

# Operation Rising Eagle: the story of Joplin Interim High School



## Executive Summary

One of the deadliest and most destructive tornadoes in the history of the United States ripped through Joplin, Mo., May 22, 2011. As it traveled along a 13-mile path it damaged or destroyed 10 schools. Joplin High School was a total loss.

Two days after the storm Joplin Schools Superintendent Dr. Huff promised school would start on time August 17. To complete this feat, the district relied on local and national experts to design and construct an interim high school within 55 business days.

The school, located inside a 96,000 vacant big box retail space, has transformed the educational model for Joplin Schools. It also has drawn national attention. During a recent tour, U.S. Secretary of Education Arne Duncan commented the school is a model for the nation. Funded by a \$1 million donation by the United Arab Emirates, Joplin Schools implemented the 1 to 1 laptop program in the interim high school. The 1 to 1 initiative, along with the innovative interim high school design, has moved Joplin Schools to 21<sup>st</sup> Century learning environments for its students.

## Scope of Work

Integrated Design, Architecture, Educational Planning, Electrical Engineering

## Budget

\$5.5 million



***This is going to have national implications.***  
--U.S. Education Secretary Arne Duncan

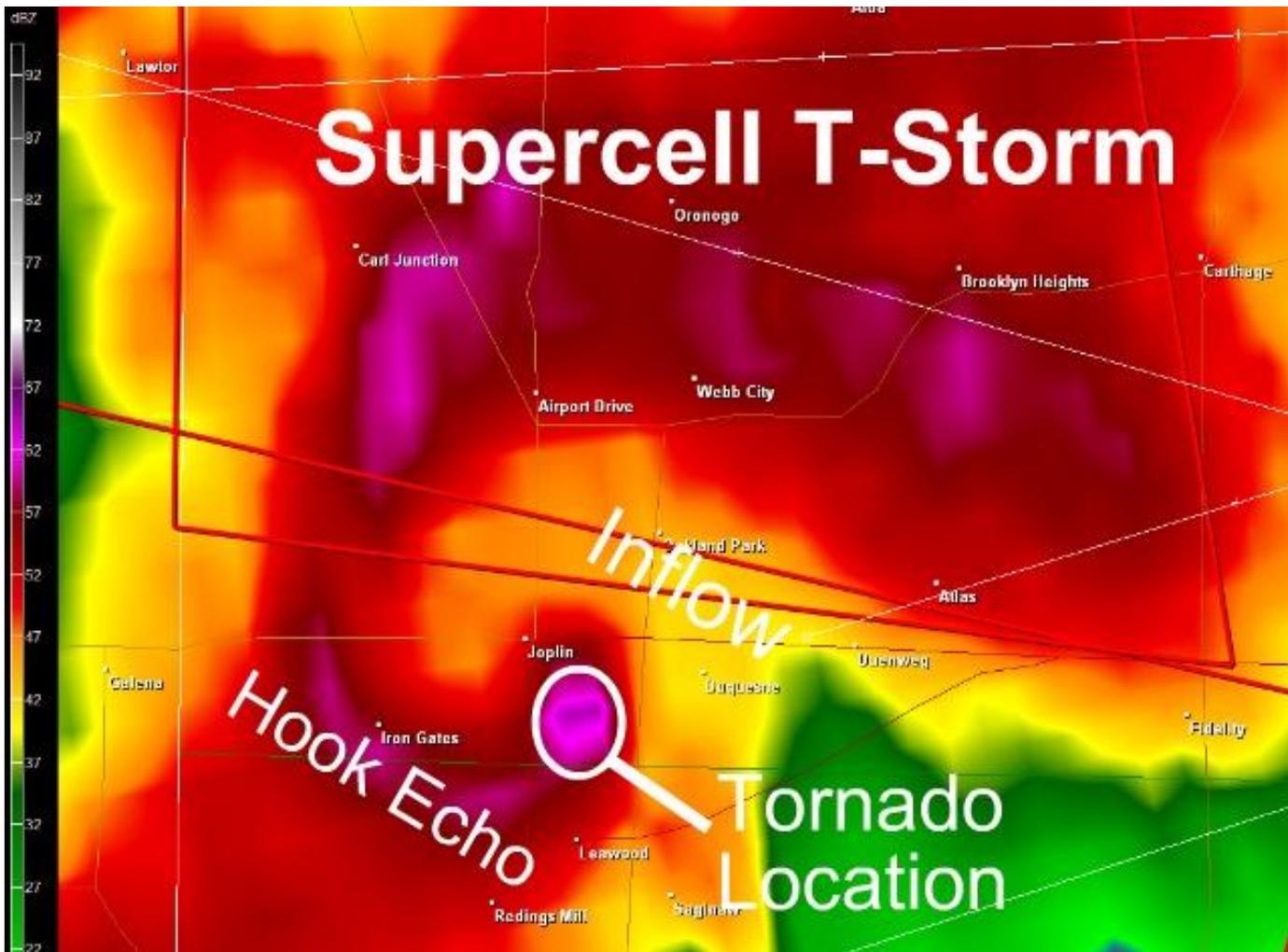
Homeland Security Secretary Janet Napolitano traveled to Joplin, Mo., in September 2011 to learn from the May 22 tornado and how to do things better in the event of a natural disaster. She and Joplin Schools Superintendent Dr. Huff both said communication during and after the tornado was an issue. Federal officials say they will look at what can be done to improve that situation.



