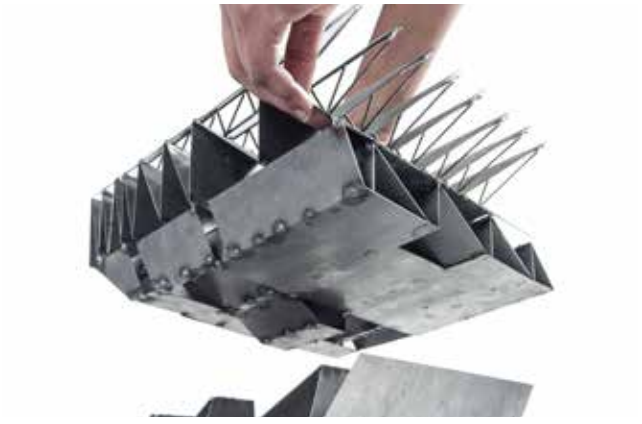
The winners of this year's
Steel Design Student Competition exhibit excellence
in creating inspiring museums and flexible spaces.

The FUTURE of Museums?



THE 2017 STEEL DESIGN STUDENT COMPETITION has recognized nine exceptional projects, in two categories, that explore a variety of design issues related to the use of steel in design and construction.

The 17th annual competition, administered by the Association of Collegiate Schools of Architecture (ACSA) and sponsored by AISC, offered architecture students the opportunity to compete in two separate categories. Category I challenged students to design a museum, exploring ways in which design and imagination can create a popular visitor destination and a city focal point. Category II was an open competition with limited restrictions that encouraged students to investigate steel with a great amount of flexibility. The competition encouraged students to take advantage of the many varied functional and aesthetic uses for steel as a building material.

The 2017 jury for Category I – Museum consisted of:

- Julian Bonder, Wodiczko + Bonder and Roger Williams University
- Hazel Ruth Edwards, Howard University
- Steven Tipping, Tipping Structural Engineers

The jury for Category II – Open included:

- Jeffrey L. Day, MinDay Architects and the University of Nebraska-Lincoln
- Elizabeth Golden, United 4 Design and University of Washington
- Elizabeth Martin-Malikian, Kennesaw State University

The competition had more than 1,200 student and faculty participants and received more than 400 submissions (213 in Category I and 188 in Category II). The jurors awarded First, Second, Third and two Honorable Mentions in Category I, and First, Third and two Honorable Mentions in Category II Open.

The selected projects will be on view at the 106th ACSA Annual Meeting in March 2018 and NASCC: The Steel Conference in Baltimore in April (see **www.aisc.org/nascc** for more information). You can get more information and see more renderings of all the winners at **www.acsa-arch.org/2017SteelWinners**.

WINNERS: CATEGORY I – MUSEUM

First Place Museum of the 20th Century Student: Justin Foo, Cornell University Faculty Sponsor: Andrea Simitch

The Museum of the 20th Century in Berlin borrows its initial spatial strategy from the adjacent Mies van der Rohe New National Gallery and a constructional affinity to Mies' investigations into steel construction. A series of stacked and initially planar surfaces are subsequently deformed in response to program, site, orientation and structure. The fold acts as a mediator between the harsh Cartesian rationality of Mies and the lyrical tectonism of Scharoun. The fold is further used as an operative strategy that allows for the mixing of programs—not just blurring the line between the public and private but also between the programs themselves, as one surface defines the surface of the other. The changing orientation of each plate "collects" the architecture of the city as part of the museum experience, and the building's crown-like roof allows soft northern light to illuminate the art within.

The main museum entry faces the New National Gallery while the public plaza entry orients itself toward Potsdamer Platz, with the height of the overall proposal establishing itself as a visible landmark from this important transportation hub. The transformation of the urban landscape further expands this strategy of assimilation and transformation between these two icons as it undulates and stacks to initiate the sequence into the museum. A sequence of ramps and stairs leads to an elevated public plaza at the center of the museum, which operates as an extension of the city's urban fabric, locating art as central to the urban experience. This pedestal in turn elevates the special galleries for maximum views of the surrounding context.

