LESSON PLAN : TH-1. LAND SURVEY– II,FOR THE SESSION 2025-26 (SUMMER-2025), GOVT. POLYTECHNIC,BERHAMPUR		
Discipline: civil engineering	Semester: 6TH	Name of the Teaching Faculty : RUPELI KUMARI PATRO
Subject: TH.1-LAND SURVEY–II	No. of days/ per week class allotted: 5	Semester From Date : 22-12-2025 to Date: 18-04-2026 No. of Weeks: 15
Week	Class Day	Theory/ Practical Topics
		1 TACHEOMETRY:
		(Only concepts; applications without derivation)
1ST	1	1.1 Principles, stadia constants determination
	2	1.1 Principles, stadia constants determination
	3	1.2 Stadia tacheometry with staff held vertical and with line of collimation horizontal or inclined, numerical problems
	4	1.2 Stadia tacheometry with staff held vertical and with line of collimation horizontal or inclined, numerical problems
	5	1.2 Stadia tacheometry with staff held vertical and with line of collimation horizontal or inclined, numerical problems
2ND	1	1.2 Stadia tacheometry with staff held vertical and with line of collimation horizontal or inclined, numerical problems
	2	1.2 Stadia tacheometry with staff held vertical and with line of collimation horizontal or inclined, numerical problems
	3	1.3 Elevations and distances of staff stations – numerical problems
	4	1.3 Elevations and distances of staff stations – numerical problems
		2 CURVES :
	5	2.1 compound, reverse and transition curve, Purpose & use of different types of curves in field
3RD	1	2.1 compound, reverse and transition curve, Purpose & use of different types of curves in field
	2	2.2 Elements of circular curves, numerical problems
	3	2.3 Preparation of curve table for setting out
	4	2.4 Setting out of circular curve by chain and tape and by instrument angular methods (i) offsets from long chord, (ii) successive bisection of arc, (iii) offsets from tangents, (iv) offsets from chord produced, (v) Rankine's method of tangent angles (No derivation)
	5	2.4 Setting out of circular curve by chain and tape and by instrument angular methods (i) offsets from long chord, (ii) successive bisection of arc, (iii) offsets from tangents, (iv) offsets from chord produced, (v) Rankine's method of tangent angles (No derivation)
4TH	1	2.4 Setting out of circular curve by chain and tape and by instrument angular methods (i) offsets from long chord, (ii) successive bisection of arc, (iii) offsets from tangents, (iv) offsets from chord produced, (v) Rankine's method of tangent angles (No derivation)
	2	2.5 Obstacles in curve ranging – point of intersection inaccessible
		3 BASICS ON SCALE AND BASICS OF MAP:
	3	3.1 Fractional or Ratio Scale, Linear Scale, Graphical Scale
	4	3.2 What is Map, Map Scale and Map Projections
	5	3.3 How Maps Convey Location and Extent

5TH	1	3.4 How Maps Convey characteristics of features
	2	3.5 How Maps Convey Spatial Relationship 3.5.1 Classification of Maps
	3	3.5.1 Physical Map 3.5.2 Topographic Map
	4	3.5.3 Road Map 3.5.4 Political Map
	5	3.5.5 Economic & Resources Map 3.5.6 Thematic Map 3.5.7 Climate Map
		4 SURVEY OF INDIA MAP SERIES:
6TH	1	4.1 Open Series map
	2	4.2 Defense Series Map
	3	4.3 Map Nomenclature
	4	4.3.1 Quadrangle Name
	5	4.3.2 Latitude, Longitude, UTM's
7TH	1	4.3.2 Latitude, Longitude, UTM's
	2	4.3.4 Contour Lines
	3	4.3.5 Magnetic Declination
	4	4.3.6 Public Land Survey System
	5	4.3.7 Field Notes
		5 BASICS OF AERIAL PHOTOGRAPHY, PHOTOGRAMMETRY, DEM AND ORTHO IMAGE GENERATION:
		5.1 Aerial Photography:
8TH	1	5.1.1 Film, Focal Length, Scale 5.1.2 Types of Aerial Photographs (Oblique, Straight)
		5.2 Photogrammetry:
	2	5.2.1 Classification of Photogrammetry
	3	5.2.2 Aerial Photogrammetry 5.2.3 Terrestrial Photogrammetry
		5.3 Photogrammetry Process:
	4	5.3.1 Acquisition of Imagery using aerial and satellite platform
	5	5.3.2 Control Survey
	1	5.3.3 Geometric Distortion in Imagery
9TH	2	Application of Imagery and its support data, Orientation and Triangulation
	3	Stereoscopic Measurement, 19.9.1 X-parallax, 19.2.2 Y-parallax
	4	5.4 DTM/DEM Generation
	5	5.5 Ortho Image Generation
		6 MODERN SURVEYING METHODS :
10TH	1	6.1 Principles, features and use of (i) Micro-optic theodolite, digital theodolite
	2	6.1 Principles, features and use of (i) Micro-optic theodolite, digital theodolite
	3	6.1 Principles, features and use of (i) Micro-optic theodolite, digital theodolite
	4	6.2 Working principles of a Total Station (Set up and use of total station to measure angles, distances of points under survey from total station and the co-ordinates (X,Y & Z or northing, easting, and elevation) of surveyed points relative to Total Station position using trigonometry and triangulation.
	5	6.2 Working principles of a Total Station (Set up and use of total station to measure angles, distances of points under survey from total station and the co-ordinates (X,Y & Z or northing, easting, and elevation) of surveyed points relative to Total Station position using trigonometry and triangulation.

