



A NEW MISSION: MILITARY / INDUSTRY PARTNERSHIP IN POST-DISASTER BUILDING SAFETY EVALUATION

June 28, 2023, 10:30 a.m.



635th FESB



To lead collaborative efforts to identify and resolve national security infrastructure-related challenges.
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Idea to Develop a Relationship with Missouri National Guard



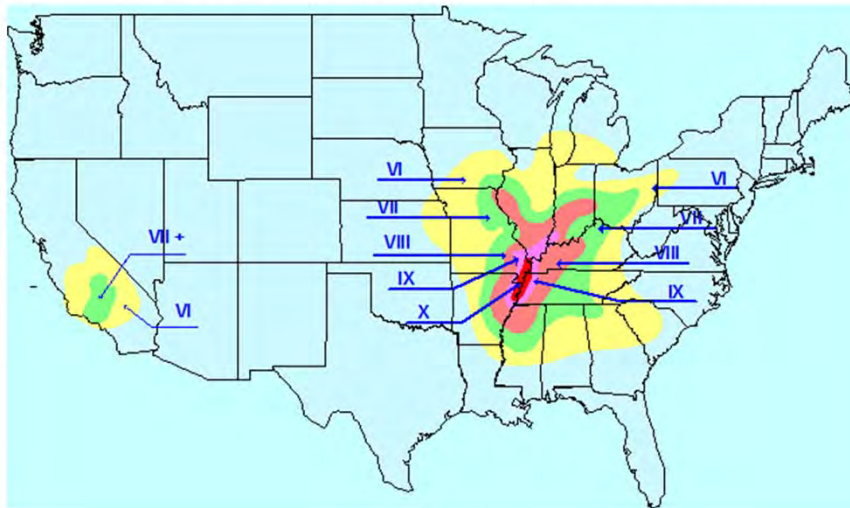
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Joint Training and Exercises



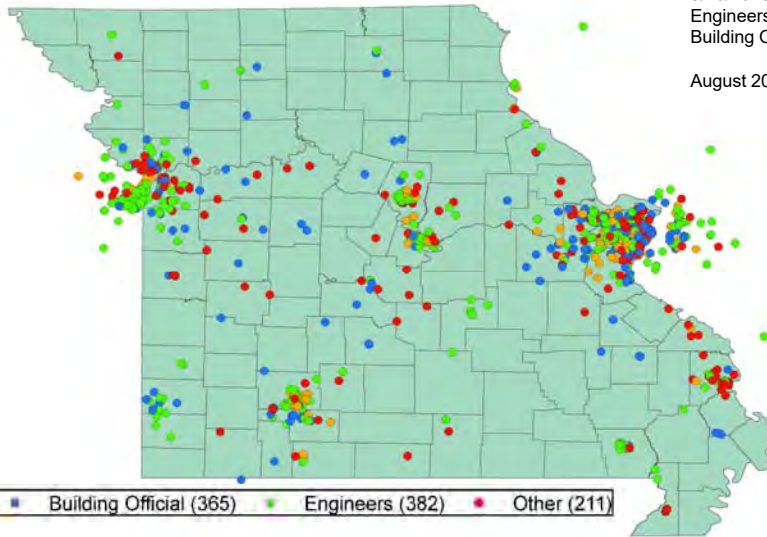
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WHY? 7.6 M Earthquake



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Missouri SAVE Coalition Members by Occupation



9/26/2018
 Engineers, Architects,
 Building Officials = 906
 August 2020 = 966

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Missouri S.A.V.E. Coalition



**SAVE Coalition
 Implemented by
 RSMo 44.023**

**SEMA Authorized to
 Establish Volunteer
 Inspection Program**

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Missouri S.A.V.E. Coalition



S.A.V.E. Volunteer Service

- Duration = Up to 5 days**
- Liability = Willful & Gross Negligence Only**
- Duty With = Local Jurisdiction**
- Expenses = Local Jurisdiction Reimbursement**
- Workers Compensation = State**



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Missouri SAVE Coalition



**Around 1,000
Current Members**

**It Starts With
ATC-20/45
Training**



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Missouri S.A.V.E. Coalition



The S.A.V.E. Board of Directors Come From the Coalition's Participating Professional Organizations:

- American Council of Engineering Companies/Missouri (ACEC/MO)
- American Institute of Architects/Missouri (AIA/MO)
- American Society of Civil Engineers (ASCE)
- Missouri Society of Professional Engineers (MSPE)
- Structural Engineers Association of Kansas & Missouri (SEAKM)
- Earthquake Engineering Research Institute (EERI)
- Society of American Military Engineers/St. Louis Post (SAME)
- Missouri Seismic Safety Commission (MSSC)
- Missouri Association of Code Enforcement (MACE)



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What S.A.V.E. Does

- Mostly Rapid Visual Inspections per ATC-20 and ATC-45
- Exterior Only, Structural Life Safety
- Public Information and Warning - Post Placards:



