

# OneEleven

## 60-Inch Thick Unbonded Post-Tensioned Transfer Deck

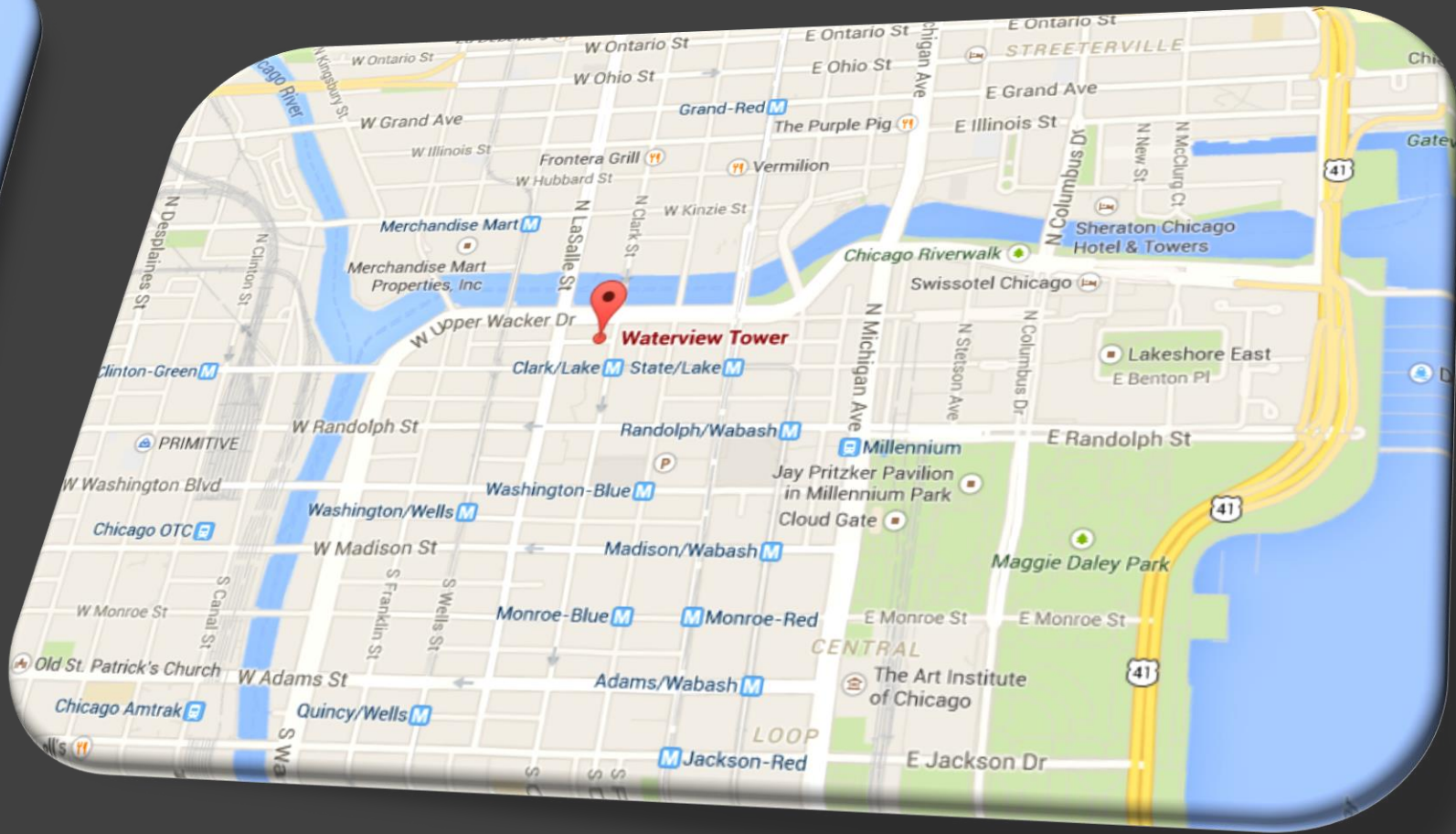
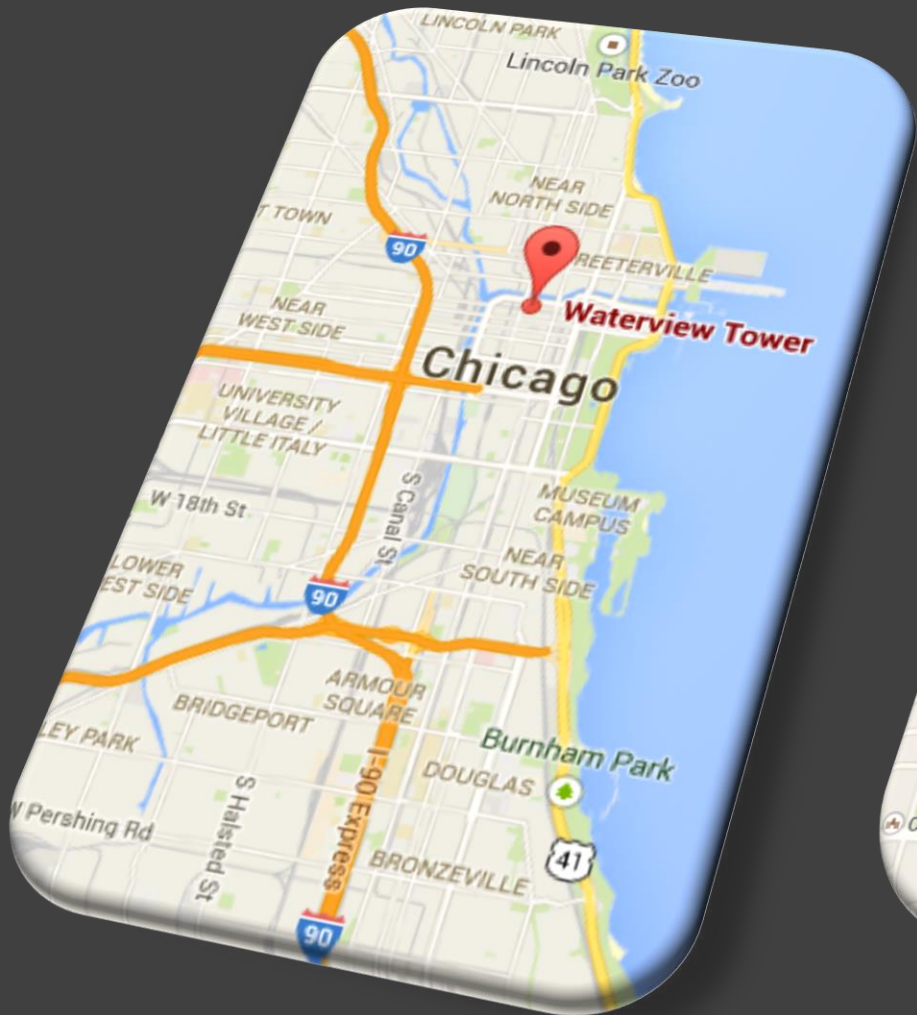
by Neel Khosa (AMSYSCO) – May 2015