11TH	1	6.2 Working principles of a Total Station (Set up and use of total station to measure angles, distances of points under survey from total station and the co-ordinates (X,Y & Z or northing, easting, and elevation) of surveyed points relative to Total Station position using trigonometry and triangulation.
	2	6.2 Working principles of a Total Station (Set up and use of total station to measure angles, distances of points under survey from total station and the co-ordinates (X,Y & Z or northing, easting, and elevation) of surveyed points relative to Total Station position using trigonometry and triangulation.
	3	6.2 Working principles of a Total Station (Set up and use of total station to measure angles, distances of points under survey from total station and the co-ordinates (X,Y & Z or northing, easting, and elevation) of surveyed points relative to Total Station position using trigonometry and triangulation.
	4	6.2 Working principles of a Total Station (Set up and use of total station to measure angles, distances of points under survey from total station and the co-ordinates (X,Y & Z or northing, easting, and elevation) of surveyed points relative to Total Station position using trigonometry and triangulation.
	5	6.2 Working principles of a Total Station (Set up and use of total station to measure angles, distances of points under survey from total station and the co-ordinates (X,Y & Z or northing, easting, and elevation) of surveyed points relative to Total Station position using trigonometry and triangulation.
		7 BASICS ON GPS & DGPS AND ETS:
		7.1 GPS: - Global Positioning
12TH	1	7.1.1 Working Principle of GPS,GPS Signals,
	2	7.1.2 Errors of GPS,Positioning Methods
		7.2 DGPS: - Differential Global Positioning System
	3	7.2.1 Base Station Setup 7.2.2 Rover GPS Set up
	4	7.2.3 Download, Post-Process and Export GPS data 7.2.4 Sequence to download GPS data from flashcards
	5	7.2.5 Sequence to Post-Process GPS data
13TH	1	7.2.6 Sequence to export post process GPS data
	2	7.2.7 Sequence to export GPS Time tags to file
		7.3 ETS: - Electronic Total Station
	3	7.3.1 Distance Measurement 7.3.2 Angle Measurement
	4	7.3.3 Leveling 7.3.4 Determining position
	5	7.3.5 Reference networks 7.3.6 Errors and Accuracy
		8 BASICS OF GIS AND MAP PREPARATION USING GIS
14TH	1	8.1 Components of GIS, Integration of Spatial and Attribute Information
	2	8.2 Three Views of Information System 8.2.1 Database or Table View, Map View and Model View
	3	8.3 Spatial Data Model 8.4 Attribute Data Management and Metadata Concept
	4	8.5 Prepare data and adding to Arc Map.
	5	8.6 Organizing data as layers.8.7 Editing the layers.
15TH	1	8.8 Switching to Layout View.
	2	8.9 Change page orientation.
	3	8.10 Removing Borders.
	4	8.11 Adding and editing map information.
	5	8.12 Finalize the map

Rupeli Kumari Patro (G.F of civil dept.)

