

Incident Summary #II-1551465-2023 (#35432) (FINAL)

SUPPORTING INFORMATION	Incident Date	May 12, 2023	
	Location	Vernon	
	Regulated industry sector	Electrical - Low voltage electrical system (30V to 1000V)	
	Injury	Qty injuries	0
		Injury description	N/A
		Injury rating	None
	Impact	Damage description	A fire occurred in a single-family dwelling that destroyed the exterior attached shed and covered entry to the backside of the garage. Structural damage to trusses and roof to attached garage and modular home noted. Damage to the dwelling itself was noted mainly contained to the attic spaces with heat and smoke damage within dwelling areas as well as ceilings.
			Damage rating
	Incident rating	Major	
	Incident overview	<p>An exterior shed attached to the main structure was utilized as storage for personal items that included tires, propane tanks, exterior patio furniture, metal brackets, spray cans and other items.</p> <p>A fire occurred within the shed that extended to the interior attic areas of the dwelling and attached garage.</p>	
INVESTIGATION CONCLUSIONS	Site, system and components	<p>Electrical wiring installed to an exterior attached shed included an interior receptacle with interior and exterior light switches and lights.</p> <p>Lighting is used to illuminate and allow the occupants to see within and around the exterior of the shed for convenience as well an interior receptacle for use to provide power for electrical appliances/ loads.</p>	
	Failure scenario(s)	<p>The evening of May 11, the occupant of the dwelling took her dog outside at approximately 11:00 PM, at that time she noted the smell of smoke but never followed up on it nor felt there was an issue and did not investigate. Approximately 4:30 AM of May 12, the occupant noted a crackling noise and noted a glow through the exterior window of the shed where the fire was in progress inside the shed.</p>	

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Facts and evidence

The shed itself was noted to include electrical wiring with an interior receptacle, interior ceiling light and wall switch located above the receptacle, exterior dimmer switch wired to soffit recessed lighting. No gas lines or appliances were noted.

The origin of the fire leads to the shed where considerable fire damage was noted at a low level destroying the exterior wall structure extending to the roof framing and as far downwards as burning the exterior patio wood deck structure. All other areas of fire extended into the dwelling and garage attic/truss areas.

On site investigation May 15 by ESO, it was noted various items were removed from site by the Insurance Companies Fire Investigator.

- Phone discussion with Fire Dept on May 12 noted a fire was attended that morning at a new mobile home that seemed to damage mainly an exterior shed and attic areas of a mobile home, the drywall ceiling was noted to collapse from the weight of the water in ceiling from firefighting efforts.
- the female occupant noted a smell of smoke after 11:00pm night before when she took the dog out but did not investigate. The occupant then noted crackling at Approx 4:30am-ish, and a glow noted through the exterior window of the shed.

Site examination (May 16)

- An approx. 8'x8' shed addition on backside of home with two non-metallic-sheathed cable (NMSC) noted entering/exiting area, 1 located at door entry and second located in ceiling area of north side of shed exiting out backside of shed likely ran in soffit towards south side.
- Sources of possible ignition noted in shed include:
 - Electrical receptacle, light switch, and ceiling light with 1x exterior dimmer switch controlling recessed soffit lights.
 - Garage sub panel, siemens 100AMP 120/240volt 24/48cct combination panel, bond jumper removed, with 4x 1 pole 15AMP, 1x 1 pole 30AMP, 1x 2 pole 40AMP breakers, no arc fault circuit interrupter (AFCI) protection noted in panel for receptacle circuits.
- The 'shed' located on the backside of the garage with a covered roof over the back garage door entry had deepest charring/ damage of the structure indicating the origin, once the fire burnt through the ceiling area, it travelled into the garage ceiling attic space and spread from that point. The damage extended into the main dwelling attic space and through the roof. Due to the weight of the water applied during the fire-fighting efforts, the ceiling in various areas collapsed under excessive weight and moisture.
- The shed structure had completely burnt all the wood structure located near the doorway where an outlet was noted by Fire Department. The evidence of the outlet was removed from scene by the Insurance companies fire investigator.
- Damage to garage panel was noted mainly due to fire burning through wall from within attached shed. Panel and feeder cable noted no noticeable evidence of cause, all branch wiring exiting top of panel were destroyed.
- Garage panel noted no AFCI breakers installed, exterior shed wired from garage panel and garage/shed are attached to main dwelling.

