EWCE-103

Project Surveying

Project Surveying

Definition:

Includes:

- **all works** and **calculations** together with
- **maps**, **profiles** and **other related drawings**,

Involved:

- in the **planning** and **construction** of any engineering projects.

Examples: Railways, Highways, Irrigation, Canals, Sewer lines, Tunnels, Dams etc.

Project Survey

- Project should be planned in such a way that it **may be constructed and operated with greatest economy and utility.**

- Every problem has its own characteristics and peculiar problems which should be dealt for economical solution.

- **Accuracy of project works depend entirely on** the sound knowledge and judgement of the project engineer, types of instruments used, time at disposal and the fund available.

Project Survey Steps



Project Survey

Step 1: Plan the survey of the project

- Agree the **scope**, survey project **objectives**.
- Define the key **survey policies** for the project
- **Develop the project plan** and project steps

Step 2: Design & Pilot the Survey & Communications:

- Define the **reporting requirements**.

Step 3: Get Responses

- **Set up the project**.
- Distribute surveys and provide support

Project Survey

Step 4: Analyze results & develop recommendations

- Analyze results.
- Develop recommendations.

Step 5: Make decisions & act

- Present results.
- Make decisions and plan action
- Communicate results and plans to key stakeholders

Different types of survey for the project.

- **Boundary Survey**
- **Topographic Survey**
- **Contour survey**
- **Levelling- Route survey**
- **Construction survey**
- **As-built survey**
- **Bathymetric Survey**

Boundary Surveys:

- A **process carried** out **to determine property lines.**

- **Indicates the extent** of **any easements or encroachments.**

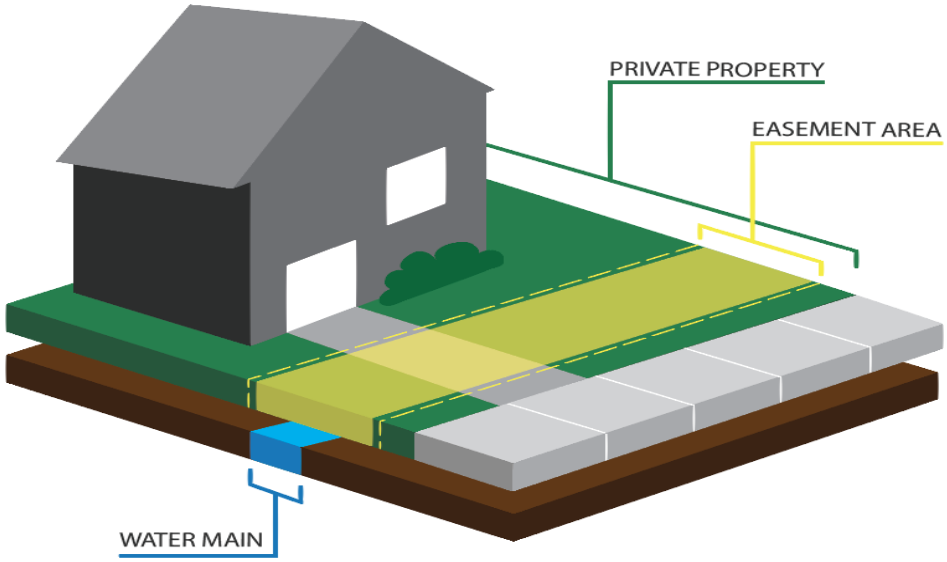
Easement:

- An **easement** is a **nonpossessory right** to **use and/or enter** onto the real property of another without possessing it.
- The right to use another land for specific purpose

Encroachment:

- **Use of a piece of land by an individual other than the owner** unaccompanied by an authority to do so is generally termed as encroachment.

