ANNUAL REPORT
DEPARTMENT OF HIGHWAYS
2024



NAKHON RATCHASIMA
RING ROAD





The duties of all civil servants can be divided into two parts. One part is to perform their responsibilities efficiently and effectively. The other part is to work together with all Thai people to maintain and preserve the goodness of the nation. Therefore, I ask all civil servants in every department to strive to fulfill both these duties completely and perfectly.

Amphorn Sathan Villa, Dusit Palace
The 25th of March, 2024



Preface

PREFACE

For over 112 years, the Department of Highways, under the Ministry of Transport, has been dedicated to driving the development of the country's infrastructure. This includes connecting land, water, air, and rail transportation networks to create a comprehensive system that covers the entire nation and links with neighboring countries. The department is also responsible for the management and maintenance of 1,531 roadways, spanning a total distance of 52,380.804 kilometers, with the goal of enhancing road safety and providing seamless, high-quality transportation services in all aspects. In line with government and Ministry of Transport policies, the Department of Highways is implementing its five-year operational plan (2023-2027) guided by the vision of developing and managing a road network that is convenient, interconnected, accessible, and safe, adhering to road hierarchy standards while being environmentally friendly and catering to the needs of all people.

In the past fiscal year, the Department of Highways continued to make significant strides in various projects, including the construction of Motorway No. 6 (Bang Pa-In - Nakhon Ratchasima), Motorway No. 81 (Bang Yai - Kanchanaburi), and Motorway No. 82 (Bang Khun Thian - Ban Phaeo), as well as the construction of Thai-Lao Friendship Bridge 5 (Bueng Kan - Bolikhamxay). Other notable projects include the development of the ditches along Vibhavadi Rangsit Road, the construction of various state highways, the expansion of major roads to four lanes, traffic congestion mitigation in the Bangkok metropolitan region, the construction of roads connecting to international borders, the construction of railway overpasses, and support for the Eastern Economic Corridor (EEC) development.

Beyond its core mission of road development, the Department of Highways is also deeply committed to serving the communities. This includes establishing service stations for travelers during peak seasons, responding to accidents and disasters, collaborating with the Provincial Waterworks Authority to provide drinking water during droughts, and addressing issues such as forest fires, haze, and $PM_{2.5}$ pollution.

The Department of Highways recognizes its significant role and is fully committed to driving the policies of the government and the Ministry of Transport. With the goal of achieving the "Transportation for Thailand's Opportunities" policy, we aim to develop transportation infrastructure and provide international-standard services. This will create opportunities and accessibility for the public through such development, while promoting comprehensive, equitable, and fair public participation in all dimensions. Ultimately, our focus remains on the people and the nation.

Department of Highways



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PRIME MINISTER



Ms. Paetongtarn Shinawatra
Prime Minister of Thailand

Executives of the Ministry of Transport



Mr. Suriya Jungrungreangkit
Minister of Transport



Mrs. Manaporn Charoensri
Deputy Minister of Transport



Mr. Surapong Piyachote
Deputy Minister of Transport

EXECUTIVES OF THE MINISTRY OF TRANSPORT



Mr. Chayatan Phromsorn
Permanent Secretary



Miss Ratchaneeporn Thitisap
Deputy Permanent Secretary



Mr. Withaya Yamoung
Deputy Permanent Secretary



Mr. Sorapong Paitoonphong
Deputy Permanent Secretary

Executives of the Department of Highways (Fiscal Year 2024)

EXECUTIVES OF



Mr. Sarawut Songsivilai
Director-General



Mr. Piyapong Jiwattanakulpaisarn
Deputy Director-General for Engineering



Mr. Sermsak Naiyanan
Deputy Director-General for Administration



Mr. Chirapong Theppithuck
Deputy Director-General for Maintenance



Mr. Paitoon Pongchavalit
Deputy Director-General for Operations



Mr. Tanin Rirattanapong
Chief Engineer
for Planning



Mr. Sittichai Boonsaat
Chief Engineer
for Location and Design



Mr. Chavalert Lertchavanakul
Chief Engineer
for Construction



Mr. Thiti Sedthamanop
Chief Engineering
for Maintenance



Mr. Attasit Sawatparnich
Chief Engineer for
Research and Development



Mr. Danai Ruengsorn
Chief Engineer
for Highway Safety

Current Executives of the Department of Highways

CURRENT EXECUTIVES OF



Mr. Apirat Chaiwongnoi
Director-General



Mr. Pongphan Junngern
Deputy Director-General
for Engineering



Mr. Sermsak Naiyanan
Deputy Director-General
for Administration



Mr. Pongsakorn Chullabodhi
Deputy Director-General
for Maintenance



Mr. Paitoon Pongchavalit
Deputy Director-General
for Operations



Mr. Tanin Rirattanapong
Chief Engineer
for Planning



Mr. Sittichai Boonsaat
Chief Engineer
for Location and Design



Mr. Chavalert Lertchavanakul
Chief Engineer
for Construction



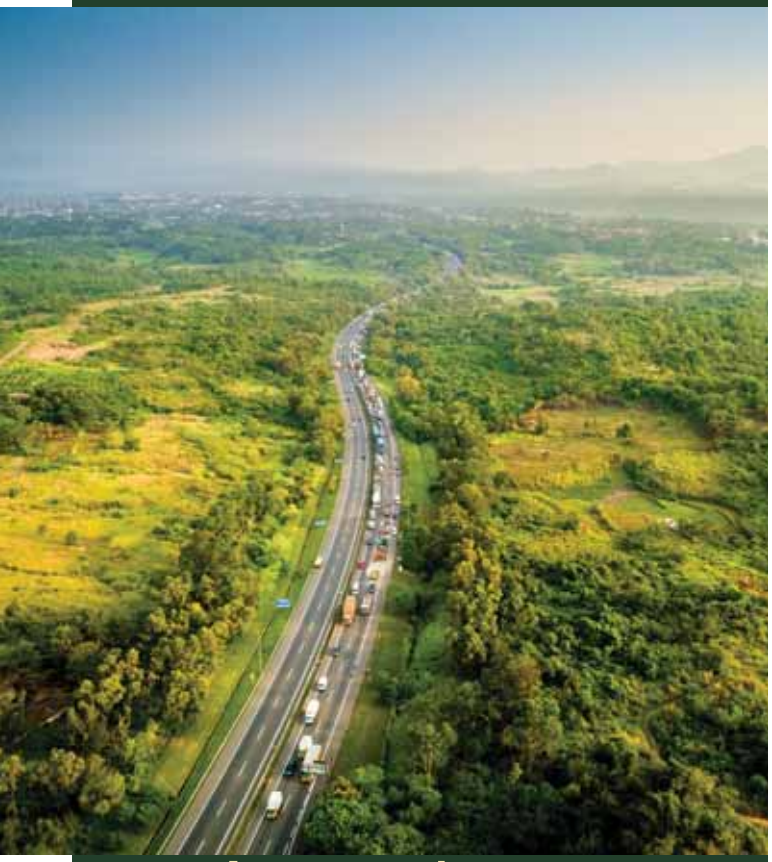
Mr. Thiti Sedthamanop
Chief Engineering
for Maintenance



Mr. Attasit Sawatparnich
Chief Engineer for Research
and Development



Mr. Attasit Sawatparnich
Acting Chief Engineer
for Highway Safety



Duties and Responsibility of the Department of Highways

1. Operate in line with highway-related laws, particularly those concerning intercity motorways, national highways, and concession highways, and other relevant legislation.
2. Conduct research and development related to the construction, rehabilitation, and maintenance of intercity motorways, national highways, and concession highways.
3. Collaborate and coordinate on road construction activities with relevant organizations and agencies domestically and internationally.
4. Perform other duties as prescribed by laws and as assigned by the Minister of Transport or the Cabinet.

Department of Highways

Operational Plan (2023-2027)

Vision

"To develop and manage highway network that is convenient, connected, accessible, safe, and environmentally friendly, according to Road Hierarchy standards, benefiting all groups of people."

Our vision covers the following two aspects.

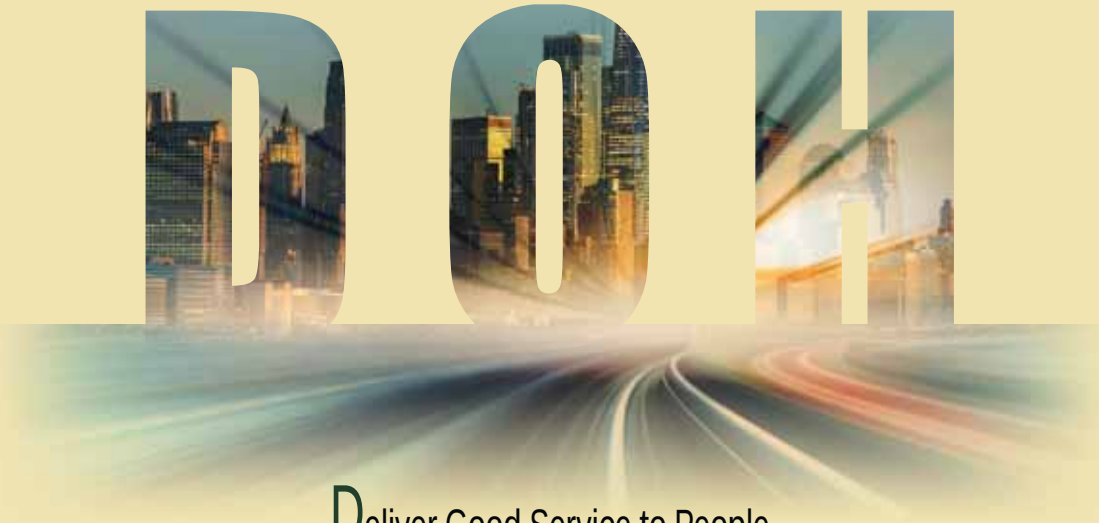
1) The process aspect: Committed to developing and managing the highway network in accordance with road hierarchy standards.
2) The output and outcome aspect: Supporting national development by establishing the highway network that is "convenient, connected, accessible, safe, environmentally friendly, as well as expanding social opportunities for all groups of people.

Missions

1) Develop a highway network with complete connectivity, accessibility, and mobility to drive the country's economy and society.
2) Maintain and enhance safety and manage the highway network to ensure quality standards for the readiness of continuous service.
3) Manage the organization striving to transition into a resilient digital entity that prioritizes the environment and communities to achieve sustainable development goals.

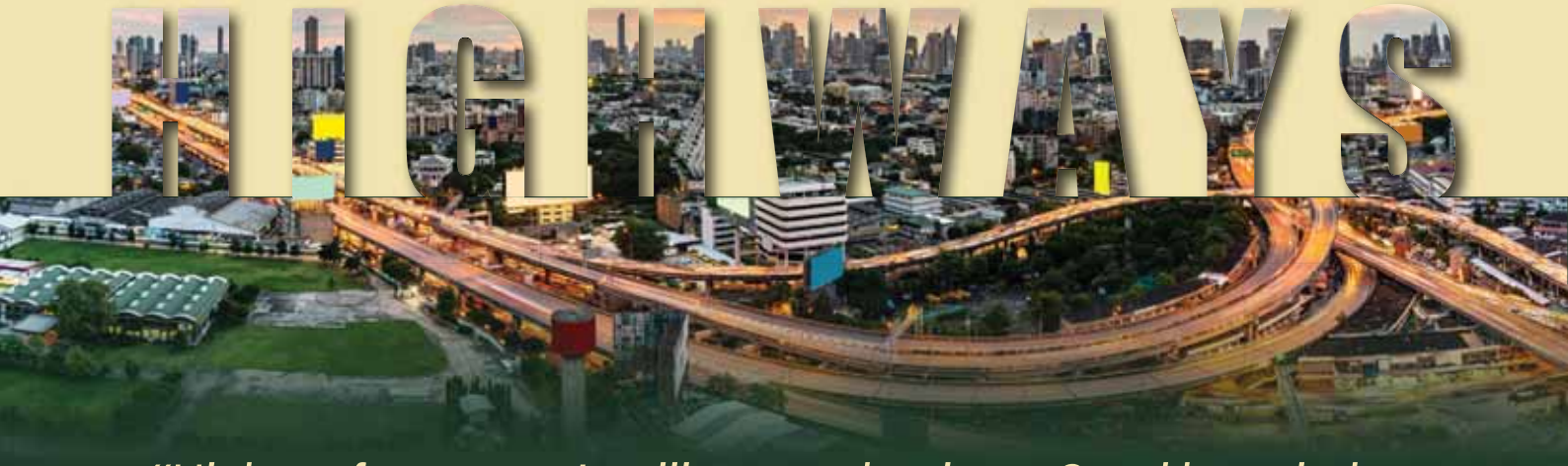


Organizational Culture



Deliver Good Service to People
Obligate Governance and Sustainability
Hold Accountability for Interests of Nation and People

Value



"High performance, Intelligent technology, Good knowledge, Honesty, Work smart, Accountability, Year-round commitment, and Synergy"

High performance
Intelligent technology
Good knowledge
Honesty
Work smart
Accountability
Year-round commitment
Synergy

Strategic Issues, Strategic Goals, Objectives, and Strategies

Strategy 1: Highway Network Development

Goal: Highway network development to enhance connectivity, accessibility, and mobility in line with road hierarchy standards.

1. Objectives

1) To establish a highway network that seamlessly connects and provides access to economic areas and other modes of transportation. The highways must also support the shift towards rail and water transport to facilitate travel and goods transportation, accommodate economic and urban expansion, and reduce logistics costs.

2) To develop and improve the highway network to enhance efficiency in travel and goods transportation, thus addressing traffic congestion and minimizing losses due to delays on the highway network.

3) To develop the highway network and related facilities that accommodate safe and convenient pedestrian activities, road crossings, and other forms of mobility for vulnerable road users.

4) To develop the highway network that enhances both mobility and accessibility in accordance with the road hierarchy standards.

2. Strategies

Strategy 1.1: Expand the national highway and intercity motorway networks to strengthen connectivity with economic zones, tourist destinations, and border checkpoints.

Strategy 1.2: Develop and improve missing links in the highway network to enhance connectivity to economic hubs, transport terminals, railway stations, seaports, inland ports, airports, and goods distribution centers. Ensure seamless integration with intercity motorway entry and exit points.

Strategy 1.3: Develop and improve highways, bridges, underpasses, tunnels, intersections, bypasses, and railway crossings, as well as implement effective management of the travel and freight demand to enhance traffic flow.

Strategy 1.4: Optimize highway infrastructure through communities, agricultural zones, and tourist areas to ensure safety and accessibility for all road users.

Strategy 1.5: Establish road highway standards in line with the road hierarchy standards , focusing on primary and secondary route development, intersection design, and access management.





Strategy 2: Highway Network Maintenance and Management

Goal: Timely maintenance and management of highway network to ensure uninterrupted and high-quality services.

1. Objectives

1) To maintain roads and bridges across each level of the road hierarchy to meet established quality and safety criteria targets.

2) To manage traffic and routes efficiently to facilitate road users' convenience in all situations – including normal conditions, during construction and maintenance operations, as well as during abnormal events and disasters.

3) To implement sustainable disaster solution approaches through technology, innovation, and efficient management systems.

4) To enforce vehicle weight control according to legal requirements and international standards to extend road service life and reduce highway maintenance budget requirements.

2. Strategies

Strategy 2.1: Manage road and bridge maintenance across each level of the road hierarchy using engineering inspection and condition assessment data.

Strategy 2.2: Establish a center for integrated management of traffic, incidents, and disasters that coordinate data and operations - from surveillance and incident detection to monitoring, response, and future incident prevention.

Strategy 2.3: Create mechanisms for integrating data, operations, budget, personnel, equipment, machinery, and modern technology for traffic management and responding to abnormal incidents and disasters.

Strategy 2.4: Focus on sustainable solutions for recurring incidents, disasters, and vulnerable network sections through big data analysis and engineering models.

Strategy 2.5: Enhance vehicle weight control systems across the national highway network using cutting-edge technology, while addressing and revising problematic regulations and legal barriers.





Strategy 3: Highway Safety

Goal: Enhancement of the efficiency and safety standards of the Thai highway network, as well as highway construction and maintenance sites.

1. Objectives

1) To establish safety standards for the Thai highway network in each road hierarchy and carry out improvements to meet the standards.

2) To implement proactive measures to prevent and mitigate highway accidents.

3) To implement concrete solutions to reduce the severity of highway accidents, which are the leading cause of deaths and injuries in terms of travel.

4) To develop a mechanism to promote higher safety standards to prevent accidents during highway construction and maintenance.

2. Strategies

Strategy 3.1: Improve highway design standards and installation of road safety equipment to align with safety standards set in each road hierarchy.

Strategy 3.2: Implement engineering measures that focus on preventing and addressing specific types of severe accidents, including accidents caused by speeding, highway shoulder accidents, intersection accidents, head-on collisions, slippery roads, accidents in the backs of cars parked on roadside, pedestrian accidents, and motorcycle crashes.

Strategy 3.3: Expedite solutions to address black spots on highways by using collision diagrams to determine patterns or methods to resolve hazardous highway conditions.

Strategy 3.4: Establish effective work processes and provide a precise budgeting and staffing mechanism for road safety audits during planning, design, and construction stages before the opening of new or upgrading of existing highways.

Strategy 3.5: Execute appropriate efforts to promote and support law enforcement in highway accident prevention.

