

FOUNDATION ENGINEERING

LECTURE NOTE ON SHALLOW

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What is a shallow foundation foundation? A shallow foundation is a type of building foundation that transfers structural load to the Earth very near to the surface, rather than to a subsurface layer or a range of depths, as does a deep foundation.

What are the 5 types of shallow foundations What are the 3 types of deep foundations?

What are the characteristics of a shallow foundation? The main characteristic of shallow foundations is that the depth at which they are placed is generally less than the width of the footing itself. Shallow foundations are used when the load of the structure is “light” compared to the strength of the surface soils.

What is shallow foundation pdf? * Shallow Foundations: Foundations that transmit structural loads to the near- surface soils. (Spread footing foundation + Mat foundation) $D_f/B \leq 1$ (by Terzaghi) ? Later $D_f/B \leq 3/4$. * Requirements to satisfactory foundations i) Safe against shear failure (bearing capacity failure).

What are the benefits of a shallow foundation? Shallow, slab on grade foundation design is a popular choice for low to mid-rise buildings due to its simplicity, cost-effectiveness, and ease of construction.

What are the disadvantages of a shallow foundation? Disadvantages of Shallow Foundation Prone to uneven settlement, especially in areas with variable or weak near-surface soils. Shallow foundations can be affected by frost heave in cold climates, leading to potential damage. Not ideal for sites with limited space, as they require larger areas for spreading loads.

Which is the most commonly used shallow foundation?

What is the maximum depth for shallow foundation? What is the maximum depth of a shallow and deep foundation? Shallow foundations generally go up to 3 metres, while deep foundations extend beyond, reaching depths greater than 3 metres to anchor into stable soil or rock layers for support.

What is the difference between a footing and a foundation? The footing is what's actually in contact with the ground, while the foundation is the structure that transfers the load to the earth. A simple way to visualize the difference when comparing it to the human body would be to view the footing as the actual feet of the legs and the foundation being the legs themselves.

What are the basic criteria for design of a shallow foundation? The design of shallow foundations consists of 2 components, the bearing (resistance to shear) capacity and settlement (performance limits). According to Samtani and Nowatzki (2006) most shallow foundation problems occur because of settlement, while true bearing failure is limited.

How do shallow foundations fail? Shallow foundations may experience a reduction in bearing capacity and increase in settlement and tilt due to seismic loading. The reduction in bearing capacity depends on the nature and type of soil and ground acceleration parameters in non-liquefiable soils.

Is a strip footing a shallow foundation? Strip Footing also known as the wall footing is one type of shallow foundation, and it is used to transfer load-bearing structure weight to the ground evenly. It is used only when soil bearing capacity is good. The width of the footing is generally kept as twice of the wall width.

What are the two 2 types of shallow foundation?

What is the formula for shallow foundation? The required area of the foundation $A = (D + L) / q_{net(all)} = (290 + 110) / 88.94 = 4.5 \text{ m}^2$. Hence, the length of the foundation is $A / B = 4.5 \text{ m}^2 / B = 4.5 / 1.5 = 3 \text{ m}$. The factored column load $= 1.2D + 1.6L = 1.2(290) + 1.6(110) = 524 \text{ kN}$.

What is the theory of shallow foundation? Ultimate Bearing Capacity (qult) is the least (gross) pressure that will cause shear failure in the vicinity of the foundation. According to this theory, a foundation is shallow if the depth, D_f of the foundation is less than or equal to the width of the foundation. $D_f = 3$ to $4B$ considered shallow.

What is the difference between a shallow foundation and a deep foundation? A foundation is a necessary structure in construction that supports and transfers the weight of a building to the earth. A shallow foundation is near the earth's surface, while deep foundations are placed at greater depths in the earth.

How do you make a shallow foundation? Design of Shallow Foundations (isolated footing) AIM: To design a square footing for a column size of 400x400 for given constraints and do the following check: • If the gross bearing pressure under the footing is within safe bearing capacity Provide sufficient depth and longitudinal steel for resisting bending...

What is shallow foundation ratio? In a shallow foundation, depth of foundation is less than or equal to its width whereas in a deep foundation, depth of foundation is greater than its width. A shallow foundation is the one whose width is greater than depth. i.e. A deep foundation is the one whose depth is greater than width of the footing. i.e.

What is the limit of a shallow foundation? These cover such types of foundations in which load transference is primarily through shear resistance of the bearing strata (the fractional resistance of soil above bearing strata is not taken into consideration) and are laid normally to the depth of 3 m.

What is the factor of safety for shallow foundation? The factor of safety for shallow foundation against overturning shall be not less than 1.5 when a dead load, live load, and earth pressures are considered together with wind load or seismic forces. When dead load, live load, and earth pressures only are considered, the factor of safety shall be not less than 2.

