memo

NC Department of Labor

To:	OSH Compliance
From:	Wanda Lagoe, Bureau Chief, ETTA
CC:	Kevin Beauregard, Assistant OSH Director Allen McNeely, OSH Director
Date:	02/12/2014
Re:	Electrical Classification Charts for General Industry

Comments: The attached Electrical Classification Charts are to be used as a guidance document by compliance officers when citing electrical violations. The intent of the Classification Charts is to ensure consistency in citing the most frequently cited electrical standards in general industry and construction.

They were developed jointly by the Compliance Bureau Chiefs and ETTA's Standards Section along with the assistance of Steve Davis, electrical expert and President of Global Risk Management, Inc.

The charts will be managed by ETTA's Standard's Section and updated as deemed appropriate. Additional classifications may be added by contacting the Standards Section Supervisor.

General Industry – Most Frequently Cited Standards

This document is designed to give consistent guidance for violation classification of electrical hazards. The following information and possible citations should always be supported with photos. In each case, document environmental and conductive conditions such as wet or dry location, hard use cords, etc. Document signs of thermal or physical stress such as burn marks and strained cords. Employee access to live bare conductors will always be classified as serious. These scenarios were based on the 20 most commonly cited electrical hazards. This tool is to help as a guideline; citations may vary depending on the exact situation encountered.

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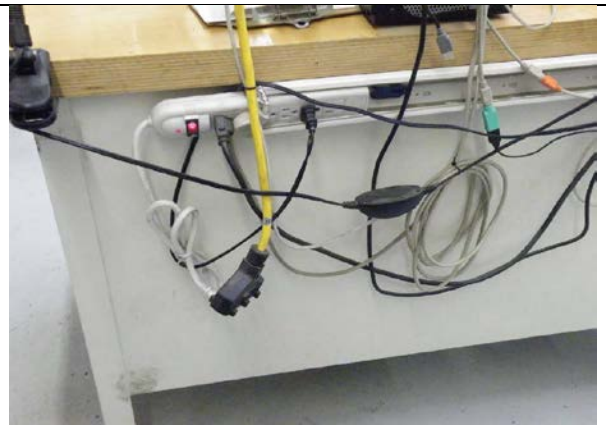
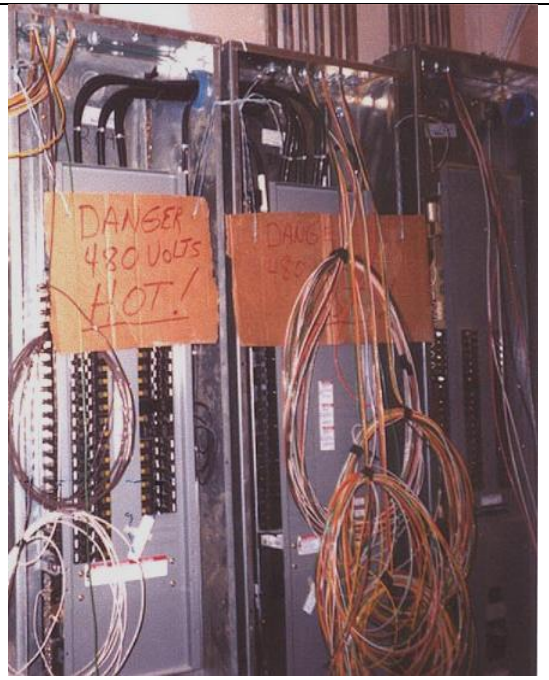
General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Equipment installed not in accordance with listing and labeling.	Over 50V – possible electrical shock.	1910.303(b)(2)	X (working GFCI, metal box was grounded. No knockout missing – no exposed live parts.)	X (Gripping condition, exposed live parts, missing knockout)	 Photo: NCDOL - OSH
Equipment installed not in accordance with listing and labeling. Overloading branch circuit.	Possible electrical fire resulting in smoke inhalation or slight electrical shock	1910.303(b)(2) 1910.304(b)(4)(ii)(B) (Must know amperage.)	X		 Photo: NCDOL - OSH

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Missing covers on breaker panels. Exposed live electrical parts operating at 480 volts.	Electrical shock, burns or electrocution	1910.303(b)(7)(i)		X	 Photo: NCDOL - OSH

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Damaged parts that may adversely affect safe operation or mechanical strength of equipment were used.	Electrical shock, burns or electrocution	1910.303(b)(7)(iv)		X	 Photo: NCDOL - OSH

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Services, feeders, and branch circuits at its disconnecting means not legibly marked.	Delay in disconnecting electrical circuit/equipment. Possible electrical fire resulting in minor smoke inhalation.	1910.303(f)(2)	X		 Photo: NCDOL - OSH

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Working space in the direction of access to live parts was not adequate.	Electrical shock, burns or electrocution	1910.303(g)(1)(i)	X (Proper PPE in use)	X (exposed ee in arc flash zone)	 Photo: NCDOL - OSH

