ADICHUNCHANAGIRI INSTITUTE OF TECHNOLOGY

CHIKKAMAGALURU-577102

DEPARTMENT OF CIVIL ENGINEERING

MANUAL

ON

EXTENSIVE SURVEY PROJECT-2020

6th Semester B.E. Civil Engineering

CAMP SITE: Beeranakere Village, Shivamogga Dist.

FROM: 12-01-2020 TO 19-01-2020

Name:_____

USN:_____ **Sem:**_____

Batch No:_____

.SYLLABUS

Course Title: Extensive Survey Project /Camp
As per Choice Based Credit System (CBCS) scheme
SEMESTER:VI

Subject Code	17CVL68	IA Marks	40
Number of Lecture Hours/Week	04	Exam Marks	60
Total Number of Lecture Hours	50	Exam Hours	03
CREDITS –02		Total Marks-	100

Course objectives: This course will enable students to

1. Understand the practical applications of Surveying.
2. Use Total station and other Measurement Equipments.
3. Work in teams and learn time management, communication and presentation skills

1. **NEW TANK PROJECTS**: The work shall consist of;
   a. Reconnaissance survey for selection of site and conceptualization of project.
   b. Alignment of center line of the proposed bund, Longitudinal and cross sections of the center line.
   c. Detailed survey required for project execution like Capacity surveys, Details at Waste weir and sluice points, Canal alignment etc. as per requirement
   d. Design and preparation of drawing with report.

2. **WATER SUPPLY AND SANITARY PROJECT:** The work shall consist of;
   a. Reconnaissance survey for selection of site and conceptualization of project.
   b. Examination of sources of water supply, Calculation of quantity of water required based on existing and projected population.
   c. Preparation of village map by using total station.
   d. Survey work required for laying of water supply and UGD
   e. Location of sites for water tank. Selection of type of water tank to be provided. (ground level, overhead and underground)
   f. Design of all elements and preparation of drawing with report.

3. **HIGHWAY PROJECT:** The work shall consist of;
   a. Reconnaissance survey for selection of site and conceptualization of project.
   b. Preliminary and detailed investigations to align a new road (min. 1 to 1.5 km stretch) between two obligatory points. The investigations shall consist of topographic surveying of strip of land for considering alternate routes and for final alignment. Surveying by using total station.
   c. Report should justify the selected alignment with details of all geometric designs for traffic and design speed assumed.
   d. Drawing shall include key plan initial alignment, final alignment, longitudinal section along final alignment, typical cross sections of road.

4. **RESTORATION OF AN EXISTING TANK:** The work shall consist of;
   a. Reconnaissance survey for selection of site and conceptualization of project.
   b. Alignment of center line of the existing bund, Longitudinal and cross sections of the center line.

c. Detailed survey required for project execution like Capacity surveys, Details at Waste weir and sluice points, Canal alignment etc. as per requirement
d. Design of all elements and preparation of drawing with report.

5. **TOWN/HOUSING / LAYOUT PLANNING:** The work shall consist of;
   a. Reconnaissance survey for selection of site and conceptualization of project.
   b. Detailed survey required for project execution like contour surveys
   c. Preparation of layout plans as per regulations
   d. Centerline marking-transfer of centre lines from plan to ground
   e. Design of all elements and preparation of drawing with report as per regulations

Course outcomes: After studying this course, students will be able to:

1. Apply Surveying knowledge and tools effectively for the projects

2. Understanding Task environment, Goals, responsibilities, Task focus, working in Teams towards common goals, Organizational performance expectations, technical and behavioral competencies.

3. Application of individual effectiveness skills in team and organizational context, goal setting, time management, communication and presentation skills.

4. Professional etiquettes at workplace, meeting and general

5. Establishing trust based relationships in teams & organizational environment

6. Orientation towards conflicts in team and organizational environment, Understanding sources of conflicts, Conflict resolution styles and techniques

Program Objectives:

