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SUBJECT- Estimating and costing 2
(5th Semester)

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DEPARTMENT OF CIVIL
ENGINEERING

CHAPTER-5

Works:-

For any original work, the engineering department prepares a proposal on the basis of preliminary estimate, from the requirements and information supplied by the department concerned. The department after due consideration approves the proposal with respect to the work and fund and convey their approval and administrative sanction to the engineering department.

Classification of works:-

Original work:- all new constructions whether of entirely new works or of additions and alterations to existing works which increase the capital cost of a building or work.

Repair Work:-

The repair required to maintain the work in proper condition as annual repair to buildings, road, etc.

2. Annual Repairs

This maintenance service is carried out to maintain the aesthetics of buildings and services as well as to preserve their life, some works like white washing, distempering, painting, cleaning of lines; tanks etc. are carried out periodically. These works are planned on year to year basis.

3. Special Repairs

Special repairs of building are undertaken to replace the existing parts of buildings and services which get deteriorated on ageing of buildings. It is necessary to

prevent the structure & services from deterioration and restore it back to its original conditions to the extent possible.

Quadrennial repair -:

Besides annual repair work of white washing and colour washing, every fourth year special repair works are done for through repair as repainting of doors and windows, patch repairing of plastering, etc. special repair work every fourth year is known as Quadrennial repair .

Execution of works

For this purpose if the value of work put to tender exceeds Rs.1.00 Lakh it is called major work. If it is less than Rs.1.00Lakh it is called minor work.

The departmental method: - The Department itself engages the necessary daily labor and purchases or supplies the necessary material.

The Piece work contract method: The piece worker agrees to execute a specified work or part of a work at specified rates without reference to quantity or the time taken, and the department arranges for the supervision, setting out and measuring of all the work done.

- Procedure for call of Tenders: Tender notice or Notice Inviting Tender (NIT) will be approved by the officers for the works for which they are competent to accord 9 technical sanction. The Tender document will be prepared by the concerned officers bringing greater transparency indicating the provisions made in the estimates for items which are reimbursable to the contractor with conditions therefore.

Tender invitation & finalization: 1. For works up to Rs. 50.00 lakh the tender notice shall be published in District Edition of at least one vernacular news paper with wide circulation. For the works costing more than Rs. 50.00 lakh, the tender notice shall be published in at least two news papers having wide circulation at the state level. The Tender schedule should contain not only quantities but also the rates worked out by the department and the amount for each item and the total value of the contract. The Tenderer should indicate his willingness to do the

work, either at the estimated value of the work or at a percentage less than the estimated value of the work. Authority should always be reserved to reject any or all the tenders so received without the assignment of a reason and this should be expressly stated in the advertisement.

Rules for Engaging Casual Laborers on Muster Roll

- (i) The Superintending Engineer will issue sanction for engaging casual labourers on muster rolls. The sanction will specify the maximum number of labourers of various categories/bullock carts etc for which a daily wages rate exists in C.S.R./S.O.R. and period of employment on muster roll. This sanction will be quoted on the cover pages of the muster roll. The S.D.O. shall report to the E.E. the number of the muster roll used against each such sanction. The S.D.O. may engage the minimum number of casual laborers under unavoidable circumstances during emergencies affecting Public Services and properties, but shall immediately intimate E.E. the details thereof and obtain his sanction from authority competent.
- (ii) The S.O. in charge will prepare the muster roll. He shall record attendance on first day giving name, father's/husband's name and village.
- (iii) The name of the work, the number and the amount of the estimate etc. must be entered clearly in the place provided for the purpose.
- (iv) The names of the work people must be grouped by classes, and the attendance and totals by classes must be entered in ink at the time the attendance is taken. A cross mark X must be placed against each absent person in every muster

roll so that no blank space is left.

(v) The attendance should be recorded daily by the S.O. who will enter his initials against the total of each class of labour and dated initials against the grand total at the foot of the column in which he enters the attendance.

