A TECHNICAL REPORT

ON

STUDENTS INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES)

HELD AT

KHADOMS ENGINEERING NIGERIA LIMITED

KM 12, ALONG OLD JEBBA ROAD, OKE-OSE, ILORIN, KWARA STATE

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SUBMITTED TO

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DEDICATION

I dedicate this technical report to Almighty God, the giver of knowledge, wisdom and who is rich in mercy.

ACKNOWLEDGEMENT

I am using this opportunity to express my profound gratitude and deep regards to Almighty God, the creator of heaven and earth, the one who knows the beginning and the end, the alpha and the omega, also to my parents (MR & MRS ADEOYE), and to all those who have contributed immensely to the successful completion of my SIWES programme. The blessings, help and guidance given by them, time to time has carry me this far. I also take this opportunity to express a deep sense of gratitude to compliment my mentor for his cordial support, valuable information and guidance which helped me in completing my SIWES through various stages. I am also deeply grateful to the organization for accepting me, and also my regard to the school board of trustees and the staff a very big thanks to all and sundry.

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CHAPTER ONE

1.1 INTRODUCTION TO SIWES

Students Industrial Work Experience Scheme (SIWES) is a Skills Training Program designed to prepare and expose Students of Universities, Polytechnics, Colleges of Technology, Colleges of Agriculture and Colleges of Education for the Industrial Work situation they are likely to meet after graduation. The Scheme affords Students the opportunity of familiarizing and exposing themselves handling equipment and machinery that are usually not available in their institutions.

1.2 HISTORY OF SIWES

The Students' Industrial Work Experience Scheme (SIWES) was initiated in 1973 by the Federal Government of Nigeria under the Industrial Training Fund (ITF) to bridge the gap between theory and practice among products of our tertiary Institutions. It was designed to provide practical training that will expose and prepare students of Universities, Polytechnics, and Colleges of Education for work situation they are likely to meet after graduation.

Before the establishment of the scheme, there was a growing concern among the industrialists that graduates of institutions of higher learning lacked adequate practical background studies preparatory for employment in industries. Thus the employers were of the opinion that the theoretical education going on in higher institutions was not responsive to the needs of the employers of labour.

As a result of the increasing number of students' enrolment in higher institutions of learning, the administration of this function of funding the scheme became enormous, hence ITF withdrew from the scheme in 1978 and was taken over by the Federal Government and handed to National Universities commission (NUC), National Board for Technical Education (NBTE) and National

Commission for Colleges of Education (NCCE). In 1984, the Federal Government reverted back to ITF which took over the scheme officially in 1985 with funding provided by the Federal Government.

1.3 OBJECTIVES OF THE PROGRAMME

The specific objectives of SIWES are to:

- Provide placements in industries for students of higher institutions of learning approved by relevant regulatory authorities (NUC, NBTE, NCCE) to acquire work experience and skills relevant to their course of study
- Prepare students for real work situation they will meet after graduation.
- Expose students to work methods and techniques in the handling of equipment and machinery that may not be available in schools.
- Make transition from school to the labour market smooth and enhance students' conduct for later job placement
- Provide students with the opportunity to apply their knowledge in real life work situation thereby bridging the gap between theory and practice
- Strengthen employer involvement in the entire educational process and prepare students for employment in industry
- Promote the desired technological knowhow required for the advancement of the nation.

