

OSHA Crane & Rigging Safety Pack

FORBES SAFETY SOLUTIONS

Complete bundle — 8 templates included

Editable Word/Excel/PowerPoint versions available at forbessafety solutions.com/downloads/

Table of Contents

1. Inspection Crane
2. Inspection Rigging Sling
3. Jha Mobile Crane
4. Jha Rigging Crane
5. Program Crane Rigging
6. Program Mobile Crane
7. Toolbox Crane Signals
8. Toolbox Rigging

FORBES SAFETY SOLUTIONS

CRANE PRE-USE INSPECTION CHECKLIST

Per 29 CFR 1926.1412 (Inspections) & 29 CFR 1926.1417 (Operation)

Compar _____

Crane ID _____

Make / _____ Capacity (ton) _____

Date: _____ Inspector Name _____

1. STRUCTURAL COMPONENTS

#	Inspection Item	PASS	FAIL	N/A
1	Boom condition (cracks, deformation, corrosion)			
2	Jib condition and connections			
3	Mast / tower structure integrity			
4	Turntable and swing mechanism			
5	Outriggers / crawlers condition and operation			
6	Counterweights properly secured and correct amount			

2. WIRE ROPE & RIGGING

#	Inspection Item	PASS	FAIL	N/A
7	Main hoist wire rope (kinks, bird-caging, broken wires)			
8	Auxiliary hoist wire rope condition			
9	Pendant lines condition and connections			
10	Sheaves and drums (wear, cracks, rope tracking)			
11	Hook condition (latch, throat opening, twist)			
12	Slings, shackles, and rigging hardware			

3. CONTROLS & LIMIT SWITCHES

#	Inspection Item	PASS	FAIL	N/A
13	All operating controls functional and properly labeled			
14	Upper and lower limit switches operational			
15	Anti-two-block (A2B) device functional			
16	Boom hoist limiting device			
17	Swing brake and lock			
18	Emergency stop / power disconnect			

4. SAFETY DEVICES

#	Inspection Item	PASS	FAIL	N/A
19	Load moment indicator (LMI) operational			
20	Boom angle indicator functional			
21	Level indicator / bubble level			
22	Anemometer / wind speed indicator			
23	Backup alarm operational			
24	Fire extinguisher present and current			

5. HYDRAULIC SYSTEM

#	Inspection Item	PASS	FAIL	N/A
25	Hydraulic cylinders (leaks, damage, drift)			
26	Hoses and fittings (wear, abrasion, leaks)			
27	Hydraulic fluid level adequate			
28	Filters and strainers condition			
29	Pump operation and pressure			

6. ELECTRICAL SYSTEM

#	Inspection Item	PASS	FAIL	N/A
30	Power supply / generator condition			
31	Ground fault protection			
32	Lighting (cab, boom, warning lights)			
33	Wiring and connections (damage, exposure)			
34	Battery condition and charge			

7. GROUND CONDITIONS

#	Inspection Item	PASS	FAIL	N/A
35	Ground firm and level for crane operation			
36	Cribbing / mats in place and adequate			
37	Outrigger pads properly positioned			
38	Underground utilities identified and marked			
39	Adequate clearance from power lines (min. 20 ft)			

8. DOCUMENTATION & CERTIFICATION

#	Inspection Item	PASS	FAIL	N/A
40	Load chart present and legible in cab			
41	Operator certification current and on file			

42	Annual inspection current (within 12 months)			
43	Crane logbook up to date			
44	Manufacturer's operation manual available			

DEFICIENCY NOTES / CORRECTIVE ACTIONS REQUIRED

#	Deficiency Description	Corrective Action
1		
2		
3		
4		
5		
6		
7		

INSPECTION SIGN-OFF

☐ Crane is SAFE to operate

☐ Crane is NOT SAFE — Remove from service

Inspector: _____ Date: _____

Supervisor: _____ Date: _____

Forbes Safety Solutions | Crane Pre-Use Inspection Checklist | Per 29 CFR 1926.1412 & :
This checklist must be completed BEFORE each shift of crane operation. Keep records for duration of c

[illegible][illegible][illegible]

Notes

Notes

Notes

Notes

Notes

Completion Date

--

1926.1417
 crane use + 3 months.

[illegible]

Reference: 29 CFR 1926.251 | Inspect slings before each use per OSHA requirements

Generated: 2026-03-16 | Forbes Safety Solutions

FORBES SAFETY SOLUTIONS
RIGGING & SLING INSPECTION LOG

Reference: 29 CFR 1926.251

[illegible][illegible]

[illegible]

FORBES SAFETY SOLUTIONS

SLING REMOVAL CRITERIA BY TYPE

Reference: 29 CFR 1926.251 | ASME B30.9

Wire Rope Slings

- X REMOVE FROM SERVICE: Ten randomly distributed broken wires in one rope lay, or five broken wires in one strand
- X REMOVE FROM SERVICE: Wear or scraping of one-third the original diameter of outside individual wires
- X REMOVE FROM SERVICE: Kinking, crushing, bird caging, or any other damage resulting in distortion of the rope
- X REMOVE FROM SERVICE: Evidence of heat damage
- X REMOVE FROM SERVICE: End attachments that are cracked, deformed, or worn
- X REMOVE FROM SERVICE: Hooks that have been opened more than 15% of the normal throat opening or twisted
- X REMOVE FROM SERVICE: Corrosion of the rope or end attachments
- X REMOVE FROM SERVICE: Missing or illegible identification tag

Synthetic Web Slings

- X REMOVE FROM SERVICE: Acid or caustic burns
- X REMOVE FROM SERVICE: Melting or charring of any part of the sling surface
- X REMOVE FROM SERVICE: Snags, punctures, tears, or cuts
- X REMOVE FROM SERVICE: Broken or worn stitching in load-bearing splices
- X REMOVE FROM SERVICE: Excessive abrasive wear
- X REMOVE FROM SERVICE: Knots in any part of the sling
- X REMOVE FROM SERVICE: Excessive pitting or corrosion, or lack of corrosion resistance on fittings
- X REMOVE FROM SERVICE: Distortion, excessive pitting, corrosion, cracking, or twisting of fittings
- X REMOVE FROM SERVICE: Missing or illegible sling identification

Chain Slings

- X REMOVE FROM SERVICE: Wear exceeding the allowance listed in ASME B30.9 (varies by chain size)
- X REMOVE FROM SERVICE: Stretch exceeding 3% of original chain length (measure 10-link section)
- X REMOVE FROM SERVICE: Nicks, gouges, or cracks in any link
- X REMOVE FROM SERVICE: Bent, twisted, or elongated links or fittings
- X REMOVE FROM SERVICE: Evidence of heat damage (discoloration/scaling)

- ✗ REMOVE FROM SERVICE: Excessive pitting or corrosion
- ✗ REMOVE FROM SERVICE: Weld splatter on any link
- ✗ REMOVE FROM SERVICE: Missing or illegible identification tag

Synthetic Round Slings

- ✗ REMOVE FROM SERVICE: Snags, punctures, tears, or cuts exposing core yarns
- ✗ REMOVE FROM SERVICE: Acid or caustic burns
- ✗ REMOVE FROM SERVICE: Evidence of heat damage (melting, charring, glazing)
- ✗ REMOVE FROM SERVICE: Knots in the sling
- ✗ REMOVE FROM SERVICE: Broken or damaged stitching in the cover
- ✗ REMOVE FROM SERVICE: Core yarn showing through cover
- ✗ REMOVE FROM SERVICE: Excessive abrasive wear on the cover
- ✗ REMOVE FROM SERVICE: Missing or illegible tag/label
- ✗ REMOVE FROM SERVICE: Hard or stiff spots indicating internal damage



e strand in one rope lay

ope structure

isted more than 10 degrees



FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

JHA INFORMATION			
JHA Title:	Mobile Crane Lift Operations	JHA Number:	FSS-JHA-030
Project Name:		Date:	
Location:		Revision:	0
Regulatory References:	29 CFR 1926 Subpart CC (Cranes & Derricks in Construction); ASME B30.5 (Mobile and Locomotive Cranes); OSHA 29 CFR 1926.1400-1442		
Prepared By:		Approved By:	
Competent Person:		Supervisor:	