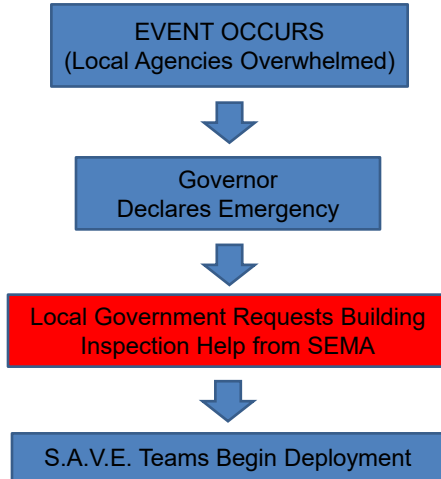
- Joplin EF-5 Deployment Data used by FEMA, Missouri National Guard, NIST, and ASCE Researchers



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How S.A.V.E. Activates



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SEMA S.A.V.E.

Structural Assessment and Visual Evaluation Coalition

Fredericktown, MO Flash Flood

1999



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SEMA S.A.V.E.

Structural Assessment and Visual Evaluation Coalition
Joplin EF-5 Tornado Deployment

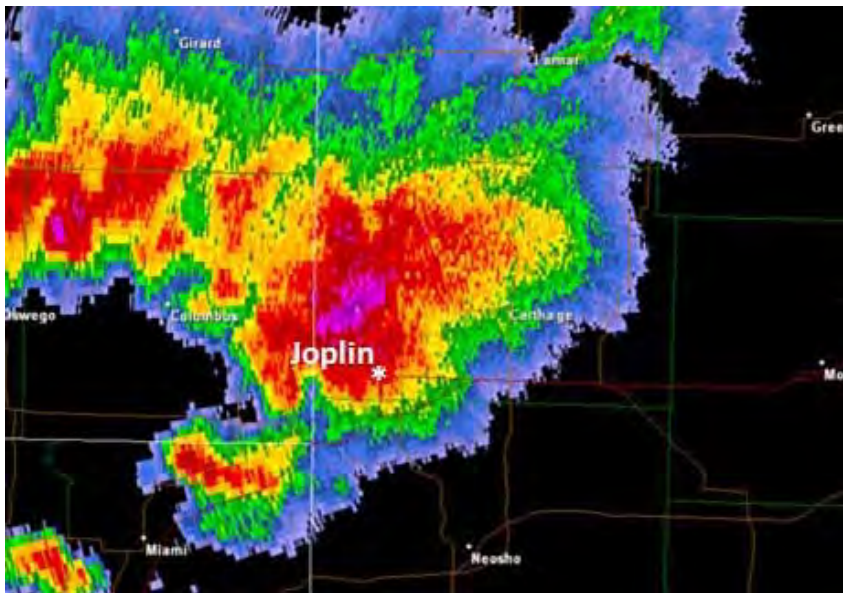
May 25 – 28, 2011



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May 22nd
2011

5:29 pm



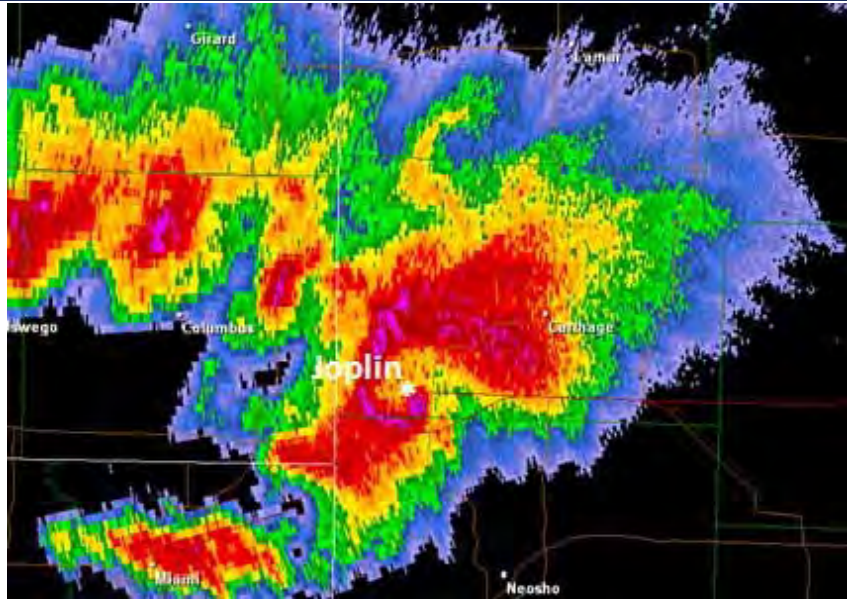
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5:39 pm

