

Union Pacific Railroad

GUIDELINES FOR 3rd PARTY UTILITY POTHOLING



CALL BEFORE YOU DIG

Page 3, Section 2.2

EMERGENCIES

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1. Introduction

1.1 Purpose

- a. The purpose of these Guidelines is to inform 3rd party Applicants, Contractors, and other stakeholders of the Railroad's requirements and standards for the design and execution of 3rd party utility potholing within the Railroad Right-of-Way.

1.2 Scope

- a. This guideline governs on the Railroad Right-of-Way. This includes the limits of property owned, controlled and/or operated upon by the Railroad.
- b. All requirements addressed within this document shall constitute minimum requirements for all projects or works on the Railroad Right-of-Way. The Contractor shall not be relieved of any responsibilities or liabilities as set forth in any document authorizing the work.
- c. Where laws or orders of authority prescribe a higher degree of protection or restriction than specified herein, the higher degree so prescribed shall control.
- d. These guidelines are provided as a reference and cannot be taken as authority to construct without prior review and written approval from the Railroad.
- e. It is the responsibility of the Applicant and Contractor to ensure they are using the most current version of this guideline. This document is subject to revision without notice.

2. General Criteria

2.1 Highlighted Criteria (see entire document for all details)


























- a.  Railroad operations must never be delayed or interrupted.
- b.  No potholing until all existing utilities and Railroad signals are marked.
- c.  No one may enter within 25 feet of any track without a Railroad flagger present.
- d.  No mechanized excavation is allowed within 15 feet of the track centerline.
- e.  No pothole may be left unprotected and unattended.

Table 1

Category	0–9 feet from track centerline	9–15 feet from track centerline	>15 feet from track centerline
Pothole Allowed?	 Discouraged	 Allowed	 Allowed
Excavation Method	 Dry Excavation preferred  Hydro Excavation by variance  Mechanical prohibited	 Dry & Hydro Excavation preferred  Mechanical Excavation discouraged	 Dry, Hydro and Mechanical Excavation allowed
Max Pothole Size (see Figure 1)	12 inches	18 inches x 4 feet	24 inches x 4 feet
Slot Trenching	 Prohibited	 Up to 4 feet  >4 ft needs approval	 Up to 4 feet  >4 ft needs approval
Construction Observation	 Required	 Required	 As-Required by Railroad
Geotechnical Review	 As-Required by Railroad	 As-Required by Railroad	 As-Required by Railroad

2.2 Call Before You Dig & Railroad Signal Lines

Appropriate measures for the location and protection of existing fiber optic, Railroad signal lines and other utilities, shall be addressed in the plans and contract documents.

- a. Call Before You Dig (Complete all three)
 - i. Call 811 in your state. www.811beforeyoudig.com
 - ii. Locate long haul fiber within Railroad right-of-way. www.up.com/cbud
 - iii. Locating Railroad Signal Lines
 1. The applicant is responsible for locating and protecting Railroad signal lines, as required by the Railroad agreement.
 2. The Railroad transmittal letter provides instructions for contacting the Railroad Manager of Signal Maintenance (MSM) to coordinate signal line locates.
 3. Potholing may not begin until the applicant receives, and can produce, an email from the MSM confirming that the Railroad signal lines have been marked.

2.3 Railroad Safety & Operations

- a. Projects shall be designed such that construction activities and phasing will not compromise Railroad safety nor impact Railroad operations or infrastructure.
 - i. Any damage to the Railroad Right-of-Way, infrastructure, or any interference with Railroad operations, caused by the Applicant or Contractor, shall be promptly mitigated at the full expense of the Applicant or Contractor.
- b. Emergency Railroad phone numbers are to be obtained from a Railroad representative prior to the start of any work and shall be posted at the job site.

