

Excavation Monitoring and Observation for Damage Prevention

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Excavation Monitoring and Observation for Damage Prevention

1 Scope

The scope of this technical report is to provide a consistently applied decision making process for monitoring and observing of excavation and other activities on or near pipeline rights-of-way for “hazardous liquid” and “natural and other gas” transmission pipelines. The goal is to protect the public, excavation employees, and the environment by preventing damage to pipeline assets from excavation activities.

NOTE Pipeline operators are encouraged to refer to the latest edition of Common Ground Alliances “CGA Best Practices” for additional guidance.

2 Definitions

For the purposes of this document, the following definitions apply.

2.1

activity

Identified excavation [activity].

2.2

excavation

Disturbance or removal of dirt or subsurface debris from a specified area.

NOTE 1 Excavation can include the use of non-mechanized or mechanized equipment, or explosives.

NOTE 2 Specific definitions and requirements for excavation may be established by regulation and the user is encouraged to check with the applicable authorities (e.g. municipal, county, state, etc) as to any relevant details.

2.3

excavation monitoring

Oversight at regular intervals of the process to plan, request, design, approve, and excavate on or around pipelines to ensure the safe, effective completion with the desired results.

NOTE Excavation monitoring is commonly referred to or associated with Excavation Planning.

2.4

excavation observation

Active participation in the onsite excavation before, during and after activities cease to ensure proper completion of the agreed work in a safe, effective manner.

2.5

locate

To indicate the existence of a buried or otherwise obscured line or facility by establishing a mark through the use of stakes, paint, or some other customary manner that approximately determines the location of the line or facility.

2.6

one-call center

Entity in each state or territory that administers a system for their area of responsibility that can notify owners/operators of lines or facilities of proposed excavations.

NOTE 1 One-call provisions and laws vary by state and it is the operator's responsibility to be familiar with and comply with all applicable one-call laws.

NOTE 2 There may be multiple entities providing service to a given area of responsibility.

2.7

operator

pipeline operator

Person who owns or operates pipeline facilities.

NOTE 1 For the purpose of this document, the terms “pipeline operator” and “operator” are synonymous.

NOTE 2 “Person” means any individual, firm, joint venture, entity, partnership, cooperation, association, state, municipality, cooperative association, or joint stock association, and includes any trustee, receiver, assignee, or person representative thereof.

2.8

originator

Individual or company who has identified and made notification of an excavation activity and/or initiated a one-call ticket.

2.9

positive response

Procedural system that ensures communication of locating and marking status of the excavation between the originator and the operator, regardless of whether or not the locate activities have been completed.

2.10

request

one-call request

One-call ticket issued from a one-call center.

2.11

ticket

Documentation of the one-call request or the identified excavation activity, including assigned number identification for tracking the ticket and all associated documentation.

3 Flow Diagram

The following sections make reference to Decision Nodes and Tasks identified in Figure 1.

4 Decision Nodes

4.1 Decision Node 1—Is Additional Information Required?

The first step is to determine if additional information from the Originator is necessary, beginning with a review of the One-Call ticket. Contact with the originator is not required if the exact work location is known with certainty and the proposed work or activity falls outside designated company determined buffer zones. However, if any uncertainty exists, designated personnel must contact the originator, clearly confirm the activity location, and document the results of the conversation that all work is outside of company buffer zones before closing the ticket.

Contact the originator for more information when the above is not met.

The operator performs due diligence to confirm several critical pieces of information before analyzing an excavation request:

- Is the locate request spatially correct (i.e. will the excavator dig at the required location?)
- Is the full or probable extent of the originator's intended or possible excavation area included in the request?

- Are the Operator's buried assets properly identified and spatially accurate?
- Is the information submitted to the One-Call agencies correct and current?

Originators should contact the operator under certain circumstances that include, but are not limited to:

- questions,
- incomplete locates where less than the requested area was addressed,
- no locating activity evidence is present such as flags, or
- any other uncertainty exists.

