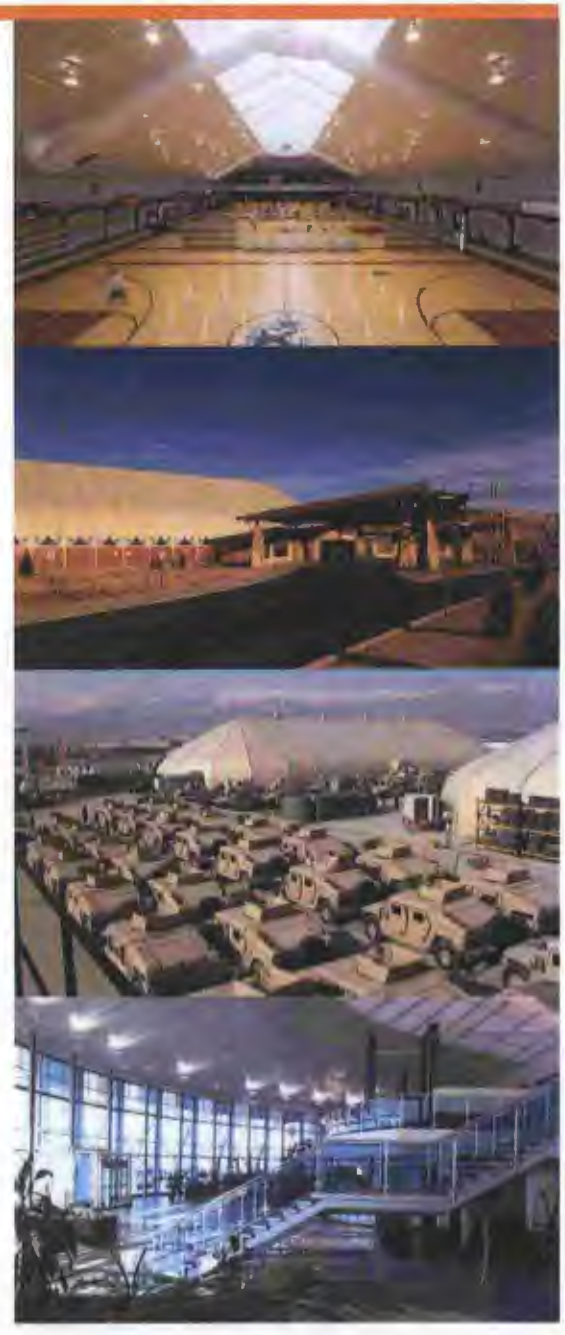
3,500 Arenas in Canada



sprung Performance Arenas
Let's talk about what's possible for your community.

About Sprung Structures

- Founded in 1887
- Patented the stressed membrane structure
- Built more than 12,000 structures in 90 countries
- Uses include sports, gaming, worship, education, corrections, military, office space and more
- The Sprung cornerstones:
  - Solutions for your changing needs
  - Commitment to quality
  - Green strategy
  - Passionate about your satisfaction
- Sprung Structures are:
  - Durable
  - Energy efficient
  - Cost effective over the long term
  - Provide a green footprint
  - Safe



sprung Performance Arenas
Let's talk about what's possible for your community.

Our Partners

PRC
PERFORMANCE RECREATION CONSULTANTS

- Performance Recreation Consultants
- Construction Management
- Skilled team of estimators and field managers
- Assists clients with:
  - Budgeting the complete project
  - Pricing the site work
  - Managing subcontracts
  - Quality control
  - Final commissioning of the facility

GENIVAR

BEARDEN
A Division of GENIVAR

- Bearden, a Division of GENIVAR
- Engineering and Design
- 30 years expertise in arena design
- Ensures structures constructed quickly
- Assists clients with:
  - Engineering design
  - Planning
  - Structural analysis

sprung Performance Arenas
Let's talk about what's possible for your community.

The Sprung Arena

sprung Performance Arenas

Let's talk about what's possible for your community.

The Sprung Performance Arena Cross Section

- A high roof ideal for sports
- Overhead lighting is crisp and energy efficient
- Welcoming, comfortable and high performance environment
- NHL-quality ice surface
- Spectators have ample seating room with unobstructed views
- Corridors and change rooms are accommodating
- Optional mezzanine level provides even greater convenience and comfort

sprung Performance Arenas
Let's talk about what's possible for your community.

Aluminum Substructure

- The Sprung Performance Arena offers greater versatility and performance
- Extruded aluminum substructure is prefabricated and ready to assemble
- Aluminum is:
  - Rustproof - unlike steel & wood, aluminum performs extremely well in humid environmental conditions
  - Lightweight - about 1/3 the weight of steel
  - Strong - meets or exceeds most building codes
  - Versatile - can be extruded into virtually any shape
  - Easy to ship - strength-to-weight equals more product, less space
  - Long-lasting - indefinite life expectancy, gets stronger with age
  - Environmental - 100% recyclable with no loss of quality

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Let's talk about what's possible for your community.

Performance Architectural Membrane

DUPONT

- The Sprung Performance Arena offers durability, cleanability, fire resistance, and colour choice
- Self-cleaning exterior is virtually maintenance-free
- Clean, bright look
- Superior building material:
  - Approx. 24 oz per square yard
  - Guards against UV and airborne contaminants
  - Dramatically extends membrane life
  - Exceptional fire-retardant capability
  - Available in large selection of colours
  - 20-year pro-rated guarantee

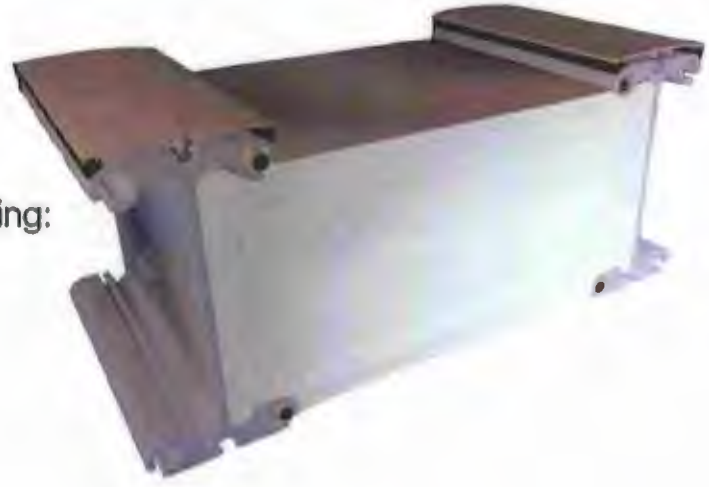
CONCORD CREAM | BROWNSTONE RED | BAYBERRY | DESERT SAND | BRIGHT WHITE | SALEM BLUE | MEDITERRANEAN OLIVE | GRANITE GRAY

sprung Performance Arenas

Let's talk about what's possible for your community.

Insulation

- The Sprung Performance Arena offers naturally better climate control
- Insulation at its proper thickness for maximum performance and comfort
- Johns Manville Formaldehyde-Free Fibreglass Blanket
  - Only formaldehyde-free product in the world
  - Aluminum foil backing for increased overall efficiency
- Three reasons insulation performs better in a Sprung building:
  1. Air tightness of exterior architectural membrane
  2. No differentiation between wall and roof
  3. Thicker insulation increases performance



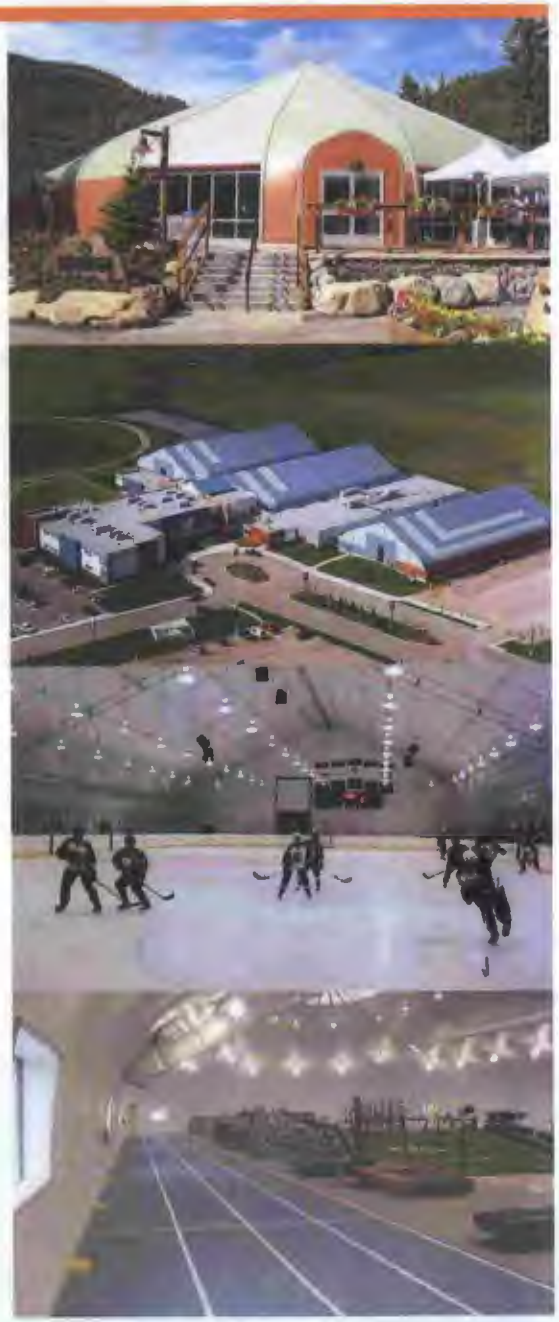
sprung Performance Arenas

Let's talk about what's possible for your community.

Green Footprint

- The Sprung Performance Arena is environmentally friendly by design:
  - Eliminates the substantial construction waste
  - Long lasting: rust-free aluminum substructure is engineered for indefinite life
  - Energy-efficient: exceptionally airtight building envelope with R30 insulation
  - LEED ® Certifiable: recycled content, energy performance, durability, construction waste management and deconstructability.
  - Relocatable: designed to be disassembled, reconfigured, expanded or relocated

Sprung: environmental stewardship by design

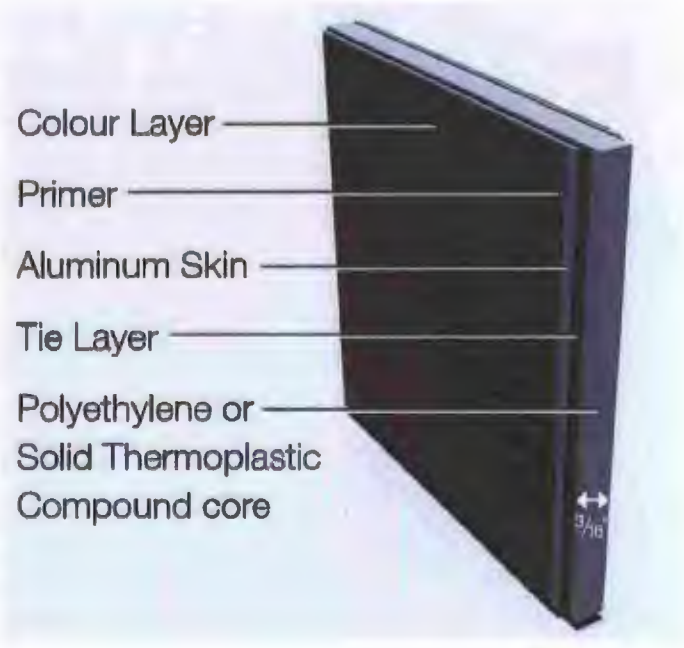


sprung Performance Arenas

Let's talk about what's possible for your community.

Sprung Shield

- The Sprung Performance Arena includes a virtually non-penetrable defence wall for protection against vandalism
- Multiple protective layers bonded to a hard aluminum skin and solid core
- Rises 8'6" around the entire structure and
- Provides secure peace of mind



sprung Performance Arenas

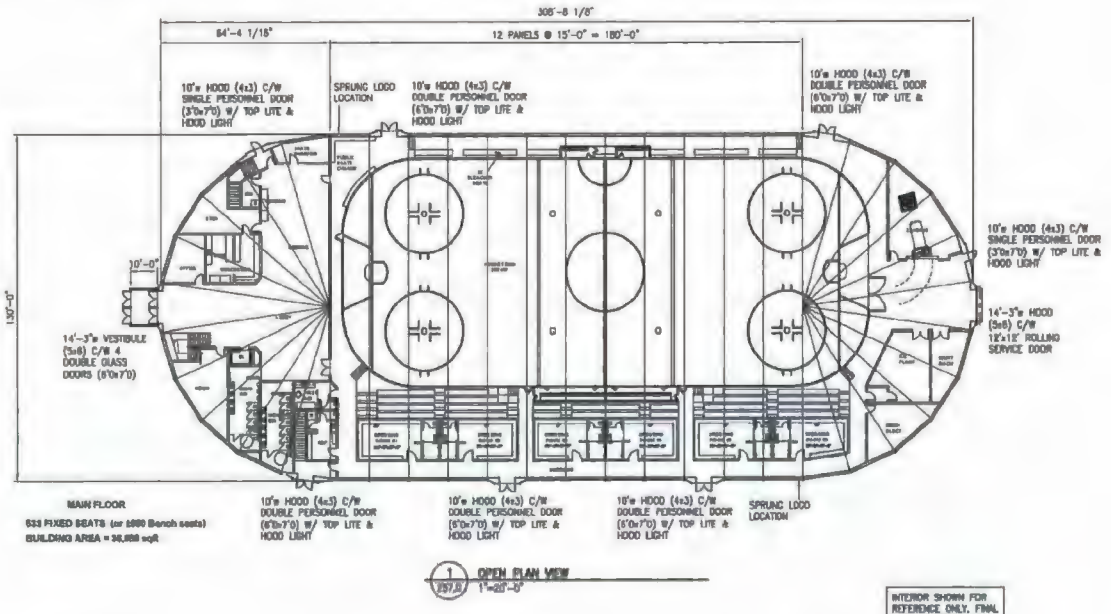
Let's talk about what's possible for your community.

Single Arena

sprung Performance Arenas

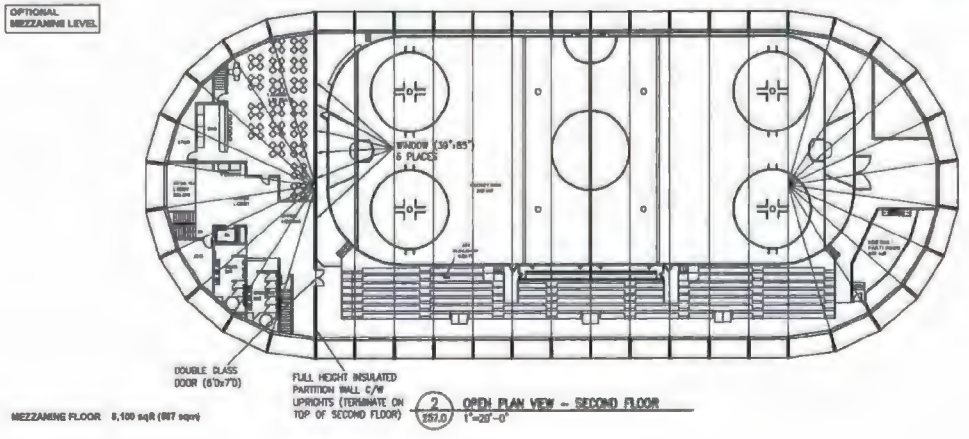
Let's talk about what's possible for your community.

Single Arena



INTERIOR SHOWN FOR REFERENCE ONLY. FINAL LAYOUT DESIGNED & SUPPLIED BY OTHERS.

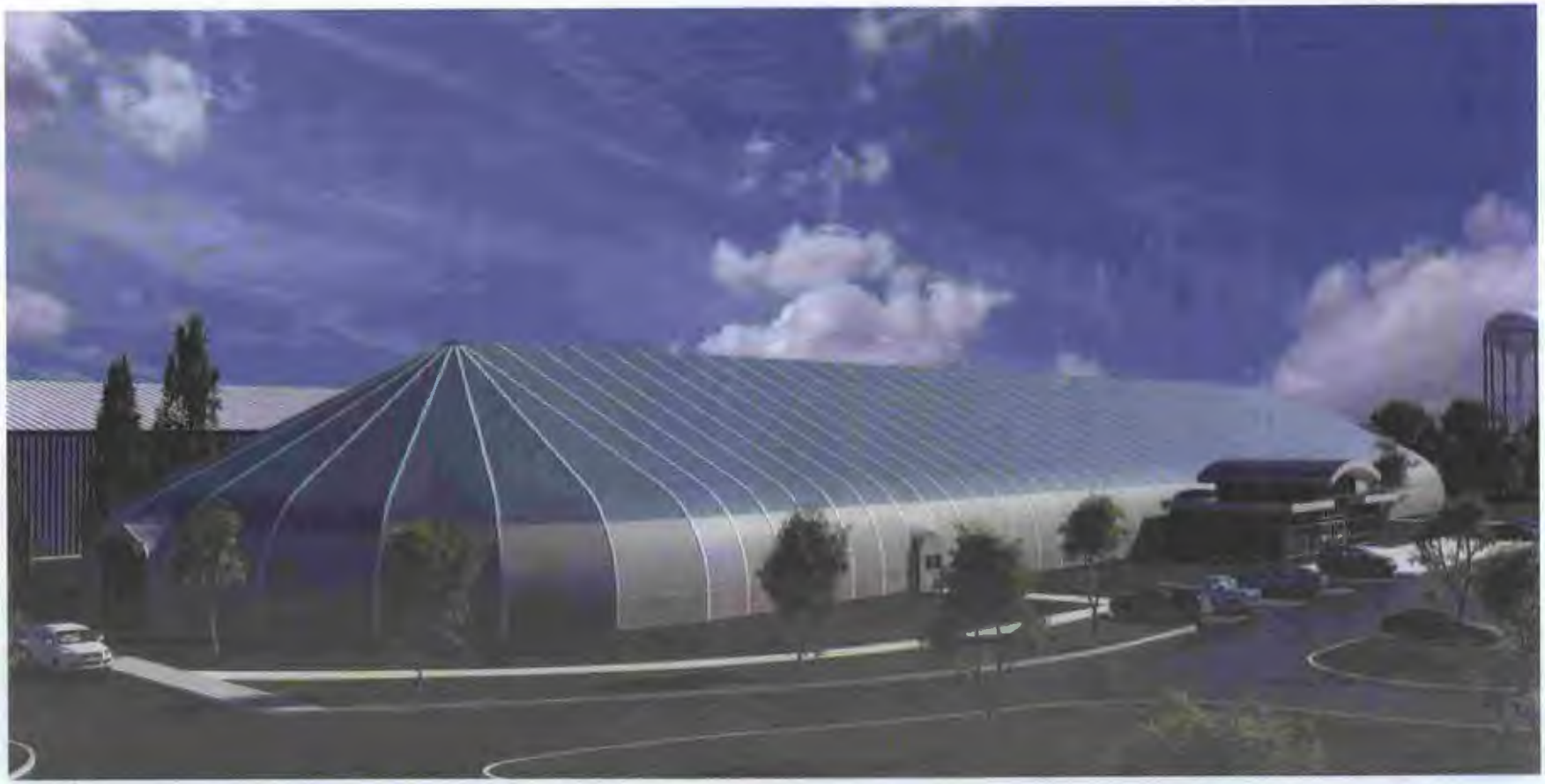
Optional Mezzanine



sprung Performance Arenas

Let's talk about what's possible for your community.

Twin Arena



sprung Performance Arenas

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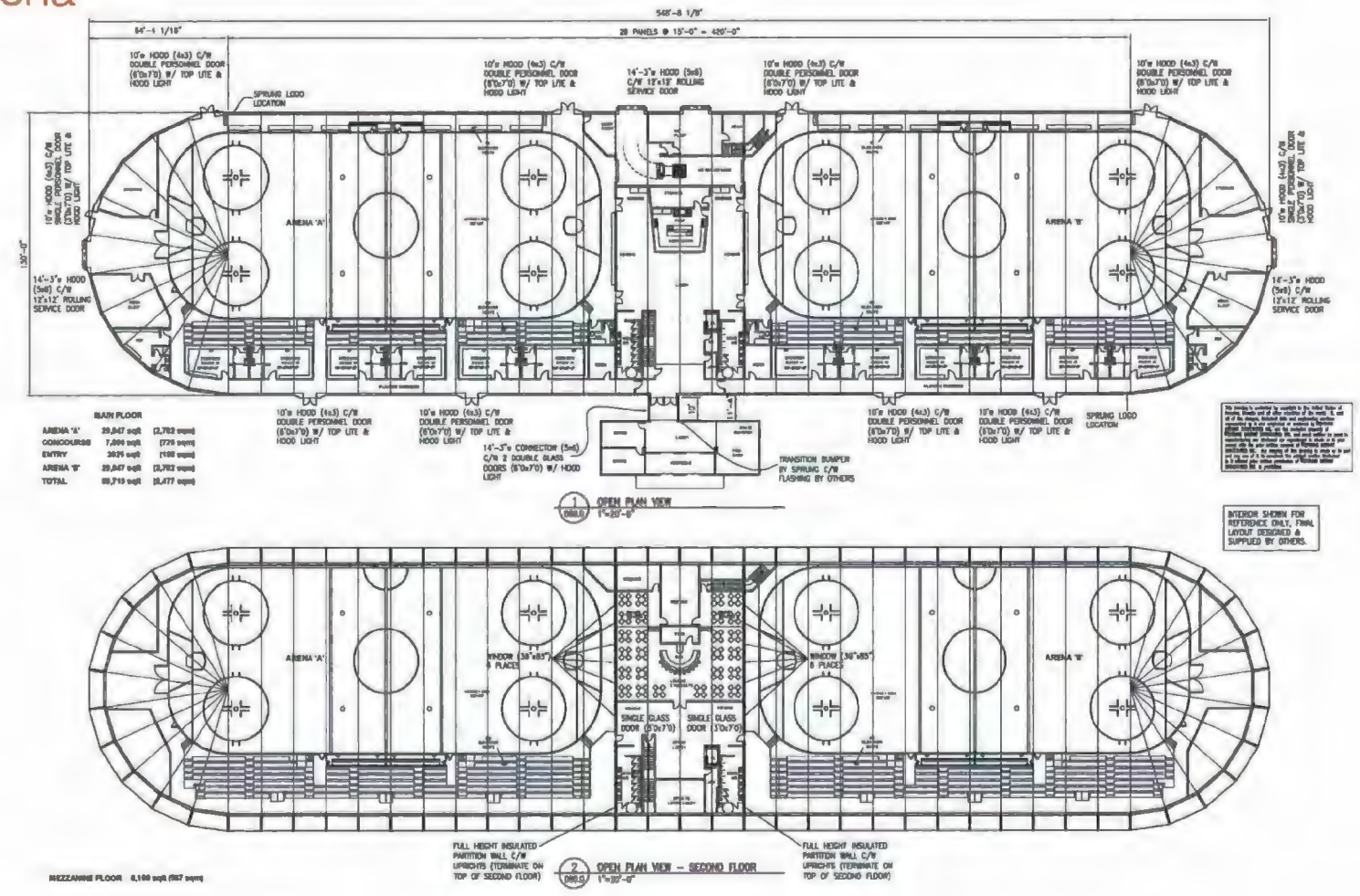
Twin Arena



sprung Performance Arenas

Let's talk about what's possible for your community.

