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**Insulated Classrooms**  
Four structures  
50' wide x 75' long

**Open-Air Sunshades**  
Five structures  
40' wide x 60' long

- 
- ▶ Rapid Construction
  - ▶ Design Flexibility
  - ▶ Performance & Durability
  - ▶ Lower Overall Cost

**Engineered  
& Manufactured by  
Sprung Structures**

[www.sprung.com](http://www.sprung.com)

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**Lecture Halls  
& Classrooms**

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# Rice University

Houston, Texas



## Project Overview

### CLIENT

Rice University, Houston, Texas

### CHALLENGE

With a goal to welcome students in the fall for in-person learning, this university needed more space for physical distancing due to COVID-19. To reduce student density, more classroom space was essential.

### TIMELINE

Completed three months from order.

### RESULT

Students and faculty returned to campus for in-person fall courses, made possible with four 50' wide by 75' long outdoor classroom structures built on newly laid concrete foundations. The spacious classrooms feature air conditioning and heating systems, automatic doors, movable furniture, power outlets and audiovisual technology. On evenings and weekends, they're used as study and group collaboration areas. Five open-sided structures, each 40' wide by 60' long, are strategically located around campus for outdoor events. Rice's Sprung structures will remain on campus for five or more years, as flexible space to meet evolving needs.



**WATCH:** Students & faculty react to their new Sprung classrooms <https://youtu.be/ZMs9ui1xEHM>



TOLL FREE: 1 800 528 9899  
 or (408) 901-5225  
 www.sprung.com

- GENERAL NOTES:**
1. ALL PERSONNEL DOORS COMPLY WITH HWY WIRE & HOODS
  2. STRUCTURE TO BE INSTALLED WITH LINE TO RISK
  3. AREA OUTSIDE MEMBRANE TO BE BAR
  4. STRUCTURE MEMBRANE TO BE ANTI-CORROSION TREATMENT
  5. STRUCTURE SHALL BE KEPT CLEAR
  6. INSULATING MATERIAL TO BE SYSTEM FOR ALL TYPES OF BUILDING
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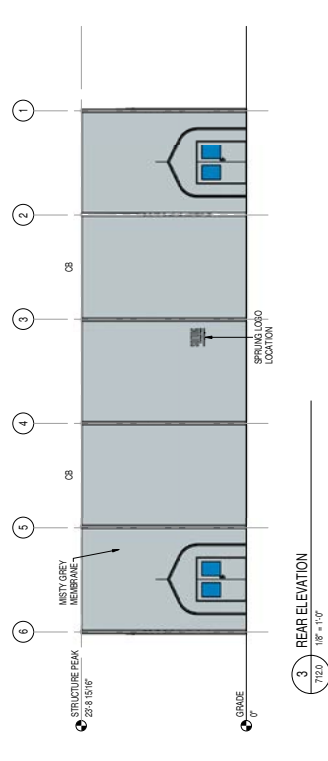
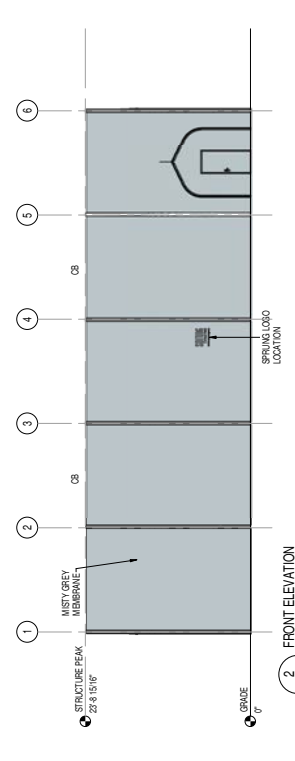
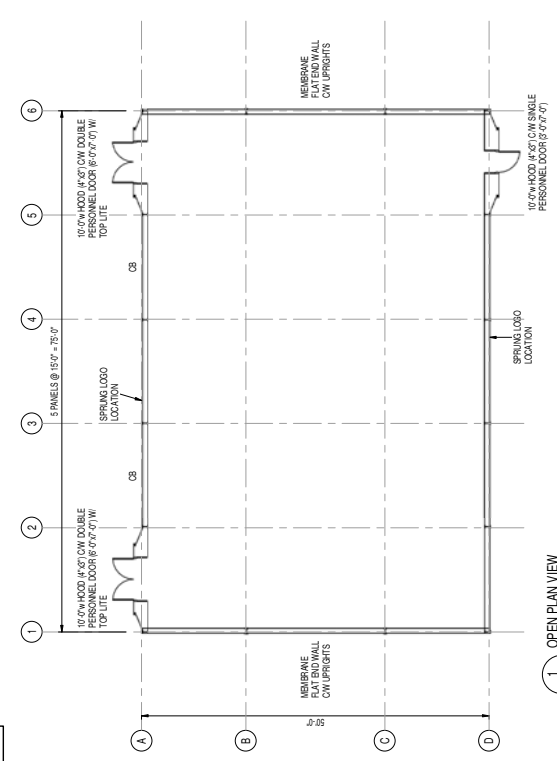
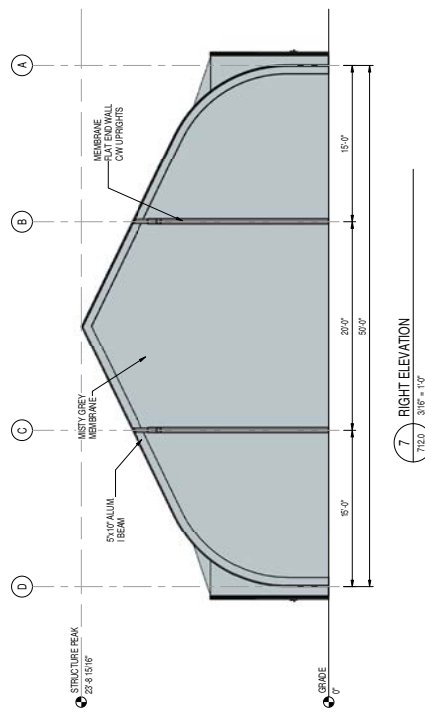
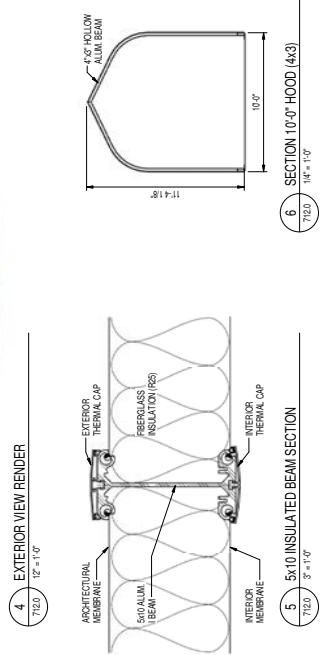
**RICE UNIVERSITY**  
 50' - 0" x 75' - 0"  
 LECTURE HALL  
 HOUSTON, TX, USA

