Earth work for building construction

Elements of Building construction

Trenches - for construction
Embankment - for "
Tempory → any shape.
permanent

(1) Type of soil - sandy soil
clayed soil

(2) angle of repose.

[illegible]

θ = angle of repose

Facts to be considered in selection of site for a building

(1) Is the land liable to flood? → health / building [illegible] [illegible]
(2) what is the type of sub soil? — To check building [illegible] - foundation design
(3) what is the aspect and ~~prose~~ Prospect?
[illegible] [illegible]

[illegible]

(4) Is water supply readily available?

(5) can electrical and gas services laid without probitive east.

(6) will the drianage enter the local sewer or will other means of disposal, such as as a sepite tanke house to be built.

Pile fondation → [illegible]

[illegible]

ptdable — good to drinke.

free of toxic chemicals.

disease causing micro orgamism.

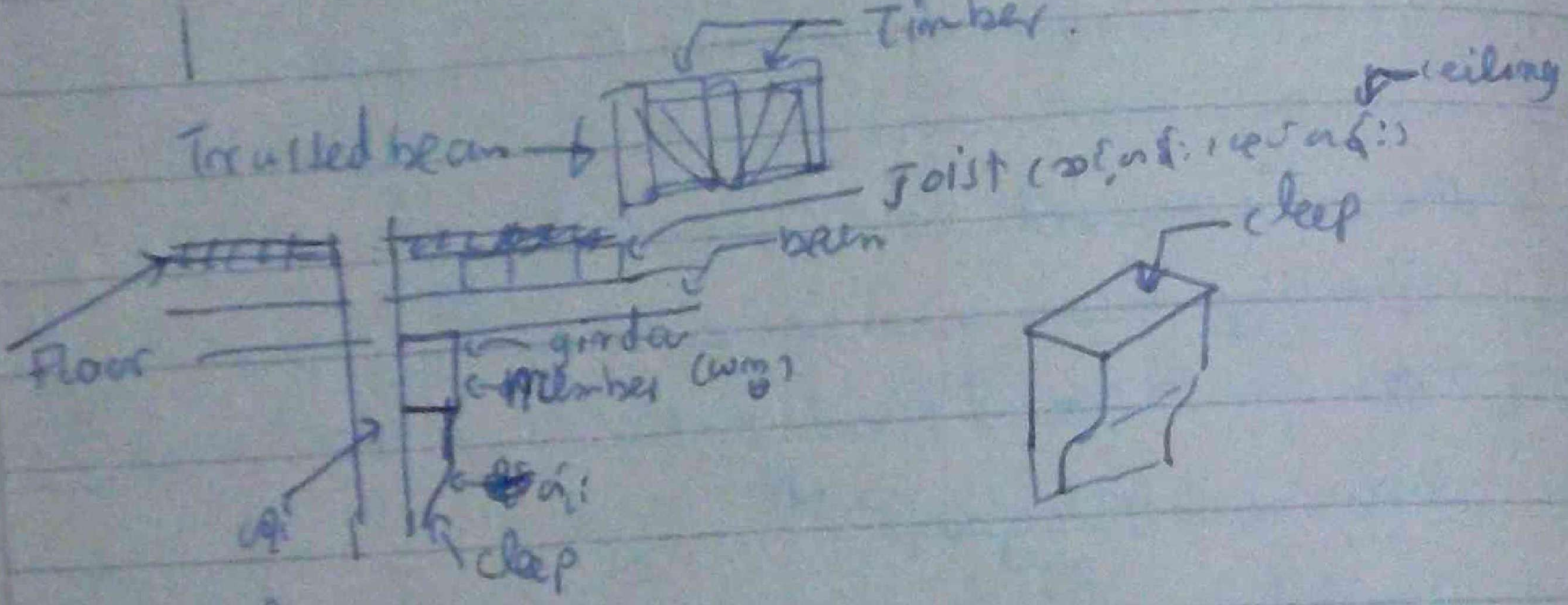
16-6-015

(7) whether the land is in any way scheduled for town-planning or re development. Town planning and By-law approval will be required.

Are there any restriction on the land itself.

