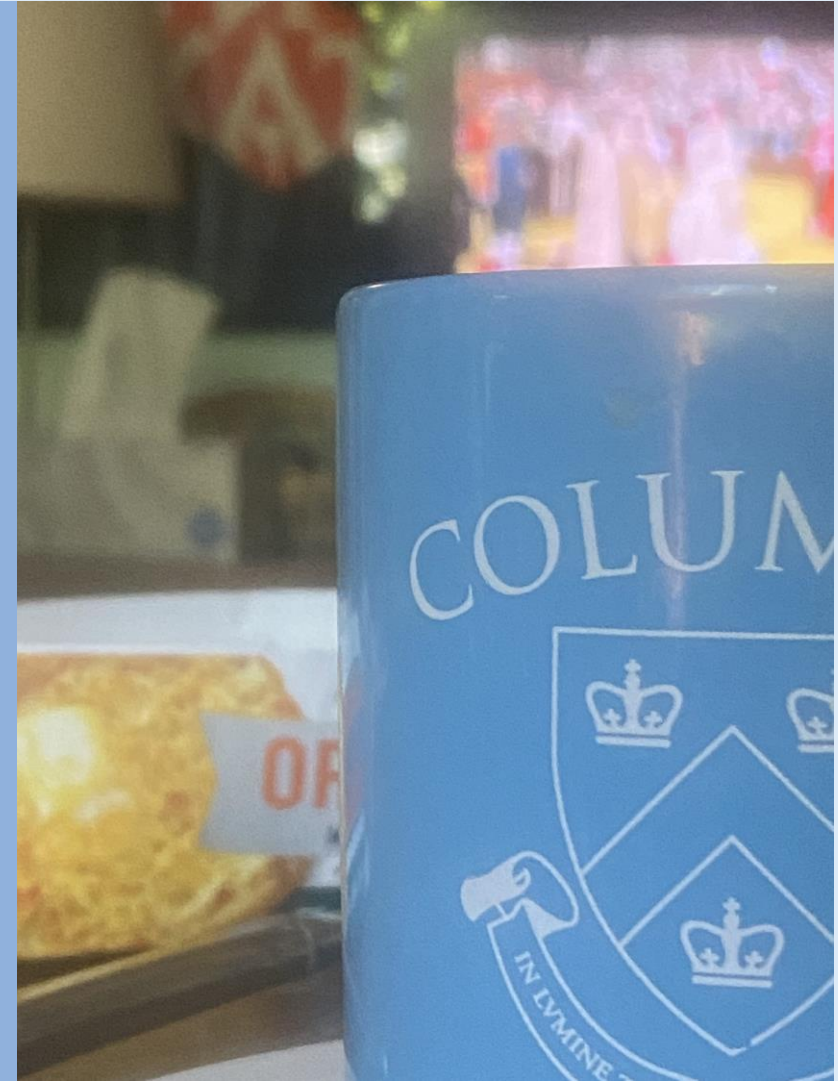


CBIPS | Welcome



Welcome



CBIPS | Kickoff Meeting of 9.6.23



Agenda

- Introductions
- Industry Field Study
- Advisory Board
- Guest Speakers
- NYC Site Visits
- National Field Study
- International Field Study
- Research 2022-23
- Research 2023-24
- Research Detail 2023-24
- Breakout Groups 2023-24

INTRODUCTION

CBIPS | Introduction | Welcome to New York



CBIPS conducts action research.

The Center for Buildings, Infrastructure and Public Space seeks to identify how best to design, construct, and manage buildings, infrastructure, and civic spaces, emphasizing social impact, sustainability, and resilience, in addition to cost, schedule, quality, and safety.

CBIPS | Introduction | Our Scope



Our scope is interdisciplinary.

“Thus, in addition to speaking to us about usefulness, economics, energy and safety, structure [*and infrastructure?*] asks us to appreciate creativity and beauty.”

Why Buildings Stand Up, Mario Salvadori

CBIPS | Introduction | Our City



Our laboratory is New York.

The Center for Buildings, Infrastructure and Public Space benefits from the sites, streets and superb engineering and construction management firms in New York as a starting point for research that is intended to influence projects and policies

CBIPS | Introduction | Our Context



Our context is Columbia.

The Center for Buildings, Infrastructure and Public Space is housed in the Fu Foundation School of Engineering and Applied Science (SEAS) and benefits from a stellar Industry Advisory Board of leaders from all aspects of the AEC Industry.

CBIPS | Introduction | Our Capability



Our capability is you.

