

Notable Event Worksheet

(See [ES&H Manual Chapter 5200 Appendix T1 Event Investigation and Causal Analysis](#) for Instructions)

Click
For Word Doc

Title of Event					
Event Title:	RadCon Electrical Line Strike				
Date and Time of Occurrence:	4/10/12	09:57am	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Notable Event Number:</td> <td>TEDF-12-0410</td> </tr> </table>	Notable Event Number:	TEDF-12-0410
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Event Location:	Transformer North of Process Support Building	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Date Notable Event Report is Due*:</td> <td>05/10/2012</td> </tr> </table>	Date Notable Event Report is Due*:	05/10/2012	
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*The Notable Event Report is due to the ESH&Q Reporting Officer with 30 days of the Initial Fact Finding Meeting unless an extension is requested.

Categorization and Reporting
 (To be completed by ESH&Q Reporting Officer within two hours – unless essential information is still pending)

ORPS Determination:	Date:	04/10/2012	Time:	1733
<p>Subject ORPS determination for the Utility (Electrical) Line Strike at the Mortenson Construction Site (East Side of Test Lab) 4/10/2012 5:33 PM</p> <p>To Steve Neilson ✪</p> <p>Cc Mary Logue ✪, Bob May ✪, Stephen Smith ✪, Ned Walker ✪, Jennifer Williams ✪, John Kelly ✪, kujawa ✪, Bert Manzi Other Actions -</p> <p>Steve,</p> <p>As you know from the fact-finding, there was an event this morning at the East Side of the Test Lab Addition. A Mortenson's subcontractor was using a back hoe and they hit a live electrical line. The subcontractor immediately stopped their work and notified their supervisor and Mortenson. As a result of the utility strike, the power supply to Building 52, trailers 52A and 52B was interrupted.</p> <p>After the fact finding meeting we believe that this event meets the ORPS reporting criteria under DOE O 232.2:</p> <p>Subgroup E- Determination Hazardous Electrical Energy Control :</p> <p style="margin-left: 40px;">(2) 3 Any unexpected discovery of an uncontrolled electrical hazardous energy source (e.g., live electrical power circuit, etc.). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.</p> <p>If you have any questions or concerns, feel free to contact me.</p> <p>Thank you, Tina</p>				
10 CFR 851 Screen:	Date:	04/10/2012	Time:	1733
<p>This event does not meet the NTS voluntary reporting criteria either as a discreet event or as a programmatic weakness.</p>				

Unless otherwise specified the following is to be completed by the [Lead Investigator](#).

Step 1 Initial Fact-Finding Meeting				
Date:	4/10/2012	Time:	11:00am	Location: JSA Trailer
Required Attendees:			Optional Attendees:	
Lead Investigator:			Associate Director:	
			√ if Present	

(Print Name): Keith Royston	(Print Name):	
ESH&Q Representative:	TJSO Observer:	√
(Print Name): Tina Johnson	(Print Name): Rick Korynta Steve Neilson	
Supervisor of involved persons(s):	Subject Matter Expert(s), Facility/Equipment Owner as applicable:	
(Print Name): Eric Thompson	(Print Name): Bob May	√
Involved or impacted person(s): *Contractor -Name removed	(Print Name): Chris Johnson	√
(Print Name):	(Print Name): Ken Mitchell	√
(Print Name):	(Print Name): Rick Dalberg	√
Witness(es): Vicente Velasquez	(Print Name): Jeff Woeste	√
(Print Name):	(Print Name):	

