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AN EXAMPLE OF A STANDARD ARC FLASH PPE LABELING STRATEGY

1.0 BACKGROUND INFORMATION:

1. The basis for the labeling of equipment for potential electric arc flash hazards is:

   a. NEC 2020 Article 110.16**:**

   110.16 Arc-Flash Hazard Warning.

   (A) General. Electrical equipment, such as switchboards, switchgear, panelboards, industrial control panels, meter socket enclosures, and motor control centers, that is in other than dwelling units, and is likely to require examination, adjustment, servicing, or maintenance while energized, shall be field or factory marked to warn qualified persons of potential electric arc flash hazards. The marking shall meet the requirements in 110.21(B) and shall be located so as to be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment.

   (B) Service Equipment. In other than dwelling units, in addition to the requirements in 110.16(A), a permanent label shall be field or factory applied to service equipment rated 1200 amps or more. The label shall meet the requirements of 110.21(B) and contain the following information:

   (1) Nominal system voltage
   (2) Available fault current at the service overcurrent protective devices
   (3) The clearing time of service overcurrent protective devices based on the available fault current at the service equipment
   (4) The date the label was applied

   Exception: Service equipment labeling shall not be required if an arc flash label is applied in accordance with acceptable industry practice.

   Informational Note No. 1*: NFPA 70E-2018, Standard for Electrical Safety in the Workplace,* provides guidance, such as determining severity of potential exposure, planning safe work practices, arc flash labeling, and selecting personal protective equipment. [Note: NFPA 70E-2021 is now in effect.]

   Informational Note No. 2: ANSI Z535.4-2011, *Product Safety Signs and Labels,* provides guidelines for the design of safety signs and labels for application to products.

   Informational Note No. 3: Acceptable industry practices for equipment labeling are described in *NFPA 70E-2018, Standard for Electrical Safety in the Workplace*. This standard provides specific criteria for developing arc-flash labels for equipment that provides nominal system voltage, incident energy levels, arc-flash boundaries, minimum required levels of personal protective equipment, and so forth.

b. NFPA 70E-2021 Article 130.5(H)**:**

(H) Equipment Labeling. Electrical equipment such as switchboards, panelboards, industrial control panels, meter socket enclosures, and motor control centers that are in other than dwelling units and that are likely to require examination, adjustment, servicing, or maintenance while energized, shall be marked with a label containing all the following information:

(1) Nominal system voltage
(2) Arc flash boundary
(3) At least one of the following:
    a. Available incident energy and the corresponding working distance, or the arc flash PPE category …
    b. Minimum arc rating of clothing
    c. Site-specific level of PPE

Exception No. 1: Unless changes in electrical distribution system(s) render the label inaccurate, labels applied prior to the effective date of this edition of the standard shall be acceptable if they complied with the requirements for equipment labeling in the standard in effect at the time the labels were applied.

Exception No. 2: In supervised industrial installations where conditions of maintenance and engineering supervision ensure that only qualified persons monitor and service the system, the information required in 130.5(H)(1) through 130.5(H)(3) shall be permitted to be documented in a manner that is readily available to persons likely to perform examination, servicing, maintenance, and operation of the equipment while energized.

The method of calculating and the data to support the information for the label shall be documented. The data shall be reviewed for accuracy at intervals not to exceed 5 years. Where the review of data identifies a change that renders the label inaccurate, the label shall be updated.

The owner of the electrical equipment shall be responsible for the documentation, installation, and maintenance of the field-marked label.

2. It is planned that virtually all equipment at 480V and above would be labeled, except for terminal boxes associated with motors, based on NEC 2020 Article 110.16 and NFPA 70E-2021 Article 130.5 (H).

3. With regard to the low voltage ($\leq$ 240V) systems, the IEEE Standard 1584-2018 states, “Sustainable arcs are possible but less likely in three-phase systems operating at 240V nominal or less with an available short-circuit less than 2000A”.

