WELCOME!

Our Meeting Will Begin Just After 1130

(**Please keep your audio muted to begin meeting**)

San Diego Post

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Society of SAME American Military Engineers

http://www.same.org/San-Diego

Virtual Conference Rules of Engagement

- **Please mute your microphones during the meeting!**
- View functions (located in top right corner):
  - Speaker view
  - Gallery view
- Use Speaker View during presentation
- Submit questions via the Zoom Chat Function

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Agenda

1130 – 1145: Welcome, Pledge of Allegiance, & Introductions

1145 – 1155: SAME Scholarship Awards

1155 – 1215: 2021 Greater San Diego Science & Engineering Fair – SAME STEM Awards & Project Presentations

1215 – 1245: SDSU Mission Valley by Robert Schulz – University Architect, SDSU

1245 – 1255: Question & Answer

1255 – 1300: Meeting Closeout

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Pledge of Allegiance

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2021 SAME Scholarship Awards

$82,000 awarded to 9 recipients chosen from 39 applicants

General Awards

- Rachel Astet Vasquez, SDSU – Engineering Sciences (PhD)
- Kilian Colin, SDSU – Environmental Engineering
- Justin Daus, USD – Industrial & Systems Engineering
- Andrew Ruff, SDSU – Mechanical Engineering
- Miguel Molina, CSUSM – Electrical Engineering
- Joshua O'Connell, SDSU – Electrical Engineering

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2021 SAME Scholarship Awards

Tom Crane Award

- Minghua Ong, UCSD – Bioengineering

Ben Montoya Award

- Christopher Colandene, USD – Industrial & Systems Engineering

Jackie Price-Dunn Award

- Rachel Fernandez, CSUSM – Software Engineering

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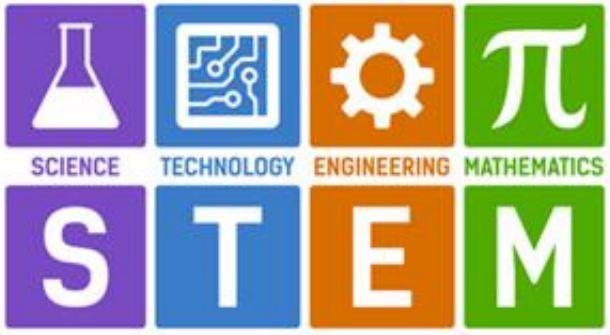
2021 SAME STEM Awards

67th Annual Greater San Diego Science & Engineering Fair 2021

- Event conducted virtually on March 16th 2021
- Panel of judges from San Diego SAME chapter
- Cash prize for top three projects in Junior and Senior divisions



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Junior Division Award Winner

Tyler Williams

St. Michael's School – 7th Grade

Robotic Firefighter

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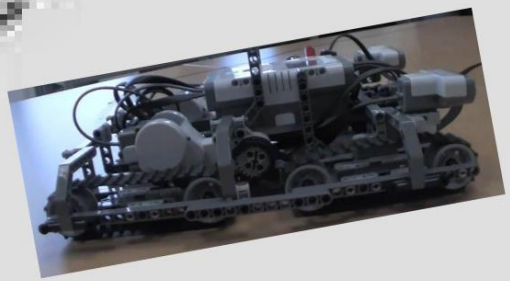
Junior Division Award Winner

Robotic Fire Fighting Machine



By: Tyler J Williams

Junior Division Award Winner

Anirudh Kalyanaraman

Mesa Verde Middle School – 8th Grade

Optimization of Canard Configuration to Enhance Aircraft Carrier-based Operations

SCIENCE TECHNOLOGY ENGINEERING MATHEMATICS

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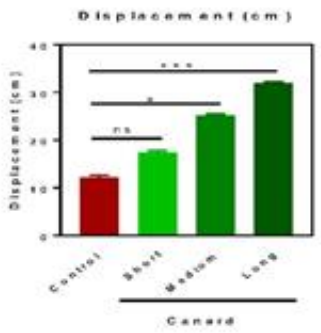
Junior Division Award Winner