1.4 THE ESTABLISHMENT

KHADOMS TECHNOLOGY NIGERIA LIMITED is an Engineering Company established in the year 2011 by Engr. Mustapha Omokanye, a renowned Engineer. The company was situated at

Kilometer 12, along Old Jebba Road, Oke Ose, Ilorin, Kwara State Nigeria. The company is a construction based engineering company which focused mainly and building construction, maintenance, road constructions, drilling of Bore holes and other engineering works. The company is made up of some corporate and engineering setup structure which includes works departments, administrative and accounting departments

1.5 OBJECTIVES OF THE ESTABLISHMENT

The objectives of Khadoms Engineering Nigerian Limited is centered around construction of quality structures, ensuring the effective delivery of building projects, and promoting sustainable development. The key objectives of the establishment include:

1. **Delivering Quality Construction Services:** One of the primary objectives of the company is to provide high-quality construction services that meet industry standards. The company focuses on ensuring the successful completion of projects, whether it is residential, commercial, or infrastructure, while maintaining safety, sustainability, and durability in all its constructions.
2. **Fostering Innovation in Engineering:** Khadoms Engineering is committed to adopting innovative construction techniques, modern engineering solutions, and advanced technology. This helps the company stay ahead in the competitive construction industry and ensures the efficiency and effectiveness of its operations.
3. **Ensuring Client Satisfaction:** Another key objective is to ensure customer satisfaction by delivering projects on time, within budget, and according to clients' specifications. The company strives to build long-term relationships with clients by consistently meeting and exceeding expectations.

4. **Developing a Skilled Workforce:** Khadoms Engineering also aims to invest in the development of its workforce, providing training and career advancement opportunities. This includes mentoring young professionals and offering internships and industrial training programs, such as the SIWES scheme, to develop future talent for the construction industry.
5. **Contributing to National Development:** The Company seeks to contribute to Nigeria's infrastructure growth by participating in large-scale construction projects that promote economic development and improve living conditions. Through its work, Khadoms Engineering is dedicated to building sustainable structures that benefit society and the nation as a whole.

CHAPTER TWO

ACTIVITIES OF THE ORGANISATION

During my Student Industrial Work Experience Scheme (SIWES) at Khadoms Engineering Nigeria Limited, I was involved in a variety of activities aimed at gaining practical experience and enhancing my technical skills in the field of Metallurgical Engineering. These activities allowed me to apply theoretical knowledge in real-world settings and deepen my understanding of metallurgy and materials engineering in the construction industry. Below are some of the key activities I undertook during my time at the company

2.1 MATERIAL TESTING AND ANALYSIS

During my time at Khadoms Engineering Nigeria Limited, one of the key activities I undertook was **Material Testing and Analysis**. This involved evaluating various construction materials, including metals like steel and construction components such as concrete, to determine their properties and suitability for use in specific projects. I was actively involved in conducting tests that assessed the strength, durability, and overall performance of materials in real-world construction scenarios. This experience helped me gain a deep understanding of how different materials behave under various conditions and why it's important to select the right material for each construction project.

I participated in several specific tests, such as **tensile strength testing**, which measures the maximum amount of stress a material can withstand while being stretched or pulled before breaking. I also worked on **hardness testing**, which determines a material's resistance to deformation, and **corrosion resistance testing**, where I observed how materials like steel react to environmental factors such as moisture and chemicals. Each of these tests is crucial for ensuring that the materials used in construction are not only strong but can also withstand wear and tear

over time, ensuring the safety and longevity of structures. I learned how to use specialized testing equipment, which gave me valuable hands-on experience with the tools and technology used in the field of materials engineering.

In addition to conducting the tests, I was responsible for **documenting the results** in a detailed and accurate manner. This involved recording measurements, interpreting the test data, and compiling reports that would be used by the engineers and project managers to make decisions about material selection. I gained a deeper understanding of how crucial precise data and accurate testing are in making informed decisions about the materials used in construction projects. The testing and analysis process helped ensure that only materials with the required properties and performance characteristics were used, reducing the likelihood of material failure and increasing the safety and durability of the finished structures.

2.2 QUALITY CONTROL AND ASSURANCE

During my SIWES at Khadoms Engineering Nigeria Limited, I gained valuable experience in **Quality Control and Assurance**, an essential aspect of ensuring that construction materials and processes meet the required standards for safety, durability, and performance. Quality control (QC) and quality assurance (QA) processes are integral to construction projects, as they ensure that materials, designs, and construction methods meet established specifications and regulatory requirements.

