

### Operational Challenges of using Tower Cranes In Demolition

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In Partnership Together



### 103 Colmore Row, Birmingham, England, UK




- Birmingham is the second largest city in UK
- The building
  - 1975, pre cast panel façade
  - Predominantly concrete construction
  - Busy city area
  - Main road, high traffic volumes
  - Next to other "significant" buildings
- H Smith were contracted to undertake the demolition
- Radius contracted to supply suitable Tower Crane




### Some Facts and Figures



#### Super Structure Volumes:

- 14,940te of demolition arisings
- 300te of reinforcing lifted down
- 1,080 RC cladding panels
- 300te of 'Processed Core' & 40yards\* of soft strip away per week

#### Basement Volumes:

- 4,752te of demolition arisings
- 80te of reinforcing lifted

#### Tower Crane Operation

- Duration on Site: 82 weeks
- Total Height: 101m
- Total Weight: 185.0te
- Max Lift Capacity: 16.0te
- Max Radius: 35.0m



### The need for the Demolition

- Existing building not suitable for refurbishment
- Not economically viable for modernisation
- Allow for a new 'City Centre Super-Prime Grade A Office Tower'
- Project commissioned by Sterling Property Ventures & Rockspring



...and the new building...




### Why was a Tower Crane Required?



Complete conventional demolition not possible due to:

- Building Location
- Construction of Plant Rooms
- Environmental Constraints (Noise and Vibrations)
- Construction of Building Envelope



### Enabling Works

- Choosing a Crane
- Permitting (Saddle Jib Crane in the city)
- Surveying and setting out
- Tower Crane base (design and construction)
- Floor slabs & tie columns (connection solution)



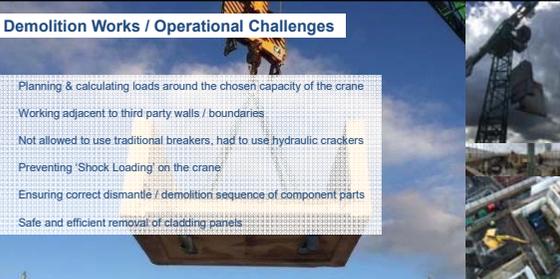

### Tower Crane Erection

- Physical space for a crane
- Road closures
- Erecting to full height
- Ties through the windows
- Environment (time constraints)




### Demolition Works / Operational Challenges

- Planning & calculating loads around the chosen capacity of the crane
- Working adjacent to third party walls / boundaries
- Not allowed to use traditional breakers, had to use hydraulic crackers
- Preventing 'Shock Loading' on the crane
- Ensuring correct dismantle / demolition sequence of component parts
- Safe and efficient removal of cladding panels




### Climbing the crane down with the building

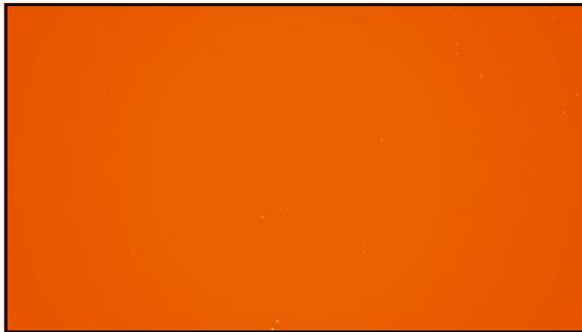
- Crane orientation (chosen during planning)
- Delivery & installation of the climbing cage
- Subsequent removal of the climbing cage
- Remove existing ties




### Dismantle and Removal from site

- Engineering of outrigger locations
- Physical space for a crane
- Road Closures
- Environment (time constraints)





### Questions?



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