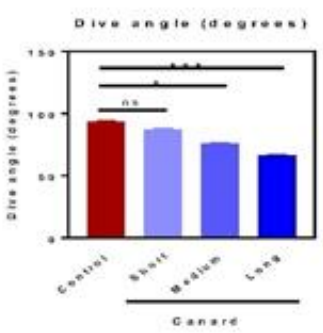
Optimization of canard configuration to enhance aircraft carrier-based operations

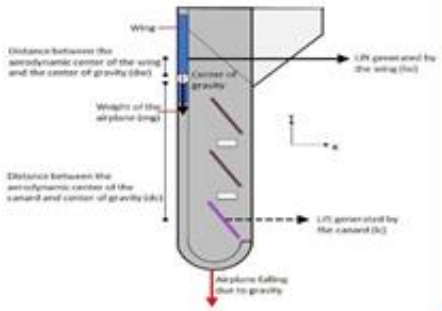
Anirudh Kalyanaraman,

Mesa Verde Middle School, Grade 8

What is the **optimal coupling distance** (distance between the trailing edge of the canard and the leading edge of the wing) in an inbuilt model of a canard aircraft that **minimizes the pull up radius**?







- Conducted experiments with **prototype aircraft, free body force analysis** and **numerical simulations**
- Canard aircraft with a **long coupling distance** showed promising flight characteristics with reduced dive angle and higher displacement leading to **tighter pull up radius**.
- Larger coupling distance results in **improved maneuver capability** and **aerodynamic performance** of carrier-based combat aircraft.

Junior Division Award Winner

Santiago Martinez

Nazareth School – 7th Grade

Does the Shape of an Airplane's Wing Influence the Distance it Travels?

SCIENCE TECHNOLOGY ENGINEERING MATHEMATICS

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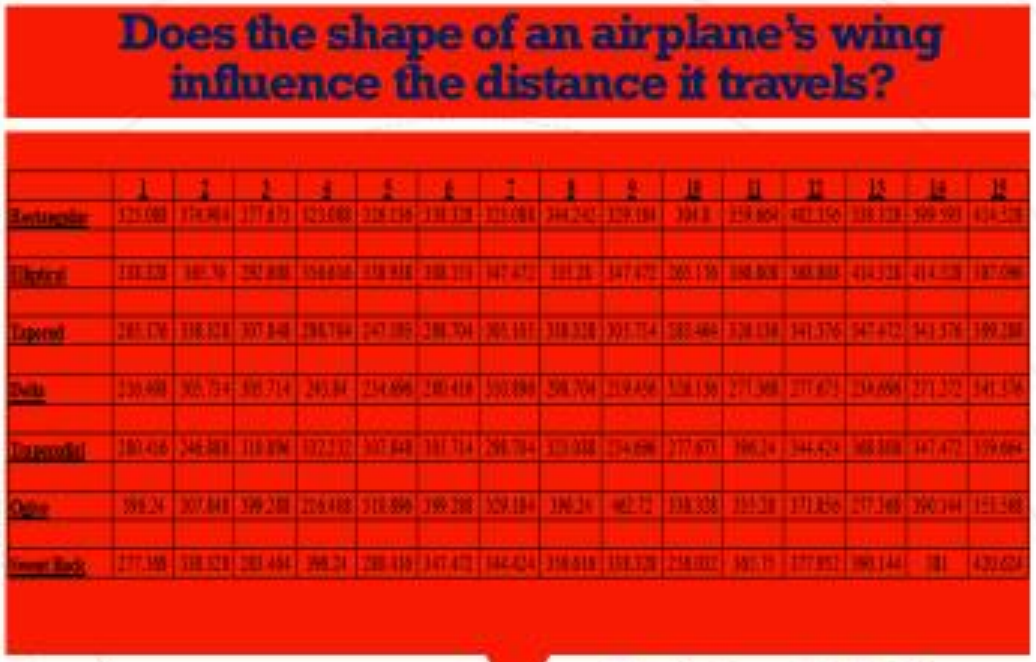
Junior Division Award Winner

Does the shape of an airplane's wing influence the distance it travels?



Based on the results, the Rectangular Model was the most consistent on its average flight distance.