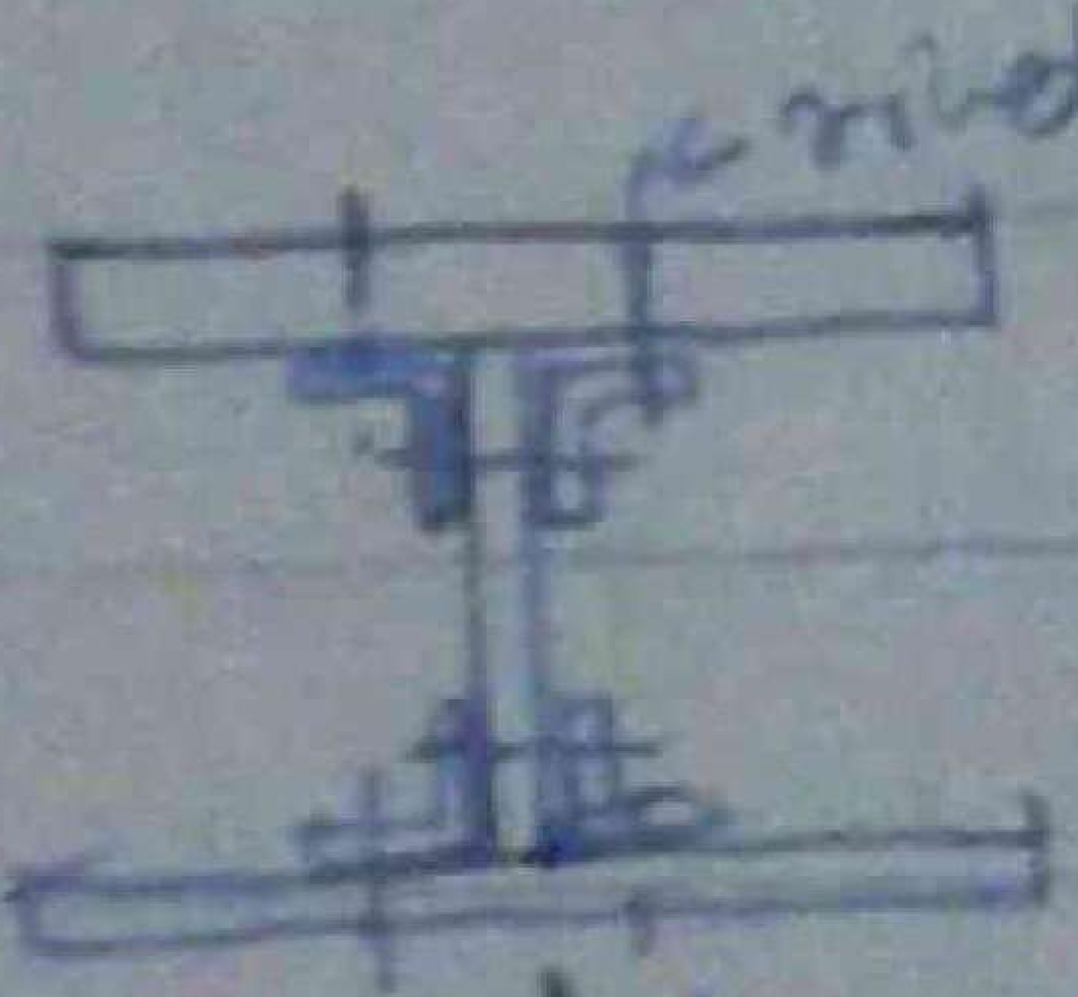
(8) Do the local authorities stipalate that only acertain type or design of house shall be erected.

Perlin – [illegible] ([illegible])

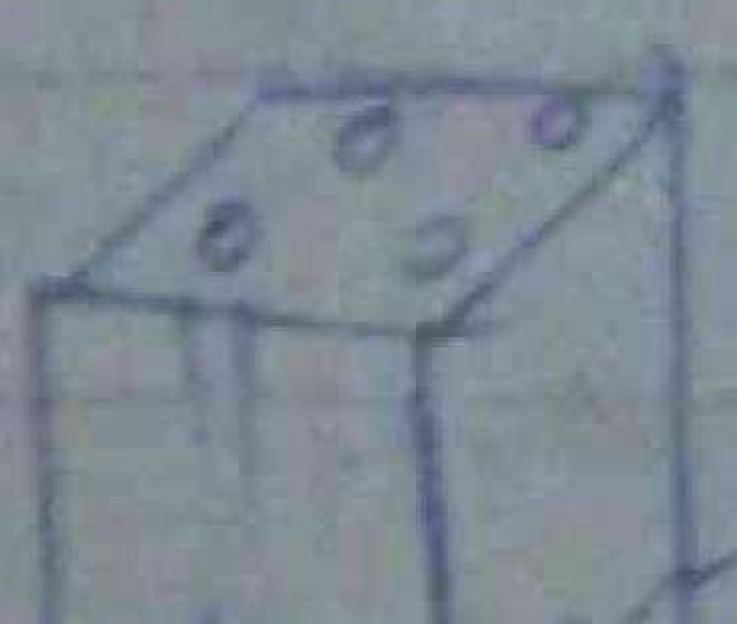


Steel section

I section, girder [illegible] (channel) [illegible] ⊏
[illegible] weight [illegible] angle L (angle Iron)



Steel filtched beam



Colums Strats and Ties

column - posts, pier (vertical members)
~~Timber (posts)~~ Timber, stone, brick, concrete R.C.C
Steel
(main force - compression)

Strut short column vertical or at an angle
(Beam) compressive member.

Tie any member under tension, may be any angle or vertical.