Oranges vs. Oranges - Compare your options

	Sprung Performance Arena	Pre-Engineered Metal Building	Conventional Construction
Construction	6 months	9 -12 months	More than 12 months
Insulation	Continuous 9-inch thick R30 insulation from ground to peak	6-inch R20 wall squeezed to R14, 6-inch R20 roof squeezed to R11	R20 wall R20 roof
Lighting Levels	The highly tensioned white interior membrane reduces number of light fixtures required	Requires more lighting fixtures	Requires more lighting fixtures
Maintenance Schedule	Aluminum is virtually maintenance-free Self-cleaning exterior architectural membrane Sprung Shield "vandal proof" hard-wall system to 8'6" level	Standing seam metal roof prone to large thermal movements and requires continuous maintenance, especially at penetrations	Regular maintenance is required
Air-tightness	Air Permeability almost 0, which means excellent energy performance	Poor airtightness	Moderate airtightness
Energy Efficiency	Up to 20% energy savings over pre-engineered	Poor energy performance	Moderate energy performance
Lifespan	60+ years	60+ years	60+ years
Price	Single: <$6 million Twin: <$12 million	Single: $8 million+ Twin: $14 million+	Single: $8.5 to $20 million Twin: $16 to $22 million

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Bob Nicholson
President and CEO
Hockey Canada

Innovative
Building Solutions

The immediate, cost-effective solution to new ice rink construction

The Integrated Arena System

"Our Sprung arenas have far exceeded our expectations in terms of look, feel and performance."

"We absolutely hit a HOME RUN with Sprung Instant Structures."

Brent R. M. Devost
Founder, President & CEO
Edge School

sprung

Innovative Building Solutions

Engineered & Manufactured by Sprung Instant Structures

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PROJECT TESTIMONIAL

EDGE SCHOOL – CALGARY, ALBERTA

The Edge School is a private institution with a mission to provide students from Grade 6 to 12 with a purposeful integration of excellence in academics, athletics and character-building.

Several years ago the school expanded their property and looked to traditional construction for classrooms, two NHL-sized hockey rinks and a gymnasium. When the plans were developed, the project costs exceeded their available budget by $10 million. The architect and project manager approached Sprung for an alternative proposal. After careful consideration, three 120' wide Sprung structures were provided and erected with a net savings of $7 million. The decision to use Sprung allowed the Edge School expansion to go forward on budget and on time.

The ice arenas at the Edge School are a showcased aspect of this multi-venue development and have received high praise from visiting teams and spectators.

"Our Sprung arenas have far exceeded our expectations in terms of look, feel and performance. The positive comments we have received on how much space there is, how bright the facility is and how good they look has been overwhelming. And most importantly folks cannot stop talking about the quality of the ice. Certainly this is a combination of ice plant and facility design however a major question in building Sprung arenas was the outside temperature and ice quality – well the questions have been answered with vigor. In 30 degree celsius weather, the ice has been outstanding!

Sprung structures have been providing outstanding value for our school. They are certainly not the cheapest option nor are they the most expensive but rather a perfect middle ground. They look great both inside and out, they allow the ice surfaces to be of impeccable quality, they are so bright inside for the players and all of this was possible in such a short time frame and at such a reduced cost from a traditional bricks and mortar facility.

Initially when we set out on this project we were very focused on building facilities that would be considered the home for "optimal performance". We were invested in putting in the best gymnasium flooring, the best ice plant, the best arena board system, a large amount of lighting etc.... We were less concerned about a "grand aesthetic" look but rather were looking for a less costly covering solution. We absolutely hit a HOME RUN with Sprung Instant Structures. Sprung structures actually enhanced our performance opportunities, look absolutely incredible both inside and out side and were erected in a fraction of the time it would have taken had we made other choices."

Brent R. M. Devost
Founder, President & CEO
Edge School

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CONCEPT

REALITY

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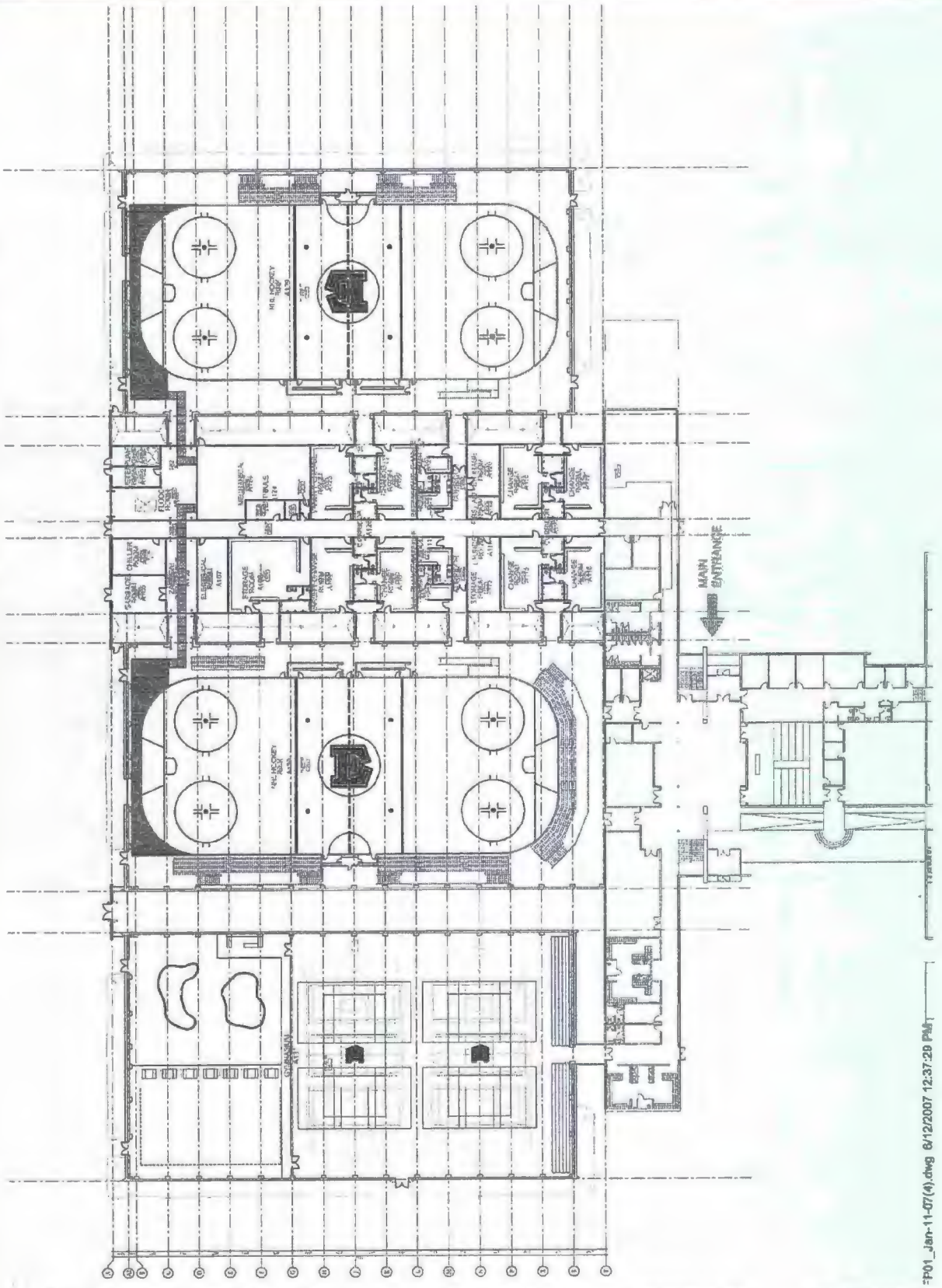

SPRUNG INSTANT STRUCTURES

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info@sprung.com

www.sprung.com

sprung

Innovative Building Solutions

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CORPORATE PROFILE
SPRUNG INSTANT STRUCTURES®

Our durable, precision-engineered structures are the solution of choice for a broad range of industries needing a fast, reliable and cost-effective building alternative.

Sprung Instant Structures Ltd. located in Aldersyde, Alberta is a member of the Sprung Group of Companies in business since 1887, which has achieved international recognition by providing shelter solutions for thousands of different applications in over ninety countries throughout the world.

Sprung is the inventor of the stressed membrane structure, engineered to accommodate the world's need for enclosed space quickly and economically.

This innovative alternative to conventional construction utilizes architectural membrane panels placed under high tension within a non-corroding aluminum substructure.

The benefits of Sprung structures include: speed of erection, flexibility of use, customization and unparalleled engineering. Each Sprung structure is manufactured from the highest quality products and materials, and individually tested using strict performance measures. With a specialized high-strength aluminum alloy, our substructure has an unlimited lifespan. Sprung structures are engineered to meet or exceed the requirements of most worldwide building codes and standards.

We continually research and test to determine the best available products for our structures. An important component of our structures is the optional insulation package. Insulating a Sprung structure reduces energy costs, ensures comfort, assists in climate control, and absorbs sound for enhanced acoustics.

We use Johns Manville Formaldehyde-free™ fiberglass blanket; the only such Formaldehyde-free™ product available worldwide. With virtually zero formaldehyde in this insulation, we reliably and confidently insulate with a thick foil backed blanket of this safe, fiberglass solution.

Our corporate and manufacturing facilities are located in Sprung structures. We showcase and enjoy the superior qualities and features that make a Sprung structure a sound business, and an environmentally-friendly, building choice. Sprung's environmental care extends beyond our product to include the way we operate our business. Throughout our organization we are increasing our 'green' awareness and implementing policies and practices that keep the Earth in mind.

Innovative Building Solutions

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Sprung structures are the immediate, cost-effective solution for ice rink development.

Speed to Market
Our large inventory, typically in excess of two million square feet, ensures exceptionally fast delivery and timely project completion

A team of workers can erect and complete an insulated structure at a rate of up to 1,000 square feet per day

Customers may render their facilities fully operational in a much shorter time frame than conventional construction

Clean bright finished interior
Tall peak height and highly-tensioned white interior liner provides optimum playing environment

Energy efficient
Proven R30 fiberglass insulation system, provides energy efficiency superior to conventional buildings

Flexible leasing and purchase options
Purchase, or lease with option to purchase

Up-front capital investment may be reduced to provide significant cash flow advantages

Guarantee
Sprung structures include a pro-rata guarantee of 30 years on the aluminum substructure and 20 years on the DuPont™ Tedlar® Architectural Membrane

Reliability
Highly durable engineered structure, provide long-term flexibility and value: easily expanded, reconfigured or relocated

Proven technology world wide

Innovative
Building Solutions

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Sprung: environmental stewardship by design

CONSTRUCTION WASTE

Sprung structures, by design, are environmentally-friendly. Each structure arrives at our client's site prefabricated. This eliminates the substantial waste associated with conventional construction—where typically 3.9 lbs pounds of waste goes to a landfill, for each square foot of finished space.

RELOCATABILITY

While our product's distinct qualities are immediately apparent, we truly excel as our customer's needs change in the future: Sprung structures are designed to be adapted and reused. Your structure may be disassembled, reconfigured or expanded and relocated for another application. No demolition is required and no waste goes to the landfill. As a fast, reliable alternative to conventional construction, a Sprung structure dramatically reduces construction timelines.

LONGEVITY

Sprung's business commitment is to high quality, long lasting products—rather than those designed for short term use and disposal. Therefore, we use extruded aluminum frames which are 100 percent recyclable with no loss of quality. Aluminum does not rust, is inherently strong and lightweight. With exceptional long-life expectancy our aluminum substructure may be repeatedly reused. Our highest quality membrane includes a DuPont™ Tedlar® PVF Film, the most technically advanced product of its kind, with incomparable resilience and long life.

ENERGY EFFICIENCY

Sprung structures are energy efficient and provide significantly higher R values than typical conventional construction. Exceptionally airtight, they minimize heat or cooling loss. We utilize Johns Manville Formaldehyde-free ™ 8 inch fiberglass blanket to insulate our structures. A foil backing adds to the efficiency of this superior product and assists in the containment of radiant energy. We incorporate skylights and windows to take advantage of natural light—and reduce power consumption.

LEED CERTIFICATION

Ask us how Sprung may assist your building project in obtaining LEED® certification. Many of the inherent qualities of our structures align with the credits and prerequisites in the LEED® point-based rating system. We have documented aspects of our structures that support your efforts to obtain certification, including: recycled content, energy performance, durability, construction waste management, and deconstructability. Contact us for more information.

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Innovative Building Solutions

North America toll free:
1.800.528.9899
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801.280.1555
Canada direct dial:
403.601.2292
www.sprung.com


Edge School – Calgary, Alberta


Collingwood – UK


Family Fitness Facility


Sanford Health Facility – South Dakota


Redemption World Outreach Center's – Family Fitness Facility


Redemption World – Family Fitness Facility


Edge School – Calgary, Alberta

sprung

Innovative Building Solutions

Engineered & Manufactured by Sprung Instant Structures

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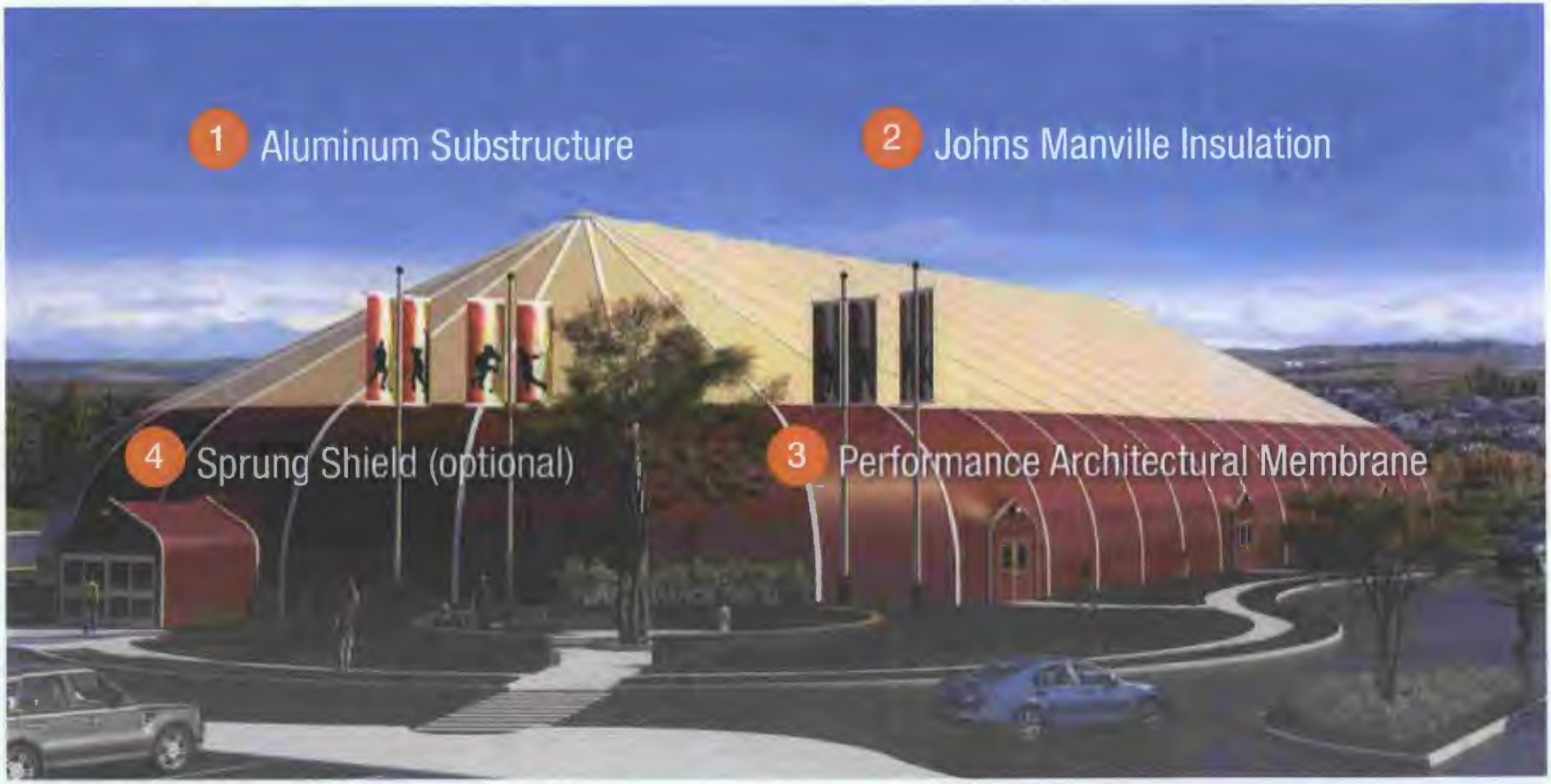
sprung Performance Gymnasiums
Let's talk about the possibilities.
800 528.9899
info@sprung.com

sprung Performance Gymnasiums

Let's talk about the possibilities.

The Sprung Community Center



sprung Performance Gymnasiums

Let's talk about the possibilities.

About Sprung Instant Structures

- A member of the Sprung Group of Companies established in 1887
- Patented the stressed membrane structure
- More than 12,000 structures in 90 countries world wide
- Uses include sports, gaming, worship, education, corrections, military, office space and more
- The Sprung cornerstones:
  - Solutions for your changing needs
  - Commitment to quality
  - Green strategy
  - Passionate about your satisfaction
- Sprung Structures are:
  - Durable
  - Energy efficient
  - Cost effective over the long term
  - Provide a green footprint
  - Safe

sprung Performance Gymnasiums
Let's talk about the possibilities.

Aluminum Substructure

- The Sprung Performance Gymnasiums offers greater versatility and performance
- Extruded aluminum substructure is prefabricated and ready to assemble
- Aluminum is:
  - Rustproof - unlike steel & wood, aluminum performs extremely well in humid environmental conditions
  - Lightweight - about 1/3 the weight of steel
  - Strong - meets or exceeds most building codes
  - Versatile - can be extruded into virtually any shape
  - Easy to ship - strength-to-weight equals more product, less space
  - Long-lasting - indefinite life expectancy, gets stronger with age
  - Environmental - 100% recyclable with no loss of quality

sprung Performance Gymnasiums

Let's talk about the possibilities.

Performance Architectural Membrane

- The Sprung Performance Gymnasium's membrane provides durability, cleanability, fire resistance, and color choice
- Self-cleaning exterior is virtually maintenance-free
- Clean, bright look
- Superior building material:
  - Approx. 24 oz per square yard
  - Guards against UV and airborne contaminants
  - Dupont Tedlar film dramatically extends membrane life
  - Exceptional fire-retardant capability
  - Available in large selection of colors
  - 20-year pro-rated guarantee

CONCORD CREAM | BROWNSTONE RED | BAYBERRY | DESERT SAND | BRIGHT WHITE | SALEM BLUE | MEDITERRANEAN OLIVE | GRANITE GRAY

sprung Performance Gymnasiums

Let's talk about the possibilities.

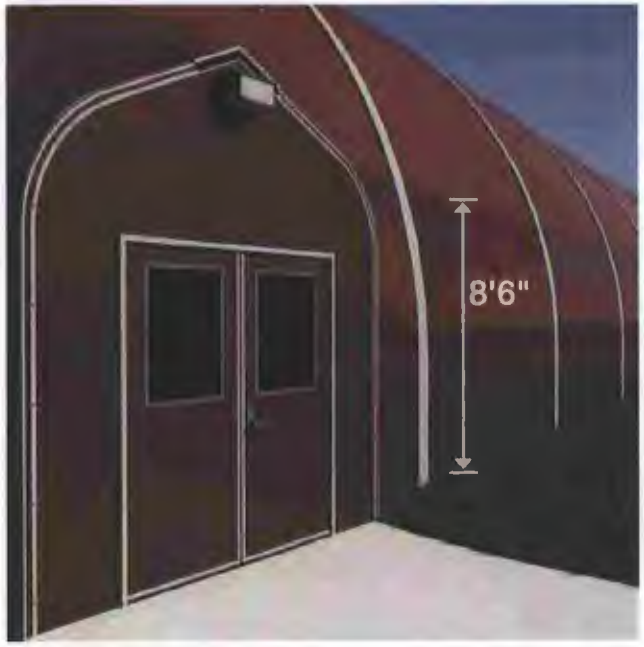
Insulation

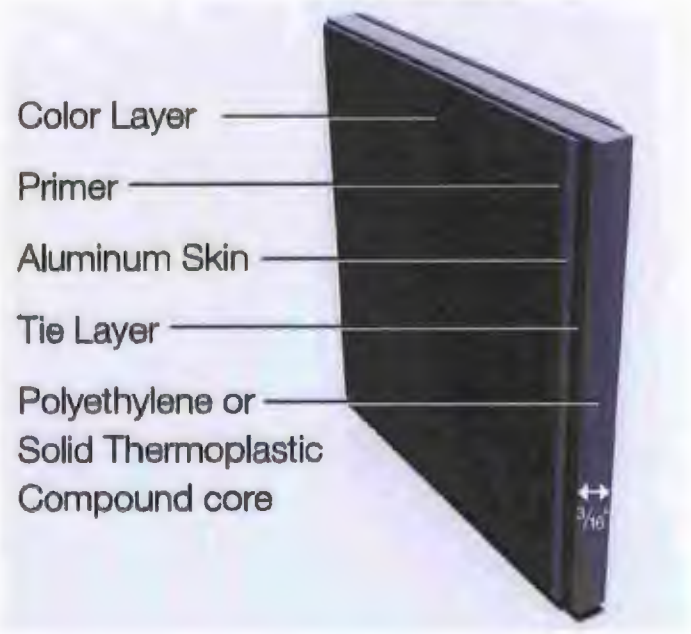
- The Sprung Performance Gymnasiums provides naturally better climate control
- Up to 9" thick fiberglass blanket insulation for maximum performance and comfort
- Johns Manville Formaldehyde-Free Fiberglass Blanket
  - Only formaldehyde-free insulation product in the world
  - Aluminum foil backing for increased overall efficiency
- Three reasons insulation performs better in a Sprung building:
  1. Air tightness of exterior architectural membrane
  2. No differentiation between wall and roof
  3. Thicker insulation increases performance

sprung Performance Gymnasiums
Let's talk about the possibilities.

