Student Name:_____

CHECKLIST

**Please place this sheet at the beginning of the document.
DO NOT WRITE ON THIS FORM
The Committee will use this form in evaluating the document.**

_____Page one - **Intern checklist**

_____Page two - **Title page**

_____Page three - **Current resume**

_____Page four - **Evaluation received from site**

_____Section One - **Description of Facility**

_____Section Two - **Duties**

_____Section Three – **Resources**

_____Section Four – **Project Documentation**

_____Section Five **– Summary**

GRADE:_____

COMMENTS:

Internship Capstone Project

CE 6330 – Masters Report
Texas Tech University

July 19th, 2024

Prepared for:
Dr. Clifford Fedler – Instructor of Record
Dr. Theodore Cleveland – Second Reader

Prepared By:
Mike Feather

Michael J. Feather, EIT

2525 Carlisle St. #730, Dallas, TX 75201
mikefeather@bellsouth.net
901-605-5645

EDUCATION

Texas Tech University, Lubbock, TX
Master of Science in Civil Engineering, January 2022 – December 2024

Texas Christian University, Fort Worth, TX
Bachelor of Science in Mechanical Engineering with a Minor in Mathematics, August 2016 – May 2020

Engineer-In-Training Certification (#71567) – Texas, October 2020

EXPERIENCE

Civil Analyst – Land Development September 2021 – Present
Kimley-Horn and Associates Inc., Dallas, TX

- Design site stormwater drainage and utility layouts to assist in the development of large-scale multi-family and commercial projects in the DFW area
- Coordinate with landowners, developers, and contractors to adhere to project timelines and ensure budget constraints are met
- Assist project managers in overseeing team workload and balancing competing deadlines in a fast-paced work environment

Testing and Applications Engineer May 2020 – September 2021
Klein Tools, Mansfield, TX

- Develop performance testing procedures for over 100+ SKUs of manufactured products to ensure adherence to company and industry standards
- Draw appropriate conclusions based on test data and report manufacturing process changes
- Ensure testing laboratory maintains ANSI-ISO 17025:2017 safety and testing standards to aid in accreditation

Design Project Engineer – Limestone Drying Unit August 2019 – April 2020
Lhoist North America Limestone Ltd, Crawford, TX

- Design and implement a scaled rotary dryer design to improve efficiency of energy use in industrial material processing plant by coordinating with a team of thirteen students
- Improve estimated efficiency of drying system by 25% after fabrication and integration into limestone processing layout at industrial mining plant

Petroleum Landman May 2019 – August 2019
Rock Ridge Royalty Company, Fort Worth, TX

- Communicate with 200+ landowners to verify mineral ownership and aid in developing land ownership opinions
- Examine oil production and land surveying data to accompany mineral pricing opinions
- Negotiate with mineral owners and production groups for the acquisition of mineral rights leading to the development of petroleum deposits in the Permian Basin of West Texas

PROJECTS

Crandall Commercial Master Planning*, Kimley-Horn & JWS Land, Ltd.* December 2021 – Present

- Assisted the landowner of the development of over 200+ acres of mixed-use-zoned property into a bustling hub in the center of Crandall, Kaufman County, Texas
- Completed the civil design and permitting for master infrastructure for the commercial end-users to facilitate the sale of the property.

High-Volume Product Quality Assurance, *Klein Tools Testing Lab* September 2020 – September 2021

- Performed material testing on high volume pliers to determine effectiveness of current manufacturing processes
- Reported manufactured product standards and advised on process improvements based on financial and technological viability

SKILLS

AutoCAD Civil 3D	Microsoft Office	Python Programming	Project Management
SolidWorks	Bluebeam Revu	Drainage Design	Technical Reporting

VERIFICATION OF INTERNSHIP SITE FORM

(The student must provide a copy of this form to the Instructor of Record for their designated CE 6330 course and the Graduate Program Advisor)

I certify that Mike Feather (student intern name) will serve as an intern at Kimley-Horn (name of facility). This student will be permitted to work 120 hours during the following time period of 7/8/2024 to 7/26/2024.

During this time, the student intern will be involved in the following activities:

Civil Engineering - Water Design, Wastewater Design, Stormwater Design, Site Grading Design, Construction Document Production, Project Management

Facility Name: Kimley-Horn

Facility Address: 203 W Nash St, Suite 100, Terrell, TX 75160

Supervisor Name: Matt Lucas, P.E.