***The 'can do attitude' of this community is really unsurpassed. I've been in a lot of number of communities this past year especially and I will say Joplin certainly has something very special going for it.***  
--Homeland Security Secretary Janet Napolitano

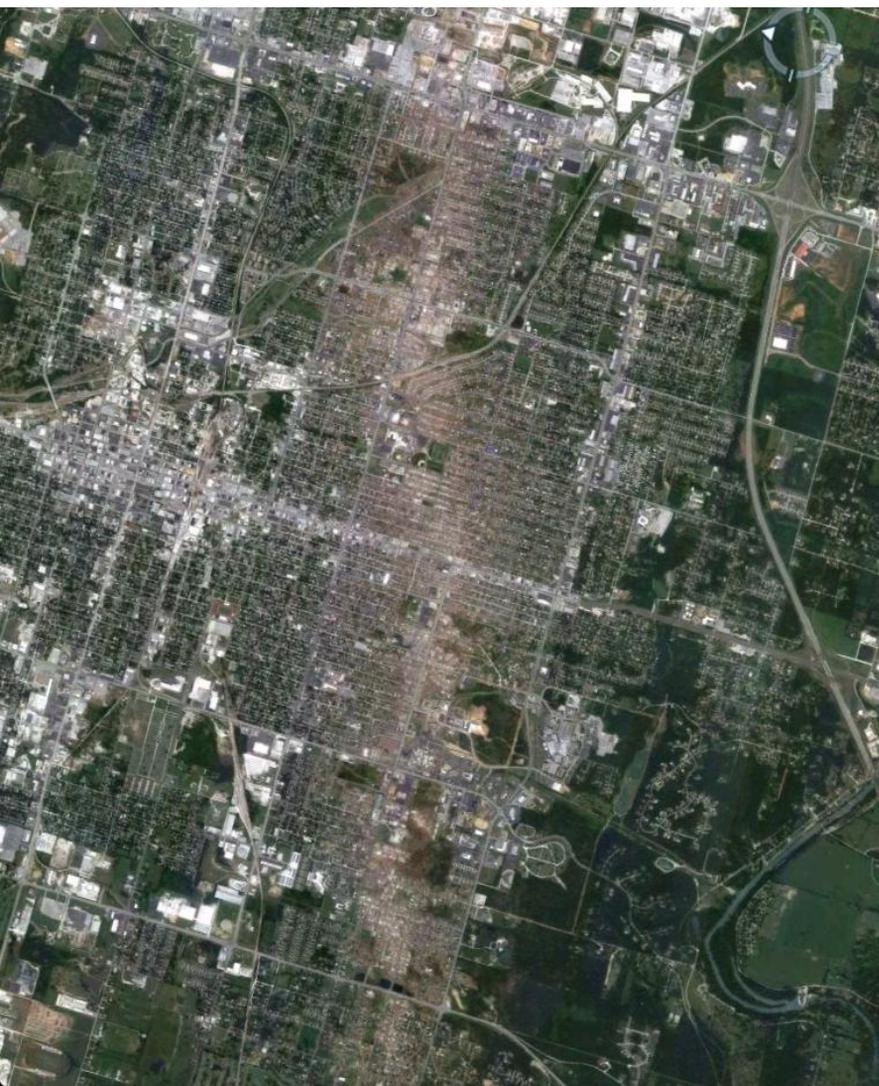
# **Timeline of Events**

**May 22, 2011, 5:41 p.m.** Devastation struck the southwestern Missouri community of Joplin, 150 miles south of Kansas City. An EF-5 tornado was on the ground for 20 minutes, traveled along a 13 mile path, and destroyed or damaged 10 schools, including Joplin High School.



**May 22** —————

162 lives were lost as a result of the tornado.



13 mile long path of destruction



Joplin High School was a total loss

Two days later, on May 24, Joplin Schools Superintendent Dr. Huff emphatically stated school would open as scheduled on August 17. Operation Rising Eagle was put into motion.

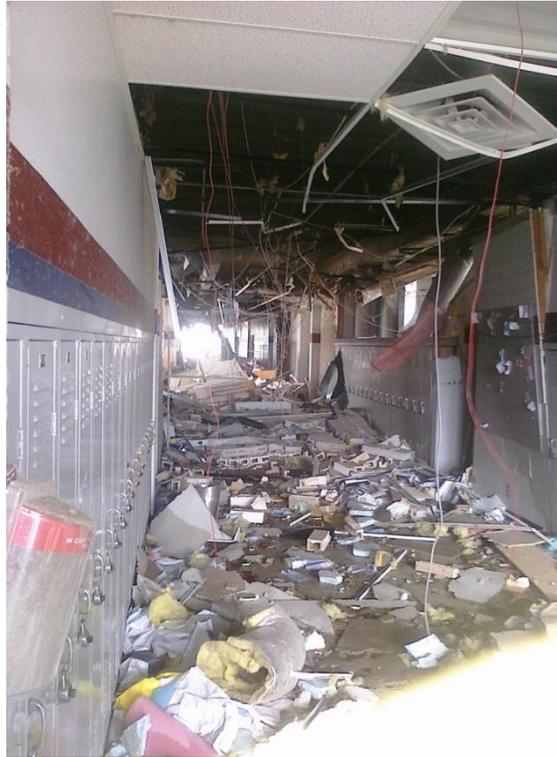


**“We will have school on August 17th”**

*Two days after the tornado we made the announcement that school would open on time on August 17. This was critical. It gave hope. It reassured parents that their children would still receive a quality education. It gave a goal for everyone to work towards.*

*We didn't want to lose our community; we didn't want to lose our families. Schools are a big part of why people are in Joplin, and getting back to normal quickly was very important.*

*-Joplin Schools Superintendent Dr. Huff*



Our team immediately offered assistance to Joplin Schools. An integrated team of architects and structural engineers traveled to Joplin on May 24 to evaluate the structural integrity of the affected schools. This team spent a week compiling a Facilities Assessment for the District to submit to FEMA.