19/12/2025

GOVT. POLYTECHNIC BERHAMPUR
LESSON PLAN - 2025

Discipline :-	Semester :-	Name of the teaching Faculty :
CIVIL ENGINEERING	SIXTH(S) 2025-26	SIBANI SAHU

SUBJECT:- CONSTRUCTION MANAGEMENT	NO. Of CLASSES ALLOTED FOR WEEK	SEMESTER FROM :- FROM 22/12/2025 TO 18/04/2026
WEEK	**DAY**	**THEORY**
1ST	1st	1.1 - Aims and objectives of construction management.
	2nd	1.2- Functions of construction management. 1.3 – The construction team components. 1.4 - Resources for construction management.
	3rd	1.5 - Resources for construction management.
	4th	1.6 - Importance of Construction Planning. 1.7 - Developing work breakdown structure for construction work.
2ND	1st	1.8 - Construction Planning stages. 1.9 - Construction scheduling by Bar charts.
	2nd	2.0- Preparation of Bar Charts for simple construction works. 2.1 - Preparation of schedules for labour materials,machinery, finance for small works.
	3rd	2.2- Limitation of Bar charts. 2.3 - Construction scheduling by network techniques.
	4th	2.4- Defination of terms ,PERT and CPM techniques. 2.5- Classification of Stores-storage of stock.
3RD	1st	2.6– Issue of materials-indent , invoice, bin card. 2.7- Job Lay out, Objectives, Review plans, specifications, 2.8- Lay out of equipments.
	2nd	2.9 -Location of equipment, organizing labour at site. 3.0- Job lay out for different construction sites.
	3rd	3.1 – Principle of storing material at site. 3.2- Introduction ,Characteristics, Structure, importance of construction organisation.
	4th	3.3 - Organization types, functions and their characteristics. 3.4- Principles of organization,meaning &significance of terms.
4TH	1st	3.5 -Necessity of Leadership, styles of leadership, role of leader.
	2nd	3.6- Human relations, relations with subordinates, peers, Supervisors.
	3rd	3.7 - Characteristics of group behavior, mob psychology. 3.8- Handling of grievances, absenteeism, labour welfare.
	4th	3.9- Preparing Labour schedule..

5TH	1st	4.0 - Preparing Labour schedule.
	2nd	4.1 - Essential steps for optimum labour output. 4.2 - Conflicts in organization,genesis of conflicts, types.
	3rd	4.3 - Essential steps for optimum labour output.
	4th	4.4 -Wages & their payment. 4.5- Labour incentives,Motivation,different approaches to motivation.
6TH	1st	4.6- Labour characteristics. 4.7 - Preparing the equipment schedule.
	2nd	4.8- Identification of different alternative equipment. 4.9- Importance of Owning & operating costs in making decisions for hiring & purchase of equipment.
	3rd	5.0- Inspection and testing of equipment. 5.1- Equipment maintenance,Concept of quality in construction.
	4th	5.2- Quality Standards during construction, 5.3- After construction, destructive & non destructive methods.
7TH	1st	5.4 - Programme and progress of work. 5.5- Work study,Analysis and control of physical and financial progress corrective measures.
	2nd	5.6 – Importance of safety. 5.7- Causes and effects of accidents in construction works.
	3rd	5.8 - Safety measures in worksites for excavation, scaffolding. 5.9- Formwork, fabrication and erection, demolition.
	4th	6.0 - Development of safety consciousness. 6.1- Safety legislation,Workman's compensation act.
8TH	1st	6.2- Contract labour act.. 6.3 - Introduction to Vulnerability Atlas of India.
	2nd	6.4- Concepts of natural hazards and disasters . 6.5 - vulnerability profile of India.
	3rd	6.6- Definition of disaster related terms. 6.7- Earthquake hazard and vulnerability.
	4th	6.8- Magnitude and intensity scales of earthquake. 6.9- seismic zone.
9TH	1st	7.0 - Earthquake hazard maps, types of structures. 7.1- Damage classification, effects in housing and resistant measures.
	2nd	7.2 - Wind / Cyclone hazard and vulnerability. 7.3- Wind speed and pressures, wind hazard.
	3rd	7.4 – cyclone occurrence maps, storm surveys. 7.5- cyclone resistant measures.
	4th	7.6 -Flood hazard and vulnerability, Flood hazard. 7.7- Flood prone areas of the country.