Measurement of Progress

4.006. Measurements of work done on muster roll should be taken frequently, generally not less than twice a week by the S.O./E.I./R.A./Amin/Mistry/Muster Clerk or in respect of electrical work by the Wireman and in the case of work done in mechanical workshop by the Foreman. Measurement not taken by S.O./E.I./R.A. must be checked by him. The location of the work must be clearly stated.

4.007. In cases where the measurements are recorded initially by the S.O./E.I./R.A./Amin/Mistry/Muster Clerk/wireman/Foreman the same will be recorded by him initially in Part-III of muster roll. The S.O./E.I./R.A. will enter the same in M.B. after his check.

The S.O./E.I./R.A. in charge of work shall be responsible for all the work done and measurements entered.

4.008. Measurements shall be checked by E.E./S.D.O. as frequently as possible. All check measurements will be entered in the Part-III of muster roll and also in the measurement book if available. A reference to the check measurements not recorded in the M.B. shall be made in the measurement book when the muster roll

is paid. If any serious error is discovered in the measurements entered in a muster roll, the entries should be corrected immediately and the explanation of the official responsible for the error obtained.

Payments

4.009. Before payment is made, the S.D.C. will examine within one day the details of the works done and the value of the same in the abstract prepared by the S.O. at the approved rates applicable to the various classes of work. Then S.D.O. will compare it with the amount of the muster roll in order to decide whether any fine for short or bad work is necessary and if so its proportion to the total of the muster roll taking the local conditions into consideration. Each member of the gang will ordinarily be fined in that proportion. He will then countersign the abstract and give the pay-order.

4.010. Payments must be made by the S.D.O. in all cases. However the E.E. may authorize any other S.D.O. or Assistant Engineer (Attached Officer) to make payments when the concerned S.D.O. is not in a position to make payments or when the E.E.

Issue and Write Off of Muster Roll Forms

4.012. Blank forms of muster rolls must be machine numbered, registered and signed by the E.E. before they are issued. He should maintain, in the form printed as Appendix 4.02 a register of the numbers of all forms that are issued and obtain receipt from the subordinates to whom they are issued. No form may be destroyed except under proper sanction. S.D.O. should maintain similar register in his office.

4.013. All forms issued must be returned to the E.E.

. whether they have been used or not.
If any muster roll is not used within three months of issue, the subordinate must either return it for reissue or explain how it has been disposed off.

4.014. E.E. may sanction the write-off of—
(i) blank forms of muster roll, which may be missing or torn or have become useless due to any cause, and
(ii) muster rolls, on which attendance has been entered but no payment has been made. Care should, however, be taken to prevent the payment of lost muster roll, should they subsequently be presented for payment.

Rules for Measurement Books

4.017. The measurement Book is a most important record. It is the basis of all accounts of quantities of work done, purchase made and it must contain such a complete record of facts as to be conclusive evidence in court of law. The description of the work/materials must be lucid, and such as to admit of easy identification and check.

4.018. It should be most carefully kept and used for contract work, piece work, departmental work, and for accounts of materials. It is not to be used for petty bazaar supplies (other than article of tools and plants) the cost of which does not exceed Rs.100 in the case of any individual purchase.

Measurement books shall be issued to store-keeper /E.I./R/A/Sub-Engineer/S.O. or higher officers for recording measurements.

Register of Measurements Books

4.019. A register of measurement books should be maintained in the Division and Sub-

Division Office in the forms printed as Appendix 4.03 and 4.04. No entries will be made in the register in respect of measurement books received from a subordinate with bills for check and payment.

4.020. The entries on the outside label and on the inner title page in a measurement book showing the number of the book, name of the office etc., must be filled in at the time of its initial issue.

4.021. Subsequently, whenever an official in whose name a measurement book is registered, is relieved of his charge, the name of the relieving officials shall be entered in the name page of the book, with the date of its transfer

Instruction for the use of measurement books

4.023. The following instructions are laid down for the compliance by the officials who take measurements:-

(i) Every measurement, at the time it is taken, must be recorded directly in the measurement book and in no other book (paragraph 4.007).