· Engineering knowledge
· Problem analysis
· Interpretation of data

RULES OF CONDUCT

- **The students should reach the work site by 8:00 a.m.**
- The Batches should work according to the notified time - table.
- All the equipment drawn from stores should be checked completely in all respect and defects, if any, should be reported immediately before carrying it to the field.
- Each day's work and Level book etc., pertaining to survey conducted should be completed in all respects and submitted for valuation on the same day.
- **All Students should assemble in the Hall at 06:30 pm for drawing.**
- **All Students should wear decent clothes in the camp premises.**
- Any indecent behaviors like Playing cards, drinking alcohol, smoking, swimming, taking bath in tanks, ponds, streams, rivers, and spoiling the atmosphere of the Camp, etc., are **STRICTLY** prohibited.
- No external person other than the inmates of the camp is allowed to meet the inmates without the notice of the concerned staff member/camp officer. If it is found to be violated, it shall be viewed severely and even may lead to **Debarring** of the student from the camp.
- No student is allowed to leave the camp without the permission of the camp officer.
- Attendance shall be marked by the camp officer each day before leaving for work and at the site, at the end of work and the day.
- **STRICT DISCIPLINE SHOULD BE MAINTAINED IN THE CAMP AREA**.

NEW TANK PROJECT

INVESTIGATION

Meteorological, Hydrological and geological data, regarding a project is necessary for good planning.

The survey work for any irrigation project includes

1. Preliminary survey
2. Detailed survey
3. Location survey

Preliminary investigation consists of collecting readily available data by inspection, enquiry and by doing preliminary field work. The report should show the following.

a) The approximate amount of water normally available with their seasons of availability.
b) Periods of deficient water supply.
c) Technical feasibility of the project taking into consideration the commanded area, nature of its soil, types of crops and all categories of demand for water at present and in future.
d) Approximate cost of all the proposed works to know the economics of the scheme.

SURVEY WORK INCLUDES

a) Longitudinal sections & cross sections along the centre line of the bund.
b) Block leveling for Waste Weir
c) Capacity contours.
d) Canal alignments.

LONGITUDINAL SECTIONS AND CROSS SECTIONS

The center line of the bund should be fixed keeping the following points in view:

i) The length of the bund at the proposed top level should be smallest (economical).
ii) The volume of bund should be a minimum (economical).
iii) There should be good foundation soil.
iv) A natural diversion channel at proposed waste weir is desirable.

Two flag post must be fixed at the end points of the proposed centre line and at elevation about 1 m higher than the proposed top level of the bund. Intermediate posts may then be fixed by ranging.

EQUIPMENTS TO BE USED:

1. Tape,
2. Compass with stand,
3. Ranging rods.
4. Chain

PROCEDURE:

1) Align the centre line of the bund by fixing the flag posts at the probable ends of the line.
2) The levels should be carried from the temporary B.M. and one end of the centre line (TBL) should be established along the alignment.
3) Levels should be taken at 10 m intervals on the centre line of the bund and cross-sections at every 10 m. Cross levels have to be taken at 5 m intervals up to a length of 15 m on either side.
4) Levels should also be taken at places where there is change in slope.
5) Trial pit should be excavated on the centre line to determine the nature of soil underground. The soil profile is also determined by seeing the cross section of wells dug or any cutting made nearby.

Plot the longitudinal section to a scale of 1:500 horizontal and 1:50 vertical. The L-section should show top of TBL, M.W.L, F.T.L, General ground level, sluices and waste weir positions the depth of foundations, in dotted line. R.L. of ground points, height of embankments at different points on the centre-line.

Cross-sections should be plotted to scale 1:250. They show the details as in case of L-section (refer above)

CAPACITY CONTOURS.

These contours will help in finding out the capacity of reservoir.

The following equipment's are required.

1. Total Station with accessories,
2. Tape,
3. Compass with stand,
4. Ranging rods.

PROCEDURE

1. Total station is to be setup at any convenient Point.
2. Take RL at random points on the upstream side covering all the catchment area.
3. Types of land and crops, survey numbers of fields through which the contour passes, roads and other important features of topography should be marked on the drawing sheet during survey work.
4. After the survey, draw the contours using E-Surveying software.
5. Minimum of 4 to 5 contour lines should be drawn.

