





## Turner Construction Company – Incident Investigation Report

(To be completed within 24 hours by Supervisor)

***What PERSONAL ACTION(S) may have contributed to the incident? (Consider tools, equipment, employee/supervisor action:***

1. The work should have been permitted by two distinctly different penetration permits. One for installation of the grounding grid into new construction concrete to a maximum depth of six inches, (this permit was properly written and obtained). A second permit should have been obtained to penetrate into the existing ground/earth to a depth of ten feet by driving copper grounding rods. The employees performing the work mistakenly believed their research yard excavation permit adequately covered the driving of the grounding rods.
2. The proper permitting would have required a pre-job penetration permit meeting by knowledgeable and/or affected parties in the research yard and most likely would have revealed that a utility hazard existed.
3. Inadequate communication resulted in key personnel being left out of the approval loop.

***What PHYSICAL CONDITION(S) may have contributed to the incident (consider tools, equipment, work conditions, environ)***

1. No engineered drawing overlays were provided or subsequently requested to verify that the proposed grounding rod locations did not conflict with the existing utility location plans.
2. The present penetration permit and associated process adopted by Turner from SLAC was designed around the penetration of walls, ceilings, floors in buildings. Although it is possible to utilize it for ground penetration it does not have clear, concise and direct application.

### CORRECTIVE ACTION(S) TAKEN OR PLANNED

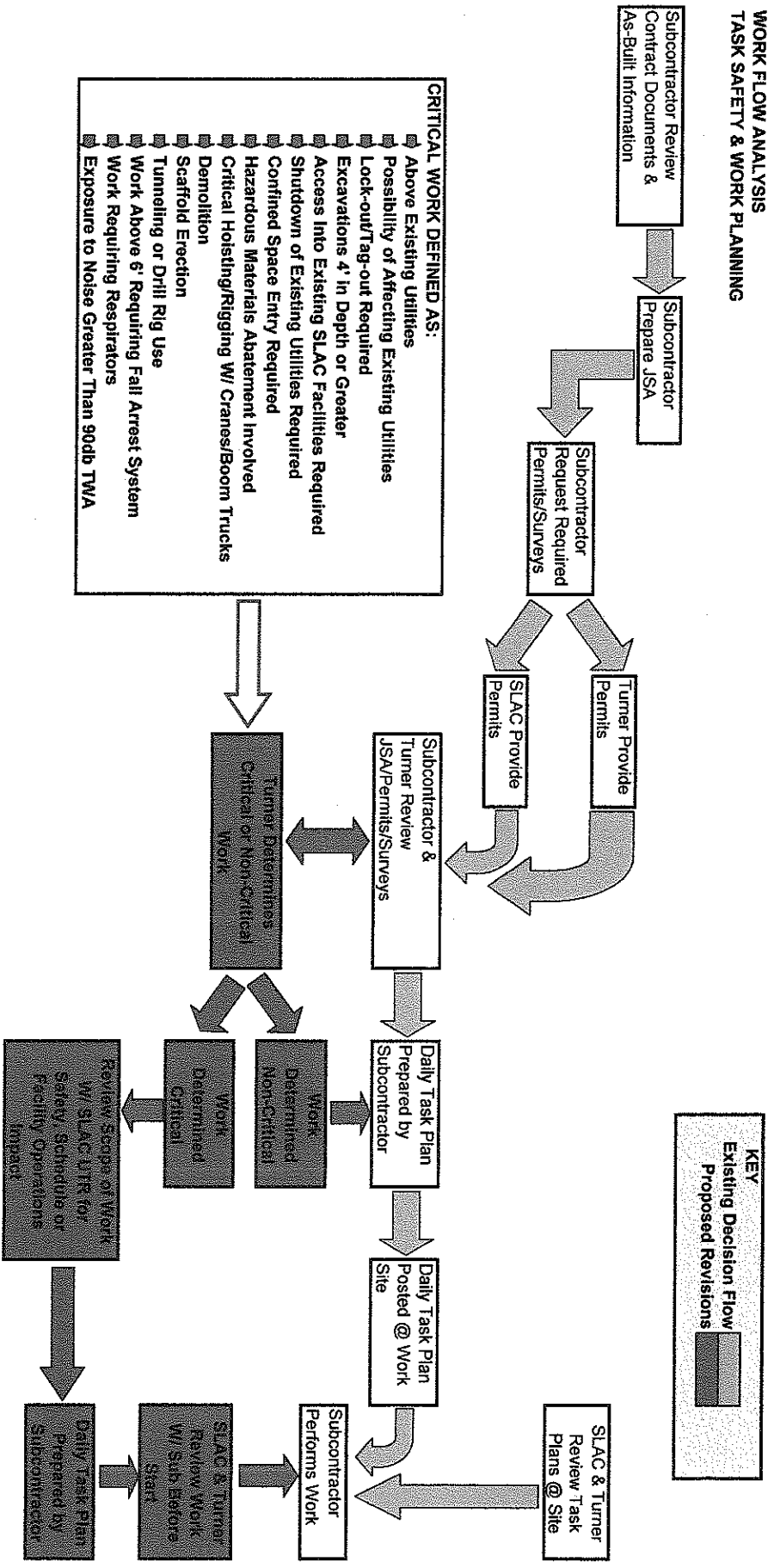
What was/will be done	By Whom	Completion Date
Turner and Cupertino met to investigate the incident and to determine causal factors.	Turner + Cupertino Electric	04-19-07 (Done)
Turner and Cupertino developed a corrective and preventative action plan.	Turner + Cupertino Electric	04-19-07 (Done)
Turner team to develop an improved penetration permit form and process. Team Lead Rick Needham.	Turner	04-20-07
Turner team to develop a general pre-planning work model, applicable to all work, which will identify appropriate communication and approval levels based upon hazard severity and probability. Team Lead Nick Tyler.	Turner	04-20-07
Turner to rollout improved penetration permit form and associated process.	Turner	04-23-07
Turner to rollout new pre-planning work model.	Turner	04-23-07

