American Concrete Institute®
Advancing concrete knowledge

Extreme Tilt-Up Performance: Design to Construction, Part 2(B)

ACI Spring 2010 Xtreme Concrete Convention
March 21 - 25, Chicago, IL

ACI WEB SESSIONS

ACI Web Sessions

The audio for this web session will begin momentarily and will play in its entirety along with the slides.

However, if you wish to skip to the next speaker, use the scroll bar at left to locate the speaker's first slide (indicated by the icon in the bottom right corner of slides 9 and 26). Click on the thumbnail for the slide to begin the audio for that portion of the presentation.

Note: If the slides begin to lag behind the audio, back up one slide to re-sync.

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ACI Web Sessions

ACI is bringing you this Web Session in keeping with its motto of "Advancing Concrete Knowledge." The ideas expressed, however, are those of the speakers and do not necessarily reflect the views of ACI or its committees.

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ACI Web Sessions

ACI Web Sessions are recorded at ACI Conventions and other concrete industry events. At regular intervals, a new set of presentations can be viewed on ACI's website free of charge.

After one week, the presentations will be temporarily archived on the ACI website or made part of ACI's Online CEU Program, depending on their content.

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ACI offers an easy-to-use Online CEU Program for anyone who needs to earn Continuing Education credits.

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Topics recently added to the program:

- RAP Bulletin 10: Leveling and Reprofiling of Vertical and Overhead Surfaces
- RAP Bulletin 11: Slabjacking
- RILEM Report on Self-Compacting Concrete (Parts 1 and 2)

Visit www.concrete.org/education/edu_online_CEU.htm for more information.

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ACI Web Sessions

This ACI Web Session includes three speakers presenting at the ACI Xtreme Concrete convention held in Chicago, IL, March 21st through 25th, 2010.

Additional presentations will be made available in future ACI Web Sessions.

Please enjoy the presentations.

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Advancing concrete knowledge

Extreme Tilt-Up Performance: Design to Construction, Part 2(B)

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March 21 - 25, Chicago, IL

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Shane Walters, P.E., is Director of Engineering & Technology at Tilt-Up Design Systems, LLC. Shane has worked as a Structural Engineer for the past 10 years. Previously, at Steinbicker & Associates, Inc., he was involved in the design and development of computer-based design tools for tilt-up up construction, in addition to his project engineering and coordination activities. At Tilt-Up Design Systems he coordinates the continuing development of Tilt-Werks (an online design and collaboration application), administers the company network, trains clients, and leads live demonstrations of Tilt-Werks for engineers, architects, contractors, and material providers.

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BIM SYSTEMS AND COLLABORATIVE TECHNOLOGY FOR TILT-UP DESIGN AND CONSTRUCTION

Shane Walters, P.E.
Tilt-Up Design Systems, LLC
www.tilt-werks.com

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Building Information Modeling

- It's not just creating 3D models
- It's a process:
  - Creating building data
  - Managing building data
- Building data is not just limited to geometry and material quantities
- Can be further developed to provide added benefits to a wider group
- Integration with engineering design software

TILT-UP

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BIM and Tilt-Up Design

- One component to BIM that needs to be developed is the link to engineering design
- Will help reduce design time and increase productivity
- Develop software to take advantage of the benefits of BIM and add more information to the building data
- Current design practices typically only allow for the design of one panel at a time
- Calculations are usually the only output though the information entered can produce much more

TILT-UP

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Project Design Data Summary

TILT-UP DESIGN SYSTEMS LLC
building technology that works

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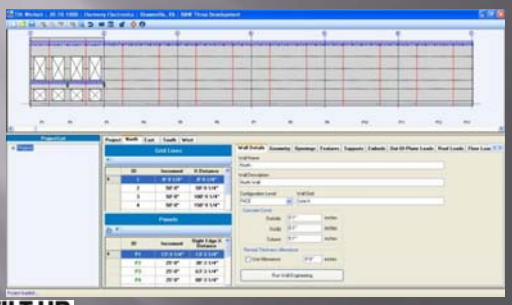
North Wall