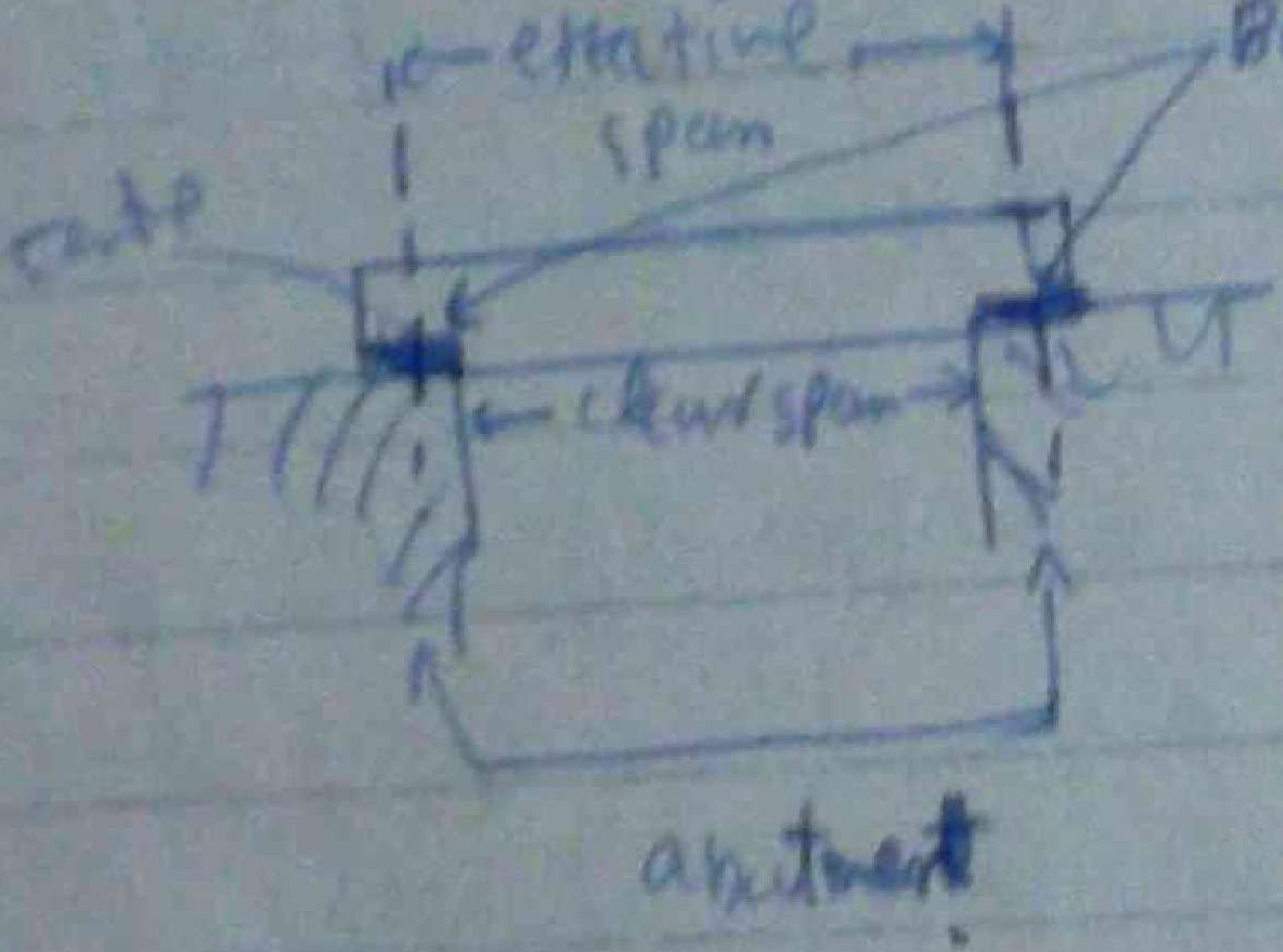
Terms

① clear spans of a beam
The horizontal distance between the abutments.

② Effective span - the distance between the centre of the bearing surfaces of the joints on the supports. This is taken to be length for purposes of calculation

③ Bearing Surface

The part of the lower face of the beam which rests upon the support.

