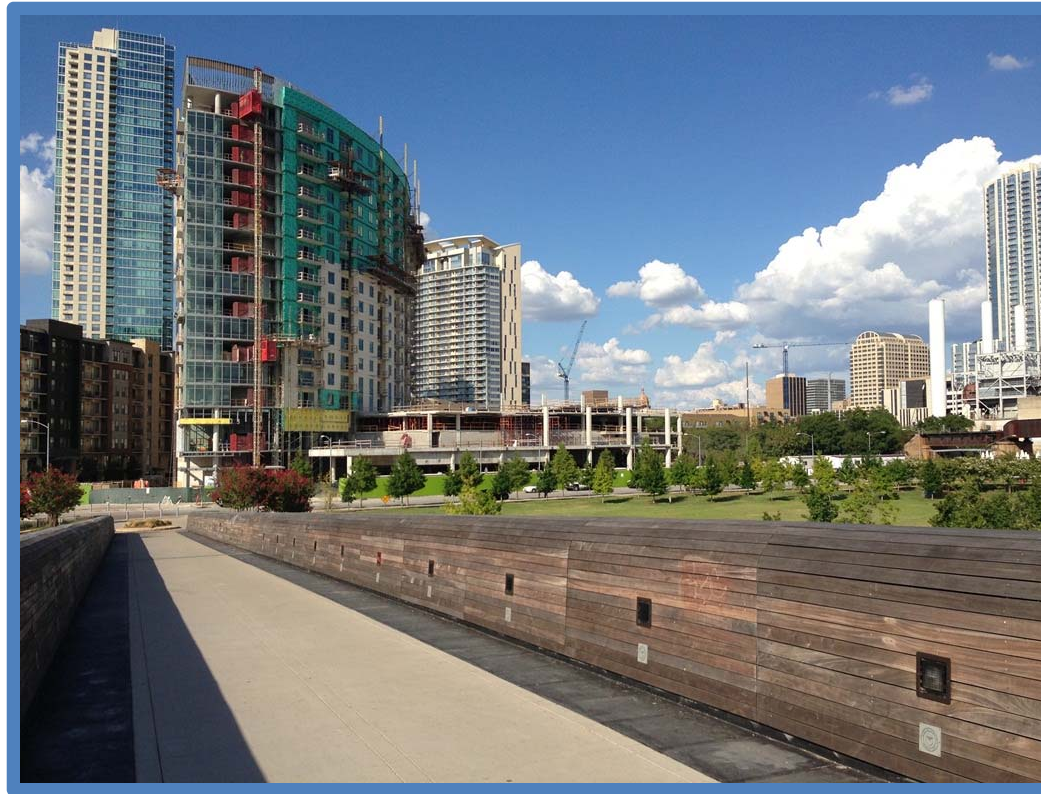


Park Plaza Post-Tensioned Parking Structure Demolition



Presenter:

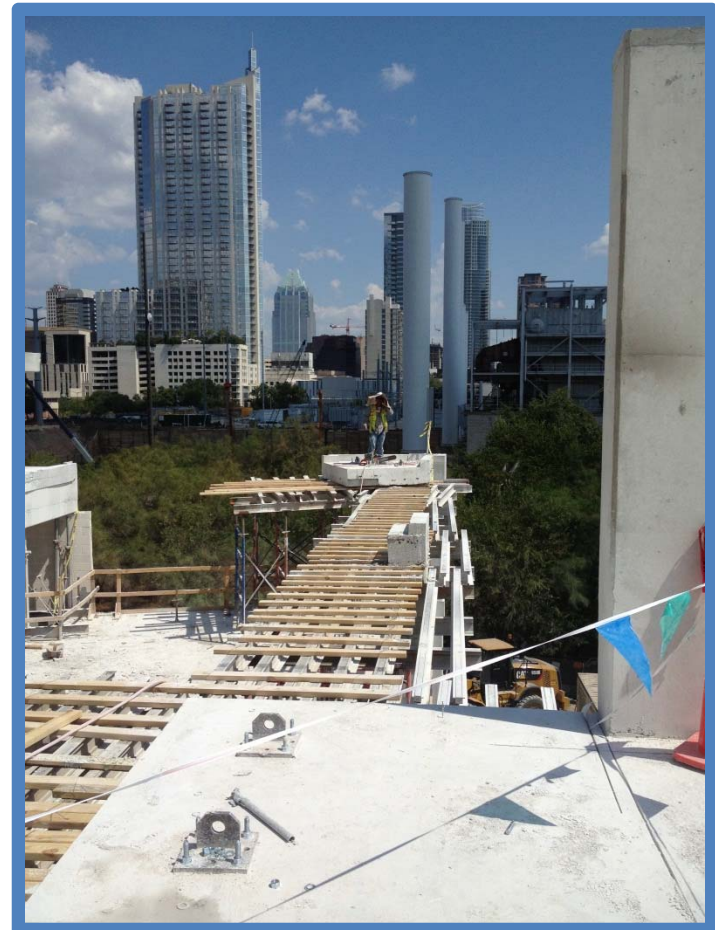
Michael Lussier, Structural Technologies - VSL

