

**High Risk Construction
Oversight Study (HRCO)
Implementation
Crane Industry Meeting
May 18, 2010**



Industry Meeting – May 18, 2010

Overview



Bolted Connections



Component Tracking

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Bolted Connections - Observations

- Found loose bolts on tower crane mast sections and tie-ins
- Observed bolted connections where the fastener did not have markings
- Witnessed fasteners that were not properly maintained
- Unsure of the process of various owners to ensure the reusable fasteners were visually inspected prior to installation / reuse
- Fasteners are not routinely checked for flaws using non-destructive testing means

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Bolted Connections - Observations

Loose bolt observations

Type	Loose Bolt Occurrences	Cranes Investigated
Tie-in Friction connection	3	11
Foundations	4	16
Mast Sections	6	16

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Bolted Connections - Observations

Markings missing or difficult to read



Markings hard to read due to corrosion

Bolt had marking
but nut did not



No markings

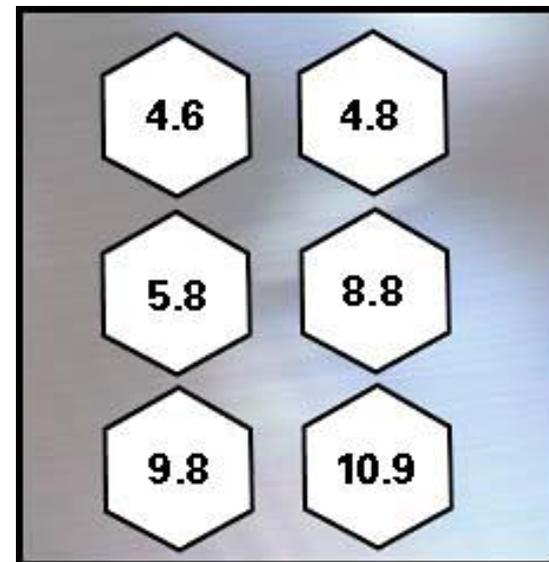
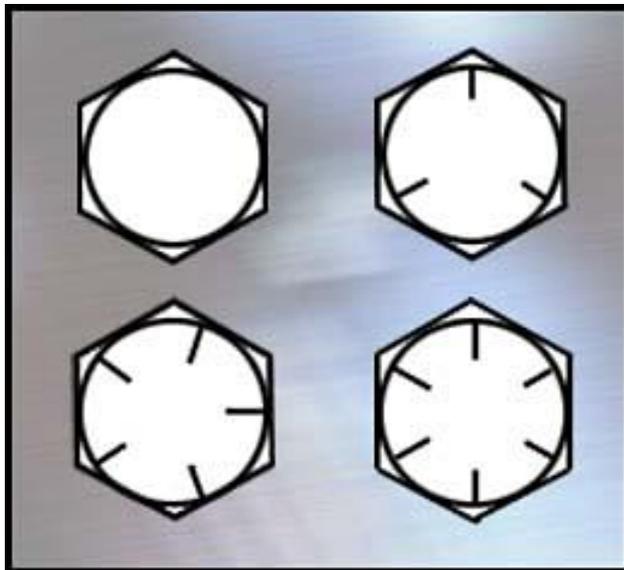
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Bolted Connections - Observations

Examples of bolt markings



Typical bolt markings



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Bolted Connections - Observations

Fasteners not maintained properly



- 1) Bolt Markings
- 2) Visually inspect and properly lubricate reusable fasteners
- 3) Non-destructive testing of reusable bolts
- 4) Mobile Crane owner must have in their possession bolt tensioning and torque values as well as lubrication procedures available to maintenance personnel to perform the work
- 5) Bolted connection maintenance and inspection procedures to be disseminated to maintenance staff and included with maintenance logs

1) Bolt Markings

- Bolts and nuts on structural components shall bear stamps or markings
- All bolts within one connection shall be the same
- Fasteners to be installed in a manner that allows visual auditing or as per OEM specifications

- 2) Visually inspect and properly lubricate reusable fasteners

- 3) Non-destructive testing of reusable bolts
 - All reusable load bearing bolts for specified components must undergo a non-destructive test prior to reinstallation. The test results are to be part of the annual inspection.
 - The bolts on the following components require NDT: Turntable, Tower and boom sections, “A” frames and crane tower tops, foundations and tie-ins. **Frequency must be addressed**