10TH	1st	7.8- General protection of habitants. 7.9- Flood resistant construction, Landslides, Tsunamis.
	2nd	8.0- Thunderstorm hazards and vulnerability.
	3rd	8.1-Landslide.
	4th	8.2 -Thunderstorm incidence maps.
11TH	1st	8.3-Measures against Tsunami.
	2nd	8.4-hazards.
	3rd	8.5 -Housing vulnerability risk tables.
	4th	8.6 - Usage of vulnerability atlas of India.
12TH	1st	8.7 - Inclusion of vulnerability atlas in Tender documents.
	2nd	8.8- REVISION class.
	3rd	8.9- assignment on plan layout.
	4th	9.0- Planning of building in software.
13TH	1st	9.1- Network diagram of different cpm.
	2nd	9.2- Safety measures for building construction.
	3rd	9.3- Line diagram of building.
	4th	9.4- Significance of organizational behaviour.
14TH	1st	9.5- Methods to measure and monitor the progress of work.
	2nd	9.6- Significance of safety requirement in construction site.
	3rd	9.7- Important terms related to site management.
	4th	9.8- Responsibility of owner, architecture.
15TH	1st	9.9- Quality check of different material.
	2nd	10.0- Preparation of chart.
	3rd	10.1- Discussion of different terms.
	4th	10.2- Revision.

Sibani Sahu
G.F (civil)
Dt:- 19.12.2025

LESSON PLAN :TH-3. ADVANCED CONSTRUCTION TECHNIQUES & EQUIPMENT,FOR THE SESSION 2025-26(SUMMER-2025) GOVT. POLYTECHNIC,BERHAMPUR

Discipline: civil engineering	Semester: 6TH	Name of the Teaching Faculty: A GUPTESWAR PATRA
Subject: TH.3-ADVANCED CONSTRUCTION TECHNIQUES & EQUIPMENT	No. of days/ per week class allotted: 4	Semester From Date : 22-12-2025 to Date: 18-04-2026 No. of Weeks: 15
Week	Class Day	Theory/ Practical Topics
		1 Advanced construction materials
1ST	1	1.1 Fibers and Plastics-Types of fibers- Steel, Carbon, glass fibers, Use of fibers as construction material, properties of Fibers.
	2	1.1 Fibers and Plastics-Types of fibers- Steel, Carbon, glass fibers, Use of fibers as construction material, properties of Fibers.
	3	Types of plastics- PVC, RPVC, HDPE, FRP, GRP etc. Colored plastic sheets. Use of plastic as construction material.
	4	Types of plastics- PVC, RPVC, HDPE, FRP, GRP etc. Colored plastic sheets. Use of plastic as construction material.
2ND	1	1.2 Artificial Timbers – Properties and uses of artificial timber. Types of artificial timber available in market, strength of artificial timber.
	2	1.2 Artificial Timbers – Properties and uses of artificial timber. Types of artificial timber available in market, strength of artificial timber.
	3	1.2 Artificial Timbers – Properties and uses of artificial timber. Types of artificial timber available in market, strength of artificial timber.
	4	1.3 Miscellaneous materials – Properties and uses of acoustics materials, wall claddings, plaster boards, micro-silica, artificial sand, bonding agents, adhesives etc.
3RD	1	1.3 Miscellaneous materials – Properties and uses of acoustics materials, wall claddings, plaster boards, micro-silica, artificial sand, bonding agents, adhesives etc.
	2	1.3 Miscellaneous materials – Properties and uses of acoustics materials, wall claddings, plaster boards, micro-silica, artificial sand, bonding agents, adhesives etc.
		2 Prefabrication
	3	2.1 Introduction, necessity and scope of prefabrication of buildings, history of prefabrication, current uses of prefabrication , types of prefabricated systems, classification of prefabrication, advantages and disadvantages of prefabrication,
	4	2.1 Introduction, necessity and scope of prefabrication of buildings, history of prefabrication, current uses of prefabrication , types of prefabricated systems, classification of prefabrication, advantages and disadvantages of prefabrication,
4TH	1	2.1 Introduction, necessity and scope of prefabrication of buildings, history of prefabrication, current uses of prefabrication , types of prefabricated systems, classification of prefabrication, advantages and disadvantages of prefabrication,
	2	2.1 Introduction, necessity and scope of prefabrication of buildings, history of prefabrication, current uses of prefabrication , types of prefabricated systems, classification of prefabrication, advantages and disadvantages of prefabrication,
	3	2.2 The theory and process of prefabrication, design principle of prefabricated systems, types of prefabricated elements, modular coordination
	4	2.2 The theory and process of prefabrication, design principle of prefabricated systems, types of prefabricated elements, modular coordination
5TH	1	2.2 The theory and process of prefabrication, design principle of prefabricated systems, types of prefabricated elements, modular coordination
	2	2.3 Indian standard recommendation for modular planning.
		3 Earthquake Resistant Construction
	3	3.1 Building Configuration
	4	3.2 Lateral Load resisting structures

