



QUESTIONS AND ANSWERS IN REGARDS TO CODES

ANALYSIS OF IFC 316.3 AND IFC 316.5

OBJECTIVE

The goal of this document is to provide building owners and manufacturer reps a guide to introduce the Crotega Threat Suppression System to Authorities Having Jurisdiction (AHJ), such as building officials, law enforcement officials, and fire marshals. Crotega representatives have met face-to-face with Minnesota State Fire Marshal officials, Minnesota Building Code officials, and the President of the International Code Council, as well as two other ICC representatives to determine what code issues might arise as building owners across the United States install Crotega Threat Suppression Systems for protection in their buildings.

Crotega's Investigative Process

Minnesota State Fire Marshal

Minnesota State Fire Marshals have had a significant impact on the design of the Crotega Threat Suppression System. Following a 2014 meeting with seven State Fire Marshal officials, the founder, Jody Allen Crowe, used the advice provided to advance the design of the system into its current configuration. A meeting at the Crotega Research Center with over a dozen Deputy State Fire Marshals in June 2016 led to further advice, including seeking professional consultation on the process. Two codes were cited by the State Fire Marshal's officials for further review, IFC 316.3 Pitfalls, and IFC 316.5 Security Device. Crotega has kept the Minnesota State Fire Marshals apprised of progress, including the Product Safety Lab testing of the Crotega Repuls™ product.

Minnesota Building Code Officials

Crotega officials met with the Minnesota Building Code officials to ask if there were any building codes that would preclude installation of the Crotega Threat Suppression System. The officials were aware of our system and had already determined there was no Minnesota building code that would stop a building owner from installing the Crotega Threat Suppression System in a building. The only time the Minnesota State Building Code officials would be involved in a decision for installation in a school would be when the \$100,000 threshold for state approval is reached. Their suggestion, when a local building official raises code concerns, is

to have the building owner ask the local official to show them the code, which, according to the state officials, does not exist.

International Code Council Evaluation Services (ICC-ES)

In August 2016, three Crotega representatives, along with consultant, Jay Peters, traveled to Los Angeles to meet with the International Code Council (ICC) President and two department heads, asking for an analysis of our system in regard to current International Codes. We were informed in that meeting there is no code in the International Building Codes concerning a system such as the Crotega Threat Suppression System. We asked for an ICC-ES Evaluation Service Report that would provide guidance. After taking that question under consideration, we received the following response from Michael Temesvary, P.E., ICC Evaluation Service, LLC:

"I discussed the Crotega system with ICC-ES engineering management staff. They concluded that with respect to IFC recognition, there was not a particular section that would clearly apply to this type of system and act as the basis for an ICC-ES Evaluation Service Report (ESR). The attached 2015 IFC code and commentary section 316.5 was cited as being a concern for the acceptance of this particular product."

It is important to note that ICC ES staff did not consider IFC 315.3 Pitfalls as applying to Crotega Threat Suppression Systems. ICC staff provided Crotega with a copy of IFC Code 316.5 and Comments that provides a summary of the reasoning for the code. The comment section is important to understanding the intent of the code.

Crotega's Analysis of IFC Code 316.5 and Commentary

316.5 Security Device. Any security device or system that emits any medium that could obscure a means of egress in any building, structure or premise shall be prohibited.

IFC Code Comment Section

Security devices that, when activated, emit a medium such as smoke or other aerosols into a building could obscure exits or confuse occupants, thus creating an inherently dangerous situation for the public and responding emergency personnel. In cases of activation of these devices, armed criminal perpetrators could be trapped inside the buildings. Law enforcement personnel arriving on the scene could easily believe that a building is on fire and responding fire fighters could enter and be confronted by the perpetrator. Another danger is that false fire alarms could be transmitted automatically or by passers-by because of the appearance of smoke in the building. See also the commentary to Section 1031.2 regarding the reliability of exits.

Analysis:

Obscure (verb); keep from being seen; conceal. "gray clouds obscure the sun"

Synonyms hide, conceal, cover, veil, shroud, screen, mask, cloak, cast a shadow over, shadow, block (out), obliterate, eclipse, darken

Crotega Repuls is not a fog, nor is it an aerosol. It is not pepper spray, OC or CS gas. It is not deployed automatically. The system only deploys when activated by a trained person upon visual recognition of a threat inside the building. The system disperses water with irritating properties through pressurized nozzles in short bursts of 5, 10, or 15 seconds, up to a total of 30 seconds of deployment. Each burst is activated by a trained building occupant, based on visual recognition of a threat in the building. At no time is an exit pathway visually obscured, as would be if a fog were deployed or if a person set off a fire extinguisher in a room or hallway. Egress may be delayed for up to 30 seconds, much shorter of a time that would occur if a fire sprinkler head is open and spraying putrid, bacteria-laden water for as long as there is pressure in the system (a process that lasts much longer than 30 seconds and could cause a great deal of confusion and water damage). With the Crotega Threat Suppression System, egress is not obscured during or upon completion of the short burst or bursts of spray. A burst of Crotega Repuls does not "hide, conceal, cover, veil, shroud, screen, mask, cloak, cast a shadow over, shadow, block (out), obliterate, eclipse, or darken" an egress.