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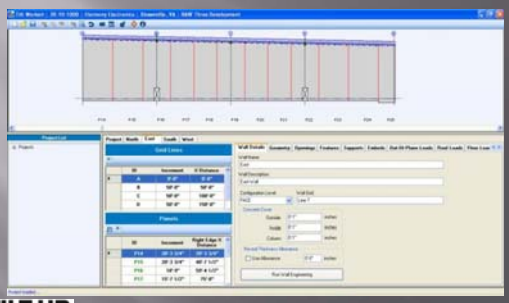
East Wall



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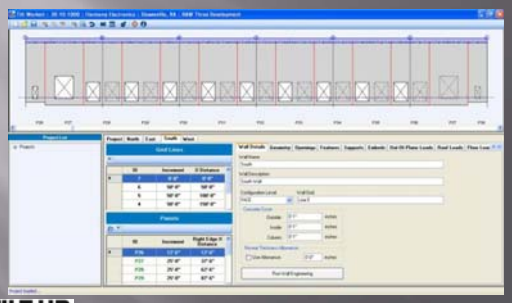
South Wall



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West Wall

- To perform Tilt-Up design most of the information required is geometric
- Same information is entered into a BIM system

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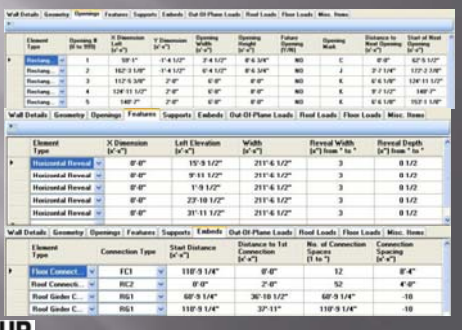
- Information required for design as well modeling



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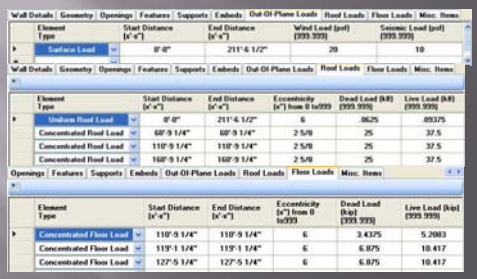
- Load input for the design of a typical Tilt-Up panel is usually minimal



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- Design output can also contain BIM building data that would be beneficial to the engineer to assist in refining the panel.
- Other factors besides just the capacity of the panel to accommodate the loading can be considered by using this information.

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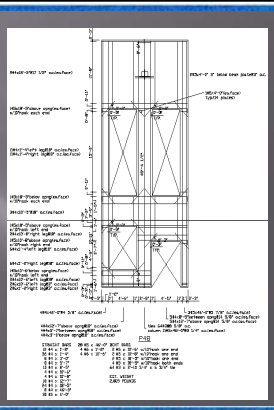
- Other forms of design output can be obtained from the information entered.
- This can reduce the time spent on other aspects of a project such as shop drawing creation.
- This information can become part of the BIM building data.



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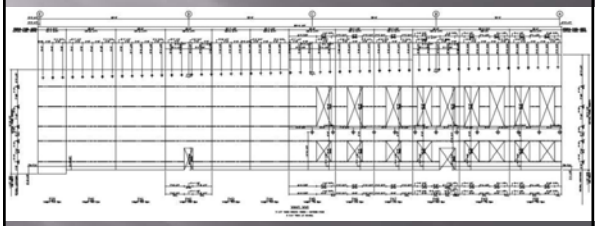
- Creation of full wall Panel layout drawings which match architectural elevations can help in data verification.



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Conclusions

- BIM systems that collaborate with engineering design software:
  - Provide an enhanced level of efficiency for design
  - Allows the different sections of the process to do what they do best
  - Each section can gain benefits from the other
  - Will lead to the development of a more complete BIM system
  - Will continue the core idea behind BIM of a centralized location for ALL the building data

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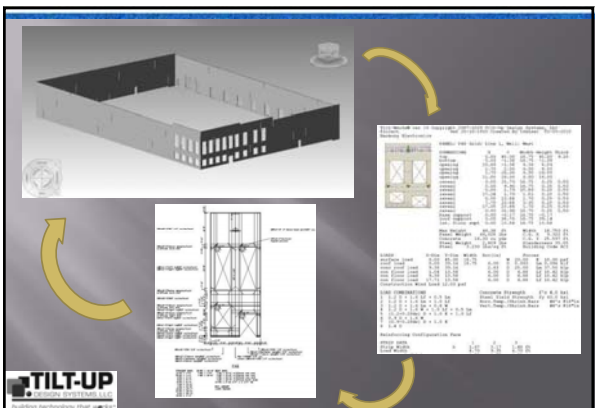

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Thank You!