JOB HAZARD ANALYSIS — TASK BREAKDOWN

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Lift Planning & Load Chart Review	• Crane overload / tip-over • Incorrect load weight estimation • Unanticipated boom/load radius • Inadequate lift plan for critical lifts	H	• Conduct lift planning meeting with operator, rigger, and signal person • Determine actual load weight (weigh or calculate — add rigging weight) • Reference crane load chart for configuration, radius, and boom length • Ensure lift does not exceed 75% of rated capacity (critical lift threshold) • Develop written Critical Lift Plan for loads >75% capacity or special conditions • Review swing path, travel route, and landing zone for obstructions • Verify operator certification (NCCCO or equivalent) is current
2. Ground Preparation & Crane Setup	• Ground failure under outriggers • Crane instability on slopes • Underground voids / utilities • Insufficient outrigger extension	H	• Evaluate ground conditions — bearing capacity must support crane + load reactions • Place outrigger pads/mats sized to distribute ground bearing pressure • Extend all outriggers fully and level crane within 1% grade • Call 811 / utility locate before setting up over unknown subsurface • Confirm level using crane's built-in level indicator • Barricade swing radius to prevent unauthorized access • Set up on compacted, stable surface — no soft fill or excavation edges
3. Rigging & Load Attachment	• Rigging failure / sling breakage • Improper hitch causing load shift • Struck by rigging hardware • Pinch points during attachment	H	• Qualified rigger selects rigging based on load weight and sling angles • Inspect all slings, shackles, and hardware before each lift — reject damaged gear • Match sling capacity to load — account for sling angle reduction factor • Use proper hitch type (basket, choker, vertical) for load geometry • Ensure load is properly balanced and center of gravity identified • Rig tag lines to control load orientation during lift • Never stand under suspended load — stay out of fall zone
4. Load Pick & Travel	• Tip-over during lift or swing • Overhead power line contact • Struck by swinging load • Two-blocking the hoist • Loss of load control in wind	H	• Use designated signal person with clear communication (hand signals or radio) • Perform initial test lift — raise load 6 inches, hold, verify stability • Maintain minimum 20-ft clearance from power lines (or de-energize / use spotter) • Anti-two-block device must be functional — test at start of shift • Monitor wind speed — cease operations if wind exceeds crane chart limits • Clear all personnel from swing radius and load travel path • Operator must have clear line of sight to load at all times • Never travel with load over occupied areas
5. Load Placement & Unhooking	• Pinch/crush during placement • Load shift on landing • Premature unhooking • Unstable load support	M	• Land load on adequate dunnage/cribbing to support weight evenly • Use tag lines to guide load into final position — never push/pull by hand • Do not unhook until load is confirmed stable and properly

			supported • Rigger signals all clear before operator slacks rigging • Keep hands and body clear of pinch points during landing • Block and secure load against movement before releasing rigging • Verify load placement matches engineered drawings if applicable
6. Crane Breakdown & Demobilization	• Boom contact with structures during retraction • Outrigger retraction on unsupported crane • Transport hazards on roadway • Improper securing for transport	M	• Retract boom fully and secure in boom rest/travel position • Retract outriggers only after boom is fully secured • Verify swing lock is engaged before transport • Inspect crane for damage and document in operator log • Ensure all loose components are secured for transport • Develop transport plan for oversized loads (permits, escorts) • Restore site — remove outrigger pads, fill any ground depressions • File completed lift plan and inspection records with project documentation

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE Required	Specification / ANSI Standard	Condition / Notes
Hard Hat	ANSI/ISEA Z89.1, Type I, Class E	Required for all personnel in crane operating zone
Safety Glasses	ANSI/ISEA Z87.1+	Impact-rated with side shields
High-Visibility Vest	ANSI/ISEA 107, Class 2 minimum	Required for all ground personnel
Work Gloves (Rigger's Gloves)	ANSI/ISEA 105, Cut Level A4+	Leather palm for rigging work
Steel-Toe Safety Boots	ASTM F2413 (I/75 C/75)	Puncture-resistant soles recommended
Fall Protection Harness	ANSI/ASSP Z359.1	Required when working at heights on crane or load
Hearing Protection	ANSI S3.19 / S12.6 (NRR ≥ 25 dB)	Required near crane engine operations
Communication Radio	N/A — operational requirement	Dedicated channel for crane operator, signal person, rigger

EMERGENCY PROCEDURES

Crane Tip-Over / Structural Failure:

- Sound alarm — all personnel evacuate crane operating zone immediately
- Call 911 — report crane incident with potential trapped persons
- Establish exclusion zone (minimum 1.5x boom length radius)
- Account for all personnel at assembly point
- Do not approach overturned crane — risk of fuel/hydraulic spill and secondary collapse
- Notify crane manufacturer/engineer for recovery planning
- Preserve scene for OSHA investigation

Overhead Power Line Contact:

- Operator stays in cab — DO NOT exit crane (equipotential zone)
- If crane is drivable, move away from power line contact
- If must exit: JUMP clear — do not step down (step potential danger)
- Call 911 and utility emergency — report power line contact
- Keep all personnel at least 35 feet from crane and any grounded equipment
- Do not touch crane or load until utility confirms line is de-energized

Rigging Failure / Dropped Load:

- Operator sets brakes and secures crane — do not attempt to recover
- Evacuate drop zone and establish exclusion perimeter
- Account for all personnel — check for injuries
- Call 911 if any injuries or structural damage to occupied areas
- Inspect all rigging and crane before any further lifts
- Conduct incident investigation and root cause analysis

Emergency Contact Information:

- Emergency Services: 911
- Crane Company Emergency: [Insert Name & Phone]
- Site Safety Manager: [Insert Name & Phone]
- Nearest Hospital: [Insert Name, Address & Phone]
- Utility Emergency: [Insert Local Utility Number]

WORKER SIGN-OFF — I HAVE READ AND UNDERSTAND THIS JHA

#	Print Name	Signature	Company / Trade	Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

Role	Name / Signature	Date	Initials
Prepared By (Author)			
Reviewed By (Safety Manager)			
Approved By (Project Manager)			
Client / Owner Rep			

This JHA must be reviewed and updated whenever job conditions change, after any incident, or at minimum annually.

JOB HAZARD ANALYSIS

Rigging & Crane Lift Operations

Applicable Standards: 29 CFR 1926 Subpart CC (1926.1400–1926.1442) — *Cranes & Derricks*; ASME B30.5 — *Mobile Cranes*; ASME B30.9 — *Slings*; OSHA 1926.1431 — *Hoisting Personnel*

Project Name: _____	Date: _____
Location: _____	Supervisor: _____
Crew Members: _____	

Step #	Job Steps	Potential Hazards	Hazard Controls	Responsible Person
1	Conduct pre-lift planning — review lift plan, load weight, crane capacity at required radius	Crane overloading (structural failure/tip-over); incorrect load weight estimate; inadequate ground conditions	Qualified rigger calculates total load (object + rigging + block). Verify crane load chart at planned radius and boom length — stay below 75% of rated capacity for routine lifts. Review ground bearing capacity. Document lift plan — critical lifts (>75% capacity) require engineered lift plan.	
2	Set up crane on firm, level ground — extend outriggers and verify LMI/anti-two-block function	Crane tip-over from inadequate ground support; outrigger pad failure; LMI malfunction leading to undetected overload	Level crane within 1% grade (or per manufacturer spec). Outriggers fully extended with timber mats rated for ground pressure. Function-test LMI (Load Moment Indicator) and anti-two-block device before first lift. Daily crane inspection per 1926.1412.	
3	Inspect all rigging hardware — slings, shackles, hooks, and spreader beams	Rigging failure from damaged or overloaded hardware; dropped load; struck-by from failed rigging component	Qualified rigger inspects all rigging per ASME B30.9 — reject any sling with visible damage, broken wires, or missing ID tags. Verify hardware WLL (Working Load Limit) exceeds calculated sling loads. Use proper sling angles (never <30° included angle). Document inspection.	
4	Rig the load — attach slings, connect shackles, verify center of gravity, install taglines	Crush injuries during rigging attachment; pinch points between load and rigging; unbalanced load; tag line entanglement	Only qualified riggers attach hardware to loads. Hands clear of pinch points — use push/pull sticks. Verify CG with trial lift (raise 6-12 inches and pause). Install taglines of sufficient length — never wrap around hands. Use softeners on sling contact edges.	
5	Clear the lift zone — establish swing radius barricades and verify power line clearance	Workers struck by suspended load or crane components; boom contact with overhead power lines (electrocution); unauthorized entry into lift zone	Barricade swing radius plus 10 ft. Assign signal person with dedicated radio channel. Verify min 20-ft clearance from power lines per 1926.1408 (or use table for voltage >350kV). No personnel under suspended load at any time. Air horn for lift initiation warning.	
6	Execute the lift — signal person directs crane operator through pick, swing, and travel	Struck-by from load swing; crane tip-over during dynamic loading; loss of communication between operator and signal person; two-blocking	Standard hand signals or radio per 1926.1419–1926.1421. Smooth, controlled movements — no sudden stops or swings. Monitor LMI continuously. One signal person at a time (designated). Stop lift immediately for any "all stop" signal from any worker.	
7	Set and land the load at designated location	Crush injuries during landing; workers caught between load and structure; loss of load control in wind; rigging snagging on structure	Tagline operators guide load to within 12 inches. Landing zone crew clear until load is within 2 ft of landing. Use dunnage/cribbing at set point. Workers approach from upwind side only. Release load tension before disconnecting rigging. Wind speed limit: suspend lifts if sustained winds >20 mph (or per lift plan).	

