Two More Chains

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Wildland Fire Lessons Learned Center

Improving Our Collective Skill Related to Structure Protection

By Travis Dotson, Analyst
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This issue of *Two More Chains* is about structure protection.

Structure protection is a big deal; there can be some serious consequences if you do it wrong. Some of the consequences include failure—meaning the house or barn or bridge or power pole you didn't want to burn goes up in flames. It is also true that even if the house doesn't burn up, your methods can inflict severe non-fire-related damage to the very thing you are trying to save. Of course, there is also the ever-present danger of being entrapped by fire while attempting to protect inanimate objects. These are complicated matters.

It is also true that many of us have never gotten a whole lot of specific training or education on structure protection tactics. In fact, more than a few of us have learned almost entirely in a sink-or-swim situation—we are assigned to structure protection and find a bunch of sprinkler kits stacked next to a house. Next thing you know, we are shrugging our shoulders and setting up a water show using well-intentioned guess work.

We want all that to be different. We want every firefighter to have access to resources and context to perform like the professionals we are.

We start on page two with context—a summary of a few events and their associated lessons. This helps to illustrate some of what we face on a regular basis. In Ground Truths we get a few stories and a good reminder. From there we move into some real expertise in One of Our Own, which includes access to a Structure Protection Tactics Guide.

This issue of *Two More Chains* provides the context, insight, lessons, and resources to improve our collective skill related to structure protection. Please use it.

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The Trout Fire Dozer Entrapment

https://lessons.wildfire.gov/incident/trout-fire-dozer-entrapment-2025

A dozer entrapment on June 17, 2025, on the Trout Fire in New Mexico shows us how the sudden confluence of factors can create an unintended outcome in the blink of an eye.

It was a Red Flag Day on a major Southwest fire, burning in piñon-juniper and pine. Fire was predicted to push in multiple areas on this incident at once.

The fire hit the trigger point, a drainage about three miles to the west of the highway. But by the time the firing operation started above the highway, spots from the main fire's advance forced the crews to pull back.

Structure Protection Group and Division resources went to work, trying to protect homes in the fire's direct path . . .

Torched junipers at the entrapment site.

The fire was spotting prolifically, filling the receptive dry field across the highway with rapidly growing spot fires.

Structure Protection Group and Division resources went to work, trying to protect homes in the fire's direct path and attack the fire's edge to stop it from spreading farther east into an area of vast forest and more receptive fuels.

In this dynamic environment, a dozer offloaded and went operational immediately, trying to cut off the head of the fire along its left shoulder. Then, with a flash, two junipers torched and sent a blast of superheated gas at the unenclosed dozer cab. The operator jumped out and ran to safety in a nearby rock outcropping, but not before his hands and face suffered second-degree burns.

Key Lessons

Don't let the houses and quick pace make you short circuit the risk management process.

- Entrapments most often occur during the initial attack phase of firefighting. Consider how emerging spot fires among structures mimic the chaotic environment of an emerging initial attack. How do you manage the dynamic IA environment to create order?
- The dozer operator expressed his strong desire to do some good work and only in retrospect saw indications that conditions were potentially hazardous. Don't let the houses and quick pace make you short circuit the risk management process.

The Dolan Fire Entrapment

https://lessons.wildfire.gov/incident/dolan-fire-entrapment-2020

An entrapment and shelter deployment occurred after 0745 on September 8, 2020, at the Nacimiento Guard Station of the Los Padres National Forest. This entrapment coincided with the 2020 Labor Day wind event that exploded fires all along the West Coast.

The Dolan Fire started on August 18 and by 0200 on September 8 was more than 73,000 acres. In less than 24 hours, the fire would add another 20,000 acres and threaten the historic Nacimiento Guard Station. The engine based at Nacimiento became committed that morning to protecting this station from the oncoming fire.

The aftermath of the Dolan Fire at Nacimiento Guard Station.

The Division Supervisor had already promised his wife over the phone that he would not be at Nacimiento when the fire got there. But as the fire advanced and he was told that there was a crew committed to staying, he came to convince them otherwise. As the window is closing to leave the area, another local engine arrives to assist in the station's defense.

The Division Supervisor had already promised his wife over the phone that he would not be at Nacimiento when the fire got there.

When the fire hits the station compound at around 0745, two engine crews, the Division Supervisor, and two dozer operators who were in the area are now all committed to staying at the property. Soon the heat and smoke overwhelm the efforts of the firefighters on the hoselay and they retreat to the engine bay.