Supervisor Title: Senior Vice President

Supervisor Phone: 972-770-1372

Supervisor Fax: n/a

Supervisor Email: matt.lucas@kimley-horn.com

SUPERVISOR SIGNATURE:

Student Signature:

SUPERVISOR EVALUATION OF INTERN FORM

(The student must provide a copy of this form to each of their committee members, the Instructor of Record and the Graduate Program Advisor)

Intern Name: Mike Feather

Name of Internship site: Kimley-Horn

Name of Supervisor/Title: Matt Lucas, P.E. - Senior Vice President

Address of site: 203 W Nash St, Suite 100, Terrell, TX 75160

To the supervisor: Please evaluate the performance of the intern by circling the appropriate response under each of the areas below. Your personal comments concerning the intern or the program are encouraged.

Evaluation Ratings

N/A 1 Poor 2 Fair 3 Average 4 Good 5 Excellent

Personal Qualities						
Dresses appropriately & neatly	N/A	1	2	3	4	(5)
Acted professional	N/A	1	2	3	4	(5)
Shows Initiative	N/A	1	2	3	4	(5)
Accepts Criticism	N/A	1	2	3	4	(5)
Demonstrates enthusiasm	N/A	1	2	3	4	(5)
Is punctual & dependable	N/A	1	2	3	4	(5)
Work with individual						
Demonstrates knowledge of forensic principles	N/A	1	2	3	4	(5)
Gives corrective feedback	N/A	1	2	3	4	(5)
Establishes rapport	N/A	1	2	3	4	(5)
Works well with other outside professionals	N/A	1	2	3	4	(5)
Professional Qualities						
Establishes rapport with personnel & supervisor	N/A	1	2	3	4	(5)
Demonstrates adequate knowledge	N/A	1	2	3	4	(5)
Communicates well	N/A	1	2	3	4	(5)
Seeks new knowledge	N/A	1	2	3	4	(5)
Management						
Manages time efficiently	N/A	1	2	3	4	(5)
Care in use of equipment and facilities	N/A	1	2	3	4	(5)
Promptness, neatness, and adequacy of records and reports	N/A	1	2	3	4	(5)
Uses good judgment in making decisions	N/A	1	2	3	4	(5)

Additional Comments: _____

Would you feel confident in hiring this intern for a full time position or in providing a position recommendation? Yes ✓ No ___

I certify that this student has completed a total of 120 **hours of internship experience.**

Matthew Lucas

Signature of Supervisor

SVP

Position/Job Title

7-11-24

Date

NOTE: Please feel free to write any additional comments below. Please see "Interpreting the Evaluation Scale" for any help in responding to any of the above items.

Section 1 – Organization

CE 6330 – Masters Report
Texas Tech University

Mike Feather

July 19th, 2024

This summer I worked as a Civil Analyst for a consulting firm named Kimley-Horn and Associates ("KH"). In this role, I was asked to perform civil engineering design in the preparation of construction documents for private developers working in the Dallas-Fort Worth metroplex. I currently work in the East DFW office, located in Terrell, Texas, serving clients primarily in Kaufman County, Texas. KH is a consulting firm that assists private and public developers and cities in plenty of different facets of development, including hydraulics and hydrology, water/wastewater utilities, transportation, and the broader-termed *private development services*, which I work under. The office is newer compared to most of the locations at Kimley-Horn, opening back in March of 2024. Because it is a new office, there are only eight people working in the office each day. During my three-year tenure at KH beginning in September of 2021, I had the opportunity to begin my career in the Dallas office, which is the largest one in the country. Starting my journey in the largest office surrounded by technical experts allowed me to grow as a technically competent engineer quickly while completing my master's degree before moving towards a more client-facing, project manager role.

The structure of Kimley-Horn appears like a lot of small engineering firms that are all housed under the KH umbrella. Each office is comprised of "teams" which are typically headed by partners that have their own clients and "practice" which can vary from different project types, locations, and clients. My practice is made up of mostly commercial/retail clients with several institutional ones, such as churches and city economic development corporations. However, the partners in our office like to say, "we'll work on anything that will make the firm money," so we have a relatively diverse project list. The team-structured organization of KH allows for them all to work together or separately, sharing in resources and information to best serve their clients.