Agenda <i>(Ensure the pace of the meeting allows time for accurate note taking.)</i>	√ if Complete
1. Introduction – Provide Event Title, Date and Time of Occurrence, and Location:	√
2. Attendance - Are Required Attendees present.	√
3. Purpose of Initial Fact-Finding meeting.	√
4. Event Reconstruction – Use information to complete Section 3. Summary of Event and/or Injuries below.	√
a. Personnel and organizations involved in the event.	√
b. Conditions and actions preceding the event.	√
c. Chronology (timeline) of the event; and	√
d. Immediate actions taken in response to the event.	√
5. Clarify information – Subject-Matter Expert (SME) confirms work conditions.	√
6. Stop Work or the Tag Out Required? If “Yes” – establish the restart criteria and inform the affected Management chain.	N/A
7. Compensatory Actions Required? If “Yes” determine responsibility and include confirmation documentation.	N/A
8. Records or documentation required to confirm, clarify, or complete information (i.e., work plans, work control documents, photos, etc).	√
9. Other Questions or Concerns: Ask attendees if there are any other questions, concerns, or information that they wish to provide.	√
10. Obtain TJSO Observer feedback on conduct of fact finding meeting and potential improvements.	√

Step 2 Investigation Team:		Date Convened: (Within 24 hours of Fact Finding Meeting.)	2/20/2011	
Role	Name	Department/Group	Phone	
Lead Investigator	Keith Royston	FM&L	6117	
EHS&Q	Tina Johnson	EHS&Q	7611	
EHS&Q	Bob May	EHS&Q	7632	

<u>TJSO Observer</u>	Rick Korynta	TJSO	7145

Step 3 Summary of Event and / or Injuries, including Initial Fact Finding Meeting information: determine the chain of events and timeline. Use attachment as necessary.

While excavating for foundations for the new UPW building, the contractor struck an unmarked, undocumented 480V buried line feeding the RadCon trailers. The backhoe operator heard a pop, saw a spark, and immediately stopped excavation and contacted his supervisor. The foreman immediately contacted Mortenson Construction who promptly contacted JSA. As background information the area had been marked by the project utility location company on 4/4/2012. Pot holing was completed by the subcontractor on Friday 4/6/2012. This was reviewed with project personnel and additional pot holing requested, also completed on Friday 4/6/2012. The foreman established the footing depths in relation to the identified utilities and discussed this with project personnel and the workers working on the excavation. The 480 volt line was lying on top of an electrical ductbank which was known and potholed, depth was established. Prior to the strike the operator removed a bollard directly over the exposed electrical cable. The 480 volt line was not marked by the utility location company as it was not shown on any JLab provided documents and was missed in sweeping the area due to the proximity of the known larger electrical ductbank. No injuries were reported.

Notable Event Report

Emergency Notifications Made (Subsequent to the Event):	Date	Time
Fire, Rescue & Emergency Medical: (9-911)		
Guard Post: x4444; 269-5822		
Occupational Medicine 269-7539		
ESH&Q Reporting Officer: 876-1750	4/10/2012	10:15
Crew Chief 630-7050		
Industrial Hygiene: 269-7863:		
Other: Rusty Sprouse	4/10/2012	10:10

Witness Accounts: (Use attachments as necessary. Box will expand as necessary)

See Attached

Environmental Aspects	
Type of Material Released:	Quantity:
N/A	
Source:	Time Flow was Halted or Controlled:

Notable Event & Lessons Learned Worksheet

For Investigation Team (√ All That Apply):

Reportable Quantity
 Impact Ground/Soil
 Storm Water Channel/Drain
 Sanitary Sewer

Records, Documents, Pictures, and Other References: (Copy and paste, use attachments or document links as necessary)

See Attached.

Causal Analysis: (Use attachment as necessary)

Root Cause:	Inadequate management systems in place at the time the 480 volt cable was installed to record and update as-built drawings.
Contributing Causes: (List as many as apply.)	<ol style="list-style-type: none"> JLab failed to properly mark as built drawings from a previously installed electric line. Inadequate documentation provided to the contractor and the utility locating service.

