Southern California Edison (SCE) sets safety, hazard awareness, and mitigation as the highest priorities for our workforce. These are key in eliminating all serious injuries and fatalities. SCE will utilize this Hazard Assessment and Safety Plan (HASP) as a tool for our Edison Representatives to collaborate with contract leadership to ensure there is alignment and understanding before any Safety Tier 1 work begins.
The Plan must identify relevant safety programs, procedures, mitigation measures, and approaches put in place to address potential hazards in the work performed pursuant to the completion of the Scope of Work.
The Plan shall be updated as needed (e.g., when any component changes or when additional hazard mitigations are required) but at a minimum it shall be reviewed and updated (and dated/signed) annually. The most current Plan shall be uploaded in the Third-Party Administrator (TPA).

INSTRUCTIONS:

- **Step 1:** Edison Representative must:
  - Complete Sections 1 & 2
  - Select each hazard category in Section 3 that applies to this scope of work
  - Review and edit as appropriate each Hazard Description in Section 3. Note: All Safety Tier 1 requests for proposal (RFP) shall include a copy of this Plan with Sections 1-3 filled out by the Edison Representative so the hazards associated with the work are clear to the bidders.
- **Step 2**: Contractor must:
  - Complete Section 3 including the Contractor's mitigation plan and applicable reference documents
  - Add any additional Hazard categories (including Subcontractor hazards) not already identified by the Edison Representative and complete the remainder of the document
- **Step 3:** Once all sections have been completed by the Contractor, the Edison Representative must sign Section 13 and provide a signed copy to the Contractor.
- **Step 4:** The Edison Representative and Contractor must follow the orientation instructions in the CHOC which state:
  - The Edison Representative and Contractor Representative shall review each section of the Health and Safety (HS) Handbook for Contractors and confirm understanding by checking the box associated with each section.
  - The Edison Representative and Contractor Representative shall sign and date the HASP and CHOC to confirm a mutual understanding regarding what is required to safely perform work at SCE.
  - Safety Tier 1 Contractors shall upload the signed CHOC to the TPA along with the signed HASP.
  - Contractors shall ensure all Prime and Subcontractor workers are trained to these requirements.
- **Step 5:** Safety Tier 1 Contractors shall ensure a signed copy (electronic and/or hard copy) of this CHOC is retained by all crews while conducting Safety Tier 1 work for SCE (along with the Contractor's tailboard form, HASP and reference safety documents).

SECTION 1: GENERAL INFORMATION					
Project Name:	Vegetation Management			**Edison Representative:**	David Guzman
Purchase Order #:	CW2227313			**Project Location:**	SCE system
Source Work? (Y/N)	Yes			**Higher Risk (HR) Work? (Y/N)**	Yes
Anticipated Start Date:	1/1/2021	**Anticipated Completion Date:**	12/31/2022	**Contractor Company:**	Utility Tree Service

Contractor Representative		**Contractor's Safety Professional**	
Name:	William Ross	**Name:**	Joe Ramirez
Phone:	909-890-9901	**Phone:**	503-568-9296
Email:	wross1@utilitytreeservice.com	**Email:**	jramirez@utilitytreeservice.com

SECTION 2: SCOPE OF WORK AND PROJECT SCHEDULE

Describe all key elements/objectives of the work/project.
EDISON REP TO ADD specific conditions and safety considerations for this scope, for example below for a DISTRIBUTION WORK TYPE:
Add work-site conditions/environment (e.g., residential area, hillside, rocky terrain, etc.). Add work that will be performed by Subcontractors. Add limited resources if applicable (e.g., no cell phone reception). Add # of on-site crews/personnel. Add approximate conductor miles, #of poles, will poles be relocated or replaced. Add Contractor safety oversight requirements.

Utility Vegetation Management (UVM) across the SCE system including but not limited to, line clearing, tree pruning, branch removals, tree removals, & various activities associated with brush removal in close proximity to SCE's high voltage electrical circuits. The aforementioned UVM activities will be executed throughout various geographical areas such as residential and public right of way, and various site conditions/environments such as hillside, rocky terrain, environmentally sensitive, etc. Because of the many various areas and conditions that UVM work will be conducted at times the contractor may face challenges associated with resources such as cell coverage and emergency personnel. Contractor must be prepared ensuring adequate medical aide and safety oversight at all times.

SECTION 3: HAZARD ASSESSMENT AND MITIGATION

The Edison Representative shall select all applicable items from the Primary Hazards/Activity column and review the associated Critical Observable Actions (COAs) for applicability.

The Contractor must verify the selections made by the Edison Representative, review the COAs, and populate the Contractor Mitigation Plan column (see example below). The Contractor's mitigation plan must be practical, effective and sustainable to prevent serious injuries and fatalities.

✓	Primary Hazard / Activity / Conditions	SCE Critical Observable Actions (COAs)	Contractor Mitigation Plan (with references)
Example Hazard			
✓	***The selections made in this column indicate hazards, activities and conditions that are unique to each scope of work and could cause injury or harm to workers if not mitigated. Selection of each Primary Hazard and Activity indicates that these may be present during the contract period.*** ***Example***:	***Prepopulated COAs have been developed in collaboration with SCE and Contractor subject matter experts. These COAs establish observable actions to increase awareness of desired safe work practices that could help to prevent serious injuries and fatalities.*** ***Example Prepopulated COAs:*** • *Maintain 3 points of contact* • *Ladder won't fall and in good shape*	**Contractor to provide mitigation measures for the identified hazards an include references to their safety programs, or regulatory requirements. The mitigation measures must be clear and concise safety expectations.** ***EXAMPLES:*** • Contractor Safety Program Reference: • *ABC Fall Protection Manual – working from poles and towers* • Contractor's Mitigation: • *100% fall protection/restrict equipment required when climbing above 4 feet on wood poles or towers.*

	Fall Hazards/Elevated Work *Use "OTHER" category to add items not specified*	• *Engaged observer when worker over 12 feet in the air.* • *Non-slip safety feet on each ladder.*	• *All employees shall inspect their fall protection equipment prior to use.* • Contractor Safety Program Reference: • *ABC Fall Protection Manual – working from aerial lift devices* • Contractor's Mitigation: • *100% fall protection required at all times.* • *Three points of contact to be used at all times* • *Do not stand on material to gain greater height* • *All employees shall inspect their fall protection equipment prior to use.*
✓ **Basic Site Safety**			

✓	**General Safety**	• The crew has completed a thorough tailboard, covering all Primary Hazards (critical hold points) and it is signed by all.
		• There is an Emergency Action Plan (EAP) on site.
		• Emergency rescue equipment is on site, and readily available.
		• The site is well organized and free of tripping hazards.
		• Weather condition is safe for the work to be performed.
		• There is ample water and shade on site, especially if temperatures exceed 80 degrees.
		• The crew is wearing appropriate clothing for their scope and environment.
		• The crew is wearing appropriate PPE for the task at hand.
			• Contractor Safety Program Reference:
			  • Line Clearance Qualification Standard (LCQS)
			  • 1.2 Job Briefing and stretches-Page 27
			• Contactor Mitigation:
			  • JBO- Minimum 2 Job Brief per day or after significant work change with all on site participating
			  • All 5 subjects of the job briefing covered
			  • Team identifies all hazards and has a plan to mitigate. Emergency action plan developed and discussed
			  • Palm Job Briefing for all climbed palm trees over 30 feet in height
			
			• Contractor Safety Program Reference:
			  • Line Clearance Qualification Standard (LCQS)
			  • 1.2 Job Briefing and stretches-Page 27
			  • Lesson 14 Rescue Techniques Page 299
			• Contactor Mitigation:
			  • There is a second set of climbing gear out when performing manual climbing operations
			  • All employees are trained in tree/lift rescue bi-annually
			  • Emergency action plan documented on Job briefing
			
			• Contractor Safety Program Reference:

			• LCQS • 8.2 climbing Page 161 • Backing Page 333 • Chipping JHA Page 602 • Contactor Mitigation: • Clear walkways of tripping hazards • Use 3 points of contact when ascending ladders trees • Keep worksite orderly • Mark trip hazards that cannot be moved • Contractor Safety Program Reference: • Heat Illness Prevention Program Page 1-8 • Contactor Mitigation: • Crew has ample drinking water supply (2 quarts per hour per employee) • Use trees, vehicles, buildings for shade, peer check • Wear appropriate clothing for conditions • More frequent water breaks during high heat (85 degrees plus)
✓	**Hand and Power Tools**	• Tools are in good condition. • Crews are using tools as they were designed.	• Contractor Safety Program Reference: • LCQS • Lesson 6 Hand tools page 131 • Lesson 7 Power tools Page 141 • Contractor's Mitigation: • Two hands on the power saw when chain is moving • Know where blade will go when "sweeping" through cut • Wear all required PPE including glasses, hearing protection and chain saw leg protection when using the chain saw on the ground • Inspect all tools prior to use
☐	**Powder Actuated Tools**	• Tools are only used in accordance with manufacturer instructions. • Tools are maintained in good condition • Powder-actuated tools are not used in an explosive or flammable atmosphere.	•

		• Tools are not loaded until just prior to the intended firing. • Tools and cartridges are never left unattended.	

✓	**Fire**	• There is a fire evacuation plan on site, if required.
		• Required fire tools are on site and easily accessible.
		• Vehicles are parked in a cleared area when possible, and in the direction of egress.
		• There is a fire evacuation plan on site, if required.
		• Adherence to SCE fire mitigation programs, including the SCE HFRA Hot Work Restriction and Mitigation Measures, SCE Hot Work Program, etc.
			• Contractor Safety Program Reference:
			  • Region 075 Wildfire Preparedness and Prevention Plan
			  • LCQS 1,10 Fire readiness Page 54
			  • LCQS Fire Prevention (Specialized Equipment) Page 386
			  • Wildfire Job Briefing
			• Contractor's Mitigation:
			  • EAP discussed prior to work and documented on the Job Briefing
			  • Tools staged within 25 ft of work area
			  • Fire can full, and tools inspected for readiness,1 hand tool per crewmember
			  • Do not park vehicles on dry grass or brush
			  • Annual wildfire prevention and suppression training
			  • Wildfire job briefing when fire danger elevated or extreme
			  • Designated fueling area for power saws do not start within 10 ft
			  • No welding, grinding or other hot work in fire areas

✓	**Flammable/Combustible Liquids**	• Flammable liquids are stored safely.
		• Flammable liquids are used only where there is adequate ventilation and where there is no chance of electric spark.
		• "No Smoking" signs are posted where flammable liquids are used.
		• Flammable liquids are not used for cleaning purposes.
		• Flammable liquid containers are clearly marked.
			• Contractor Safety Program Reference:
			  • UTS Region 075 Wildfire Preparedness and Prevention Plan
			  • LCQS Fire Readiness Page 54
			• Contractor's Mitigation:
			  • Store flammable liquids properly in approved containers
			  • Containers labeled
			  • No open flame or smoking within 10 ft of fueling area
			  • Proper disposal of unused liquids and containers
			  • Spill kit available on every vehicle

✓	**Traffic**	• Effective traffic control is in place, with an approved traffic control plan (if necessary), allowing for smooth and safe traffic flow.	• Contractor Safety Program Reference:
			  • LCQS Lesson 5 TTC - Pages=108-125
			  • 1.6 PPE - Page 45
			  • All-Stop Page 536
			  • 15.7 Boom Spotter Page 328

		• Approved pedestrian control plans are in place (if necessary), and pedestrians are diverted safely around the worksite, or are escorted safely through the worksite. • The crew is wearing high visibility clothing when working adjacent to traffic or at night. - * add	• UTS TTC Manual • TTC Chart on passenger side of lift and split dumps • Contractor's Mitigation: • TTC set up per California MUTCD and recorded on Job Briefing • Pedestrian control plan discussed during Job briefing • Flagging operations when required with flagmen trained prior to assuming flagging duties • Employees wear class 3 hi visibility apparel at all times
✓	**Pedestrians**	• Approved pedestrian control plans are in place (if necessary). • Pedestrians are diverted safely around the worksite or are escorted safely through the worksite.	• Contractor Safety Program Reference: • LCQS Temporary Traffic Control-Page 117 • All Stop page 536 • 11.5 Rigging-Page 243 • 15.7Boom Spotter-Page 328 • 17.4 Job Briefing Special Precautions – Page 352 • Contractor's Mitigation: • All Stop when pedestrians need to move through work area • Work area clearly defined • Call All-Stop and guide pedestrians through worksite when necessary
✓	**Tripping/Impalement**	• The site is well organized and free of tripping hazards and impalement hazards. • Exposed impalement hazards are covered and/or protected.	• Contractor Safety Program Reference: • LCQS 8.2 Limbing-Page 161 • 6.9 Hand Tools-Page 139 • 15.7 Vehicle Backing-Page 334 • 17 Job Briefings- Page 341 • Job briefing Special Precautions • Contractor's Mitigation: • Move debris from walkways • Mark trip hazards if they cannot be moved • Mark metal stakes or other impalement hazards • Place a cone or trash can over impalement/sharp objects
✓	**Human Performance**	• The crew is communicating effectively. • The crew is using three-way communication for critical tasks. • The crew is working at a safe pace.	• Contractor Safety Program Reference: • LCQS • 27.8 Human Performance-Page 534 • 15.7 Boom Spotter-Page 328 • Job Briefing Cover

		• The crew is working free of distractions (i.e., mobile phones, etc.).
		• The crew is using Peer Check during critical tasks.
		• Individual workers are using Self Check during critical tasks.
		• The crew demonstrates a Questioning Attitude during critical tasks.
		• The crews exercise Stop Work Responsibility whenever anyone is unsure about the safety of an activity.
			• Contractor's Mitigation:
			  • Discuss tools and traps during the pre-job briefing and document
			  • Use proper 3-way communication
			  • No rushing-verified during JBO/field visits
			  • No cell phone distractions during safety sensitive work
			  • Use all stop policy, peer-check, and self-check
			  • Team uses the buddy system
			  • Stop when unsure

✓	**Ergonomic Risk**	• Crew maintains safe footing while lifting.
		• Crew uses proper lifting technique.
		• Crew lifts in teams or uses mechanical advantage when necessary.
			• Contractor Safety Program Reference:
			  • LCQS
			  • Job briefing and stretches-Page 29
			  • 17.4 Job Briefing Work Procedures-Page 351
			• Contractor's Mitigation:
			  • Get help or cut smaller
			  • Use legs when lifting
			  • Turn do not twist
			  • Hug the load and keep your back straight
			  • Use dolly or apprentice loader when possible to avoid manual lifting

✓	**Sanitation**	• Crews have the required sanitation facilities on site.	• Contractor Safety Program Reference:
			  • None
			• Contractor's Mitigation:
			  • Soap and hand sanitizer available on each truck
			  • Employees have permission to drive to restroom if needed
			  • No urination defecation on public property

✓	**Communication Limitations**	• Crew has alternative communication plans and equipment in place if required.	• Contractor Safety Program Reference:
			  • LCQS
			  • 1.9 specialized equipment emergency planning-Page 53
			  • 14.8 remote location rescue-Page 309
			  • 17.9 Emergency Planning-Page 357
			• Contractor's Mitigation:
			  • Check phone service

			• Document nearest cell service area or talk to homeowner for land line use in remote areas with no service • Radios used when flaggers are not in visual range

✓	**Contaminated Soil**	• Crew has appropriate spill kits on site for the equipment and processes in use.
		• Crews use proper techniques when mitigating contaminated soil.
			• Contractor Safety Program Reference:
			  • LCQS
			  • 7.3 power saw fueling Page 144
			  • 20.8 Vehicle Cooling Systems Page 412
			  • 23.2 Herbicide Spills-Pages 473
			• Contractor's Mitigation:
			  • Control/wipe up small spills
			  • Contact 3rd party service for spills over 5 gallons
			  • All vehicles equipped with spill kit

✓	**Weather Conditions**	• Wind and weather allow for work to be completed safely.
		• Crews stop work in hazardous weather conditions.
			• Contractor Safety Program Reference:
			  • LCQS
			  • 1.5 Orientation to Storm Work-Pages 37, 43, 44
			  • 15.7 Work Spotter responsibilities Page 328
			  • 27.8 Human Performance All Stop-Page 535
			• Contractor's Mitigation:
			  • No work above conductors in high winds
			  • No one working aloft during active lightning strikes
			  • Monitor weather conditions using weather app
			  • Stop all work when conditions are unsafe

✓	**Environmental Conditions**	• There is ample potable water, shade, and opportunity for rest on site.
		• The weather and site conditions are safe for work.
		• The site is clear of biological hazards (*e.g.* animals, insects) prior to work.
			• Contractor Safety Program Reference:
			  • LCQS
			  • 1.5 Orientation to storm work, Climbing, aerial device, spotter responsibilities-Page 37
			  • Climbing, Aerial device 43 and 44
			  • 15.7 Spotter Responsibilities 328
			  • Heat Injury and Illness Prevention Program
			• Contractor's Mitigation:
			  • 2 quarts of water per person per hour (HIPP)
			  • No trimming above lines in high wind, shut down at 35 MPH
			  • Work stoppage during active lightning storm
			  • Drinking water reminder and high temperature on Job Briefing
			  • Stinging insects, dogs, wildlife documented on job briefing

✓	**Remote Work**	• Crew has a remote communication plan in place.
		• Crew has an emergency action plan that overcomes remote work barriers.
			• Contractor Safety Program Reference:
			  • LCQS 17.9 Emergency Planning-Pages 53
			  • Job Briefing
			• Contractor's Mitigation
			  • EAP is developed during the pre-job briefing
			  • Cell service or alternative discussed, trucks parked facing out
			  • Nearest cell service or alternative phone use documented on JB

✓	**Emergency Evacuation Limitations**	• Crew has an effective evacuation plan in place that takes in consideration evacuation limitations.	• Contractor Safety Program Reference:
			  • LCQS 17.9 Emergency Planning page 357
			  • Job Briefing
			• Contractor's Mitigation:
			  • Emergency meeting place discussed and documented on Job Briefing with back-up plan if necessary
			  • Vehicles facing out, suppress small fires but leave if uncontrollable