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 **POST-TENSIONING INSTITUTE®**
Stressing the Stronger Concrete Solution

GOALS

- Review the following:
 - Detensioning Operations
 - Project Planning
 - Engineering Details
 - Project Execution



OPPORTUNITY

- Capitol View Corridor – Austin, TX
- It was decided to remove the top deck including columns and ramp
- VSL was brought in to develop a safe detensioning/demolition solution



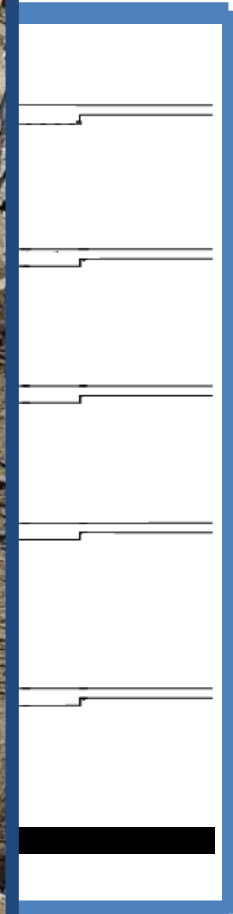
DESIGN/CONSTRUCTION CHALLENGES

- Detensioning of concrete slab in a controlled manner
- Coordinate detensioning
- Tight project sites
- Mitigate risk to structure
- LEED Silver certification
- Accelerated schedule

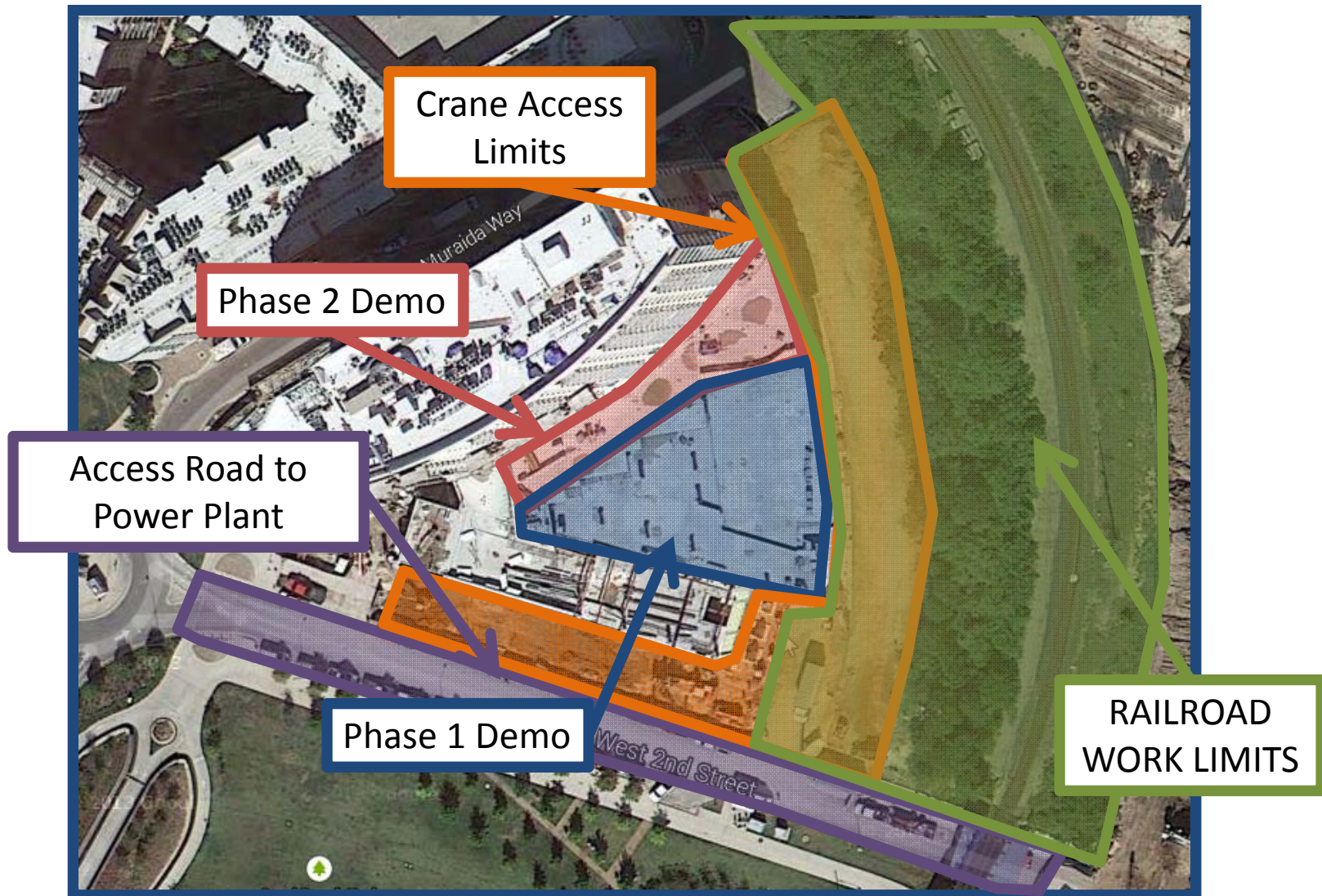


THE STRUCTURE

- One Way Slab
 - 7" – 9" Thick
- Shallow-Wide Beams
 - 14" – 18" Thick
- Unbonded, ½" fabricated strand
- Five Story Garage
 - 50'-6" Tall