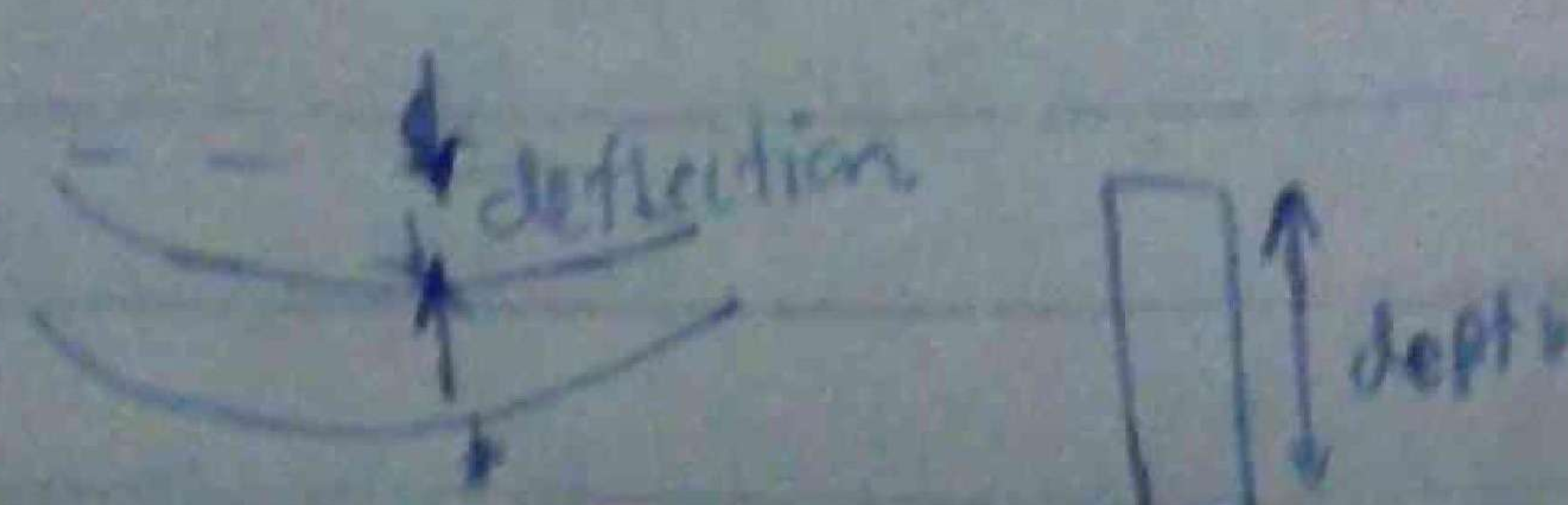


Depth of a beam

The depth of the beam to have the necessary stiffness to limit deflection.

[illegible]

(beam [illegible] of deflection [illegible])



deflection should be minimum.

3/sol. (railways / 1/1/21

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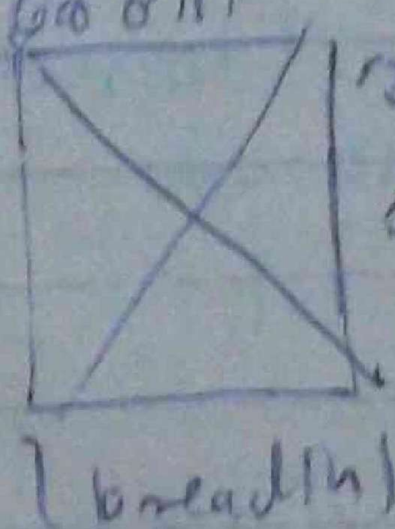
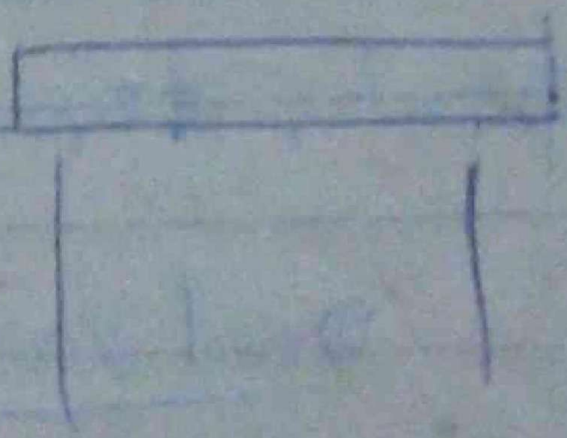
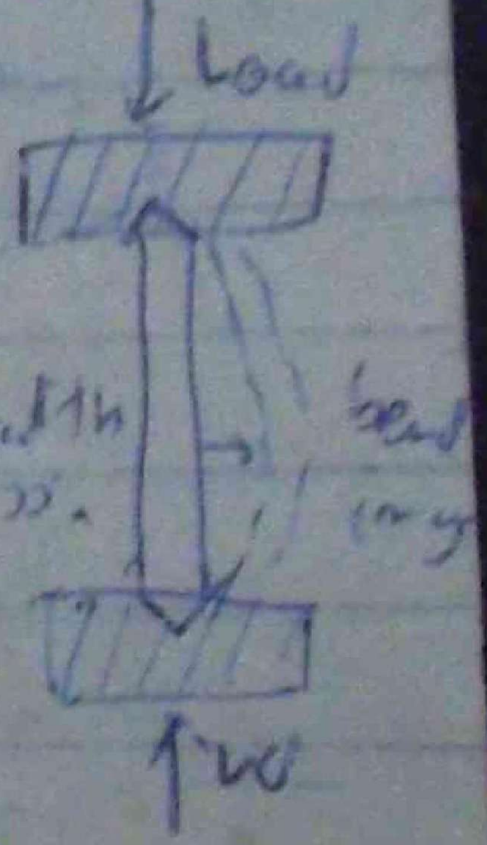
Breadth of beam - This is frequently determined by the breadth of the load to be supported as in the case of a beam supporting a ~~wall~~ wall but in cases where the beam has no lateral support the breadth must be sufficient to buckling - load of breadth of beam for buckling







Buckle

~~Buckling~~

The breadth ~~is~~ big.

⑥ load - The load consists of (a) the dead load comprising the weight of the beam floor coverings and all permanent fixture and (b) the superimposed load (or all loads other than dead loads such as furniture and occupants termed live loads.