✓	**Noise**	• Crews are wearing appropriate hearing protection based upon the noise level of the site.	• Contractor Safety Program Reference:
			  • LCQS 1.6 PPE page 45
			  • Job Briefing section 2 energy source controls, section 5 PPE
			• Contractor's Mitigation:
			  • Hearing protection worn, anyone within 25ft of power saw, chipper or other noise over 80 decibels
			  • Discussed during pre-job briefing

✓	**Working Over/Near Water**	• Employees are wearing approved life jackets or buoyant work vests.
		• Crew has an action plan in place
			• Contractor Safety Program Reference:
			  • LCQS
			  • 14.6 Water rescue-page 306
			  • 17.11 additional hazards-page 358
			  • Job Briefing section 4, special precautions
			• Contractor's Mitigation:
			  • Tie off on steep terrain near water
			  • Wear proper floatation device when fall in could occur
			  • Safety plan discussed and documented on job briefing

✓	**Low Visibility**	• Crews have ample light to work safely.
		• Crew has taken inclement weather (fog) into consideration.
			• Contractor Safety Program Reference:
			  • LCQS 5.9 Night Work Zones page 122
			• Contractor's Mitigation:
			  • Wear class 3 hi visibility apparel
			  • Slow down when driving

			• Portable lighting for night work • No flagging operations during foggy, rainy days (except emergency)

✓	**Neighboring Facilities/Homeowner Issues**	• Crew is aware of adjacent facilities that could affect the safety of their worksite.
		• Crews are aware of, and avoid, dangerous persons or animals on adjacent properties.
		• Vehicles are clearly marked and identifiable.
		• Crew engages the homeowner before entering their property
			• Contractor Safety Program Reference:
			  • LCQS 17.1 Job Briefing Overview page 342
			  • Job Briefing step 3 Hazard Identification
			• Contractor's Mitigation:
			  • UTS vehicles marked with company logo
			  • Customer contact made before trimming
			  • Dogs, insects, poisonous plants identified during Job Briefing with hazard mitigation

✓	**Terrain**	• Crews have appropriate footwear for the worksite terrain.
		• Mitigations have been implemented with regards to terrain and weather conditions that may adversely affect the safe operations of vehicles.
			• Contractor Safety Program Reference:
			  • LCQS 17.1 page 359 Working on Steep Slopes
			• Contractor's Mitigation:
			  • Check footwear during JBO, morning safety meetings
			  • Tied off when working steep slopes to prevent fall

☐	**Toxic Metals (including Lead)**	• Toxic dust is mitigated. • Crew is using appropriate PPE for TM/lead exposure. • Exposure is less than .03 mg/m3.	•
☐	**Other:**		•
☐	**Other:**		•
☐	**Other:**		•
✓ Vehicle Operations			

✓	**Parking**	• Stowed and parked trailers are adequately secured	• Contractor Safety Program Reference:
			  • LCQS
			  • 15.1 Aerial device safety-Page 312

		• Vehicles are parked with emergency parking system activated • Vehicles are locked and secured when not in use • Crew evaluates the site prior to departure	• 15.3 Aerial device components and daily inspection-Page 317 • 18.2 Truck daily inspection -Page 366 • Contractor's Mitigation: • Wheel chocks every stop placed on downhill side • Parking brake activated and checked pre-trip (DVIR) • Remove vehicle/chipper keys when unattended • 360 walk-around
✓	**Collision**	• Vehicle has been inspected prior to use (documented). • Crew has a pre-planned route. • Roads are confirmed safe to drive. • Driver avoids distractions. • Driver maintains safe distance. • Driver maintains a safe speed. • Driver uses turn signals.	• Contractor Safety Program Reference: • LCQS 16.4 Driving Special Precautions page 336 • Driver Management Program (DMP) annually • Contractor's Mitigation: • Use 5 principles of defensive driving (ESSPT) • All drivers qualified for the vehicle driven • Pre trip inspection • No cell phones allowed in commercial vehicles and hands free in pickups • Obtain 3rd party information, CHP called for all commercial accidents
✓	**Rollover**	• Driver uses low gears down declines. • Driver navigates turns at a conservative and safe speed. • Consider soil conditions when driving off road	• Contractor Safety Program Reference: • LCQS 19.6 Terrain Assessment page 390 • Contractor's Mitigation: • Uphill-never drive past your point of visibility • Never allow vehicle to roll back freely • Downhill use low gears, choose a straight path • Caution when traversing slopes, stay buckled in should vehicle begin to roll
✓	**Driving with a Trailer**	• Trailer connections are sound. • Trailer has been inspected and confirmed to be in good condition. • Trailer is the appropriate size for load (trailer loaded correctly). • Crew uses a chase vehicle (comms between the two) with oversized loads.	• Contractor Safety Program Reference: • LCQS • 3.2 Chipper daily inspections-Page 73 • 3.6 Connecting and disconnecting towed unit-Page 77 • 18.4 Trailer Inspections-Page 374 • Driver Management Program (DMP) • Driver Vehicle Inspection Report (DVIR) • Contractor's Mitigation: • Pre trip inspection, trailer inspected using DVIR

			• DMP and JBO drive-along • Driver allows room for chipper to clear when cornering

✓	**Backing**	• Crew is using spotter when backing vehicles.
		• Driver performs Circle of Safety (360 degrees) prior to backing when there is no spotter.
			• Contractor Safety Program Reference:
			  • LCQS 16.1 Backing of Vehicles page 333
			• Contractor's Mitigation:
			  • Do not back without help
			  • 360 walk-around when spotter not available
			  • Backing spotters trained
			  • Vehicles equipped with back up alarm or sound horn before backing
			  • Mirrors Adjusted properly for vehicle driver
			  • Spotter stays visible does not stand directly behind vehicle

✓	**Load Securement**	• Loads are secured properly using approved rigging equipment and procedures.	• Contractor Safety Program Reference:
			  • LCQS 17.4 Documentation of Job Briefing page 352
			  • Driver Management Program annual training
			• Contractor's Mitigation:
			  • No tools stored in open sign bins or on chippers
			  • Ladders carried on ladder racks
			  • 360 Walk around vehicle to confirm

✓	**Fall from Heights**	• Crew maintains 3 points of contact when ascending and descending.
		• Walking surfaces are free of tripping hazards and oil.
			• Contractor Safety Program Reference:
			  • LCQS 15.1 Aerial Device Safety page 312
			• Contractor's Mitigation:
			  • Use 3 points of contact
			  • Clip in to bucket before climbing in, stay clipped in until safely on cab guard
			  • Clean oil from cab guard and repair hydraulic leaks

✓	**Overhead Obstructions**	• Crew uses a spotter to avoid overhead obstructions. • Equipment (boom, etc.) is properly stowed.	• Contractor Safety Program Reference: • LCQS • Driver Management Program (DMP) • 15.7 Boom Spotter-Page 328 • 27.8 Human performance, All-Stop-Page 534 • 27.9 Situational Awareness-Page 539 • Contractor's Mitigation: • Tie down boom before movement, work spotter, driver knows height of vehicle

			• DMP Driver known vehicle height (decal on top of cab)

✓	**Off-road**	• Crews maintain speeds appropriate to road conditions.
		• 4X4 required for off-road travel
		• Crews observe all postings and signs, and all environmental limitations
		• Crews observe OHV rules and procedures
			• Contractor Safety Program Reference:
			  • LCQS
			  • 19.7 Winching and equipment recovery-Page 394
			  • 22.1 Specialized equipment overview-Page 430
			  • Lesson 25 Off road aerial devices- Page 501
			• Contractor's Mitigation:
			  • No ropes to recover stuck equipment
			  • Stay on established roadway
			  • Do not park over dry grass or brush

✓	**Other: Sennebogan**	• Operate equip safety • Qualified Employees • Proper set up	Provisions for operators • Operators will be competence is competence in safe handling of the machine, its attachments and its environment • Successful reception of a machine-specific or product-specific instructions. The instructions must include the safe use of the machine and all of its attachments as well as the procedures to be followed in the case of malfunctions such as the failure of the power supply or the control system. • Written and task-specific assignment by the machine owner to operate the machine Duties of the machine operator • Carrying, reading and understanding the operating manual • Observance of all safety instructions in the operating manual • Proper use of the machine • Wearing personal protective equipment • Setting the operation in case of safety-threatening defects on the machine • Report malfunctions and damage to the machine to the operator and to the nearest machine operator • Checking the safety devices before starting work

			• Observance of the maintenance plan • Arranging the hand signals with the spotter • If necessary, give warning signal Provisions for spotter Requirements for the spotter • Appointment as spotter by the machine operator Duties of the spotter • Coordination of unambiguous and clearly visible signals with the machine operator • Immediately reporting of faults and damage to the machine operator and giving appropriate signals • Supporting and checking manually slung loads • Checking the danger area • Wearing personal protective equipment General Safety and Operation General • The machine is not used as intended • The machine is not operated or maintained by trained personnel • The safety instructions are not complied with • The machine has defects • The attached tools do not comply with the relevant safety regulations • The attached tools have defects Intended use • Grapple • Grab saw • Mulcher

			Foreseeable misuse • Exceeding the permitted safe working loads. • Using non-SENNEBOGEN parts. • Use in unauthorized ambient conditions. • Misuse by untrained and uninstructed personnel. • Inadequate equipment for the types of use (for example, protection of the cab against falling objects with protective grating). • Working on an insufficiently firm substrate. • Failure to perform the necessary inspection and maintenance tasks. • Neglecting to lower attached loads and boom if necessary when shutting the machine down (for example, work stop-pages, overnight), • Starting and operating the machine outside the specified starting and operating temperature. • Insufficient pre-warming and warm-up phase. • Working in emergency operation over a longer time period, et cetera. • Hoist operation without load moment monitoring Misuse • Hoisting, moving, and transporting of persons • Lifting loads at an angle • Pulling loads n Dragging loads • Pulling jammed loads free • Operation of the machine in an explosive environment. • Exceeding the permitted safe working load • Attachment/operation of non-approved/permitted attachments

☐	**Other:**	•	•
☐ **Forklifts / All-Terrain Forklifts**			
☐	**General**	• Forklift is in safe working condition. • Operator is wearing a seatbelt at all times.	•

		• Operator keeps hands and feet inside the cab.	
☐	**Rollover**	• Operator remains off slopes too steep for safe operation. • Operator moves the forklift at a safe speed. • Operator never turns on a grade. • Operator does not drive with forks elevated.	•
☐	**Load Stability**	• Loads are stable and secure. • Load within capacity of forklift. • Operator only drives forward with load upgrade if grade is >10%.	•
☐	**Collision**	• Operator maintains a clear view of path of travel. • Operator backs safely.	•
☐	**Other:**	•	•
✓ **Cranes and Suspended Loads**			
✓	**Crane Instability**	• The crew has a lift plan in place. • Operator is certified and qualified. • Crane configuration and capacity sufficient for the weight of the load. • Outrigger and pads are in place. • Ground is stable. • Weather is safe for crane operation. • Equipment has been inspected and confirmed in good condition.	• Also see pages 54-98  cranes.pdf  Cranes.docx •
✓	**Overhead Obstructions**	• There is a qualified engaged observer. • The operator has an acceptable flight plan in place.	 Cranes.docx  cranes.pdf • Also see pages 54-98

✓	**Rigging Failure**	• Rigging is tagged and in good condition. • Rigging is sufficient for the weight of the load. • The load is rigged correctly. • The crew is using tag lines to control the load if applicable. • Rigging is protected against sharp edges. • The load is not flown over crew members, pedestrians, etc.	• Also see pages 54-98 •  Cranes.docx  cranes.pdf  UTS rigging Material handling (1 •
✓	**Loss of Control of the Load**	• Use of taglines when appropriate. • Load is plumb prior to lift. • Equipment is operated properly and as intended.	• Also see pages 54-98 •  Cranes.docx  cranes.pdf  UTS rigging Material handling (1 •
✓	**Electrical Contact**	• There is a qualified engaged observer. • The insulated stage of the digger derrick is extended. • Equipment is barricaded when working near energized primary conductors. • Conductors are spread. • Crew has proper cover in place. • There is effective communication between spotter and operator.	 Cranes.docx  cranes.pdf Also see pages 54-98
☐	**Other:**		•
☐	**Other:**		•
☐ **Bulk Fuel Storage and Transport**			

☐	**Explosion**	• Fuel is stored in approved containers. • Fuel quantity storage does not exceed local fire code limitations. • "No Smoking" and/or "No Open Flame" signs are posted. • Conditions from which spontaneous ignition could produce a fire, are not present. • Fire suppression is strategically placed.	•
☐	**Other:**	•	•
✓	**Ladders, Platforms and Aerial Devices**		

✓	**Equipment Failure**	• All equipment is pre-inspected and in good condition.
		• Equipment is utilized within manufacturer's specifications.
			• Contractor Safety Program Reference:
			  • LCQS JHA Bucket Operations Page 571
			  • 15.1 Aerial device safety-Page 312
			  • 15.3 Aerial device components and daily inspection-Page 317
			  • 18.2 Truck daily inspection-Page 366
			• Contractor's Mitigation:
			  • Inspect before each use (dry fly)
			  • Annual 3rd party inspection and dielectric test
			  • Trim lift inspection report completed daily
			  • Aerial lift manual on each lift

✓	**The Bight**	• The crew has accurately identified and avoids the bight.
		• The crew keeps their hands within the bucket while moving.
		• The hydraulic system of the truck appears in good condition.
			• Contractor Safety Program Reference:
			  • LCQS JHA Bucket Operations page 571
			  • 15.1 Aerial device safety-Page 312
			  • 15.3 Aerial device components and daily inspection-Page 317
			  • 15.6 Aerial device operations-Page 326
			• Contractor's Mitigation:
			  • Face direction of travel
			  • Operator keeps all body parts inside basket, does not overreach
			  • Daily trim lift inspection documented
			  • Avoiding pinch points

✓	**Fall from Heights**	• Ladders and platforms are stabilized properly.
		• Fall protection attached to an appropriate anchorage point.
		• The ladder is placed on a secure and level footing.
		• Ladders are secured from falling over.
		• Ladders extend 3 feet above the landing surface.
		• Employees avoid overreaching when working from a ladder.
		• Employees maintain 3 points of contact with the ladder at all times.
		• The ladder is placed so that the horizontal distance from the top support to the foot of the ladder is one-quarter of the working length of the ladder.
		• Employees do not work from top three rungs of an extension ladder.
		• Employees maintain their footing on the main platform at all times.
		• If required, employees are using a personal protection system while working from a ladder.
			• Contractor Safety Program Reference:
			  • LCQS 6.5 Ladder Safety
			• Contractor's Mitigation:
			  • Ladder base tied off, secured Held by coworker when ascending
			  • 100% tie in, tie in before ascending the ladder
			  • Ensure ladder is not on steep slope
			  • Ladder is inspected before use
			  • Only non-conductive ladders allowed (fiberglass)
			  • Base is one foot out for every 4 feet raised
			  • Move ladder incrementally to avoid overreach
			  • 3 points of contact when ascending
			  • Do not work from top rungs (remove after accent)
			  • Do not lean on pole structures or cables
			  • Do not drop limbs or wood on ladder
			  • Wear all required PPE and fall protection

✓	**Dropped Objects**	• Crew has established a clearly defined drop zone.
		• Tools and materials are tethered or secured.
		• Crews are using handlines.
			• Contractor Safety Program Reference:
			  • LCQS
			  • Life Saving Rules Drop Zone-Page 24
			  • 6.5 Ladder safety page 136
			  • 11.2 Utility pruning, establishing the drop zone-Page 236
			• Contractor's Mitigation:
			  • Establish the drop zone
			  • Do not drop debris on ladders
			  • Secure tools to prevent accidental drop
			  • Raise tools to elevated position with handline

☐	**Other:**		•
☐	**Other:**		•
☐	**Other:**	•	•
☐ **Demolition**			
☐	**Flying Objects**	• The crew is wearing eye protection. • The crew has barricaded the work area. • The crew is using proper equipment with which to chip.	•
☐	**Silica / Dust**	• Crew is wearing appropriate respiratory protection. • Crew is using an effective method to minimize dust.	•
☐	**Electrical Contact**	• There is a clearance, including open disconnects, visible tags, and warning blocks in place. • The crew has grounded their equipment as required. • The crew has defined their work space. • Work area limits are delineated. • The crew is using a Spotter/Checker. • Proper warning signage is present. • The crew is using the proper chipping tool, attachment, and technique.	•
☐	**Other:**		•
☐	**Other:**		•
☐ **Scaffolding**			

☐	**Collapse**	• Scaffold components can support at least four times their maximum intended load. • Scaffold is assembled per manufacturer instructions. • Scaffold is certified and green tagged with all required information.	•
☐	**Fall from Heights**	• Scaffold is fully planked with no more than 1" gap between planks. • Platform is at least 18 inches wide. • Guardrails are used if work height is > 6 feet. Guardrail system includes top rail; mid rail; toe board; and posts. • Scaffold is 14 inches or less from face of work (if guardrails are removed).	•
☐	**Other:**		•
☐ **Enclosed Spaces / Confined Spaces**			
☐	**Hazardous Atmosphere**	• An attendant with first-aid training shall be immediately available outside the enclosed space. • Atmosphere and environment is safe to enter. • Atmospheric readings are continuously monitored and logged. • Ventilation in place, if required, and placed away from sources of carbon monoxide.	•
☐	**Engulfment**	• Water is removed from the space.	•
☐	**Fall from Heights**	• Opening is barricaded or a dedicated spotter near the opening. • Ladders secured properly.	•

