
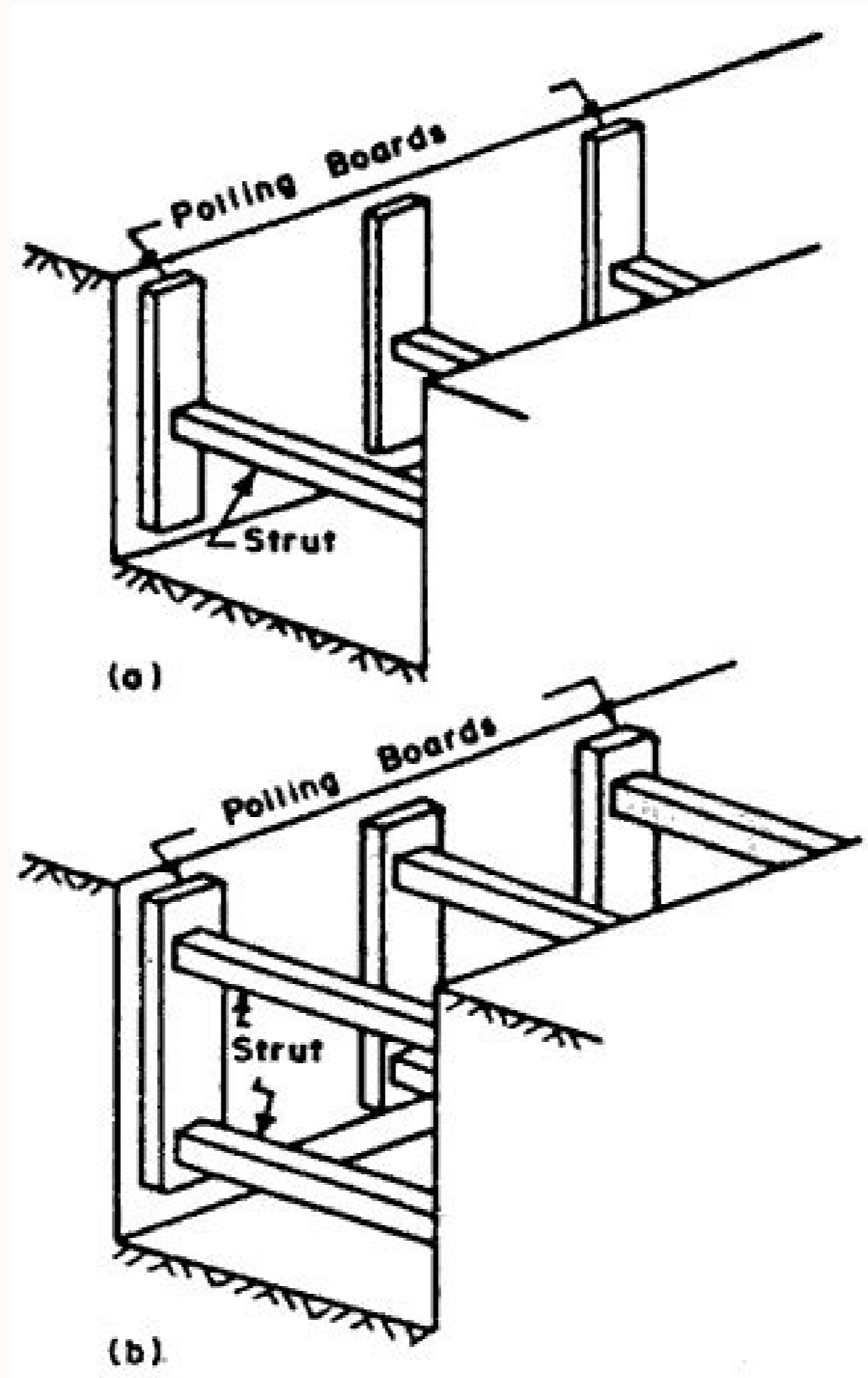


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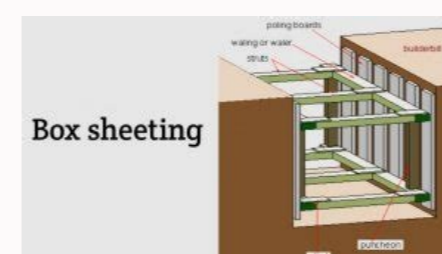
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Timbering of trenches pdf

Reasons for timbering to trenches. What is timbering to trenches.