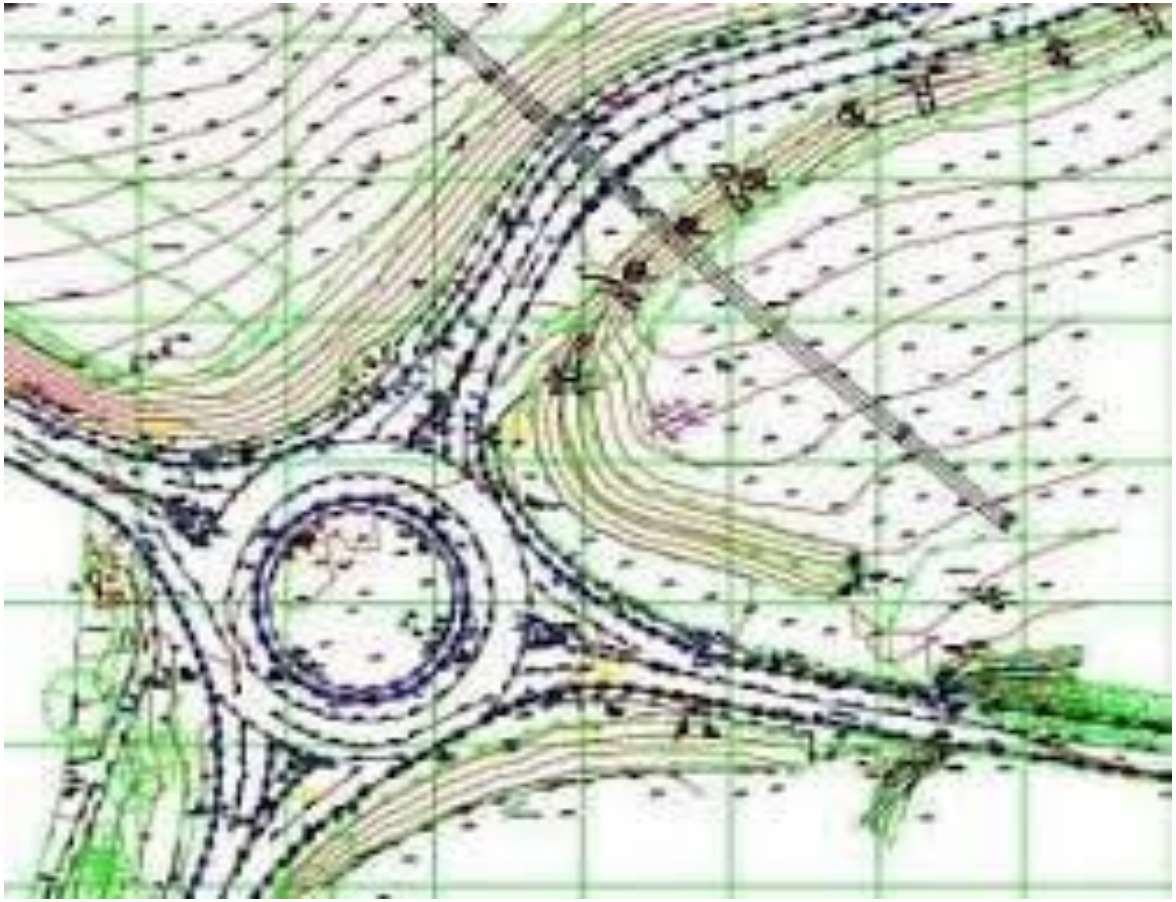
Boundary Survey





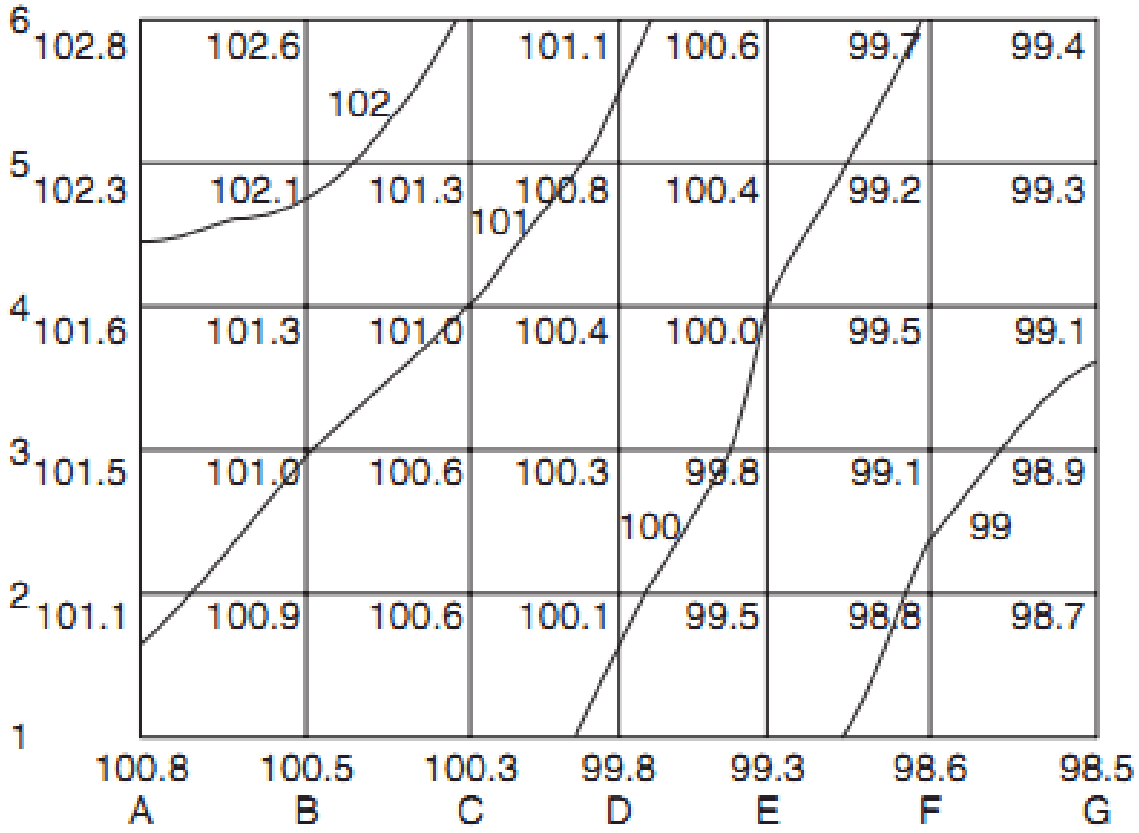
Topographic Survey

- A topographic or topographical land survey shows the **height**, **depth**, **size** **and** **location** of any manmade or natural features on a given parcel of land, **as well as the changes or contours in elevation** throughout the parcel.



Contour Survey

- A Contour Survey **shows the slope of your land** and is generally done at the same time as soil testing.



Construction Survey

- A construction survey typically consists of **determining current site conditions for future above-ground** and **in-ground infrastructure**.