Sprung Shield (optional)

- The Sprung Performance Gymnasiums can include a virtually non-penetrable defense wall for protection against vandalism
- Multiple protective layers bonded to a hard aluminum skin and solid core
- Rises 8' 6" around the entire structure
- Provides secure peace of mind





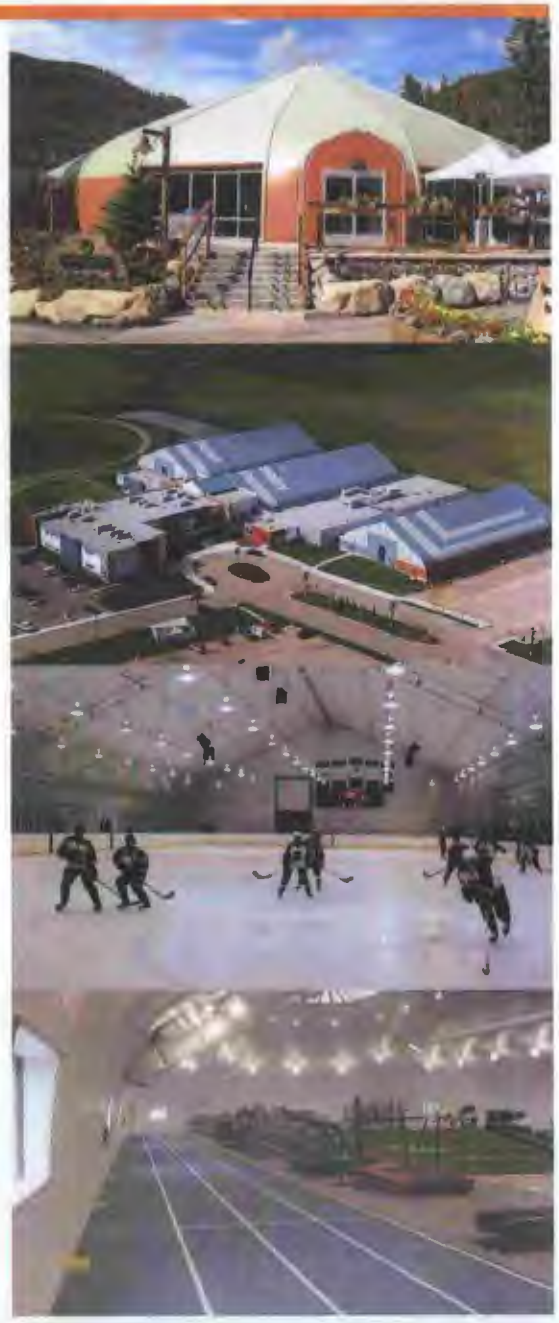
sprung Performance Gymnasiums

Let's talk about the possibilities.

Green Footprint

- The Sprung Performance Gymnasium is environmentally friendly by design:
  - Eliminates substantial construction waste
  - Long lasting: rust-free aluminum substructure is engineered for indefinite life
  - Energy-efficient: exceptionally airtight building envelope with R-25 / R-30 Insulation
  - LEED ® Certifiable: recycled content, energy performance, durability, construction waste management and deconstructability.
  - Relocatable: designed to be disassembled, reconfigured, expanded or relocated

Sprung: environmental stewardship by design



sprung Performance Gymnasiums
Let's talk about the possibilities.

Oranges vs. Oranges - Compare your options

	Sprung Performance Gymnasiums	Pre-Engineered Metal Building	Conventional Construction
Construction	4-6 months	9-12 months	More than 12 months
Insulation	Up to 9" R-30 thick fiberglass blanket insulation for maximum performance and comfort.	6-inch R20 wall squeezed to R14, 6-inch R20 roof squeezed to R11	R20 wall R20 roof
Lighting Levels	The highly tensioned white interior membrane and translucent skylight section reduces number of light fixtures required	Requires more lighting fixtures	Requires more lighting fixtures
Maintenance Schedule	Aluminum is virtually maintenance-free. Self-cleaning exterior architectural membrane.	Standing seam metal roof prone to large thermal movements and requires continuous maintenance, especially at penetrations	Regular maintenance is required
Air-tightness	Air Permeability almost 0, which means excellent energy performance	Poor airtightness	Moderate airtightness
Energy Efficiency	Up to 20% energy savings over pre-engineered metal buildings	Poor energy performance	Moderate energy performance
Lifespan	60+ years	60+ years	60+ years

sprung Performance Gymnasiums

Let's talk about the possibilities.

St. Patricks, Ireland

Collingwood College, UK

St. Patricks, Ireland

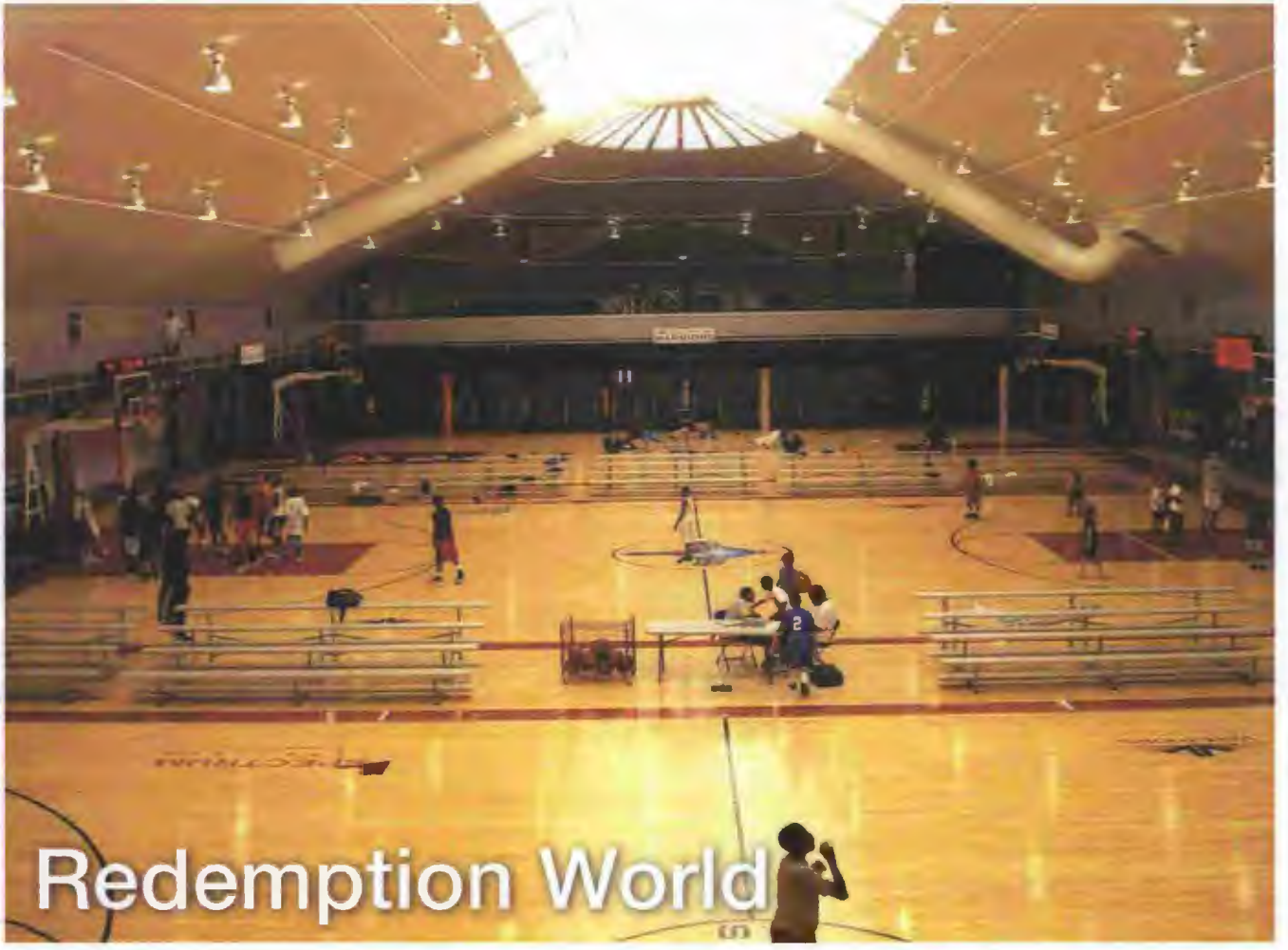
University of Cincinnati, OH

sprung Performance Gymnasiums

Let's talk about the possibilities.

Innovative Building Solutions

Engineered & Manufactured by Sprung Instant Structures



PROJECT DESCRIPTION:

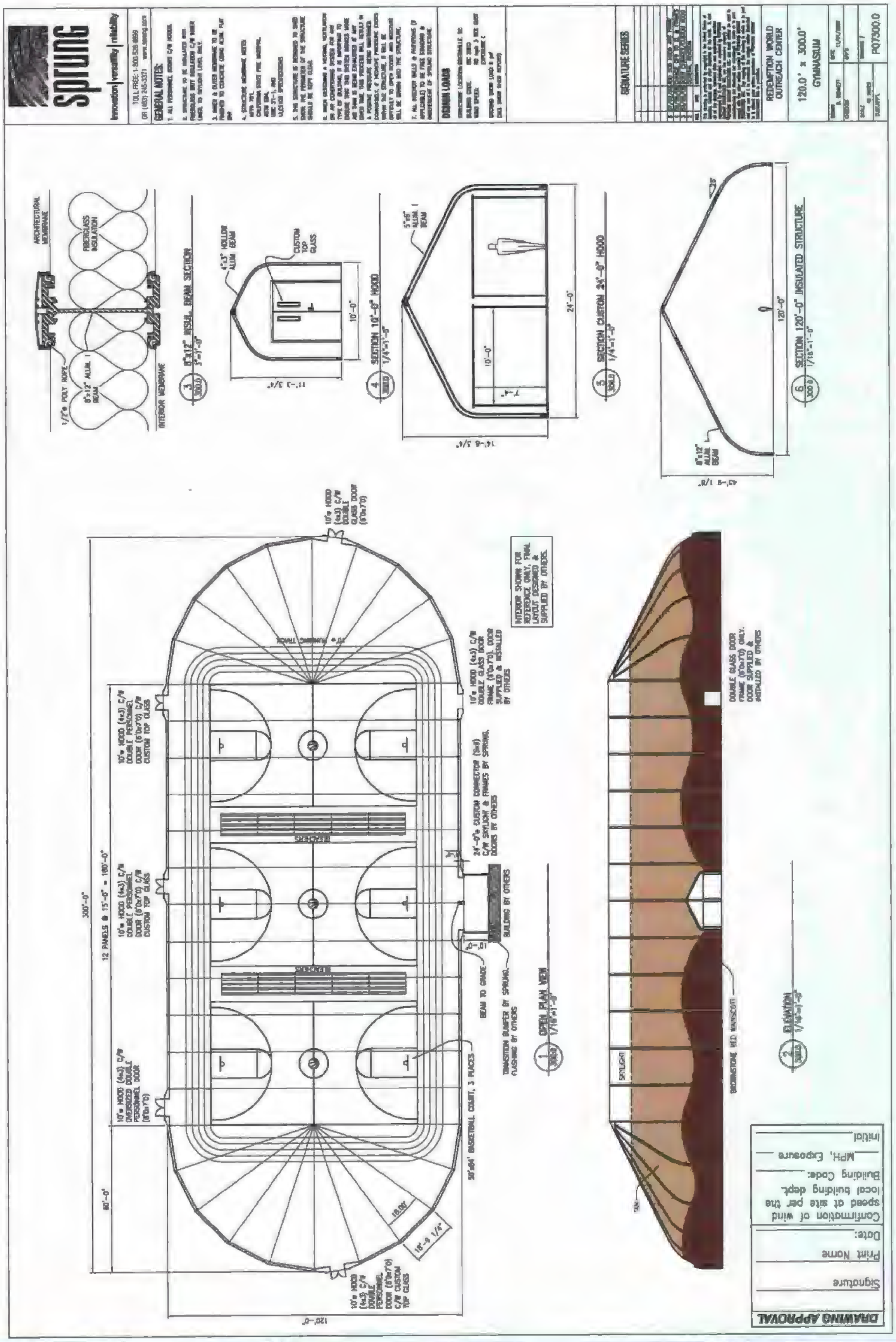
Redemption World
Outreach Center
Greenville, SC

120' x 300' Imagine Center

OVER 48,000 SQUARE FEET INCLUDING THE UPPER LEVEL MEZZANINES AND ELEVATED RUNNING TRACK

Inside the Structure is complete with:

- 3 full size hardwood floor basketball courts
- 2nd story extended walking/running track (1/5 mile long)
- Spinning Studios
- Free weight areas
- Women's only area
- Full cardio theater with multiple flat panel monitors
- Fully-equipped, state of the art conference room, with A/V capabilities, wireless for corporate member meetings, staff retreats and more!


sprung
innovation | versatility | reliability
GENERAL NOTES:
DESIGN LOADS
SIGNATURE SERIES
REDEMPTION WORLD OUTREACH CENTER
120.0' x 300.0'
GYMNASIUM
P07300.0
8"x12" INSUL. BEAM SECTION
SECTION 10'-0" HOOD
SECTION CUSTOM 24'-0" HOOD
SECTION 120'-0" INSULATED STRUCTURE
OPEN PLAN VIEW
ELEVATION
DRAWING APPROVAL
Signature
Print Name
Date:
Confirmation of wind speed at site per the local building dept.
Building Code:
MPH, Exposure
Initial


IMAGINE
GENIE


HOME OF THE
WARRIORS


GUARDS

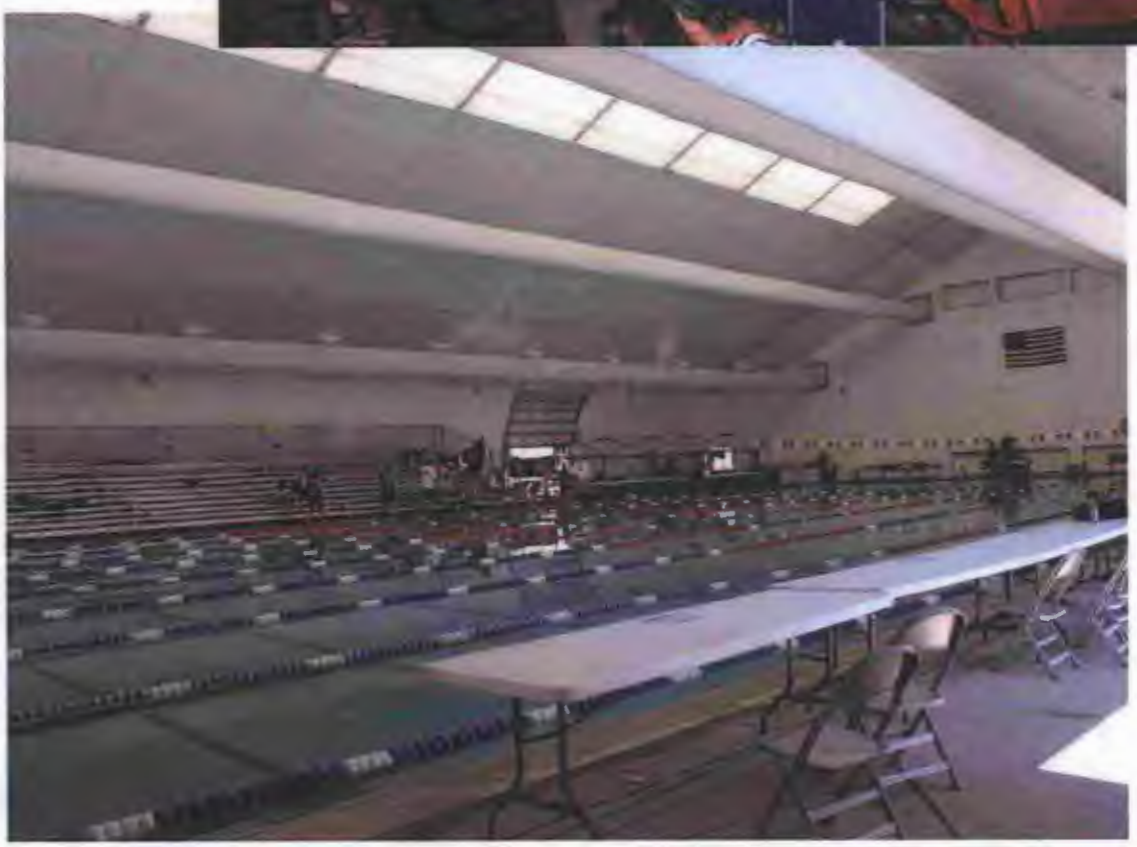
free insulation system. The structure features a Salem blue Kynar membrane wave pattern on the bottom and tan Dupont Tedlar Membrane ocomplete with a custom skylight, seating for over 1,000, connector to existing facility, state of the art sound system and full color, 22mm, video capable 8' x 16' scoreboard. Kearns was extremely impressed with the options that could be integrated into a Sprung. The structure includes a sprinkler system and has a custom inverted lighting package that utilizes the highly reflective and tensioned inner liner to uniquely diffuse the lighting, eliminating blind spots during polo meets that would occur in traditional buildings from the past.

The Structure was erected over a completely full Olympic sized 50 meter pool. This pool has racing lanes and is also being utilized by local schools to house polo championships that in the past had to be out of state to avoid the weather.

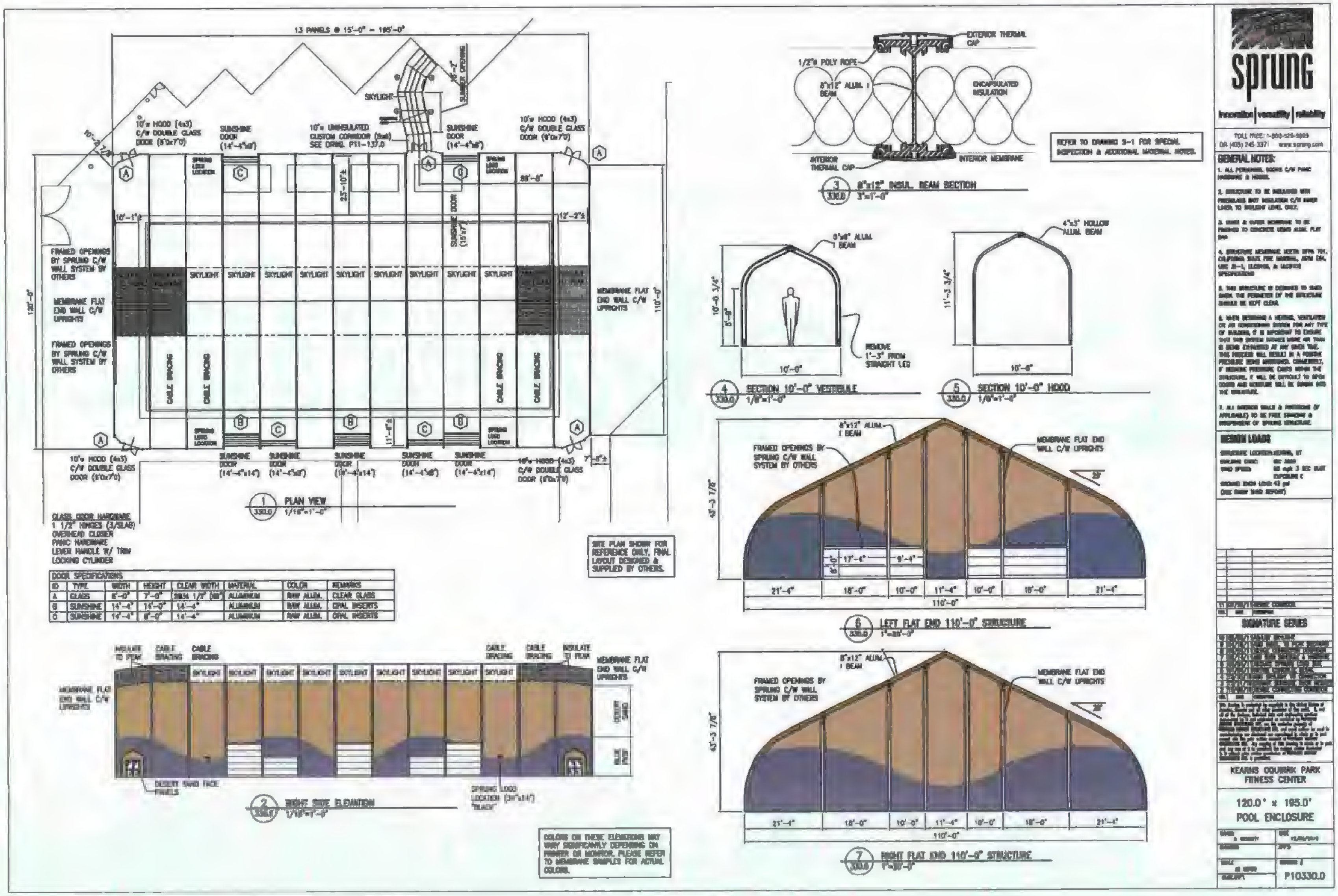
The existing facilities and pool presented unique design challenges that were taken head on by everyone that was involved on the project. Sprung worked closely with Kearns to help design a year round facility that would give the feel of a conventional facility with the atmosphere of an indoor/ outdoor pool. This was a huge factor in why Kearns chose Sprung as the product of choice. During the design process, Sprung introduced two solutions to help the client achieve this feel by introducing the translucent Sunshine doors and the Kalwall Architectural Panels that raise up allowing the visitors to walk in or out. One of the challenges that Sprung encountered during the design phase was proximity to other buildings and pools. Sprung's design department developed a

solution to help meet some of the issues by transitioning from a 120' width to a 110' width on both flat ends to help get closer to the other structures.

One extremely valuable benefit Sprung was able to offer was the speed in which the building process could be finished. This allowed Kearns to be operational for their summer season. During the procurement phase it was determined that Sprung was not the lowest cost solution, however, with the extensive guarantees, quality of construction, natural sky lighting, high insulated values, energy efficient design, speed of erection, engineering, virtually maintenance free and high tech appearance was added value that could not be over looked, and selected Sprung as the preferred solution.