		• Rescue retrieval system and plan are in place.	
☐	**Dropped Objects**	• Hand lines are used when required. • Tools and equipment are kept away from the opening.	•
☐	**Other:**		•
☐	**Other:**		•
☐	**Other:**	•	•
☐ **Trenching / Excavation**			
☐	**Utility Strike**	• Crew has a valid current USA ticket on site. • Markings are clear and legible. • Crew hand digs to reveal conflicting utilities (within 24 inches either side) before mechanized digging.	•
☐	**Cave In**	• The excavation is benched, sloped, or shielded as required. • There is a means of access/egress within 25 feet of anyone working in the excavation. • Spoil piles are at least two feet from the edge of the excavation. • Vehicles are not parked directly adjacent to the excavation.	•
☐	**Atmosphere**	• Atmosphere is tested if the excavation is deeper than 4 ft, or if the soil may be contaminated. • Ventilation is used if required. • Vehicles are parked so that exhaust is not entering the excavation.	•

☐	**Fall from Heights**	• The crew is using proper fall protection when required. • The crew has placed barricades around the excavation. • The crew has placed signage to warn of the excavation. • Excavations are covered or barricaded when unattended.	•
☐	**Other:**		•
☐ Chipping on Encasement			
☐	**Electrical Contact / Arc Flash**	• There is a Qualified Electrical Worker observing the work. • The crew has No-Test Orders in place on all circuits contained within the package. • The crew is using an appropriate tool / gad to chip (never a pointed gad). • The crew is using proper chipping technique to avoid contact. • The excavation is safe to enter. • The crew has appropriate PPE for chipping. • Contractor is operating per the latest version of the SCE standard for chipping on or around encased conduit(s) housing energized cable.	•
☐	**Silica Dust**	• The crew is controlling silica dust according to regulatory requirements.	•
☐	**Other:**		•
☐ Caissons and Cofferdams			

☐	**Fall from Height**	• Crews are provided adequate fall protection when working at heights.	•
☐	**Hazardous Atmosphere**	• An emergency rescue plan is developed and in place. • The employer shall assign a competent person who shall perform all air monitoring.	•
☐	**Noise and Vibration**	• Workers use hearing protection when required.	•
☐	**Flooding**	• Rock bolts meet the necessary torque. • A competent person has determined acceptable ground stability. • Shafts are subjected to a hydrostatic or air-pressure test. • A shield is erected therein for the protection of the employees as required. • All caissons having a diameter or side greater than 10 feet are provided with a man lock and shaft for the exclusive use of employees. • If overtopping of the cofferdam by high waters is possible, means are provided for controlled flooding of the work area.	•
☐	**Other:**		•
☐ **Drilling Operations**			
☐	**Utility Strike**	• Utilities have been properly marked. • Conflicted utilities have been hand exposed before mechanical drilling.	•

		• The drill head is always tracked to ensure that it stays on course. • Workers do not touch the pipe string or equipment when the drill is being pushed into the ground.	
☐	**Struck By**	• Workers stay clear of the rotating drill and shaft. • Workers are not standing in the receiving pit or area where the drill is expected to exit. • Swing radius of rotating equipment is clearly demarcated.	• •
☐	**Tunnel Collapse**	• Cal OSHA Mining and Tunneling Unit has performed a pre-job safety conference if required.	•
☐	**Hazardous Atmosphere**	• The gas hazards of the tunnel have been properly classified. • Ventilation and fresh air flow meet the required minimum standards. • There is a written record of atmospheric readings on site.	•
☐	**Fall from Heights**	• Crews have established a Restricted Access Zone (RAZ) if the hole is to exceed 6 feet deep. • There is adequate fall protection installed as required.	•
☐	**Other:**		•
☐ **Blasting and Explosives**			
☐	**General Requirements**	• Competent Person is onsite and has a valid California Blaster's License. • Warning signals are used leading up to firing.	•

☐	**Inadvertent Explosion**	• Explosives are stored properly, and caps are stored separately. • No smoking within 50 feet. • Explosives are at least 25 feet from electrical circuits. • Loaded holes and explosives are attended. • Competent Person declares site safe to blast prior to firing sequence.	•
☐	**Personal Injury**	• Explosives are transported safely. • Blasting mats are used when flying material is a risk. • The blasting crew waits at least 5 minutes before returning to the point of blasting (15 min for underground blasting).	•
☐	**Other:**	•	•
✓ Work on or Around Substation Equipment			

✓	**Electrical Contact**	• Testing equipment is present and calibrated.
		• Voltage and current are confirmed.
		• Observer and/or Checker present if required.
		• Proper cover and barriers in place.
		• Work area properly identified.
		• Safe work distances are maintained (MAD).
		• Work position and equipment are properly grounded.
		• Checker is present.
		• Visual blocking devices are present.
		• Crew is wearing appropriate arc-rated clothing or remains outside the Arc Blast Radius.
			• Contractor Safety Program Reference:
			  • LCQS 4.11 Substation entry hazards-Page 99
			• Contractor's Mitigation:
			  • Escorted by utility personnel when working inside or around substation
			  • Follow Utility instructions and stay out of non-authorized areas
			  • Work checker present at all times
			  • FR clothing worn when required

☐	**Wiring Installation Secondary Cable**	• Crew is wearing appropriate PPE. • Rubber gloves (if required) are in good condition. • Wires are safe ended. • Work area is clearly defined and marked. • Voltage and current are confirmed. • Workers are using insulated tools.	•

☐	**Pulling/Demo Secondary Cable:**	• Cable tails are controlled.
		• Cables are safe ended.
		• Cables are identified prior to cutting.
		• Voltage and amperage are confirmed.
		• Checker is present if required.
		  • Crew is wearing appropriate arc-rated clothing.
		  • Crew is using an arc-flash rated face shield when required.
		  • Load and strain are calculated.
		  • Load is within the capacity of rigging and equipment.
		  • Crew remains clear of the bight.
			•

☐	**Other:**	•	•
✓	**Working from Structures / Poles**		
☐	**Fall from Heights**	• The crew is using 100% fall protection. • Personal fall protection and equipment is in good condition and worn correctly. • Fall protection attached to appropriate anchorage point. • Pole is adequately supported if required, before climbing.	• N/A UTS personnel do not work from pole structures

		• Fall protection attached to appropriate anchorage point.	
☐	**Compromised Structures**	• The crew has confirmed the structure is safe to climb (visually and physically). • Structure is adequately supported if required, before climbing.	•
☐	**Other:**	•	•
☐ **Pulling or Removing Conductor or Cable**			
☐	**Induction / Electrical Contact**	• Approved site-specific grounding plan is in place. • Equipment is EPZ grounded. • All equipment on site is bonded properly. • Equipment barricaded and proper personnel transition is in place.	•
☐	**Dropped Wire**	• Wire is sound for pull (splices, rigging, tools, etc). • There is an approved pull plan on site. • Guard structures are in place. • Adequate cover over hot crossings is in place. • Line status is confirmed. • Traffic/pedestrian security is in place. • Traffic and railroad crossing permits are in place as required. • Effective radio communication is established. • The crew has removed grounds prior to pulling wire. • Qualified observers are present at critical points.	•

		• The crew is using proper bypass tension. • There is proper tension on pullers.	
☐	**Rigging Failure**	• Ensure proper rigging meets anticipated tensions. • Rigging equipment is in good condition. • Rigging is applied correctly (grips, hoists, slings, shackles, etc.)	•
☐	**Equipment Failure**	• Equipment has been inspected, has valid certifications, and is in good condition. • Equipment is set up correctly. • Crew is using correct equipment for the job. • Equipment operated in a safe manner and as designed.	•
☐	**Structure Failure**	• Structure is visibly sound. • Tension is within structure capacity. • Foundation integrity has been confirmed.	•
☐	**Other:**	•	•
☐	**Other:**	•	•
☐	**Other:**	•	•
✓ **Working in Proximity to High Voltage Lines and Equipment**			
☐	**Induction**	• Approved site-specific grounding plan, including EPZ grounding is on site. • Equipment is EPZ grounded. • Crane basket is bonded to the wire.	•

		• If accessible, crane is bonded to the structure. • Equipment barricaded • Crew is using appropriate live line tools. • Crew is using approved jumpers when making up or breaking bonds	
☐	**Arc Flash/Blast**	• The crew has confirmed the Arc Flash requirements for their work area. • Crew is wearing appropriate Arc Flash PPE level.	•
☐	**Electrical Contact**	• The crew has ample cover (i.e. second point of contact). • Gloves and sleeves are within their test dates. • Gloves and sleeves have passed inspection, prior to use. • Crew maintains Minimum Approach Distance (MAD). • Crew is wearing gloves and sleeves when working within the MAD. • The crew has grounded effectively per Contractor grounding plan. • The crew has effective Lock Out Tag Out in place (i.e. clearance). • The open points are tagged. • There is an engaged qualified observer when crew is working in the Primary Zone. • The crew has defended against backfeed and induction (i.e. open points, grounding). • Equipment within the energized primary zone is barricaded.	• •

		• Live line tools are inspected and in good condition.	
☐	**Other:**	•	•
☐	**Other:**	•	•
☐ **Spacer Carts**			
☐	**Pinch Points**	• Lineman keeps hands and arms clear of the rollers.	•
☐	**Fall from Heights**	• Safety chains are in place. • Lineman is using 100% fall protection.	•
☐	**Dropped Objects**	• Tools and equipment are secured. • Ground crews avoid working below spacer cart operations.	•
☐	**Equipment Failure**	• Spacer cart is traveling at a safe speed. • Equipment is inspected and confirmed in good working condition.	•
☐	**Other:**	•	•
☐	**Other:**	•	
✓ **Woodchippers**			
✓	**Caught Between**	• No ropes or loose clothing near chipper, tear away vest only, no jewelry. • Safety bar/emergency stop system in place and working. • Feed chipper from curb side, butt end first.	Contractor Safety Program Reference: • LCQS JHA Wood Chipping Operations page 601 • Lesson 3 Chipping operations • 3.8 when not to chip-Page 80 • DVIR Daily inspection Contractor Mitigation: • No loose clothing or gauntlet style gloves use breakaway safety vests

		• Use push stick to move debris into chipper. • Lock Out Tag Out when maintaining, not in use, or clearing a jammed chipper.	• Cut brush to manageable size and feed butt end first • Inspect chipper daily before use • Employees trained before allowed to use woodchippers • Pull Keys from ignition when left unattended • Lock out equipment before performing maintenance • Stay to the side (curb side) and move away as brush is pulled in • Use push stick for small debris • Feed from curbside away from vehicle traffic • TTC/job site set up before use on roadway • CR gloves when thorns or briars present, Hard hat, hearing protection at all times • Do not lean into or reach into feed table past curtain

✓	**Struck By**	• Stand to the side while chipper in operation.
		• Use proper PPE (safety glasses, hard hat, hearing protection).
		• All guards and covers in place and secure.
		• Chute properly aimed.
			• Contractor Safety Program Reference:
			  • LCQS JHA Wood Chipping Operations Page 601
			  • Lesson 3 Chipping operations
			  • 3.8 when not to chip-Page 80
			  • JHA Wood Chipping operations-page 601
			• Contractor Mitigation:
			  • Stand to the curb side and move away as brush is pulled in
			  • Never stand directly behind chipper
			  • Hard hat, safety glasses, hearing protection worn at all times
			  • Pre inspection before use, red tag if any guards, covers or other safety features missing or broken
			  • All personnel stand clear of discharge chute, never in front
			  • CR gloves when changing blades

✓	**Other:**	• Unit left unattended	• Contractor Mitigation: • Lock out equipment (take keys) wheel chocks on downhill side and chain around jack wheel
	✓ **Chainsaws**		
✓	**Laceration**	• Proper PPE, including chaps or pants (ground use), hard hat, hearing, and eye, protection. • Right sized saw. • Always use two hands when using a chain saw.	Contractor Safety Program Reference: • LCQS JHA Chainsaw Operations Page 581 • Lesson 7 Power tools page 141 • 1.6 PPE-Page 45 Contractor Mitigation:

		• Chain saw safety devices are in place and functional. • A stable body position is maintained when using a chain saw. • Avoid cutting in such a way that would cause kick-back. • Do not use chainsaw above head.	• Proper PPE including hearing protection, safety glasses and chaps for ground use • Always choose the correct saw for intended use • 2 hands on the saw with thumb gripped around front handle • No reverse grip, 2 hands on the saw • Inspect saw before use and red tag if any of the 10 safety features are nonoperational • Do not start cut with top front quadrant (kick back) • No cutting over shoulder height • Proper body position before use, stable position in tree • Chain brake engaged when moving 2 steps or more • Two attachments when climbing aloft and using saw

✓	**Fall from Heights**	• Secondary tie-in when using a chainsaw aloft (Veg Man)	• Contractor Safety Program Reference:
			  • LCQS 10.7 Climbing system and tie-in procedures
			• Contractor Mitigation:
			  • Trimmer has 2 attachment points when using saw aloft (climbing)
			  • Keep ropes and lanyards out of the line of fire
			  • Inspect climbing gear before each climb
			  • Trained operator

✓	**Dropped Objects**	• When a chain saw is carried aloft it is secured against falling.	• Contractor Safety Program Reference:
			  • LCQS JHA Chainsaw Operations page 581
			  • Lesson 7 Power tools-page 141
			  • Life Saving Rules -drop Zone-Page 24
			• Contractor Mitigation:
			  • Power saw is hung on the climber's belt with approved chain saw lanyard.
			  • Stay out of the drop zone

☐	**Other:**		•
	✓ **Palm Trees**		

✓	**Fall from Heights**	• Pre-climb and trim assessment done.
		• Double tie-in.
			• Contractor Safety Program Reference:
			  • LCQS Lesson 10 Palm Trees pages 231 thru 241
			  • Palm tree Job Briefing
			  • 10.12 Alternative tools (AFC)

		• Tied into main trunk / stem with a False Crotch.	• 10.13 Palm Anatomy • 10.14 Palm Species • 10.15 Ganoderma Zonatum Disease • 10.16 Leading causes of SIFS while trimming palms • 10.17 Palm trimming • 10.18 Static Line over the top • Contractor Mitigation: • Use the Palm Tree Job Briefing for climbed palm tree • Secondary tie in while using handsaw or power saw • Over the top climbing palms with 3 years or more growth – Climber must have signed proficiencies for static line training • Adjustable False Crotch used on all climbed palm trees • 100% tie-in tree or ladder
✓	**Electrical Contact**	• Keep body and all tools out of minimum approach distance (MAD) or 10 feet if non-qualified. • Engaged observer. • Fronds cut above power lines dropped or lowered with control. • Fronds in contact with wire removed with non-conductive tool.	• Contractor Safety Program Reference: • LCQS • LSR Violating MAD-Page 26 • Grounding policy-Page 40 • Lesson 4 Electrical Hazard Awareness-Page 81 • Contractor Mitigation: • Trimmers trained before performing work • Always maintain MAD – 10 feet whenever possible • Engaged work spotter signs on Palm job briefing agrees to check work position • Hand saw use for cut and control or place frond in basket, move below line before removal • Use non-conductive tool to clip or cut back tree parts in MAD
✓	**Falling Objects**	• Clearly marked and enforced Drop Zone. • Ensure tools used aloft are secure. • Three-way communication among all crew members.	• Contractor Safety Program Reference: • LCQS • Life Saving Rules Drop Zone-Page 24 • 6.5 Ladder safety-Page 136 • 11.2 Utility pruning, establishing the drop zone-Page 236 • Contractor's Mitigation: • Establish the drop zone -clearly marked and enforced • Secure tools to prevent accidental drop • 3-way communication audible warnings before dropping fronds or wood – warning, response and acknowledgement

✓	**Suffocation / Crushing**	• No climbing inside skirts with three or more years of growth.	• Contractor Safety Program Reference:
			  • LCQS 10.18 Climbing a palm static crotch method 241
			• Contractor Mitigation:
			  • Over the top climbing for palms with more than 3 years of dead skirt
			  • Trimmer must have training and signed proficiencies before using static line, over the top trimming

✓	**Other:**	• Quality work plan	• Palm tree Job Briefing required on all climbed palms over 30 feet
✓ **Climbing Trees**			

✓	**Fall from Heights**	• Pre-climb and trim assessment done.
		• Double tie in when in working position.
		• Tie in to main trunk / stem.
		• Correct Gear & tools in good condition.
		• Fall protection correctly worn.
			• Contractor Safety Program Reference:
			  • LCQS JHA Climbing Operations page 587
			  • Lesson 10 Climbing Techniques page 208
			• Contractor Mitigation:
			  • 3-part pre trim inspection (tree inspection, work site inspection and work plan)
			  • 2 points of attachment when using power saw aloft
			  • Tie to main leader-no laterals must be substantial
			  • 100% tie in LSR
			  • Inspect all climbing equipment prior to use, correct size saddle for each climber, leg straps used
			  • Only approved gear and knots
			  • Training completed and documented before 1st climb

✓	**Electrical Contact**	• Keep body and all tools out of minimum approach distance (MAD) or 10 feet if non-qualified.
		• Tie in point positioned to swing away from power lines.
		• Engaged observer.
		• All tools remain outside the MAD.
			• Contractor Safety Program Reference:
			  • LCQS - LSR Violating MAD-Page 26
			  • Grounding policy-Page 40
			  • Lesson 4 Electrical Hazard Awareness-Page 81
			• Contractor Mitigation:
			  • Trimmers trained to know MAD for voltage being worked and keep body parts and conductive tools out of MAD
			  • Tie in high and choose a tie-in that will swing trimmer away from line should a slip occur

		• Limbs in contact with power lines removed with a non-conductive tool. • Limbs trimmed only when there is visibility of what is being cut. • Any tree parts within the MAD removed only with a non-conductive tool. • Limbs cut above power lines dropped with control.	• Work spotter to monitor MAD and proper body positioning and tie-in • Use non-conductive tool to clip or cut back tree parts in MAD or rope it back • Maintain MAD at all times (LSR), • Tie off limbs and wood if needed for control or use break cut