One of the key activities I participated in was the **inspection and testing of raw materials** before they were used in construction projects. I assisted in checking the materials for compliance with industry standards and project specifications. This included reviewing certificates of material quality, checking for any signs of defects or damage, and confirming that materials such as steel

and concrete met the required tensile strength, durability, and other critical properties. I was actively involved in the process of sampling materials, performing tests, and documenting results to ensure that only high-quality materials were used for the construction projects. This hands-on involvement deepened my understanding of how quality control processes are applied in the field and the importance of maintaining consistent material quality throughout a project.

In addition to inspecting materials, I also observed the **quality assurance procedures** that were implemented during the construction process. These procedures involved monitoring the construction methods and ensuring that the techniques used by workers adhered to the design specifications. I learned how the company implemented QA protocols, such as regular site inspections, continuous monitoring of work progress, and checking for adherence to safety standards. I had the opportunity to participate in **site inspections** to evaluate the work done and assess whether it met the established quality criteria. If any discrepancies or issues were identified, I assisted in ensuring they were addressed promptly, ensuring that the final product met the necessary quality standards.

Furthermore, I was involved in **documenting and reporting** quality control and assurance findings. This activity taught me how important it is to keep detailed records of inspections, tests, and any corrective actions taken during the construction process. These records not only serve as a reference for future projects but also as evidence that the project has complied with quality standards and regulations. My involvement in quality control and assurance during my SIWES at Khadoms Engineering Nigeria Limited has given me a thorough understanding of how critical these practices are to the success of construction projects and the overall safety of the built environment.

2.3 MATERIALS SELECTION AND SPECIFICATION

During my SIWES at Khadoms Engineering Nigeria Limited, I gained significant experience in **Material Selection and Specification**, a critical component of construction engineering. Material selection plays a pivotal role in determining the overall success, durability, and safety of construction projects. My involvement in this area helped me understand how various materials are chosen based on specific criteria, including strength, durability, cost, and the particular requirements of the project.

I assisted engineers in **evaluating the properties of different materials** such as concrete, steel, and other construction-related materials. I learned to assess the suitability of each material based on the specific demands of the project. For example, when selecting steel for structural components, it was essential to consider factors like tensile strength, corrosion resistance, and load-bearing capacity. For concrete, factors such as compressive strength, workability, and curing time were considered. I was involved in reviewing material data sheets, conducting preliminary tests, and understanding how material properties affected their performance in different environmental conditions.

In addition to evaluating materials, I also participated in the **specification process**, where I learned how engineers and project managers define the characteristics and standards that materials must meet for a specific project. This involved preparing material specifications that outlined the required strength, durability, and performance characteristics for each material. I learned the importance of ensuring that these specifications aligned with project goals, industry standards, and regulatory requirements. My experience in material selection and specification broadened my understanding of the careful consideration that goes into choosing the right materials to ensure the success, safety, and longevity of construction projects.

2.4 METALLURGICAL PROCESS AND HEAT TREATMENT

During my SIWES at Khadoms Engineering Nigeria Limited, I had the opportunity to explore **Metallurgical Processes** and **Heat Treatment**, both of which are fundamental to the manufacturing and construction industries. Metallurgical processes involve the transformation of raw materials into useful metal products, and understanding these processes was essential in ensuring that the metals used in construction projects met the required specifications and standards. I was actively involved in learning about various techniques, such as **casting, welding, and heat treatment**, all of which are crucial in the fabrication of metal components for construction.

One key aspect of my experience was observing and assisting in **heat treatment** processes, which are used to alter the physical and mechanical properties of metals to improve their performance in specific applications. Heat treatment involves processes like **annealing, quenching, and tempering**, each of which affects the hardness, strength, and flexibility of materials. I learned how controlling factors such as temperature, cooling rates, and time can change the structure of metals at the molecular level, thereby enhancing their suitability for specific construction purposes, such as improving the strength and resistance of steel used in structural elements.

