

University of Pittsburgh Master Plan Recreational Center

The Reck'n Crew

Spring 2019



Our Team



Structural: Nate Buettner Chase Rogers

Alexa Silverman

Cassandra Valcourt

Management: Michael Donato Kate Lundy James Suszynski

Construction

Gustavo Cardona

Geotechnical:

Project Description

A major goal of the University of Pittsburgh's Campus Master Plan is to provide a more centralized recreation facility and form a connection between upper and lower campus. This recreation center sits on the site of the current O'Hara Parking Garage and meets both needs and more. It will provide muchneeded dining options and study spaces in addition to state-of-the-art fitness facilities throughout this architecturally stunning, 8-story structure.



Structural

The Structural Team's scope included the design of floor slabs, beams and girders, columns, shear walls, and the long span zipper truss system. These structural components support the integrated recreation center and parking garage. The architectural features of the recreation center were also a major part of the structural team's scope, and detailed floor layouts were created to illustrate the overall program of the building. Stakeholder input was a driving force behind the chosen features.

Shear Wall Modeling

Reaction Forces in Front Shear Wall

Load Case 2 (Shown)

MX = 175483.922 kip-in

MY = 28053.904 kip-in

Number of

Columns

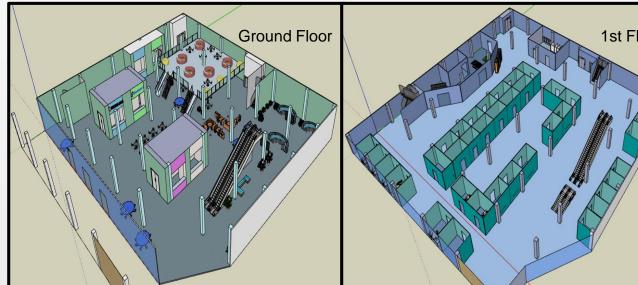
MX = -3.085 kip-in

X = -0.004 kip

Z = -167.109 kipMX = -171485.563 kip-in

MY = -32049.697 kip-in

Recreation Center Sample Floor Models



Wind Load - Shear Walls simulated as Columns

Longitudinal

Reinforcement

8 #9 bars

12 #11 bars

12 #11 bars

28 #11 bars (Floor 1)

12 #11 bars (Other Floors)

16 #11 bars

Column

2 ft x 2 ft

2 ft x 2 ft

3 ft x 3 ft

3 ft x 3 ft

4 ft x 4 ft

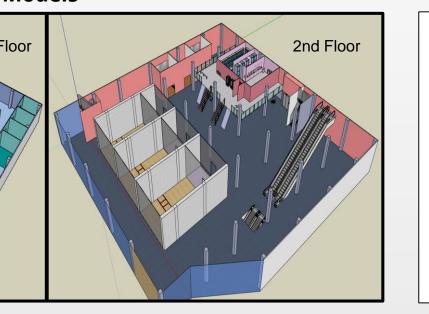
Column Design Summary

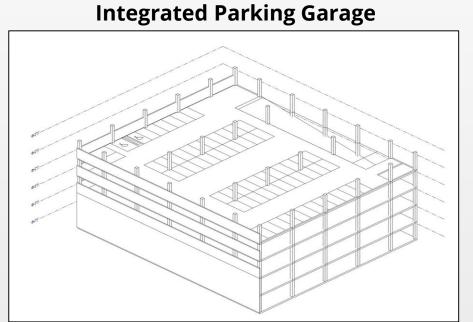
Transverse

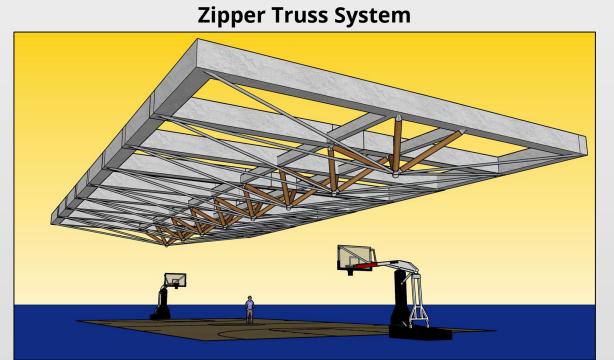
Reinforcement

#3 ties at 18 in.

#4 ties at 18 in.







