## **PROGRAM** BOOK

# OFFSITE

THEORY AND PRACTICE OF ARCHITECTURAL PRODUCTION

2012 ACSA FALL CONFERENCE + MODULAR BUILDING INSTITUTE REGIONAL INDUSTRY MEETING

SEPTEMBER 27-29 2012 AT TEMPLE UNIVERSITY IN PHILADELPHIA PA



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#### **IMPORTANT ADDRESSES**

**Westin Philadelphia** (Thursday & Friday Morning) 99 South 17th Street at Liberty Place Philadelphia, PA 19103

**Temple University** (Friday Afternoon & Saturday) Tyler School of Art 2001 North 13th Street Philadelphia, PA 19122

## OFFSITE: THEORY AND PRACTICE OF ARCHITECTURAL PRODUCTION

Prefabrication is said to be the oldest new idea in construction, so it is no wonder that it continues to pervade as an ideal. The construction industry is fraught with litigation, inefficiency and waste. The design and construction of buildings are separate acts that are delineated contractually and legally identified and observed. Arguably, the divide between design and construction has resulted in increased schedule delays and cost, and a diminished building quality and sustainability because the conception (architecture), optimization (engineering) and production (construction) are not integrated. In response to this inefficiency, prefabrication and modularization emerge and remerge as effective methods of efficient production. McGraw-Hill Construction's latest SmartMarket Report, "Prefabrication and Modularization: Increasing Productivity in the Construction Industry," demonstrates how prefab architecture is yielding improved project schedules, decreased costs, and reductions in construction waste.

While the basic concepts of prefabrication—labor, material and cost efficiencies, shortened construction schedules, and the possibility of greater quality control—are well understood, architects often lack the fundamental knowledge necessary to determine where and when fabrication is appropriate. Architects must understand the range of choices, opportunities and challenges associated with prefabrication to use it effectively. Effective use of off-site construction requires strategic thinking about the design process. Specifically, architects must consider production thinking as a value-added measure to design, embracing notions of product theory and product design in the conception phase of development. In addition, industry professionals, especially many of those in the modular building industry, are ignorant of advances in parametric modeling and digital fabrication, with the potential to give more agency to building form and performance. This ACSA Fall 2012 Conference in conjunction with the Modular Building Institute Regional Industry Meeting brings together allied professionals, academics, and builders/fabricators to present current theory and practice at all scales of designing and building offsite.

#### **CO-CHAIRS**

Ryan E. Smith, University of Utah John Quale, University of Virginia Rashida Ng, Temple University

#### **SPONSORS**

The Association of Collegiate Schools of Architecture is grateful for the support and assistance of Temple University, Tyler School of Art.



#### **PARTNER**

ACSA is pleased to partner with the Modular Building Institute.



#### **GENERAL INFORMATION**

#### **Continuing Education**

Selected ČES sessions will be available. CES forms are located in your registration packet. CES forms must be signed and turned in at the registration desk before leaving the conference.

#### Badges

You must wear your badge throughout the conference to be admitted into sessions. Please return your badge cover at the close of the meeting to the registration desk for recycling.

#### Online Evaluation Form

You will be sent a link to complete an online evaluation survey after the conference. Your opinions and program suggestions will help us plan for future conferences. Please take a few minutes to complete the survey. We greatly appreciate your feedback.

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#### **ACSA MISSION STATEMENT**

To advance architectural education through support of member schools, their faculty, and students. This support involves:

- Serving by encouraging dialogue among the diverse areas of discipline
- Facilitating teaching, research, scholarly and creative works, through intra/interdisciplinary activity;
- Articulating the critical issues forming the context of architectural education
- Fostering public awareness of architectural education and issues of importance

This advancement shall be implemented through five primary means: advocacy, annual program activities, liaison with collateral organizations, dissemination of information and response to the needs of member schools in order to enhance the quality of life in a global society.