The Delta and the Ogive models, both of which the wing-design is triangle-like shaped and do not have horizontal stabilizers, recorded the shortest distance flights

Hypothesis: Yes, it does. And, I thought the elliptical-wing plan would fly the farthest.

Procedure: (1) build seven different wing-design planes, and rubber band-powered launcher; (2) launch each plane fifteen times; (3) record data for each plane; and (4) run calculations and prepare graphs.

Result: Ogive-wing plane flew the farthest.

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Senior Division Award Winner

Bella Rose Schremmer

University City High School – 10th Grade

Clean Coastal Energy by a Piston-Buoy Rack Pinion WEC System

SCIENCE TECHNOLOGY ENGINEERING MATHEMATICS

S T E M

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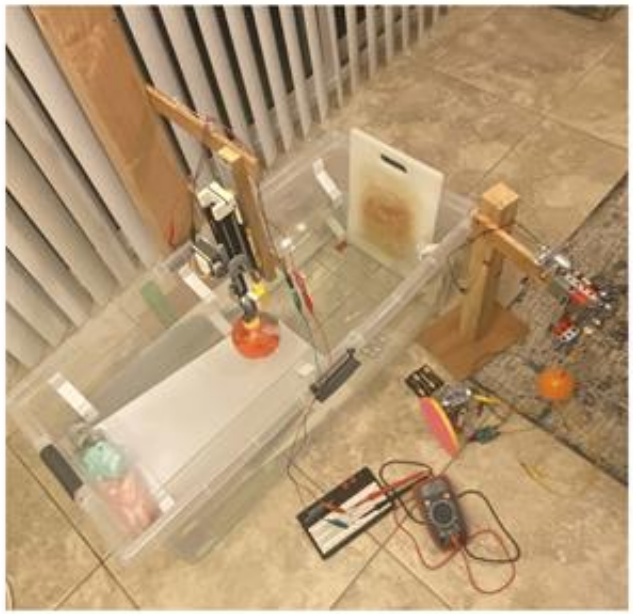
Senior Division Award Winner

April 2021

Clean Coastal Energy by a Piston-Buoy Rack and Pinion Wave Energy Converter System

By. Bella Rose Schremmer

WEC Device applied to pillars

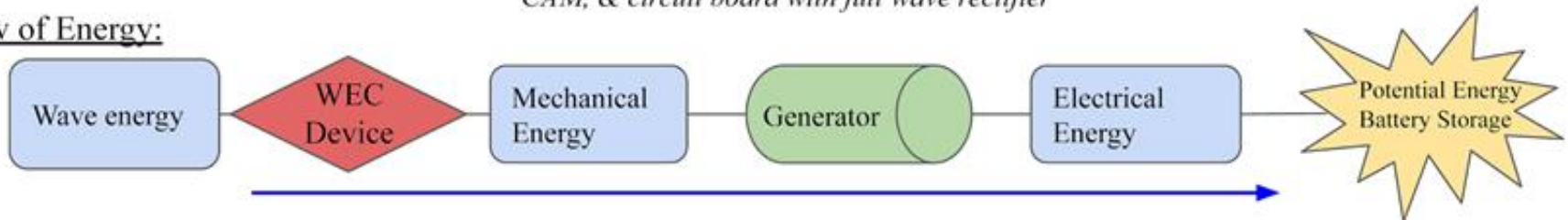


WEC system including final device, wave tank, prototype-1, CAM, & circuit board with full wave rectifier

-Harness the reciprocating linear motion of ocean waves to provide low cost renewable power
-Applied to pre-existing structures, like a beach pier pillar, for easy application and no need for costly drilling into the sea floor

WEC device being tested with CAM

Flow of Energy:



Senior Division Award Winner

Issa Alwazir

Bright Horizon Academy – 10th Grade

Deleting Drunk Driving

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Senior Division Award Winner

Deleting Drunk Driving

According to the Federal Bureau of Investigation (FBI) in 2016 reported that there were 1,017,808 arrests for driving under the influence 10,497 casualties that were claimed by them in one year alone! Driving under the influence has long been one of the top factors behind these collisions.