NO.	REVISION	DATE	BY	CHKD.
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**FLOOR PLAN & ELEVATIONS**  
 DATE: \_\_\_\_\_ DRAWN BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_  
 PROJECT NO: P20-712.0

**PERSONNEL DOORS**

CATEGORY	TYPE	HOOD WIDTH	BEAM DOOR SIZE	COMMENT	SWING	COUNT
HOOD	DPD	10'-0"	4'-0" x 7'-0"	TOP LITE	STANDARD	2
HOOD	SPD	10'-0"	4'-0" x 7'-0"	TOP LITE	STANDARD	1



**DRAWING APPROVAL**  
 SIGNATURE: Lawrence Vossler  
 PRINT NAME: Lawrence Vossler  
 DATE: June 19, 2020  
 CONFIRMATION OF DESIGN LOADS AT SITE PER THE LOCAL BUILDING CODE: IBC 2012  
 WIND: 145  
 EXPOSURE: C  
 INITIAL: L/V

**SIGNATURE SERIES**



*“The climate control, the size, the lighting... The facility is actually better than anything I’ve used on campus prior to this.”*

– David Van Kleeck,  
Rice University professor  
(via NBC)





Four insulated structures feature audio-visual technologies and HVAC for comfortable and functional learning.



### Sprung Classrooms in the News

**Fast Company:** [These outdoor classes are designed to withstand hurricane force winds](https://www.fastcompany.com/90543015/these-outdoor-classes-are-designed-to-withstand-hurricane-force-winds)  
<https://www.fastcompany.com/90543015/these-outdoor-classes-are-designed-to-withstand-hurricane-force-winds>

**NBC News:** [Inside look at one university's unique Covid approach](https://www.nbcnews.com/nightly-news/video/inside-look-at-one-university-s-unique-covid-approach-93604933735)  
<https://www.nbcnews.com/nightly-news/video/inside-look-at-one-university-s-unique-covid-approach-93604933735>

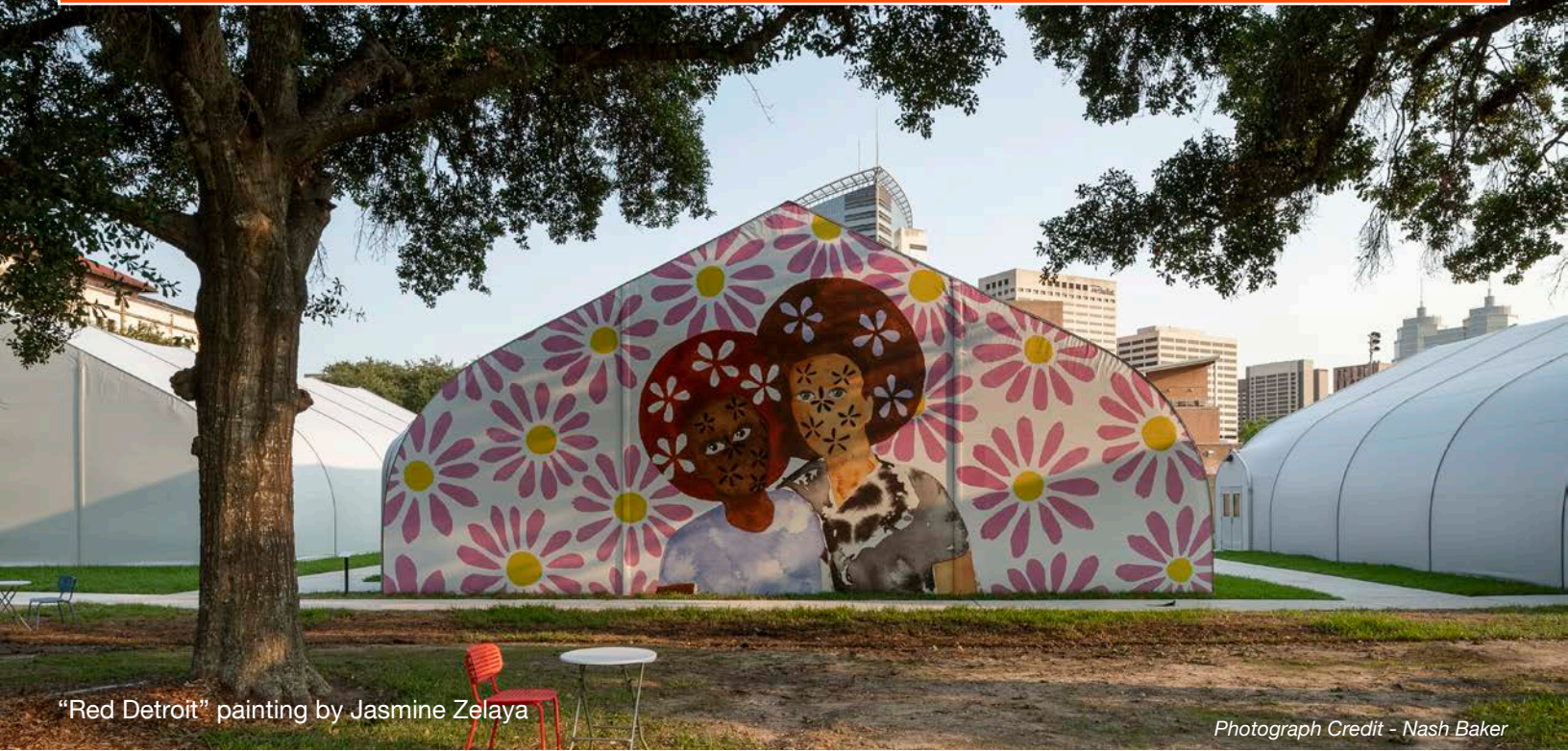
**Houston Chronicle:** [An inside look at Rice's outdoor classrooms for in-person classes](https://www.houstonchronicle.com/news/education/article/An-inside-look-at-Rice-s-outdoor-classrooms-for-15560511.php)  
<https://www.houstonchronicle.com/news/education/article/An-inside-look-at-Rice-s-outdoor-classrooms-for-15560511.php>