Meeting with Fire Investigator

- Meeting with Investigator was held Friday May 26 with removed evidence brought in for discussion.
- Interior electrical included 1x receptacle located nearest deepest fire damage with switch located above for interior light mounted to ceiling.

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- Exterior electrical noted a dimmer switch for under soffit recessed lighting, exact location of switch not confirmed. Damage to dimmer switch was limited, aluminum mounting brackets not severely damaged, only internal components and plastic cover.
- On review of the 'dimmer' switch, the damage to the switch did not indicate as the source as the aluminum mounting bracket remained without melting from heat.
- On review of the receptacle, it was noted the wiring connections were done to acceptable industry standards with proper splicing and connections to the box and receptacle, no loose connections noted.
- The line and neutral connection terminals noted one socket of the receptacle had more notable heat damage than the other socket with melted/ damaged strap that noted likely shorting.
- Investigator noted same as Fire Department that nothing was inserted into the outlet.
- The light switch and light were not brought in for review.

Causes and contributing factors

Based on the evidence reviewed and extent of damage the origin of the fire was likely in the location of the electrical receptacle. Although direct cause could not be determined, the electrical system could not be ruled out.



Image 1 - Original as-found on site prior to sifting through and removing electrical evidence on Monday May 15 (Image provided by Fire Investigator).



Image 2 – Site prior to Fire Investigator site review on Monday May 15 (*Image provided by Fire Investigator*).