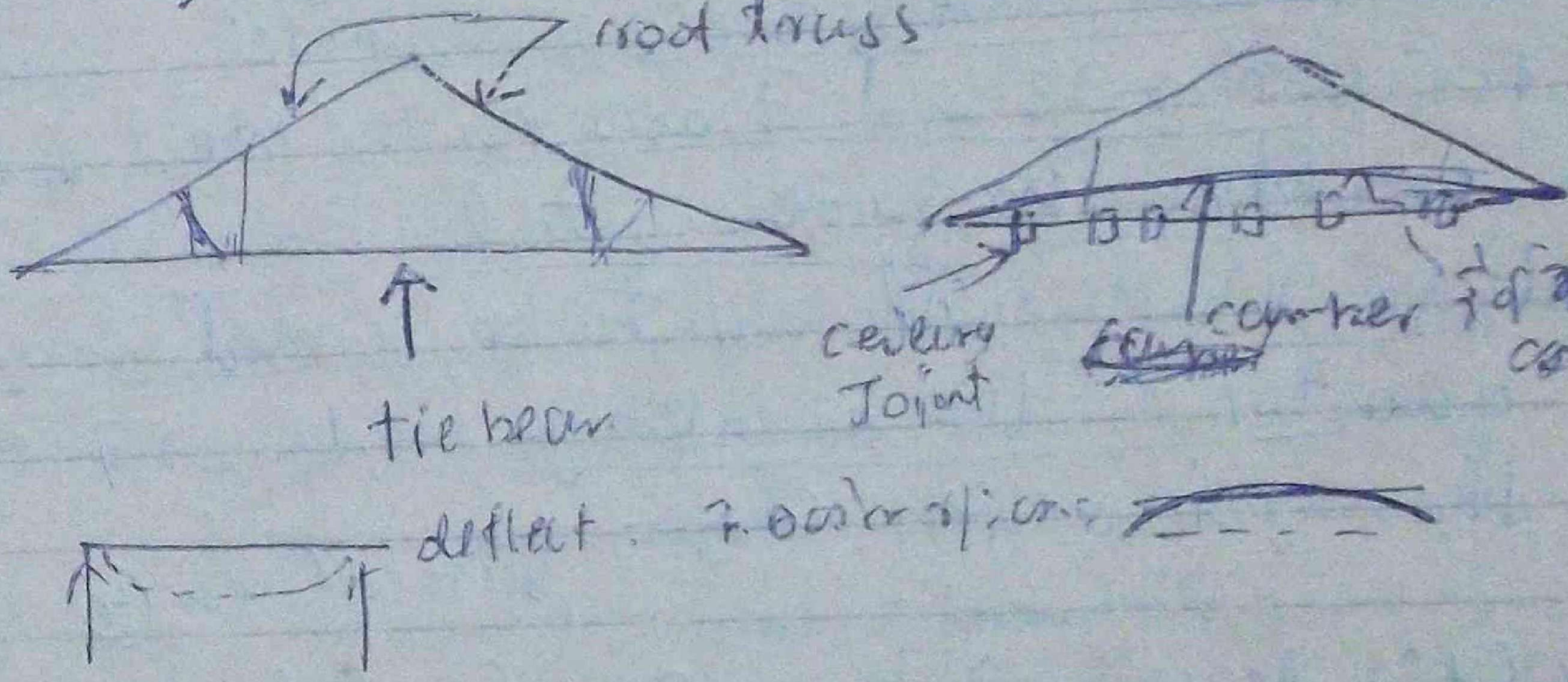
Dead load

superimposed load - Load of occupant

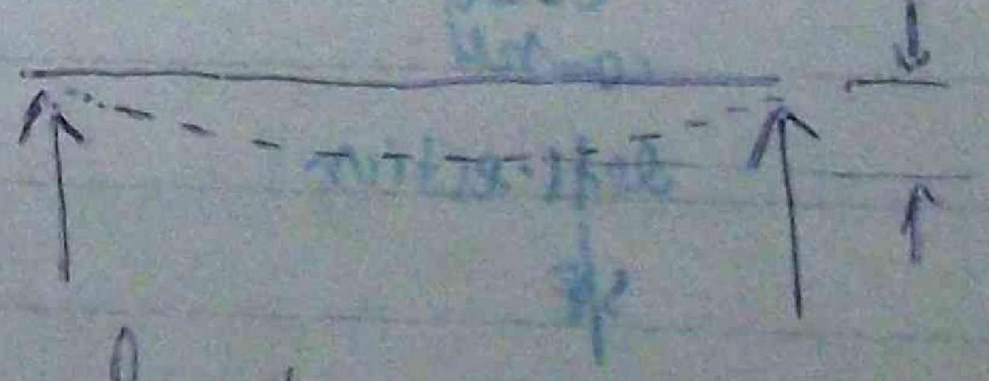
Total load ~~is~~ is Designed for

⑦ Camber - This is a vertical curve in an upward direction. Iron the bearing points Beams are sometimes cambered to allow for the deflection of the beam when

and to avoid the apparent sagging that exist in all long horizontal lines. This applies particularly to the tie beam in a roof truss



(8) Deflection - The amount a beam bends from its original position. The main consideration in designing beams and floor slabs is to limit the deflection so that it is not noticeable when the load is applied.