The engine bay catches fire at 0805 and they end up in fire shelters in the center of the adjacent parking lot. Vehicles ignite on all sides, and the buildings continue to burn in the center of the parking lot.

All 15 people at Nacimiento survive this entrapment, although three are taken to the hospital, with one firefighter suffering serious burns.

Key Lessons

- A personal identification and association with the station, which was both a workplace and a home, may have driven the desire to stay and defend. Those without that attachment may evaluate with more objectivity. Incident Management Teams have Safety Officers for a reason: Use them to evaluate your risk management process.
- Does your station have defensible space? Would it survive a fire without your crew staying there to defend it?

Cornet Fireline Explosion

https://lessons.wildfire.gov/incident/cornet-fireline-explosion-2015

Firefighters on Eastern Oregon's Cornet Fire in 2015 were notified that a home in the fire's path had a particularly frightening hazard: a shed on the property contained dynamite and blasting caps.

They denied entry into the area, flagging off the potential blast area. Before the fire reaches the structure, the blasting caps are removed. With structure prep work in place all around the community, and as the fire approaches, the crews are forced to leave the area due to a lack of adequate safety zones.

The fire consumed the shed, but the dynamite inside did not explode. That night, the crews leave the line due to numerous overhead hazards.

The crater in the concrete pad that resulted from the shed explosion.

Early the following morning, the thud of an explosion is heard by personnel working in the area. In the light of day, Oregon State Police bomb technicians discover that there was another shed, also containing explosives. It exploded hours after the fire front had passed.

Key Lessons

- Hazardous materials contained in homes and sheds are no joke. Whether they are solvents, petroleum, mixes of various chemicals, or, as in this case, actual explosives, these materials can respond to heat by combusting or producing deadly toxins.
- When you get reports of explosives in an area with multiple buildings—assume you didn't find it all.
- If fire moves through an area reported to have explosives, request a bomb squad or similar responders to clear the area before re-engaging.

Valley Fire Structure Protection

https://lessons.wildfire.gov/incident/valley-fire-structure-protection-2015

From the Report:

"The Valley Fire started on September 12, 2015, at 1324 hours near the community of Cobb in Lake County, California. The initial report stated that the fire was approximately 2 acres in size burning with a moderate rate of spread. According to a CAL FIRE Press Release, by 1350 hours, the fire was 50 acres in size . . .

At 1410 hours, there is a report that four firefighters from CAL FIRE Helicopter 104 have been burned and were being flown to a burn center . . .

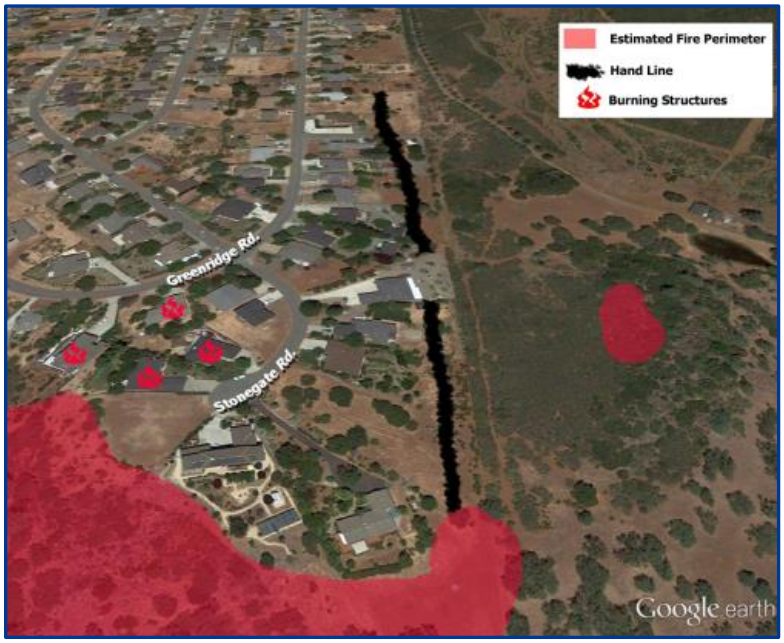
At 1648 hours, the fire has reached the community of Harbin Hot Springs, seven miles from the point of origin.

At 1715, the Air Attack Supervisor recommends evacuating the community of Middletown, which is eight miles away . . .

By 0125 hours the next morning, the fire was flown using an infrared sensor with an unbelievable growth of 45,000 acres since the time of ignition 11 hours previous. This would equate to 68 acres per minute of fire growth."