WINNERS: CATEGORY I – MUSEUM

Second Place **Museum of Architecture: Over and Under**

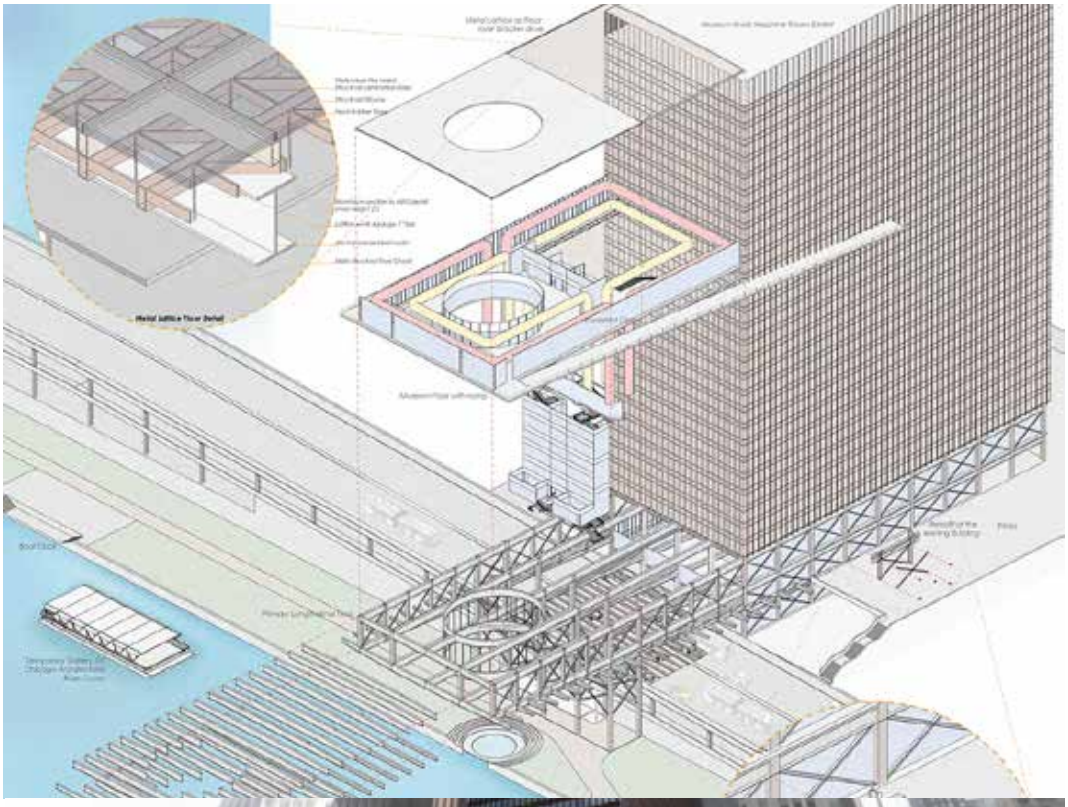
Student: Nahid Akram, University of Illinois, Urbana-Champaign Faculty Sponsor: Kevin Hinders

