TECHNICAL REPORT ON THE STUDENTS' INDUSTRIAL WORK EXPERIWENCE SCHEME (SIWES)

HELD AT

MINISTRY OF TRANSPORTATION

Block 17, ministry of transportation Alausa secretariat ikeja lagos state.

BY

ABDULRASAK ABDULKAREEM OLASUNKANMI

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THE DEPARTMENT OF MECHANICAL ENGINEERING

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INSTITUTE OF TECHNOLOGY (IOT)

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DEDICATION

I dedicate this report to Almighty God for His Unlimited Grace, Consistent Love, Immeasurable Faithfulness, and for sparing my life throughout the period of my SIWES programme.

Secondly, I dedicate it to my parents **Mr & Mrs AbdulRasak** for their undiminished support and unquantifiable assistance throughout the whole exercise and beyond.

ACKNOWLEDGEMENTS

First and foremost, my deepest acknowledgement goes to God Almighty for His overwhelming love upon my life throughout the Scheme.

I appreciate my parents Mr. and Mrs AbdulRasak and friends for their constant help and support.

I also appreciate all staff members of Ministry of transtortation, especially my supervisor who gave out of his tight schedules to attend to me.

TABLE OFCONTENTS

CHAPTER ONE

1.0 INTRODUCTION TO SIWES

In 1974, the federal government of Nigeria introduced the National policy on industrial training called the student industrial work experience scheme (SIWES).

This program is under the umbrella of the ministry of education through the Industrial Training Fund (ITF), was design to help student acquire the necessary practical education experience in their fields of study and other related professions.

The program was established basically to impact elaborate practical understanding to student with respect to their various discipline. It is also intended that the student through a process of relation to academic knowledge and practical industrial application would understand the underlying principle and become better focused and acquire the practical application toward excellence in his/her discipline.

The student are expected to develop occupational competence that would facilitate their fitting into the world of work after graduation.

1.1 AIM AND OBJECTIVE OF SIWES

The student industrial work experience scheme (SIWES) has it major aims and objective of establishment. The following are the aim and objective of the program.

i. To provide student an opportunity to apply their theorical knowledge in really work situation, thereby bridging the gap between theory and practical.

ii. To expose student to working method and techniques in handing equipment and machineries that is not available in their various institutions.

iii. To make the transition from the institution to the world of work easier and thus enhance student contact for later job placement

iv. To prepare student in skill development by participating in field works, particularly in writing report in their fields of works.

1.2 HISTORICAL BACKGROUND OF THE ORGANIZATION ATTACHMENT

The Lagos State Ministry of Transportation, located at Alausa Secretariat in Ikeja, evolved from a Transportation Unit within the Ministry of Works and Planning to a full-fledged ministry in 1979 under Alhaji Lateef Jakande, later merging with the Ministry of Works before becoming an autonomous ministry again.

Here's a more detailed look at its history:

Pre-1979:

A Transportation Unit existed within the Ministry of Works and Planning.

1979:

Under the administration of Alhaji Lateef Jakande, the Lagos State Ministry of Transportation was created as a full-fledged ministry.

1984:

The Ministry of Transportation was merged with the Ministry of Works, becoming the Ministry of Works and Transport under Governor Gbolahan Mudasiru.

1994:

The ministry was separated again and renamed the Ministry of Public Transportation under Colonel Olagunsoye Oyinlola.