The Valley Fire of 2015 is probably best known for the devastation of a significant part of Middletown and surrounding areas (burning 1,958 homes and killing four residents), and the entrapment of the CAL FIRE helitack during IA.

But this report focuses on the successes in structure protection that occurred amidst the destruction and deaths.



The Tamalpais Fire Crew's work area on the Valley Fire.

A handcrew from nearby Marin County, the Tamalpais Fire Crew, was ordered on the first day of the fire. This crew arrived to a chaotic scene of evacuating civilians and uncontrollable fire spread. Initially sent to Staging, the crew was eager to start working—they knew homes were burning.

More resources joined them at Staging and then the order came to come to Hidden Valley Lake and *"do what you can."*

At a housing development, the crew went to work—constructing 700 feet of handline, cutting fences, prepping structures, moving propane tanks. As the fire approached, they deployed garden hoses—homeowners' hoses and their own rolled 3/4-inch hoses—to keep ember fallout from becoming spot fires.

They rescued a dog from inside a less defensible home, and they put a homeowner to work who had decided to stay with his own hose and chainsaw.

Key Lessons

The Tamalpais Fire Crew shared several lessons from their experience on the Valley Fire:

- Never discount the value of handline. It can stop a surface or creeping fire even without firefighters present. Firefighters should not leave an area where homes have been protected without putting in a handline.
- Garden hose can be powerful. Garden hose is easy to move and there's a lot of it out there. It is effective at wetting down fuels near structures, lobbing water onto roofs, etc. Carry rolls of it in your pack.
- If you're bored, take a break—but commit to the structures you protected. There is a strong temptation to move on to more exciting fire behavior elsewhere, but you run the risk of losing a house through a slow-creeping fire when nobody was around. Perhaps you can't stay at the structures due to inadequate safety zones, but come back and continue the good work you've done.

Ground Truths

By Travis Dotson
Wildland Fire Lessons Learned Center Analyst
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Walls and Windows

I've had my hair in the butter a time or two.

When I think back to some of my wildest scenarios, more than a handful involve fire moving in and around structures.

One time I was part of a true "Hail Mary" firing operation behind a group of houses. It was a pretty steep slope and we needed some fire up high. So I scrambled up the slope to make it happen. I was still getting set when I heard yelling and some crackling sounds below me. Someone had jumped the gun with a line of fire at the base of the slope!

Some of the most important work is done right behind the fire front.

Luckily, I had a good homie looking out who yelled a warning to me and tackled the inattentive fussee flinger. I should have taken a moment to make sure we were on the same page before I took off up that hill.

Another time I found myself in a full-on free-for-all when the fire flanked a group of homes. Everyone was just doing their best wherever they were. I came up a driveway and saw a solid line of one-foot flames marching steadily toward a couple of houses. I was the only person around. I started scraping as fast as I could.

I got some scratch in just in time for the first house and was panicking about the second one when a group of angels in a Fish and Wildlife Type 6 rolled up.

They pulled hose and went to town, answering my prayers. We just high-fived and moved on. I should have asked for help over the radio instead of diving into a Solo Op and hoping for miracle fish friends.

Houses seem to dial up the intensity knob just a bit, and, sometimes, this affects our thinker.

Here's one of my go-to sand table scenarios: Lay out a very basic fire perimeter, a road and maybe a little topography and ask the "hot seat" student to outline their initial attack plan. Have some discussion about the plan with everyone present. Cool. Now put a house downwind of the fire. Ask them again for their initial attack plan. Did anything change? Should it?

It sure *feels* different, don't it?

