160M

OVERALL STRATEGIES

Human Resource

- Modelling Software trainings
- Training on New Construction Tools/Techniques/Equipment

Needed R&D Technologies

- 1. Technologies for upland, coastal, flood and earthquake resistant infrastructures
- 2. Housing technologies
- Advanced Laboratory testing facility
- 4. Value-adding agro-industrial waste for different construction products/applications
- 5. Modular testing, monitoring, surveying equipment
- 6. Adoption of new construction practices, tools, techniques
- 7. Advance preservation S&T based strategy of heritage sites

Facilities/Services

- 1. Laboratory testing facility for:
- · Durability & performance of concrete
- Coastal, Earthquake and Wind Engineering simulation testing laboratory
- Construction Materials/Product **Testing Laboratory**
- 2. Digital Technologies innovation Center for Construction
- 3. Heritage Site/Building Center
- 4. Underground engineering

S&T Policy initiatives

- 1.Inclusion of locally developed construction products in the DPWH local standards and AITECH accreditation
- 2. Updating of NSCP to consider the generated seismic data in seismic design of structures, and the new materials developed
- 3.new testing requirement in the NBCP
- 4.Local utilization and prioritization of locally developed construction products

THEMATIC AREAS:

90M

Concrete Petrography

Nationwide

establishment of

testing laboratory

Equipment for

Assessment

of structures

· Establishment of

Center towards

sustainable

Materials

Infrastructure

· Generation of

· Modular Construction

subsurface data to

improve seismic design

Mountain Engineering

Innovative Construction

Pilot demonstration of

Seismic Atlas for DOST

Instrumented SHMS for

structures in metro manila

selected government

Rubber & PET

Smart Cities

Modified Asphalt Road using

- Sustainable Construction Materials
- Innovative Construction Methodology/System/Techni ques

Possible Solutions

110M

- Advancement of modelling tools for design and analysis of different infrastructures
- Modular Construction Equipment for Assessment Monitoring and Surveying
- Green Cement **Technologies**

2023

equipment

reduction

products

120M

Earthquake Engineering

for Construction

Application (R9)

R&D Center (R8)

Heritage Building/Site

Concrete Petrography

2024

Preservation R&D

Center (R6)

Housing/Building

Technologies

Application

- Digitization Rubber-based Products (Mindanao Rs)
 - **Technologies**
 - Natural Fiberbased concrete infra products
 - Wind Tunnel **Engineering R&D** Center (R7)

2025

130M

- Construction Research Center
- 3D Construction

Operational

earthquake

and testing

Localized NDT

equipment

Agro-industria

waste-baste

construction

products

developed

monitoring

equipment

Localized

superplasticizer

Concrete crack

Locally

facilities

simulation lab

140M

- · Coastal Engineering Technologies/Intervent
- Mountain Engineering Technologies/Intervent
- · Housing and Building **Technologies**
- Underground Engineering R&D Center (NCR)

150M

Legend

(Text Font):

Heritage Building

Technologies

Construction

Innovative

Materials

- Digitalization Earthquake Technologies for the Engineering Construction Industry **Technologies**
- 3d Concrete Printing **Technologies** /Site Preservation Wind Tunnel
 - Engineering Solutions

Vision

- Advance and reliable construction materials and services towards a safer and sustainable Infrastructures.



2028

Operationa

technologies

2027

2026

- Design and Analysis method, and prototypes for earthquake resistant infrastructures
- S&T based engineering design and intervention for the preservation of heritage sites/bldgs
- Fiber-based infra products
- Wearable Technologies
- Localized 3d Printer. concrete resin and demonstration prototypes
- Concrete/Raw material Performance on the effect of climate change and saltwater or rainwater intrusion

Milestones

engineering technologies Optimized loca materials for structural and non-structural applications Wearable Technologies Construction Prototypes Infrastructure

Deployed coastal

and mountain

- prototypes (earthquake, win. coastal) Operational Wind
- **Tunnel Testing Facility**

