SKATE RALEIGH:
SK8 SHADES
CONLON FAMILY SKATEPARK

RALEIGH, NORTH CAROLINA

NC State University School of Architecture
The Henry W. and Lorene R. Johnston Design + Build Program
Summer Studio 2024
in collaboration with the
City of Raleigh Parks and Recreation, Skate Raleigh,
and The Conlon Family Skatepark

SK8 SHADES

Each summer, NC State University's School of Architecture partners with community members to design and build a real, permanent project — taking it from concept to installation in just eleven weeks. In Summer 2024, that partner was **Skate Raleigh**, and the result was four bold shade structures now standing at the Conlon Family Skatepark along Capital Boulevard. The SK8 Shades represent what architecture education can be when students take genuine ownership of a community's needs and learn by building something that truly matters.

The Conlon Family Skatepark is a beloved public gathering place, but it presents a harsh environmental reality: an expansive stretch of sun-baked asphalt and concrete with almost no relief from the summer heat. For the skaters, families, and spectators who spend hours there, the lack of shade has long been a barrier to comfort and extended use. The SK8 Shades were conceived specifically to address that gap: creating sheltered spaces to rest, eat, and socialize without stepping away from the energy of the park.

What distinguishes this project is not only what was built, but how. Students engaged Skate Raleigh stakeholders from the very first design charrette, listening to the people who use the park daily and letting that input shape the work. Three competing design schemes were developed and reviewed by community members, instructors, and guests before a direction was chosen.

This was community-engaged design practiced authentically, with real challenges, real opportunities, and a real audience.

The resulting structures are deeply rooted in skate culture. Triangulated steel frames, angular geometries, and intricately perforated Dibond panels — cut using CNC fabrication — reflect the visual energy of skating rather than imposing a foreign architectural language onto the site. The panels were intentionally designed to welcome graffiti and street art, honoring self-expression as a core value of the community. Sponsor signage, visible from Capital Boulevard, was integrated thoughtfully without compromising the installation's authenticity. And unlike conventional site furniture, the concrete bench elements were designed to be skated as well as sat upon — inviting the structures into the life of the park rather than sitting apart from it as passive amenities.

For students, this was service-learning in its fullest sense. Many arrived with little or no experience in steel fabrication, concrete forming, or construction documentation. Over eleven weeks they welded structural frames, cast and cured concrete panels, navigated permitting, coordinated vendors, and delivered four permanent (but mobile) structures to the site in a single day. They didn't simulate professional practice — they performed it, for a community that is now making the SK8 Shades their own.

11- WEEK DESIGN + BUILD

COMMUNITY ENGAGEMENT
Collaborative design process

DESIGN DEVELOPMENT
Tactile modeling and mockups

FABRICATION

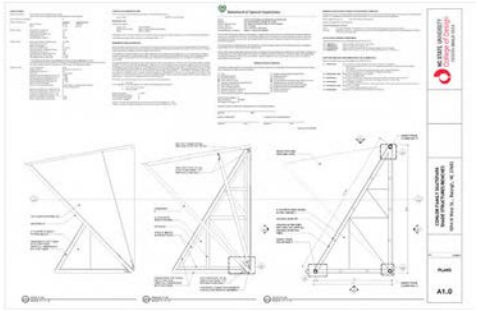
RIBBON CUTTING CEREMONY

WEEK 1 | **WEEK 2** | **WEEK 3** | **WEEK 4** | **WEEKS 5-6** | **WEEKS 6-10** | **WEEK 11**

LESSONS LEARNED
Studying previous design/ build projects to inform current project