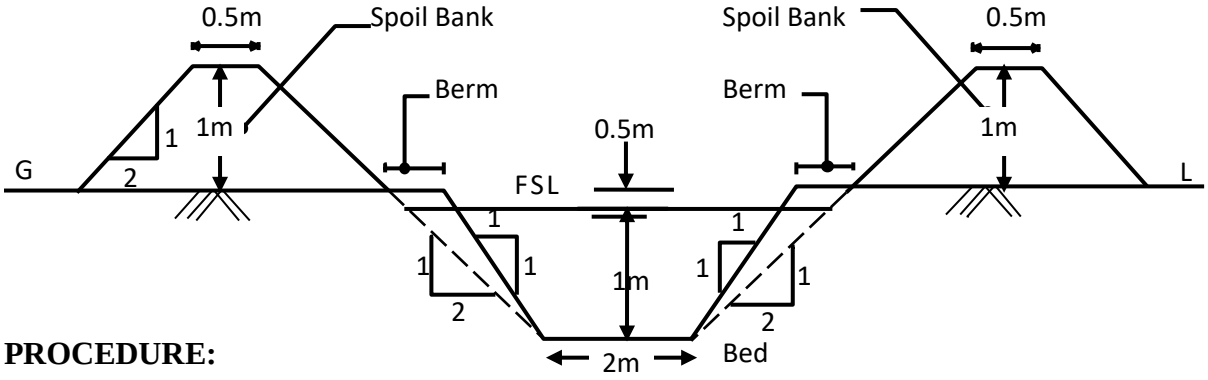
CANAL ALLIGNMENT:

The following equipments are used;

1. Level with stand
2. leveling staff
3. Prismatic Compass
4. chain and arrows
5. ranging rods
6. tape .etc.

Before aligning the channel the following points are to be noted:

1. The channel should always be in cutting.
2. There should be free board of at least 0.5 m
3. The channel should be as straight as possible.
4. There should be a few cross drainage works as possible. If unavoidable the alignment should cross the valley at right angles.



PROCEDURE:

1. The Sluice level at the Ground should be searched on the centre line of the bund such that there should be provision for dead storage of approximately 10% of the total volume of water stored in the reservoir. RL of the sluice on the centre line of the bund
2. After establishing the Sluice RL on the centre line, a canal bed slope of 1 in 1000 is provided and the subsequent points on the alignment should be traced. Bearings for each of the line traced on the canal alignment should be measured and noted. To trace the next point, the RL of the next point should be established as follows:
3. RL of the previous point – Arc length/1000.
4. To mark this point, find the staff reading required for this RL as PC – RL and locate this RL on an arc length of 10 m. Take cross sections at each of these points on either sides for a length of 12 m at 3 m intervals.
5. Locate/mark the important features like roads, culverts, crops, boundaries, buildings etc.. on either sides of the canal alignment. As far as possible the at least few points on the alignment should be permanently fixed with reference to permanent objects with three readings like distance or angles measured.
6. The length of the canal should be taken at least for about 600m.
7. Where ever Cross drainage work is proposed along the route of the canal, block leveling should be done of size 50 m x 50m with grid size 10m x 10m.

1) CROP PERIOD AND BASE PERIOD:-

Crop period is the time, in days, that a crop takes from the instant of its sowing to that of its harvest .Base period for a crop refers to the period of cultivation from the time when irrigation water is issued for preparation of the ground for planting the crop, to its first watering before harvesting.

2) DUTY AND OUTLET FACTOR OF A CHANNEL:-

Duty represents the irrigation capacity of a unit water .It is defined as the area irrigated by a discharge averaging one unit for a specified number of days called the base period or the duty. It is measured in hectares per cumec (m^3/s)

Duty is based on discharge passed through the channel, and thus excluding all losses in the canal system, is called the "Outlet Discharge Factor" or "Outlet factor".

3) DELTA:-

It is the total depth of water required by a crop during the entire period the crop is in the field. It is equal to 8.64 base period/duty metres.