SPRUNG INSTANT STRUCTURES TOLL FREE 1 800 528.9899 INFO@SPRUNG.COM WWW.SPRUNG.COM



ID	TYPE	WIDTH	HEIGHT	CLEAR WIDTH	MATERIAL	COLOR	REMARKS
A	GLASS	6'-0"	7'-0"	2834 1/2" (68")	ALUMINUM	RAW ALUM.	CLEAR GLASS
B	SUNSHINE	14'-4"	14'-0"	14'-4"	ALUMINUM	RAW ALUM.	OPAL INSERTS
C	SUNSHINE	14'-4"	8'-0"	14'-4"	ALUMINUM	RAW ALUM.	OPAL INSERTS

SPRUNG INSTANT STRUCTURES innovation | versatility | reliability

TOC0512701

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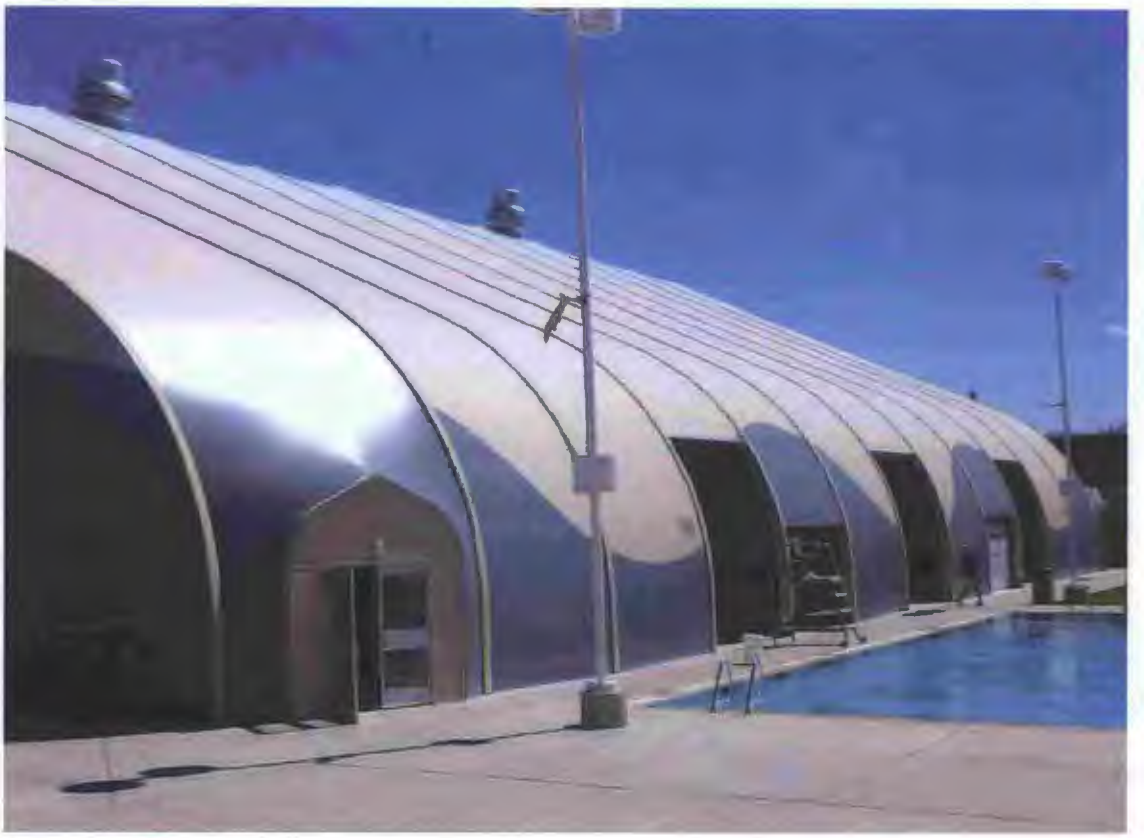
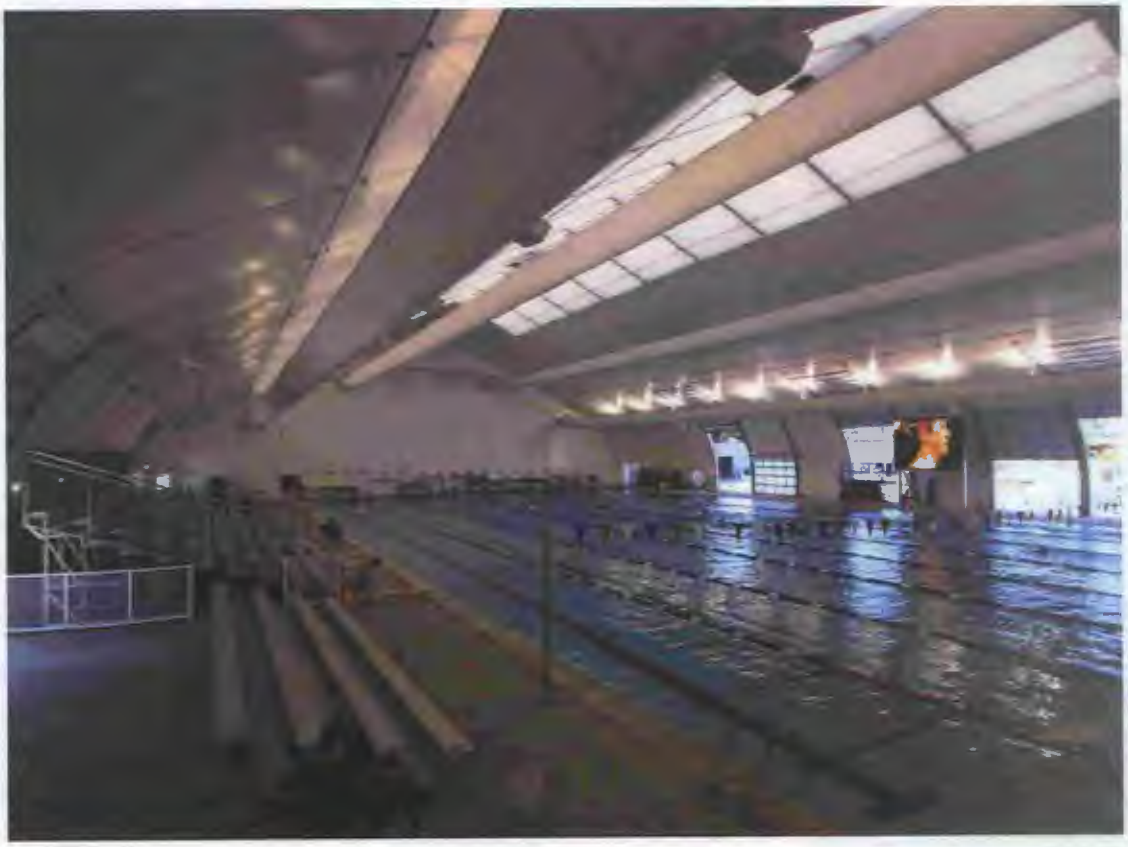
Salem Blue

Desert Sand

Kearns Oquirrh Park Fitness Center
Pool Enclosure

sprung



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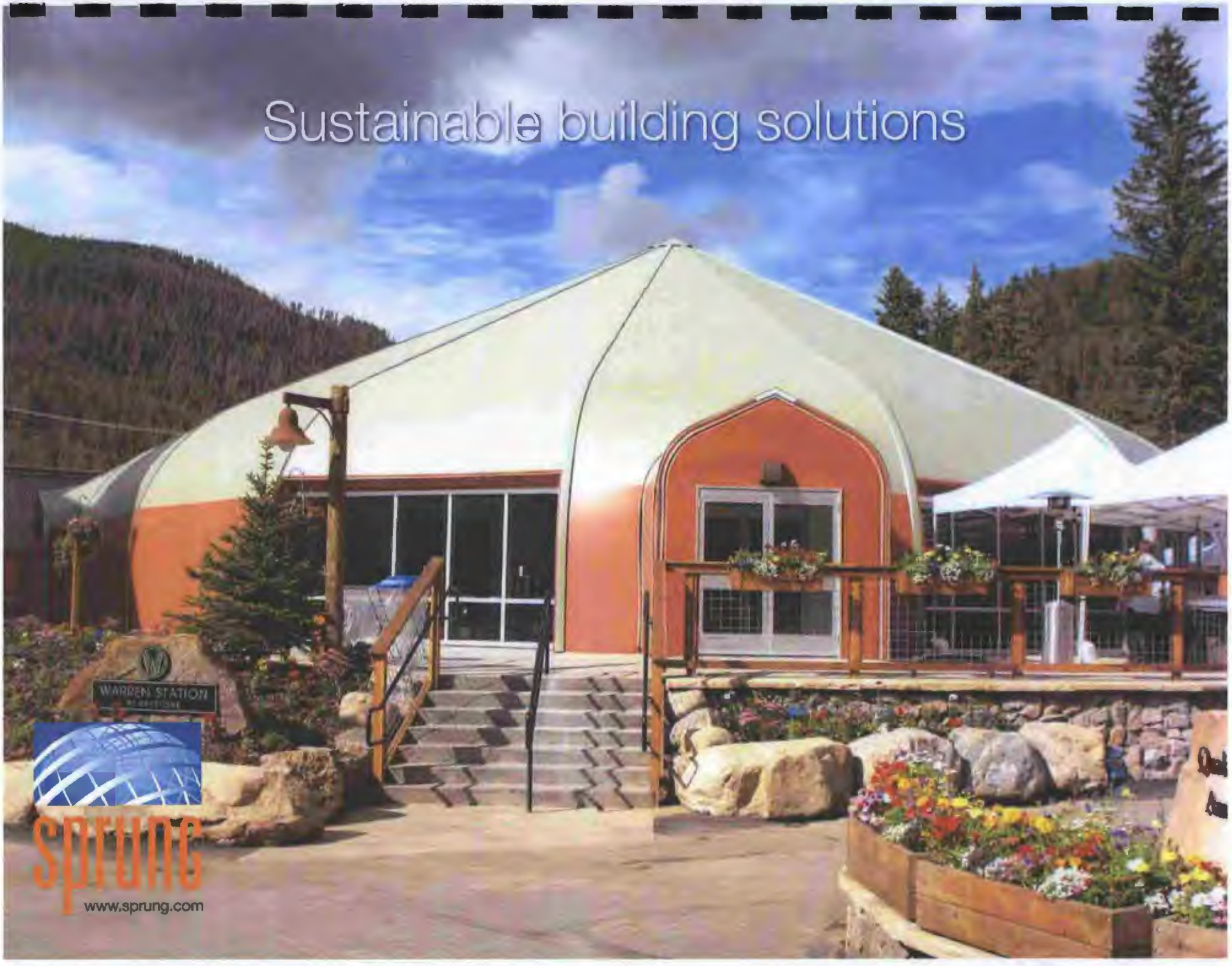
Sprung Buildings
Dynamic and Inspiring Solutions


TENT FACTORY
TENTS
123 year old
Canadian Company
founded in 1887
info@sprung.com
sprung
www.sprung.com


sprung
12,000 Buildings
in 93 Countries

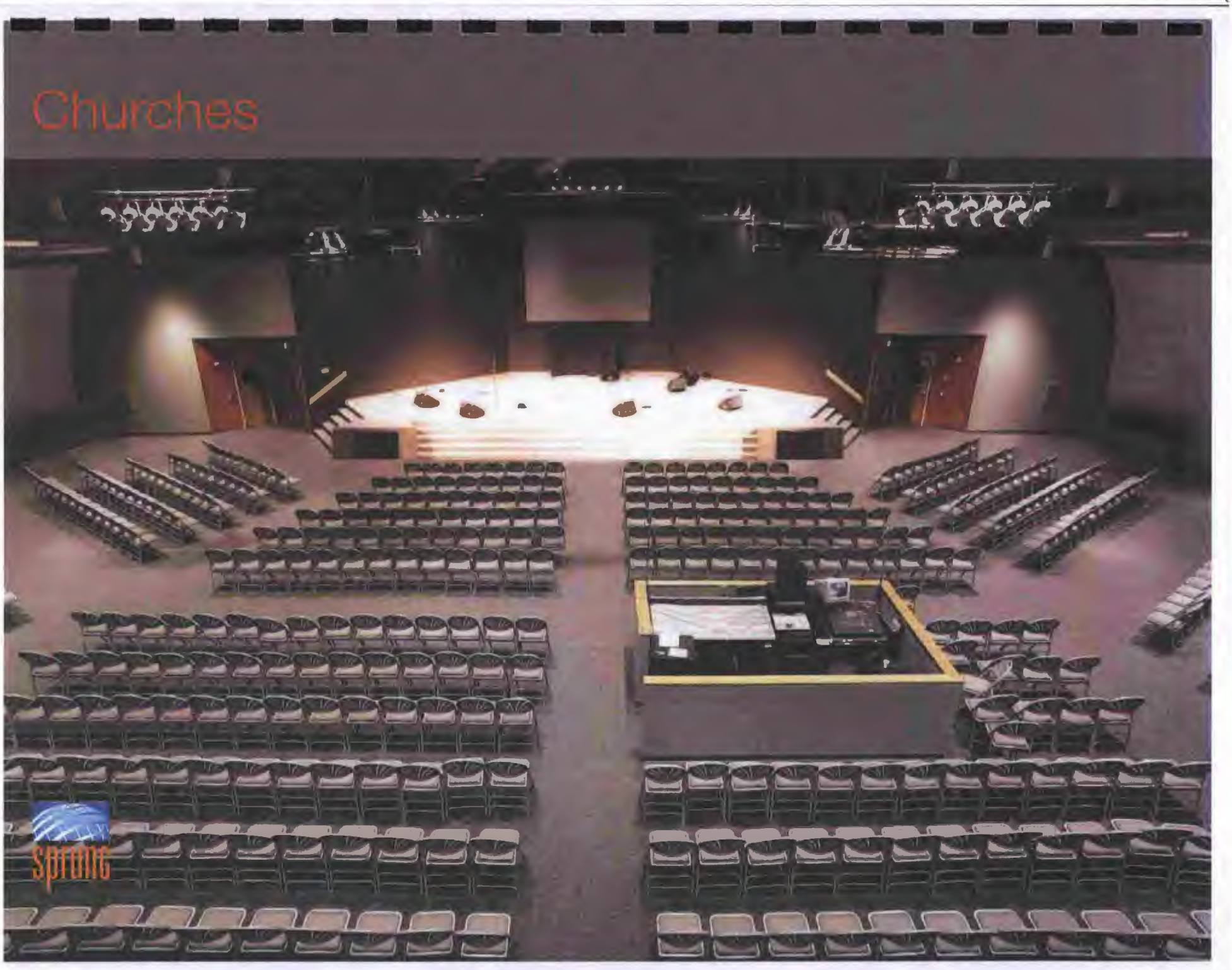

sprung
Modern and energy efficient


Sustainable building solutions
WARREN STATION
sprung
www.sprung.com


Sprung Building Solutions
Constructed at a fraction of the time
compared to conventional construction
sprung
100% Relocatable


Sprung: environmental stewardship by design
Sprung structures can
contribute to LEED certification
sprung
www.sprung.com


WARRIORS
sprung
Clearspan interior space
ideal for multi-purpose designs


Churches
Sprung


Life Church, Roscoe, IL 23,000 sq. ft.

Life Church, Roscoe, IL

"This has been a wow experience with Sprung. The money we saved, the speed we were able to complete it; as well as giving us a totally unique building. We are now a landmark in our community."

Pastor Kevin Kringel

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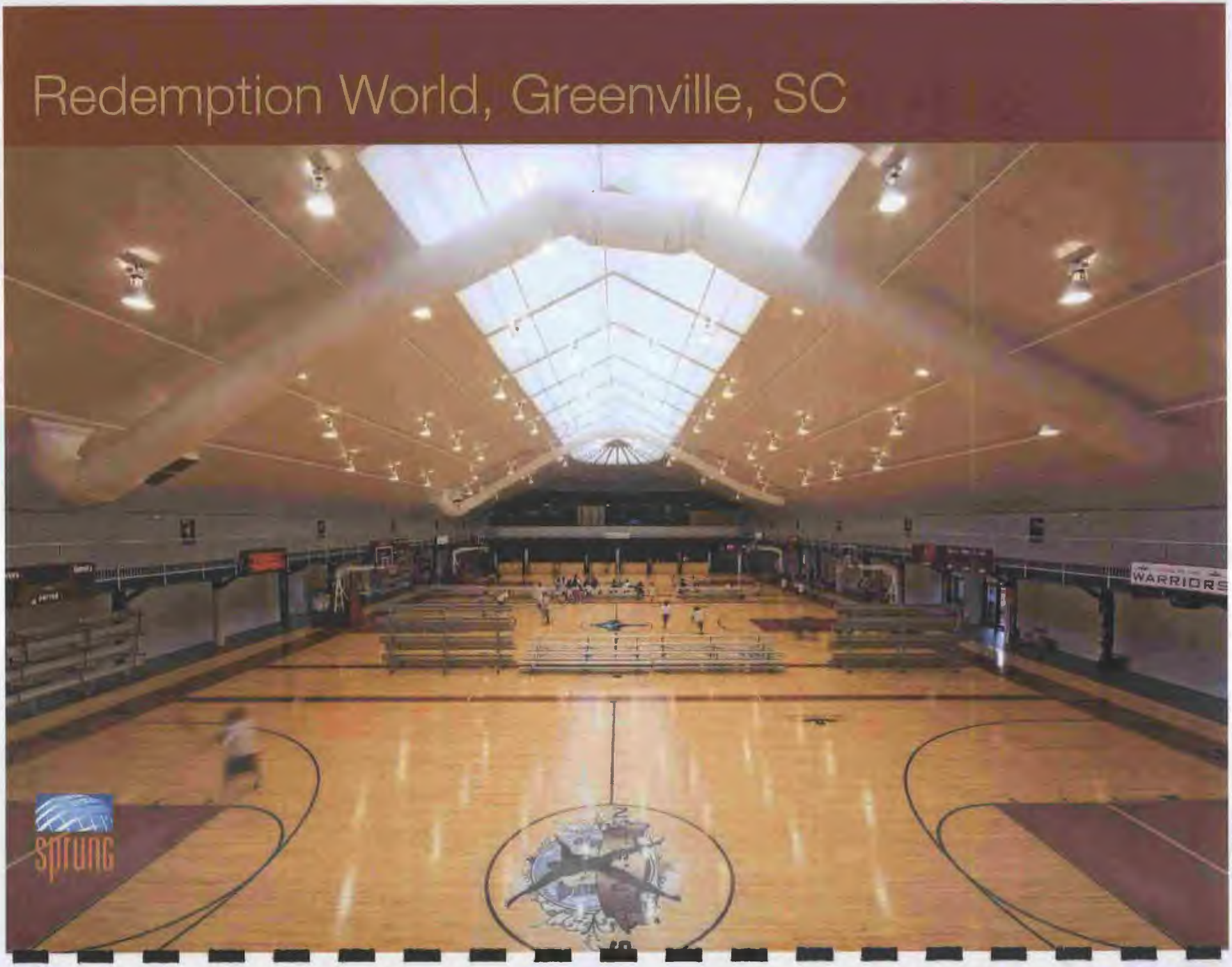
www.sprung.com

Redemption World, Greenville, SC



Redemption World

"I would highly recommend a Sprung building to anyone who is interested in constructing a facility that is 'out of the box.' This has been one of the smoothest building projects that this church has been honored to participate in to date"

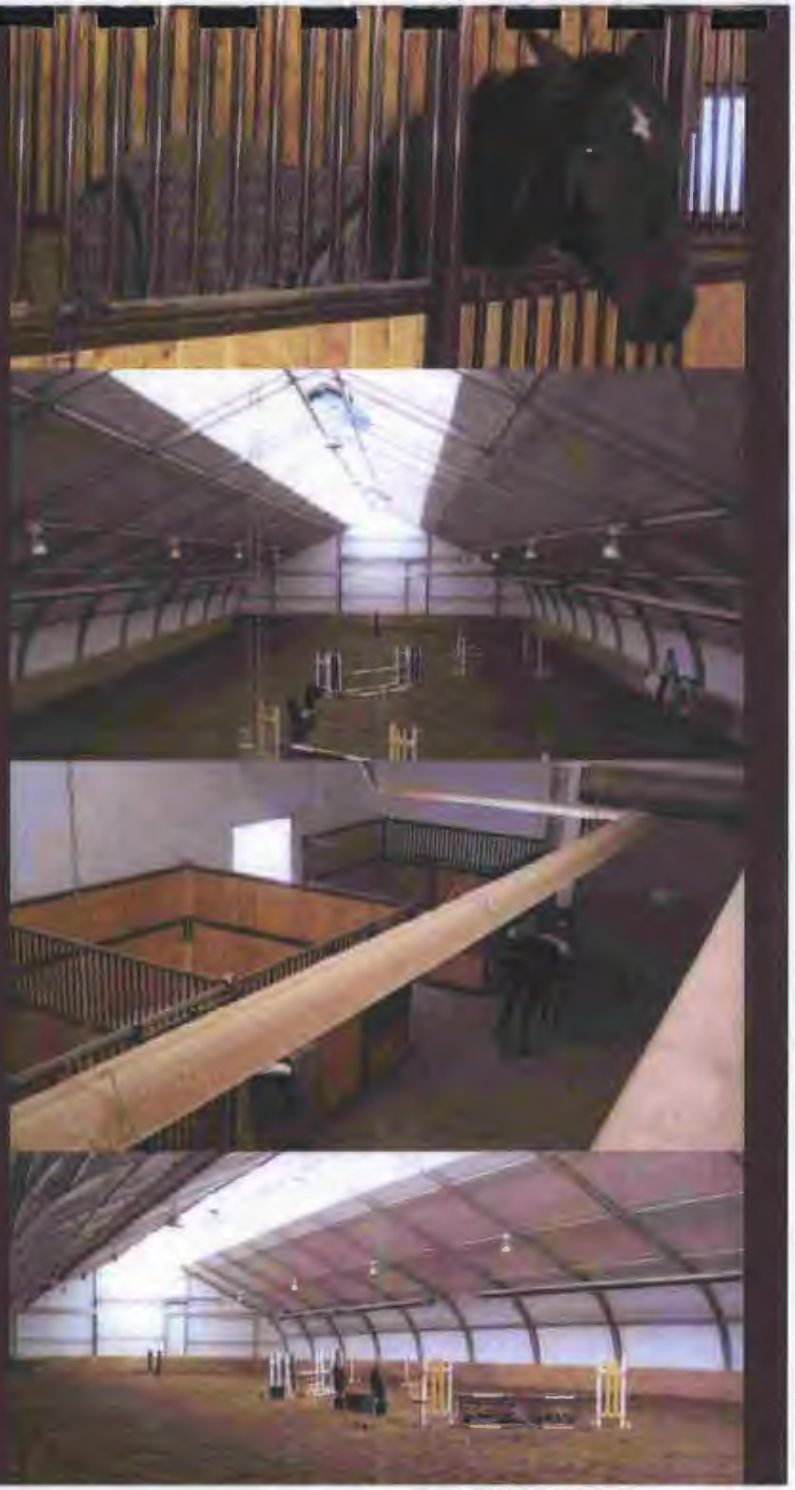
Pastor Olin McSherry
RWOC Director of Development

Equestrian

Equestrian

"I have tried other membrane structures and Sprung is by far the best quality and value! In Southern Alberta, we experience extreme wind and snow conditions. The quality of the Sprung structure with its perfectly tensioned opaque membrane, and insulation package, is second to none!"