- 4) Mobile Crane owner must have bolt tensioning and torque values as well as lubrication procedures available to mechanics to perform the work
- 5) Bolted connection maintenance and inspection procedures to be disseminated to maintenance staff and included with maintenance logs
 - If a loose bolt is found, the OEM should be contacted immediately to seek further instructions. This call and response would be included in the maintenance log
 - Should a high strength fastener require replacement, the substitution shall be approved or purchased by/from the OEM. The substitution shall be noted in the crane maintenance log.

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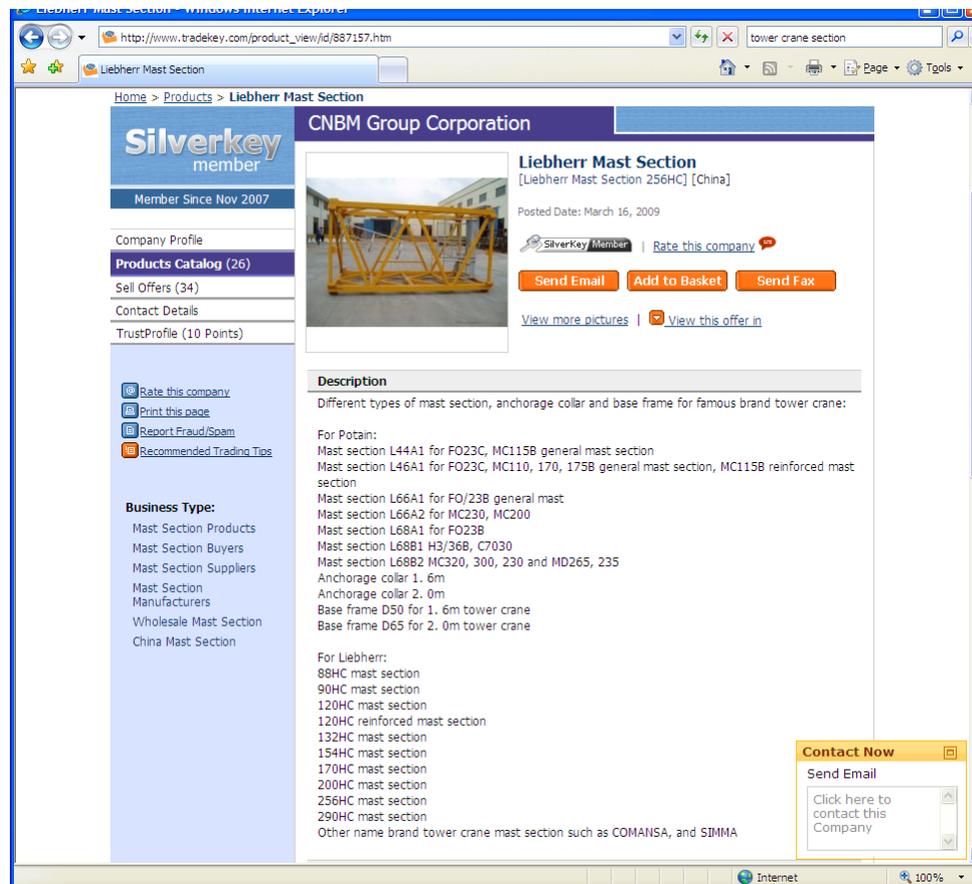
Component Tracking - Observations

- A concern of the manufacturers is that other companies are selling inferior quality components as OEM parts.
- NYC requires that mast and boom sections undergo non destructive testing for the annual inspection.
- Many crane owners are presently using unique identifiers for mast and boom sections
- Other jurisdictions have expressed interest in component tracking and some already required it.
- Limited means to track a component that has been in an accident or incident

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Component Tracking - Observations