4. Based on items 1 and 2 above, the goal is to label virtually all equipment at 480V that has a bolted panel or door that can be accessible to an electrician when it is energized. Specific guidelines for 480V systems are given as follows:

    a. Motors and 277V lighting would not be labeled.

    b. Transformers that step down from 480V to lower voltages would be labeled.

    c. Panels and disconnect switches would be labeled.

    d. Where motors are fed directly from an MCC switch or breaker, there is nothing down-line to label.

    e. Equipment that is down-line of a VFD would be labeled the same as if the VFD were bypassed. (The protection from the VFD for a fault is generally as fast or faster than the up-line device.)

    f. Where the device is too small for the label, such as a welding receptacle or other mounted receptacle, but still fits the criteria given above, a label is to be put as close to the device as possible. This could be on the wall near to the device.

5. For 240V and 208V systems that are fed by sources of $I_{SC} \geq$ 2000A, the same guidelines as for 480V systems would apply as given in item 4 above.

6. It is XYZ's objective to define labels which are generally applicable to XYZ systems, but that do not give the specific calculations for each particular location. The XYZ labels are in accordance with NFPA 70E guidelines. In some cases the XYZ labeling is more conservative than what is recommended in NFPA 70E. The following labeling strategy details are used by XYZ:

   a. Information for both arc flash PPE level and shock protection are given. (The shock protection information is not required by NFPA-70E, but it is commonly included on labels throughout the industry.)

   b. For medium voltage systems (1 kV through 34.5 kV) PPE = 2 is the minimum PPE to be used for working on energized equipment.

   c. For low voltage systems (< 1000V), when circuit breakers are used for protection, PPE = 2 is the minimum PPE to be used for working on energized equipment. (For more detailed information on this topic, see Section 2.0 at this link http://www.qualtecheng.com/docs/arc-flash-hazard/QT-632.pdf .)

   d. The PPE Level that has been determined for a given location is to be used for the switching of that device unless a risk assessment has determined that it is not required. (See Section 4.0.)

7. Although there are no standards on working distances, in this document the labels are based on the following typical working distances:

208V to 750V	18" Working Distance
1 kV to 8 kV	24" Working Distance
8 kV to 15 kV	36" Working Distance

8. The arc flash labels are based on the equipment being properly installed and properly maintained.

9. The labeling strategy is based on PPE levels of 0, 2, & 4.
   a. 0 – The incident energy is $\leq$ 1.2 cal/cm^2.
   b. 2 – The incident energy is $\leq$ 8.0 cal/cm^2.
   c. 4 – The incident energy is $\leq$ 40 cal/cm^2.

2.0 DEFINITIONS

Approach Boundaries for Shock & Flash Protection

The shock protection boundaries are applicable to the situation in which approaching personnel are exposed to live parts. The boundary definitions, as given in NFPA-70E 2021 Article 100, are given below. More detailed information with regard to the application of these boundaries is given in NFPA 70E-2021 Articles 130.4 and 130.5.

Limited Approach Boundary – An approach limit at a distance from an exposed energized electrical conductor or circuit part within which a shock hazard exists. (It is the closest distance an unqualified person can approach, unless accompanied by a qualified person.)

Restricted Approach Boundary – An approach limit at a distance from an exposed energized electrical conductor or circuit part within which there is an increased likelihood of electric shock, due to electrical arc-over combined with inadvertent movement for personnel working in close proximity to the energized electrical conductor or circuit part. (It is the closest distance to exposed energized electrical conductor or circuit part a qualified person can approach without proper PPE and tools.)

Arc Flash Boundary – When an arc flash hazard exists, an approach limit at a distance from an arc source at which incident energy equals 1.2 cal/cm^2 (5 J/cm^2).

Informational Note: According to the Stoll skin burn injury model, the onset of a second degree burn on unprotected skin is likely to occur at an exposure of 1.2 cal/cm^2 (5 J/cm^2) for one second.

A summary of the boundaries for unqualified and qualified persons is given as follows.

When there are exposed live parts, ***Unqualified Persons:***
- Must stay beyond the limited approach boundary (unless special circumstances exist, as are defined in NFPA 70E-2021 Article 130.4) and the arc flash boundary.
- Must not cross the restricted approach boundary under any circumstances.