The Center for Buildings, Infrastructure and Public Space could not exist without the intelligence, ambition and energy of the CBIPS Fellows selected each year to participate in group research, site visits, and field study.

CBIPS | Introduction | Rick Bell, Acting Director



Brief CV

- Acting Director, CBIPS
- NYC DDC, Director Design Excellence
- AIANY/Center for Architecture, Director
- NYC DDC, Assistant Commissioner A&E
- CSU President (<https://csu.global>)
- Degrees from Yale and Columbia
- Lived on a houseboat for eight years
- <https://www.linkedin.com/in/rick-bell-b7316110>

CBIPS | Introduction | Julio Alfredo Tupayachi Molina, Research Coordinator



Brief CV

- CBIPS Research Coordinator
- CBIPS Fellow, 2022-23
- Thornton Tomasetti, Engineer Intern
- NCEES FE Engineer-in-Training
- TYP Engineering, Structural Engineer
- Civil Engineering degrees from PUCP
- From the historic city of Lima
- <https://www.linkedin.com/in/rick-bell-b7316110>

CBIPS | Introduction | Alejandro Lizcano Caballero, Research Coordinator



Brief CV

- CBIPS Research Coordinator
- CBIPS Fellow, 2022-23
- STV Inc., Digital Advisory Intern
- Estruktural SAS CEO & Founding Partner
- FIDARE AJP Director of Real Estate
- Degree from University of Los Andes
- From the beautiful city of Bogota
- <https://www.linkedin.com/in/Alejandro-lizcano>

CBIPS | Introduction | 2023-24 Accepted Fellows and Wait List Designees



Nikita Aggarwal
Divy Agrawal
Srimathi Am
Shrusti Balki
Ruben Martin Bazalar
Karthik Boppana
Vandan Darji
Abdel Rahman El Tallis
Sloka Gampa
Abhiskeh Jadhav
Salah Ajmal Khan
Sean Kim
Sree Lakshmi Kumar
Yuanfeng (Emily) Liang

Karan Mutha
Trushar Padwekar
Siri Reddy Pannala
Javier Quirós Reiche
Sanjeeth Ramesh
Adina Sargozhina
Kalyani Uday Shah
Vedant Rakesh Singh
Maya Taibi-Guénolé
Kavit Thakkar
Kaustubh Tiwari
Shaik Numan Aad Unk
Alok Kumar Vidyarthi
Prathap Yellam

CBIPS | Introduction | 2022-23 Fellows



Ali Danish Bakhtyari
Michael Leyton Bradley
Fumin (Renée) Chen
Siddhe Deshpande
Yuhuan Gao
Sruta Gunuganti
Rajveer Gurbuxani
Hardhik Kasireddy
Sai Mithil Krishna Kumar
Alejandro Lizcano
Aashini Patel
Shivani Patel
Atmaja Vilas Patil
Julio Tupayachi
Chintan Vohra
Feng Zhang
Qixiao Zhang

CBIPS | Introduction | 2021-22 Fellows



Jennifer Nelsson
Jennie Gandhi
Yuhuan Gao
Aakash Goel
Hongxin Jiang
Jianjun Long
Rujutha Parameswaran
Haimil Patel
Krunal Patel
Atmaja Vilas Patil
Roopesh Pugalendi
Derry Radityatama
Kahan Shah
Lin Shi
Richard Shrivastav
Kenichiro Suzuki
Victoria Yio
Haiwen Zhu
Qinyang Zhu

AECOM and STV Industry Field Study

INDUSTRY FIELD STUDY

AECOM Industry Field Study | 2021-23 | Traditional & Agile Project Management



AECOM IFS gives the opportunity of seeing project management concepts in action:

- Go / No Go / Risk Assessment
- Proposal Preparation / Planning
- Contracts / Negotiations / Financials
- Metrics of Sustainability
- Agile Principles and Value Drive Delivery
- Defining Scope Requirements
- Technology Power Apps
- Stakeholder Engagement

STV Industry Field Study | 2022-23 | Traditional and Agile Project Management



STV IFS gives the opportunity of seeing project management concepts in action:

- Go / No Go / Risk Assessment
- Proposal Preparation / Planning
- Contracts / Negotiations / Financials
- Metrics of Sustainability
- Agile Principles and Value Drive Delivery
- Defining Scope Requirements
- Technology Power Apps
- Stakeholder Engagement

AECOM Industry Field Study | 2023-24 | CIEN E4182.2 Roster as of 9.5.23

The AECOM logo is displayed in white, bold, sans-serif capital letters against a dark green rectangular background. The letters are spaced out, with the 'E' being particularly prominent due to its width and the horizontal bars.

