A TECHNICAL REPORT ON STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME

(SIWES)

UNDERTAKEN AT MOSCOW ENGINEERING

NIGERIA LTD.

AHMADU BELLO WAY, GRA ILORIN KWARA STATE.

BY

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(ND/23/CEC/FT/0005)

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INTSITUTE OF TECHNOLOGY,

FROM AUGUST TO NOVEMBER 2024

DEDICATION

This report is dedicated to Almighty Allah for sparing my live throughout the SIWES programme.

Also dedicated to my darling and lovely parents, for their financial support since the beginning of this programme. May Almighty Allah grant them their heart desires and find favour in wherever they are. Amin.

Also to my lovely families and friends for their guidance, support and moreover their advice been given, may Almighty Allah see you through your days in joy and complete happiness (AMEEN).

ACKNOWLEDGEMENT

I acknowledge with gratitude to Almighty Allah for successful completion of SIWES and making this SIWES a reality.

I appreciate the effort of my lovely parents, who had supported me in all aspects of my lives. I am grateful to them for sending me to acquire greater knowledge sound education. May you live long to reap what you have sawn.

I am grateful to my Supervisor for his unrented effort, support and encouragement. Also my appreciation goes to all staff of Civil Engineering Department who has contributed one way or the other to the completion of this project.

My profound gratitude to my trusted and able Head of Department Engr. Na`Allah and other reliable lecturers.

Lastly, I extend and express my appreciation to my friends for their moral support, I say thank you all, May Almighty Allah guild and bless you All.

ABSTRACT

The report details the author's industrial training experience with MOSCOW ENGINEERING NIGERIA LTD, focusing on (CADs) Computer Aided Designs and practical site works.

The training involved hands-on activities such as setting-out, arranging reinforcement bars, formwork erection, blinding preparation, and foundation block-wall laying.

The report emphasizes the acquisition of technical skills applicable to roles in the construction industry, including site engineer, project engineer, foremen, artisans, and highlights the gained competence for success in the labor market.

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CHAPTER ONE

1.1 HISTORY OF SIWES

SIWES which means **Student Industrial Work Experience Scheme** is a compulsory skills training programme designed to expose and prepare students at Nigerian Universities, Polytechnics, Colleges of Education, Colleges of Technology and Colleges of Agriculture, for the industrial work situation they're likely to meet after graduation.

The scheme also affords students the opportunity of familiarizing and exposing themselves to the needed experience in handling equipment and machinery that are usually not available in their institution.

Before the establishment of the scheme, there was a growing concern among industrialists that graduates of institutions of higher learning lacked adequate practical background studies preparatory for employment in industries.

Thus, employers were of the opinion that the theoretical education in higher institutions wasn't responsive to the needs of the employers of labor.

The Industrial Training Fund (I.T.F) did SIWES introduction, initiation and design in 1993 to acquaint students with the skills of handling employer's equipment and machinery. The Industrial Training Fund (I.T.F) solely funded the scheme during its formative years.

However, because of financial constraints, the fund withdrew from the scheme in 1978. The Federal Government, noting the significance of the skills training, handed the management of the scheme to both the National Universities Commission (N.U.C) and the National Board for Technical Education (N.B.T.E) in 1979.

The management and implementation of the scheme was however, reverted to the I.T.F by the Federal Government in November 1984 and the administration was effectively taken over by the Industrial Training Fund in July1985, with the funding solely borneby the Federal Government.

1.2 BODIES INVOLVED IN THE MANAGEMENT OF SIWES

The bodies involved are:

- Industrial Training Fund (ITF).
- The Federal Government.

Other supervising agents are:

- National Council for Colleges of Education(NCE)
- National University Commission(NUC)
- National Board for Technical Education(NBTE)

The functions of these Agencies above include;

- Establish SIWES and accredit SIWES unit in the approved institutions.
- Formulate policies and guideline for participating bodies and institutions as well as appointing SIWES coordinators and supporting staff.
- Supervisestudentsattheirplacesofattachmentandsigntheirlob-bookandIT forms.
- Ensure payment of allowances for the students and supervisors.
- Ensure adequate funding of the scheme.

1.3 AIMSANDOBJECTIVESOF SIWES

- Prepare the students for the industrial work situation they're likely to meet after graduation.
- Expose students to work method and techniques in handling equipment and machinery that may not be available in their institutions.
- Provides the avenue for students in institutions of higher learning to gain industrial skills and experiences in their course of study.
- Make the transition from school to the world of work easier and enhance students' contact for later job placement.

CHAPTER TWO

COMPANY PROFILE

2.1 BRIEF HISTORY OF THE ORGANIZATION

MOSCO Engineering ltd located at *Headquarters P.M.B 1384, Ahmadu Bello Way,GRA Ilorin*, Kwara State. It was incorporated as a limited liability company in March 2011, the company which was formerly known as **MOSCO** started business in April 2006 and with the needs of expansion and bringing in more investors, the company became a limited liability company with the name **MOSCO** Engineering ltd.