As-Built Survey

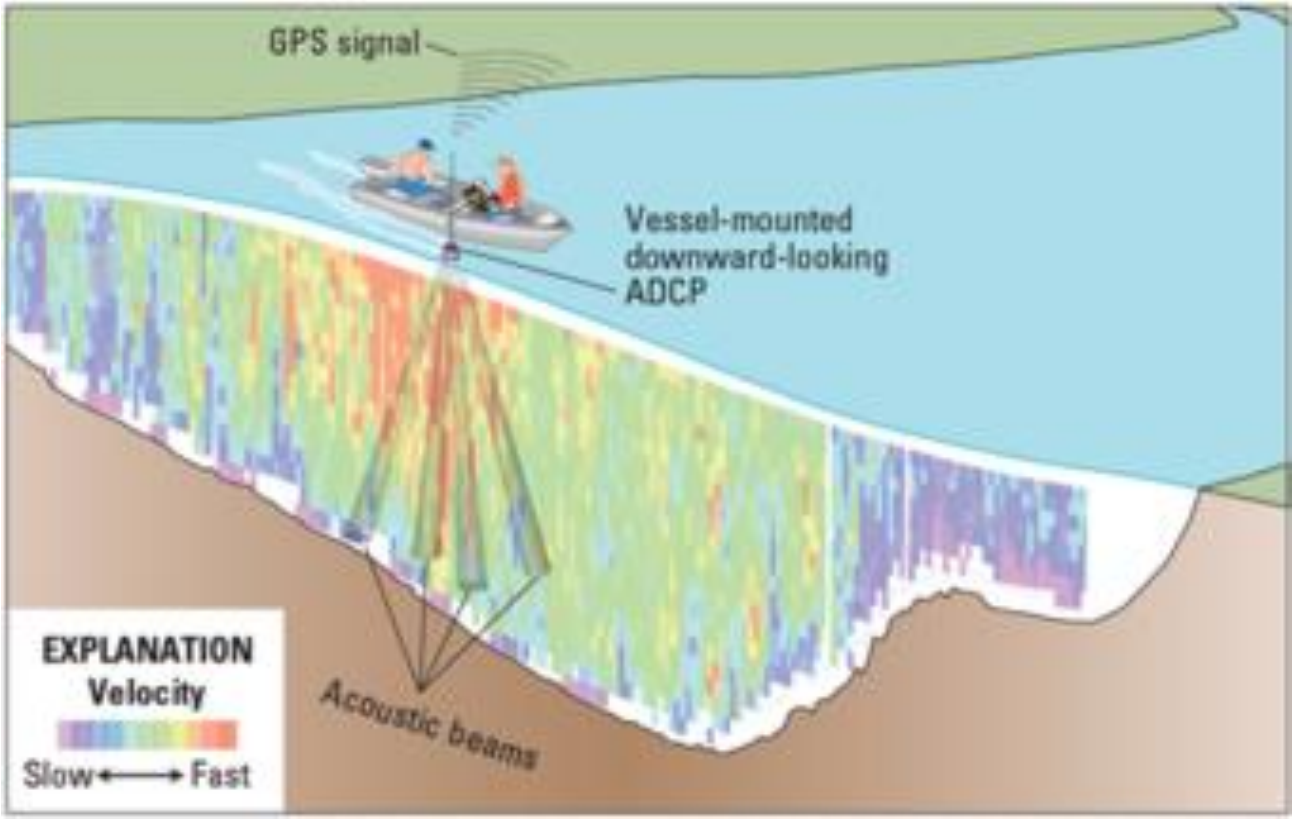
- A survey of **existing site infrastructure and improvements** to obtain dimensional and vertical data, so that constructed improvements may be located and delineated.

- Survey is carried out **during** or **immediately after a construction project** for:
  - -record,
  - -completion evaluation and
  - -payment purposes.



Bathymetric Survey:

Allow us to measure the **depth of a water** body as well as **map the underwater features** of a water body.



Project Survey

Different Project:

- Sewer Pipeline, Canal, Highways and Railway Project.
- Irrigation Project.
- Hydrographic Project.

Sewer Pipeline, Canal, Highways and Railway Project:

Reconnaissance Survey:

- Quick survey of the whole areas through which the different possible routes can be aligned.

Points to be examined and Information to be obtained for Reconnaissance Report:

- Topography of the country
- Probable alignment
- Obligatory areas, towns, rivers, ridges etc.
- Soil and drainage conditions.
- Highest flood level
- Availability of construction materials and labor.
- Land value for acquisition of land.
- Time required for construction
- Rise and fall of the country.
- General slopes of the hills.

Sewer Pipeline, Canal, Highways and Railway Project:

Preliminary Survey:

- Involves **detailed instrumental examination** of the strip of land along the selected alignment.

- **An open traverse** is conducted along the middle of the strip and stakes are set at all stations.

Final Survey

Construction Survey

As-built Survey

Tunnel Project Survey

Definition:

- Tunnels are under ground conduit**.**

- They are **constructed in** railways, highways, big cities, hydro-electric projects, irrigation projects.

Purposes:

- Shorten the distance.
- Avoid excessive cost of maintenance.
- Rapid movements of traffic in big cities.

Tunnel Project Survey

Tunnels involve following operations:

Setting out or surface survey:

- **Reconnaissance Survey**
- **Preliminary survey**
- **Final Survey**

Alignment Transference from surface to underground

Levels Transference from surface to underground

- Construction Survey
- As-built Survey

Irrigation Project Survey

Surveying that is conducted for the completion of irrigation project may:

- Reconnaissance Survey
- Preliminary survey,
- Detailed survey and
- Construction survey.

Hydrographic survey

Definition:

- **Process of acquiring**, **processing** and **presenting detailed bathymetric information** on the seafloor, including ports, harbors and inland waterways.