- Shruti Vinod Balki
- Weijia Chen
- Vandan Rajesh Darji
- Abdel Rahman El Tallis
- Marion Leah Kemunto Ndubi
- Salah Ajmal Khan
- Yuanfeng (Emily) Liang
- Karan Mutha
- Minathi Nambi
- Trushar Padewekar
- Siri Reddy Pannala
- Adina Sargozhina
- Vedant Rakesh Singh

STV Inc. Industry Field Study | 2023-24 | CIEN E4182.1 Roster as of 9.5.23



- Srimathi Am
- Ruben Martin Bazalar
- Karthik Boppana [or Divy Agrawal]
- Michael Leyton Bradley
- Sean Kim
- Ganavi Ravi Kumar
- Sree Lakshmi Ranjith Kumar
- Abhishek Sunil Jadhav
- Javier Quirós Reiche
- Sanjeeth Ramesh
- Dhinesh Kanna Ramkumar
- Kalyani Uday Shah
- Kavita Hasmukhbhai Thakkar
- Prathap Yellam

CBIPS Advisory Board

Advisory Board

CBIPS Board of Advisors | 2022-23 | Annual Colloquium at Faculty House



Highlights of the 2022 Board of Advisors Colloquium on Equity in Infrastructure:

- Annual Board meeting at Faculty House
- Focused on a CBIPS research project
- Convened Fellows & Board Members
- Poster session of research by Fellows
- Speakers participated from LA & Chicago
- Proceedings summary on CBIPS website
- Board member bios on CBIPS website
- 2023 Colloquium scheduled for Oct

CBIPS Guest Speakers

Guest Speakers

CBIPS Guest Speakers | 2018-19 | Social Housing Design and Financing



Highlights of the 2019 guest lecture by Mark Ginsberg of Curtis + Ginsberg Architects:

- NYCHA work by Curtis + Ginsberg
- HPD work by Curtis + Ginsberg
- public housing policies and NYC politics
- public housing financing and challenges
- Citizens Housing and Planning Council
- zoning and other regulatory issues
- accessibility and ADA questions
- infill housing at NYCHA developments

CBIPS Guest Speakers | 2019-20 | Social Housing Design and Engineering



Highlights of the 2019 guest lecture by Dan Eschenasy, DOB Chief Structural Engineer:

- NYCHA relation to Buildings Department
- HPD relation to NYC Buildings Department
- public housing policies and NYC politics
- public housing financing and challenges
- forensic challenges of building condition
- changes in inspection through technology
- DOB need for civil and structural engineers
- disaster preparedness work at NYC DOB

CBIPS Guest Speakers | 2021-22 | Zoning and Residential Planning



Highlights of the 2022 guest lecture by Prof. Kate Dunham from Columbia GSAPP:

- zoning and neighborhood impact
- significance of zoning
- zoning regulations and building massing
- zoning relation to use and bulk
- density, location and type of building
- access to open space
- affordability, equity and inclusivity
- density and diversity of people

CBIPS NYC Site Visits

NYC SITE VISITS

CBIPS New York City Site Visits | 2018-19 | Infrastructure Economics



Highlights of the 2018 site visit to Brooklyn Bridge Park with Marvel Architects:

- commercial history of the waterfront site
- NYC 2012 Olympic proposal planning
- phased roll-out of recreational facilities
- St. Anne's Warehouse adaptive re-use
- access to park site from upland Brooklyn
- access by ferry and water taxi
- opportunities for public art installations
- reuse of stone slabs for amphitheater

CBIPS New York City Site Visits | 2019-20 | Infrastructure Economics



Highlights of the 2019 site visit to Hunters Point South with Thomas Balsley:

- commercial history of the waterfront site
- NYC 2012 Olympic proposal planning
- phased roll-out of recreational facilities
- construction of new housing and schools
- construction of library and ferry landing
- access by water taxi and subway
- proximity to museums and galleries
- creation of resilient soccer field bowl

CBIPS New York City Site Visits | 2021-22 | Infrastructure Economics



Highlights of the 2021 site visit to Little Island with Signe Nielsen of MNLA:

- commercial history of the waterfront site
- dispute and lawsuit about privatization
- foundation financing of construction
- private financing of maintenance
- delivery of concrete structure by barge
- variety and maintenance of plantings
- accessibility for those with limited mobility
- animation by performance and food

CBIPS National Field Study

NATIONAL FIELD STUDY

CBIPS National Field Study | 2018-19 | Los Angeles | March 2019



Highlights of the 20 meetings or site visits during the Los Angeles National Field Study:

- LA Metro with Adam Light
- LA Rams/Olympic Stadium in Culver City
- Hyperloop Mockup with Yaya Zhou
- Port of Long Beach expansion by boat
- Thornton-Tomasetti Wilshire Grand site
- AECOM Los Angeles River project
- Culver City Mayor on transit and housing
- Santa Monica social housing with MRY

CBIPS National Field Study | 2021-22 | Chicago (virtually) | March 2022



Meetings during the Chicago Field Study:

- Woody Wood of Chicago Architecture Center
- Brad Carter of Turner Construction
- Carol Ross Barney of Ross Barney Architects
- Denise Casalino of AECOM Chicago
- Thorsten Johann of Studio Gang
- Alejandro Fernandez at Thornton Tomasetti
- Lindsay Zanders of WSP Chicago
- Paul Tebben of Kinexx Modular Construction
- Tim Swanson of Inherent Homes Modular
- Commissioner Gia Biagi of Chicago DOT

CBIPS National Field Study | 2022-23 | Miami | March 2023



Ten meetings during the Miami Field Study:

- Michael Robinson at Turner Construction
- Alla Permyacoff at the Perez Museum
- Oscar Gonzalez at FDOT I-395 Project
- George Adornato at Suffolk Construction
- Nitin Motwani at Miami Worldcenter
- Susan Nesenman at WSP Miami
- Bernard Zyscovich re Plan Z Miami
- Andy Salcedo at Kaufman Lynn
- Pierluca Roccheggiani at Luis Vidal Arch.
- Bernardo Fort-Brescia at Arquitectonica

CBIPS International Field Study

INTERNATIONAL FIELD STUDY

CBIPS International Field Study | 2018-19 | Paris | January 2019



Highlights of the 20 meetings or site visits during the Paris International Field Study:

- Pavillon de l' Arsenal with Mayor Hidalgo
- City Hall with D/M Jean-Louis Missika
- Renzo Piano Building Workshop
- Catherine Barbé at Société de Grand Paris
- AECOM Paris environmental office
- Dominique Perrault on Olympic planning
- Jardin Gilles-Clément with Patrick Blanc
- Vinci (Léonard) with Cécile Maisonneuve

CBIPS International Field Study | 2019-20 | London | January 2020



Highlights of the 20 meetings or site visits during the London International Field Study:

- NLA overview with Peter Murray
- Spencer de Grey at Foster and Partners
- Bloomberg HQ with Foster's Michael Jones
- Michael Roberts at Thornton-Tomasetti
- Angela Brady at Brickworks social housing
- AECOM London office
- Kings Cross Central Station with WSP
- Arup with Susan Claris and James Kenny

Waterloo Station with Carina Wu of Arup

CBIPS International Field Study | 2021-22 | Madrid (virtually) | January 2022



Highlights of ten Zoom meetings during the Madrid Virtual International Field Study:

- Javier Camy at AECOM Madrid
- Belem Moneo & Jeff Brock at Moneo Brock
- Luis Vidal, Luis Vidal Architect
- Ginés Garrido, Burgos & Garrido
- María Hurtado, estudio.entresitio
- Alberto Campo-Baeza, ETSAM
- José M. Ezquiaga, Planning Director
- Arturo Franco at Warehouse 8B

CBIPS International Field Study | 2022-23 | Amsterdam | January 2023



Amsterdam Field Study meetings or sites:

- Dimitri Tuinstra at Arup re bridge design
- Renée Schoonbeek at Arcadis Amsterdam
- Sofie Oosdijk at new Arcadis HQ by SO-IL
- Menno Kooistra at Elephant Studios site
- Jeroen van Schooten at Team V site
- Paco Bunnik at Zuidas Info Center
- Charlotte Griffioen of MVSA and site visit
- Deborah Lambert of Felixx at Ijburg site
- Jeroen Hoving at TU Delft Engineering
- Floris Overheul at Mecano library site

CBIPS Projects Prior Year | 2021-22

PRIOR PROJECTS

CBIPS Projects Prior Year | 2021-22 | Real Estate and the Pandemic



To understand the impact of the COVID-19 pandemic on the real estate market.

- retail space impacted by the pandemic
- shopping malls hit by online purchasing
- repurposing malls as fulfillment centers
- fiscal challenges of affordable housing
- pricing models and relation to technology
- real estate value and classifications

Jennie Gandhi, Haimil Patel, Harsh Patel, Krunal Patel and Kahan Shah

Info: Real Estate Board of New York

CBIPS Projects Prior Year | 2021-22 | Public-Private Partnerships



To better understand the possibilities and challenges of use of P3 in NYC.

