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Introduction

This is a Culmination project that focuses on the safe use of pyrotechnics in a performance setting. The process will include collecting documents and creating a paper trail that demonstrates best practice of safe usage of pyro or any special effects in a theater safely. Consulting 3 different experts, each of which that represent different areas in which the safety procedures need to be followed. If any part of the show with any effect that the FDNY does not see or know a venue can perform safely or adequately, could shut the show down, or deny the use of said effect. The experts list includes; Jim Skeley the Director of theater Projects and safety from the Public Theater, Jean Gilus the Fire Safety Director from New York City College of Technology, and Allison Aaron business manager and pyrotechnician at J&M effects. Jim is the Director of theater projects and safety at the Public Theatre; his role in my interview, was presenting the venue perspective of safety. If effects wanted to happen, he was the one to sign for it. Jean Gilus is the Fires safety Director at City Tech; his role is the safety inside the building in case of fires or emergencies. He is the person responsible for the communication between City Tech safety and the FDNY in the event of an emergency. J&M are the people that install and fire off pyrotechnics; they are licensed experts in handling pyrotechnics.

Documentation

The objects anyone should get, are all the permits and licenses that relate to pyro and effects, from handling to storing them. It also includes any requirements somebody might need, since with any logical thought, these needs would be passed through the FDNY. A lot of companies that came up in my searches were; NFPA, OSHA, and the FDNY, all of which completely necessary. NFPA, is the National Fire Protection Association, OSHA being the Occupational Safety and Health Association, the FDNY being the Fire Department of New York City. All of these have their rules pertaining to effects and doing pyrotechnics, the FDNY, takes direct charge in anything involving fire or explosives within the city. OSHA and NFPA are the overall safety regulators, that set the safety standards, the NFPA being the open standard for fire regulations in the country.

Venue Safety Expert

I start with my list of interviews at the Public theatre with Jim Szekely. Being in an established venue helped in my understanding on what occurs within them, and Jim Szekely was an important part of that process. As the safety director of the public theater, Jim is the one that makes sure all the productions in the theater meet their safety standards. When special effects are involved, there is a form he needs to fill. He fills an intent form that he shows the FDNY, who then will acknowledge it, and inspect the venue. The intent form includes an entire checklist:

- A place of assembly permit
- An owner's signature
- General Liability insurance
- Site Diagram

- Copy of COF card holder

These are all criteria required from the FDNY, because they take the likelihood of any kind of explosives or open flames inside an establishment very seriously. The owner's signature for example, is the building owner's consent to the performance of said effects in their building, while the public place of assembly permit, makes sure the building will comply with a predetermined capacity. This among other things in the form lets the FDNY know that the facility is knowledgeable about their performances.

City Tech Expert

The second interview was with Jean Gilus, who is the fire safety director of NYCCT. Jean is the person that assists the FDNY when they arrive to the building in case of emergencies. He is present for all performances that happen at the school, and makes sure emergency plans are followed and practiced, fire alarm system is working properly and reviews what it is a production would want to do within the facility. Emergency plans are procedures he practices as a fire safety director in case of fires or in the case of an active shooter. To perform any kind of Special effects in his proximity:

- he needs to be informed of the effect, and consults in a private Materials Safety Data Sheet, whether the amount of the effect is in capable hands of the performers.
- He mediates with the FDNY of the effect and takes charge of the disabling of the fire alarm in the area, if need be.
- Is present for the use of said effects and coordinates safety measures in the event of an emergency.

With any effect, regardless, he must consult with the FDNY, since any trigger of the fire alarms from the building's system will call an unnecessary visit from the FDNY. He is the holder of an f-85 COF which replaces f-25 and f-58 COFs and must complete a active shooter and medical emergency preparedness course to obtain one.

Pyrotechnician

For a pyrotechnic, an interview was conducted with Allison Aaron, who is the business manager and a pyrotechnician at J&M effects. Depending on the amount of effect or which kind of effect one uses, would have determined the permit I would need for a show. He would need to already have experience with the three classes of Pyro A, B, and C documented in the e-18, 19, and 27 respectively. The application will make the person a certificated pyrotechnician in the state of New York. This is required and in case of emergency as well, one would also need to have insurance covering up to \$1,000,000. This if hired by a company, is what a pyro technic would bring to a venue, which all covers the use of smoke or open flame on a stage.