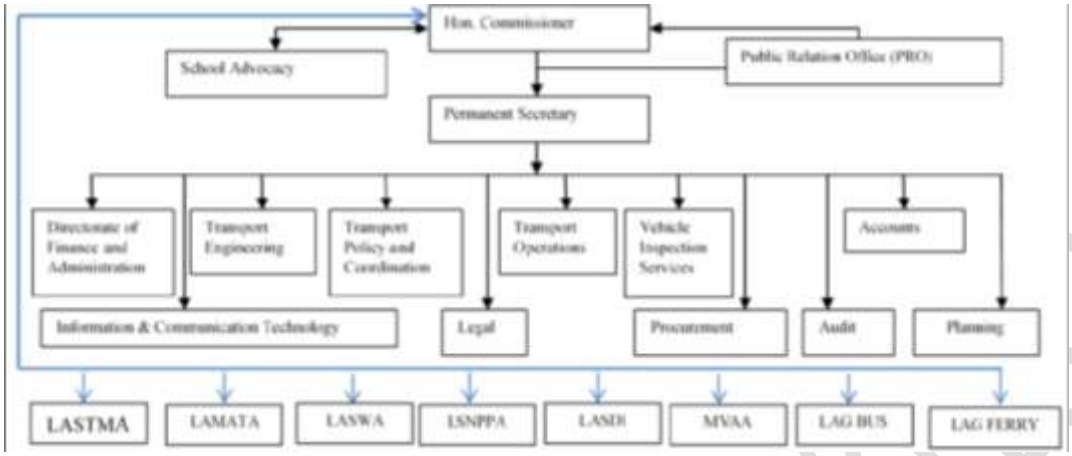
Tinubu's Administration:

During the administration of Asiwaju Bola Ahmed Tinubu, the ministry was renamed the Ministry of Transportation, reflecting a focus on developing an efficient and effective transport system.

Current Focus:

The ministry's primary objective is to establish a mass transit system and address transportation challenges in the state.

1.3 ORGANIZATION CHAT OF THE ORGANIZATION



1.4 MAJOR ACTIVITIES OF THE ORGANIZATION

The Lagos State Ministry of Transportation (MOT), located at the Alausa Secretariat in Ikeja, focuses on developing an efficient transport system, improving the quality of life for Lagosians, and ensuring the safety of lives and properties through activities like policy formulation, infrastructure development, and traffic management.

1.5 WORKSHOP SAFETY

Safety is the preventive measure timely taken to guide against any form of hazard injury or accident in our daily activities in the workshop. Workshop safety is particularly focusing on ways of preventing danger particularly accident, injury a times death to personnel or other things around the operator while doing work. The following are the basic work shop safeties that must be comply with these include:

I. Always clean the machine and check the condition of the machine before working on it

II. Do not use the hand to stop the working machine

III. Do not play with any machine

IV. Know where the emergency stop buttons are positioned in the workshop in case of accident.

V. Always listen carefully to the supervisor and follow the instructions.

CHAPTER TWO

2.0 ROAD MAINTAINANCE EQUIPMENT WITH THEIR FUNCTION

i. **Excavators,** also known as diggers or backhoes, are heavy construction equipment used for earthmoving, digging, and lifting, featuring a bucket, arm, rotating cab, and movable tracks or wheels.

ii. **Asphalt pavers** are essential construction equipment used to lay and smooth asphalt on roads, highways, parking lots, and other paved areas, ensuring a uniform and durable surface.

Here's a more detailed explanation of their uses:

Road Construction:

Asphalt pavers are the primary tool for laying down asphalt in new road construction projects, ensuring smooth and even surfaces.

Road Repair and Maintenance:

They are also used to repair and resurface existing roads, applying new layers of asphalt to address wear and tear.

iii. **Road rollers** primarily used in construction, compact and smooth materials like asphalt and soil, creating stable foundations for roads, pavements, and other infrastructure projects.

Here's a more detailed explanation of their uses:

Compacting Materials:

Road rollers exert pressure to compress loose materials like soil, asphalt, or gravel, creating a dense and stable surface.

Road Construction:

They are crucial for building roads, highways, and other paved surfaces, ensuring a smooth and durable roadbed.

Foundation Preparation:

Road rollers are used to compact soil and other materials to create a solid foundation for buildings and other structures.

Pavement Smoothing:

They help to smooth out and level asphalt or other pavement surfaces, ensuring a uniform and even finish.

iv. **Graders:** also known as motor graders or road graders, are primarily used in construction and civil engineering for leveling, grading, and preparing surfaces, especially for road construction and maintenance, but also for tasks like snow removal and earthmoving.