**Click2Houston:** [Rice University incorporates outdoor classrooms into in-person teaching amid COVID-19](https://www.click2houston.com/news/local/2020/09/17/rice-university-incorporates-outdoor-classrooms-into-in-person-teaching-amid-covid-19/)  
<https://www.click2houston.com/news/local/2020/09/17/rice-university-incorporates-outdoor-classrooms-into-in-person-teaching-amid-covid-19/>

**Rice University News:** [Creative Interventions: Rice University Outdoor Structures](https://moody.rice.edu/exhibitions/creative-interventions-rice-university-outdoor-structures?utm_source=miragenews&utm_medium=miragenews&utm_campaign=news)  
[https://moody.rice.edu/exhibitions/creative-interventions-rice-university-outdoor-structures?utm\\_source=miragenews&utm\\_medium=miragenews&utm\\_campaign=news](https://moody.rice.edu/exhibitions/creative-interventions-rice-university-outdoor-structures?utm_source=miragenews&utm_medium=miragenews&utm_campaign=news)

Local artists turned portions of the structures into vibrant public displays as part of Rice's Public Art program. The area is now a popular attraction among students, faculty and the public.

<http://news.rice.edu/2020/10/06/rice-transforms-temporary-classrooms-into-public-art-destinations/>



"Red Detroit" painting by Jasmine Zelaya

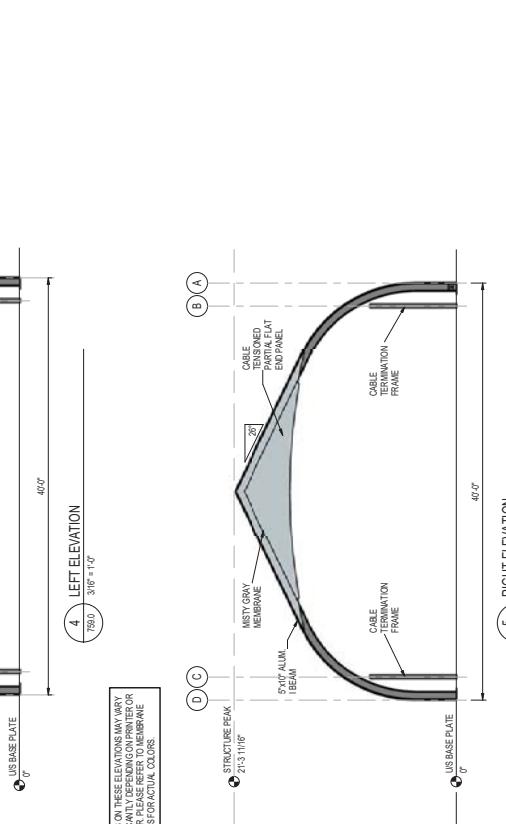
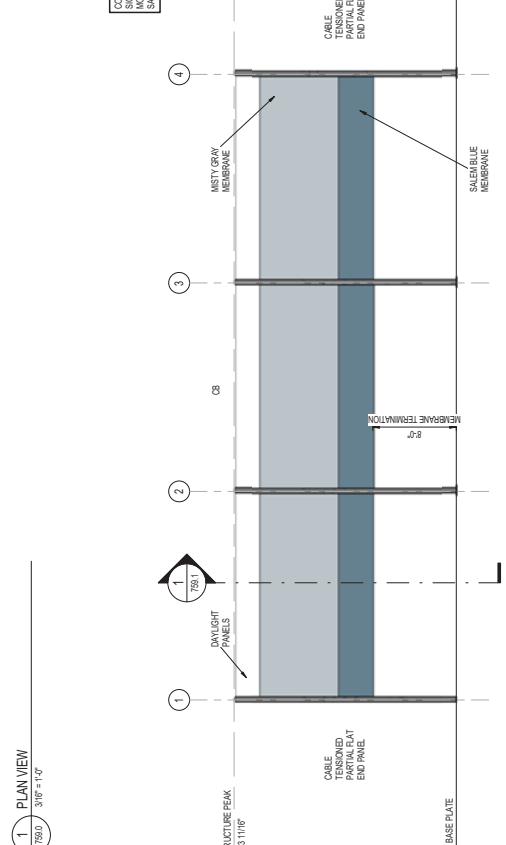
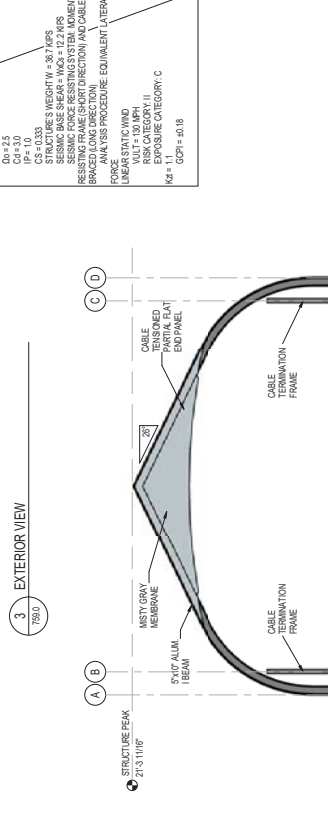
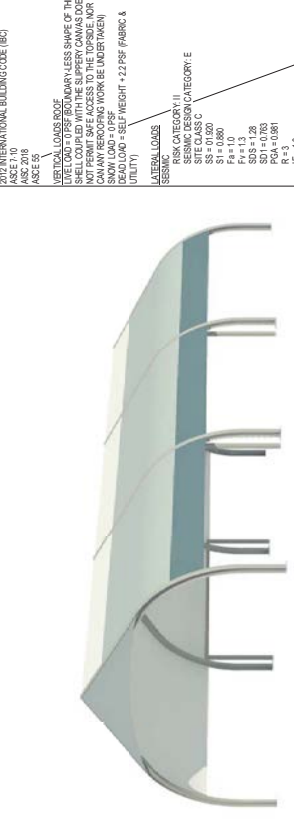
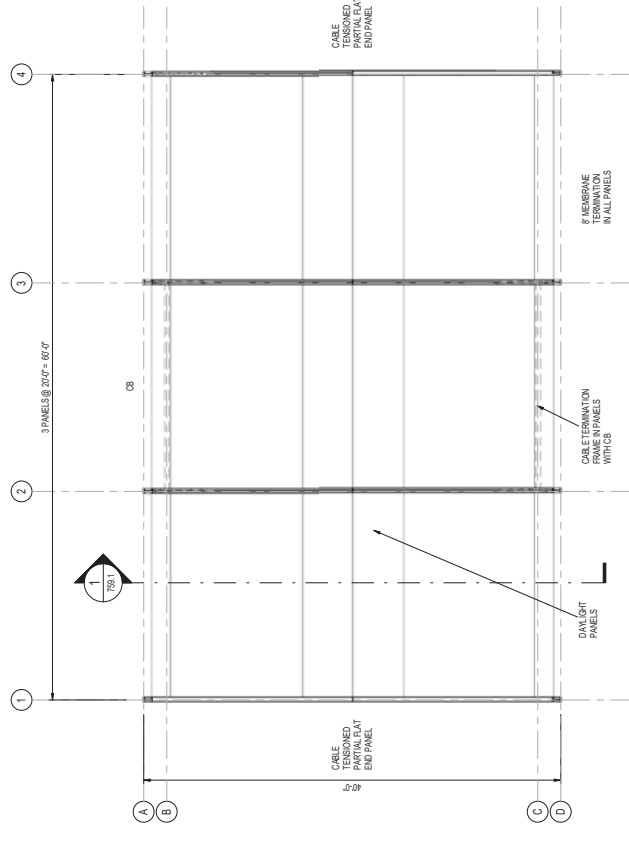
Photograph Credit - Nash Baker



"Hive at Rice" light projection video by Allison Weaver

Photograph Credit - Nash Baker

3B = CABLE BRACING



COLORS ON THESE ELEVATIONS MAY VARY FROM WHAT YOU SEE IN THE COLOR MONITOR. PLEASE REFER TO MEMBRANE SAMPLES FOR ACTUAL COLORS.

**DESIGN CRITERIA**  
 CODES AND STANDARDS  
 2015 INTERNATIONAL BUILDING CODE (IBC)  
 ASCE 7-16  
 ASCE 5-16  
 1. VERTICAL LOADS  
 LIVE LOAD TO PER IBC UNLESS SHAPE OF THE  
 STRUCTURE IS SUCH THAT LIVE LOADS  
 NOT PERMITTED ARE APPLIED TO THE  
 CANOPY REWORKING WORK BE UNDERTAKEN.  
 DEAD LOAD = SELF WEIGHT + 22PSF (FABRIC +  
 UTILITY)