✓	**Falling Objects**	• Clearly marked and enforced drop zone.
		• Ensure tools used aloft are secure.
		• Clear three-way communication with all crew members.
			• Contractor Safety Program Reference:
			  • LCQS
			  • Life Saving Rules Drop Zone-Page 24
			  • Lesson 10 Climbing Techniques-Page 208
			  • 11.2 Utility pruning, establishing the drop zone-Page 236
			• Contractor's Mitigation:
			  • Establish the drop zone and stay out
			  • 3-way communication audible warnings before dropping debris
			  • Secure tools to prevent accidental drop

☐	**Other:**		•
✓ Tree Felling			

✓	**Electrical Contact**	• Keep body and tools out of minimum approach distance or 10 feet if non-qualified
		• Rigged pull rope to start safe fall direction
		• Notch and back cut used to fell trees over 5 inches DBH
			• Contractor Safety Program Reference:
			  • LCQS JHA Tree Felling and Chainsaw Operations Page 597
			  • Lesson 13 Tree Felling-Page 275
			• Contractor Mitigation:
			  • Only Employees trained in tree felling may fell trees
			  • Thorough tree assessment not all trees can be felled may have to piece it down (note proximity to electrical conductors)
			  • Use all 5 tree felling steps
			  • Mark danger zone 1.5 X tree height for rope puller, 2x for public
			  • Pull rope used for all trees over 5" DBH tied to upper 1/3
			  • Only Open Face Notch (70 degrees plus) allowed for trees felled from the ground
			  • Feller gives audible warning before starting notch and back cut

			•

✓	**Falling / Moving Objects**	• Tree assessment done
		• Clearly marked and enforced danger zone – 1.5x for rope pullers, 2x for bystanders
		• Feller leaves Danger Zone as soon as tree begins falling
		• Clear three-way communication among all crew members
		• Clearly established and cleared retreat path
		• Assess new hazards before de-limbing or bucking a felled tree
			• Contractor Safety Program Reference:
			  • LCQS Lesson 13 Tree Felling-Page 275
			• Contractor Mitigation:
			  • Measure and mark the danger zone (stick method step 1)
			  • Use escape route before tree is pulled if possible
			  • Audible warnings and response before making notch and back cuts and clear response from work team
			  • Dry run for escape route before making back cut. Escape route is 45 degrees away from intended direction of fall and is clear of tripping hazards
			  • Check other trees for hangers before reentering work area
			  • Use company lodged tree policy if tree hangs up
			  • Keep all employees and bystanders out of the danger zone (LSR)

☐	**Other:**		•
☐ **Helicopter: General Safety**			
☐	**Documentation/Basic Safety**	• All involved line crew has signed air operations tailboard sheet. • Weather conditions are safe for helicopter operations. • There is a solid communication plan, including both air-to-ground and air-to-air communications.	•
☐	**Rotor Strike / Struck By**	• Pilot acknowledgement and eye contact established prior to approach. • Crews approach helicopter in full view of the pilot. • Tools are carried at or below waist level.	•

		• Crew wearing helicopter specific PPE (chin straps, goggles, etc.). • Landing zone clear of loose materials (FOD). • Non-essential personnel remain at least 50 feet away from helicopter operations.	
☐	**Hot Fueling**	• Pilot is at the controls during hot refueling. • Passengers have disembarked prior to hot refueling. • Fuel servicing vehicles are at least 20 ft away from any helicopter rotating components. • There is an adequate and operational fire extinguisher on site. • At least two ground personnel are present during hot fueling/loading. • The aircraft must be bonded to the fuel source.	•
☐	**Aviation Fatigue**	• Pilot and ground crew have a mandatory rest schedule and maximum duty time policy in place to reduce pilot fatigue.	•
☐	**Other:**		•
☐ **Helicopter: External Cargo**			
☐	**Static Electricity**	• Crew dissipates static electricity before handling load or uses rubber gloves.	•
☐	**Uncontrolled Loads**	• Crew using tag lines, if required. • Pilot controlling the load smoothly and effectively. • Crew is using SONO tubes when setting poles.	•

		• Crew waits until pole is at waist level before guiding. • Long line is of sufficient length. • Load is confirmed free and clear before pilot climbs away.	
☐	**Dropped Objects**	• Approved long line is inspected and in good condition. • Loads are rigged appropriately. • Pre-approved flight plan is in place. • Load is not approached or handled until chest height or lower. • Minimal personnel are underneath load.	•
☐	**Other:**		•
✓ Helicopter: Human External Cargo			
☐	**Collision with Conductor/Structure**	• Pilot and airborne line crew have established effective communication protocol. • Pilot is aware of conductor heights along route of flight and has planned accordingly. • Long line is of sufficient length.	•
☐	**Dropped Objects**	• Tools are tethered.	•
☐	**Fall from Heights**	• The helicopter has a double attachment point (bellyband; dual hook systems or approved waiver from FAA). • Crew is using a longline dedicated to HEC. • Long line has been inspected and found to be in good condition.	•

		• Lineman has two points of contact with the long line. • Fall protection is inspected daily and in good condition. • Personal fall protection worn correctly. • Linemen must be attached to structure prior to disconnecting from long line.	
☐	**Other:**		•
☐ Helicopter: Skid Transfer			
☐	**Fall from Heights**	• Lineman has 100% fall protection attached to approved anchorage point.	•
☐	**Induction/Electrical Contact**	• Lineman bonds to the structure prior to transfer. • Lineman is never attached to the helicopter and structure at the same time.	•
☐	**Other:**		•
☐ Unmanned Aerial Vehicles			
☐	**General**	• UAVs are in good working condition. • UAV crew coordinates operations with SCE Air Operations.	•
☐	**Collision / Crash**	• Pilot maintains a "sterile cockpit" (i.e. an area free of distractions while operating). • UAV remains within visual line-of-of-site of operator and/or visual observer (VO).	•

		• UAV does not operate over uninvolved personnel. • UAV is not operated above 400 feet above ground level (agl). • Visibility at location of operation is at least 3 statute miles. • Operations are conducted only with acceptable visibility and between the hours of "civil twilight." • Weather conditions (e.g., wind, precipitation, etc) are conducive for safe flight.	
☐	**Powerline Contact**	• Operator maintains Minimum Approach Distance (MAD) from powerlines. • Operator maintains a safe distance above powerlines (>50 feet) and structures if overflying. • The crew monitors for electromagnetic interference and if it is encountered, increases the distance from the structure/conductor until the interference resolves.	•
☐	**Other:**		•
☐ **Other Hazards**			
☐	**Asbestos**	• All Presumed Asbestos Containing Material (PACM) is left undisturbed and the proper notifications made to Edison. • Required Cal OSHA registration and signage is in place. • Crews do not exceed the permissible exposure limits (PEL).	•

		• Daily monitoring is in place as required. • Appropriate respirators are provided and used as required. • Crew is using most effective method to control dust and debris. • Crews are using appropriate tools and techniques around asbestos. • Approved abatement techniques are used.	
☐	**Asphalt Fumes**	• Crew is using low-fuming asphalt if possible. • Crew is using the proper size kettle for the job. • Kettle is placed on a level location, downwind, and close to the work area. • The kettle is in good condition. • Crew is using respiratory protection if required. • Kettle is placed with the inside of the lid facing in a direction that affects the least number of people.	•
☐	**Carbon Monoxide**	• Crew exposure to CO is eliminated. • Forced ventilation is sufficient to reduce exposure to acceptable levels. • Crews are using respiratory protection as required.	•
☐	**Chromium VI**	• Crew has established a regulated area where exposure to Cr(VI) may exist. • Crew has isolated the source of exposure.	•

		• There is ample ventilation in place to capture airborne Cr(VI). • Crews are wearing appropriate PPE. • Worksite has appropriate hygiene facilities. • Crew is exercising proper housekeeping to reduce exposure to Cr(VI).	

✓	**COVID-19**	• Crews are practicing social distancing
		• Facial coverings are worn when required
		• Crews are exercising maximum precautions when engaging with the public.
		• Crews are practicing proper hygiene.
			• Contractor Safety Program Reference:
			  • UTS Covid 19 Pandemic Policy
			• Contractor Mitigation:
			  • Maintain 6 feet social distancing from coworkers and public
			  • Wear face coverings at all times except on break time (keep 6 ft)
			  • Do not come to work sick
			  • Wash hands frequently
			  • Ensure public maintains 6 feet social distance from UTS employees
			  • Notify employer of any CV symptoms

SECTION 4: CONTRACTOR SAFETY RESPONSIBILITIES	
Contractor shall describe assigned safety roles and responsibilities of key personnel.	
TITLE	**SAFETY RESPONSIBILITIES**
Region Safety Supervisor (RSS)	Implements company Safety program, distributes safety material. Oversees region training program, new hire orientation, subcontractor oversight, incident investigation lead,
Region Safety Trainer (RST)	Line Clearance Qualification Standard (LCQS) and all other annual and required hands-on training including tree felling, AFC, defensive driving, wildfire prevention and suppression, over the top palm static line
General Foreperson	Completes field safety observations, holds safety meetings and stand downs, training of new employees using the LCQS, assist with incident investigation, completes crew audits, equipment inspection and maintenance, compliance with company manuals

SECTION 5: SAFETY REPRESENTATIVES AND KEY PERSONNEL			
Contractor shall include name and contact information for Contractor safety representatives and key personnel. Safety representatives shall meet Safety Professional requirements specified in section 2.4.2 of the SCE HS Handbook for Contractors.			
TITLE	**NAME**	**CELL NUMBER**	**EMAIL ADDRESS**
RSS	Joe Ramirez	(503) 568-9296	jramirez@utilitytreeservice.com
RSS	Dave Bloch	(530) 363-4209	dbloch@utilitytreeservice.com
RSS	Gabriel Lepe	(951) 453-5987	glepe@utilitytreeservice.com
RSS	Mike Reynolds	(760) 497-4610	mreynolds@utilitytreeservice.com
RST	Amado Gutierrez	(951) 544-9806	agutierrez3@utilitytreeservice.com
RST	Antonio Santiago	(951) 537-0519	tsantiago@utilitytreeservice.com

SECTION 6: TAILBOARD PROTOCOL
In the space below, Contractor shall describe the procedures for completing tailboards. Discuss risk factors and documentation requirements. Include checklists or templates you will use for this protocol as an attachment to this Plan. Refer to the EHS Handbook for Contractors, Section 5.0 for greater detail.
Tailboard (Job Briefings) are completed 2x per day minimally; once before the first job and again after the noon lunch break the job briefing shall be reviewed and updated. A new job briefing is required when there is a significant task change presenting new hazards. Example would be a crew moving from compliance trimming to tree removal, overhang or call out emergency. During storm work a new job briefing is required at every new tree or location. It is required that all employees participate are trained to conduct a job briefing; the Foreperson shall lead the process. If multiple crews are working on the same job or project, it is acceptable and recommended that all participate in the same job briefing so that they are aware of the jobsite hazards and work plan. In this case the team shall assign a lead Foreperson. It makes no difference which Foreperson is chosen but all should be aware of whom is assigned the lead position. General Forepersons, Region Safety Supervisors, Field Supervisors, Region Safety Trainers and other management team or Corporate Safety Team personnel are required during field visits to review the job briefing form and carry a red pen to make corrections or give suggestions for improvement. This improves the process and helps with work planning, hazard assessment and other topics of the job briefing. A separate palm tree job briefing shall be done for climbed palm trees over 30 feet in height. The job briefing shall be presented and reviewed with all visitors to the work site.

SECTION 7: REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)		
Contractor shall describe what PPE items are used and when workers are required to use each. Make reference to Contractor policies supporting these requirements.		
✓	**ITEM**	**DESCRIPTION**
✓	*(Example: Fall Protection)*	***EXAMPLE:*** • Contractor Safety Program Reference: • *ABC Fall Protection Manual – working from poles and towers* • Contractor Requirement: • *100% fall protection/restrict equipment required when climbing above 4 feet on wood poles or towers.*
✓	**Head Protection**	• Contractor Safety Program Reference: • LCQS 1.6 PPE • Contractor Requirement: • Wear ANSI E Rated helmet at all times on the jobsite
✓	**Face Protection**	• Contractor Safety Program Reference: • UTS Pandemic Plan • Contractor Requirement: • Wear Face covering at all times during working hours (Exception-breaks or when working aloft)
✓	**Eye Protection**	• Contractor Safety Program Reference: • LCQS – 1.6 PPE

		• Contractor Requirement: Z87 glasses on at all times when out of the vehicle
✓	**Hand Protection**	• Contractor Safety Program Reference: • LCQS 1.6 PPE • Cut Resistant Glove Policy • Contractor Requirement: • CR Gloves when using hand saw, power saw or handling brush with thorns or when handling other sharp objects
✓	**Hearing Protection**	• Contractor Safety Program Reference: • LCQS 1.6 PPE • Contractor Requirement: • Within 25 feet of running chipper or power saw
✓	**Leg Protection (chainsaw chaps and snake guards)**	• Contractor Safety Program Reference: • LCQS • Contractor Requirement: • Leg chaps when operating power saws on the ground
✓	**Fall Protection**	• Contractor Safety Program Reference: • LCQS JHA Climbing Operations and Life saving Rules • Contractor Requirement: • 100% tie in – Tree, bucket, or ladder – Life Saving Rule. Inspect all equipment before each use. Only company approved fall protection allowed
✓	**Foot Protection**	• Contractor Safety Program Reference: • LCQS • Contractor Requirement: • Leather uppers covering ankle, good tread on sole
✓	**AR/FR Clothing**	• Contractor Safety Program Reference: • LCQS • Contractor Requirement: • Employees wear FR clothing working in substations
☐	**Rubber Gloves**	• Contractor Safety Program Reference: • • Contractor Requirement: •
✓	**High Visibility Clothing**	• Contractor Safety Program Reference: • LCQS • Contractor Requirement: • At all times when out of vehicle except when working aloft – class 3
✓	**Respiratory Protection**	• Contractor Safety Program Reference: • Wildfire Smoke protection policy • Contractor Requirement: • UTS shall supply N95 respirators when smoke level above 150 PM
✓	**Barricades and Signs**	• Contractor Safety Program Reference: • LCQS TTC • Contractor Requirement: • At all times when vehicles are on the roadway • UTS will also use an SCE approved Outside traffic control company/s for all major street closures and state and federal hwys.. • UTS shall verify all TTC company's are qualified.

✓	**Personal Flotation Devices**	• Contractor Safety Program Reference: • LCQS • Contractor Requirement: When working near water where workers could fall in • When working on, or near water where EE could fall in
☐	**Other:** _____	• Contractor Safety Program Reference: • • Contractor Requirement: •
☐	**Other:** _____	•
☐	**Other:** _____	•

SECTION 8: EMERGENCY ACTION PLAN

Contractor shall identify hospitals in the region, describe evacuation considerations/steps, and describe inclement weather procedures/policies. Identify first responders and how they are to be contacted. Include maps/directions and any other details as appropriate. ***Note: This information should be posted where it can be easily accessed by all workers.***

Clinic 1		**Clinic 2**	
Name:	Each Crew has a list of Hospitals	Each Crew has a list of Hospitals	
Address:		Address:	
Phone #:		Phone #:	
Hours of Service: *		Hours of Service:	
Hospital 1		**Hospital 2**	
Name: *	Each Crew has a list of Hospitals	Each Crew has a list of Hospitals	
Address:		Address:	
Phone #: *		Phone #:	
Police/Sheriff		**Fire Department**	
Name:	911	Name: **911**	
Address:		Address:	
Phone #:		Phone #:	

Mobile Work Forces	In the space below describe your plan for mobile work forces to identify hospital locations and first responder contacts:

All UTS employees shall have a list of hospitals and approved medical clinics located in their area of operations. The list shall include the facility name, location and telephone number and shall be kept with the job briefing booklet on the vehicle seat accessibility. In an emergency situation workers are instructed to call 911

First Aid Kit Location(s):	Under the passenger seat of each crew vehicle. Mounted and fully stocked
AED Location(s):	Located behind the passenger seat in every vehicle
Fire Extinguisher Location(s):	Two 10LB and one 3LB, rope box, saw box and cab of vehicle, mounted and charged
SDS Location(s):	In Hazard Communication Program with truck manuals.

CPR Certified (who?):	All employees

Contractor shall specify how workers are trained and expected to respond to emergency situations. Consider workers located at normal routine work locations as well as changing/remote locations. Be sure to describe rally points, communication plans, and the means to account for the well-being of all workers.

All workers are CPR/AED and tree/lift rescue trained. In an emergency they shall first ensure the scene is safe and tend to any injured. If injuries are substantial 911 is called or injured is transported to the nearest hospital or medical clinic (noted on the JB). The workers shall leave the scene intact for investigation purposes. Electrical contact Rescue is not permitted – Call 911. Barricade the area for any downed wires and keep public and workers clear.

When working high fire areas, vehicles are parked facing escape route and emergency plan is documented on the pre-job briefing. The wildfire job briefing is completed and shall note tool assignments, fire danger level and cell phone service. If cell service in not available, the team shall locate the nearest cell service area or contact residents for land line phone use (backup plan). Workers shall have fire tools staged and shall attempt to extinguish any fire whether started by the crew or by a third party. If the fire can not be extinguished safely then the escape plan is used, and employees will gather at the designated meeting point noted on the job briefing. All fires whether extinguished or not shall be called in to the fire department so they can gather information and release the team once it is safe to do so.

SECTION 9: JOBSITE COMMUNICATIONS

Contractor shall describe different methods of communicating to workers (verbal, electronic, written, satellite, radio, GPS, etc.). Provide information on how teams are to stay in contact. Provide primary and secondary methods of communication (example: where no cell service is available).