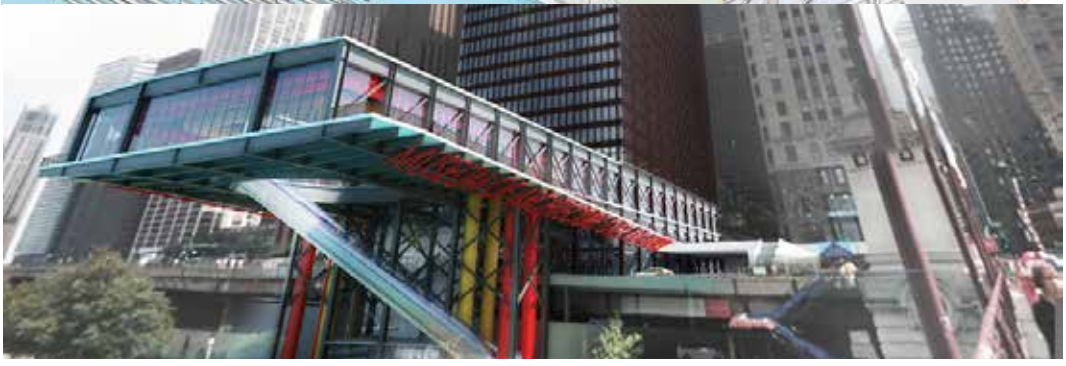
Most people's perception of architecture is based upon the sculptural quality of buildings. The intricate aspects of architecture (its infrastructure, systems, etc.) are often sealed away behind the image of that sculpture. The Museum of Architecture: Over and Under, seeks to educate the public on "behind the curtain" aspects of architecture.

Chicago, a city with rich modern architectural history, is a perfect location for such a project. The Illinois Center, a Miesian development near the edge of Chicago Loop, has a huge repository of intricate infrastructure, including a network of pedways that can be entered from the surrounding buildings/blocks and an under-occupied, raised plaza that provides a base for the thirty-story Miesian steel buildings. A new structure will synergize with this existing context to form a new museum complex. Coupled with the existing Chicago Architecture Foundation River Cruise, this museum will teach museum visitors about the complex workings of structure, mechanical systems and transport. It will also show the impact of architecture on the built environment and its meaning.

The museum is thus a symbiotic building, supported and grown from the existing Miesian steel building and the Chicago cultural context. It spans over the Wacker drive and cantilevers 100 ft over the Chicago River, engaging the river below and the developments above it. The hovering cantilever uses the existing tower for support and acts as a hub of networks that are publicly accessible and complement the DuSable Bridge, a steel Chicago Style bascule bridge on the river.

The museum will inform and convey people with more insight about architecture, beyond cosmetic aspects, which will allow visitors to appreciate a broader aspect of the built environment.





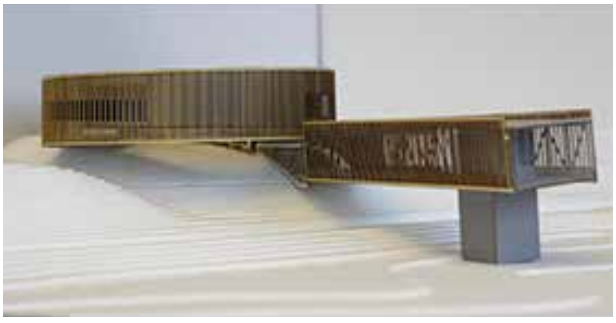
WINNERS: CATEGORY I – MUSEUM

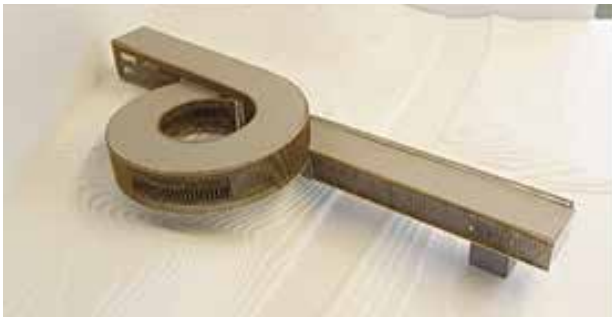
Third Place **Loop, Sculpture Museum in Indianapolis**
Students: Wei Lin and Meghna Majethiya, University of Illinois, Urbana-Champaign
Faculty Sponsors: Scott Murray and Marci S. Uihlein

The Sculpture Museum is a new addition to the Indianapolis Museum of Art (IMA), whose 152 acres comprise the existing main Art Museum, the 100-acre Art and Nature Park, historic homes and performance spaces. This new proposed addition acts like a link between the main museum and the park, with a canal flowing across the site, which includes a 60-ft elevation drop. Currently, visitors must walk downhill from the main museum and walk across the Waller Bridge to reach the Art and Nature Park.