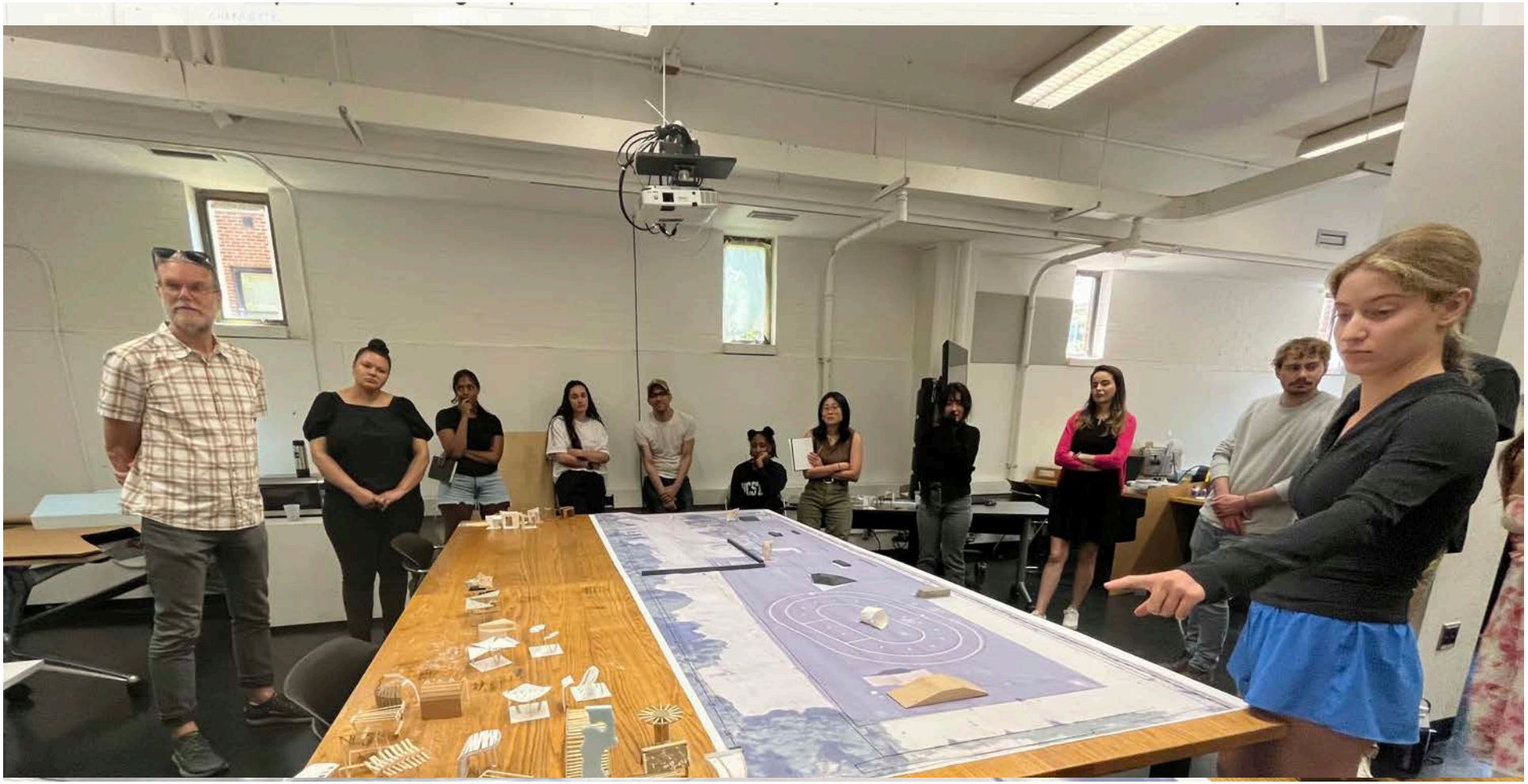
SCHEMATIC DESIGN
Concept development

CONSTRUCTION DOCUMENTATION
Construction documents and redlines

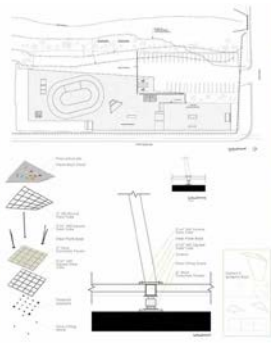


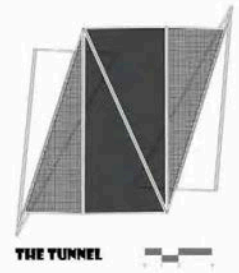
DELIVERY + INSTALL

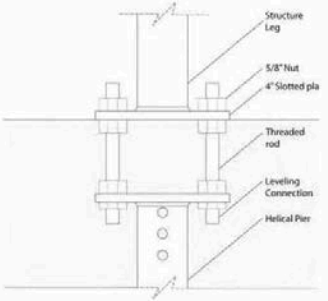
COMMUNITY ENGAGEMENT: SITE VISITS + WORKSHOPS



