



# UNT College of **ENGINEERING**

Senior Design Day 2019



Department of  
**ENGINEERING**  
**TECHNOLOGY**



# CONSTRUCTION ENGINEERING TECHNOLOGY



# Wildlife 10

## Team Members:

- Dylan Pelt
- Zamira Escamilla
- Omar Maraqa
- Joe Scroggins
- Christian Pineda

## External Sponsors/Mentors:

- Hector Rivera
- Mike Van-Slyke

## Internal Sponsors/Mentors:

- Dr. Zhenhua Huang

## Abstract:

One Team Building Co. has been tasked with overseeing the construction of a 524,460 sq. ft. warehouse with approximately 50-70 docks, located at the intersection of Belt Line Rd. and I-30 in Grand Prairie, TX. The scope of work focuses on preparing the site, underground utilities, foundation, paving, erecting tilt walls and the metal roof. Our team's objective is to prepare the documentation for the project regarding the schedule, budget, safety plan, risks analysis and logistics.

This project is a tenant build out, which simply means Ridgemont is only responsible for building the warehouse shell. At which point, the owner representative will determine what interior finishes they require for their warehouse, and will then choose a subcontractor to finish the interior.



# North Texas Construction

## Team Members:

- Erica Rose
- Eduardo Aguirre
- Michael Williams
- Omar Khodr
- Alex Mulcahey

## External Sponsors/Mentors:

- **Sponsor:** Vaughn Construction
- **Mentor:** Andrew Thompson, Adam Perkins

## Internal Sponsors/Mentors:

- **Faculty Advisor:**
- Aloysius Attah, P.E.

## Abstract:

Our senior design project is the “University of North Texas Joe Greene Residence Hall” located on the main campus of University of North Texas (UNT) at 800 Avenue A and Building #0169, 1417 Maple St. Denton, Texas.

Based on the need established in the 2013 Campus Master Plan, the University of North Texas will construct a new residence hall to provide 1000 beds and the corresponding support areas. The 1,000 beds may be constructed in multiple facilities and locations in accordance to the UNT Campus Master Plan. It is anticipated that the construction will be in multiples phases with the initial phase constructing approximately 500 beds. Emphasis is given to providing a living-learning type of environment with ample study and shared common spaces throughout the building. Additionally, there will be a Tourist Center component, as well as housing and dining administration offices. A new central plant will be located in the existing Kerr Hall mechanical room along with a new cooling tower.

Our project team planned and performed management analysis of the Joe Greene Residence Hall located at the University of North Texas. The sections covered will include: Logistics and Layout, Budget, Schedule, Sustainability, Value Analysis, Risk Assessment, Safety Plan, Business Plan, and Computer Modeling program such as BIM.





# Jaguar | Landrover/R&R Construction

## Team Members:

- Ricky Evans
- Brendin George
- Ryan Condra
- Justin Tolle

## External Sponsors/Mentors:

- Bryan Bennett, Senior PM Ridgemont
- Blake Templeton, Asst. PM Ridgemont

## Internal Sponsors/Mentors:

- Dr. Saman Rashidian

## Abstract:

We have been given the job under Ridgemont to help build the new addition for the Jaguar | Land Rover dealership in Frisco, Tx. There are two phases in the project, as R&R Construction, we are in charge of Phase II.

We will be in charge of the scheduling, ordering of materials, and construction from above grade work all the way up until the roof is on and waterproofing has been completed. The new addition will consist of an expansion on the existing showroom, a service room, service drive and a new car delivery room.

Our milestones will cover the following topics: Logistics/Layout, Budget Outline, Rough Schedule, Sustainability/Green Review, Value Analysis, Risk Assessment and Business Plan.



# N South Fwy Bridge Value Engineering for the TRE Trinity River Bridge Project

## Team Members:

- Cole Hyun
- Jett DeRiso
- Matthew Kimmich
- Blake Kuecker

## External Sponsors/Mentors:

- Lee Pelton  
Austin Bridge and Road  
Assistant Project Manager

## Internal Sponsors/Mentors:

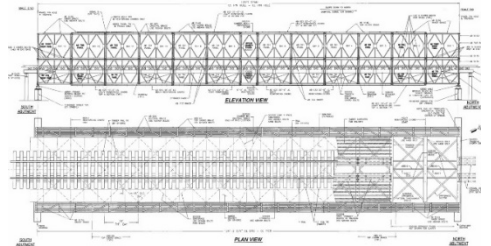
- Dr. Saman Rashidian

## Abstract:

Our senior design capstone project is to value engineer the N South Fwy bridge (bridge 612.20) of Austin Bridge & Road's TRE Trinity River Bridge Project job. The full project scope consists of adding a second track over a three-quarter mile distance, constructing 5 new bridges (including bridge 612.20), and refurbishing the steel truss bridge over the Trinity River.

Due to the original plan for bridge 612.20 not being efficient, our sponsor, Lee Pelton, asked for us to value engineer the bridge to save time and money as well as allow the Trinity River Express to run sooner than originally projected. Using our knowledge and experience, with generous aid from our mentor, we will join together as G4 Construction Co. to develop a schedule, budget, business plan, risk analysis, and value analysis as a general contractor in order to value engineer bridge 612.20.