Extent of Condition Check	Responsible Person(s)	JLab CATS Number	Target Date
Unknown at this time			

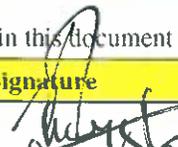
Corrective Action(s)	JLab CATS Number	Target Date
Jefferson Lab Facilities Division to review all TEDF utility drawings and incorporate all known utilities not shown onto record utility drawings.	<u>NE-2012-11-01-01</u>	12/31/2012
Umbrella dig permit used for the TEDF project was rescinded. TEDF contractor to obtain dig permits through JLab and then issue their internal dig permits using the previously approved contractor procedure.	<u>NE-2012-11-02-01</u>	6/1/2012
All excavations to be designated keep out zone, entry only for personnel directly responsible for the excavation.	<u>NE-2012-11-02-02</u>	6/1/2012
Additional instruction will be given to operators and spotters by the SOTR for work on the TEDF	<u>NE-2012-11-02-02</u>	6/1/2012

Corrective Action(s)	JLab CATS Number	Target Date
project.		
Clarify the current dig permit procedure to obtain master underground utility drawings	<u>NE-2012-11-02-03</u>	08/01/2012

Lessons Learned (Confer with Division/Department Lessons-Learned Coordinator) (Use attachment as necessary)	JLab COE Number
Digging(s) on established property can be rather tricky at times. It is better to error on the side of caution when you define your scope of work and mitigate the potential worst case scenario hazards.	N/A

Investigation Team Confirmation:

The below signees, confirm to the best of their knowledge, that the information presented in this document is accurate and complete.

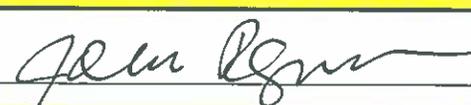
Role	Print	Signature	Date
Lead Investigator	Keith Royston		5/22/12
EHS&Q	Tina Johnson		5/22/12
EHS&Q- Deputy AD	Robert May		05/22/12

Upon confirmation submit document to the [ES&H Reporting Officer](#) for completion and distribution.

Documentation of Findings: (To be Completed by ESH&Q Reporting Officer)

Notable Event Number:	TEDF-12-0410
CATS Number:	NE-2012-11
JLab COE Number:	N/A
ORPS Number:	SC--TJSO-JSA-TJNAF-2012-0005
NTS Number:	N/A
CAIRS Entry:	N/A
DOE Cause Code:	A4 Management Problem, B3 Work Org and Planning LTA, C11 Inadequate work Package preparation; A5 Communication LTA, B4 Verbal Communication LTA, C01 Communication between work groups LTA
ISM Code:	Analyze the hazards

Acceptance/Acknowledgement of Facts

	Print	Signature	Date:
Associate Director/ Department Manger			5/22/12

Distribution:

- ES&H Reporting Officer (Original)
- Associate Director/Department Manager
- Division Safety Officer
- Investigation Team Members

Form Revision Summary

- Revision 1.3 – 01/31/12** – Updated ESH&Q Reporting Officer assignment from SSmith to CJohnson per MLogue Edited to clarify process steps.
- Revision 1.2 – 10/20/11** – Updated ESH&Q Reporting Officer assignment from JKelly to SSmith per MLogue.
- Revision 1.1 – 05/24/11** - Edited to clarify process steps.
- Revision 1 – 11/23/10** – Updated to reflect current laboratory operations.

ISSUING AUTHORITY	FORM TECHNICAL POINT-OF-CONTACT	APPROVAL DATE	EXPIRATION DATE	REV.
ESH&Q Division	Tina Johnson	10/19/09	10/09/12	1.3

This document is controlled as an on line file. It may be printed but the print copy is not a controlled document. It is the user's responsibility to ensure that the document is the same revision as the current on line file. This copy was printed on 5/22/2012.

Eric Thompson Superintendent Bayside Concrete Inc. 4/10/12

Previous to utility strike. Area of the UPW Bldg. foundation was marked for utility's by *Contractor. The areas at the foundation with utility markings were potholed by hand to confirm depth and location of utility's. On the North wall of the UPW Bldg. there were three red markings that ran parallel to and then over top of the foundation. We potholed at the N/W and N/E locations of Bldg. foundation to confirm locations on site utility plan (100011-021-CU1-STE). We found duct bank beside and below bldg. footprint. After inspection by J-Lub and Mortenson Bayside was directed to do more potholes on the south and west walls of bldg. and a dig permit was issued for North and west walls (west wall by hand only). On the morning of 4/10/12 Pre-Task plan and AHA was reviewed by crew members, a dig permit was issued and work was ongoing. At 9:52 AM. I was at the laydown yard loading materials when I received a call from my operator saying he struck a live elec. cable. I directed the operator to secure the area and stop work. I then called Rick Dalberg with Mortenson and went to the UPW bldg. The utility struck was not marked by D. Aden or on the site utility plan indicated above.