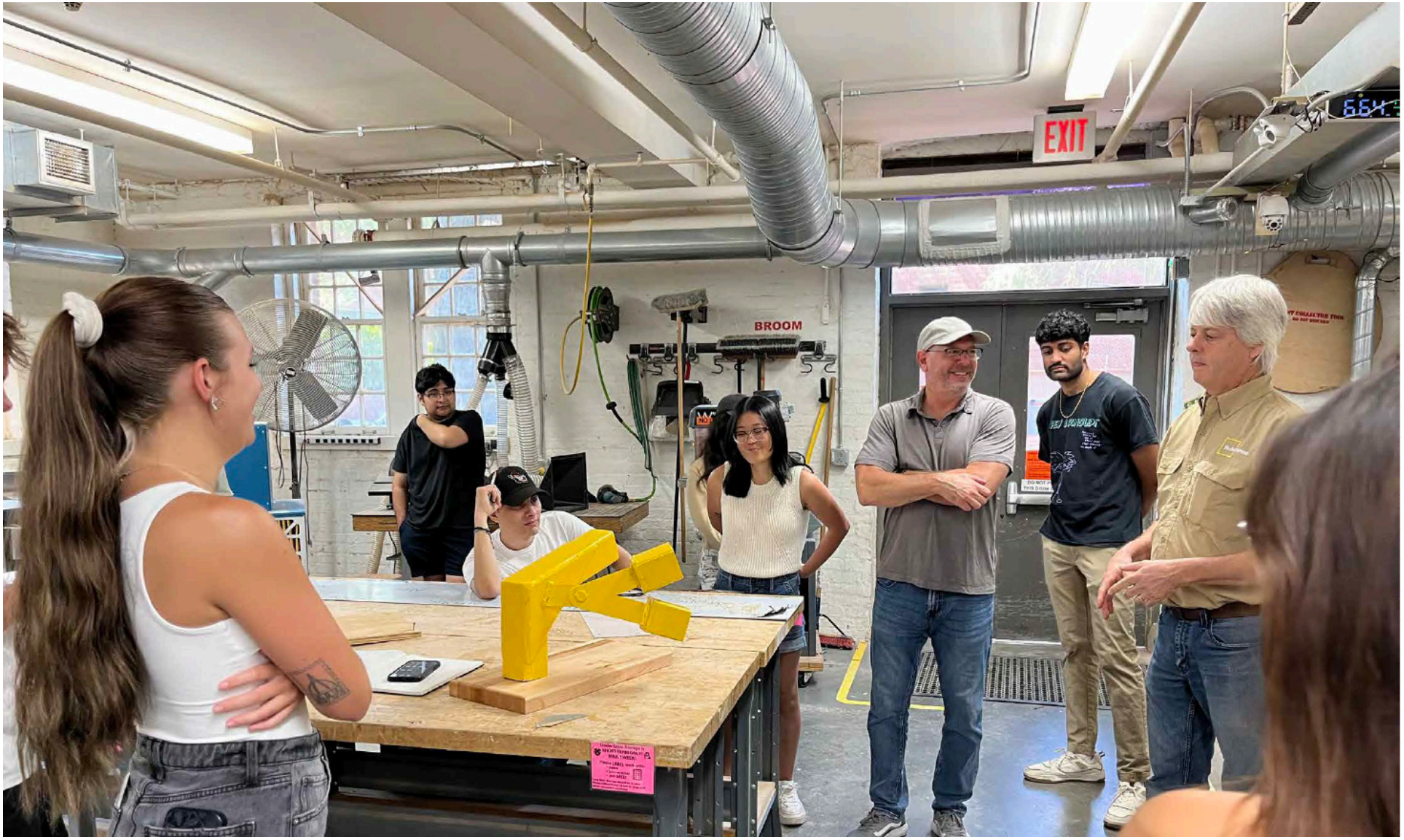
SCHEMATIC DESIGN







DESIGN DEVELOPMENT:
PROTOTYPES + MOCK-UPS



CONSTRUCTION DOCUMENTS:
PERMITTING + APPROVALS

DESIGN CRITERIA

BUILDING CODES:	2018 North Carolina State Building Code ASCE 7-10 Minimum Design Loads for Buildings and Other Structures		
OCCUPANCY CATEGORY:		II	
DESIGN LIVE LOADS:		UNIFORM	CONCENTRATED
	Bench Platform	40 PSF	1,000 LBS
	Roof	20 PSF	300 LBS
SNOW LOAD:	Ground Snow Load, Pg	15 PSF	
	Importance Factor, Is	1.0	
	Snow Exposure Factor, Ce	1.0	
	Thermal Factor, Ct	1.0	
	Flat Roof Snow Load, Pf	15 PSF	
WIND LOAD:	Basic Wind Speed (3 second gust)	115 MPH	
	Importance Factor, Iw	1.0	
	Exposure Category	B	
	Enclosure Classification	Enclosed	
	Internal Pressure Coefficient, GCpi	±0.18	
	Topography Factor, Kzt	1.00	
	Applied Directionality Factor, Kd	0.85	
	Wind Base Shear (x direction)	1.7 KIPS	
	Wind Base Shear (y direction)	0.8 KIPS	
	**All building components and cladding with structural design delegated to the contractor/manufacturer/supplier are required to be designed for wind loads determined using the above design criteria in accordance with the governing Building Code(s).		
SEISMIC LOAD:	USGS Design Map	2008	
	Design Method	Equivalent Lateral Force	
	Importance Factor, Ie	1.0	
	Site Class	D (assumed)	
	Mapped Spectral Response Accel, Ss	15.4%g	
	Mapped Spectral Response Accel,S1	7.7%g	
	Spectral Response Coefficient, Sds	16.4%g	
	Spectral Response Coefficient, Sd1	12.2%g	
	Seismic Design Category	B	
	Seismic Force Resisting System	Steel Systems not Specifically Detailed for Seismic Resistance	
	Response Modification Coefficient, Rx	3	
	Response Modification Coefficient, Ry	3	
	Deflection Amplification Factor, Cdx	3	
	Deflection Amplification Factor, Cdy	3	
	Seismic Base Shear (x direction)	1 KIPS	
	Seismic Base Shear (y direction)	1 KIPS	

CONCRETE AND REINFORCING STEEL

C-01 Concrete to meet the following 28 day compressive strengths (f'c):

Bench Slabs 3,000 PSI, Normal Weight

STRUCTURAL STEEL

S-02 Steel Properties:

Angles, WT:	A36 (Fy=36 KSI)
Hollow Sections, HSS:	A500, Grade B (46 KSI rectangular)
Plate:	A36 (Fy=36 KSI)

S-03 Design, detail, fabricate and erect structural steel per structural contract documents and AISC 360-05 and AISC 325-05.

S-04 Weld electrodes: E70XX. Perform all welding per AWS D1.1-4.

STATEMENT OF SPECIAL INSPECTIONS

Refer to project specifications for all requirements for special inspections and construction materials testing. The Statement of Special Inspections does not include construction materials testing requirements for the project. All construction is to be in full and complete compliance with the project specifications.