# THE (SAD) HISTORY OF WATERVIEW TOWER





Originally designed as an 89-story luxury condotel.

Construction of the conventionally-reinforced building progressed until the 27<sup>th</sup> floor in 2008.





# Then This Happened...





An aerial photograph of a city skyline, likely New York City, featuring a river with bridges in the foreground and numerous skyscrapers in the background. The image is used as a background for a graphic design.

# A Dream Deferred







**Second Chance**



# “Groundbreaking” 2010



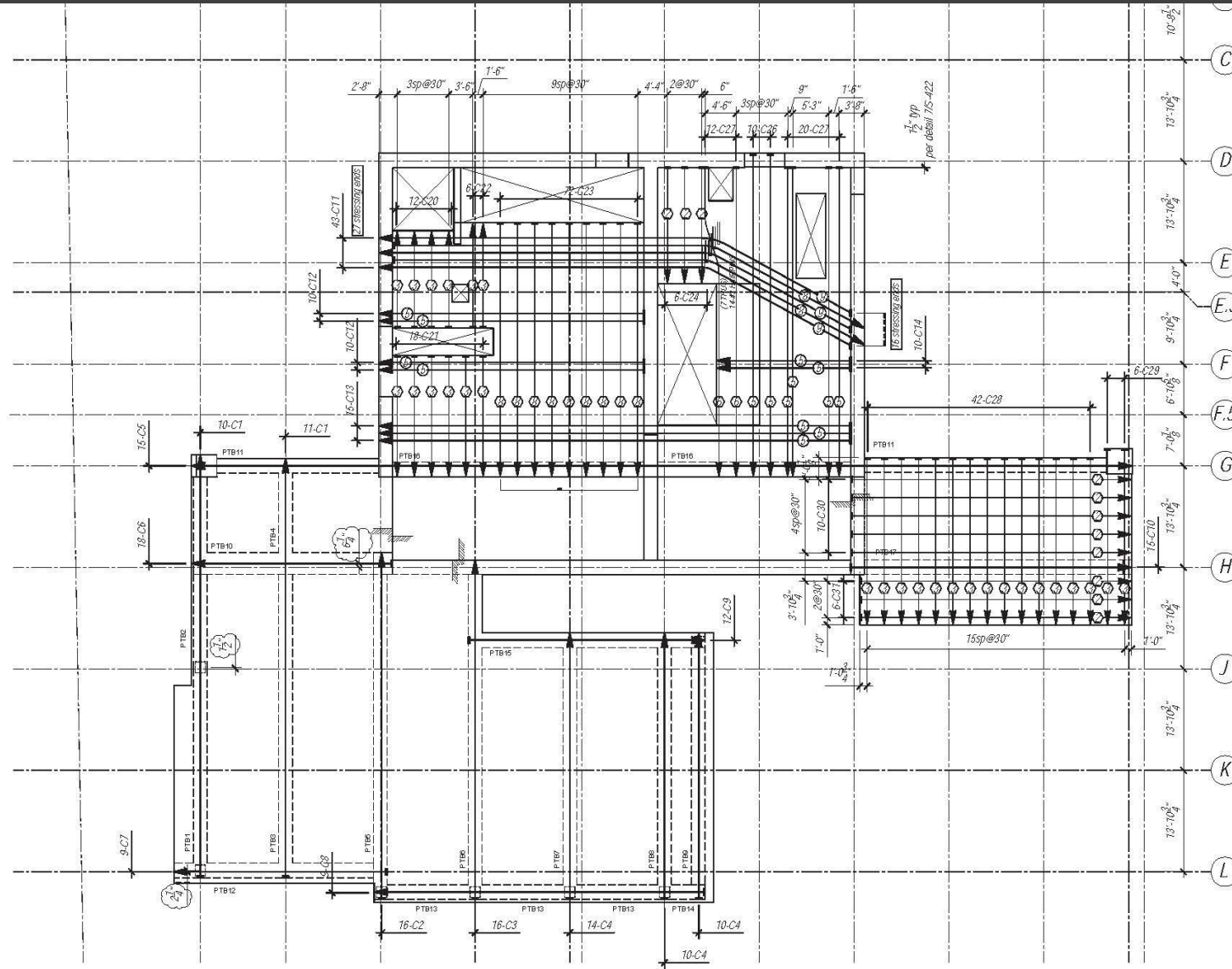




In 2012, the condo/hotel was  
redesigned as a 60-story  
residential apartment building  
and renamed 'OneEleven.'