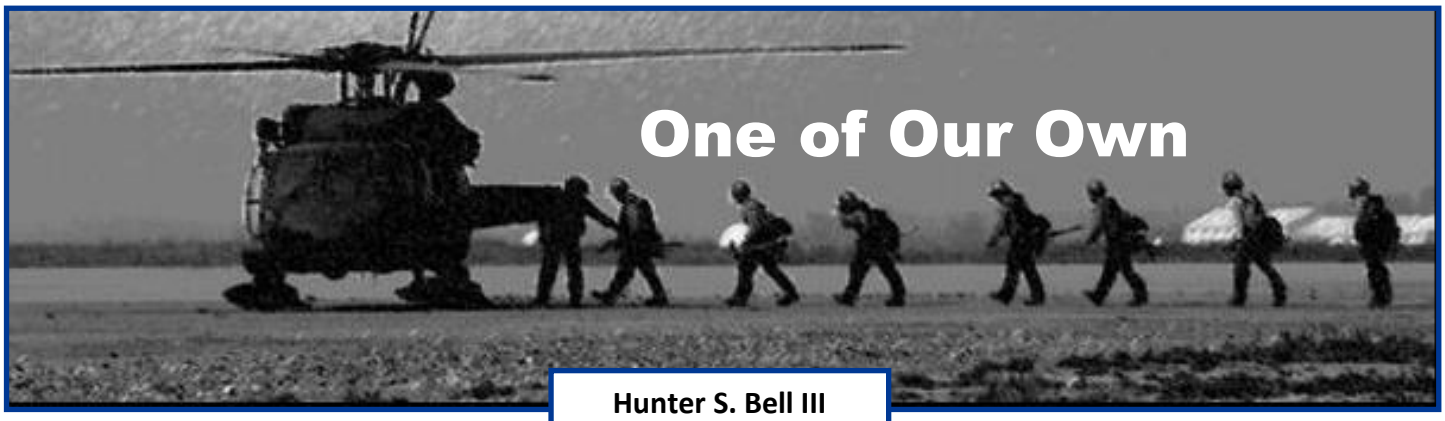
What if we did that in reverse? Think of the hairiest structures threatened chaos moments that you have experienced. What if the houses weren't there? How different would that be?

I know, it's kind of a dumb exercise because the houses ARE there. It IS different. But framing it this way helps me recognize how much risk we accept in those scenarios. I hate mid-slope line, but I'll give it a shot to save a house.

Don't let walls and windows make you dumb. It makes sense that we will likely accept a bit more risk, just make sure you don't go full fail on the basics.

And remember that being there when the main fire hits isn't always the most effective tactic. Some of the most important work is done right *behind* the fire front.

Swing on, Toolswingers.



Hunter S. Bell III

Hunter S. Bell III

What Every Wildland Firefighter Should Know About Structure Protection

This enlightening conversation between structure protection expert Hunter S. Bell III and Travis Dotson, Wildland Fire Lessons Learned Center Analyst, highlights and explores important lessons and resources for protecting homes and infrastructure from wildland fire. Included in their discussion: The most common mistakes when setting up sprinklers.

Travis – What are the top tactical considerations you want every firefighter to know about structure protection?

Hunter – I start with what would you want us to do at your house? What is necessary tactically? No cutting down the cherished Christmas tree in the front yard. Try to work around that kind of stuff. I let people know that they're probably on camera. So just be careful. That is kind of my go-to intro to get folks in the structure protection mindset. Once you get on site, it's very important that you try to get a grip on the expected and unexpected fire behavior that day.

I've seen where the fire was just creeping and smoldering through the woods and folks were spraying the sidewalls of structures with what little water they had instead of going direct on the creeping and smoldering fire. So just be aware of the fire behavior.

Doing structure protection, go in and get your situational awareness. Analyze what you might have to do. How much work is it? If the time allows for you to do some mitigation, start working right adjacent to the structures. The "Zone Zero" area, which is the five feet next to the structure. This is where the problems generally start with the firebrand ember intrusion.

A structure will survive several minutes of direct flame radiant heat as it comes by. However, when you have those firebrands and they start finding receptive spots within five feet of the home—the wood piles, the stuff that's stored underneath the deck, the porch cushions, the carpet, that kind of stuff that's outside—that's when the structure is now at risk.

Hunter's Background

Hunter's background includes time running a general contracting business while volunteering on a local government fire and EMS district where he served as Chief for 14 years. In addition, his past fire involvement over the years includes time with: the Montana Department of Natural Resources and Conservation (DNRC), the Lewis and Clark Interagency Hotshot Crew; and as an AD for the BLM's Billings Field Office. He currently resides in Ely, Minnesota and is currently sponsored by the USFS-Superior National Forest, as well as serving as a call-when-needed resource with the Minnesota Department of Natural Resources.

Hunter has been the primary Structure Protection Specialist (STPS) for the Northern Rockies Incident Management Team 1 since 2018.

If you can't stay there and defend the structure when the fire's coming, the work you've done in that Zero Zone buys you time to come back in after the fire front passes and you're able to put out whatever's on fire. So, if you can get that stuff tuned up around the structure, that's ideal.

Podcast:
Lessons on Structure Protection

Check out this podcast with Hunter S. Bell III

https://wildfirelessons.podbean.com/e/episode-41-lessons-on-structure-protection-operations/

Setting Up Sprinklers

Setting up sprinklers is a very effective tactic. I see it a lot. I see it all over the country. But the deal is with the sprinklers, you have to apply the water in the appropriate amount and the appropriate place because it doesn't take a lot of water to wet down those fuels that are in the Zero Zone and adjacent to the structures moving out away from the structure.

