

**Multi – Agency
Serious Accident Review Team**



Floyd – Roselle Incident

Final Report

Submitted by:

A handwritten signature in black ink, appearing to read "William Barrera".

William Barrera
Chairperson
Serious Accident Review Team

City of Modesto Public Works Department

April 8, 2019

ACKNOWLEDGEMENT OF SART MEMBERS

The City of Modesto would like to thank the participating members of the Serious Accident Review Team (SART). The purpose of this team is to find out what happened, why it happened and how to prevent it. Not to find blame or fault but to take the corrective action needed and make recommendations to the City of Modesto to avoid any future incidents.

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OVERVIEW

The City of Modesto Public Works Electrical Division maintains 11,575 Street Lights, 160 Traffic Signal Lights for the City of Modesto, 46 for Stanislaus County and seven for the City of Riverbank; this team also maintains 96 City Buildings and 76 parks within the City of Modesto's limits. The Electrical Division covers a total of 44.81 square miles with the population of 201,165 (according to the 2010 Census). This division has a team of one Supervisor, one Crew Leader, five Electricians, two Electrical Assistants and two part-time employees with one Administrative Services Technician. The City of Modesto Public Works Electrical Division operates out of the City's Corporation Facility which is located at 501 Jefferson St, Modesto, CA 95354.

EXECUTIVE SUMMARY

The morning of April 9, 2018 a street light installation was completed at Oakdale Rd and Celeste Dr. Once this was completed, the crew traveled to the intersection of Floyd Ave and Roselle Ave.

The City of Modesto's Electrical Division was performing a street light installation on the Southwest corner of Roselle Ave and Floyd Ave (a roundabout intersection). The Digger Derrick was facing Eastbound with the flow of traffic with the stabilizers down. The truck was in the number two lane on Roselle Ave when they offloaded the street light. One Electrician who operated the Digger Derrick, one Electrician and one Electrical Assistant assembled the pole on the ground. The pole was on the ground on the south side of the truck. The base of the pole was to the West and the top of pole was to the East with the arm facing South. The pole was a Caltrans Type 15 with the dimensions of 25 feet tall and an arm of 15 feet long and a rise of five feet. The street light pole was lifted causing the arm to drop down facing East then swinging the pole in the direction of East to North approximately 270° clockwise. When swinging the pole it came well within the restricted approach boundary (10 feet) causing the pole to become energized. Statements from the Electricians on site indicate that the pole came into contact with the bottom High Voltage line. When the pole became energized by the High Voltage line the Electrician Assistant who was attempting to set the street light was electrocuted. The Electrician immediately called Emergency Services (911). While on the phone with Emergency Services, direction was given to turn the Electrical Assistant onto their back to begin Cardiopulmonary Resuscitation (CPR) by the Electrician who was operating the Digger Derrick until the Emergency Services arrived on scene. The Fire Department then notified the City of Modesto's Public Works Director, Risk Manager, Fire Chief and Modesto Irrigation District (MID). The Electrical assistant was then transported to Memorial Medical Center (MMC) where the Electrical Assistant was pronounced deceased at 1145 and the mother was notified at 1344. OSHA arrived on scene at 1349 and assessed the situation. After the incident, MID lowered, disassembled, and transported the pole to the City of Modesto's Corporation Yard along with the Digger Derrick truck.

The topics below are those that were investigated by the Serious Accident Review Team due to the Roselle and Floyd Incident.

- Personal Protective Equipment
- Operations
- Policies and Procedures
- Culture

INCIDENT TIMELINE

1108: Call to 911 by City of Modesto employee. Basic Life Support (BLS) began through instructions made by dispatcher

1109: Fire Department Dispatched

1113: Fire Department Arrived (Engine 9)

1121: Modesto Police Department (MPD) requested by fire for traffic control

1122: MPD dispatched

1123: Fire Department asked for Public Works Director, Risk Manager, and Modesto Chief 2/3 to be advised

1125: Fire Department asked for Modesto Irrigation District (MID) to be advised

1128: First MPD unit arrived

1132: Employee transported to Medical Memorial Center (MMC)