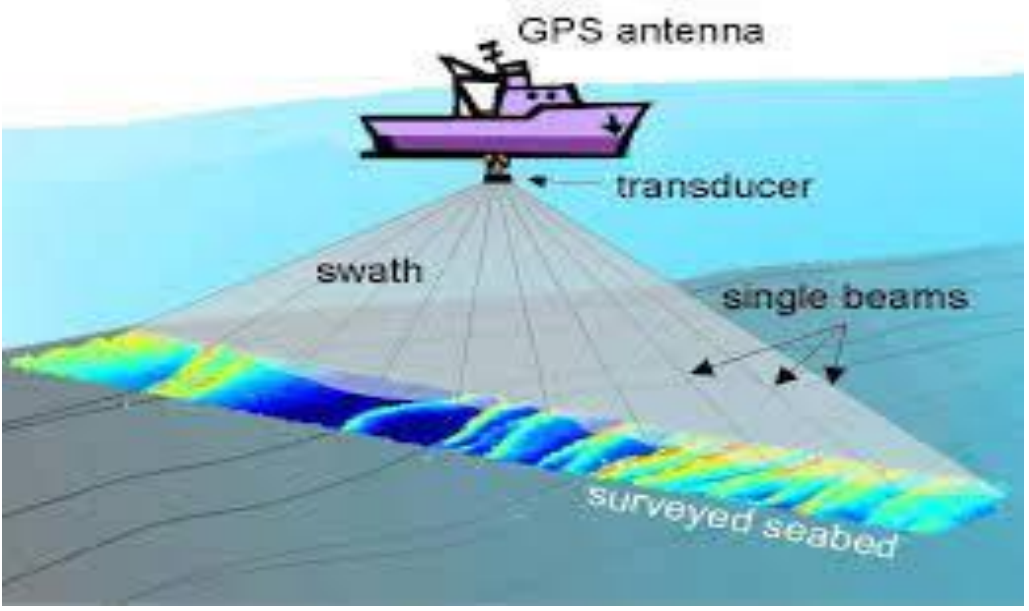
- **Multi-beam Sonar** uses sound waves that travel downward through the water column and bounce back up off the seafloor (or other seabed features).

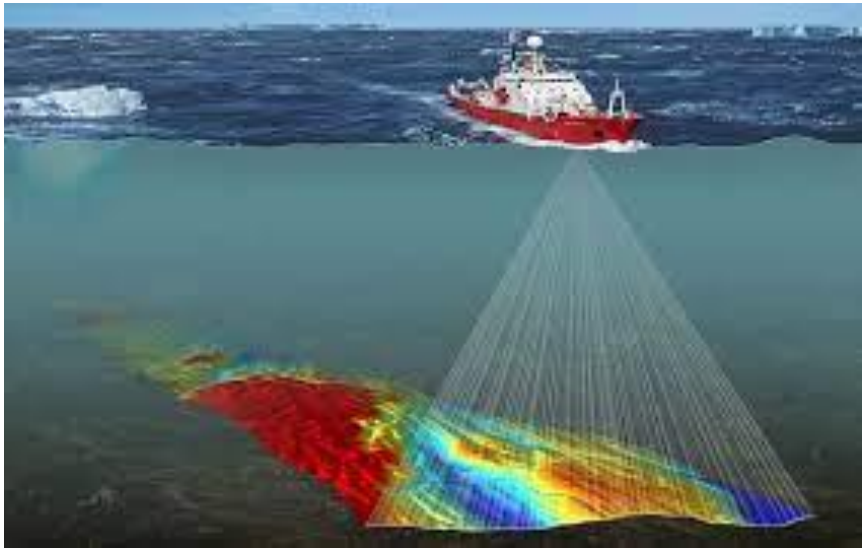
- Hydrographic information can be used for a variety of uses, including **navigation**, **shipwreck discovery** and **charting, planning cable routes** and **offshore wind farms**, **construction of piers and docks**, **locating seafloor hazards** such as rocks and reefs, as well as **supporting search and rescue operations** at sea.

Requirements hydrographic surveys:

- **Pre-construction surveys** include the initial data acquisition to provide those involved in a project with a **good knowledge of the seafloor**.

- **Post-construction surveys** provide a **detailed record of the physical changes** made to an area as well as creating a baseline from which to monitor future change.