So, there again, I'm a big fan of not applying water directly to the side walls of the structure. You're asking for trouble with the pressurized water impacting weak spots in the building envelope, potentially flooding the structure. If you can get water adjacent to the structure in some form or fashion, and if you have a little over-spray on the structure, that's a little bit different than the heavy impact of a sprinkler head slamming it.

I'm a big fan of not applying water directly to the side walls of the structure . . . I'm also not a big fan of putting people up on the roof to place sprinklers.

If you can get up the humidity a little bit around the area and get those fuels adjacent to the structure damp, then you'll buy yourself some time. You don't have to run those sprinklers all day long. You can just test them, make sure they're doing what you want them to do and then shut them off and come back as you do your patrols. You can check the pump again and everything like that.

I'm also not a big fan of putting people up on the roof to place sprinklers. You're asking for trouble. Oftentimes, when you're getting up there, it's not for the metal or the asphalt shingles. It's for the cedar or wood shake stuff. Those materials can be loose. And once they get wet, they're slippery.

Therefore, I don't like to put people up there.

But if you can set up a sprinkler head like on a T-post or on a long, 20-foot or so sapling and raise it up and get the water coming *down* on that wood shake roof—to ensure that you're not lifting shingles when you're coming up from underneath. If you can get the water on the roof mimicking rainfall, then you can get that roof a little bit damp and it'll buy you some time on the firebrand ember wash scenario. Also, if there's no gutters, then it comes down and saturates the drip line and everything next to the structure.

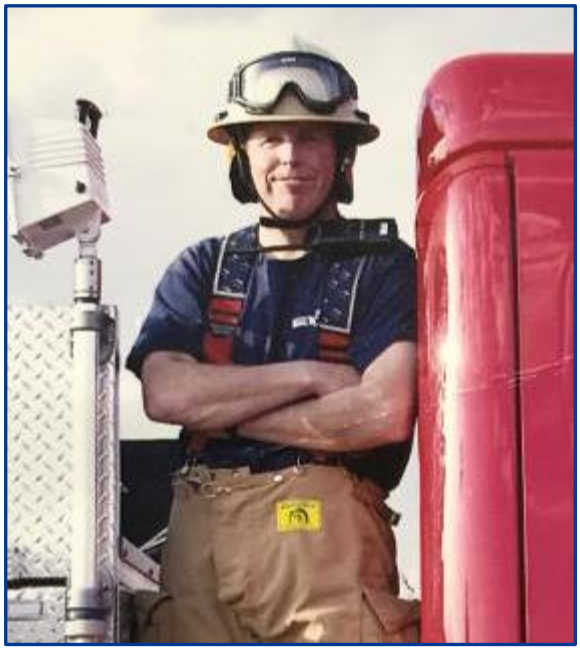
Don't give up on a wood shake roof when you first walk up to it. It's not the be-all end-all. It's not as good as metal and it's not as good as asphalt. Even so, there are actions that you can take with the sprinkler heads to get water up there and do some moistening of that surface.

Other Critical Infrastructure

While we always talk about and focus on structures where people live, including their shops and businesses, there's also the critical infrastructure that I don't want people to forget. This includes wooden bridges, which may or may not allow you to get in and out of there. There are also private bridges that are old rail car bridges—they've got steel girders, but wood decks. We've got to consider this type of infrastructure.

Another big one for me is guardrails on the side of the road, wooden post guardrails. They're hugely expensive to repair. Once they're down, the state has to come back in and spend time putting all that stuff back up. So if the fire is encroaching and there's time to mitigate the risk to these wooden guardrails, just grub out around them a little bit.

Power poles are another one. If there are power poles coming through your division, you can certainly send your extra hands out there with a tool and just grub a couple of feet around each one so the fire doesn't have a chance to creep over and start climbing that thing. By doing that, you can buy the power company a lot of time.



Structure Firefighter Hunter

. . . we always talk about and focus on structures where people live, including their shops and businesses. But there's also the critical infrastructure that I don't want people to forget . . .

Travis – From a safety standpoint, those are really good investments. I mean you think about bridges, that's access/egress that has very specific ties to escape routes to safety zones. And guardrails, don't forget the reason why those guardrails are there, right? The minute they're not there, then we have lost a mitigation because we get pushed off roads by oncoming vehicles or a soft shoulder. So now the guardrail's not there, which is a major safety concern. Same thing with power poles. Those things burn and fall in the road and now it's a different hazard.