Additionally, I gained exposure to the importance of **quality control during metallurgical processes**. This includes monitoring the heating process to ensure that the metals reach the correct temperatures and cooling rates required for desired properties. I learned how precise control over the heat treatment process is critical to avoid defects and ensure that the materials meet the necessary standards for safety and durability in construction. I also assisted in inspecting and testing treated metals to evaluate their performance, such as checking for hardness, flexibility, and resistance to wear. This experience in metallurgical processes and heat treatment gave me a deeper understanding of how material properties are engineered to meet specific needs in construction and manufacturing.

CHAPTER THREE

WORK DONE IN THE ORGANISATION

3.1 CONSTRUCTION MATERIALS RESEARCH AND DEVELOPMENT

During my SIWES at **Khadoms Engineering Nigeria Limited**, I was actively involved in **material selection** for various construction projects, where I helped assess materials based on strength, durability, cost-effectiveness, and sustainability. This experience directly aligned with **research and development (R&D)** in construction materials, as selecting the right materials is a key part of optimizing construction processes. I also participated in **testing and quality control**, assisting in testing materials like concrete and steel to ensure they met performance standards. This hands-on involvement helped me understand the importance of rigorous testing in the R&D process, ensuring materials are reliable and meet safety requirements.

Sustainability was another key area I focused on during my time at Khadoms Engineering. I worked with **eco-friendly materials** like recycled aggregates and bio-based insulation, gaining insight into the ongoing R&D efforts aimed at reducing the environmental footprint of construction. I was also involved with **energy-efficient materials**, such as cool roofing and solar-integrated materials, which are part of the latest advancements in sustainable building practices. These experiences allowed me to connect practical applications with the growing demand for greener construction solutions.

I also had the opportunity to explore **innovative technologies** in construction, such as **3D printing** and **modular construction**, which are revolutionizing how materials are used. My involvement in these projects gave me exposure to the research driving the development of new materials suited for advanced construction techniques. Additionally, I participated in **durability and performance**

testing, helping assess how materials withstand extreme conditions, which is crucial in developing long-lasting and reliable construction materials.

Lastly, my time at Khadoms Engineering involved **collaborating with industry professionals** and contributing to ongoing research discussions. I gained valuable experience in documenting and reporting on the performance of various materials, further connecting me to the R&D efforts shaping the construction industry. Overall, my SIWES experience provided me with a solid foundation in **Construction Materials R&D**, equipping me with practical knowledge of how new materials and technologies are developed, tested, and applied in the industry.

3.2 SAFETY AND ENVIRONMENTAL CONSIDERATION

During my SIWES at **Khadoms Engineering Nigeria Limited**, I gained valuable exposure to **safety and environmental considerations** within the construction industry. I learned the importance of adhering to safety protocols to ensure the well-being of workers on site. This included participating in safety meetings, helping with the implementation of personal protective equipment (PPE) standards, and ensuring that construction practices aligned with safety regulations. The emphasis on preventing accidents and mitigating risks underscored the crucial role that safety plays in maintaining a secure work environment, which is a fundamental part of any construction project.

Additionally, I was involved in ensuring that construction activities adhered to **environmental regulations** to minimize their impact on surrounding ecosystems. I learned how to manage waste properly, especially hazardous materials, and ensure that they were disposed of in an environmentally responsible manner. This experience highlighted the importance of waste reduction and recycling in construction, as well as the role of sustainable practices in maintaining

environmental integrity throughout the lifecycle of a project. Reducing pollution and minimizing the environmental footprint of construction activities were key areas of focus.

One of the most important aspects of my work involved understanding how construction materials can be chosen and applied to reduce environmental damage. I participated in projects that used **eco-friendly materials** and technologies aimed at energy efficiency and sustainability. For instance, I worked with materials designed to reduce carbon emissions and energy consumption, which aligns with industry trends toward greener and more sustainable construction practices. This focus on environmentally friendly materials demonstrated how thoughtful material selection can contribute to both the safety of workers and the protection of the environment.