Example of a company selling non authorized OEM parts



The screenshot shows a web browser window displaying a product page for 'Liebherr Mast Section' on the trade website TradeKey. The page is for CNBM Group Corporation, a SilverKey member since November 2007. The product is identified as 'Liebherr Mast Section [Liebherr Mast Section 256HC] [China]' and was posted on March 16, 2009. The page includes a photo of a yellow tower crane mast section, a 'Description' section listing various part numbers for different crane models (Potain and Liebherr), and a 'Contact Now' button. The description lists parts for Potain (L44A1, L46A1, L66A1, L68A1, L68B1, L68B2) and Liebherr (88HC, 90HC, 120HC, 120HC reinforced, 132HC, 154HC, 170HC, 200HC, 256HC, 290HC) mast sections, as well as anchorage collars and base frames. A 'Contact Now' pop-up window is visible in the bottom right corner, containing a 'Send Email' button and a text field with the placeholder 'Click here to contact this Company'.

Home > Products > Liebherr Mast Section

Silverkey member
Member Since Nov 2007

Company Profile
Products Catalog (26)
Sell Offers (34)
Contact Details
TrustProfile (10 Points)

[Rate this company](#)
[Print this page](#)
[Report Fraud/Spam](#)
[Recommended Trading Tips](#)

Business Type:
Mast Section Products
Mast Section Buyers
Mast Section Suppliers
Mast Section Manufacturers
Wholesale Mast Section
China Mast Section

CNBM Group Corporation

Liebherr Mast Section
[Liebherr Mast Section 256HC] [China]

Posted Date: March 16, 2009

[Send Email](#) [Add to Basket](#) [Send Fax](#)

[View more pictures](#) | [View this offer in](#)

Description

Different types of mast section, anchorage collar and base frame for famous brand tower crane:

For Potain:
Mast section L44A1 for FQ23C, MC115B general mast section
Mast section L46A1 for FQ23C, MC110, 170, 175B general mast section, MC115B reinforced mast section
Mast section L66A1 for FQ/23B general mast
Mast section L66A2 for MC230, MC200
Mast section L68A1 for FQ23B
Mast section L68B1 H3/368, C7030
Mast section L68B2 MC320, 300, 230 and MD265, 235
Anchorage collar 1. 6m
Anchorage collar 2. 0m
Base frame D50 for 1. 6m tower crane
Base frame D65 for 2. 0m tower crane

For Liebherr:
88HC mast section
90HC mast section
120HC mast section
120HC reinforced mast section
132HC mast section
154HC mast section
170HC mast section
200HC mast section
256HC mast section
290HC mast section
Other name brand tower crane mast section such as COMANSA, and SJMMA

Contact Now

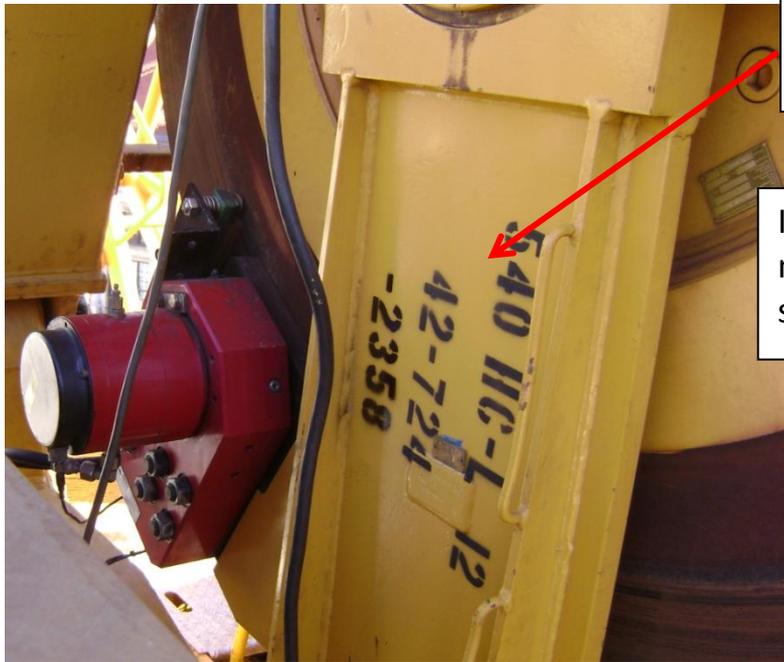
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Click here to contact this Company

