

Class - 1

27/2/16

Syllabus:

Moaazem Sir

- Low-cost Road

- Equipments

- Construction of embankment

- Subgrade

- Base

- Flexible and Rigid surface

- Maintenance of Flexible and Rigid

Road Pavements.

Low Cost Roads:

Unsealed rural roads with earth and gravel/brick surfaces comprise the greater proportion of the length of public road in rural areas in developing regions.

21/5/15
Reliable rural road access improves

Marketing opportunities

* Low cost and predominantly gravel road.

(a) Road works.

stone chips

Marketing opportunities for subsistence

farmers. Impassable roads lead to

loss of market opportunities, spoiling

of crops, reduced or lost income

* कृषकों यात्रा के लिए रास्ता, ट्रांसपोर्ट सुविधा

का अभाव है। Transportation सुविधा

कृषक सड़क यात्रा करते, दृष्टिकोण से, खेती

— Social welfare. Maintaining inter-community access to family and friends has important social benefits, which help promote a better quality of life for the rural poor.

— Education through better access to schools and shorter travel times.

In BD, LGEP / Municipality / Zilla

Paved roads.

Earthen roads.

Gravel is appropriate where suitable

material is available.

Disadvantages:

— periodic re-gravelling

→ ଅନୁପାଳନ କରାଯାଇ ନାହିଁ - 02

→ Embankment ବାହାରେ 24

→ Gravel ପଥର ପଥର

→ Gravel ଓ price ବୃଦ୍ଧି ହେଉଛି

health hazard, discomfort and

— ଅନୁପାଳନ କରାଯାଇ ନାହିଁ

— Dust ହେଉଛି

— ପଥର ପଥର

— ଅନୁପାଳନ କରାଯାଇ ନାହିଁ

— brick surface

— Gravel surface

During rainy periods, ପଥର ଲିପି,

ଅନୁପାଳନ ନାହିଁ Fertility ବୃଦ୍ଧି

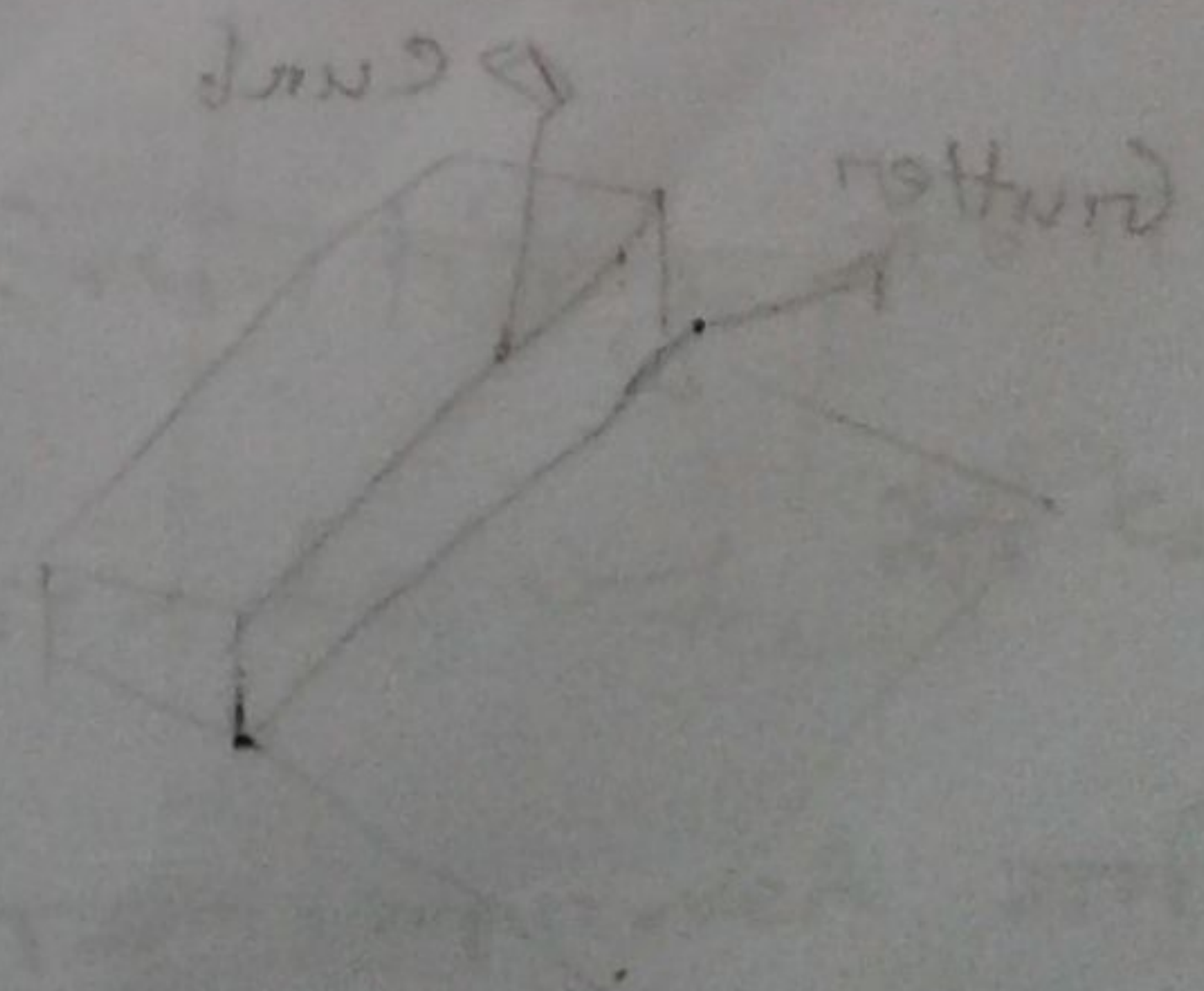
— ଅନୁପାଳନ କରାଯାଇ ନାହିଁ

Non-renewable roads.

18-10-19

References:

- ① ~~Highway~~ Highway Engineering → Wright
- ② Sim Note →



Drainage - Roman for drainage
 Later on car firmment filter → stable
 18th century