Eric Thompson

*Contractor

4/10/12

I WAS DIGGING FOOTERS FOR BUILDING AS MARKED TO DEPTH. I GOT THE GO AHEAD TO REMOVE BALLARD AND DIG END OF FOOTER, WHILE GRADING I SAW SPARKS AND HEARD A LOUD POP. THIS STARTLED ME FOR WE SPEND DAYS HAND DIGGING AND LOCATED ALL MARKED UTILITIES. I IMMEDIATELY CALLED MY IMMEDIATE SUPERVISOR AND INFORMED HIM OF WHAT JUST OCCURRED.

Vicente Velasquez 4-10-012

I WAS STANDING, WATCHING, WITH SHOVEL IN HAND AND CHECKING THE GRADE. THE BUCKET OF THE MACHINE MOVING BRCK SLOWLY, ALL OF A SUDDEN THERE WAS A LOUD POP AND SPARKS FLEW FROM BUCKET.









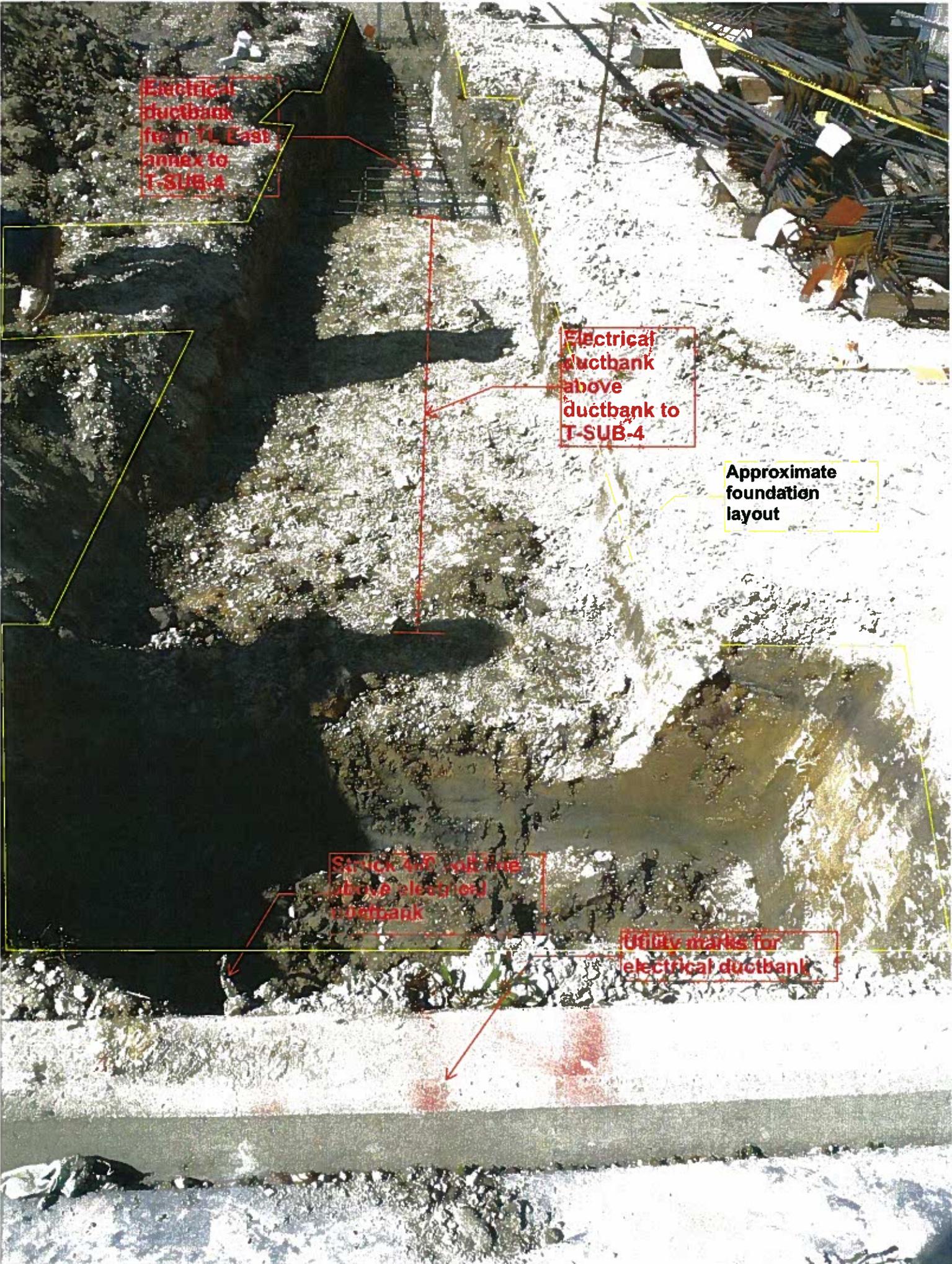
Electrical ductbank from TL East annex to T-SUB-4