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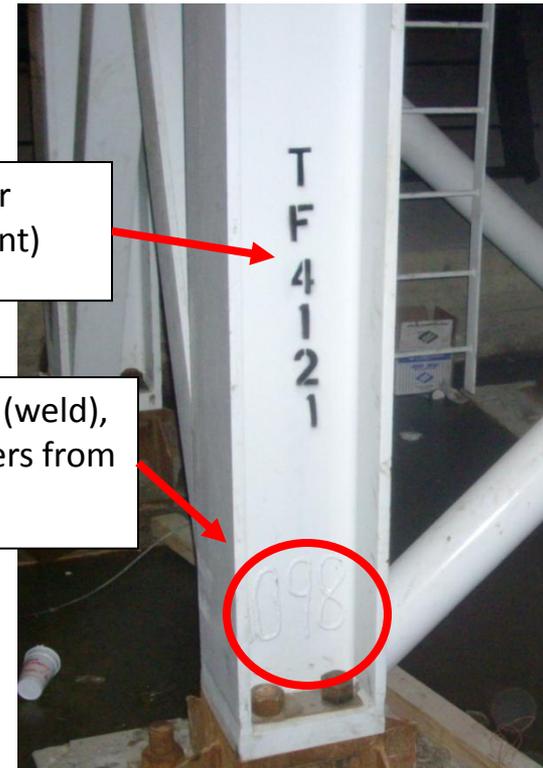
Component Tracking - Observations

Examples of numbering on cranes



ID by crane owner