ACCESS CHALLENGES

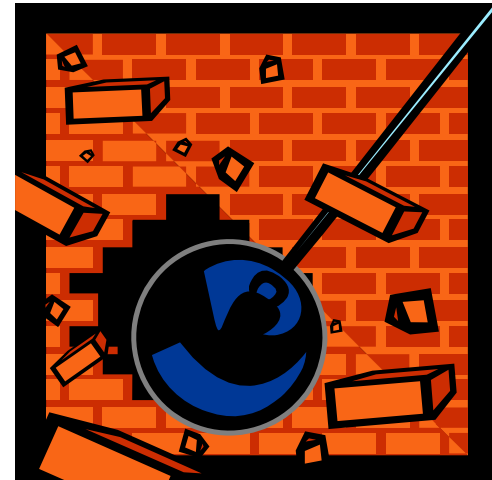
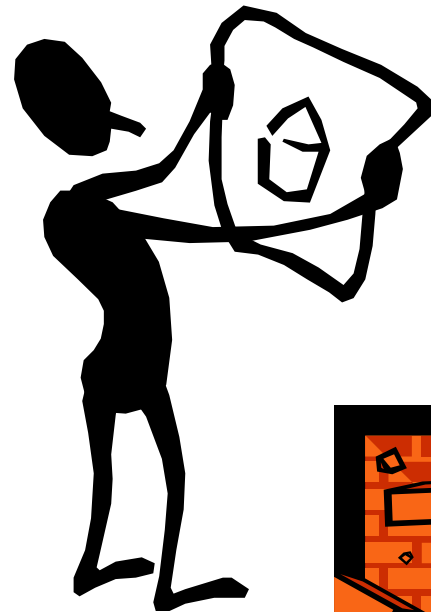


SOLUTION

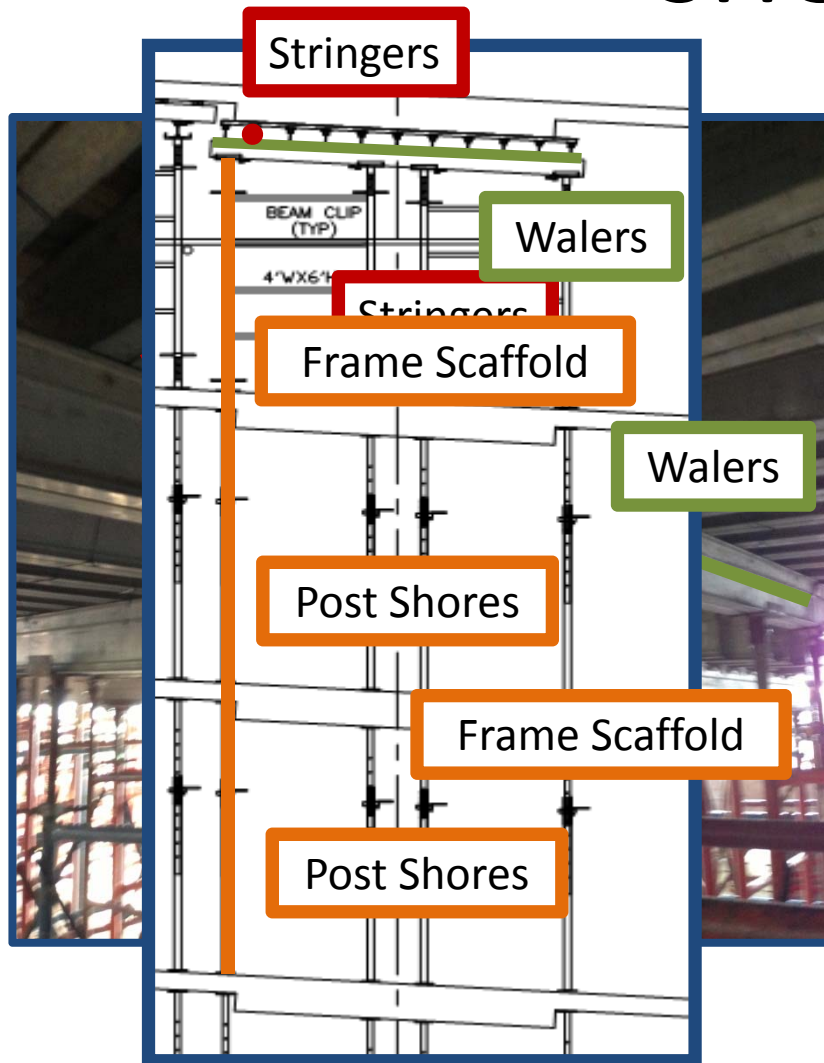
- Engineer temporary shoring plan throughout garage
- “Let down” each post-tensioned tendon in a controlled manner
- Engineer removal process for all concrete elements
- Recycle concrete