On the morning of May 25, the National Guard had secured the perimeter around the tornado destruction, creating challenges for our team to continue inspecting the damaged schools. Team members waited more than two hours to receive permits to enter the devastation zone.

On Thursday, June 2 our team was formally hired by Joplin Schools to design the interim high school. A 96,000 SF freestanding former Shopko big box space attached to a mall was identified as one of the few standing buildings in Joplin with the space available to house an interim high school for 1,200 students. The space previously sat vacant for 10 years.



After the District closed terms on a lease, a 55 day window remained to program, design, and complete construction of the interim high school. The design had to be more than a stop-gap solution. For many of the students, “the mall” would be their only high school experience. The new high school needed to inspire students and serve as a rallying point for the community.





Our team set up shop inside North Middle School, which also housed the District's administrative team over the summer.

This countdown clock was prominently displayed at the entrance of North Middle School. It provided a subtle reminder to our team that we had a mere 55 day window to get life back to a sense of normal for the 1,200 students, ages 17 and 18, as well as the larger community.

## DAY 52: June 7

We set up a studio inside a classroom not much larger than a small conference room. This space was dubbed the “war room” by the design team. We completed the design and documents, held meetings, and conducted presentations in the “war room.” Being housed adjacent to the administration was critical, as design decisions were made on the fly and immediate access to administrators was necessary. Typically eight to ten design team members were in this room 14 to 16 hours a day. After their day ended in Joplin they had to drive 60 to 90 minutes to a hotel in a neighboring state.



# "GUIDING PRINCIPLES"

1. COLLABORATION
2. PERSONALIZATION
  - SOCIAL / SERV. LEARNING
  - DISTRIBUTED ADMIN
3. COMMUNITY
  - BIG TO SMALL
  - PARTNERSHIPS
4. FOSTER INNOVATION
5. CRITICAL THINKING / PROBLEM SOLVING

The team created "Guiding Principles" after briefly talking with district administrators.

A marker board in the war room became the design team's most important tool. They wrote August 17 on the board and made a calendar of events to meet the deadline.

Critical path items and the person responsible was on the board at all times.

The team posted important cell phone numbers, a calendar of meetings and upcoming tasks along with the Guiding Principles so they didn't lose site of the inspiration while racing through the documentation.



# HS PROGRAM

- MALL SITE

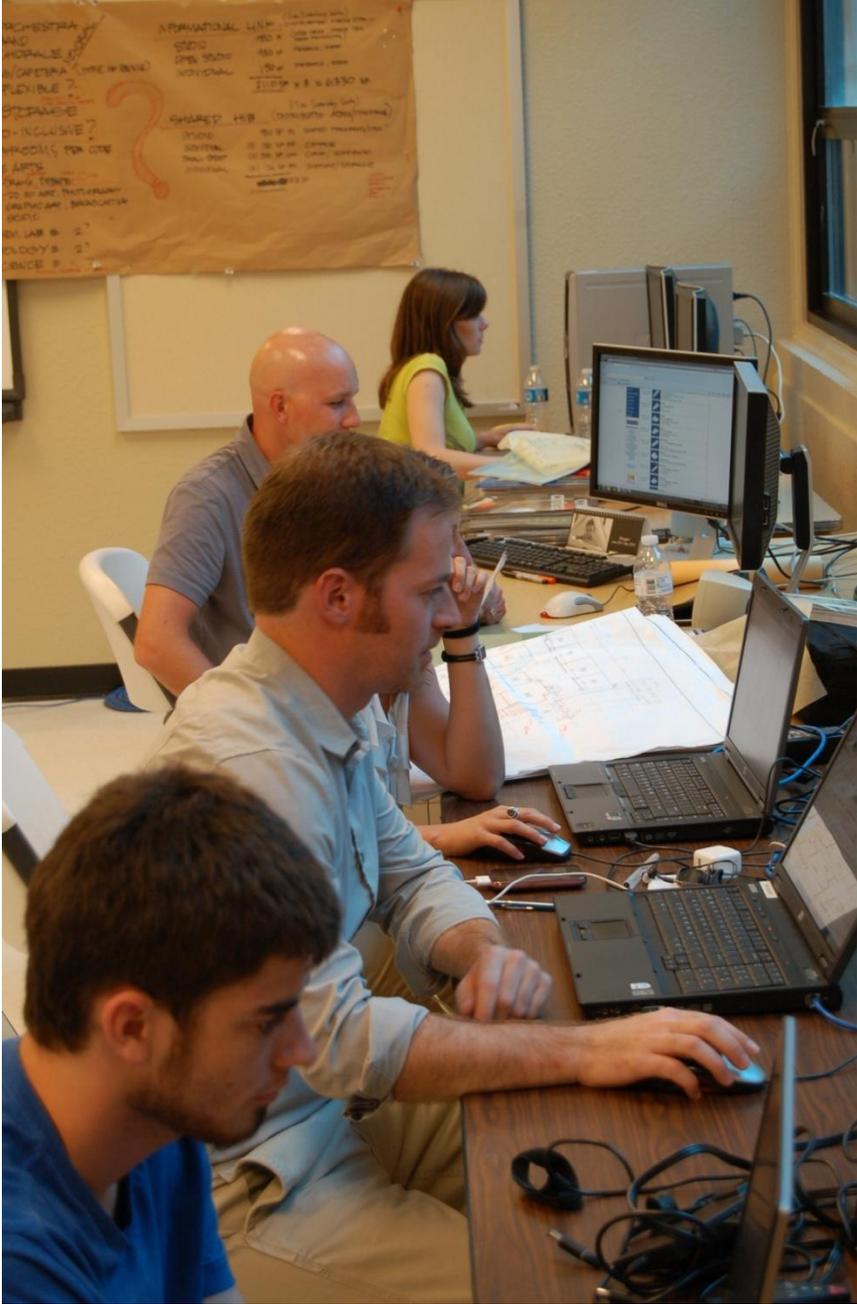
COLLABORATIVE LING. SUITE (3 cu. 1200 students)  
 (2) CTRS. OF KNOWLEDGE (200 students each)