## THURSDAY (AT WESTIN HOTEL)

8:00	Prefabrication Education Workshop - MBI	SALON 2
8:00	Building Strong Management Skills - MBI	SALON 3
3:00	Coffee Break	REGISTRATION
3:30	Digital Innovation Session I	SALON 1
3:30	History Session I	SALON 2
3:30	Industry Innovation Session	SALON 3
3:30	Material Innovation Session	GEORGIAN ROOM
5:30	Coffee Break	REGISTRATION
6:00	Keynote: Atlantic Yards Highrise Modular	SALON 1
7:30	Reception	GEORGIAN ROOM

## FRIDAY (BEGINS AT WESTIN HOTEL / DROP-OFF AFTER TOUR AT TEMPLE UNIVERSITY)

7:00	Breakfast	SALON
7:30	Factory Tour: NRB Modular	LOBBY
	(DROP-OFF AT TEMPLE UNIVERSITY)	
1:00	Lunch	LOBBY
2:00	Component Systems Session	CLASSROOM 305
2:00	SFS: Housing Plenary	GALLERY 104
2:00	Material Innovation Session II	CLASS 404
2:00	SFS: Theories of Fabrication	SEMINAR 103
3:30	Coffee Break	LOBBY
4:00	Classroom & Disaster Relief Session	GALLERY 104
4:00	Digital Innovation Session II	CLASSROOM 305
4:00	History Session II	CLASSROOM 404
4:00	Sustainablity Session	SEMINAR 103
6:00	Coffee Break	LOBBY
6:30	Keynote: OFFSITE in the UK	GALLERY 104
8:00	Reception	LOBBY

## SATURDAY (AT TEMPLE UNIVERSITY)

8:30	Design Speculation Session	LAB 303
8:30	Housing Session I	CLASSROOM 404
8:30	Solar Decathlon Session	SEMINAR 103
8:30	Theories of Fabrication Session I	CLASSROOM 305
10:00	Coffee Break	LOBBY
10:30	History Session III	CLASROOM 305
10:30	Housing Session II	LAB 303
10:30	Pedagogy Session	SEMINAR 103
10:30	Theories of Fabrication Session II	CLASSROOM 104
12:30	SFS: Closing Plenary/Lunch	GALLERY 104
2:00	Modules Project Tour	TEMPLE CAMPUS

### 8:00AM-3:00PM

SALON 2

## PREFABRICATION EDUCATION WORKSHOP / ESSENTIALS OF COMMERCIAL MODULAR CONSTRUCTION (MBI)

Ryan E. Smith, University of Utah Laurie Roberts, NRB

While commercial modular construction represents only one percent of overall commercial construction, this building method remains one of the most interesting and misunderstood, dating back to Egypt's Great Pyramids. Advances in technology and trends, however, have made modular building an extremely flexible and efficient process in today's environmentally-conscious market, where up to 90% of a building is constructed in a quality-controlled factory using traditional building materials, then shipped to a final destination and assembled to form a seamless building.

Regardless of industry experience, every person interested or involved in temporary or permanent modular construction should participate in this course at least once. Developed by the MBI Educational Foundation in response to the need for industry-specific training, this course is delivered in the logical order of a successful modular building project from start to finish.

Participants will learn principles of professional selling, how to qualify a customer, project delivery methods, fundamentals of teamwork, who the key players are, common design considerations, common building materials used, site considerations, site supervision, and methods of installing and finishing a building. A certificate of completion from MBI will be awarded to each participant.

#### 8:00AM-3:00PM

SALON 3

#### BUILDING STRONG PROJECT MANAGEMENT SKILLS / MODULAR BUILDING INSTITUTE (MBI) INDUSTRY TRAINING

FMI Corporation

In a study conducted by the Business Roundtable, the training of field supervisors and managers has been identified as the most critical factor in controlling job costs. In these difficult economic times, the ability of project managers, superintendents, and foremen to meet or beat estimates will become increasingly important in separating successful contractors from the average firm.

This course is designed to enhance project management skills and ultimately result in increased company productivity and profitability. It is for handson, can-do professionals who want to understand how a five percent savings on materials can increase net profits by 62 percent; how a 10 percent increase in labor productivity can increase net profits by 68 percent; how efficient handling of change orders will protect the contractor, improve job profits, and improve customer satisfaction; how to analyze and overcome obstacles to high daily performance; and how team participation in the field creates a cooperative attitude, boosts morale, improves productivity, and increases profits for the mutual wellbeing of worker and company.