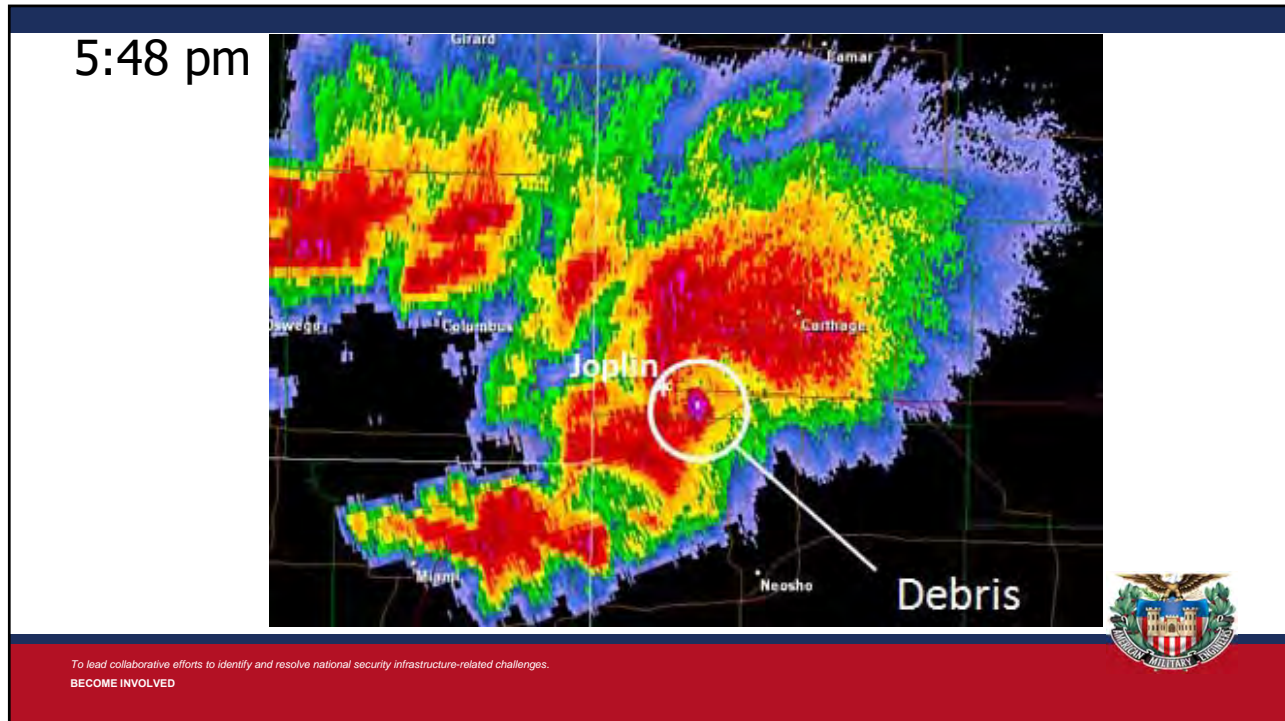


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5:43 pm



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Joplin EF-5 Tornado Deaths

Preliminary Locations of Deceased	# of Victims	Preliminary Locations of Deceased	# of Victims
Residences - single family	54	Pizza Hut	5
Greenbriar Nursing Home	21	Harmony Heights Baptist Church	3
St. John Regional Medical Center	15	Wal-Mart	3
Outside (6 in vehicles)	14	Meadows Healthcare Facility	2
Residences - apartments	11	Stained Glass Theater	2
Unknown	8	Academy Sports Store	1
Home Depot	8	AT&T store	1
Full Gospel Church	7	Officer killed in the line of duty	1
Elks Lodge	5	TOTAL	161

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To lead collaborative efforts to identify and resolve national security infrastructure-related challenges. Photo Credit: Michael Goldschmidt, AIA – S.A.V.E.
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To lead collaborative efforts to identify and resolve national security infrastructure-related challenges. Photo Credit: Jeff Hower – S.A.V.E.
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State of Emergency Declared

"As a state, we are deploying every agency and resource available to **keep Missouri families safe**, search for the missing, provide emergency medical care, and begin to recover."

Gov. Jay Nixon



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Joplin EF-5 Event Time Line

- May 22nd 5:41 pm Tornado Strikes
- May 22nd 5:42 pm Search and Rescue Efforts Begin
- May 23rd 8:10 am S.A.V.E. Regional Coordinators
Begin Phone Tree Call Down
- May 24th 10:39 pm City of Joplin Requests Building
Inspection Help from SEMA
- May 25th 10:19 am S.A.V.E. SW Regional
Coordinator Deploys to Joplin
- May 26-28 S.A.V.E. Inspection Team Deployment