Step #	Job Steps	Potential Hazards	Hazard Controls	Responsible Person
8	Disconnect rigging from landed load	Load shift after tension release; falling hardware when disconnecting; residual energy in rigging (snap-back)	Verify load is stable and fully supported before disconnecting. Rigger confirms no residual tension on slings. Remove rigging from topside when possible. Stack rigging hardware properly — never leave on ground in walkways. Inspect rigging for damage before next lift.	
9	Multi-crane lifts (when applicable) — coordinated dual-crane operations	Unequal load sharing leading to overload; boom collision; communication failure between operators; loss of synchronization	Engineered lift plan mandatory for all multi-crane lifts. Each crane limited to 75% of capacity at max radius. Dedicated signal person for each crane + lift director. Pre-lift meeting with all operators. Continuous radio communication. Abort procedure agreed upon and rehearsed.	
10	Secure crane at end of shift — boom stow, lockout, and documentation	Unattended crane movement; boom interference with other operations; theft/vandalism	Boom lowered and secured per manufacturer procedure. Swing lock engaged. Main disconnect locked out. Remove keys. Complete operator daily log — note any deficiencies. Report maintenance items to crane coordinator. Barricade crane perimeter if left on-site.	

 **This JHA must be reviewed and signed by all crew members before work begins.** Conditions on the jobsite may change — reassess hazards throughout the shift and update this JHA as necessary.

REVIEW & APPROVAL

Reviewed By (Print Name)

Signature

Date

FORBES SAFETY SOLUTIONS

CRANE & RIGGING SAFETY

Program

29 CFR 1926 Subpart CC

[COMPANY NAME]

[ADDRESS]

[CITY, STATE ZIP]

Effective Date: [DATE]

Revision: [REV #]

Approved By: [NAME/TITLE]

1. PURPOSE & SCOPE

This Crane & Rigging Safety Program establishes the minimum requirements for the safe operation of cranes, hoisting equipment, and rigging at [COMPANY NAME] construction and utility jobsites. This program is designed to prevent injuries, fatalities, and property damage associated with crane and rigging operations.

This program applies to all [COMPANY NAME] employees, contractors, and subcontractors involved in crane operations, rigging, signal communication, or who work in proximity to crane operations. This program covers:

- Mobile cranes (lattice boom, hydraulic, telescopic, crawler, truck-mounted)
- Tower cranes
- Overhead and gantry cranes
- Derricks
- Rigging hardware and below-the-hook lifting devices
- Personnel hoisting operations

All crane and rigging operations shall be conducted in compliance with this program, the crane manufacturer's specifications, and all applicable OSHA standards.

2. REGULATORY REFERENCES

- 29 CFR 1926 Subpart CC — Cranes and Derricks in Construction
- 29 CFR 1926.1400 through 1926.1442 — Specific crane requirements
- 29 CFR 1926.251 — Rigging Equipment for Material Handling
- 29 CFR 1910.179 — Overhead and Gantry Cranes (General Industry)
- 29 CFR 1926.1431 — Hoisting Personnel
- ASME B30.5 — Mobile and Locomotive Cranes
- ASME B30.9 — Slings
- ASME B30.26 — Rigging Hardware
- ANSI/ASSP A10.28 — Safety Requirements for Work Platforms Suspended from Cranes or Derricks

3. DEFINITIONS

Competent Person: One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them (as defined in 29 CFR 1926.32(f)).

Qualified Person: A person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience has successfully demonstrated the ability to solve problems relating to the subject matter, the work, or the project (as defined in 29 CFR 1926.32(m)).

Crane Operator: A person who operates the crane. Must meet the operator qualification/certification requirements of 29 CFR 1926.1427.

Signal Person: A person who directs crane operations through the use of standard hand signals or voice/radio communication. Must meet the qualification requirements of 29 CFR 1926.1428.

Rigger: A qualified person who attaches and detaches loads and is responsible for the selection and inspection of rigging hardware.

Lift Director: The individual designated to direct the overall lifting operation, including coordination between the operator, rigger, signal person, and other personnel.

Critical Lift: A lift that exceeds 75% of the crane's rated capacity at the operating radius, involves hoisting personnel, requires the use of more than one crane, involves hoisting over occupied areas, or is otherwise designated as critical by [COMPANY NAME] management.

Load Chart: The manufacturer's document that specifies the rated capacity of the crane at various radii, boom lengths, and configurations.

Rated Capacity: The maximum load that a crane is designed and built to handle at a specified radius and configuration, as established by the manufacturer.

Swing Radius: The area swept by any part of the crane's superstructure or counterweight during rotation of the crane.

4. ROLES & RESPONSIBILITIES

4.1 Management/Program Administrator

- Establish, implement, and maintain this Crane & Rigging Safety Program
- Ensure all crane operators meet OSHA operator qualification/certification requirements
- Ensure adequate resources for crane maintenance, inspection, and safe operation
- Designate competent and qualified persons for crane and rigging operations
- Review and approve all critical lift plans
- Investigate all crane-related incidents, near-misses, and equipment failures

4.2 Site Superintendent/Project Manager

- Ensure pre-lift planning is conducted for all crane operations on the project
- Verify ground conditions are adequate for crane setup

- Coordinate crane operations with other trades and activities on the project
- Ensure swing radius barricading and overhead power line safety measures are in place
- Stop any crane operation that appears unsafe

4.3 Crane Operator

- Operate the crane in accordance with manufacturer's specifications, load charts, and this program
- Perform required pre-shift inspections and document findings
- Refuse to make any lift the operator believes is unsafe, regardless of direction from others
- Maintain valid operator certification/qualification per 29 CFR 1926.1427
- Follow all signal person directions; stop operations when signals are unclear
- Never exceed the rated capacity of the crane at any configuration
- Maintain a current copy of the load chart in the crane cab at all times

4.4 Rigger

- Select, inspect, and properly use rigging hardware in accordance with manufacturer ratings
- Determine load weight and center of gravity before rigging
- Ensure proper sling angles (never less than 30° from horizontal, 60° preferred)
- Protect rigging from sharp edges using softeners/padding
- Signal the operator when the load is ready to be lifted
- Ensure all personnel are clear of the load and swing radius before signaling the lift

4.5 Signal Person

- Provide clear, standard signals to the crane operator per 29 CFR 1926.1419-1422
- Maintain visual contact with the operator at all times (or radio contact if approved)
- Immediately signal STOP for any unsafe condition
- Must be qualified per 29 CFR 1926.1428

4.6 All Employees in Crane Work Areas

- Stay clear of suspended loads at all times — never walk or work under a suspended load
- Remain outside the swing radius barricade during crane operations
- Report any unsafe crane or rigging conditions to supervision immediately
- Understand and obey warning signs, barricades, and signals

5. OPERATOR QUALIFICATIONS & CERTIFICATION

All crane operators shall meet the qualification requirements of 29 CFR 1926.1427. [COMPANY NAME] requires:

5.1 Certification Requirements

1. Operators of cranes with a rated capacity exceeding 2,000 lbs. must be certified by an accredited testing organization (e.g., NCCCO, CIC, NCCER, OECF).
2. Certification must be for the specific type and capacity of crane being operated.
3. Operators shall carry their certification card while operating a crane.
4. Certification shall be current and valid (not expired or suspended).