There are specific documents one would need as a pyrotechnician, to perform their effects. They are as follows:

- A general liability insurance
- Copy of COF card: e-18, e-19, or e-27
- Pyrotechnician license (optional)
- Time and date of effect
- What the effect is and where it will be stored

Using Pyro in Voorhees

If anyone wanted to use fog in the Voorhees theater they would have to fill the letter of intent to the explosive's unit of the FDNY. Next, they would consult with Jean of my use of fog in the theater, so somebody would be able to manage the fire sprinkler system. It would be deactivated for the duration of the show, and the letter will advise the FDNY of the use of fog during the show hours. The person manning the fire system will be the security desk, since they are the closest means of safety. They will be advised by Jean or somebody with comms inside, in case of an actual emergency (or an actual fire) so they could reactivate the fire system within the theater. If one were to do fire or pyro, one would still need to write the letter of intent, encompassing the duration of the show, the description of the effect and the requirements (certificates and permits). After the FDNY has deemed the theater safe when they come for an inspection of the venue, the venue has the OK to go on with their performances, so long as they do not go past their agreed upon amount of effect, or beyond their time frame.

(Make a list of the documents you need and a second list of who you would inform)

List of documents:

- Public place of assembly permit
- Copy of COF card holder(s)
- Owner's signature
- FDNY letter of intent
- General liability insurance
- Description of effect and time of show
- Site Diagram
- Where the effect is to be stored

This comes from a letter of intent/Permit application issued to and by the FDNY explosives unit. They are a specific branch of the FDNY that manages the use, and storage of explosives, in this case the use of open flames, smoke, and blank cartridges in a venue. The NFPA code that pertains to my research is specifically and wholly within the code 1126 of the NFPA code. NYC data that I found, is mostly in particular consents, such as the letter of intent, and owner's consent. Another form of code one must comply with is the New York State Penal Law #450. The OSHA code that is specific to the OSHA code 1910 subpart E for means of egress, G for occupational health and environmental control, H for hazardous materials, I for personal protection and L for fire protection.

The people I would inform of my effect are as followed:

- Building manager
- Stage/House manager
- Building safety personnel
- Building owner
- FDNY
- NYPD (in the use of prop guns)
- Insurance company

(In conclusion how much time do you need to actually be able to shoot of pyro in Voorhees)

In conclusion, considering the permits the Voorhees building already has, shooting pyro is only a matter of how long it would take for somebody to fund it. Between the costs of the effect itself, the insurance and the person doing the technical work, is about 1200 USD. 300 for the performer for one effect, 350 for the effect's material, and about 600 for the insurance for the venue. It is also 210/hr for the handling and storage of explosives, and a fee of about 200 for the FDNY to inspect the venue. The inspection the FDNY needs to conduct before they deem the venue safe is necessary, which one should appoint as soon as the documents are in order. The letter is given, the FDNY does their inspection, and could grant the permit to the venue the same day for the performance.

Results

What I learned by this entire project; is how long it takes to get effects done. The process of going about it, is long since there are so many people that could and eventually be involved. The permits for the FDNY is the major factor, because they have the final say in all productions wishing to conduct effects. Getting the permits themselves is time consuming since they each have their own requirements, and finding the right person is also difficult. Reality as it is, makes getting appointments with individuals difficult, since one could be more preoccupied than another, so certain interactions could be had out of order. The coordination would also need to be precise, since the use, handling or storage of any effect could be dangerous. There are a lot of people involved in the process of getting safe effects on a stage, as well as the time of the effect being used as well. Even if it is fog, or a cigarette on stage, the fire alarm going off in a building will bring the FDNY speeding to the scene. They charge for the false alarm and in the event of prop guns is even more severe. The penalties outweigh the rewards for not doing effects properly and safely, which is what any person involved in the show would not want to happen.

"UNITED STATES DEPARTMENT OF LABOR." Occupational Safety and Health Administration, www.osha.gov/SLTC/pyrotechnic/display.html.

"NFPA 1126." NFPA 1126: Standard for the Use of Pyrotechnics Before a Proximate Audience, www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-andstandards/detail?code=1126.

"Licensing and Other Provisions Relating To Fireworks." NY State Senate, 2 Mar. 2019, www.nysenate.gov/legislation/laws/PEN/P4TWA405

"Department of Labor." New Pyrotechnic Licensing Requirements - New York State Department of Labor, www.labor.ny.gov/workerprotection/safetyhealth/New_Pyro_Lic_Requirements.shtm

"Certificates-Of-Fitness". *Www1.Nyc.Gov*, 2019, <https://www1.nyc.gov/site/fdny/business/all-certifications/certificates-of-fitness.page>. Accessed 3 May 2019.

"Permits". *Www1.Nyc.Gov*, 2019, <https://www1.nyc.gov/site/fdny/business/all-certifications/permits.page>. Accessed 3 May 2019.

Jean Gilus *Fire safety Director*

Jim Szekely *Director of theater projects & safety*

Allison Aaron *Business manager / Pyrotechnician*