①	*STUDIO - (2)	980 SF.	1,900 SF.	(GENERAL CLASSRM.)
②	*SMALL WORKSHOP.	1	1,250 SF.	-APPLIED LEARNING- (JOURNALISM, CHILD CARE, NUTRITION, 2D ART, ALT. ENERGY, ROBOTICS)
③	INDIVIDUAL	1	150 SF.	(OUTSIDE OPEN STUDIO)
④	*LARGE WORKSHOP	1	1,500 SF.	-APPLIED LEARNING- (LABORATORY / SCIENCE, 3D ART HORTICULTURE) PHYSICS
⑤	*SMALL BOX (OPEN)	1	2,000 SF.	(KITCHENETTE, TV, SOFT SEATING, SOCIAL COMMONS)
⑥	*OPEN STUDIO	2	900 SF.	(GENERAL CLASSRM.)
⑦	SMALL GROUP	1	300 SF.	
⑧	LARGE GROUP	1	750 SF.	(STAFF PLANNING / OPEN OFFICE)
			<u>9,710 SF.</u>	
			$9,710 \text{ SF.} \times 6 =$	<u>58,260</u>
				+ CIRCULATION

After receiving notice that the interim school would be in the mall, the design team immediately began the process of determining the need to house 1,200 students. The team realized the lack of space could be a challenge. To solve the issue the team created a program that could accommodate the need in a space that typically would not be considered.

The program became the basis for every decision moving forward. It was created in a 24 hour period inside the "war room" and remained pinned on the wall as our backdrop throughout the design process.

The design team needed a tool to explain how it could be done. They used a 36 inch roll of brown paper 12 feet long to create a written program and concept diagram that was posted in the war room and transported to meeting sites, such as the band booster meeting, to explain the plan and get kids excited about going to school in "the mall." The District was concerned about the loss of student population if the students didn't know about the exciting opportunity the design team was creating.



The REVIT technology available to the team was crucial to the success of the project. With design and construction occurring simultaneously, there was no room for error. 3D imagery became part of the construction process.

Within 24 hours of the project kick-off designers had created a 96,000 SF model of the existing building showing basic walls and doors for new construction. This model allowed the design team to study the 3D qualities of the space and provide the construction team the ability to understand the magnitude of materials required to complete the work.

As the team continued designing, this electronic model allowed the integrated team of architects, engineers, and contractors the ability to see real time changes and make adjustments to keep the project on schedule. In the first two weeks of design/construction, a new set of documents was uploaded every morning with new information for the contractor.

The process also allowed for real time quality control between the design team and contractors.



Our team took advantage of District events and gatherings to introduce the school design concept to captive audiences.

On June 9, designers presented the initial concept for the interim high school to all Joplin Schools teachers at the Retiring Teacher Luncheon.

**OUTCOME:** Teachers were introduced to 21<sup>st</sup> Century learning environments and what might be included in their school.

Later that evening designers presented the same concept to 50 parents and 150 students at the Band Booster meeting.

**OUTCOME:** Students and parents were introduced to 21<sup>st</sup> Century learning environments and what might be included in their school.





A formal presentation on the schematic design occurred June 10. Designers presented to a **teacher focus group** in the morning and to a **student focus group** at lunch. This was the first interactive session where designers solicited immediate feedback from teachers and students after introducing the design concept.



**OUTCOME:** Students were emotional yet passionate about getting back to school. To be a senior and lose your high school was a tragedy, but students were hopeful about what they heard in the make up of the spaces. They understood the limitations yet wanted the design team to create an environment to make their peers excited about coming back to school everyday.

In some ways students wanted something different than traditional classrooms to help raise their spirits and renew their hope. It was an emotional meeting!

*Whenever they first brought up the idea of it being in a mall, I didn't think it would be as cool as it is now.*

--JHS Student

Constant communication with the contractor was crucial for the success of this project. June 10 marked the first planning and scheduling strategy session with the design team and contractor.



### OUTCOME

- Designers and contractors identified challenges and agreed on a schedule
- Produced and refined Schematic Design deliverable for contractor to share with subcontractors
- Selected prefinished dry wall panels to save time
- Doors and lighting were identified as challenges due to lead time –To overcome this challenge the design team used as many local materials available as possible. One designer walked into a local lighting manufacturer, picked out a light fixture, and the contractor placed an order of 400 light fixtures delivered in three days. They were installed as the design team completed the reflective ceiling plan.



Demolition began June 10. Contractors removed all ceiling tiles and lights first. Second they removed existing retail gyp board partition walls and a structural mezzanine that ran the full length of the building. The existing mechanical system was maintained to eliminate the need for ductwork fabrication and the existing ceiling grid was used as well. Walls did not go completely to the ceiling to maintain return air requirements.





On June 15, Missouri Governor Jay Nixon traveled to Joplin to witness the progress. Designers walked Governor Nixon through plans for the temporary school.

