Excavation Monitoring and Observation

API RECOMMENDED PRACTICE 1166
FIRST EDITION, NOVEMBER 2005

REAFFIRMED, NOVEMBER 2010

AMERICAN PETROLEUM INSTITUTE

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Pipeline Segment

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Excavation Monitoring and Observation

1 Purpose and Scope

To protect the public, excavation employees, and the environment by preventing damage to pipeline assets from excavation activities.

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.

Note: 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

2 Definitions

2.1 originator: An individual or company who has identified and made notification of an excavation activity and / or initiated a one-call ticket

2.2 one-call center: An entity that administers a system through which a person can notify owners / operators of lines or facilities of proposed excavations

2.3 ticket: Documentation of the one-call request or the identified excavation activity - includes assigned number identification for tracking the ticket and all associated documentation

2.4 activity/request: Identified excavation activity or one-call ticket request. Examples include an activity notification from an aerial overflight, a one-call ticket issued from a one-call center, an internal notification made from pipeline maintenance employees during Right-of-Way patrol, or a notice from the general public

2.5 locate: To indicate the existence of a 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 excavation monitoring: Defined in Task Description Outline—Task E

2.7 excavation observation: Defined in Task Description Outline—Task G

3 Decision Node 1

Contact with Originator is not required if the exact work location is known and without question work or activity falls outside designated company determined buffer zones. If any question exists, designated field personnel must contact the originator and document the results of the conversation before closing the ticket.

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

Examples of situations requiring Originator contact 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 don't 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 feet
- Global Positioning coordinates information provided

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 Decision Node 2

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.

5 Decision Node 3

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.

6 Decision Nodes 4 & 5

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

- Does the excavator have a proven record of following pipeline company procedures and requirements.
- Has the excavation area been marked (well defined excavation area)
- Has the pipeline operator or appointed representative confirmed the type of mechanized equipment to be used:
  - weight limit issues (See API RP 1102, *Steel Pipelines Crossing Railroads and Highways*)
  - reach/ extension capabilities
- Are there equipment components (excavator treads or tracks) that may be within 5 or 25 feet (minimums), even though the excavation is 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*

* Note: the above may require special individual operator designated procedures

7 Decision Node 6

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.

8 Task A

Close Ticket

Render ticket completed using company protocols.

9 Task B

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

10 Task C

Conduct site visit

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

11 Task D

Perform Locate

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

12 Task E

Excavation Monitoring

(includes but is not limited to:)

- 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 pre-determined frequency w/ documentation of contact. Documentation may include:
  - Name of contact person
  - Status of work
  - Scope changes
  - Confirm one-call ticket is current
- Exercise authorities as defined in Task G
- Obtain safety and security documentation

13 Task F

Excavation Observation not required

Self-explanatory (continue monitoring)

14 Task G

Excavation Observation

(includes but is not limited to:)

- Obtain safety and security documentation
- Continuously present at all time excavation and backfilling is underway
- Affirmative communication with on-site excavation lead at site daily (at least)
- Conduct site visits on pre-determined frequency w/ documentation of contact. Documentation may include:
  - Name of contact person
  - Status of work
  - Scope changes
  - Confirm 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)
  - Hazards of this pipeline are recognized at excavation site, known hazards are communicated
- Maintain hand excavation zone agreed to by pipeline company and the excavator
- Confirm size, type, weight and reach of excavation or other equipment previously agreed to:
  - Teeth / no teeth
  - Accurate bucket control
  - Work equipment
- 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

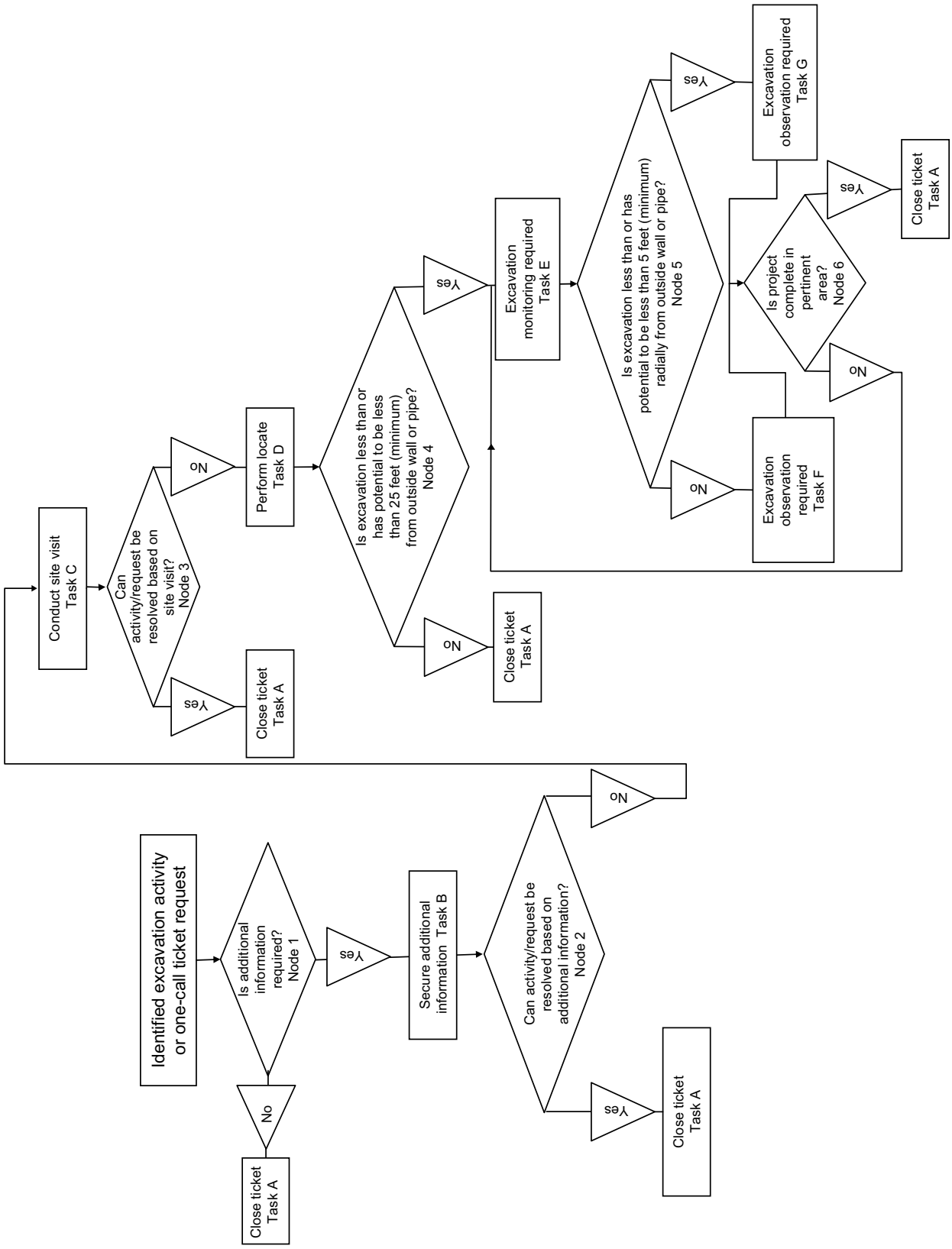

Figure 1—Flowchart—Excavation Monitoring and Observation

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