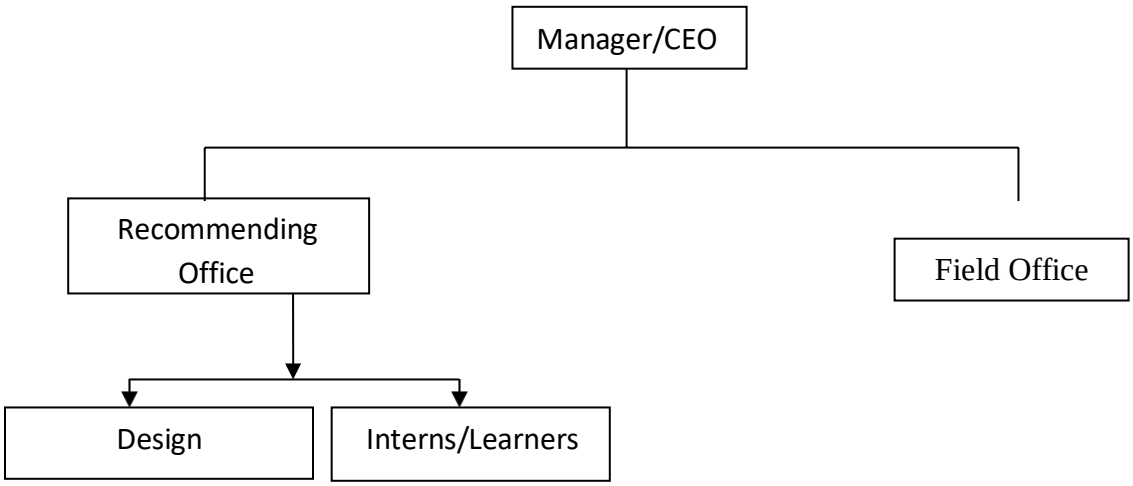
The company was Established by ENGR MOSES JEGEDE because of the realization that Nigerian construction professionals should take the bull by the horn and dictate the pace for the complete development of the construction and real estate sector of the economy. Because of the competitive nature of the terrain of business, the Organization is aware that for indigenous engineering companies to survive, a complete re-orientation of the erstwhile Nigeria approach to business must be embraced.

To this end, the organization's subscription to Total Quality Management is unsurpassed consequently therefore matters such as;

- Conducive business environment.
- Competitive pricing.
- Employees and Public safety.
- Commitment to ultimate quality.
- Staff welfare
- Commitment to project on- time delivery.
- Effective management techniques have become second nature to my organization.

MOSCO Engineering ltd should provide and deploys the best in class project management techniques and procedures in executing all projects to the highest standard Projects undertaken include Construction, Engineering and Architectural Design, Interior Decoration, Procurement and Consultancy to both private and corporate clients in Nigeria.

2.2 ORGANIZATIONAL CHART



2.3 VARIOUS DEPARTMENTS IN THE FIRM

1. Managing Office
2. Recommending Office
3. Field Office
4. Design Coordinators
5. Interns/Learners

CHAPTER THREE

EXPERIENCE GAINED

3.1 INTRODUCTION TO AUTOCAD

Designing is the process of converting an idea into an object, product or a system. This process is iterative. CAD (Computer Aided Design) is a tool that can be used for design and drafting activities. Since it uses the computing power of a processor, CAD drawings are faster, better and more accurate than their manually drafted counterparts.

Simply put, AutoCAD enables engineers, designers and architects to produce 2D and 3D models using computers. AutoCAD started as a design tool for engineers and architects, but is now used by other professionals as well. Autodesk, the company behind AutoCAD, has developed custom versions that can be used by design engineers, civil engineers, electrical and electronics engineers and mechanical engineers. AutoCAD thus covers a vast canvas

3.1.1 IMPORTANT TOOLS:

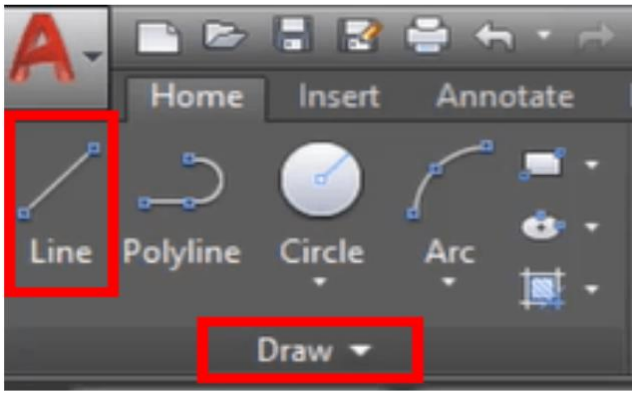
1. Line
2. Rectangle
3. Copy
4. Erase
5. Extend
6. Scale
7. Offset
8. Fillet

1. Line

A line tool lets you create a straight path between two points in a CAD drawing.

How to open it?

Click the Line tool in the Draw panel.



Line

Command Prompt: Type “LINE” or “L” in the command prompt and press Enter.

Line 2Note: Similarly, you can type the command for other tools in the command prompt.