**OUTCOME:** To continue momentum, Governor Nixon relaxed all bidding laws, which allowed the project to be completed on time. Competitive bidding requirements were relaxed to get all subcontractors on board immediately without price being a factor.

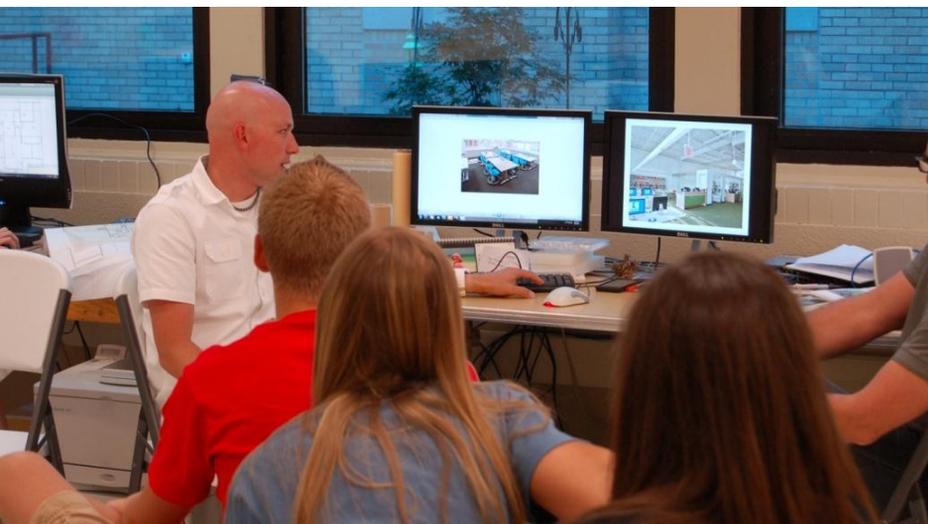
Designers used 3D REVIT models to show design ideas and receive immediate feedback from the student focus group. Students were able to view various spaces inside the interim school, including the main entry, commons, and collaborative areas.

## **OUTCOME**

Students were able to give us a thumbs up or thumbs down on what they saw because it was easy to show modeled spaces that were also construction documents.



Teachers and administrators regularly wandered into the “war room” to check on the design progress. In one instance the PE teacher looked at the drawing for the fitness center and asked “where are we going to change?” Instantaneously designers opened the drawing and added changing rooms. The next morning the drawing was uploaded for the contractor and the walls were built by noon.



# DAY 40-35: June 23 - 30

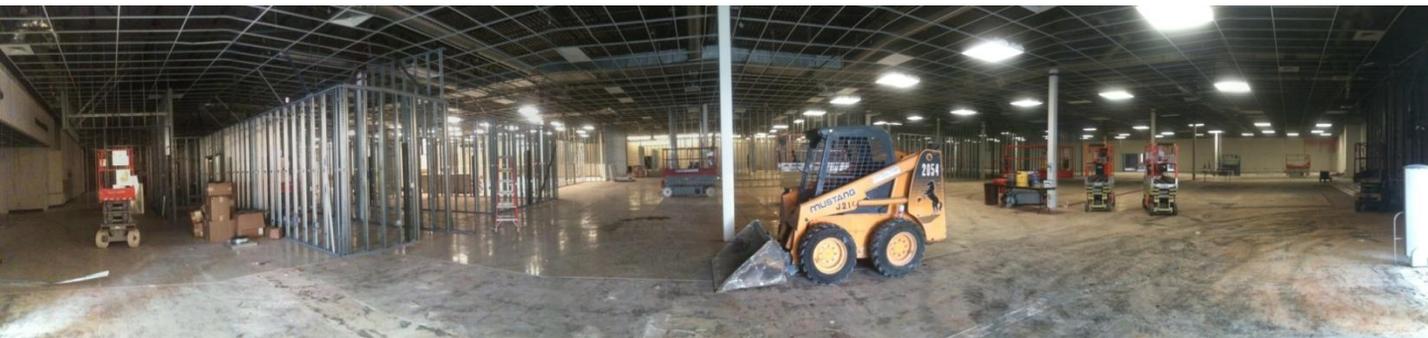
Design and construction continue simultaneously



June 23



June 25



June 27



June 30

**Front Entry** – Administration and counseling offices are located just inside the school's front entry.



Rendering shown to students and teachers during design.



**Social Commons** – The social commons is home to a school store and coffee bar, both operated by the Business and Marketing student groups. The school’s media center and Information Technology support spaces are adjacent to the social commons.



Rendering shown to students and teachers during design.



**Flexibility** – Moveable walls, which double as marker boards, allow students and teachers to expand classrooms into corridor spaces for large and small group collaboration.