(stencil, spray paint)

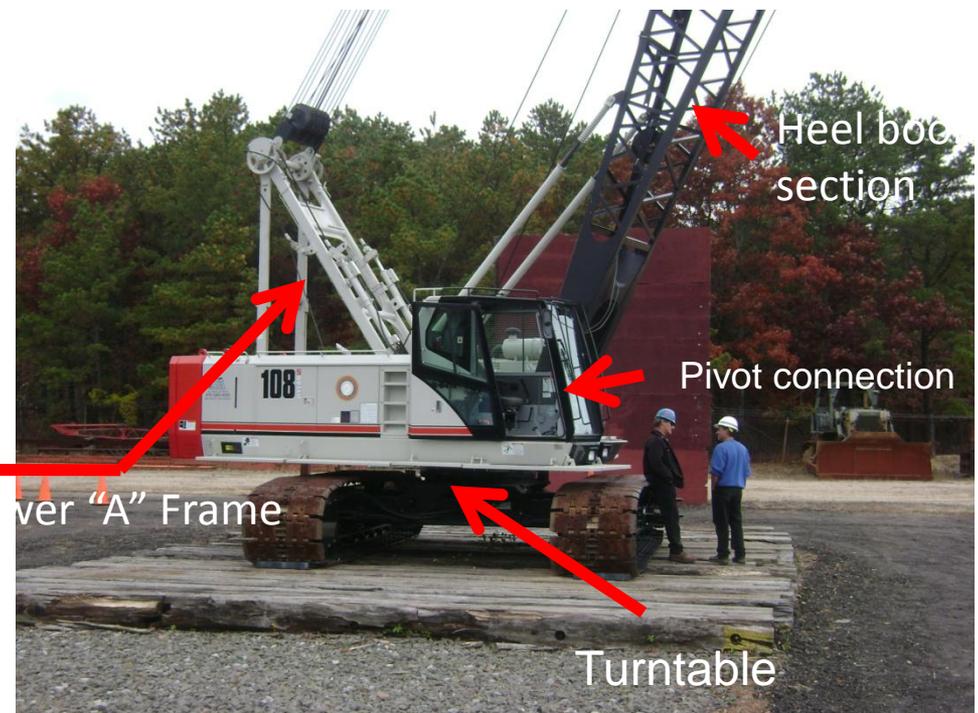
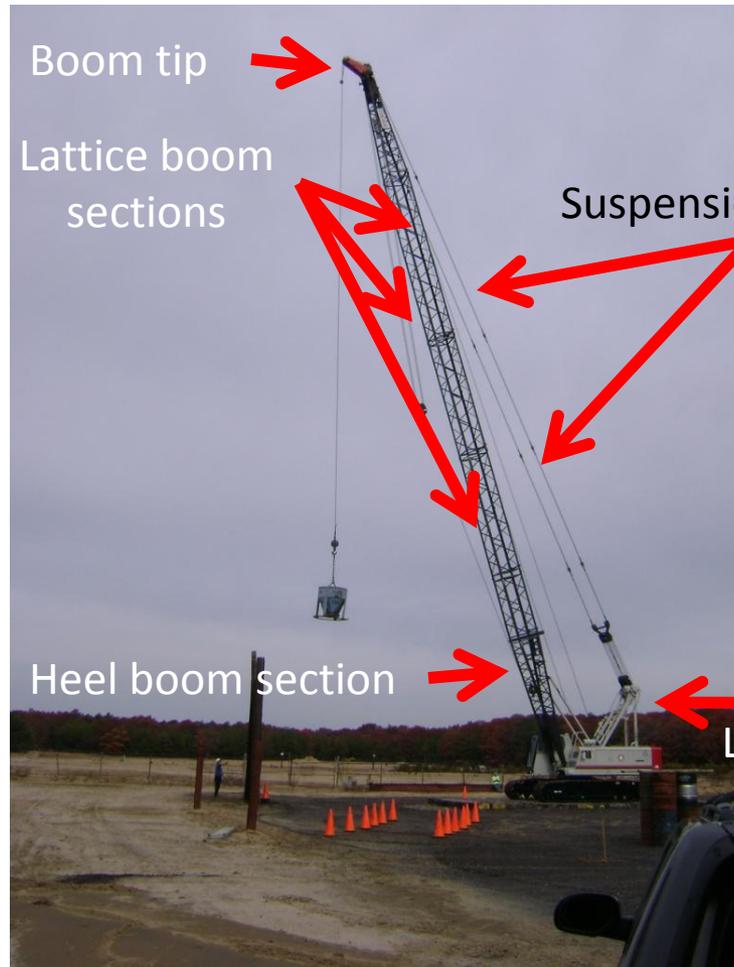
ID by crane owner, (weld),
number "098" differs from
stencil