How to Use it?

- Pick a starting point: Click your mouse to tell AutoCAD where to begin the line.
- Choose the ending point: AutoCAD will then ask you to pick a second point, indicating where the line should end. Click again to set this point.
- Finish the command: You can end the LINE command by hitting Enter, Escape (ESC), or the Spacebar.

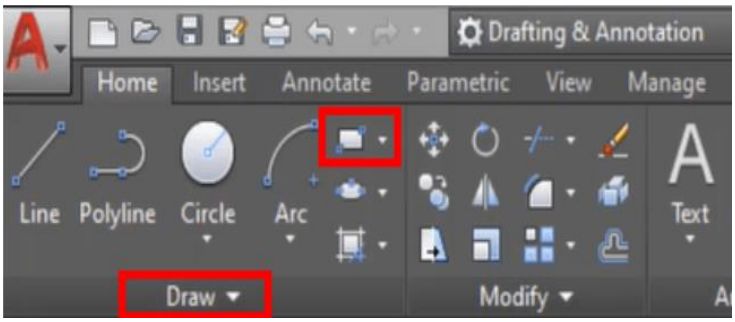
When to Use it?

- Creating walls and partitions in architectural drawings.
- Drawing electrical wiring diagrams with straight wire segments.
- Sketching basic geometric shapes (square, rectangle, triangle, etc.).

Output:

2. Rectangle

The rectangle tool constructs a four-sided shape with equal-length sides and right angles.



How to open it?

- It often appears as a rectangle-shaped icon under the Draw or Create panel.
- Rectangle
- Command Prompt: Type “RECTANGLE” or “REC” > Press Enter.

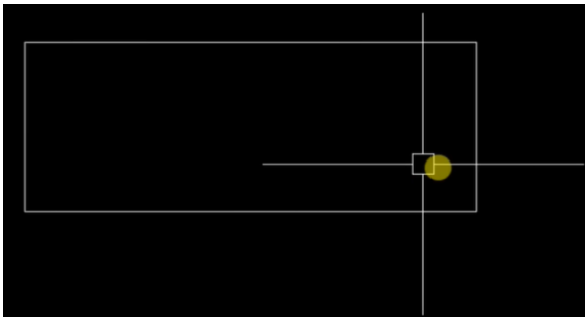
How to use it?

- First corner: Click to mark one corner of the rectangle.
- Second corner: Click again to mark the diagonally opposite corner. AutoCAD creates the rectangle between these two points.
- Adjust properties: You can change attributes like color or layer using the Properties palette or by right-clicking on the rectangle.

When to use it?

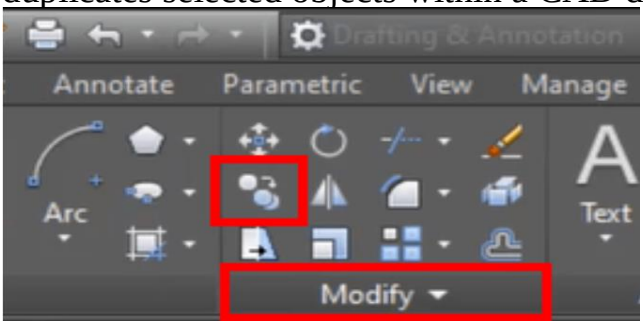
- Designing rooms and spaces in architectural drawings.
- Creating frames for illustrations and diagrams.
- Drafting floor plans and site layouts.

Output:



3. Copy

The copy tool duplicates selected objects within a CAD drawing.



How to open it?

- The Copy tool is present in the Modify group. The icon has one small circle and two overlapping circles.
- Copy
- Command Prompt: Type “COPY” > press Enter.

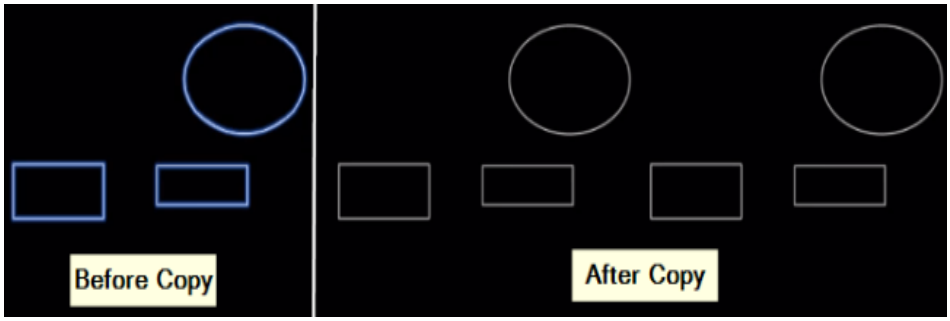
How to use it?

- Select what to duplicate: Click on the objects you want to copy. Hold Shift for multiple items or draw a box around them.
- Choose a starting point: Click where you want the copying to begin. Objects will be pasted in relation to this point.
- Pick the new spot: Click where you want to paste the copied objects (The objects will be positioned based on the starting point).
- Keep going: Repeat by selecting, choosing a start, and picking new spots. Finish with Enter or right-click and “Enter.”