6TH	1	3.3 Building characteristics
	2	3.4 Effect of structural irregularities-vertical irregularities, plan configuration problems.
	3	3.5 Safety consideration during additional construction and alteration of existing Buildings.
	4	3.5 Safety consideration during additional construction and alteration of existing Buildings.
7TH	1	3.6 Additional strengthening measures in masonry building-corner reinforcement, lintel band, sill band, plinth band, roof band, gable band etc.
	2	3.6 Additional strengthening measures in masonry building-corner reinforcement, lintel band, sill band, plinth band, roof band, gable band etc.
		4 Retrofitting of Structures
	3	4.1 Seismic retrofitting of reinforced concrete buildings :
	4	4.1 Seismic retrofitting of reinforced concrete buildings :
8TH	1	4.2 -Sources of weakness in RC frame building
	2	4.2 -Sources of weakness in RC frame building
	3	4.2 -Sources of weakness in RC frame building
	4	4.3 -Classification of retrofitting techniques and their uses
9TH	1	4.3 -Classification of retrofitting techniques and their uses
	2	4.3 -Classification of retrofitting techniques and their uses
		5 Building Services
	3	5.1 Cold Water Distribution in high rise building, lay out of installation
	4	5.2 Hot water supply – General principles for central plants-layout
10TH	1	5.3 Sanitation –soil and waste water installation in high rise buildings
	2	5.4 Electrical services –i) requirements in high rise buildings ii) Layout of wiring -types of wiring iii) Fuses and their types iv)Earthing and their uses
	3	5.4 Electrical services –i) requirements in high rise buildings ii) Layout of wiring -types of wiring iii) Fuses and their types iv)Earthing and their uses
	4	5.5 Lighting – Requirement of lighting, Measurement of light intensity
11TH	1	5.6 Ventilation - Methods of ventilation (Natural and artificial Systems of ventilation) problems on ventilation
	2	5.7 Mechanical Services- Lifts, Escalator, Elevators – types and uses.
		6 Construction and earth moving equipments –
	3	6.1 Planning and selection of construction equipments
	4	6.1 Planning and selection of construction equipments
12TH	1	6.2 Study on earth moving equipments like drag line, tractor, bulldozer, Power shovel
	2	6.2 Study on earth moving equipments like drag line, tractor, bulldozer, Power shovel
	3	6.2 Study on earth moving equipments like drag line, tractor, bulldozer, Power shovel
	4	6.3 Study and uses of compacting equipments like tamping rollers, Smooth wheel rollers, Pneumatic tired rollers and vibrating compactors
13TH	1	6.3 Study and uses of compacting equipments like tamping rollers, Smooth wheel rollers, Pneumatic tired rollers and vibrating compactors
	2	6.3 Study and uses of compacting equipments like tamping rollers, Smooth wheel rollers, Pneumatic tired rollers and vibrating compactors
	3	6.4 Owning and operating cost – problems
	4	6.4 Owning and operating cost – problems
		7 Soil reinforcing techniques
14TH	1	7.1 Necessity of soil reinforcing.
	2	7.1 Necessity of soil reinforcing.
	3	7.2 Use wire mesh and geo-synthetics.
	4	7.2 Use wire mesh and geo-synthetics.
15TH	1	7.3 Strengthening of embankments, Slope stabilization in cutting and embankments by soil reinforcing techniques.
	2	7.3 Strengthening of embankments, Slope stabilization in cutting and embankments by soil reinforcing techniques.
	3	7.3 Strengthening of embankments, Slope stabilization in cutting and embankments by soil reinforcing techniques.
	4	7.3 Strengthening of embankments, Slope stabilization in cutting and embankments by soil reinforcing techniques.