- advantages and disadvantages
- approvals and stakeholder relationships
- initial financing and maintenance costs
- profits and yield
- international case studies
- managerial guidelines

**Aakash Goel, Jennifer Nelsson, Victoria Yip,
Qinyang Zhu and Rujutha Parameswaran**

Info: Arup Associates and DP Architects

CBIPS Projects Prior Year | 2021-22 | Modular Construction



To analyze the benefits and challenges of modular construction of housing in NYC.

- modular off-site fabrication
- 3d printing
- issue of factory inspections
- logistical issues of transportation
- union jurisdictional issues
- carbon reduction of on-site activities

Hongzin Jiang, Roopesh Pugalendi, Derry Radityatama, Lin Shi and Kenichiro Suzuki

Info: SHoP Construction and nArchitects

CBIPS Projects Last Year | 2022-23

PROJECTS LAST YEAR

CBIPS Projects Last Year | 2022-23 | EV Charging and Multi-Family Residential



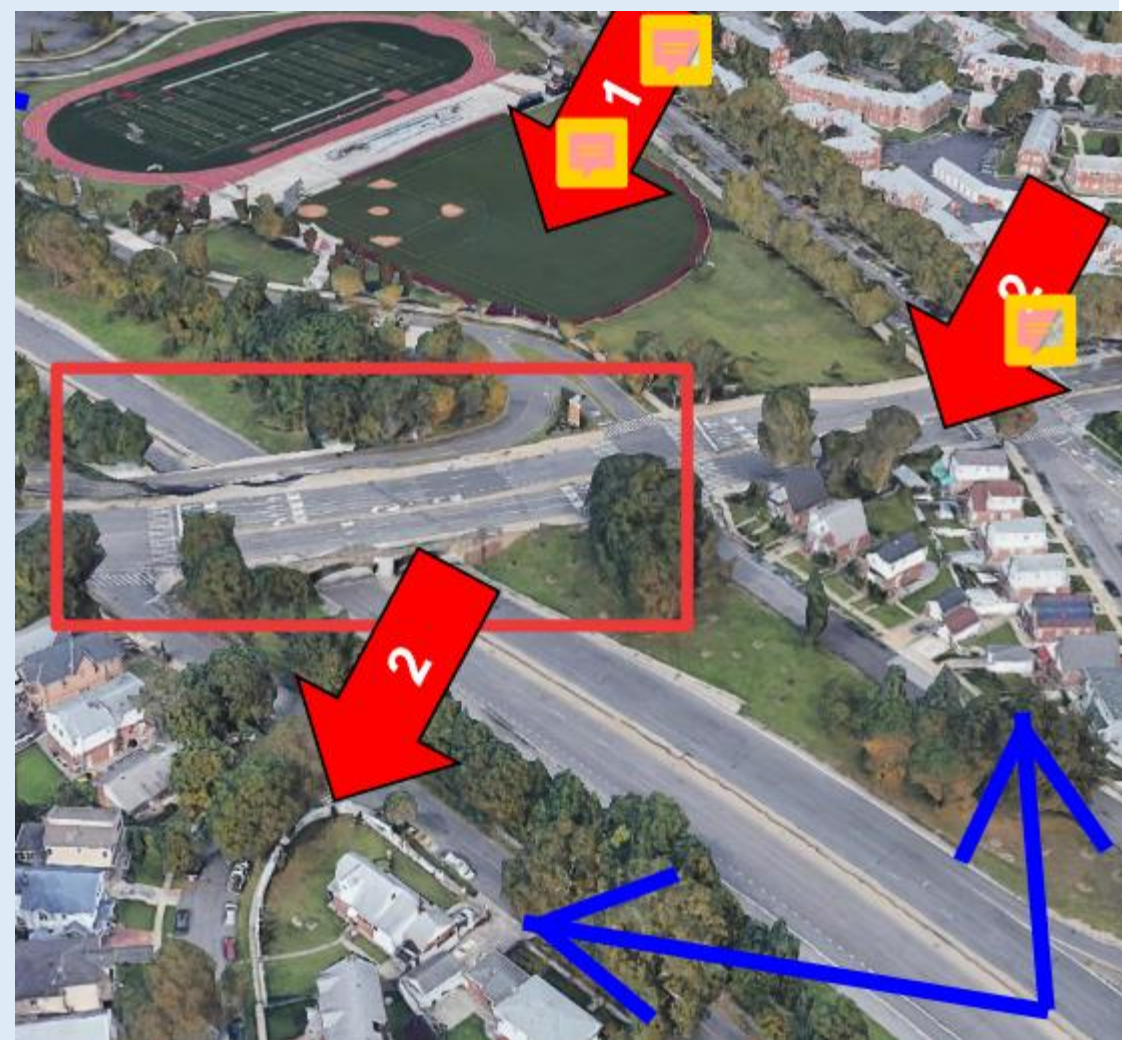
To assist with incorporation of electric vehicle charging stations in housing.

