



Capital Programs & Environmental Affairs Crane Operations Review & Evaluation Program

PURPOSE

This program outlines Massport's requirements for control, inspection and operation of Contractor cranes and other hoisting equipment. The Crane Operations Review & Evaluation form that follows is intended to be used for the pre-planning of any cranes or hoisting machinery being used on property under Massport's jurisdiction. This procedure does not relieve any contractor or crane operator of their responsibility to comply with OSHA crane standards or other provisions of Industry Standards.

REQUIREMENTS

The following documents will be required before any determination can be made for a crane operation on Massport Property, see the sections below for details on what is required for each document:

- Work plan
- The Crane Operations Review & Evaluation form
- Pre-lift meeting
- FAA Form 7460 final determination to be submitted in this package

WORK PLAN

A MPA work plan is required to accompany this form with the following information:

- Detailed description of work proposed
- Sequence of operations
- Impacts to airport operations
- Potential hazards
- Diagrams of the lift that provides geometrical conditions of the load, rigging, and all crane positions during the lift. The drawing shall provide the following:
 - Safety Zone.
 - Equipment on site that will assist the lift and all other adjacent equipment
 - Locations of all components to be lifted prior, during and after the lift are completed.
 - Radius points with the pick points and set points.
 - In the event that the lift must be aborted, positions where the load may be safely landed.
 - Areas where any personnel, public, and vehicles must be evacuated during the lift and identify any access ways and doors that will be affected during the operation.
- Impact on environment
- Load handling equipment

- Rigging diagram
- Lift Plan Check list
- Identify any impairments caused due to this operation including but not limited to:
 - Door restrictions
 - Access ways and walk walks
 - MEP Systems
 - Tenant spaces
- List any restrictions that are necessary because of weather limitations, time of day and/or temperature restrictions
- List any Temporary Traffic Controls
- Emergency Contact list

THE CRANE OPERATIONS REVIEW & EVALUATION FORM

This form is used to obtain the required information regarding the crane operation and load handling. This form is to be filled out entirely and signed by the appropriate parties. The form will include at least the following information:

- Information about the contractor and subcontractor
- Exact location and description of the work. This is to supplement the description required in the work plan.
- Crane logistics and scheduling
- Lift plan (see below for additional information required under each type of lift plan)
- Notifications
- Additional Notes or Special Conditions

See blank form attached

LIFT PLANS

Crane lifts will be categorized under the following categories; Critical Lifts, General Lifts, & Production Lifts. Select the lift plan that supports the type of pick required and submit the following information for the crane lift category specified.

Critical Lifts

A critical lift is defined by any lift utilizing multiple cranes, the weight of the equipment to be lifted as compared to the allowable lift, the swing area of the lift, the overall risk, difficulty or complexity of the lift, toxicity of the product being lifted and other considerations at the discretion of Massport.

Critical Lift Plan

Where a critical lift will be performed, a written critical lift plan shall be submitted to Massport prior to commencing with the lift. The written plan shall include the following:

- 1) Load chart data for the crane to be used to make the lift.
- 2) Total calculated weight of the load to be lifted including all rigging and other deductions consistent with the manufacturer's load chart. Include a detailed rigging diagram.
- 3) Soil and subsurface data and information pertaining to the location on which the crane used for the critical lift will be positioned. This information shall be procured from an authoritative source such as a geotechnical engineer or a professional civil engineer registered in Massachusetts.
- 4) An engineer shall use the data provided in #3 above to verify and confirm the following:
 - a) That the soil and subsurface conditions are capable of supporting all loads imposed during the critical lift.
 - b) That the designs of cribbing and other supports used under the crane load points are appropriate to safely transfer such loads

- 5) The following roles shall be defined and assigned:
 - a) Crane assembly director
 - b) Lift director
 - c) Rigging director
 - d) Site Supervisor
 - e) Signal Person
- 6) Signature and stamp on the plan by a registered professional engineer licensed in Massachusetts, evidencing review of the plan as meeting the requirements set forth in this manual and that all loads and load information and calculations contained in the plan are approved, acceptable and safe to perform.
- 7) Method by which communication will be provided to the crane operator. (Designated signal person, two-way radio, hard wire phone system, etc.)
- 8) A critical lift hazard analysis which identifies the particular hazards associated with the lift and the means and methods to reduce, mitigate, or eliminate the hazards.
- 9) list any restrictions that are necessary because of weather limitations, time of day and/or temperature restrictions
- 10) Emergency action plan.

The written plan shall be submitted 10 business days prior to any critical lift for review by Massport. No critical lifts shall be conducted prior to such review.

General Lift Plan

Lifts that are neither Critical nor Production fall in this category. For example, the unloading of miscellaneous supplies or the delivery of lumber to a carpenter crew are general lifts.

The general lift plan should:

- List any restrictions that are necessary because of weather limitations, time of day and/or temperature restrictions;
- Require that the weight of the load be known;
- Give a description of the general arrangement and use of rigging equipment
- Outline the procedures used to assure that rigging equipment has been inspected properly;
- Require that there be a lift director in charge of each lift.
- A signal person shall be assigned and clearly identified as such to the operator. If multiple signal persons are required, a thorough briefing on the sequential communication with the crane operator is required.