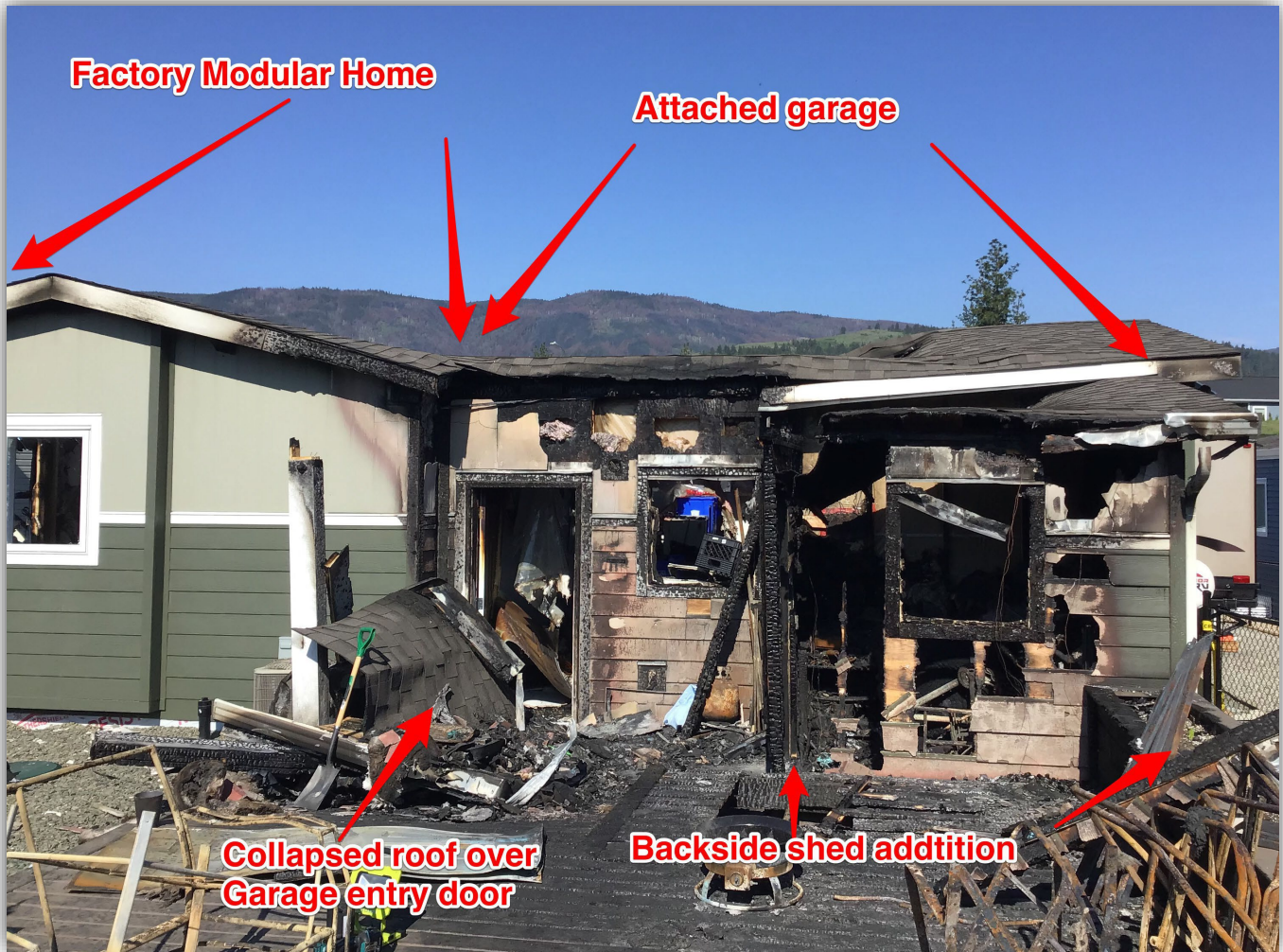


Image 3 - Site view from backyard Tuesday May 16 showing shed, garage area and dwelling to left.



Image 4 - Lines provide proposed fire travel from shed location and access into garage and dwelling attic through soffit area.



Image 5 - Back entry area: covered back open area roof laying on ground to left with shed location to right where most fire damage occurred. Extensive heat noted along upper wall area of garage and major fire damage to shed and wood decking.

