



Article 530 now clearly defines on-location motion picture production areas as being within its scope. These places are not carnivals or recreational vehicle parks falling within Articles 525 and 551.

Bringing *NEC* Article 530 into the present

BY ALAN ROWE AND STEVE TERRY

THE NATIONAL ELECTRICAL CODE (NEC), more formally known as NFPA 70, is an immense document both in terms of volume and importance. This is the document that governs electrical usage, installations, and standards throughout the United States and has a huge influence in many other countries. Thousands of people and interest groups, including Authorities Having Jurisdiction (AHJs), public safety officers, manufacturers, and end users, propose and then debate hundreds of changes to the code every three years. In addition, every proposed change is subject to two stages of public review. While Article 518 (Assembly

Occupancies), 520 (*Theaters, Audience Areas of Motion Picture and Television Studios, Performance Areas, and Similar Locations*), Article 525 (*Carnivals, Circuses, Fairs, and Similar Events*), and Article 530 (*Motion Picture Studios and Similar Locations*) are of particular importance to us in the entertainment industry, these Special Occupancy articles of the NEC are often unknown or ignored by some people and organizations outside the entertainment industry.

It falls on those of us in the entertainment industry to keep the NEC updated to reflect the changes in industry equipment and practices. Through USITT, ESTA, and their participating members, we

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have successfully revised Articles 518, 520, 525, and 530 in previous cycles beginning in 1984, which coincided with the transition from DC to AC power in the motion picture and television industry. For the 2023 revision cycle, we focused on Article 530—which hadn't been materially updated in our earlier revisions. Instead of revising the Article one clause at a time, we decided to take a different approach, and revised the entire Article with a single proposal covering every area of Article 530 that needed changing.

With demand for recorded content rapidly expanding in the we hope soon-to-be post-pandemic world, motion picture and television production is happening all over the United States. Many public safety officers and AHJs who have never experienced our unique equipment and safe working practices are suddenly finding themselves at a loss when they are exposed to motion picture and television production, especially in remote locations outside traditional production cities. This demand for relevant specialty guidance from the *NEC* emphasized the urgent need to revise Article 530.

Our guiding vision in this process was to take our current safe production practices and codify them into the *NEC*. In some cases, this meant eliminating previous requirements that were obsolete, and in others it required introducing new requirements. The motion picture and television industry is fast paced and high stakes; it relies on speed and efficiency to meet the demands of our producers as well the needs of our communities. Many of the locations where we work are limited in the amount of time we have available, and we can wear out our welcome very quickly in residential neighborhoods. We are frequently working with high-demand talent on an extremely tight schedule, so time literally becomes money. Maintaining both efficiency and a high standard of safety is of extreme importance.

In order to make this major revision possible, we created a small task group as part of the ESTA Electrical Power Working Group, consisting of:

Task Group Member	Affiliations
Alan Rowe, Chair	IATSE Local 728, <i>NEC</i> Code Panel 15
Steve Terry	ETC, <i>NEC</i> Code Panel 15
Mike Skinner	AMPTP, <i>NEC</i> Code Panel 15
Mitch Hefter	Signify, <i>NEC</i> Code Panel 15
Eddie Kramer	IATSE Local One, <i>NEC</i> Code Panel 15
Hans Lau	IATSE Local 728
Charlie McIntyre	IATSE Local 728

We also enlisted the input of end-users who have many years, and in some cases several decades, of experience from IATSE (International Alliance of Theatrical Stage Employees) film locals located in production centers such as Los Angeles (Local 728), New York (Local 52), Boston (Local 481), Chicago (Local 476), San Francisco (Local 16), New Orleans (Local 478), and Atlanta



Article 530 now references ESTA's standard, ANSI E1.58, *Electrical Safety Standard for Portable Stage and Studio Equipment Used Outdoors*, for guidance.

(Local 479). Many of these participants are ETCP Entertainment Electricians. Like everything else during the past two years, we held several meetings online and distributed documentation for feedback. The motion picture and television industry was one of the first to restart after the shutdown, so we had some people who made every meeting and discussed topics with their colleagues at work and others who were only able to comment on the draft documents.

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Also, it so happens that the person with the longest term of service on Code Making Panel 15 of the *NEC* (the panel that oversees the Entertainment Articles) is Mike Skinner, who represents the Alliance of Motion Picture & Television Producers (AMPTP). Mike worked simultaneously with the studios, and we coordinated our concerns so that the result was a unified industry proposal. While the IATSE and the AMPTP have a good working relationship in the safety arena, it was ESTA that served as the glue to keep this all together and bring it to the National Fire Protection Association's (NFPA) *NEC* revision process.