In summary, my experience at Khadoms Engineering gave me a deeper understanding of the importance of **safety and environmental considerations** in the construction industry. I learned how safety protocols help protect workers, how environmental regulations guide responsible practices, and how innovative materials can reduce the ecological impact of construction projects. These lessons are essential in ensuring that construction projects are both safe and sustainable.

3.3 SITE INSPECTION AND REPORTING

During my SIWES at **Khadoms Engineering Nigeria Limited**, I gained valuable experience in **site inspection and reporting**, which are essential aspects of construction project management. I was involved in inspecting construction sites to ensure that all activities were being carried out according to project specifications, safety regulations, and quality standards. This included checking the progress of construction, verifying the correct use of materials, and ensuring that all work complied with the approved plans and codes. Site inspections were crucial in identifying any issues early on, allowing for timely corrective actions to maintain the smooth flow of the project.

In addition to inspections, I played an active role in **reporting** the findings of these site visits. I documented the status of construction activities, noted any discrepancies or concerns, and compiled reports for project managers and other stakeholders. These reports provided detailed information on the progress of the work, any challenges encountered, and recommendations for improvements. This process of reporting was crucial in ensuring clear communication between the site team and project managers, helping to keep the project on track and address any issues before they became major problems.

I also learned the importance of accurate **documentation** in maintaining proper records of inspections and activities. Detailed site inspection reports help track the quality of work, ensure compliance with safety and environmental standards, and serve as valuable references for future projects or audits. Throughout my time at Khadoms Engineering, I gained hands-on experience in preparing comprehensive reports that included both technical details and suggestions for improvements, providing clear insights into the progress and challenges of the construction site.

Overall, my involvement in **site inspection and reporting** allowed me to develop a deeper understanding of the day-to-day operations of a construction project. It gave me practical experience in monitoring construction quality, ensuring safety compliance, and providing detailed feedback through reporting, all of which are critical in successful project execution and management.

3.4 COLLABORATIONS WITH OTHER ENGINEERS AND TECHNICIANS

During my SIWES at **Khadoms Engineering Nigeria Limited**, I had the opportunity to work closely with a diverse team of **engineers and technicians**, which greatly enhanced my learning experience. Collaboration with professionals from different engineering disciplines allowed me to

gain a comprehensive understanding of the various aspects involved in a construction project. I worked alongside civil, structural, and electrical engineers, contributing to discussions on project design, material selection, and construction methods. This experience taught me how teamwork and interdisciplinary collaboration are essential for the successful execution of a project.

As part of the team, I participated in joint problem-solving sessions where we discussed challenges encountered on-site, such as structural issues, material shortages, or safety concerns. Working with **technicians** on-site gave me hands-on experience in troubleshooting technical problems related to construction equipment and tools. I learned how engineers and technicians work together to ensure that equipment is operating correctly and that all aspects of construction are progressing as planned. This collaboration was crucial in addressing technical challenges quickly and efficiently, keeping the project on schedule.

I also had the opportunity to **communicate across departments**, ensuring that the engineers' designs and the technicians' operations aligned with project goals. Whether it was coordinating the installation of electrical systems or ensuring that construction materials were handled and applied correctly, effective communication was key. I gained practical insights into how different departments and professionals coordinate their efforts to maintain high standards of quality, safety, and efficiency on construction sites.

Overall, my collaboration with **engineers and technicians** during my SIWES experience gave me valuable insights into the importance of teamwork in construction projects. I learned that successful project execution requires clear communication, joint problem-solving, and a shared commitment to quality and safety, all of which are essential for delivering a project that meets its objectives.

