High Risk Construction Oversight Study (HRCO) Implementation

Crane Industry Meeting

March 18, 2010

Overview

Cranes

Foundations

1) "Foundation Only" Acceptance
2) Anchor Stool Placement
3) Anchor Stool Usage
4) Special Inspection
5) Foundation should be kept free of debris, water and other loads

Tie-Ins

1) Building Engineer Review of loads imposed
2) Climbing Schedule and Tie-in Submittal
3) Special Inspection
4) Fastener Tightening (foundation slabs and tie-ins)
5) Releasing Tie-ins during high wind conditions

Overview

Cranes

Special Inspector Qualifications

1) Concrete buildings
2) Steel buildings

Load Test

1) Line pull test on all gears unless OEM recommends otherwise (pre-programmed)
2) Moment test at corresponding radii except if crane is de-rated below the moment curve.
3) Check limit and pre-limit switches
4) Use certified scale or certified weights
5) Post climb functional test

Overview

Cranes

Counterweights

1) EOR to include counterweight value and configuration in Certificate of On-Site.

2) Counterweight markings should be as large as possible.

3) Concrete counterweights must be protected against chipping or spalling. For example, they should be framed in steel or coated with an epoxy.

4) Moveable counterweight mechanism should be maintained in good working order.

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Foundation Recommendations

Cranes

Foundations

1) Pre-Pour Acceptance
2) Anchor Stool Placement Alternative
3) Anchor Stool Usage
4) Special Inspection
5) Foundation pit should be kept free of debris, water and other loads

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Foundation Recommendations

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Foundations

1) Pre-Pour Acceptance
    a) EOR submits a “Foundation Only” CD-4
    b) Specific crane model required.
    c) Foundation design calculations required
    d) EOR to note all potential underground issues
    e) DOB will accept submittal not approve
    f) Discuss C/N expiration for “foundation only”

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Foundation Recommendations

NYC Buildings

Cranes

Foundations

2) Anchor Stool Placement Alternatives

a) Use first tower mast section as template

b) Use a rigid template pursuant to B30.3

c) Rock anchors should undergo a pull test

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Foundation Recommendations

Cranes

Foundations

3) Anchor Stool Usage

a) Use only new OEM anchor stools

b) Anchor stools to have unique markings

c) Special inspection required non-OEM stools

d) Clarify definition of reusable embedded components

e) Special inspection required re-used components

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Foundation Recommendations

Cranes

Foundations

4) Special Inspection Report

a) Concrete

b) Steel

c) Results from the concrete testing laboratory are sent to DOB for comparison to the design criteria.

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Foundation Recommendations

Cranes

Foundations

5) Foundation should be kept free of debris, water and other loads

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Tie-In Recommendations

Cranes

Tie-Ins

1) Building Engineer Review loads imposed
2) Climbing Schedule and Tie-in Submittal
3) Special Inspection
4) Fastener Torquing (foundation slabs and tie-ins)
5) Releasing Tie-ins during high wind conditions

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Tie-In Recommendations

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Tie-Ins

1) Building Engineer Acknowledgment
   a) Concrete
   b) Steel
   c) Existing Buildings

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Tie-In Recommendations

NYC Buildings

Cranes

Tie-Ins

2) Climbing Schedule and Tie-in Submittal

Submittal of the complete tie-in schedule should be submitted with the initial application (pre-planning)

b) Amendments will be allowed.

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Tie-In Recommendations

Cranes

Tie-Ins

3) Special Inspection Report
   a) Concrete
   b) Steel
   c) Concrete testing laboratory results sent to DOB

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Tie-In Recommendations

Cranes

Tie-Ins

4) Fastener Torquing (foundation slabs and tie-ins)
   a) Bolted connections tightened according to the manufacturer or PE specifications
   b) Applies primarily to friction connections
   c) Further points on other bolted connection at next meeting

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Tie-In Recommendations

Cranes

Tie-Ins

5) Releasing Tie-ins during high wind conditions

The main issue is that there are NOT enough Master and Tower Crane Riggers in NYC to release ties in case of high wind conditions.

EOR should also include the location of the climbing frame when not in use on the CN application.

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Special Inspector Recommendations

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Special Inspector Qualifications

1) Concrete Buildings pursuant to §101-06 of Title 1

2) Steel Buildings pursuant to §101-06 of Title 1

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Special Inspector Recommendations

Cranes

Special Inspector Qualifications

1) Concrete Buildings

a) Primary inspector is a PE with 1 year related experience.

b) Supplemental inspector works under the direction of a PE and has at least one of the following qualifications:

i) ACI Cert as concrete construction specialist inspector

ii) ICC Cert as Concrete Special Inspector

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Special Inspector Recommendations

NYC Buildings

Cranes

Special Inspector Qualifications

2) Steel Buildings

a) Primary inspector must have the following qualifications:

i) PE – Civil/Structural, and

ii) ICC Certification as a Structural Steel and Bolting Inspector, and

iii) 1 year relevant experience.

b) A supplemental Inspector must:

i) work under the direct supervision of the Primary

ii) ICC Certification as a Structural Steel and Bolting Inspector, and

iii) 3 years relevant experience

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Load Test Recommendations

Cranes

Load Test

1) The EOR will submit the load test procedure with the initial full CN application.
2) Line pull test on all gears unless OEM recommends otherwise (pre-programmed)
3) Moment test at corresponding radii except if crane is de-rated below the moment curve.
4) Check limit and pre-limit switches
5) Use certified scale or weights
6) Post climb functional test with or without a load

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Counterweight Recommendations

NYC Buildings

Cranes

Counterweights

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2) Counterweight markings should be as large as possible.

3) Concrete counterweights must be protected against chipping or spalling. For example, they should be framed in steel or coated with an epoxy.

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Thank You for your valuable input