

Blind Penetration of Floors, Walls, Ceilings, and Exterior Foundations

Laboratory-Wide Argonne Procedure LMS-PROC-152, Rev. 3

Effective Date: 09/11/2014

1 Purpose

Establish the process for conducting blind penetration of walls, floors, ceilings, and exterior foundations.

2 Scope

LMS core processes:	Environment, Safety, and Health
Organizations:	all
Buildings:	all
Specific locations:	all
Other applicability factors:	See Exhibit: Applicability to On-Site Contractors
Exclusions:	Installing brads 0.5 inch or less into drywall for tasks such as hanging a picture

3 Work Process

3.1 Introduction

This procedure is used when Argonne employees conduct blind penetration into hollow walls, hollow ceilings, hollow floors, concrete walls, floors, ceilings, and exterior foundations. This includes the drilling, sawing, chipping, or coring of concrete and brick.

The depth of penetration determines classification.

- If the job involves penetrations in drywall to a depth of 1.5 inch or less (Class 0) proceed to Section 3.2.1.
- If the job involves penetrations to a depth of 1.5 inch or less in concrete, concrete block, or any other material (Class 1), proceed to Section 3.2.2.
- For all other jobs (Class 2), proceed to Section 3.2.3.

3.2 Step-by-Step Procedure

The steps below are mandatory unless noted otherwise.

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3.2.1 Penetrations of 1.5 inch or Less in Drywall/Plaster/Hardboard (Class 0 Blind Penetration)

Step	Job Role	Action
1	Supervisor	If work will be conducted in a radiologically contaminated area, radioactive material area, or as part of an operation by Nuclear & Waste Management Division (NWM), contact Environment, Safety, and Quality Assurance Division (ESQ) Radiological Protection Program group (ESQ-RPP).
2	ESQ-RPP	When requested, provide requirements for blind penetration operations.
3	Supervisor	3.1 If work will be performed by personnel not assigned to the building, contact the building manager to obtain a Work Entry Clearance (ANL-18). 3.2 Contact ESQ Worker Safety and Health group (ESQ-WSH) for evaluation of material being disturbed (paint, concrete, silica, asbestos).
4	ESQ-WSH	When requested, provide requirements, including personal protective equipment (PPE), for penetration of material that might present a health hazard.
5	Worker performing blind penetration	5.1 After required permits are obtained and requirements from ESQ-RPP and ESQ-WSH are implemented, perform work in accordance with the following criteria: <ul style="list-style-type: none"> • Complete form ANL-909 for Class 0 penetrations. • Check other side of walls, under floors, or through false ceilings for hazards. • Verify that all identified electrical circuits in the area of blind penetration have been locked out or that a valid Energized Electrical Work Permit (ANL-211) is in place (see ESH-7.1). • Inspect all tools before work begins, verifying that all non-battery powered electrical tools are protected by a ground fault circuit interrupter (GFCI). • Mark the area to be penetrated. • Use short drill bits or marked equipment to limit penetration depth. • Use dust control measures as required by ESQ-WSH. • Stop work immediately and notify the supervisor if obstructions or new hazards are encountered (see LMS-POL-1). 5.2 When work is complete, forward form ANL-909 to the supervisor.

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3.2.2 Penetrations of Less than 1.5 inches in Material Other Than Drywall (Class 1 Blind Penetration)

Step	Job Role	Action
1	Supervisor	If work will be conducted in a radiologically contaminated area, radioactive material area, or as part of an operation by Nuclear & Waste Management Operations (NWM), contact Environment, Safety, and Quality Assurance (ESQ) Radiological Protection Program group (ESQ-RPP).
2	ESQ-RPP	When requested, provide requirements for blind penetration operations.
3	Supervisor	3.1 If work will be performed by personnel not assigned to the building, contact the building manager to obtain a Work Entry Clearance (ANL-18). 3.2 Contact Worker Safety and Health group (ESQ-WSH) for evaluation of material being disturbed (paint, concrete, silica, asbestos).
4	ESQ-WSH	When requested, provide requirements, including PPE, for penetration of material that might present a health hazard.
5	Worker performing blind penetration	5.1 After required permits are obtained and requirements from ESQ-RPP and ESQ-WSH are implemented, perform work according to the following criteria: <ul style="list-style-type: none"> • Complete form ANL-909 for Class 1 penetrations. • Verify that identified electrical circuits in the area of the blind penetration have been locked out or that a valid Energized Electrical Work Permit (ANL-211) is in place (see ESH-7.1). • Check other side of walls, under floors, or through false ceilings for hazards. • Mark the area to be penetrated. • Inspect all tools before work begins, verifying that all non-battery powered electrical tools are protected by a ground fault circuit interrupter (GFCI). • Use dust control measures as required by ESQ-WSH. 5.2 Inspect electrical PPE before each use in accordance with manufacturer's requirements. Use Type I, Class 2, electrical safety mat or electrical safety footwear, rated for use at 1000v, with all Class 1 penetrations in damp or wet locations. 5.3 Stop work immediately and notify the supervisor if obstructions or new hazards are encountered (see LMS-POL-1). 5.4 When work is complete, forward form ANL-909 to the supervisor.