We understand in conversations with consultants that a precedent for delaying egress for 30 seconds has been established. IFC 1010.1.9.7 states egress can be delayed for a maximum of 30 seconds in approved settings. When a Minnesota Deputy State Fire Marshal observed our beta site, he was clear in asking that we keep the burst to 30 seconds or less.

The total time of spray is 30 seconds or less. A person can move through the zone of deployment as soon as the spray burst ends with minimal residual impact from the sprayed water, unlike the lingering strong impact of aerosol pepper spray, OC or CS gas, which can last for days if not totally cleaned off walls, ceilings, and floors.

In further analyzing the commentary for IFC 316.5, it appears the focus of the code is to prohibit the use of security smoke machines in structures, a security strategy popular in Europe and one that is now becoming a reality in pharmacies in the United States. It was common when smoke machines were first used, that bystanders would call the fire department because they thought the smoke was from a fire and the local department had to respond, which was costly and time consuming. Smoke security devices are also considered to be one of the more dangerous things in an emergency situation because of its persistent ability to delay/prevent egress. We entirely agree with IFC 316.5 when considering fog. We have found that to be true through testing of a fog device in our research facility. We found that, with fog, while it may be an effective shielding strategy in the case of an active shooting event, visual recognition and egress would be obscured for up to 30 minutes or more.

Crotega's Analysis of IFC Code 316.3 and Commentary

ICC ES staff, in the response to our request, did not cite IFC 316.3 Pitfalls as a possible barrier. Since IFC 316.3 Pitfalls was brought up as a possible barrier in March 2016 email from a Minnesota Deputy State Fire Marshal, this analysis provides Crotega's analysis regarding 316.3.

316.3 Pitfalls. The intentional design or alteration of buildings to disable, injure, maim or kill intruders is prohibited. A person shall not install and use firearms, sharp or pointed objects, razor wire, explosives, flammable or combustible liquid containers or dispensers containing highly toxic, toxic, irritant, or other hazardous materials in a manner that could passively or actively disable, injure, maim or kill a fire fighter who forcibly enters a building for the purpose of controlling or extinguishing a fire, rescuing trapped occupants or rendering other emergency assistance.

IFC Code Comments Section:

This paragraph prohibits the use of 'booby-traps' in building, for whatever reason, if they could injure or disable the emergency responder during the performance of his or her duties.

Analysis:

Crotega agrees with ICC ES that the activation of the Crotega Threat Suppression System does not fit the definition of a "Pitfall", as defined in IFC 316.3. It is not a 'booby-trap'. It is not an automatic deployment. The system cannot be deployed without human interaction. Deployment only occurs when activated by a building occupant upon visual recognition of a threat.

The code and comments explicitly focus on forcible entry into a building by fire fighters for purposes of controlling or extinguishing a fire, rescuing trapped occupants or rendering other emergency assistance. In each of these cases, the Crotega Threat Suppression System would not activate upon forcible entry or in the event of a fire, but only be activated by trained personnel inside the building upon visual recognition of a threat, thus not fitting the definition or intent of the code.

SUMMARY

The Crotega Threat Suppression system meets the requirements of IFC 316.3 and IFC 316.5. It has been designed such that it does not pose significant impediment to ingress or egress of first responders and building occupants. Our testing confirms that the system meets our objectives of deterring, disrupting, and delaying intruders with minimal impact on occupants.

Addendum



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After review of the applicable IFC code sections and associated commentary, and consulting with ICC code opinion/interpretation staff, it's our position that the Threat Suppression System does not clearly fall within the scope of either IFC 316.3 - Pitfalls, nor IFC 316.5- Security Device; and it's likely the IFC did not intend to address this type of system. Therefore, it's our opinion/interpretation that the 2015 MN State Fire Code does not address this type of system with enough detail to prohibit installation.

ICC code opinion/interpretation staff did mention that IFC Section 102.9 (Matters not provided for) could be cited by an authority having jurisdiction (AHJ) to prohibit installation should the local code official determine it necessary for the safety of occupants. However, State Fire Marshal Inspectors will not be citing 102.9 for this purpose.

[A] 102.9 Matters not provided for. Requirements that are essential for the public safety of an existing or proposed activity, building or structure, or for the safety of the occupants thereof, which are not specifically provided for by this code, shall be determined by the *fire code official*.

Please note that this opinion/interpretation does not constitute an endorsement or approval of the Threat Suppression System, as the SFMD does not endorse or approve specific products.

Finally, I want to thank you for contacting us early on during the development process, and keeping us updated as the process unfolded.

Sincerely,
Forrest Williams

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