(ii) The first entries to be made on the occasion of each measurement are—

(a) full name of the work as given in the estimate,

(b) situation of the work,

(c) agency by which executed (i.e. by contract/piece work/departmental labour),

(d) name of contractor (if work is executed by contract),

(e) number and date of his agreement (if work is executed by contract), and

(f) date of measurement.

(iii) The particulars in column (1) of the measurement book should be so

worded as readily to be identified with the corresponding description of the sub-head, as given in estimate.

(iv) All measurements must be entered in ink.

(v) Interpolations/erasures/overwriting of figures are strictly prohibited. If corrections are necessary, they must be made by drawing a line over the wrong entry and writing the correct figure above it. The correction must be initialled and dated by the party making it. When corrections are necessary in group should be rewritten, initialled and dated. Initials must contain first letters of person's name and surname. If any measurement is cancelled, the reasons for the cancellation must be recorded on the same page and dated signature made thereunder.

(vi) No page must be left blank or torn out on any account whatever. Any page left blank inadvertently should be cancelled by diagonal lines, attested and dated.

(vii) Final and check measurements must be made in the presence of the contractor or his legally appointed agent, who must certify as follows against the measurements concerned :-These measurements are accepted by me". Contractor/Agent.

When a contractor or agent is illiterate the certificate should be entered over his thumb impression before a witness.

(viii) All measurements/ check measurements must be attested by the dated signature in ink of the official by whom they are taken under the words "Measurements taken/ checked by me".

(ix) In the case of measurements for running bills it is not necessary to report the details of measurements of items not operated on since the former measurements were taken. The totals of "Contents" of

f such items should
however, be brought forward.

(x) The index should be posted as and when measurements are recorded in the book.

4.024. At the end of each set of measurements the following memorandum should be added :-

Total value of work done
Rs.

.....
Deduct previous payments, vide certificate
No..... dated

Net
Payments now made, vide certificate
No..... dated.....

As detailed below :-

In cash
By cheque No.....
Recoveries, stores or cash.....

....
Balance due.....

4.025. (i) At the time of payment all the pages of measurements which relate to the bills or vouchers being paid should be crossed off in red ink by drawing straight line from top left corner to bottom right corner.

(ii) The connection of each set of measurements with the voucher number in the cash book should be shown in the M.B. as soon as the payment is entered in the cash book.

4.026. For each large work, two or more measurements books should be in use to admit required measurements books being sent to the Division Office, in support of contract bills submitted for check or payment. Separate measurement book should be kept for measurements of repair works.

Payment of Bills

An S.D.O. is authorized to pay all running bills in which the net value of the work since previous bill is Rs.20,000 or less. All other running bills and every fourth running bill for a particular work must, however, be submitted to the Division Office for complete audit before payment. S.D.O. is empowered to make final payments for works the cost of which does not exceed Rs.1,000 but the S.E. may, in his discretion lower this limit in individual cases.

The measurement books containing the accounts of works which an S.D.O. pays need not ordinarily be submitted to the E.E. for check, but when a final bill, the

amount of which is beyond the powers of an S.D.O. to pay is prepared, all

measurement books containing the running bills and the contract certificate should

be submitted to the E.E. for scrutiny and disposal.

The E.E. may, however, at any

time require the measurement books relating to any bill, running or final to be

submitted to him for scrutiny.

Final bills, which are beyond the power of a

n S.D.O. to pay will usually be paid

by the E.E. but it is open to him to return them to

the S.D.O. for payment from the

latter's drawing account. The abstract of bills showing

all necessary adjustments

and recoveries and, when required, a receipt of payment

of any sums held in

deposit will be prepared in the Division Office and

the pay order will be made by

the E.E.

For the works which are approved to be split up by competent authority, the M.Bs.