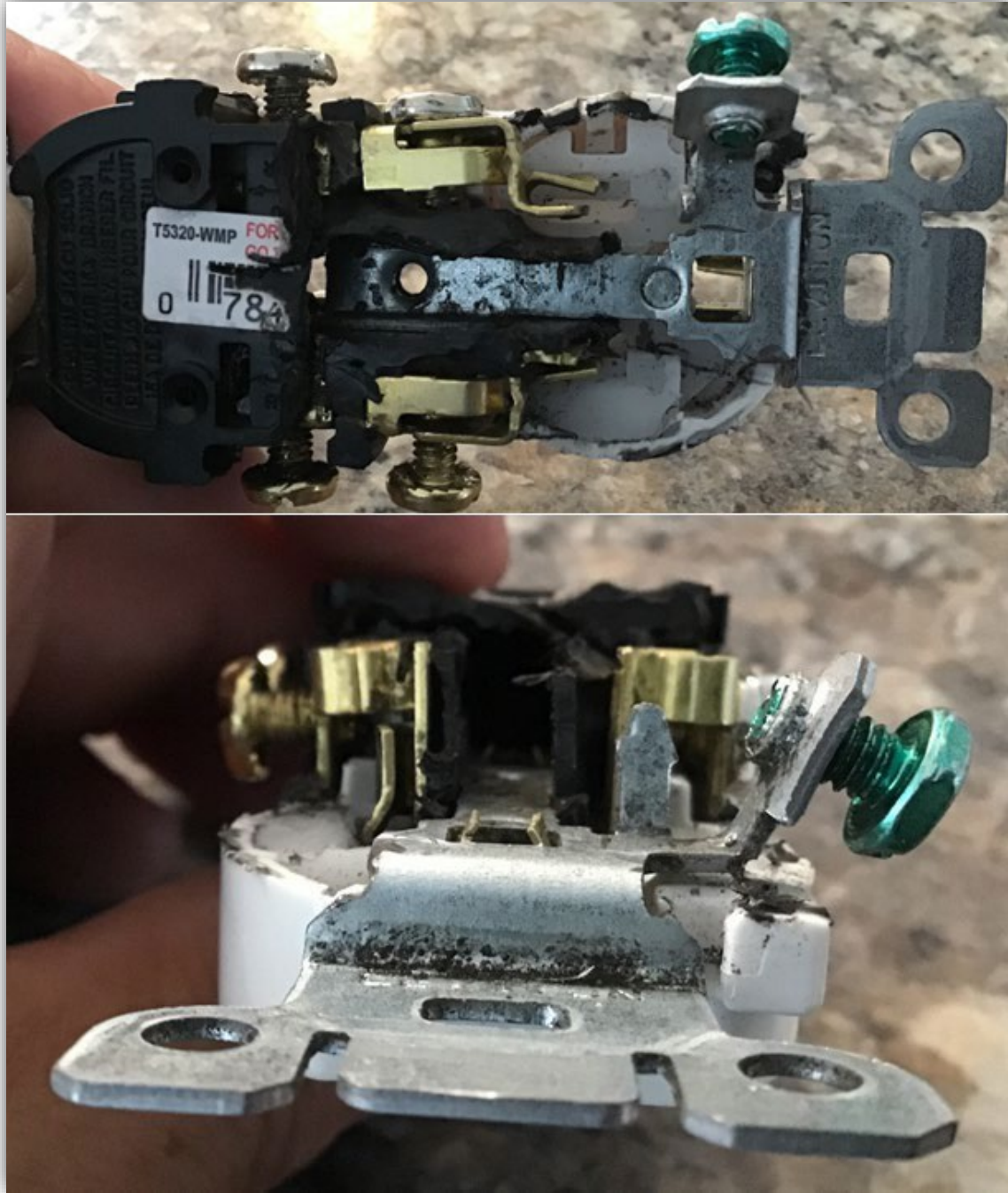


Image 6 - Typical 'new' receptacle cut open for reference only.