- EV charging station installation guidelines
- financial analysis tool
- owner-operator inputs
- single-vehicle vs shared ownership
- dedicated or shared parking space
- NYCHA public housing developments

Aashini Patel, Shivani Patel, Fumin (Renée) Chen and Sruta Gunuganti

Sponsor: STV Inc. and DKS Associates

CBIPS Projects Last Year | 2022-23 Digital Twin Study: Union Turnpike Bridge



To apply Digital Twins to a bridge project in Queens at Union Turnpike.

- methodology and data points
- topography
- location and surrounding critical zones
- community outreach
- 3D modeling of existing and new bridge
- 4D integration and construction phasing

Julio Tupayachi, Ali Bahktyari, Michael Bradley, Atmaja Patil and Chintan Vohra

sponsor: NYC Department of Transportation

CBIPS Projects Last Year | 2022-23 | Guidelines for Digital Twins



To create guidelines for use of Digital Twins by the NYC Department of Transportation.

- current BIM guidelines and software
- Globally Unique Identifier and use of data
- Guidelines for 4D: Phasing
- Guidelines for 5D: Cost
- Guidelines for 6D: Life Cycle Integration
- Guidelines for 7D: Energy

**Sai Mithil Krishna Kumar, Feng Zhang
and Qixiao Zhang**

sponsor: NYC Department of Transportation

CBIPS Projects Last Year | 2022-23 **Equity in Infrastructure**



To create opportunities for Historically Disadvantaged Businesses to lead projects.

- access to capital
- delivery methods
- fraud schemes
- contractor prequalification
- compliance with goals vs waivers
- equity considerations