The central concept lies in taking best advantage of the topography and scenic vistas found at the site. The design team started by connecting the highest and the lowest points of the site, spanning the museum across the canal while making sure not to obstruct the view of the canal. The other idea was to create openings in certain locations of the building so as to have vantage points that offer good views to the rest of the campus. The building form reinforces the circulation path of the visitors through the building.

Building performance was an important driver for the project. A central courtyard and a narrow building width of 45 ft bring natural light into the facility, and Sefaira energy-analysis software was used to develop a high-performance building envelope. The structural steel framing system incorporates 25-ft-high steel trusses to span across the canal.





WINNERS: CATEGORY II – OPEN

First Place **The Public Factory**

Student: Kevin Herhusky, California Polytechnic State University

Faculty Sponsor: Margarida Yin

"Designed with its own phasing and construction timeline, the project successfully integrates public transportation, a variety of structures, cantilevers, lightweight simple spans and volumetric spaces. This concept could aspire to the next step of national distribution."

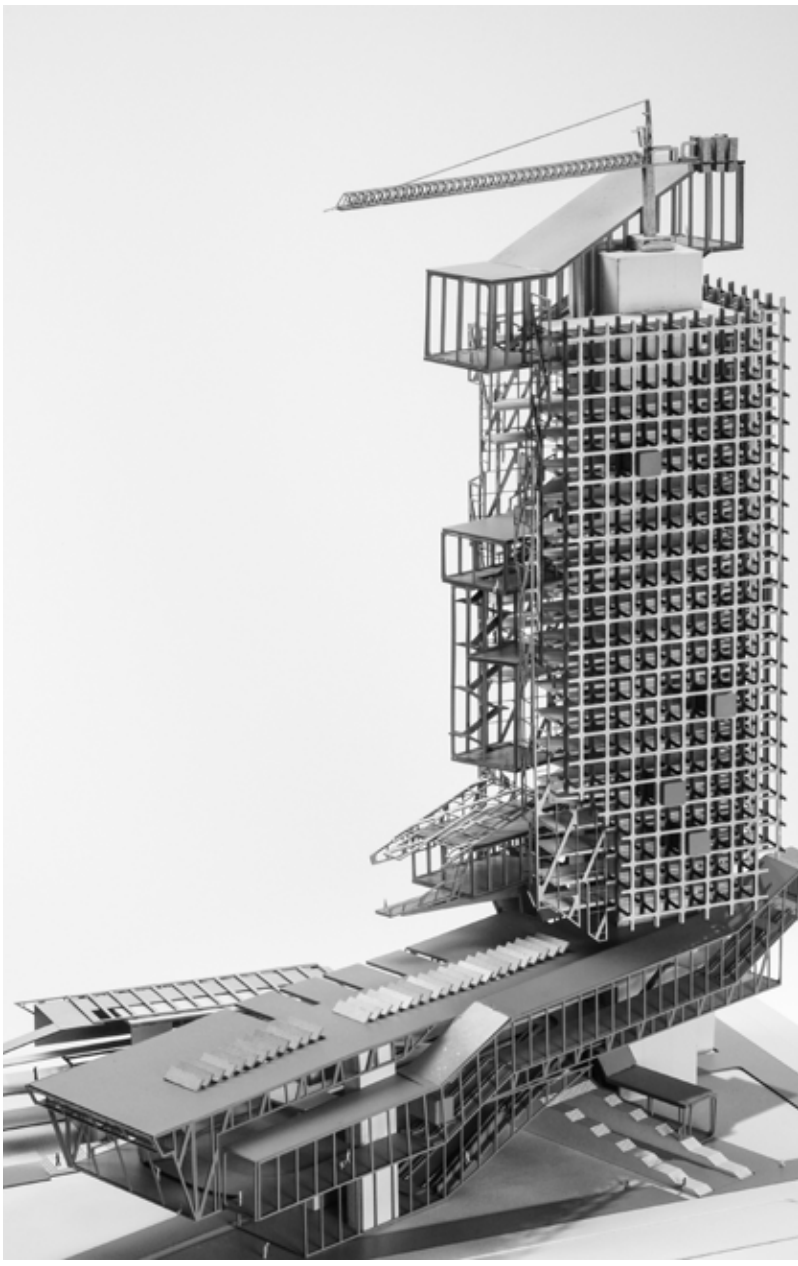
Detroit oscillates between periods of prosperity and disparity. Tuning to the cyclical rhythm of the city's pulse, the Public Factory expedites this transition, catalyzing a new era of regrowth. for the city.