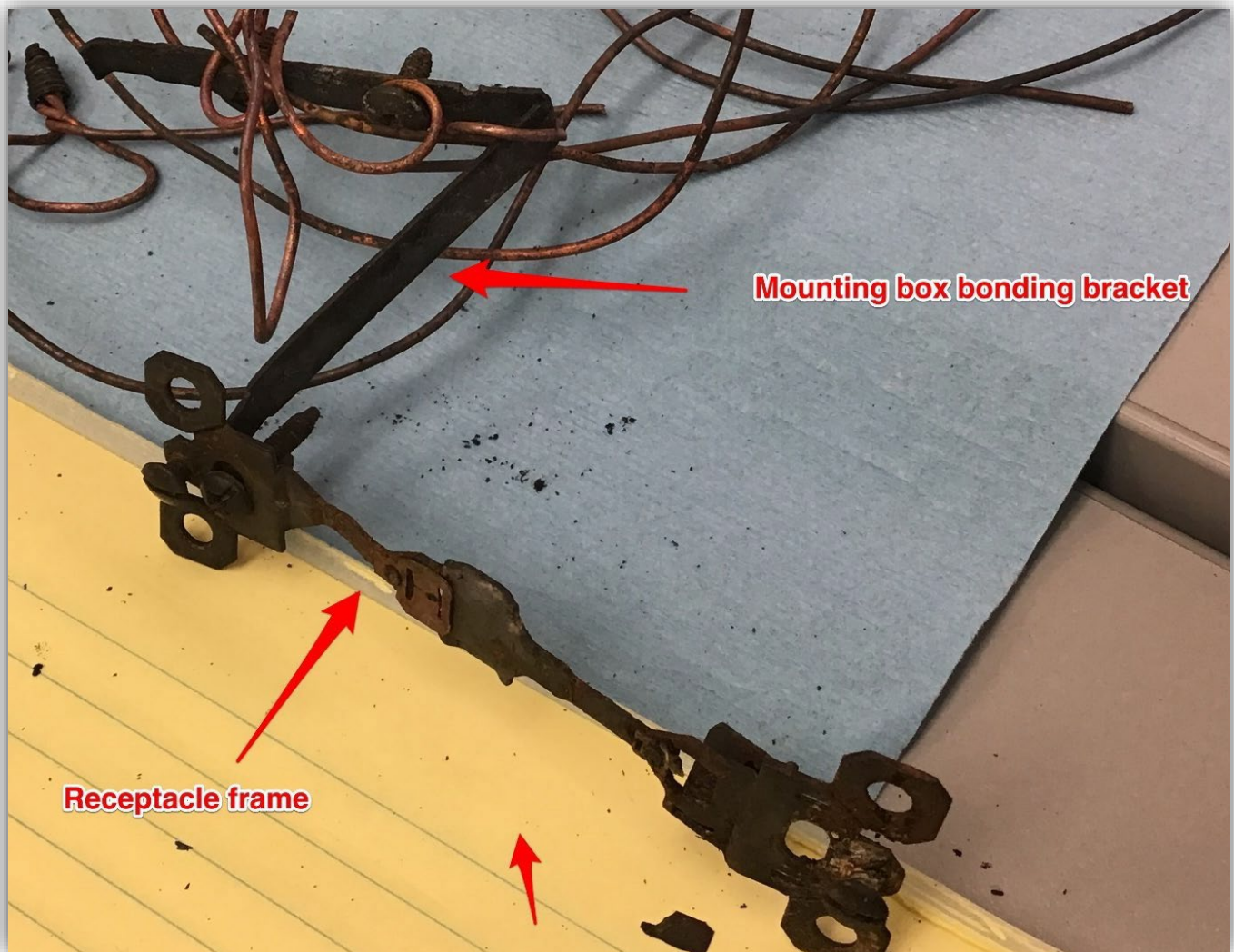


Image 7 - Photo notes receptacle box was a plastic style box with approved bonding strap. The wiring within the receptacle was noted as using good industry work practices with good wiring connections between conductors and to the receptacle. No loose connections were noted.