The General Lift Plan shall be submitted with the work plan.

Production Lift Plan

Production lifts are repetitive and do not fall into the classification of a critical lift. Production lifts may all be covered by one lift plan that outlines the parameters and the equipment to be utilized as well as the procedures.

The production lift plan is an extension of the general lift plan and should:

- contain a physical description of the class or group of items to be repetitively lifted including size, shape, weight and center of gravity. The description for a class or group must include the most adverse properties for crane operation such as the heaviest or largest that will occur in the class;
- List operational factors such as lifting and swing speeds, and the travel path;
- address hazards from failure of the rigging and/or collision. A hazard evaluation should be performed in order to identify and eliminate these potential hazards. Hazards associated with lifting over personnel and congested areas should be eliminated by either controlling access to the area or by changing the path of the lifting operation;
- List specific restrictions over and above those for the general lift plan that are necessary because of weather limitations, time of day and/or temperature restrictions;
- identify the specific type and minimum capacity of the lifting equipment required.
- identify the specific arrangement of rigging equipment;

- identify any special rigging fixtures which might be required. The fixtures should be designed in accordance with applicable regulations and standards;
- require that rigging and lifting equipment be subject to specified inspection intervals and that a documented trail of the history of inspections and/or certifications be maintained;
- require that a designated leader of the rigging crew be appointed. This leader may be a foreman of the Service Provider or other party specifically designated to perform the leadership functions needed by the rigging crew.

The Production Lift Plan shall be submitted with the work plan.

PRE-LIFT MEETING

After all of the above information has been submitted and reviewed by Massport a Pre-Lift meeting will be held. This meeting is intended to review the crane package with all of the appropriate parties to go over final coordination and logistic issues. At minimum the following should be in attendance:

- Crane assembly director
- Lift director
- Crane Company Representative
- GC Representative
- MPA PM
- MPA RE

ALL APPLICABLE SECTIONS OF THE FORM THAT FOLLOWS MUST BE COMPLETED PRIOR TO WORK COMMENCING. IF REQUIRED SECTIONS ARE LEFT BLANK OR ARE INCOMPLETE MASSPORT WILL NOT REVIEW THE PLAN.


DAILY OPERATIONAL PROCEDURE

Once all of the above information has been submitted, reviewed and Massport has found the crane submission acceptable the following will be the procedure for the daily crane operation.

- Once a crane is on site the Resident Engineer must call Massport operations at 617-561-1919 to give the operator the coordinates of the crane location and the ASN number (if applicable) from the FAA 7460.
- When the crane is ready to boom up and begin work the onsite Resident Engineer will call "PORT 25" and Clearly indicate the Following to get permission to boom up the crane:
 - Crane Location
 - Boom Height
 - Flag and Beacon
 - What time the operation will go until
 - Indicate the lat/long have been given to operations.
- The resident engineer as well as the crane supervisor or the competent person supervising the crane picks will be required to monitor the Massport Operations radio at all times. Weather, Runway Configurations or Emergencies may require the crane to boom down immediately.
- At the end of the work shift the Resident Engineer will call "PORT 25" to indicate that the crane has boomed down.

DEFINITIONS

1. **Crane:** A Crane is a lever and the simple principles of movement apply. The weight of the load, times the distance from the fulcrum, is the overturning moment.

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3. **Outrigger:** Extendable or fixed members attached to the mounting base that rest on supports at the outer ends used to support the crane.
 4. **Qualified Person:** One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience has successfully demonstrated ability to solve or resolve problem relating to the subject matter, the work, or the project. (OSHA definition)
 5. **Radius:** The horizontal distance between the centerline of rotation and the center of gravity of a suspended load.
 6. **Rated Capacity:** The maximum allowable lift for the crane. A crane can safely operate at rated capacity **only** when operating at the minimum lifting radius which is the horizontal distance from the center of the rotation of the crane to the center of gravity of the load; with minimum boom length. In the industry the size of the crane is commonly referred to as the rated capacity
 7. **Lift Director:** Responsible for each lift or series of lifts on a jobsite. Ensures compliance with crane safety plan and appropriate lift plan.
 8. **Assembly Director:** Responsible for assembly of the crane. Ensures compliance with crane safety plan and appropriate lift plan
 9. **Safety Coordinator:** Coordinates **all** crane activities and control operations on the site. Only one safety coordinator on a job site. Safety Coordinator may be responsible for multiple Lift Directors.



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CRANE OPERATIONS REVIEW AND EVALUATION FORM

Section 1.0: General Information

Reference Work Plan No.