Throughout this course, FMI will challenge participants to perform at higher levels so they leave with management skills that add value to the company. Participants will also be awarded a certificate of completion from FMI.

#### 3:00PM-3:30PM COFFEE BREAK

REGISTRATION

3:30PM-5:30PM

**DIGITAL INNOVATION SESSION I** 

SALON 1

Critiquing CAM: Comparing Computer-Aided Manufacturing and Traditional Manufacturing Dana K. Gulling, North Carolina State University

Who already does this better? Mass Production + Customization

Marc A. Roehrle, University of Wisconsin-Milwaukee

Off Site / On Site: Re-Siting Modular Construction Through Robotic Manufacturing Joshua Bard, University of Michigan

3:30PM-5:30PM

**HISTORY SESSION I** 

MLOIVZ

Prefab + Solar at Mid-century
Anthony Denzer, University of Wyoming

**Cherner and the FHA: Housing Research in the 1950s** Jane Murphy, Ohio State University

Mail-Order Modern: Supermarket Magazines, Vacation Cabins, and Modular Measure in the 1950s
David Hill, North Carolina State University

Off and On: Successes and Failures of Prefabrication of Houses
Linda Brock, University of British Columbia

An American Wartime Dream: The Packaged House of Konrad Wachsmann and Walter Gropius Alicia Imperiale, Temple University

3:30PM-5:30PM

INDUSTRY INNOVATION SESSION

SALON 3

**Logistical Aspects of Prefabrication** Emanuel Jannasch, Dalhousie University

A Case Study on Multi-trade Prefabrication Kihong Ku, Philadelphia University Paul Broadstone, Virginia Tech Anthony Colonna, Skanska USA Building

Offsite Fabricators and Customization in History and Practice
Liane A. Hancock, Louisiana Tech University

Customized Container Architecture Adrian Robinson, Oxford Brookes University

Iterative Resilience: Synchronizing Dynamic Landscapes with Responsive Architectural Systems Meredith Sattler, Louisiana State University

3:30PM-5:30PM

MATERIAL INNOVATION SESSION I

GEORGIAN ROOM

AAC Textile Block System Lawrence Blough, Pratt Institute

Investigation of the Process of Digital Design, Virtual Prototyping, Simulation Testing and CNC Manufacturing of Contemporary "Post-and-Beam" Timber Framed Buildings

Faidon Nikiforiadis, Low Carbon Building Design, UK

Pattern and Performance: A Case Study Andrew Cruse, Washington University in St. Louis

Tessellating Terracotta: The Performative Potential of Ceramic Systems for Prefabrication
Clare Olsen, California Polytechnic State University

5:30PM-6:00PM

REGISTRATION

**COFFEE BREAK** 

6:00PM-7:30PM

SALON 1

**KEYNOTE: ATLANTIC YARDS HIGHRISE MODULAR** 

Alex Terzich & Erik Churchill, SHoP Architects (NYC) + industry experts offer a presentation and Panel Discussion on the progress of the Atlantic Yards modular high rise in New York City.

7:30PM-8:30PM GEORGIAN ROOM

**RECEPTION** 

FRIDAY, SEPTEMBER 28, 2012, BEGIN AT THE WESTIN HOTEL

7:00AM-7:30AM SALONI

**CONTINENTAL BREAKFAST** 

7-30AM-1-00PM

**FACTORY TOUR: NRB MODULAR** 

WESTIN LOBBY

Buses will depart from the Westin Hotel Lobby starting

at 7:30AM.

DROP-OFF AT TEMPLE UNIVERSITY, ARCHITECTURE BUILDING

1:00PM-2:00PM

LUNCH AT TEMPLE UNIVERSITY

LOBBY

Buses will drop attendees at Temple University, Tyler School of Art for conference sessions.