DEMOLITION PLAN

1. Shoring
2. Access Definition
3. Piece Layout
4. Detensioning
5. Lifting Process



SHORING

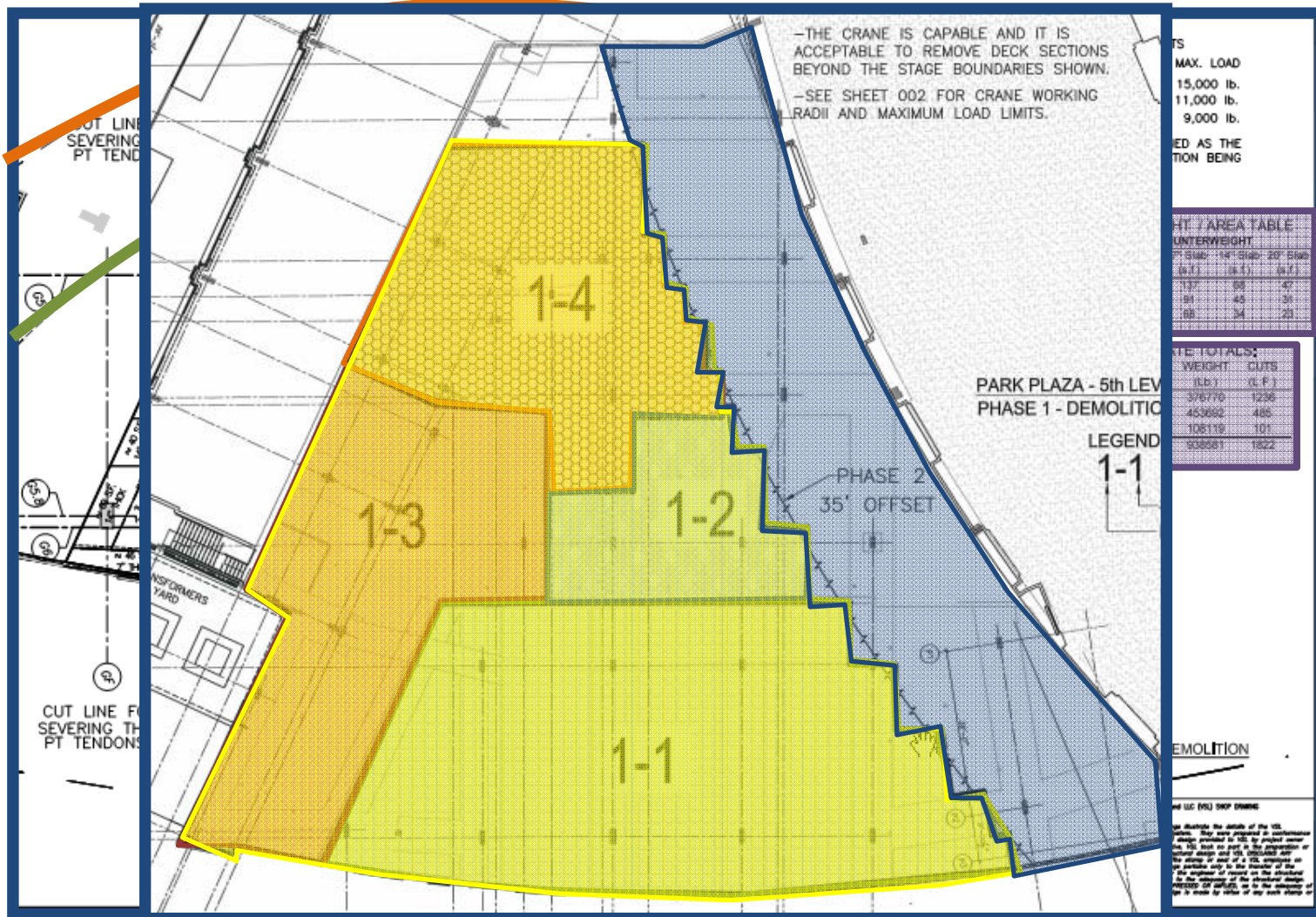


ACCESS DEFINITION

- Various tower and crawler cranes were evaluated for use
- A 225 ton truck crane was chosen based off of mobility and ease of setup and teardown