Examples of situations requiring the operator to contact the originator include, but are not limited to:

- work location falls inside company defined buffer zone,
- ticket is classified as an emergency,
- address cannot be located on map or appears to be incorrect (e.g. street number and name do not correspond),
- ticket indicates location map or additional information is available upon request,
- ticket contains conflicting or unclear information on work location or work scope,
- positive response required by regulations.

Examples of specific verifiable work locations include, but are not limited to:

- SW corner of intersection of Main and Beacon Streets,
- front property line of 704 Byrne, going East for 500 ft,
- accurate reporting of the proposed excavation location through provision of GPS coordinates.

Examples of general work locations requiring originator contact includes, but is not limited to:

- approximately five miles east of city on Highway 77, then 1 mile south on lease road,
- 704 Byrne (rural location and property size unknown).

4.2 Decision Node 2—Office Analysis and Resolution

Site visit is not required if contact with originator has determined that, without question, work or activity falls outside company designated buffer zones. If any question exists, designated field personnel must conduct a site visit.

4.3 Decision Node 3—Site Visit Resolution

Locate is not required if site visit has determined that, without question, work or activity falls outside company designated buffer zones. If any question exists, designated field personnel must perform the locate.

4.4 Decision Nodes 4 and 5—Excavation Proximity to Pipeline

Consideration should be given, but not limited to, the following when evaluating the proximity of work (or work impact) to the pipeline:

- Does the excavator have a proven record of following pipeline company procedures and requirements?
- Has the excavation area been marked (well defined excavation area, i.e. “white lined”)?
- Has the pipeline operator or appointed representative confirmed the type of mechanized equipment to be used, including the following considerations:
 - weight limit issues (See API 1102, *Steel Pipelines Crossing Railroads and Highways*);
 - reach/extension capabilities.
- Are there equipment components (excavator treads or tracks) that have the potential to impact a minimum safety radius (i.e. 5 ft, or 25 ft), even though the excavation itself does not?
- Are effective isolation measures in place to protect pipeline from mechanized equipment (example would be a residential security fence)?
- Have pipeline bends been accounted for in marking the area?

Does the work plan indicate need for special considerations such as (includes, but is not limited to):

- blasting*,
- seismic testing*,
- mining*,
- quarry operations*,
- dredging*,
- heavy surface loading*,
- multiple pipeline corridors*,
- abandoned pipe segments*,
- boring/directional drilling*,
- pile drilling*.
- extremely wet soil, or other applicable environmental factors*.

NOTE The above items marked with an “*” may require special individual operator designated procedures.

4.5 Decision Node 6—Ticket Closure

Pipeline representative should only close ticket when a review has been completed with excavator and confirmed all work activities in the area of excavation have been completed.

5 Tasks

5.1 Task A—Close Ticket

Render the ticket completed using company protocols.

5.2 Task B—Secure Additional Information

Secure additional information by contacting originator, one-call center, or by visiting site to validate the scope of work.

5.3 Task C—Conduct Site Visit

Visit the site and evaluate the need to perform locate per company requirements and protocols to validate the scope of work.

5.4 Task D—Perform Locate

Conduct locate per company requirements and obtain appropriate safety and security documentation.

NOTE One method to achieve this task includes capturing GPS coordinates and photographs of how the site was left by the locator as a method of positive confirmation of what was marked for the excavator in case questions or issues arise, or an incident occurs. This is also a simple way to provide a record to the excavator for verification when on site.

5.5 Task E—Excavation Monitoring

Excavation monitoring includes but is not limited to the following.

- Meet with contractor to define scope of work.
- Determine if or when observation by pipeline operator's designated representative is required.
- Determine frequency of pipeline operator monitoring based on:
 - scope of work,
 - duration of expected excavator work,
 - type of equipment,
 - potential impact on pipeline,
 - complexity of work,
 - multiple contractors/excavators.
- Conduct site visits on predetermined frequency w/ documentation of contact. Documentation may include:
 - name of contact person,
 - status of work,
 - scope changes,
 - confirmation one-call ticket is current.
- Exercise authorities as defined in Task G.
- Obtain safety and security documentation.