1132: MPD Watch Commander Advised

1142: Public Works and Risk Management arrived to scene

1145: Employee confirmed deceased

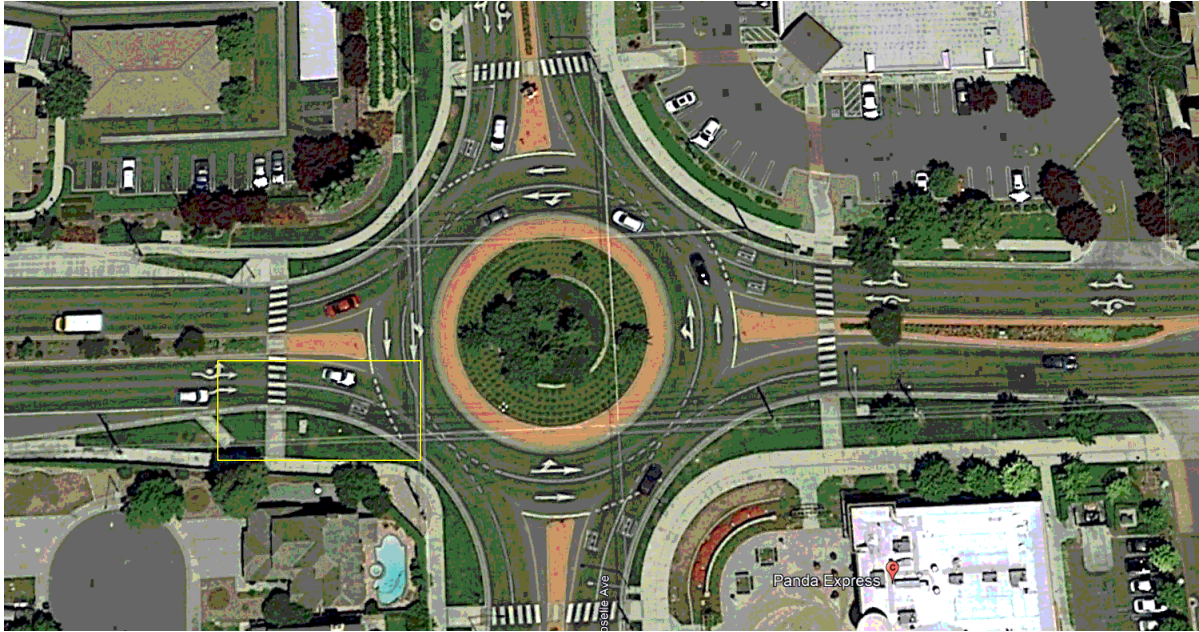
1344: Notification made to employee's mother by MPD

1349: OSHA arrived on scene

1533: MPD checked for surveillance cameras that would cover the area, unable to locate any video footage

SITE INFORMATION

The site involved is located at Southwest corner at Floyd Ave and Roselle Ave. The City's Digger Derrick was parked on the same corner facing East on the number two lane. The street was blocked off approximately 35 feet behind the Digger Derrick for installation of the light pole. See picture below.