PIECE LAYOUT



DETENSIONING

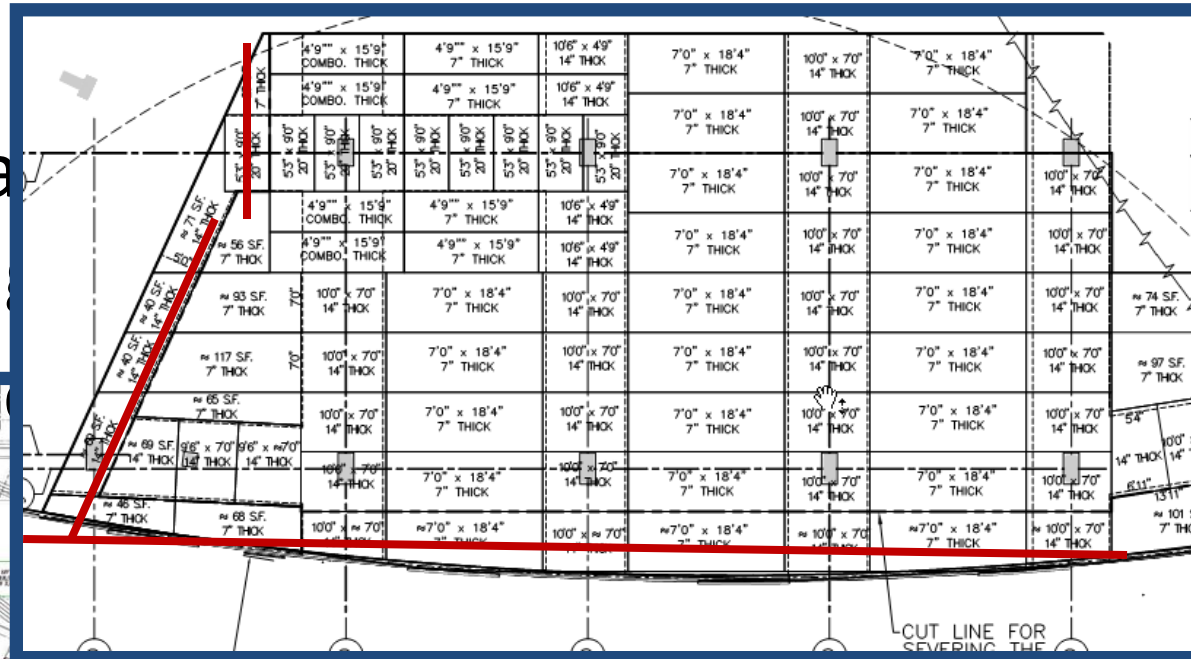
1. Locate deck using

2. Place

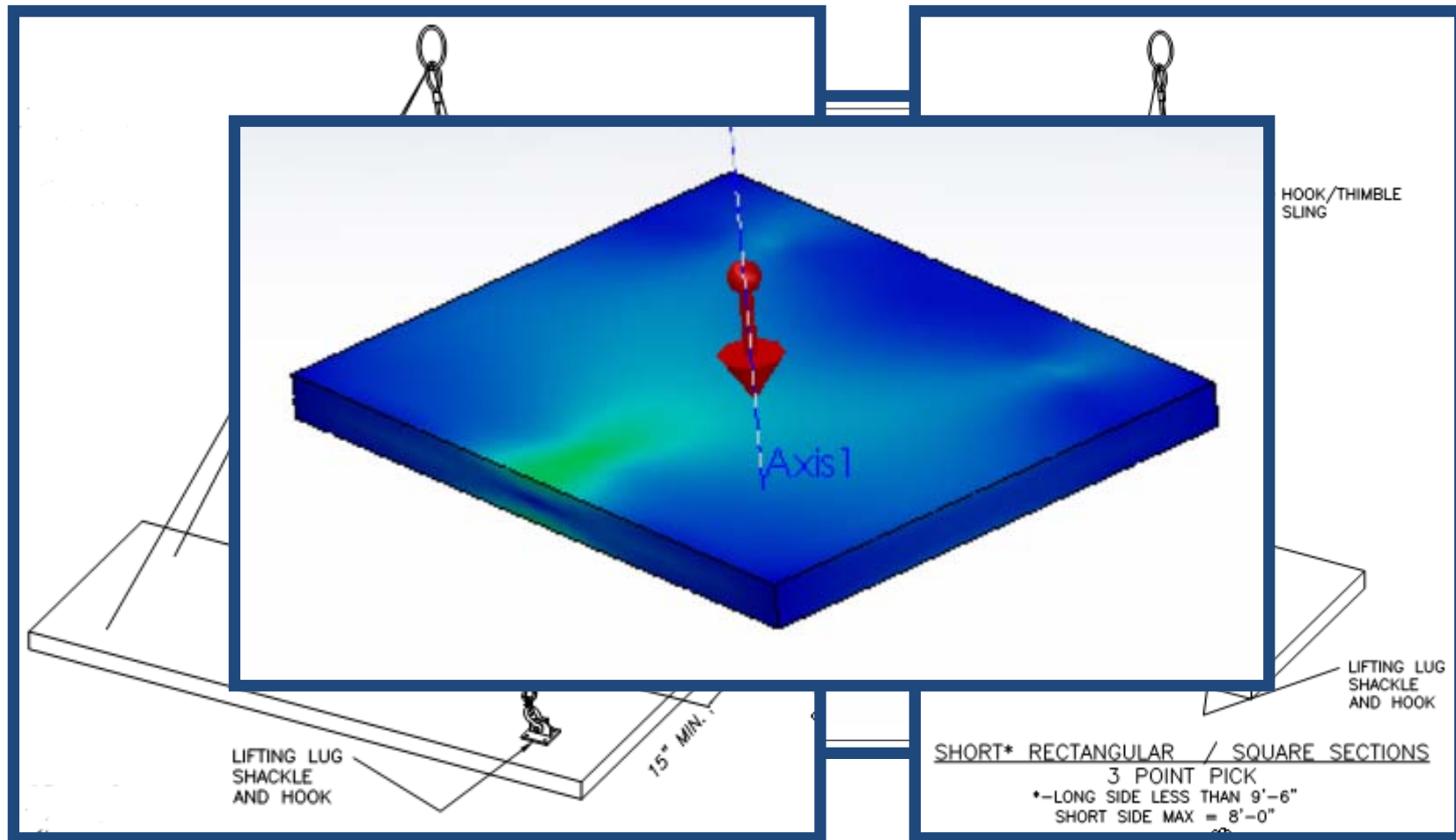
3. Cut tendons individually along lines that would be used to delineate pieces