2.4 Railroad Flagging

- a. Flagging Requirement Determination: Flagging is required if any of the following conditions apply.
 - i. Flagging Zone Encroachment:
 1. Mandatory Flagging Zone: Flagging is required for any person, equipment, or activities within 25 feet of the centerline of any track, whether below ground, at-grade, or above ground.
 2. Conditional Flagging Zone: Flagging is also required for activities outside the Mandatory Flagging Zone if there is a risk of equipment, materials, or operations encroaching into the Mandatory Flagging Zone, whether below ground, at-grade or above ground. This includes any scenario where equipment might extend, fall or pose a hazard within the Mandatory Flagging Zone.
 - ii. Notification by UPRR Representative: A UPRR representative has informed the Applicant by mail, attachment, comments, phone call, or other means, that flagging is required.
 - iii. Applicant-Requested Flagging Support: If flagging is not required by the steps above, the Applicant may still request flagging. The Applicant must clearly communicate this circumstance and need to the Railroad.
- b. Flagging Field Processes:
 - i. Documentation: The Applicant, or their authorized representative, is required to have a fully executed copy of all Railroad permits, approved design plans and agreements physically present and available prior to entering Railroad property. These documents must be presented upon request to any Railroad representative, employee or railroad official.
 - ii. Job briefings: Job briefings must be conducted with any person that will be on Railroad property prior to the start of the work and when the work conditions or procedures change.

iii. Procedures During Train Approach & Passage:

1. Personnel Safety: All personnel must vacate the area to a designated place of safety located greater than 25 feet from the track centerline.
2. Work Suspension: Suspend any operations and secure any equipment, whether below ground, at-grade, or above ground, which are within 25 feet or have the potential to encroach within 25 feet of the centerline of any track, or otherwise impact Railroad operations, infrastructure or safety.

2.5 Construction Observation

- a. The monitoring and documentation of utility work performed by third parties, conducted by the Railroad or its designated representative, to monitor for compliance with applicable standards, approved plans, agreements and safety requirements.
- b. Construction observation is required under the following conditions:
 - i. When potholing occurs within 15 feet of the track centerline.
 - ii. When deemed necessary by the Railroad.

2.6 Track & Ground Monitoring

- a. Track and ground monitoring is required under the following conditions:
 - i. When deemed necessary by the Railroad.
 - ii. For any proposed pothole/excavation greater in size than allowed per Figure 1 and Section 3.1.
- b. Refer to the [UPRR Guidelines for Track & Ground Monitoring](#) for requirements.

2.7 Applicant & Contractor Responsibilities

- a. The Applicant and Contractor must verify with the local Railroad Representative their receipt of the latest version of these guidelines prior to developing construction documents.
- b. Construction shall NOT impact Railroad safety, operations, and infrastructure:
 - i. The Applicant and Contractor shall develop design and construction plans, including, without limitation, all procedures necessary to excavate and backfill the proposed pothole(s), ensuring that no interruption shall occur to Railroad operations during and after construction.
 - ii. Work shall not impede drainage or cause potential for erosion or scouring of existing grade within the Railroad Right-of-Way. Best Management Practices (BMPs) shall not direct stormwater towards Railroad Right-of-Way, tracks, or access roads.
 - iii. Any work which requires equipment, personnel, or materials to be located within 15 feet of the nearest track centerline may require a Track Curfew to be completed safely. Any Railroad curfews thought to be required for the completion of any pothole must be requested by submittal to the Railroad long in advance of mobilization and construction. Track Curfews are strongly discouraged and may not be granted.
 - iv. Unapproved and unscheduled interruptions to Railroad operations may result in your removal from Railroad Right-of-Way, and your authorization to re-enter may be revoked.
- c. The Contractor must obtain a valid right of entry permit from the Railroad and comply with all Railroad requirements when working on Railroad Right-of-Way.
- d. The Applicant has the ultimate responsibility and liability for the construction documents and liability for damages to Railroad Right-of-Way during and after potholing.
- e. The Applicant and Contractor are responsible for the security and safety of all people including the general public and trespassers, and the protection of Railroad infrastructure within the limits of the proposed potholing project. All damages must be reported immediately to the Railroad Local Representative and to the local Railroad Manager of Track Maintenance.

- f. The Applicant and Contractor are required to meet all safety standards as defined by the Railroad, Federal Railroad Administration (FRA), Division of Occupational Safety and Health Administration (OSHA), Local, State and Federal Governments and the State Railroad Regulatory Body.