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3.2.3 Penetrations Deeper than 1.5 inches in Solid or Semi-Solid Material (Class 2 Blind Penetration)

Step	Job Role	Action
1	Supervisor	If work will be conducted in a radiologically contaminated area, radioactive material area, or as part of an operation by Nuclear & Waste Management Division (NWM), contact Environment, Safety, and Quality Assurance Division (ESQ) Radiological Protection Program group (ESQ-RPP).
2	ESQ-RPP	When requested, provide requirements for blind penetration operations.
3	Supervisor	3.1 If work will be performed by personnel not assigned to the building, contact the building manager to obtain a Work Entry Clearance (ANL-18). 3.2 Contact Worker Safety and Health group (ESQ-WSH) for evaluation of material being disturbed (paint, concrete, silica, asbestos).
4	ESQ-WSH	When requested, provide requirements, including PPE, for penetration of material that might present a health hazard.
5	Supervisor	5.1 After required permits are obtained and requirements from ESQ-RPP and ESQ-WSH are implemented, plan work in accordance with the following criteria: <ul style="list-style-type: none"> • Plan work to safely avoid embedded utilities identified by visual inspection and as-built drawings. • Inform the building maintenance foreman and the building manager of planned work. • Review the scope of work and conduct a visual inspection of the work site. • Using skill-of-the-worker and assessment of the particular situation, identify and document locations of hidden utilities using as-built drawings and consultation with utility representatives. • Conduct pre-job briefing with all involved employees. 5.2 Notify affected personnel of the planned outages. 5.3 If interruption of electrical services is not possible, complete an Energized Electrical Work Permit (ANL-211), obtain approval in accordance with ESH-9.2 , <i>Electrical Worker Safety</i> .

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6	Worker performing blind penetration	<p>6.1 After required permits are obtained and requirements from ESQ-RPP and ESQ-WSH are implemented, perform work according to the following criteria:</p> <ul style="list-style-type: none"> • Mark the area to be penetrated. • Check other side of walls, under floors, or through false ceilings for hazards. • Verify that all identified electrical circuits in area of blind penetration have been locked out or that a valid Energized Electrical Work Permit (ANL-211) is in place. • Use dust control measures as required by ESQ-WSH. • Inspect all tools before work begins, verifying that all non-battery powered electrical tools are protected by a ground fault circuit interrupter (GFCI). • Complete form ANL-909 for Class 2 penetrations. <p>6.2 Inspect electrical PPE before each use in accordance with manufacturer's requirements. Use the following PPE:</p> <ul style="list-style-type: none"> • Class 0 insulated electrical gloves with leather over gloves rated to a minimum of 1,000 volts Type I, Class 2 electrical safety mat or electrical safety footwear, rated for use at 1000v for all Class 2 penetrations when working in damp or wet locations, and/or when penetrating floors. <p>Note: Work performed while on a non-conductive ladder or any type of aerial lift does not require a safety mat or footwear as long as the conditions are dry and non-conductive.</p> <ul style="list-style-type: none"> • Other PPE as required by ESQ-RPP and ESQ-WSH. <p>6.3 Stop work immediately and notify the supervisor if obstructions or new hazards are encountered (see LMS-POL-1).</p> <p>6.4 When work is complete, forward completed form ANL-909 to the supervisor.</p>
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4 Records Created by Work Process

The records listed below must be retained as indicated.

Description of Record (include form number if applicable)	Custodian	Indexing Method, Storage Medium	Federal Retention Requirement*
Completed form ANL-909	Supervisor of employee performing work	Index by date and project, store on paper	Destroy 75 years after completion of form (DOE ADM 18.37)

*If records are maintained in a business information system that is not currently programmed to purge digital records based on age, the records may be retained in that system past the indicated destruction date.

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5 Related Documents

This procedure implements requirements established by the following basis documents.

- [CFR Title 10, Part 851](#).

This procedure implements requirements established by the following Argonne policies.

- *Safety and Health*, [LMS-POL-1](#).

This procedure implements requirements established by the following Argonne procedures.

- *Electrical Worker Safety*, [ESH-9.2](#).

The following documents provide background information relevant to the subject of this procedure.

- none

6 Definitions

The following terms used in this document are defined in the [Argonne Policy and Procedure Dictionary](#).

[Class 0 blind penetration](#)

[Class 1 blind penetration](#)

[Class 2 blind penetration](#)

7 About this Procedure

Issuing LMS core process:	Environment, Safety, and Health
LMS subprocess:	not applicable
Issuing organization:	Office of the Laboratory Director
Final approver:	Roby D. Enge
Point of contact:	Francis X. Curran, III
Review cycle (months):	36
Date last revised:	September 11, 2014
Date last reviewed:	September 11, 2014

8 Summary of Changes in This Version

Revision 3 differs from Revision 2 in the following way: organization names were updated; an exhibit was added regarding applicability of requirements to on-site contractors.

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Exhibit: Applicability to On-Site Subcontractors

LMS-PROC-152 implements a portion of Argonne's worker safety and health program (WSHP) under 10 CFR 851. Subcontractors who work on the Argonne site are required, through their contract language, to comply with 10 CFR 851 as well as with any supplemental, Argonne-specific WSHP standards identified in their subcontracts.

The table below identifies any Argonne-specific WSHP standards that are set by LMS-PROC-152 for Laboratory employees; it also shows whether Argonne applies those standards to subcontractors working on the Argonne site. The process by which Argonne-specific WSHP standards are included in subcontracts is defined in LMS-PROC-56, *Laboratory-Wide Policies and Procedures*.

Argonne-specific standard that applies to employees	Procurement document that applies the standard to subcontractors
Completion of form ANL-909, Blind Penetration Checklist	ANL-526 Terms & Conditions for Fixed Price Construction Contracts

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