5.2 Evaluation

[COMPANY NAME] shall evaluate each operator to verify they have the skills, knowledge, and ability to operate the specific crane they are assigned. The evaluation shall include:

- Understanding of the crane's load chart(s)
- Knowledge of the crane's controls, operating characteristics, and limitations
- Ability to perform required inspections
- Understanding of crane setup requirements (ground conditions, outrigger use, level)
- Demonstrated ability to operate the crane safely under actual job conditions

5.3 Medical Fitness

Crane operators shall meet the applicable medical fitness requirements and shall not operate a crane if impaired by fatigue, illness, medication, drugs, or alcohol.

6. PRE-LIFT PLANNING

Before any crane operation, the following pre-lift planning shall be completed:

6.1 Hazard Assessment

5. Survey the work area for overhead power lines, structures, and obstructions
6. Identify underground utilities and voids that may affect ground stability
7. Assess weather conditions (wind speed, visibility, lightning, temperature)
8. Identify personnel working in the area and coordinate activities
9. Determine the need for traffic control or road closures

6.2 Ground Conditions

Ground conditions are critical to safe crane operations. The following shall be verified:

- The ground is firm, level, and capable of supporting the crane and load at maximum configuration
- Underground voids, utilities, and other subsurface conditions have been identified and addressed
- Proper cribbing, mats, or outrigger pads are used to distribute crane loads
- Slopes and grades are within the crane manufacturer's specifications
- Drainage conditions will not undermine the crane's foundation during the lift

NOTE: A competent person shall evaluate ground conditions before crane setup and shall monitor conditions throughout the operation.

6.3 Overhead Power Lines

Minimum clearance distances from overhead power lines per 29 CFR 1926.1408:

Voltage (kV)	Minimum Clearance Distance
Up to 50 kV	10 feet
Over 50 to 200 kV	15 feet
Over 200 to 350 kV	20 feet
Over 350 to 500 kV	25 feet
Over 500 to 750 kV	35 feet
Over 750 to 1,000 kV	45 feet
Over 1,000 kV	As established by utility owner

Additional power line safety requirements:

- An approach distance plan shall be developed for operations near overhead power lines
- A dedicated spotter shall be used when working within the trigger distance (Table A of 1926.1408)
- If the power line voltage is unknown, minimum clearance shall be 20 feet for lines up to 350 kV and 50 feet for lines over 350 kV
- Insulating links, proximity alarms, and range limiters should be used when feasible

7. LIFT PLAN REQUIREMENTS

A lift plan shall be developed for all crane operations. The complexity of the lift plan shall be commensurate with the complexity and risk of the lift.

7.1 Standard Lift Plan

All lifts shall address the following at minimum:

- Crane type, capacity, and configuration (boom length, jib, counterweight)
- Load weight, dimensions, and center of gravity
- Rigging hardware selection and configuration
- Lift radius (pick and set locations)
- Load chart verification — rated capacity at maximum radius must exceed the total rigged load weight
- Ground conditions and outrigger/crawler positions
- Swing path and clearances
- Personnel roles (operator, rigger, signal person, lift director)
- Communication methods
- Overhead obstructions, power lines, and other hazards

7.2 Critical Lift Plan

A critical lift plan is required when any of the following conditions exist:

- The load exceeds 75% of the crane's rated capacity at the operating radius
- The lift involves hoisting personnel
- Multiple cranes are used to make a single lift (tandem/dual crane lifts)
- The lift is over occupied buildings or active work areas
- The lift involves an unusual or complex rigging arrangement
- The lift is designated as critical by project management or the lift director

Critical lift plans shall be prepared by a qualified person and approved by [COMPANY NAME] management before the lift. The plan shall include all items from the standard lift plan plus:

- Detailed load weight calculation with rigging weight included
- Specific crane configuration and setup diagram
- Step-by-step lift sequence
- Contingency/emergency procedures
- Pre-lift meeting agenda and attendance documentation

8. SIGNAL PERSON REQUIREMENTS

A signal person is required when:

- The point of operation (load travel or near the landing zone) is not in full view of the operator
- The equipment is traveling on a road, and a signaler is needed to guide travel
- The operator or the person handling the load determines a signal person is needed

8.1 Qualification

Signal persons shall be qualified by either:

10. A third-party qualified evaluator, OR
11. [COMPANY NAME]'s qualified evaluator who has demonstrated the ability to evaluate signal persons

Qualification shall confirm:

- Knowledge of standard hand signals per 29 CFR 1926.1419
- Demonstrated competence in giving signals
- Understanding of the operations and limitations of the equipment
- Knowledge of hazard recognition and the required signaling method

8.2 Standard Hand Signals

Standard hand signals per 29 CFR 1926.1419 shall be used unless voice/radio communication is established. A chart of standard signals shall be posted at each crane work site.

9. RIGGING HARDWARE INSPECTION

9.1 General Rigging Requirements

- All rigging shall be inspected before each use by a competent person
- Rigging shall not be loaded in excess of its rated capacity
- Damaged or defective rigging shall be immediately removed from service and tagged/destroyed
- Rigging shall be stored properly to prevent damage — hung on racks, not piled on the ground
- Sling angles shall be considered in capacity calculations — never rig at angles less than 30° from horizontal

9.2 Wire Rope Slings — Removal Criteria

- Ten randomly distributed broken wires in one rope lay, or five broken wires in one strand in one rope lay

- Wear or scraping of one-third the original diameter of outside individual wires
- Kinking, crushing, bird caging, or any other distortion of the rope structure
- Evidence of heat damage
- End attachments that are cracked, deformed, or worn
- Corrosion of the rope or end attachments

9.3 Synthetic Slings — Removal Criteria

- Acid or caustic burns
- Melting or charring of any part of the sling surface
- Snags, punctures, tears, or cuts
- Broken or worn stitching in load-bearing splices
- Distortion, excessive pitting, or corrosion of fittings
- Missing or illegible sling identification (tag)

9.4 Chain Slings — Removal Criteria

- Wear, nicks, cracks, or gouges
- Stretch — any individual link stretched more than 5% over original length
- Bent or twisted links
- Evidence of heat damage (discoloration)
- Missing or illegible identification tag

9.5 Shackles, Hooks & Hardware — Removal Criteria

- Deformation (bent, twisted, spread)
- Cracks visible to the naked eye
- Excessive wear (throat opening increased more than 15% of nominal)
- Missing safety latches on hooks (except where specifically permitted and documented)
- Corrosion that affects structural integrity
- Missing or illegible manufacturer markings/rated capacity

10. LOAD CHART USAGE

The crane load chart is the primary document for determining safe lifting capacity.

12. The load chart shall be available in the crane cab at all times.
13. The operator shall consult the load chart before every lift.

14. The correct load chart for the crane's specific configuration shall be used (boom length, jib, counterweight, outrigger position, on-rubber vs. on-outriggers).
15. The total load shall include: the weight of the object, rigging hardware, headache ball/block, and any other attachments below the boom tip.
16. The maximum radius during the lift (including load swing and boom deflection) shall be used to determine the rated capacity.
17. The crane shall never be loaded to more than 100% of the rated capacity at the working radius.
18. Deductions shall be made for freely suspended rigging, personnel platforms, and other below-the-hook devices.

CRITICAL: If the load weight is unknown or cannot be reliably determined, the lift shall not proceed until the weight is established.

11. SWING RADIUS & BARRICADING

The swing radius of the crane shall be barricaded to prevent personnel from entering the area where they could be struck by the rotating superstructure or counterweight.

19. Barricades shall be erected at a minimum distance that prevents contact with the rotating crane superstructure, counterweight, and load.
20. Barricades shall be clearly visible (high-visibility tape, cones, or rigid barriers).
21. Warning signs shall be posted at all barricade access points.
22. A dedicated safety watch may be required at access points to prevent unauthorized entry.
23. Employees must not be permitted between the rotating superstructure and any fixed object (pinch point hazard).
24. The operator shall not rotate the crane if any person is within the swing radius barricade (unless specifically authorized and controlled under the lift plan).