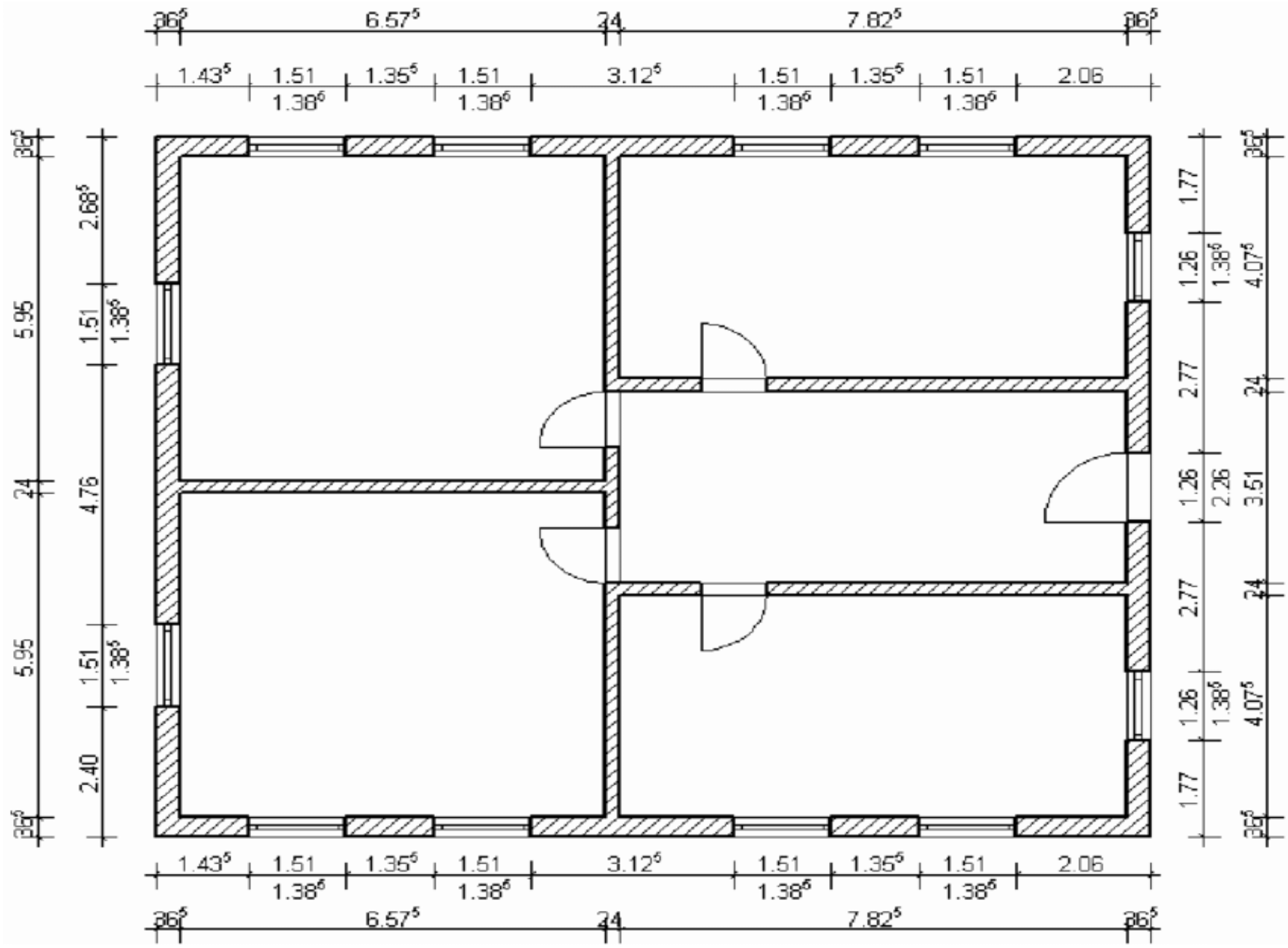
Project Survey – House Setting

Definition:

Means the **setting out on the ground** of the **out lines** of **the excavations** of a building **from plan**.