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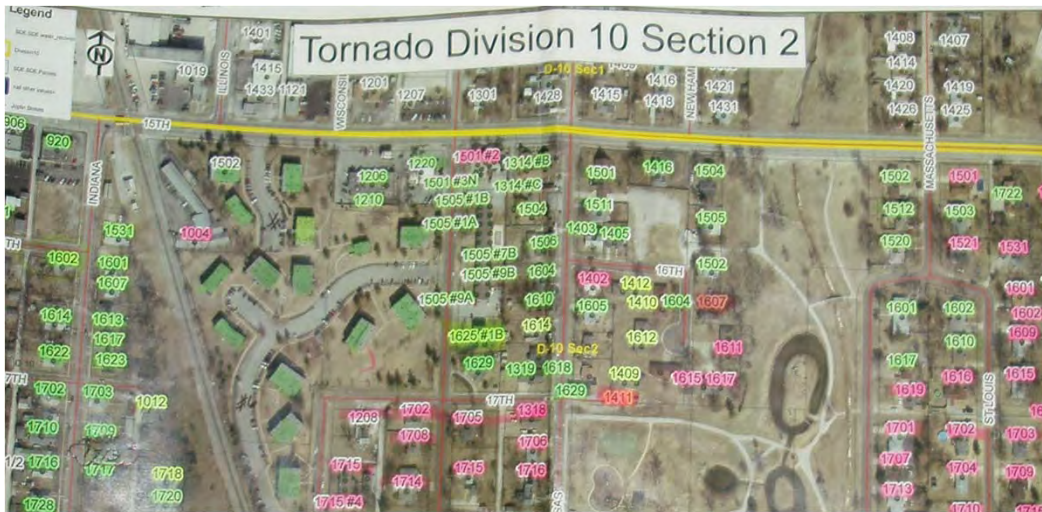
Daily Briefing



To lead collaborative efforts to identify and resolve national security infrastructure-related challenges. Photo Credit: Ben Ross – S.A.V.E.
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Paper Search and Rescue Maps



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Transportation in School Buses



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S.A.V.E. Members in the Field



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Photo Credit: Jeff Hower – S.A.V.E.

Aftermath



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Aftermath



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Aftermath



BEFORE

Photo Credit: St. Mary's



AFTER

Photo Credit: CNS



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Posting Damaged Building



Photo Credit: Jeff Hower – S.A.V.E.



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Example Unsafe Building



Photo Credit: Ben Ross – S.A.V.E.

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Example Unsafe Building



Photo Credit: Ben Ross – S.A.V.E.

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Example Unsafe Building

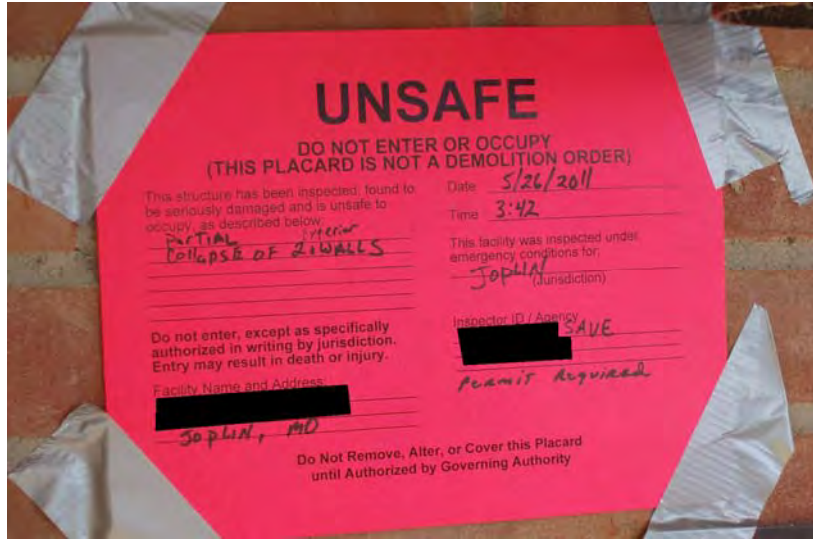


Photo Credit: Ben Ross – S.A.V.E.

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Progress Board – End of Day 2

AREA	16 / 46	27 MAY 11:11
1	10-1	DONE
	10-2	DONE
	10-3	DONE
2-1	11-1	20%
2-2	11-2	30%
3-1	11-3	0%
3-2	11-4	0%
4-1	11-A	NOT ASSIGNED
4-2	12-1	10% Done
5-1	12-2	DONE-ALLIED
5-2	12-3	DONE-ALLIED
6-1	12-4	
6-2	13-1	NOT ASSIGNED
6-3	13-2	
7-1	14-1	
7-2	15-1	
8-1	15-2	
8-2	15-3	
9-1	15-4	
9-2	15-5	
9A-1	15-6	
9A-2	16-1	
9A-3	16-2	
9A-4	16-3	

Photo Credit: Ben Ross – S.A.V.E.

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Example Unsafe Building



To lead collaborative efforts to identify and resolve national security infrastructure-related challenges. Photo Credit: Ben Ross – S.A.V.E.
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Example Unsafe Building?



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Example Unsafe Building?



To lead collaborative efforts to identify and resolve national security infrastructure-related challenges Photo Credit: Ted Pruess – S.A.V.E.
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Example Unsafe Building?