CHAPTER FOUR

SKILLS AND EXPERIENCE GAINED

The SIWES program at Khadoms Engineering Nigeria Limited was an invaluable experience that enhanced my understanding of metallurgy and its application in the construction industry. Some of the key learning outcomes include:

4.1 PRACTICAL KNOWLEDGE OF MATERIAL TESTING

During my SIWES at **Khadoms Engineering Nigeria Limited**, I gained **practical knowledge of material testing**, which was an essential part of the experience. I was involved in testing various construction materials, such as concrete, steel, and aggregates, to ensure they met the required standards for strength, durability, and overall performance. I learned how to perform basic tests, such as compressive strength tests for concrete and tensile strength tests for steel, which helped me understand how materials behave under different conditions. These hands-on activities gave me a deeper understanding of the testing processes used to validate the quality of materials before they are used in construction projects.

I also gained experience in the preparation and execution of **quality control tests**. For example, I was involved in testing the workability and curing of concrete mixtures to ensure the mixture would achieve the desired strength. Additionally, I assisted in evaluating the moisture content and particle size distribution of aggregates, which are vital in determining their suitability for specific types of construction. By working alongside professionals, I learned how to properly follow testing procedures, maintain accurate records, and interpret the results to assess whether the materials were up to standard. This experience reinforced the importance of accurate testing and documentation in ensuring the success and safety of construction projects.

Through this practical exposure, I developed a solid understanding of the critical role that **material testing plays** in construction. Testing ensures that only materials with the appropriate properties are used, which directly impacts the safety, longevity, and performance of the structure. My time at Khadoms Engineering helped me realize how the insights gained from material testing feed into decision-making and how they can influence material selection and construction methods. This experience has provided me with a strong foundation in material testing, which is an essential skill for any future career in construction and engineering.

4.2 INSIGHTS INTO WELDING AND METAL FABRICATION

I gained valuable **insight into welding and metal fabrication**, which are critical components in many construction projects. I had the opportunity to observe and participate in various welding processes, such as **arc welding** and **MIG welding**, which are commonly used to join metal components in construction and structural projects. I learned about the different types of welding techniques, their applications, and the safety precautions required when working with high-temperature equipment. This hands-on exposure allowed me to better understand how welding contributes to the overall integrity and strength of a construction project.

In addition to welding, I was introduced to the fundamentals of **metal fabrication**, which involves cutting, shaping, and assembling metal parts to create structural components. I assisted in the preparation and assembly of metal frames and supports, gaining insight into how precise measurements and material selection are crucial in the fabrication process. I observed the importance of accuracy and attention to detail, as even small errors can compromise the strength and stability of the final product. This experience helped me appreciate how metal fabrication is

intertwined with other construction activities, ensuring that components fit together correctly and meet the project's specifications.

Furthermore, I learned the importance of **quality control** in welding and metal fabrication. I observed technicians and engineers inspecting welded joints for defects, ensuring that the materials met the required standards for strength and durability. I gained an understanding of how the quality of welding and fabrication directly impacts the safety and longevity of the constructed structure. This experience has provided me with a solid foundation in welding and metal fabrication, skills that are essential for working in construction and industrial projects where metal components play a significant role in the overall structure.

4.3 QUALITY CONTROL TECHNIQUES

I gained a solid understanding of various **quality control techniques** used to ensure that construction materials and processes meet the required standards and specifications. One of the key techniques I was involved in was **visual inspection**, where I helped assess the quality of materials and workmanship by closely examining them for any defects or inconsistencies. I observed how engineers and technicians would inspect concrete, steel, and other materials for cracks, surface imperfections, and other issues that could affect the integrity of the construction. This hands-on experience taught me the importance of attention to detail in ensuring that the final product meets the desired quality standards.

I also learned about **laboratory testing** as an essential aspect of quality control. At Khadoms Engineering, I had the opportunity to participate in tests like **compressive strength testing** for concrete and **tensile strength testing** for metals, which are crucial in assessing material performance under stress. I learned how these tests help engineers determine if the materials meet

industry standards and whether they are suitable for use in construction projects. This technique is essential for identifying potential weaknesses in materials before they are used in the construction, ensuring safety and long-term durability of the structure.