Erin Taylor
Ironstone Farms, Calgary



sprung
www.sprung.com

Pool Enclosures

Pool Enclosures

sprung

www.sprung.com

Tennis

Sides can open or down and air tight

Golf

Sprung structure helped Ravenna make the Top 100 modern courses on the Golf Week list. Using two structures, one as a stunning Golf club House and a complementing structure for the golf cart storage barn. Sprung can cater to a "high-end" community like Ravenna.

Edge School, Calgary, Alberta

Edge School

"We absolutely hit a 'home run' with Sprung structures. Sprung structures actually enhanced our performance opportunities, look absolutely incredible both inside and outside and were erected in a fraction of the time it would have taken had we made other choices."

Brent R. M. Devost
Founder, President

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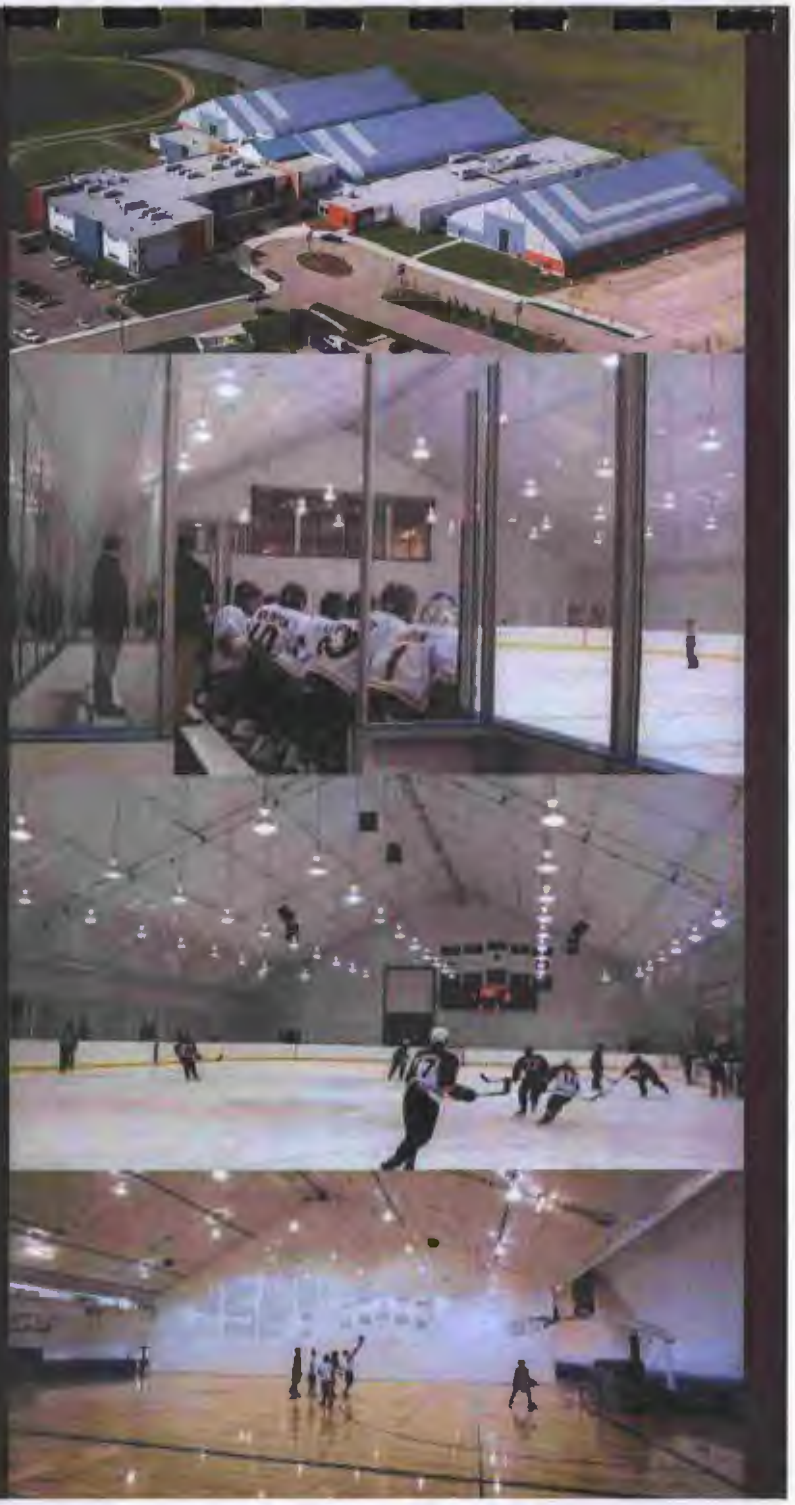
www.sprung.com



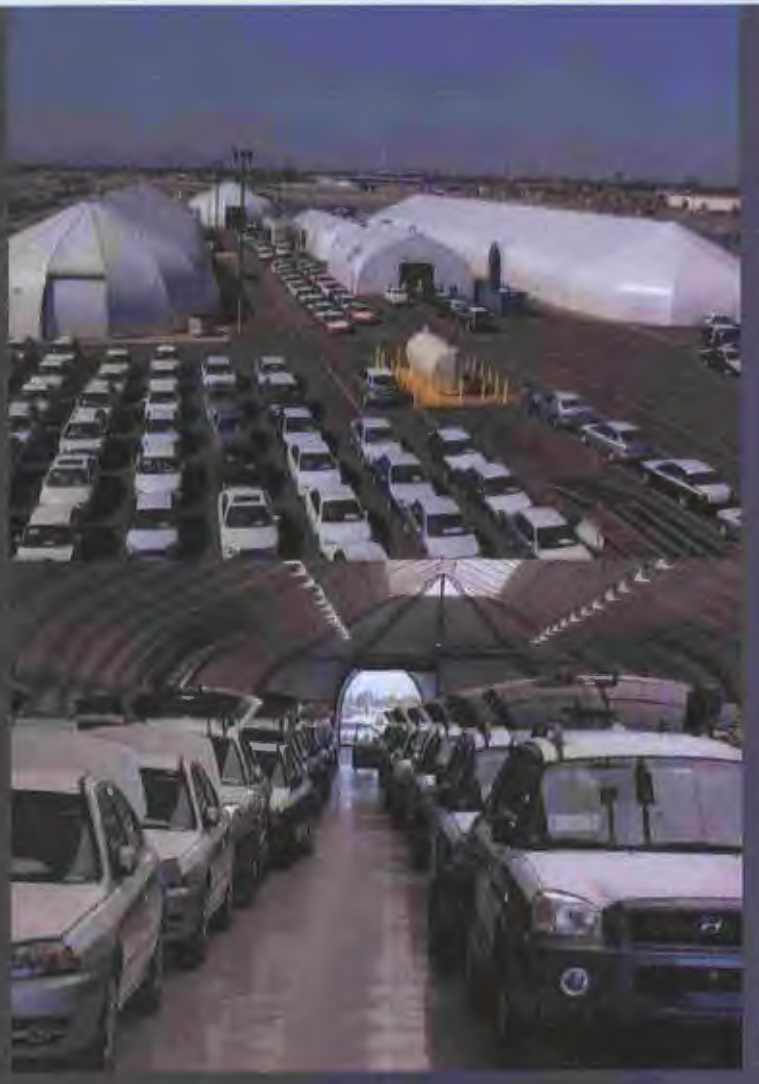
Automotive

Global Auto Processing Services, Inc.

"In 1998, Global Auto Processing Services (GAPS) established a full-service automotive processing facility at the US Naval facility at Port Hueneme, California.
GAPS uses Sprung structures that are designed to allow easy expansion to meet future processing needs. These structures provide unique innovative solutions to enclose space in a fraction of the time and expense of conventional construction.

Since opening our facility at Port Hueneme, GAPS has purchased six pre-fabricated Sprung structures for our Vehicle Prep Center: one 27,000 sq. ft. PDI/Accessory structure, one 13,000 sq. ft. structure for our Warranty/ Repair department, one 2,400 sq. ft. Throw-in structure, one 12,600 sq. ft. Parts structure and one 12,000 sq. ft. structure which houses our Paint & Body shop.

Two challenges in our industry are to provide structures for new customers and to expand structures for existing customers.



Sprung structures provide an immediate, reliable, cost-effective and flexible solution for automotive vehicle processing."

Michael "Song" Wynn
Sr. Ex. Vice President, Global Auto Processing Services, Inc.

SPRUNG


Drama
Outstanding Acoustics
sprung


Aviation
Airports around the world
sprung

Amsterdam Airport Schiphol

"Atlas Air" and its sister company "Polar Air Cargo" purchased three Sprung structures 130' x 280' (39.6m x 85m) for their cargo holding and handling operation at Schiphol Amsterdam Airport.

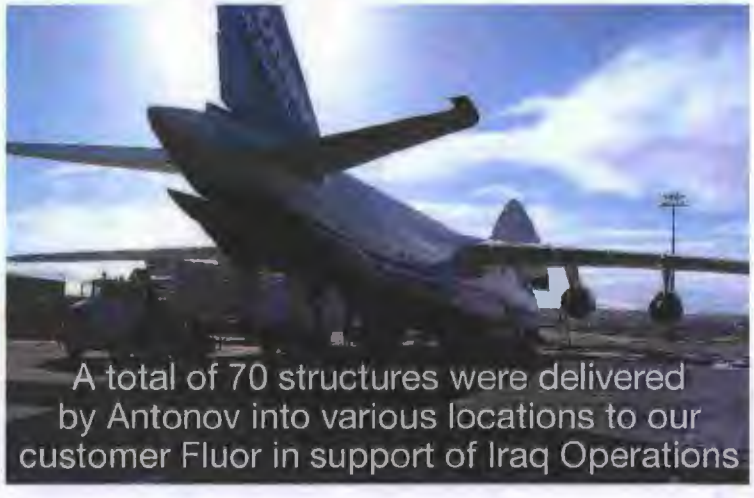
POLAR AIR CARGO

ATLAS AIR WORLDWIDE

LAX
Los Angeles World Airports

PHL PHILADELPHIA INTERNATIONAL AIRPORT

Hartsfield-Jackson
Atlanta International Airport



Marshall Aerospace, Cambridge Airport, UK

"This project had one critical driver – certainty – would it be delivered on time, on budget and as expected – and it was. What amazed us was the speed of construction, quality of finish and the lack of problems during the build. As an aviation business we know good engineering when we see it and it is clear to us the Sprung product is based on world-class engineering and intelligent design. All of that cleverness is then supported by Sprung's Delivery Partners in the UK, Freespan, whose project management was surefooted and confident. It is unusual to see a construction project delivered with no problems but Freespan made sure that we, as the client, did not have to worry about anything."

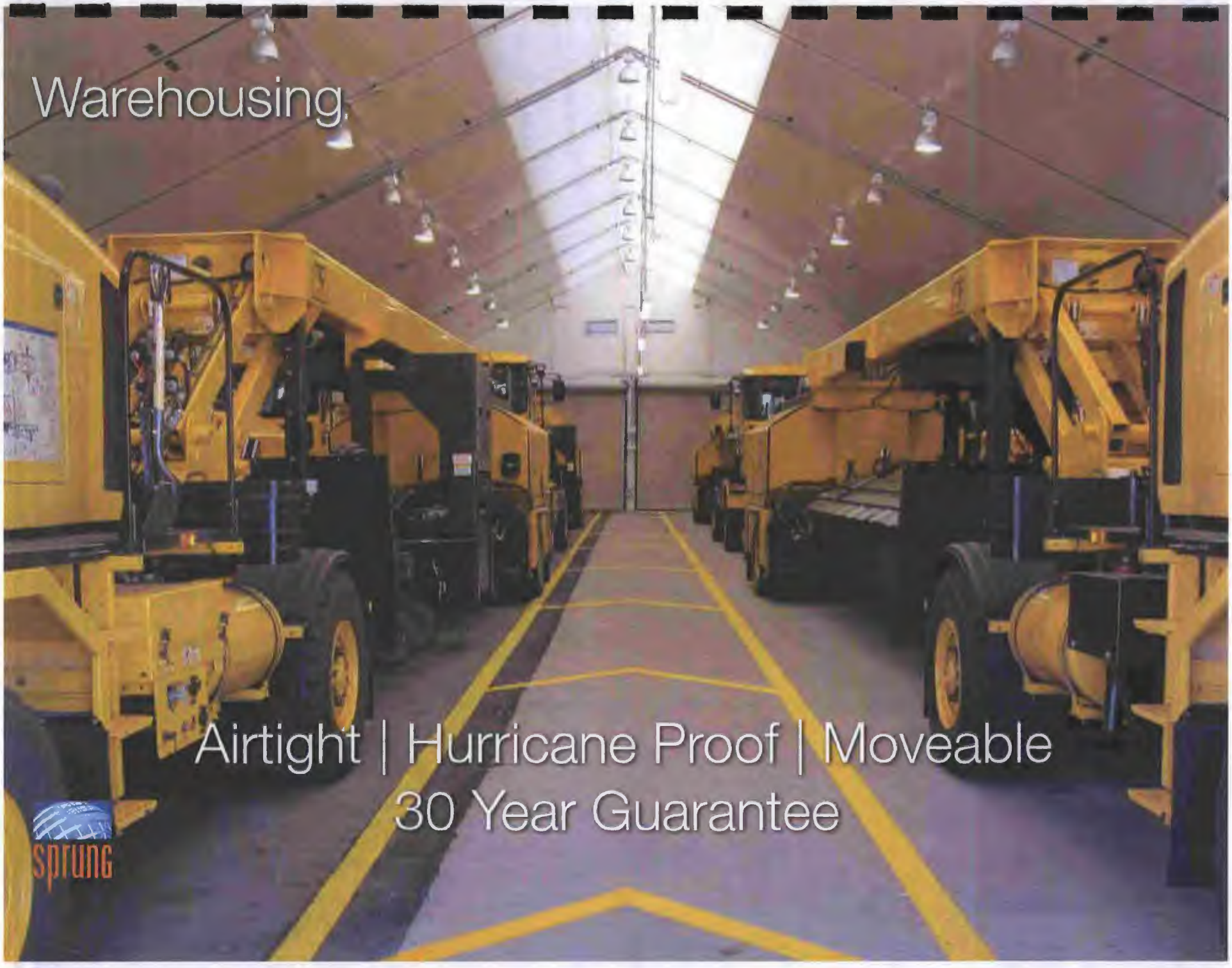
Allan McGreal
Marshall Aerospace

Date: 19/11/09
Her Majesty the Queen
tours
Marshall of Cambridge

Her Majesty The Queen and His Royal Highness
Prince Philip The Duke of Edinburgh
will visit Marshall of Cambridge this afternoon
(Thursday 19 November).

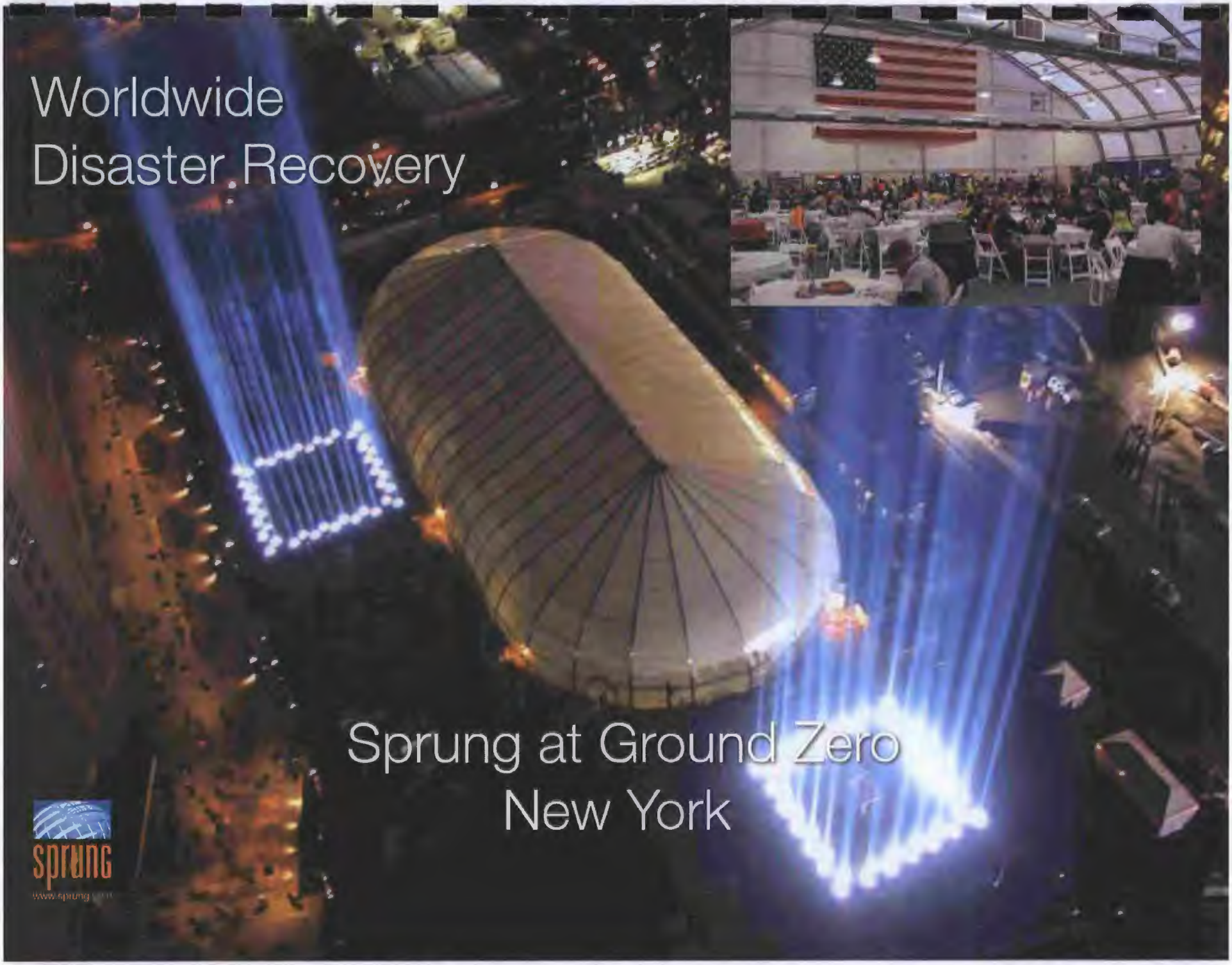

Mining
World wide mining
and natural gas projects


Casinos
Over 150 casinos
Speed of Delivery
sprung


Warehousing.
Airtight | Hurricane Proof | Moveable
30 Year Guarantee
sprung

Hospitality

Radisson Resort at the Port Cape Canaveral, FL
"We chose to use the Sprung structure as a convention hall for a number of reasons. We originally purchased the structure to use as a temporary surf shop for three years, while we built our permanent building, however, we were so impressed with the quality of the structure during the three year period that we decided to not only enlarge the structure, but to make it a permanent part of our 284 room resort in Cape Canaveral. We could not be happier with the quality of tour structure and the way it handled the hurricane conditions in Florida."


Worldwide
Disaster Recovery
Sprung at Ground Zero
New York
sprung


Education
Classrooms | Administration | Swing Space
sprung


Retail
Dodgertown
HUDSON
13
Dodgers
Sizes 30 ft to 200 ft wide by any length
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www.sprung.com


Dining
SPRUNG
info@sprung.com


Speed of construction
Long term flexibility
Lower overall costs
Energy efficient fiberglass insulation packages
Limited foundation requirements
Available immediately from inventory
Lease or purchase
Proven technology in over 90 countries worldwide
Fast, reliable, cost effective alternative to conventional construction.
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Sprung Instant Structures
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CANADA 403 601.2292
USA 801280.1555
info@sprung.com

Sprung: environmental stewardship by design

CONSTRUCTION WASTE

Sprung structures, by design, are environmentally-friendly. Each structure arrives at our client's site prefabricated. This eliminates the substantial waste associated with conventional construction—where typically 3.9 lbs pounds of waste goes to a landfill, for each square foot of finished space.

RELOCATABILITY

While our product's distinct qualities are immediately apparent, we truly excel as our customer's needs change in the future: Sprung structures are designed to be adapted and reused. Your structure may be disassembled, reconfigured or expanded and relocated for another application. No demolition is required and no waste goes to the landfill. As a fast, reliable alternative to conventional construction, a Sprung structure dramatically reduces construction timelines.

LONGEVITY

Sprung's business commitment is to high quality, long lasting products—rather than those designed for short term use and disposal. Therefore, we use extruded aluminum frames which are 100 percent recyclable with no loss of quality. Aluminum does not rust, is inherently strong and lightweight. With exceptional long-life expectancy our aluminum substructure may be repeatedly reused. Our highest quality membrane includes a DuPont™ Tedlar® PVF Film, the most technically advanced product of its kind, with incomparable resilience and long life.

ENERGY EFFICIENCY

Sprung structures are energy efficient and provide significantly higher R values than typical conventional construction. Exceptionally airtight, they minimize heat or cooling loss. We utilize Johns Manville Formaldehyde-free ™ 8 inch fiberglass blanket to insulate our structures. A foil backing adds to the efficiency of this superior product and assists in the containment of radiant energy. We incorporate skylights and windows to take advantage of natural light—and reduce power consumption.

LEED CERTIFICATION

Ask us how Sprung may assist your building project in obtaining LEED® certification. Many of the inherent qualities of our structures align with the credits and prerequisites in the LEED® point-based rating system. We have documented aspects of our structures that support your efforts to obtain certification, including: recycled content, energy performance, durability, construction waste management, and deconstructability. Contact us for more information.

Our corporate and manufacturing facilities are located in Sprung structures. We showcase and enjoy the superior qualities and features that make a Sprung structure a sound business, and an environmentally-friendly, building choice.Sprung's environmental care extends beyond our product to include the way we operate our business. Throughout our organization we are increasing our 'green' awareness and implementing policies and practices that keep the Earth in mind.

innovation | versatility | reliability

Aluminum vs. Steel

The structural frame of a Sprung Instant Structure is produced using a structural aluminum alloy. All structures, whether they are built out of steel, wood, concrete or aluminum, are required by the building code to provide the same level of safety.

A unique combination of properties makes aluminum one of the most versatile engineering and construction materials in the world. As a building material, aluminum has many advantages over steel. These include the following;

1. Extrudability

Aluminum can be extruded into any almost any complex structural shape to very close dimensional tolerances. Aluminum can be extruded with a wide range of mechanical properties with few limitations. Appropriately alloyed and treated aluminum can be as strong as some steels. 6000 series aluminum is one of the most common structural aluminum alloys. Alloy 6351-T6, one of the strongest in this series, is utilized on all structural components on the Sprung Structure. It's mechanical properties are 37 ksi, slightly higher than that of carbon steel.

The use of extruded shapes provides for more efficient fabrication, thus reducing costs. Steel is limited primarily to a fixed size I beams, angles, pipes or HSS shapes. Steel is not readily extrudeable.