When there are exposed live parts, ***Qualified Persons:***
- Must stay beyond the restricted approach boundary and the arc flash boundary unless equipped with the proper PPE and tools.

3.0 CLOTHING STRATEGY

The labeling is based on plant personnel having the appropriate clothing available. The key issues are noted as follows:

1. **OPERATORS** – In some locations it may be common practice for an equipment operator to perform a task where there is a potential incident energy of $\leq$ 1.2 cal/cm^2. (This is referred to as PPE Level 0.). To perform this task with the appropriate PPE level of 0, there are several options:

   a. ***Option 1*** - The operator is normally dressed in safety glasses, heavy-duty leather shoes, short-sleeve cotton shirt, and pants (such as denim cotton blue jeans). To reach a PPE level of 0, he/she would put on an appropriate cotton jacket, hearing protection (ear canal inserts), and leather gloves. (All underwear is to be cotton with no synthetic materials.)

   b. ***Option 2*** - The operator is normally dressed in a PPE level of 0 which includes safety glasses, heavy-duty leather shoes, long-sleeve cotton shirt, pants (such as denim cotton blue jeans), and hearing protection (ear canal inserts). To reach a PPE level of 0, he/she would put on leather gloves. (All underwear is to be cotton with no synthetic materials.)

2. **ELECTRICIANS** - Electricians need to be prepared to perform tasks with PPE Levels of 0 ($\leq$ 1.2 cal/cm^2), 2 ($\leq$ 8 cal/cm^2), and 4 ($\leq$ 40 cal/cm^2). Clothing strategies could include the following:

   a. ***Option 1*** - The electrician is normally dressed in safety glasses, short-sleeve cotton shirt, pants (such as denim cotton blue jeans), and leather shoes. (All underwear is to be cotton with no synthetic materials.)

      i. To perform tasks which are a PPE Level 0, he/she would put on
         - an appropriate cotton jacket,
         - hearing protection (ear canal inserts), and
         - heavy-duty leather gloves as needed.

      Arc Flash PPE Level 2 is required if any part of the body or clothing is exposed to energized circuit parts within the defined working distance. He/She would use insulated gloves and tools as required.

      ii. To perform tasks which are a PPE Level 2, he/she would put on
         - properly fitted arc-rated coveralls ($\geq$ 8 cal/cm^2),
         - hearing protection (ear canal inserts),
         - arc-rated balaclava,
         - hard hat with arc-rated face shield, and
         - insulating gloves with leather protectors.

      He/She would use insulated tools as required.

      iii. To perform tasks which are a PPE Level 4, he/she would put on
         - hearing protection (ear canal inserts),
         - hard hat,
         - flash suit jacket, pants, and hood ($\geq$ 40 cal/cm^2), and
         - arc-rated gloves.

      He/She would use insulated tools as required.

   b. ***Option 2*** - The electrician is normally dressed in safety glasses, long-sleeve cotton shirt, pants (such as denim cotton blue jeans), and leather shoes. (All underwear is to be cotton with no synthetic materials.)

      i. To perform tasks which are a PPE Level 0, he/she would put on
         - hearing protection (ear canal inserts), and
         - heavy-duty leather gloves as needed.

      Arc Flash PPE Level 2 is required if any part of the body or clothing is exposed to energized circuit parts within the defined working distance. He/She would use insulated gloves and tools as required.

ii. To perform tasks which are a PPE Level 2, he/she would put on
- properly fitted arc-rated coveralls ($\geq$ 8 cal/cm^2),
- hearing protection (ear canal inserts),
- arc-rated balaclava,
- hard hat with arc-rated face shield, and
- insulating gloves with leather protectors.

He/She would use insulated tools as required.

iii. To perform tasks which are a PPE Level 4, he/she would put on
- hearing protection (ear canal inserts),
- hard hat,
- flash suit jacket, pants, and hood ($\geq$ 40 cal/cm^2), and
- arc-rated gloves.