2:00PM-3:30PM CLASSROOM 305

COMPONENT SYSTEMS SESSION

Off Building Pre-Assemblies: Building Envelope Systems Pre-assembled for Optimal Modularization and Improved Workflow

Minjung Maing, Georgia Institute of Technology

Housing Agency System (HAS): Multi-Criteria Satisficing & Mass-Customization of Homes Michael S. Bergin, University of California, Berkeley

Architects + Manufacturing: A Catalog of Architects **Customizing Repetitive Building Elements** Dana K. Gulling, North Carolina State University

Thermal Performance Issues of Glazing Facades and the Use of Environmental Parameters in Exterior Shading Device Design Nik Nikolov, Lehigh University

2:00PM-3:30PM

GALLERY 104

SPECIAL FOCUS SESSION: HOUSING PLENARY

Scott Hedges, Entrepreneur & Greg La Vardera, Architect discuss Optimizing Offsite: Residential Construction Systems in Sweden.

Howard Steinberg, Principal, Onion Flats + BLOX Sustainable Building Systems

2:00PM-3:30PM

CLASSROOM 404

MATERIAL INNOVATION SESSION II

Recasting Precast: Pedagogy, Production, and Performance with Precast Concrete Wall Panel Systems Matt Burgermaster, New Jersey Institute of Technology

Molded Remediating Modules: Prefabricated Components for Improving Indoor Air Quality and Condition

Carmen Trudell, California Polytechnic State University

Digital Concrete Fabrication: Concepts in Parametric Formwork

Nathan Howe, Kansas State University

Modular Commons: Z-Blocks

Srdjan Jovanovic Weiss, Temple University

2:00PM-3:30PM

SEMINAR 103

SPECIAL FOCUS SESSION: THEORIES OF FABRICATION PLENARY

Roger-Bruno Richard, University of Montreal, presents Industrialised Building Systems: . The 'Palette' of Options.

3:30PM-4:00PM

COFFEE BREAK

LORRY

4:00PM-6:00PM GALLERY 104

**CLASSROOM & DISASTER RELIEF SESSION** 

Social Process for a Modular Future

Margarette Leite & Sergio Palleroni, Portland State University

FrameScapes: Modular Demountable School for Burmese Refugee Children

David Hill, North Carolina State University

**Designing Better Portable Classrooms** 

Nils Gore, University of Kansas

Habitat Temporanei: Proposals for Post-Disaster **Provisional Housing** 

Sandy Stannard, California Polytechnic State University

reCOVER: Disaster Recovery Housing System Anselmo Gianluca Canfora, University of Virginia

Prefabricated Emergency Response Living (P.E.R.L.) Peter D.D. Hind, University of Nebraska-Lincoln

4:00PM-6:00PM CLASSROOM 305

DIGITAL INNOVATION SESSION II

Traditional Complex Modularity in Islamic and Persian Architecture: Interpretations in Muqarnas and Patkâné Crafts, Focusing on their Prefabricated Essence Negin Dadkhah, Temple University

Youth Hostel Detroit: Reframing Design Build **Education Through Digital Practice** Joshua Bard, University of Michigan

Yesterday's Tomorrow Was Today: the Revival of Mid-Century Optimism in the Age of Digital Fabrication Damon Caldwell, Louisiana Tech University

4:00PM-6:00PM CLASSROOM 404

HISTORY SESSION II

The Production of R.G. LeTourneau's Prefabricated Concrete Homes: Making the Tool to Make the Thing Everett E. Henderson, Jr., University of Florida

Repeating Success and Avoiding Failures: A Historical Overview of Panelized and Modular Construction in Housing

Michael J. O'Brien, Texas A&M University

The Dismissal of Dymaxion House and Demountable Space

Rob Whitehead, Iowa State University

New Ways of Living Through Plug-In and Stacking **Prefabricated Modular Housing Systems** 

Luis Machuca, Malaga University

Industrial Building Relevancy: A Retrospective of CRS Firm Insights on Designing Production Facilities Marjorie Callahan, University of Oklahoma

4:00PM-6:00PM SEMINAR 103

SUSTAINABILITY SESSION

A Novel "Post-and-Beam" Timber Structural System for Sustainable European Modular Houses

Faidon Nikiforiadis, Low Carbon Building Design, UK

**Efficacy of Shipping Container Upcycling: Comparison of Environmental Impacts Between Two Housing Systems** Bradley Guy, Catholic University of America