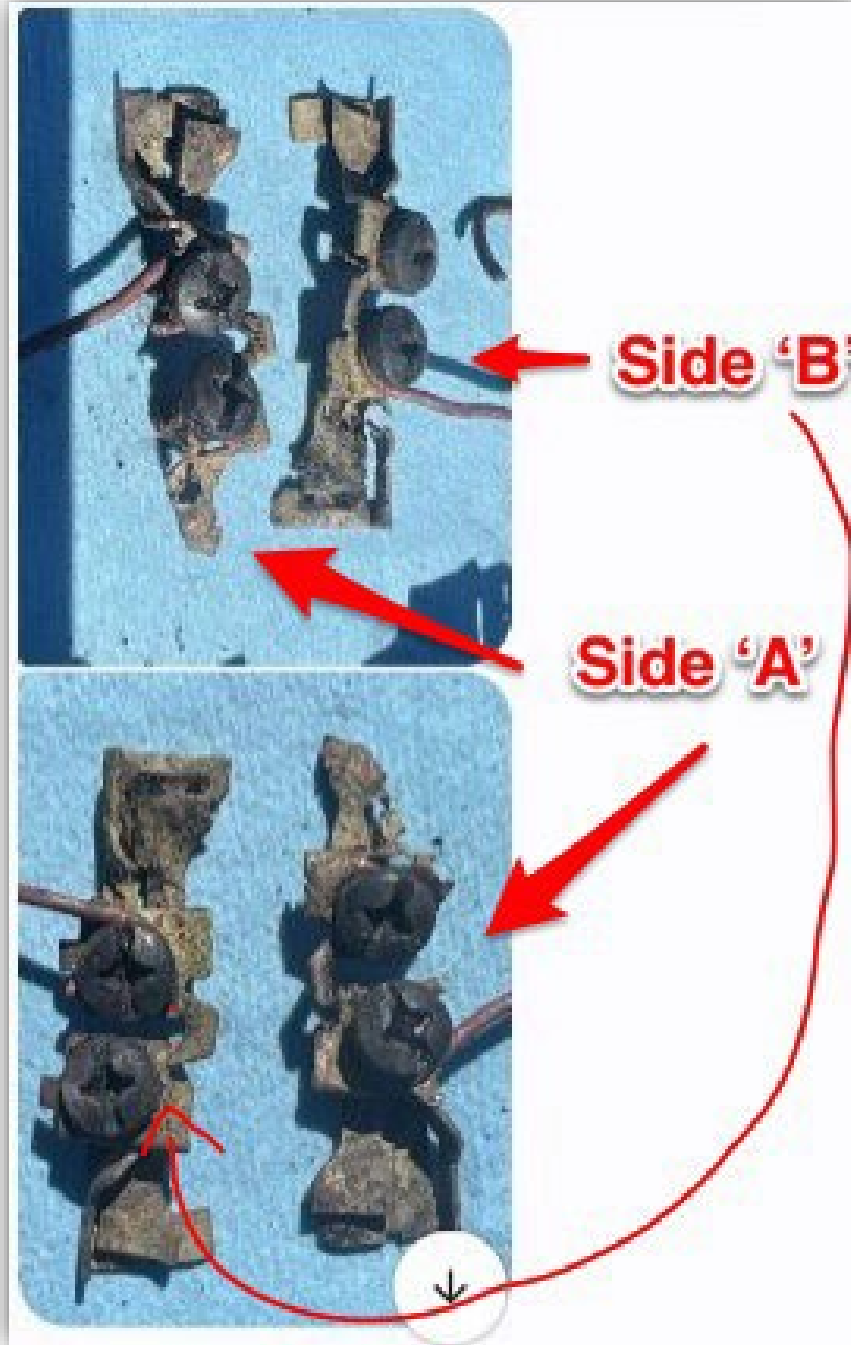


Image 8 - Remaining receptacle line and neutral terminal connections noting more heat damage on one socket over the opposite end.

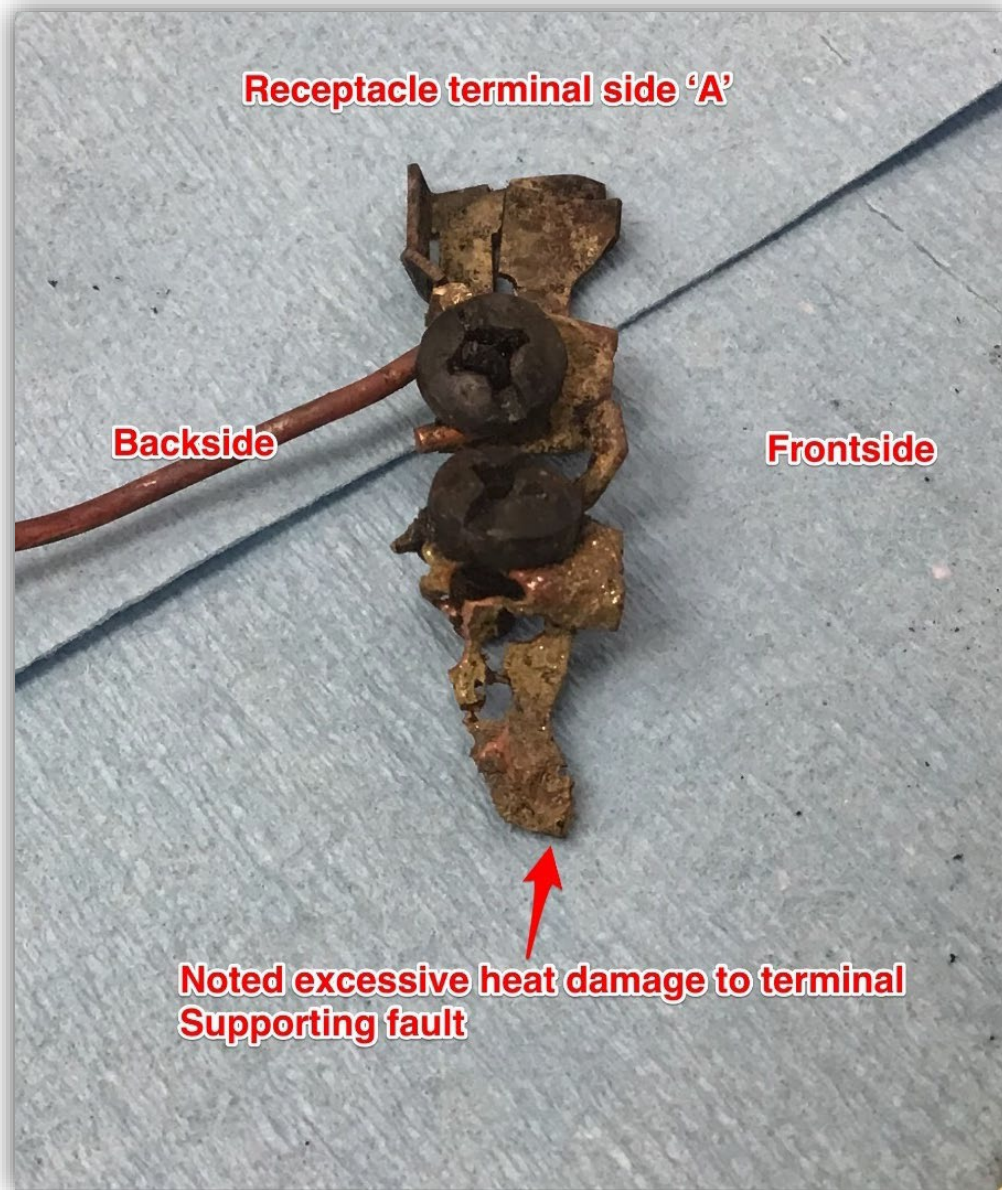


Image 9 - Close up view of other side of receptacle terminal notes more heat/fault at one end than the other.

