

DISCLAIMER: These Standard Operating Procedures (SOP's) are for the exclusive use of Navy Public Works Center (PWC) Norfolk. They are promulgated as guidance for their NAVFAC Commands. If intended to be used by other activities, they must be tailored to each activity's particular requirements and must be reviewed/approved by the activity's safety professionals prior to use.

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**NAVY PUBLIC WORKS CENTER  
NORFOLK, VIRGINIA  
UTILITIES**

**STANDARD OPERATING PROCEDURE / JOB HAZARD ANALYSIS**

**TITLE  
ELECTRICAL MANHOLE ENTRY**

**PROCEDURE NUMBER  
600 HVE 8**

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**SIGNED:** \_\_\_\_\_  
(DATE)

**APPROVED:** \_\_\_\_\_  
(DATE)

**SAFETY PROFESSIONAL:** \_\_\_\_\_  
(DATE)

**MANAGEMENT OFFICIAL:** \_\_\_\_\_  
(DATE)

REVISION

**B**

ELECTRICAL MANHOLE ENTRY

**DISTRIBUTION**

<b>CODE</b>	<b>REV/DATE</b>						
<b>620</b>							
<b>622</b>							
<b>610</b>							
<b>610.E1</b>							
<b>601A</b>							
<b>30A</b>							
<b>09A</b>							
<b>216</b>							
<b>226</b>							
<b>236</b>							
<b>622.1</b>							
<b>622.2</b>							
<b>622.3</b>							



## ELECTRICAL MANHOLE ENTRY

**Purpose:**

Electrical manhole entry.

**Potential Energy Sources:**

Primary and secondary electrical voltage - 120 volts to 34,500 volts.

**B> Tools and PPE:**

Gas free meter, manhole hook, rescue device, safety harness, pump to remove water from manhole, manhole guard, traffic cones, sludge judge, ph tester, fiberglass ladder, blast blankets, hard hat, safety glasses, safety shoes, rubber boots, Nomex coveralls, Nomex hood, insulating rubber gloves, insulating rubber sleeves, orange vest, work gloves, and back brace if required by back injury prevention and control program. The class of rubber gloves and sleeves will depend on the exposure voltage as per the following: Class 0 - up to 1,000 volts, Class 1 - up to 7,500 volts, Class 2 - up to 17,000 volts, Class 3 - up to 26,500 volts, Class 4 - up to 36,000 volts.

**B> References:**

1. PWC Occupational Safety and Health Program Manual, PWCNORVAINST 5100.33E
2. Occupational Safety and Health Standards for General Industry (29 CFR PART 1910): Subpart I, Personnel Protective Equipment; Subpart R, Electrical Power Generation / Transmission / Distribution; Subpart S, Electrical
3. NFPA 70 E approach distances to exposed, energized, electrical conductors and circuit parts.
4. ANSI C2-1987 National Electrical Safety Code
5. Electrical Transmission and Distribution Safety Manual, P-1060
6. Virginia Power Accident Prevention Manual
7. SOP 600 HVE 12, Traffic Control Devices

**Procedures:**

(Traffic control if manhole is in street, highway, road, sidewalk)

1. Wear work gloves and safety shoes.
2. Wear hard hat and safety glasses if area is a PPE area.
- B> 3. If manhole is in a street, highway, road, or a sidewalk, then all personnel will wear an orange traffic vest.
- B> 4. Use a flag person to direct traffic if needed.
5. Place traffic cones and signs at proper distances to re-route traffic and guard work area. Beware of passing traffic.

(Secure work vehicles.)

1. Place emergency brake on and turn off engine.

## ELECTRICAL MANHOLE ENTRY

2. Place wheel chocks, one on left rear and one on right front of work vehicle.

(Remove manhole cover)

1. Wear work gloves, safety shoes, and safety glasses.
- B> 2. Prior to removing manhole cover test for any hazardous gases which may be in the manhole.
- a. Sample the air, using a gas free tester, along the edge of the manhole cover. Be sure to draw the air from just above the surface of the manhole cover's rim.
  - b. If the manhole has a hole in it, then push the gas free samplers intake tube into the hole and sample the air in the manhole.
  - c. NOTE - The above two steps do not constitute gas freeing the manhole.
3. Remove manhole cover by using proper lifting device or manhole cover hook.

(Guard manhole opening)

1. Place manhole guard with rescue device over manhole opening.

(Dewatering test)

1. Follow dewatering instruction, you must be certified.

(Pump manhole if required)

1. If manhole passes dewatering test, remove water from manhole by using proper pumping device.

(Gas free manhole)

1. Follow PWC gas free instruction.

(Entering manhole to complete gas free test and inspection)

- B> 1. Wear Nomex coveralls, safety shoes, boots, work gloves, and safety harness connected to the manhole guard and rescue device. If required to, wear a back brace as well.
2. Place fiberglass ladder to enter manhole.
  3. Enter manhole and complete gas free test and inspection.
  4. Do not step on cables when entering the manhole.

(Exit manhole after gas free test and inspection)

1. Exit manhole by use of the fiberglass ladder. Avoid becoming entangled in rescue rope. Do not step on cables while exiting manhole.

(Electrical work in manhole)

## ELECTRICAL MANHOLE ENTRY

- B> 1. If all circuits in the manhole are de-energized and properly grounded, then the PPE will be as per the SOP/JHA covering the required work.
- B> 2. If personnel are entering the manhole to perform inspection or sketching work and this work does not require touching or moving energized cables or de-energized cables not properly grounded, then the PPE will consist of Nomex coveralls, safety shoes, boots, work gloves, and safety harness connected to the manhole guard and rescue device. If required to, wear a back brace as well.
- B> 3. For all other work in a manhole with energized cables or de-energized cables not properly grounded:
- a. Personnel will enter the manhole wearing Nomex coveralls, Nomex hood, insulating rubber gloves, insulating rubber sleeves, safety shoes, boots, hard hat with face shield, safety glasses and, a safety harness connected to the manhole guard and rescue device. If required to, wear a back brace as well.
  - b. All energized cables or de-energized cables not properly grounded will be covered with blast blankets.
  - c. After the blast blankets are placed the PPE will consist of Nomex coveralls, safety shoes, boots, work gloves, a safety harness connected to the manhole guard and rescue device, and any other PPE required by the SOP/JHA covering the job. If required to, wear a back brace as well.
  - d. If energized cables or de-energized cables not properly grounded are to be handled or blast blankets are not placed, then the PPE listed in 3.a will be required at all times.
  - e. After work is completed, put on step 3.a PPE to remove blast blankets prior to exiting manhole.
- B> 4. Top watch is required at all times.

Note: This SOP must be approved, and signed, by the Navy Public Works Center Group Head or higher.

END