It reaches this conclusion through its most significant precedent, the previous building occupying its site: the J.L.Hudson department store. Hudson's was built during the city's first wave of prosperity, growing with the city and expanding twelve times over several decades, to become the world's tallest department store—before disparity hit and the site was demolished.

A blank slate now appears in the city center, an opportunity for the city's next wave of prosperity. Like its predecessor, the Public Factory constructs through (four) phases, growing with the city.

Phase One: A geothermal plant, housed in a concrete plinth, anchors itself to the site, harvesting energy from the earth to fuel further expansion phases.

Phase Two: The plinth grows a steel armature, grabbing onto the existing monorail-line paralleling the site, bringing in people from all over the city. Pedestrian paths slice through its mass, creating an axis of shortcuts.



Phase Three: With energy and people, the factory can now be assembled. Tapping into Detroit's long history of industry and innovation, the building program employs, educates and houses citizens, allowing them to participate in the construction process. The building grows with the city: A modern metabolic megastructure!

Phase Four: Once it reaches its desired height, the tower grows a structural steel grid. It shifts its production capabilities and begins to manufacture modular-capsules, containing small live-work units. These capsules travel along the factory's internal assembly line before a crane embedded in the structural core installs them into the grid. As more units plug in, the façade becomes a chart of regrowth, mirroring the people returning downtown.

While the Public Factory will not solve all of Detroit's problems, it will expedite potential solutions, maintaining infrastructure and educating skilled citizens to become capable of facilitating future transitions.

Third Place **Summit Climbing Retreat**
Students: Daniel Wayne Campbell and Chase Emery Johnson, Louisiana Tech University
Faculty Sponsors: Kevin J. Singh and Pasquale De Paola

Amongst the southern mountain ranges of Norway stands Trollveggen, or Troll Wall. Peaking at 3,556 ft, Trollveggen casts its shadow over a beautiful five-mile valley of river and forest. As the tallest vertical rock face in Europe, the wall delivers a climbing challenge second only to Mount Everest. With the prestige of the climb, however, comes the risk of injury—or even death. Summit Climbing Retreat aims to mitigate the risk of climbing by acting as an encouraging training refuge for the aspiring climber, and doubles as an iconic tourist attraction for the people of Andalsnes, Norway.

When gripping a rock, the friction of a hand against a horizontal surface provides traction (tension). The fingers compress against the horizontal surface while the thumb or palm set against the vertical surface (compression). By adapting the physics of a basic grip to the 70,000 sq. ft of Summit Climbing Resort, it can touch Trollveggen only where necessary, preserving the site's natural beauty.

By activating the unique qualities of steel, the Summit Climbing Resort expresses the action of climbing in its structure, program and utility. Sitting atop four massive friction dampers, the wide-flange steel beams hang bold and strong in their center, like the body of the climber, while the hands and feet connect small and tense to the dangerous gneiss façade of the Trollveggen cliff. Twenty tension cables, buried 60 ft into the bedrock below, allow the entire building envelope to teeter delicately over the edge—only touching the cliff wall with redundant seismic dampers below, all with a natural tendency to resist the earthquakes that plague the entire region.