COMMUNICATION METHOD	DESCRIPTION AND CIRCUMSTANCES FOR USE
3-way communication	**Before dropping wood or limbs from height, when pedestrians are moving through the work site or when ground personnel need to enter the drop zone or aerial lift when the boom is unstowed from the cradle**
Hand signals	**Can be used as an alternative to verbal commands and when backing vehicles or directing traffic when flaggers have clear visual of each other**
2 way radios	**During flagging operations when flaggers cannot maintain clear sight of each other**
Cell phone	**Communication between work groups and supervision or to call for emergency assistance. In areas without cell reception; an alternate plan shall be developed such as pre authorized use of homeowner or business land line or pre-determined cell phone reception area noted on the job briefing emergency plan.**

SECTION 10: ADDITIONAL INFORMATION AND SAFETY PLAN DETAILS

Contractors shall use this section as needed to identify other procedures not already covered in this template and list other resources (programs, plans, etc.) that help provide hazard mitigation and safety planning.

UTS uses web-based training for some activity such as distracted driving and incident investigation

UTS also has a video library with video training available for:

AFC
2-in-1 work positioning lanyard
Climbing spikes
5 steps of tree felling, open face notch
Power saw safety feature
Additional training videos that are stored in the video library, updated regularly and sent to field employees, monthly.

We also use GF mentoring program for new GFs, and the corporation has GF development and RSS development training sessions annually.

Field employees receive weekly safety letters that are distributed in a booklet, biannually. (Green Weekly Safety Meeting Book)

JBO – field safety tool used to encourage safe behaviors, correct at risk behaviors and fine tune the safety performance of field employees.

GF meetings – monthly meetings with all members of the management team to discuss observation and incident trends, roll out of new safety programs and other region safety related topics.

Employee Safety Committee – meets monthly to discuss region safety topics, concerns, and new ideas regarding equipment, tools and other region-specific discussion topics

Corporate safety conference calls – conference calls with corporate safety advisors and RSSs from western regions to discuss lessons learned, new corporate safety expectations and other safety program related roll-outs and to share new ideas.

SECTION 11: CERTIFICATION			
*By signing this document, the **Contractor Representative**, as an authorized representative of the Contractor company, affirms that they understand the items contained in this Contractor Hazard Assessment and Safety Plan and will ensure compliance by their employees and any Subcontractors.*			
Contractor Representative:			
Company Name:	Utility Tree Service LLC		
Printed Name:	William Ross		
Signature:	*William Ross*	Date:	11/30/21
*By signing this document, the **Edison Representative** affirms that they have reviewed this document with the Contractor Representative.*			
Edison Representative:			
Printed Name:	David Guzman		
Signature:		Date:	1/3/2022

SECTION 12: REVISION HISTORY AND ANNUAL REVIEW	
In the spaces below note the date of each revision and describe the revision made (e.g. annual review, scope change etc.)	
3-24-21	**Final Draft with suggested changes**
11/17/21	Added Crane and Sennebogen

Additional documents for Cranes

Cranes

I. Ground Conditions.

The equipment must not be assembled or used unless ground conditions are firm, drained, and graded to a sufficient extent so that, in conjunction (if necessary) with the use of supporting materials, the equipment manufacturer's specifications for adequate support and degree of level of the equipment are met. The requirement for the ground to be drained does not apply to marshes/wetlands.
The controlling entity must ensure that ground preparations necessary to meet the requirements are provided.
Inform the user of the equipment and the operator of the location of hazards beneath the equipment set-up area (such as voids, tanks, utilities) if those hazards are identified in documents (such as site drawings, as-built drawings, and soil analyses) that are in the possession of the controlling entity (whether at the site or off-site) or the hazards are otherwise known to that controlling entity.

II. Assembly/Disassembly

When assembling or disassembling equipment (or attachments), the employer must comply with all applicable manufacturer prohibitions and must comply with manufacturer procedures applicable to assembly and disassembly.
Assembly/disassembly must be directed by a person who meets the criteria for both a competent person and a qualified person, or by a competent person who is assisted by one or more qualified persons.
Where the assembly/disassembly is being performed by only one person, that person must meet the criteria for both a competent person and a qualified person. For purposes of this standard, that person is considered the A/D director.

III. Power Line Safety

Before beginning equipment operations, the employer (UTS) must identify the work zone by either:

- Demarcating boundaries (such as with flags or a device such as a range limit device or range control warning device) and prohibiting the operator from operating the equipment past those boundaries.
- Defining the work zone as the area 360 degrees around the equipment, up to the equipment's maximum working radius.

Determine if any part of the equipment, load line or load (including rigging and lifting accessories), if operated up to the equipment's maximum working radius in the work zone, could get closer than 20 feet to a power line. If so, the employer must meet one of the following requirements:

- De-energize and ground. Confirm from the utility owner/operator that the power line has been de-energized and visibly grounded at the worksite.

- 20 foot clearance. Ensure that no part of the equipment, load line, or load (including rigging and lifting accessories), gets closer than 20 feet to the power line by implementing the measures specified in paragraph (b) of this section.
- Table A clearance. Determine the line's voltage and the minimum approach distance permitted under Table A

IV. Inspections

Each shift

A competent person must begin a visual inspection prior to each shift the equipment will be used, which must be completed before or during that shift. The inspection must consist of observation for apparent deficiencies. Taking apart equipment components and booming down is not required as part of this inspection unless the results of the visual inspection or trial operation indicate that further investigation necessitating taking apart equipment components or booming down is needed. Determinations made in conducting the inspection must be reassessed in light of observations made during operation. At a minimum the inspection must include all of the following:

- Control mechanisms for maladjustments interfering with proper operation.
- Control and drive mechanisms for apparent excessive wear of components and contamination by lubricants, water or other foreign matter.
- Air, hydraulic, and other pressurized lines for deterioration or leakage, particularly those which flex in normal operation.
- Hydraulic system for proper fluid level.
- Hooks and latches for deformation, cracks, excessive wear, or damage such as from chemicals or heat.
- Wire rope reeving for compliance with the manufacturer's specifications.
- Electrical apparatus for malfunctioning, signs of apparent excessive deterioration, dirt or moisture accumulation.
- Tires (when in use) for proper inflation and condition.
- Ground conditions around the equipment for proper support, including ground settling under and around outriggers/stabilizers and supporting foundations, ground water accumulation, or similar conditions.
- The equipment for level position within the tolerances specified by the equipment manufacturer's recommendations, both before each shift and after each move and setup.

- Operator cab windows for significant cracks, breaks, or other deficiencies that would hamper the operator's view.
- Safety devices and operational aids for proper operation.

Monthly

Each month the equipment is in service it must be inspected in accordance to previous section. Equipment must not be used until an inspection demonstrates that no corrective action required.

Documentation

The following information must be documented and maintained by Pacific Coast Tree Experts:

- The items checked and the results of the inspection.
- The name and signature of the person who conducted the inspection and the date.

Note: This document must be retained for a minimum of three months.

V. Safety Devices

Proper operation required. Operations must not begin unless all of the devices listed in this section are in proper working order. If a device stops working properly during operations, the operator must safely stop operations. If any of the devices listed in this section are not in proper working order, the equipment must be taken out of service and operations must not resume until the device is again working properly. Alternative measures are not permitted to be used.

VI. Operation

The employer shall permit only those employees qualified by training or experience to operate equipment and machinery.

The employer must comply with all manufacturer procedures applicable to the operational functions of equipment, including its use with attachments.

The procedures applicable to the operation of the equipment, including rated capacities (load charts), recommended operating speeds, special hazard warnings, instructions, and operator's manual, must be readily available in the cab at all times for use by the operator.

Where rated capacities are available in the cab only in electronic form: In the event of a failure which makes the rated capacities inaccessible, the operator must immediately cease operations or follow safe shut-down procedures until the rated capacities (in electronic or other form) are available.

Whenever there is a concern as to safety, the operator must have the authority to stop and refuse to handle loads until a qualified person has determined that safety has been assured.

VII. SIGNAL PERSON QUALIFICATIONS

The employer of the signal person must ensure that each signal person meets the Qualification Requirements prior to giving any signals. This requirement must be met by using either Option 1 or Option 2 of this section.

Option 1

Third party qualified evaluator. The signal person has documentation from a third party qualified evaluator showing that the signal person meets the Qualification Requirements.

Option 2

Employer's qualified evaluator. The employer's qualified evaluator assesses the individual and determines that the individual meets the Qualification Requirements and provides documentation of that determination. An assessment by an employer's qualified evaluator under this option is not portable--other employers are not permitted to use it to meet the requirements of this section.

The employer must make the documentation for whichever option is used available at the site while the signal person is employed by the employer. The documentation must specify each type of signaling (e.g. hand signals, radio signals, etc.) for which the signal person meets the requirements.

If subsequent actions by the signal person indicate that the individual does not meet the Qualification Requirements, the employer must not allow the individual to continue working as a signal person until

re-training is provided and a reassessment is made that confirms that the individual meets the Qualification Requirements.

Qualification Requirements

Each signal person must:

- Know and understand the type of signals used. If hand signals are used, the signal person must know and understand the Standard Method for hand signals.
- Be competent in the application of the type of signals used.
- Have a basic understanding of equipment operation and limitations, including the crane dynamics involved in swinging and stopping loads and boom deflection from hoisting loads.
- Know and understand the relevant requirements.
- Demonstrate that they meet the requirements through an oral or written test, and through a practical test.

VIII. Crane Signals

The device(s) used to transmit signals must be tested on site before beginning operations to ensure that the signal transmission is effective, clear, and reliable.
A signal person must be provided in each of the following situations:

- The point of operation, meaning the load travel or the area near or at load placement, is not in full view of the operator.
- When the equipment is traveling, the view in the direction of travel is obstructed.
- Due to site specific safety concerns, either the operator or the person handling the load determines that it is necessary.

Types of Signals

Signals to operators must be by hand, voice, audible, or new signals.

Hand Signals

- When using hand signals, the Standard Method must be used (see Appendix A).
  Exception: Where use of the Standard Method for hand signals is infeasible, or where an operation or use of an attachment is not covered in the Standard Method, non-standard hand signals may be used.

Non-Standard Hand Signals

- When using non-standard hand signals, the signal person and operator must contact each other prior to the operation and agree on the non-standard hand signals that will be used.

New Signals

Signals other than hand, voice, or audible signals may be used where the employer demonstrates that:

- The new signals provide at least equally effective communication as voice, audible, or Standard Method hand signals, or
- The new signals comply with a national consensus standard that provides at least equally effective communication as voice, audible, or Standard Method hand signals.

Suitability

The signals used (hand, voice, audible, or new), and means of transmitting the signals to the operator (such as direct line of sight, video, radio, etc.), must be appropriate for the site conditions.
During operations requiring signals, the ability to transmit signals between the operator and signal person must be maintained. If that ability is interrupted at any time, the operator must safely stop operations requiring signals until it is reestablished and a proper signal is given and understood.
Only one person may give signals to a crane/derrick at a time, except in the following circumstance.

- Anyone who becomes aware of a safety problem must alert the operator or signal person by giving the stop or emergency stop signal. The operator must obey a stop or emergency stop signal.

IX. Work Area Control

Swing Radius Hazards

There are accessible areas in which the equipment's rotating superstructure
(whether permanently or temporarily mounted) poses a reasonably foreseeable risk of:

- Striking and injuring an employee; or
- Pinching/crushing an employee against another part of the equipment or another object.

To prevent employees from entering these hazard areas, the employer must train each employee assigned to work on or near the equipment in how to recognize struck-by and pinch/crush hazard areas posed by the rotating superstructure.
Erect and maintain control lines, warning lines, railings or similar barriers to mark the boundaries of the hazard areas.
Exception: When the employer can demonstrate that it is neither feasible to erect such barriers on the ground nor on the equipment, the hazard areas must be clearly marked by a combination of warning signs (such as "Danger--Swing/Crush Zone") and high visibility markings on the equipment that identify the hazard areas. In addition, the employer must train each employee to understand what these markings signify.

Protecting Employees in the Hazard Area

Before an employee goes to a location in the hazard area that is out of view of the operator, the employee (or someone instructed by the employee) must ensure that the operator is informed that he/she is going to that location. When the operator knows that an employee went to a location, the operator must not rotate the superstructure until the operator is informed that the employee is in a safe position.

X. Equipment Modifications

Modifications or additions which affect the capacity or safe operation of the equipment are prohibited by (UTS) except where the requirements are met:

- The manufacturer approves the modifications/additions in writing.

- The load charts, procedures, instruction manuals and instruction plates/tags/decals are modified as necessary to accord with the modification/addition.
- The original safety factor of the equipment is not reduced.

Table A

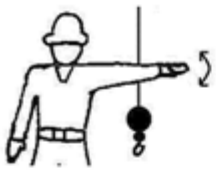
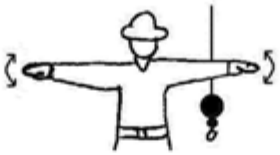
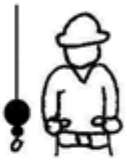
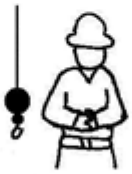
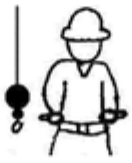
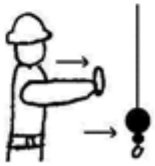
Minimum Clearance Distances

VOLTAGE (nominal, kV alternating current)	CLEARANCE (minimum clearance distance in feet)
Up to 50	10 ft.
Over 50 to 200	15 ft.
Over 200 to 350	20 ft.
Over 350 to 500	25 ft.
Over 500 to 750	35 ft.
Over 750 to 1000	45 ft.
Over 1000	(as established by the utility owner)

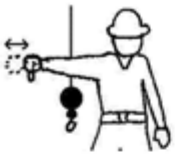
Appendix A

HAND SIGNALS FOR CRANE OPERATION

When there is a lot of traffic at a worksite, it is essential for workers to be able to use hand signals. Here are some standard hand signals for crane operation.

 **STOP** – With arm extended horizontally to the side, palm down, arm is swung back and forth.	 **EMERGENCY STOP** – With both arms extended horizontally to the side, palms down, arms are swung back and forth.	 **HOIST** – With upper arm extended to the side, forearm and index finger pointing straight up, hand and finger make small circles.
 **RAISE BOOM** – With arm extended horizontally to the side, thumb points up with other fingers closed.	 **SWING** – With arm extended horizontally, index finger points in direction that boom is to swing.	 **RETRACT TELESCOPING BOOM** – With hands to the front at waist level, thumbs point at each other with other fingers closed.
 **RAISE THE BOOM AND LOWER THE LOAD** – With arm extended horizontally to the side and thumb pointing up, fingers open and close while load movement is desired.	 **DOG EVERYTHING** – Hands held together at waist level.	 **LOWER** – With arm and index finger pointing down, hand and finger make small circles.
 **LOWER BOOM** – With arm extended horizontally to the side, thumb points down with other fingers closed.	 **EXTEND TELESCOPING BOOM** – With hands to the front at waist level, thumbs point outward with other fingers closed.	 **TRAVEL/TOWER TRAVEL** – With all fingers pointing up, arm is extended horizontally out and back to make a pushing motion in the direction of travel.

HAND SIGNALS FOR CRANE OPERATION (cont'd.)

 **LOWER THE BOOM AND RAISE THE LOAD** – With arm extended horizontally to the side and thumb pointing down, fingers open and close while load movement is desired.	 **MOVE SLOWLY** – A hand is placed in front of the hand that is giving the action signal.	 **USE AUXILIARY HOIST** (whipline) – With arm bent at elbow and forearm vertical, elbow is tapped with other hand. Then regular signal is used to indicate desired action.
 **CRAWLER CRANE TRAVEL, BOTH TRACKS** – Rotate fists around each other in front of body; direction of rotation away from body indicates travel forward; rotation towards body indicates travel backward.	 **USE MAIN HOIST** – A hand taps on top of the head. Then regular signal is given to indicate desired action.	 **CRAWLER CRANE TRAVEL, ONE TRACK** – Indicate track to be locked by raising fist on that side. Rotate other fist in front of body in direction that other track is to travel.
 **TROLLEY TRAVEL** – With palm up, fingers closed and thumb pointing in direction of motion, hand is jerked horizontally in direction trolley is to travel.		

Crane part 2

Utility Tree Service, LLC.

Crane Safety Plan

Facility Address 1802 S Commercenter Dr West Suite C.

Plan tast updated: 5.14.18

POLICY STATEMENT

It is the goal of UTS to provide a safe and healthful workplace for all employees and other persons at worksites where crane operations are performed. Therefore, this Crane Safety Plan is hereby adopted for the safe operation of such cranes at our Facility.

AUTHORITY AND SCOPE

Authority: This Crane Safety Plan has been authorized by UTS corpl

Scope: This Plan applies to all facilities and worksites where cranes and related equipment are operated or stored.-

PROGRAM ADMINISTRATION

Program Contact Information

Task	Contact Person	Phone/Radio Contact Information
Plan Administrator	William Ross	909-890-9901 Safety
Manager	*Mike Reynolds	909-890-9901
Supervisor	!William Ross	909-890-9901 j
Trainer	! Mike Reynolds	1909-890-9901

Plan Administrator. The Administrator is responsible for revising the Plan as necessary and has overall responsibility for ensuring that the requirements of the Plan are followed. The Administrator will:

- Ensure that the appropriate insurance and inspection documentation is available with the overhead and gantry crane.

- Notify the safety manager and supervisors that an overhead and gantry crane is scheduled to be operating in a particular area.
- Be responsible for the actions of the subcontractor.
- Stop work if dissatisfied with a contractor's or subcontractor's performance.

Safety Management. The Safety Superintendent will conduct periodic hazard assessments and ensure that all appropriate safe work practices prescribed in the Plan for each type of lift operation, crane maintenance activity, and crane inspection are implemented. The Safety Superintendent has the authority to suspend or stop crane operations if he or she determines that workers are exposed to potential injury or if equipment may be damaged.

Supervisors. The supervisors of lifting and rigging operations must be knowledgeable in the specific types of lifting and rigging operations and the operational hazards under their supervision. The supervisors must be familiar with applicable rules and procedures implemented at the site to ensure that lifting and rigging work under their control is done efficiently and safely, with safety as the top priority. Supervisors wili ensure that employees fully understand the importance of safety and that they recognize their own authority and responsibility to stop work when safety is questionable.