Which of the below is the most commonly used shallow foundation? Which of the below is the most commonly used shallow foundation? Explanation: In spread footing, load is transmitted through an isolated column or wall to the subsoil; hence

this is most common type of foundation.

When should shallow foundation be used? When Are Shallow Foundations Used? Shallow foundations are commonly used for projects that are smaller in size and lighter in weight. They are common when the lowest finished part of the structure is less than six feet deep and the dirt around the project has sufficient bearing capacity.

Which is the most commonly used shallow foundation?

What is the minimum depth of a shallow foundation? If the depth of the foundation is lower than its width, we call it a shallow foundation. The minimum depth of a shallow foundation is 800mm and the maximum depth is 3m. Shallow foundations are used in places where the soil condition is good and can easily bear the weight of the superstructure.

Is concrete slab foundation a shallow foundation? A slab-on-grade is a type of shallow foundation in which a concrete slab rests directly on the ground below it. A slab-on-grade foundation usually consists of a thin layer of concrete across the entire area of the foundation with thickened footings at the edges or below load bearing walls in the middle of the building.

The Mysterious Mr. Quin by Agatha Christie: Unraveling the Enigmatic Detective

Agatha Christie's enigmatic and enigmatic detective, Mr. Harley Quin, has captivated readers since his introduction in the 1925 short story collection "The Mysterious Mr. Quin." With his extraordinary abilities and enigmatic nature, Mr. Quin stands out as a unique figure in the annals of mystery fiction.

Who is Mr. Quin?

Mr. Quin is a mysterious and enigmatic figure who appears to hold supernatural powers. He can vanish into thin air, read minds, and manipulate events to achieve his goals. Despite his seemingly otherworldly abilities, Mr. Quin is motivated by a deep sense of justice and a desire to protect the innocent.

What is Mr. Quin's role?

Mr. Quin acts as a catalyst for events, setting in motion mysteries that challenge the boundaries of human understanding. He often takes on the role of a guardian angel, guiding characters towards the truth while testing their morality. Mr. Quin's presence forces characters to confront their own fears and prejudices, ultimately leading them towards a path of enlightenment.

How does Mr. Quin investigate crimes?

Mr. Quin uses his extraordinary abilities to gather information and unravel mysteries. He can manipulate events to create opportunities for suspects to reveal their true nature. By playing on their emotions and testing their limits, Mr. Quin exposes the hidden secrets that lie within their hearts.

What is the significance of Mr. Quin's stories?

The stories featuring Mr. Quin explore themes of morality, guilt, and the power of belief. Through his interventions, Mr. Quin challenges readers to question their own assumptions and consider the consequences of their actions. His enigmatic nature prompts readers to speculate on the true extent of his powers and the source of his wisdom.

What is the legacy of Mr. Quin?

Mr. Quin's enigmatic presence has left an enduring mark on the world of mystery fiction. His unique abilities and enigmatic character have inspired countless other detectives and supernatural beings. Moreover, his stories continue to captivate and challenge readers to this day, inviting them to ponder the boundaries of human understanding and the power of belief.

Skagen 901XLMLN Watches Owner's Manual: A Comprehensive Guide

The Skagen 901XLMLN watch, renowned for its sleek design and exceptional craftsmanship, is a prized timepiece. However, like any complex device, it comes with a comprehensive owner's manual to ensure its optimal use and longevity. This article aims to answer frequently asked questions about the Skagen 901XLMLN watch, based on the information provided in its owner's manual.

1. How do I set the time and date on my Skagen 901XLMLN watch?

To set the time, pull the crown out to the second position. Rotate it clockwise to adjust the hour and counterclockwise to adjust the minutes. To set the date, pull the crown out to the first position and rotate it clockwise.

2. How do I change the strap on my Skagen 901XLMLN watch?

The Skagen 901XLMLN watch features an interchangeable strap system. To remove the strap, locate the quick-release pins on both sides of the case. Use a small tool, such as a paperclip or toothpick, to push the pins inward and remove the strap. To attach a new strap, slide it onto the case and press the pins back into place.

3. How do I adjust the bracelet on my Skagen 901XLMLN watch?

If your watch comes with a bracelet, you can adjust it for a perfect fit. Use a small tool, such as a screwdriver, to remove the pins that connect the bracelet links. Remove or add links as needed, then reattach the pins to secure the bracelet.

4. How do I replace the battery in my Skagen 901XLMLN watch?

The Skagen 901XLMLN watch uses a SR927SW battery. To replace the battery, use a small screwdriver to remove the four screws on the back of the case. Pry open the back and carefully remove the old battery. Insert the new battery, positive side up, and secure the back of the case with the screws.

5. How do I care for my Skagen 901XLMLN watch?

To maintain the pristine condition of your Skagen 901XLMLN watch, follow these care instructions:

- Clean the case and strap with a soft, damp cloth.
- Avoid exposing the watch to extreme temperatures or humidity.
- Do not drop or impact the watch, as it may damage the movement.
- Have the watch serviced regularly by an authorized Skagen dealer to ensure optimal performance.