Drainage quality 23-240- Road quality depend

Class-2

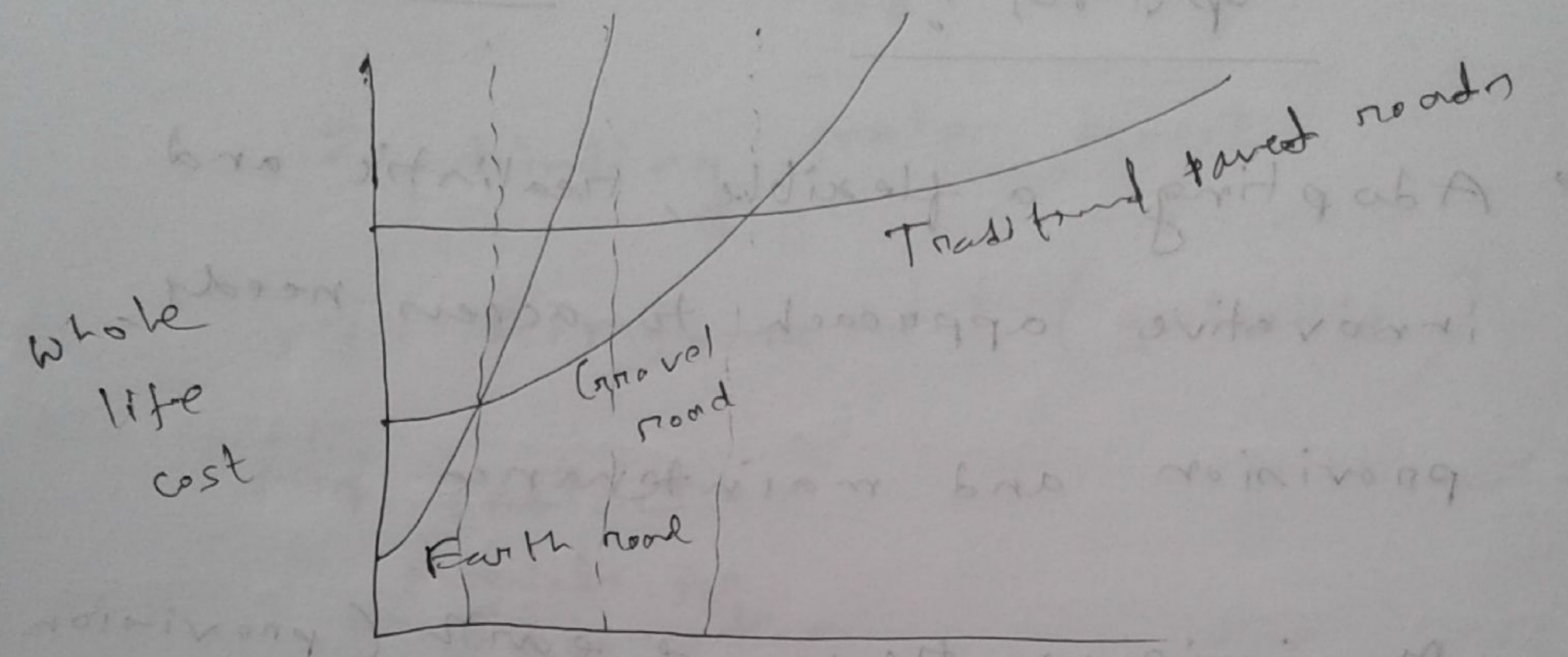