4. Detensioning done during off peak hours

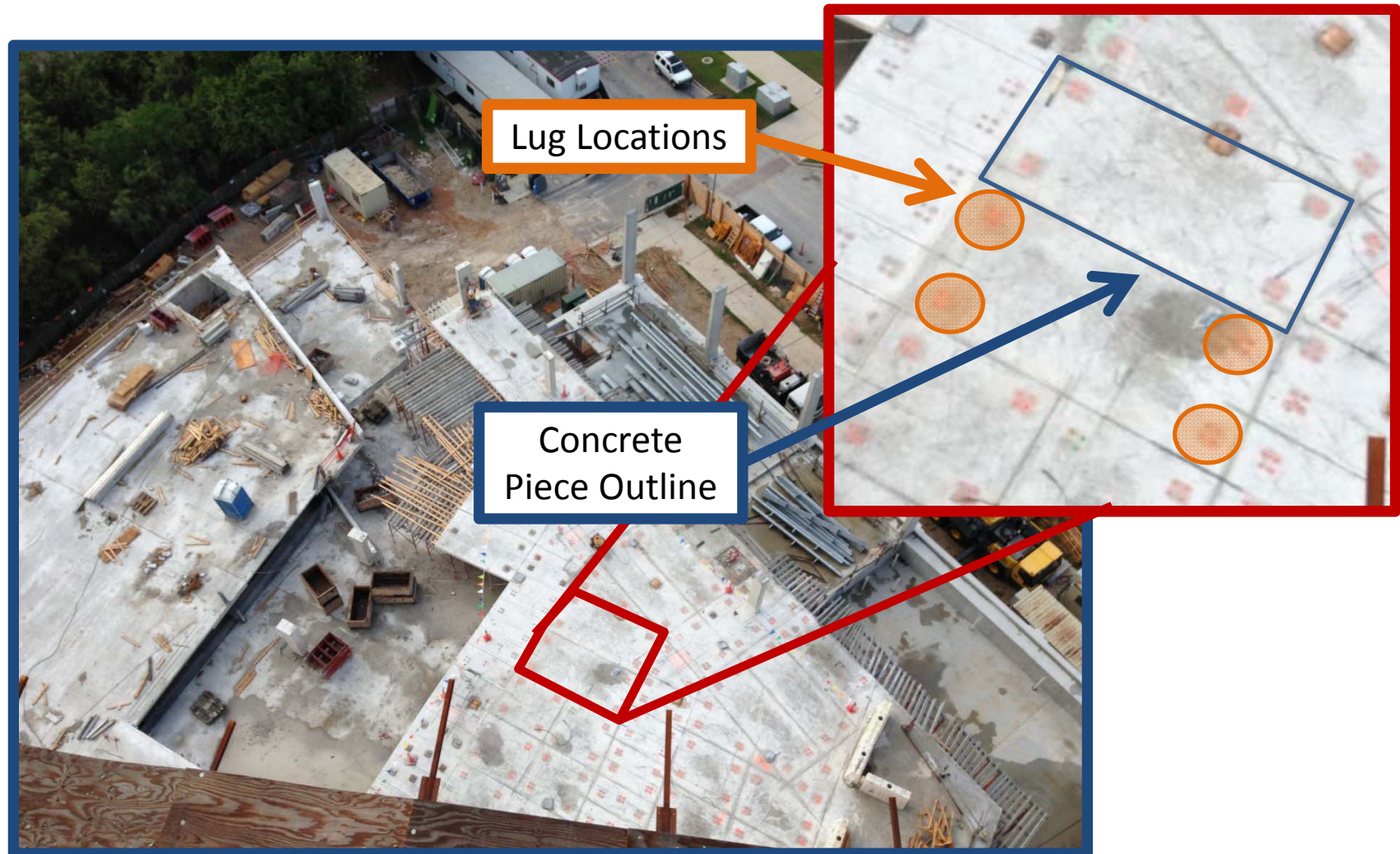
5. Detensioning done on Live End of tendon