This Statement of Special Inspections has been prepared in accordance with the Chapter 17 - Structural Tests and Special Inspection requirements of the Building Code. It includes a schedule of special inspections applicable to building systems for this project as well as the minimum qualifications required for the Special Inspector and all Inspectors and Testing Technicians.

The Special Inspector will keep records of all inspections and furnish inspection reports to the Contractor, Building Official, Architect of Record and Structural Engineer of Record on a monthly basis unless otherwise agreed upon by all parties. Discrepancies are to be brought to the immediate attention of the Contractor for correction. The Special Inspector will track all discrepancies and when corrected report the resolution of those items immediately. The Special Inspection program does not relieve the Contractor of his or her contractual and GA/QC responsibilities. A Final Report of Special Inspections, documenting completion of all required Special Inspections, testing and correction of any discrepancies noted in the inspections, is to be submitted to the Contractor, Building Official, Owner, Architect of Record and Structural Engineer of Record prior to issuance of a Certificate of Use and Occupancy.

This *Statement of Special Inspections* encompass the following disciplines:

- Structural

This Statement of Special Inspections includes the following building systems:

- Cast in Place Concrete
- Structural Steel

Basic Wind Speed: 115 MPH
Wind Exposure Category: B
Seismic Design Category: B
Occupancy Category II

Project is exempt from Special Inspections provisions for Wind Resistance (1706)
Project is exempt from Special Inspections provisions for Seismic Resistance (1707)

Statement of Special Inspections

Project: Conlon Family Skatepark Shade Structures/Benches
Location: 1014 N West Street, Raleigh, NC 27603
Owner's Representative: Erik Mehlman (assigned agent of Skate Raleigh)
Owner's Address: City of Raleigh
Architect of Record: Erik V. Mehlman, NC #9797
Structural Engineer of Record: Robert T. Macia, NC #026690

This Statement of Special Inspections is submitted as a condition for permit issuance in accordance with the Special Inspection requirements (Chapter 17) of the North Carolina State Building Code. The Statement includes a Schedule of Special Inspections applicable to this project as well as the required qualifications for the Special Inspector and Agents of the Special Inspector to perform on this project.