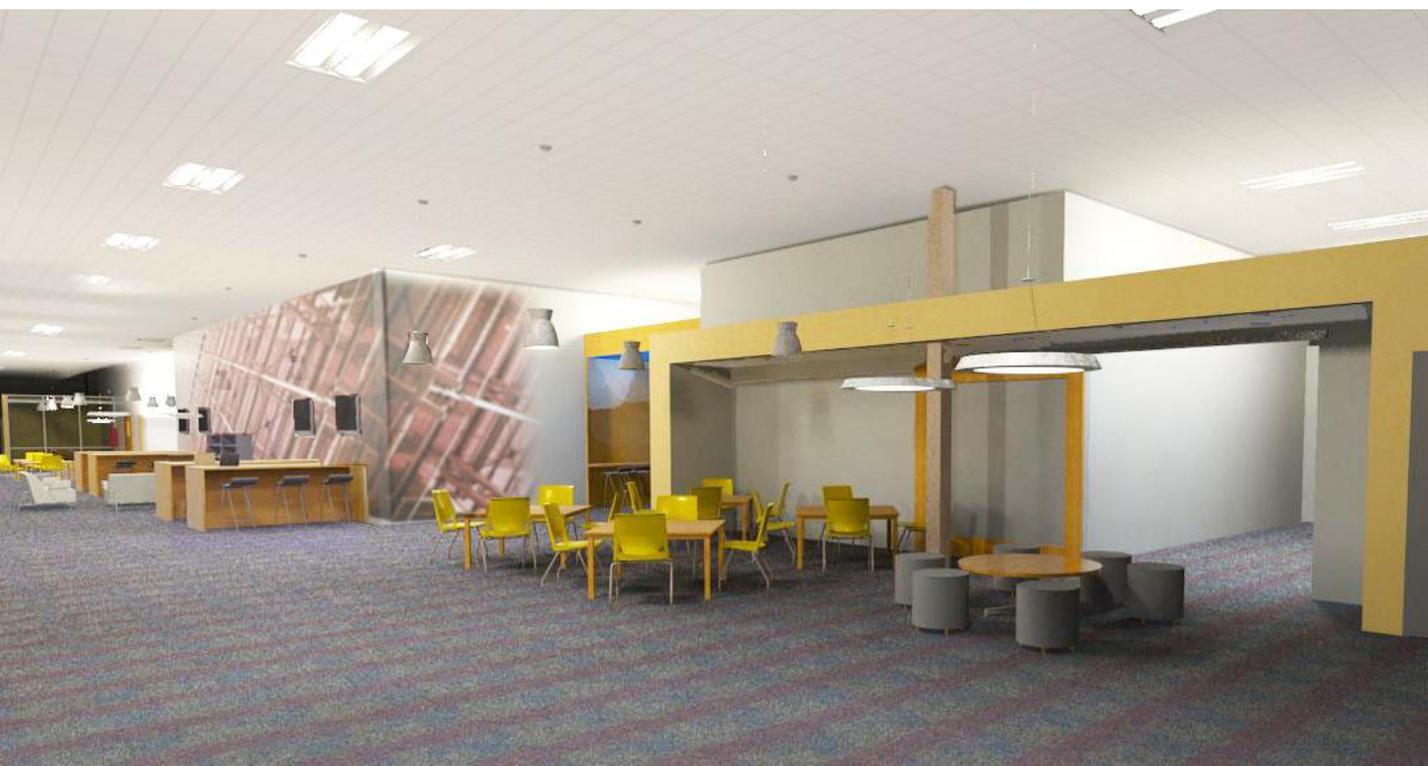
Rendering shown to students and teachers during design.



**Info Link** – All spaces within the building are used as educational spaces. Shown here, the Info Link provides small group gathering areas and collaboration spaces to give students a place to relax, socialize and complete group projects. Teachers can spill into these areas directly from their classroom via sliding doors or pivoting walls.



Rendering shown to students and teachers during design.

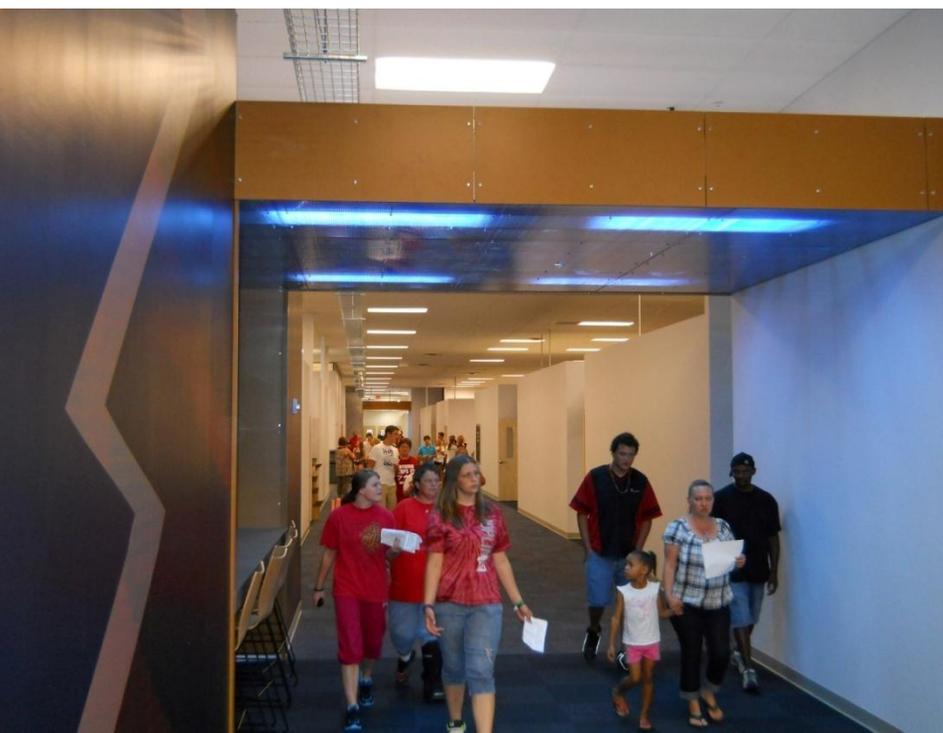


Designers unveiled the interim school to Joplin students.



**OUTCOME:** The excitement and relief parents and students expressed when touring the school was magical for the design team. This team had been a small part in helping the community regain a sense of normalcy.

No one could believe what had occurred in the timeframe, let alone the kinds of spaces they would call school. Many parents remarked they wanted to go back to school.