⚠ DANGER

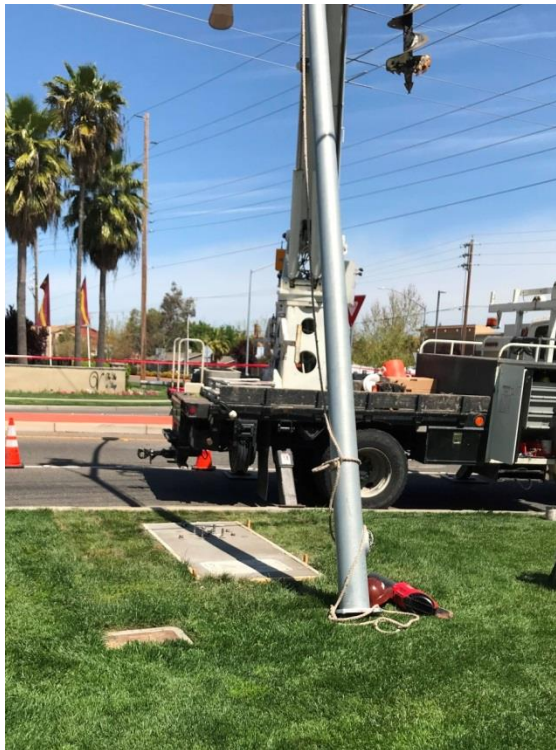
ELECTROCUTION HAZARD

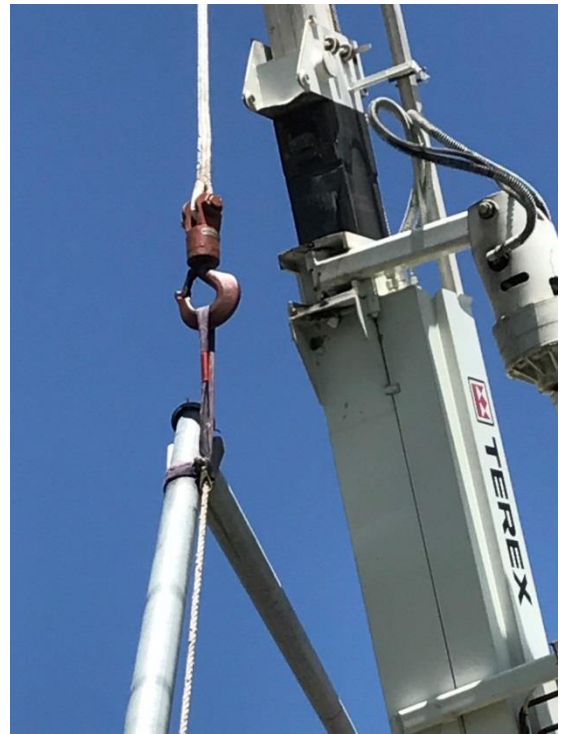
DEATH OR SERIOUS INJURY
 WILL RESULT FROM CONTACT WITH THE LOAD,
 THIS MACHINE, THE TRUCK OR
 TRUCK ATTACHMENTS IF THE BOOM OR
 LOADLINE SHOULD BECOME
 ELECTRICALLY CHARGED

KEEP CLEAR OF TRUCK AND LOAD

**STANDARD HAND SIGNALS
 FOR CONTROLLING CRANE OPERATIONS**

EXTRACTED FROM ANSI STANDARDS
 A95.1-1983 & B30.5-1983
 THIS COMPLIES WITH OSHA STANDARDS











CAUSAL/CONTRIBUTORY/NON-RELATED FACTORS

Causal Factor – Any behavior, omission or deficiency that if corrected, eliminated or avoided, probably would have prevented the injury.

Contributing Factor – Any behavior, omission or deficiency that sets the stage for an accident or increases the severity of injuries.

Non-Related Factors – Elements discovered as part of the investigation that did not have a direct or indirect effect on the outcome of the accident but does deserve scrutiny.

CULTURE AND SAFETY

City of Modesto's Electrical Division

OVERVIEW

The following information was gathered by the SART personnel through interviews, videos, and audio.

CULTURE

The attitudes and behaviors characteristics of a particular social group. Culture is the social behavior found in human societies. Culture is transmitted through language, material traits, religion, ritual and race.

CITY OF MODESTO ELECTRICAL DIVISION

Past practices and lack of training may have influenced factors within the Electrical Division in relation to health and safety. After conducting multiple interviews, it was expressed by some employees that they are not being properly trained. Current job descriptions need to be updated to obtain a more knowledgeable staff and properly allocate candidates in regards to positions and promotions. Failure to expand the Electrical Division over multiple decades is causing a stressful atmosphere because of an increased work load placing a greater demand on the work force.

Cultural practices in the Electrical Division were to not provide any High Voltage P.P.E. to any employees not qualified to work on energized circuits. The City of Modesto currently has an Electrical Safety Program that is not being utilized by the Public Works Electrical Division.

FINDINGS AND RECOMMENDATIONS: CULTURE AND SAFETY

ITEM

General Safety Practices
P.P.E.
Additional Staff

FACTOR

Contributing

FINDINGS

When staff is not following general safety practices it can result in injury or death.

When employees are not given the same P.P.E. it, too, can result in injury or death.

The Electrical Division is in need of additional staff because of the heavy workload, and backlogs that need attention.

RECOMMENDATIONS

- The City of Modesto shall immediately implement the Electrical Safety Program.
- Any unsafe past cultural practices shall stop immediately.
- All staff shall be provided with the same P.P.E.
- Due to City expansion, increase in staffing is needed in the Public Works Electrical Division to properly maintain City facilities, parks, street lights, and traffic signal lights.

FINDINGS AND RECOMMENDATIONS: PERSONAL AND PROTECTIVE EQUIPMENT

PERSONAL PROTECTIVE EQUIPMENT

OVERVIEW

Representatives of Public Works Departments from several surrounding municipalities have merged to form a (SART) Serious Accident Review Team to establish cause of the events of April 9, 2018 at Floyd Ave and Roselle Ave in the City of Modesto California.

REVIEW

All incident information has been evaluated for proper safety policies and procedures and have been reviewed for consistency regarding the fatal injury incident involving the City of Modesto Employee.

SUMMARY

It has been recommended that the City of Modesto's Leadership reinforce the safety practices, policies & procedures to the highest safety standard in the industry, introducing a revised standard operating procedure for street light handling and placement involving high voltage applications and general field safety practices such as "tail board" meetings to evaluate site conditions and safety concerns before work is to be performed.