Aluminum Profiles are Seamless. Complex shapes can be realized in one-piece extruded aluminum sections without having to affect mechanical joining methods. The resultant profile is typically stronger than a comparable assemblage and less likely to leak or loosen over time. Aluminum profiles can be assembled or connected in many ways, these include; bolting, clips, rivets, welding and adhesives. All connections on the Sprung Structure are bolted assemblies. This significantly reduces fatigue as compared to welded connections.

Aluminum Profiles are Economical. Extrusion tooling is relatively inexpensive and does not require long lead times.

2. Weight/Density

Aluminum is lightweight about 1/3 that of steel. This gives aluminum greater versatility as a building material. It is lower in weight allowing for increased spans. Lightweight aluminum is less expensive to ship and much easier to assemble and erect.

Aluminum Exhibits High Strength-to-Weight Ratio. Aluminum offers a unique combination of light weight and high strength. Without aluminum, space travel might never have been realized. Engineers are discovering that bridge decks constructed from extruded aluminum can bear heavier live loads, in part because the aluminum bridge deck itself weighs so much

less than a conventional steel deck. Due to its light weight, aluminum frames can easily be assembled off-site and lifted into place thus reducing the need for on-site fabrication and assembly.

3. **Corrosion Resistance**

Unlike steel, Aluminum offers excellent corrosion resistance; it does not rust. Aluminum is protected by its own naturally occurring oxide film. As a result, as compared to steel, aluminum is very low maintenance and much more durable in harsh environments.

4. **Recycle-ability - Green**

What makes aluminum a green material? Aluminum is recyclable, sustainable, and versatile; three key qualities for any material being used to construct a green building. Historically, aluminum has proven to be one of the most important materials in successful recycling programs. Aluminum offers high scrap value, widespread consumer acceptance, and aluminum recycling enjoys significant industry support. Aluminum can be recycled indefinitely without losing any of its superior characteristics, making it an appealing building material on an environmental point of view. Approximately 2/3 of the aluminum used today has been recycled.

5. **Other Design Benefits**

Aluminum Does Not Emit Sparks. Because aluminum is nonsparking, it is appropriate for applications involving explosive materials or taking place in highly flammable environments.

Aluminum is Nonmagnetic. Because aluminum does not acquire a magnetic charge, it is useful for high-voltage applications, as well as for electronics, especially where magnetic fields come into play or where sensitive magnetic devices are employed.

Aluminum is Resilient. Aluminum combines strength with flexibility and can flex under loads or spring back from the shock of impact or structural loads. This resilience not only protects the form of an aluminum product, but it can be used as a design feature or function wherever flexible strength is valued.

As aluminum ages, the temper of the aluminum increases, this increases the strength of the section.

Aluminum is Suited to Extreme Cold. The strength of aluminum actually increases under very cold temperatures

Aluminum is Noncombustible. Aluminum does not burn, even at extremely high temperatures, does not produce toxic fumes. Aluminum is a very efficient conductor of heat and cold and the amount of heat energy required to cause structural damage is significant. The thermal conductivity of aluminum is around four times that of steel and its specific heat twice that of steel. This means that heat is conducted away faster and a greater heat input is necessary to bring the same mass of aluminum to a given temperature compared with steel. Where an aluminum structure is exposed to the heat of a fire, the relatively high thermal conductivity enables the heat to be rapidly conducted away from the exposed area. This helps to reduce hot spots where significant localised property loss could occur, so extending the serviceability period.

Aluminum's Material Advantage

- Lightweight
- Strong (colder it gets the stronger it gets)
- Durable
- High Strength/Weight Ratio
- Resilient
- Resists Corrosion
- Noncombustible
- Nonmagnetic
- Recyclable
- Nontoxic
- Reflective
- Thermally Conductive
- Formable
- Electrically Conductive

Aluminum Extrusion's Product Advantages

- Attractive
- Wide range of finishes
- Virtually Seamless
- Cost Effective
- Complex Integral shapes
- Flexible for Designers
- Precise - allows for close tolerances.
- Assured Uniform Quality
- Easy Assembly Designs
- Ease of Fastening and Assembly
- Ease of Fabrication
- Low Tooling Costs
- Virtually Seamless
- Comes in a wide variety of strengths.
- As strong as most steels
- Recognized by the building code.

Comparison of Aluminum Extrusions to Steel

	Aluminum Extrusions	Roll Formed Steel
Strength (Tensile)	Very good mechanical properties	Very High mechanical properties
Density	Lightweight, about 1/3 that of steel	High density, high pounds per cubic foot.
Strength to Weight Ratio	Very Good	Good
Corrosion Resistance	Excellent, it can be further increased, along with enhanced appearance, through anodizing or other coatings	Poor; usually requires protective coatings for corrosion resistance.
Form-ability	Easily formable and extruded in a wide variety of complex shapes including multi-void hollows. Formable to net shapes, and extrusions provide for the placement of metal where needed.	Readily formable; thinner cross-sections are produceable in comparison to aluminum extrusions; metal cannot always be located where it can be best used in the design. Complex shapes are very difficult.
Machine-ability	Good mechanically through sawing, tapping, drilling, boring, turning, etc. High Production rates.	Good mechanically through sawing, tapping, drilling, boring, turning, etc.
Tolerances	Excellent; can be manufactured and fabricated to high tolerances.	Good
Weld-ability	Excellent; with any joining method - welding, brazing or soldering.	Excellent; with any joining method - welding, brazing or soldering.
Joining (Mechanical)	Can use all methods available including interlocking shapes; extrusions can typically eliminate joining processes by placing the metal where needed. Fatigue is significantly reduced.	Uses all available methods.

Electrical Conductivity	Excellent; on a pound for pound basis, twice as efficient as copper.	Poor; cannot usually be used as an electrical conductor.
Thermal Conductivity	Excellent	Poor
Recycle-ability	High scrap value; routinely reprocessed to generate new extrusions.	Low scrap value.
Tooling	Extrusion tooling is relatively inexpensive. Generally a simple shape will cost only a few hundred dollars. Short lead times for tooling construction.	Typical tooling costs very expensive. Thousands of dollars. Long lead times.
Energy Savings	Lightweight aluminum easy to handle and ship.	Heavy - increased shipping costs. More difficult to handle.
Toxicity	Nontoxic	Nontoxic
Sparking / Non sparking	Non Sparking	Sparking
Magnetism	Non-Magnetic	Magnetic
Combustibility	Non-Combustible; does not emit any toxic fumes when exposed to high temperatures.	Non-Combustible; does not emit any toxic fumes when exposed to high temperatures.
Cryogenics	Excellent - Aluminum gains strength the colder it gets.	Some alloys become brittle in low temperatures - some gain strength.

RePower™ Canada Inc.

Sprung Since 1887

Energy Comparison Report

Sprung Structure

Versus

Traditional Method

Revision: 1.1

April 2012

RePower Canada Inc.

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RePower Canada Inc.

Located in Barrie, RePower Canada Inc. is an energy management firm that provides audits, analysis and answers to large and small organizations in virtually every industry vertical throughout Central and Southern Ontario. Services include ASHRAE Level 2 audits, utility expense re-verification, sustainable resource management & consulting. Our firm is consistently involved in community matters; supporting environmental initiatives to promote a sustainable neighborhood, participating within a sub-committee for the Greater Barrie Chamber of Commerce and providing feedback to Georgian College to help develop their Sustainable Studies program.

1 Executive Summary

Repower Canada has been commissioned to conduct a comparison study between two different construction methods. The goal is to determine overall building performance based on similar building size and function. Using a comparison of annual energy consumption, annual carbon emission, and energy performance rating will provide insight into which method is the most efficient.

The two construction methods are based on the following:

- Traditional Structure
  - Concrete block, wood frame, R-12 Batt insulation, gypsum interior finish
- Sprung Structure
  - Aluminum frame supported tension membrane structure, R-25 fiberglass blanket insulation sandwiched between exterior and interior tension membrane panels

1.1 Summary Table

The results highlighted in **GREEN** indicate which construction method has the highest energy performance and/or rating from that particular area of study.

	Sprung Structure (7,152ft²)	Traditional Structure (7,500ft²)	
Energy Star Performance Rating	**44**	1	
Building Carbon Emission Rate	**0.005 $MtCO_2e/ft^2$**	0.014 $MtCO_2e/ft^2$	**64%**
Annual Energy Consumption*	**31,287 kWh**	136,680 kWh	**77%**
	8,971 m^3	12,145 m^3	**26%**
Annual Carbon Emission**	**18.55 $MtCO_2e$/year**	80.57 $MtCO_2e$/year	**77%**
	17.34 $MtCO_2e$/year	23.48 $MtCO_2e$/year	**26%**
Annual Energy Costs***	**$11,110 - Electricity**	$34,456 - Electricity	**68%**
	$4,964 - Gas	$10,296 - Gas	**52%**
Normalized Energy Consumption****	**20.1 joules/dd/ft^2**	**36.5** joules/dd/ft^2	**45%**

* February 2011 - January 2012

** Based on emission factors from Portfolio Manager

*** February 2011 - January 2012

**** Based on weather data from Barrie & London, Ontario weather stations

1.2 Energy Star Performance Summary

This Sprung structure achieves a rating of 44 through Energy Star Portfolio Manager.

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2 Introduction

2.1 Background

RePower Canada Inc. has conducted a comparison study between two different construction methods to determine overall building performance based on similar size and building function.

Selected for comparison is a traditional method of construction (TMC) consisting of concrete block, wood frame, and metal deck roof, and a modern method of construction (MMC) consisting of individual architectural membrane panels tensioned between a series of aluminum arched ribs.

2.2 Methodology

Report methodology shall be based on two buildings of similar size (7,100 – 7,500 square feet) and function (house of worship). While the traditional structure is located in Barrie, Ontario, the modern structure is located in Dorchester, Ontario.

Main factors assessed are:

- Energy Performance
  - Difference in actual energy consumption when normalized for weather and floor area. Values are given in joules/degreedays/ft²
- Energy Star Rating
  - Based on Energy Star's Portfolio Manager, each building is designated a rating that compares against the national average
- Annual Energy Consumption
  - Differences in actual energy consumed and related carbon emissions

Buildings chosen are both houses of worship and of similar size. To create a fair comparison, floor area and geographical location have been accounted for. Weather normalization was completed using data from the nearest cities (London & Barrie). However, the Portfolio Manager uses Toronto weather data only for its calculations.

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Each building's characteristics are as follows:

	Traditional Structure	Sprung Structure
Gross Floor Area:	7,500ft^2	7,100ft^2
Space Type:	House of Worship	House of Worship
Fuel Source:	Electricity	Electricity
	Natural gas	Natural Gas
Heating:	Packaged Outdoor Unit (80% Efficient)	Packaged Outdoor Unit (81% Efficient)
Lighting:	Fluorescent T8	Fluorescent (Linear and Compact)
Ventilation:	Dedicated Vent Fans	Packaged Outdoor Unit (81% Efficient)
Air Conditioning:	Packaged Outdoor Unit (80% Efficient)	Packaged Outdoor Unit (81% Efficient)
Controls:	Digital Programmable	Digital Programmable

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3 Design Criteria – Sprung Structure

3.1 Specific Building Data – Dorchester Community Church

Project Building Data:

Construction:	Modern method (Aluminum frame supported tension membrane structure, R-25 fiberglass blanket insulation sandwiched between exterior and interior tension membrane panels)
Exterior:	Dupont Tedlar architectural membrane
Building Type:	House of Worship
Gross Floor Area:	7,150 ft²

Transparent Construction:

Name of Transparent Construction	Thermal Resistance
Roof Lights (Polycarbonate Panel between transluscent fabric)	0.14 U-Value* 7.00 R-Value*

*U/R Values provided by Sprung Structures Inc.

Opaque Construction:

External wall: Tension membrane structure, consisting of aluminum sub frame with exterior architectural fabric membrane.

Name of Opaque Construction	Thermal Resistance
External Wall (Fabric)	0.18 U-Value* 5.55 R-Value*
Ground Floor (Concrete)	0.25 U-Value* 4.00 R-Value*
Insulation (Fiberglass)	0.04 U-Value* 25.0 R-Value*
Roof (Fabric)	0.18 U-Value* 5.55 R-Value*

*U/R Values provided by Sprung Structures Inc.

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4 Design Criteria – Traditional Structure

4.1 Specific Building Data – AM Shalom Synagogue

Project Building Data:

Construction:	Traditional (concrete block construction with wood frame and R-12 Batt insulation)
Building Type:	House of Worship
Gross Floor Area:	7,500 ft²

Transparent Construction:

Name of Transparent Construction	Thermal Resistance
Roof Lights (double paned non-operable)	0.7 U-Value* 1.42 R-Value*

*U/R Values provided by All Wall System

Opaque Constructions:

External Wall:	Concrete block construction, consisting of wood frame with R-12 Batt insulation
Roof:	Standard metal deck roof with cathedral design.

Name of Opaque Construction	Thermal Resistance
External Wall (Concrete)	0.12 U-Value* 7.84 R-Value*
Ground Floor (Concrete)	0.22 U-Value 4.42 R-Value*
Insulation (Fiberglass)	0.08 U-Value* 12.0 R-Value*
Roof (Metal Deck)	0.25 U-Value* 4.00 R-Value*

*U/R Values provided by All Wall System

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5 Energy Star Performance Comparison

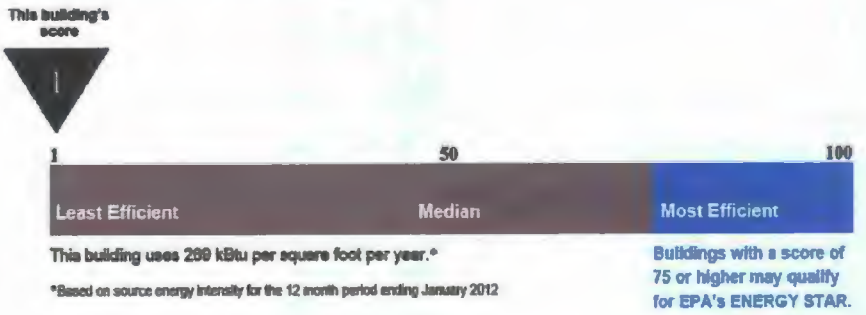
5.1 AM Shalom – Traditional Structure

Annual Carbon Emission

Below is the output data from the Portfolio Manager outlining the building's carbon emission rate. The values are based on annual utility data for the previous 12 months accounting for natural gas and purchased electricity.

12 Months Ending	Current Total Site Energy Use (kBtu)	Current Direct GHG Emissions (MtCO2e)	Current Indirect GHG Emissions (MtCO2e)	Current Total GHG Emissions (MtCO2e)
January 2012	907,689.32	23.48	80.57	104.05

Traditional – Energy Performance Rating



A rating of 1 indicates that the building, from an energy consumption standpoint, performs better than 1% of all similar buildings nationwide.

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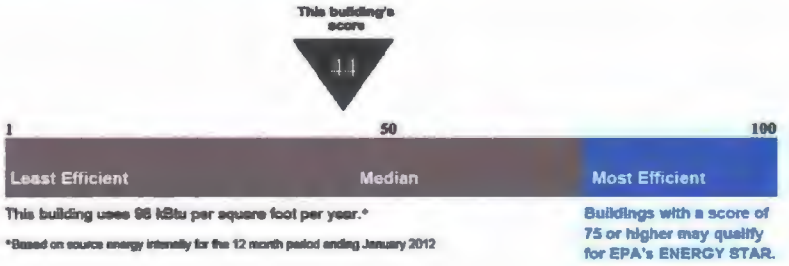
5.2 Dorchester Community Church – Sprung Structure

Sprung – Annual Carbon Emission

Below is the output data from the Portfolio Manager outlining the building's carbon emission rate. The values are based on annual utility data for the previous 12 months accounting for natural gas and purchased electricity

12 Months Ending	Current Total Site Energy Use (kBtu)	Current Direct GHG Emissions (MtCO2e)	Current Indirect GHG Emissions (MtCO2e)	Current Total GHG Emissions (MtCO2e)
January 2012	433,356.52	17.34	18.55	35.89

Sprung – Energy Performance Rating



A rating of 44 indicates that the building, from an energy consumption standpoint, performs better than 44% of all similar buildings nationwide.

Although a rating of 44 is very good, much higher ratings can be achieved within the Sprung structure by implementing controls, passive and renewable technologies. For example, triple-pane windows combined with a geothermal heat/cool system (using variable speed drives), subsidized by solar-thermal hot-air, all controlled and monitored by a building automation system, would place the facility much closer to, if not inside, the "Energy Star Approved" rating of 75 or above.

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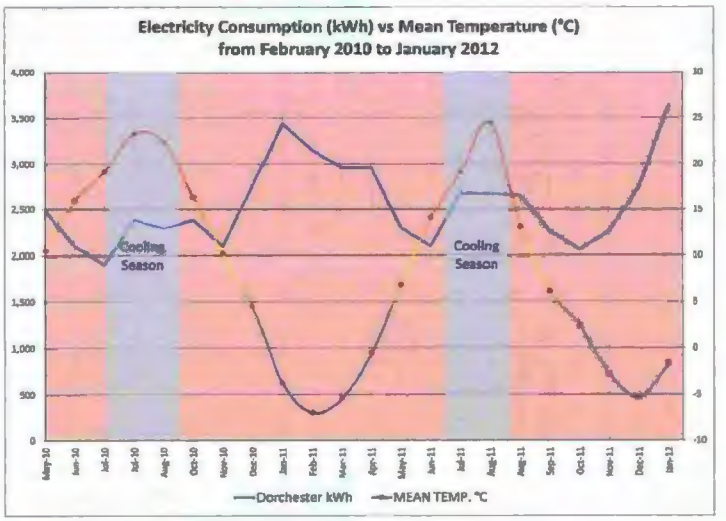
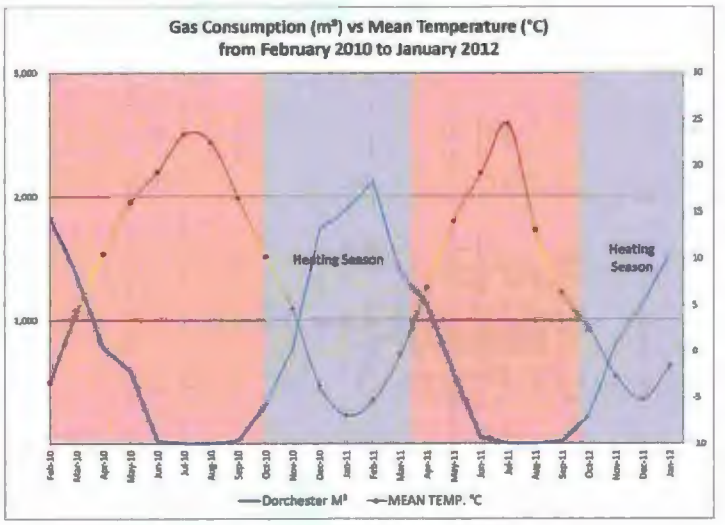
6 Comparison - Annual Energy Consumption

6.1 Dorchester Community Church – Sprung Structure

22 months of electrical data and 24 months of natural gas to data have been analyzed for this study, while accounting for weather and floor area.



The above graph displays electricity consumption relative to average outdoor temperature. An increase in consumption is evident during the summer months, indicating an electric air conditioning unit. Additionally, spikes in consumption that occur during the winter months can be attributed to electric space heaters.



Above, displays natural gas consumption relative to average outdoor temperature. An increase in consumption during the winter months is attributed to gas-fired heating equipment. Consumption does not occur during the summer months.

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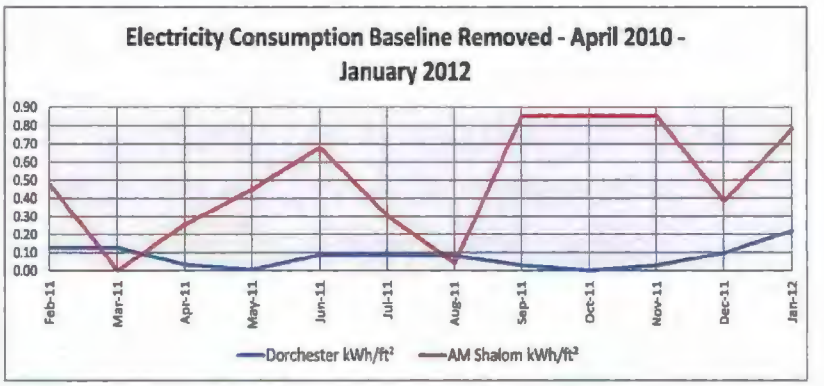
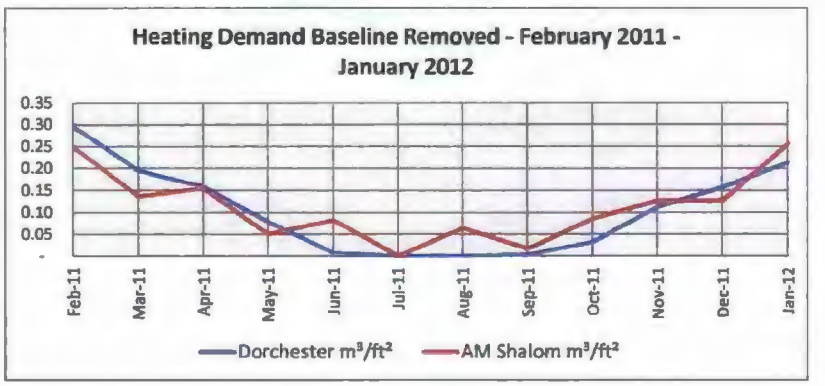
6.2 Annual Energy Comparison



The above graph illustrates electricity consumption per square foot for both structures. Baseline data has been removed to isolate consumption attributed to outdoor weather conditions. Consumption is considerably higher in the traditional structure. Electricity usage is consistent throughout the Sprung facility.



Above, shows natural gas consumption (per square foot) for both structures. Baseline data has been removed to isolate consumption attributed to outdoor weather conditions. Consumption is similar in most building during the winter months; however, the traditional structure uses gas-fired equipment throughout the year resulting in higher annual values.

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7 Comparison – Thermographic Scan

7.1 Entrance

Based on the thermal images taken of both facilities, we can isolate areas that help explain the difference in energy performance. Ideal conditions show smooth zones with consistent changes of temperature from area to area.

Considering both facilities utilitize interior vestibules, thermal imaging shows the better performing entrance doors by the Sprung structure. While the traditional build has "hot-spots" or concentrated areas of air infiltration.