To lead collaborative efforts to identify and resolve national security infrastructure-related challenges Photo Credit: Ben Ross – S.A.V.E.
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Example Unsafe Building



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Example Restricted Use Building



To lead collaborative efforts to identify and resolve national security infrastructure-related challenges Photo Credit: Ben Ross – S.A.V.E.
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Example Inspected Building



To lead collaborative efforts to identify and resolve national security infrastructure-related challenges Photo Credit: Ben Ross – S.A.V.E.
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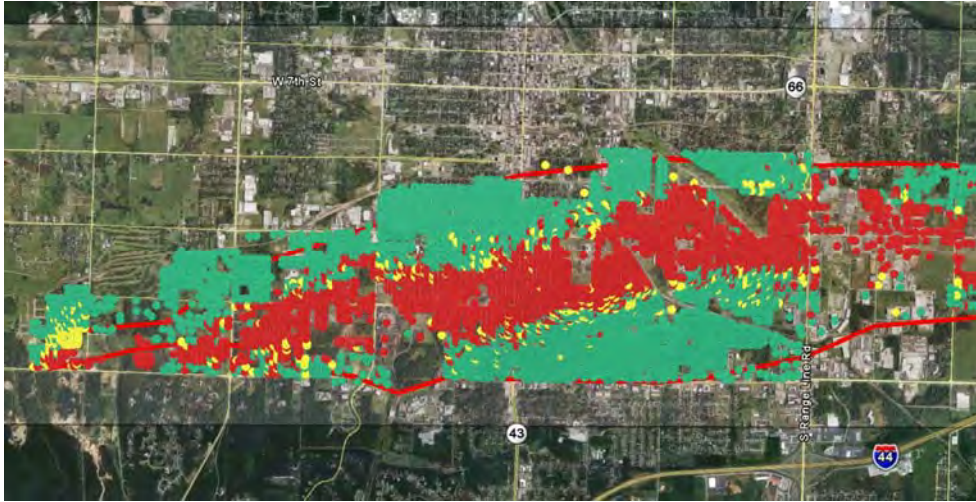
Field Copies of Damage Area Maps



To lead collaborative efforts to identify and resolve national security infrastructure-related challenges Photo Credit: Ben Ross – S.A.V.E.
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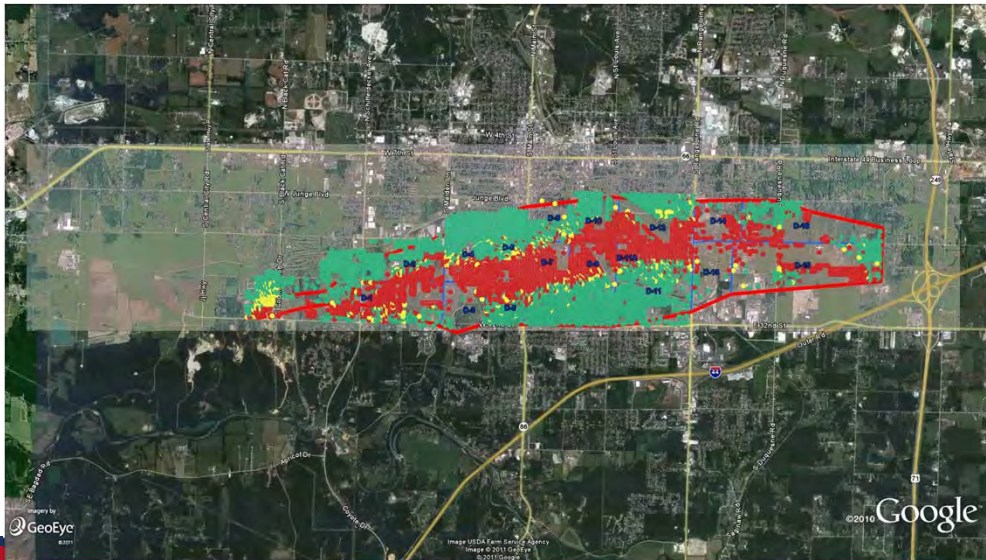
S.A.V.E. Data in City of Joplin GIS



To lead collaborative efforts to identify and resolve national security infrastructure-related challenges. **BECOME INVOLVED** Courtesy City of Joplin



Tornado's Eye View



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Results

More than 7,700 Structures
Evaluated/Inspected



36% Unsafe



6% Restricted Use



58% Did Not Present Life Safety
Problems



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Joplin Building Official Steve Cope Thanking S.A.V.E. Members



To lead collaborative efforts to identify and resolve national security infrastructure-related challenges Photo Credit: Ben Ross – S.A.V.E.
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Lessons Learned

- S.A.V.E. Program Worked Well
- An Automated Volunteer Communication System is Needed
- Automated Data Collection is Needed
- Better Transportation
- Formal SAVE Leader Training



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SAVE Goal: Develop Relationship with Missouri National Guard



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GPS Data Collection



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Structural Assessment and Visual Evaluation Coalition