Trainer. See the Training section of this Plan for employee training requirements.

Plan Review and Update

This Plan will be reviewed Time Interval and updated as needed to reflect changes in the work and/or worksite conditions, and when injury or illness incidents warrant a review.

DEFINITIONS

Crane means a machine for lifting and lowering a load and moving it horizontally, with the hoisting mechanism an integral part of the machine. Whether fixed or mobile, cranes are driven manually or by power.

Designated person or personnel means selected or assigned by the employer or the employer's representative as qualified to perform specific duties. The term designated personnel in reference to recordkeeping refers to company and regulatory officials.

Gantry crane means a crane similar to an overhead crane except that the bridge for carrying the trolley or trolleys is rigidly supported on two or more legs running on fixed rails or other runway.

Hoist means a device integral to a crane used for lifting or lowering a load by means of a drum or liftwheel around which rope or chain wraps- It may be manually, electrically, or pneumatically driven and may use chain, fiber, or wire rope as its lifting medium.

Mobile crane means a crawler crane, locomotive crane, wheel-mounted cranes of both the truck and self-propelled wheel type, and any variation that retains the same fundamental characteristics- It includes only cranes powered by internal combustion engines or electric motors and that utilize drums and ropes.

Overhead crane means a crane with a movable bridge carrying a movable or fixed hoisting mechanism and traveling on an overhead fixed runway structure.

PERSONNEL QUALIFICATIONS

Crane Operator and Operator Trainees

Only designated personnel are authorized to operate cranes. See the Training section for crane operator training requirements.
Substance abuse testing. Upon initial assignment and at least every 3 years thereafter, all personnel involved in crane operations must successfully pass a substance abuse test with a negative result. The test must be confirmed by a recognized laboratory service.

Physical exams. Operator physical examinations must be required every 3 years or more frequently if supervision deems it necessary.

Proficiency Requirements

Written examination. Operators and operator trainees must satisfactorily pass a written examination covering operational characteristics and controls, along with emergency control skills, such as response to fire, power tine contact, loss of stability, and control malfunction. The exam wilt also include characteristic and performance questions appropriate to the crane type for which qualification is sought.

Operating skill evaluation. The operator must complete a practical operating skill evaluation test (actual or simulated), demonstrating proficiency and basic knowledge in handling the specific type crane for which the operator is being evaluated, that includes:

- Prestart and post-start inspection
- Maneuvering skills
- Shutdown
- Securing the crane

Limit of qualification. Qualification must be limited to the type of equipment for which the operator is being evaluated.

Riggers

Riggers must pass a practical rigging skill evaluation that requires the use of rigging equipment in safe configurations. The actual or simulated operation must enable personnel to demonstrate basic knowledge and skills at a level that ensures the safety of personnel and equipment.

Requalification

Crane operator and rigger qualification is for a period not to exceed 3 years, unless the qualification is revoked sooner by the employee's manager.

The program for requalification of all crane-related personnel must include:

- Completion of a written or oral evaluation relevant to the type of equipment used or participation in a refresher training program

- A performance evaluation

Contractors

Contractors must have a documented training and qualification program that includes the following elements:

- Classroom or computer-based training
- Written tests with established and documented pass/fail criteria
- On-the-job training
- On-the-job evaluations

GENERAL CRANE OPERATING SPECIFICATIONS

Load Limits

The crane must not be loaded beyond its rated capacity except for test purposes.

Rated-Load Marking

The rated capacity must be marked on each side of the crane. If the crane has more than one hoisting unit, each hoist must have its rated capacity marked on it or on its toad block. Markings on the bridge, trolley, and load block must be legible from the ground or floor.

Crane Modification

Cranes may be modified or rerated provided the modifications or supporting structures are analyzed thoroughly by the crane manufacturer or a qualified engineer. The method(s) for modifications and reratings must be approved by the cognizant engineering firm. A rerated crane, or one whose loadsupporting components have been modified, must be tested. See the Equipment Tests section for more information.

Electrical Equipment

Wiring and equipment must comply with OSHAs electrical standards (29 CFR 1910.301 to 1910.399). Electrical equipment must be located or enclosed to prevent live parts from being exposed to accidental contact under normal operating conditions. Electrical equipment must be protected from dirt, grease, oil, and moisture. Guards for live parts must be substantial and located so that they cannot be accidentally deformed and make contact with the live parts.

Power Supply Switches

The power supply to the runway conductors must be controlled by a switch or circuit breaker located on a fixed structure, accessible from the floor, and arranged to be locked in the open position.

Cab-operated cranes. On cab-operated cranes, a switch or circuit breaker of the enclosed type, with provision for locking in the open position, must be provided in the leads from the runway conductors. A means of opening this switch or circuit breaker must be located within easy reach of the operator.

Floor-operated cranes. On floor-operated cranes, a switch or circuit breaker of the enclosed type, with provision for locking in the open position, must be provided in the leads from the runway conductors. This disconnect must be mounted on the bridge or footwalk near the runway collectors. One of the following types of floor-operated disconnects must be provided:

- Nonconductive rope attached to the main disconnect switch.
- An under-voltage trip for the main circuit breaker operated by an emergency stop button in the pendant pushbutton station.
- A main line contactor operated by a switch or pushbutton in the pendant pushbutton station.

Over-travel limit switch. The hoisting motion of all electric traveling cranes must be provided with an over-travel limit switch in the hoisting direction.

Lifting magnet. All cranes using a lifting magnet must have a magnet circuit switch of the enclosed type with provision for locking in the open position. A means for discharging the inductive load of the magnet must be provided.

Crane runway conductors. Conductors of the open type mounted on the crane runway beams or overhead must be so located or so guarded that persons entering or leaving the cab or crane footwalk normally could not come into contact with them.

Clearance from Obstructions

Minimum clearance of 3 inches (in.) overhead and 2 in. laterally must be provided and maintained between crane and obstructions in conformity with Crane Manufacturers Association of America, Inc. (CMAA), Specification No. 70, Electric Overhead Traveling Cranes. Where passageways or walkways are provided, obstructions must not be placed where the safety of personnel will be jeopardized by movements of the crane.

Stops

Stops must be provided at the limits of travel of the trolley and fastened to resist forces applied when contacted. A stop engaging the tread of the wheel must be of a height at least equal to the radius of the wheel.

Bumpers

A crane or trolley must be provided with bumpers or other automatic means that provide equal effect, unless the crane:

- Travels slowly and has a faster deceleration rate due to the use of sleeve bearings;
- Is not operated near the ends of bridge and trolley travel;
- Is restricted to a limited distance by the nature of the crane operation and there is no hazard of striking any object in this limited distance; or • Is used in similar operating conditions.

The bumpers must be designed and installed to minimize parts falling from the crane in case of breakage.

When more than one trolley is operated on the same bridge, each must be equipped with bumpers or equivalent on their adjacent ends. Bumpers or equivalent must be designed and installed to minimize parts falling from the trolley in case of age.

Guards

Guards must be installed if hoisting ropes run near enough to other parts to make fouling or chafing possible. A guard must be provided to prevent contact between bridge conductors and hoisting ropes if they could come in contact. Exposed moving parts, such as gears, set screws, projecting keys, chains, chain sprockets, and reciprocating components, which might constitute a hazard under normal operating conditions, must be guarded. Guards must be securely fastened and must be capable of supporting without permanent distortion the weight of a 200-pound (1b) person unless the guard is located where it is impossible for a person to step on it.

Automatic Rail Clamps

Outdoor storage bridges must be provided with automatic rail clamps.

Wind-Indicating Device

A wind-indicating device must be provided that will give a visible or audible alarm to the bridge operator at a predetermined wind velocity.

Emergency Exits from Cab

On cab-operated cranes, there must be at least two means of exit from the crane, remote from each other, and arranged to permit departure under emergency conditions.

Rail Sweeps

Bridge trucks must be equipped with sweeps that extend below the top of the rail and project in front of the truck wheels.

Hoisting Equipment

Sheave Grooves

Sheave grooves must be smooth and free from surface defects that could cause rope damage. Sheaves carrying ropes that can be momentarily unloaded must be provided with close-fitting guards or other suitable devices to guide the rope back into the groove when the load is applied again. The sheaves in the bottom block must be equipped with close-fitting guards that will prevent ropes from becoming fouled when the block is lying on the ground with ropes loose. Pockets and flanges of sheaves used with hoist chains must be of such dimensions that the chain

does not catch or bind during operation. All running sheaves must be equipped with means for lubrication. Permanently lubricated, sealed, and/or shielded bearings meet this requirement.

Ropes

The crane manufacturer's recommendation must be followed when using hoisting ropes.

Rated load. The rated load divided by the number of parts of rope must not exceed 20 percent of the nominal breaking strength of the rope.

Socketing. Socketing must be done in the manner specified by the manufacturer of the assembly,

Securing the rope. Rope must be secured to the drum as follows:

- No less than two wraps of rope must remain on the drum when the hook is in its extreme low position.
- The rope end must be anchored by a clamp securely attached to the drum or by a socket arrangement approved by the crane or rope manufacturer.

Rope clips. Rope clips attached with U-bolts must have the U-bolts on the dead or short end of the rope. Spacing and number of all types of clips must follow the clip manufacturer's recommendation. Clips must be drop-forged steel in all sizes manufactured commercially. When a newly installed rope has been in operation for an hour, all nuts on the clip bolts must be retightened. Swaged or compressed fittings must be applied as recommended by the rope or crane manufacturer.

Extreme temperatures. Whenever exposure to extreme temperatures would cause fiber-core damage, use rope that has an independent wire-rope or wire-strand core or other temperature-damage-resistant core.

Replacement rope. Replacement rope must be the same size, grade, and construction as the original rope furnished by the crane manufacturer, unless otherwise recommended by a wire-rope manufacturer because of actual working condition requirements.

Load tensioning. If a load is supported by more than one part of rope, the tension in the parts must be equalized.

Hooks

Hooks must meet the manufacturer's recommendations and must not be overloaded.

Warning Device

Except for floor-operated cranes, cranes equipped with a power traveling mechanism must have a gong or other effective warning signal.

EQUIPMENT TESTS

Initial Operation Test

Before initial use, new or modified cranes must undergo an initial operation test. The following crane components must be tested before initial use:

- Load-lifting and -lowering mechanisms
- Trolley travel mechanisms
- Bridge travel mechanisms
- Limit switches
- Locking devices
- Safety devices

New Cranes

Each production crane must be tested by the manufacturer to the extent necessary to ensure compliance with the operational requirements of ASME 830.2, Safety Code for Overhead and Gantry Cranes. If the complete production crane is not supplied by one manufacturer, such tests must be conducted at final assembly by a designated person.

Records. Certified production-crane test results must be kept on file, and written reports must be available showing test procedures and confirming the adequacy of repairs or alterations.

New and Modified Cranes

Load Test

Before initial use, all new cranes and cranes in which load-sustaining parts have been modified, replaced, or repaired must be load-tested by a qualified inspector or under the direction of that inspector.

A designated or authorized person must determine if repairs made to a crane are extensive and require a rated load test, or if repairs are routine maintenance and require only operational testing. The replacement of rope is excluded from this requirement However, a functional test of the crane under a normal operating load must be made before putting it back in service.

Load Test Procedure

Personnel must be kept clear of the test load while it is suspended. The following load test procedures must be carried out as minimum requirements:

1. Hoist the test load a sufficient distance to ensure that the load is supported by the crane and held by the hoist brakes.

2. Transport the test load by means of the trolley for the full length of the bridge.

3, Transport the test load by means of the bridge for the full length of the runway, in one direction with the trolley as close to the extreme right-hand end of the crane as practical, and in the other direction with the trolley as close to the extreme left-hand end of the crane as practical.

4. Lower the test load, and stop and hold the load by the brakes.

Load Test Weight Limit

Test weights must not exceed 125 percent of the rated capacity unless otherwise recommended by the manufacturer.

Load Test Report

The qualified inspector must submit a written report confirming the rated load test.

Hoist-Limit Switch

The trip setting of hoist limit switches must be determined by tests with an empty hook traveling in increasing speeds up to the maximum speed. The actuating mechanism of the limit switch must be located so that it will trip the switch, under all conditions, in sufficient time to prevent contact of the hook or hook block with any part of the trolley.

Crane Rerating Test

Where rerating of a crane is necessary:

- Cranes must be tested according to the load-rating requirements for new or modified cranes.
- Cranes must not be rerated in excess of the original load ratings unless such rating changes are approved by the crane manufacturer or final assembler.
  Display of new rated load. The new rated load must be displayed according to the Rated-Load Marking requirements. See the General Crane Operating Specifications section of this Plan for more information.

Cranes Removed from Service

A crane that has been out of service may be load tested before returning it to service. The following criteria should be used to determine whether a load test will be required:

- Frequency of use of the crane for critical lifts.
- General condition and age of the crane.
- Previous load test and maintenance history of the crane.

The load test must not exceed the rated capacity, and will be done only after a return-to-service inspection is completed.

Test Reports

The testing inspector must furnish a written report that shows test procedures and confirms the adequacy of repairs or alterations. Test reports, including rerating test reports, must be kept on file and be readily available to appointed personnel.

INSPECTIONS

Cranes in Regular Service

Inspection requirements for cranes in regular service must follow the procedures provided by the crane manufacturer unless authorized alternative procedures are prescribed in this Plan or attachments.

Correct deficiencies. Any deficiencies discovered during the inspection of a crane conducted according to the procedures outlined in this section and referenced attachments that could reduce its load capacity or adversely affect its performance must be corrected before the crane is returned to service.

Initial Inspection

New, reinstalled, altered, modified, or extensively repaired cranes must be inspected before initial use according to the written procedures outlined in the crane manufacturer's manual and in this Plan and attachments- All safety devices, controls, and other operating parts of the equipment must be checked during each inspection and must be in good working order before operating a crane. Inspections of equipment must also follow the testing procedures described in the Equipment Tests section of this Plan.

See the attached Pre-Operation Checklist for a list of initial inspection procedures.

Daily Inspection

Each crane must be inspected by a qualified crane operator or designated inspector before daily use or before each work shift. The operator must determine whether equipment must be removed from service or if a more detailed inspection is required.
Controls. Test all controls. If any controls do not operate properly, they should be adjusted or repaired before operations begin. Check that motions are smooth and regular, with no hesitations, vibration, binding, weaving, unusual noise, or other irregularity.

Primary upper-limit device. The trip-setting of primary upper-limit switches must be checked under noload conditions by inching the block into the limit.

Ropes and load chains. Visually inspect all ropes and load chains for damage.

Functional operating mechanisms. Inspect all functional operating mechanisms for maladjustment that can interfere with proper operation, including:

- Deterioration or leakage in lines, tanks, valves, drain pumps, and other parts of air or hydraulic systems
- Hooks with deformities, cracks, chemical damage, or excessive wear
- Hoist chains and end connections for excessive wear, twist, distorted links interfering with proper function, or stretch beyond manufacturer's recommendations

- Wire rope for wear, corrosion, kinking, crushing, or broken wires or strands
- Rope and chain reeving system
- Hoist braking system

Daily inspection records. Ensure that inspections of all components, including wire rope, chains, and crane, are current via inspection sticker or other documentation from the designated inspector. The inspection can be documented on a tag attached to the crane controls, or it may be documented in a log that is kept with the key that unlocks the crane controls. Inspection tags must be collected by the crane service provider and kept on record. Where applicable, crane inspection logs must be reviewed by the crane service provider.

Monthly Inspection

The crane operator or other designated inspector must visually inspect the following items at least once per month for damage, wear, or other deficiency that might reduce capacity or adversely affect the safety of the crane:

- All control mechanisms for excessive wear of components and contamination by lubricants or other foreign matter
- All safety devices for malfunction
- Crane hooks with deformities or cracks, and for hooks with cracks having more than 15 percent in excess of normal throat opening or more than a 10-degree twist from the plane of the unbent hook
- Hook block at its lowest position for any condition that could result in an appreciable loss of strength
- Brakes
- Wire ropes and chains

- Rope reeving for noncompliance with manufacturer's recommendations
- Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, and moisture accumulation

Monthly inspection records. Signed and dated inspection records must be kept on file and must be readily available to designated personnel. A certification record of inspections for the following crane components must be kept on file:

- Hooks with deformities or cracks, with a certification record that includes the date of inspection, the signature of the person who performed the inspection, and the serial number or other identifier of the hook inspected
- Hoist chains, including end connections, with a certification record that includes the date of inspection, the signature of the person who performed the inspection, and an identifier of the chain that was inspected
- All functional operating mechanisms for excessive wear of components
- Rope reeving for noncompliance with manufacturer's recommendations

Periodic Inspection

Complete inspections of all cranes must be performed by a qualified inspector at 1- to 12-month intervals, depending on the crane's activity, severity of service, and environment.

Normal service. Cranes under normal use throughout the year should receive complete inspections annually.

Heavy service. Cranes under heavy service should receive complete inspections at least every 6 months.

Severe service. Cranes under severe service should receive complete inspections at least every 1 to 3 months.

Components to be inspected. The qualified inspector must examine the following items for deficiencies and determine whether they constitute a hazard:

- Deformed, cracked, or corroded members
- Loose bolts or rivets
- Cracked or worn sheaves and drums
- Worn, cracked, or distorted parts, such as pins, bearings, shafts, gears, rollers, locking and clamping devices
- Excessive wear on brake system parts, linings, pawls, and ratchets
- Load, wind, and other indicators over their full range, for any significant inaccuracies
- Gasoline, diesel, electric, or other power plants for improper performance or noncompliance with applicable safety requirements
- Excessive wear of chain drive sprockets and excessive chain stretch
- Electrical apparatus for signs of pitting or any deterioration of controller contactors, limit switches, and push-button stations

Periodic inspection records. Dated and signed inspection records must be kept on file and must be readily available for review by designated personnel.