5.6 Task F—Excavation Observation Not Required

This is self-explanatory (continue monitoring).

5.7 Task G—Excavation Observation

Excavation observation includes but is not limited to the following.

- Obtain safety and security documentation.
- Continuously present at all-times when excavation or backfilling is underway.
- Affirmative communication with on-site excavation lead at site daily (at least).
- Conduct site visits on predetermined frequency w/ documentation of contact. Documentation may include:
 - name of contact person,
 - status of work,
 - scope changes,
 - confirmation one-call ticket is current.
- Observe compliance with agreed upon design/specification/scope of work.
 - Digging criteria are being met (hand excavation, etc.—pipeline company prescribed criteria; undermining support, equipment boom reaching over the pipeline is limited).
 - Hazards of this pipeline are recognized at excavation site, known hazards are communicated.
 - Compliance to government-mandated Trenching and Excavation Rules

NOTE Notify project supervision if it appears that government-mandated trenching and excavation rules are not being followed.

- Maintain the hand excavation zone agreed to by pipeline company and the excavator.
- Confirm the size, type, weight, and reach of excavator or other equipment previously agreed to (such as):
 - teeth/no teeth,
 - accurate bucket control,
 - work equipment,
 - age or hours of service of the equipment,
 - operator years of experience.
- Exercise pipeline company authority to stop work, as necessary.
- Exercise pipeline company authority to call appropriate agencies or responsible parties, as necessary:
 - law enforcement,
 - 911 emergency,
 - excavation company,
 - pipeline company.
- Document ticket closing.
 - Records and as built updates as required..