ITEMS

Tail board and safety meetings, spotter deployment, proper electrical safety equipment: electrical rated gloves, fiber insulation sticks, personal grounding equipment, high voltage blankets and covers and certifications when required.

FACTOR

Contributing factors include lack of proper PPE for handling light poles near high voltage applications. Workers should wear appropriate electrical rated gloves for use with electrical applications and the use of fiber sticks to help increase leverage when rotating poles near electrical lines in addition to personal grounding lines to protect individuals from high voltage or Induction arcing.

DISCUSSION

In field operations such as street lighting installations one of the first items is to evaluate the site conditions and safety concerns and hazard risk analysis as it applies to traffic control safety and set up procedures, appropriate PPE selection, communication protocols, crane equipment and crane equipment safety limitations, general industry safety precautions, spotter deployment, CPR and AED training, and specific task installation training.

FINDINGS AND RECOMMENDATIONS: PERSONAL AND PROTECTIVE EQUIPMENT

RECOMMENDATION

- Implementation of all City of Modesto safety practices, procedures, training and programs. Update and organize all employee training records to provide better training for all employees.
- Perform Crane Safety, Crane Operation, Rigging and Signal Certification training for Traffic and Building Electrical crews.
- Implement and document all Tail Gate & Hazard Risk Analysis meetings before any work begins.
- Basic electrical safety awareness training for Traffic and Building Electrical crews.
- Traffic & Building Electrical crew supervisors daily checking of crew to verify safety practices are taking place.
- Contract MID or other electrical contractors for high voltage applications where light pole installations are needed.
- Appoint a qualified Safety Officer for the City of Modesto with supporting staff, and a Safety Liaison for each department.
- Conduct CPR/AED Certification Training for field crews. Purchase AED equipment to install in all vehicles and facilities.
- Provide proper safety equipment for field crews. High Voltage gloves, shoes, insulated Fiber pole attachments, tools, glasses, footwear etc.
- Better training on street light pole installations.
- Update all EMERGENCY CONTACT NUMBERS for family members as well as all personal information.
- Implement the City of Modesto Electrical Safety Training Document.
- Review and update the job descriptions for Traffic Electrical regarding the timeline allowed for Class A/B licenses and Crane Operator certifications.
- Better structure for job classifications for the apprentice/electricians.
- City to maintain training/certification records that fall under the job requirements.
- Carefully analyze the initial construction design regarding pole location.
- Begin having documented safety meetings bi-weekly.

FINDINGS AND RECOMMENDATIONS: POLICIES AND PROCEDURES

OVERVIEW

Policies and Procedures City of Modesto's Electrical Safety Program and Electrician-Traffic and Buildings job description were reviewed for compliance and consistency after this incident.

SUMMARY

It is recommended that the management will make sure the Electrical crew are familiar and in compliance with City of Modesto's Electrical Safety Program.

ITEMS

Tail gate Safety Meetings

FACTOR

Non-related

FINDINGS

During investigation, it was found that there are no documentations of any tailgate or safety meetings.

DISCUSSION

Tailgate/Toolbox Safety Meeting under Title 8 California Code of Regulation, Construction Safety Orders, Section 1509(e) states, "Supervisory employees shall conduct "toolbox" or "tailgate" safety meetings, or equivalent with their crews at least every 10 working days to emphasize safety.

RECOMMENDATION

- Supervisor shall conduct and document toolbox/tailgate safety meetings twice a month.
- Use Cal/OSHA as a guideline on how to conduct toolbox/tailgate safety meetings.
- <https://www.dir.ca.gov/dosh/puborder.asp>
- https://www.dir.ca.gov/dosh/dosh_publications/tailgateInsert.pdf

FINDINGS AND RECOMMENDATIONS: POLICIES AND PROCEDURES

ITEMS

Crane Operator Certifications

FACTOR

Causal Factor

FINDING

The Public Works Electrical Division does not have any employees certified by the National Commission for the Certification of Crane Operators (NCCCO).

DISCUSSION

During the investigation, it was found that it is presumed by the Public Works Electrical Division's management and crew members that they are exempt from Crane Operators Certification for operating Digger Derrick, however, no documentation was provided regarding the certification exemption.

It was also found that under the License or Certificate of the Electrician-Traffic and Buildings job description, it states:

“When assigned, possession of a valid crane operator certificate, issued by the National Commission for the Certification of Crane Operators (NCCCO), is required within six months of assignment. Failure to obtain the required certification may result in release from probation.”