12. CRANE INSPECTIONS

12.1 Pre-Shift/Daily Inspection

Before each shift, the crane operator shall perform a visual inspection that includes:

- Control mechanisms for proper operation and excessive wear
- Safety devices and operational aids for proper function
- Wire rope reeving for compliance with manufacturer recommendations
- Hydraulic and pneumatic hoses for leaks, damage, or routing issues
- Ground conditions for stability

- Outriggers, tires, wheels for proper positioning and condition
- All hooks for deformation, cracks, and safety latch operation

12.2 Monthly Inspection

A thorough monthly inspection shall be performed by a competent person and documented, including:

- All items from the daily inspection
- Structural members for deformation, cracks, and corrosion
- Bolts, pins, and connections for tightness and wear
- Boom sections for straightness and structural integrity
- Wire rope for broken wires, corrosion, and proper reeving
- Electrical systems for proper function

12.3 Annual Inspection

A comprehensive annual inspection shall be performed by a qualified person. This inspection shall be documented and records maintained for the life of the crane.

13. CRITICAL LIFT PROCEDURES

In addition to the critical lift plan requirements in Section 7.2, the following procedures apply to all critical lifts:

13.1 Pre-Lift Meeting

A pre-lift meeting shall be conducted with all personnel involved in the lift. The meeting shall cover:

- Review of the critical lift plan
- Roles and responsibilities of each team member
- Communication protocols and signals
- Sequence of operations — step by step
- Emergency procedures and stop-work authority
- Weather limitations and go/no-go criteria
- Load path and landing zone requirements

13.2 Execution

25. Verify crane setup matches the approved critical lift plan.
26. Verify all rigging matches the approved plan.

27. Perform a trial lift — raise the load a few inches, hold, and verify stability, rigging balance, and crane function.
28. Proceed with the lift only after the lift director confirms all conditions are satisfactory.
29. Maintain continuous communication throughout the lift.
30. If any condition changes or concern arises, STOP the lift immediately and reassess.

13.3 Multi-Crane (Tandem) Lifts

Multi-crane lifts shall be planned by a qualified engineer and shall include:

- Load distribution calculations for each crane
- Each crane shall not exceed 75% of its rated capacity
- A single designated lift director shall coordinate both cranes
- Contingency procedures if one crane experiences a malfunction

14. TRAINING REQUIREMENTS

14.1 Crane Operator Training

- Crane-specific training on each type/model of crane to be operated
- Load chart interpretation and application
- Pre-shift inspection procedures
- Emergency procedures (loss of power, structural failure, tip-over prevention)
- Power line awareness and minimum clearance distances
- Operator certification/qualification requirements per 29 CFR 1926.1427

14.2 Rigger Training

- Rigging hardware identification, inspection, and selection
- Load weight determination and center of gravity
- Sling angle calculations and capacity derating
- Proper rigging techniques for various load types
- Tag line use and load control
- Rigging removal criteria

14.3 Signal Person Training

- Standard hand signals per 29 CFR 1926.1419
- Voice/radio communication protocols
- Positioning requirements for visibility and safety
- Emergency signals and procedures

14.4 General Employee Training

All employees who work in proximity to crane operations shall receive training on:

- Recognizing and avoiding crane operation hazards
- Staying clear of suspended loads
- Swing radius hazards and barricade compliance
- Overhead power line awareness
- Emergency procedures and reporting requirements

14.5 Retraining

Retraining shall be provided when:

- An employee is assigned to operate a new or different type of crane
- An employee is observed operating unsafely or not following procedures
- Changes to the program, equipment, or operations require updated knowledge
- An incident or near-miss indicates a need for additional training

15. RECORDKEEPING

[COMPANY NAME] shall maintain the following records:

- This written Crane & Rigging Safety Program (current and previous versions)
- Crane operator certification/qualification records
- Signal person qualification records
- Daily, monthly, and annual crane inspection records
- Rigging inspection records
- Lift plans (standard and critical)
- Training records for all crane-related personnel
- Incident and near-miss investigation reports
- Manufacturer's load charts and operating manuals for each crane

Daily inspection records shall be maintained for a minimum of three (3) months. Annual inspection records shall be maintained for the life of the crane. Training and certification records shall be maintained for the duration of employment.

16. PROGRAM REVIEW & REVISION HISTORY

This program shall be reviewed at least annually or whenever changes in operations, equipment, or regulatory requirements necessitate a revision.

Revision #	Date	Description of Change	Approved By

APPENDIX A: LIFT PLAN FORM

Complete this form for all crane lifts. Critical lifts require additional detail and management approval.

Project & Lift Information

Field	Information
Project Name:	
Project Location:	
Date of Lift:	
Lift Director:	
Crane Operator:	
Signal Person:	
Rigger(s):	
Lift Type: ☐ Standard ☐ Critical	

Crane Information

Field	Information
Crane Type/Make/Model:	
Crane Capacity (max):	
Boom Length:	
Jib Length (if used):	
Counterweight Configuration:	
Setup: ☐ On Outriggers ☐ On Rubber/Crawlers	
Outrigger Extension: ☐ Full ☐ Mid ☐ Partial	

Load Information

Item	Weight/Value
Load Description:	
Load Weight:	
Rigging Weight:	
Block/Headache Ball Weight:	
Total Rigged Weight:	
Pick Radius:	
Set Radius:	
Maximum Radius During Lift:	
Rated Capacity at Max Radius:	
% of Capacity:	

Rigging Plan

Rigging Component	Type/Size	Rated Capacity	Qty
Slings:			
Shackles:			
Spreader Bar/Beam:			
Other Hardware:			
Tag Lines:			

Hazard Assessment

Hazard	Yes	No	Mitigation Measures
Overhead power lines within 200 ft?	☐	☐	
Underground utilities?	☐	☐	
Occupied areas within load path?	☐	☐	
Wind speed concerns?	☐	☐	

Hazard	Yes	No	Mitigation Measures
Soft or unstable ground?	☐	☐	
Other crane operations nearby?	☐	☐	
Pedestrian/vehicle traffic?	☐	☐	
Other hazards:	☐	☐	

Communication Plan

☐ Standard Hand Signals ☐ Voice/Radio ☐ Other: _____

Approvals

Lift Director Signature: _____ Date: _____

Crane Operator Signature: _____ Date: _____

Management Approval (Critical Lifts): _____ Date: _____

APPENDIX B: RIGGING INSPECTION CHECKLIST

Use this checklist to inspect rigging hardware before each use. Remove from service and tag/destroy any defective rigging immediately.

Field	Information
Inspector Name:	
Date:	
Project/Location:	
Inspection Type: ☐ Pre-Use ☐ Monthly ☐ Annual	

Wire Rope Slings

Inspection Item	OK	Defect	N/A	Notes
Identification tag legible	☐	☐	☐	
No broken wires exceeding removal criteria	☐	☐	☐	
No kinking, crushing, or bird caging	☐	☐	☐	
No corrosion or pitting	☐	☐	☐	
End fittings (thimbles, ferrules) intact	☐	☐	☐	
No evidence of heat damage	☐	☐	☐	
Proper diameter (no excessive wear)	☐	☐	☐	

Synthetic Web Slings

Inspection Item	OK	Defect	N/A	Notes
Identification tag legible	☐	☐	☐	
No cuts, tears, or snags	☐	☐	☐	
No acid/caustic burns	☐	☐	☐	
No melting or charring	☐	☐	☐	

Inspection Item	OK	Defect	N/A	Notes
Stitching intact in load-bearing splices	☐	☐	☐	
Hardware (fittings, eyes) not distorted	☐	☐	☐	
No knots in sling body	☐	☐	☐	

Chain Slings

Inspection Item	OK	Defect	N/A	Notes
Identification tag legible	☐	☐	☐	
No excessive wear, nicks, or gouges	☐	☐	☐	
No stretch (links within 5% of original)	☐	☐	☐	
No bent or twisted links	☐	☐	☐	
No heat damage (discoloration)	☐	☐	☐	
Hooks not spread or cracked	☐	☐	☐	
Master links intact and not distorted	☐	☐	☐	

Hooks, Shackles & Hardware

Inspection Item	OK	Defect	N/A	Notes
Safety latches present and functional	☐	☐	☐	
No deformation or spread	☐	☐	☐	
No visible cracks	☐	☐	☐	
Rated capacity markings legible	☐	☐	☐	
Shackle pins straight and secured	☐	☐	☐	
No excessive wear or corrosion	☐	☐	☐	
Swivels operate freely	☐	☐	☐	
Turnbuckles and eye bolts not bent	☐	☐	☐	

Disposition

☐ All rigging approved for use ☐ Items removed from service (list below)

Items Removed:

Reason: _____

Inspector Signature: _____ Date: _____

FORBES SAFETY SOLUTIONS

Mobile Crane Operation Program

OSHA Compliance Program

Prepared for:

[COMPANY NAME]

Regulatory References:

29 CFR 1926 Subpart CC | ASME B30.5

Date: [DATE] | Revision: [REV NUMBER]

Prepared by: [SAFETY MANAGER NAME / TITLE]

Table of Contents

1. Purpose and Scope

This Mobile Crane Operation Program establishes the requirements and procedures for the safe operation, inspection, and maintenance of mobile cranes used by [COMPANY NAME]. This program has been developed to comply with OSHA's Cranes and Derricks in Construction standard (29 CFR 1926 Subpart CC) and ASME B30.5 (Mobile and Locomotive Cranes).