**LATERAL LOADS**  
**SEISMIC**  
 RISK CATEGORY: I  
 SITE CLASS: C  
 SS = 0.1200  
 FS = 1.0  
 FI = 1.5  
 SO = 1.0  
 SD = 1.0  
 PG = 0.081  
 IE = 1.0  
 Ds = 2.5  
 R = 8  
 S = 1.0  
 SI = 1.0  
 CS = 0.333  
 SH = 1.0  
 Seismic Base Shear - VWS = 12.2 kips  
 Seismic Force Resisting System - Moment  
 Resisting Frame  
 ANALYSIS PROCEDURE - EQUIVALENT LATERAL  
 FORCE ANALYSIS (MDO)  
 WIND  
 VULT = 130 MPH  
 RISK CATEGORY: I  
 EXPOSURE: C  
 TOP-GRADE CATEGORY: C  
 Kz = 1.1  
 GCPI = 0.18

**Spring**  
 Since 1887

TOLL FREE: 1 800 528 9899  
 or (409) 501-2208  
 www.spring.com

**GENERAL NOTES**  
 1. STRUCTURE MEMBRANE WEETS  
 MAPPING CONTRACTOR TO USE RECOMMENDED  
 MATERIALS AND TO OBTAIN ALL NECESSARY  
 PERMITS.  
 2. THE STRUCTURE IS DESIGNED TO  
 WITHSTAND WIND AND SEISMIC LOADS.  
 THE STRUCTURE SHALL BE KEPT CLEAR  
 OF ALL OBSTACLES.  
 3. WIND DIRECTIONAL HEATING,  
 FROST PROTECTION, AND OTHER SYSTEMS  
 INCLUDING AIR CONDITIONING SYSTEM  
 SHALL BE PROVIDED BY THE CLIENT.  
 4. ALL INTERIOR WALLS AND PARTS OF  
 THE STRUCTURE SHALL BE KEPT CLEAR AND  
 UNOCCUPIED.  
 5. THE STRUCTURE SHALL BE KEPT CLEAR  
 AND UNOCCUPIED.

**SEISMIC NOTES**  
 STRUCTURE LOCATION: HOUSTON, TX  
 BUILDING CODE: IBC 2015  
 RISK CATEGORY: I  
 EXPOSURE: C  
 TOP-GRADE CATEGORY: C  
 (SEE WIND AND REPORT)

**canvons**  
 HOUSTON, TEXAS, CANOPY 1700  
 5010 LAMAR AVENUE, SUITE 1000  
 HOUSTON, TEXAS 77056-2688  
 PHONE: (832) 482-6688

**RICE UNIVERSITY**  
 40' - 0" x 60' - 0"  
 LECTURE HALL  
 HOUSTON, TX, UNITED STATES

REV # | DATE | DESCRIPTION

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**FLOOR PLAN & ELEVATIONS**  
 DATE: 04/15/2020  
 DRAWN BY: J. BURKE  
 PROJECT NO: R20-759.0

**SIGNATURE SERIES**



Five open-air sunshades serve as outdoor event space on campus. They feature high-performance DuPont™ Tedlar® architectural membrane in Sky Blue and Misty Gray.





## Benefits of Sprung for Education

- 1. Immediate Delivery from Inventory** – Complete projects in a much shorter time frame than conventional construction.
- 2. Spacious Environment** – Provide a bright and spacious playing environment with a tall peak height, fortified with a fully tensioned white interior membrane.
- 3. Sunlight and a Bright, Welcoming Space** – Allow more natural light to penetrate and brighten the interior space with daylight panels and glazing walls.
- 4. Superior Performing Insulation System** – Achieve exceptional performance as well as lower operating and energy costs with Sprung’s airtight building envelope and fully lofted fiberglass insulation system.
- 5. Rapid Construction Schedule** – Significantly reduce construction costs and timelines compared to conventional construction.

## About Sprung

Sprung is the global innovator and manufacturer of high-performance tensioned membrane structures used around the world to meet rapid-response building needs in education, healthcare, technology, aviation, recreation, commercial and more. Reconfigurable, relocatable and built to endure extreme climates and weather events, Sprung structures are engineered for long-term flexible use. Customizations include performance insulation packages for superior indoor climate control, peak-integrated daylight panels, doors and entryways for every application, and countless accessories. In business since 1887, Sprung has completed over 12,000 structures in more than 100 countries.



For more information about this project contact Sprung Structures

**1 800 528 9899**