5/3/16

Moaazem Sir

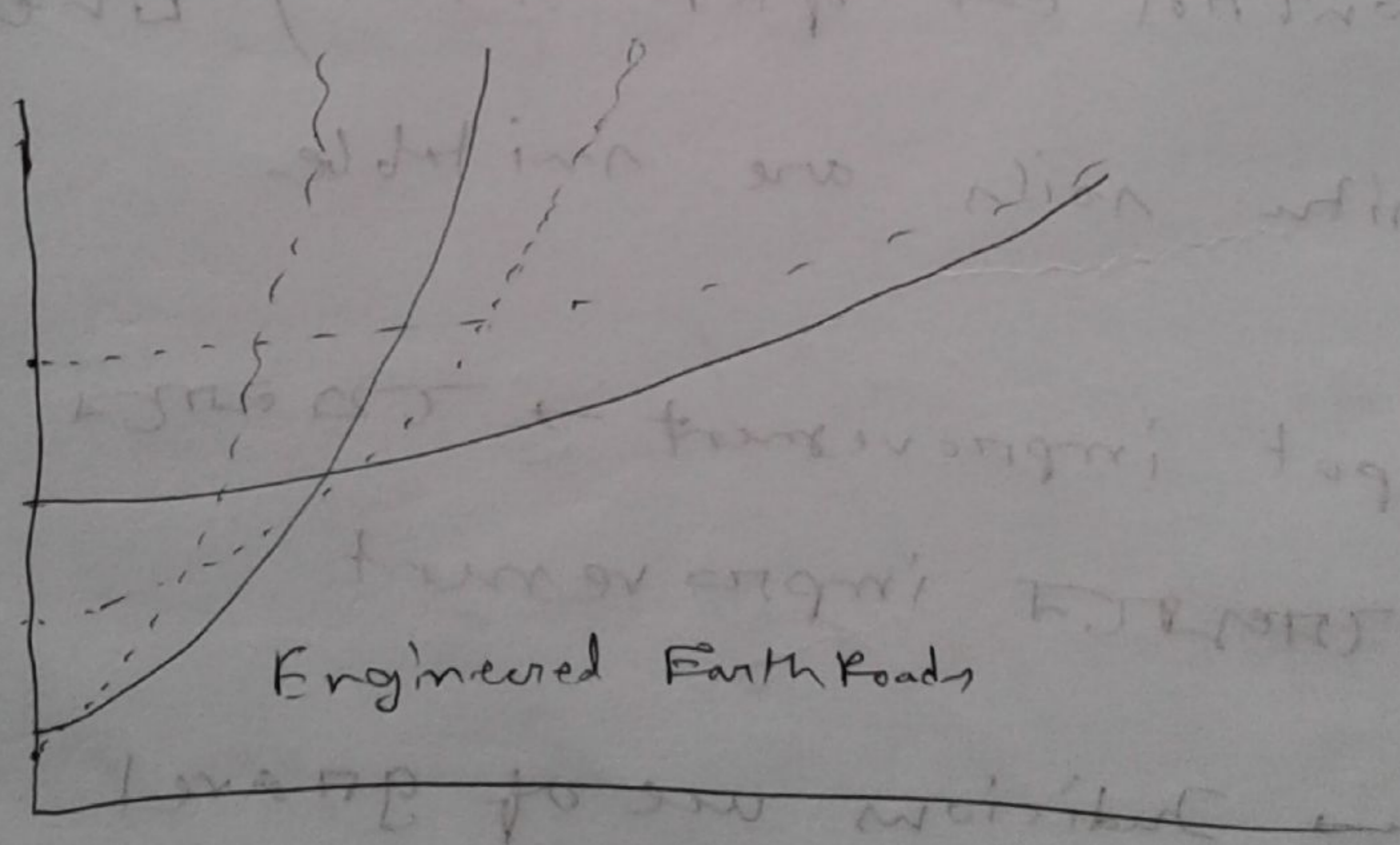
Options ?