# The 29<sup>th</sup> (amenity) level built with a 12-inch post-tensioned slab.





# TRANSFER DECK

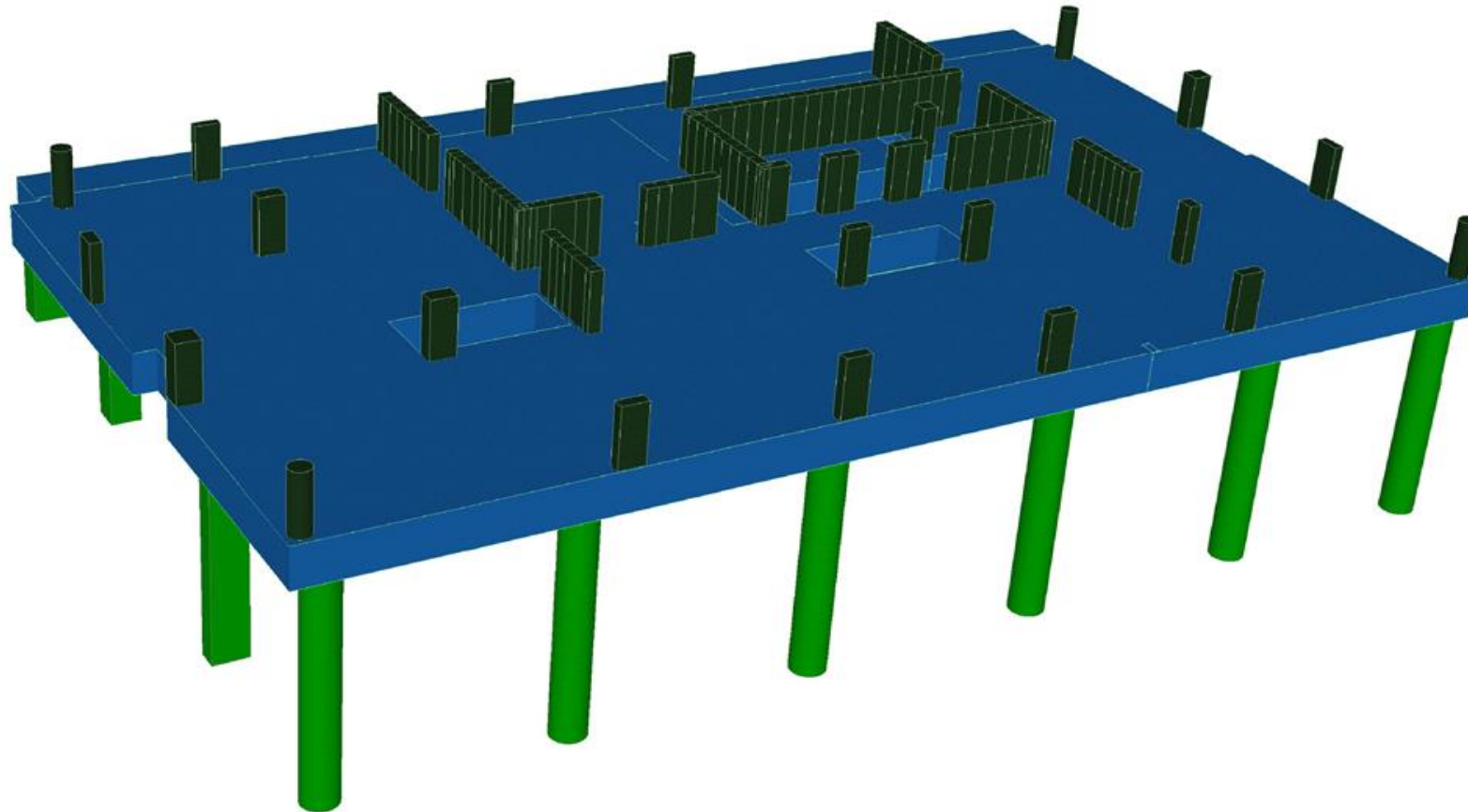
- Remained on Level 30
- Was going to support 58 floors
- Now supports 30 floors



There were MAJOR design issues with having a DIFFERENT column layout and a SMALLER floor-plate than originally-designed on the upper levels.

## Element: Structure Summary Perspective

Wall Elements Below; Wall Elements Above; Column Elements Below; Column Elements Above; Slab Elements;  
User Lines; User Notes; User Dimensions;