This critical infrastructure protection is also an investment in safe operations. Yes, there is the cost of repairing it, but there's also the function of that infrastructure that we want to exist while we're assigned to that area.

Hunter – Absolutely.

Travis – What do you think are the most common mistakes you see related to structure protection?

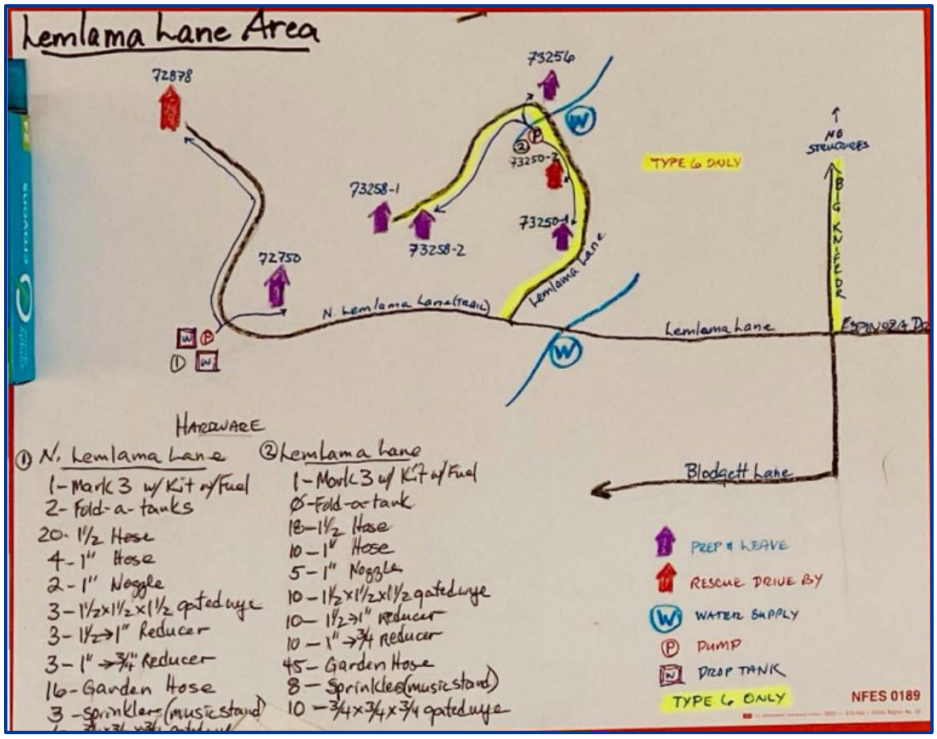
Hunter – One of the most common mistakes is I think we as a fire organization—whether you're a volunteer or paid or Forest Service, BLM, BIA, Fish and Wildlife, Park Service, or local government—we get there and get assigned to structure protection. And you go: *"Oh, this is not what I signed up for. I want to run and gun."* Then we look around and we're like: *"Well, the fire is never going to get here. Why am I looking at these structures? Why am I looking at the potential of these things burning? The fire is 10 miles away. What's the point of me being here?"*

I see a lot of people devolve into that mindset when they first get into structure protection. They think *"this is not where I need to put my A-game. My A-game needs to be over there on the line."* So, if you're doing structure protection, it's a critical detail of every fire in the country these days; we wouldn't be fighting fires like we are now if it wasn't for the structures. We'd let the fire burn up to the side of the road and call it good. But we now have homes and values at risk.

That is one of my biggest concerns: You've got a job—take it seriously. You're the face of the fire when the homeowners are still there. Duty, Respect and Integrity—the people doing work at the structures are the face of the fire and that's what the homeowners see. So be serious about what the job is.

Building a Plan

The next thing I would say, one of the most common mistakes is not building a plan. You got the assignment, you need to start building a plan, figuring out all the appliances you might need and getting it on order. A lot of times you'll see people just drive around and say: *"Well, we'll just order some sprinklers and some pumps if the fire gets here."* And they really have no idea how many or what type—or if they need drop tanks, pump kits, that kind of stuff.



An example of a structure protection plan that Hunter developed and used on a prior incident.

Take some time and pencil together a plan in your notebook or on the side of a cardboard box. Go to work, make a plan, show all the structures, put the pump kits where you want them, how many sprinklers per house? Usually, I figure eight sprinklers per structure. They usually come four to a box, so that's two boxes per structure. Get that stuff figured out.

One of the most common mistakes is not building a plan. You got the assignment, you need to start building a plan, figuring out all the appliances you might need and getting it on order.