- 1) Identify critical components to track
- 2) A unique identification number should be permanently affixed to each component.
- 3) Require the components being tracked to undergo a non destructive test before re-use. **Frequency and method(s) must be discussed and DOB will send out a survey to owners seeking feedback and their current possesses.**

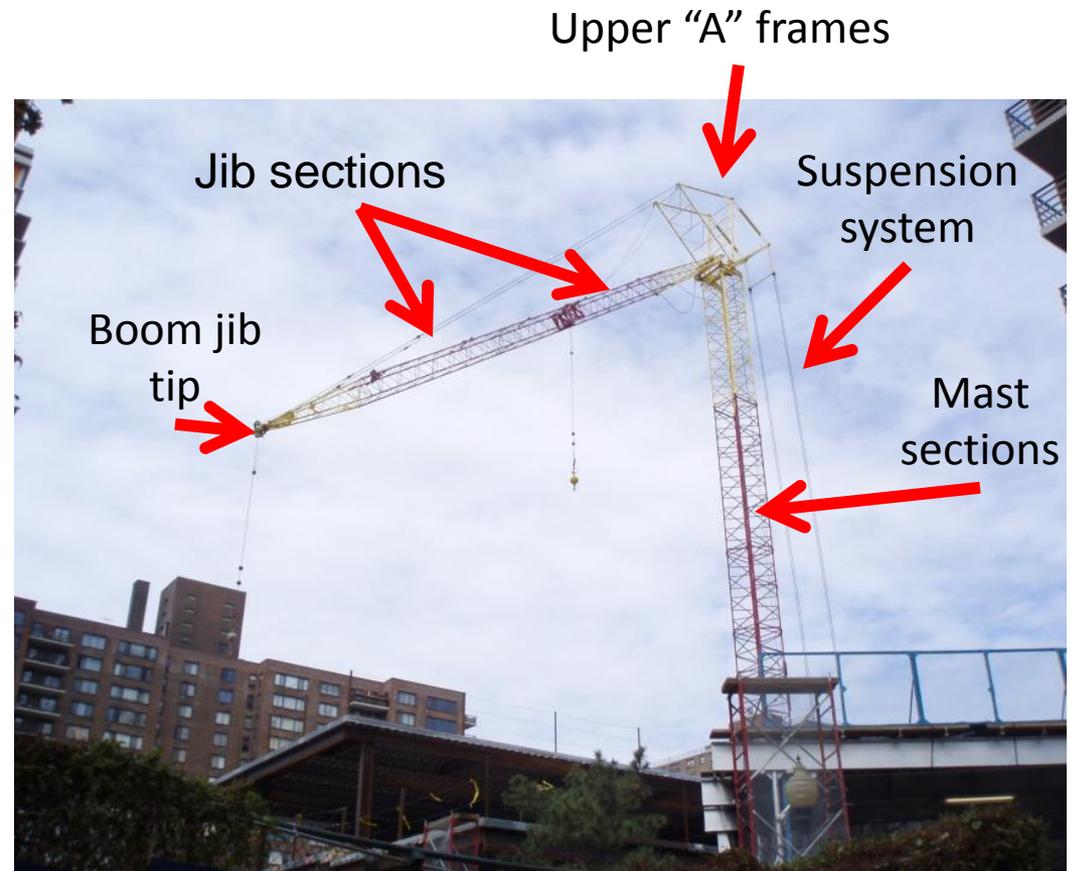
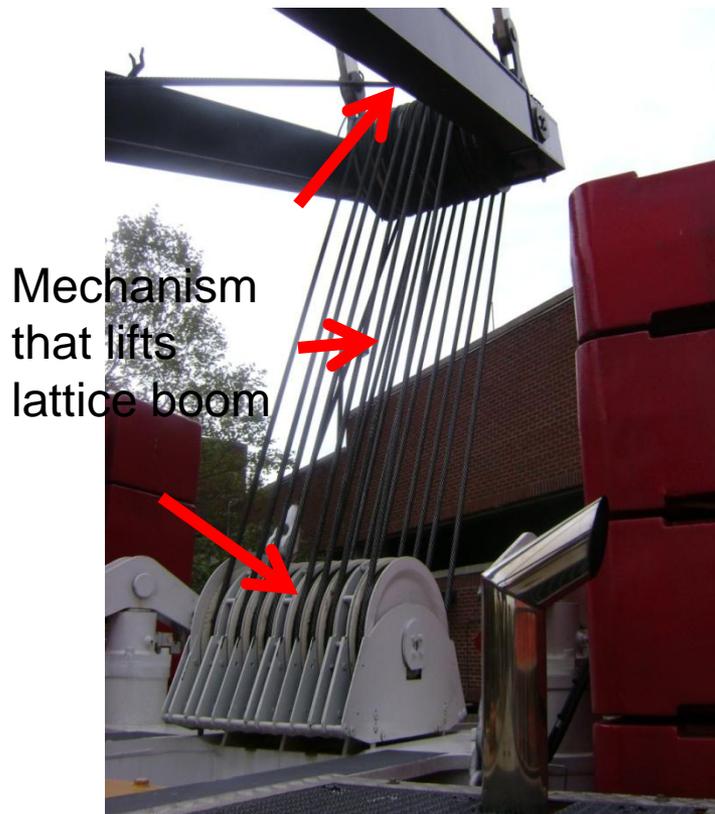
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Part 2 – Critical Components