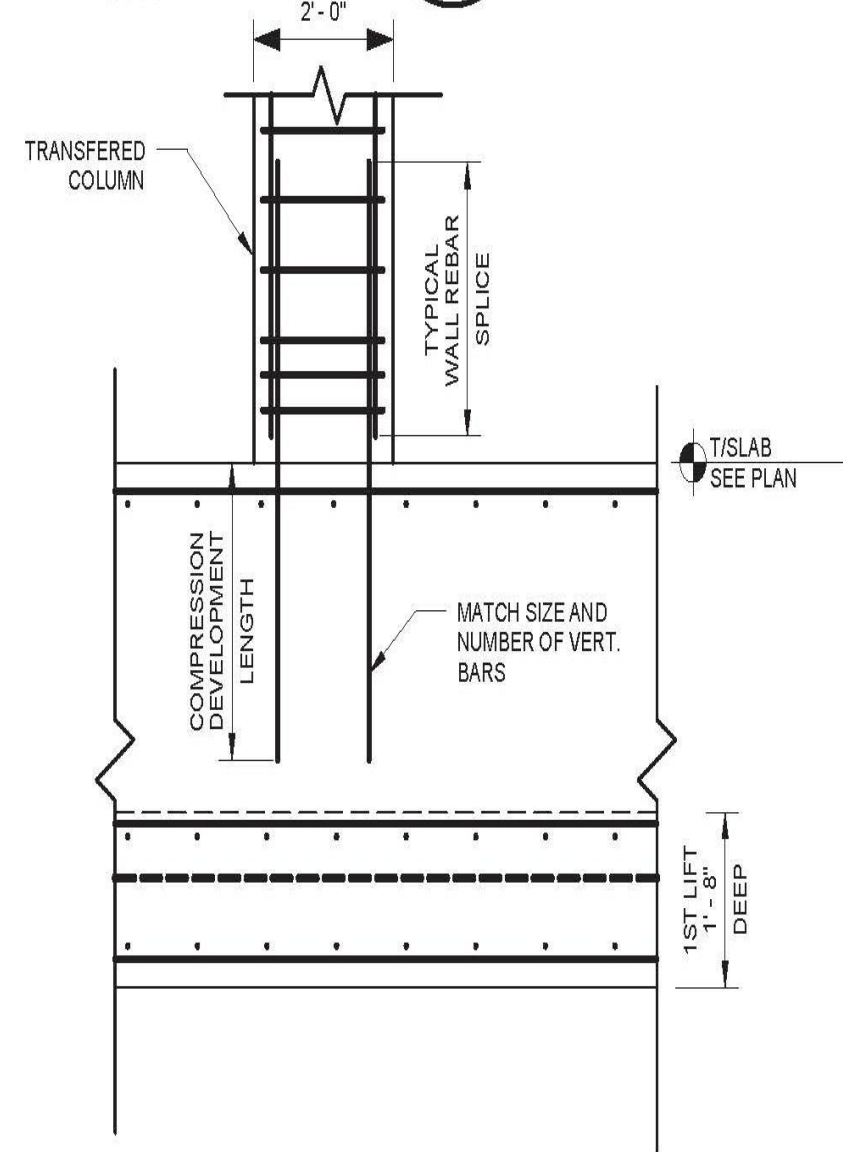




A green road sign with a white border, tilted slightly to the right. It features a white arrow pointing left at the top left, followed by the word "Problems" in a large, white, sans-serif font. Below "Problems" is the word "Solutions" in the same font, followed by a white arrow pointing right at the bottom right. The sign is mounted on two wooden posts against a clear blue sky.

← Problems  
Solutions →

WHAT SEPARATES  
THIS HIGH-RISE  
TOWER FROM  
MOST SKYSCRAPERS  
IS THE 30<sup>TH</sup> FLOOR  
TRANSFER DECK



4

TYPICAL TRANSFER MAT SECTION

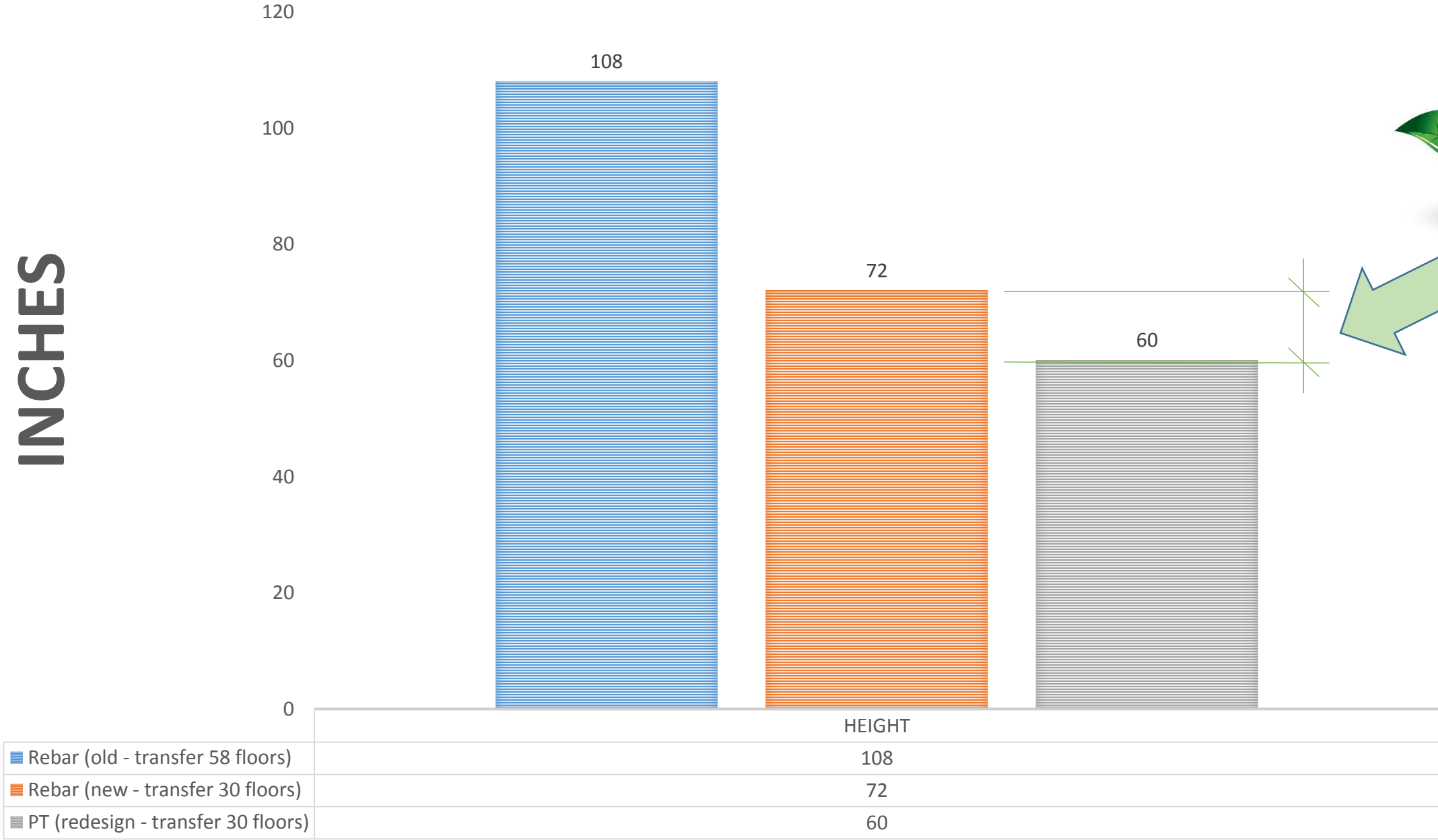
SCALE: 1/2" = 1'-0"

© AMSYS CO 2015



THE HIGHEST UNBONDED  
POST-TENSIONED  
TRANSFER DECK  
BUILT IN NEW CONSTRUCTION\*

INCHES





# ADDITION BY SUBTRACTION

ORIGINAL DESIGN

-12 INCHES OF CONCRETE

-372 TONS OF REBAR

+60 TONS OF POST-TENSIONING

-RESHORING REQUIREMENTS (dead load)