He/She would use insulated tools as required.

c. ***Option 3*** - The electrician is normally dressed in safety glasses, arc-rated shirt and pants ($\geq$ 8 cal/cm^2), and leather shoes. (All underwear is to be cotton with no synthetic materials.)

i. To perform tasks which are a PPE level of 0, he/she would put on
- hearing protection (ear canal inserts), and
- heavy-duty leather gloves as needed.

Arc Flash PPE Level 2 is required if any part of the body or clothing is exposed to energized circuit parts within the defined working distance. He/She would use insulated gloves and tools as required.

ii. To perform tasks which are a PPE level of 2, he/she would put on
- hearing protection (ear canal inserts),
- arc-rated balaclava,
- hard hat with arc-rated face shield, and
- insulating gloves with leather protectors.

He/She would use insulated tools as required.

iii. To perform tasks which are a PPE level of 4, he/she would put on
- hearing protection (ear canal inserts),
- hard hat,
- flash suit jacket, pants, and hood ($\geq$ 40 cal/cm^2), and
- arc-rated gloves.

He/She would use insulated tools as required.

d. ***Clarifying Notes*****:**

i. Where reference is made above to use leather gloves for arc flash protection, it is acceptable to use insulating rubber gloves with leather protectors.

ii. The leather protectors are not to be used alone as leather work gloves.

4.0 CAUTIONS

The following items are noted here:

1. **Equipment Maintenance** – The PPE labels are based on the proper operation of the up-line protective equipment. The protective equipment must be maintained and working properly for the PPE recommendation on the label to be appropriate for that location.

   a. Consequently, the proper maintenance of all equipment is a basic requirement for a good safety program.

   b. There is a note at the bottom of each label that emphasizes this point.

2. **Switching** – As described in NFPA 70E-2018 130.2(A)(4) and Table 130.5(C), a normal operating condition of a circuit breaker, switch, contactor, or starter exists if all of the following are true. In that case, there is no likelihood of an arc flash incident.

   a. The equipment is properly installed.

   b. The equipment is properly maintained.

   c. The equipment is used in accordance with instructions included in the listing and labeling and in accordance with manufacturer's instructions.

   d. The equipment doors are closed and secured.

   e. All equipment covers are in place and secured.

   f. There is no evidence of impending failure.

   It is XYZ's policy that the PPE Level determined for a given location is to be used for the switching of that device unless a Risk Assessment has determined that it is not required. (See Section 1.0, item 6.c.)

3. **PPE = 0** – In this document PPE = 0 corresponds to a maximum incident energy of 1.2 cal/cm^2 at the defined working distance. If any part of the body or clothing is exposed to energized circuit parts within the defined working distance, then PPE = 2 is required.

   For example, if the qualified person is working on energized equipment with exposed energized circuit parts, the person must wear the appropriate PPE. If the working distance is 18", the PPE level is 0, and the person is wearing cotton clothing (which is permissible) and leather gloves, it is essential that the parts of the body with exposed cotton clothing be beyond the 18" working distance. If the person is wearing leather and rubber gloves (as needed) and is working directly on the energized equipment, there may be a part of the arms that is covered with cotton sleeves but is within the 18". If that is the case, PPE = 2 is required.

   This issue is significant, because the cotton clothing is flammable and as the working distance is reduced the incident energy increases exponentially. Consequently, if cotton clothing is exposed within the working distance, it could catch on fire during an arcing event.

5.0 LABELS

A summary of the labels is given in Table 1. An illustration of the labels is given in the following sections.