None of the three employees involved on the incident are Certified Crane Operators.

RECOMMENDATION

- Contact Cal/OSHA and ask for reference or documentation regarding the operations of a Digger Derrick for this specific municipality.
- Send employees to get Crane Operators Certified along with Rigging and Signaling Crane training as per the job description.
- Change the required time line of Electricians on getting Crane Operator certificate from six months to one year.
- Obtain a Digger Derrick class and certification.

FINDINGS AND RECOMMENDATIONS: POLICIES AND PROCEDURES

ITEMS

Attendant in place

FACTOR

Causal

FINDING

Through the investigation it was found that the *Attendant was not* in place while employees were installing a street light pole within the approach limits of overhead high voltage lines.

DISCUSSION

City of Modesto has Electrical Safety Program that is in place. Working around overhead lines is discussed on Chapter 6.10 Page 19. Without accountability and enforcement, policies and procedures are ineffective.

RECOMMENDATION

- Train personnel on City of Modesto Electrical Safety Program.
- Perform tailgate safety meeting prior to commence work to discuss safety hazards on each job location.
- Make sure employees follow the guidelines on working around high voltage overhead lines as discuss on Electrical Safety Program.

FINDINGS AND RECOMMENDATIONS: POLICIES AND PROCEDURES

ITEMS

Electrical Shock Protection Boundaries

FACTOR

Causal

FINDING

Through the investigation, employees encroached the allowable minimum distance while working around high voltage overhead lines. Employees are not familiar with City of Modesto's Electrical Safety Program and few employees do not know or unaware that there is such a written policy.

DISCUSSION

City of Modesto has a written policy on Electrical Safety. It is important that employees understand the hazards while working around high voltage overhead lines. They must understand and enforce the recommended distance as describe on Chapter 6.10 and Appendix D, Electrical Shock Protection Boundaries, of the Electrical Safety Program.

RECOMMENDATION

- Have a tailgate safety meeting in regards to working around high voltage overhead lines.
- Make copies of Electrical Safety Program and distribute to the Electrical Crew.
- Make sure employees understand and enforce the permitted safe distance on high voltage overhead lines as describe on Appendix D of Electrical Safety Program.
- Be familiar with Cal/OSHA's Power Line Safety- Equipment Operations.
https://www.dir.ca.gov/title8/1612_1.html

FINDINGS AND RECOMMENDATIONS: OPERATIONS

REVIEW

Work zone inadequately coned and signed to protect personnel.

SUMMARY

Adhere to Caltrans specs for Traffic Control per IMSA by the Work Zone Safety Course.

ITEM

IMSA Work Zone Safety

FACTOR

Non-related

FINDINGS

There is a need to train personnel and practice work zone safety as stated in the IMSA standards.

DISCUSSION

It is noted that there was improper signage and work zone area for the safety of the crew.

RECOMMENDATION

- **Certify all Traffic and Building Electricians and Assistants in Work Zone Safety.**
- **Highly recommend that all personnel be trained in Traffic Control.**

FINDINGS AND RECOMMENDATIONS: OPERATIONS

REVIEW

All policies known by crew members were followed. No crane certification required due to Digger Derrick exemption. Exemptions of operations of the Digger Derrick were followed as past practices.

SUMMARY

ITEM

Crane Certification

Digger Derrick Exemption

FACTOR

Causal

FINDINGS

No exemptions for the Digger Derrick that would pertain to the City of Modesto Public Works Electrical Division employees from being exempt were found.

DISCUSSION

Listed exemptions for Digger Derrick pertain to utility companies and telecommunications. Previous personnel were crane certified but certifications were not renewed due to Digger Derrick exemptions.

RECOMMENDATION

- It is recommended that the Electrical Traffic and Building personnel be certified in crane operations, rigging, and hand signals.
- It is recommended by the SART team to review past practices and ensure the proper training and operation of the Digger Derrick.

FINDINGS AND RECOMMENDATIONS: OPERATIONS

REVIEW

Caltrans Type 15 poles were assembled, rigged, hoisted, and mounted as per past practices and personal preference as a whole or two pieces.

ITEMS

Research other guidelines for pole installation from other entities.

FACTOR

Contributing

FINDINGS

Caltrans Type 15 pole assembled and hoisted in improper manner to maintain safe working clearance from high voltage lines.

RECOMMENDATION

- Train employees in proper rigging techniques.
- Ensure all needed tools are readily available on the job site.
- Proper pole assembly and placement on the ground.