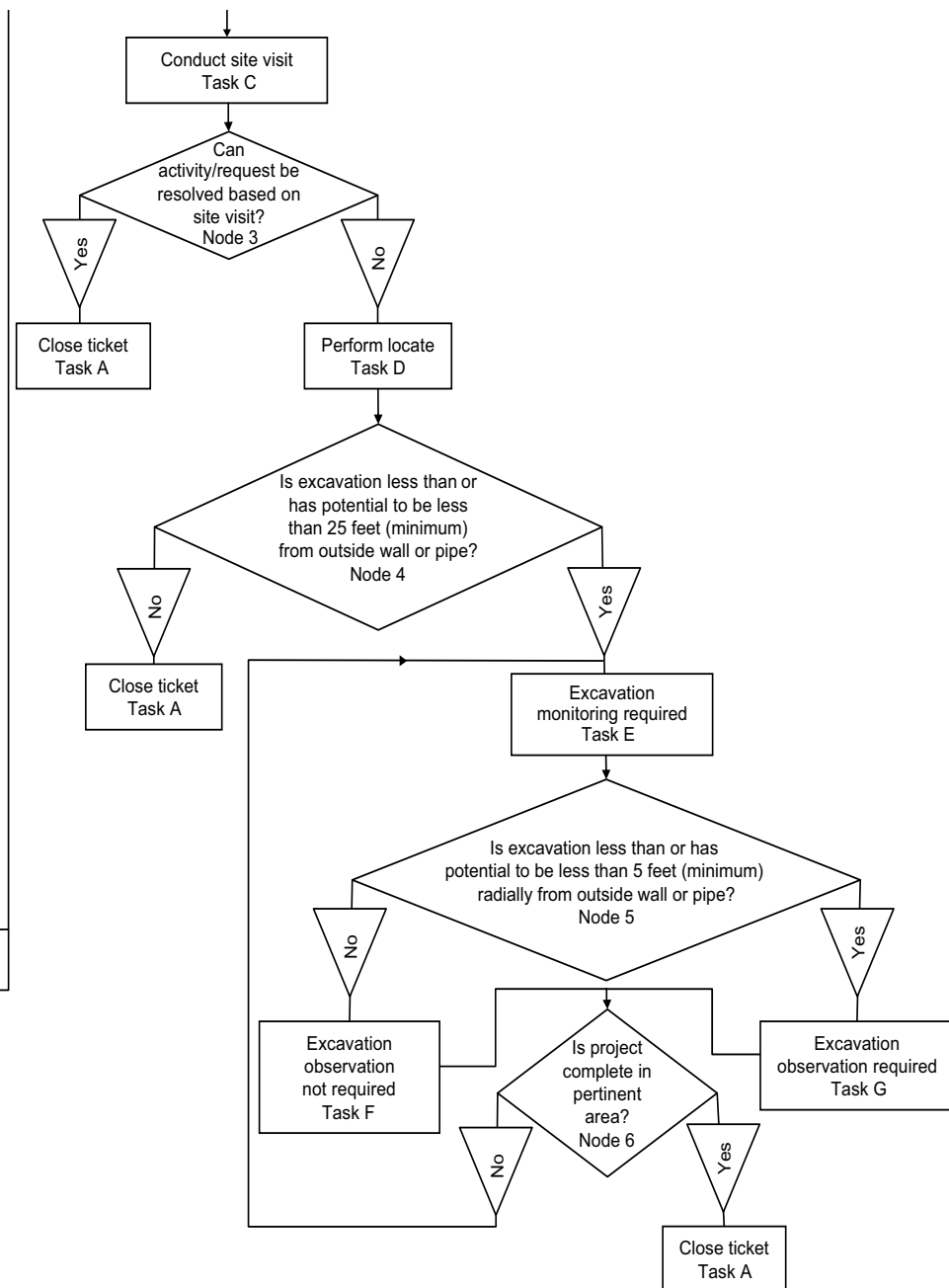
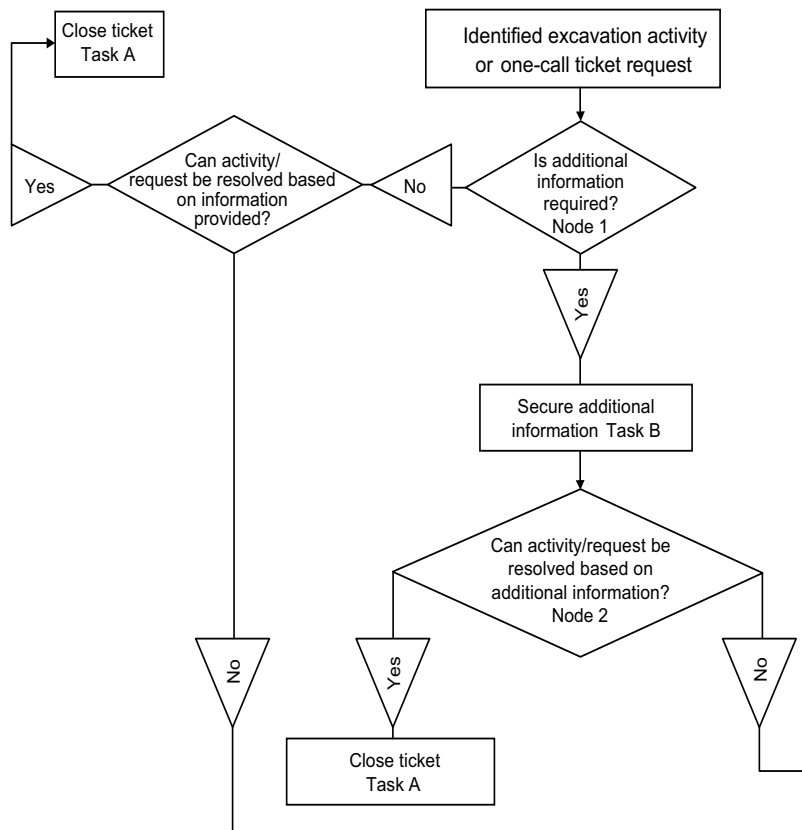


Figure 1—Flowchart—Excavation Monitoring and Observation

Bibliography

- [1] API Recommended Practice 1102, *Steel Pipelines Crossing Railroads and Highways*
- [2] Common Ground Alliance (CGA) Best Practices Guide¹

¹Common Ground Alliance, 2300 Wilson Blvd #310, Arlington, VA 22201, <http://www.commongroundalliance.com>



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