

A Pictorial Look at Causes and Effects of Concrete Imperfections

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ConcreteState

Use a good concrete mixture, finishing, and curing practices for the application

ACI Certification

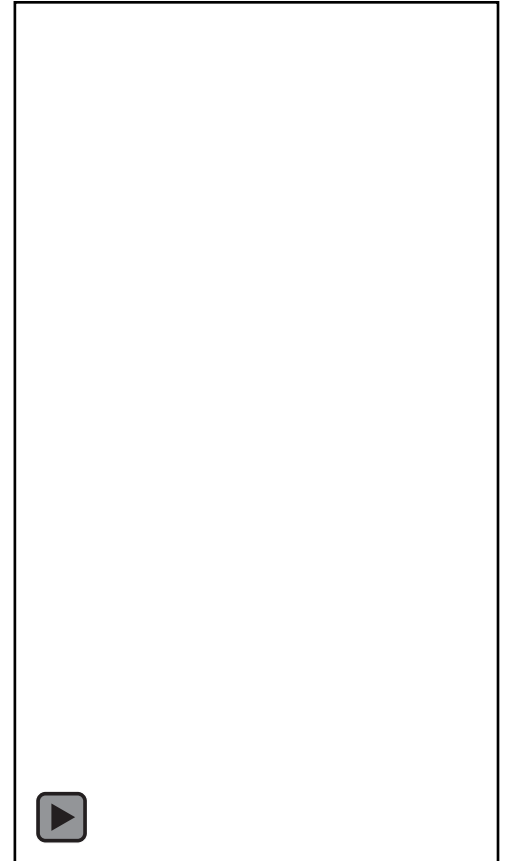
TECHNICIAN WORKBOOK



Concrete Field Testing Technician—Grade I



Photo Courtesy of Jereme Montgomery



CP-1 40th Ed.