Strategy 3.6: Enhance safety management skills and core values for highway construction and maintenance personnel at all levels.

Strategy 3.7: Establish work processes and provide a precise budgeting and staffing mechanism for safety management in highway construction and maintenance.



Strategy 4: Organizational Management

Goal: Nurture a new generation of personnel by focusing on proactive operations, integration with all relevant sectors, and achievement of organizational digitization.

1. Objectives

1) To build a modern organization with a flexible workforce capable of adapting to the ever-changing global situation.

2) To become an organization accountable to all groups of people based on the understanding and principles of good governance.

3) To create an organization that incorporates a digital organizational culture throughout its value chain.

4) To be an organization that fosters a proactive work culture and cross-sector integration skills.

2. Strategies

Strategy 4.1: Develop future-ready personnel by fostering mindsets, skills, and attitudes that promote lifelong learning and enhance their quality of life within the organization.

Strategy 4.2: Equip personnel with the knowledge, understanding, and digital literacy skills needed to build a digital organizational culture.

Strategy 4.3: Drive digital transformation by implementing and leveraging digital technology tools in work processes and data storage for analysis and utilization.

Strategy 4.4: Develop and implement electronic service (e-Service) systems for public services.

Strategy 4.5: Enhance proactive public relations, communicating mission execution and operational results to improve public understanding of road usage and related legal obligations.

Strategy 4.6: Enhance operational monitoring and budget expenditure tracking using information systems.

Strategy 4.7: Establish work procedures and provide budget and personnel management mechanisms for efficient risk management.

Strategy 4.8: Regularly review, improve, and update laws, regulations, and standards to ensure efficient operations aligned with current needs and adaptable to future changes.



Strategy 5: Research, Environment, and Sustainable Development

Goal: Drive research and innovation to build highways that are environmentally and community friendly, while also promoting the achievement of relevant Sustainable Development Goals (SDGs).

1. Objectives

1) To generate tangible research results and innovations applicable across the organization's value chain.

2) To implement a mechanism for developing environmentally friendly and universally accessible highways.

3) To adopt relevant SDGs to guide related mission objectives.

2. Strategies

Strategy 5.1: Support and drive research and innovations – including mission-directed research, knowledge-generating research, and staff-developed innovations – to ensure continuity and clarity, as well as promote the use of research results and innovations and expand them extensively.

Strategy 5.2: Apply modern technologies and innovations to operational missions. Examples include using unmanned aerial vehicles (UAVs) for traffic management surveys and design, and building information modeling (BIM) for surveying, design, maintenance, and safety management.

Strategy 5.3: Build networks and collaborations through memorandums of understanding (MOUs) with government agencies, the private sector, educational institutions, and international agencies and organizations to advance research and innovation.

Strategy 5.4: Develop, improve, and maintain the Thai highway network, while judiciously managing highway construction and maintenance to ensure optimal and equitable use for all.

Strategy 5.5: Create a prototype route using green highway corridor development methodology. This includes appropriate design, construction, operation, and maintenance practices to minimize environmental impacts, efficiently use resources, and conserve energy.

Strategy 5.6: Promote the use of environmentally friendly alternative, waste, and recycled materials. Establish work processes that minimize energy use and carbon/greenhouse gas emissions in highway and bridge construction and maintenance.

Strategy 5.7: Cultivate environmental stewardship among staff at all levels.

Organizational Chart of the Department of Highways

Director-General

Chief Engineer for Planning
- Bureau of International Highways Cooperation
- Bureau of Standards and Evaluation

Chief Engineer for Location and Design
- Bureau of Location and Design

Chief Engineer for Construction
- Bureau of Bridge Construction
- Bridge Construction and Rehabilitation Center

Chief Engineer for Maintenance
- Bureau of Mechanical Equipment and Communications
- Office of Vehicle Weight Control
- Highway Police Division

Chief Engineer for Research and Development
- Bureau of Road Research and Development
- Training Division

Chief Engineer for Highway Safety
- Information Technology Center

Agencies designated by the Department of Highways
- Five Road Construction Centers: Lampang, Lom Sak, Khon Kaen, Kanchanaburi, and Songkhla
- Four Highway Districts with International Friendship Bridges: Chiang Rai 2 , Nakhon Phanom, Nong Khai, and Mukdahan

Office of Administrative System Development
Office of Internal Audit
Personnel Division

Deputy Director-General for Engineering
- Bureau of Planning
- Bureau of Material Analysis and Inspection
- Bureau of Highway Safety

Deputy Director-General for Administration
- Office of the Secretary
- Finance and Accounting Division
- Intercity Motorway Division
- Procurement Division
- Bureau of Legal Affairs

Deputy Director-General for Maintenance
- Bureau of Highways Maintenance Management
- Office of Highways 1-18
- Highway District (104 highway districts)

Deputy Director-General for Operations
- Bureau of Highway Construction 1
- Bureau of Highway Construction 2
- Road Construction Center
- Bureau of Right of Ways

HISTORY

History



The Department of Highways was established on 1 April 1912. Formerly, there was simply the Department of Canals under the supervision of the Ministry of Agriculture, currently known as the Ministry of Agriculture and Cooperatives. Later, King Vajiravudh (King Rama VI) ordered the Department of Canals to be subordinated to the Ministry of Public Works and renamed the "Department of Roads". Meanwhile, the Ministry of Public Works was renamed the "Ministry of Transport" according to a declaration regarding the organizational structure of government agencies of 1912.

On 30 September 1914, all canal-related divisions of the Department of Roads were handed over to the Department of Irrigation, currently referred to as the Royal Irrigation Department, which was supervised by the Ministry of Agriculture. Therefore, the Department of Roads, led by a director-general, had control over the Road Division.

On 30 July 1917, after Thailand declared war on Germany and Austria-Hungary, King Rama VI graciously commanded the Department of Roads to merge with the Department of Royal Railways under the supervision of the Ministry of Commerce and Transport, led by the Commander of the Royal Railways.

This consolidation aimed to centralize the country's engineering expertise, as many foreign engineers previously employed by both departments were citizens of hostile nations and had been dismissed or interned. The Department of Roads was led by a chief roadwork technician at the time.

On 29 June 1932, with the approval of the People's Party, King Prajadhipok (King Rama VII) ordered the merger of the Ministry of Commerce and Transport and the Ministry of Agriculture into a single ministry known as the "Ministry of Agriculture and Commerce". Consequently, the Department of Royal Railways, including the Department of Roads as a subordinate department, was placed under the Ministry of Agriculture and Commerce.

On 3 May 1933, with the Cabinet's guidance and agreement, King Rama VII ratified the Act Establishing Ministries, Sub-ministries, and Departments, B.E. 2476 (1933). The act dissolved the Ministry of Agriculture and Commerce. Hence, the Department of Royal Railways, with the Department of Roads as a subordinate department, was transferred to the Ministry of Economic Affairs (currently referred to as the Ministry of Commerce).

On 18 September 1934, with guidance and agreement of the House of Representatives, King Rama VII ratified the Act Transferring Authority and Responsibilities for Highway Construction and Maintenance, B.E. 2477 (1934). As a result, the Department of Roads' authority and responsibilities were handed over to the Department of Public Works (currently referred to as the Department of Public Works and Town & Country Planning), which was overseen by the Ministry of Interior.

On 19 August 1941, during the reign of King Ananda Mahidol (King Rama VIII), the Road Division was promoted to the Department of Roads. Later it was transferred from the Department of Public Works under the supervision of the Ministry of Interior to the Ministry of Transport pursuant to the Act Restructuring Ministries, Sub-ministries, and Departments, B.E. 2484 (1941). Despite being upgraded to a department under the Ministry of Transport, the Department of Roads had no head office and was still housed in the Department of Public Works' main office, which was situated at the foot of Phan Fa Lilat Bridge. On 13 November 1948, the department relocated to Rama VI Road, where the Procurement Division is now located.

On 12 March 1952, the Department of Roads was renamed the "Department of National Highways" under the supervision of the Ministry of Transport in accordance with the Act Restructuring Ministries, Sub-ministries, and Departments, B.E. 2495 (1952).

On 24 June 1955, the Department of National Highways conducted the opening ceremony for its office building on Si Ayutthaya Road.

On 4 May 1963, the Department of National Highways was renamed the "Department of Highways" under the supervision of the Ministry of National Development in accordance with the Act Restructuring Ministries, Sub-ministries, and Departments, B.E. 2506 (1963).





From 29 September 1972 to the present day, the Department of Highways has been part of the Ministry of Transport in compliance with relevant laws. To conclude, the department's organizational structure has been improved according to the chronological sequence given hereunder:

- The National Executive Council's Announcement No. 216
- The Royal Decree on Organizational Division of the Department of Highways, Ministry of Transport, B.E. 2516 (1973)
- The Royal Decree on Organizational Division of the Department of Highways, Ministry of Transport, B.E. 2532 (1989)
- The Royal Decree on Organizational Division of the Department of Highways, Ministry of Transport, B.E. 2533 (1990)
- The Act Restructuring Ministries, Sub-ministries, and Departments, B.E. 2534 (1991)
- The Royal Decree on Organizational Division of the Department of Highways, Ministry of Transport, B.E. 2537 (1994)
- The Royal Decree on Organizational Division of the Department of Highways, Ministry of Transport (No. 2), B.E. 2539 (1996)
- The Act Restructuring Ministries, Sub-ministries, and Departments, B.E. 2545 (2002)
- The Ministerial Regulations regarding Organizational Division of the Department of Highways, Ministry of Transport, B.E. 2545 (2002)
- The Ministerial Regulations regarding Organizational Division of the Department of Highways, Ministry of Transport, B.E. 2552 (2007)
- The Ministerial Regulations regarding Organizational Division of the Department of Highways, Ministry of Transport, B.E. 2558 (2015)



Report on Expenditure Budget of Fiscal Year 2024
Classified by work plan/output/project
(Regular and Capital Expenditure)
As of 30 September 2024

Department of Highways, Ministry of Transport — Unit: Baht

Work Plan/Output/Project		Budget after Transfer or Adjustment	Retained Disbursement	%
Total		121,874,933,337.27	98,691,022,150.56	80.98
1. Work Plan: Government employee work plan		5,141,175,337.27	5,136,363,891.42	99.91
Expenditure for government employee to develop infrastructure and logistics system		5,141,175,337.27	5,136,363,891.42	99.91
2. Work Plan: Basic work plan for competitiveness enhancement		1,230,086,950.00	860,050,809.06	69.92
Output 1	Developed highway network	628,802,300.00	374,943,095.35	59.63
Output 2	Well-maintained highway network	147,056,450.00	140,261,728.17	95.38
Output 3	Highway network with greatest safety	454,228,200.00	344,845,985.54	75.92
3. Work Plan: Strategic work plan for transport and logistics system development		35,158,501,350.00	30,461,690,941.72	86.64
Output 1	Highway development for supporting national transport and logistics system	1,586,758,416.00	993,989,499.12	62.64
Output 2	Maintenance and management of highway network and bridges	27,309,773,040.00	24,066,299,919.21	88.12
Output 3	Enhancement of highway safety and efficiency	6,261,969,894.00	5,401,401,523.39	86.26
4. Work Plan: Integrated work plan for transport and logistics system development		77,765,121,100.00	60,162,030,989.29	77.36
Project 1	Intercity motorway construction projects	6,993,796,559.43	6,715,241,871.58	96.02
Project 2	Inter-regional highway network rehabilitation projects	5,290,203,625.57	4,109,051,347.42	77.67
Project 3	National highway network construction projects	58,983,687,323.00	45,360,493,313.56	76.90
Project 4	Highway rest area and weight control station development projects	1,787,884,793.00	1,111,323,274.64	62.16
Project 5	Highway safety efficiency enhancement projects	3,695,096,713.00	2,108,407,222.88	57.06
Project 6	Project on the construction of elevated road on Highway No. 35: Thon Buri - Pak Tho (Rama II Road)	1,014,452,086.00	757,513,959.21	74.67
5. Work Plan: Integrated work plan for the Eastern Economic Corridor (EEC)		2,580,048,600.00	2,070,885,519.07	80.27
Project 1	Highway development for supporting the EEC	2,580,048,600.00	2,070,885,519.07	80.27

Department of Highways, Ministry of Transport
Statement of Financial Position
As at 30 September 2024

Unit: Baht

	Note	2024	2023
Assets			
Current Assets			
Cash and cash equivalents	4	1,977,887,561.14	2,166,518,772.04
Other short-term receivables	5	9,508,453,474.90	8,461,694,689.54
Fixed deposits		12,132.69	12,010.93
Inventories		100,582,387.90	79,268,644.71
Other current assets		3,134,189.40	2,919,268.87
Total Current Assets		11,590,069,746.03	10,710,413,386.09
Non-Current Assets (Fixed Assets)			
Property, plant, and equipment – net	6	94,946,869,495.05	89,751,845,250.99
Infrastructure assets – net	7	434,683,807,483.86	414,800,196,299.24
Intangible assets – net	8	36,632,451.66	42,368,875.03
Other non-current assets		180,810.69	-
Total Non-Current Assets		529,667,490,241.26	504,594,410,425.26
Total Assets of Department of Highways		541,257,559,987.29	515,304,823,811.35
Assets of non-juristic person working capital	28.1	58,597,906,313.63	53,868,360,451.67
Total Assets		599,855,466,300.92	569,173,184,263.02

The accompanying notes are an integral part of these financial statements.

(Miss Anchalee Sata)
Director of Finance and Accounting Division

(Mr. Apirat Chaiwongnoi)
Director-General of Department of Highways

Note: These financial statements have not yet been audited and certified by the State Audit Office of the Kingdom of Thailand.

Department of Highways, Ministry of Transport
Statement of Financial Position (Continued)
As at 30 September 2024

Unit: Baht

	Note	2024	2023
Liabilities and Net Assets/Equity			
Liabilities			
Current Liabilities			
Trade accounts payable	9	7,708,971,307.09	1,753,735,488.10
Short-term accounts payables (amounts to be transferred) and subsidies		2,963,669.09	159,275.67
Other short-term payables	10	2,314,769,140.13	2,552,106,680.05
Short-term deposits	11	5,564,970,704.02	6,381,465,121.66
Other current liabilities	12	483.50	49,478,790.14
Total Current Liabilities		15,591,675,303.83	10,736,945,355.62
Non-current Liabilities			
Long-term accounts payables (amounts to be transferred) and subsidies		255,624,477.96	273,074,716.00
Long-term government advances received from the Treasury		15,538,000.00	15,538,000.00
Total Non-current Liabilities		271,162,477.96	288,612,716.00
Total Liabilities of Department of Highways		15,862,837,781.79	11,025,558,071.62
Liabilities of non-juristic person working capital	28.1	1,057,798,730.70	605,997,413.00
Total Liabilities		16,920,636,512.49	11,631,555,484.62
Net Assets/Equity			
Capital		22,737,041,607.79	22,737,041,607.79
Accumulated surplus	14	502,657,680,597.71	481,542,224,131.94
Total Net Assets/Equity of Department of Highways		525,394,722,205.50	504,279,265,739.73
Net assets/equity of non-juristic person working capital	28.1	57,540,107,582.93	53,262,363,038.67
Total Net Assets/Equity		582,934,829,788.43	557,541,628,778.40
Total Liabilities and Net Assets/Equity		599,855,466,300.92	569,173,184,263.02

The accompanying notes are an integral part of these financial statements.

(Miss Anchalee Sata)
Director of Finance and Accounting Division

(Mr. Apirat Chaiwongnoi)
Director-General of Department of Highways

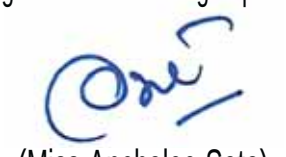
Note: These financial statements have not yet been audited and certified by the State Audit Office of the Kingdom of Thailand.

Department of Highways, Ministry of Transport
Statement of Financial Performance
As of 30 September 2024

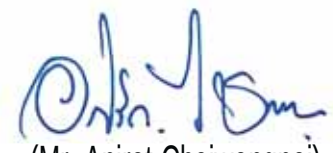
Unit: Baht

	Note	2024	2023
Revenue			
Revenue from budget allocation	15	104,814,470,775.87	132,334,896,283.83
Revenue from loans and other government revenue	16	-	226,800.00
Revenue from sales of goods and services		1,827,935.00	5,851,116.41
Revenue from grants and donations	17	1,557,694,947.81	1,152,095,425.60
Other revenue	18	336,179,710.00	291,005,617.60
Total Revenue of Department of Highways		106,710,173,368.68	133,784,075,243.44
Revenue of non-juristic person working capital	28.2	10,582,558,707.53	10,275,374,799.65
Total Revenue		117,292,732,076.21	144,059,450,043.09
Expenses			
Personnel expense		8,424,139,556.81	8,414,870,148.43
Pension expense		2,823,122,402.81	2,707,382,614.28
Remuneration expense		4,269,992.95	2,856,652.20
Overheads		23,961,177,651.22	31,704,286,810.33
Supplies expense		796,511,427.05	789,600,025.05
Utilities expense		431,016,797.61	390,469,826.44
Depreciation and amortization		49,143,636,150.39	42,547,633,101.69
Other expenses		11,022,345.80	(11,591,373.74)
Total Expenses of Department of Highways		85,594,896,324.64	86,545,507,834.68
Expenses of non-juristic person working capital		6,304,814,163.27	6,292,031,395.10
Total Expenses		91,899,710,487.91	92,837,539,229.78
Net Revenue over/(under) Expenses of Department of Highways		21,115,277,044.04	47,238,567,408.76
Net Revenue over/(under) expenses of non-juristic person working capital		4,277,744,544.26	3,983,343,404.55
Total Net Revenue over/(under) Expenses		25,393,021,588.30	51,221,910,813.31

The accompanying notes are an integral part of these financial statements.