LIFTING PROCESS



CONCRETE REMOVAL - LAYOUT

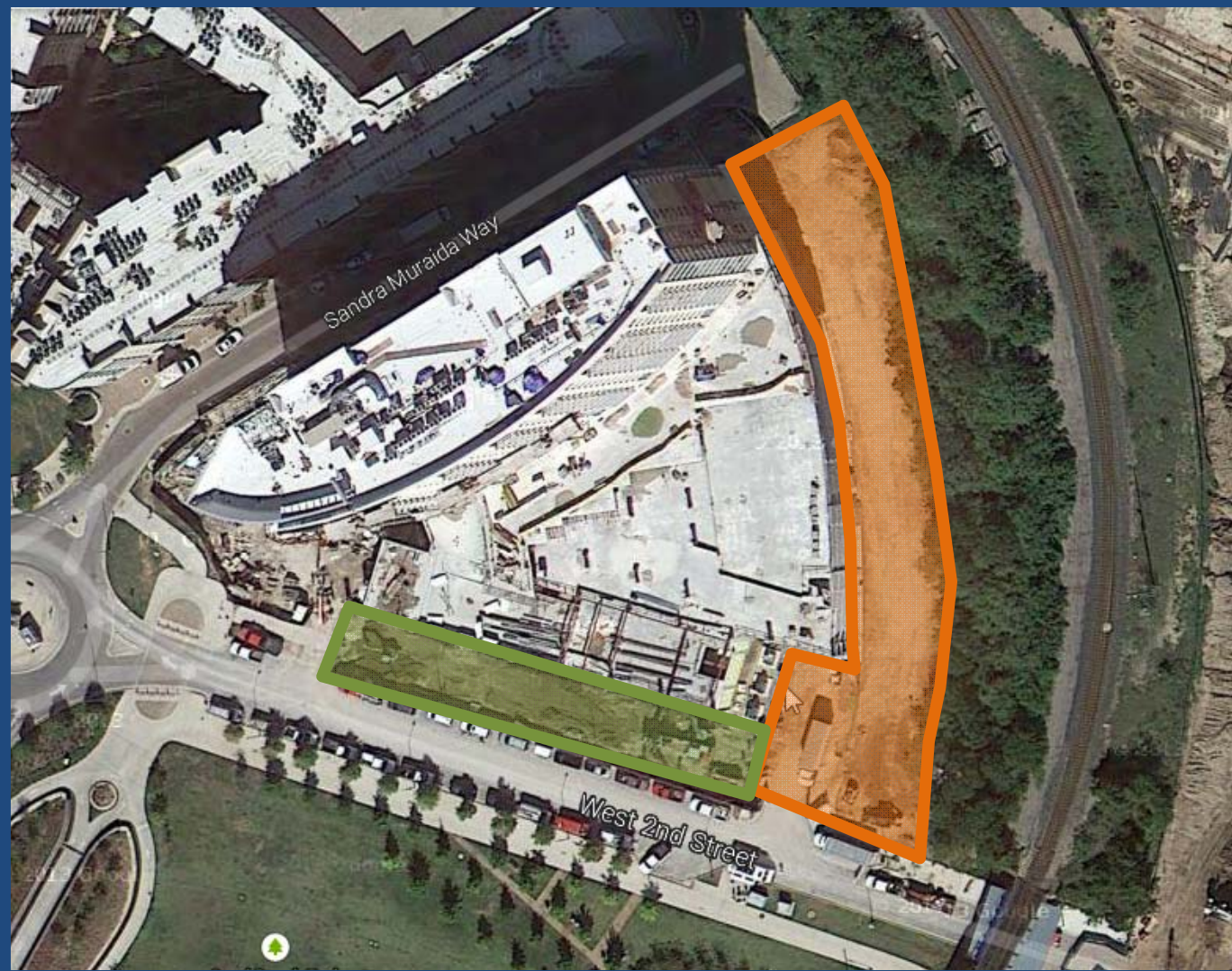


CONCRETE REMOVAL - DETENSIONING

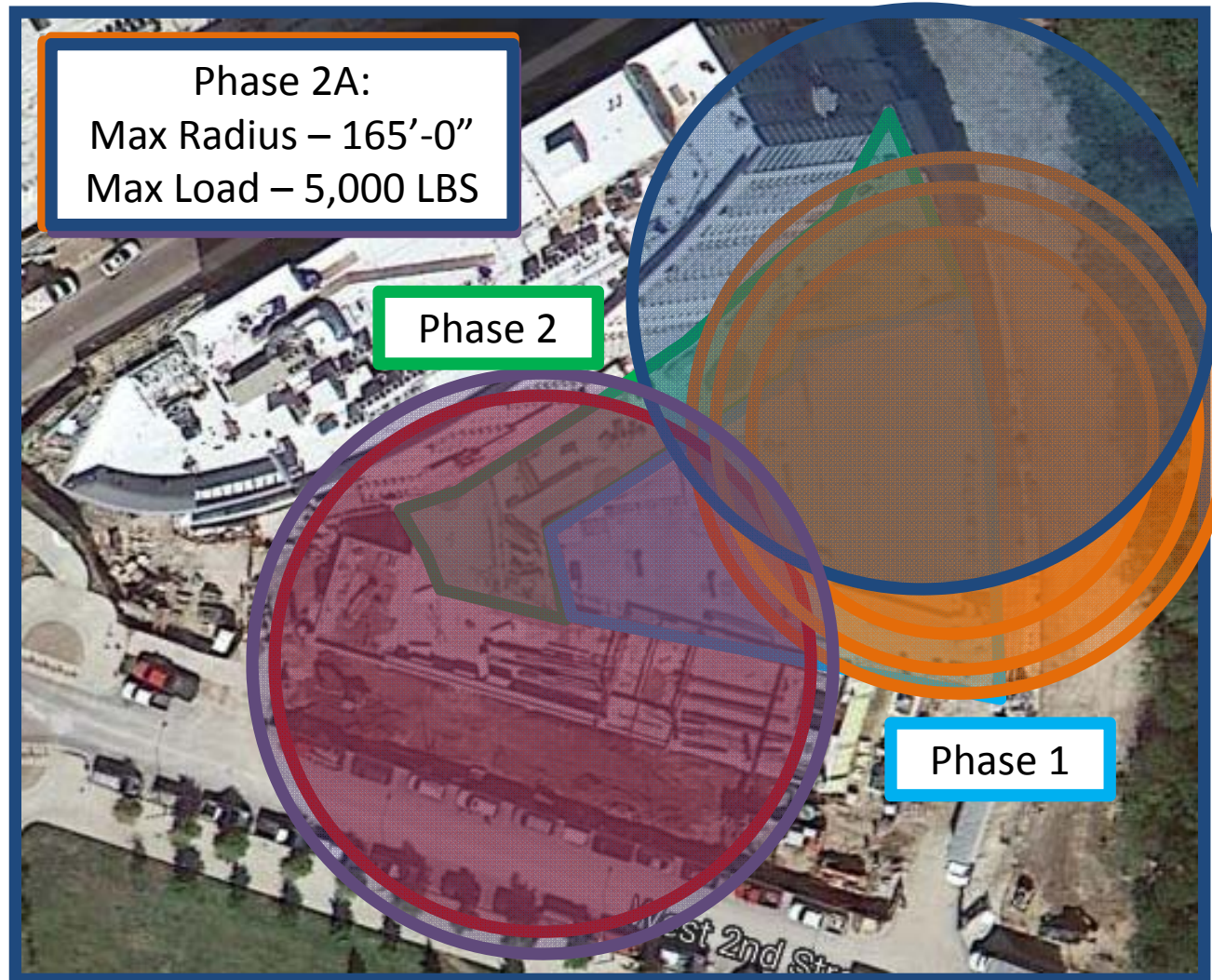


The typical detensioning response was the pocket patch concrete coming loose and the strand releasing about 3" out of the slab

CONCRETE REMOVAL - ACCESS



CONCRETE REMOVAL - ACCESS



CONCRETE REMOVAL - LIFTING



CONCRETE REMOVAL - COLUMNS

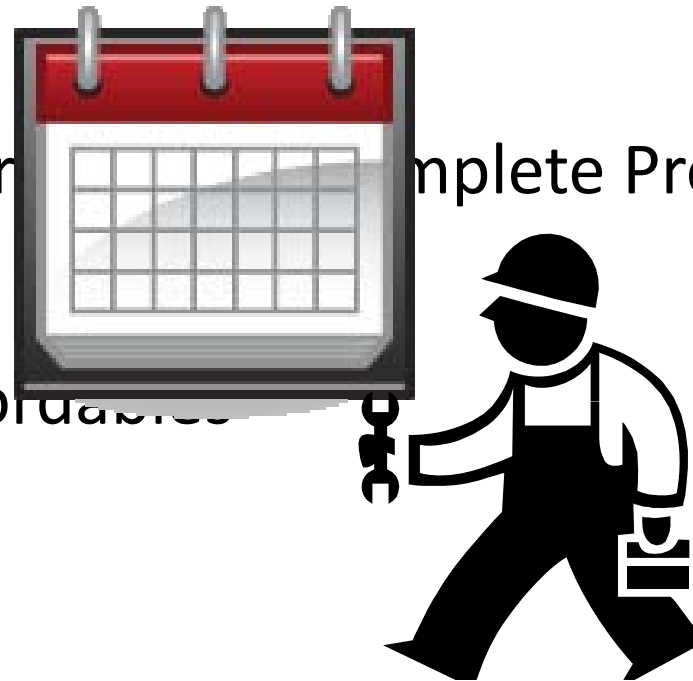


CONCRETE REMOVAL - RECYCLING



PROJECT STATISTICS

- Duration:
 - 4 Months with a Month Delay Between Phases
- Resources:
 - 5,000 Man Hours to Complete Project
- Safety Results:
 - Zero OSHA Recordables



PROJECT STATISTICS

- Concrete Removed and Recycled:
 - 3,800,000 LBS or 425 Pieces or 25,000 SF
 - 40 Columns
- Cables Detensioned:
 - 575 Tendons
- Project was completed on time, on budget, safely and with a high level of



CONCLUSIONS

- High level of planning created buy in by the project team
- Understanding and planning for hazards involved
- Project was able to move along efficiently and effectively

QUESTIONS?

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