You can find help for all this in my "Handy Dandy." It includes an appliance list that's available through the cache system or through your supply in Logistics. *[Hunter has produced a "Handy Dandy" booklet on Structure Protection that is now available: Structure Protection Tactics Guide | Wildland Fire Lessons Learned Center]*

Once you get that order built, get it up to your supervisor and say: *"This is what we're going to need for this subdivision."* It may hang on the wall in the Supply tent for the next week, but at least Supply knows what you need out there at XYZ subdivision. I have a standard form that I use for appliances and stuff. I fill it out with all the National Fire Equipment System (NFES) numbers on its side. I give that to Supply and inform: *"This is what I need for subdivision XYZ. I want that palletized down here. I want it set aside so nobody else can grab it. I want my name on it and the subdivision name. And when I call for it, I want you to bring it up."*

The point being here is one of the mistakes is not making those kinds of plans ahead of time. You know the saying: *Amateurs study tactics, but professionals study logistics."* You hear that all over the place and I'm a firm believer in this mindset. If you don't put an order in soon enough, you won't have it when you need it.

Jacketed Hose and Tank Water

The other thing I see out there is structure departments who are coming out to help roll up in their structure truck and they'll start flaking out their jacketed hose.

It's just heavy and cumbersome. Once you fill it full of water, it's even more cumbersome. And if you burn it up, you have to go through some serious paperwork to get it replaced or your department eats it. And if you have to get out of there in a hurry, it's not easy to roll up and get it back on the truck. So my suggestion for those folks is to have a supply of NFES type hose, the single jacket stuff. It's lightweight and okay to leave. You can replace it that night from Supply.

If you get called to a wildland fire, you probably ought to load some of that NFES type hose in one of the compartments before you leave the station. It's easier to flake out and easier to tie-in with what everybody else is using.

Another mistake I see is engine companies using up their tank water spraying down the exterior side walls of a structure.

Another mistake I see is engine companies using up their tank water spraying down the exterior side walls of a structure. Often times, the fire behavior certainly does not dictate this action and this tactic is almost of no consequence in the survivability of the structure.

And then there is the main topic in which I got started in this sprinkler project arena. That's the impacting of the side walls of the structures with that hard, steady, straight stream off a sprinkler head. The water gets into the windows, patio doors, etc. and the cracks and seasonal checking in the logs. People think that's the right thing to do. But, in my opinion, it's not the best—it just doesn't work.

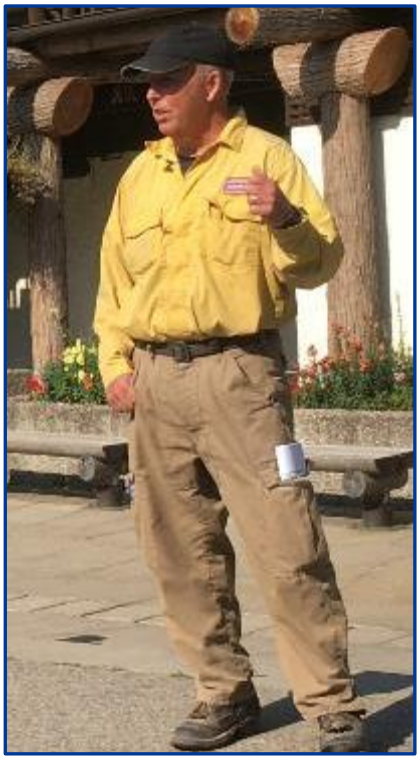
Travis – Yeah, it's not effective in terms of protecting from ignitions. So that's one level. And the second level is damaging to the structure itself.

We need to remember that approximately 80 percent of structure loss is from firebrands and embers.

Hunter – Yep. A lot of people also talk about Class A foam and compressed air foam systems. They can put it on dry and let it stick to the side wall. But you have to apply that right before the fire front shows up and you probably don't have enough to do a subdivision of 30 houses.

The materials on the structure will typically withstand a radiant heat source for about 25 to 30 minutes before it starts off-gassing and being made available to burn. A crown fire coming through with the wind behind it, it's not going to be there very long. You're not going to get that radiant heat. But if you didn't do the mitigation around the structure in Zone Zero, those firebrands catch the stuff next to the structure. That's where the problems are going to be.

We need to remember that approximately 80 percent of structure loss is from firebrands and embers.



Travis – OK, let's talk about being present when the fire does come through. When we say "structure protection," we're often thinking of before the fire gets there. But every so often, we end up in the houses when the fire hits, whether it's because it's an emerging fire or it's just happening on our division. But now the fire is moving into where the houses are and it can be chaotic, and it's certainly high tempo. What actions do you recommend?