- Adopting a flexible, realistic and innovative approach to access needs provision and maintenance
- Maximizing the use of earth (provision of good camber, drainage and traffic control can often be achieved where in-situ soils are suitable)
- Spot improvement →
→ Judicious use of gravel
→ provision of short section of bituminous on non-bituminous surfacings.

2/3/16 → Initial cost and maintenance cost long term



→ Traffic



→ Provision of what is better
 differences in road performance
 and factors

Table 1: Schedule of Alternate Road surface

improvements

	<u>Road Surface</u>	Description
C1	<u>Environment options</u> Paving Road surface	
C2	Light Grading Reshaping of Surface	
C3		

Dhaka city use \rightarrow C16: Bitumen
Slurry Seal Surface
(and "Cape" seals)

IEB \rightarrow Institute of Engineers Bangladesh
BSTE \rightarrow Bangladesh Standards and Testing
Authority

Class-3

Test material A

12/3/16

Moatzen Sin

C17: Bituminous Premix Macadam Surface

C18: Penetration Macadam Surface

C19: Water bound Macadam Road base:

जाड़ि बालासुरा इन्डु बालासुरा एडु न,

but बालासुरा योडु नारु ।

C20: Dry bound Macadam Road base:

Water न दियु just vibratory compaction

दियु करु एडु ।

C21: Slurry bound Macadam Road base:

only bitumen न दियु जा माएर sand min करु ।

C22: Crushed stone Road base:

उन्डु specifically बलुन दियु, मूडु

crushed stone use करु ।

C23: Mechanically Stabilised Roadbase:

Mechanically → pressure

Roller →

C24: Chemical or Emulsion Stabilized

Road base:

— Asphalt or bitumen emulsion form

— To increase the performance under water

— Same particle or same charge particles, water will repel them, causing them to drain away.

C25: Improved using Recycled Materials:

— Subbase 1 दिव पाठि,

— Surface 2 दिव मा,

Engineered Earth Roads

Bituminous Soil Stabilization:

Material:

- Well graded soil, sand, clays: very

fine ones are avoided

- Rapid / medium / low curing liquid

asphalt or

Field Control:

- By monitoring compaction and

relevant CBR value

dry density \uparrow CBR value \uparrow

Oiled earth surfaces:

* Clay की शक्ति → plasticity की,
जिसका हल था,।

Cement Stabilization:

Material:

- Soil suitable for subgrade
- Portland cement

Field Control:

By

Lime Stabilization

Material:

- Plastic clay soil
- Lime
- Water

Cement and Water Content - fixed

~~... ..~~

Cement 2 stabilisation:

Material:

- Soil suitable for unbound

- Portland cement

Field Control:

B₂

Line 2 stabilisation

Material:

- Blends clay soil

- Lime

- Water

Class - A

2/4/16

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Appropriate Seals:

Sand/grit seals:

Slurry seal

Chip seal seals

Graded aggregate seals:

Single surface dressing & double

surface dressing

SEAL options:

Table 1: Bituminous surfacings for

low volume roads.