Vertical sheetingd. Runner systeme. Sheet piling.a. Stay bracing This method is used for supporting the sides of a bench excavated in fairly firm soil when the depth of excavation does not exceed about 2 meters. The method consists of placing vertical sheets (called sheathing) or polling boards opposite each other against the two walls of the trench and holding them in position by one or two rows of struts. The sheets are placed at an interval of 2 to 4 meters and generally, they extend to the full height of the trench.The polling boards may have a width of about 200 mm and a thickness of 40 to 50 mm.



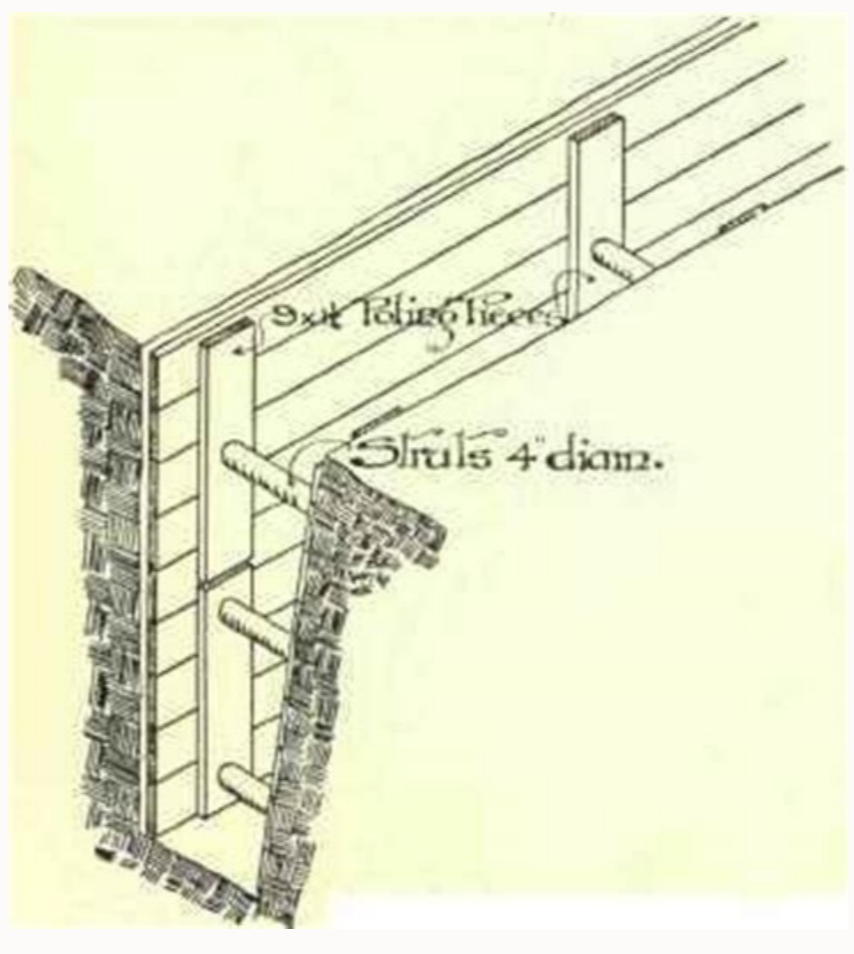
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e. Sheet Piling This method is adopted when (i) the soil to be excavated is soft or loose (ii) the depth of excavation is large (iii) the width of the trench is also large and (iv) There is subsoil water. Sheet piles are designed to resist lateral earth pressure. These are driven in the ground by mechanical means (pile driving equipment). They can be used for excavating to a very large depth. This was for the Timbering of Trenches.