This program applies to all employees, operators, riggers, signal persons, and subcontractors involved in mobile crane operations at [COMPANY NAME] work sites. It covers all types of mobile cranes, including lattice boom crawler cranes, hydraulic truck cranes, rough terrain cranes, all-terrain cranes, and carry deck cranes.

1.1 Regulatory References

- 29 CFR 1926 Subpart CC – Cranes and Derricks in Construction
- ASME B30.5 – Mobile and Locomotive Cranes
- ASME B30.3 – Construction Tower Cranes (where applicable)
- 29 CFR 1926.1400-1442 – Specific crane operation standards
- ANSI/NCCCO – Crane Operator Certification Standards
- Manufacturer specifications and load charts for each crane in service

2. Roles and Responsibilities

2.1 Crane Program Administrator

[SAFETY MANAGER NAME / TITLE] is responsible for:

- Implementing and maintaining this Mobile Crane Operation Program
- Verifying crane operator certifications are current and valid
- Ensuring all crane inspections are conducted and documented
- Reviewing and approving lift plans for critical/complex lifts
- Investigating crane-related incidents and near-misses
- Coordinating crane-related training

2.2 Crane Operators

- Hold a valid NCCCO, NCCER, or equivalent operator certification for the type and capacity of crane being operated
- Perform daily/shift pre-operation inspections per this program
- Operate the crane in accordance with manufacturer specifications, load charts, and this program
- Refuse to make a lift if conditions are unsafe (operator has stop-work authority)
- Maintain awareness of load weight, radius, capacity, and environmental conditions

2.3 Riggers

- Be qualified per 29 CFR 1926.1404 (qualified rigger criteria)
- Select and inspect rigging hardware before each use
- Attach loads in accordance with rigging best practices and the lift plan
- Communicate with the operator and signal person throughout the lift

2.4 Signal Persons

- Be qualified per 29 CFR 1926.1428 (qualified signal person criteria)
- Use standard ASME hand signals or radio communication
- Maintain clear line of sight with the operator at all times
- Stop the lift if any unsafe condition is observed

2.5 Competent Person

A designated competent person shall be assigned to each crane operation and is responsible for evaluating ground conditions, supervision of assembly/disassembly, power line clearance compliance, and hazard assessment.

3. Operator Certification Requirements

All crane operators at [COMPANY NAME] shall meet the operator certification requirements of 29 CFR 1926.1427:

3.1 Certification Standards

- Operators shall be certified by an accredited testing organization (NCCCO, NCCER, CIC, or OECP) for the type and capacity of crane being operated.
- Certification must be current and not expired, suspended, or revoked.
- Operators must carry their certification card on-site during crane operations.
- A copy of the certification shall be maintained in the operator's personnel file.

3.2 Medical Fitness

Crane operators shall meet the medical fitness requirements, including adequate vision, hearing, and physical capability to safely operate the crane. Medical evaluations shall be conducted in accordance with ASME B30.5 requirements.

3.3 Familiarization

Before operating any crane for the first time, operators must receive familiarization training on the specific make, model, and configuration, including:

- Operating controls and instrumentation
- Safety devices (LMI, anti-two-block, boom length/angle indicators)
- Emergency procedures
- Load chart review and interpretation for the specific crane configuration

4. Crane Selection and Lift Planning

4.1 Crane Selection for the Job

The appropriate crane shall be selected based on the following factors:

1. Load weight (including rigging weight, headache ball, and below-the-hook devices)
2. Lift radius (distance from center of rotation to the load)
3. Lift height required
4. Ground conditions and available setup area
5. Crane capacity at the required radius (per the load chart)
6. Boom length and configuration needed
7. Counterweight configuration
8. Proximity to power lines, structures, and other cranes

4.2 Load Charts – Radius and Capacity

The load chart is the most critical reference for safe crane operation. All lifts shall be planned using the crane's load chart, which is specific to the crane's make, model, boom length, configuration, and counterweight.

NOTE: The crane's rated capacity at any radius is the MAXIMUM load that may be lifted. [COMPANY NAME] requires that no lift exceed 75% of the crane's rated capacity unless a critical lift plan is in place.

Key load chart considerations:

- Always use the correct chart for the actual crane configuration (boom type, jib, outrigger/crawler position)
- Account for the weight of all rigging, blocks, headache balls, and below-the-hook lifting devices
- Capacity decreases as radius increases – never exceed the rated capacity at any radius
- On outriggers: capacity may vary depending on whether outriggers are fully or partially extended
- On rubber: capacity is significantly reduced compared to operation on outriggers

5. Ground Conditions Assessment

A competent person shall evaluate ground conditions before crane setup to ensure the ground can support the crane, outrigger loads, and the maximum anticipated lifted load.

5.1 Ground Condition Requirements

- Ground must be firm, level, drained, and adequately compacted to support the crane's maximum outrigger/track loading.
- Outrigger pads, cribbing, or mats shall be used to distribute outrigger loads. Pad size shall be calculated based on soil bearing capacity.
- Underground utilities, vaults, tanks, and recently backfilled trenches shall be identified and avoided.
- Slopes, edges of excavations, and soft soil areas shall be evaluated and mitigated.
- The crane shall be level within manufacturer-specified tolerances (typically $\pm 1\%$ unless otherwise specified).

5.2 Outrigger Load Calculations

Maximum outrigger load shall be calculated using manufacturer data or engineering analysis. Soil bearing capacity at the setup location shall be verified before crane operations begin.

6. Assembly and Disassembly

Crane assembly and disassembly shall be performed under the direction of a qualified and competent A/D (Assembly/Disassembly) Director in accordance with 29 CFR 1926.1404.

6.1 Requirements

- An A/D Director shall be designated for each assembly/disassembly operation.
- The A/D Director shall review the manufacturer's assembly/disassembly procedures before work begins.
- The crew shall be briefed on the sequence, hazards, and each person's role.
- Adequate clearance from power lines shall be maintained (see Section 9).
- Only personnel essential to the operation shall be in the work area.
- Wind speed limits for assembly/disassembly shall be per manufacturer requirements.

7. Operational Procedures

7.1 Pre-Lift Verification

Before any lift, the operator and lift supervisor shall verify:

1. Load weight is known and documented (actual weight, not estimated).
2. Rigging is inspected, rated for the load, and properly configured.
3. Crane is level and set up per the load chart (outriggers fully extended and set, or on crawlers as specified).
4. Load chart confirms adequate capacity for the maximum radius during the lift.
5. Swing path is clear of personnel and obstructions.
6. Signal person is assigned and positioned (required when operator cannot see the load or the point of landing).
7. Tag lines are attached to control load rotation and swing.

7.2 During the Lift

- No personnel shall be under a suspended load at any time.
- The operator shall not leave the controls while the load is suspended.
- Loads shall not be swung over occupied areas.
- Multi-part line lifts shall be reeved per manufacturer requirements.
- The operator shall monitor the LMI (Load Moment Indicator) and rated capacity at all times.

7.3 Anti-Two-Block Systems

All mobile cranes shall be equipped with a functioning anti-two-block (A2B) device. The A2B system prevents the hook block from being drawn up into the boom tip sheaves, which can result in structural failure and dropped loads.

- The A2B warning and lockout system shall be tested daily before operations begin.
- The A2B system shall not be bypassed, disabled, or overridden at any time.
- If the A2B system activates during a lift, the operator shall stop all motions immediately and lower the load to the ground.