Road treatments in Bangladesh:

Rural Road section with HBB Pavement

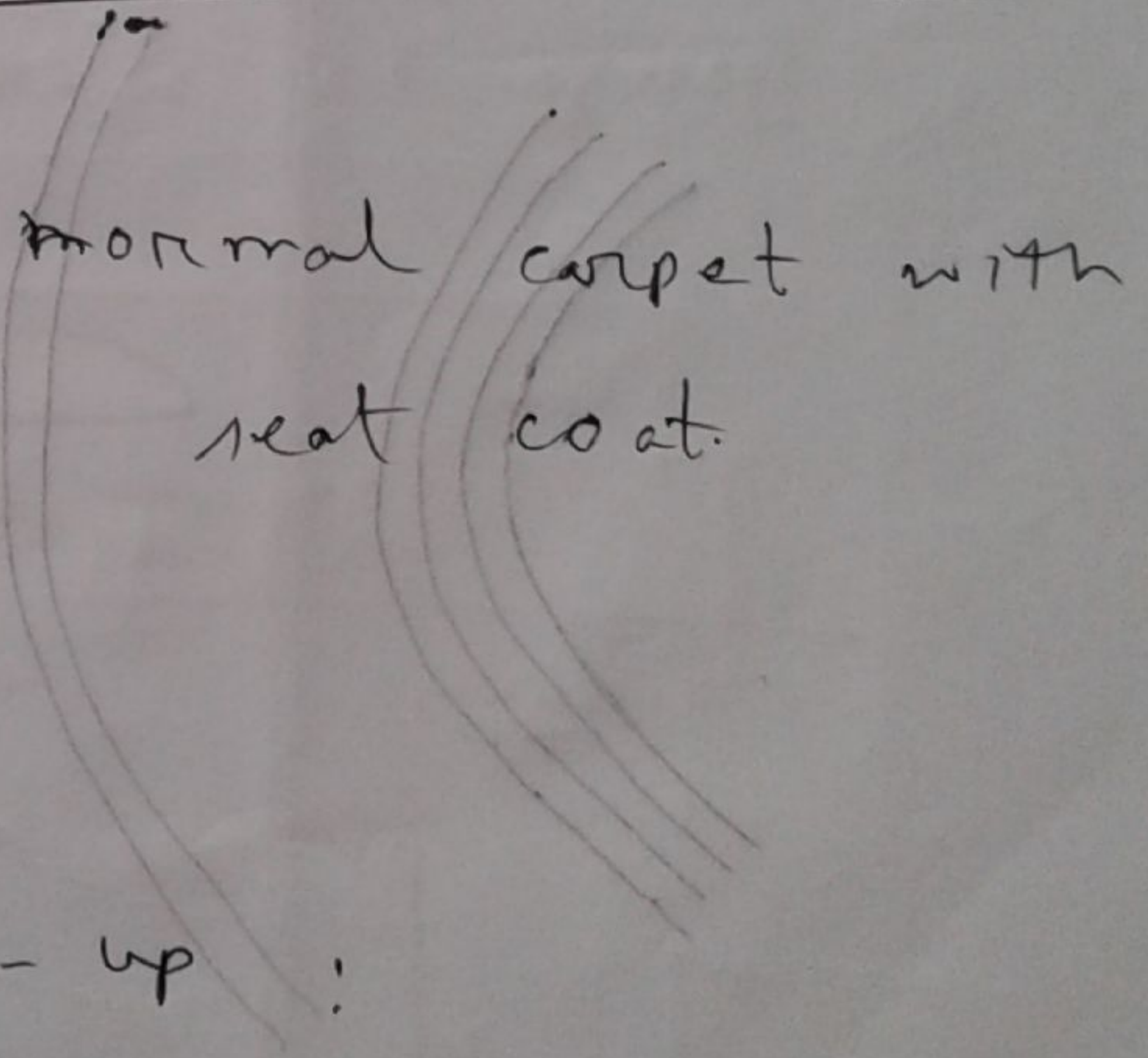
Herringbone Bond brick pavement.

Sand blasting technique = 1% sand layer above

HBB

Single and double surface dressing:

Normal carpet,



NGO

Low cost wrap-up :

Ann-5

9/4/16

Dr. Moazzem Sir

Low Cost Wrap-up

Equipments

Manufacturers

Forestry Equipment:

Forklift : Palette কে (তিনটি কন)

Generator set: Temporary power connection

Motor Grader: বিভিন্ন grade করা জন্য

Pipe layer: Pipe lay করা জন্য

Pump:

Skid steer: বেশি load একে রাখা (যদি)

অন্য কাজে নেওয়া

Trailer:

Boring machine / cable plow

0

* Initial temp. $\rightarrow 300^{\circ}\text{F}$

* Lay ~~at least~~ at least 185°F

* ~~at~~ 160°F ~~is~~ ~~not~~ ~~open~~ ~~for~~

Road construction

General construction operation

Construction equipments:

Mobilization

Maintenance

Class - 6

23/4/16

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Construction Equipment - General Requirement

Mobilization

275 kwh prepared, 9357

275 kwh prepared, 9357

Maintenance of Traffic:

Alternative Traffic Control Plan:

Detour

Install and maintain adequate traffic

Control

Tools and devices

Prevention, control and Abatement

Contractor Quality Control General Feeds

Clearing and grubbing:

Next Class 2 C.T.

of fine differences (rigid + flexible)

ATTENTION (C.M.S. Program)

- Control
- Program
- Review

Ques-7

7/05/16

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Excavation and embankment

Regular excavation

Another damification

Materials for embankment

Embankment construction

Dry fill construction method

Hydraulic method

Compaction Requirement :

Verification Comparison Criteria and Resolution

Procedures

Construction Quality

21/10/15

Page No

Base Construction

Graded agg. Base

Transporting aggregate

Spreading Aggregate

Compacting and Finishing Base

Prime and Tack Coats for base course

Hot bituminous Mixtures

Next week → CT → Embankment
and base construction

[entire lecture]

Class-8

14/5/16

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HOT bituminous Mixtures.

Asphalt plant:

Preparation of asphalt cement:

Blending of Aggregates,

Transportation of Mixture:

Preparation of Application Surfaces:

Compacting Mixture:

Standard rolling procedure

Surface Requirement:

21/2/21

8/10/20

Planning and execution of construction

Gantt chart

CPM

Team organization of mixture

Preparation of Application surface

Control of Mixture

Standard testing procedure

Surface treatment

Class - 9

28/5/16

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Construction of concrete pavement