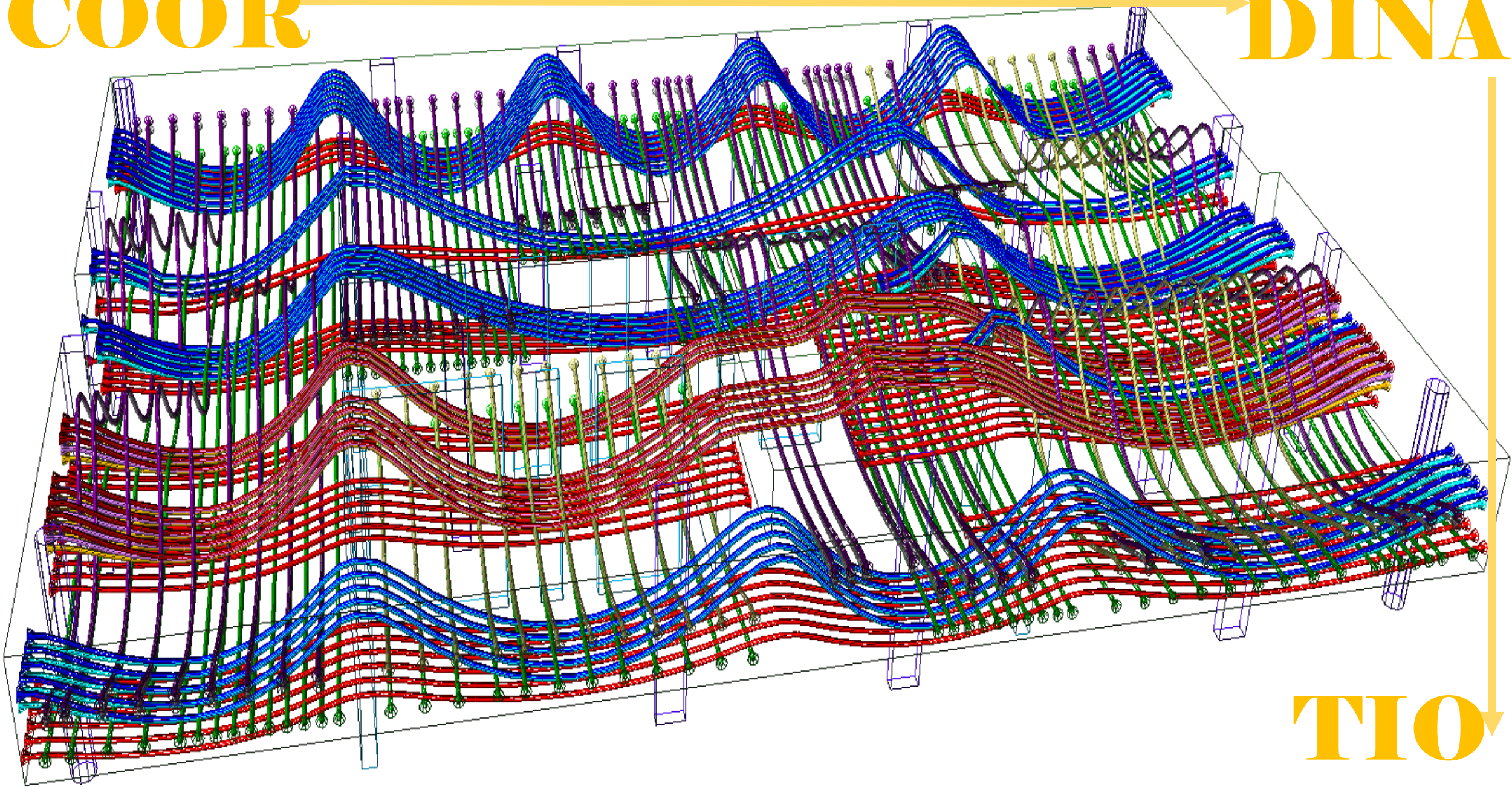
---

**SAVE \$380,000\*** IN CONCRETE FRAME

\*excludes savings to other vertical elements or life-cycle benefits

COOR

DINA



TION



**COOR**

**DINA**

The TRANSFER DECK  
was the 2<sup>nd</sup> level in  
new construction.