(Miss Anchalee Sata)
Director of Finance and Accounting Division



(Mr. Apirat Chaiwongnoi)
Director-General of Department of Highways

Note: These financial statements have not yet been audited and certified by the State Audit Office of the Kingdom of Thailand.

Department of Highways, Ministry of Transport
Statement of Changes in Net Assets/Equity
For the Year Ended 30 September 2024

Unit: Baht

		Capital	Revenue over/(below) Accumulated Expenses	Total Net Assets/ Equity
Balance as at 30 September 2022 – As previously reported		22,737,041,607.79	434,306,704,519.74	457,043,746,127.53
Cumulative effect of prior-year error corrections		-	(3,047,796.56)	(3,047,796.56)
Cumulative effect of changes in accounting policies		-	-	-
Balance as at 30 September 2022 – After adjustments		22,737,041,607.79	434,303,656,723.18	457,040,698,330.97
Changes in net assets/equity for the year 2023				
Changes that increase/decrease capital		-	-	-
Revenue higher/(lower) than expenses for the period		47,238,567,408.76	47,238,567,408.76	-
Gains/losses from investment revaluation		-	-	-
Balance as at 30 September 2023		22,737,041,607.79	481,542,224,131.94	504,279,265,739.73
Balance as at 30 September 2023 – As previously reported		22,737,041,607.79	481,528,567,053.46	504,265,608,661.25
Cumulative effect of prior-year error corrections		-	13,836,500.21	13,836,500.21
Cumulative effect of changes in accounting policies		-	-	-
Balance as at 30 September 2023 – After adjustments		22,737,041,607.79	481,542,403,553.67	504,279,445,161.46
Non-juristic person working capital				
Balance as at 30 September 2022	28.3	7,889,981,742.93	41,389,037,891.19	49,279,019,634.12
Changes in net assets/equity for the fiscal year 2023		-	-	-
Changes that increase/decrease capital		-	-	-
Income higher/(lower) than expenses for the period		-	3,983,343,404.55	3,983,343,404.55
Gains/losses from investment revaluation		-	-	-
Balance as at 30 September 2023	28.3	7,889,981,742.93	45,372,381,295.74	53,262,363,038.67
Total balance as at 30 September 2023		30,627,023,350.72	526,914,784,849.41	557,541,808,200.13

Unit: Baht

		Capital	Revenue over/(below) Accumulated Expenses	Total Net Assets/ Equity
Changes in net assets/equity for the year 2024				
Changes that increase/decrease capital		-	-	-
Income higher/(lower) than expenses for the period		-	21,115,277,044.04	21,115,277,044.04
Gains/losses from investment revaluation		-	-	-
Balance as at 30 September 2024		22,737,041,607.79	502,657,680,597.71	525,394,722,205.50
Non-juristic person working capital				
Balance as at 30 September 2023	28.3	7,889,981,742.93	45,372,381,295.74	53,262,363,038.67
Changes in net assets/equity for the fiscal year 2024		-	-	-
Changes that increase/decrease capital		-	-	-
Income higher/(lower) than expenses for the period		-	4,277,744,544.26	4,277,744,544.26
Gains/losses from investment revaluation		-	-	-
Balance as at 30 September 2023	28.3	7,889,981,742.93	49,650,125,840.00	57,540,107,582.93
Total balance as at 30 September 2023		30,627,023,350.72	552,307,806,437.71	582,934,829,788.43

The accompanying notes are an integral part of these financial statements.

(Miss Anchalee Sata)
Director of Finance and Accounting Division

(Mr. Apirat Chaiwongnoi)
Director-General of Department of Highways

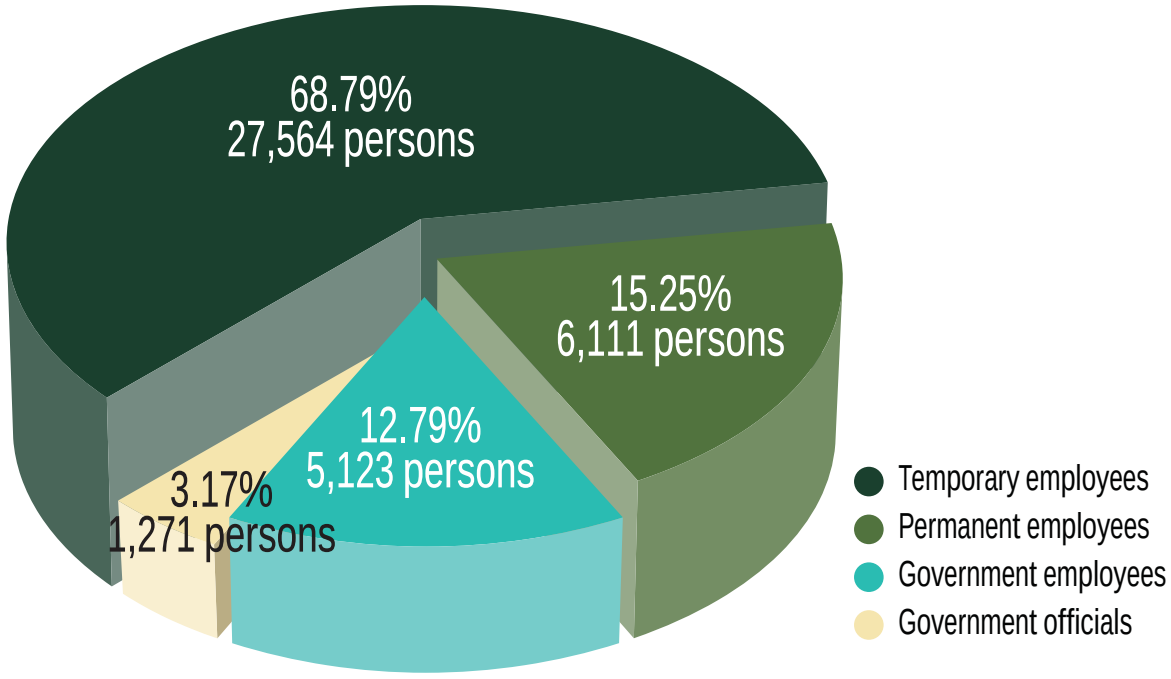
Scan to read Notes to the Financial Statements

Note: These financial statements have not yet been audited and certified by the State Audit Office of the Kingdom of Thailand.

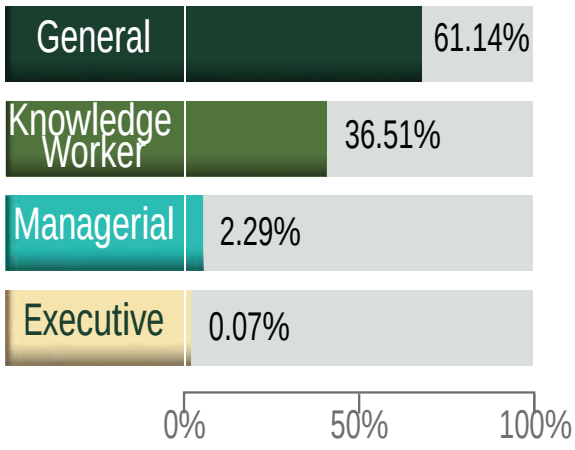


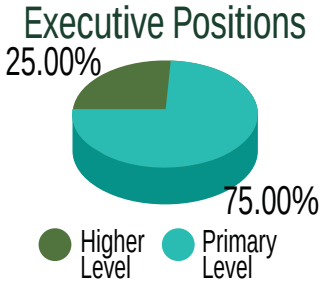
Human Resource Management

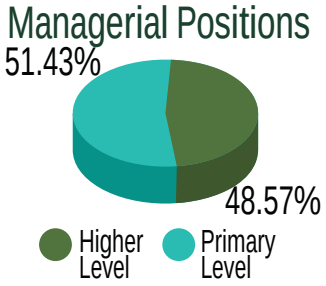
Manpower of the Department of Highways as of 30 September 2024 Total: 40,069 persons

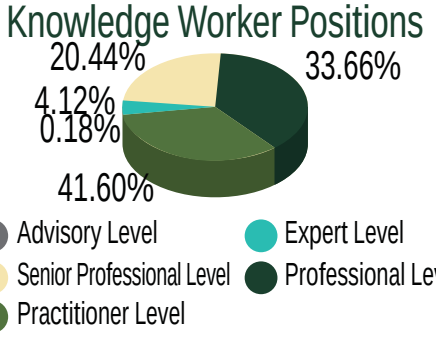


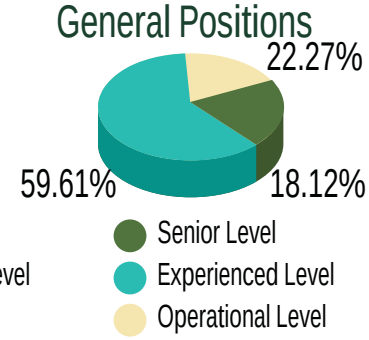
Government Officials' Manpower, as of 30 September 2024 (Classified by position and level of position)



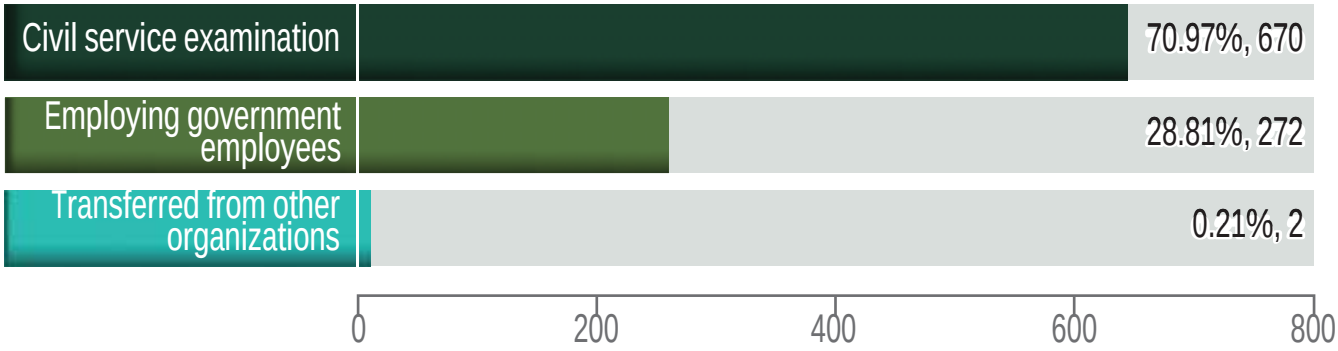




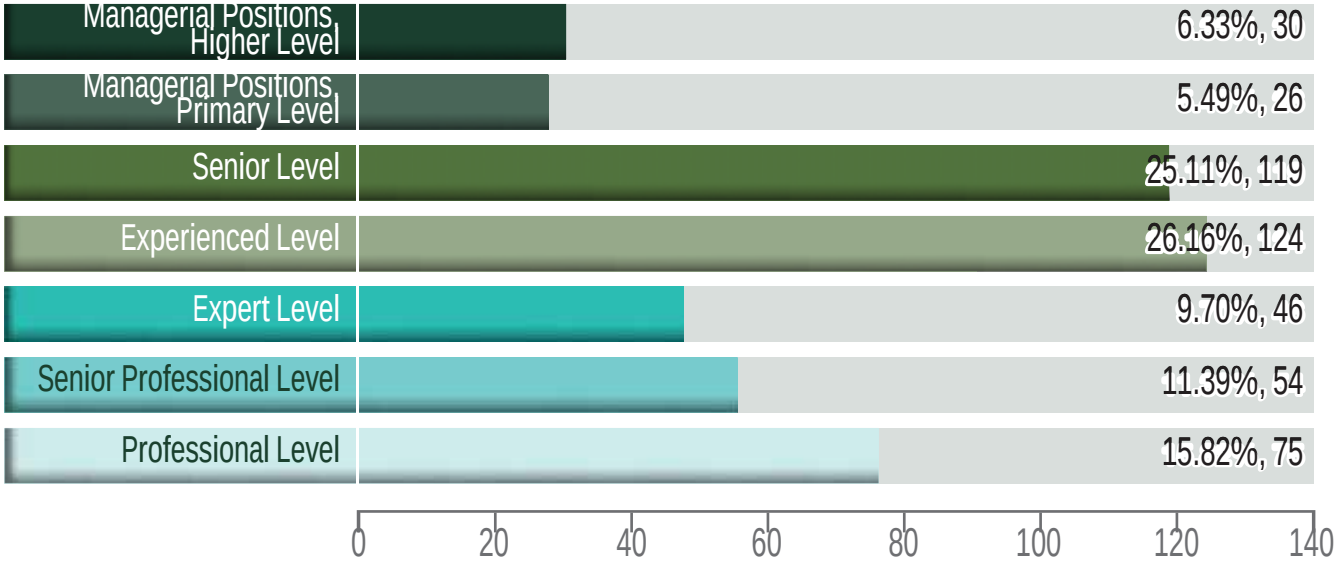




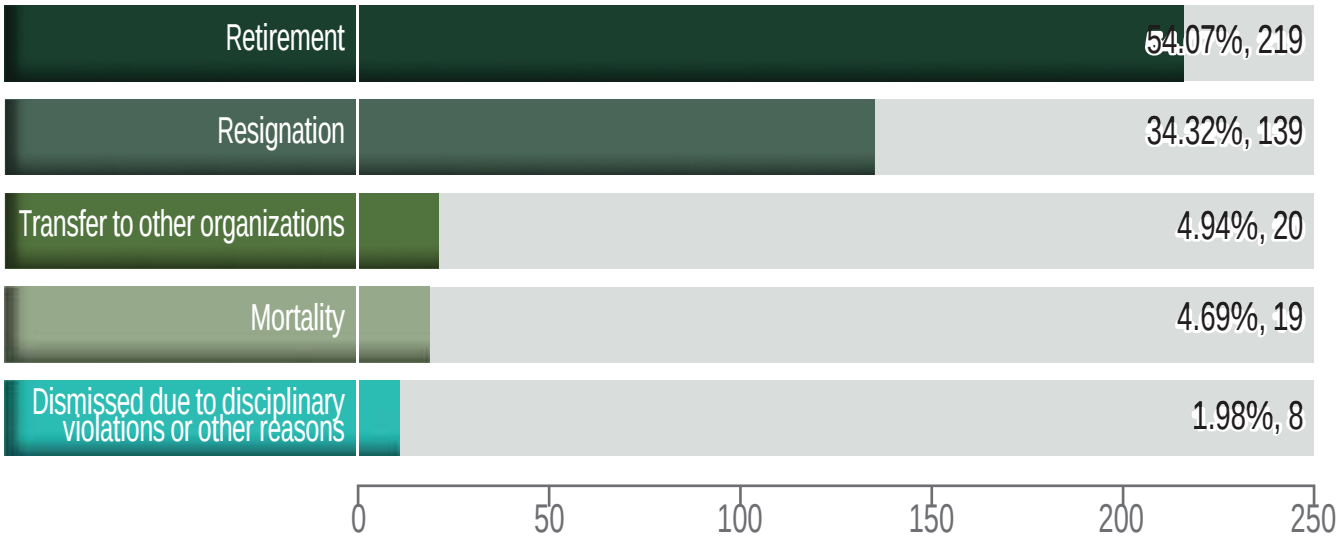
Government Official and Government Employee Recruitment during the Fiscal Year 2024



Appointment of Government Officials to Higher Positions during the Fiscal Year 2024



Attrition Rate of Government Officials in the Department of Highways during the Fiscal Year 2024



Performance in the Fiscal Year 2024

In fiscal year 2024, the Department of Highways prioritized human resource management, recognizing its crucial role in supporting and driving the department's mission to achieve its goals. Comprehensive measures were implemented, including developing work systems, managing the human resource information system, overseeing personnel records, administering rights and benefits, planning and managing manpower frameworks, recruiting and appointing personnel, handling disciplinary actions, promoting ethics, providing welfare, and formulating quality-of-life development plans aligned with government policies. Performance evaluations and assessments for promotions and salary increases were also conducted, along with other human resource management initiatives. The following human resource management initiatives were undertaken by the Department of Highways in fiscal year 2024:

1. Review and establishment of criteria or guidelines for human resource management practices

1.1 Developed criteria and methods for screening and listing candidates eligible for appointment to managerial positions, in accordance with the criteria specified in the Office of the Civil Service Commission (OCSC) letter No. Nor. Ror. 1006/Wor. 3, dated 22 February 2024. These criteria have been communicated to all relevant units.

1.2 Established criteria, methods, and conditions for the transfer, relocation, or promotion of civil servants to knowledge worker positions at the expert level and below, announced on 18 April 2024. The details were revised to align with the criteria specified in the OCSC letter No. Nor. Ror. 1006/Wor. 5, dated 22 March 2024, regarding the transfer, relocation, or promotion of civil servants to knowledge worker positions. These criteria have been communicated to all relevant units.