The objective of this project is to create a robot that is accurate, reliable, fast and affordable to monitor the the sobriety of the driver of a car. Once the sensor detects alcohol in the person's breath, it will disable the car from starting for safety reasons. This device will then call the designated family member of the driver to alert them, but then if the driver attempts to start the car the authorities will be contacted directly by the robot.

I firstly built the prototype car to be fitted with the Arduino, IoT Module and an alcohol sensor. I then needed to code it in C language on KIPR C, a software for coding the KIPR Wombat. I then wired the Arduino to the alcohol sensor so that I can allow it to communicate with the prototype car. Next, I coded on the Arduino IDE software using combined functions from C and C++. I finally secured the Arduino and IoT Module to the prototype car.

I tested the car in 70 trials with it working accurately 91.4% of the time. The car was successfully disabled from starting when it detected alcohol in the breath. The device was also able to call the designated family member of the replica person driving the prototype vehicle.

In conclusion, this device is affordable, costing $34 in total and can be mass produced at an even smaller investment cost for country-wide distribution rather than current innovations which are hard to come-by for the majority of the population and range in cost between 400 and $500.

Senior Division Award Winner

Jessica McWilliams

Scripps Ranch High School – 10th Grade

In-situ Pore Water and Sediment Sampler

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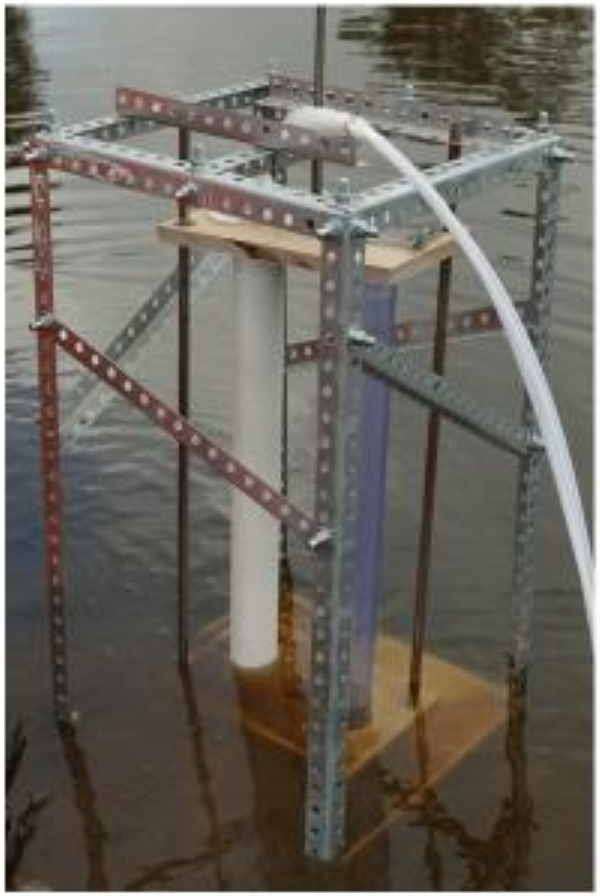
Senior Division Award Winner

In-situ Pore Water and Sediment Sampler

By Jessica McWilliams



Environmental scientist collect pore water and sediment sample to identify contaminates in underwater sediment. However their job is limited by their sampling equipment. A device was built that simultaneously takes a sediment core and pore water samples from 3 different depths.

The sediment sampler collects a sediment core using a core catcher.

The pore water sampler collects water from 3 discreate levels using screened sections connected by couplers.

A large screw is used to lower and raise the platform through the base.

Clamps attach the samplers to the wooden platform

A metal frame provides a sturdy structure and rails guide the platform

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Robert Schulz

University Architect – San Diego State University

- San Diego resident since 2006
- Ball State University – B.S. in Architecture
  Cal Poly Pomona – M.S. in Architecture
- Licensed Professional Architect in California
- Proud husband, father, and “Aztec for Life”

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Why SDSU MV?