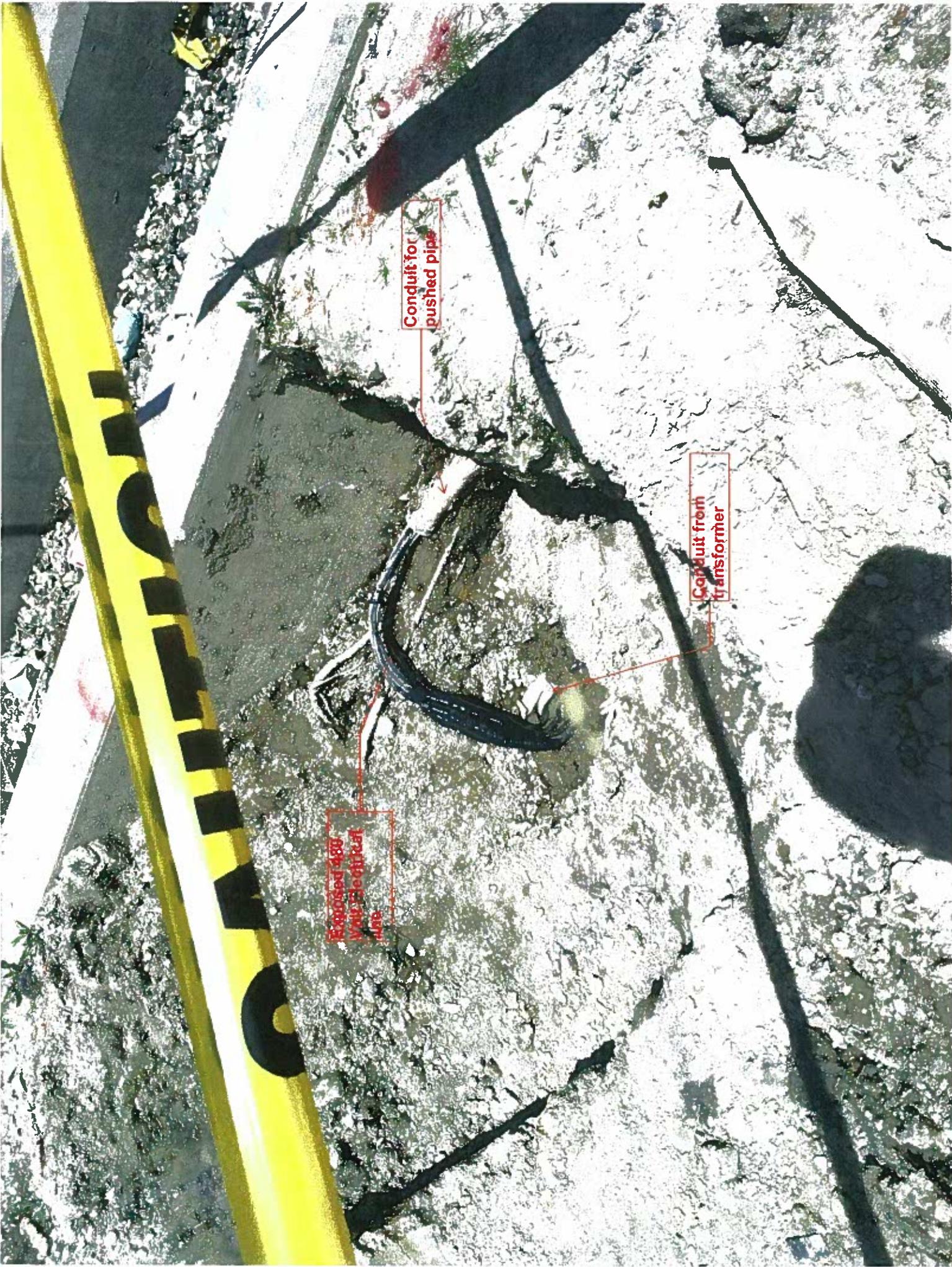
Electrical ductbank above ductbank to T-SUB-4