Designers hosted a teacher workshop to explain how spaces were intended to be used in the interim school. Designers led the teachers on a tour to point out unique spaces and new concepts they would incorporate into the curriculum in the interim school.



### OUTCOME:

Designers realized teachers had been personally affected by the storm and this could be difficult but therapeutic. The design team arranged all the furniture in the school to create different scenarios throughout the building. They walked teachers through the spaces so the teachers could understand there was a purpose to the madness of the past 55 days.



Moveable furniture, soft seating, TV monitors, wireless access, walls not to the ceiling, different sized classrooms, no lockers, a fitness center, no gymnasium, a coffee shop in the media center...these were all new concepts to the teachers and designers wanted them to be comfortable on the first day of school.

## DAY 2: August 16

The District hosted an Open House for all students, parents and community members to tour the interim school prior to the first day of school.



**OUTCOME:** Feedback from students and parents was positive. Students were excited to get back to school the next day and parents were relieved when they saw the transformation of “the mall.”



*Such a blessing! Hats off to the designers and builders – you will touch more lives than you know through this effort.*  
--JHS Parent

# **First Day of School**

**Delivered on our Promise to start school on time  
Community Continuity Returns**



*Joplin's temporary school is a model for the nation in itself.*  
--U.S. Education Secretary Arne Duncan

**August 17** \_\_\_\_\_



Joplin Schools provided school supplies to all students the first day of school.

The District also received a \$1 million donation to implement the 1 to 1 laptop program for high school students.



Students wait for help at the Genius Bar in the social commons.

**August 17** \_\_\_\_\_



August 17, 2011 has been marked as one of the most celebrated days in Joplin Schools' history because of the District's leadership and the staff's commitment to the students. On that day, the world was watching. National and local media crews broadcast live from Joplin interim school the first day of school.

# **Community Engagement**

# ***Community Engagement Stakeholders***

Typically stakeholders for a new high school include parents, students, community members and local businesses, but in Joplin the stakeholder group is unique. The group is two-fold:

- 1. A smaller, intimate group of stakeholders includes students, parents and the Joplin Community.**
  - 2. The larger stakeholder group spans outside Joplin city limits, Missouri state lines, and the United States border, including the United Arab Emirates.**
- Individuals and organizations from around the world helped Joplin rise from the rubble to start school on August 17.
  - Local patrons rolled up their sleeves and helped neighbors, friends, and those in need recover from the storm.
  - Volunteers from all over the globe traveled to the Midwest town to lend a hand.
  - The United Arab Emirates donated \$1 million to implement a 1 to 1 laptop program at the high school.
  - U.S. Secretary of Education Arne Duncan and Homeland Security Secretary Janet Napolitano traveled to Joplin to tour the temporary facilities. Both praised the accomplishments of the District to start school on time.



***To see what's been accomplished, it's an inspiration not only to the community, but to the whole world.***

***--Missouri Governor Jay Nixon***

# ***Community Engagement***

## **Challenges**

The Joplin interim High School posed unique challenges to the design team, including:

- **55 days to program, design and construct a temporary school for 1,200 11<sup>th</sup> and 12<sup>th</sup> graders**
  - Designers set up an office onsite inside Joplin's North Middle School. This became the hub for the entire integrated design team of architects, engineers, contractors and the district. The location allowed immediate access to District administration and contractors to keep project on time.
- **Lead time for construction materials**
  - Designers selected local materials with little to no lead time to expedite construction.
- **Lead time for labor**
  - Designers worked directly with subcontractors to expedite the process of product procurement and construction.
- **Lack of hotel rooms for design team to be on site**
  - Early in the process out of town project team members stayed with family members of our local Joplin partner when hotel rooms were unavailable. They also stayed in neighboring states.
- **Lack of communication channels to reach students, parents, district administration**
  - Designers relied on social and traditional media, as well as the District's communication methods to engage students, parents and community members through the design process.
- **Need for immediate decisions**
  - Designers and administrators met at 7:30 a.m. daily to discuss progress and make decisions necessary to continue moving forward.
- **Typical bidding laws in the state of Missouri**
  - Governor Nixon relaxed bidding laws to keep the project on schedule.
- **Emotions, trauma and recovery**
  - Opening school on time helped students return to a sense of normalcy to help in the healing process.
- **No school supplies, books, desks, 50+ years of supplies destroyed**
  - The District implemented the 1 to 1 laptop program through the \$1 million donation from the United Arab Emirates, which eliminated the need for textbooks.
- **Students going to school "at the mall", new concept for mall and store owners**
  - Communication from the District about the temporary space.
- **No windows in the building**
  - Designers increased the amount of light in the space, making the large spaces feel light and airy; designers focused attention on other details in the space, including large Eagle graphics and polygal blue panels.
- **No room for lockers**
  - 1 to 1 laptop program eliminated need for lockers.
- **\$5.5 million budget**
  - Designers utilized local materials and labor sources to minimize costs.