Our design consists of two single track 125 foot span bridges to replace the existing single track 42 foot span bridge. We will use two 600 ton cranes to hoist each fully assembled new bridge into position. We anticipate our design to cut weeks of construction time off of the original schedule.





# ARVIN HILL ROAD – ROADWAY & DRAINAGE IMPROVEMENTS

## Team Members:

- Thamer Alameer
- Logan Vidrine
- Alton Cheek
- Ebiye Ofongo

## External Sponsors/Mentors:

- DENTON COUNTY/ Fred Ehler, P.E.

## Internal Sponsors/Mentors:

- Aloysius Attah, P.E.

## Abstract:

Arvin Hill Road Roadway & Drainage Improvements. The project will take a place at Arvin Hill Road, Aubrey, TX. On Tuesday, December 18, 2018, Denton county accepted Ed Bell Construction Company's bid at \$3,761,323.64. The project should be completed within 400 consecutive calendar days. This project consists of the reconstruction of Arvin Hill Road from US 377 to Red Mesa Trail including roadway, drainage improvements and all extra work related to the project.

Due to changing in weather, heavy rain and low maintenance, Arvin Hill road is damaged and it needs to be rebuilt to serve the people who live in that area. The project will improve the quality of the street, utility supply and the drainage system. Also, it will connect Arvin Hill to US 377 in different way for a better safety measurements. The project will insure that the people who live in that area will have access to a better public services.

Our main objective is to implement a team-based approach to construction projects. prepare documentation regarding the major works on the project. The documentation will include: Logistics, Layout, Budget, Schedule, Sustainability, Value Analysis, Risk Assessment, Safety Plan, Business Plan, and Computer Modeling program such As AutoCAD.





# CNET Senior Design Capstone Eagle Construction

## Team Members:

- Zachary Hill
- Gerardo Martinez
- Sergio Florido
- Frank Robles

## External Sponsors/Mentors:

- MYCON General Contractors
- Justin Swaim

## Internal Sponsors/Mentors:

- Dr. Cheng Yu

## Abstract:

Our team's senior design project is the Justice Plaza Retail/Office Buildings and is located at 1405 East McKinney Street in Denton Tx with a lot size of 4.57 acres. Justice Plaza is a design bid build project with two phases and our group will be doing our project over phase one. Phase one consists of two retail/office buildings, excavation and construction for a detention pond, and installing the sanitary sewer, storm sewer, and domestic water lines to tie into the existing underground utility system.

The first building is 12,190 SF and building two totals out to be 13,270 SF. The two buildings are both wood framed buildings and will have a stone and stucco exterior finish. MYCON is just constructing the shell of the building once the owner has leased out his building then the people who leased them will hire their own contractors to do the interior finish out. The detention pond will be surrounded by a redi-rock retaining wall with a 6" clay liner to seal the bottom of the pond. The detention pond has the 36" RCP inflow coming in from the North to catch all the runoff water from the back of the property and has an outfall structure that lets the storm water continue to flow through the system.

Our team will be constructing a report for Justice Plaza that will include; logistics and layout, budget, schedule, sustainability, value analysis, risk assessment, safety plan, business plan. Our team of four plan on working together using the tools and skills we have learned over our time in the CNET program at the University of North Texas.



# Knockout Construction

## Team Members:

- Tyler Roberts
- Aaron Scott
- Quinn Shoop
- Cameron Craig

## External Sponsors/Mentors:

- Breck Landry

## Internal Sponsors/Mentors:

- Dr. Zhenhua Huang

## Abstract:

Our senior design project is the Gaylord II apartment complex located in Frisco, T.X. at the corner of Gaylord Parkway and Ohio St. The apartment complex will consist of a parking garage and 254 multifamily units. The 1<sup>st</sup> floor will consist of a clubhouse, 56 units, and a fitness center. The 2<sup>nd</sup> floor will have 66 units. The 3<sup>rd</sup> floor will have 69 units and the 4<sup>th</sup> floor will have 69 units as well. There will be 2 swimming pools, one will be in the court yard and the second one will be on the top of the parking garage.

Our team analyzed the design and management aspects of the project. There are 7 key aspects within design and management that we focused on for the project. These 7 aspects are : Logistics, Site layout plan, Budget, Schedule, Sustainability, Value analysis, Risk assessment, Safety plan, Business plan, and a Computer modeling. Our team created documentation pertaining to each individual aspects that will reflect the work we have completed for this project.





# UNT Dining Hall

## Very Good Building and Development Co.

### Team Members:

- Kevin Copher
- Nathan Butcher
- Manuel Delacruz-Pena
- Juan Garcia

### External Sponsors/Mentors:

- Robert Will – Preconstruction Manager, Rogers-O’Brien Construction

### Internal Sponsors/Mentors:

- Dr. Cheng Yu

### Abstract:

Our senior design project is the UNT Dining Hall located in Denton, Texas. Our project consists of the new dining facility at the address of 1416 Maple Street, Denton, TX 76201. The dining facility will be approximately 36,000 gross square feet, and be able to support approximately 700 person seating capacity. Dining room(s), associated kitchen, preparation, storage, dishwashing, and all other necessary support areas of a modern dining facility shall be included. The idea of the new Dining Hall is to create a great dining experience that would attract new students, and retain existing students. The new Dining Hall will give the students to be able to customize their meals, and experiences while being able to visually see the food preparation.