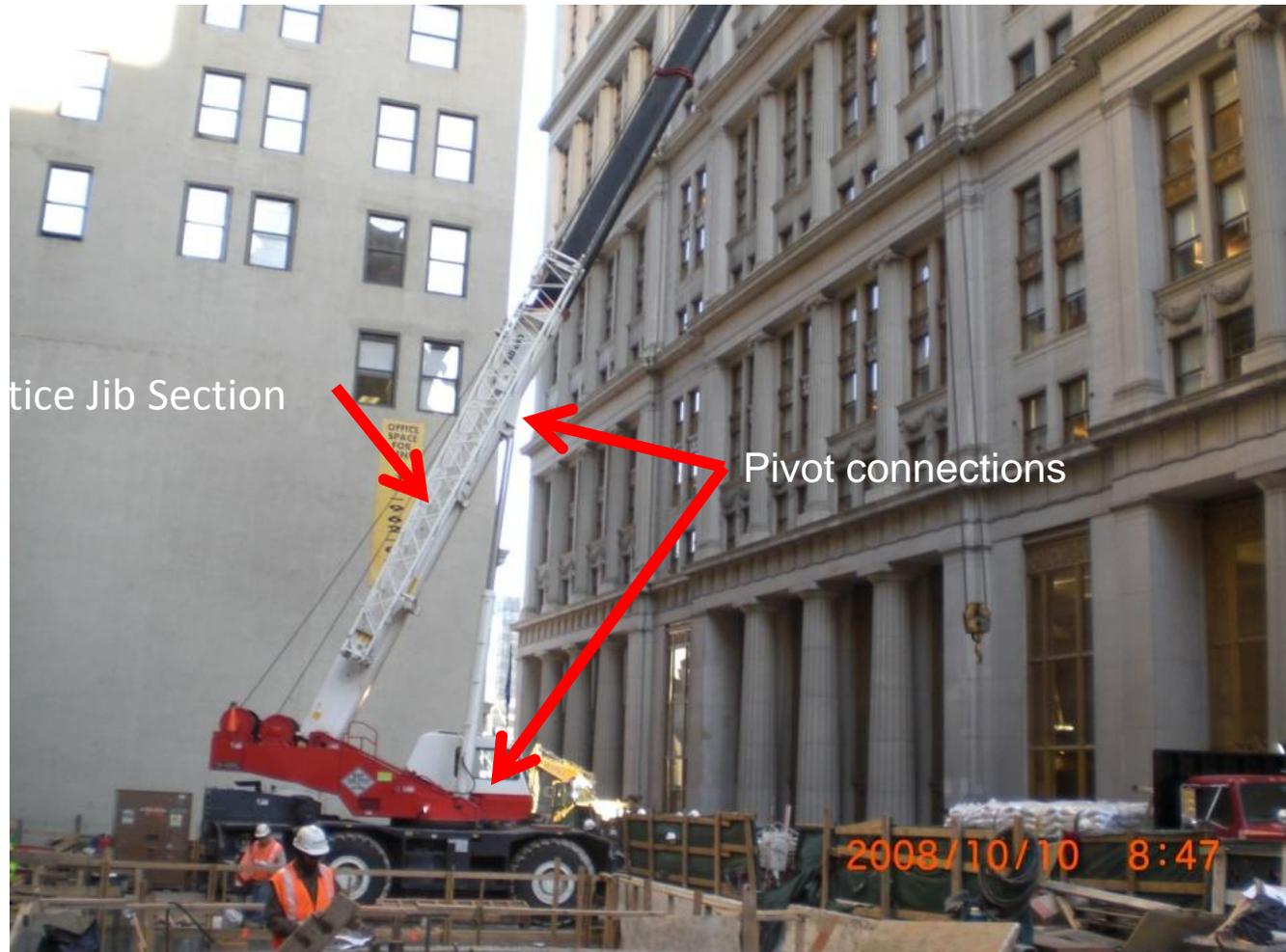
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Part 2 – Critical Components