Here's a more detailed breakdown of their uses:

Road Construction and Maintenance:

Surface Preparation:

Graders are essential for preparing the ground for asphalt or other paving materials by creating a smooth and level surface.

Road Maintenance:

They can be used to maintain roads by smoothing out rough patches, filling potholes, and ensuring a level surface.

Subgrade Construction:

Graders help in the construction of the subgrade, the layer of soil or material beneath the pavement, ensuring a stable foundation

2.1 VARIOUS SPECIALIZED TOOLS FOR PATCHING AND SEALING

1. **Asphalt shovels** are heavy-duty, durable tools specifically designed for handling and moving asphalt, featuring a wide blade and sturdy handle for efficient scooping and lifting.

Here's a more detailed look:

Purpose:

Asphalt shovels are essential for construction sites, paving projects, and road repair jobs, designed to handle hot asphalt.

Key Features:

Wide Blade: The wide blade allows for easy scooping and lifting of large quantities of asphalt.

Sturdy Handle: A sturdy handle provides optimal leverage and control, especially when lifting heavy material.

Durability: They are built to withstand rigorous use and harsh conditions.

2. **Asphalt rakes**, also known as pavement rakes or asphalt lutes, are tools used in asphalt paving projects for spreading, leveling, and smoothing asphalt, as well as removing debris and patching potholes.

Here's a more detailed explanation of their uses:

Key Functions:

Spreading and Leveling Asphalt:

The rake's teeth help to break up clumps and distribute asphalt evenly, while the flat side is used for smoothing the surface.

Debris Removal:

They can be used to remove debris, such as loose gravel or dirt, from the area before laying asphalt.

Patching and Pothole Repair:

Asphalt rakes are useful for patching potholes and repairing small areas of damaged asphalt.

Tamping and Smoothing Joints:

They can be used to tamp and smooth joints, gutters, and connections, ensuring proper adhesion of the asphalt mixture to the old surface.

Smoothing Defects:

Asphalt rakes can help to smooth out honeycombs and other defects that may appear after tamping and rolling the asphalt surface.

Features of Asphalt Rakes:

Long Teeth: Long teeth allow you to rake in more asphalt and apply it evenly.

Wide Level Head: A wide head allows you to cover more surface area.

Durability: They are designed for durability with no weak or weld points in the teeth, metal head, or handle.

Magnesium handles and bars: Magnesium handles and bars are resistant to abrasion and dissipate heat.

Serrated edge: The lute bar's serrated edge has slightly blunted points and rounded notches to allow material to pass through without jamming.

3. **An asphalt tamper** is a heavy, flat, rectangular plate mounted on a long handle that allows users to apply pressure to the asphalt surface while standing upright. A tamper compacts asphalt, ensuring a smooth and level surface for driveways, walkways, or spot work.

4. **Asphalt brushes**, typically used in road sweepers, are crucial for efficiently removing dust, debris, and loose materials from the road surface before asphalt paving, ensuring a clean and stable base for the new pavement.

Here's a more detailed explanation:

Preparing the Road Surface:

Before laying down new asphalt, the road surface needs to be thoroughly cleaned to ensure proper adhesion and prevent problems like delamination or cracking.

Removing Debris:

Road sweepers equipped with brushes effectively remove dirt, sand, leaves, and other debris that can interfere with the bonding process between the new asphalt and the existing road surface.

5. **Asphalt squeegees**, or "squeegee machines," are primarily used for applying and spreading sealants or sealcoating materials on asphalt surfaces, ensuring a smooth, even finish and filling cracks.

Here's a more detailed breakdown of their uses:

Sealcoating Application:

Spreading Sealers:

Asphalt squeegees are essential for efficiently spreading sealers over existing asphalt surfaces, ensuring a smooth and even finish.

Crack Filling:

The pressure from the squeegee application method allows the sealant to fill any cracks, helping to create a high-quality bond with the surface of the pavement.