# ***Community Engagement***

## **Available Assets**

**Designers utilized available assets to complete the project on time, including:**

- **A vacant precast concrete big box retail space**
  - This space was the one of few spaces available to Joplin Schools large enough to house 1,200 students.
- **Physical structure of the space**
  - High bay ceilings and large, open spaces created the ideal building for an interim high school.
- **Mall location and amenities**
  - The mall location worked in favor of the large volume of people who would use the school every day for access of construction and supplies. The site had available parking and was centrally located.
- **People/work ethic**
  - After the storm people in Joplin and volunteers from around the world gathered with a can-do attitude, commitment, and passion to get the students back in school.
- **District leadership**
  - District leadership adopted a “we will not fail” attitude. Their passion and commitment to doing whatever it took to open school on time was inspirational.
- **Staff and teachers’ trust of the experts**
  - The District wanted to implement 21<sup>st</sup> century learning, but staff and teachers didn’t fully comprehend what 21<sup>st</sup> Century learning entailed. They trusted the design team experts to design a space that was flexible enough to accommodate a variety of teaching and learning styles for the next three years.
- **Collaboration between design team and contractor**
  - Design and construction were happening simultaneously. Multiple meetings daily kept both groups on task.
- **Nimble design team**
  - The design team set up a studio in Joplin within two days of being hired. Our Information Technology professionals connected our network so we could stay connected to other professionals in the firm while onsite in Joplin.
- **REVIT**
  - We created 3D images to show students and staff what their interim school would look like and receive immediate feedback.
- **Interim school as incubator for permanent school**
  - The design team introduced the incubator concept to the District. This would be the District’s one shot to test materials and concepts for their permanent school.

# ***Community Engagement***

## **Value to Community**

Joplin suffered through a tragedy no one outside the community can fully comprehend. Together they experienced trauma and emotional stress of losing loved ones, seeing one third of their community destroyed, losing local businesses, churches and schools; and together they are recovering.

Starting school on time on August 17 was the first step in the healing process. Students and parents got back into their routines and back to a sense of normalcy.

The buzzword 'Eagle Pride' swept the community after the storm. Together, as they cleared debris and began the recovery and rebuilding effort, one common thread that united the community was 'Eagle Pride'.

Superintendent Huff challenged the design team to "Eagle Up" the interim school. For some students, this is the school they will graduate from. To make it a memorable experience, designers incorporated Eagle graphics to instill pride and ownership in their school.



Members of the student design team

# **Educational Environment**

# ***Educational Environment***

Knowing that 1,200 students should need more than 200,000 SF, the design integrates every square inch of existing space and features 21<sup>st</sup> Century learning environments utilizing flexibility and interconnectivity.

Six small learning communities divide the larger student population into 200-student learning communities and offer a more intimate learning environment for students and staff.

Shown here, the Info Link provides small group gathering areas and collaboration spaces to give students a place to relax, socialize and complete group projects.



Student “think tanks” have become the most popular spaces in the school.

# ***Educational Environment***

Flexible furniture allows students to customize their space and study in a comfortable environment. Eagle graphics energize the space.



# ***Educational Environment***

Large openings, oversized pivot doors, and a diverse array of soft and structured furniture allow students to customize spaces to fit their personal preferences. The pivot doors allow classrooms to spill into commons areas to encourage project-based learning.



***It looks like they put so much thought into it. If I didn't know I was at the mall I would think I was in a regular school.***

**--JHS student**

# ***Educational Environment***

The social commons is home to a school store and coffee bar, both operated by the Business and Marketing student groups. The school's media center is adjacent to the social commons. The Information Technology support hub with a "genius bar" offers student a place to get tech support for their laptops.



Booths inside the social commons are a popular hang out for seniors.

***The cafeteria is pretty awesome. This whole building is so innovative. The hallways and common areas are really great.***  
--JHS student

# **Physical Environment**

# *Physical Environment*



The Joplin Interim High School is not about a building. It is a living example of how design and architecture can elevate the human experience. The space inspires students to move beyond the tragic events of the past and move forward with their fellow students in a space that is truly a healing and learning environment for students, faculty, and the community.

# *Physical Environment*

An established HVAC system dictated lower wall heights to enhance airflow. Hints of plastic panels and stained MDF add expression to the design.



*People here can't stop talking about the Joplin Interim High School. I think there will be more accolades to come; too much quality and problem solving with a very unique design in a short period of time not to be noticed by many others.*

*--Dr. Kerry Sachetta, Joplin High School Principal*

# Results

# Results

## Educational Goals

The Joplin Interim High School design integrates every square inch of the existing space and features 21<sup>st</sup> century learning environments utilizing flexibility and interconnectivity. Large openings, oversized pivot doors, and a diverse array of furniture allow students to customize spaces for collaborative learning.



## School District Goals

“We will have school on August 17,” stated Joplin Schools Superintendent Dr. Huff just two days after the EF-5 tornado destroyed much of the town and its school system. The goal was established. Everyone on the project team, including designers and contractors, collaborated to achieve it. The Joplin Interim High School was designed and constructed in 55 business days, allowing school to start on time August 17.

## Community Goals

The start of the school year on August 17 brought back community continuity Joplin needed to heal after the tragedy. Joplin Schools is the backbone of the community. The school district is leading the rebuilding efforts to get the community back to a sense of normalcy so patrons can move past the events of May 22, 2011 and plan for a vibrant future.

# Results

Quotes from Facebook on August 17:

*I have a student going to the new high school and one going to the new East. Congratulations Joplin Schools and Dr. Huff for putting these buildings up in this short amount of time, nothing short of amazing. My students are blessed to attend Joplin Schools! Thank you!*

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*As a parent of Joplin students, and a tornado survivor, I am so proud of my community and our school system!! Thank you so much to the countless people across the world that helped make this day possible!*

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*I'm from Texas and we were just there yesterday volunteering and took some pics. You would never know there school was in a mall – a beautiful job. The parents and kids should be pleased.*

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*This is unbelievable! A lot of hard work and planning went into this, it's obvious.*

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*AWESOME – this is truly taking lemons and making premier lemonade!*

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*Way to come through for the kids...school may be the only stable place to call home for now until families establish their homes.*

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