4) CROSS COMMANDED AREA, CULTURABLE COMMANDED AREA AND INTENSITY OF IRRIGATION:-

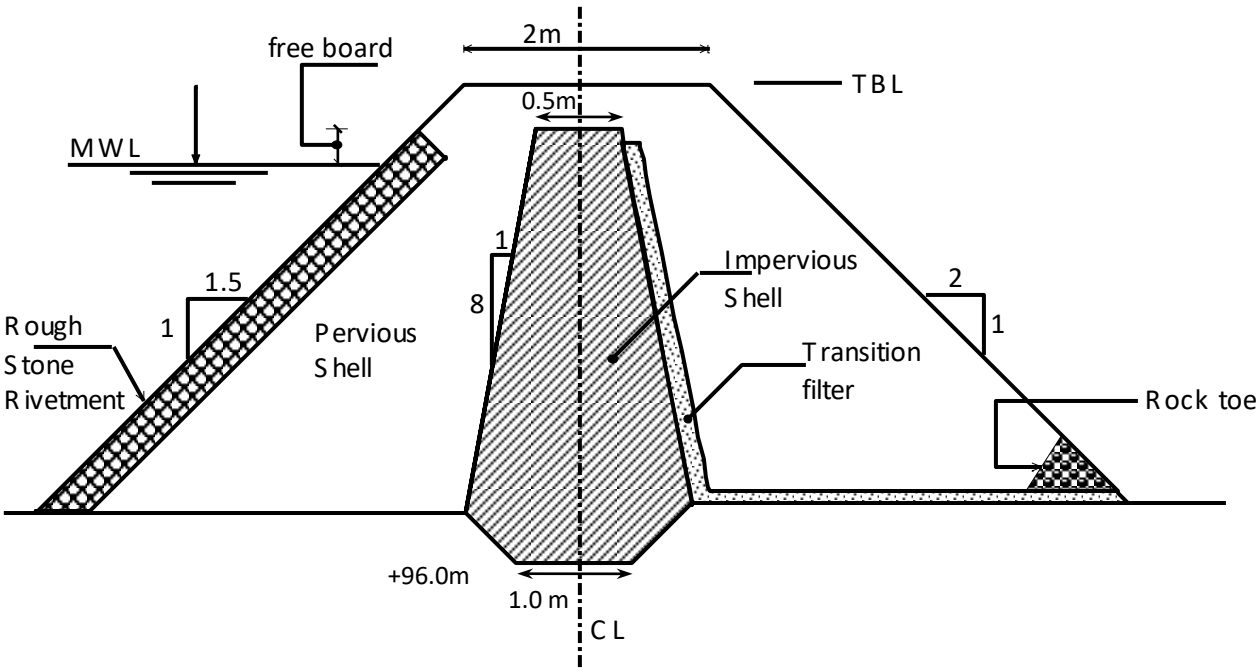
Gross commanded area is the total area lying between drainage boundaries which can be commanded and irrigated by a canal system.

The total area lying between drainage boundaries which are actually irrigated is called the cultivable commanded area.

Intensity of irrigation is the area actually irrigated in any year to the cultivable commanded area.

Run off of a catchment area in any specified period is the total quantity of water drainage into stream or into a reservoir in that period. This can be expressed as (i) centimeters of water over a catchment or (ii) The total water in cubic metre or hectare-metre for a given catchment.

Run off calculated from mean annual rainfall (which is the average total rainfall of several consecutive years usually 35 years) correspondence reading to a average bad years rainfall (which is the average of total rainfall of several consecutive years usually 35 years)



TYPICAL CROSS SECTION OF EARTHEN DAM

DRAWINGS TO BE PREPARED

- Typical Plan of the bund
- Key Plan of bund
- Longitudinal and cross section of bund
- Block level of waste weir
- Capacity contour
- Typical cross section of bund
- Key Plan of canal
- Longitudinal section of canal

HIGHWAY PROJECT

This involves the construction of new road. Prior to the construction of road, it is essential to plan the new project to get maximum utility, minimum cost etc. Following surveys and investigations are carried out.

a) Route survey
b) Soil survey
c) Material and location survey

ROUTE SURVEY:

The purpose of route survey is to fix the road alignment i.e., to locate the position of central line of the road on the ground. Route surveys are carried out in three stages.

1. Reconnaissance survey
2. Preliminary survey
3. Detailed survey and location survey.

Reconnaissance survey:

It is carried out to examine the general characteristics of the area. It comprises study of survey plans, contour maps, geological maps etc. The obstacles like lakes, valleys, ponds, permanent structures etc should be traced out if not available in the map. Gradient, radius of curves, proximity of materials and labor details are to be collected during reconnaissance. As a result of reconnaissance a few alternate alignments may be selected for further study.

Preliminary survey:

The purpose of the preliminary survey is to fix the final alignment for the proposal. Additional information in respect of routes recommended in the reconnaissance survey has to be collected. For this, accurate traverse lines are run along the possible routes. After having collected the details, plans are prepared and best alignment is selected for further study.

Detailed survey and location survey:

It is necessary to fix the centerline of the proposed highway on the ground. Location surveys are helpful in collecting information for road design, estimation and preparation of detailed working drawings.