Additionally, I was exposed to **documentation and reporting** as part of the quality control process. Keeping accurate records of tests, inspections, and any corrective actions taken is vital to tracking the quality of materials throughout the project lifecycle. I participated in preparing reports detailing the results of inspections and tests, which were then reviewed by senior engineers to make informed decisions about material acceptance or rejection. This experience helped me appreciate the importance of documentation in maintaining a clear and organized record of quality control activities, ensuring that all processes are transparent and compliant with industry regulations.

4.4 MATERIAL FAILURE ANALYSIS

I gained valuable insight into **material failure analysis**, a crucial aspect of understanding and improving the performance of materials used in construction. I was involved in examining materials that had failed or showed signs of degradation on-site. This process helped me understand how factors like improper material selection, poor construction practices, or environmental conditions can lead to material failure. By observing and analyzing these failures, I learned how engineers investigate the root causes and identify the necessary corrective actions to prevent future issues.

One of the key aspects I learned about material failure analysis was how to **conduct visual inspections** and **identify signs of failure**, such as cracks, corrosion, or deformation in materials like concrete, steel, and wood. I participated in documenting these failures and working with senior

engineers to assess whether they resulted from issues like poor mixing, improper curing of concrete, or stress overload. This hands-on experience emphasized the importance of understanding material properties and how they behave under different environmental conditions, such as extreme temperatures or moisture exposure, which can significantly impact their performance.

I was also introduced to the more **technical aspects of failure analysis**, such as laboratory testing. For example, in cases where material failure was suspected to be due to improper composition or defects, I observed the process of **testing failed materials** for properties like strength, hardness, or fatigue resistance. These tests allowed us to identify whether the material was manufactured improperly or had defects that led to its failure. The results of these tests helped determine whether adjustments in material procurement, design, or construction processes were needed to prevent similar issues in future projects. This experience provided me with a solid foundation in understanding material failure and how it can be addressed through careful analysis and preventive measures.

4.5 COLLABORATION WITH OTHER INDUSTRY'S PROFESSIONALS

During my SIWES at **Khadoms Engineering Nigeria Limited**, I had the opportunity to **collaborate with various industry professionals**, which significantly enriched my learning experience. I worked alongside engineers, project managers, technicians, and other construction professionals, gaining valuable insights into the different roles and responsibilities within the construction industry. These collaborations allowed me to understand how different departments interact and contribute to the successful completion of a project. By participating in team meetings

and on-site discussions, I learned how professionals share knowledge, brainstorm solutions, and ensure that projects stay on track in terms of quality, time, and cost.

In addition to working with engineers and technicians, I was also exposed to **interactions with suppliers and subcontractors**, which provided me with a broader perspective on the construction supply chain. I assisted in coordinating with these external partners to ensure that materials and services were delivered on time and met the required specifications. This experience helped me understand the importance of clear communication and teamwork in ensuring that every aspect of the project is aligned with the overall goals. Collaborating with professionals across different areas also helped me appreciate the need for effective problem-solving, especially when unexpected challenges arise on-site.

Through these collaborations, I developed a deeper appreciation for **interdisciplinary teamwork** and the importance of building strong professional relationships within the industry. I learned how engineers, technicians, and other stakeholders work together to overcome challenges, improve processes, and deliver successful construction projects. The experience of working with experienced professionals provided me with practical knowledge and insights that will be invaluable as I progress in my career, particularly in fostering a collaborative approach to problem-solving and decision-making in construction projects.

4.6 CHALLENGES ENCOUNTERED

During my industrial training, I faced several challenges:

- **Limited Hands-on Exposure to Certain Equipment:** Although I gained theoretical knowledge, I was sometimes limited in my ability to work with certain advanced metallurgical equipment due to safety concerns or lack of access.