Opportunity

Location

Immediate Need

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Scale of Property

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Mission Valley to Existing Campus Comparison

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Adjacency to Existing Campus

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Nearest NCAA Div 1A Football Venue

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What

Projects Overview

Property Acquisition

Property acquisition and offsite improvements

- Owner: SDSU
- Budget: $134M
- ($88 M Purchase Price)
- Expected Completion: Sep 2037

Stadium

35,000 capacity stadium and outbuildings

- Owner: SDSU
- Architect: Gensler
- Budget: $310M
- Completion Date: Sept 2022

Site Development

160 acre demolition and redevelopment

- Owner: SDSU
- Engineer: Project Design Consultants
- Budget: $216M
- Expected Completion: Sep 2023

Residential Development

Public Private Partnerships

- Long Term Ground Leases
- Private Capital
- Non-recourse to University
- Expected Completion: 10-15 Years

Innovation District

Public Private Partnerships

- Long Term Ground Leases
- SDSU Build-to-Suit
- State/Campus Project
- Expected Completion: 10-15 Years

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1930 FLOW

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EXISTING STADIUM CUT & FILL | 1965

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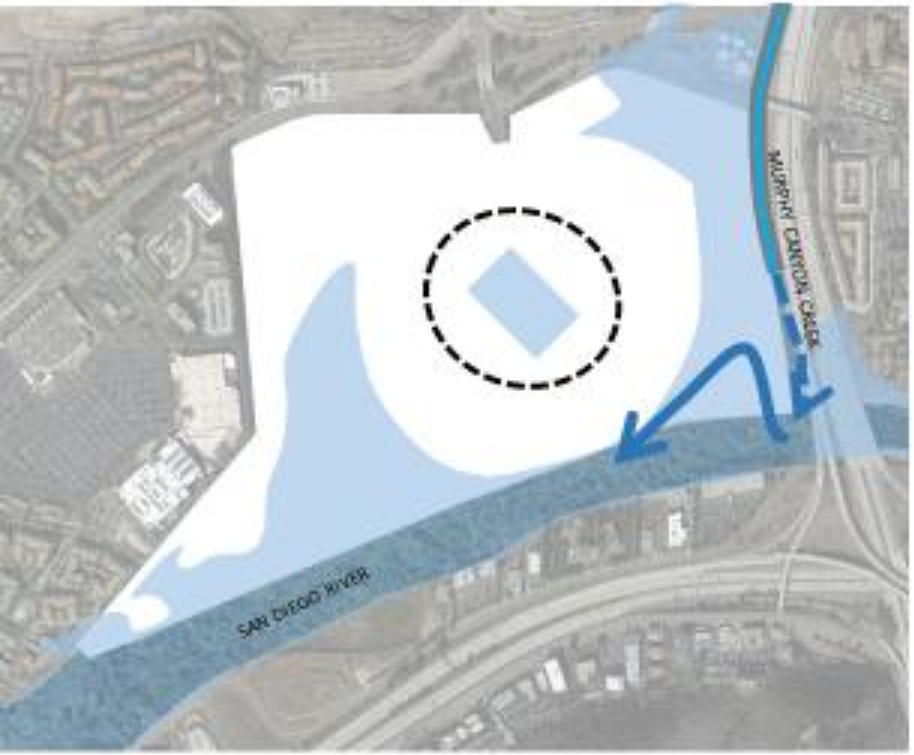
SITE HYDROLOGY CONCEPT



CURRENT 100 YEAR FLOOD CONDITION

NEW 100 YEAR FLOOD CONDITION

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SDSU Mission Valley – Site Development

PARKS & OPEN SPACE

- 80+ TOTAL ACRES
- 4 MILES HIKE/BIKE TRAILS
- ACTIVE AND PASSIVE RECREATION
- WATER QUALITY BASINS AND FLOOD MITIGATION

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Mission Valley

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SDSU Mission Valley – Aztec Stadium

STADIUM

- 35,000 CAPACITY MULTI-USE STADIUM
- MULTI-USE RECREATION FIELDS/TAILGATE PARK
  - 1,000 GAME DAY PARKING SPACES
- SHARED PARKING WITH INNOVATION DISTRICT