When did Johnson outboards go out of business? It has been owned since 2001 by the Canadian firm Bombardier Recreational Products. Bombardier stopped selling outboards under the Johnson brand after 2007, and moved all sales entirely to Evinrude Outboard Motors until they were discontinued in June 2020.

How do I know what model Johnson outboard I have? "Standing in back of the engine There should be a plate on the port transom bracket (bracket that attaches engine to the boat) that has the model and serial number imprinted. You may also find a small quarter sized core plug (looks like a small freeze out plug) on the powerhead that has those same numbers.

What does VRO mean on Johnson outboard? VRO is an abbreviation for 'Variable Ratio Oil' . A two stroke engine needs an oil-fuel mixture to operate. It does not have an internal oil storage with oil pump, pumping engine oil through the engine which a four stroke engine does have.

Can you still get Johnson outboard parts? Outboard Parts Inventory MarineEngine.com keeps thousands of Johnson Evinrude parts in stock. We offer current Johnson Evinrude OEM parts, the largest selection of old stock OEM parts and quality discount aftermarket parts by Sierra Marine, Mallory Marine, CDI Electronics and more.

Are old outboards worth anything? Outboard motors, similar to wooden boats, are valued by the simple laws of supply and demand. Yet, some fairly common models like Mercury kg-7 "Super 10" and Johnson 5 hp green TD models are fairly pricey in restored condition. Some rare, often low horse power, brands like Flambeau or Elgin are easy to bargain for.

Did Johnson ever make a 4 stroke outboard? 1998 Johnson 4-Stroke Series J70FTLEC Outboard motors, Prices & Specs - J.D. Power.

Are Johnson and Evinrude motors the same? In 1936 the Evinrude company merged with the Johnson Motor Company to form the Outboard Marine Corporation.

When did Suzuki start making Johnson outboards? The first Suzuki-made re-branded-as-Johnson engine was probably around c. 1997 and was a 70-HP engine.

How can I tell what year my engine is by the serial number? The date code for the engine is built into the serial number after the first two numbers. As an example, a 2013 engine would read something like this, 1013426. The "13" designates it as a 2013 engine.

What does SPL mean on a Johnson outboard motor? Yep, SPL stood for Special. They were offered with fewer features. In addition to lacking the oil injection, they often lacked power trim, and had less fancy cowling graphics. In later years, they were often the "old tech" models alongside a newer tech motor of the same horsepower, .

What year did Johnson introduce Vro? A LITTLE HISTORY. OMC introduced the VRO on the V-4 and V-6 engines in 1984. The pump consisted of a combination oil pump and fuel pump actuated by crankcase pulses through an air motor.

What causes a 2 stroke outboard to bog down? Fuel Vein Blockage Eventually the blockage can cause a complete stoppage of fuel going into the engine, therefore causing it bog down and stop. If you suspect you have a blockage, the best cause of action is to strip down the carburettor and blow down the fuel veins with an air line or air blower.

How can I tell how old my Johnson outboard is? Not sure about the year of your outboard motor? The serial number can help you determine the year of your engine. Your serial number or model number can be found on the engine's mid-section. Often this plate is also marked with the engine's year too.

What is the best outboard motor out there? Suzuki outboard motors are an excellent choice for many types of boats in 2023. These outboards offer unparalleled performance and durability, thanks to their lightweight design, durable construction, and reliable power delivery system. Suzuki outboard have a reputation for being one of the best in the market.

How good is a Johnson outboard motor? The are very reliable engines, I have owned 4 boats all powered by Johnson outboards and have had zero issues with them. I would say they are just as reliable as the Yamahas. However, IMO the Yamahas of the same vintage are smoother, and more efficient than the Johnsons.

They are very good engines.

When were 2 stroke outboards banned? In 2004, the Environmental Protection Agency (EPA) put an end to the 2-strokes dominance by enacting stricter limits on pollutants, and then in 2007, making the restrictions even stricter.

Who is the largest manufacturer of outboard motors? Sales figures are closely held by the companies, but Mercury claims to have the largest share of the U.S. outboard engine market. Yamaha is probably in second place, according to industry analysts, followed by Suzuki, Honda, BRP and Nissan in no definite order."

Do they still make Johnson and Evinrude outboard motors? OUR EVINRUDE CUSTOMERS We are proud to have supplied you with outboard engines over the past 110 years. For business reasons, we have made the difficult and thoughtful decision to discontinue manufacturing of our outboard engines to focus on the next generation of propulsion.

Who is the oldest outboard motor manufacturer? It is the motor of 1906 that is generally regarded as the first commercially produced outboard. 1908 -Ole Evinrude produced a motor which clamped on the back of a boat. 1909 -Ole Evinrude and his wife Bess formed the Evinrude Detachable Rowboat Motor Company.

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