Special considerations:

a. Cutting and filling of earth in an alignment is balanced to achieve economy.
b. Adequate gradient is to be maintained to achieve minimum operating cost.
c. Super elevation is to be provided at curves.
d. Curves should be suitably designed; circular curves should be connected with transition curves at the starting and end points.
e. Longitudinal profile and cross-sections should also be taken.
f. While aligning roads on hill special care should be taken to align the road along the side of the hill to avoid landslides.
g. There should be minimum number of cross drainage works.
h. In case of hill roads, block leveling should be carried over a sufficient area.
i. A single datum should be used for level works. Permanent bench marks should be established at intervals of 250m at or near all drainage structures.

EQUIPMENTS.

- Dumpy Level with stand and staff.
- Chain and arrows.
- Tape.
- Ranging roads.
- Prismatic compass with stand.

PROCEDURE:

i) Walk along the probable alignment and make a reconnaissance, sketch of the area.
ii) Take longitudinal levels on centre lines at every 5m and cross sections at 15m intervals with cross levels for a distance of 15m at 5 m centre on either side.
iii) Plot the centre-line alignment on plan. (To plot the centre-line alignment on plan, take bearings of lines using prismatic compass).
iv) Keeping above points in view regarding the alignment make the final alignment and get it approved by the concerned staff member.

Draw L–section along the final alignment to a scale of 1:1000 horizontal, 1:100 vertical. The plan should show levels of all ground points within the width of road land. In addition it should show width of roadway and pavement width of road land. Further it should show Grade, total chainage, cross drainage works, soil data, nature of terrain etc.,

The L–Section should show (*i*) the datum, (*ii*) the ground profile and the R.L.'S of ground point, (*iii*) the proposed grade adopted for final alignment, R.L'S of the proposed grade adopted for final alignment, R.L.'S of the proposed grade, depth of cut or height of bank (*iv*) total chainage on the final location,(*v*) cross-drainage works etc.,

Draw any one cross-section of the road to a scale 1:500.

DRAWINGS TO BE PREPARED:

1. Plan of the alignment with horizontal curves and other details.
2. Longitudinal profile of the alignment with suitable formation line.
3. Cross-section profiles.
4. Block Level at Cross Drainage.

WATER SUPPLY & SANITARY PROJECT

The design of rural water supply project involves the following

1. The examination of sources of water supply.
2. Quantity of water required.
3. Objective of water supply system & water quality standard.
4. Basic design considerations for water treatment plant.
5. Design of water distribution system.

Reservoir > Intake well > Storage tank (Treatment plant)>Over head tank > Distribution
Method of supply, pump design, diameter of pipe, pipe distribution

Source of water supply:

Design consideration for water demand:

Before designing the water supply scheme it is necessary to determine the total quantity of water required for various purposes. For the available quantity of water, the forecasting of the population is necessary.

The quantity of water required is fixed depending upon the population and their standard of living.The existing population of Durga village is obtained. The project components may be designed to meet the requirements of the future demand for number of years depending upon their useful life.The design period should neither be too short nor too long. The design is made for a period of 30 years.

Objectives of water supply system:

1. To supply safe and whole-some water to the consumers.
2. To supply water in adequate quantity and in most economical way, keeping the overall requirements of the entire region in view.
3. To make water easily available to the consumers, so as to encourage personal and house hold cleanliness.

Survey work: Survey work for rural water supply project is conducted to obtain

1. Key plan of complete water supply project.
2. Longitudinal section of alignment
3. Plan of water distribution system
4. Block levels at various location

Guidelines:

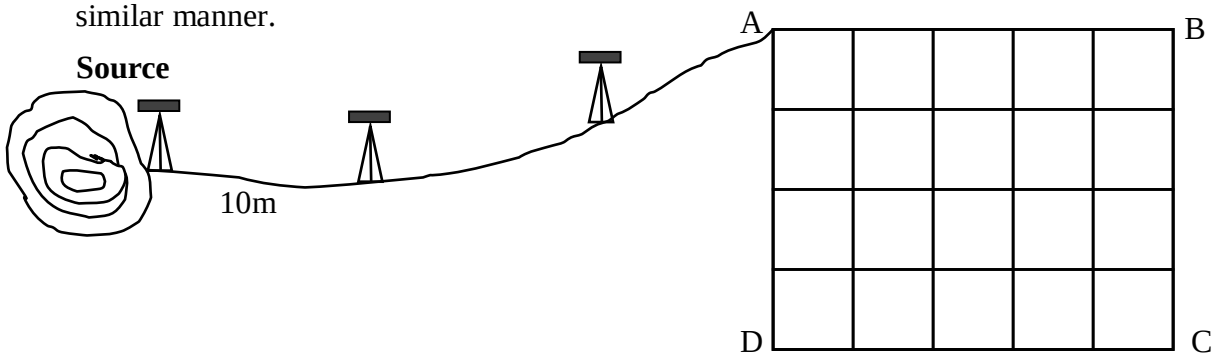
1. The alignment should be shortest and economical
2. The loss of head should be least.
3. Suitable arrangements for inspection and repairs etc. should be made.