**Alejandro Lizcano, Siddhe Deshpande,
Yuhuan Gao and Rajveer Gurbuxani**

Sponsor: Equity in Infrastructure Project

CBIPS Potential Research Projects

This Year

CBIPS Potential Research Projects | 2023-24 | Possible Topics

GIVE ME A
PLACE TO
STAND AND
I WILL
MOVE
THE EARTH

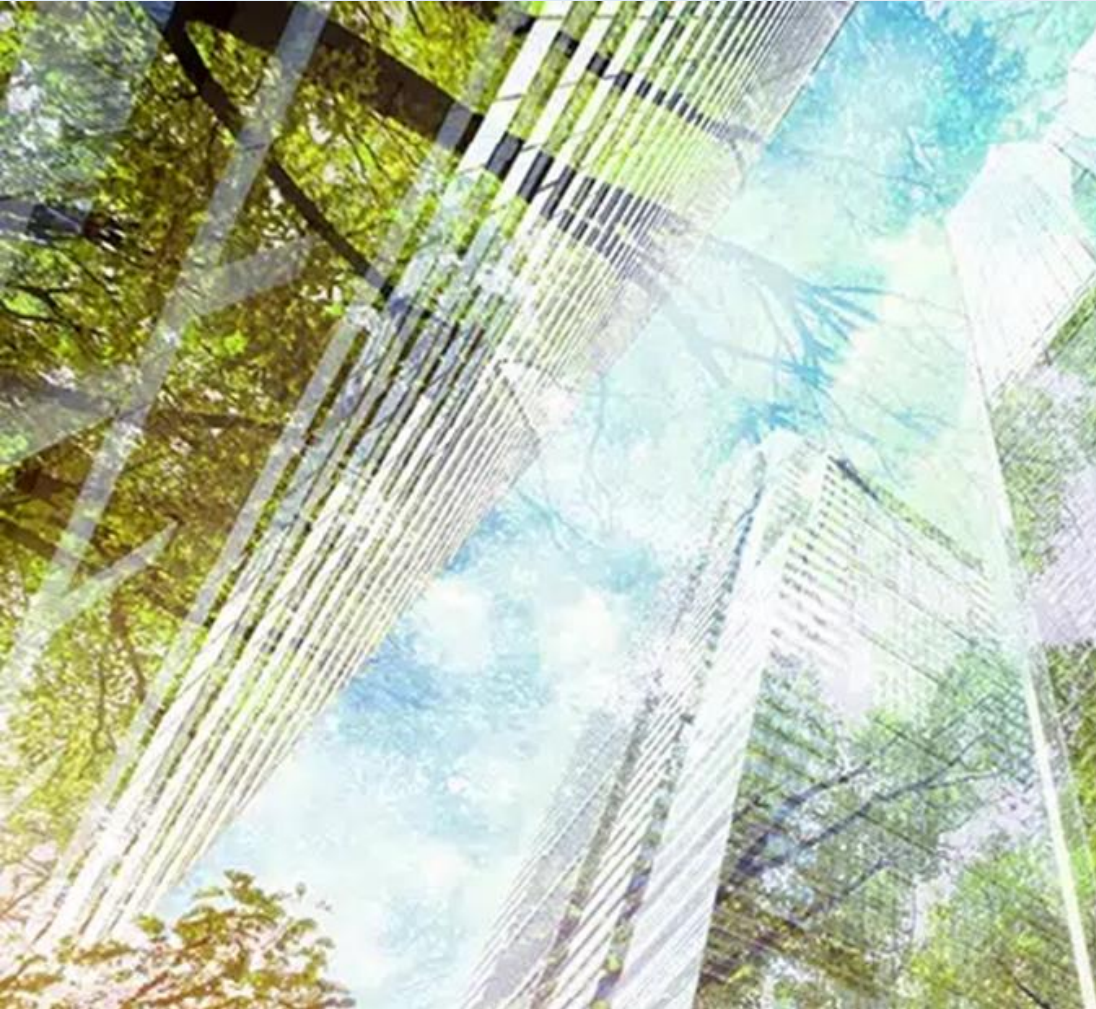
Archimedes

Suggested research topics for this year:

1. Carbon Reduction in Infrastructure
2. Low Carbon Concrete Bridge Decks
3. Urban Drought and Conflagration
4. Engineering Urban Forests
5. Alternative Capital Financing
6. Circular Economy and Infrastructure
7. Social Housing and Open Space

You can also suggest research topics!

CBIPS Potential Project 1 | 2023-24 | Carbon Reduction in Infrastructure



To develop a framework for reducing embodied carbon in infrastructure projects.

- contribute to the Infra2050 initiative
- framework for reducing embodied carbon
- facilitate cross-disciplinary collaboration
- develop carbon reduction guidelines
- consider a centralized database framework
- produce a research article
- analyze bridges, ports, roadways & tunnels
- Carbon Leadership Forum challenge link

CBIPS Potential Project 2 | 2023-24 | Low Carbon Concrete Bridge Decks



To ascertain the feasibility of using low carbon emission concrete for bridge decks.

- technical and economic feasibility
- environmental impact
- regulatory and policy assessment
- supply chain analysis
- impact on construction practice
- case studies review
- stakeholder acceptance
- implementation roadmap

CBIPS Potential Project 3 | 2023-24 | Urban Drought and Conflagration



To determine the risk factors and methods of preventing climate-driven conflagrations.

- history of large-scale urban fires
- fire prevention relation to plantings
- methods of fireproofing construction
- building age and sprinkler systems
- mass timber construction risk factors
- water supply capacity in case of drought
- use of river water to fight fires in NYC
- prevention of fires in other cities

CBIPS Potential Project 4 | 2023-24 | Engineering Urban Forests



To encourage the engineering of large-scale insertion of new vegetation in New York.

- history of large-scale urban reforestation
- civil engineering and design for nature
- success of recent efforts
- financial impediments and possibilities
- tie-in to biodiversity
- links to infrastructure adaptive reuse
- measurable air quality improvements
- next million trees opportunities in NYC