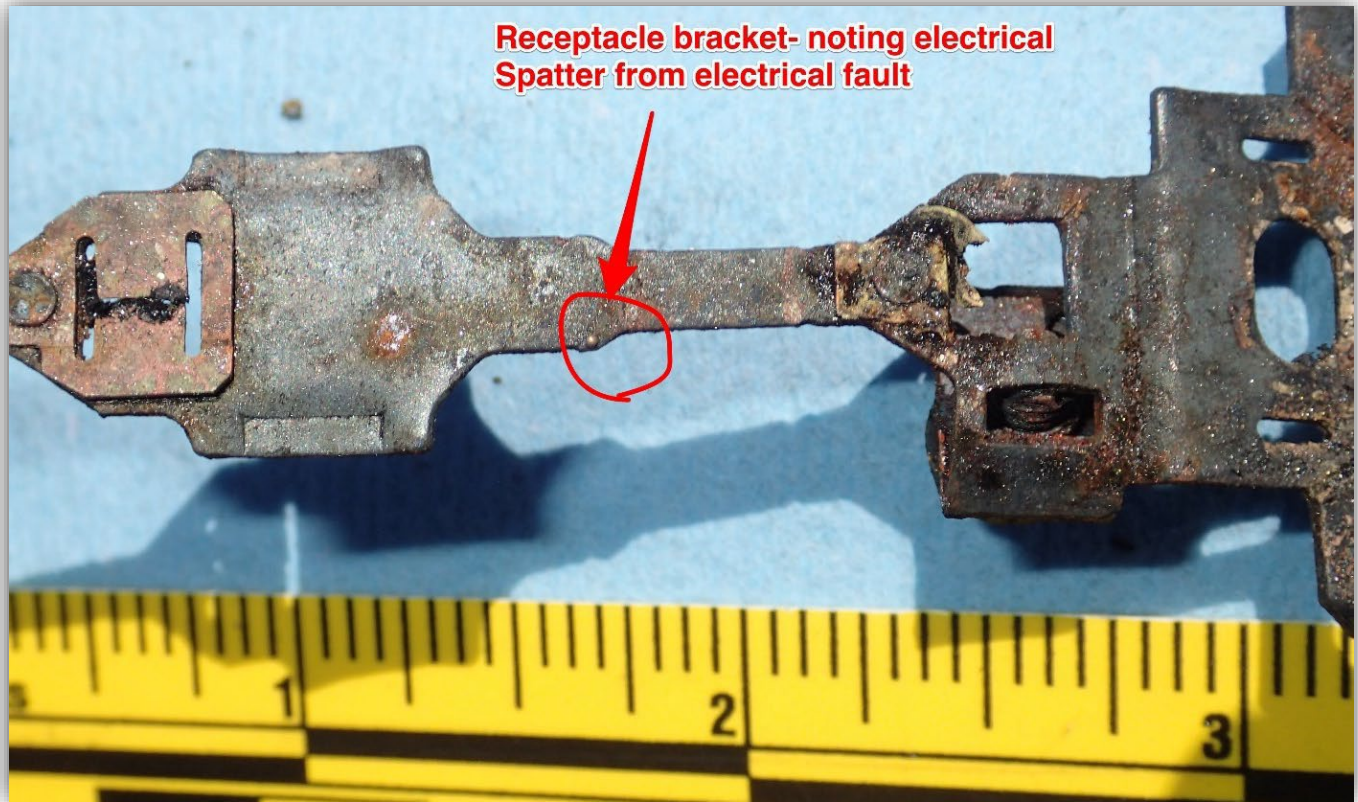


Image 10 - Noted electrical fault spatter on receptacle bracket supporting electrical fault (Image provided by Fire Investigator).