Stephen Bender, University of Florida

High Octane: Eco-adaptive Architecture

Elizabeth Martin, Southern Polytechnic State University

Prefabricating Charles Moore: Reinterpreted Saddlebags and Aedicules

C. A. Debelius, Chadwick Everhart James Russell, Appalachian State University

Life Cycle Impact Assessment of a Megapanel Façade System in HL23 Condo

Kyoung-Hee Kim, University of North Carolina at Charlotte

6:00PM-6:30PM

**COFFEE BREAK** 

LOBBY **6:30PM-8:00PM** 

KEYNOTE - OFFSITE IN THE UK

GALLERY 104

Session Moderator: James Guthrie, Miletus Group

Keynote Speaker: Jaimie Johnston, Bryden Wood (London) presents on designing for manufacture and assembly.

Panel Discussion: A panel discussion follows with Ian Peter Atkins, Kohn Pedersen Fox Associates and Adrian Robinson formerly with Buro Happold (London) to discuss the emergence of offsite growth in the UK during the past decade.

8:00PM-9:00PM

**RECEPTION** 

LOBBY

SATURDAY, SEPTEMBER 29, 2012, AT TEMPLE UNIVERSITY

#### 8:30AM-10:00AM DESIGN SPECULATION SESSION

LAB 303

Folding Modular Retreat

Jessica Hester-Mautner Braverman, North Carolina State University

From 'Part to Whole' to 'Whole to Part': Rethinking Modularity Luis Ortega, University of Illinois at Chicago

Prefabricated Nested Boxes

Kristina H Yu, University of New Mexico

Your Space Kit: Off-Site Prefabrication of Integrated Residential Fit-Out Stephen H. Kendall, Ball State University

8:30AM-10:00AM CLASSROOM 404

**HOUSING SESSION I** 

Beyond the Trailer: Rethinking Affordable Manufactured Housing in the U.S.

Carlos Alberto Reimers, Catholic University of America

BRITNEY and K-FED: Uniting Processed and UN-Processed Components in Affordable Housing John E. Folan, Carnegie Mellon University

Locally Based Approach to Prefabricated Housing Peter L. Wong & Alexander Suryandono, University of North Carolina at Charlotte

A New Norris House: Give and Take

Samuel Mortimer, University of Tennessee-Knoxville

Eco-Fab: A Climatic Responsive Alternative to Manufactured Housing

Sandy Stannard, California Polytechnic State University

8:30AM-10:00AM SOLAR DECATHLON SESSION

SEMINAR 103

Unmoored Architecture: On Modules, Mobility and Manufacturing in the RE:FOCUS House Mark McGlothlin, University of Florida

Living Light

Edgar Stach, Philadelphia University

The Urban Garden; Industrialized Net Zero **Energy Housing** 

Joseph Wheeler, Virginia Tech

Design-Build: Prototyping a Modular, Energy-Efficient **Envelope System with Students** 

Christian Volkmann, City College of New York

8-30AM-10-00AM

#### **THEORIES OF FABRICATION SESSION I**

CLASSROOM 305

Modular Urbanism

David Karle, University of Nebraska-Lincoln

Speculative Evolution: Computational and Biogenetic Analogues in Contemporary Architectural Production Pasquale De Paola, Louisiana Tech University

System Structures in Architecture: Towards a Theory of Industrialized Construction Kasper Sánchez Vibaek, Royal Danish Academy of Fine Arts

#### 10:00AM-10:30AM COFFEE BREAK

LORRY

#### 10:30AM-12:30PM HISTORY SESSION III

CLASSROOM 305

Into Africa: A Comparison of the Metal, Prefabricated Structures Proposed by Auguste Choisy (1893) and Jean Prouvé (1949) for the French Colonies Hilary Bryon, Virginia Tech

Modularity, Prefabrication + Building Manuals In Postwar Italy: Scenes from America Alicia Imperiale, Temple University

The 'Single-Pour System': Thomas Edison and the Production of a House Without Parts Matt Burgermaster, New Jersey Institute of Technology