Our project team is tasked with creating a project report, project presentation, and poster board. The project report will cover the following section: Business Plan, Logistics and Site Layout, Risk Assessment, Safety Plan, Value Analysis, Sustainability, Budget, Schedule, and a Computer Modeling program such as BIM.



# Charles Schwab Westlake Campus: DFW-2 Office Building

## Team Members:

- Omar Cereceres
- Tomas Becerra
- Ruben Garza
- Luis Cobos Montes

## External Sponsors/Mentors:

- TDIndustries
- Brent Hawley
- Dan Weir
- Ben Berard

## Internal Sponsors/Mentors:

- Dr. Cheng Yu

## Abstract:

Our team has been assigned the Charles Schwab DFW-2 Corporate Campus building located on the southeast corner of State Highway 114 and State Highway 170. The DFW-2 building will be one of the four buildings part of the Charles Schwab DFW Corporate Campus. The project located on the 69 acre site will support 3,000+ employees and include approximately 1.4 million square feet in floor area.

The scope of work includes all the Mechanical and Plumbing (MEP) components for the DFW-2, 194,045 SF 4 story building. The 194,045 SF of the floor area will include offices, elevators, lounges, large video conference rooms, open office space, restrooms, storage spaces, lobby areas and reception areas.

Global Construction is tasked with analyzing and understanding the project, in order to accomplish this our group will address and analyze different categories such as: Logistics and Layout, Budget, Schedule, Sustainability, Value Analysis, Risk Assessment, Safety Plan, Business Plan, and Computer Model.



# Energy Square One Remodel

## North Texas Contracting

### Team Members:

- Bobbie Daniels
- Rhett Butler
- Josh Fleming
- Sebastian Gatewood

### External Sponsors/Mentors:

- Evan McKee
- The Whiting-Turner Contracting Company

### Internal Sponsors/Mentors:

- Dr. Zhenhua Huang

### Abstract:

Our team was tasked with creating a project that aligns with the Energy Square Redevelopment project located in Dallas, Texas. This project includes the removal of tenant space, remodeling, and redeveloping of the first floor of an office tower building. This project report will consist of details on the construction of the first floor. The 25,000 square foot scope of work consists of demolishing and removing current tenant space, adding new exit doors and stairs, remodeling for a new fitness center, and obtaining a new certificate of occupancy.

Much of the scope for this project will lie in the addition of a 10,331 square foot new fitness center. This fitness center will include locker rooms, a fitness studio, a laundry room, and a massage room. The new 1,700 square foot terrace level will be located above the fitness level. There, tenants will have the option to enjoy their lunch and other social activities.

Other scopes involve the addition of 3 conference centers and the relocation of a Deli. The last scope includes the remodel of the bathrooms and the office building mail room. Much of the work will be done on the first floor of the office building but other work will be performed on the second floor to coordinate with all the remodel happening for the fitness center.

*We would like to personally thank Dr. Attah for his continued guidance, Bobby Daniels for constant support, and Evan Mckee along with the Whiting-Turner team for giving us this opportunity.*





# The Colony Firehouse No.4

## AP Construction

### Team Members:

- James Elliott, Aubree Rowley, Cody Western, and Casey Winsor

### External Sponsors/Mentors:

- Steele & Freeman, Inc.

Brian Hennington, Project Manager (CMAR)

### Internal Sponsors/Mentors:

- Aloysius Attah, P.E.

### Abstract:

Our Senior Design project is a close partnership with Steele & Freeman in specifying, planning and performing management analysis during the Colony Firehouse construction project. The project is located on 3400 Plano Parkway In The Colony, TX approximately ¼ mile south of Texas 121 (Sam Rayburn Tollway). The work is composed of a single story Fire Station, including general construction, site development, HVAC, plumbing, electrical and fire sprinkler systems. The work of this contract for Fire Station No. 4 will be performed under multiple subcontracts with the Construction Manager at Risk. The Colony officials know that the city was in need of a new fire station, so they turned to Steele & Freeman to come up with a resolution to the cities problems. Fire Station No. 4 will be approximately 22,000 square feet with a total of 5 bays. The size of this Fire Station is larger in size to accommodate for the rapid growth of the area off of SH 121. Within the new Fire Station it will include all of the latest gear available as far as ventilation. Also including bi-fold doors for functionality as well as modern designs for the kitchen, as well as updated sleeping corridors for the firemen, as well as new training opportunities for the firemen. All of these updates to help prepare for future growth in the area.



Special thanks to the College of Engineering, along side the Department of Construction Engineering Technology, Steele & Freeman, The Colony, and The Colony Fire Department.