Project Name:

MPA/TAA Contract Number:

<input type="text"/>	<input type="text"/>
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Project Contact Information:

<input type="checkbox"/> General Contractor	<input type="checkbox"/> Construction Manager	<input type="checkbox"/> Tenant
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Company Name	Contact Name	Title	24- Hour Emergency Phone Number

Subcontractor Performing Work:

Company Name	Contact Name	Title	24- Hour Emergency Phone Number

Section 2.0: Description of Work

Provide a brief description of work to supplement the work plan description:



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CRANE OPERATIONS REVIEW AND EVALUATION FORM

Section 3.0: Crane Logistics and Scheduling

Crane Company	Contact Name	Phone Number

Manufacturer	Model	Type	Maximum Capacity

What is the FAA 7460 ASN# (include determination)	
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Coordinates of the Point where the crane will be set up or description of location (Include drawing)		
Latitude	Longitude	Elevation
Building #/Terminal/Runway/Taxiway	Distance from Nearest Runway	
Location:		

What is the anticipated operational height that the crane will be working at?	
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Crane Usage:

One Day Use			
Date:	Day:	Start Time:	End Time:
Reoccurring or Continuous Use			
Start Date:	End Date:	Daily Start Time:	Daily End Time:

Crane Placement & Considerations:

Adequate support & degree of level?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Soil bearing capacity verified?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Mat, plates, cribbing required?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Subsurface Encumbrance? (Utilities, Tunnels)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
High voltage or electrical hazards?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Obstacles or obstructions to lift or swing?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Travel with load required?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Weather/environmental restrictions?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Signals used? (Hand, voice, radio)		



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CRANE OPERATIONS REVIEW AND EVALUATION FORM

Crane Type:

Identify the Type of Crane. The following documentation must be submitted for approval prior to crane use.

Tower Crane	<input type="checkbox"/>
Lattice/Friction Crane	<input type="checkbox"/>
Mobile Hydraulic Crane	<input type="checkbox"/>
Truck Mounted Crane	<input type="checkbox"/>
Other type of Hoisting Equipment	<input type="checkbox"/>

Documentation:

The following documentation must be submitted for review prior to crane use.

Lift Plan Category

CRITICAL / GENERAL / PRODUCTION

Crane Operators License	<input type="checkbox"/>	Crane Operators OSHA 10 hour card	<input type="checkbox"/>
Crane Operators Medical Certificate	<input type="checkbox"/>	Annual 3 rd party Inspection	<input type="checkbox"/>
Valid Insurance Certificate with Massport Named as Additional Insured	<input type="checkbox"/>	3 rd Party Post-Assembly Inspection **Required for all cranes assembled onsite**	<input type="checkbox"/>
FAA 7460 Notification	<input type="checkbox"/>	Approved Lift Plan	<input type="checkbox"/>
FAA Flag & Beacon	<input type="checkbox"/>	Load Chart	<input type="checkbox"/>
Assembly Supervisors Training Documentation	<input type="checkbox"/>	Signalman Training Documentation	<input type="checkbox"/>
Qualified Rigger Training Documentation	<input type="checkbox"/>	Daily Inspection Form Maintained on File	<input type="checkbox"/>
Foundation Plan – PE Stamp Required	<input type="checkbox"/>	Spill Kit Onsite	<input type="checkbox"/>

Please describe what the crane activity (type of load, purpose for pick, etc):

If NO, the crane contractor must get authorization to proceed from the MPA Representative and the GC/CM/Tenant.

GC/CM/Tenant Supervisor

Name:

Signature:

Date:

MPA Representative

Name:

Signature:

Date:

Section 4.0: Lift Plan Check List



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CRANE OPERATIONS REVIEW AND EVALUATION FORM

<u>Crane Information</u>		<u>Rigging Information</u>	
Manufacturer:		Sling Type and Size:	
Model:		Number of Slings:	
Type:		Hitch Type/Connection:	
Maximum Capacity:		Sling Rated Capacity:	
Radius @ Pickup:	Ft	Weight of Slings:	lbs
Maximum Capacity @ Radius:	lbs	Shackle Type & Size:	
Maximum Expected Load:	lbs	Number of Shackles:	
Percentage of Crane Capacity	%	Shackle Rated Capacity:	
		Weight of Shackles:	lbs
Maximum Expected Load		Lifting Beam Capacity: lbs	
Weight of Load-Empty	lbs	Weight of Lifting Beam:	lbs
Weight of Contents: (if any)	lbs	Total Weight of Rigging:	lbs
Weight of Main Block:	lbs		
Weight of Aux Block:	lbs	Hoist Rope Information	
Weight of Lift Beam:(if any)	lbs	Rope Diameter:	in
Weight of Rigging Equipment:	lbs	Number of Parts x Length:	x ft
Weight of Hoist rope:	lbs	Capacity based on Parts:	lbs
Weight of Jib:	lbs	Weight of Hoist Rope:	lbs
Other:	lbs		
Maximum Expected Load	lbs		

Section 5.0: Notifications



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CRANE OPERATIONS REVIEW AND EVALUATION FORM

<input type="checkbox"/>	Capital Programs Review Required	<input type="checkbox"/>	Advisory Required
<input type="checkbox"/>	Operations (Port 25 -617-561-1919	<input type="checkbox"/>	Facilities (Facilities 1 617-561-1964)
<input type="checkbox"/>	State Police (617-569-7300)	<input type="checkbox"/>	Fire & Rescue (617-568-2020)
<input type="checkbox"/>	Tenant	<input type="checkbox"/>	Other:

Section 6.0: Additional Notes or Special Conditions