Wire Rope

Any deficiencies discovered by a designated inspector during the inspection of wire rope that could reduce its load capacity or adversely affect its performance must be corrected before the rope is returned to service, or the rope must be removed from service. The inspection must include examination of the entire length of the rope without detaching it from the drum.

Frequent Inspection

The frequency of inspection intervals for wire rope must be determined by a designated inspector and must be based on such factors as expected rope life as determined by severity of:

- Environment
- Percentage of capacity lifts
- Frequency of operation
- Exposure to shock loads

At a minimum, all ropes must be thoroughly inspected once every 30 days.

Inspect for signs of deterioration or weakness. Any deterioration of wire ropes resulting in appreciable loss of original strength must be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard. Some of the conditions that could result in an appreciable loss of strength are:

- Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires
- A number of broken outside strands and the degree of distribution or concentration of such broken wires
- Worn outside strands
- End connections with corroded or broken wires or that are cracked, bent, worn, or improperly applied
- Sections of the rope at or near terminal ends where corroded or broken wires may protrude
- Severe kinking, crushing, cutting, or un-stranding of wire(s)
- Ropes with saddles or with heavy wear and/or broken wires at sections in contact with equalizer sheaves or other sheaves where rope travel is limited

Annual Inspection

A designated inspector must inspect wire ropes at least annually. The inspector must carefully note any deterioration that results in appreciable loss of original strength and determine whether further use of the rope constitutes an acceptable risk. The inspection must include examination of the entire rope length without detaching it from the drum.

Irregularly Used Wire Rope

All rope that has been idle for a month or more due to shut down or storage of a crane must be thoroughly inspected before it is used. This inspection must be for all types of deterioration and performed by a designated inspector whose approval must be required for further use of the rope. Nonrotating rope must be carefully inspected.

Inspection Records

Operators must keep a certification record of wire rope inspections on file and readily available to appointed personnel. The certification must include the date of inspection, the signature of the person who performed the inspection, and an identifier for the ropes that were inspected.

Load Hooks and Blocks

A designated inspector must inspect load hooks and load blocks that have been changed out before returning the crane to service.

Inspection Records

Inspection records must be retained on file throughout the service life of the hook or load block and must be readily available for review by designated personnel.

Irregular Service Cranes

Crane Idle 1 Month to 6 Months

A crane that has been idle for 1 month or more but less than 6 months must be given an inspection of all crane items that require a daily or frequent inspection, including rope inspections, before placing it in service.

Crane Idle More Than 6 Months

A crane that has been idle for more than 6 months must be given a complete inspection of all items required for daily/frequent and periodic inspections, including rope inspections, before placing it in service-

Standby Crane

Standby cranes must be inspected at least semiannually according to the requirements for frequent inspections and rope inspections. Inspection of wire ropes must be completed at least semiannually. Standby cranes that are exposed to adverse environmental conditions must be inspected according to the requirements for frequent crane inspections.

Inspection Records

Certification records must be made monthly on critical items in use, such as brakes, crane hooks, and ropes. The certification must include:

- The date of inspection
- The signature of the person who performed the inspection
- The serial number or other identifier of the crane that was inspected

The certification record must be kept on file and readily available to designated personnel.

MAINTENANCE

Cranes in Regular Service

Maintenance of the crane is the responsibility of the crane operator and must follow the guidelines of the crane manufacturer and this Plan. See the manufacturer's manual for a copy of the crane maintenance and inspection schedule.

A preventive maintenance program must be established on the basis of recommendations of the crane manufacturer. If equipment maintenance procedures deviate from published manufacturer's recommendations, the alternate procedures must be approved in advance by the manufacturer or another designated person and must be kept on file and readily available to designated personnel.

Pre-Maintenance Procedures

Before starting adjustments or repairs on a crane, maintenance personnel must take precautions in the following chronological order:

1. Place the crane where it will cause the least interference with other equipment or operations in the area.
2. Lower the lower load block to the ground or otherwise secure it against dropping-
3. Place all controls in the OFF position and secure all operating features from inadvertent motion by brakes or other means.
4. Lock out the means of starting crane operating equipment.

5- Stop the power source or disconnect it at the power takeoff

6. "Warning" or "Out-of-Orded' signs must be placed on the crane controls and underneath the crane where overhead work may create a hazard. Signs or flags must be removed only by authorized personnel.

7. Guard adjacent runways for the length of the work area to prevent contact with another crane.

Adjustments and Repairs

Any hazardous conditions disclosed by inspection or during operation must be corrected before operation of the crane is resumed. Adjustments and repairs must be done only by designated personnel.
Adjustments must be maintained to ensure correct functioning of components, which include:

- Functional operating mechanisms
- Safety devices
- Control systems
- Power plants
- Braking systems

Repairs or replacements must be provided promptly as needed for safe operation.

Post-Maintenance Procedures

After adjustments and repairs have been made, the crane must not be operated until:

- All guards have been reinstalled.
- Safety devices have been reactivated.
- Maintenance equipment has been removed.

Load Attachment Chains and Rope Slings

Load attachment chains and rope slings showing defects must be repaired or replaced promptly, as must all critical parts that are cracked, broken, bent, or excessively worn.

Pendant Control

Pendant control stations must be kept clean and function labels kept legible.

Wire Rope

Personnel using wire rope must ensure proper care in compliance with the following guidelines.

Storage. Store rope to prevent damage or deterioration. Unreel or uncoil rope as recommended by the rope manufacturer and with care to avoid kinking or twisting.

Cutting. Before cutting a rope, use a method that prevents the unlaying of the strands. Heat-affected zones of flame-cut wire rope must not be allowed to bear a load.

Installation. During installation, avoid dragging the rope in the dirt or around objects that will scrape, nick, crush, or induce sharp bends in it.

Lubrication. Maintain rope in a well-lubricated condition to reduce internal friction and to prevent corrosion. Ensure that lubricant applied as part of a maintenance program is compatible with the original lubricant. Consult the rope manufacturer when in doubt Lubricant applied must be of the type that does not hinder visual inspection. Those sections of rope that operate over sheaves or that are otherwise hidden during inspection and maintenance procedures require special attention when the rope is lubricated.

Worn ends. When an operating rope shows greater wear at its ends than on the remainder, its life can be extended (in cases where a reduced rope length is adequate) by cutting off the worn end, thus shifting the wear to different areas of the rope.

Hooks

Discard hooks with cracks or those having more than 15 percent in excess of normal throat opening or more than a 10-degree twist from the plane of the unbent hook.

Repairs by welding or reshaping are not generally recommended. If such repairs are attempted, they must be done only under competent supervision, and the hook must be tested to a rated load test before further use.

Maintenance Records

Dated maintenance records must be kept where readily available to appointed personnel. The most recent copy of dated records that document maintenance of critical items, such as hoisting machinery, sheaves, hooks, chains, ropes, and other lifting devices, must be retained in a maintenance file. Maintenance records must be retained in the crane history file, or an electronic recordkeeping system may be used.

GENERAL OPERATING PRACTICES

Manufacturers Information

An operating manual supplied by the manufacturer must be readily available to the operator at all times.

Crane Operator General Work Practices

Operators are responsible for those operations under their direct control. The qualified operator must perform the following activities:

- Safely operate equipment
- Follow the equipment operating guidelines.
- Perform the pre-use and frequent equipment inspection.

- Ensure that the load will not exceed the rated capacity of the equipment.
- Abide by any restrictions placed on the use of the equipment.
- Ensure inspections are current via inspection sticker, other documentation, or verbal confirmation from the equipment custodian.
- The crane must not be loaded beyond its rated load except for test purposes.
- Do not engage in any attention-diverting activity while operating the crane.
- When physically or mentally unfit, do not engage in the operation of equipment.
- Respond to signals from the appointed signal person.
- Obey a STOP signal no matter who gives it.
- Whenever there is any question as to the safety of the activity, an operator has the authority to stop and refuse to handie loads until the matter has been resolved by supervisory personnel.
- Sound a warning signal (if furnished) during travel, particularly when approaching personnel.
- Notify the next operator of any defects in equipment or operating problems at shift change.
- Contacts with runway stops or other cranes must be made with extreme caution. If ordered to engage with or push other cranes, do this with particular care for the safety of persons on or below the cranes, and only after making certain that any persons on the other cranes are aware of what action is to be taken.
- Secure outdoor cranes before leaving them.
- When the wind-indicating alarm is given, anchor the bridge on outside cranes.
- Do not hoist two or more separately rigged loads in one lift, even though the combined load is within the crane's rated capacity.
- Do not lift, lower, or travel the crane while anyone is on the load or hook.

Emergency Switch

- If the crane's main or emergency switch is open when starting on duty, do not close it until it has been determined that no one is on or close to the crane. If there is a warning sign on the switch, do not remove it unless you placed it there.
- Do not close the switch until the warning sign has been removed by the person who placed it there.
- Before closing the main switch, ensure that all controllers are in the OFF position.
- If a power failure occurs during operation, immediately switch all controllers to the OFF position.

Hoisting

The weight of the load must be determined before hoisting. The crane and rigging equipment must not be loaded beyond its rated capacity, except for authorized testing.

Pre-Lift Check

Before the lift is performed, the operator must ensure that:

- The load to be lifted is within the rated load capacity limits for the crane.
- The load is attached to the hook by means of slings or other approved devices.
- The load is well secured and properly balanced in the sling or lifting device before it is lifted more than a few inches.
- The hoist rope is not kinked.
- Multiple-part lines are not Wisted around each other.
- The hook must be positioned above the center of gravity of the load in such a manner as to minimize swinging when the load is lifted.
- If there is a slack-rope condition, it should be determined that the rope is properly seated on the drum and in the sheaves.
- All personnel, including the qualified rigger, must be clear of the load.

Prohibitions on Hoisting

Crane operators must comply with the following hoist prohibitions:

- The load must not be lowered below the point where less than two full wraps of rope remain on the hoisting drum.
- During hoisting, ensure there is no sudden acceleration or deceleration of the moving load and the load does not contact any obstructions.
- Do not hoist, lower, or travel while anyone is on the load or hook.
- Do not carry loads over people.

Hoist Limit Switch

The first time the crane is used during a shift, test the upper-limit switch/device of each hoist under no load. Avoid two-blocking; "inch" the block into the limit switch or run it in at slow speed. If the switch/device does not operate properly, immediately notify the supervisor. Never use the final hoist-limit switch that controls the upper limit of travel of the load block as an operating control.

Attaching the Load

Ensure the load is attached to the load-block hook by means of slings or other approved devices. Ensure that the sling clears all obstacles.

Moving the Load

The person appointed to direct the lift must see that the load is well secured and property balanced in the sling or lifting device before it is lifted more than a few inches. Ensure that:

- The load is lifted slowly until it clears the ground or other support to minimize swinging.
- There is no sudden acceleration or deceleration of the moving load.
- The load does not contact any obstructions.
- A "dry run" is conducted in areas where clearance is limited.

Side Pulls

Cranes must not be used for side pulls except when specifically authorized by an appointed person who has determined that the stability of the crane is not endangered and that load-bearing parts of the crane will not be overstressed.

Holding a Suspended Load

The operator must not leave his or her position at the controls while the load is suspended. No person is allowed to stand or pass under a load on the hook.

If the load must remain suspended for any considerable length of time, the operator must hold the drum from rotating in the lowering direction.

Cab Housekeeping

Necessary clothing and personal belongings must be stored in such a manner as to not interfere with access to the crane or its operation.

Tools, oil cans, waste, extra fuses, and other necessary articles must be stored in the toolbox and must not be permitted to lie loose in or about the cab.

Fire Extinguisher

Ensure that a 10BC or larger fire extinguisher is installed in the cab of cab-operated cranes. The extinguisher must be maintained in a serviceable condition.

Unattended Crane

Before leaving the crane unattended, the operator must perform the following tasks:

1. Land any load, bucket, lifting magnet, or other device.
2. Set travel brakes and other locking devices.

3. Put controls in the off or neutral position.
4. Secure the crane against accidental travel.

CRITICAL LIFT PROCEDURE

When a crane is lifting more than Percentage, Generally 85 Percent or Higher percent of its rated capacity, it will be considered a "critical lift," and additional precautions must be taken. An appointed person must classify each lift as ordinary or critical before planning the lift.

Determination of Critical

A lift must be designated critical if any of the following conditions are met:

- The load item, if damaged or upset, would result in a release into the environment of hazardous material exceeding the established permissible environmental limits.
- The load item is unique and, if damaged, would be irreplaceable or not repairable and is vital to a system, facility, or project operation.
- The cost to replace or repair the load item, or the delay in operations of having the load item damaged, would have a negative impact on organizational budgets to the extent that it would affect program commitments.
- A lift not meeting the above criteria must also be designated critical if mishandling or dropping the load would cause any of the above-noted consequences to nearby installations or facilities.

Further site-specific criteria may be developed to supplement those cited above and may include loads that require exceptional care in handling because of size, weight, close-tolerance installation, or high susceptibility to damage, as well as lifts using multiple pieces of lifting equipment.

FALL PROTECTION

Slips, Trips, and Falls

All workers involved in material handling and lifting with cranes must be provided protection from slips, trips, and falls,

Falls from Height

Workers must be provided with suitable fall protection when working on walking and working surfaces near unprotected sides and edges that are 6 ft or more above a lower level.

EMERGENCY RESPONSE

Injured Person

In case of an accident that results in a serious injury (i.e., requires medical attention):

1 . Attend the injured person(s), give standard first aid, make the situation safe, and comfort the injured.

2. Call 911 from a cell phone, phone in crane cab, or other nearest location.

3. Notify the office or designated personnel by phone or radio.
4. Send a person, if available, to the office to coordinate help.
5. Set up rescue rigging if the situation requires (trained staff only).

6- Wait for EMS to arrive.

Electrical Storm

In the event of a lightning storm, all personnel on or near a crane, including the crane operator, must be evacuated away from it to a safe shelter.

Before evacuating the crane and if there is enough time before the electrical storm is imminent, the operator should follow the procedures for an unattended crane in the General Operating Practices section of this Plan.

Lifts must be halted until weather conditions have changed enough to allow continuation of safe crane operation. The crane operator or other authorized person will assess weather conditions and make this decision.

Power Failure

Safety Procedures

If power to the crane fails during a lift operation:

- Set all brakes and locking devices.
- If practical, land the suspended load under brake control.

Crane Breakdown

Breakdown Procedures

In the event a crane breaks down with a suspended load intact and the operator cannot lower the load safely, the operator must:

- Cordon off the area under the load to prevent personnel from entering.
- Contact the supervisor or other designated person immediately and inform him or her of the situation.

- Assist with or take charge of the situation if a supervisor or other designated person is not available, and ensure that the area under the suspended load is suitability cordoned off and posted.
- Not leave the suspended load unattended at any time.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

The Plan Administrator or designee will assess the work areas where cranes will operate to determine if hazards are present, or are likely to be present, which necessitate the use of PPE (see 29 CFR 1910.132, Personal Protective Equipment, General Requirements). If such hazards are present, or likely to be present, the Safety Manager must select and have each affected employee use the types of PPE that will protect the affected employees from the hazards identified in the hazard assessment.

Mandatory PPE

Fall Prevention and Fall Arrest

When an employee is performing maintenance, repair, or inspection of a crane 6 ft or more above the ground or lower level and a standard barrier or platform is not provided, the employee must wear an approved safety harness and lanyard or a fell arrest device and fasten the lanyard or device to a secure anchor.

Safety Shoes

All personnel participating in lifts involving cranes or hoists must wear approved safety shoes.

Hard Hats

All personnel must wear approved hard hats when such personnel:

- Operate a crane.
- Participate in a lift or are within 15 ft of the vertical plane of the load.

If the top of the load is lifted to a height greater than 5 ft, the load is considered an overhead hazard and head protection must be worn.

Gloves

Workers who handle wire rope or loads with rough or sharp edges or splinters must wear sturdy work gloves.

TRAINING

All personnel who operate, rig, inspect, or perform maintenance on cranes and related equipment covered under this Plan must be provided with training, including a means of evaluation, to ensure that they are competent to perform their tasks safely. This training must also include applicable site-specific lifting and rigging procedures that address abnormal or emergency operations as well as possible equipment failure.

See the Personnel Qualifications section of this Plan for the requirements for personnel evaluations and qualifications.

Training Methods

Trainers must use training methods best suited for the students and the subject material. This may include, but is not limited to:

- Computer-aided training
- Classroom training
- Simulated field training
- On-the-job training
- Training by equipment manufacturer or commercial training companies

Standards must be set for each examination by the training department. The minimum passing score will depend on the subject, testing technique, and test difficulty. Management must determine the course of action for persons receiving negative evaluations.

Crane Operators

Only qualified and authorized operators, or operator trainees under the direct supervision of a qualified operator, are permitted to operate cranes.

Operators must demonstrate knowledge of equipment operating characteristics, capabilities, limitations, effects of variables, safety features, and operating procedures for the cranes they will operate.
The following checklist contains basic factors with which an operator must be familiar. This checklist must be tailored to suit actual conditions.

- Load limits
- Operator aids
- Operating characteristics
- Environmental hazards, including weather
- Electrical hazards
- Traveling with load
- Traveling without load
- Lifting personnel
- Equipment inspections and tests
- Load weight estimation
- Emergency procedures

• Lessons learned • Hand signals

- Load dynamics
- Applicable standards and regulations
- Critical lifts

- Safety features of equipment
- Terminology and definitions
- Ropes and reeving
- Records and documents
- Limit switches
- Warning signals
- Operating practices
- Fire protection
- Crane components
- Access and exit routes
- Warning devices

Maintenance Workers

Operational Requirements and Qualifications

Employees who operate cranes to perform crane maintenance must be trained and qualified to operate the cranes on which maintenance is being performed. Crane operation by maintenance personnel must be limited to those crane functions necessary for performing maintenance on the crane or for verifying the performance of the crane after maintenance has been performed.