2.8 Application & Review

- a. All Submittals to the Railroad for a Potholing application shall include the following information:
 - i. A detailed potholing procedure for excavation and backfill, including method, equipment, size and extent of the proposed pothole(s), backfill materials and excavation protection measures.
 - ii. Plans must show the location, dimensions, and clearances from the nearest track centerline to the center of a round pothole or the near face of a trench pothole. Include pothole sizes, equipment layout, material staging and other relevant details.
 - iii. Access plans detailing proposed access locations, travel paths and temporary crossings.
- b. How to Communicate with the Railroad:
 - i. All design and construction submittals shall be sent to the Railroad Representative who will pass them along for Railroad review.
- c. Railroad Review Duration:
 - i. For your design and construction schedule planning, assume that the Railroad's review of submittals and resubmittals will require a minimum of 4 weeks each. Revised submittals will follow the same procedure as the initial submittal until all issues are resolved.
 - ii. Submittals must adhere to these Guidelines and be complete and of sufficient quality. Partial, incomplete, inadequate or non-compliant submittals will be rejected. In such cases, longer review times should be expected.
- d. Applicant Review:
 - i. Before providing submittals for the Railroad to review, the Applicant must first review and approve the submittal for compliance with the project specifications and these Guidelines. Exceptions or proposed alternatives, if any, must be clearly communicated and identified for all submittals involved.

3. Potholing Procedures

3.1 Pothole Size & Clearances

a. General:

i. Clearance From Track:

1. Potholes shall be located as far from tracks as possible. Applicant submissions must demonstrate their efforts to maximize the distance of potholes from the track.

ii. Size of Pothole:

1. See Figure 1 below for allowable pothole size. Any proposed pothole greater in size shall follow the [UPRR/BNSF Guidelines for Temporary Shoring](#).

b. **0 to 9 feet from track centerline:**

i. Potholes within 9 feet from track centerline are strongly discouraged.

1. A variance may be considered if it can be demonstrated that no other feasible option exists including non-invasive locating methods. If such a request is considered, it will be subject to increased requirements, more stringent review and extended review times.
2. Some of the increased requirements include, but are not limited to:
 - Pothole excavation to not exceed 12 inches diameter. Slot trenching is not permitted.
 - Prior to excavation, existing infrastructure shall first be located via non-invasive methods.
 - Potholes shall be clear of the track ballast, unless otherwise approved by the Railroad.
 - All potholing activities, including excavation, utility identification, backfill, and CLSM set time, must be completed within a single, naturally occurring track window (i.e., the time between train movements). The duration of these windows varies by location, date and time of day.
 - Construction Observation is required.
 - Track and ground monitoring is required.
 - Geotechnical report may be required.

c. **9 to 15 feet from track centerline:**

- i. Potholing is permitted; however, documentation must demonstrate that all reasonable efforts were made to perform the work farther from the track.
- ii. Pothole excavation shall not exceed 18 inches x 4 feet, oriented such that the 18 inch dimension is parallel to the track, as illustrated in Figure 1.
- iii. Construction Observation is required.
- iv. Track and ground monitoring may be required.
- v. Geotechnical report may be required.

d. **>15 feet from track centerline:**

- i. Potholing is permitted; documentation must demonstrate that all reasonable efforts were made to perform the work as far from the track as possible.
- ii. Pothole excavation shall not exceed 24 inches x 4 feet, oriented such that the 24 inch dimension is parallel to the track, as illustrated in Figure 1.
- iii. Construction Observation may be required.
- iv. Track and ground monitoring may be required.
- v. Geotechnical report may be required.

