



**ANALYSIS:** The root cause was determined to be Inadequate or Defective Design. Past paving and paving repairs in the area have created a low area that retains ground water. In addition, the configuration of gutters was directing the water from a downspout on the north side of the building eastward toward the low area rather than northward toward a nearby storm drain. These were both determined to be design problems that were not adequately anticipated.

Until the root cause is fully corrected a compensatory action has been established of roping and flagging off the area when moisture and freezing conditions are expected. The gutter drain has been modified to direct the water to the storm drain north of the building. The pavement will be modified to eliminate the pooling effect.

The event occurred early in the morning while it was still dark. Two of three outdoor lights in the area were not working and the effectiveness of the third light was limited.

A small roof had been added above door that the subcontractor employee was approaching when the event occurred. The roof was installed under the existing light thus forming a shield that limited the lighting effectiveness. To correct this problem, the light was modified to move it to a location that illuminated the stairs and the surrounding walk area.

A safety concern was submitted on the day before, identifying the need for lighting improvements in the area where the event occurred. To improve prompt reporting of needed lighting repairs, direction was provided for management to pass down to the personnel in their organizations.

#### **RESOLUTION/RECOMMENDED ACTIONS:**

1. Personnel should be reminded to be alert to potential safety problems and to promptly report the conditions so that they can be corrected. Likewise, reported conditions should be promptly repaired before they contribute to accidents. Examples from this even include lighting in need of repair and areas of standing water that could create icy conditions.

2. Personnel should be periodically reminded to exercise caution whenever weather conditions create potential slippery surfaces. This is especially important when:

- \* Sudden weather changes occur that do not allow time for normal compensatory measures such as snow plowing, and

- \* Darkness, poor lighting, fog, or other conditions may affect visibility.

3. Modify the gutter downspout to have the water drain to the storm sewer on the north end of the building.

4. Modify the pavement to drain standing water.

5. Issue a lessons learned message to personnel performing design and building management functions informing them of the design problems related to this incident.

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NAME OF AUTHORIZED DERIVATIVE CLASSIFIER: Jeffrey S. Paris

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PRIORITY DESCRIPTOR: Yellow/Caution

KEYWORDS: Injury, fell, ice, lighting, weather, slip

REFERENCES: ORO--BJC-K25GENLAN-1999-0001

DOE FUNCTIONAL CATEGORIES: Engineering and Design, Natural Phenomena Hazards, Occupational Safety and Health

BJC FUNCTIONAL CATEGORIES: EC - Engineering & Construction, NP - Natural Phenomena Hazards, SH - Occupational Safety & Health

HAZARDS: Weather Related; Walking/Working Surfaces, Slips & Tripping

WORK ACTIVITY: Roads/Grounds, Facility Maintenance

**FOLLOW-UP ACTION:** Information in this report is accurate to the best of our knowledge. As means of measuring the effectiveness of this report please notify Joanne E. Schutt at (423)574-1248, e-mail at [s6u@ornl.gov](mailto:s6u@ornl.gov) of any action taken as a result of this report or of any technical inaccuracies you find. Your feedback is important and appreciated.