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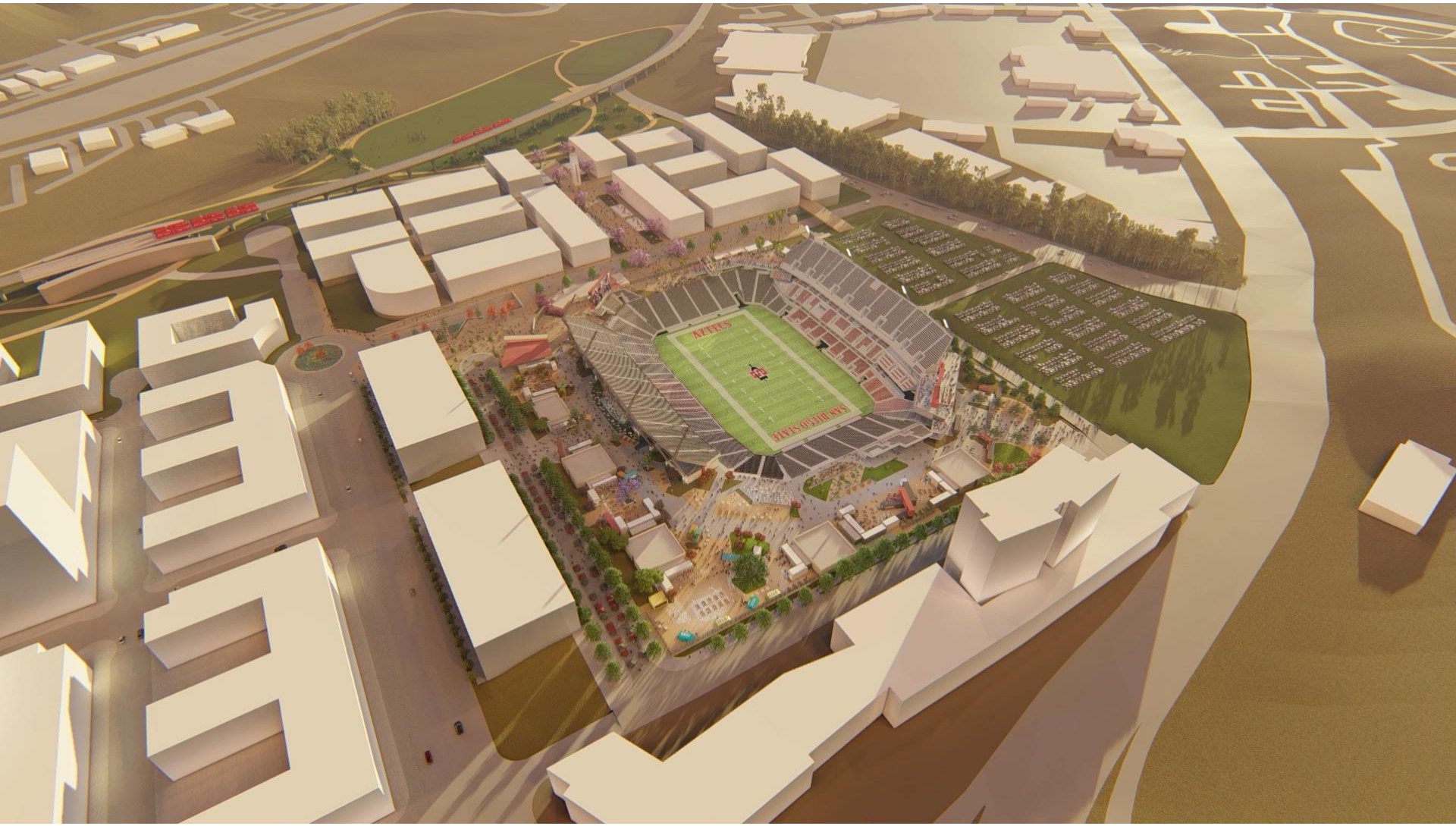
AZTECS
SAN DIEGO STATE