When to use it?

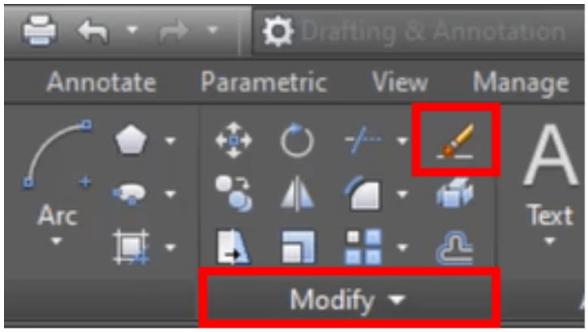
- Replicating furniture or fixtures in an interior design layout.
- Placing multiple instances of the same detail in a drawing.
- Creating symmetrical patterns and layouts.

Output:



4. Erase

The erase tool deletes unnecessary elements from a CAD drawing.



How to open it?

- Find the Erase command under the Modify panel. It looks like a pencil that has a back eraser.
- AutoCAD Tools-Errase
- Command Prompt: Type “ERASE” or “E” > press Enter.

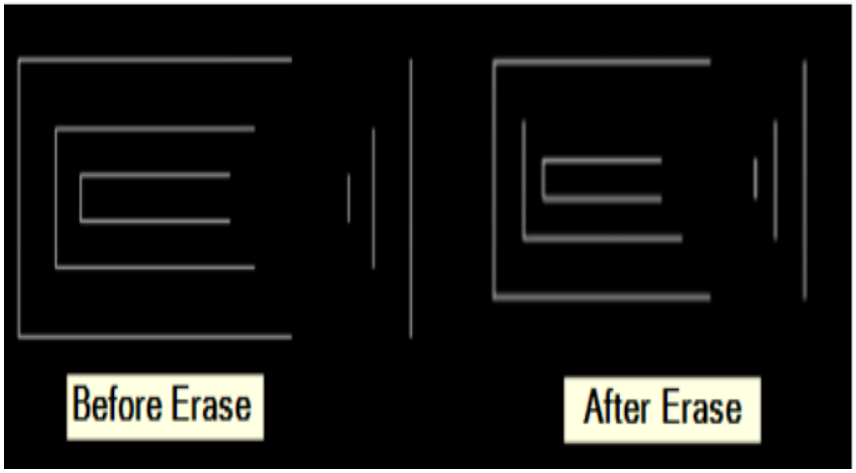
How to use it?

- Pick what to delete: Click on the things you want to eliminate. You can choose many by clicking on each or dragging a box around them.
- Finish deleting: After you have selected the objects to delete, press Enter or right-click and pick “Enter.” The selected objects vanish from your drawing.

When to use it?

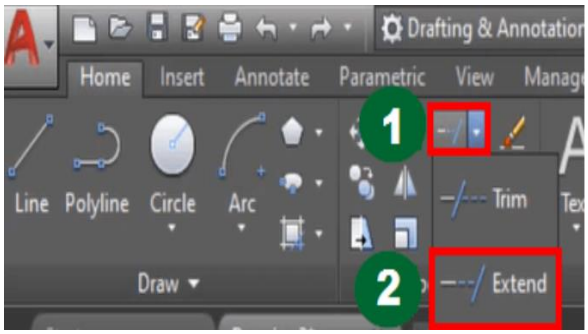
- Deleting unnecessary or unwanted elements from a cloth design.
- Cleaning up draft sketches before finalizing a design.

Output:



5. Extend

The extend tool increases an object's length so it can join with a boundary or another object.



How to open it?

- In the Modify group, open the dropdown menu for a tool booking like a knife and then select the second option (Extend).
- AutoCAD Tools-Extend
- Command Prompt: Type "EXTEND" > press Enter.

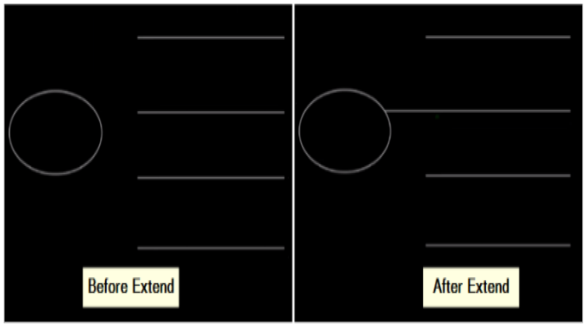
How to use it?

- Select boundary: Click on the point (line or object) where you want to set the boundary.
- Select what to extend: Click on the lines or objects you want to make longer until they touch the boundary.
- Keep going: You can pick more boundaries and objects to extend. To finish, press Enter or right-click and choose "Enter."

When to use it?