All incidents need to be immediately reported to your BU Safety Director & Claims Manager.  
Fax copy of report and applicable attachments to (510) 267-0784.

Date: 04 / 20 / 2007

Prepared By: Morgan Spaman

**SLAC LCLS PROJECT  
WORK FLOW ANALYSIS  
TASK SAFETY & WORK PLANNING**



# INCIDENT INVESTIGATION

Unintentional Breach of Utility Tunnel

March 28 – April 3, 2007

## Causal Factors Associated with the Incident:

1. Utility locator markings and drawing provided by utility locator did not indicate location of existing tunnels. The utilities marked on the ground were outside the existing tunnels.
2. On Thursday, April 19, 2007, CEI was informed that the locator (Cruz Brothers) did not have the capability to locate utilities in the existing tunnels. The utilities marked on the ground were outside the existing tunnels.
3. Engineered drawing overlays were not provided to CEI until the day the JSA was signed that identified the tunnel locations in the Research Yard.
4. CEI applied for and was granted one penetration permit for the grounding grid and the driving of the ground rods.

## Root Cause of the Incident:

- 1) Communications breakdown between CEI and Cruz Brothers (utility locator service). CEI assumed that all underground obstructions (utility and others) had been marked. CEI was unaware that Cruz Brothers did not mark out the tunnels.
- 2) Misunderstand/miscommunication between CEI and TCCo regarding penetration permit and excavation permit. CEI grouped the installation of the grounding grid and the driving of the groundrods into one penetration permit – as the grounding grid would not be effective without the groundrods. Because this involved two very different operational depths, two separate sets of paperwork should have been filed.

## Basis of Report:

This report was developed based on discussions with Kevin Minchaca, Herman Limosnero, Eric Abbott, Jeremy Camper, and Tony Barton all of CEI and from information obtained from the following documentation:

1. Preliminary written report by Kevin Minchaca with notes from Herman Limosnero
2. Penetration Permit dated and signed 3/27/2007.
3. Turner Excavation Permit signed by Kevin Minchaca on 2/14/2007.
4. Turner Construction Job Safety Analysis (JAS) Proposed Start Date 3/27/2007.
5. SLAC Utility Line Location Results and associated drawing.

## Recommended Corrective Actions:

- 1) CEI and TCCo are working together to develop corrective measures and a new or revised protocol to be implemented by TCCo to address the identified gap in locator service capabilities. (From TCCo Investigation Report – 4/20/2007)
  - a. TCCo and CEI met to investigate the incident and to determine causal factors. *Completed 4/19/2007*
  - b. TCCo and CEI a corrective and preventative action plan. *Completed 4/19/2007*
  - c. TCCo to develop an improved penetration permit form and process. TCCo Team Lead Rick Needham.

# INCIDENT INVESTIGATION

Unintentional Breach of Utility Tunnel

March 28 – April 3, 2007

- d. TCCo team to develop a general pre-planning work model applicable to all work, which will identify appropriate communication and approval levels based on hazard severity and probability. TCCo Team Lead Nick Tyler.
  - e. TCCo to rollout improved penetration permit form and associated process.
  - f. TCCo to rollout new pre-planning work model.
- 2) CEI to conduct and document in-depth training of all supervisory/lead personnel in TCCo improved penetration permit form and process and TCCo pre-planning work model.
  - 3) CEI will conduct training for all CEI employees in TCCo improved penetration permit form and process and TCCo pre-planning work model. Training will be documented.

## Incident Analysis Team:

Tony Barton, CEI Corporate Safety Manager  
Herman Limosnero, CEI LCLS Site Superintendent  
Kevin Minchaca, CEI General Foreman  
Eric Abbott, CEI Superintendent  
Jeremy Camper, CEI LCLS Project Manager

Respectfully Submitted,

*Tony Barton*

Tony Barton  
Corporate Safety Manager