Image 11 - Damaged Dimmer switch- for reference only. Aluminum mounting bracket in one piece with no melting noted from extensive heat.

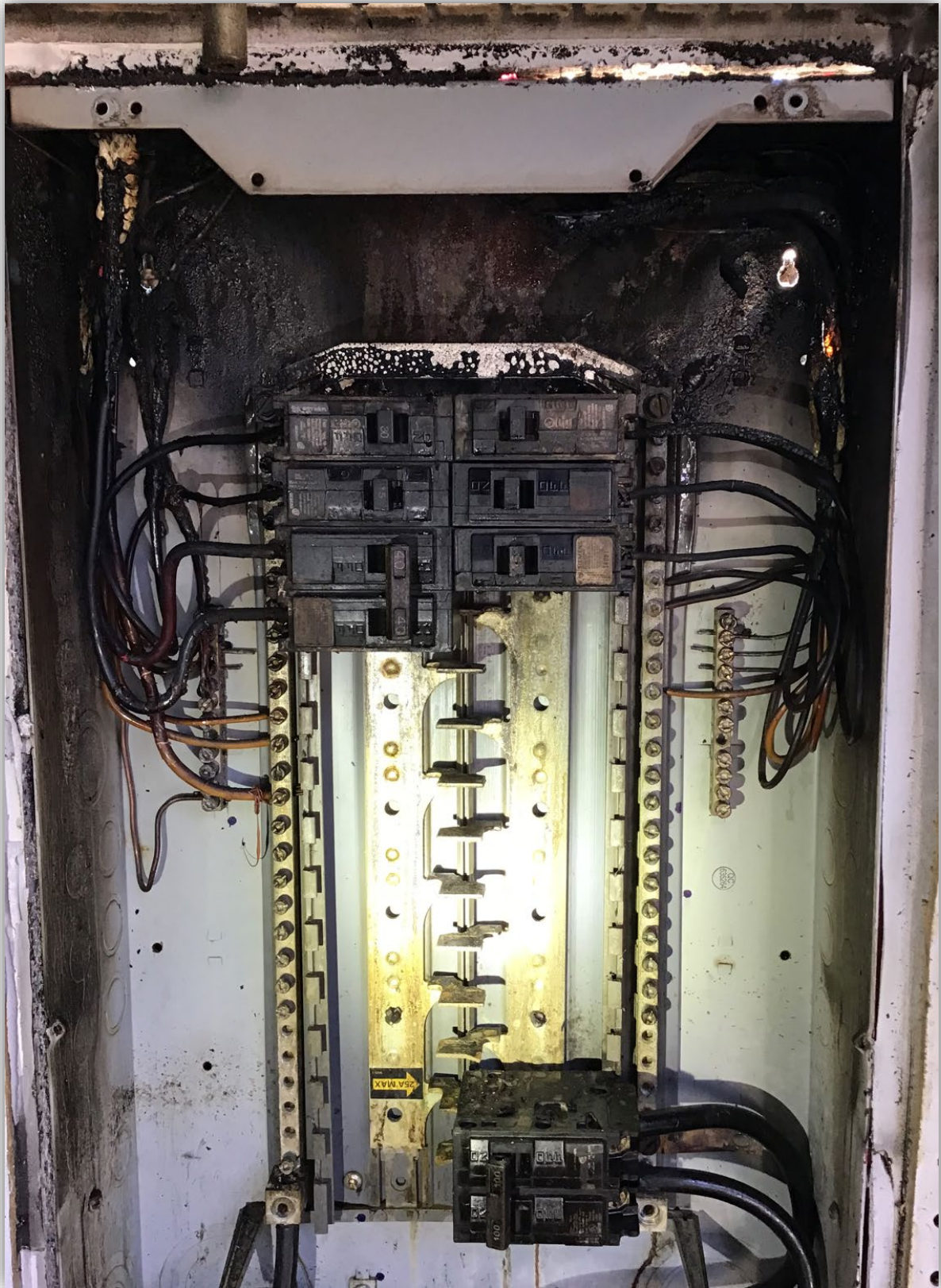


Image 12 - Garage Electrical Panel received the most damage coming from above and behind the panel area. There were four one pole 15AMP breakers installed and no arc fault circuit interrupter (AFCI) overcurrent devices installed for wiring of receptacle circuits.