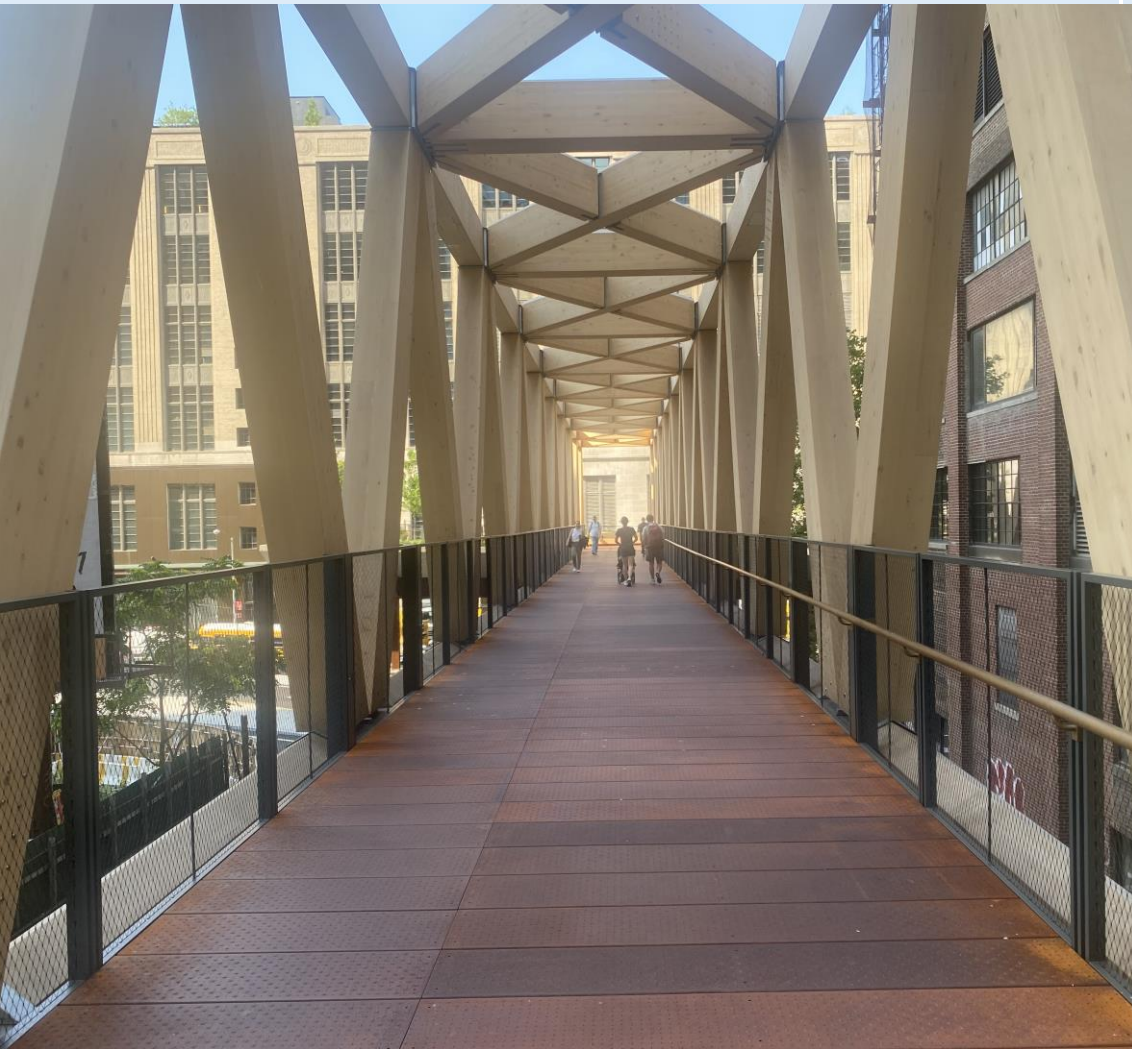
CBIPS Potential Project 5 | 2023-24 | Alternative Capital Funding Mechanisms



To analyze the use of incentive programs and Public Private Partnerships in NYC.

- history of Public Private Partnerships
- tax credits for carbon reduction
- success of recent policy changes
- financial impediments and possibilities
- tie-in to risk analysis
- analog projects in other cities
- infrastructure vs building project use
- Business Improvement Districts

CBIPS Potential Project 6 | 2023-24 | Circular Economy and Infrastructure



To analyze how best to implement a circular economy approach within the AEC Industry.

- use of alternative materials such as wood
- use of demolition waste
- use of recycled materials
- adaptive reuse of existing infrastructure
- adaptive reuse of existing buildings
- analog projects in other cities
- conversion of office buildings to housing
- financing incentives and municipal policy

CBIPS Potential Project 7 | 2023-24 | Social Housing and Open Space



To help make use better use of open space in NYC public housing projects.

- history of NYC public housing
- analysis of NYCHA land use and density
- analysis of NYCHA parking lot use and area
- post-Sandy funding for resiliency
- analysis of fears of displacement
- analog projects and programs nationwide
- rooftop planting and NYCHA tree-planting
- recommendations for change at NYCHA

BREAKOUT GROUPS

CBIPS Potential Research Projects | 2023-24 | Breakout Groups



Suggested research topics for this year:

1. Carbon Reduction in Infrastructure
2. Low Carbon Concrete Bridge Decks
3. Urban Drought and Conflagration
4. Engineering Urban Forests
5. Alternative Capital Financing
6. Circular Economy and Infrastructure
7. Social Housing and Open Space

You can also suggest research topics!