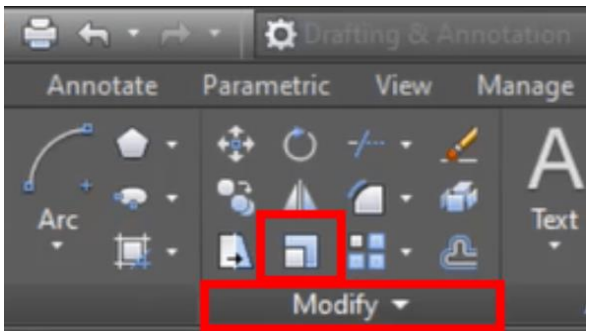
- Extending walls to meet at a common intersection.
- Lengthening objects to match other features in a design.
- Connecting lines to form a continuous boundary.

Output:



6. Scale

The scale tool resizes selected objects proportionally or non-proportionally.



How to open it?

- You can find the Scale command in the Ribbon on the Home tab under the Modify panel. The icon has two boxes, a smaller box inside the bigger one.
- AutoCAD Tools-Scale
- Command Prompt: Type “SCALE” > press Enter.

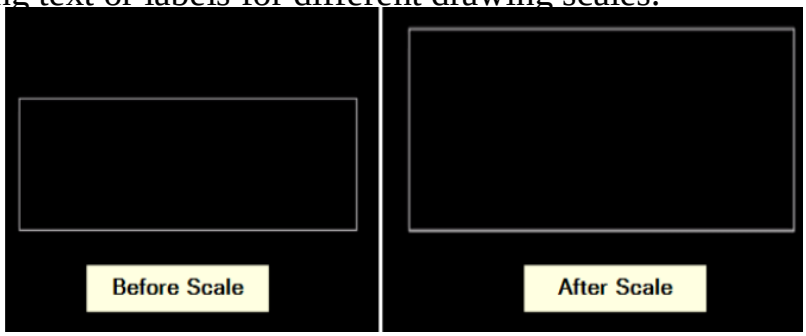
How to use it?

- Pick what to resize: Click on the object you want to make bigger or smaller. You can pick lots by holding Shift or drawing a box around them.
- Set a starting point: Click to choose a point that stays still during the resizing. Everything resizes around this point.
- Choose how much to resize: Type in how much bigger or smaller you want the object to be and press Enter or type the scale factor.
- Preview and adjust: AutoCAD shows you what the resized object will look like. Make changes if needed.
- Finish resizing: Press Enter or right-click and select “Enter.” AutoCAD resizes the selected object based on your instructions.

When to use it?

- Adjusting the size of furniture or fixtures in architectural layouts.
- Scaling mechanical components to fit a specific size.
- Resizing text or labels for different drawing scales.

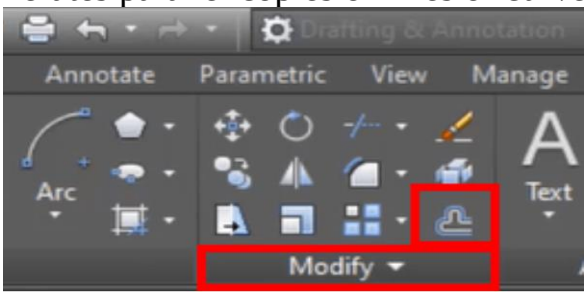
Output:



7. Offset

The offset tool generates parallel copies of lines or curves at a specified distance.

How to open it?



- Represented by an icon resembling parallel or perpendicular lines, you can find the Offset command in the Modify panel.
- AutoCAD Tools-Offset
- Command Prompt: Type “OFFSET” or simply “O” > press Enter.

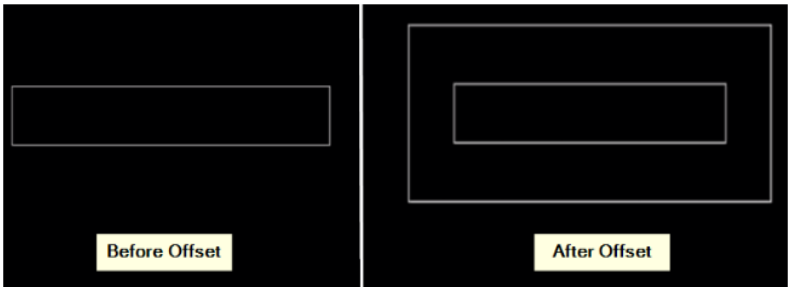
How to use it?

- Specify offset distance: When you start Offset, tell AutoCAD how far you want to offset:
- Type the distance and press Enter.
- Click on the shape you want to create in the offset.
- Select objects to offset: Click the objects you want to offset. Use a selection window to choose many items by dragging a box around them.
- Specify offset side: To choose the direction:
- Click inside the objects to offset inward.
- Click outside the objects to offset outward.
- Finish offsetting: Press Enter or right-click and select “Enter” to finish. AutoCAD makes copies of the objects using the specified distance and direction.

When to use it?