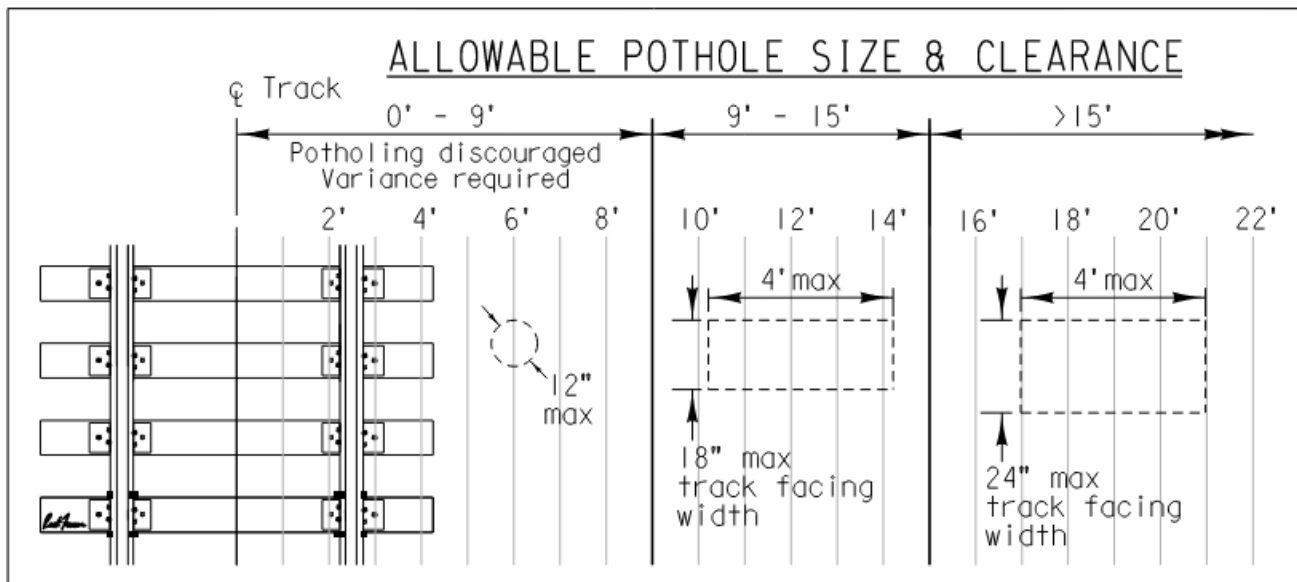


Figure 1

3.2 Excavation & Locating Methods

- a. Non-Invasive Methods: Prioritize non-invasive methods for determining accurate pothole locations. Techniques such as Ground Penetrating Radar (GPR) or electronic pipe/cable locators should be used before resorting to physical excavation.
- b. Excavation Methods:
 - i. General:
 1. All excavation methods must conform to the location, area, depth and duration specified in the plans submitted to and approved by the Railroad. Methods must be safe, controlled, and appropriate for the proximity to track infrastructure. Variances will be reviewed on a case-by-case basis. Provide an exhaustive and compelling justification for any variance request.
 2. Excavations shall not cause issues supporting the Railroad such as slope instability or undermining.
 3. Equipment and personnel shall be located on the field-side (away from tracks) of any potholing activities.
 - ii. Dry Excavation (air-based vacuum excavation)
 1. Required within 9 feet from the track centerline.
 2. Preferred in sensitive locations due to:
 - No water use prevents saturation and destabilization of ballast/subgrade
 - Enables highly precise exposure and quick backfill
 - Minimizes long-term settlement concerns even when restored with CLSM
 3. Other non-hydraulic, non-mechanical dry methods (e.g., pneumatic tools, hand digging) may be considered with exhaustive justification submitted.
 - iii. Hydro Excavation
 1. Prohibited within 9 feet from the track centerline.
 2. Allowed when greater than 9 feet from the track centerline.
 3. A variance may be considered within 9 feet if the contractor can clearly demonstrate that, in the specific context of the work, hydro excavation would result in less risk to track structure and less disruption to Railroad operations than air excavation. Greater

utility locating accuracy may also be considered, but only if it directly supports the Railroad's safety or operational interests.

iv. Mechanical Excavation

1. Prohibited within 9 feet from the track centerline.
2. Strongly discouraged within 9 to 15 feet from the track centerline.
3. Allowed when greater than 15 feet from the track centerline.
4. This method is considered too imprecise for use near track infrastructure and poses a high risk of undermining track stability or damaging adjacent utilities. Variances may be considered.

3.3 Multiple Potholes

- a. For locations requiring multiple potholes, each pothole must be fully backfilled and completed before initiating the next one. No more than one pothole should be open at any given time.