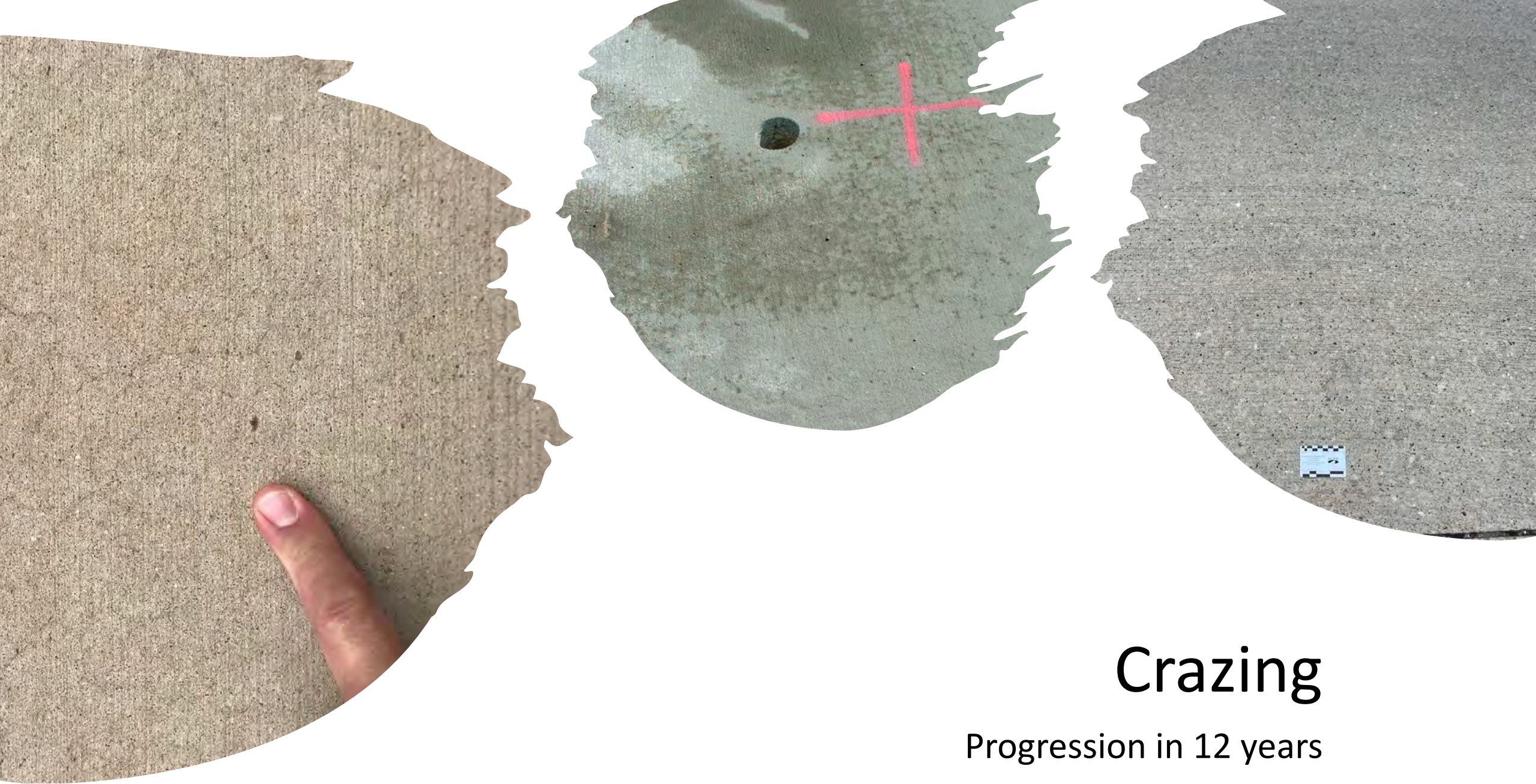
Scaling

Scaling contributors



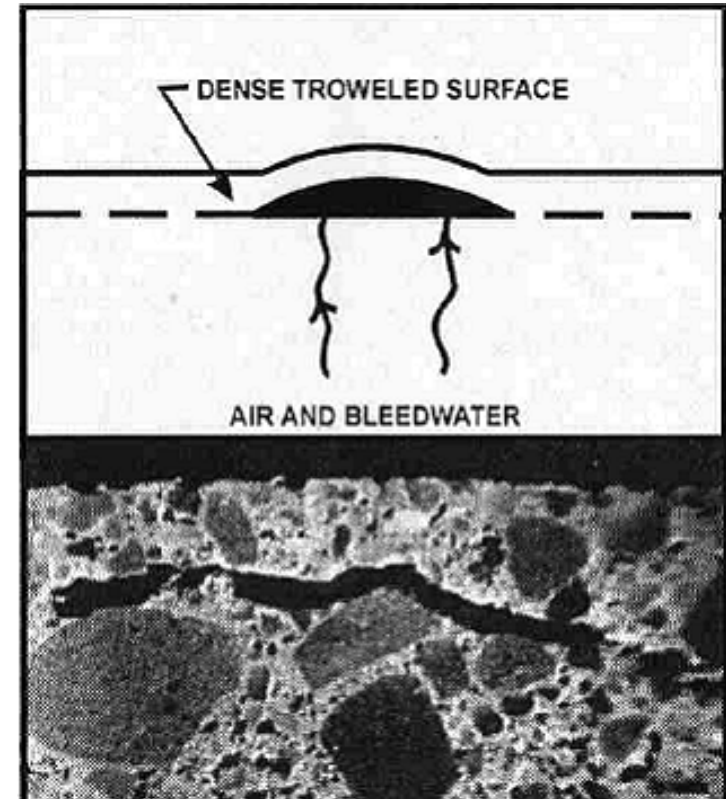
Inadequate or
no curing





Crazing

Progression in 12 years



Timing



Timing, air content, and troweling

Reinforcement in walls

- Not enough



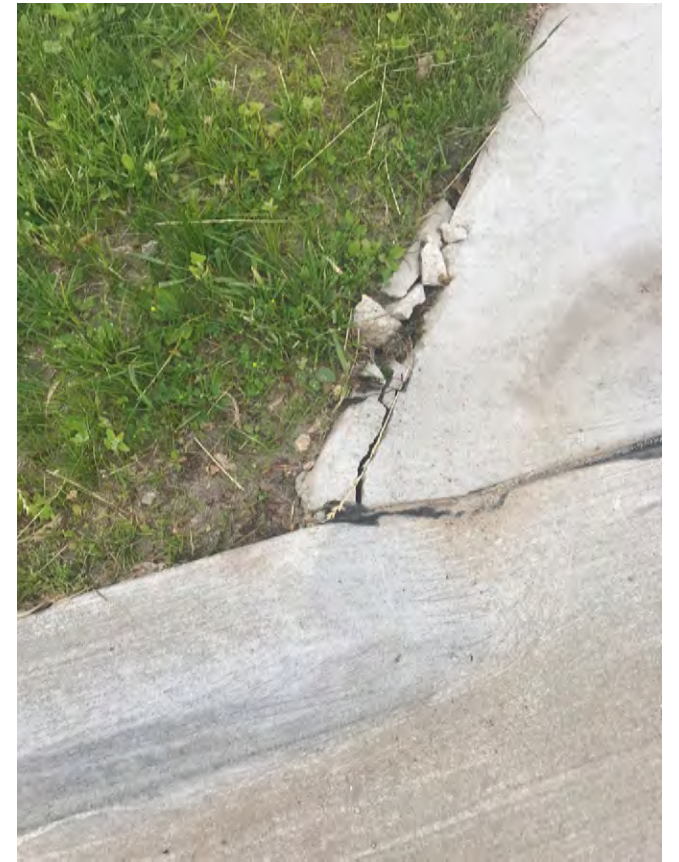
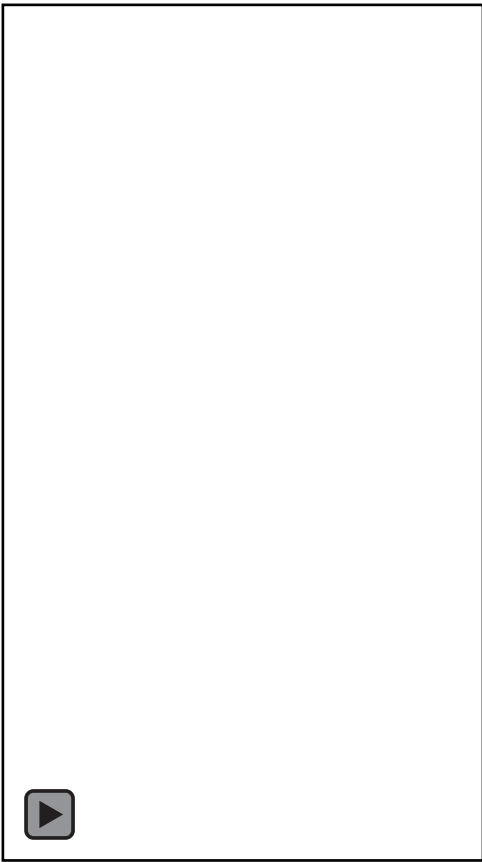
Reinforcement in slabs

- For slabs, more than 0.10% steel reinforcement they are prone to increased random cracks
 - #4 rebar at 42" o.c. in 5-inch slab = 0.10%
- Sawcut to 1/3 slab depth if reinforced
- If more than 0.50% steel reinforcement, then joints are not necessary. The slab will have a number of very tight cracks
 - Similar to continually reinforced pavement