Procedures:

- **North line** is fixed by prismatic compass.
- **Center lines of the outer walls** are fixed, by arrows and ropes.
- Then the **center lines of the rooms are set** out by setting perpendiculars in the ratio 3-4-5.
- **Intersections of the center lines at the corners are marked** by pegs.


365
6.575
24
7.825
365
1.435
1.51
1.385
1.51
3.125
1.51
1.385
1.51
2.06
1.386
1.386
1.386
1.386
365
2.685
1.51
1.386
5.95
24
4.76
1.51
1.385
5.95
2.40
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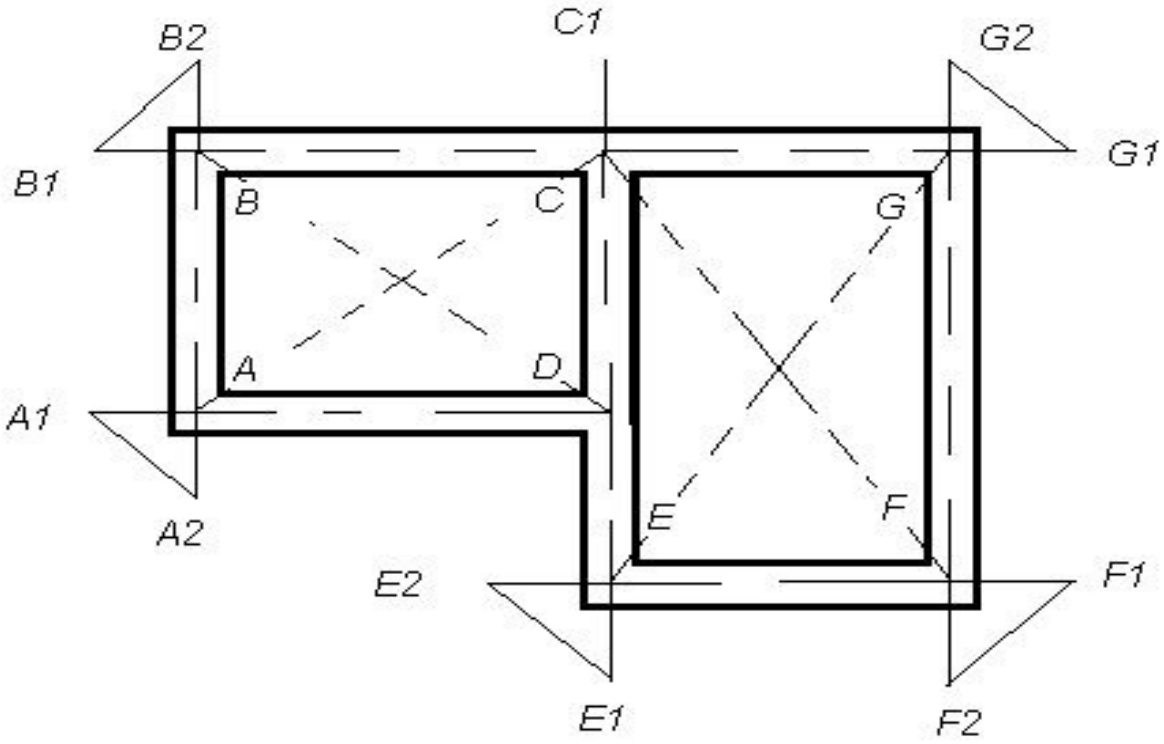
House Setting (Conti..)

- **Diagonals are checked** for the dimensions of the individual rooms.
- **Dimensions should be checked up to 3 places** of decimals.
- **Foundation trench-width is demarcated** by knowing its width across the center line from the sectional elevation of the foundation.
- A **level is pla**ced near the plot and level pegs are set at various corners of the buildings.

House Setting (Conti..)

- **Center lines are extended** beyond the outer edge of the wall by 3 feet, arrows are driven and ropes are tied.
- **Top of the pegs** will indicate the same elevation.
- **Excavation depths are then measured** vertically from the tops of these pegs.
- After excavation, the **base of the foundation is checked** by using a spirit label.

Project Survey- House Setting



https://www.youtube.com/watch?v=dY8XiUy6dOE

Thank You