

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

Laboratory-Wide Argonne Procedure LMS-PROC-152, Rev. 7

Effective Date: 1/28/2020

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, ceilings, and exterior foundations. This blind penetration includes the drilling, sawing, chipping, or coring of concrete and brick.

The depth of penetration determines permit requirements.

- If the job involves penetrations to a depth of 1.5 inch or less proceed to section 3.2.1.
- For all other jobs, proceed to section 3.2.2.

3.2 Step-by-Step Procedure

The steps below are mandatory unless noted otherwise.

3.2.1 Penetrations of 1.5 inch or Less

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 Worker Safety and Health Radiological Protection Program department (WSH-RPP).
2	WSH-RPP	When requested, provide requirements for blind penetration operations.

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3	Supervisor	<p>Complete a Work Entry Clearance (ANL-18).</p> <p>Note: Facilities Building Maintenance (FAC-BM) personnel are exempt from the requirement to complete an ANL-18. The FAC-BM foreman will contact the Worker Safety and Health (WSH) division to evaluate materials being disturbed (e.g., paint, concrete, silica, asbestos and potential radioactive contamination).</p>
4	WSH Occupational Safety and Health group (WSH-OHS)	<p>When requested, provide requirements, including personal protective equipment (PPE), for penetration of material that might present a health hazard.</p>
5	Worker performing blind penetration	<p>After requirements from WSH-RPP and other WSH departments are implemented, perform work in accordance with the following criteria:</p> <ul style="list-style-type: none"> • 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 mechanical drill stops to limit penetration depth. • Use dust control measures as required by WSH. • Stop work immediately and notify the supervisor if obstructions or new hazards are encountered (see LMS-POL-1).

3.2.2 Penetrations Deeper than 1.5 inches in Solid or Semi-Solid Material

Step	Job Role	Action
1	Supervisor	<p>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 Worker Safety and Health Division Radiological Protection Program department (WSH-RPP).</p>
2	WSH-RPP	<p>When requested, provide requirements for blind penetration operations.</p>
3	Person-in-charge (PIC)	<p>3.1 Complete a Work Entry Clearance (ANL-18).</p> <p>Note: Facilities Building Maintenance (FAC-BM) personnel are exempt from the requirement to complete an ANL-18. The FAC-BM foreman will contact the Worker Safety and Health (WSH) division to evaluate materials being disturbed (e.g., paint, concrete, silica, asbestos and potential radioactive contamination).</p> <p>3.2 If the planned penetration(s) are:</p> <ul style="list-style-type: none"> • 1.5 inches deep or less, or • More than 1.5 inches deep in a hollow drywall, plaster, or hardboard wall or ceiling, and 1) a borescope or other similar method has been employed to verify that no utilities are in the area; or 2) the area is open

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		<p>such that a visual inspection can verify the absence of utilities, then form ANL-909 Blind Penetration Permit is not required.</p> <p>3.3 If the criteria in step 3.2 cannot be met, then complete form ANL-909 Blind Penetration Permit.</p>
4	WSH-OHS	When requested, provide requirements, including PPE, for penetration of material that might present a health hazard.
5	Building manager	Review project, noting any conditions that may affect the penetration.
6	Person-in-charge (PIC)	<p>6.1 After required permits are obtained and requirements from WSH-RPP and other WSH departments are implemented, plan work in accordance with the following criteria:</p> <ul style="list-style-type: none"> • Plan work to safely avoid embedded utilities identified by visual inspection, ground penetrating radar (GPR), and as-built drawings. Inform the building maintenance foreman and the building manager of planned work. • Review scope of work and conduct a visual inspection of the work site, checking other side of walls, under floors, or through false ceilings for hazards. • 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. <p>6.2 Notify affected personnel of the planned outages.</p>
7	Building engineer	Review historical records, engineering plans, and drawings to verify location of any embedded utilities.
8	Person-in-charge	Locate any potential unlocated utilities using GPR, completed by a qualified operator, with equipment that is approved by Argonne and capable of operating at the required depth and material for the penetration.
9	Building Maintenance foreman	Review project, identify and LO/TO utilities known to be affected by the penetrations.
10	Worker performing blind penetration	<p>After requirements from WSH-RPP and other WSH departments are implemented, perform work in accordance with the following criteria:</p> <ul style="list-style-type: none"> • 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 mechanical drill stops to limit penetration depth.

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		<ul style="list-style-type: none"> • Use dust control measures as required by WSH. • Stop work immediately and notify the supervisor if obstructions or new hazards are encountered (see LMS-POL-1).
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4 Records Created by Work Process

The records listed below must be retained as indicated.

Description of Record	Custodian	Storage Medium	Location, Arrangement, Dates	Federal Retention Requirement*
Completed form ANL-909 for WCD	Supervisor of employee performing work	Digital: system of record	Aware application; arranged by WCD number; May 2019 forward	Retain: Temp DOE ADM 18, Rev 2, 35.b ACT+5 Destroy 5 years after the date of completion of either a task or performance of an activity or action for which the documentation will have no future applicability for demonstrating an item's capability for safe operation. Temporary Record. Currently under epidemiological freeze. DO NOT DESTROY.
Completed form ANL-909 for OPM contractors	Project manager	Digital: documents	Box; arranged by project number (Folder: Infrastructure Projects); May 2019 forward	Retain: Temp DOE ADM 18, Rev 2, 35.b ACT+5 Destroy 5 years after the date of completion of either a task or performance of an activity or action for which the documentation will have no future applicability for demonstrating an item's capability for safe operation. Temporary Record. Currently under epidemiological freeze. DO NOT DESTROY.

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Completed form ANL-909 for contractors other than FAC	Project manager/ technical representative	Digital: documents	Box; arranged by project number; May 2019 forward	Retain: Temp DOE ADM 18, Rev 2, 35.b ACT+5 Destroy 5 years after the date of completion of either a task or performance of an activity or action for which the documentation will have no future applicability for demonstrating an item's capability for safe operation. Temporary Record. Currently under epidemiological freeze. DO NOT DESTROY.
Completed form ANL-909 for FAC	Supervisor of employee performing work	Digital: system of record	FMAX; May 2019 forward	Retain: Temp DOE ADM 18, Rev 2, 35.b ACT+5 Destroy 5 years after the date of completion of either a task or performance of an activity or action for which the documentation will have no future applicability for demonstrating an item's capability for safe operation. Temporary Record. Currently under epidemiological freeze. DO NOT DESTROY.

*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.

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 and procedures.

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

6 Definitions

not applicable

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7 About this Procedure

Issuing LMS core process:	Environment, Safety, and Health
Issuing organization:	Office of the Laboratory Director
Final approver:	David Wayne Gibson
Point of contact:	Cari Helberg
Review cycle (months):	36
Date last revised:	January 28, 2020
Date last reviewed:	January 28, 2020

8 Summary of Changes in This Version

Revision 7 differs from revision 6 in the following ways:

- Updated references to ESHQ Directorate divisions and departments as a result of the recent reorganization.
- Option of completing an ANL-211 Electrically Energized Work Permit was removed from sections 3.2.2 and 3.2.3. All electrical circuits must be locked out.
- Reference to *Electrical Worker Safety* ESH 9.2 was removed from section 5.
- The POC and final approver have been updated.
- Added reference to the *Electrical Safety Manual*.
- Revised Records table.

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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
Use of Blind Penetration Permit ANL-909	ANL-526 Terms & Conditions for Fixed Price Construction Contracts