Drainage facility जो वही subgrade Lean

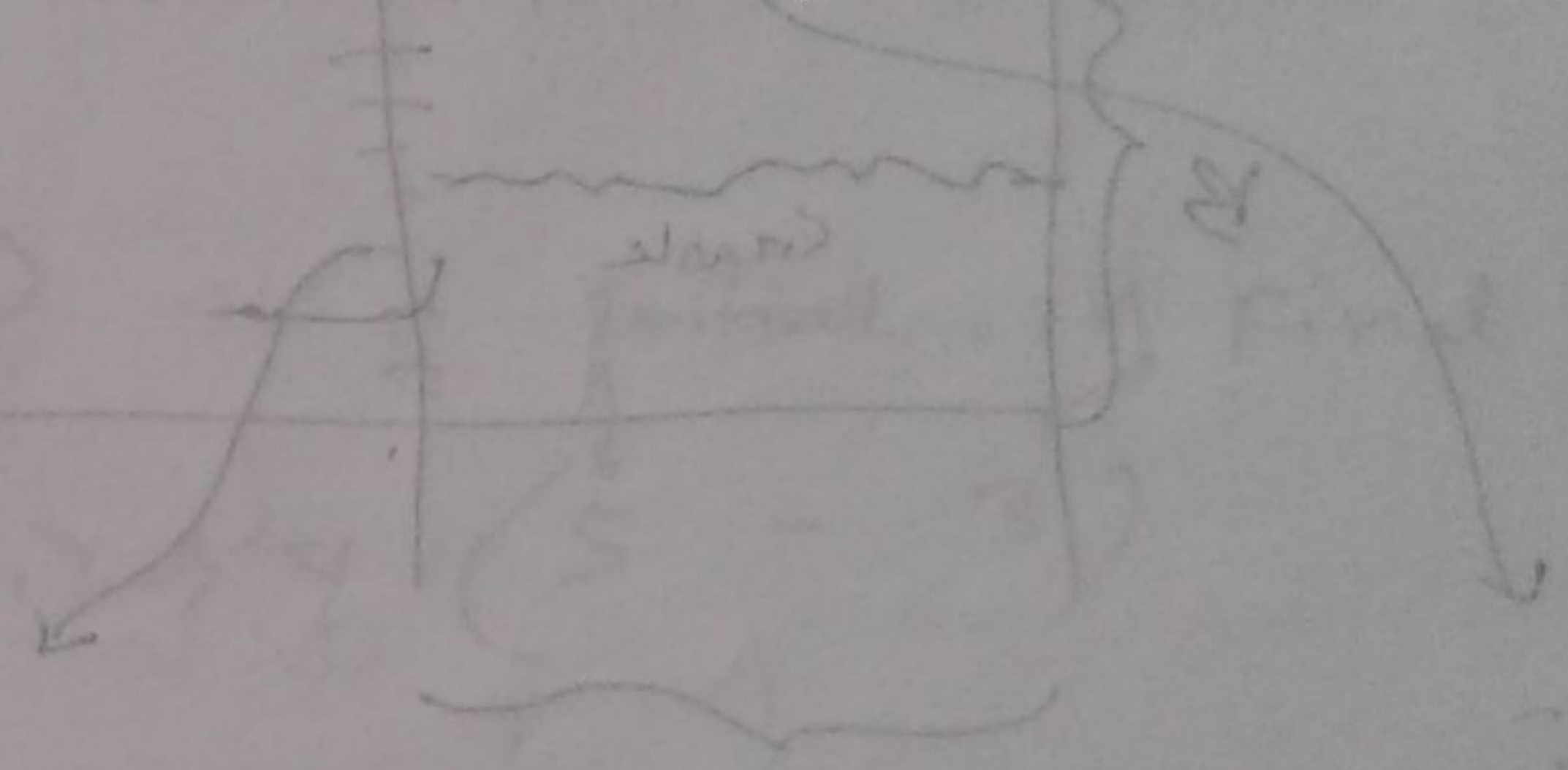
पंपिंग से वही।

Steps:

1.

2.

Slab curling



1.5 x 2.5 x 0.15

$\frac{B}{L} = \frac{0.15}{2.5}$

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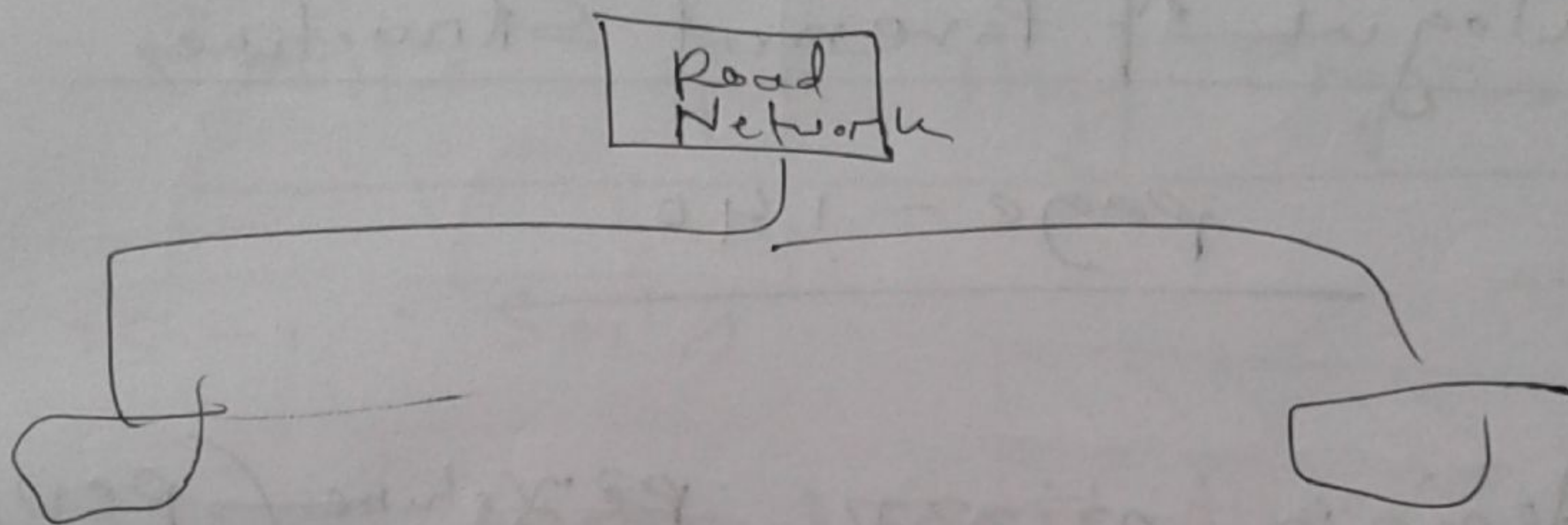
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class-10

Maintenance

4/6/16

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Maintenance management system

Table 1