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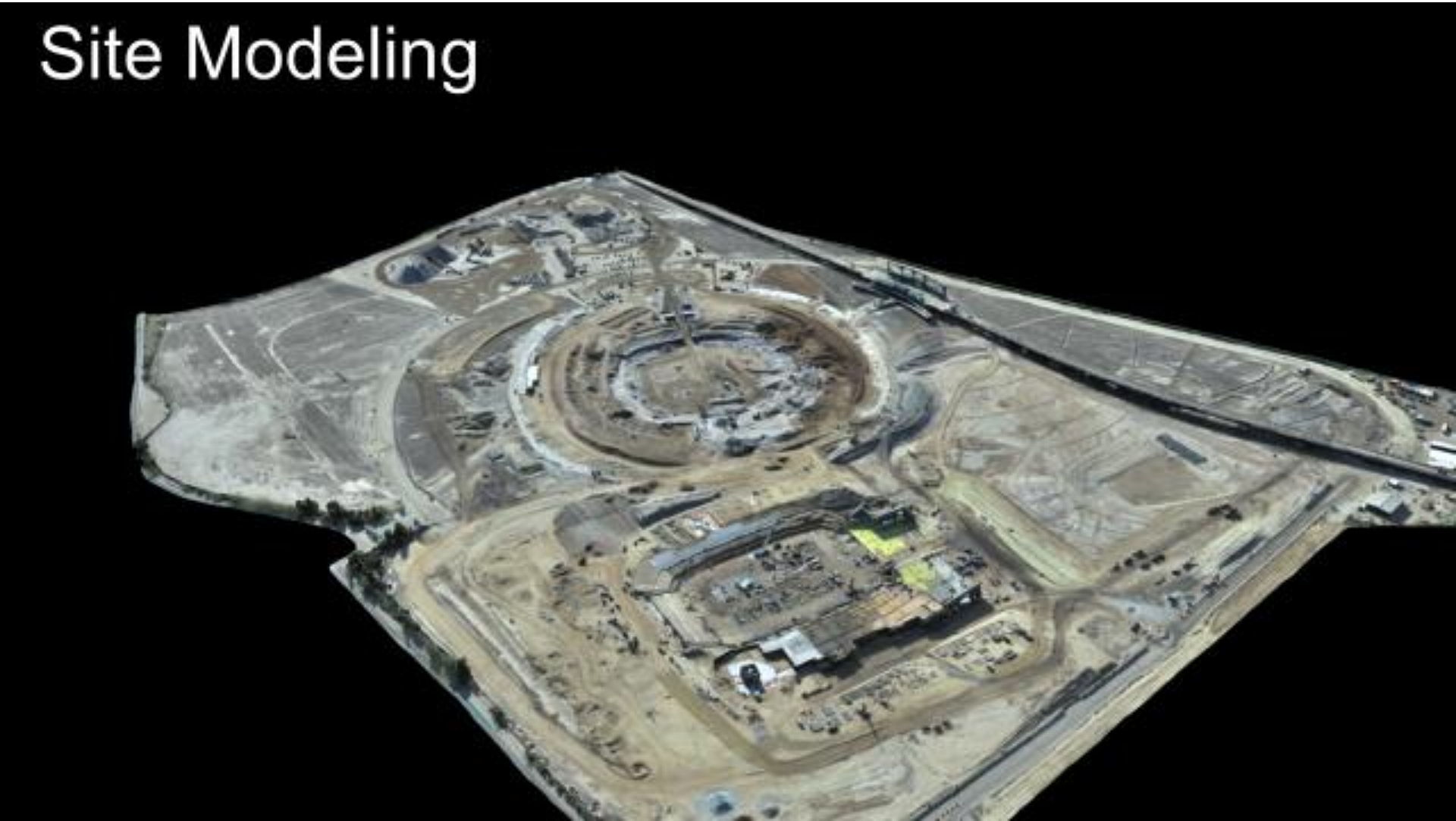
Site Modeling



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Hmmm?

San Diego State University
Mission Valley

Society of SAME American Military Engineers

September 2022

San Diego State University
Mission Valley

Society of SAME American Military Engineers

Summer 2023

San Diego State University
Mission Valley

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FUN FACTS

Structural Steel: 6,400,000 lbs.

Concrete: 200,000 CY

620 miles of sidewalk!

Rebar: 7,500,000 lbs.