Settlement cracking





Isolation joint related



Sun, wind, and low humidity



Rapid evaporation



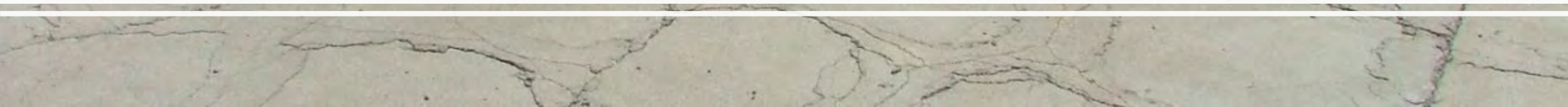
Avoid the rain



Photo courtesy of Danny Sturm
– JEO Consulting Group



Don't overload it





Aggregate
related



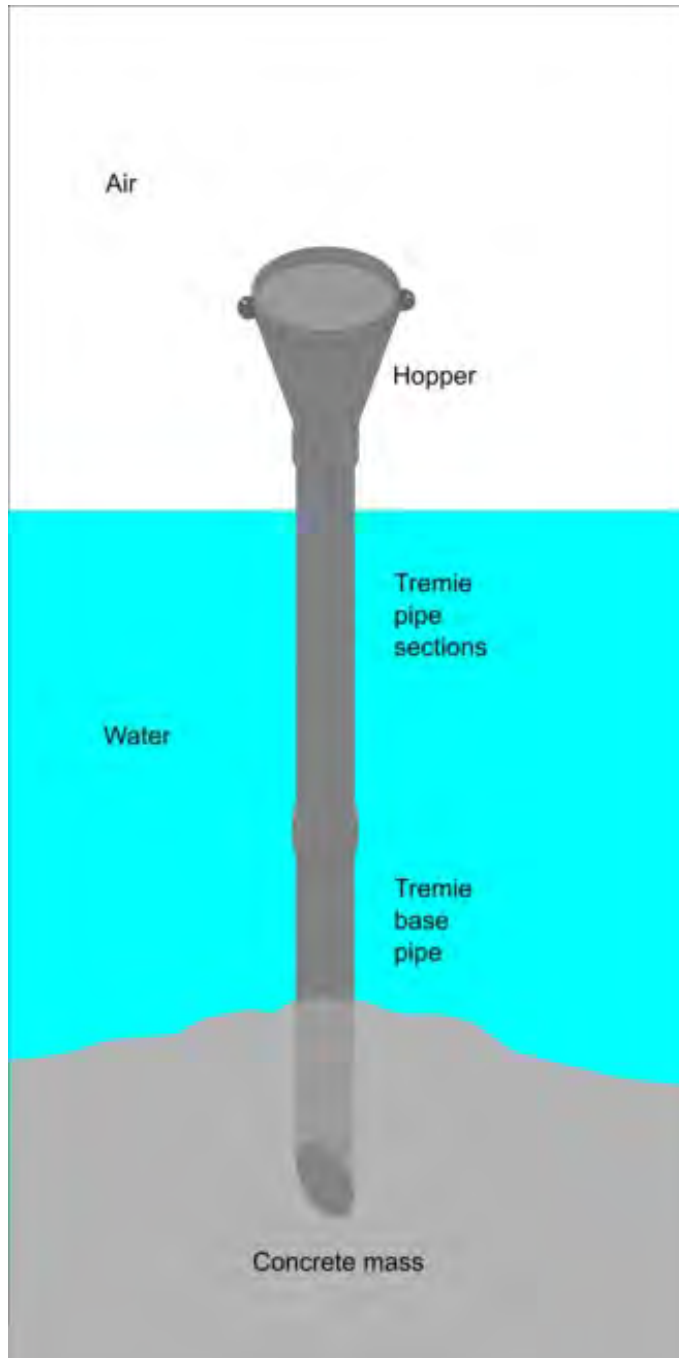


Discoloration



Sometimes the unexpected happens





We can place concrete under water correctly