HONORABLE MENTION: CATEGORY I – MUSEUM

Corrosion of Time
Student: Juncheng Shen,
University of Hawaii at Manoa
Faculty Sponsor: Clark E. Llewellyn

As a metropolis, Shanghai, China, especially the Pudong Lujiazui area, is seen as a "new" place—but of course, every area has its past, present and future. For the Corrosion of Time museum, weathering steel was ideal evoke the memory of the area's past, as it represents the passage of time while at same time speculates on a possible future. This museum will show the history of the area and its origin and success, and will also host public activities and flexible exhibitions.

Rhizome Terminal
Students: John Sayegh and Samantha Sowell, University of Tennessee-Knoxville
Faculty Sponsor: Kevin Stevens

The rhizome, as described by Deleuze and Gauttari in *A Thousand Plateaus*, "connects any point to any other point, and its traits are not necessarily linked to traits of the same nature; it brings into play very different regimes of signs, and even non-sign states." Braddock Terminal, located in Braddock, Pa., near Pittsburgh and envisaged as both a train station and civic museum, embraces the nature of the rhizome as an architectural and urban design strategy.

The terminal reconnects Braddock with its neighboring communities in the greater Pittsburgh area, forging a brighter future for the city and allowing residents and visitors alike a new opportunity to interact with their shared history. Braddock Terminal is designed as one of three primary stations in a metro train system developed for greater Pittsburgh: Point Park Terminal in downtown Pittsburgh anchors the Pre-Industrial line, while Braddock Terminal is the hub for the Industrial Line and finally the University of Pittsburgh/Carnegie Mellon Terminal is the main station for the Post-Industrial Line. These three principal "termini" form the central spine of an extensive public transit system throughout the region, making users aware of the various economies, resources, histories and cultures that have intersected for centuries in the area. The result of this transit system is rhizomatic, developing a noticeable organizational pattern across Pittsburgh, weaving together certain lines at stations that often share history.

