EASTERN MEDITERRANEAN UNIVERSITY

DEPARTMENT OF CIVIL ENGINEERING

MATERIALS OF CONSTRUCTION LABORATORY

CIVL 484 REPAIR & MAINTENANCE OF CONCRETE

GAZIMAGUSA

EXPERIMENT NO: #2

NAME OF THE EXPERIMENT: Ferroscan Reinforcement detection
 ASTM CODE:

Ferroscan

Objective and Scope

The objective of this experiment was detection of steel reinforcements in concrete using one of the non-destructive test methods called Ferroscan.This method is used for so many reason such as when we want to renew or demolish the building and we need to locate or making sure about the place of reinforcements without checking the construction plans or to control the contractor scam or for core sample taking without touching any reinforcements.
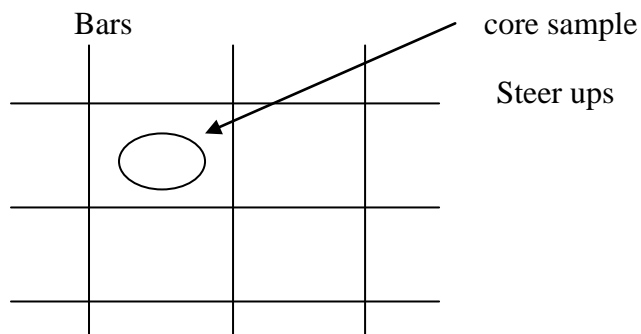
The Ferroscan itself is a battery powered portable system which can be used to:

- Detect the presence, measure the size and debt and map the position of ferromagnetic materials like iron or steel embedded in concrete.

Ferroscan can detect:

- Reinforcement steel bars , pre-stressed or post-tension tendons , steel conduit and steel embedment

Apparatus

A Ferroscan machine include two parts (the machine for recording and adjusting information and the part include sensors for sending and receiving signals , map(for detailed scan)

Sender   receiver

Surface   (ferroscan general performance)

Signal

Bar
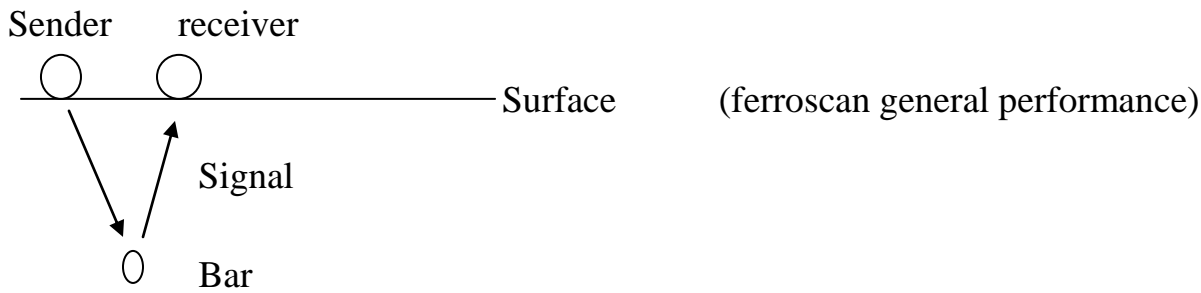
Test Procedure

1. Turn on the testing device
2. Let the device initiate the set up by keeping the sensors away from metals
3. Set the depth of exploration .Using Ferroscan The accuracy of estimating size of reinforcement in concrete is about 90% and for cover depth the accuracy is 2.54mm (0.1 inch) up to a depth of 152.4 mm(6 inch)
4. Choose quick scan mode for quick locating the horizontal and vertical reinforcements (it mostly used to locate the best place to collect the core samples.
5. Choose a reference point and by holding the button on the sensor start moving Forrescan machine vertically to locate the steer ups and horizontally to locate the bars.
6. When machine start making sound it means it detected the reinforcement then look at the depth cover diagram on the screen when it reaches the highest point mark the place.
7. If you want to have complete detail of the existing reinforcements press scan.
8. Again let the machine initiate the procedures by keeping the sensors away from any metal.
9. Place the map on the wall or any other surfaces the middle of sensor has to adjust correctly on the map.
10. Start moving the sensor by keeping the button first in horizontal direction each time on parallel line which has been shown on the map then vertically we do the same procedure slowly.
11. Once we finish with scanning the surface by pressing done button all the data will be stored in the machine and by analyze button we can display all the information of the surface on the screen.
12. Once we have the information on the screen by adjusting curser using arrows on the machine we can receive the information on size of the bar, cover depth, and distance between reinforcements.
13. Using Ferroscan machine the stored data could be transferred to pc for more accurate analysis as well.

Results

As it said before it is nondestructive method so without damaging specimen we can estimate the number and cover debt of reinforcements.

For most application Ferroscan can provide data almost as accurate as other expensive equipment such as radar and radiography while it is much safer than them due to lack of radiations. With the help of experiment it has been learnt to use Forrescan machine. It is useful because it prevents the problem of harming rebar by drilling or curing methods. It also increases the working life of the tool and drill. So it is an economical technique as well as being easily and safely performable.