7.4 Wind Speed Limits

Crane operations shall cease when wind speeds exceed the following limits (or lower limits specified by the manufacturer):

Condition	Maximum Wind Speed	Action Required
Normal crane operations	20 mph sustained (typical)	Monitor conditions; follow manufacturer limits
High-wind alert	20-30 mph	Cease lifts with high-windage loads; secure boom; consult manufacturer charts
Crane shutdown	30+ mph (or per manufacturer)	Cease all operations; boom down or secured per manufacturer procedure

Condition	Maximum Wind Speed	Action Required
Assembly / disassembly	Per manufacturer A/D procedures	Typically lower than operational limits

NOTE: Manufacturer wind speed limits for the specific crane model always take precedence. Wind speed shall be measured at the work site using an anemometer.

8. Multi-Crane (Tandem) Lifts

Multi-crane lifts involve two or more cranes lifting a single load simultaneously. These are considered critical lifts and require additional planning and controls.

8.1 Requirements for Multi-Crane Lifts

- A detailed, written lift plan shall be prepared and approved by a qualified person (engineer or qualified lift planner).
- No crane shall be loaded beyond 75% of its rated capacity at any point during the lift.
- A single designated Lift Director shall coordinate all crane movements.
- All operators, riggers, and signal persons shall participate in a pre-lift meeting to review the lift plan, sequence, signals, and abort procedures.
- Communication between all parties shall be established and tested before the lift begins.
- Load distribution between cranes shall be calculated and verified.
- Abort/emergency procedures shall be established before the lift.

9. Power Line Clearance

Contact with energized power lines is one of the leading causes of crane fatalities. [COMPANY NAME] strictly enforces the following power line clearance distances per 29 CFR 1926.1408-1411:

9.1 Minimum Clearance Distances

Voltage (kV)	Minimum Clearance Distance
Up to 50 kV	10 feet (3.05 m)
Over 50 kV to 200 kV	15 feet (4.60 m)
Over 200 kV to 350 kV	20 feet (6.10 m)
Over 350 kV to 500 kV	25 feet (7.62 m)
Over 500 kV to 750 kV	35 feet (10.67 m)
Over 750 kV to 1,000 kV	45 feet (13.72 m)
Over 1,000 kV	As established by utility owner/operator

9.2 Power Line Safety Procedures

1. Identify all overhead and underground power lines within the work area before operations begin.
2. Assume all power lines are energized unless the utility owner confirms de-energization and grounding in writing.
3. Maintain the minimum clearance distances (above) for all parts of the crane, load, load line, rigging, and tag lines.
4. A dedicated spotter/signal person shall be assigned when operating within the Table A assessment distance.

5. If the crane cannot maintain the required clearance, the power line must be de-energized and visibly grounded, or insulating barriers must be installed.
6. Pre-lift planning shall include a power line hazard assessment for every lift within the work area.

NOTE: If any part of the crane, load line, or load contacts a power line, all personnel shall stay clear of the crane and load. The operator shall remain in the cab and attempt to swing or drive the crane clear. If unable to move clear, the operator shall remain in the cab until the utility confirms the line is de-energized.

10. Crane Inspection Requirements

[COMPANY NAME] shall ensure all mobile cranes are inspected in accordance with OSHA regulations and manufacturer requirements.

10.1 Inspection Categories

Inspection Type	Frequency	Performed By	Key Items
Pre-Shift / Daily	Before each shift	Crane Operator	Controls, safety devices (LMI, A2B), wire rope, hydraulic systems, tires/tracks, fluid levels, structural components, load chart legibility
Monthly	Every 30 days	Competent Person	All daily items plus: hooks (for deformation, cracks), wire rope (reeving, end connections), sheaves, boom and jib structural members, outrigger components
Annual	Every 12 months	Qualified Inspector	Comprehensive inspection per manufacturer and ASME B30.5: structural, mechanical, electrical, hydraulic systems, safety devices calibration
Comprehensive	Per manufacturer interval (typically every 4 years or 8,000 hours)	Qualified Inspector / Manufacturer Rep	Disassembly-level inspection of structural and mechanical components. Non-destructive testing (NDT) of critical welds and pins.

10.2 Deficiency Reporting

Any deficiencies identified during inspection shall be:

- Reported to the crane owner and operator immediately.
- Documented on the inspection form with the nature and severity of the deficiency.
- Classified as safety-critical (crane removed from service immediately) or non-critical (repair at next scheduled maintenance).
- Corrected before the crane is returned to service (for safety-critical items).

11. Training

[COMPANY NAME] shall ensure all personnel involved in crane operations are qualified and trained.

11.1 Operator Training

- All operators shall hold a valid, accredited crane operator certification.
- Familiarization training shall be provided for each specific crane make/model before the operator's first use.
- Annual refresher training on crane safety, load charts, and this program.

11.2 Rigger Training

- All riggers shall meet the qualified rigger criteria per 29 CFR 1926.1404.

- Training shall cover sling selection, load weight estimation, hitch types, rigging hardware inspection, and capacity calculations.

11.3 Signal Person Training

- All signal persons shall be qualified per 29 CFR 1926.1428.
- Training shall cover standard ASME hand signals, radio communication protocols, and positioning.

11.4 Awareness Training

All employees working in or around crane operations shall receive awareness-level training covering:

- Staying clear of the crane's swing radius and overhead loads
- Recognizing and avoiding struck-by hazards
- Power line awareness and clearance distances
- Emergency and evacuation procedures during crane operations

12. Recordkeeping and Documentation

[COMPANY NAME] shall maintain the following crane-related records:

- Operator certification copies (current and valid)
- Daily/shift crane inspection records (Appendix A)
- Monthly, annual, and comprehensive inspection reports
- Lift plans (routine and critical lifts – Appendix B)
- Crane maintenance and repair records
- Training records for operators, riggers, signal persons, and awareness training
- Incident and near-miss investigation reports

Record Type	Retention Period
Daily inspection logs	Minimum 3 months (recommended 1 year)
Monthly inspections	Minimum 1 year
Annual / comprehensive inspections	Life of the crane
Lift plans	Duration of project + 1 year
Operator certifications	Duration of employment + 3 years
Training records	Duration of employment + 3 years
Incident reports	Minimum 5 years

Appendix A: Daily Crane Operator Inspection Checklist

[COMPANY NAME]

Daily / Pre-Shift Crane Inspection Checklist

Date: _____

Crane Make / Model: _____

Crane Serial / Unit Number: _____

Operator Name: _____

Operator Certification #: _____

Project / Site Name: _____

Hours on Meter (start of shift): _____

Mark each item: ✓ = OK X = Deficiency N/A = Not Applicable

Cab / Controls

- ☐ All controls labeled and functioning properly
- ☐ Cab windows clean and unobstructed
- ☐ Seat belt / operator restraint functional
- ☐ Horn / audible warning device working
- ☐ Fire extinguisher present and current inspection
- ☐ Load chart present, legible, and accessible

Safety Devices

- ☐ LMI (Load Moment Indicator) tested and functional
- ☐ Anti-two-block (A2B) device tested and functional
- ☐ Boom angle / length indicator functional
- ☐ Outrigger / stabilizer controls functional
- ☐ Swing brake / lock functional

Structural / Mechanical

- ☐ Boom sections – no visible damage, cracks, or deformation

- ☐ Jib (if applicable) – pins secured, no damage
- ☐ Turntable / swing bearing – no unusual play or noise
- ☐ Hook – safety latch present, no cracks or deformation, free rotation
- ☐ Sheaves – rotate freely, no cracks, rope guards in place

Wire Rope

- ☐ No visible broken wires, kinking, crushing, or bird-caging
- ☐ Properly reeved per load chart
- ☐ End connections secure
- ☐ No excessive wear or corrosion

Hydraulic / Pneumatic

- ☐ No visible leaks (hoses, fittings, cylinders)
- ☐ Hydraulic fluid level adequate
- ☐ Outrigger cylinders and pads in good condition

Carrier / Travel System

- ☐ Engine oil, coolant, and fuel levels adequate
- ☐ Tires / tracks in good condition (pressure, wear, damage)
- ☐ Brakes functional (service and parking)
- ☐ Lights and reflectors working
- ☐ Counterweight secure and as specified