Table 1
Summary of Standard XYZ Company PPE Labels
Based on NFPA 70E-2021

Label Name	Nominal System Volts	Working Distance (Inches)	PPE Category	Min PPE Rating (cal/cm^2)	Arc Flash Boundary (feet)	PPE = 2 Distance (feet)	Glove Class	Shock Boundaries		Label Size (Inches)	Equipment	
								Limited Approach	Restricted Approach		Metal Enclosed	Open Air
Equipment Labels												
XYZ480-0	480	18	0	1.2	1.5		0	3 ft 6 in	1 ft	4 x 3	X	
XYZ480-2	480	18	2	8.0	6.0		0	3 ft 6 in	1 ft	4 x 3	X	
XYZ480-4	480	18	4	40.0	17.0	5.0	0	3 ft 6 in	1 ft	4 x 3	X	
XYZ480>4	480	18	> 4							4 x 3	X	
XYZ4160-2	4,160	24	2	8.0	10.0		1	5 ft	2 ft 2 in	4 x 3	X	
XYZ4160-4	4,160	24	4	40.0	30.0	10.0	1	5 ft	2 ft 2 in	4 x 3	X	
XYZ13800-2	13,800	36	2	8.0	15.0		2	5 ft	2 ft 2 in	4 x 3	X	
XYZ13800-4	13,800	36	4	40.0	45.0	15.0	2	5 ft	2 ft 2 in	4 x 3	X	
XYZ-P	PPE									4 x 6		
XYZ-B	Boundaries									7 x 4		
Remote Switching												
XYZ0-R	Any Voltage		0							4 x 3		
XYZ2-R	Any Voltage		2							4 x 3		
XYZ4-R	Any Voltage		4							4 x 3		

5.1 Main Switchgear & Next Down-Line Devices

Labels 480V - These labels are intended for metal-enclosed equipment rated 480V where the working distance is ≥ 18 inches.

WARNING

ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE REQUIRED

Based on NFPA 70E-2021 & XYZ Company Safety Directives

ARC FLASH PPE LEVEL 0: **0**

Working Distance ≥ 18"
Minimum PPE Rating = 1.2 cal/cm^2
Arc Flash Boundary = 1 ft 6 in

SHOCK PROTECTION - 480 VAC

Insulating Glove Class	0
Limited Approach Boundary	3 ft 6 in
Restricted Approach Boundary	1 ft

CAUTION:
Ensure that all of the appropriate safety procedures are followed. The PPE Level designation on this equipment is based on the proper installation and maintenance of the up-line protective device.

XYZ480-0

WARNING

ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE REQUIRED

Based on NFPA 70E-2021 & XYZ Company Safety Directives

ARC FLASH PPE LEVEL 2: **2**

Working Distance ≥ 18"
Minimum PPE Rating = 8 cal/cm^2
Arc Flash Boundary = 6 ft

SHOCK PROTECTION - 480 VAC

Insulating Glove Class	0
Limited Approach Boundary	3 ft 6 in
Restricted Approach Boundary	1 ft

CAUTION:
Ensure that all of the appropriate safety procedures are followed. The PPE Level designation on this equipment is based on the proper installation and maintenance of the up-line protective device.

XYZ480-2

WARNING

ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE REQUIRED

Based on NFPA 70E-2021 & XYZ Company Safety Directives

ARC FLASH PPE LEVEL 4: **4**

Working Distance ≥ 18"
Minimum PPE Rating = 40 cal/cm^2
Arc Flash Boundary = 17 ft

Note: PPE = 2 at a working distance of 5 ft.

SHOCK PROTECTION - 480 VAC

Insulating Glove Class	0
Limited Approach Boundary	3 ft 6 in
Restricted Approach Boundary	1 ft

CAUTION:
Ensure that all of the appropriate safety procedures are followed. The PPE Level designation on this equipment is based on the proper installation and maintenance of the up-line protective device.

XYZ480-4

DANGER

ARC FLASH AND SHOCK HAZARD

Based on NFPA 70E-2021 & XYZ Company Safety Directives

ARC FLASH PPE LEVEL >4:

The potential arc flash incident energy is greater than 40 cal/cm^2 for a working distance of 18". **>4**

Operation or insertion/removal (racking) of switching device is not to be done unless the equipment is deenergized and confirmed to be deenergized.

No work is to be done on energized electrical conductors.