**TIME**

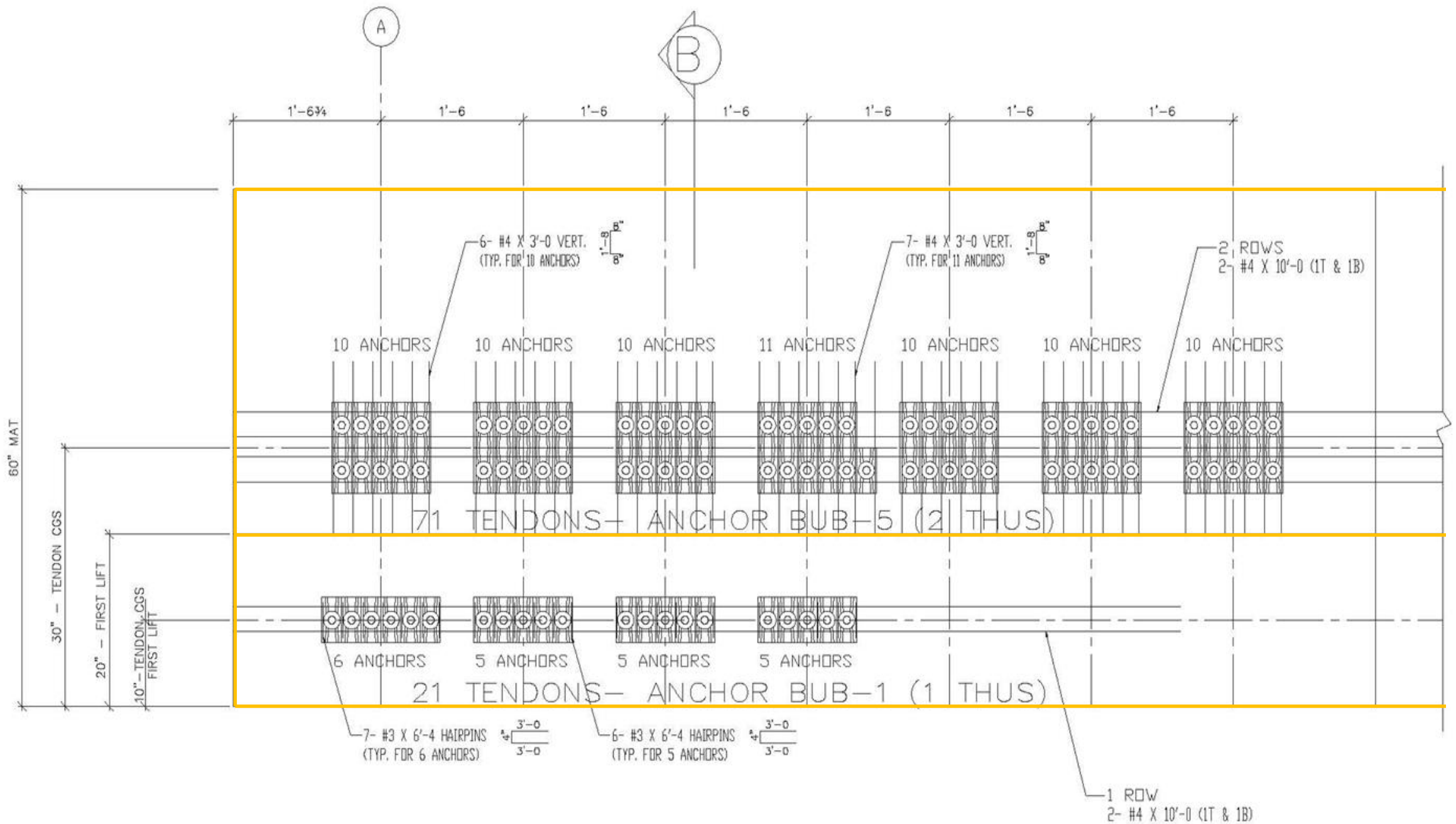
**TION**

**N**

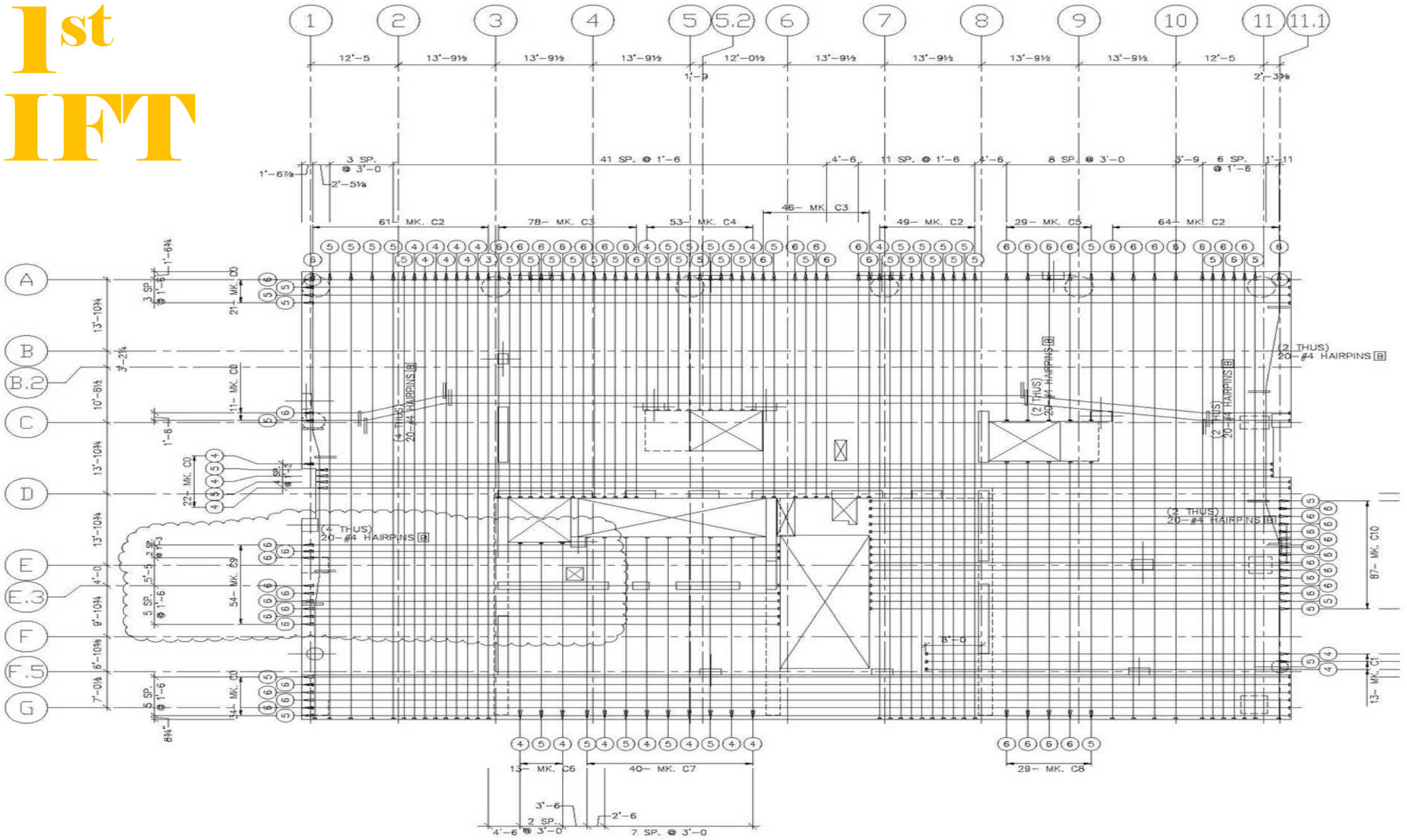
# ~~TIME~~ BUT....