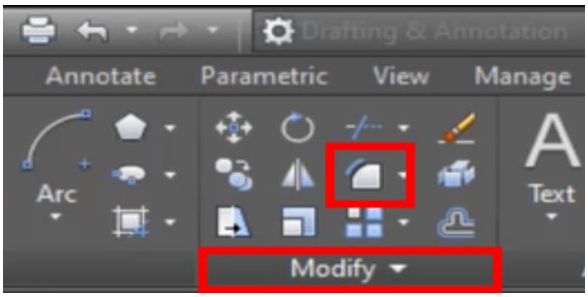
- Adding offsets to represent walls or partitions in architectural plans.
- Designing concentric shapes or patterns.
- Creating clearance gaps in mechanical drawings.

Output:



8. Fillet

The fillet tool converts the corners of intersecting lines or objects into a rounded shape.



How to open it?

- Look for this tool in the Modify panel. The fillet tool looks like a quarter circle with an arc above it.
- Fillet
- Command Prompt: Type “FILLET” > press Enter.

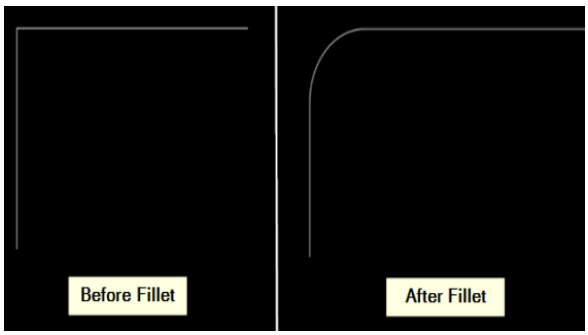
How to use it?

- Pick fillet size: After you start Fillet, tell AutoCAD how big you want the rounded corner to be. Type the size or click a point to set it.
- Choose the first thing: Click on the first line or object where you want the rounded corner.
- Select the second thing: Click on the second line or object that meets the first one at the corner you want to round.
- Keep going if needed: You can make more rounded corners by selecting the first and second things for each one.
- Finish filleting: When you are done, press Enter or right-click and pick “Enter” to exit the Fillet tool.

When to use it?

- Adding rounded corners to architectural elements like door frames.
- Smoothing sharp edges in mechanical parts.
- Creating aesthetically pleasing curves in drawings.

Output:



3.2 FOUNDATION FOOTINGS AND TYPES

Footing in construction is a structural element meticulously designed to transfer the often immense loads from a building safely into the ground beneath. They play the critical role of ensuring that buildings remain stable and upright, distributing weight evenly to prevent uneven settlement or structural failure. By spreading out the weight, the different concrete foundation footings types help avoid uneven settlement. Settlement is when one part of a building sinks more than others because the ground underneath isn't holding up its share of the weight. This can lead to all kinds of problems, like cracks in concrete or, in really bad cases, buildings falling down. Footings in construction are designed keeping in mind the type of ground they're resting on because not all dirt is the same and some types need a little extra help holding things up. In short, footings keep buildings standing strong and steady.

3.2.1 Types of Footings

Each foundation footing type serves a specific purpose, addressing various geological, structural, and spatial challenges to ensure the resilience and stability of construction projects.

1) Spread Footings:

Among the most common types of footings in construction, spread footings offer a reliable foundation for individual columns or posts. They spread the structural load over a larger area of soil, reducing the risk of settlement.

a) Isolated Footings

Construction bunting in building house, isolated footing pad or spread footings

These are primarily used for individual columns or posts. They act as single foundations that specifically support and distribute the load of each column to the ground, suitable for instances where columns are spaced apart.

b) Combined Footings

When space constraints exist due to closely spaced columns or property boundaries, combined footings are utilized. These foundation footing types support multiple columns, efficiently distributing their collective loads.

c) Mat Foundations (Raft Footings)

Fill base plate. Pit formation of grillage is completed. Forms formwork of vertical structures of lower level underground parking. Raft foundation is top of pile, pier foundation. Home construction ideal for large structures bearing heavy loads. Mat foundations provide a widespread area of support, evenly distributing the weight of the entire structure to prevent excessive stress on any single point of the underlying soil.

2) Deep Footings

When the soil near the surface lacks the necessary strength to support the structure, deep footings come into play. This is a type of foundation footing type that penetrates deeper into the ground, reaching more stable soil or rock layers.

a) Pile Foundations

Foundation concrete pile underground for base construction

These consist of long, slender columns driven or screwed deep into the ground. Pile foundations are employed to transfer building loads to deeper, more stable layers of soil or rock, bypassing weaker surface layers.

b) Drilled Piers (Caisson Foundations)

A pile driving mechanism operating on a construction site. Concrete piles or pillars are dug into the ground. It is Created by drilling deep into the ground and filling the resultant void with concrete or other reinforcing materials. These foundations are suited for structures requiring deep, stable support that surface soils cannot provide.

3) Strip Footings (Continuous Footings)

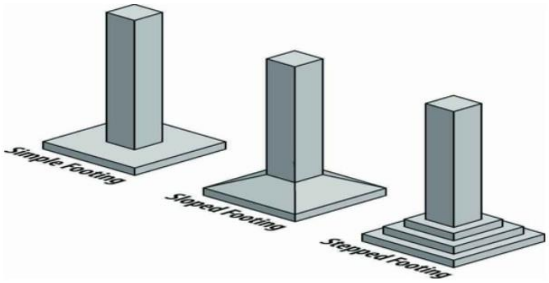
Strip Footing, in this image strip footing we can see it's type of footing manly you can see in construction site. A continuous run of concrete provides foundational support along the lengths of load-bearing walls or alignments of columns. Strip footings ensure load distribution is spread evenly along the structure's periphery.