1.3 Developed criteria and methods for evaluating individuals for transfer to the position of General Administration Officer, Practitioner Level (Head of the General Administration Section). The criteria and guidelines for transferring government officials to the position of Head of General Administration Section were established in line with the criteria specified in the OCSC letter No. Nor. Ror. 1006/Wor. 5, dated 22 March 2024, regarding the transfer, relocation, or promotion of civil servants to knowledge worker positions. These criteria have been communicated to all relevant units.

1.4 Clarified the evaluation form for probationary civil service performance, in line with the OCSC's revised guidelines for the development and evaluation of civil servants on probation, effective for civil servants appointed from 1 February 2024 onwards.



2. Improvement of the appointment of government official positions in accordance with the criteria and methods specified in the OCSC letter No. Nor. Ror. 1008/Wor. 2, dated 19 February 2015 (Wor. 2/2558)

The aim was to align with the evolving missions of the Department of Highways and to provide career advancement opportunities for personnel. This includes:

- Two specialized managerial positions (civil engineering) at Highway Districts;
- Two positions of Civil Engineer (Head), Senior Professional Level at the Construction Supervision Division, Office of Highways;
- Three positions of Civil Engineer (Head), Senior Professional Level at the Engineering Section of Highway Districts where the directors were in the higher-level managerial positions;
- Two positions of Legal Officer, Senior Professional Level at the Legal and Land Ownership Division, Office of Highways.

3. Efficient management of vacant positions

In the past fiscal year, approximately 5% of vacant positions remained, enabling the Department of Highways and its affiliated agencies to successfully achieve their mission goals. This also ensured effective human resource management, boosting morale, motivation, and career advancement for civil servants. Key initiatives included:

3.1 Recruitment of individuals for civil service positions, particularly in core roles such as Civil Engineer (Practitioner Level), Civil Engineer (Operational Level), and support roles such as Human Resources Officer (Practitioner Level), General Administrative Officer (Practitioner Level), Procurement Officer (Practitioner Level), Internal Audit Officer (Practitioner Level), International Relations Officer (Practitioner Level), Mechanical Technician (Operational Level), and so forth.

3.2 Recruitment of individuals for appointment to senior-level general positions, knowledge worker positions at senior professional and expert levels, and managerial positions at both primary and higher levels. Recruitment for these positions was conducted in accordance with the criteria and guidelines set by the OCSC, filling all vacant positions.

3.3 Facilitated government officials in the general, knowledge worker, and managerial positions in requesting transfers when vacancies arose due to various circumstances, such as promotions, departmental transfers, or transfers to other types of positions.

4. Appointment of government scholarship recipients as civil servants

The appointment twas carried out in line with the OCSC letter No. Nor. Ror. 1004.1/Wor. 16, dated 11 December 2008, regarding the selection and appointment of individuals to civil service positions, as follows:

4.1 Three OCSC scholarships allocated by the government for general degree-level candidates in 2020, based on the Department of Highways' requirements.

4.2 One scholarship under the Development and Promotion of Science and Technology Talents Project (DPST) by the Institute for the Promotion of Teaching Science and Technology (IPST).

4.3 Two scholarships under the Human Resource Development in Science Project (Science Achievement Scholarship of Thailand) by the Office of the Permanent Secretary, Ministry of Higher Education, Science, Research, and Innovation.

5. Analysis and preparation of the request for approval of the Department of Highways' sixth round of government employee manpower framework (fiscal years 2025-2028)

The analysis and preparation were carried out in line with the guidelines set by the Government Employee Administration Committee (GEAC). This includes relevant data such as the overall manpower data of the department, analytical data for preparing the government employee manpower framework, data on required government employee positions for critical and essential missions, historical workload data, data on vacant positions not allocated budget for government employee hiring, and a summary of the analysis for preparing the government employee manpower framework. The GEAC approved the allocation of 6,956 government employee positions to the Department of Highways, enabling the department to conduct performance evaluations and renew contracts for its government employees to ensure continuous operations.

6. Selection of 2024 Transportation Role Models and Outstanding Civil Servants of the Department of Highways

6.1 The “Transportation Role Model” Award is a prestigious honor conferred by the Ministry of Transport upon personnel under its jurisdiction who demonstrate exemplary conduct, integrity, transparency, and strong moral and ethical values. This award recognizes individuals who exhibit unwavering honesty, steadfastness in upholding what is right, and dedication that produces tangible results. It serves to inspire others to emulate these values, fostering a culture of integrity and ethical governance. As part of the Ministry of Transport’s anti-corruption and ethics promotion project for fiscal year 2024, the Department of Highways nominated a qualified government official, Mr. Thaweesak Rujijunyawat, Director of the Bureau of Bridge Construction, as the 2024 Transportation Role Model.









6.2 The “Outstanding Civil Servant of the Department of Highways” Award annually recognizes civil servants within the department who demonstrate exemplary conduct and outstanding performance. Selections are made according to criteria and guidelines established by the Ministry of Education. In 2023, five individuals were selected as Outstanding Civil Servants of the Department of Highways, ten received commendation awards, and twelve received certificates of honor. The Department of Highways held an awards ceremony on 3 April 2024, in the Terdsak Sedthamanop Seminar Room, where plaques and certificates were presented. The department also nominated three outstanding civil servants to the Ministry of Education for consideration as Outstanding Civil Servants for 2023. They were: Mr. Suebpong Phaisanwatthana, Director of the Bureau of Planning Bureau; Mr. Natthawut Deepradit, Senior Civil Engineer at Chainat Highway District; and Mrs. Wilai Petchkerd, Typist (Operational Level 4) at Phetchabun Highway District 1.

7. Promotion of ethical and moral awareness among personnel and campaigns for the prevention and suppression of corruption and misconduct in the public sector

7.1 Implemented the Department of Highways' action plan for preventing and suppressing corruption and misconduct, and promoting ethics and morality for the fiscal year 2024. This included developing projects and activities to foster ethical and moral consciousness among personnel, ensuring compliance with government regulations and promoting good conduct. Campaigns will emphasize participation in preventing and combating public sector corruption and foster understanding of good governance principles. Progress has been monitored at least twice annually, with results reported to external agencies such as the Ministry of Transport and the Office of the Civil Service Commission.













7.2 Conducted ongoing activities to promote a culture of ethics, morality, and the prevention and suppression of corruption and misconduct. These activities included: New Year merit-making and alms-giving, oath-taking ceremonies pledging to be good civil servants and serve the nation, merit-making and Buddhist chanting ceremonies commemorating the 112th anniversary of the Department of Highways' establishment (1 April 2024), the Department of Highways' royal-sponsored Kathina ceremony at Chiang I Si Mongkhon Wararam Temple (a royal monastery) in Si Sa Ket Province, the 2024 Anti-Corruption Day event, activities promoting the wearing of Thai traditional attire, and so forth.





8. Integrity and Transparency Assessment (ITA) for the fiscal year 2024

The assessment was conducted using three key assessment tools: Internal Integrity and Transparency Assessment (IIT) which measured perceptions of internal stakeholders or the department's personnel, External Integrity and Transparency Assessment (EIT) which evaluated perceptions of external stakeholders or the public and the department's service users, and Open Data Integrity and Transparency Assessment (OIT) which evaluated public information disclosure. Assessment data was fully recorded in the Integrity and Transparency Assessment System (ITAS), adhering to National Anti-Corruption Commission (NACC) guidelines and deadlines. The 2024 assessment result was 87.44%, classified as "Pass," exceeding the key performance indicators and targets set by the Ministry of Transport and the NACC.

9. Ethical organization evaluation for the fiscal year 2024

The evaluation was conducted in accordance with the manual for assessing ethical communities, organizations, districts, and provinces under the National Ethics Promotion Action Plan, Phase 2 (2023-2027). The evaluation used a nine-step process with three levels: Ethics Promotion, Ethics Development, and Model Ethics. Targets were based on "issues to be resolved" and "good deeds to be accomplished," aligned with religious principles, the sufficiency economy philosophy, Thai cultural values, and the five virtues: sufficiency, discipline, integrity, volunteerism, and gratitude. This initiative aimed to cultivate ethical individuals and "complete human beings," promoting visible and tangible ethical development in society. A summary of the ethical organization initiatives, including video clips, was published on the Department of Highways' public relations channels, following the Ministry of Transport Anti-Corruption Operations Center guidelines. The Department of Highways achieved "Model Ethics Organization" status for 2024, a result of collaborative efforts by all affiliated units in implementing the evaluation criteria indicators.

10. Provision of welfare and financial assistance

Welfare and financial assistance were provided in accordance with the Department of Highways' welfare regulations regarding the payment of welfare benefits to members of the Department of Highways' welfare scheme, B.E. 2554 (2011). This assistance included: five cases of death resulting from accidents or disasters while performing official duties (totaling 150,000 baht), 50 cases of injury or harm sustained while performing official duties (totaling 134,500 baht), 53 cases of direct impact from fire, flood, or public disasters (totaling 171,450 baht), and two cases of injury leading to disability or incapacity requiring retirement due to performing official duties (totaling 200,000 baht).

11. Production and sale of yellow, navy blue, and white polo shirts featuring Department of Highways' official emblem as well as yellow polo shirts with the emblem for the Royal Celebration in honor of His Majesty the King's Sixth Cycle Birthday Anniversary on 28 July 2024

The proceeds from sales were contributed to the Department of Highways Welfare Fund to support continuous and more efficient welfare programs for personnel, ultimately enhancing their quality of life. To streamline the purchasing process, an online order form (Google Forms) was utilized, along with the development of a database to manage orders, payments, deliveries, and document storage.









12. Development and promotion of employee well-being and organizational engagement

Committed to improving quality of life for its personnel beyond the standard government benefits, the department partnered with CP ALL Public Company Limited and PTT Oil and Retail Business Public Company Limited to establish Department of Highways Welfare Stores. These stores, located within the central office area and serving 24 internal departments, operate Monday through Friday, 06:00 a.m. to 06:00 p.m., and are closed on weekends and public holidays. Regarding health and hygiene, the department cafeteria adheres to Department of Health food sanitation standards, ensuring high-quality, clean, and safe food. Stainless steel spoon sterilization cabinets and designated containers for utensils are also provided.

13. Implementation of information technology to support operations

The aim was to transition into a digital organization and improve access to human resource management data. In this regard, an online meeting was conducted via the Zoom Cloud Meetings application to enhance understanding of the second evaluation of government employee performance (1 April - 30 September 2024) for the fiscal year 2024. Additionally, employees and officials have been granted the ability to submit their transfer requests through Google Forms.



HUMAN RESOURCES

Human Resource Development

In fiscal year 2024, the Training Division received a budget allocation of 2,176,100 baht under the Act (operating budget for training and seminars). An additional allocation of 10,590,680 baht was received, making a total of 12,766,780 baht. These funds supported personnel development within the Department of Highways across core and support functions, as well as knowledge exchange programs and network collaboration initiatives, which are detailed hereunder:





1. Human resource development projects according to policies and strategies

1.1 Seminar Project for Executives of the Department of Highways for the Fiscal Year 2024

The seminar on “Driving Government Policies and Steering the Organization Toward Established Goals” under the ‘Transportation for Public Well-being’ policy,” was held on Monday, 18 December 2024, at the Manas Korwanich Meeting Room for central unit executives and via Zoom Cloud Meetings for regional unit executives. The seminar aimed to ensure that executives are well-informed about policies and administrative guidelines, enabling them to effectively manage organizational resources, plan expenditures, and prepare budgets efficiently and cost-effectively. These efforts aligned with the Department of Highways’ Operational Plan (2023-2027). A total of 163 executives participated in the seminar.

1.2 Newly Appointed Civil Servant Development Project

In the fiscal year 2024, the Department of Highways appointed 416 new civil servants. According to the Office of the Civil Service Commission (OCSC) requirements, affiliated agencies must develop newly appointed civil servants through three key processes: orientation, self-learning via the “Newly Appointed Civil Servant Training Course through e-Learning,” and joint training seminars. To comply with these guidelines, the Training Division facilitated their participation in the following programs:: “I Am...a Good Civil Servant” Training Course (Classes 75-79), hosted by the Ministry of Transport; and the Sapling Civil Servants of the Department of Highways” Orientation Program (Classes 1-5). These training sessions were conducted at the Terdsak Sedthamanop Seminar Room, Training Division, and the Roadwork Human Resource Development Center in Si Racha, Chon Buri Province. Participants were equipped with the principles of ethical civil service, competency development, and essential skills for their official duties. The training also fostered a sense of unity and collaboration, ensuring effective teamwork in future operations within the Department of Highways.

2. Engineering promotion and development projects

To ensure continuous and systematic personnel development aligned with the organization's specialized capabilities and its current and future infrastructure mission, several training programs were conducted. These programs also addressed the need to adapt management approaches in accordance with highway standards and government regulations. The following training courses were held:

2.1 Experience Enhancement for Newly Appointed Civil Servants in the Engineering Field (Class 26): Held at the Training Division Meeting Room, with 127 participants completing the course.

2.2 Construction Supervision for Civil Engineers and Civil Technicians: Held at Highway District 7 (Khon Kaen), with 117 participants completing the course.

2.3 Road Safety Audit during Construction and Pre-Opening Stage: Held at Chiang Rai Highway District 1, Office of Highways 4 (Tak), and Office of Highways 17 (Krabi), with a total of 157 participants completing the course.

2.4 Highway Construction Project Management Using Drones with RTK Systems: Held at Highway District 1 (Chiang Mai), with 34 participants completing the course.

2.5 Bridge Damage Assessment and Analysis (Classes 1-4): Held at the Roadwork Human Resource Development Centers in Chon Buri, Chiang Mai, Khon Kaen, and Nakhon Si Thammarat, with a total of 123 participants completing the course.

2.6 Supervision of Highway Lighting System Installation and Maintenance: Held at Office of Highways 12 (Suphan Buri), with 68 participants completing the course.









3. Administration promotion and development projects

In line with the executives' policy to expand personnel development opportunities across all units within the Department of Highways, training programs were organized to enhance employees' capabilities and improve overall work performance. These programs focused on both core engineering roles and support roles, fostering collaboration to drive the agency's mission forward. Notable examples include:

3.1 Department of Highways' Primary-Level Executives Course (Classes 13 and 14): Held in a hybrid format, combining e-learning modules and classroom training at the Roadwork Human Resource Development Center in Chon Buri Province, with 120 participants completing the course.

3.2 Project to Develop the Department of Highways Human Resource Development Strategic Plan (2023-2027): Held at the Terdsak Sedthamanop Seminar Room, with 68 participants completing the training.

3.3 Basic Life Support Skills Training Project: Held at the Terdsak Sedthamanop Seminar Room, with 107 participants completing the training.

3.4 Seminar on the Department of Highways' Complaint Management in Online Format via Zoom Cloud Meetings: Held at the Training Division Meeting Room, with 164 participants.

3.5 Seminar on Enhancement of Efficiency and Competencies in Finance and Accounting: Held at the Terdsak Sedthamanop Seminar Room, with 158 participants.

3.6 Academic Seminar for Analysis and Inspection Officers: Held at the Roadwork Technology Development Center Building (Central Lab), with 300 participants.

3.7 Seminar for Land Acquisition Officers: Held at the Terdsak Sedthamanop Seminar Room, with 182 participants.

















4. Roadwork machinery promotion and development projects

Recognizing the impending retirement of experienced heavy machinery operators within the Road Construction Centers and Bridge Construction and Rehabilitation Centers, a meeting of these centers highlighted the urgent need to develop personnel to replace them. This development is crucial to ensure that new personnel possess the necessary knowledge, skills, and expertise for efficient and effective road construction and maintenance operations. To address this need, the Training Division organized two training courses specifically for personnel within the Road Construction Centers and Bridge Construction and Rehabilitation Centers:

4.1 Excavator Operation Training Course (Class 7): Held at the Kanchanaburi Road Construction Center, with 28 participants completing the course.

4.2 Motor Grader Operation Training Course (Class 6): Held at the Lom Sak Road Construction Center, with 30 participants completing the course.





5. Organizational learning promotion projects

The Training Division organized knowledge promotion and dissemination projects alongside knowledge exchange programs to ensure that personnel across all levels, groups, and positions have access to learning resources and opportunities for independent study. Various platforms, such as the KM Facebook page and KM Website, were utilized to facilitate learning. Additionally, personnel were trained and developed as knowledge managers within their respective units, enabling them to expand their expertise in knowledge management practices. In fiscal year 2024, the following training projects were conducted to support both core and support functions of the Department of Highways:

5.1 Knowledge Exchange on Guidelines for Improving Procurement Operation Efficiency in the Department of Highways: Conducted at the Terdsak Sedthamanop Seminar Room, with 159 participants.

5.2 Meeting of the Department of Highways' Knowledge Management Strategy Workforce: Conducted at the Training Division Meeting Room, with 33 participants.

5.3 The 13th Community of Practice (CoP) Knowledge Exchange on Guidelines for Asphalt Concrete Pavement Design and Supervision, and Procurement Operations and Management: Conducted at the Training Division Meeting Room, with 123 and 90 participants, respectively.

5.4 Learning Promotion Project for Organizational Innovation Creation: Conducted at the Terdsak Sedthamanop Seminar Room, with 41 participants.

5.5 Basic Knowledge Management Training via Zoom Cloud Meetings: Conducted at the Training Division Meeting Room, with 131 participants.