2.2 ROAD MEASUSING TOOL

Total Station

A total station is an electronic/optical instrument used in modern surveying and building construction that uses electronic transit theodolite in connection with electronic distance meter (EDM).It is also integrated with microprocessor, electronic data collector and storage system.

The instrument is used to measure sloping distance of object to the instrument, horizontal angles and vertical angles. This Microprocessor unit enables for computation of data collected to further calculate the horizontal distance, coordinates of a point and reduced level of point.

Data collected from total station can be downloaded into computer/laptops for further processing of information.

Total stations are mainly used by land surveyors and civil engineers, either to record features as in topographic surveying or to set oust features (such as roads, houses or boundaries). They are also used by archaeologists to record excavations and by police, crime scene investigators, private accident Reconstructionist and insurance companies to take measurements of scenes.

Auto Level/Dumpy Level

A dumpy level, builder's auto level, levelling instrument, or automatic level is an optical instrument used to establish or verify points in the same horizontal plane. It is used in surveying and building with a vertical staff to measure height differences and to transfer, measure and set heights.

Theodolite

Basic surveying instrument of unknown origin but going back to the 16th-century English mathematician Leonard Digges; it is used to measure horizontal and vertical angles. In its modern form it consists of a telescope mounted to swivel both horizontally and vertically. **A theodolite** is a precision instrument for measuring angles in the horizontal and vertical planes. Theodolites are used mainly for surveying applications, and have been adapted for specialized purposes in fields like metrology and rocket launch technology. A modern theodolite consists of a movable telescope mounted within two perpendicular axes the horizontal or trunnion axis, and the vertical axis. When the telescope is pointed at a target object, the angle of each of these axes can be measured with great precision.

Prism Pole

A prism pole can be used to measure the elevation of a specific ground point by using a sight level, which is important if you want to get accurate results. You can find a survey pole in a variety of materials — from metal and fiberglass to a variety of composites.

Bipods

Find a collection of aluminium survey bipods, carbon fiber bipods, quick-release bipods, and more. Easy level adjustment for better precision & accuracy.

Measuring Wheel

The measuring wheel – also known as a surveyor's wheel, click wheel, perambulator, odometer, way wiser or trundle wheel – is a tool used to measure distances. Measuring wheels have a counting mechanism that counts the number of rotations and uses the circumference of the wheel to calculate the distance covered.

CHAPTER THREE

3.0 STUDENT SPECIFIC INVOLVEMENT AT VARIOUS SECTIONS

I was involved in Road transport department, I was assisted with the inspection and servicing of traffic light controller, I was involve in maintenance of traffic light controller along ikeja road, I assisted with the developed recommendation to enhance mechanical performance of vehicles.

3.1 ROAD DESIGN SECTION

Road design a multidisciplinary field, involves planning, geometric design, material selection, and construction to create efficient, safe, and sustainable transportation routes, considering factors like traffic volume, topography, and the needs of all road users.

DIFFERENT TYPES OF ROAD

i. **A single carriageway** road is a road with one strip for traffic going in each direction, separated only by a center line (or markings), with no central reservation/median strip.

ii. A dual carriageway, also known as a divided highway, is a road with two or more lanes of traffic in each direction, separated by a central reservation or barrier.

3.2 GEOMETRIC DESIGN

i. **Alignment:** Determining the horizontal and vertical alignment of the road, including curves, grades, and sight distances.
ii. **Cross-Section:** Designing the road's width, including travel lanes, shoulders, and verges, as well as provisions for public transport and cyclists.
iii. **Intersections and Crossings:** Planning safe and efficient intersections, roundabouts, and interchanges.
iv. **Roadside Design:** Ensuring safety and aesthetics through proper roadside treatments, including barriers, lighting, and landscaping.