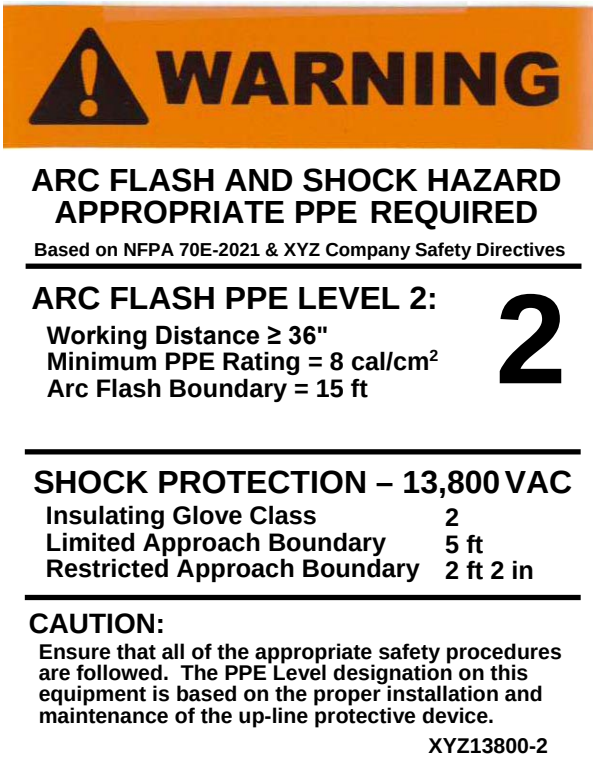
SHOCK PROTECTION - 480 VAC

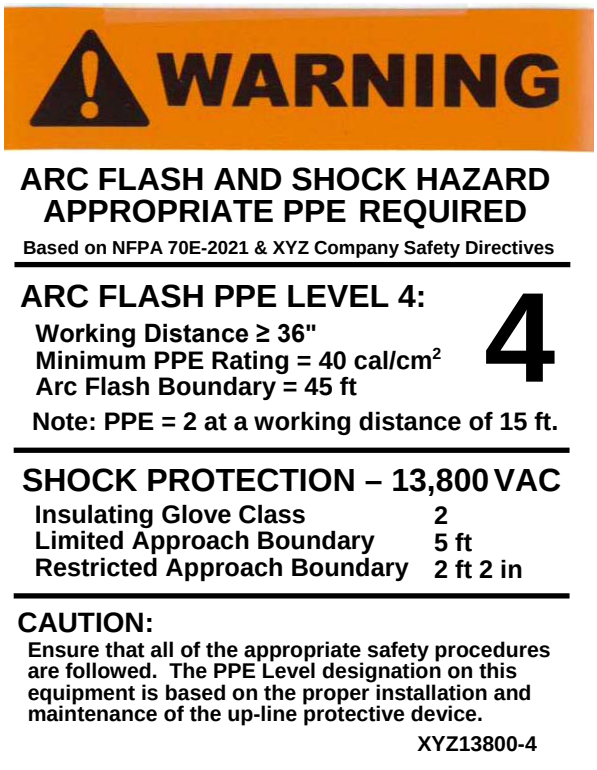
Energized parts are not to be exposed.

XYZ480>4

Labels for 4160V – This label is intended to be used on 4160 volt metal-enclosed equipment where the working distance is ≥ 24 inches.

Labels for 13,800V – This label is intended to be used on 13,800 volt metal-enclosed equipment where the working distance is ≥ 36 inches.





Label PPE

This label is for PPE as defined in NFPA 70E-2021. It is possible to accomplish the PPE levels with variations in clothing from those given below. - This label is intended to be posted in key locations, such as substations, for general information.

PROTECTIVE CLOTHING AND PERSONAL PROTECTIVE EQUIPMENT PPE

Based on NFPA 70E-2021 & XYZ Company Safety Directives

ARC FLASH PPE LEVEL 0 (For Tasks ≤ 1.2 cal/cm^2)

Nonmelting fiber underlayers (e.g. cotton)
Nonmelting fiber long sleeve shirt & pants (e.g. cotton)
Arc Flash PPE Level 2 is required if any part of the body or clothing is exposed to energized circuit parts within the defined working distance.
Safety glasses or safety goggles
Hearing protection (ear canal inserts)
Leather gloves
Insulating gloves and tools as needed

ARC FLASH PPE LEVEL 2 (For Tasks ≤ 8 cal/cm^2)