5.6 Seminar on Defining Knowledge Management Competency Indicators: Conducted at the Terdsak Sedthamanop Seminar Room, with 42 participants.

5.7 Training/Seminar for Department of Highways Knowledge Managers on Professional Management: Conducted at the Roadwork Human Resource Development Center, Chon Buri Province, with 90 participants.







6. Projects to promote morality, ethics, and quality of life development

The Training Division has continuously organized initiatives to foster moral integrity, ethical conduct, and a strong sense of responsibility in the workplace, while also promoting work-life balance. In 2024, activities under the "Full of Merit, Warm with Dharma, Leading to Happiness at Work" project were conducted at Phra That Pha Son Kaeo Temple, Khao Kho District, Phetchabun Province, with 48 participants.

7. Facilitating personnel participation in training courses conducted by external agencies

To equip personnel with the knowledge, skills, and competencies necessary to adapt to future changes and advance in their careers, the Training Division has facilitated participation in 22 study and training programs conducted by external agencies. For senior executives, high-ranking officials were sent to specialized training programs. These external training programs included:

7.1 Complimentary Executive Development Program - CEDP (Class 16): Conducted by the Office of the Civil Service Commission (OCSC) and conducted at the OCSC office, with five participants from the department.

7.2 Executive Development Program - CEDP (Visionary and Moral Leaders): Conducted by OCSC, with two participants from the department.

7.3 Senior Executive Development Program - SEDP (Public Sector Executives): Conducted by OCSC, with one participant from the department.

7.4 Complimentary Executive Development Program - CEDP: Conducted by OCSC, with five participants from the department.

7.5 National Defence Program (Class 66): Conducted by the National Defence College, with two participants from the department.

7.6 Ministry of Transport Senior Executive Program: Conducted by the Ministry of Transport, with eight participants from the department.

Additionally, five officials were sent to participate in two quality workforce development courses organized by OCSC, as follows:

7.7 New Wave Leader Program (Class 29), with one participant form the department.

7.8 High Performance and Potential System (HiPPS) Program, with four participants from the department.











8. Projects to promote cooperation with external agencies and organize special lectures

The Department of Highways is committed to fostering academic collaboration to develop human resources in road engineering for both internal and external personnel across the public and private sectors. It has continuously served as a key agency for transferring technical knowledge in roadwork under various international cooperation frameworks. In fiscal year 2024, the department implemented the following initiatives:

8.1 Course on Road Surface and Road Recycling Techniques for Engineers from Thailand's Department of Highways Engineers and Officials from the Department of Roads, Ministry of Public Works and Transport, Lao PDR

Conducted at the Roadwork Technology Development Center (Central Lab), this initiative, with seven participants, aimed at enhancing international cooperation in roadwork.

8.2 Special Lecture on Building Paint and Chemical Innovations for Construction Use

Held at the Terdsak Sedthamanop Seminar Room, Training Division, this lecture was attended by 19 participants, including civil engineers, civil technicians, and scientists. Experts from Beger Co., Ltd., a leading manufacturer and distributor of building paints and construction chemicals, delivered the session.

8.3 Academic Seminar under Technical Cooperation Project between Department of Highways, JICA, and Japanese Private Sector

The seminar, titled "Carbon Fiber Sheet Reinforcement Technology for Long-Lasting Infrastructure in Thailand," was held at the Training Division Meeting Room and streamed via Zoom Video Conference, with a total of 161 participants. The event facilitated knowledge and technology exchange between Japanese experts and Thai engineers, focusing on the effectiveness of reinforcement materials. Topics included concrete structure repair using Carbon Fiber Sheet reinforcement technology, which has potential applications in future Department of Highways projects.

8.4 Establishment Ceremony of the Standards Development Organization by the Department of Highways in Collaboration with the Thai Industrial Standards Institute

The Department of Highways has applied to become a Standards Development Organization (SDO) under the Thai Industrial Standards Institute (TISI) to establish credible, transparent, and internationally aligned standards. This designation will enable the Department to enhance work quality, develop and regulate highway-related standards, and ensure efficiency and safety. Ultimately, this initiative aims to improve road infrastructure, benefiting both the nation and the public in the long term.

The official ceremony to present the certificate recognizing the Department of Highways as an SDO took place on 29 August 2024, at the Terdsak Sedthamanop Seminar Room, Training Division. Mr. Sarawut Songsivilai, Director-General of the Department of Highways, presided over the event, which was attended by executives from TISI, the Department of Highways, and members of the media.









8.5 The 5th International Conference on Highway Engineering: "Thailand's First International Collaboration Gathering Innovations in Highway Engineering"

The Department of Highways, in collaboration with the Roads Association of Thailand, organized the 5th International Conference on Highway Engineering 2024 (iCHE2024) under the theme "Future-proofing Roads for Asia and Beyond." This conference provided a platform for presenting academic research at an international level while fostering knowledge and experience exchange among highway engineering professionals and participants from various domestic and international organizations. Held from 4 to 6 September 2024, at the BITEC Convention and Exhibition Center, Bang Na, Bangkok, the event featured special lectures by distinguished keynote speakers, academic presentations, panel discussions, workshops, and exhibition booths. Attendance was free of charge, with no registration fees required. More details can be found at www.iche2024.com.

9. Projects to develop digital skills through online self-learning

The Training Division has implemented the Department of Highways' Digital Skills Development Project through online self-learning since 2023. The project aims to equip the department's personnel with digital knowledge and skills that can be applied to their work in alignment with their roles and responsibilities, while also preparing them to adapt to changes in digital technology in anticipation of the digital economy and society era. Learning is facilitated through two platforms: the Office of the Civil Service Commission and THAI MOOC. In fiscal year 2024, a total of 3,439 personnel, including government officials, permanent employees, government employees, and temporary staff, successfully completed the program.

10. Projects for learning through electronic media (e-learning)

The Department of Highways has actively supported and promoted personnel learning through various self-development initiatives. In fiscal year 2024, the Training Division continued its e-learning program, offering courses in English Language, Construction Supervision, Innovation Management, and Time Management Techniques. A total of 1,219 participants, including the department's personnel and external individuals, successfully completed the training.

Overall Summary Results of Human Resource Development Operations of the Department of Highways for Fiscal Year 2024

The Department of Highways' human resource development operations comprised a total of 34 projects/101courses, with a total of 12,127 trainees. The budget used for implementation (planned/unplanned) amounted to 12,766,780 baht.

Type of Project/Course	Project	Course	Trainees (Person)	Budget (Baht)
1) Human resource development projects (planned)	17	27	2,264	2,176,100
2) Human resource development projects (unplanned)	17	24	1,352	10,590,680
3) Training/seminar programs developed according to consultant contract agreements, sales contract terms, and upon request	-	46	3,853	6,672,680
4) E-Learning Training Programs	-	4	1,219	-
5) Department of Highways Digital Skills Development Program through Self-Paced Online Learning	-	-	3,439	-
Total	34	101	12,127	12,766,780 (Planned and unplanned projects)



Administrative System Development

Performance Based on Indicators

1. Summary of agency evaluation results based on administrative efficiency improvement measures for fiscal year 2024 (Department of Highways)

The Department of Highways conducted an agency evaluation based on administrative efficiency improvement measures for fiscal year 2024. The results are summarized below:

Indicators	Weight (%)	Target			Performance	Weighted Scoring
		Minimum (50)	Standard (75)	Threshold (100)		
Performance-Based Assessment (70%)						
1. Road traffic fatality rate per 100,000 population	20	4.37 people per 100,000 population	3.85 people per 100,000 population	3.24 people per 100,000 population	3.80 people per 100,000 population	15.41
2. Percentage of highway distance with International Roughness Index (IRI) better than the specified criteria (IRI not exceeding 3.5 meters per kilometer)	20	86.70%	90.35%	90.38%	88.23%	12.096
3. Percentage of completed and operational intercity motorway distance	10	37.95%	40.95%	43.95%	44.81%	10.00
4. Number of hazardous points and dangerous areas that have been improved	20	1,905 locations	1,928 locations	1,951 locations	1,961 locations	20.00
Potential-Based Assessment (30%)						
5. Percentage of open datasets complying with Government Data Catalog (GD Catalog) standards	10	50 (points)	75 (points)	100 (points)	100 (points)	10.00
6. Digital Government Readiness Level of Thai government agencies	5	2 (pillars)	3 (pillars)	4 (pillars)	3 (pillars)	3.75
7. Digital Government Readiness Level of Thai government agencies	5	44.44 (points)	54.44 (points)	59.44 (points)	50.22 (points)	3.2225
8. Results of PMQA 4.0 assessment for government agency status	10	400.00 (points)	449.33 (points)	458.32 (points)	454.10 (points)	8.826
					Total score	83.3045

Assessment: High Standard Level

Outstanding Performance

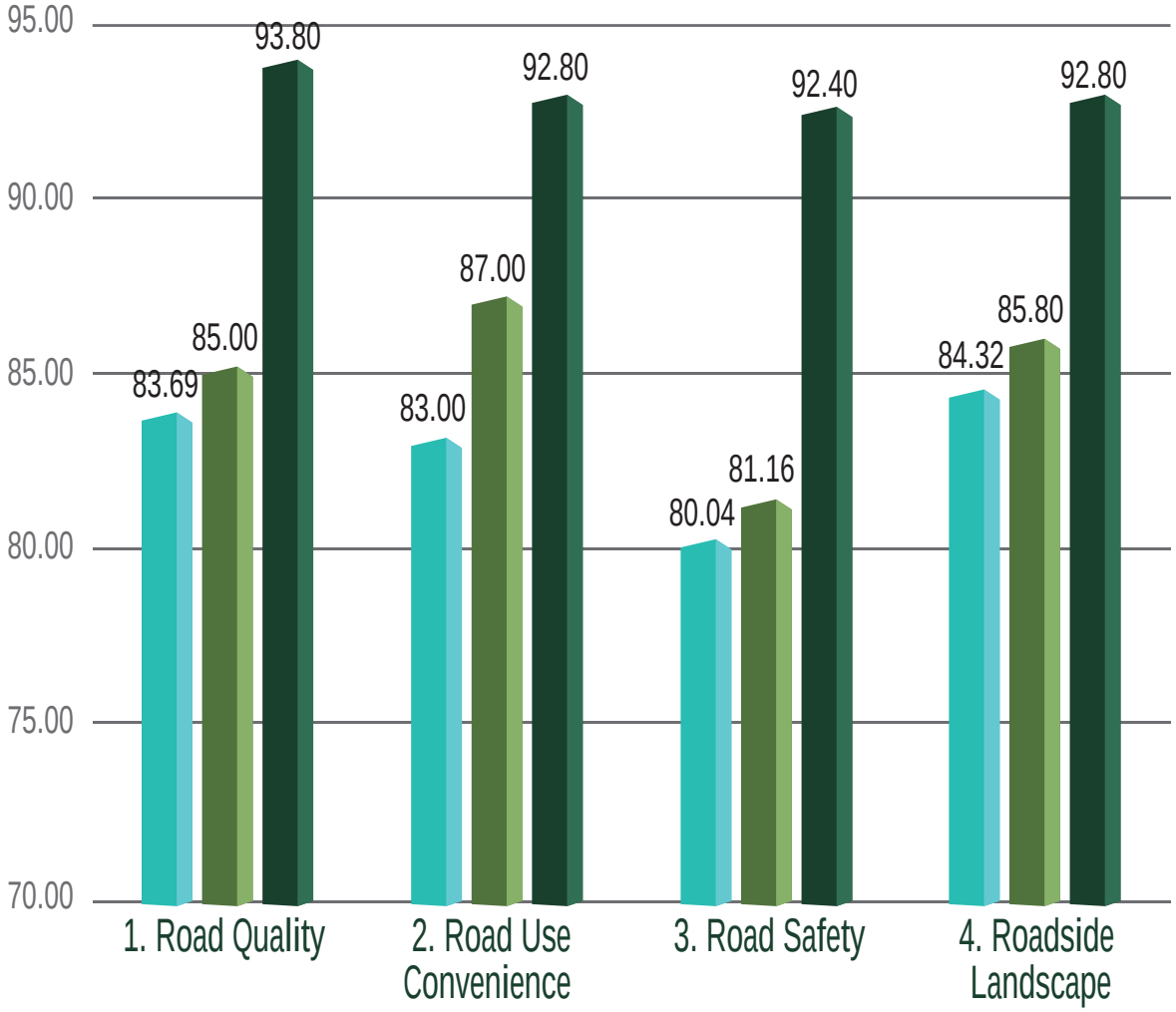
2. Road user satisfaction and dissatisfaction survey results for the Department of Highways' road network in 2024

The 2024 Road User Satisfaction and Dissatisfaction Survey for the Department of Highways' Road Network assessed road user satisfaction and dissatisfaction with road quality, convenience, safety, roadside landscapes, and overall experience. The survey polled 1,884 road users across the Department of Highways' road network. Data was collected via a 5-point rating scale questionnaire administered by surveyors across all 77 provinces and 104 highway districts nationwide.

2.1 Road user satisfaction with the Department of Highways' road network

Road user satisfaction with the Department of Highways' road network	Average Score	Percent	Satisfaction Level
1.Road Quality for Travel			
1.1 Road/bridge surface smoothness	4.72	94.40	Highest
1.2 Number of traffic lanes	4.70	94.00	Highest
1.3 Appropriate and safe road shoulder conditions	4.65	93.00	Highest
1.4 Clarity of road lines and traffic markings	4.67	93.40	Highest
Average	4.69	93.80	Highest
2. Road Use Convenience			
2.1 Travel flow efficiency	4.68	93.60	Highest
2.2 Adequate and clear directional signs	4.63	92.60	Highest
2.3 Adequate rest areas and highway rest stops	4.67	93.40	Highest
2.4 Appropriateness of road medians (if any)	4.59	91.80	Highest
2.5 Easy access to route and traffic information	4.65	93.10	Highest
Average	4.64	92.80	Highest
3. Road Safety			
3.1 Appropriate and safe U-turn points	4.61	92.20	Highest
3.2 Adequate street lighting in community areas	4.48	89.60	Highest
3.3 Safe and convenient pedestrian crossing in community areas	4.63	92.60	Highest
3.4 Adequate and clear safety equipment/facilities	4.64	92.80	Highest
Average	4.62	92.40	Highest
4. Roadside Landscape			
4.1 Cleanliness of roadsides (no litter and overgrown grass)	4.60	92.00	Highest
4.2 Road maintenance condition	4.64	92.80	Highest
4.3 Scenic beauty	4.67	93.40	Highest
Total Average	4.64	92.80	Highest
Overall Satisfaction	4.65	93.00	Highest

Comparison of Road User Satisfaction Scores for the Department of Highways' Road Network between Fiscal Years 2022–2024



	1. Road Quality	2. Road Use Convenience	3. Road Safety	4. Roadside Landscape
2022 (%)	83.69	83.00	80.04	84.32
2023 (%)	85.00	87.00	81.16	85.80
2024 (%)	93.80	92.80	92.40	92.80

A comparison of road user satisfaction with the Department of Highways' road network between fiscal years 2022 and 2024 shows progressive increases in overall satisfaction across all four measured aspects. In fiscal year 2024, road quality for travel received the highest satisfaction score at 93.80%. Road use convenience and roadside landscape both scored 92.80%, while road safety received a score of 92.40%. The overall average satisfaction score for the Department of Highways was 93.00%, demonstrating the department's success in meeting the needs and expectations of the public using its road network.



Highway Development Planning

Highway Development Planning is a core mission of the Department of Highways, encompassing: 1) defining and analyzing strategies and goals for highway network and intercity motorway development; 2) conducting short-, medium-, and long-term highway development studies and planning to guide project selection and prioritization; and 3) assessing the engineering and economic feasibility, as well as environmental impacts, of projects. In fiscal year 2024, the Department of Highways undertook the following key highway development planning activities:

1. Study and Preparation of New Highway Development Plan to Support Transportation Network and Logistics System Connectivity

Major highway networks in some areas face limitations that hinder overall transport efficiency and increase logistics costs. Therefore, the Department of Highways has been studying and defining the direction for new national highway network development. This focuses on closing missing links, improving connectivity to key points, and developing shortcut routes to reduce travel time. The goals are to increase convenient, fast, and safe route options, open new development areas, and distribute prosperity to local communities, ultimately improving quality of life by enabling equitable access to basic transportation. A short-, medium-, and long-term new highway development plan is currently being developed, covering all 77 provinces nationwide. This study will identify at least 20 high-potential projects, totaling no less than 300 kilometers.



Figure 1: The project on study and preparation of new highway development plan to support transportation network and logistics system connectivity

2. Preliminary Study on Economic and Engineering Feasibility and Environmental Impacts for the Development of a New Highway Network Connecting Betong District, Yala Province and Sukhirin District, Narathiwat Province

The proposed new highway network connecting Betong District, Yala Province, and Sukhirin District, Narathiwat Province, aligns with the southern border provinces administration and development policy. This policy emphasizes integrated and coordinated efforts

across all sectors to drive development in the southern border provinces, with the ultimate goal of improving quality of life and well-being, addressing poverty and inequality, and promoting peace. A preliminary study is underway to assess the economic, engineering, and environmental feasibility of the project. The study area includes Betong and Sukhirin Districts, as well as surrounding areas impacted by the proposed development. The study results will inform highway network development planning to: improve access to transportation systems for residents of the southern border provinces; support security operations; reduce inequality; improve quality of life and well-being; and promote tourism.