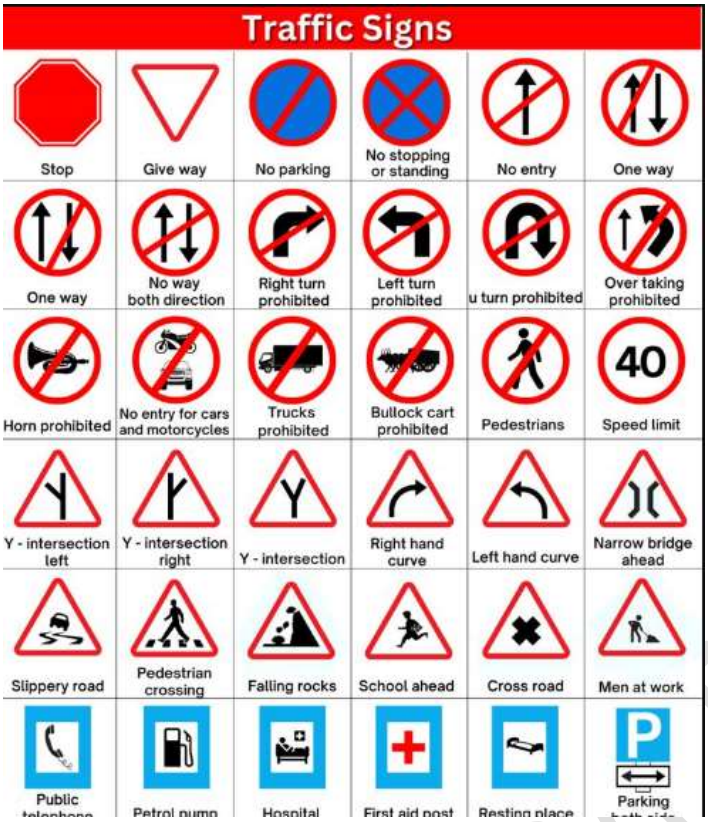
3.3 MATERIAL SELECTION AND CONSTRUCTION

i. **Pavement Design:** Choosing appropriate pavement materials (e.g., asphalt, concrete) based on traffic load, climate, and cost.
ii. **Drainage:** Designing effective drainage systems to prevent water damage and ensure road stability.
iii. **Construction Techniques:** Implementing efficient and sustainable construction methods.

3.4 SAFETY AND SUSTAINABILITY

Road Safety:

Road safety encompasses the measures and strategies aimed at reducing the risk of road traffic injuries and fatalities for all road users, including pedestrians, cyclists, and motorists.



Prioritizing safety for all road users, including pedestrians, cyclists, and drivers, through design features like speed limits, clear markings, and adequate lighting.

Sustainability

Minimizing the environmental impact of road construction and operation through sustainable materials, energy-efficient designs, and traffic management strategies.

CHAPTER FOUR

4.0 EXPERIENCE GAINED

During the four months program, I gained a lot especially in the Road transport department, my responsibility include data analysis, document processing and assisting in policy research in traffic light department. All this gives me the knowledge of constructing and designing a project.

Also in Traffic light department, where I know about the traffic light sign and it's meaning

4.1 INTERPERSONAL RELATIONSHIPS WITH THE ORGANIZATION

My four month SIWES program has equipped me the knowledge of mechanical engineering design in term of maintenance and production of a particular Project.

During the course of staying with the coordinator in the various section has turn a new movement in my course of study like the production section in person of Engr. Kolawole Taiwo.

4.2 SUGGESTION FOR IMPROVEMENT OF THE PROGRAM

The Industrial training Fund should have up and hold a committee on inspecting the student in their various organization that they are attached to as this will improve the level of seriousness of the student to the program. Also the federal government in collaboration with the Industrial training Fund (ITF) to increase the student allowance for the program as this will encourage them in active participation.

CHAPTER FIVE

5.0 CONCLUSION

I found it interesting and I fully participated in it which in turn yields a successful result indeed it prepares me for future challenge in my chosen field. This SIWES program has turn out to be more interesting education due to the nature of the program itself.

5.1 RECOMMENDATION

The experience I gained during my SIWES program cannot be over emphasized I was practically oriented I humbly recommend that the SIWES program should be made compulsory for student of engineering, fields in order to gain more experience in their course of study.