4) Stepped Footings

Applied in construction on sloped terrain, stepped footings adapt the level of the foundation to the incline. This type of footing in construction maintains the structural integrity and even loads distribution across varying elevations.

5) Sloped Footings

Specifically designed to align with or counter the natural slope of the terrain, sloped footings are a foundation footing type that enhance stability by adjusting the footing's angle to match ground conditions, optimising load transfer.



6) Strap Footings (Cantilever Footings)

Utilized to link two separate footings, strap footings act as a reinforcing bridge that stabilizes and supports structural elements positioned between the connected footings.

7) Grade Beams

Products of metal structure fabrication factory, I-beam welded H-beam steel, Selective Focus, raw materials used in building construction. steel floor beams in piles

Reinforced concrete beams situated at or just below ground level, provide a strong horizontal support for walls or other structural elements. Grade beams are a type of footing in construction that organizes and lessens the load directly transferred to the soil.

8) Floating Footings

Pouring concrete slab

Specifically designed to counteract potential damage from frost heave, these are a foundation footing type that either extends below the frost line or incorporates insulation to shield the structure from freezing ground temperatures.

3.2.2 The Uses of Footings in Construction

Footings are fundamental to construction projects and the different foundation footing types serve several critical functions that ensure the structural integrity and durability of buildings. Their uses vary depending on the type of structure, environmental conditions, and soil properties. Below are the principal roles footings play in construction:

1) Weight Distribution

The primary function of the different foundation footing types is to distribute the weight of the structure above evenly across the ground below. This ensures that the building does not exert excessive pressure on any one point of the soil, which could lead to uneven settling or foundation failure.

2) Stability on Varied Soils

Different soil types have varying capacities to bear weight. Footings are designed to adapt structures to these conditions, whether that involves reaching down to more stable soil layers with deep footings or spreading the load across less stable soils with wide, shallow footings.

3) Prevention of Settlement and Sinking

By evenly distributing the structure's load, footings in construction prevent excessive settlement or sinking of buildings. This is especially critical in areas with soft or unstable soils, where without proper footings; buildings might tilt, crack, or collapse.

4) Anchoring Structures against Environmental Forces

Footings in building foundations not only support static weight but also anchor structures against dynamic forces such as winds, earthquakes, and floods. Properly designed foundation footings ensure that buildings can withstand these forces without shifting or toppling.

5) Elevation from Moisture

Building footings can elevate the foundational level of buildings, keeping crucial structural elements above the reach of moisture from groundwater or rain. This is particularly valuable in preventing water damage and the associated risk of mold or structural weakening.

6) Foundation for Further Structural Elements

Footings provide a solid, level base for the construction of further structural elements such as foundation walls, columns, or slabs. They ensure that these elements are securely anchored and aligned, which is essential for the overall structural integrity.

7) Adapting to Sloped Terrains

In hillside or sloped areas, specific foundation footing types, such as stepped or sloped footings, help create level platforms for buildings. They allow for safe construction on gradients by compensating for the angle of the slope, ensuring the structure remains stable and level over time.

8) Compliance with Building Codes and Standards

Footings in building construction are designed in compliance with local building codes and standards, which specify the minimum requirements for safety, stability, and durability. This ensures that structures are built to withstand expected loads and environmental conditions, safeguarding the well-being of occupants and the public.

3.3 FOUNDATION TRENCH

Foundation trenches are excavated to create a stable base for a building's foundation. They can be used for a variety of purposes, including:

- Trench fills foundations

A trench is dug and filled with concrete to create a foundation for a building. This type of foundation is often used for small buildings like houses, garages, and sheds.

- Piping

Trenches are used to install pipes for water, sewage, gas, and other utilities.

3.4 TYPES OF COLUMN

1. In-situ Concrete Column

In-situ columns are constructed by pouring concrete into shutters that hold the concrete in place while it sets. The concrete is placed slowly and vibrated to ensure it sets correctly.

2. Steel Column: I/H Cross-Section

Steel column is a vertical structure member used in construction to provide essential support. They may carry loads in compression or they may transfer loads from things like beams, ceilings, floor slabs or roof slabs to floors or foundations. Steel columns may also carry bending moments near cross-section axes.

While there are many types of materials used columns in construction, steel is a common choice. Its structure offers a more durable and flexible and stronger structure than concrete structure does. Also, steel columns are generally more lightweight and faster to construct than concrete columns.

3. Precast Concrete Column

Precast Concrete Columns can be circular, square or rectangular. Reinforced Concrete Columns can be designed and manufactured to your specifications and can incorporate additional features and fittings

5. Structural Timber Column

This type of column is chosen by an engineer based on structural grade, species, compressive/bending/shear stresses, and modulus of elasticity.