Team spent 1 month  
coordinating  
PT tendons, rebar,  
MEP piping/penetrations





# 1st IFT

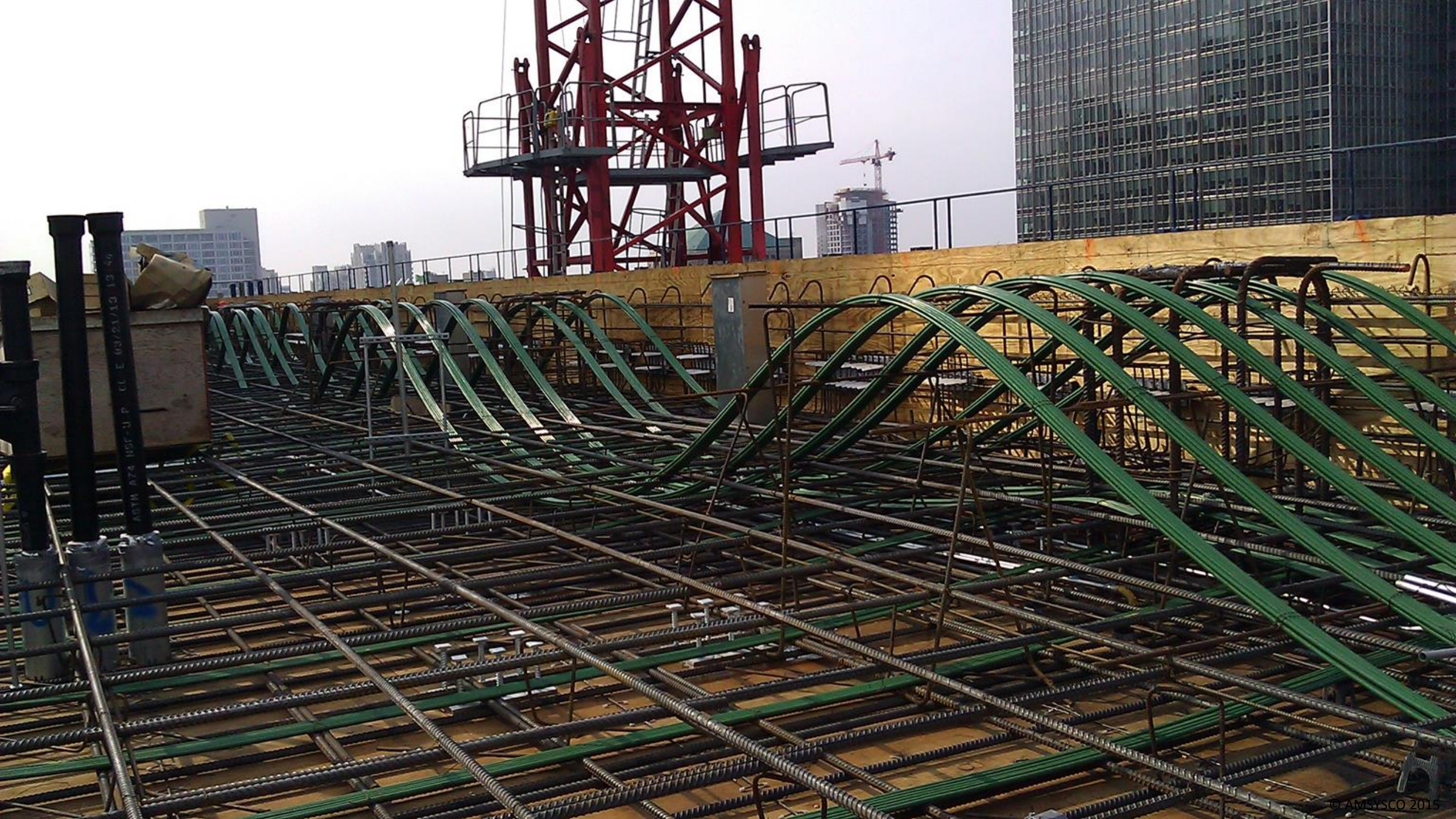




# 2nd IFT

The drawing is a detailed structural plan for the 2nd floor of the IFT building. It features a grid of columns labeled 1 through 11.1 horizontally and A through G vertically. The plan includes numerous annotations for reinforcement, such as '22 SP. @ 3'-0"', '16- MK. C3', and '32- MK. C8'. Dimensions are provided for various sections, including '12'-5"', '13'-9 1/2"', and '1'-6"'. The drawing also shows the layout of beams, walls, and other structural elements, with specific notes for each component.































# TRANSFER DECK POUR

## Poured in 2 lifts

- The 1<sup>st</sup> lift supported the 2<sup>nd</sup> lift without shoring.
- 2 floors were reshored below the shoring.

2,250 cubic yards of 8,750 psi concrete

## One of the pours lasted 17 hours


- Increased degree of complexity
- Poured 30-stories in the air.

# OH BY THE WAY (part 1)...

## ...UPPER LEVELS OF PT





A photograph of the Chicago skyline at dusk or dawn. In the foreground, a large American flag flies from a tall pole on the left. Below the flag is a stone structure with a white spherical light fixture. In the background, several skyscrapers are visible, including a prominent blue glass building with a construction crane on top. A bridge with orange lights spans the water in the foreground.

On the Upper Levels,  
PT reduced 1 inch  
per floor compared  
to mild-steel.

~30 inches shaved  
off building height.





# PT helped to make a stalled project more economical due to the reduction in other material costs.

- Concrete Columns / Shear Walls
- MEP piping
- Elevators
- Stairs
- Curtainwall + Facade



WITHOUT UNBONDED PT  
THIS PROJECT MAY NOT  
HAVE HAPPENED  
\$\$\$



# OH BY THE WAY (part 2)...

## ...VERTICAL PT







MARINA TOWERS

The image shows a high-rise construction site. In the foreground, a dense grid of rusty steel reinforcement bars (rebar) is laid out on a concrete slab. Overlaid on this grid are numerous green post-tensioning (PT) cables. Some of these cables are bundled together and curve upwards, arching over a section of the rebar. In the background, several tall buildings are visible under a clear blue sky. One building has a distinctive wavy, balconied facade. Another building to the right has a glass facade and a tall, dark structural tower. The overall scene is one of active construction for a major urban project.