Section 2 – Duties

CE 6330 – Masters Report
Texas Tech University

Mike Feather

July 19th, 2024

As a project manager at Kimley-Horn, my primary goal is to assist my clients in the completion of their development projects all over Texas. While many engineering firms can prepare construction documents, KH serves clients as *development consultants* that assist in the acquisition, zoning, due-diligence, design, and construction of the project to completion. I work under a partner at the firm whose primary role is to bring new work to our team, where I will pick it up with my small team of two people and take it to the permitting finish line.

My current role at Kimley-Horn is primarily client-facing, with about half of my time spent in civil design and half of my time in developer and city coordination. In the design phases of our projects, I am typically called to perform civil engineering design including water and wastewater layout and design, stormwater runoff design, and earthwork/grading design. While my team works on a range of projects, we primarily serve shopping centers and city-clients to complete utility and drainage design for construction documents. I participate in the design, plan production, and quality-assurance review of the construction documents, prepared under municipal review and permitted through various city, state, and federal agencies.

As a Mechanical Engineering graduate from Texas Christian University, I did not have the civil design background when beginning my role at Kimley-Horn that many others did. The on-the-job experience in civil design alongside my online master's degree courses have allowed me to progress my technical skills and operate as a civil engineer. The preparation of Drainage Area Maps and analysis of existing downstream facilities adjacent to proposed new development has always posed a challenge for our engineers in completing a runoff design that is beneficial to the public while keeping costs low for our clients.

Section 3 – Resources

CE 6330 – Masters Report
Texas Tech University

Mike Feather

July 19th, 2024

The resources at Kimley-Horn allowed for me to grow and progress as a civil engineer, despite my lack of background knowledge when beginning the role out of college. The first great resource is the array of technical experts that KH hires. Hydraulics and Hydrology engineers assist in drainage design for many projects, allowing engineers to learn new methods of drainage design and flood mitigation. In addition to the people, various technical resources are provided as well.

The primary design tools that are used at Kimley-Horn are AutoCAD Civil 3D and Bluebeam. Young design engineers will spend most of their time in these two programs, assisting in 2D and 3D design and reviewing construction document deliverables. AutoCAD Civil 3D is used entirely for civil design and civil plan production. The program allows for water and wastewater mains to be laid out horizontally and vertically, to allow for effective communication of design parameters out in the field. Additionally, grading design in Civil 3D can be completed and analyzed in the same program, checking for underground storm pipe conflicts and utility adjustments at the same time. Kimley-Horn has a specialized team of CAD designers that prepare KH-specific commands for often-used design algorithms, making plan production and design much faster than the base Civil 3D commands. In Bluebeam, civil plan review and quantity takeoffs for construction are taught and incorporated into everyday design to help facilitate document retention and organization. Bluebeam, in my opinion, is the most powerful tool I have used for young engineers that are looking to dive deeper into civil design and plan review.

Kimley-Horn engineers also utilize many other programs in design, such as ArcGIS which assists in roadway and hydrologic design, HEC-RAS which facilitates large-scale drainage basin

analysis and design, and FlowMaster/CulvertMaster which is used in the design of stormwater outfalls and collection facilities. While these programs and design spreadsheets are beneficial to speed along civil design, it is beneficial to understand the design components and the science behind the programs when the public's safety is at risk. My courses in Open Channel Flow, Surface Water Hydrology, and Groundwater Hydrology have given me the advanced technical knowledge to complete drainage design and understand the principles governing the design as well. While most of an engineer's work is done on the computer these days, the work in the classroom lays the foundation for engineering design and the resources provided at KH in programs and design spreadsheets allows for a more-efficient design process overall.

Section 4 – Summary & Evaluation

CE 6330 – Masters Report
Texas Tech University

Mike Feather

July 19th, 2024

At the outset of my master's degree, I was just beginning my role at Kimley-Horn and did not have the technical knowledge that was required for high-level engineering design. I completed my undergraduate degree in Mechanical Engineering at TCU, and therefore only had the baseline knowledge of engineering design with respect to mechanical systems. With my degree at Texas Tech, I sought to grow as an engineer in the classroom while applying my coursework to the real-world engineering problems I encounter at my job. This has given me the opportunity to improve my now-refined technical abilities and truly understand the design decisions that my team and I make daily.