Training Topics

Employees who perform maintenance activities on equipment covered by this standard should have an understanding of the following criteria:

- The tools to accomplish their work safely
- Access to operating instructions to perform adjustments
- Parts information furnished by the manufacturer or the responsible maintenance or engineering firm.
- Manufacturers' recommendations as to points and frequency of lubrication and levels and types of lubricant to be used
- Maintenance and repair procedures recommended by the manufacturer or responsible maintenance or engineering firm.
- Wiring diagrams
- Documentation requirements for maintenance and repair

Inspectors

Employees who operate cranes to perform crane inspections must be trained and qualified to operate the crane on which the inspection is being performed. Qualified inspectors must have the necessary knowledge and experience to properly inspect hoisting and rigging equipment. Crane operation by crane inspectors must be limited to those crane functions necessary for performing the inspection on the crane.

Inspector training must include basic inspection techniques and acceptance/rejection criteria as specified in this Plan and other applicable sources.

Instructors

Instructors who develop or deliver lifting and rigging training programs must meet the qualification standards specified by training department

Qualifications

Instructors must develop technical competence by satisfactorily completing documented training or technical experience in the hoisting and rigging discipline.

Continuing Education

Instructors should attend recognized training courses, workshops, or seminars in order to remain current on industry practices and changes in applicable codes and standards.

Signalers

Signalers must be trained to give the standard hand signals to the crane operator.

Previous Training and Qualification

Personnel involved in crane operations who have documented evidence of previous related training or experience may be accepted as meeting training requirements. Previous training deemed acceptable may include:

- Vendor or equipment manufacturer training
- Completion of an apprenticeship program
- Journeyman status in an applicable trade

For previous training to be acceptable for qualification, documented evidence must include type and class of equipment and hours of experience- For qualifications not related to equipment operation, personnel must have documented evidence of training and experience related to an activity covered by this Plan. Documented evidence may be any of the following:

- Certificates of training
- Journeyman card or documents issued by a trade union
- Degree or accreditation from a college or trade school

When previous training and experience are accepted, personnel involved in crane operations will be considered qualified when they have passed a written and oral examination.

On-the-job training instructors, on-the-job evaluators, and operators of cranes and forklifts must satisfactorily complete an on-the-job evaluation.

REFERENCES

American National Standards Institute (ANSI) Al 0.28 Safety Requirements for Work Platforms Suspended from Cranes or Derricks for Construction and Demolition Operations

ANSI/American Society of Mechanical Engineers (ANSI/ASME), New York, New York:

• B18.15 Forged Eyebolt

American Society of Mechanical Engineers, New York, New York:

- 330.2 Safety Code for Overhead and Gantry Cranes
- B30.9 Slings • B30.10 Hooks
- 330.11 Monorails and Underhung Cranes

• B30.17 Overhead and Gantry Cranes (Top Running Bridge, Single Girder with Top or Under Running Trolley Hoist) • B30.18 Stacker Cranes (Top or Under Running Bridge, Multiple Girder with Top or Under Running Trolley Hoist)

American Society of Testing and Materials (ASTM), Washington, D.C.:

- C A148/A148M, Standard Specification for Steel Castings, High Strength, for Structural Purposes
- C A391/A391M, Standard Specification for Grade 80 for Alloy Steel Chain
- C A489, Standard Specification for Carbon Steel Eyebolts
- C E165, Standard Practice for Liquid Penetrant Inspection Method
- C E709, Standard Practice for Magnetic Particle Examination
- C F 1145, Standard Specification for Turnbuckles, Swaged, Welded, Forged
- F541, Standard Specifications for Alloy Steel Eyebolts

Crane Manufacturers Association of America, Inc.

• Specification No. 70, Electric Overhead Traveling Cranes

• Specification 74, Specifications for Top Running and Underhung Single Girder Electric Overhead Traveling Cranes

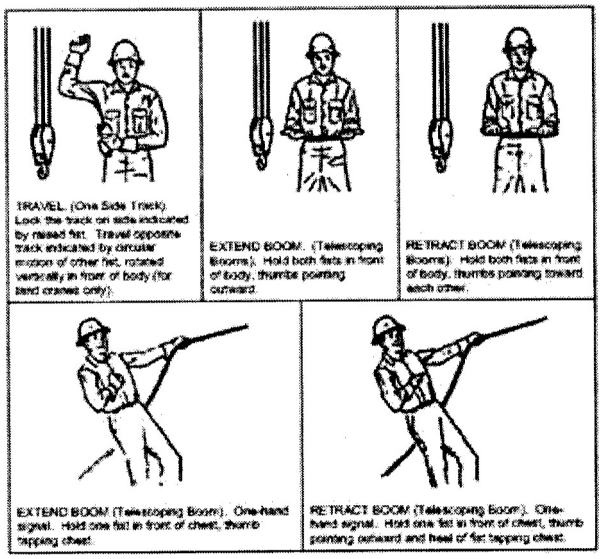
.-(SE) Cranes & Booms

Use cranes and booms to displace heavy objects, such as trees or large branches. This specialized piece of equipment requires total crew coordination and teamwork.

Safety Awareness

Some of the main hazards associated with crane operation:

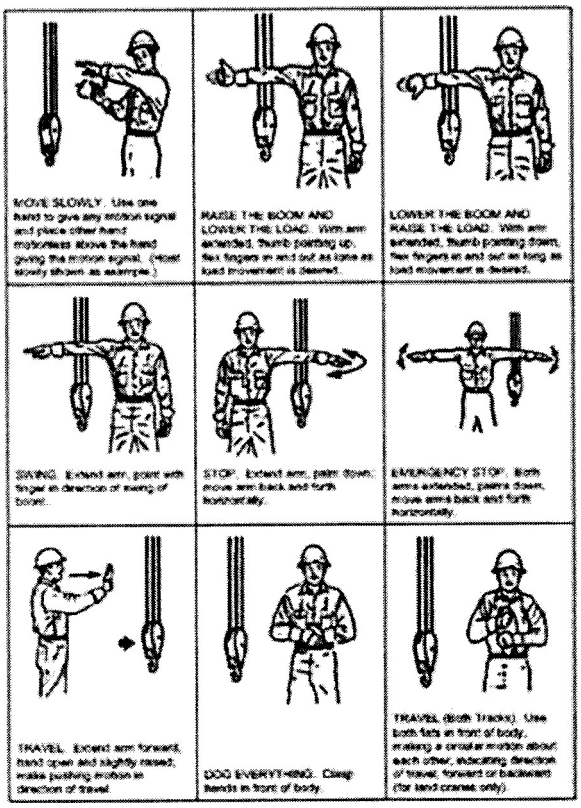
- Equipment failure caused by inadequate or improper inspection and maintenance procedures
- Equipment failure / overloading
- Truck rollover
- Electric contact
- Falling debris
- Improper load securing
- Pinch points or crushing
- Poor communications



Preparation

The maximum lift SHALL never exceed manufacturer's specifications and SHALL be operated by a qualified Operator that has met applicable standards for crane operations. • Cranes SHALL never be worked without first properly setting all outriggers. Planks or equivalent SHALL always be used under outrigger feet. Every step necessary SHALL be taken to insure adequate traction for outriggers. • Slings SHALL be equal in strength to drop line.

Before any work is to begin, the Operator and Trimmer SHALL agree and use approved visual and audible signals. The standard hand signals SHALL be used. These hand signals are found in Annex G of ANSI Z 133.1 Safety Requirements for Arboricultural Operations.

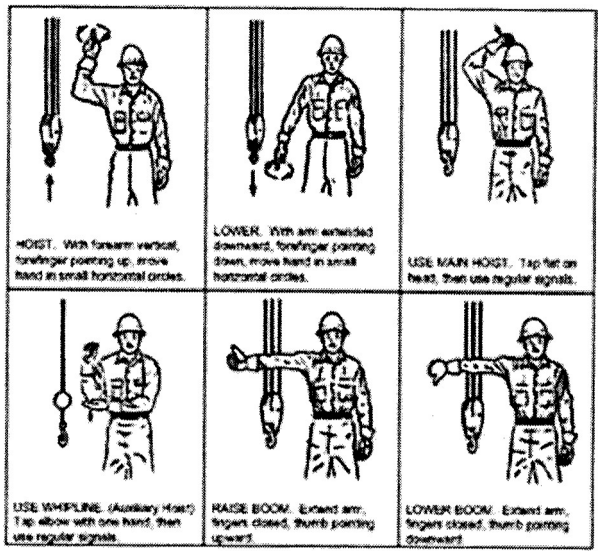


Signals continued next page

Maintenance

The equipment SHALL be inspected and maintained in strict accordance with inspection requirements and manuals issued by the company and the manufacturer.

- Wire ropes and natural or synthetic rope with wire cores SHALL never be used as a drop line or sling. 5/8" Dacron is the standard drop line.
- Daily inspection SHALL be made of all:
  Ropes, slings, cables
  Gears, screws, worms
  Shafts, hooks, snaps Welds, body mounting bolts Cotter pins, batteries, etc.



Worksite Assessment

Worksite protection SHALL take place and barriers erected as necessary.
Boom SHALL be kept at least 10 feet from conductors at all times. If this is not possible, discuss in advance with General Foreperson and/or Utility, so special arrangements can be made.

Best Practices

- All crewmembers SHALL stay out of the Line-of-Fire while cranes and booms are in operation.
- Heavy loads should not be lifted or lowered with boom lower than 45 degrees.
- Branches SHALL never be lowered over the truck.
- Special consideration SHALL be given to the possibility of dead branches breaking when they are being handled, or breaking out of a tree when the tree is being worked on or in.
- Knots SHALL NOT be used to secure the drop line to the pin or to form a sling. Only an eye splice on the pin and a short splice on the sling SHALL be used.
- Boom SHALL never be telescoped when a load is on the hook or pill.
- A tag line should be used to help guide the tree part being lowered to the ground.

Operations

An operator SHALL always remain at the controls while a load is lifted, suspended or lowered.

Boom SHALL be worked over side or rear of the truck-never over the front of the truck or forward of the beam (900 to the side) position.

Boom SHALL be worked as near to vertical position as possible.
Operator SHALL position drop line as near to directly over the balance point of piece being removed as possible.

Slack SHALL NOT be allowed in the drop line because to do so may cause the line to become fouled in drum operating gears. Special care SHALL be taken not to run drop line out when pull weight is off drop line

When operations require a Trimmer to be hoisted in a tree, it SHALL ONLY be done when tied in properly to a designated anchor point on the boom or load line (above the ball) with a rope and saddle. Tying into the hook is not permitted.

DURING THE OPERATION:

The Trimmer SHALL NOT be raised or lowered between wires, cables or conductors.
The Operator is responsible for the operation and SHALL determine the safest and most practical way to perform the work.
Communication between Operator and Climber Trimmer SHALL be maintained at all times, either directly or through an appointed signal person.

Post Operations—Store boom properly and inspect cables and slings for damage or wear.

EVALUATION CHECKLIST—Crane & Boom Trainer: Date: Model : Attachment:	NOTE: Trainer must DATE each activity when Operator has become proficient in the described task. Task
Always read and understand the 0M before operating	
STARTING THE MACHINE	Enter Date
Turn the battery disconnect switch to ON (if equipped)	
Engage the parking brake	
Places outrigger and levels unit	
Move direction control lever into neutral	
Ensure all attachment are grounded	
Move the attachment control levers to HOLD	

Ensure all personnel are clear of machine	
Sound horn	
Turn key-start-switch to ON	
Perform start-up test or observe system self-test (if applicable)	
Turn key-start-switch to START. Crank engine	
MACHINE WARM UP	Enter Date
Allow machine to warm up (per 0M)	
Engage and disengage attachment controls to help speed warm-up of hydraulic components	
Cycle all controls to allow warm oil to circulate through all hydraulic cylinders and lines	

Perform steering, service brake, & parking brake operation checks (per 0M by machine model)	
Extend boom and Dry Fly the boom	
Check gauges, indicators, and action light frequently	

Evaluation Check List — Crane & Boom - continued

MOVING THE BOOM	Enter Date
Ensure area is clear	
Raise all lowered implements	
Release the parking brake	
Move transmission control lever to desired direction	
Release service brake pedal and depress accelerator pedal	
Extends smoothly	
Secures load properly	
All clear under suspended load	
Gentle maneuvering of control (no jerking)	
Places boom in appropriate spot to handle load	
Gets out of machine and inspects terrain	
MACH)NESHU DOWN	
Reset and proper tie down of cable lines	
Lower all hydraulic implements	
Run engine at low idle for 5 minutes to cool down.	
Turn key-start-switch to OFF and remove key	
Dismount machine using 3-point contact	
Conduct post-operation walk-around inspection	

Cranes Rigging

UTS-Rigging Materiel Handling

1. GENERAL

Only designated personnel shall be permitted to operate a crane covered by this section.

The rated load of the crane shall be plainly marked on each side of the crane, and if the crane has more than one hoisting unit, each hoist shall have its rated load marked on it or its load block and this marking shall be clearly legible from the ground or floor.

Test loads shall not be more than 125 percent of the rated load unless otherwise recommended by the manufacturer. The test reports shall be placed on file where readily available to appointed personnel.

Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to ensure that it is safe. Defective rigging equipment shall be removed from service.

Employers must ensure that rigging equipment:

- Has permanently affixed and legible identification markings as prescribed by the manufacturer that indicate the recommended safe working load.
- e Not be loaded in excess of its recommended safe working load as prescribed on the identification markings by the manufacturer.
- Not be used without affixed, legible identification markings.

Rigging equipment, when not in use, shall be removed from the immediate work area so as not to present a hazard to employees.

11. INSPECTION

UTS Frequent Inspection

The following items shall be inspected for defects at intervals as defined in this section or as specifically indicated, including observation during operation for any defects which might appear between regular inspections, All deficiencies such as listed shall be carefully examined and determination made as to whether they constitute a safety hazard:

- Hooks with deformation or cracks.
  Visual inspection daily; monthly inspection with a certification record which includes the date of inspection, the signature of the person who performed the inspection and the serial number, or other identifier, of the hook inspected.

1

- Hoist chains, including end connections, for excessive wear, twist, distorted links interfering with proper function, or stretch beyond manufacturer's recommendations.

Visual inspection daily; monthly inspection with a certification record which includes the date of inspection, the signature of the person who performed the inspection and an identifier of the chain which was inspected.

111. ROPE INSPECTION

Running Ropes

A thorough inspection of all ropes shall be made at least once a month and a certification record which includes the date of inspection, the signature of the person who performed the inspection and an identifier for the ropes which were inspected shall be kept on file where readily available to appointed personnel. Any deterioration, resulting in appreciable loss of original strength, shall be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard. Some of the conditions that could result in an appreciable loss of strength are the following:

- Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires. • A number of broken outside wires and the degree of distribution or concentration of such broken wires.
- Worn outside wires.
- Corroded or broken wires at end connections.
- Corroded, cracked, bent, worn, or improperly applied end connections. • Severe kinking, crushing, cutting, or un-stranding.

Other Ropes

All rope which has been idle for a period of a month or more due to shut down or storage of a crane on which it js installed shall be given a thorough inspection before it is used. This inspection shall be for all types of deterioration and shall be performed by an appointed person whose approval shall be required for further use of the rope. A certification record shall be available for inspection which includes the date of inspection, the signature of the person who performed the inspection and an identifier for the rope which was inspected.

IV. HANDLING THE LOAD

Moving the Load

When rotating the crane, sudden starts and stops shall be avoided. Rotational speed shall be such that the load does not swing out beyond the radii at which it can be controlled. A tag or restraint line shall be used when rotation of the load is hazardous.

2

Hooks and Other Detachable Devices

Hooks used in the connection between the hoist line and the personnel platform (including hooks on overhaul ball assemblies, lower load blocks, bridle legs, or other attachment assemblies or components) must be:

- Of a type that can be closed and locked, eliminating the throat opening.

V. CABS

Fire Extinguisher

Carbon tetrachloride extinguishers shall not be used.

VI. ELECTRIC EQUIPMENT

Equipment

Electrical equipment shall be so located or enclosed that live parts will not be exposed to accidental contact under normal operating conditions.

VII. MAINTENANCE

Preventive Maintenance

A preventive maintenance program based on the crane manufacturer's recommendations shall be established.

Maintenance Procedure

Before adjustments and repairs are started on a crane the following precautions shall be taken:

- The crane to be repaired shall be run to a location where it will cause the least interference with other cranes and operations in the area.
- All controllers shall be at the off position.
- The main or emergency switch shall be open and locked in the open position. • Warning or "out of order" signs shall be placed on the crane, also on the floor beneath or on the hook where visible from the floor,
- Where other cranes are in operation on the same runway, rail stops or other suitable means shall be provided to prevent interference with the idle crane.

After adjustments and repairs have been made the crane shall not be operated until all guards have been reinstalled, safety devices reactivated and maintenance equipment removed.

3

'8111. SLINGS

Safe Operating Practices

Whenever any sling is used, the following practices shall be observed:

- Slings that are damaged or defective shall not be used.
- Slings shall not be shortened with knots or bolts or other makeshift devices.
- Sling legs shall not be kinked.
- Slings shall not be loaded in excess of their rated capacities.
- Slings used in a basket hitch shall have the loads balanced to prevent slippage.

- Slings shall be securely attached to their loads.
- Slings shall be padded or protected from the sharp edges of their loads.
- Suspended loads shall be kept clear of all obstructions.
- All employees shall be kept clear of loads about to be lifted and of suspended loads.
- Hands or fingers shall not be placed between the sling and its load while the sling is being tightened around the load.
- Shock loading is prohibited.
- A sling shall not be pulled from under a load when the load is resting on the sling.
- Employers must not load a sling in excess of its recommended safe working load as prescribed by the sling manufacturer on the identification markings permanently affixed to the sling.
- Employers must not use slings without affixed and legible identification markings.

Inspections

Each day before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a competent person designated by the employer. Additional inspections shall be performed during sling use, where service conditions warrant. Damaged or defective slings shall be immediately removed from service.