Branson EF-2 Tornado Deployment

March 3, 2012



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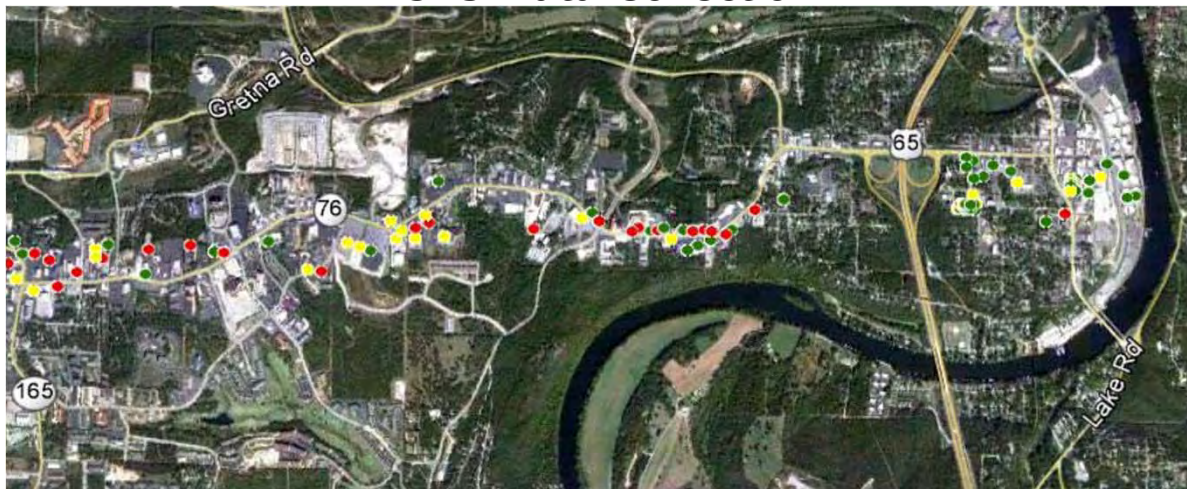
Branson Convention Center Largest Building Ever Evaluated by SAVE



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GPS Data Collection



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2015 Exercise Planning Team



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Jefferson Barracks Site



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April 2015 Planning Site Visit



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Historic Buildings with Natural Decay



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Historic Building with Real Decay



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POST AFTER-SHOCK



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Senior Leadership Support

“What most impressed me was the teamwork. We had folks from many states working together to organize this drill, inspect the buildings and report the findings, and they did a great job.” - Ron Walker, SEMA Director



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Check-In and Team Assignments



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GPS and Collector App Briefing



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Collector App Dashboard



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Real 3.4M Earthquake in New Madrid



"All of a sudden, a picture fell off the wall. We didn't know what had happened," Orr said.

Myers said the earthquake occurred just one day after EMA officials had participated in the annual Great Central U.S. ShakeOut drill at area schools.

"This earthquake is a reminder one can happen at any time. That is why we practice earthquake drills," Myers said.



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Carter Co. / Van Buren, Missouri Flash Flood Deployment

May 3, 2017



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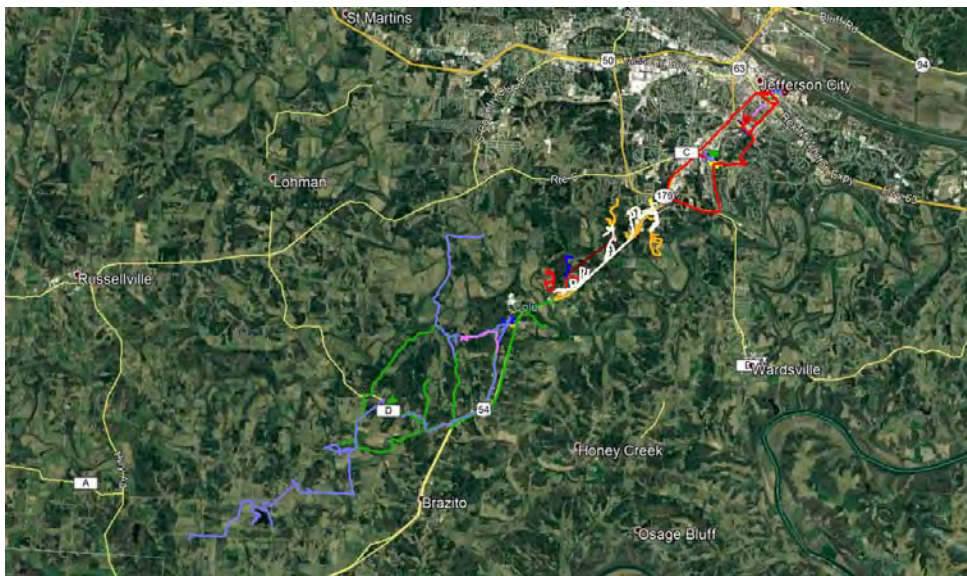
SEMA S.A.V.E.