(9) Strength of steel and concrete. The value of the concrete in compression and the steel in tension is measure in lb per sq. in (psi) or kg/cm²
~~ultimate~~ ultimate stress are approximately 3,000 psi for concrete and 72000 psi for steel obviously would be un-safe to load a beam right up to these limits is allowed to be loaded to only a quarter of the breaking load (ie) 750 psi and 18000 psi respectively.

Safety factor (4)

ultimate stress or 1/4 [illegible] design [illegible]

Highway and Railway notes [illegible]

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span ✓

width
load
control

(9) What is the permitted density of people houses or rooms per acre?

(10) For what purpose has the land hitherto be used?

(11) Who are the adjoining owners and do they enjoy any rights of way light or of drainage over the land or if any road changes are likely.

(6) <u>waste disposal system</u>

conduit [illegible]

building [illegible] waste [illegible] local <u>sewer</u> ← conduit carrying liquid waste.

sewerage.

dispose → [illegible] sanitary disposal → [illegible]

[illegible]

(7) schedule for town planning - [illegible]

[illegible] land [illegible] / [illegible]

- Town planning [illegible] By law - [illegible]

- [illegible] <u>[illegible]</u>

restriction.

(8) Authorities - ...
stipulate - ...
erected - ...

(9) Per acre - unit area.

(10) ~~further~~ ...

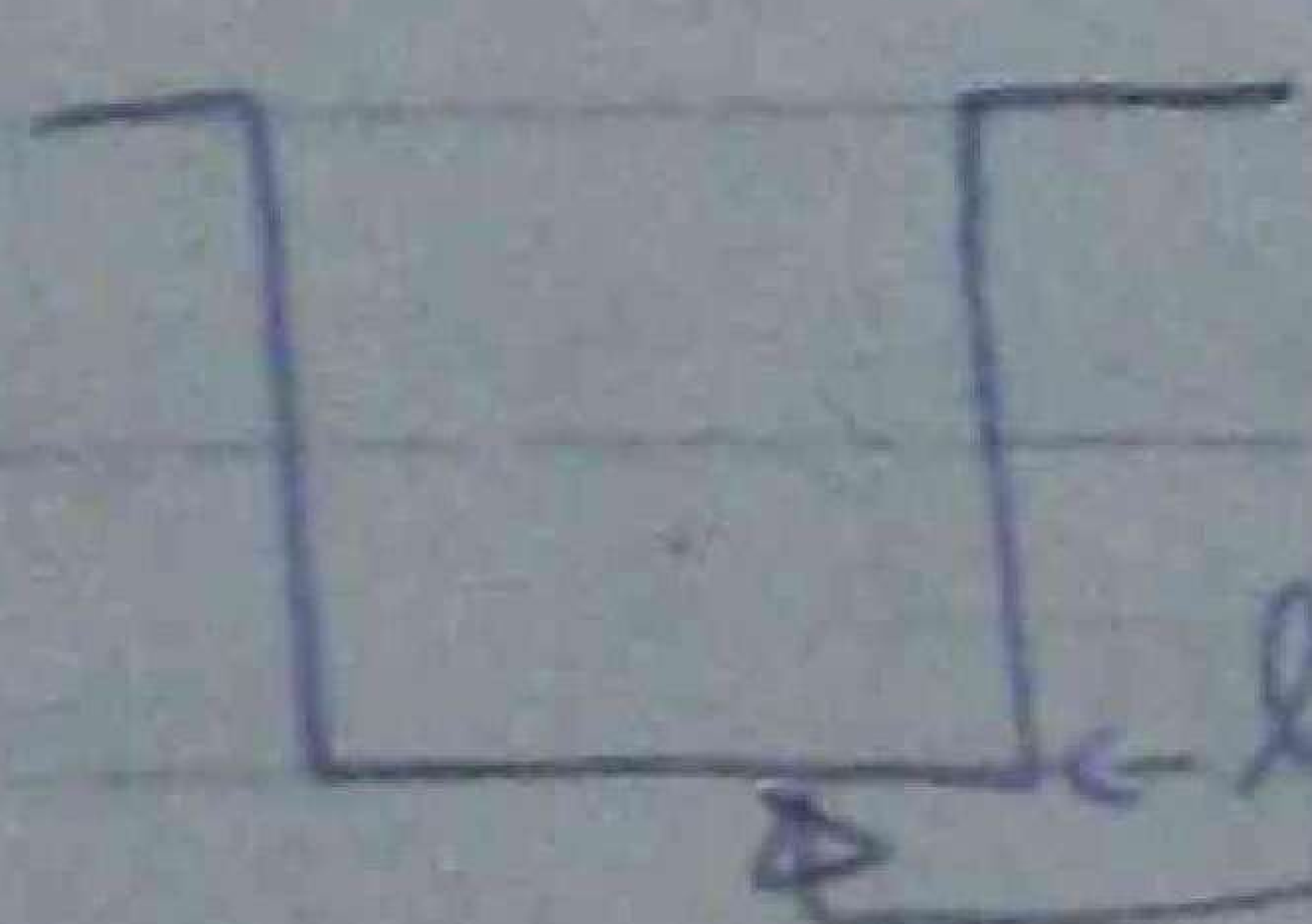
(11) adjoin - ... enjoy - ...
right of light - ... change - ...
Board: and enjoy - ...
road change are likely - ...