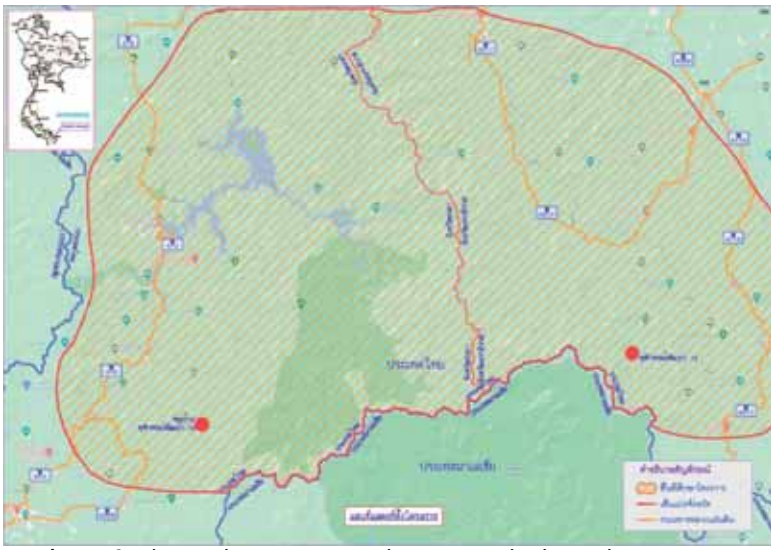


Figure 2: The study covers areas in Betong District, Yala Province and Sukhirin District, Narathiwat Province

3. Preliminary Study on Economic and Engineering Feasibility and Environmental Impacts for the Development of a New Highway Network Connecting Ban Pa Khlok and Ban Bang Khu in Phuket Province

Phuket, a major tourism hub in Thailand, generates the second-highest tourism revenue after Bangkok. The province has experienced continuous growth across various sectors, including the economy, society, trade, investment, and tourism. Currently, Highway No. 402 (Thep Kasattri Road) is the primary road connecting Phang Nga Province to Phuket Island and providing access from Phuket International Airport to the city center. While the Department of Highways plans to develop Highway No. 4027 (Tha Ruea - Mueang Mai) as an alternative route to Phuket's inner city, both highways converge at the heavily congested Tha Ruea Intersection (Highways No. 402, 4027, and 4025). Furthermore, the section from Tha Ruea Intersection to Bang Khu Intersection relies solely on Highway No. 402, which is already at full capacity and cannot be further expanded due to space constraints. To address these issues, the Department of Highways is conducting a feasibility study to determine the optimal route alignment, project viability, and preliminary development plans for a new highway network connecting Ban Pa Khlok and Ban Bang Khu. This project aims to improve connectivity in the region.



Figure 3: The study covers areas in Phuket Province and areas affected by the project development

4. Construction of Intercity Motorway No. 9: Western Bangkok Outer Ring Road (Bang Bua Thong - Bang Pa-In Section) (Civil Works)

The Western Bangkok Outer Ring Road, part of Intercity Motorway No. 9, was completed in 2000 and currently operates as a toll-free route. Serving as a major western artery of Bangkok, it facilitates travel and freight transport. However, increasing traffic congestion has become a significant issue. The area has transformed from rural and agricultural to urban, commercial, and industrial, which has led to rapid growth in residential communities, commercial zones, and industrial estates, and substantial economic development. Consequently, its Bang Bua Thong - Bang Pa-In section now experiences an average daily traffic volume of 65,000 vehicles, with a 4.7% annual growth rate. This has affected the road's capacity, causing congestion, travel delays, and disruptions to freight transport. The road can no longer effectively function as a bypass or fully support connectivity within Bangkok and its surrounding areas. Therefore, upgrading the Bang Bua Thong - Bang Pa-In section of the Western Bangkok Outer Ring Road to a fully controlled-access intercity motorway is critical. This will alleviate traffic congestion in Bangkok and its vicinity, ensuring convenient, fast, safe, and timely travel and freight transport between the southern, northern, and northeastern regions. The project will also reduce transportation and logistics costs, enhance national competitiveness, and improve overall efficiency. Furthermore, it will integrate with future intercity motorway networks as follows:



Figure 4: Project location of Intercity Motorway No. 9: Western Bangkok Outer Ring Road (Bang Bua Thong - Bang Pa-In Section) and future connection with other motorways



1) To be connected to Intercity Motorway No. 9: Western Bangkok Outer Ring Road (Bang Khun Thian - Bang Bua Thong Section), at Bang Bua Thong Interchange. This will facilitate travel to the western region via Intercity Motorway No. 81 (Bang Yai - Kanchanaburi) or travel to the southern region via Intercity Motorway No. 82 (Bang Khun Thian - Ban Phaeo).

2) To be connected to Intercity Motorway No. 6 (Bang Pa-In - Nakhon Ratchasima) at Bang Pa-In Interchange, to facilitate travel to the northeastern region.

3) To be connected to Intercity Motorway No. 9: Eastern Bangkok Outer Ring Road (Bang Pa-in - Bang Phli Section) at Bang Pa-In Interchange, to facilitate travel to eastern suburban Bangkok.

The Intercity Motorway No. 9, Western Bangkok Outer Ring Road (Bang Bua Thong - Bang Pa-In Section) route will start at the Bang Bua Thong Interchange on Intercity Motorway No. 9: Western Bangkok Outer Ring Road (Bang Khun Thian - Bang Bua Thong Section), and terminate at Bang Pa-In Interchange, spanning approximately 34.57 kilometers and covering areas in three provinces, namely Nonthaburi, Pathum Thani, and Phra Nakhon Si Ayutthaya.

The Department of Highways plans to undertake the civil works construction of the project between 2025 and 2029. As the civil works are progressively completed, the system installation phase will begin to expedite connectivity to Intercity Motorway No. 6 (Bang Pa-In - Nakhon Ratchasima), which is currently under construction and slated for completion in 2025. Furthermore, the project will align with the construction timeline for Intercity Motorway No. 9: Western Bangkok Outer Ring Road (Bang Khun Thian - Bang Bua Thong Section), which is scheduled to open in 2030.

5. Four-lane Expansion of Primary Highways (Phase 2)

The Cabinet has authorized the Ministry of Transport, through the Department of Highways, to implement a plan for expanding primary highways into four traffic lanes (Phase 2). This plan encompasses the upgrade of primary highway routes across all regions, covering 11 networks with a total distance of 5,246.23 kilometers.

Networks	Construction completed	Ongoing construction	Under budgeting process	Total
Network 1: Nakhon Sawan - Phitsanulok - Den Chai District - Phrae - Ngao District (including Phrae - Nan)	543.61	20.00	-	563.61
Network 2: Mae Sot District - Tak - Sukhothai - Phitsanulok - Lom Sak District - Chum Phae District - Khon Kaen - Kalasin - Mukdahan	752.36	-	80.73	833.09
Network 3: Saraburi - Phetchabun - Lom Sak District - Loei	280.21	-	111.83	392.04
Network 4: Ban Hin Kong - Nakhon Nayok - Prachin Buri - Aranyaprathet District - Thai/ Cambodian Border	196.00	-	-	196.00
Network 5: Nakhon Pathom - Suphan Buri - Pa Mok District - Saraburi (including Kanchanaburi - Suphan Buri)	229.24	-	-	229.24
Network 6: Nakhon Sawan - Chaiyaphum - Ban Phai District - Maha Sarakham - Roi Et - Yasothon - Ubon Ratchathani - Chong Mek	507.67	-	136.01	643.68
Network 7: Sattahip District - Phanom Sarakham District - Kabin Buri District - Pak Thong Chai District - Chok Chai District - Nang Rong District - Prasat District - Ubon Ratchathani - Mukdahan (including Si Khio District - Chok Chai District)	917.36	-	-	917.36
Network 8: Surat Thani - Nakhon Si Thammarat - Songkhla - Hat Yai District (including Songkhla - Chana District)	343.16	-	-	343.16
Network 9: Phuket - Phang Nga - Krabi - Trang - Phatthalung (including Huai Yot District - Nakhon Si Thammarat)	386.74	-	-	386.74
Network 10: Loei - Udon Thani - Sakon Nakhon - Nakhon Phanom	304.96	12.95	-	317.91
Network 11: Other networks	404.52	18.88	-	423.40
Total	4,865.83	51.83	328.57	5,246.23
Percentage	92.75	0.99	6.26	100.00

6. Highway Development to Promote Special Economic Zones (SEZ)

In 2015, the government introduced a policy to develop Special Economic Zones in 10 provinces as an initial phase. This initiative aimed to establish production hubs connected to the ASEAN region and foster the development of border towns, creating new economic zones that facilitate trade and investment with neighboring countries. The primary objectives were to promote regional prosperity, reduce social and income disparities, improve the quality of life for people in border areas, and strengthen border security.

To support the development of these Special Economic Zones, the Department of Highways devised a comprehensive road infrastructure development plan spanning from 2014 to 2028. The plan includes 53 projects covering a total distance of 1,073.20 kilometers. As of 2024, 46 projects (967.09 kilometers) were completed, 2 projects (25.23 kilometers) were under construction, and 5 projects (80.87 kilometers) were planned for the future.

In 2022, the Special Economic Zone Development Policy Committee approved the designation of economic corridor areas across four regions. In response, the Department of Highways has outlined plans to develop road infrastructure to support and facilitate future growth in these corridors. The planned projects include: 20 projects for the Northern Economic Corridor (NEC), 20 projects for the Northeastern Economic Corridor (NeEC), 17 projects for the Central-West Economic Corridor (CWEC), and 16 projects for the Southern Economic Corridor (SEC).

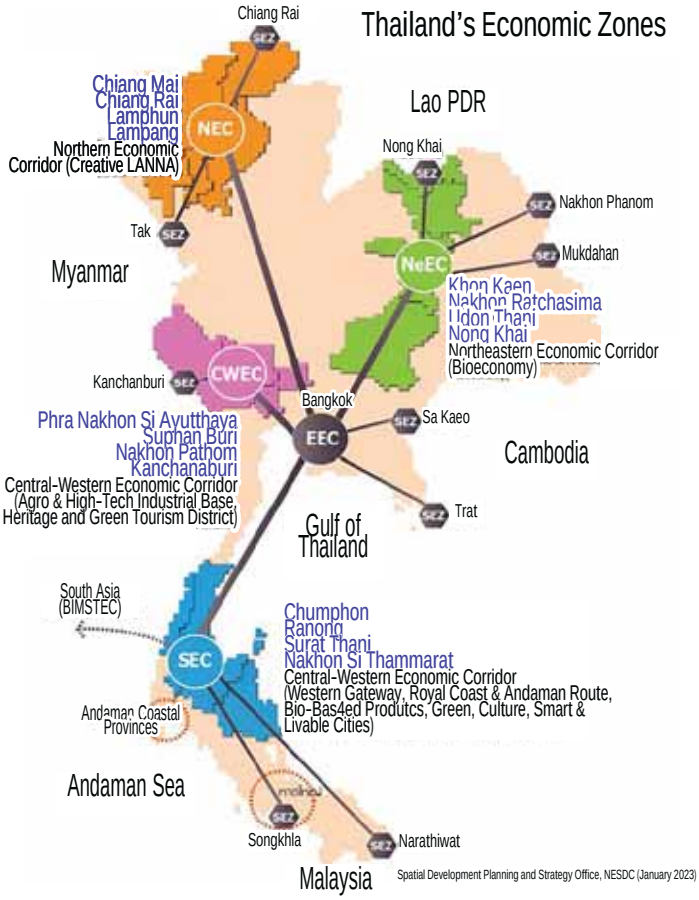


Figure 5: Thailand's Economic Corridor Scheme



7. Highway Development to Promote the Eastern Economic Corridor (EEC)

The Eastern Economic Corridor (EEC) is a strategic area-based initiative designed to promote investment and strengthen Thailand's industrial sector. The scheme focuses on three key provinces: Chon Buri, Rayong, and Chachoengsao. To hone the development of EEC, the Department of Highways has planned and executed a range of road infrastructure projects. Between 2014 and 2024, a total of 51 projects received funding. As of 2024, 43 projects were completed, eight projects were under construction, and two additional projects were allocated additional funding in the fiscal year 2024.

8. Annual Budget Planning

Each year, the Department of Highways develops and submits a budget proposal to the Bureau of the Budget for review and approval. This budget planning aligns with national transportation development strategy and addresses urgent needs to alleviate public hardship. For fiscal year 2024, the Department of Highways received the following budget allocations, categorized by project type:

8.1 Large-Scale construction projects

For fiscal year 2024, the Department of Highways' budget includes funding for 42 new projects under the integrated transportation and logistics system development plan.

Activities	Number of Projects	Distance (kilometer)	Construction Cost (million baht)	Budget requested for fiscal year 2024 (million baht)
Construction of international road links	1	27.80	1,120.00	168.00
Highway construction for transport and logistics	1	9.00	950.00	142.50
National highway construction	22	320.23	21,610.00	3,241.50
Highway construction to support EEC development	2	13.45	3,713.76	557.06
Bridge and interchange construction	8	-	7,850.00	1,177.50
Solutions to traffic congestion in Bangkok, its surrounding areas, and major cities	1	9.36	6,450.00	967.50
Management of highway hierarchy to enhance road efficiency and safety	1	25.93	860.00	129.00
Enhancement of service efficiency on major highways	4	100.04	4,680.00	702.00
Acceleration the four-lane expansion of main roads (Phase 2)	2	31.42	2,450.00	367.50
Total	42	537.23	49,683.76	7,452.56

8.2 Small-scale construction projects

The Department of Highways also implements small-scale highway construction and improvement projects that can be completed within one year with relatively modest budgets. These projects address specific issues and local needs, such as traffic congestion in community areas across the country. The goal is to maintain highways at proper standards while providing convenient, fast, and safe services to road users in support of the highway construction project for area-based development. The following activities were carried out.

8.2.1 Community highway development

This program focuses on improving highways passing through residential communities to enhance traffic flow and safety. The improvements aim to reduce accidents, minimize dust pollution, and promote economic and social development, ultimately enhancing quality of life for local residents.



Before improvement



After improvement

8.2.2 Bridge and drainage system development

This initiative encompasses the construction and improvement of small bridges and drainage structures to meet highway standards. Activities include building permanent drainage channels, preventing bridge abutment erosion, and implementing other measures to enhance drainage efficiency and prevent flooding.



Before improvement



After improvement

8.2.3 Road shoulder construction

While recent road construction projects have prioritized improving highway efficiency and upgrading standards to accommodate high traffic volumes, some important roads remain underdeveloped. A particular focus is needed on roads lacking proper shoulders. These roads, despite their significance to local communities, have not received necessary improvements or development attention. The shoulder construction program aims to address this infrastructure gap.



Before improvement



After improvement

8.2.4 Highway efficiency improvement

While large-scale construction projects require substantial budgets and lengthy approval processes, many areas need immediate solutions. Small-scale highway improvements are implemented to efficiently address urgent issues on primary and secondary highway networks. These targeted interventions provide cost-effective, immediate benefits to the public while laying groundwork for future large-scale projects.

8.2.5 Highway construction for regional area development

This initiative takes a comprehensive approach to highway development from both regional and national perspectives, integrating public and private sector efforts. The program aligns with key government strategies including: tourism promotion, special economic zone development, transportation network expansion for new economic areas, and border economic zone development. The integrated regional development plan helps achieve the objectives of government policies under these strategies.



Before improvement



Before improvement



After improvement



After improvement

For fiscal year 2024, the operational details are as follows:

No.	Activities	Work Plan	
		Number	Million Baht
1	Community highway development	59	1,865.30
2	Bridge and drainage system development	26	449.50
3	Road shoulder construction	40	1,438.20
4	Highway efficiency improvement	172	6,143.80
5	Highway construction for regional area development	53	1,862.00
Total		350	11,758.80

9. Project Evaluation

The Bureau of Planning conducted its evaluation in line with the framework for monitoring and assessing operational performance and budget implementation plans established by the Budget Bureau. This process aimed to analyze the success and achievement levels of projects in terms of both outputs and outcomes derived from budget implementation. For fiscal year 2024, the Evaluation Section under the Department of Highways' Bureau of Planning selected appropriate projects for performance evaluation, focusing on the following three main components.

9.1 Performance evaluation based on the analysis report of levels of operational success in budget implementation

This evaluation assessed both efficiency and effectiveness across various dimensions, including quantitative, qualitative, time-based, and cost-based aspects. The evaluation covered the following outputs: developed highway network, well-maintained highway network, safe highway network, national highway network construction projects, interregional highway network rehabilitation projects, highway safety improvement projects, and highway development projects to support the EEC.



9.2 Evaluation of highway transfer to local administrative organizations

This component evaluated the results of highway transfers to local administrative organizations implemented between 2002 and 2017, covering 1,034 routes. The overall evaluation rated the routes at Level B (Good), accounting for 55.61% of all routes. Key issues identified for urgent improvement were primarily safety-related, including insufficient street lighting, damaged road surfaces, and unclear signage and traffic signals. The evaluation also identified 17 routes recommended for transfer to agencies with greater capacity for effective management than the current responsible organizations.