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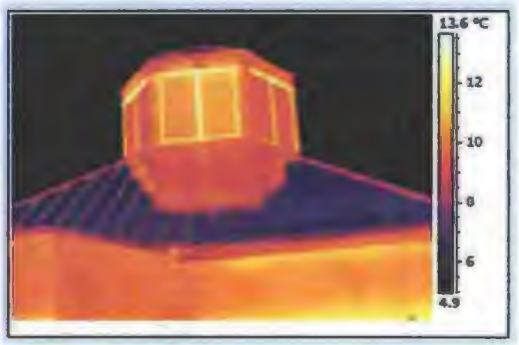
7.2 Natural Lighting

Above, the Sprung structure allows sunlight though a semi-translucent panel section, running the length of the building. MMC uses semi-translucent membrane panels that allow natural daylight into the facility without having the heat loss associated with glazing and framing, shown in the second image.



Conversely, the above traditional structure is experiencing intense heat loss through the rooftop window assembly while letting in less light.

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8 Conclusion

It is apparent from the results of this study that the Sprung Structure using the modern method of construction is more efficient when compared with a traditional construction method. Both buildings are of similar function and size. These advantages are due to:

- Use of two translucent membrane panels along the roof greatly reduces heat loss associated with glass and roof fenestration.
- More daylight entering the facility compared to the traditional structure. The result is lower lighting demand which reduces energy consumption from artificial lighting and reduced cooling load (in summer from lamp heat).
- Use of an electric hot water heater instead of a gas-fired unit.
- Higher R-Values for the roof assembly reduces heat loss, decreasing consumption.
- Higher R-Values for the roof fenestration reduces heat loss, decreasing consumption.

Overall the Sprung structure is considerably more efficient when compared to traditional methods.

- **Consumes 45% less energy** than a facility of similar size and function using the traditional construction method
- **Produces 65% less greenhouse gas** emissions than a facility of similar size and function
- **Operating costs are 62% less** than a facility of similar size and function using the traditional construction method

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Appendix

A. Energy Star Rating

i. What is Energy Star – Portfolio Manager

Portfolio Manager is an interactive energy management tool that allows you to track and assess energy and water consumption across your entire portfolio of buildings in a secure online environment.

Building Energy Performance Rating

For many facilities, you can rate their energy performance on a scale of 1–100 relative to similar buildings nationwide. Your building is *not* compared to the other buildings entered into Portfolio Manager to determine your ENERGY STAR rating. Instead, statistically representative models are used to compare your building against similar buildings from a national survey conducted by the Department of Energy's Energy Information Administration. This national survey, known as the Commercial Building Energy Consumption Survey (CBECS), is conducted every four years, and gathers data on building characteristics and energy use from thousands of buildings across the United States. Your building's peer group of comparison is those buildings in the CBECS survey that have similar building and operating characteristics. A rating of 50 indicates that the building, from an energy consumption standpoint, performs better than 50% of all similar buildings nationwide, while a rating of 75 indicates that the building performs better than 75% of all similar buildings nationwide.

EPA's energy performance rating system, based on source energy, accounts for the impact of weather variations as well as changes in key physical and operating characteristics of each building. Buildings rating 75 or greater may qualify for the ENERGY STAR label.

Estimate Carbon Footprint

Portfolio Manager calculates your building's greenhouse gas emissions (including carbon dioxide, methane, and nitrous oxide) from on-site fuel combustion and purchased electricity and district heating and cooling. While the emissions calculations are based on the amount of energy your building consumes, they have no bearing on its energy performance rating. The methodology for calculating greenhouse gas emissions in Portfolio Manager was designed to be consistent with the Greenhouse Gas Protocol developed by the World Resources Institute and World Business Council for Sustainable Development, and is compatible with the accounting, inventory and reporting requirements of EPA's Climate Leaders program, as well as other state and NGO registry and reporting programs.

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ii. AM Shalom – Traditional Structure

Facility
AM Shalom
767 Huronia Street
Barrie,

General Information

AM Shalom	
Gross Floor Area Excluding Parking: (ft²)	7,500
Year Built	2005
For 12-month Evaluation Period Ending Date:	January 31, 2012

Facility Space Use Summary

[redacted]	
Space Type	House of Worship
Gross Floor Area (ft²)	7,500
Seating Capacity	220
Weekday Operation	5
Weekly operating hours	60
Number of PCs	3
Presence of cooking facilities	No
Number of Commercial Refrigeration/Freezer Units	0

Energy Performance Comparison

	Evaluation Periods		Comparisons		
Performance Metrics	Current (Ending Date 01/31/2012)	Baseline (Ending Date 02/28/2011)	Rating of 75	Target	National Median
Energy Performance Rating	1	1	75	N/A	50
Energy Intensity					
Site (kBtu/ft²)	121	114	32	N/A	43
Source (kBtu/ft²)	269	256	70	N/A	97
Energy Cost					
$/year	$ 24,140.98	$ 22,119.34	$ 6,297.04	N/A	$ 8,662.67
$/ft²/year	$ 3.22	$ 2.95	$ 0.84	N/A	$ 1.16

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iii. Dorchester Community Church – Sprung Structure

Facility
Dorchester Church
3912 Catherine Street
N0L 1G0
Dorchester,

General Information

Dorchester Church	
Gross Floor Area Excluding Parking: (ft²)	7,152
Year Built	2009
For 12-month Evaluation Period Ending Date:	January 31, 2012

Facility Space Use Summary

House of Worship	
Space Type	House of Worship
Gross Floor Area (ft²)	7,152
Seating Capacity	215
Weekday Operation	5
Weekly operating hours	65
Number of PCs	1
Presence of cooking facilities	No
Number of Commercial Refrigeration/Freezer Units	0

Energy Performance Comparison

	Evaluation Periods		Comparisons		
Performance Metrics	Current (Ending Date 01/31/2012)	Baseline (Ending Date 04/30/2011)	Rating of 75	Target	National Median
Energy Performance Rating	44	46	75	N/A	50
Energy Intensity					
Site (kBtu/ft²)	61	65	41	N/A	57
Source (kBtu/ft²)	98	101	67	N/A	92
Energy Cost					
$/year	$ 8,466.48	$ 9,002.62	$ 5,794.41	N/A	$ 7,972.92
$/ft²/year	$ 1.19	$ 1.26	$ 0.81	N/A	$ 1.12

B. Energy Consumption

i. AM Shalom – Traditional Structure

We have analyzed 22 months of electrical data and 24 months of natural gas to data for this study, while accounting for weather and floor area.

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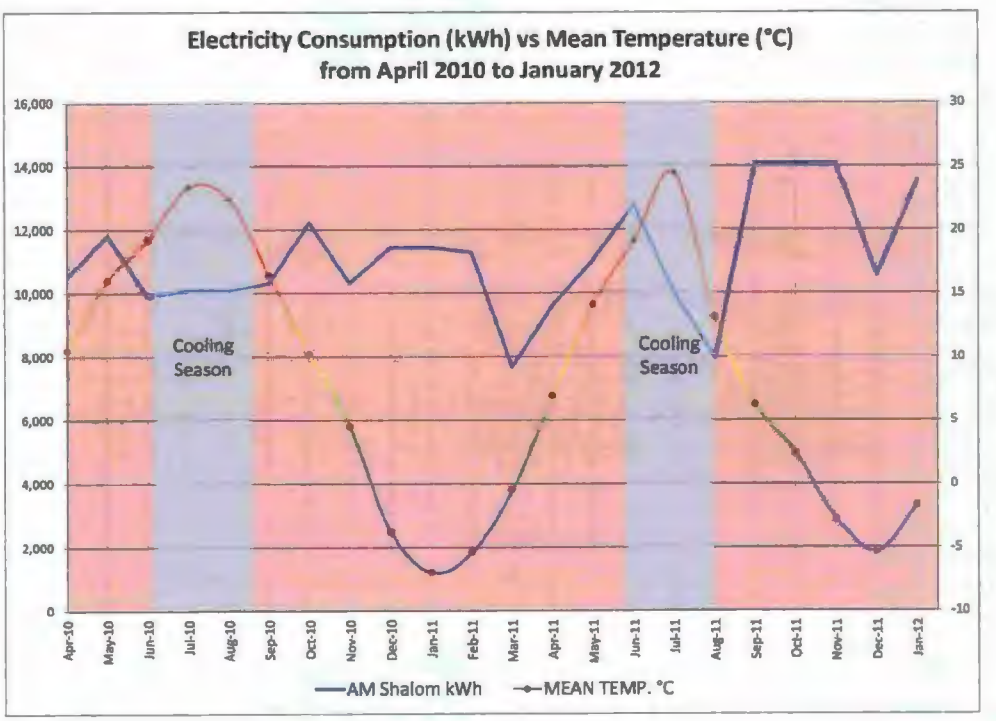
Month	Kilowatt Hours (kWh)	Total $	$/kWh
Apr-10	10,500	$1,469	$0.1399
May-10	11,820	$1,923	$0.1627
Jun-10	9,900	$1,609	$0.1625
Jul-10	10,080	$1,548	$0.1536
Aug-10	10,080	$1,548	$0.1536
Sep-10	10,320	$1,463	$0.1418
Oct-10	12,240	$1,624	$0.1327
Nov-10	10,320	$1,441	$0.1397
Dec-10	11,430	$1,536	$0.1343
Total	96,690	$14,162	$0.1465
Jan-11	11,430	$1,536	$0.1343
Feb-11	11,280	$1,335	$0.1184
Mar-11	7,680	$983	$0.1280
Apr-11	9,600	$1,229	$0.1281
May-11	11,040	$1,512	$0.1370
Jun-11	12,780	$1,939	$0.1517
Jul-11	9,960	$1,760	$0.1767
Aug-11	7,980	$1,307	$0.1638
Sep-11	14,080	$1,823	$0.1295
Oct-11	14,080	$1,823	$0.1295
Nov-11	14,080	$1,823	$0.1295
Dec-11	10,560	$1,410	$0.1335
Total	134,550	$18,480	$0.1373
Jan-12	13,560	$1,815	$0.1338
Total	13,560	$1,815	$0.1338

Month	Cubic Meters (m^3)	Total $	$/m3
Nov-09	882	$391	$0.4434
Dec-09	1,335	$559	$0.4186
Total	2,217	$950	$0.4285
Jan-10	2,357	$958	$0.4063
Feb-10	1,563	$660	$0.4221
Mar-10	1,072	$470	$0.4383
Apr-10	656	$316	$0.4811
May-10	478	$249	$0.5202
Jun-10	12	$65	$5.3992
Jul-10	182	$132	$0.7237
Aug-10	489	$253	$0.5170
Sep-10	496	$256	$0.5153
Oct-10	556	$279	$0.5020
Nov-10	967	$435	$0.4497
Dec-10	2,213	$899	$0.4063
Total	11,041	$4,970	$0.4501
Jan-11	2,218	$902	$0.4067
Feb-11	2,026	$832	$0.4109
Mar-11	1,191	$523	$0.4389
Apr-11	1,331	$568	$0.4264
May-11	546	$280	$0.5132
Jun-11	785	$370	$0.4719
Jul-11	170	$75	$0.4419
Aug-11	649	$319	$0.4908
Sep-11	296	$182	$0.6135
Oct-11	814	$380	$0.4667
Nov-11	1,122	$496	$0.4419
Dec-11	1,125	$498	$0.4422
Total	12,273	$5,424	$0.4420
Jan-12	2,090	$860	$0.4113
Feb-12	1,497	$644	$0.4300
Total	3,587	$1,503	$0.4191

The following charts display electricity and natural gas consumption for roughly two years. Electricity consumption appears to peak in the later part of the year. This can be attributed to the private daycare located on site. Natural gas consumption has increased compared to the previous year leading to higher annual costs, despite a slight decrease in the effective rate. Gas usage peaks during the winter months due to gas-fired heating equipment.



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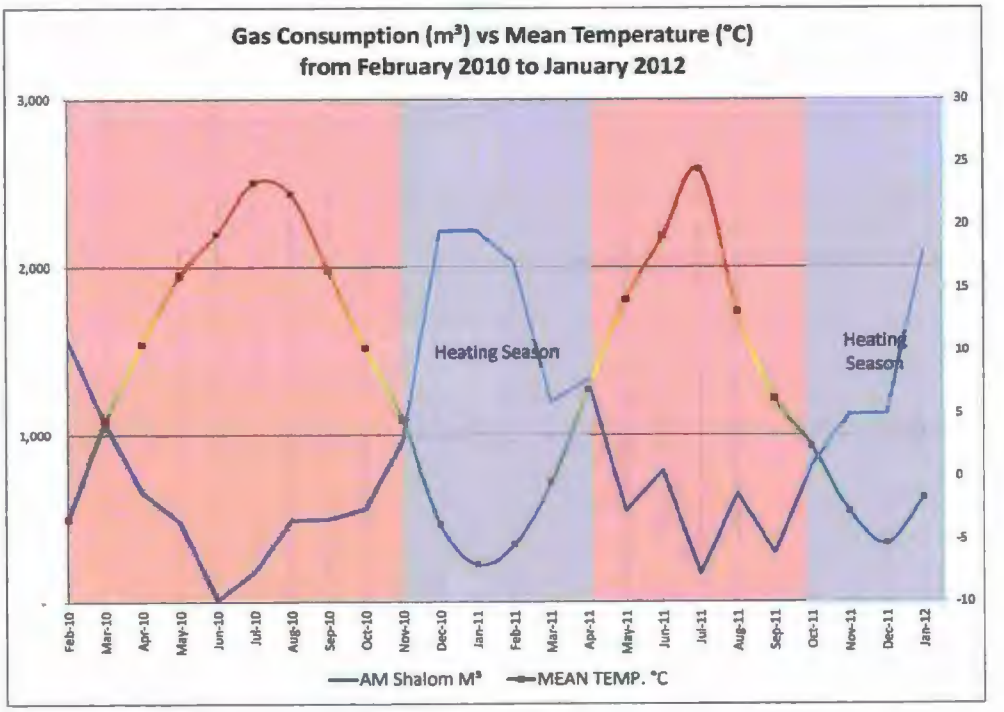
The following graph displays electricity consumption relative to average outdoor temperature. An area where consumption is consistent is due to larger billing periods (up to 93 days). Consumption appears to increase during the spring and summer months of 2011, indicating electric air conditioning units.



The following graph displays natural gas consumption relative to average outdoor temperature. Consumption appears to increase during the winter months, indicating heating is provided by gas-fired equipment. Low levels of consumption during the summer months indicate a gas-fired water heater.

Report Certified By:

RePower Canada Inc.
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Barrie, Ontario, L4N 5Z9
Canada
www.repowercanada.com
Contact: Jason Lickver C. Tech, C.E.M.

SPRUNG VS. OTHERS

Oranges vs. Oranges

How does a Sprung structure really compare?

When you compare feature by feature, you'll quickly see how your Sprung structure out-performs pre-engineered metal buildings.

Quality starts with intelligent design and choice of materials. When you consider the rapid construction time, superior energy efficiency, long term flexibility and lower overall costs, you'll agree that a Sprung structure is the right choice.

FEATURE	SPRUNG STRUCTURE	LOW COST GALVANIZED PIPE TENT STRUCTURES	PRE-ENGINEERED METAL BUILDING	CONVENTIONAL CONSTRUCTION
Engineering	Structures are engineered to meet hurricane force winds and by design shed snow	Many product failures and collapses in wind and snow	Can be designed on a case by case basis	Can be designed on a case by case basis
Delivery	Available immediately from inventory from our manufacturing and distribution centers. A Sprung structure can generally be ready to ship within three weeks from receipt of order.	6 - 8 weeks	6 - 8 weeks	2-4 months
Foundation Requirements	Provided appropriate soil conditions exist, foundations are not required on structures up 180' wide	Foundations required	Foundations required	Foundations required
Construction Time	Structures can be erected at a rate of up to 2,000 sq ft per day. Sprung structures can be erected much faster than metal or conventional construction.	Range from several weeks to months	9 - 12 months	Minimum 1 year
Insulation	Continuous 6-inch thick R25 insulation from ground to peak. Johns Manville formaldehyde free fiberglass insulation. (9-inch R30 on 100' to 200' wide structures)	Not available	Walls 6-inch R20 squeezed to R14 Roofs 6-inch R20 squeezed to R11	R20 wall R20 roof
Lighting Levels	The highly tensioned white interior membrane provides a bright reflective surface reducing the number of light fixtures required	100% translucent membrane	Requires more lighting fixtures	Requires more lighting fixtures
Maintenance Schedule	Aluminum substructure is virtually maintenance-free The smooth surface architectural membrane can be easily clean	Galvanized steel pipe eventually corrodes	Standing seam metal roof prone to large thermal movements and requires continuous maintenance to weatherproof especially at penetrations	Regular maintenance is required
Flexibility to Relocate	Yes	Yes	No	No
Airtight Building Envelope Efficiency	Our highly tensioned exterior architectural membrane provides a significantly better airtight building envelope	Poor airtightness	Poor airtightness	Moderate airtightness
Energy Savings And Operating Costs	Up to 20% energy savings over pre-engineered metal buildings	Poor performance	Moderate energy performance	Moderate energy performance
Natural Light	A translucent section of membrane provides the optimum amount of natural light. The structure includes an opaque membrane that prevents solar gain which provides climate control during summer and winter months	100% translucent membrane creates solar gain and is difficult to maintain proper climate control	Small sections can be added	Costly addition
Acoustics	Excellent acoustical properties with our comprehensive insulation package and "soft wall" interior membrane	No insulation and poor fabric tension provides little to no acoustical performance	Significant additional costs associated with acoustic treatments needed to make a metal building acceptable for any application were acoustics are a concern (gymnasiums, public assembly, churches, casinos, offices etc.	Limited performance
Lifespan	60+ years	Very limited	60+ years	60+ years
Guarantee	30 years on aluminum substructure, up to 20 years on architectural membrane	Limited - Typically 3-5 years	Limited warranty	Limited warranty
Service	Established in 1867, Sprung has a number of offices located around the world	Available	Available	Available
Proven Technology	12,000 structures erected in over 90 countries worldwide	Limited	Wide range of product	Wide range of product

Toll Free 1 800 528.9899 info@sprung.com www.sprung.com

SPRUNG INSTANT STRUCTURES

HURRICANE REPORT

Hurricane Katrina

"The vast majority of New Orleans, Louisiana is under water. Tens of thousands of homes and businesses are damaged beyond repair. Much of the Mississippi Gulf Coast has been completely destroyed. Mobile, Alabama is flooded. We are dealing with one of the worst natural disasters in our nation's history."

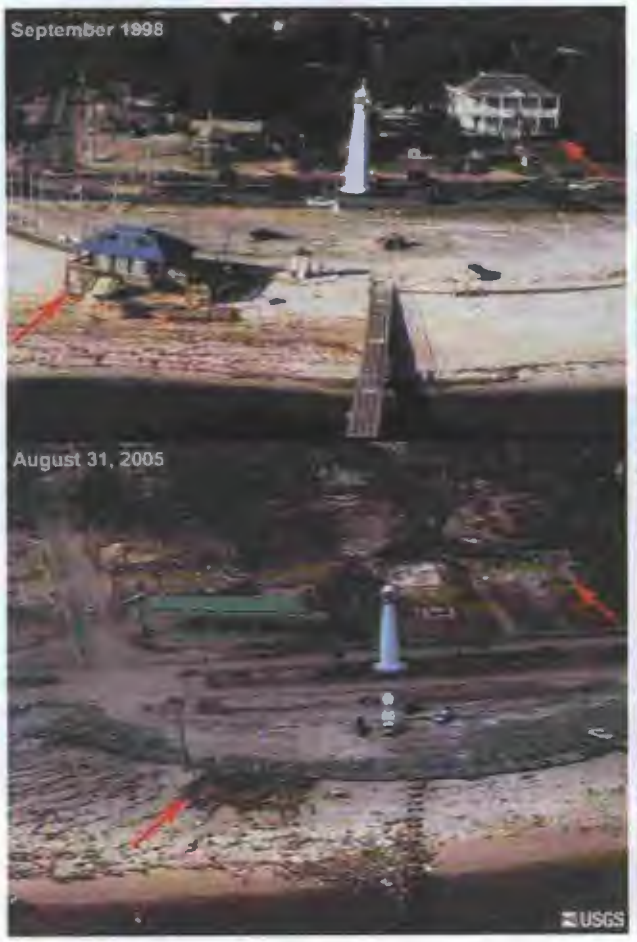
President George W. Bush, August 31,2005

HURRICANE KATRINA

THE QUICK FACTS:

August 23 - 30, 2005
Maximum Sustained Winds: 175 mph
Minimum Central Pressure: 902 mb

It formed over the Bahamas on August 23, 2005, and crossed southern Florida as a moderate Category 1 hurricane, causing some deaths and flooding there, before strengthening rapidly in the Gulf of Mexico and becoming one of the strongest hurricanes on record while at sea. The storm weakened before making its second and third landfalls as a Category 3 storm on the morning of August 29 in southeast Louisiana and at the Louisiana/Mississippi state line, respectively. The storm surge caused severe damage along the Gulf Coast, devastating the Mississippi cities of Waveland, Bay St. Louis, Pass Christian, Long Beach, Gulfport, Biloxi, Ocean Springs, and Pascagoula. In Louisiana, the federal flood protection system in New Orleans failed in more than 50 places. Nearly every levee in metro New Orleans breached as Hurricane Katrina passed east of the city, subsequently flooding 80% of the city and many areas of neighboring parishes for weeks.



SPRUNG CUSTOMER TESTIMONY

Tulane University, New Orleans, LA. 20,000 sq. ft.
Retail Facility

"Sprung designed the structure to withstand 100 mph winds. Hurricane Katrina far exceeded 100 mph, yet the Sprung structure sustained only minor damages. We are so pleased with its performance and versatility, that we exercised the option to purchase. We know it will help us in our growing need for more space. It is my pleasure to recommend Sprung to anyone in need of an 'instant' structure."

Peter J. Baricev, Jr., Director
Real Estate Tulane University

ENGINEERED TO MEET THE SOUTHERN BUILDING CODE - NEW ORLEANS, LOUISIANA 100 MPH

Faith Temple Ministries – Buras, LA

Exterior membrane replaced after Hurricane Katrina.

Buras-Triumph has become famous as the location where, on August 29, 2005, at 6:10 AM CDT, the eye of Hurricane Katrina, by far the costliest natural disaster (and one of the deadliest) ever to strike the United States, made its strongest landfall. However, the storm surge and high winds began on the previous day, August 28, 2005. During those 2 days, the area was obliterated as a result. The Sprung structure pictured above left was one of the only buildings left standing with minimal damage. As a result, the exterior membrane and insulation package was replaced in a few short weeks. (Pictured above right)

ENGINEERED TO MEET THE INTERNATIONAL BUILDING CODE - BURAS, LOUISIANA 130 MPH

THE QUICK FACTS: HURRICANE KATRINA

Hurricane Katrina was the costliest and one of the five deadliest hurricanes in the history of the United States. It was the sixth-strongest Atlantic hurricane ever recorded and the third-strongest hurricane on record that made landfall in the United States. Katrina formed on August 23 during the 2005 Atlantic hurricane season and caused devastation along much of the north-central Gulf Coast. The most severe loss of life and property damage occurred in New Orleans, Louisiana, which flooded as the levee system catastrophically failed, in many cases hours after the storm had moved inland. The hurricane caused severe destruction across the entire Mississippi coast and into Alabama, as far as 100 miles (160 km) from the storm's center. Katrina was the eleventh tropical storm, fifth hurricane, third major hurricane, and second Category 5 hurricane of the 2005 Atlantic season. At least 1,836 people lost their lives in Hurricane Katrina and in the subsequent floods, making it the deadliest U.S. hurricane since the 1928 Okeechobee Hurricane. The storm is estimated to have been responsible for $81.2 billion (2005 U.S. dollars) in damage, making it the costliest natural disaster in U.S. history.