VERTICAL PT

TRANSFER DECK











# CONSTRUCTION TEAM


 **RELATED**

  
**Lend Lease**

 **SEPSTEIN**

 **HALVORSON AND PARTNERS**  
STRUCTURAL ENGINEERS

 **ADJUSTABLE FORMS**  
CONCRETE CONSTRUCTION

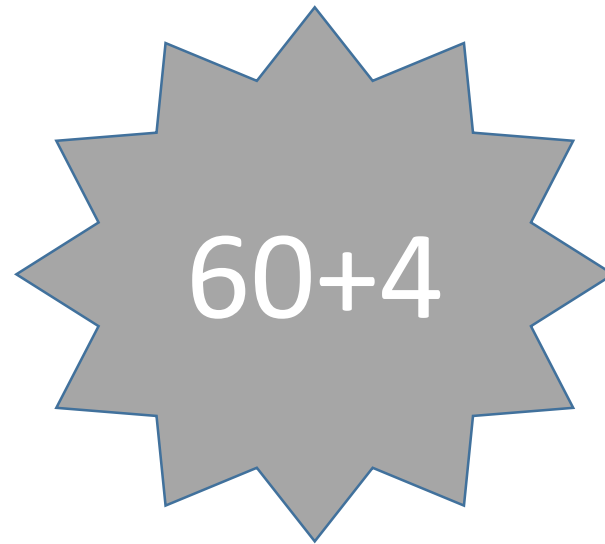
  
**AMSYSCO**



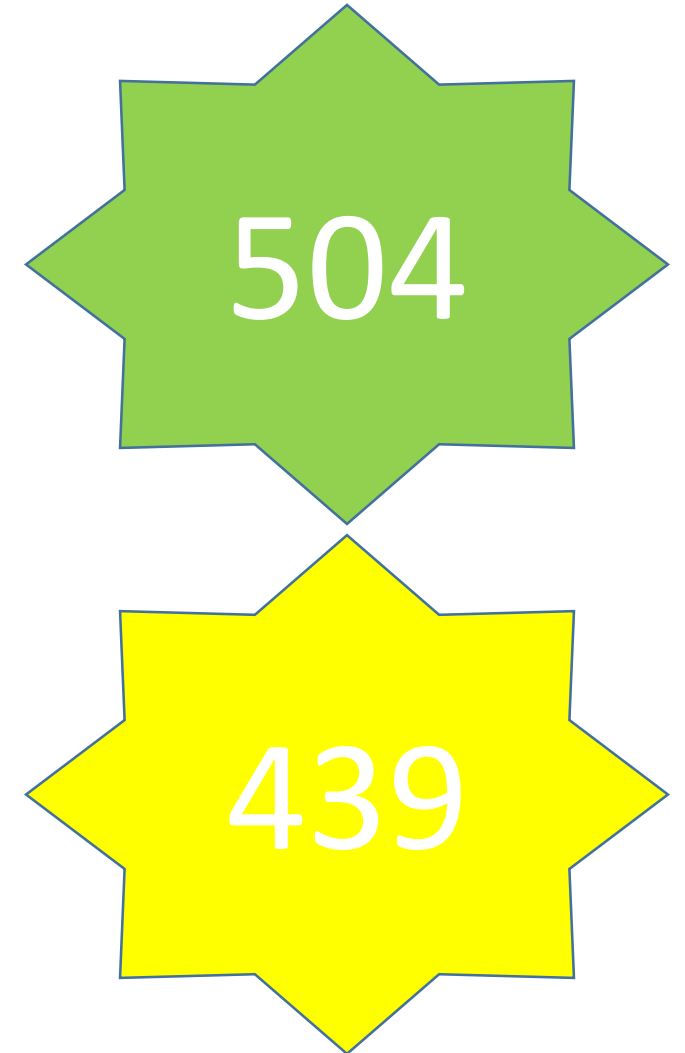
# BUILDING HEIGHT



# FLOORS



# HOUSING UNITS + PARKING SPOTS







TALLEST  
BUILDING

TALLEST  
CONCRETE-FRAME  
BUILDING

TALLEST  
RESIDENTIAL  
CONCRETE-FRAME  
BUILDING

CHICAGO

40<sup>TH</sup>

19<sup>TH</sup>

9<sup>TH</sup>

NORTH  
AMERICA

267<sup>TH</sup>

74<sup>TH</sup>

24<sup>TH</sup>

WORLD

1238<sup>TH</sup>

729<sup>TH</sup>

307<sup>TH</sup>



170

TONS

# IN RECENT NEWS

- Helped developer win the NAIOP Developer of the Year
- Featured on the cover of 'ENR Midwest' magazine
- Monthly Rents from \$1,700 to \$12,000 (CNBC 2015)
- Sold for \$333 million (or \$661,000/unit) in late-2014





# CREDITS & REFERENCES

## Pictures

- The Sad History of Waterview Tower (image) : Alonzo-ny  
<http://wirednewyork.com/forum/showthread.php?t=5888&page=7&p=269965#post269965>
- Project Location : Google Maps
- Waterview Tower : <http://yochicago.com/will-waterview-tower-%E2%80%9Crust-in-peace%E2%80%9D-no-more/19548/>
- S&P500 Chart : [www.finance.yahoo.com](http://www.finance.yahoo.com)
- Second chance : <http://www.maquoketa.k12.ia.us/wp-content/uploads/2014/08/second-chance.jpg>
- A 2<sup>nd</sup> Change Groundbreaking : <http://blog.archpaper.com/2012/11/stalled-wacker-drive-development-breaks-ground-once-more/>
- 3D Model : Courtesy of Halvorson+Partners
- Problems-Solutions : <http://solopracticeuniversity.com/files/2015/01/Problem-Solutions.jpg>
- Coordination : Courtesy of ADAPT (BIM model)
- Vertical PT : Courtesy of Lend-Lease