Equipment's:

Total Station, Dumpy/Auto Level with stand, Leveling staff, Prismatic compass, Chain, Arrows, Ranging rods, Tape, Cross staff.

PROCEDURE:

1. Fly levelling is carried out from the nearby temporary BM to the starting point of survey project.
2. Carry out longitudinal and cross sectioning to locate the position of pipeline in the drawings.
3. Water Treatment Plant (WTP), Over Head Tank (OHT) and Sewage Treatment Plant (STP) are to be introduced to carry out block levelling.
4. Levelling is also carried out simultaneously, and reduced level of the ground at 5m interval is noted on the plan. This helps to determine the profile of the ground and adopt a suitable water supply system. Block levelling is carried out at the site proposed for new residential layouts.
5. By studying the map carefully, the alignment of pipes and regulating valves are decided. The over head tanks and subsidiary tanks are to be provided at higher elevations.
6. During construction, the water pipeline always should be present above the sewage pipeline.
7. Block leveling: 5×5 or 10×10 blocks are formed on the field and RL at each corner of each block should be taken. Also the bearing at the starting point of the block should be taken to decide the alignment of the block.
8. Bearings at points A, B, C and D should be taken i.e corner points of the block and RL should be taken at each corners of sub blocks. Further survey work to be continued in a similar manner.



9. Village Map is prepared using Total Station.

SANITARY PROJECT:

The end of water supply scheme is the starting point of sanitary project. .Sanitation is the prevention of outbreak of diseases which are dangerous for the general health of the public in economical and safe manner. This includes carriage or disposal of human excreta and other wastes produced from communities, trades etc. Every community produces both liquid and solid wastes.

Sanitary works are classified as follows:

1) Collection work
2) Treatment work
3) Disposal work

SEWAGE:

Sewage is defined as water or liquid waste of a community. It is highly purifiablein nature and having high BOD and required to be conveyed in covered conduits.

SEWER:

Cover is an underground conduit or pipe line generally closed but normally not flowing full used to carry away the sewage.

SEWERAGE:
The process of collection, removal, treatment and disposal of sewage through a physical arrangement of pipes and plant is known as sewerage system. Sewage is ultimately disposed of either on land or in water. But before that a certain amount of treatment should be necessary in order to make it harmless. When disposed on land, methods adopted should be such that sewage does not result in breeding mosquitoes or flies or spread disease producing bacteria in to the air. When disposed in to running waters (streams), sewage should not result in any contamination of water.

UNDER GROUND DRAINAGE SYSTEM FOR LAYING SEWERS:
The underground drainage system may also be proposed with dead end pattern where the sewage from each house is collected in a sewer laid under the road. The cross drains are finally connected to the main drain which will be carried to a lowest point or a suitable point from where the disposal of sewage is to be done. Both water supply and sewerage system are designed and laid down that the flow is by gravity only.

Survey work: Survey work is similar to the water distribution system.

CALCULATIONS:
Designing the diameter of the sewer for the quantity of sewage produced.

DRAWINGS TO BE PREPARED

- Block Level at Source of water
- Block Level of WTP
- Block Level of OHT
- L/S From Source to WTP
- L/S From WTP to OHT
- L/S From OHT to STP
- Alignment of water distribution system from OHT to Village
- Alignment of waste water distribution system
- Typical section of Septic Tank
- Typical section of Manhole & Sewer
- Village Map

RESTORATION OF AN EXISTING TANK

THE PRELIMINARY INVESTIGATION

Includes the Following Engineering Investigations

1. Rough leveling work along the valley to obtain the topography of the valley.
2. Availability of construction materials, transportation, equipment's required for investigation, local labour etc.
3. A study for the foundation strata with few trial borings along the proposed alignment
4. Collection of hydrological data such as annual rainfall in the catchment area and flood discharge at the site
5. A natural facility for discharging the flood water through a waste weir
6. Benefit of the project that would reach the people after construction of the dam
7. Submergence of the important occupational features under water such as Lands, highways, rails, bridges, cultivated lands, after the completion of the project.