For a solid-sawn column, well seasoned wood should be used to assure the timber is at maximum and final strength.

Built-Up Columns can be Glu-Laminated or fastened mechanically with bolts or other fasteners.

7. Composite Column – Concrete and Steel

Construction materials of different properties are combined to interact and respond against loads in synchronization rather than individually. These composite materials are physically connected to utilize their distinct strengths and features to form a single unit stronger than any separate parts.

Composite construction is meant to achieve efficient and lightweight structural solutions for construction and

3.5 TYPES OF BEAM

1. Trussed beam

This is a stiffened beam by a system of braces to form a truss and a bottom chord. A trussed beam is made of either steel or timber sections. These beams are used when there is a lot of weight to be supported across vast spaces. A good example is in industrial buildings where there is a need for more space for working areas. Trussed beams span from 10 to 100 meters, depending on the building type. Trussed beams provide reasonable economical solutions for buildings with spans over 25 meters. Sections in trussed beams should be symmetrical to cater to

bending on the vertical plane of the truss. We connect the members of these beams through bolting or welding. One of the significant advantages of these beams is their ease of fabrication which makes them an economical choice for design along large spans.

2. Composite beam

These beams are made from combining two or more construction materials. Composite beams are more robust than beams made from their constituent parts, and they provide a favorable combination of the materials used in their construction. Steel and concrete composite beams have both the inherent properties of steel and concrete, and they are the most common type of composite beams. There are other types of composite beams made from plastic composites and timber. Joining two materials combines their physical strength and enhances physical characteristics. For instance, concrete lends mass, stiffness, and compressive strength in steel-concrete beams, while steel reduces vibrations, deflections and increases compressive strength. One of the most critical parts of composite beams is shear connectors that fix the two materials. In steel-concrete composite beams, shear connectors are usually studded into steel beams and set into the concrete slabs. The number of shear connectors is carefully chosen as they affect the performance of these beams.

3. Reinforced concrete beam

Reinforced concrete is a composite material made from concrete and steel bars. Steel bars are added to increase the relatively low ductility and tensile strength of concrete, and the reinforcement usually is passively embedded before the concrete sets. These are the most widely used beams in construction. Reinforced concrete is advantageous as it can take high compressive stresses. These beams take loads from walls and slabs and transmit them to columns. Reinforced concrete beams carry vertical and horizontal loads. They are used in constructing bridges, houses, foundations, and many other structures, and it would be impossible to construct modern facilities without the use of reinforcement.

4. Steel beam

As the name suggests, steel beams are made from steel, and they support heavy loads. Their specifications depend on their shapes and sizes. Steel beams are classified depending on their cross-sections into I-beams, T-beams, channels, and broad flange sections, and these beams can be straight or curved. Compared to other beams, steel beams have several advantages. Some advantages are that rodents or termites cannot attack these beams, unlike timber beams, and they can withstand high tensile stresses, therefore providing increased structural integrity. They are also resistant to fire and corrosion.

We mainly use steel beams in making warehouses, house frames, and roofing structures. They also secure houses from horrible weather conditions.

5. Timber beam

Timber beams are horizontal structural supports made from wood. These beams are standard in wooden frame structures like residential houses. The choice of wood depends on the type of construction. Wooden beams can be made either from sawn lumber or engineered wood products. Engineered wood products have a higher resistance to twisting and warping. Historically, timber beams are the oldest beams used in construction. The type and size of wood affect how much load the timber beam can bear. The most robust timber beams are dense-close grained beams.

Compared to other beams, timber beams are faster to erect. Timber beams also have a better thermal performance compared to other construction materials.

6. Tie beam

These are horizontal beams that connect columns, rafters, or trusses. We primarily use tie beams in roofs, and when used on roofs, they cannot carry heavy vertical loads such as walls. They also act as strap beams to remove the eccentricity of columns in foundation footings. Tie beams also prevent highly stressed columns from buckling outwards. We also use tie beams to hold longitudinal bars in place during concrete placement.

RECOMMENDATIONS

Based on the experience and knowledge acquired at the course of the SIWES training, I hereby give the following recommendation based on my observations.

1. Student should avoid prioritizing money overwork and experience and should develop a good attitude, good work ethics and be a good ambassador of the university they are representing.

2. Proper orientation should be given to the students by the university before they go on SIWES at least before mid-semester break of first semester.

3. The placement letter should be given to students early enough so as to avoid attachment in irrelevant organization.

CONCLUSION

In conclusion, I have experienced and developed various aspects of site activities during the period of my industrial training. The whole training period was very educative, instructive, and challenging.

I was able to gain new insights and more comprehensive understanding about the real industry working condition and practice. The six months placement also provided me the opportunities to develop and improve my functional skills. All of these valuable experiences and knowledge were not only acquired through the direct involvement in the task given but also through other aspect of the training such as work observation, interaction with workers, colleagues, superior, and participating in online courses related to structural design and construction.

Reference

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2. Thecompany'sprofilewww.mkoengineeringltd.com