Underground Engineeri na Center/Services Underground Infra design and prototypes Deployed S&T based underground inte rventions/technologies Deployed earthquake engineering. heritage preservation

NAST Foresight:

New construction materials for building and housing applications, i.e. insulating gels, Carbon storage building materials

DIFFERENCE

Cost-effective system/techniques and locally developed high value adding concrete products

2022

100M

Coastal Engineering

Establishment of

R&D Center (R1)

· Establishment of

Sustainable

Engineering

Research For

Construction

· Smart Concrete

Technologies

products

· Value-adding agro-

based construction

industrial waste-

Technologies (R10)

Resource

- · New Design and Analysis methods for Slope Protection
- **2021 Petrography Testing** Regional Offices
 - Buildings

(Baguio City)

& repairing materials Seismic atlas for mountainous areas

- **Operational Concrete** Laboratory in DPWH
- BIM Based DOST
- Localized retrofitting
- Science based engineering design and planning guidelines for retrofitting of rice terraces
 - Digitized Geotechnical Data to Improve the Governments data archiving

Design and Analysis method

and prototypes for flood and

coastal protection structures

technology in Rice terraces

Road pavement monitoring

Bio cement Materials

FRSCC for corrosion

Fiber-based Concrete

- Operational Coastal wave flume simulation equipment New Design and Analysis methods for coastal control
- structures Cost-effective Rubber based construction products
- · Application of slope protection Operational Wave flume testing laboratory Underground surveying tools
 - Actual demonstration of flood and coastal protection prototypes
 - Concrete crack assessment equipment
 - Science based engineering design and planning auidelines for flood control and coastal infrastructure
 - Operational visualization facility
 - digitized surface and subsurface database in Metro Manila

Surveying/monito ring/assessing equipment



OneDOST4U



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R&D	Project Title			Status					
Technologies		2021	2022	2023	2024	2025	2026	2027	Status
Concrete Petrography Application	ISCOPE P1. SoPIA: Software for Petrographic Image Analysis for Concrete Petrography			7,334	5,556				On-going
	ISCOPE P2. Effects of Extreme Weather Conditions on Coastal Concrete Structures in the Philippines: Determining Appropriate Concrete Cover			6,690	4,862				On-going
Modular Construction Equipment for Assessment	PAVE - Prototype Automated Visual Survey Equipment	5,865	4,197						Complete d



R&D Technologies	Project Title			Status					
R&D lectifictogles		2021	2022	2023	2024	2025	2026	2027	Status
Modular Construction Equipment for Assessment	Project CRUISE: A Capacitive Resistivity Underground Imaging Survey Equipment for Underground Utility Assessment of Philippine Infrastructures	12,086	6,854						
Establishment of Mountain Engineering Center Towards Sustainable Infrastructure and Upland Water Security	Boondock P1: Slope Stability Analysis and Engineering Intervention for Rice Terraces and Road Infrastructures in Terrain Areas	8,041	4,936	4,018					On-going





DOD To abroal action	Project Title			Status					
R&D Technologies	Project Title	2021	2022	2023	2024	2025	2026	2027	Status
Innovative Construction Materials	CoBUILDTex P1. Natural Textiles as Innovative Formwork and Reinforcement for Freeform Concrete Structures	14,169	6,760						Completed
	CoBUILDTex P2. Natural Fiber- based Technical Textiles for Smart Indoor Installations	11,174	6,222						Completed
	Development of Fiber- Reinforced Self-Compacting Concrete for Corrosion Reduction (FRSCC)	4,219	3,830						Completed
	Green Fiber-reinforced Polymer (FRP) Composites as Innovative Repair System for Earthquake-prone Historical Buildings	3,932	3,683						Completed

R&D	Project Title		Budget Allocation ('000)									
Technologies	Project fille	2021	2022	2023	2024	2025	2026	2027	Status			
Generation of subsurface data to improve seismic design	Optimization of the GeoRiskPH I ntegrated System through Risk Assessments, Site Suitability Models and 3D Visualizationsto Aid Policy and Decision Making (3D Earth Risk)	23,814	10,324	10,524								
	Geotechnical Mapping of Metro Manila Subsoil (GEMMMS)	7,820	5,685						Complete d			