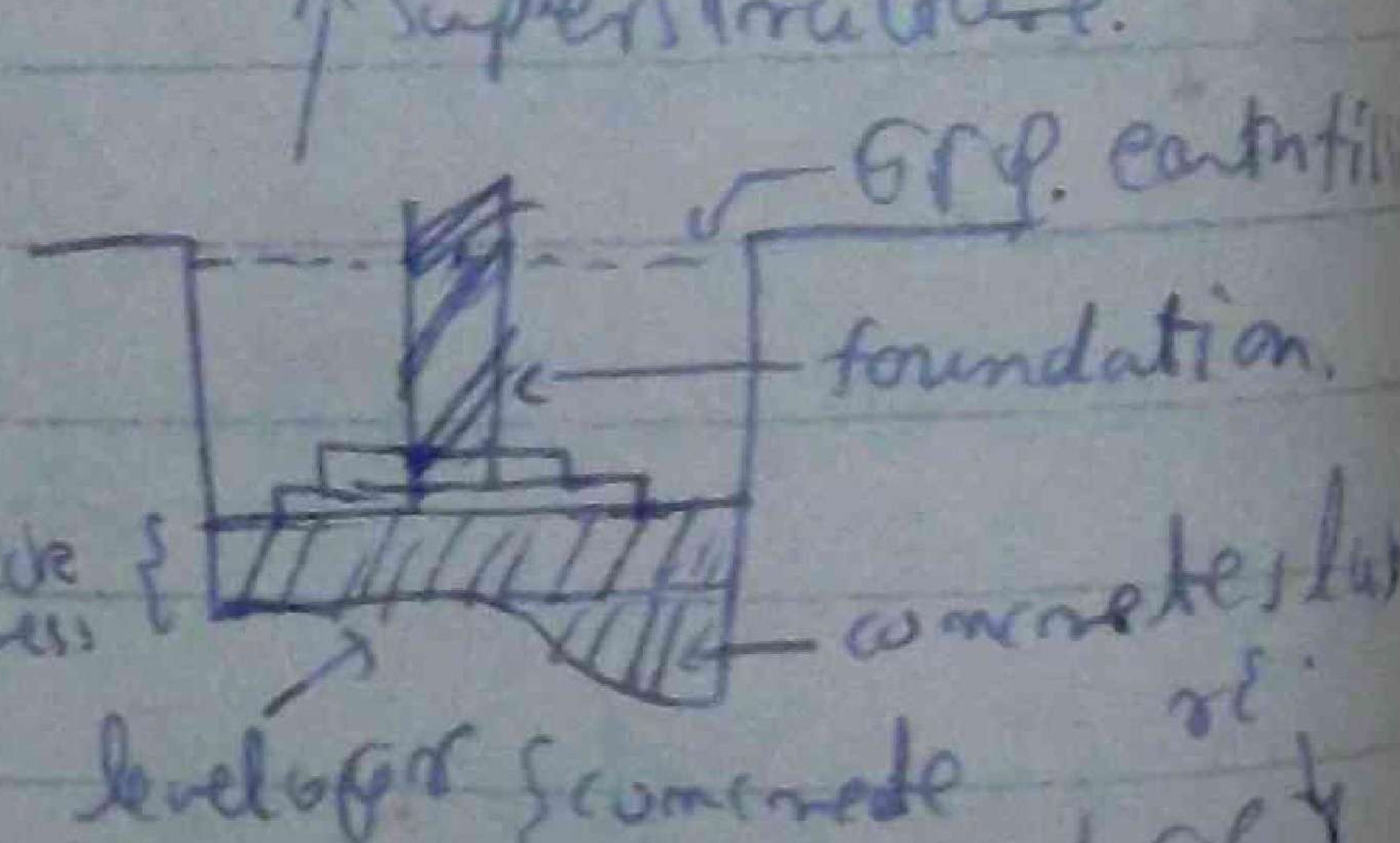
Step in erecting a Building

1. ...
2. concreting
3. ~~carpentering~~ carpentary (or) bricklaying
4. plumbing (for Roofwork)
5. slatinger tiling
6. Joining
7. Glassing

8. plumbing (for sanitary work
9. Plastering
10. Electrical wiring
11. Gas fitting
12. Drain ~~laying~~ laying
13. Flooring
14. Painting and decoration

1. Excavation - earth digging ([illegible]) according to the foundation plan.
Temporary earthwork.





2. Foundation [illegible] concrete [illegible].
3. Bricklaying [illegible] carpentry [illegible]

8. Plumbing - [illegible] [redacted] [illegible]
[illegible]
[illegible]

④ Slating or tiling (roofing, [illegible])

(C.I sheet, ([illegible]) corrugate Iron sheet)

P.C sheet ([illegible])