Structural Assessment and Visual Evaluation Coalition
Jefferson City and Cole County
EF-3 Tornado Deployment

May 24 – 25, 2019



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Extent of Damage



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Data Collection Methods



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S.A.V.E. GPS Track

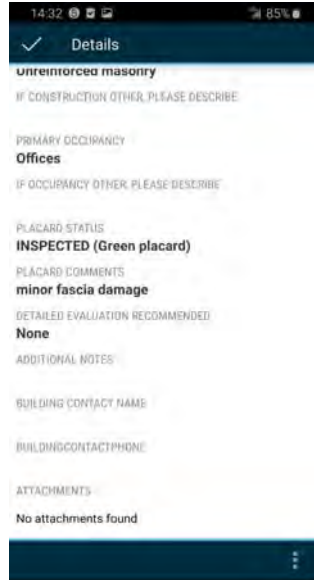
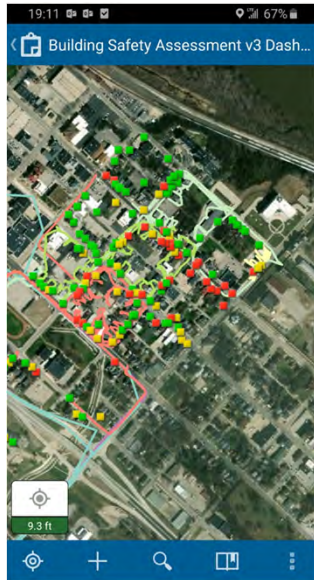


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ESRI
Collector
App

FEMA
US&R Data

GIS
Support



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"Why do those numbers keep changing?"



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S.A.V.E. Technical Supervisor Visits Team in the Field



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Law Enforcement Support



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Example Unsafe Building



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Blue Tarp – Training Validation



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Blue Tarp – Training Validation



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Training Validation



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Training Validation



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Training Validation Walk Around the Entire Building



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Lessons Learned/Learning

- Pre-Deployment Coordination
- Logistical Support
- GIS Support (City, State, Federal)
- FEMA Urban Search and Rescue Data
- Law Enforcement Support
- S.A.V.E. Leader Training Validated
- S.A.V.E. Program Worked Well

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Wind vs. Earthquake



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Wind vs. Earthquake



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Photo Credit: Ben Ross – S.A.V.E.





Ponce, Puerto Rico – 6.4 M Earthquake + 40 days



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Photo Credit: Ben Ross – S.A.V.E.

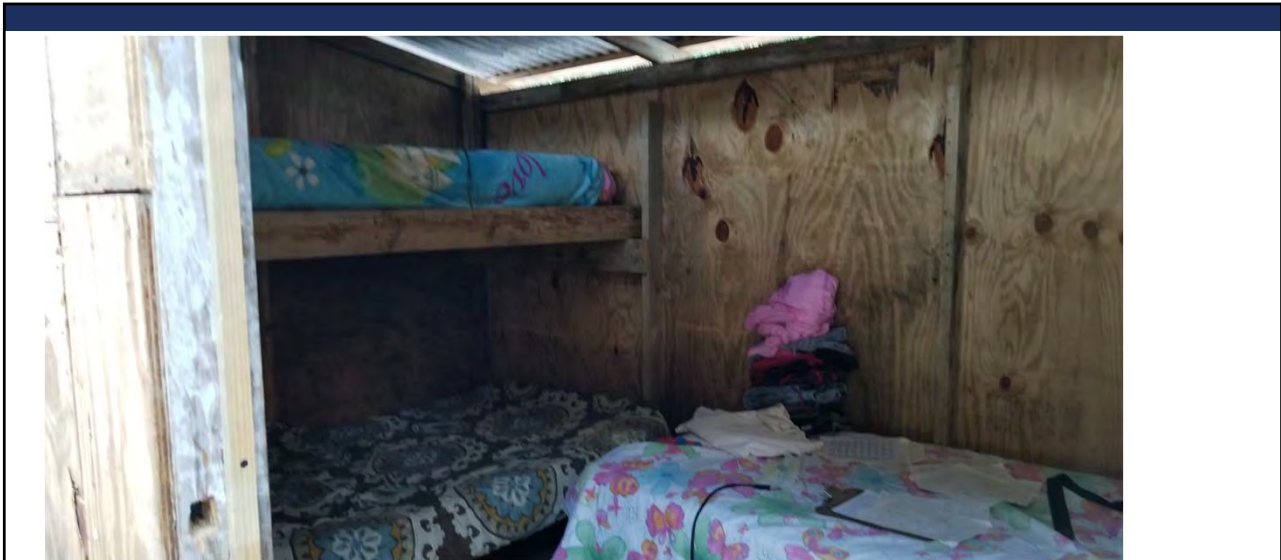


Ponce, Puerto Rico – 6.4 M Earthquake + 40 days



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Photo Credit: Ben Ross – S.A.V.E.



Ponce, Puerto Rico – 6.4 M Earthquake + 40 days



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Photo Credit: Ben Ross – S.A.V.E.