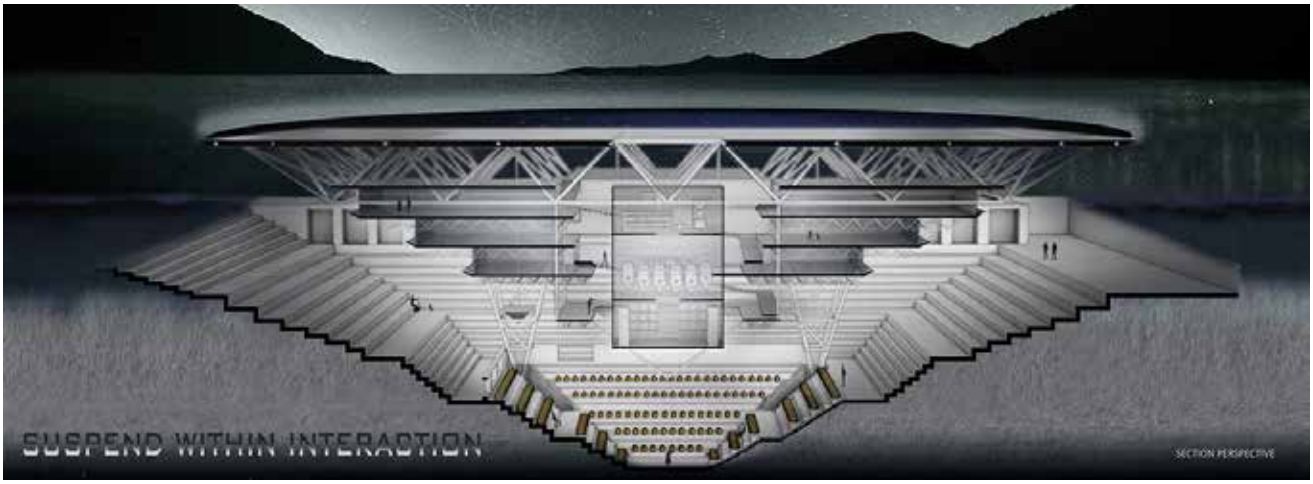
HONORABLE MENTION: CATEGORY II – OPEN

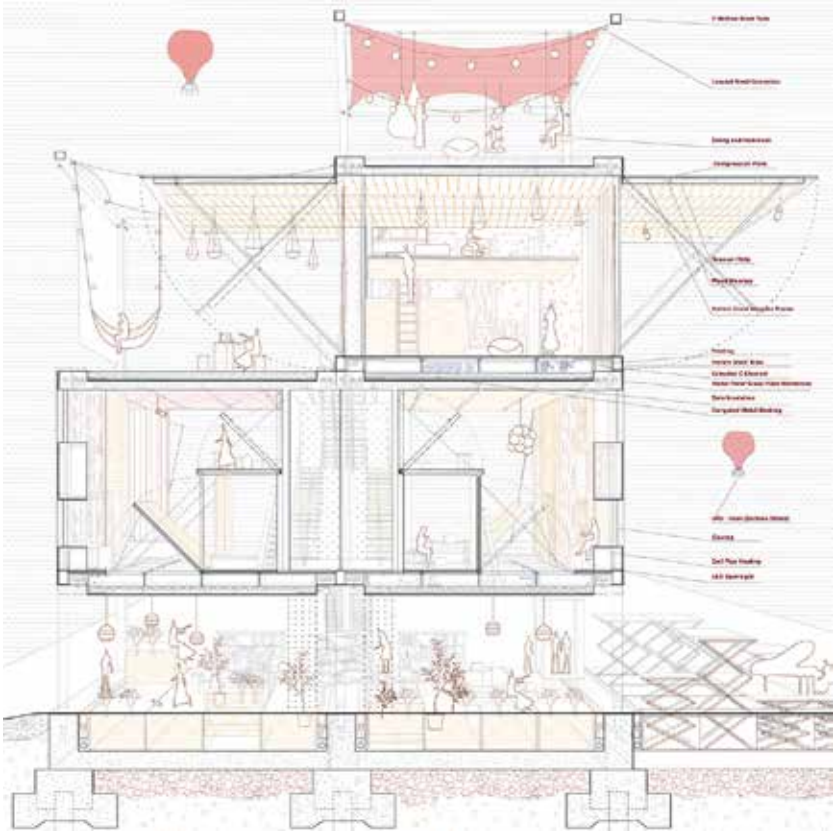
Suspending within Interaction Student: Kong Ye, Virginia Tech Faculty Sponsor: Heinrich Schnoedt

Steel is widely used in construction and other applications because of its high tensile strength and hardness. This winery project, framed with a space truss and supports, uses tensile cables to suspend all of floors of winery. Each member in the steel space truss is like a bone that can present the strength potential of steel completely. Due to the accumulation of central forces in the structure and the dispersion of forces on both sides, the suspended floors and truss together form the shape of the winery, an inverted pyramid.

The circulation of the winery begins at the top and spirals downward around a core, toward the wine tasting room, allowing varying degrees of interaction with workers at each floor level.

In addition, the winery is an interactive place for visitors. The production space is static and stationary while the visitor space is more dynamic. Steel's ductility and flexibility provide infinite possibilities for spaces, and steel's potential is fully reflected in this project.





Temporary Fields
Student: Alexis Luna, New Jersey Institute of Technology
Faculty Sponsor: Michael Stephen Zdepski

This project is an exploration of place—making through surface and materials, and the dynamics of event and people over time. Events, festivals and people culminated into the cultural fabric of Florence, Italy, and this project responds to that notion by deploying a series of temporary hotel units that sit upon a slightly less temporary ground, which is situated on a below-grade infrastructure that allows these units and events to happen. This ensemble is a kit of parts deployed across eight piazzas along the Arno River and Oltrarno. The hotel is constructed in a "shish kabob" manner in which units can be multiplied, relocated or repurposed. Each unit consists of a glass waterproof membrane wrapped around a lightweight steel framework. Inhabitants have the option to expand their units to provide a balcony for themselves or a canopy for the locals. The latter is an effort to increase public space.