1. Content Filter & Authenticity Checking Team, Dream Civil International (Our team checks every content & detail to maintain quality.) Read More: Determination of Specific Gravity of Soil
 Timbering to trenches is the method to prevent trench side soil against collapse.

During deep excavation, the sides of the trench collapse if the soil is not hard. The timbering prevents the side of the trenches against collapse. When the depth of the trench is large, or when the sub-soil is loose, the sides of the trench may cave in. The problem can be solved by adopting a suitable method of timbering. Timbering of trenches, sometimes also known as shoring consists of providing timber planks or boards and struts to give temporary support to the sides of the trench. Timbering of deep trenches can be done with the help of the following methods: Here we explain why timbering of foundation trenches is necessary?

What is the importance of timbering? And so more. The requirement or importance of timbering is as follows: For the safety of excavation workers For the safety of the surrounding property For the safety of passersby and vehicles For the safety of public service property such as telephone cable, water pipes, and electric cable. A brief explanation of the technical terms associated with the study of timbering works is as under:

A flat wooden plank that is in direct contact with the soil of the trench and is arranged in a vertical position on the side is called a polling board or planking. Sheeting is the process of holding a polling board or plank together or using a sheet instead of a plank. The component attached to the trench wall, the sheeting to support the polling board, the component which is perpendicular to the polling board and parallel to the trench wall is called Wales or walling. A piece of wood used to support sheeting/walling with two walls of a trench and to maintain a certain distance between Wales and the mainline of the trench is called a Strut. The diagonal straightening used between the walls to reinforce the timbering framework is called bracing. Trench walls are prone to collapse in very soft or hard soil. A special type of shoe made of iron should be placed at the bottom of the polling board used in such circumstances and 30 to 40 cm above the bottom surface during excavation, the planks are lowered to a greater depth with the help of a shoe.