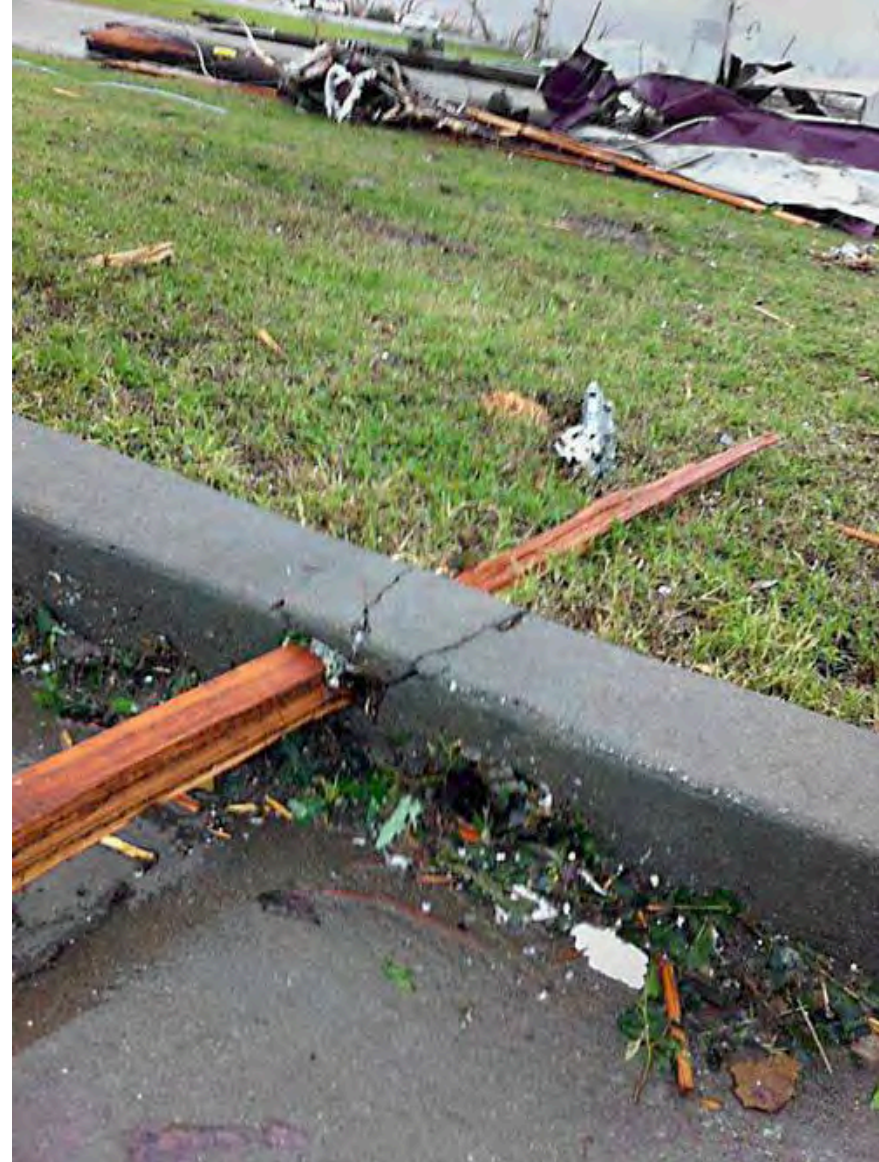
- If we do it right

But if we
don't.....

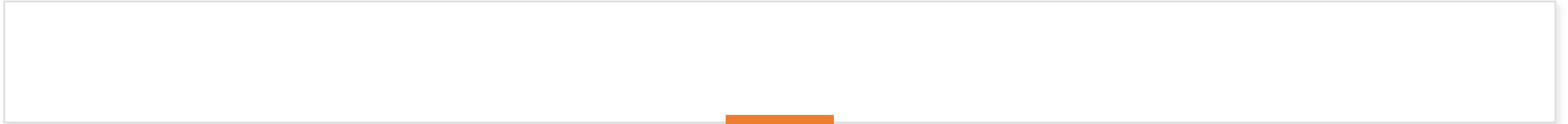


Acts of God

Facebook photo reportedly from Kansas



Acts of God



Video courtesy of Ron Lowry



Video courtesy of Joe Roenfeldt -
Bolton and Menk

Acts of God





Acts of God

Photos courtesy of Danny Sturm – JEO Consulting Group



Questions?