Wet Utilities: 38,000 LF

7 Miles of utilities!

Imported Soil: 470,000 CY

40,000 Dump Trucks!

Conduit: 173 Miles

SDCCU Stadium to Barstow!

Site Size: 160 Acres

60 Downtown city blocks!

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LOCAL IMPACT

TRADE PARTNERS

- **28** *SUBCONTRACTORS WITH SAN DIEGO OFFICES*

DESIGN FIRMS

- **12** *DESIGN PARTNERS WITH SAN DIEGO OFFICES*

SDSU ALUMNI

- **11** *SDSU ALUMNI FROM CLARK WORKING ON SDSU MISSION VALLEY*

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What's Next

SAN DIEGO STATE UNIVERSITY
Mission Valley

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SDSU Mission Valley – Residential

HOUSING

P3: Private Development on Leased Land

- 4,600 UNITS ON 18 BLOCKS
  - Market-rate
  - Workforce
- AFFORDABLE ON-SITE
  - 10% (Up to 460 units)
  - 60% AMI
  - Income-Averaging
  - Family/Senior

San Diego State University
Mission Valley

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SDSU Mission Valley – Retail

RETAIL

1st Floor of Mixed Use Buildings

- 95,000 SF – Ground Level on D Street

No Stand-Alone Retail Pads

San Diego State University
Mission Valley

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SDSU Mission Valley – Hotel

HOTEL

P3: Private Development on Leased Land

- UP TO 400 HOTEL ROOMS
- 40,000 SQFT CONFERENCE SPACE

San Diego State University
Mission Valley

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SDSU Mission Valley – Innovation District

RESEARCH & INNOVATION DISTRICT

- 1.6 MILLION SF
- 15 BUILDINGS
- 3-6+ STORIES
- PUBLIC-PRIVATE PARTNERSHIPS
- 5,000 PARKING SPACES
- TROLLEY ACCESS
- SUPPORT UP TO 15,000 ADDITIONAL STUDENTS OVER TIME

San Diego State University
Mission Valley

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SDSU Mission Valley – Innovation District

Innovation District Development Models

- Ground lease model with public or private partner
  - Individual partner
  - Commercial developer
- SDSU-led Build to Suit
- State/Campus funded capital project

San Diego State University
Mission Valley

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Announcements

- **SAME Young Professionals Virtual Happy Hour - April**
  - Wednesday, April 28th (1800 – 1900) – Networking & Pictionary!
  - Sign up by emailing Travis Pital – tpital@pacrimengineering.com
- **SAME May Luncheon – NAVFAC Engineering & Expeditionary Warfare Center (EXWC) UAV Presentation**
  - Wednesday, May 12th (1130 – 1230) – Webinar
  - Utilizing UAV technology to help protected species & other applications
- **SAME Young Professionals Virtual Cooking Class - May**
  - Date / Time TBD – Coordination with Chef(s) underway
  - Sign up by emailing Travis Pital – tpital@pacrimengineering.com

http://www.same.org/San-Diego

Announcements

- **SAME 2021 Summer Camps**

  - Army / USMC camps in-person; Navy, USAFA, & Scott Field camps virtual
  - Additional info at same.org/stemcamps
  - Mentors needed for all camps. If interested, please contact Allison Cantu (allison.cantu@navy.mil)
- **SAME Camp Pendleton Day**
  - Thursday, June 17th (1130 – 1230) – Webinar
  - Andrew Baughman (NAVFAC SW) – Energy Resiliency Presentation
- **Interested in Joining our SAME San Diego Chapter?**
  - Contact Melanie Kito (melanie.kito@navy.mil) or Sean Leffler (sean.leffler@eurofinset.com)
- **Need Professional Development Hours?**
  - Contact LT Matt Harvie (sameprograms@gmail.com)

Goals of the 2025 Strategic Plan

- Strengthen Industry-Government Engagement
- Build and Sustain Resilient Communities
- Develop Leaders for the Profession
- Enrich Our Nation's STEM Pipeline
- Prepare Service Members and Veterans for the A/E/C Industry

Our Mission:

Build leaders and lead collaboration among government and industry to develop multidisciplined solutions to national security infrastructure challenges.

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