And bills for each part of work should then be maintained separately and the final bill for each part when it is completed,

STORES

A.- General

4.070. The stores of the W.D. are divided into th

the following classes:-

(i)

Stock –

Consumable materials like cement, steel, pipes, paints, spare parts of machinery, P.O.L., tyres, tubes etc. fall in this category.

(ii)

Tools and Plants.-

Such equipments which can be shifted from one work site to another work site as and when required for the construction activities fall under this category e.g., spades, pickaxes, vehicles, road rollers, drilling rigs, concrete mixer /vibrator, compressor, jack hammer etc

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(iii)

Road materials. –

Metal, moorum, gravel etc. fall in this category.

(iv)

Material charged direct to work. –

Materials, which are accounted for in “Materials at Site Account” fall in this category.

Also the machinery which shall be fixed or embedded at one place permanently shall fall in this category e.g. electric motor or pump to be fixed in pump house, electric switches etc.

(v)

Materials charged to office contingencies.–

Stationery, furniture, typewriters, calculators, duplicating machines, copying machines, air conditioners, air coolers, water coolers, office cycle, three wheelers, blankets, warm clothing etc. fall in this category

Stock

4.081. Ordinarily, materials should be purchased only for works in progress and petty stores obtained from a supplier and no “Stock” sh

ould be kept for such items.
 But where it is considered necessary the S.E. may sanction the holding by any Division of "Stock" of a value not exceeding Rs 1,00,000, any value in excess of this limit being subject to the sanction of the C.E. . If such "Stock" limit is sanctioned, the S.E. is authorised, subject to the approval or sanction of the estimate therefore, where required by the provisions of paragraph 4.080, to manufacture or collect materials within the sanction limit.
 The money limit of the "Stock" should be kept at the lowest point compatible with efficiency, and the Stock returns of the Divisions should be carefully scrutinised by the S.E. from time to time with reference to this point. D.A. shall issue following certificate to S.E., by 15th of every month regarding "Stock" value of previous month:-
 "Certified that the value of the "Stock" materials in hand is Rs..... as per the b monthly account for the month of The money limit of the "Stock" fixed by the C.E./S.E for the concerned financial year is Rs" .

What are building bye laws ?

When planning to construct a property, it is imperative to thoroughly understand the term 'building bye laws' to avoid future conflicts. Legally abiding, building bye laws are the construction norms set by the government authorities to ensure uniform development and protect buildings against internal and external hazards. 99acres elaborates on the term and its significance.

According to the definition, building bye laws, commonly misspelt as building by laws, are the norms set forth by the government authorities such as the Ministry of Urban Development Affairs (MUDA) and City Corporation and Developing Authorities. For instance, the Bangalore Development Authority (BDA) determines the building bye laws in Bangalore. These norms are legal tools that regulate the [architectural and construction aspects](#) of buildings to achieve orderly development in an area. They are crucial in protecting buildings against fire, earthquake and structural failures. The development authority does not approve a building plan if it fails to adhere to the bye laws.

Purpose of building bye laws

- Ensure uniform development of buildings in societies as well as towns
- Affirm public safety against noise, fire, health hazards and structural failures
- Ensure optimum utilisation of space
- Follow approaches which safeguard complete health, safety and comfort of residents, such as proper ventilation, air, light and other essentials

Building bye laws include norms related to the following:

- [Floor Area Ratio](#) (FAR) and ground coverage
- Density
- Basement and parking spaces
- Setbacks and projections
- Area and its usage
- Building height and other service spaces
- Provision for lifts and basement area
- Site design and service design– sewerage, electrical design, and water, among others
- Building line
- Amalgamation

Holistically, building bye laws are a set of rules that define the construction limits of a structure within a province/city/state. For those desirous to get a property constructed or those who belong to the construction industry, it is important to delve into the building bye laws prevalent in the area of construction. Any deviation from the set rules might result in the property being deemed illegal in the future.

Ex- white washing , colour washing , etc.