Hurricane Katrina — the eye of the storm

SPRUNG INSTANT STRUCTURES

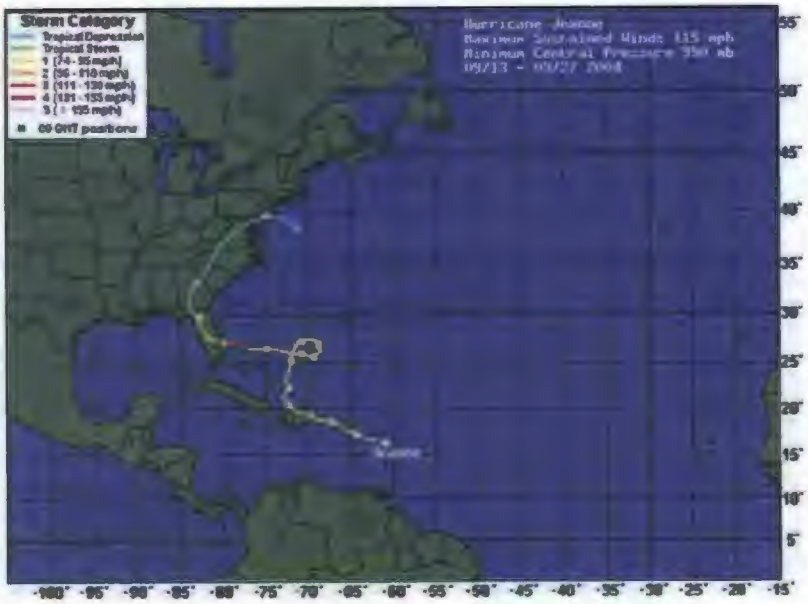
HURRICANE REPORT

Hurricane Jeanne
Hurricane Ivan
Hurricane Frances
Hurricane Charley

"...These are storms that have taken lives, storms that have created severe flooding, storms that caused major power outages, and storms that damaged farms and homes and hospitals and roads. It's been a devastating period for the state of Florida. It is the first time in nearly 120 years that four hurricanes have hit the same state in a single season. People of Florida have met historic challenges with extraordinary strength and generosity..."

President George W. Bush, September 29, 2004

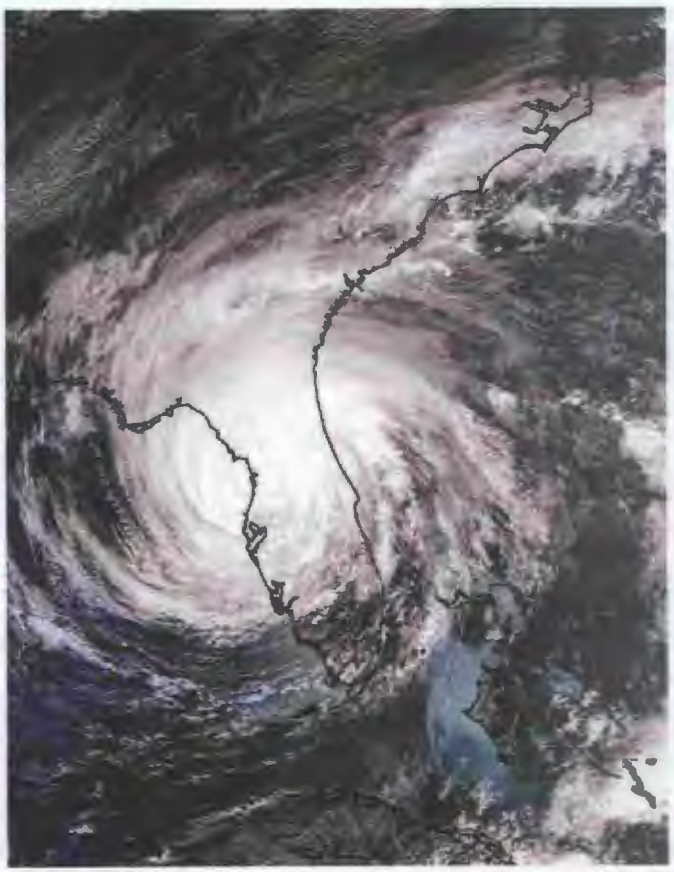
HURRICANE JEANNE



THE QUICK FACTS:

September 13 - 27, 2004
Maximum Sustained Winds: 115 mph
Minimum Central Pressure: 950 mb

The large eye made landfall on the East Coast of Florida near Stuart as a Category 3. It is notable that hurricane Frances made landfall near this same location just 20 days earlier and also moved over the same islands in the northwestern Bahamas. Jeanne weakened to a tropical storm over Central and Northwestern Florida while turning Northward. Jeanne weakened to a depression over Georgia and recurred over the mid-Atlantic coastal states on the 28th and 29th accompanied by heavy rain.



SPRUNG CUSTOMER TESTIMONY

Faith Covenant Church - Hobe Sound, Florida 5,400 sq. ft.
(photos from after the hurricane)

"We took two direct eye-wall hits from hurricane Frances and Jeanne (with winds over 125 mph) with no damage, outside or inside to both Sprung buildings. The surrounding neighborhood was heavily damaged. Thank God for His protection, and the wisdom and insight when we chose Sprung."

Dr. Jerry W. Wilkes, Senior Pastor
Faith Covenant Church, www.fcm.cc

ENGINEERED TO MEET THE FLORIDA BUILDING CODE - HOBE SOUND, FLORIDA
140 MPH

Jubilee Shores - Fairhope, Alabama 6,000 sq. ft.

ENGINEERED TO MEET THE SOUTHERN BUILDING CODE - FAIRHOPE, ALABAMA
110 MPH

Heritage Baptist - Cantonment, Florida 6,000 sq. ft.

Hurricane Jeanne struck numerous other Sprung Structures in the area including Jubilee Shores Church and Heritage Baptist Church both of which survived the high winds and rain without damage.

ENGINEERED TO MEET THE FLORIDA BUILDING CODE - CANTONMENT, FLORIDA
120 MPH

HURRICANE IVAN

THE QUICK FACTS:

September 2 - 24, 2004
Maximum Sustained Winds: 165 mph
Minimum Central Pressure: 910 mb

Ivan moved northwestward over the Gulf of Mexico and slowly weakened until it made its first U.S. landfall near gulf shores Alabama as a Category 3 hurricane early on 16 Sept. After landfall...Ivan gradually weakened over the next week while making a large clockwise loop. Ivan moved Northeastward over the Southeastern U.S. and emerged off the Delmarva Peninsula on 19 September as an extratropical low. The remnant circulation of Ivan then moved Southwestward just off the Southeastern U.S. coast and passed over South Florida and into the Gulf of Mexico on 21 Sept. Ivan became a tropical storm again on the 23rd and made its 2nd landfall over extreme Southwestern Louisiana on the 24th. Ivan finally dissipated inland over East Texas later that day.

SPRUNG CUSTOMER TESTIMONY

Faith Temple Ministry - Buras, Louisiana 6300 sq. ft.

"Wow! The storm is over, and now it's time to cleanup and make repairs. After returning home from evacuating for Hurricane Ivan we began to clean up and evaluate property damage, of course we started checking our newest building the Sprung structure. After an extensive look over the entire building we were very pleased to report to our congregation that there was no damage at all. The next part of our property we looked at was the church house which is 75 feet from the Sprung structure and at first look we knew it had sustained damages. We have now learned that those damages are estimated between 20 and 25 thousand dollars. As we continued our clean up and began our repairs people from our community began stopping by to check on how everything did through the storm. One of those that stopped by was Lt. Steve Zegura of the Plaquemines Parish Sheriffs Office he asked 'how was everything?' I said we had some damage on the church house but everything else was fine. Lt. Steve said 'Really because I was on duty during the storm and passed by your property and I wondered how your new building would handle such a hard wind. Pastor Jesse it blew over 100 mph for 2 to 3 hours. I did not think it would hold up.' I said let me show it to you. And as we looked at the building he said, 'Pastor this is a strong building I am impressed.'

To the Sprung Family Thanks."

Pastor Jesse Morris
Faith Temple Ministry

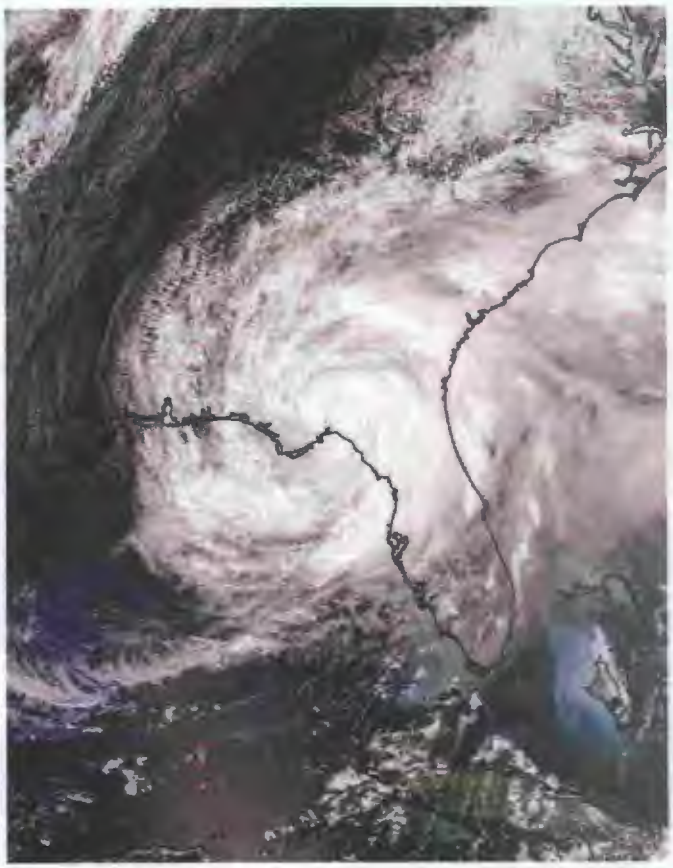
ENGINEERED TO MEET THE INTERNATIONAL BUILDING CODE - BURAS, LOUISIANA
130 MPH

HURRICANE FRANCES

THE QUICK FACTS:

August 25 - September 10, 2004
Maximum Sustained Winds: 145 mph
Minimum Central Pressure: 935 mb

The center of Frances reached the Florida East Coast near Sewall's Point early on 5 September...then continued West-Northwestward across the Central Florida Peninsula to the Northeastern Gulf of Mexico by early on 6 September. Frances weakened to a tropical storm over Florida...and it was still a tropical storm when it made a final landfall near St. Marks Florida later that day. Frances moved generally Northward across the Eastern United States...finally dissipating over Southeastern Canada on 9 September. So far Frances is believed to be responsible for 23 deaths. It left a broad trail of damage through the Bahamas and Florida into the Southeastern United States.



SPRUNG CUSTOMER TESTIMONY

Radisson Resort at the Port - Cape Canaveral, Florida
12,000 sq. ft.

"As you know Florida has endured four major storms this hurricane season. Two of these storms, Frances and Jeanne, made landfall very close (within 50 to 75 miles) of our property with winds in excess of 100 mph. While numerous buildings in our area suffered significant damage, our Sprung Structure came through both of these category three storms without a blemish...

We could not be happier with the quality of our Sprung structure, the way it handles the hurricane conditions, and our track record with Sprung Instant Structures."

Robert A. Baugher
Owner/President
Radissson Resort at the Port

ENGINEERED TO MEET THE FLORIDA BUILDING CODE - CAPE CANAVERAL, FLORIDA
130 MPH

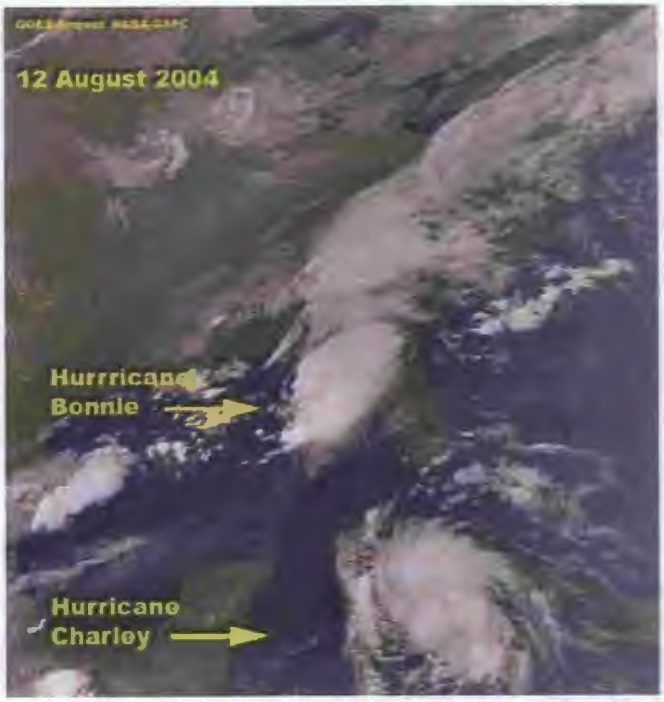
HURRICANE CHARLEY

THE QUICK FACTS:

August 9 - 15, 2004
Maximum Sustained Winds: 145 mph
Minimum Central Pressure: 941 mb

Charley made landfall on the Southwest Coast of Florida near Cayo Costa...just North of Captiva during the evening of 13 August with maximum sustained winds tentatively estimated at 145 mph. Shortly thereafter the eyewall impacted Punta Gorda and neighboring Port Charlotte with devastating results. The hurricane traversed the Central Florida Peninsula resulting in a swath of destruction across the state. The center passed near Kissimmee and Orlando early on 14 August...by which time the maximum sustained winds had decreased to around 85 mph.

The insurance information institute reports an estimated total of 7.4 billion dollars in insured losses. The preliminary estimates of the damage total range from 13 to 15 billion dollars. This would make Charley the second costliest tropical cyclone in U.S. history.



SPRUNG CUSTOMER TESTIMONY

Lee County Correction Facility - Lee County, Florida
Eight 6,650 sq. ft. structures

"Although stunned and saddened at the level of destruction through our state, we were no less grateful to report that all eight Sprung Instant Structure Inmate housing units built six years ago to house 512 inmates; passed the hurricane windload test and survived the destructive forces from this major hurricane with no damage or disruption in service, even though there was extensive damage and loss of power to thousands of buildings in the surrounding areas."

John J McDougall, Sheriff of Lee County Florida (Ret)

ENGINEERED TO MEET THE FLORIDA BUILDING CODE - LEE COUNTY, FLORIDA
130 MPH

THE QUICK FACTS: HURRICANE CHARLEY

With an estimated 25 billion dollars in damage from four major hurricanes in 2004, it would not be a stretch to say that Florida had more than its fair share of destruction and devastation for one year. Some meteorologists have called this a climatologic anomaly, while others call it a global disaster. Whatever the real assessment, we know one thing for sure, ocean weather - tropical marine surface analysis for the Gulf of Mexico and Western Atlantic is unpredictable. After having been directly ravaged by the fierce winds of Hurricane Charlie (clocked by reconnaissance aircraft, to be in excess of 145 miles per hour) this category four-hurricane, took an unexpected right turn from it's northerly predicted course in the Gulf of Mexico with little time for anyone to prepare for its immediate landfall. In a matter of minutes we went from 'Hurricane Watch' to 'Hurricane Survival'. South West Florida was the epi-center for this massive landfall of Hurricane Charlie.

MIAMI-DADE COUNTY
BUILDING CODE COMPLIANCE OFFICE (BCCO)
PRODUCT CONTROL DIVISION

MIAMI-DADE COUNTY, FLORIDA
METRO-DADE FLAGLER BUILDING

140 WEST FLAGLER STREET, SUITE 1603
MIAMI, FLORIDA 33130-1563
(305) 375-2901 FAX (305) 375-2908
www.buildingcodeonline.com

NOTICE OF ACCEPTANCE (NOA)

Sprung Instant Structures, Inc.
5711 West Damon Way
West Jordan, UT 84088

SCOPE:
This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed by Miami-Dade County Product Control Division and accepted by the Board of Rules and Appeals (BORA) to be used in Miami Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Division (In Miami Dade County) and/or the AHJ (in areas other than Miami Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. BORA reserves the right to revoke this acceptance, if it is determined by Miami-Dade County Product Control Division that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein, and has been designed to comply with the High Velocity Hurricane Zone of the Florida Building Code.

DESCRIPTION: Premium Tedlar / Polyurethane Coated Architectural Fabric Membrane ' .

APPROVAL DOCUMENT: Drawings No. P05064.0, P05064.1, & P05064.2, titled " Hurricane Test ", dated March 31, 2005, last revision #3 dated February 27, 2006, three sheets, prepared by Steven B. Brown, P.E., signed and sealed by Steven B. Brown, P.E., bearing the Miami-Dade County Product Control Approval stamp with the Notice of Acceptance number and approval date by the Miami-Dade County Product Control Division.

MISSILE IMPACT RATING: Large and Small Missile Impact

LABELING: Each structure shall bear a permanent label with the manufacturer's name or logo, city, state and the following statement: "Miami-Dade County Product Control Approved", unless otherwise noted herein.

RENEWAL of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

TERMINATION of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

ADVERTISEMENT: The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

INSPECTION: A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.
This NOA consists of this page 1, evidence submitted page E-1 as well as approval document mentioned above.
The submitted documentation was reviewed by **Helmy A. Makar, P.E.**

Helmy A. Makar
06/08/2006

NOA No 03-0407.04
Expiration Date: 06/08/2011
Approval Date: 06/08/2006
Page 1

sprung

innovation | versatility | reliability

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West Jordan, Utah 84088
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info@sprung.com

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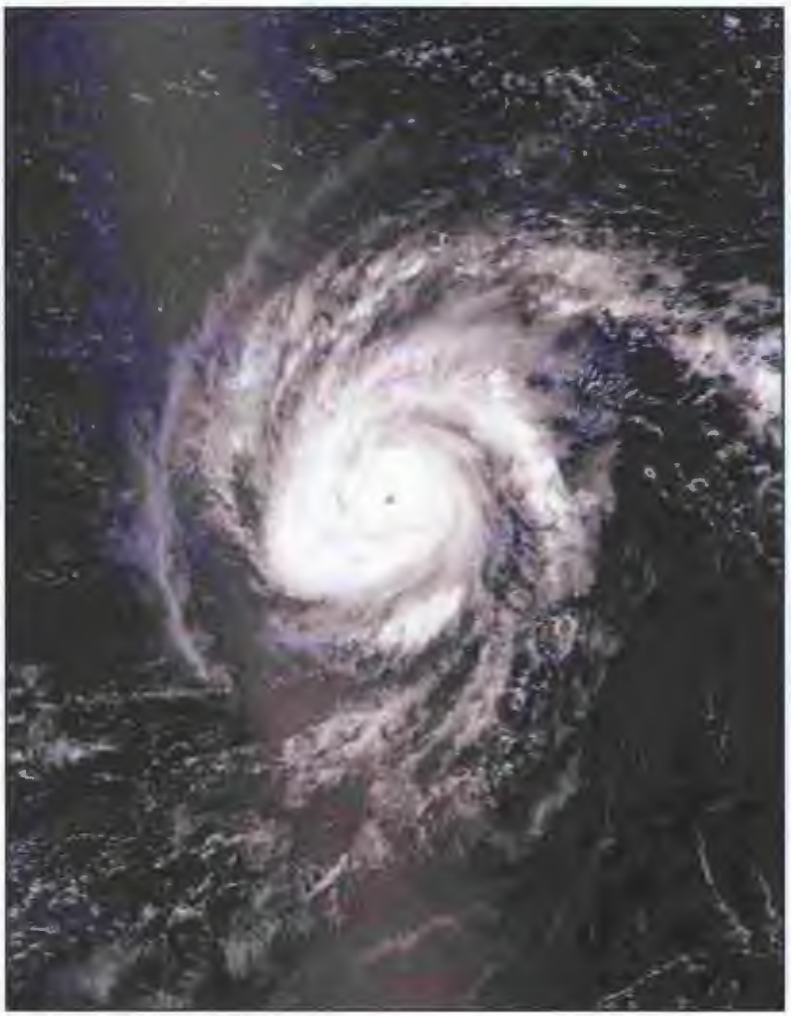


sprung

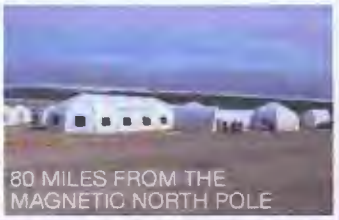
Hurricane Katrina — the eye of the storm

Proof of Performance
Cold Weather Applications

innovation | versatility | reliability

Arctic Watch Wilderness Lodge
World's most Northerly Hotel

Cunningham Inlet
Somerset Island, Nunavut, Canada



Schlumberger at Verkhnechonsk
Eastern Siberia, Russia

Oil Well Service and Maintenance

"We are amazed with the Sprung structure performance! Earlier today in the morning, we had minus 58°C degrees, it is minus 50°C degrees right now. Sprung is the best solution for our harsh conditions due to its insulation package, superb structure reliability and integrity."

Vladimir Koznov, Director of Schlumberger East Ltd., Irkutsk, Eastern Siberia, Russia

Yukon Zinc
Watson Lake, Yukon

Remote northern zinc mine

Pioneer Natural Resources
North Slope, Alaska

70' x 75'
Remote Aircraft Hangar

Innovative Cold Weather Building Solutions

1 800 628 9899

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Proof of Performance
Cold Weather Applications

innovation | versatility | reliability

Domodedovo International Airport
Moscow, Russia

Airplane hangar at the Domodedovo International Airport, Moscow, Russia

Fluor Alska Inc.
Shemya, Alaska

Ground Missile Defense.

Three structures at this site:
100' x 200'
70' x 80'
70' x 70'

Engineered to meet 120 mph Exp C sustained wind loads.

Salt/Sand Storage Facility
Vail Pass, Colorado Rockies

9,500 tons of sand and salt are stored here at Vail Pass, Colorado, elevation 10,662 feet.

SGS Minerals
Fort McMurray, Canada

80' x 90' and 90' x 135'

Modular Laboratory for testing core samples in remote heavy oil sands sites.

Innovative Cold Weather Building Solutions

1 800 528 9899

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