These types of polling boards or sheets are called runners. There are five main methods for timbering: Stay Bracing Box Sheeting Vertical Sheeting Runners Sheet Piling This type of timbering is used when soil is moderately firm and excavation depth is not more than 2 m. Polling boards are placed on the sides of the trench and it is kept in position with one or two Struts rows. These polling boards are placed at a distance of 3 to 4 m and are up to the full depth of the excavation. Width of excavation polling board - 250 mm The thickness of the excavation polling board - is 40 mm to 50 mm Size of strut - 100 mm x 100 mm (until trench depth is 2 m) - 200 mm x 200 mm (when trench depth is more than 2 m) This type of timbering, Used when loose soil and the depth of excavation is not more than 4 m. It is a type of loose soil timbering. A box-like structure is made using sheeting, Wales, struts, and bracing. This type of timbering is used when soil is loose and excavation depth is not more than 10 m. This method is similar to box sheeting. This type of timbering is also called double-stage timbering. In each stage vertical sheet, horizontal Wales, strut, and bracing are placed. Usually, the offset is given at 3 to 4 m of depth and its width is 30 cm to 60 cm. A platform is also made on the strut. This method is more suitable for arranging gutter pipes or water pipes in the ground at a greater depth. VERTICAL SHEETING and RUNNER SYSTEM respectively. This type of timbering is used when digging in very loose soil. Runners are long and thick wooden planks. Runners have an iron shoe attached to the bottom edge. Runners are hammered into the ground to a depth of 30 cm from the bottom of the trench. Runners are supported by Wales and struts. Sheet piling is used in the following situations: When excavating over a large area. Excavating soil and its surrounding soil loose and soft. Water comes during the excavation of soil. When Excavation depth is more than 10 m. The greater width of the trench. There are two types of sheet piles: Which is used up to a depth of 30 m. Steel sheet piles are used in different shapes and sizes. Work during timbering the following precautions should be taken for the safety of the workers and the safety of the surrounding property: Soil erosion during deep excavation suppresses labor. Therefore special inspection should be done on the outside of the trench during such excavation. If cracks appear in the ground, the excavation should be stopped and the laborers should be immediately instructed to move to a safe place. The struts should be kept in a fixed position and their rigidity should be checked periodically. As the soil pressure on both sides of the trench increases, the Wales bend. Such Wales should be inspected from time to time and, if necessary, bent Wales should be prevented by giving more support or by placing strong planks. Various timbering members like Sheeting, Wales, Struts, Bracing, etc. move to their original position due to soil pressure and timbering is weakened. Timbering work should therefore be inspected frequently and any defects found should be repaired immediately. Such observation is especially necessary during the rainy season. Timber boards support, Wales, etc. Should be removed safely in stages after completion of work. The soil filling in the trench should be done by leaving enough water in layers of 20 cm to 30 cm thickness so that the soil layer does not settle. If stones, pieces of wood, or other materials are likely to fall during excavation in the trench, safety helmets should be provided for the workers to wear on their heads. Ladders should be arranged at certain distances in the trench so that the labor can escape from the trench safely in case of an accident. When digging in hard soils, ladders should be arranged at a distance of 30 m and in loose soils at a distance of 15 m. The movement of trucks, wagons, and other machinery from the edge of the trench should be done under the guidance of an experienced supervisor. Workers should be provided with proper tools. So that they can use such equipment during emergencies and come out of the trench safely. Supervisors should be appointed to supervise the laborers working in the trenches. The laborers alone should not be allowed to go into the trench. If the foundations of the surrounding building become unsafe due to excavation, such building is to be protected by temporary support. A suitable resting place should be arranged near the trench so that the laborers can take their food and rest. Workers should be forbidden to rest in the trenches. Wire fencing should be made around the trench to prevent pedestrians, vehicles, or animals from falling into the trench. Red lights should be kept at the edge of the trench at night to prevent accidents. The size of the member should be determined on the basis of calculating the load on the various members used in timbering such as planks, struts, etc. The spacing and size of such members are determined to keep in view the type of soil and depth of the trench. Timbering Shoring Timbering is a support system that is generally used to support trenches or pits. Shoring is a support system that is used to support walls, long excavated sides, to support the structural system of the building, etc. Timbering is required for the safety of excavation workers, surrounding property, pedestrians or vehicles, public service, etc. Shoring is required for support of slender members, defective walls, roofs, compound walls, floors, etc. Types of timbering of trenches : Stay Bracing Box Sheeting Vertical Sheeting Runners Sheet Piling Types of shoring: Raking shores or Inclined shores Flying shores or Horizontal shores Dead shores or vertical shores Qjek`rjgh jg Qr`gmc`s Qjek`rjgh jg Qr`gmc`s Mclpt`r - 1 < Kujfajgh Mbgstrumtjbg` J Z`lr J`^lrt JJ F`mtur`r 9 Kjily Quflaclr Qclpltlcfj Mlepus ; Q`epbrlry Mbgstrumtjbg 9 9 Dbrewbro dbr`xmlvtjbg- Qjek`rjgh bd tr`gmc`s Qcjs js tc` lrrlgh`e`gt bd tjek`r pflgos jg tc` tr`gmc`s tb pr`v`gt mbfflpsjgh bd sja`s. E`tcbas (typ`s) tly krlmjgh 9 Bgfy v`rtjmlf kblra lga strut lr`us`a. Jt ely k`bd sjghf`br abukf`fly`r. Kbx sc``tjgh 9 ^bfjgh kblra (Xlf`s) pflm`a bg sja`s bd tr`gmc`s. T`rtjmlf sc``tjgh 9 Mbekjgtjbg bd lkbv`twb e`tcbas. Jugg`rs 9 Jugg`rs us`a jg pflm`bd v`rtjmlf sc``tjgh. Jc``t pjfjgh 9 Jt js us`a tb pr`v`gt sbjf`tb sfjp. = Jc``tjgh, wlfjgh lga Jtruts Elt`rjlfs lviJfklf`Jc``tjgh 9 tjek`r kblras, st`f`tr`gmc`sc``ts Xlfjgh 9 tjek`r, st`f`s`mtjbg, lfuejgue`s`mtjbg Jtruts 9 tjek`r, st`f`struts (smr`w`typ`), cyarlufjm struts