Ground Conditions / Setup

- ☐ Ground firm, level, and adequate for crane loading
- ☐ Outriggers fully extended and set on adequate pads/cribbing
- ☐ Crane level within manufacturer tolerances
- ☐ Swing area clear of obstructions and personnel
- ☐ Power line clearance distances maintained

Deficiencies / Comments

Crane Status: ☐ Fit for Service ☐ Restricted Use (explain) ☐ Out of Service

Crane Operator Signature

Date

Supervisor Acknowledgment

Date

Appendix B: Lift Plan Form

[COMPANY NAME]

Lift Plan Form

☐ Routine Lift ☐ Critical Lift ($\geq 75\%$ capacity, multi-crane, personnel hoist, near power lines)

Date: _____

Project / Site Name: _____

Lift Description: _____

Lift Director / Supervisor: _____

Crane Information

Crane Make / Model: _____

Crane Capacity (max rated): _____

Boom Length / Configuration: _____

Counterweight Configuration: _____

Outrigger Position (fully/partially extended):

Load Information

Load Description: _____

Load Weight (verified): _____

Rigging Weight: _____

Total Lifted Weight (load + rigging + block):

Pick Radius: _____

Set Radius: _____

Maximum Radius During Lift: _____

Crane Capacity at Maximum Radius: _____

Percent of Capacity (%): _____

Lift Environment

Wind Speed at Time of Lift: _____

Maximum Allowable Wind Speed: _____

Power Lines Present? ☐ Yes ☐ No

If Yes, Voltage: _____ Clearance Distance: _____

Ground Conditions: _____

Personnel

Crane Operator: _____

Operator Cert #: _____

Signal Person: _____

Rigger(s): _____

Rigging Plan

Sling Type / Size / Capacity: _____

Hitch Type (vertical, choker, basket): _____

Shackles / Hardware: _____

Spreader Bar / Below Hook Device (if applicable):

Pre-Lift Checklist

- ☐ Load weight verified (bill of lading, calculated, or weighed)
- ☐ Load chart reviewed – adequate capacity confirmed
- ☐ Rigging inspected and rated for load
- ☐ Crane inspected (daily inspection complete)
- ☐ Ground conditions assessed – crane level and stable
- ☐ Swing path clear of obstructions and personnel
- ☐ Power line clearance verified
- ☐ Signal person assigned and in position
- ☐ Tag lines attached

- ☐ Pre-lift meeting conducted with all personnel
- ☐ LMI / A2B systems tested and functional

Special Conditions / Notes

Lift Director / Supervisor

Date

Crane Operator

Date

Safety Manager (Critical Lifts Only)

Date

CRANE SIGNAL PERSON TRAINING

Standard Hand Signals and Communication Requirements

Reference: 29 CFR 1926.1419-1422

FORBES SAFETY SOLUTIONS

KEY STATISTICS

250+

Crane-related deaths in the
U.S. over the past decade

80%

Of crane accidents involve
human error or
miscommunication

100%

Of multi-crane lifts require a
designated signal person

SIGNAL PERSON QUALIFICATIONS & RESPONSIBILITIES

Qualified Signal Person — must be evaluated by a qualified third party or employer per OSHA 1926.1419

Know Standard Signals — must demonstrate proficiency in all standard hand signals before directing crane operations

Clear Line of Sight — signal person must maintain visual contact with operator at all times or use alternative communication

Competent in Load Path — must understand load dynamics, swing radius, and rigging to anticipate movements

Authority to Stop — any signal person can issue STOP and the operator must obey immediately

When Required — signals are mandatory when the operator cannot see the load, landing zone, or the path of travel

STANDARD HAND SIGNALS — OSHA / ASME B30.5

Hoist — forearm vertical, index finger pointing up, move hand in small circles

Lower — arm extended downward, index finger pointing down, move hand in small circles

Swing — arm extended, point with finger in direction of swing of boom

Boom Up — arm extended, fingers closed, thumb pointing upward

Boom Down — arm extended, fingers closed, thumb pointing downward

Stop — arm extended, palm down, move arm back and forth horizontally

Emergency Stop — both arms extended, palms down, move arms back and forth horizontally

Dog Everything — clasp hands in front of body — halt all operations

VOICE & RADIO SIGNALS AND LINE OF SIGHT

Voice / Radio Signals — permitted when hand signals are not practical due to distance, obstructions, or darkness

Dedicated Channel — radio communication must use a dedicated channel free from unrelated traffic

Confirm Before Moving — operator must repeat the signal back and receive confirmation before executing the movement

Line of Sight Required — if the signal person loses sight of the load or operator, all operations must stop immediately

Multiple Signal Persons — only one designated signal person directs at a time; transfer of duties must be clearly communicated

Signal Person Positioning — must stand in a safe location visible to the operator and clear of the swing radius and load path

KNOWLEDGE CHECK

What hand signal requires BOTH arms extended, palms down, moving back and forth?

- A) Stop
- B) Dog Everything
- C) Emergency Stop
- D) Boom Down

Answer: C) Emergency Stop — both arms distinguish it from a regular stop (one arm).

CRANE SIGNAL PERSON TRAINING — SIGN-OFF

All attendees must print and sign below to confirm understanding of this topic.

#	PRINT NAME	SIGNATURE	DATE
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Rigging Safety Fundamentals

Ref: 29 CFR 1926.251 — Rigging Equipment for Material Handling

[Company Name]

[Date]

WHY THIS MATTERS

50+

Workers killed annually in
crane and rigging-related
incidents in construction

#1

Cause of rigging fatalities:
being struck by a falling load
due to rigging failure

60°

At a 60° sling angle, capacity is
only 87% of rated — angle
always affects capacity

Sling Types & Selection

SLING TYPES

- Wire Rope: high strength, good for heavy loads, heat-resistant, but inspect for broken wires and kinks
- Synthetic Web: lightweight, won't mar loads, wide bearing surface — avoid near heat, chemicals, sharp edges
- Alloy Steel Chain: excellent for high-heat and abrasive environments, durable — heavy to handle
- Synthetic Round Slings: flexible, lightweight, protect load finish — vulnerable to cuts and UV damage

HITCH CONFIGURATIONS

- Vertical Hitch: single leg, straight pull — 100% of rated capacity
- Choker Hitch: sling wraps around load and through itself — 75% of rated capacity
- Basket Hitch: sling cradles the load with both ends on hook — up to 200% of rated capacity (with balanced load at 90°)
- Always verify hitch type matches the load shape, center of gravity, and weight

Sling Angle Capacity Chart

Sling Angle	Capacity Factor	Example: 10,000 lb Rated Sling
90° (vertical)	100%	10,000 lbs
60°	87%	8,700 lbs
45°	71%	7,100 lbs
30°	50%	5,000 lbs
Below 30°	DO NOT USE	Sling stress exceeds safe limits
—	Rule	Never use slings at angles below 30° from horizontal

Inspection, Signals & Safe Practices

SLING INSPECTION — REMOVE FROM SERVICE

- Wire rope: 6+ broken wires in one lay, kinking, crushing, bird-caging, corrosion, heat damage
- Synthetic web: cuts, tears, snags, acid/chemical burns, melting, excessive wear, missing labels
- Chain: stretched or bent links, cracks, gouges, excessive wear (10%+ reduction)
- All slings: missing or unreadable capacity tags, prior unauthorized modifications

SAFE RIGGING PRACTICES

- Know the load weight — never guess; check shipping docs, calculate, or use a scale
- Use tag lines to control load movement — never guide loads by hand
- Learn standard hand signals; use a qualified signal person
- NEVER stand under a suspended load — the #1 rigging safety rule
- Inspect all rigging equipment before each shift

QUIZ / DISCUSSION

1

What is the capacity factor of a sling used at a 45-degree angle?

Answer: 71% of the sling's rated capacity. A sling rated at 10,000 lbs can only safely lift 7,100 lbs at a 45° angle.

2

Name two conditions that require a wire rope sling to be removed from service.

Answer: Any two of: six or more broken wires in one lay, kinking, crushing, bird-caging, corrosion, heat damage, or a missing/unreadable capacity tag.

3

What is the single most important rule in rigging safety?

Answer: Never stand under a suspended load. If the rigging fails or the load shifts, anyone underneath is at risk of fatal injury.

ATTENDANCE SIGN-OFF

Rigging Safety Fundamentals

#	Print Name	Signature	Company	Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

By signing above, I confirm that I attended this toolbox talk and understand the material presented.