The Special Inspector shall keep records of all inspections, furnish inspection reports, and identify discrepancies as required by Section 1704.1.3 of the North Carolina State Building Code.

A final report of Special Inspections, documenting the completion of all required Special Inspections and confirming the correction of any discrepancies, will be submitted prior to issuance of a Certificate of Use and Occupancy. The Special Inspections program does not relieve the Contractor of his or her responsibilities. Job Site safety and means and methods of construction are solely the responsibility of the Contractor.

Schedule of Special Inspections

The following sheets comprise the required schedule of special inspections for this project. The construction divisions which require special inspections for this project are as follows:

- ☐ Soils
- ☐ Site Retaining Walls
- ☐ Special Foundations
- ☑ Cast-in-Place Concrete
- ☐ Structural Load Bearing Precast Concrete
- ☐ Wall Panels and Veneers
- ☐ Post Tensioned Concrete
- ☐ Sprayed Fire-Resistant Materials
- ☐ Structural Masonry – Level 1
- ☐ Cold-Formed Steel Framed "R" Bracing/Seismic Resisting Systems
- ☐ Exterior Insulation & Finish System (EIFS)
- ☐ Wood Shear Walls
- ☐ Smoke Control
- ☑ Structural Steel: Connections, welds, bolts, & anchors
- ☐ Quality Assurance for Seismic Resistance
- ☐ Mastic & Intumescent Fire-Resistant Coating
- ☐ Quality Assurance for Wind Requirements
- ☐ Modular Construction
- ☐ Alternate Methods

Seismic Design Category: B
Basic Wind Speed: 115 MPH
Wind Exposure Category: B

Statement of Special Inspections Prepared by (Structural Engineer of Record):

Signature Date

Owner's Authorization

Signature Date

Accepted for the Building Official by:

Signature Date

Revised on 01/05/18

MINIMUM QUALIFICATIONS OF INSPECTORS AND TESTING TECHNICIANS

The qualifications of personnel performing Special Inspection and testing activities are subject to the approval of the Building Official. The credentials of all inspectors and testing technicians are to be provided if requested.

Project Special Inspector: Licensed Professional Engineer

Minimum Qualifications for Inspectors:

Professional Engineer Licensure

PE/SE: Structural Engineer – a licensed SE or PE specializing in the design of building structures
EIT (C/S): Engineer-in-Training – a graduate engineer who has passed the Fundamentals of Engineering examination, civil or structural specialty

CAST IN PLACE CONCRETE CONSTRUCTION

Inspector qualifications (one of the following): PE/SE, EIT (C/S)

CSI-1 **PERIODICALLY** Inspect reinforcing steel and placement.
CSI-2 **PERIODICALLY** Verify use of required design mix.
CSI-3 **CONTINUOUSLY** Inspect of concrete placement for proper application techniques.
CSI-8 **PERIODICALLY** Inspect maintenance of specified curing temperature and techniques.

STRUCTURAL STEEL AND LOAD BEARING METAL STUD CONSTRUCTION

Inspector qualifications (one of the following): PE/SE, EIT (C/S)

SSI-1 **PERIODICALLY** Verify material for high-strength bolts, nuts and washers as follows:
a. Identify markings to conform to ASTM standards specified in the approved construction documents.
Per AISC 360, Section A3.3 and applicable ASTM material standards.
b. Collect manufacturer's certificate of compliance required.