9.3 Monitoring and evaluation of budget implementation outcomes

This evaluation was conducted under the basic plan for enhancing the competitiveness of highway development projects nationwide, covering fiscal years 2021 to 2023 and a total of 2,053 projects. The evaluation focused on the following outputs: developed highway network, well-maintained highway network, and safe highway network. A sample of 335 projects was selected, with data collected from 33,500 questionnaires. The results indicated that projects under the basic plan were cost-effective, generating total returns of 1,643.62 million baht, with an average First Year Rate of Return (FYRR) of 25.45%.



Highway Construction

Construction of Intercity Motorway No. 81 (Bang Yai - Kanchanaburi), Section 11

The Bureau of Highway Construction 1 completed construction of Intercity Motorway No. 81 (Bang Yai - Kanchanaburi), Section 11. This 2.6-kilometer section, running from Sta. 35+900 to Sta. 38+500 (including the East Nakhon Pathom Interchange), features six lanes of asphalt concrete, built to motorway standards. The project also included the installation of lighting system and safety equipment, in accordance with Department of Highways standards.

This completed project is a key part of an infrastructure development plan to modernize Thailand's road transport system, making it more efficient, convenient, fast, and safe. Furthermore, the route is expected to boost trade, investment, and tourism in Thailand's western region, contributing to sustainable economic growth and improving the quality of life for local communities.

















Construction of Intercity Motorway No. 81 (Bang Yai - Kanchanaburi), Section 16

The Bureau of Highway Construction 1 also completed the construction of Intercity Motorway No. 81 (Bang Yai - Kanchanaburi), Section 16. This 5.45-kilometer section, running from Sta. 55+500 to Sta. 60+950, passes through Mueang Nakhon Pathom District in Nakhon Pathom Province and Ban Pong District in Ratchaburi Province. It features four 3.5-meter-wide lanes of asphalt concrete, built to motorway standards. The outer shoulders are 3 meters wide, and the inner shoulders are 1 meter wide, both paved with asphalt concrete. The project included the construction of six bridges, lighting along the entire route, and safety equipment, all in accordance with Department of Highways standards.

This completed project is a key part of an infrastructure development plan to modernize Thailand's road transport system, making it more efficient, convenient, fast, and safe. Moreover, the route is expected to boost trade, investment, and tourism in Thailand's western region, contributing to sustainable economic growth and improving the quality of life for local communities.

Construction of Highway No. 11 (In Buri District - Sak Lek District: Ban Nong Khwao - Dai Tan Section)

The Bureau of Highway Construction 2 completed the Ban Nong Khwao - Dai Tan Section of Highway No. 11 (In Buri District - Sak Lek District). The project was divided into two phases: Phase 1 (Sta. 51+000 to Sta. 61+000, 10.000 kilometers) and Phase 2 (Sta. 61+000 to Sta. 71+665, 10.665 kilometers). The existing two-lane road was upgraded to a four-lane highway with the addition of a 3.5-meter-wide lane in each direction, separated by a raised median. The road surface is constructed with asphalt concrete. The project also included eight bridges, three pedestrian bridges, one traffic signal, 26 highway rest shelters, 10 U-turn points, and street lighting.

Highway No. 11 is a crucial tourism and logistics route connecting Nakhon Sawan and Phichit Provinces and surrounding areas. The previous two-lane road experienced heavy traffic, congestion, and a high risk of accidents, especially during holidays and festivals. The expansion to four lanes (two in each direction) significantly improves traffic flow, reduces accident risks, and enhances transport efficiency, safety, and convenience. This project also strengthens the primary interregional highway network, promoting economic growth, social development, and tourism in the region.

















Construction of Highway No. 317 (Chanthaburi - Sa Kaeo: Pong Nam Ron District - Soi Dao District Section), Chanthaburi Province

The Bureau of Highway Construction 2 completed the Pong Nam Ron District - Soi Dao District section of Highway No. 317 (Chanthaburi - Sa Kaeo), covering the stretch from Sta. 44+200 to Sta. 65+350, with a total length of 21.150 kilometers. The existing two-lane road has been upgraded to a four-lane highway by adding a 3.5-meter-wide lane in each direction, separated by a raised median. The road surface is constructed with asphalt concrete. The project also includes eight bridges, three pedestrian bridges, one traffic signal, 26 highway rest shelters, 10 U-turn points, and street lighting.

This completed section of Highway No. 317 plays a vital role in Chanthaburi Province, accommodating high traffic volumes and serving as a key link between Chanthaburi and Sa Kaeo provinces. It strengthens regional transport networks and provides a major travel route for residents in surrounding areas. The upgraded highway not only improves traffic flow and reduces congestion but also enhances road safety, decreases travel time, and minimizes accident-related losses. Ultimately, this development supports the country's competitiveness and fosters sustainable growth.

Construction of an Interchange at the Intersection of Highway No. 41 and Highway No. 417 (Sanam Bin Intersection), Surat Thani Province

The Bureau of Bridge Construction completed an interchange at the intersection of Highway No. 41 and Highway No. 417 (known as Sanam Bin Intersection) in Surat Thani Province. The project encompassed 4.161 kilometers, spanning Highway No. 41 from Sta. 159+450 to Sta. 162+661 and Highway 417 from Sta. 0+000 to Sta. 0+950. The interchange includes a prestressed concrete box segment bridge, a prestressed concrete I-girder bridge, and a prestressed concrete plank bridge. The project also included road construction and expansion, drainage systems and manholes, lighting, road markings, and other related works.

The intersection of Highway No. 41 and Highway No. 417 serves as a vital connection between Surat Thani Airport, the eastern part of the province, and the lower and upper southern regions. Its strategic location – within a one-kilometer radius of Surat Thani Airport – has led to a significant increase in traffic volume. The completed interchange enhances travel convenience, speed, and safety, effectively addressing current traffic demands. Designed with future growth in mind, the interchange ensures long-term efficiency as a key connection point between the eastern southern region and access routes to Surat Thani Airport.

















Construction of Intercity Motorway No. 6 (Bang Pa-In - Saraburi - Nakhon Ratchasima), Section 2

The Bureau of Bridge Construction has been constructing Section 2 of Intercity Motorway No. 6 (Bang Pa-In - Saraburi - Nakhon Ratchasima), which includes the Bang Pa-In 1 Interchange. This 4.81-kilometer section runs from Sta. 0+000 to Sta. 5+470 in Lam Sai Subdistrict, Wang Noi District, Phra Nakhon Si Ayutthaya Province, and is being designed and constructed to motorway standards. The project includes drainage systems and manholes, lighting, road markings, and other related works.

Upon completion of the entire route, Intercity Motorway No. 6 will serve as a strategic route, strengthening the transportation and logistics network and fully opening the trade gateway for Thailand's northeastern region. This will significantly improve convenience, speed, and safety, while also elevating the quality of life for the public.



International Highway Development

In addition to developing the domestic highway networks, the Department of Highways is committed to promoting transport connections with neighboring countries to boost regional economic growth, social development, and tourism. The department's strategic routes connect key cities – including the capital, industrial zones, agricultural centers, and tourist destinations –facilitating more convenient, faster, and more efficient travel, transportation, and cross-border trade, in line with national competitiveness goals.

The department actively engages in the development of international highway infrastructure through both multilateral and bilateral cooperation. These partnerships not only strengthen ties with neighboring countries but also enhance Thailand's competitiveness on the global stage. To support domestic highway development, the department also utilizes international loans, which provide opportunities to adopt sustainable construction practices while meeting additional development goals outlined in loan agreements. Key examples of international cooperation initiatives during fiscal year 2024 included:

Thai-Cambodian Road Infrastructure Development

Agreement on ownership, utilization, management, and maintenance of the Thai-Cambodian Friendship Bridge (Ban Nong Ian - Stueng Bot)

As part of the Thai government's initiative, the Department of Highways commissioned the Royal Thai Army's Engineering Department to construct the Thai-Cambodian Friendship Bridge (Ban Nong Ian - Stueng Bot) as a grant aid to Cambodia. The construction was successfully completed and marked with an official opening ceremony. On 30 December 2022, Sa Kaeo Province announced the opening of a temporary border crossing at Ban Nong Ian, directing large cargo trucks to reroute from the permanent border crossing at Ban Khlong Luek, Aranyaprathet District, to the Ban Nong Ian - Stueng Bot border crossing. This measure aimed to ease traffic congestion at the permanent Ban Khlong Luek crossing.

To address the bridge's usage and maintenance, the Department of Highways of the Kingdom of Thailand and the Ministry of Public Works and Transport of the Kingdom of Cambodia convened the 3rd Joint Thai-Cambodian Committee Meeting on 28 February 2023 in Sa Kaeo Province, Thailand. Discussions focused on drafting an agreement regarding the bridge's ownership, utilization, management, and maintenance. The 4th and most recent meeting took place on 30 May 2024 in Siem Reap, Cambodia. Despite these efforts, both parties have yet to reach an agreement on the collection of bridge toll fees.





The 3rd Joint Thai-Cambodian Committee Meeting to draft an agreement on the ownership, utilization, management, and maintenance of the Thai-Cambodian Friendship Bridge (Ban Nong Ian - Stueng Bot), held on 28 February 2023

To address the unresolved issue of bridge toll fees, H.E. Mr. Suriya Jungrungreangkit, Minister of Transport of Thailand, held a video conference on 17 June 2024, with H.E. Mr. Peng Ponea, Minister of Public Works and Transport of the Kingdom of Cambodia. During the discussion, the Thai side informed Cambodia that if it chose not to implement toll fees, Thailand would respect this decision to encourage cross-border cargo transportation and support the border economy. Given that the Thai-Cambodian Friendship Bridge (Ban Nong Ian - Stueng Bot) is still in new condition, toll collection may not be necessary at this stage. However, both parties can jointly reconsider and approve toll fees in the future when major renovations or repairs become necessary due to wear and tear.

Following this clear conclusion from the Minister of Transport, Thailand's Department of Highways and Cambodia's Department of Public Works and Transport scheduled the 5th Joint Thai-Cambodian Committee Meeting for 20 February 2025. The meeting aimed to finalize the draft agreement on the ownership, utilization, management, and maintenance of the Thai-Cambodian Friendship Bridge (Ban Nong Ian - Stueng Bot), with the agreement expected to be signed within 2025. Full bridge operations and the opening of the permanent border crossing at Ban Nong Ian will commence once the construction of the border checkpoint building, overseen by Thailand's Customs Department, is completed in the near future.

Study visit on truck weight management and control and truck weighing station operations

Following the opening of the temporary border crossing at Ban Nong Ian at the Thai-Cambodian Friendship Bridge (Ban Nong Ian - Stueng Bot), both Thai and Cambodian authorities observed a significant increase in heavy truck traffic. Recognizing the potential risk of damage to the bridge and surrounding road network, the Ministry of Public Works and Transport of the Kingdom of Cambodia requested Thailand's Department of Highways to organize a study visit focused on overweight truck management and the operation of truck weighing stations in Thailand. On 6 November 2024, Mr. Tanin Rirattanapong, Chief Engineer for Planning, served as the Thai chairman, accompanied by Mr. Tunwin Svasdisant, Director of the Bureau of International Highways Cooperation, to welcome H.E. Mr. Seng Chhuon, Secretary of State of the Ministry of Public Works and Transport of Cambodia, along with senior executives. The Cambodian delegation attended a comprehensive presentation on truck weight management and control methods, delivered by Mr. Pittaya Kaewponyor, Civil Engineer (Senior Professional Level) from the Vehicle Weight Control Office. The visit also included on-site observations at the Sa Kaeo and Watthana Nakhon weighing stations in Sa Kaeo Province.





Thai-Lao Road Infrastructure Development

Thai-Lao Friendship Bridge 6 (Ubon Ratchathani - Salavan)

Following a Cabinet meeting in Surin Province on 30 July 2012, the government approved in principal the results of the joint public-private sector meeting aimed at addressing regional economic issues under the National Economic and Social Development Board. The discussion focused on the plan to develop transportation networks and logistics systems, including a proposal for support in developing and expanding traffic routes. A key project identified was the development of a 50-kilometer four-lane road from Senangkhanikhom District to Chanuman District in Amnat Charoen Province, bordering Lao PDR. The Ministry of Transport was tasked with studying the feasibility and prioritizing transportation route expansion in the Lower Northeastern region, particularly those connecting domestic and neighboring countries.

Subsequently, at the Thai-Lao Transport Ministerial Meeting in Bangkok on 13 January 2016, the Lao side requested Thailand conduct a feasibility study and design for the sixth friendship bridge No. 6, intended to be one of the shortest routes connecting Thailand and Viet Nam. The Department of Highways (Thailand) and the Department of Roads (Lao PDR) were assigned to jointly determine the bridge's location.





In 2017, the Department of Highways contracted a consulting firm (18 March 2017 - 6 December 2018) to conduct a feasibility study and develop a detailed design. A Project Steering Committee was establish to oversee the study, which included economic and engineering feasibility, environmental impact assessment, survey, and detailed designs for the Thai-Lao Friendship Bridge 6 (Ubon Ratchathani - Salavan).

In 2018, the Department of Highways and the Department of Roads formed a Joint Thai-Lao Coordination Workforce to prepare for bridge construction, including reviewing the project budget and timeline.

Current Status (August 2024):

The Joint Thai-Lao Coordination Workforce finalized the total project cost, including VAT, at 4,846 million baht. Thailand will fund its portion through the national budget, while Lao PDR will finance its share through a loan from the Neighboring Countries Economic Development Cooperation Agency (NEDA). Cost breakdown details are shown below.



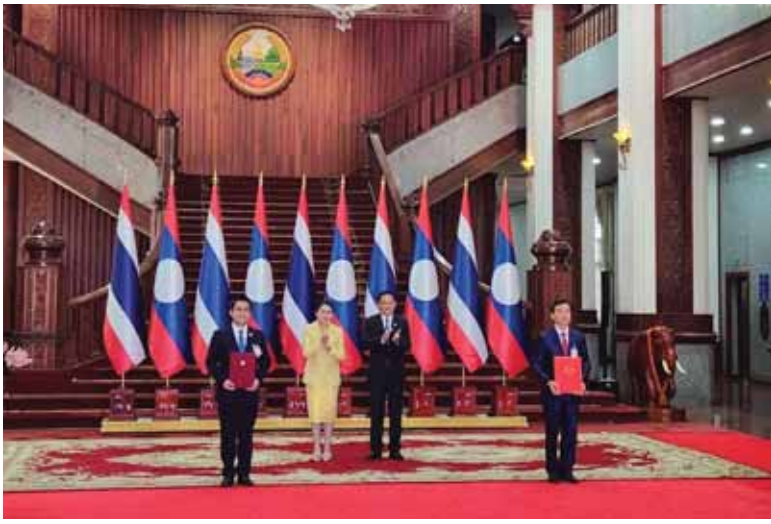
Additionally, the Joint Thai-Lao Coordination Workforce agreed on the overall project implementation timeline, with construction scheduled to begin in fiscal year 2027.

Activities	Duration
Preparation of construction contract agreement draft	Sept 2024 - Jan 2025
Project approval request	Feb 2025 - Jul 2025
Budget proposal submission	Apr 2025 - Jul 2025
Land acquisition	Aug 2025 - Dec 2026
Preparation for procurement process	Jul 2026

Rehabilitation and Strengthening of the Thai-Lao Friendship Bridge (Nong Khai – Vientiane)

The Department of Highways allocated 48 million baht from its 2024 fiscal budget for the rehabilitation and strengthening of the Thai-Lao Friendship Bridge (Nong Khai - Vientiane). The funds were divided equally, with 24 million baht designated for work on the Thai side and 24 million baht provided as grant aid to the Lao PDR. On 8 October 2024, a Letter of Intent (LOI) formalizing this assistance was signed by Mr. Piyapong Jiwattanakulpaisarn, Deputy Director-General for Engineering, Department of Highways, and Mr. Atnada Boulom, Deputy Director-General of the Lao PDR's Department of Roads, at the Department of Roads, Ministry of Public Works and Transport in Lao PDR. Also present from the Thai side were Mr. Tunwin Svasdisant, Director of the Bureau of International Highways Cooperation; Mr. Thanompot Chensujaritkarnkul, Director of the Bridge Construction and Rehabilitation Center 2 (Khon Kaen); and Mr. Teerasak Wannaphor, Deputy Director of Nong Khai Highway District (Acting Director), along with other officials from the Department of Highways.

Later that day, Mr. Piyapong Jiwattanakulpaisarn and Mr. Tunwin Svasdisant participated in an LOI exchange ceremony with Lao PDR representatives at the Office of the Prime Minister in Vientiane Capital. The ceremony was witnessed by the Prime Ministers of Thailand and Lao PDR.









The LOI outlines the roles and responsibilities of the Thai Department of Highways and Lao Department of Roads in the bridge rehabilitation and strengthening project. It underscores the continued collaboration between the two nations in developing infrastructure and international transportation, reinforcing the strong and lasting friendship between Thailand and Lao PDR.

Thai-Lao Friendship Bridge 5 (Bueng Kan - Bolikhamxay)

The construction of the Thai-Lao Friendship Bridge 5 (Bueng Kan - Bolikhamxay) and its connecting highway network is a key strategic project under the Greater Mekong Subregion (GMS) and the Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy (ACMECS) frameworks. This project will improve connectivity between Thailand, Lao PDR, and other ASEAN nations, fostering trade, investment, and tourism. It is anticipated to enhance the competitiveness of Thailand's northeastern region, facilitate more efficient and faster transportation of goods and people, and ultimately improve the quality of life for local communities.