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www.tilt-werks.com

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James E. Baty II is Technical Director for both the Tilt-Up Concrete Association and Concrete Foundation Association. He holds a degree (BARCH) in Architecture from Iowa State University, and has focused on thermal design efficiency throughout his career. His research has involved the use of thermal modeling programs for energy-efficient design such as VisualDOE, Physibel, and other mechanical engineering programs. Mr. Baty has contributed to full-scale thermal testing of insulated concrete sandwich panel construction with the U.S. Dept. of Energy. He has been actively involved in numerous associations, including ACI, and currently serves as secretary for ACI committee 551 (Tilt-Up Concrete Construction).

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James R. Baty II
Technical Director
Tilt-Up Concrete Association
Mount Vernon, Iowa

Frank Adames
President
Contratistas Civiles y Mecanicos
Santo Domingo, Dominican Republic

Tilt-Up + BIM + Creativity

Tilt-Up: Engineering Knowledge and Construction Techniques Reach New Heights

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Metro Santo Domingo
a city over-developed, looking to continue evolving a modern face

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Santo Domingo, DR

- Problem: Over 3.8 million people in 104.44 km^2 or 40.3 sq mi metro area.
- Problem: 11.5 times the density of Los Angeles
- Problem: Infrastructure congestion and urban density challenges necessity for development
- Surging population resulting in increased transportation burden.

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Gateway Theatre of Shopping
Umhlanga Rocks New Town c, kwa zulu natal, South Africa

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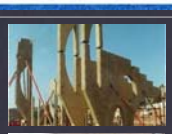
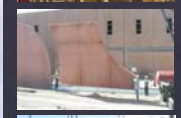


Panel Shape & Configuration

rectilinear, curved, complex geometry, warped

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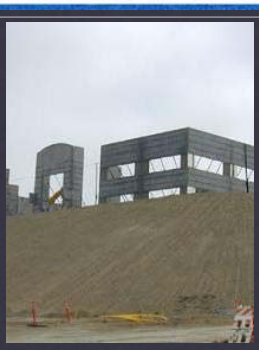

Building Site Flexibility

flat...or not

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Building Site Flexibility

on-slab...or not

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Frank Adames is President of Contratistas Civiles y Mecanicos (CCM), a design/build firm in Santo Domingo, Dominican Republic. Mr. Adames has been responsible for phenomenal growth in tilt-up construction throughout the Dominican Republic, with over 100 buildings completed using his revolutionary approach. Built upon his professional engineering expertise and his company's dedication to excellence, his solutions have often stepped beyond the state of the art for the industry.

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Jumbo Luperón

Santo Domingo, Dominican Republic

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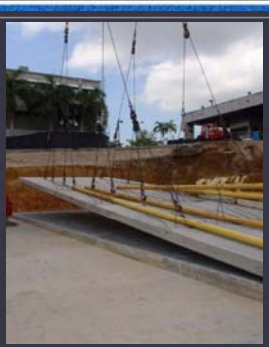


Jumbo Luperón

Santo Domingo, Dominican Republic

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Jumbo Luperón
Santo Domingo, Dominican Republic

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Welcome to Jumbo...

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Redeveloped City Blocks

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Structured Retail/Parking

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Design Technology

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Visualization Tools

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Thank you!

Tilt-Up: Engineering Knowledge and Construction Techniques Reach New Heights

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Related Documents

Tilt-up Concrete

- ACI 551.1R-05: Tilt-Up Concrete Construction Guide
- ACI 551.2R-10: Design Guide for Tilt-Up Concrete Panels
- CP-50(07): Tilt-Up Supervisor and Technician Reference Guide

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