Approximate foundation layout

Struck 400 volt line above electrical ductbank

Utility marks for electrical ductbank





Exposed 480
Volt electrical
cable

Conduit for
pushed pipe

Conduit from
transformer







Mary
This is what I
was discussing
with you
yesterday when
dealing with
TJ80
Mike
4/20

Event: Energized electrical line strike TEDF Project

Date: 4/10/2012

Description: While excavating for a footing for the new Ultra Pure Water (UPW) building on Wednesday April 4, 2012 the contractor struck an unmarked and undocumented energized 480volt line feeding the RadCon trailers. No injuries were reported. Once the area had been surveyed the line was repaired and power restored to the trailer.

Due Diligence Exercised: The utility location was performed. Pot holling was completed on Friday April 6 2012. This was reviewed with project personnel and additional pot holling requested, also completed on Friday.

Options to consider prior to restarting excavation:

1. De-energize all utilities in the area of the excavation

De-energizing transformer T-SUB-4; will turn off power to portions of building 57, building 57 cooling towers, RadCon trailers.

De-energizing the east electrical at 58; this will turn off power to building 57, building 59, RadCon, the eastern portion of the existing Test Lab, including the test cave and control room and the vertical attachment area and control room and the entire Test Lab Addition, the Process Support Building and the Acid Waste Neutralization.

2. Hand Dig

Although this would seem to be safer in this incident the likelihood exists that this strike could have resulted in significant injury if the line had been struck while hand digging. This method might not be successful due to a nature of the soil in the area.

Use of a Vac Truck. This technology is typically only used for utility location. This will add a significant amount of water to the area where there is known electrical. Hourly rental runs approximately \$500.00 per hour.

3. Operate with the knowledge of possible utility strikes with additional procedures

Main concern is worker safety. The operator and spotter would have to be instructed and trained not to exit the vehicle and or run if a similar incident was to happen in the future. The spotter will also have to be instructed that they are

not to be near and/or touching the equipment while digging. This will reduce the likelihood of possible injury. Additionally the area will need to be declared a work zone and marked as such and restricted to personnel working on the immediate task, while excavation was proceeding.

Recommendation:

1. Revoke the Mortenson project dig permit previously approved. Mortenson will obtain a Jefferson Lab dig permit prior to any excavation work. They can able to use this dig permit to issues the Mortenson daily dig permit. ✓
2. Review again JSA underground utility drawings for all known utilities in the area. ✓
3. Remark the underground utilities if the previous marks are no longer visible. Verify the identity and status of any utility found different from the JSA underground utility drawing.
4. Provide additional potholing using a vacuum truck along the full extent of the remaining foundation line.
5. Provide task specific orientation to the operator and spotter not to exit the vehicle and/or run if a similar incident is to happen in the future. The spotter is also not to touch the equipment while digging.
6. Declare and mark off the area of excavation as a keep out work zone. Entry into the work zone will be restricted to personnel that have attended working on the immediate task while excavating is proceeding.

Backup Material