- **Time Constraints:** The tight project deadlines sometimes meant that there was limited time for detailed analysis or in-depth involvement in some activities.
- **Communication Barriers:** In some instances, the need for interdisciplinary communication between metallurgists and other engineering professionals was a challenge, especially when it came to understanding the specific requirements of different construction projects.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

My SIWES experience at **Khadoms Engineering Nigeria Limited** has been both insightful and transformative. Throughout my time at the company, I gained hands-on experience in critical areas such as material testing, quality control, site inspections, welding and metal fabrication, and safety and environmental considerations. I also had the privilege of collaborating with a diverse group of professionals, which greatly enhanced my understanding of the construction industry's interdisciplinary nature. The exposure to real-world applications of engineering principles allowed me to bridge the gap between theoretical knowledge and practical experience.

I also gained valuable skills in reporting and documenting activities, which are essential for maintaining transparency and accountability in construction projects. The opportunity to be involved in material failure analysis and quality control techniques reinforced the importance of ensuring that materials meet the required standards for safety and durability. Furthermore, my involvement in site inspections and the collaborative efforts with engineers and technicians has provided me with a deeper understanding of the day-to-day operations and challenges faced in construction projects.

Overall, my SIWES at Khadoms Engineering has significantly contributed to my professional development and provided me with practical knowledge and skills that will be valuable in my future career. I am grateful for the opportunity to apply my academic knowledge in a real-world setting and to learn from experienced professionals in the construction industry. This experience has strengthened my foundation in engineering and has prepared me to contribute effectively to the field in the future.

5.2 RECOMMENDATION

Based on my experiences during the SIWES at **Khadoms Engineering Nigeria Limited**, I have formulated the following recommendations to enhance the learning experience for future interns and improve operational efficiency in the company:

1. **Enhanced Training Programs for Interns**: While I gained a lot of hands-on experience, more structured training programs would benefit future interns. These programs should cover key areas such as material testing, quality control, and safety protocols in greater depth. A detailed orientation at the beginning of the internship would also help interns better understand company-specific processes and industry standards.
2. **Increased Exposure to Advanced Technologies**: The construction industry is rapidly evolving, and exposure to advanced technologies such as **Building Information Modeling (BIM)**, **3D printing**, and **robotic automation** would greatly benefit future interns. Incorporating these modern technologies into training and project work would help interns stay ahead of industry trends and better prepare them for future careers in construction.
3. **Regular Feedback and Mentorship**: I recommend implementing a system of regular feedback and mentorship for interns. Having a designated mentor within the company would provide continuous guidance and support, helping interns navigate challenges and further develop their skills. Constructive feedback would also help interns refine their techniques and knowledge throughout their time with the company.
4. **Improved Collaboration with Academic Institutions**: Strengthening the collaboration between Khadoms Engineering and academic institutions could lead to

more tailored internship programs that align closely with university curricula. This would ensure that interns can apply their theoretical knowledge to real-world situations more effectively and gain exposure to more practical aspects of the industry.

5. **Investment in Sustainable Practices and Materials**: Given the growing demand for sustainability in the construction industry, I recommend that the company continues to explore and invest in **eco-friendly materials** and sustainable construction practices. This will not only align with global trends but also prepare interns to work with cutting-edge, environmentally conscious technologies and materials in future projects.
6. **Focus on Documentation and Reporting Skills**: As I learned during my internship, accurate documentation and reporting are essential in the construction industry. Future interns should receive more training on best practices for maintaining detailed and organized reports. This will help interns understand the importance of documentation in project management and improve communication among project teams.

In conclusion, these recommendations aim to enhance the overall internship experience and improve operational efficiencies at Khadoms Engineering. By investing in comprehensive training, adopting new technologies, and fostering a culture of mentorship and sustainable practices, the company will continue to provide valuable learning opportunities for future interns while staying at the forefront of the construction industry.