For example, I work with a landowner and developer in Crandall, Kaufman County, Texas to assist in the mixed-use development shown in Figure 1. This project required a large amount of coordination between engineers, developers, land brokers, and landowners to help push along the development and reconcile the topographical issues on site. For example, the existing creek that runs through the eastern portion of the site has USACE jurisdictional waters and FEMA floodplain on-site, which required floodplain modeling using HEC-RAS to understand the true limits of the 100-year floodplain and how the development of the adjacent property will impact it. Figure 2 shows a work map for the flood study completed for the property to ensure that the development in the ever-growing city does not impact the residential homes downstream. Methods outlined in my Surface Water Hydrology (CE 5361) and Open Channel Hydrology (CE 5360) were vital to the understanding of the behavior of these large-scale drainage basins and the analysis of existing floodplain. Additionally, there were wastewater capacity issues downstream of the property, which required facilitation and coordination for the placement of a wastewater treatment plant and force main along the landowner's property. Methods outlined in my Natural

Wastewater Treatment course (CE 5394) allowed me to recommend a possible creative fix to the city's wastewater treatment problems.

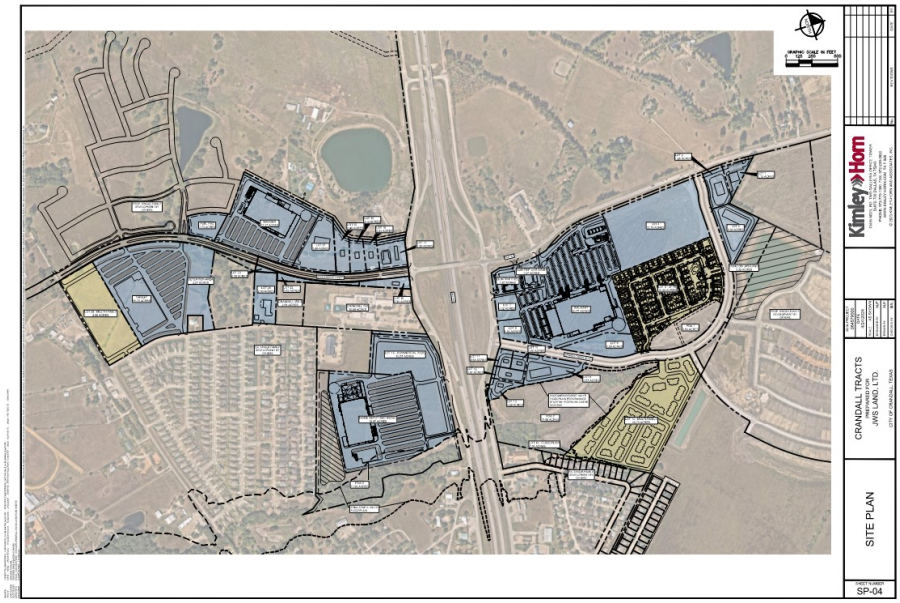

Figure 1: Crandall Master Plan

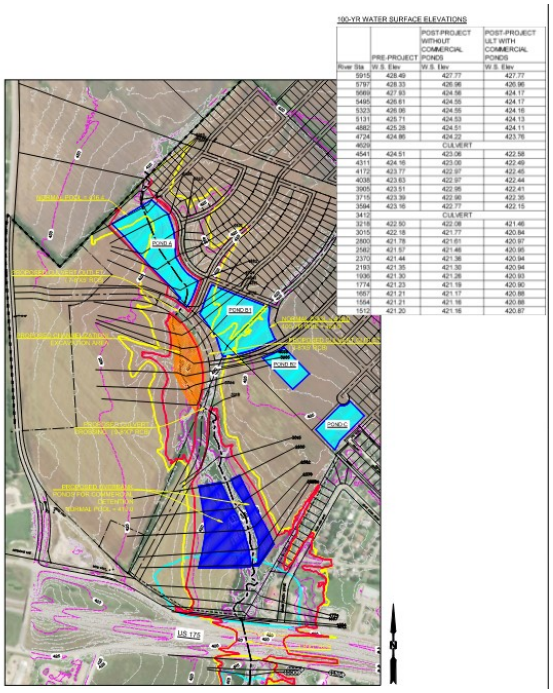

Figure 2: HEC-RAS Modeling

I have also exercised my knowledge of drainage principles learned in my courses in the analysis of downstream impacts on smaller, private developments. Figure 3 shows a downstream assessment that I prepared to prove the developed flows resulting from an adjacent church's building expansion would not impact the residential homes or adjacent roadway downstream of the site. Additionally, my course in Advanced Soil Engineering (CE 5321) gave me insight into the uncommon fill that was required to be imported to grade the site. The foreign soil that was brought from off-site to grade the site had properties that required treatment to prevent vertical movement, and my geotechnical course allowed me to dive into the report, recommending the best treatment options to our client.