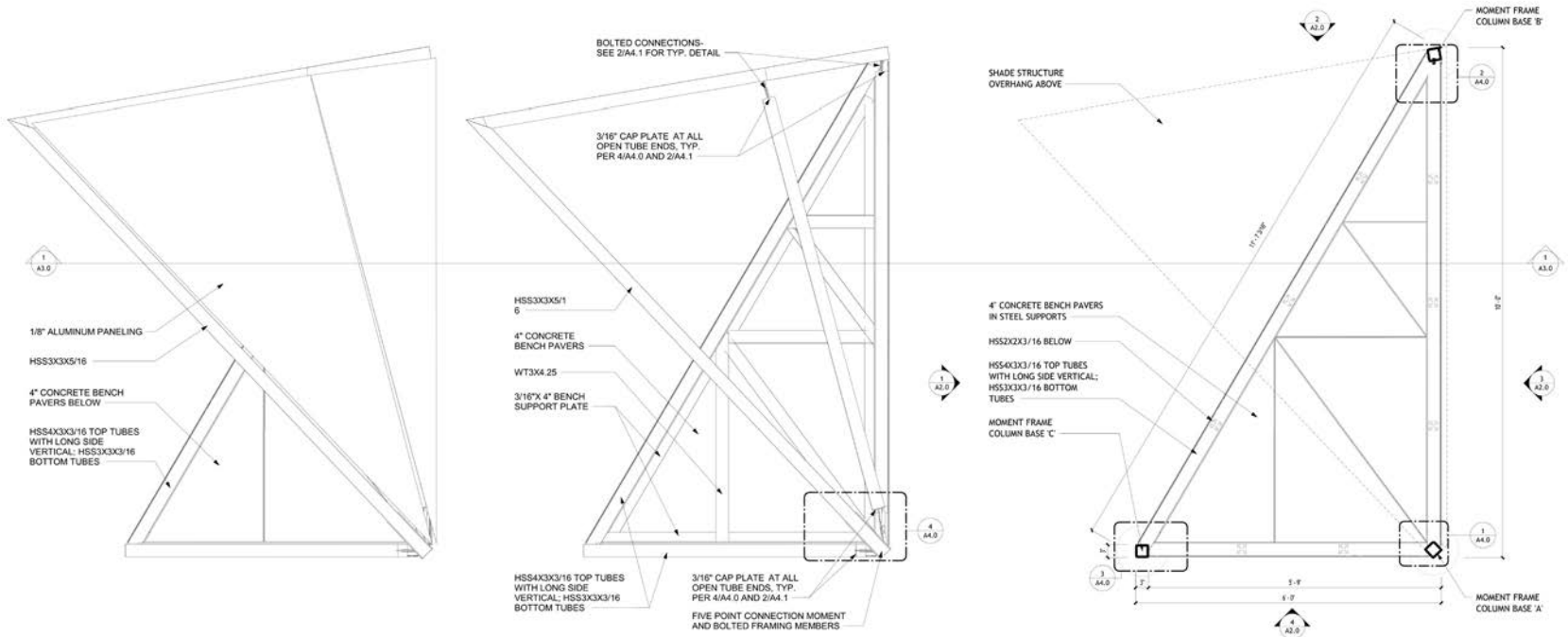
SSI-2 **PERIODICALLY, UNO** Inspect high-strength bolting as follows:
a. Inspect snug-tight joints.

SSI-3 **PERIODICALLY** Verify material verification of structural steel and cold-formed steel deck as follows:
a. Verify structural steel, identification markings to conform to AISC 360.

SSI-4 **PERIODICALLY** Verify weld filler materials:
a. Identify markings to conform to AWS specification in the approved construction documents.

SSI-5 **PERIODICALLY, UNO** Inspection of welding:
1) Inspect single-pass fillet welds ≤ 5/16"

SSI-6 **PERIODICALLY** Inspection of steel frame joint details for compliance:

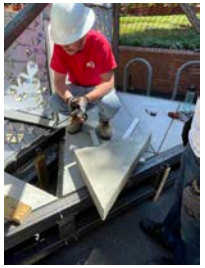


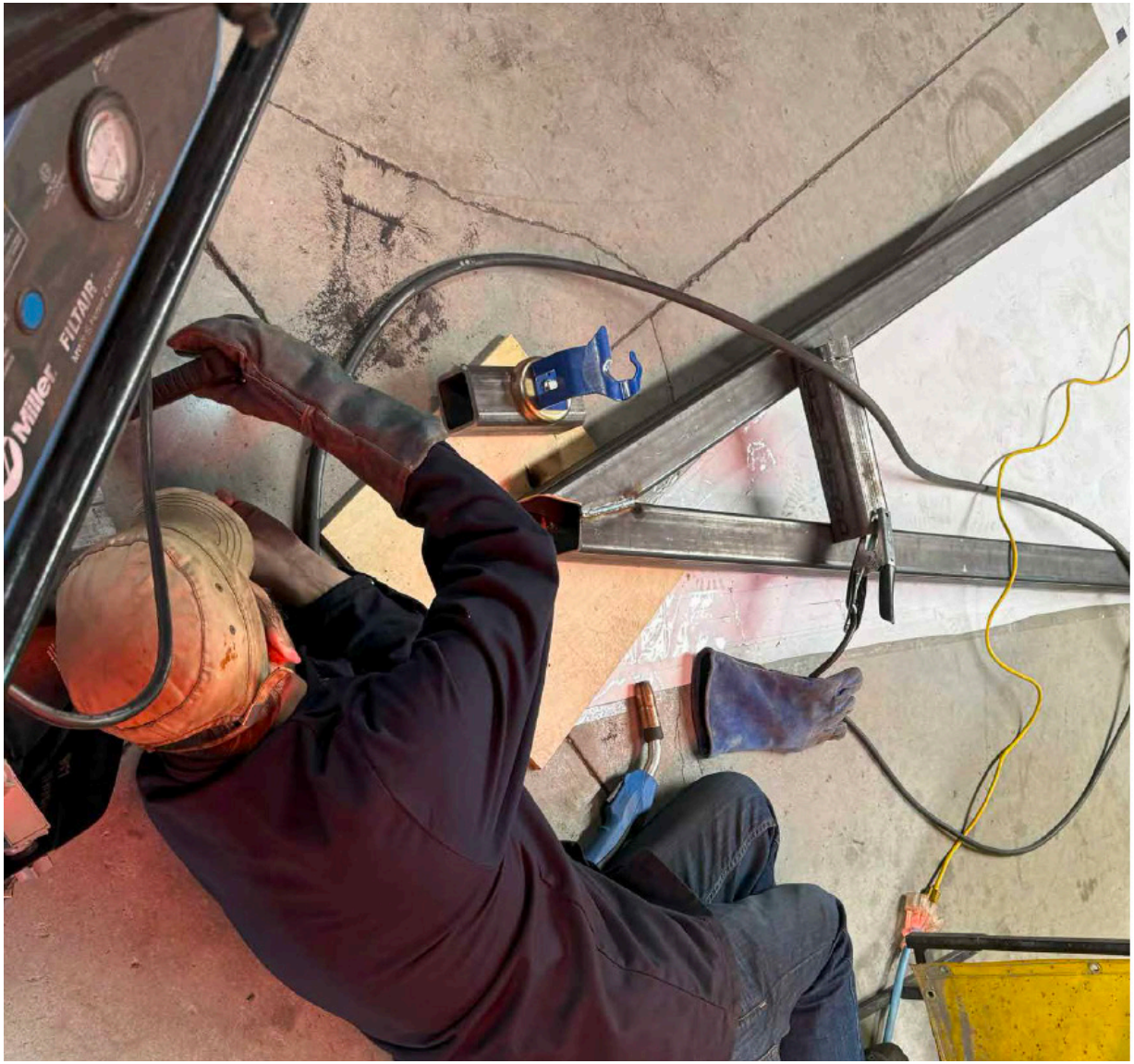
3 A1.0 ROOF PLAN
SCALE: 1" = 1' - 0"

2 A1.0 FRAMING PLAN
SCALE: 1" = 1' - 0"

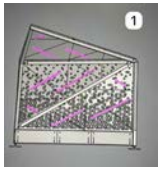
1 A1.0 BENCH PLAN
SCALE: 1" = 1' - 0"

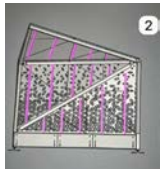
FABRICATION: STEEL FRAME

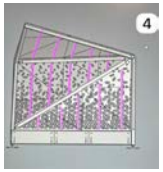




FABRICATION: ACP CLADDING







DELIVERY + INSTALLATION

Photo Credit: Max Cohen

RIBBON-CUTTING CEREMONY

Photo Credit: Max Cohen

SK8 SHADES

NC State University School of Architecture
The Henry W. and Lorene R. Johnston Design + Build Program
Summer Studio 2024

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Luanna Saade Cheatwood
Shannon Smith
Cristian Valdez

Instructors:

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Erik Mehlman
Ruby Reeves
Adam Ward

COD Materials Lab Staff:

Heather Durand
Christian Karkow
Rob Watson
Jordan Wells

Skate Raleigh Partners:

Cody Charland, Executive Director
Will Alphin, Board Member + primary consultant

Skate Raleigh Board: Stephen Mangano (President), Claire Ashby (Vice President), Laura Burkett (Secretary), Johnn Cerqueira (Treasurer), Ed Marsden, Jonathan Bonchak, David Spratte

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