Utopia Modulated: The Case of Yona Friedman and the Systemic Approach to the Social Sense of the Fragmentary Srdjan Jovanovic Weiss, Temple University

#### 10:30AM-12:30PM HOUSING SESSION II

Compact Prefabrication and the Accessory **Dwelling Unit** 

Kristina H Yu, University of New Mexico

Construction Critical: Technology, Millwork, and Interior Space

Michael D. Gibson, Kansas State University

**Prefab for Humanity** 

Ryan Salvas, Robert Sproull, Jr., and Justin Miller, Auburn University

Ralph Rapson's Greenbelt: The Evolution of a Prototype Francisco Gomes, University of Texas at Austin

Toward Green Infill Housing: A Modular "Kit-of-Parts" Lisa D. Iulo, Pennsylvania State University

#### 10:30AM-12:30PM PEDAGOGY SESSION

SEMINARY 103

Off-the-grid: Three Academic Design/Build Projects Built Offsite, Off-the-grid and for the Public Rocco J. Ceo, III, University of Miami

Digital Tolerance: Alternate Groundings for Computer Fabrication Pedagogy Sam Zeller, Kansas State University

#### Prototype

Igor Siddiqui, University of Texas at Austin

The Butler Building as a Pedagogical Instrument Greg Snyder, University of North Carolina at Charlotte

#### 10:30AM-12:30PM THEORIES OF FABRICATION SESSION II

CLASSROOM 104

Analysis and Integration of Fabrication Systems Emanuel Jannasch, Dalhousie University

Off-site / Off-world: Prefabrication for Extreme Conditions and Unpredictability Genevieve Baudoin & Bruce Johnson, University of Kansas

Form Follow Structure: Biomimetic Emergent Models of Architectural Production

Pasquale De Paola, Louisiana Tech University

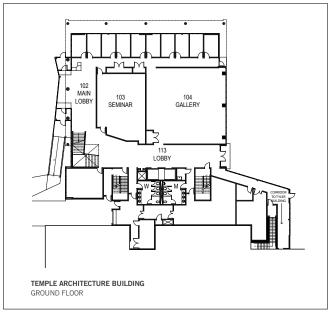
Simple Aesthetics: Searching for a Theoretical Basis for Design Restraint Dana K. Gulling, North Carolina State University

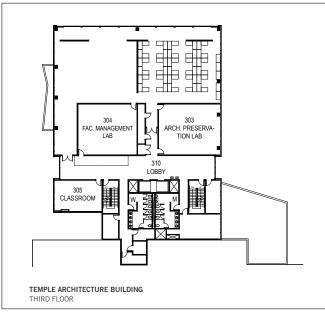
12:30PM-2:00PM SPECIAL FOCUS SESSION: **CLOSING PLENARY / LUNCH** GALLERY 104

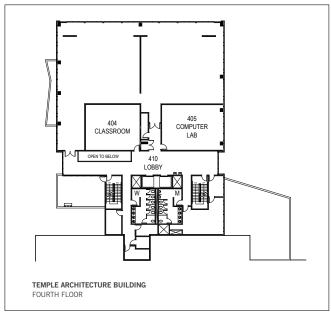
2:00PM-4:00PM TEMPLE CAMPUS

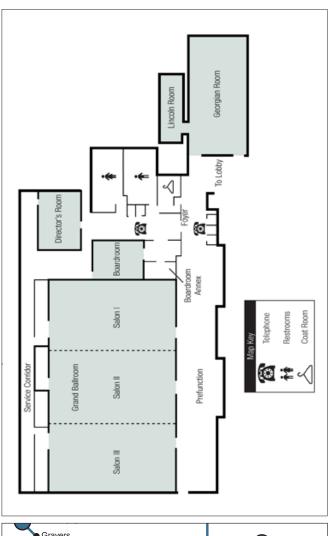
MODULES PROJECT TOUR

Brian Phillips, Architect of the Modules student residence of Temple University provides a live tour of this four story permanent modular construction.