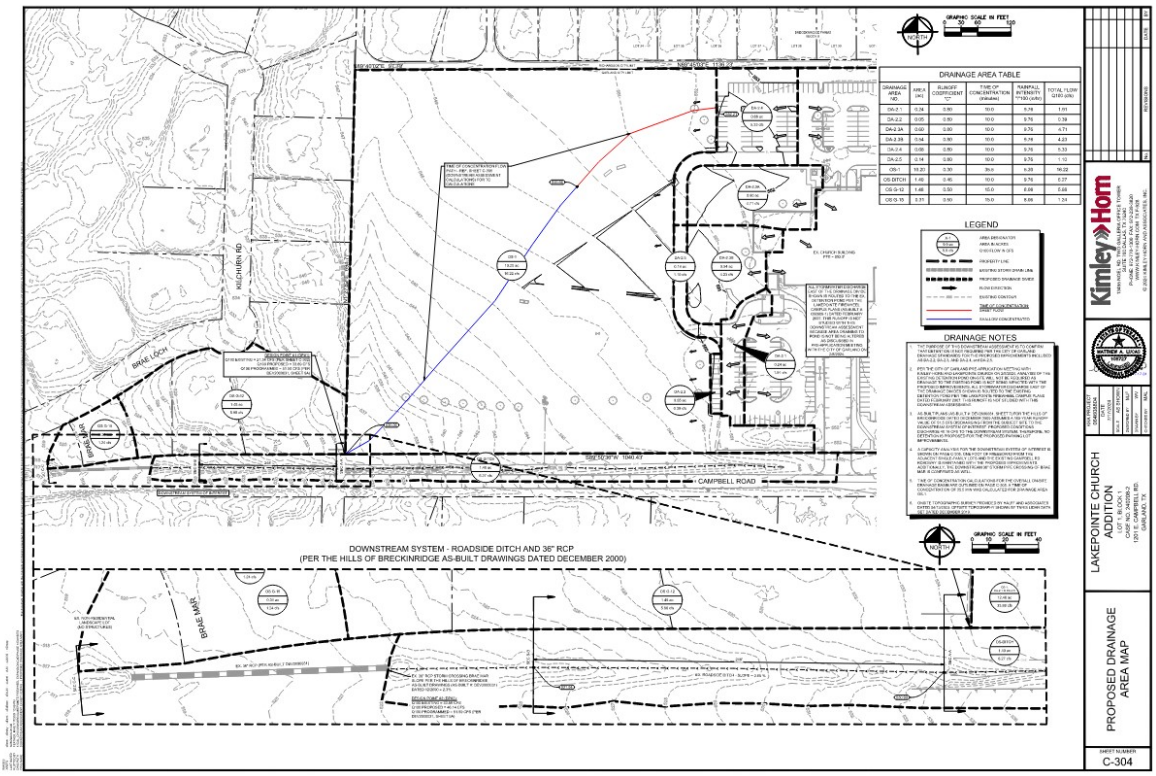

Figure 3: Downstream Assessment

Finally, my course in Construction Management (CONE 5322) gave me insight into the operations of construction firms and how large-scale projects are typically performed. Because the end-goal of these projects is a site that is constructed, a deeper understanding of the construction process and how GCs operate gives me a leg-up on the engineers that do not. Kimley-Horn has a construction management division that specializes in the overseeing of projects, so I have been able to coordinate with them on various projects due to my knowledge of the industry and coursework principles learned.

Many of the design questions that I encounter in my job at KH involve drainage design. Hydrology courses that I have taken in the last 2 years have synthesized with my knowledge of city and county design criteria to allow for streamlined design and better engineering instincts for my clients. Geotechnical courses allowed me to understand the science behind the geotechnical recommendations found in the reports for each site that determine building foundation design and reinforced paving layout. Wastewater classes that describe the design of certain treatment facilities has given me new recommendations for municipal clients that may not have typical treatment facilities in the area. Overall, the coursework at Texas Tech alongside my role at KH has refined my engineering abilities while also allowed me to complete my Professional Engineering licensure requirements. I will be using the knowledge gained from my classes as I hope to receive my license upon graduation in December of 2024.