Hunter – Keep track of your people. Always make sure your engine is placed properly so you can get in and get out. The tank is full and those kinds of considerations. Take some time to fill up your tank off the homeowner's water source if need be. Make sure at that point, when it's "getting go" time, that everybody in your engine or in your crew is engaged and they're not lost on some video hunt on their cell phone in the back seat. Get everybody engaged. Make sure they've got their heads on and they've got their gear ready because it's go time.

If you can't stay in there or if you have to use a temporary refuge area, when you come out, it's always a great time to do the fire front following tactic. I'm a big fan of that. Let the fire pulse through and stay out of the way and come back in there when you can see better and start hitting the spots, the stuff that's on fire next to the structure. You can do a lot of saves that way.

Escape route, safety zones and temporary refuge areas—have those identified. They can be down the road a little ways, but not too far. Identify those and who's all going to be in there. You have a football field, that's great. You've got a tennis court, you can't get as many people in there. So just know that.

Let the fire pulse through and stay out of the way and come back in there when you can see better and start hitting the spots, the stuff that's on fire next to the structure. You can do a lot of saves that way.

And then the other thing is, at that point, if you're actively entering an area with structures, make note if there's homeowners still around and visit with them. It's a big safety thing. I've been on a few fires when homeowners have stayed and it's been extremely dicey dealing with that reality when the fire front approaches. I don't wish that on anybody.

Travis – I just know that sometimes you end up in the thick of it and we all want to do the right thing. We're going to try and get in there and do good work. I've been in scenarios where it ends up almost like a free-for-all: everybody just go and try to do good things. There's not as much organization. So this crew's digging line around the house and this one's spraying what they can and somebody else is throwing firewood. It's definitely not as coordinated as we would like it to be.

When you're in those moments, what are the most effective efforts? And I really like what you started with, which is keep track of your people, combined with the fire following. I think this is really key. Because the best thing to do might just be to say: "*Hey, let's just back out a little bit, get behind the fire front and let's come in and be more effective after the main front passes.*" That whole concept might not be intuitive to some folks—that you can do a lot of good by coming in behind the fire front.

Hunter – As an organization, we lose structures in that scenario because we're chasing and we're chasing, trying to stay in front of the fire. The moth to the flame thing. And we don't look back at what was behind us and there's nobody back there to look at it. So it may be that afternoon, maybe for the next day or three days. On the December 2021 Marshall Fire in Colorado, I believe the last structure (outbuilding) burned six days after the big onslaught. Something just smoldered in a receptive place—and at that point it was snowing.

So who would've thought?

One of the lines I always tell people is that the fire may have taken some structures when it originally pushed through. We can't always help that because we don't have time to mitigate what the homeowner should have done. But if we as an organization lose them one day, three days, five days after the fire front comes through, we should have been doing our homework and doing the mop-up around the structures after the fire front passes. We talk about going one chain in on a fireline. We need to do that same thing around a structure.

On a fire last year, I rolled in on a random-draw assignment and said: "*Hey, I'll just go out, get SA, see what's going on around here and I'll get back to you tonight at the meeting.*" I come back into the Night Ops briefing and here's this new guy—me. I don't know a person in the room. They go around and do their reports and they bypass me. I say: *"Whoa, I got something to say here. I really wish you would start looking at the structures that are still standing amongst all this carnage. There's a lot of burning material adjacent to those standing homes from the neighboring structures. That stuff will creep right over and grab a structure and it'll be gone."*

I had to make that statement in front of a group I didn't know. It was exciting to hear on the radio over the next several days, the divisions were doing it and saying: *"Yeah, we picked up some heat around 12 structures and we mitigated that and we're doing the mop-up near these structures."* So it was nice that they took my input to heart. It's not glamorous work, but it's honest work and it's important work.

Travis – And if we're making risk-informed decisions and we're in that chaotic moment where oversight is starting to fall apart because fire is moving into a neighborhood and it's getting a little scattered and we're trying to make an individual decision, it's worth noting that, tactically, it's very possible to do some really good work *after* that fire front passes. And that might be the deciding factor for saying: *"Hey, let's just go to the temporary refuge area and come back in as soon as we can."*

That is a tactically sound decision.

Hunter – For sure.

Travis – Any closing thoughts?

Hunter – Be thoughtful. Use the Handy Dandy: Structure Protection Tactics Guide | Wildland Fire Lessons Learned Center. Share it, print it, cannibalize pages, use it. By the way, who is pictured on page 20?