INL SUBSURFACE-PENETRATION INVESTIGATIONS

POLICY AND PROCEDURE

Idaho National Laboratory

REQUEST/PERMITTING

- Initiate electronic Form 432.A47, “Subsurface Investigations,” to request subsurface survey support.
- Provide necessary information (drawings, sketches, specifications, etc.) to assist the Subsurface Investigator (SI) in locating the areas where excavation or surface penetration activities will take place.
- Review as-built and construction drawings, coordinate the subsurface investigation with Facility Representatives, and discuss excavation/penetration locations with the applicable System Engineer or SSC (system, structure, and component) Engineer.

REQUEST/PERMITTING

- Provide survey support by flagging or marking the excavation area and conducting walk downs or other site identification activities as required.
- Ensure that subsurface penetration/excavation work does not commence until the completed survey request has been entered into the work process documents.
- Request field walk-downs of excavation site by approved Subject Matter Experts (SME).
- Determine the level of investigation required on the request form 432.A47 “Subsurface Investigations” either a Tier 1, Tier 2 or Tier 3 investigation

Determine Need for Subsurface Investigation

A subsurface investigation is not required for any of the following excavations or surface penetrations:

- **Penetrating or disturbing soil less than 12 inches manually or 6 inches mechanically.**
- **Boring or cutting into pre-cast concrete components such as utility manholes, electrical manholes, vaults, utility tunnel sections, and utility tunnel walls.**
- **Inspecting for wires, pipes, etc., by removing or cutting out a section of plasterboard, drywall, sheetrock, or other wall surface materials where cutting does not exceed the depth of the inside of the material.**
- **An excavation or surface penetration does not require a subsurface investigation if the SI and job supervisor agree that no underground or embedded cables, piping, or utilities exist. This agreement must be based on reasonably obtainable facts and knowledge, drawings, a previous subsurface investigation, recent excavations, or surface penetrations in the immediate area and is to be noted on Form 432.A47**

Electronic Subsurface Investigation Request Form Process

- **Requester initiates the form, provides facility drawings for the area to be surveyed**
- **SI Lead reviews the request determines SME routing**
- **SME reviewers include: Telecommunications, engineering, ES&H, engineering, facility manager, others as appropriate.**

Prepare for Subsurface Investigation

- **Requester: Provide accurate identification of excavation boundaries and survey support by flagging or marking the proposed excavation area and conduct walk downs of the excavation site with approved SME's and other site identification activities with the SI.**
- **SI Lead: Ensure SME, and telecommunications reviews have been completed and known systems identified on SI drawings. Telecommunications (Qwest) marks the location of their telephone lines.**

Conduct the Subsurface Investigation

- **SI: Conduct subsurface investigations utilizing multiple types of investigation equipment (i.e. direct or conductive, inductive clamp or coupler, inductive or direct imaging methods), as required.**
- **Utilizing appropriate drawings or other documents as provided by requester, perform subsurface investigation and mark interferences with red, blue, yellow, or orange paint, or appropriately colored flagging. All other colors of paint are considered to be layout markings only.**
- **If requestor provided layout markings are found to be unacceptable, the SI will notify the requester and have the requestor remark the area to be investigated.**
- **If there are questions concerning data interpretation, note questionable data on Form 432.A47 with instructions for excavators/surface penetrators to contact the SI immediately prior to beginning work.**

Conduct the Subsurface Investigation

- **If the SI survey locates a utility, ensure that the area beneath the utility is carefully inspected to ensure that no lower utility or hidden object was shadowed from detection.**
- **Enter field notes on Form 432.A47 describing the excavation area, location and type of underground objects, types of investigative equipment used and any other pertinent information concerning the investigation for future reference**
- **Review findings with the requester and ensure the requester understands the results of the investigation and signs the report .**
- **Install RFID markers in accordance with Appendix C or with requestor's approved directions if different than Appendix C.**

Complete Subsurface Investigation

- **SI: Complete Form 432.A47 to the subsurface investigation. Forward copies of the completed Form 432.A47 to the appropriate distribution.**
- **Planner: Incorporate completed SI comments into the appropriate work control documents as required.**
- **Requester: If the ground markings in a surface penetrations area are not clearly visible, request the SI to remark the area. Subsurface investigation results are valid as long as markings are clearly visible.**

Past Incidents

- **Lighting conduit was “shadowed” by a conduit directly above it. The subcontractor located the above conduit by hand excavation then proceeded to utilize their excavator to dig under the located conduit and struck the “shadowed” conduit. Violation of the 2’-5’ rule.**
- **Power Management utilized a truck mounted auger inside a substation and did not understand the utility marking and dug into a 24K volt duct bank. Situational awareness and violation of the no dig markings installed by the SI.**