3.4 Duration

- a. Potholes are expected to be backfilled immediately upon identification of the utility.
- b. If a pothole must be left open after identification, it shall be clearly marked with temporary bollards and made highly visible to ensure safety. See Section 3.7 for unattended excavation safety.
- c. It may be required by the Railroad for an excavated pothole to be backfilled between train movements.

3.5 Emergency Contingency Plan

- a. Emergency contingency plans are required for all potholes.
- b. Pea gravel may be used for emergency backfill purposes, however it must be removed and filled with CLSM (max 200 psi) if utilized.
- c. Steel plates shall be on site to cover the pothole, as necessary, in the event of an emergency.
- d. All equipment and material needed to implement the emergency contingency plan shall be on-site.

3.6 Backfill Parameters

- a. Permanent Backfill:
 - i. Potholes within 15 feet from track centerline shall be backfilled with Controlled Low Strength Material (CLSM) with an unconfined compressive strength of 200 psi.
 - ii. Potholes greater than 15 feet from track centerline may be backfilled with native material or aggregate 3/4 inch minus, provided it can be compacted to 90% maximum dry density. Else, CLSM shall be used.
 - iii. Variances to which permanent backfill is used may be submitted for review on a case-by-case basis.
- b. Temporary Backfill:

Pea gravel may be used only as temporary backfill. It must be removed and filled with a permanent backfill.

3.7 Unattended Excavation Safety

- a. It is strongly discouraged to leave any pothole or excavation unattended, even if covered. All potholing activities should be completed and properly backfilled the same day to minimize safety risks and maintain site integrity.

- b. If an unattended excavation is unavoidable, it must be secured using physical barriers to prevent slips, trips and falls. One of the following protective systems must be used to physically secure the excavation.
 - i. Steel Plate Cover & Safety Fencing:
 - 1. The preferred method when within 15 feet from the track centerline.
 - 2. Steel plates must be of sufficient strength to support expected loads without deflection or failure. The perimeter of the plate must be clearly marked and surrounded by orange safety fencing to eliminate tripping hazards.
 - ii. Guardrail System
 - 1. Guardrails must comply with OSHA Standard 1926.502 and meet the following criteria:
 - Minimum height of 42 inches above the walking surface.
 - Openings no greater than 19 inches in any dimension.
 - Must withstand a force of 200 pounds applied within 2 inches of the top edge, in any outward or downward direction.

3.8 Track & Ground Monitoring

- a. Track and Ground Monitoring may be required per the [Union Pacific Railroad Guidelines for Track & Ground Monitoring](#).

4. Glossary

Applicant:

Any party proposing to install a new, and/or abandon existing, pipelines or wirelines on Railroad Right-of-Way or other Railroad operating location, regardless of track being active or out of service. This includes any contractor, employee or consultant hired by said party.

Centerline of Track:

An imaginary line, that runs down the center of the two rails of a track.

Track Curfew:

A scheduled window during which train traffic is suspended or restricted with the required presence of a Flagman.

Contractor:

The individual, partnership, corporation or joint venture and all principals and representatives (including Applicant's subcontractors) with whom the contract is made by the Applicant.

Flagman (Flagging):

A qualified employee or approved Contractor of the Railroad providing protection to and from Railroad operations per Railroad requirements.

Guidelines:

Information contained in this document.

Pothole/Potholing:

Method of excavation to locate an existing utility or other subsurface feature.

Railroad:

Refers to Union Pacific Railroad.

Railroad Load:

Cooper E-80 loading.

Railroad Local Representative/Railroad Representative:

The individual designated by the Railroad as the primary point of contact for the project.

Railroad Right-of-Entry Agreement:

An agreement between the Railroad and an Applicant or a Contractor allowing access to Railroad Right-of-Way.

Railroad Right-of-Way:

The limits of property owned, controlled and/or operated upon by the Railroad.

Railroad Manager of Track Maintenance (MTM):

Railroad representative responsible for maintenance of the track and supporting subgrade.

Tracks:

The rails, ties and ballast and roadbed that compose the traveling surface used by trains.

Utility:

Refers to a pipeline or wireline (electric power and communication utility systems including, but not limited to, all associated conductors, cables, support structures, and equipment).

UPRR:

Union Pacific Railroad.