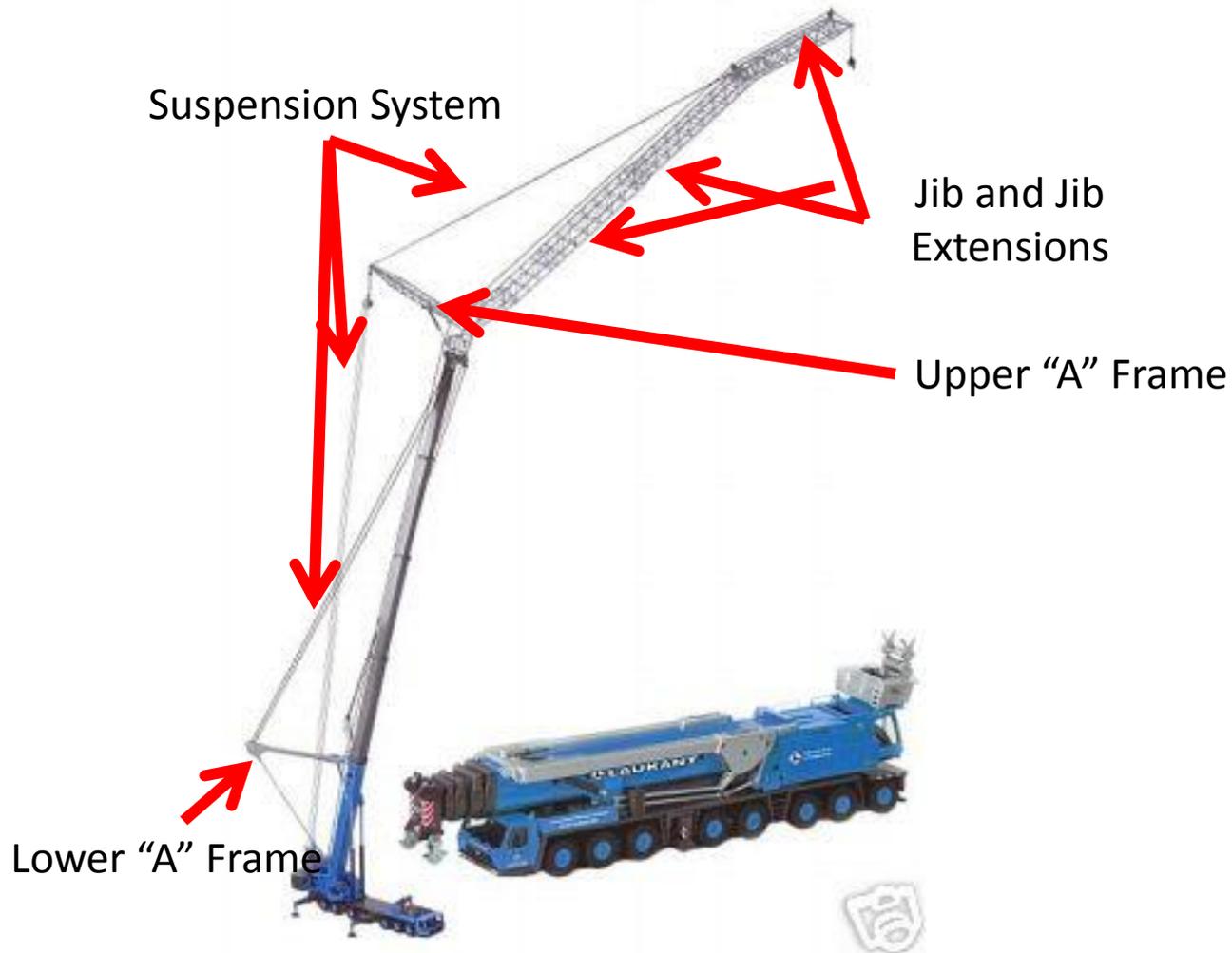
Plan Examiner Training

Part 2 – Critical Components



Plan Examiner Training

Part 2 – Critical Components



1) Proposed tracking process:

- Finalize list of components to track
- DOB to create a new form to capture the required data and this would be included with the annual inspection package.
- Owner will be required to certify that the crane is in good working order and has been properly maintained.
- DOB maintains a database with this information
- Upon CD renewal, owner must provide a brief description if a component is removed or replaced.
- If replaced, owner would provide documentation as to the origin of the new component.

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Component Tracking - Recommendations

Pivot point (not required to be tracked, but focus on inspection effort required)

Note the elongation



- 2) A unique identification number should be permanently affixed to each component.
 - The ID must be attached to the component in a permanent and durable fashion. The ID must be easily readable when the component is stored unassembled on the ground
 - Ideally, the numbering system could use the original CD number, which would give each component a unique number. This would not change if a component is sold

- 3) Require the components being tracked to undergo a non destructive test as part of the annual inspection
 - DOB requires NDTs for mast and boom sections
 - The bolt connection recommendations require NDTs for all critical bolts
 - The critical components mentioned above should also undergo NDT to check for possible fatigue or flaw issues in these items.
 - **Define NDT for the future.**
 - **Frequency and method(s) must be discussed and DOB will send out a survey to owners seeking feedback and their current possesses.**

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Thank you

Thank you for your valuable input please
send any comments to the following
email address

HRCOteam@buildings.nyc.gov