Typical Floor Section (Recreation Center)

UNBLANCED INVERTED

T SECTION(32-24-32)

INTERVERTED T SECTION (32-32-32)

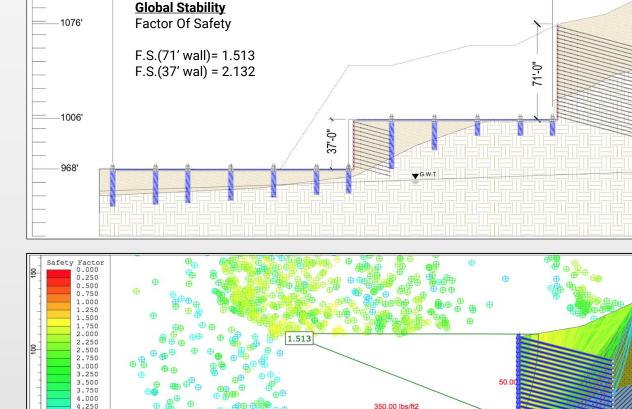
Slab-on-Grade #4 Rebar 1'-4"

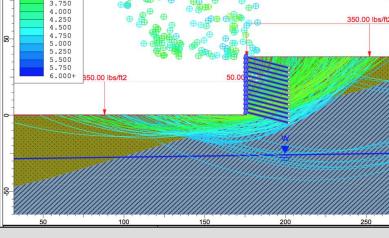
Pile Cap

Soil Profile

-> Top Soil & Organic

(Sand, Gravel, Clay)



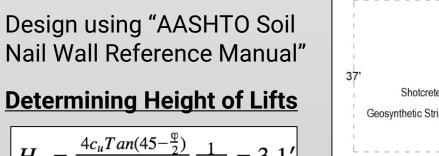


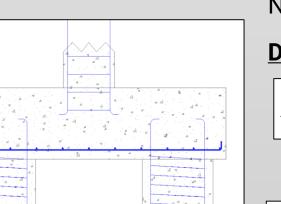
Geotechnical

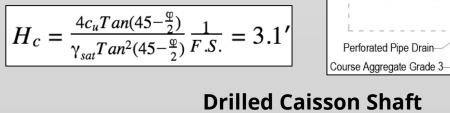
The Geotechnical Team was responsible for the design of all foundations, soil-nail retaining

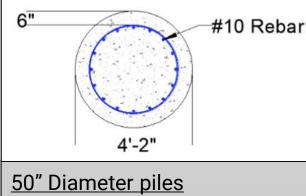
structures, structural slabs-on-grade and completing an in-depth soil analysis to ensure that

the construction of the recreation center began on solid ground.

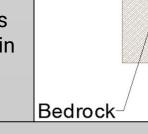








- Design Load: 1706 Kips
- Max Settlement= 0.05 in • DownDrag = 0



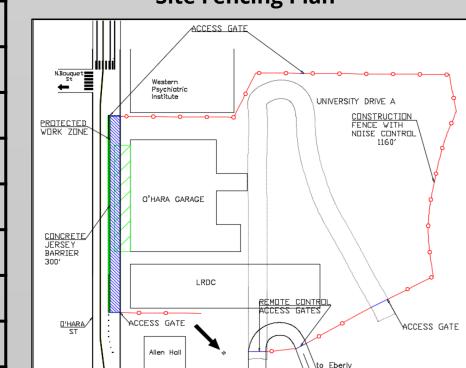
Construction Management

The Construction Management team had a broad scope encompassing everything from pre-construction to closeout. Summaries of the comprehensive schedule and cost estimate are shown. Additionally, the team created in-depth health and safety, risk management, phasing, site layout, maintenance and protection of traffic (MPT) and demolition plans. Techniques used to complete these tasks included historical data taken from past recreation center projects, building demolitions and University of Pittsburgh new-construction jobs. The schedule was created using P6 Primavera software and all drawings/models were prepared with AutoCAD.

Start Date: August	3, 2020																																			
inish Date: June 30	0, 2023																																			
Ouration: 35 Month	าร																																			
		2020				2021									2022											2023										
	Approx.	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Мау	Jun
Task	Duration	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Deoccupy	2 w																																			
Abatement	8 w																																			
Demolition	18 w																																			
Sitework/Set up	25 w																																			
Foundations	26 w																																			
Structural	45 w																																			
Envelope	28 w																																			
Interiors	55 w																																			
Landscaping	16 w																																			
Closeout	9 w																																			

Summary	Cost
Labor (+20%)	\$67,567,981.75
Materials	\$53,641,625.42
Permits	\$1,799,590.00
Equipment/Other	\$30,692,955.00
Sub Total	\$153,702,152.17
Bonds/Insurance (1.5%)	\$2,305,532.28
Contingency	\$9,805,000.00
Profit (3%)	\$4,611,064.57
Total	\$170,423,749.02

Site Fencing Plan



Acknowledgements

Professors:

Dr. Max Stevens Dr. Luis Vallejo

University of Pittsburgh Facilities Management: Dr. Andrew Bunger Dr. Kent Harries Dr. Anthony lannacchione Dr. John Oyler Professor John Sebastian

Hannah Dobos Anastasia Dubnicay Ron Leibow Chris Newman