[illegible]

Tile

⑤ <u>Joining</u>

carpentary for detail | [illegible]

- wall - wall frame
- Door - door frame
- window - window frame

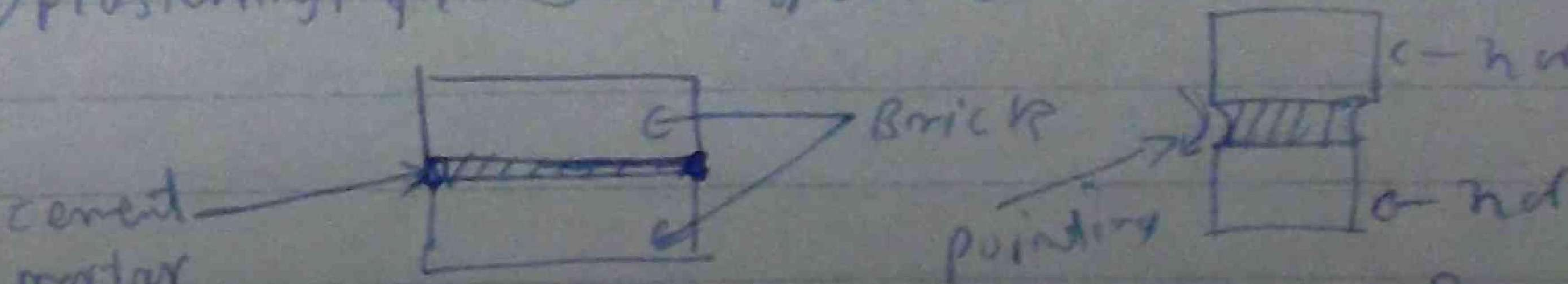
| Fun light window [illegible]

⑥ glassing [illegible]

⑦ plumbing (for sanitary)

kitchen, w/c, Bath, Basin, sewer pipes, sink.

⑨ plastering / [illegible]



[illegible]

9 → 10 = External wiring

10 → 9 = Internal wiring.

(12) Drainlaying - for storm water

sewage - liquid wage.

Sewage

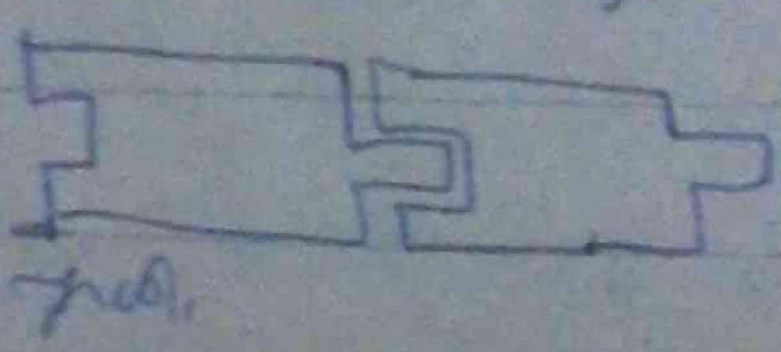
- ~~Domestic~~ sewage (organic matter) passing etc
- Storm sewage
- Root
- combination system
- separate system

Storm sewage - surface drain, open conduit

(13) Flooring - Timber flooring plain

- concrete flooring PTd.

PTG ~~Planed~~ Planed Tongued and grooved



Parcel flooring

Mosic

(14) Painting & varnishing

9-7-24

Typical specification classes for Excavator (concrete and Brick layer.

(1) Clearsite - Allard or Clearing the site of all trees Stranded and bushes (GL) and for grubbing up all roots and reading away rubbish

(2) Surface excavation - Remove top spit 6" deep and deposit at area directed solid waste.

(3) Trench Rigging - Trenches are to be excavated to the lengths breadths and depths shown on drawing and the bottom of all trenches are to be approved by architect or engineer before any concrete is poured

(4) Filling - Trenches are to be filled immediately walls are above ground level the filling material to be well watered and rammed in 6" layers.

aggregate – concrete [illegible] [illegible] [illegible]

aggregate
(5) The ~~aggregate~~ is to be clean hard broken brick or clean gravel [illegible] to pass a 2" seve 2" [illegible]
and to be free from organic matter and other impurities.

(6) sand — The sand is to be clean ~~sharp a~~ sharp river or pit sand to be free from loam [illegible], clay and other impuritties and shall be washed

(7) concrete - concrete for foundation is to be in P proportional of one part of cement to 2½ parts of sand and 5 part of aggregate and is to be incorpated with the mim quantity of water to give workable [illegible]
[illegible]

(8) mortar – The mortar is to be composed of
[illegible]
one part of cement to 3 parts of sand and a sufficient quantity only is to be mixed for ~~[illegible]~~ immediate used.

24-7-24

Terms used for structural members

Beam

- Stone or concrete or Timber **lintel**
- **Timber boom** - a beam usually forming an integral part of roof truss beam such as a trussed **purlin**
- **Reinforced concrete beam (R.C.C)**
- steel beam or joist or girder
- **composite beams**

(a) steel flitched beams

(b) Trussed beams

Beam = Horizontal member.