A. Gupteswar Sabar
G.F (Civil) 19/12/2026

LESSON PLAN: CONCRETE TECHNOLOGY		
Discipline: CIVIL ENGINEERING	Semester:6TH	Name of the faculty: Sushree Sasmita Sahoo
Subject: CONCRETE TECHNOLOGY	No. of Days/Per Week class alotted: 4	Semester From Date : 22-12-2025 to Date: 18-04-2026 No. of Weeks: 15
Week	**Class Day**	**1.0 Concrete as a construction material:**
1st	1st	1.1 Grades of concrete.
	2nd	1.2 Advantages and disadvantages of concrete
		2.0 Cement:
	3rd	2.1 Composition
	4th	2.2 Hydration of cement, water cement ratio
2nd	1st	2.3 Compressive strength
	2nd	2.4 Fineness of cement, setting time,
	3rd	2.5 Soundness, types of cement.
		3.0 Aggregate:
	4th	3.1 Classification and characteristics of aggregate
3rd	1st	3.2 Deleterious substances in aggregates
	2nd	3.3 Fineness modulus
	3rd	3.4Grading of aggregate,I.S.383
	4th	3.5 QUESTION & ANSWER
		4.0 Water:
4th	1st	4.1 Quality of water
	2nd	4.2 Mixing and curing
		5.0 Admixtures:
	3rd	5.1 Important functions, classification of admixtures, I.S 9103
	4th	5.2Accelerating admixtures
5th	1st	5.3Retarding admixtures
	2nd	5.4 Water reducing admixtures,
	3rd	5.5Air containing admixtures.
		6.0 Properties of fresh concrete:
	4th	6.1Concept of fresh concrete, workability
6TH	1st	6.2 Slump test
	2nd	6.3Compacting factor test, V-bee consistency test and flow test
	3rd	6.4 Requirement of workability,I.S.1199.
	4th	7.0 Properties of hardened concrete:
7TH	1st	7.1 Cube and cylinder compressive strengths, flexural strength of concrete.
	2nd	7.2 Flexural strength of concrete
	3rd	7.3 Stress-strain and elasticity
	4th	7.4 Phenomena of creep and shrinkage
8TH	1st	7.5 permeability, durability of concrete
	2nd	7.6 durability of concrete, sulphate, chloride and acid attack on concrete
	3rd	7.7 efflorescence.
	4th	7.8 ASSIGNMENT

		8.0 Concrete mix Design
9TH	1st	a) Introduction
	2nd	b) Data or input required for mix design.
	3rd	c) Nominal mix concrete &design mix concrete.
	4th	d) Basic consideration for concrete mix design, Methods of proportioning concrete mix – I.S Code method of mix design(I.S.10262)
		9.0 Production of concrete:
10TH	1st	9.1 Batching of materials, mixing of concrete materials
	2nd	9.2Transportation, placing of concrete, compaction of concrete,
	3rd	9.3Compaction methods, vibrators, curing ,when to start and time of curing
	4th	9.4 Formwork-requirements and types ,stripping of forms.
		10.0 Inspection and Quality Control of Concrete
11TH	1st	10.1 Quality control of Concrete as per I.S.456, Factors causing the variations in the quality of concrete, field quality control
		10.2 Sampling &acceptance criteria as per Clause15&16 of IS:456.
	2nd	10.3 Mixing, Transporting, Placing &curing requirements of Concrete as per I.S.456.
	3rd	10.4 Inspection and Testing as per Clause 17 of IS:456.
	4th	10.5 Durability requirements of Concrete as per I.S:456.
		11.0 Special Concrete
12TH	1st	11.1 Introduction to ready mix concrete
	2nd	11.2 high performance concrete
	3rd	11.3 silica fume concrete, ,
	4th	11.4 shot-crete concrete or gunitting
		12.0 Deterioration of concrete and its prevention:
13TH	1st	12.1 Types of deterioration
	2nd	12.2 prevention of concrete deterioration,
	3rd	12.3 corrosion of reinforcement, effects and prevention.
		13.0 Repair technology for concrete structures:
	4th	13.1 Symptom, cause and prevention and remedy of defects during construction
14TH	1st	13.2 cracking of concrete due to different reasons
	2nd	13.3 repair of cracks for different purposes
	3rd	13.4 selection of techniques, polymer based repairs
	4th	13.5 common types of repairs.
15th	1st	Revision
	2nd	Revision
	3rd	Revision
	4th	Revision

Sushree Sasmita Sahoo.
Lecturer, Stage-II, Civil.
19/12/2025