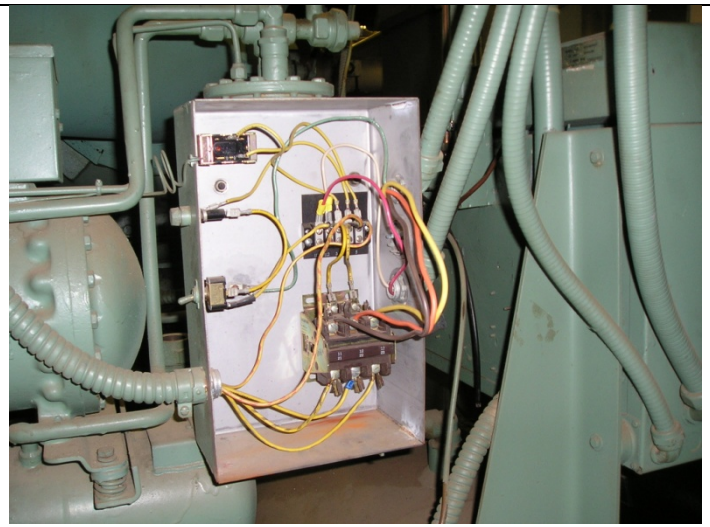
General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Blocked electrical panel.	No access to inspect, operate in case of emergency. Electrical shock, burns or electrocution	1910.303(g)(1)(i) <600 VAC	X	X (Blocked escape from arc flash zone)	 Photos: NCDOL - OSH

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Working space in front of electrical equipment used for storage. General open space not suitably guarded.	Delay in accessing equipment in case of emergency shutdown. Possible sprains/strains from climbing over equipment and materials.	1910.303(g)(1)(ii) <600 VAC	X	X (Blocked escape from arc flash zone, exposed live parts or obstructed exit path)	 Photo: NCDOL - OSH

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Live parts of electric equipment operating at 50 volts or more not guarded against accidental contact.	Electrical shock, burns or electrocution	1910.303(g)(2)(i)		X (Gripping)	 Photo: NCDOL - OSH

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
The path to ground was not permanent, continuous, and effective. Exposed noncurrent – carrying metal parts not grounded.	Electrical shock, burns or electrocution	1910.304(g)(5) No violation if double insulated or no metal parts.	X (working GFCI)	X (Gripping condition exposed metal)	 Photo: NCDOL - OSH

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Conductors entering cutout boxes, etc. not protected from abrasion. Openings through which conductors enter not effectively closed.	Electrical shock, burns or electrocution Fire resulting in burns or smoke inhalation if abraded	1910.305(b)(1)(i)	X (Not bare, not worn, no sign of abrasion)	X Bare, live wire)	 Photo: NCDOL - OSH

General Industry – Most Frequently Cited Standards

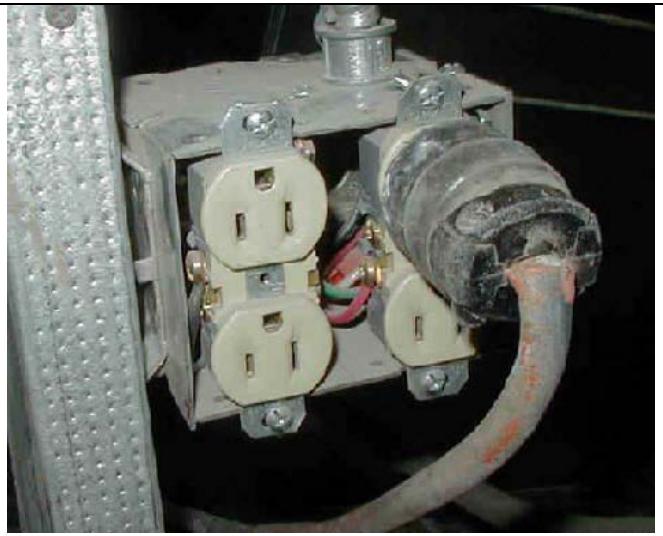
Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Unused openings in cabinets, boxes, etc., not effectively closed – exposed live parts.	Electrical shock, burns or electrocution Potential fire or explosion from dust and spark.	1910.305(b)(1)(ii) 1910.303(b)(7)(i)	X (Path through finger only)	X (Path through body, gripping)	 Photo: NCDOL - OSH
Missing knockouts on breaker panel. Exposed live parts inside of panel.	Electrical shock, burns or electrocution Potential fire or explosion from dust and spark.	1910.305(b)(1)(ii) 1910.303(b)(7)(i)	X (Path through finger only)	X (Path through body, gripping)	 Photo: NCDOL - OSH

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Pull boxes, junction boxes, and fittings not provided with covers identified for the purpose. Delay in disconnecting electrical circuit/equipment if improperly labeled.	Possible electrical fire resulting in minor smoke inhalation.	1910.305(b)(2)(i)	X	X (exposed live parts)	 Photos: NCDOL - OSH

Electrical disconnects properly identified.