Nonmelting fiber underlayers (e.g. cotton)
Arc-rated long sleeve shirt & pants or coverall (≥ 8 cal/cm^2)
Safety glasses or safety goggles
Hard hat, arc-rated face shield, and arc-rated balaclava
Hearing protection (ear canal inserts)
Insulating gloves with leather protectors
Heavy-duty leather shoes
Insulated tools

ARC FLASH PPE LEVEL 4 (For Tasks ≤ 40 cal/cm^2)

Nonmelting fiber underlayers (e.g. cotton)
Arc-rated long sleeve shirt & pants or coverall
Arc-rated arc flash suit and hood (system ≥ 40 cal/cm^2)
Safety glasses or safety goggles
Hard hat
Hearing protection (ear canal inserts)
Arc-rated gloves
Heavy-duty leather shoes
Insulated tools

XYZ-P

Label BOUNDARIES

This label is to provide a definition of the various boundaries. - This label is intended to be posted in key locations, such as substations, for general information.

APPROACH BOUNDARIES FOR SHOCK & FLASH PROTECTION

As Defined in NFPA 70E-2021

DEFINITIONS OF APPROACH BOUNDARIES:

LIMITED APPROACH BOUNDARY – An approach limit at a distance from an exposed energized electrical conductor or circuit part within which a shock hazard exists. (It is the closest distance an unqualified person can approach, unless accompanied by a qualified person.)

RESTRICTED APPROACH BOUNDARY – An approach limit at a distance from an exposed energized electrical conductor or circuit part within which there is an increased likelihood of electric shock, due to electrical arc-over combined with inadvertent movement, for personnel working in close proximity to the energized electrical conductor or circuit part. (It is the closest distance to exposed energized electrical conductor or circuit part a qualified person can approach without proper PPE and tools.)

ARC FLASH BOUNDARY - When an arc flash hazard exists, an approach limit at a distance from an arc source at which incident energy equals 1.2 cal/cm^2 (5 J/cm^2).

BOUNDARY REQUIREMENTS WHEN THERE IS AN EXPOSED ENERGIZED ELECTRICAL CONDUCTOR OR CIRCUIT PART:

UNQUALIFIED PERSONS must stay beyond the ***limited approach boundary*** and/or the ***arc flash boundary*****,** as dictated by the tasks being performed.

QUALIFIED PERSONS must stay beyond the ***restricted approach boundary*** and/or the ***arc flash boundary,*** unless equipped with the proper PPE and tools, as dictated by the tasks being performed.

XYZ-B

5.2 Remote Switching

These labels are for remote switching locations at any voltage.

ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE REQUIRED

Based on NFPA 70E-2021 & XYZ Company Safety Directives

ARC FLASH PPE LEVEL 0: **0**

Minimum PPE Rating = 1.2 cal/cm²

Remote Operation of Switching Device

CAUTION:

During Remote Breaker Switching, EVACUATE THE SUBSTATION.

The person switching should have an observer standing by the adjacent door.

CAUTION:

Ensure that all of the appropriate safety procedures are followed. The PPE Level designation on this equipment is based on the proper installation and maintenance of the up-line protective device.

XYZ0-R

ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE REQUIRED

Based on NFPA 70E-2021 & XYZ Company Safety Directives

ARC FLASH PPE LEVEL 2: **2**

Minimum PPE Rating = 8 cal/cm²

Remote Operation of Switching Device

CAUTION:

During Remote Breaker Switching, EVACUATE THE SUBSTATION.

The person switching should have an observer standing by the adjacent door.

CAUTION:

Ensure that all of the appropriate safety procedures are followed. The PPE Level designation on this equipment is based on the proper installation and maintenance of the up-line protective device.

XYZ2-R

ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE REQUIRED

Based on NFPA 70E-2021 & XYZ Company Safety Directives

ARC FLASH PPE LEVEL 4: **4**

Minimum PPE Rating = 40 cal/cm²

Remote Operation of Switching Device

CAUTION:

During Remote Breaker Switching, EVACUATE THE SUBSTATION.

The person switching should have an observer standing by the adjacent door.

CAUTION:

Ensure that all of the appropriate safety procedures are followed. The PPE Level designation on this equipment is based on the proper installation and maintenance of the up-line protective device.

XYZ4-R