2021 Missouri Shakeout Earthquake Exercise

Jefferson Barracks, Missouri



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Exercise Planning Team



With Local Fire Services



635th FESB



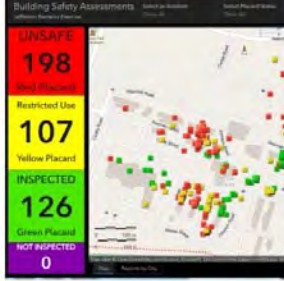
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Photoshop Damage

AREA 3 - BUILDING #46- PHOTO #1



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Training Run-ups and Exercise Setup



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ESRI Survey 123 Training



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Team Evaluating a Building



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Team Evaluating a Building



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UAV Support



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Missouri Department of Public Safety
SEMA State Emergency Management Agency

MO.gov Governor Parson

Home Plan & Prepare Recover & Rebuild Operations

Missouri SAVE Coalition

Home » Programs » SAVE Coalition

Missouri SAVE Coalition

Ensuring Building Safety In a Disaster



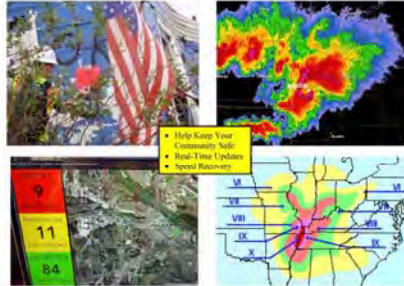
Future Training & Exercises



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Local Public Agency Guide to Utilizing SAVE

Local Public Agency Guide to Utilizing Missouri's **S.A.V.E. Coalition** to Perform Post-Disaster Building Safety Evaluations



- Help Keep Your Community Safe
- Real-Time Updates
- Special Resources



Missouri State Emergency Management Agency and the Structural Assessment and Visual Evaluation (SAVE) Coalition
December 4, 2020



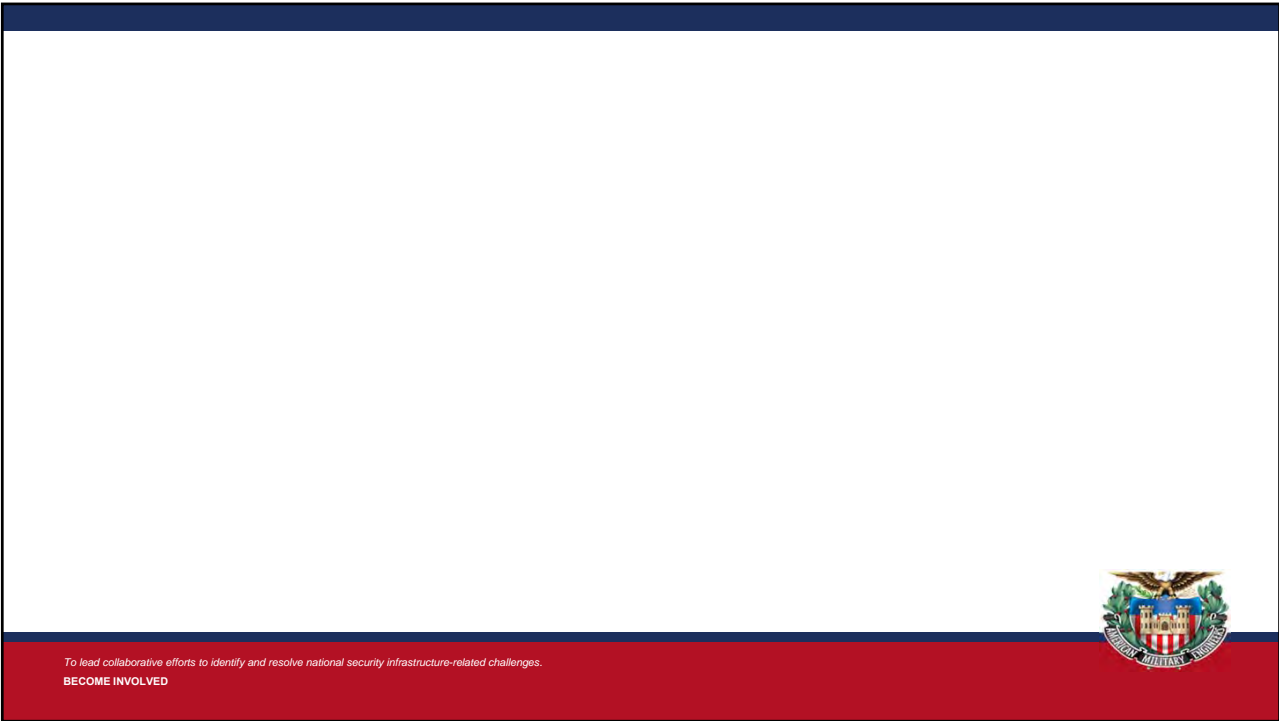
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Questions?



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