Hydrological Investigations

1. Study the runoff pattern and rain fall details to estimate yield
2. To determine the maximum flood discharge at the site
3. To estimate the quantity of water likely to be available in the river from year to year and seasons to season
4. To determination of the storage capacity of a reservoir, the runoff pattern of the river at the dam site is required

Geological Investigations

1. Suitability of foundation for the bund
2. Water tightness of the reservoir basin
3. Location of the quarry sites for the construction materials

SURVEYS TO BE CONDUCTED

- Reconnaissance of the Area
- Alignment of center line of the existing bund, Longitudinal and cross sectioning of the center line.
- Capacity survey to estimate the quantity of existing and extra storage of water in the reservoir.
- Details at existing waste weir and sluice point.

Reconnaissance Survey of the Area

In order to fix the center line of the bund with its end stations at suitable reduced levels (RLs). Tank sluice and canal take off point etc., it is necessary to inspect the project area before surveying. This preliminary inspection is known as reconnaissance survey of the area which is at most important.

The following are the points to be are considered while conducting survey.

1. Length and height of the bund.
2. For any natural diversion canal to carry the surplus water.
3. The length and height of the waste weir.
4. Type of soil at the location in the main dam as well as waste weir and tank sluice.
5. Availability of construction materials and its transportation.
6. The renovation of old tank must give enough benefits to villagers

Longitudinal and Cross-Section of Main Bund:

Longitudinal section is taken for every 10 m intervals and cross sections at every 30 m intervals.

1) Drawings Longitudinal Section (LS) of the profile of earthen bund to be drawn to a horizontal scale 1:100 and vertical scale 1:10.
2) The Cross Section (CS) at various chainages showing the profile of the bund, MWL, FTL and dead storage level etc., to a horizontal scale 1:100 and vertical scale 1:10.

Block Leveling at Waste Weir and Sluice Points:

Block leveling at sluice way of 20 m X 20 m with 5m interval and block leveling at weir of 20 m X 20 m with 5m interval.

Capacity Contour:

Same as New Tank Project.

PROCEDURE

- Same as New Tank Project.

Drawings to be prepared

- Plan of proposed bund
- Longitudinal and cross sectional of bund.
- Block level of waste weir
- Capacity contour.

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TOWN/HOUSING / LAYOUT PLANNING

The arrangement of various components or unit of a town to attain the significance of a living organism is known as "town planning". It demands active imagination and sharp commerce of the understanding of various needs of society. It has to prepare the layout plans.

A well town carries out its active a creation of civilization.

It is a science as well as art. The science consists of collecting and analysing fact of town. The art lies in arranging the all components of town. Finally it becomes to well – planned town with a need of society and form a beauty, convenient, economical and efficient unit.

Objects of town planning

Following are the objects of town planning

1. Beauty
2. Convenient
3. Environment
4. Health

Principles of town planning

Following are the principles of town planning

1. Green belt
2. Housing
3. Public building and utility
4. Recreation centres
5. Road systems
6. Transport facilities
7. Zoning

1. Green belt:

The provision of green belt on the periphery of the town results in the limitation of size of the town. And hence, the final size of the town can well be anticipated.

2. Housing:

The arrangement of the housing in a town for the various categories of the peoples at different location of the zoning with their economy.

It should be observed that there is no development of slums and further, if slums exist they are cleared by the provision of the arrangement.

3. Public housing

There should be a well-balanced grouping and distribution of various public building throughout the town. Unnecessary concentration of public building at certain spots of town should be avoided.

Necessity of town planning:

When the planning of town, the small houses are arranged in better way and appear in good way than disorder of big place. And also provide the better convenience and comfortable to the public. Suppose in absence of the town planning, the following evil situations are developed in a town.

1. Defective road system resulting in the formation of narrow street and lanes
2. Development of slums.
3. Haphazard location of industries.
4. Heavy traffic congestion during the working hour of the day.
5. In adequate open spaces like parks and playground.
6. Lack of essential amenities like electricity, water supply and drainage.
7. Noisy atmosphere.
8. Uncontrolled development of town.
9. Unhealthy condition, etc..,

Site for an ideal town:

The physical characteristics of site play an important role in determining the position of the proposed town and important features to be considered with respect to the site of the town are as follows.