#### PHILADELPHIA TRANSIT - SEPTA

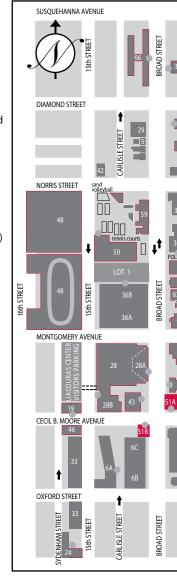
CITY HALL STATION ON THE BROAD STREET LINE EXIT CECIL B. MOORE STATION. WALK ONE BLACK EAST ON CECIL B MOORE STREET TO N. 13TH STREET, TAKE N. 13 STREET, NORTH, THREE BLOCKS TO THE ARCHITECTURE BUILDING

## **MAIN CAMPUS**

## TEMPLE UNIVERSITY

## **Buildings and Departments**

- 1. Alter Hall
- 2. Anderson Hall
- 3. Annenberg Hall
- 4. Architecture
- 5. Atlantic Terminal (privately developed housing)
- 6. Avenue North Complex
- 6A. The Edge (privately developed student housing)
  - 6B. Shops
  - 6C. Temple University Fitness
- 7. Barrack Hall
- 8. Barton Hall (Physical Science) 8A. BartonA 8B. BartonB
- 9. Beury Hall (BE)
- 10. Biology-Life Sciences Building (BL)
- 11. Campu₽dice Sub-Station
- 12. Campus Safety Services
- 13. Carnell Hall
- 14. Conwell Hall (CW)
- 15. Conwell House
- Edberg-Olson Football Practice Facility
- 17. 1810 Liacouras Walk (student services)
- 18. Engineering
- Entertainment and Community Education Center and retail shops (WRTI)
- 20. Facilities Management Office
- 21. Founder's Garden 22. Gladfelter Hall (GH)
- 22. Gladicitei Hall (GH)
- Hardwick Hall (student housing)
- 24. Elmira Jeffries (student housing)
- 25. Johnson Hall (student housing)
- 26. Kardon Building (privately developed housing)
- 27. Klein Law Building (James E. Beasley School of Law)
- 28. The Liacouras Center 28A. Esther Boyer Theater 28B. Independence Blue Cross Recreation Center
- 29. Messiah College
- 30. Mitten Hall (Diamond Club)
- 31. Newman Center
- 32. "1940" (student housing)
- 33. Oxford Village (privately developed housing)
- 34. Paley Library (PL)
- 35. Peabody Hall (student housing)
- Pearson/McGonigle Complex
   Pearson Hall (PH)
   McGonigle Hall (MG)
- 37. Presser Hall (PR)



- 38. Residential & Retail Complex (under construction)
- 39. Ritter Hall Annex (RA)/ Kiva Auditorium
- 40. Ritter Hall (RH)
- 41. Rock Hall (RC)
- 42. Edward H. Rosen Hillel Center for Jewish Life
- 43. 1700 N. Broad Street
- 44. The Shops on Liacouras Walk 44A. and 44B.
- 45. Shusterman Hall
- 46. Small Business
  Development Center
  (1510 CeciB. Moore Ave.)
- 47. Speakman Hall (SP) (School of Tourism and Hospitality Management)



- 48. Sports and Recreation Fields
- Student Center Complex
   49A. Howard Gittis Student
  - Center/Bookstore 49B. Student Center (south)
- 50. Student Pavilion
- 51. Subway Station and Plaza (SEPTA)51A. Northbound51B. Southbound (to Center City)
- 52. Sullivan Hall (SN)
- 53. Temple Performing Arts Center
- 54. Temple Towers (student housing)
- 55. Temple University Regional Rail Station (SEPTA)
- Temple University TECH Center & Welcome Center
- 57. "1300" (student housing)

- 58. Tomlinson Theater (TT)/ Randall Theater
- 59. Triangle Apartments (student housing)
- 60. Tutleman Learning Center
- 61. Tyler School of Art
- 62. University Village (privately developed housing)
- 63. Wachman Hall (Computer/Mathematics
- 64. Walk Auditorium
- 65. Weiss Hall (WH)
- 66. James. White Hall (student housing)



**NOTES** 

NOTES	

## THURSDAY, SEPT 27-SATURDAY, SEPT 29, 2012 PHILADELPHIA, PA