R&D	Project Title			Status					
Technologies		2021	2022	2023	2024	2025	2026	2027	Status
Establishmen t of Coastal Engineering R&D Center (R1)	Coastal Erosion Trends and Management Strategies for Region 1	4,611	4,784	3,973					Ongoing
	Assessment, Monitoring, and Prediction of Coastal Flooding of Selected Municipalities in Region 1	12,097	4,223	3,052					Ongoing
	Development of Science- based Engineering Approach to Coastal Protection in Region 1	2,998	2,330						Ongoing
	Enhancing Coastal Design and Infrastructure Intervention through Establishment of Wave Testing Facility	36,486	15,829	3,137					Ongoing



R&D	Duning Title		Budget Allocation ('000)									
Technologies	Project Title	2021	2022	2023	2024	2025	2026	2027	Status			
Heritage Building/Site Preservation	Innovative NDT for Heritage Conservation for a Resilient Past				11,443	4,731	3,573		New			
R&D Center	Developing Innovative Retrofitting Interventions Compatible with Heritage Structures				11,953	4,171	3,015		New			
	Assessment, Development, Preservation for Typhoon and Earthquake Resilient Ivatan Houses			6,723	3,593				Ongoing			
Smart Concrete Technologies	Engineered Smart Concrete utilizing Indigenous Wastes for Durable and Intelligent Infrastructures	6,879	3,858						Completed			



R&D	Project Title			- Status					
Technologies		2021	2022	2023	2024	2025	2026	2027	Status
Establishmen t of Sustainable Resource Engineering Research for Construction Technologies	SRM P1. Development of market-ready admixtures and SMART lightweight foamed composites with passive energy-regulating and self-reinforcing properties from agro-industrial wastes for roof screeds, roof insulation, ceilings, walls and floor applications		31,341	6,110	2,754				Ongoing
	SRM P2. Development of Eco- cement using locally available industrial wastes for Construction Applications		5,782	3,472					Extended
	SRM P3. Laminated Natural Fiber Composite as Eco-geocell and Eco-geogrid for Roadway Construction and Slope Protection		7,469	5,938					Extended





R&D	Project Title			Bud	get Allocati	on ('000)			Status
Technologies		2021	2022	2023	2024	2025	2026	2027	
Advancement of Modelling tools for Analysis of Different Infrastructure s	Project Underground Evacuation and Facilities Design and aNalysis (Project EDEN)				42,096	7,967			
Value-adding agro-industrial waste-based construction products	StabiLign: Sustainable lignin- based soil stabilizer technology from waste wood and recycled concrete for pavements				11,220	4,968			New



List of Projects – Construction Roadmap

2020	2021	2022	2023	2024
PAVE (DOST GIA Funding) PSSIT (DOST GIA Funding) GEMMMS (DOST GIA Funding) 3DEARTH (DOST GIA Funding) PHL CONCRETE (DOST GIA Funding) COBUILDTEX P1 (DOST GIA Funding) COBUILDTEX P2 (DOST GIA Funding) RUBBER (DOST GIA Funding) CRUISE (DOST GIA Funding)	COASTER Program (DOST GIA Funding)	SRM Program (DOST GIA Funding)	BAMBOO POLES (DOST GIA Funding) ISCOPE P1 (DOST GIA Funding) ISCOPE P2 (DOST GIA Funding) SHADE (DOST GIA Funding)	STABILIGN (DOST GIA Funding) EDEN (DOST GIA Funding) FIRE PROGRAM (DOST GIA Funding) HERITAGE PROGRAM (DOST GIA Funding) COBUILDTEX 2.0 Program (DOST GIA Funding)
FRP (PCIEERD-GIA) FRSCC (PCIEERD-GIA) PHILSIMS (PCIEERD-GIA)		PREDICTION OF LONG- PERIOD (PCIEERD-GIA)	Ivatan Project (PCIEERD GIA)	