1. Availability of natural advantages.
2. Availability of electric power.
3. Availability of communication.
4. Climate condition.
5. Topography of area (contour map).
6. Development of surrounding area.
7. Drainage system of area.
8. Fertility soil.
9. Frequency of flood.

Forms of planning:

To maintain the continuity in the planning process the form of the planning are to be considered as five forms,

1. Local planning.
2. Country planning.
3. Regional planning.
4. National planning.
5. International planning.

1. **Local planning:**

   The development of plan of the city or town is prepared by keeping the view of local condition. Its object is proper distribution of population with the occupation, regulation of local condition. Its object is proper distribution of population with the occupation, regulation of the traffic system, location of shops, recreation centers, provision of green belt and suitable zones. It is quite evident that local planning will be greatly influenced by economic condition and finance available for the development of the town.

2. **Country planning:**

   In this system keeping of view of the town developed without haphazard location and the surrounding area of the town also developed without haphazard way. The surrounding villages consist with a rural planning for a proper function of the town. For this purpose the surrounding villages should be linked with suitable transport facilities and wherever possible encouragement should be given for the growth of various village industries such as dairy poultry forming basket making, Rope making waiving and manually operated 100mts etc..,

3. **Regional planning :**

   The term regional planning is used to include a proposal in region for the distribution and industry, transport facilities, rural services, village industries, social amenities etc.., a town or a city cannot be isolated from its surrounding region. Hence regional planning helps in controlling and reshaping the growth of major town in the region.

4. **National planning :**

   The term national planning suggests the sitting of the planning procedure on a national level and it takes to consideration the potentialities in various fields of a nation as whole. By proper and carefully national planning, the resource of the nation can be utilizes in the best possible manner. Our various 5 years plans service as a guidance of national planning.

5. **International planning :**

   As per the suggestion of united nation organization (UNO), the international planning has come into existence and efforts also made at international level to promote good will and co-operation between different counties of the world, the various agency appointed by UNO conduct surveys in various field of human life such as education, housing, foods, etc.., study of such surveys helps in finding out remedies and solution of complicated problems as international levels.

Economic aspects of town planning:

The implementations as town planning scheme will require the uses of resources of the community and as such optimum cost of the town planning can ideally be worked out by relating cost of planning to the benefits derived from planning. It is possible from specified cases as expansion to existing town and planning as new town related cost as benefits by measuring land value.

In actual practice the usual position is that the amount to be spent on planning is decided by the governing bodies and the town planner is asked to workout planning schemes within given limitation, the factors included in such limitation may be,

1. Amount of money which the community is willing to spend on roads, hospital, parks, etc..,
2. Low relating to town planning
3. Present pattern of hand use.

PROCEDURE:

1. Conduct the Contour Survey using Total Station of the Selected Site.
2. Prepare the layout plan based on the Contour Survey as per regulations
3. Centerline marking-transfer of centre lines from plan to ground.

Drawings to be Prepared:

- Contour Map of the Site.
- Layout Plan as per regulations.

DETAILED WORK SCHEDULE

1. NEW TANK PROJECT – Two Days

	Forenoon Session	Afternoon Session
DAY 1	Longitudinal and Cross section of Tank Bund	Capacity Contour Using Total Station
DAY 2	Block Levelling at Waste weir and Sluice Point.	Canal Alignment

2. WATER SUPPLY AND SANITARY PROJECT- One Day

Forenoon Session	Afternoon Session
Longitudinal section and Block Levelling	Village Plan Using Total Station

3. HIGHWAY PROJECT- One Day

Forenoon Session	Afternoon Session
Key Plan, Longitudinal section, Cross Section of Road and Block Levelling	Key Plan, Longitudinal section, Cross Section of Road and Block Levelling

4. RESTORATION OF AN EXISTING TANK- One Day

Forenoon Session	Afternoon Session
Longitudinal section, Cross Section of Existing Bund and Block Levelling at Waste weir and Sluice Point.	Capacity Contour Using Total Station

5. TOWN/HOUSING / LAYOUT PLANNING- One Day

Forenoon Session	Afternoon Session
Reconnaissance Survey, Contour Survey Using Total Station	Layout Planning and Centreline Marking on the Ground