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Pull boxes, junction boxes, and fittings not provided with covers. Outlet box not provided with cover, faceplate, or fixture canopy. Exposed live parts not guarded.	If fault should occur and conductors disconnect from terminal screws, may cause a small arc flash burning employees. If bare conductors are exposed, employee could become the path to ground causing electrocution/thermal burns resulting in death. If burned marks are evident on the conductors, employees could become the path to ground causing electrocution/thermal burns resulting in death.	1910.305(b)(2)(i) 1910.303(g)(2)(i)	X (working GFCI, possible dust fire)	X X	 Photo: NCDOL - OSH

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Flexible cords and cables used as a substitute for fixed wiring of structure.	Possible abrasion to cord insulation resulting in fire and smoke inhalation. Electrical shock, burns or electrocution	1910.305(g)(1)(iv)(A)	X (GFCI, not bare, not worn, no sign of abrasion)	X (Cord abraded, exposed live wires)	 Photo: NCDOL - OSH

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Flexible cord(s) were run through holes in walls, ceilings, or floors.	Electrical shock, burns or electrocution Electrical short could cause fire resulting in smoke inhalation	1910.305(g)(1)(iv) 1910.305(g)(1)(iv)(B)	X (Not bare, not worn, no sign of abrasion, working GFCI)	X (Exposed bare conductor)	 Photo: NCDOL - OSH

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Flexible cords and cables run through doorways, windows, or similar openings. Insulation could be damaged exposing bare conductors.	Electrical shock, burns or electrocution Electrical short could cause fire resulting in smoke inhalation	1910.305(g)(1)(iv)(C)	X (working GFCI, no signs of abrasion)	X (exposed bare conductor)	 Need exposed conductors for serious classification. Photo: NCDOL - OSH
Flexible cord attached to building surface. Insulation could be damaged exposing bare conductors.	Electrical shock, burns or electrocution	1910.305(g)(1)(iv)(D)	X (working GFCI, no signs of abrasion)	X (exposed bare conductor)	 Need exposed conductors for serious classification. Photo: NCDOL - OSH

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Flexible cords not used in continuous length without splice or tap. Damage to outer insulation of flexible cord and insulation of conductors – exposed live parts.	Electrical shock, burns or electrocution	1910.305(g)(2)(ii) 1910.334(a)(2)(i) and .334(a)(2)(ii)	X (working GFCI, visual inspection, worn outer but not inner insulation)	X X (Live bare wire)	 Photo: NCDOL - OSH
Extension cord improperly repaired – original properties of insulation not restored. Exposed conductors under electrical tape.	Electrical shock, burns or electrocution	1910.334(a)(2)(ii) (Remove from service.)	X (working GFCI)	X (Live bare wire) ***Note:*** *Employer take apart tape.*	 Photo: NCDOL - OSH

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Flexible cords and cables not properly connected to devices and fittings. Strain relief not provided.	If fault should occur and conductors disconnect from terminal screws, may cause a small arc flash burning employees. If strain relief is attached to a metal receptacle or bare conductors are exposed employee could become the path to ground causing electrocution /thermal burns resulting in death.	1910.305(g)(2)(iii) 1910.334(a)(2)(ii) (Defects- visual inspection)	X (working GFCI, no exposed live parts.)	X (Exposed conductor wire, gripping)	 Photo: NCDOL - OSH
Flexible cords and cables not properly connected to devices and fittings. Strain relief not provided. Inner insulation exposed and damaged.	Electrical shock, burns or electrocution	1910.334(a)(2)(ii) (Defects- visual inspection) 1910.305(g)(2)(iii)	X (working GFCI)	X (conductor wire exposed, gripping)	 Photo: NCDOL - OSH

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Lampholder with exposed live parts – light bulb missing.	Electrical shock, burns or electrocution	1910.305(j)(1)(i)		X	 Exposed live pars always serious. If no exposure, then not citable. Photo: NCDOL - OSH

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Electrical equipment used in a hazardous (classified) location was not intrinsically safe. Box fan used in a spray finishing area involving flammable solvents.	Electrical shock, burns or electrocution, explosion resulting in burns or death	1910.307(c)		X	 Photo: NCDOL - OSH

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Portable cord and plug connected equipment and extension cords not visibly inspected before use for external defects.	Electrical shock, burns or electrocution	1910.334(a)(2)(i) (Inspection)	X (not bare, working GFCI)	X (Bare live wire)	 Photo: NCDOL - OSH

General Industry – Most Frequently Cited Standards

Hazard/Condition	Resulting Injury	Standard(s) Violated	Other Than Serious	Serious	
Defective or damaged item exposing employee to injury. Damage to flexible conduit. Not removed from service until repaired.	Electrical shock, burns or electrocution	1910.334(a)(2)(ii)	X (No exposed live parts)	X (Bare live wire)	 Photo: NCDOL - OSH