The first step was to identify the issues with the then-current version of Article 530, and since the industry has significantly changed since the last revision, there were many. The first thing you will notice is a change to the title of the Article. With so much production happening outside of a studio facility, there was a lot of



The revisions to Article 530 also clarify what equipment may be used in more conventional motion picture studios indoors, and are consistent with current industry good practice.

confusion over how to interpret “Similar Locations” in the original title of the Article. Some jurisdictions interpreted that anywhere we were filming was “similar” and others interpreted it to only include warehouse type facilities. This led to inconsistent enforcement, and in some cases the AHJs incorrectly applied the general rules of the *NEC* without applying the specialty modifications of Article 530 to Remote Locations. The industry uses the term “Remote Locations,” so we cleared up the confusion by incorporating that language into the revised Article as well as a definition of the term.

Another big change to the entire *NEC* is the move of all definitions to Article 100.

The next issue we tackled was the changes in production which eliminated older technology and practices, such as editing tables and DC arc lamps, and incorporated newer technology and practices, such as Ground Fault Circuit Interrupters (GFCIs) and cast trailers. Key in this change was to extend the relevant provisions of Article 530 to include previously uncovered Support Areas such as parked in-use production vehicles and basecamps.

Another factor we considered was that the industry is expanding to new areas, not only geographically but also in terms of creativity. Amateur filmmakers are creating incredible amounts of serious content on online platforms such as Vimeo and YouTube. The portable cord-and-plug connected equipment specifically designed for professional use requires training in both its application and construction before someone is allowed to use it. Additionally, someone who is not qualified will also not be aware of the industry safe practices, such as constant monitoring of the equipment, cable,

and power sources, using our equipment outdoors, and specific requirements for production power in public areas. For these reasons, we also introduced specific requirements for Qualified Personnel and restricted access to our systems and equipment.

Here are some of the changes that have been incorporated into the new Article 530:

- Changed title to “Motion Picture and Television Studios and Remote Locations.”
- New scope of the document now reads: “The requirements of this article shall apply to motion picture and television production in facilities and locations staffed by qualified personnel, except as provided in 520.1. Such occupancies shall include those using either electronic or film cameras for image capture.” Note that 520.1 invokes the more stringent requirements of Article 520 in audience areas of Article 530 occupancies.
- Portable power distribution equipment shall be used in facilities with restricted public access or in the case of remote locations, public access shall be restricted by the use of barriers or other appropriate access control measures.
- Electrical equipment and systems shall be deployed and energized by qualified personnel, and while energized the systems shall be continuously supervised by trained, qualified, and employer-authorized personnel.
- Special-Purpose Multi-circuit Cable Systems now correspond with the new requirements of Article 520 for this equipment.
- Branch circuits that are providing egress lighting, power for life critical stunts, or any other condition where a nonorderly shutdown might introduce additional or increased hazards shall not be protected by a GFCI.
- Field-assembled extension cords and multi-conductor cable assemblies consisting of listed connectors and cable shall be permitted in production areas. That is, extension cables need not be listed as complete assemblies.
- The 400% overcurrent protective device allowance now only applies to portable single-conductor feeder cable with single-pole separable connectors.
- Listing is required for all portable luminaires except “purpose-built luminaires, lighting, and effects equipment” which is not required to be listed but shall be approved. Luminaires used as properties or set decoration are not required to be listed.
- Electrical equipment used in non-production areas shall be restricted from access by the general public.
- Portable- and vehicle-mounted generators shall be located away from flammable materials and exhaust shall be vented away from structures and other areas where people may congregate.
- Portable- and vehicle-mounted generators shall not be operated in areas without natural or provided ventilation to prevent the buildup of exhaust.
- GFCI protection shall be provided for in all outdoor 125-volt,

single-phase, 15- and 20-ampere receptacles and equipment that are readily accessible to unqualified personnel and that are used for other than motion picture and television production equipment. This means that while production equipment and circuits outdoors are exempt from GFCI protection, there is an *additional* more stringent requirement for GFCIs in Support Areas.

- New requirements for the bonding and grounding of Production Vehicles and Trailers that connect to electrical distribution systems.

Another big change to the entire *NEC* is the move of all definitions to Article 100. We removed many of the definitions in Article 530 that are now obsolete. Some of the additions include:

- **Production Areas.** Areas where portable electrical equipment covered by this article is used to implement the capture of images.
- **Purpose-Built.** A custom luminaire, piece of lighting equipment, or effect that is constructed for a specific production and is not serially manufactured.
- **Remote Location.** A location, other than a motion picture or television studio, where a production is filmed or recorded.
- **Support Areas.** Areas, other than fixed production offices, intended to support production and where the capture of the image will not take place. Such areas include, but are not limited to, mobile production office, storage, and workspaces; vehicles and trailers for cast, makeup, hair, lighting, grip, wardrobe, catering, crafts service, and portable restrooms.

This revision was a monumental task. As such, this *Protocol* article cannot adequately cover all of the changes in detail. The new Article 530 will take effect on January 1, 2023, in some jurisdictions within the United States. Many jurisdictions are on a delayed adoption cycle so, while it may not be adopted by your AHJ yet, there is no reason not to start using it right away. ■



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