The 16.34-kilometer project begins in Mueang Bueng Kan District, Bueng Kan Province, at Highway No. 222 (Sta. 123+430). The route intersects with Rural Roads Bor. Kor. 3217 and Bor. Kor. 3013, as well as Highway No. 212, before crossing the Mekong River via the Thai-Lao Friendship Bridge 5 (Bueng Kan - Bolikhamxay) and connecting to Highway No. 13 in Lao PDR. The 1,350-meter bridge features a distinctive design, with its pillars inspired by the "Khaen," a traditional musical instrument common to both Thai and Lao cultures.



Figure 1: Roadwork on the Thai side



Figure 2: Roadwork and border checkpoint on the Thai side



Figure 3: Construction of the bridge crossing the Mekong River on the Thai side



Figure 4: An image of Thai-Lao Friendship Bridge 5, showing the bridge pillars designed in the shape of the Khaen

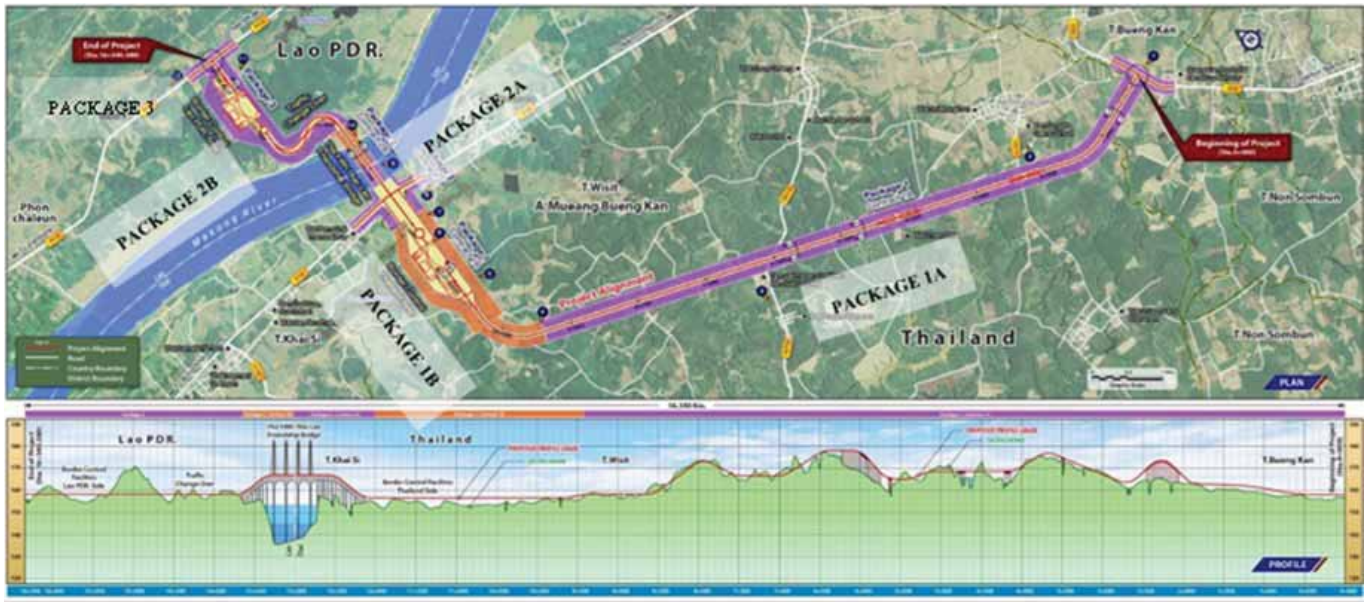


Figure 5: Map showing overall components of the Thai-Lao Friendship Bridge 5 project

Highway Construction Using International Loans

Eastern Economic Corridor Highway Network Development for Climate Change Adaptation: Intercity Motorway No. 7 Extension Connecting to U-Tapao International Airport

A new elevated highway connecting to U-Tapao International Airport is being developed as part of the Eastern Economic Corridor (EEC) highway network expansion. The project aims to improve transportation infrastructure supporting EEC growth, particularly the development of U-Tapao Airport as Thailand's third major international aviation hub. The new elevated highway will connect the airport to the main transportation system, providing faster, safer, and more convenient access to the airport, promoting commercial aviation growth and attracting investment to the EEC.

The project includes the construction of a 1.92-kilometer, four-lane elevated highway with service roads at ground level. It also involves widening a 5.65-kilometer section of Highway No. 3 (Sukhumvit Road) from Sta. 186+350 to Sta. 192+000 to improve access to U-Tapao Airport's new passenger terminal. Approved by the Cabinet in 2022, the project is supported by the Asian Development Bank (ADB), which has played a key role in project planning and assessment. Reflecting ADB's sustainable development policies, the project goes beyond construction to focus on improving the quality of life for local residents and strengthening the Department of Highways. This includes various measures such as community education programs on road safety and social equality, development of the department's road safety plans, and gender equality training for department personnel.

As of November 2024, the project was in the procurement phase, with contract negotiations underway with the winning bidder. Construction is scheduled to begin in early 2025.





Intercity Motorways

A Public-Private Partnership Scheme for the Development and Management of the Si Racha Highway Service Center on Intercity Motorway No. 7 (Bangkok - Ban Chang), Chon Buri - Pattaya Section

Project Background

Roadside rest areas are essential for intercity motorway systems as they provide travelers with safe and convenient places to stop and rest during long journeys. They also contribute to enhanced motorway safety and service efficiency by reducing unnecessary exits and entrances. The Department of Highways is partnering with the private sector to develop and manage the Si Racha Highway Service Center, leveraging private expertise to efficiently manage and maintain roadside facilities, enhance service quality, and elevate standards to international levels. This project will be Thailand's first large-scale highway service center developed under a Public-Private Partnership (PPP) model.



Project Details

Located at Sta. 93+500 on Intercity Motorway No. 7 (Bangkok - Ban Chang, Chon Buri - Pattaya Section), between the Bang Phra (Khiri) and Nong Kham Interchanges in Sii Racha District, Chon Buri Province, the service center will cover approximately 62 rai on the outbound side (heading from Bangkok) and 59 rai on the inbound side (Bangkok-bound). The area currently accommodates over 100,000 vehicles daily. Under a PPP Net Cost model, the private partner will be responsible for financing, surveying, designing, and constructing the service center. They will also provide and manage a range of facilities and services, including restrooms, parking areas, a waiting lounge, green space, restaurants, retail shops, a fuel station, and electric vehicle charging stations, all in accordance with the PPP agreement. Furthermore, the private partner will operate and maintain the facility throughout the contract term. The project is planned for a total duration of 32 years, divided into: Phase 1 (Design and Construction: 2 years) and Phase 2 (Operation and Maintenance: 30 years). The Department of Highways will handle land acquisition and supervise the private sector's operations to ensure compliance with all requirements and Key Performance Indicators (KPIs).

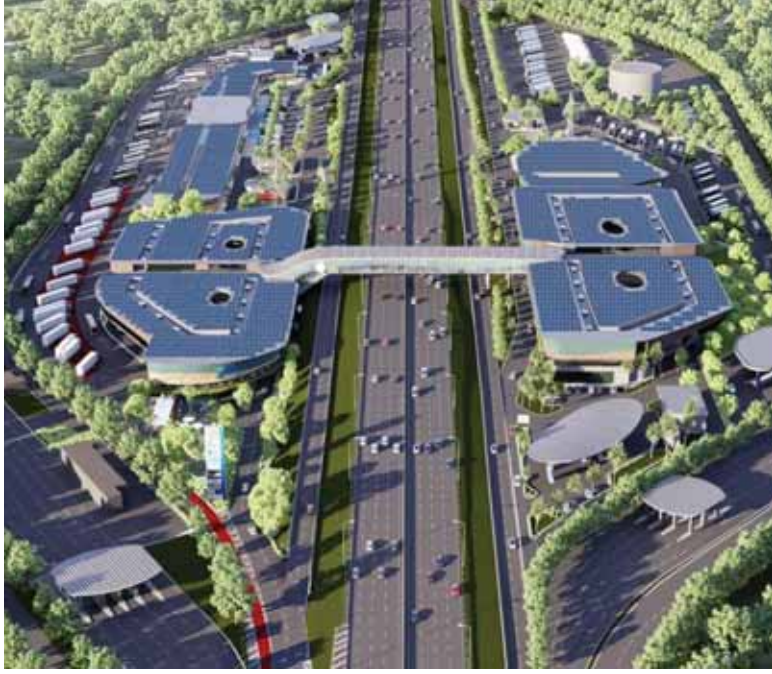
Project Progress

Following a selection process in accordance with the Public-Private Partnership Act, B.E. 2562 (2019), the R.E. Joint Venture Group (comprising PTT Retail Management Company Limited and Charoen Pokphand Engineering Company Limited) was chosen as the preferred bidder for the Si Racha Highway Service Center project. The Minister of Transport approved the selection results and the draft PPP agreement on 2 September 2024.

On 19 September 2024, the Department of Highways subsequently signed the agreement with The Rest Village Company Limited, a newly established entity by the R.E. Joint Venture. The signing ceremony was presided over by H.E. Mr. Suriya Jungrungreangkit, Deputy Prime Minister and Minister of Transport.

The project is now in the preparatory phase for site handover to the private partner for design and construction. It is anticipated that basic facilities, including restrooms, parking areas, a waiting lounge, and select food and beverage outlets, will be operational by 2026, with full-service operations commencing in 2027.

This public-private partnership will elevate travel safety and roadside service standards to international levels. The Si Racha Highway Service Center is envisioned as a world-class model for roadside rest areas, featuring modern architecture, comprehensive facilities adhering to Universal Design principles, and a unique aesthetic design. The project will also integrate innovative energy conservation and environmental sustainability concepts to ensure long-term viability.









Highway Landscape and Architecture Development

Landscape Improvement on Highway No. 321, Wang Khon - Don Chaeng Section (Sta. 69+359 - Sta. 73+864), Suphan Buri Highway District 2

Project Background

The project area is located along Highway No. 321, a primary route leading to the Dragon Descendants Museum, a popular tourist destination in Suphan Buri. Over time, the area had deteriorated and required aesthetic improvements to enhance the province's overall image.

Project Scope

Located in Suphan Buri's city center, the project focused on improving the central median of the road leading to the Dragon Descendants Museum, a high-traffic area.

Benefits

1. Creates a visual landmark, promoting tourism.
2. Enhances the urban landscape, providing a more attractive environment.
3. Showcases local cultural identity, fostering greater appreciation.









Landscape Improvement on Highway No. 121, Ton Pao - Don Kaeo Section (Sta. 22+047), Chiang Mai Highway District 2

Project Background

The project site is located along Highway No. 121, near the traffic-busy Mae Kuang Intersection surrounded by local communities. Previously left vacant due to intersection expansion, the area became neglected. Given the intersection's importance as a gateway to important areas in Chiang Mai, such as San Sai District and Doi Saket, the site was transformed to improve its appearance.

Project Scope

The project focused on converting the vacant area at Mae Kuang Intersection into a green space, improving air quality and beautifying the surroundings for commuters and local residents.

Benefits

1. Creates an attractive and safe green space, improving visual appeal. Also enhances the Department of Highways' image by promoting environmentally friendly spaces.





Landscape Improvement on Highway No. 201, Pak Phu - Chiang Khan Section (Sta. 355+190 - Sta. 355+250), Loei Highway District 1

Project Background

Highway No. 201 leads to Chiang Khan, a popular tourist destination in Loei Province and, as such, experiences high traffic volumes during peak season. The project area is a previously vacant lot located along this highway, adjacent to the Loei Provincial Land Transport Office, in the outskirts of Mueang Loei District. It was deemed appropriate to develop this area as a rest stop to provide a safe place for drivers to rest, potentially reducing accidents, while also serving local residents and visitors to the government office.

Project Scope

The project involved transforming the area into a rest area with relaxation spaces and pavilions for the public, including local residents, government office visitors, and travelers.

Benefits

1. Provides a safe and comfortable rest area for drivers and local residents.
2. Beautifies and secures the previously vacant land, creating additional green space and enhancing the Department of Highways' public image.







Survey and Design

The World's First Cable-Stayed U-Turn Bridge: Thailand's Engineering Innovation Sets a New International Benchmark

In 2025, the Department of Highways will unveil the world's first horizontal curve cable-stayed bridge on Highway No. 2 (Mittraphap Road), at Sta. 8+000 - Sta. 9+000, in Ban Lup Lao, Tan Diao Subdistrict, Kaeng Khoi District, Saraburi Province. This groundbreaking project marks a paradigm shift in U-turn bridge design, replacing conventional mid-road bridge piers with a cable-stayed system. This innovation enhances travel safety, reduces environmental impact, and minimizes accident risks associated with midr-road pier collisions.

The concept behind the cable-stayed U-turn bridge

According to national highway network statistics, the Department of Highways manages 17,219 bridges, consisting of 15,765 bridges over canals, streams, and reservoirs, 761 bridges over rivers, 376 bridges over junctions and roads, 156 bridges over railways, and more than 120 U-turn bridges.

Traditional U-turn bridges rely on mid-road piers to bear structural weight. However, this design has significant drawbacks –disrupting traffic flow in congested areas and posing a high risk of accidents. To address these issues effectively, the Department of Highways has introduced an innovative solution.

The cable-stayed U-turn bridge: advanced, safe, and future-ready

This cutting-edge bridge design utilizes high-tensile cables, instead of mid-road piers, to support the structure. It is engineered to accommodate all types of vehicles, including motorcycles and pedestrians. The bridge's length is meticulously designed based on terrain and soil conditions, ensuring long-term structural integrity.

This project integrates design techniques from the Thai-Lao Friendship Bridge 2 in Mukdahan Province, as well as cable-stayed bridges from abroad, such as the Téfénez Bridge in France, the Katsushika Harp Bridge in Japan, the Ponte del Mare in Italy, and the Santa María de Benquerencia Bridge in Spain, adapting them to suit Thailand's environmental condition.

Benefits and future prospects of cable-stayed U-turn bridges in Thailand

This cable-stayed U-turn bridge initiative represents not only an engineering innovation aimed at improving travel safety but also a testament to Thailand's commitment to internationally aligned infrastructure development. Upon completion, it will not only serve as a key landmark in Saraburi Province but also become a model for future infrastructure projects nationwide.

The project construction requires a budget of approximately 400 million baht and is scheduled to begin in April 2025. With a construction period of 1,080 days, it is expected to be completed by 2028.

This pioneering project marks a significant milestone for in advancing modern, safe, and engineering-driven highway infrastructure, potentially influencing the global approach to U-turn bridge design for decades to come.

Application of Satellite Imagery, Unmanned Aerial Vehicles, and LiDAR Technology in Road Design Surveys

Satellite imagery survey technology

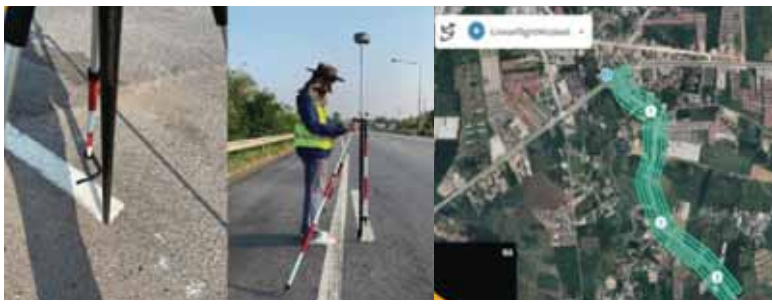
Satellite imagery survey technology has become indispensable in road survey and design, particularly for future road network planning. It facilitates efficient new route planning by enabling the analysis of optimal route alignments and comprehensive network connectivity. It also supports terrain condition monitoring, risk area identification, and drainage assessment within project areas. Satellite imagery also aids in analyzing community expansion and monitoring land use changes along routes, allowing engineers to efficiently inspect right-of-way encroachments and assess environmental impacts.





Photogrammetry survey technology

Photogrammetry surveys using unmanned aerial vehicles (UAVs) have seen rapid advancements. With image resolutions reaching 2-5 centimeters, they can generate highly detailed, rapidly updated topographic maps over extensive areas. For design purposes, photogrammetry data is used to create accurate digital elevation models (DEMs), enabling efficient earthwork volume calculations and preliminary route alignment planning. Additionally, it serves as a critical tool for construction progress monitoring, quality control inspections, and precise assessment of completed work volumes.



LiDAR UAV survey technology

LiDAR technology mounted on UAVs represents a cutting-edge innovation in the survey industry. With data collection capabilities at 1-2 cm resolution and its ability to penetrate vegetation, it provides precise terrain data even in densely vegetated areas. LiDAR UAV data enables the creation of high-resolution 3D models for accurate slope analysis and precise distance and area calculations. Moreover, it is highly beneficial for structural inspections, subsidence measurement, and damage assessment of existing road structures.





LAND OWNERSHIP
Land Acquisition

Field Survey for Detailed Property Mapping and Cost Estimation for Land Expropriation: National Highway No. 298 (Si Bun Rueang Bypass) Project (Sta. 0+000.000 - Sta. 16+717.039)

The National Highway No. 298 (Si Bun Rueang Bypass) project aims to improve goods transportation along a key corridor connecting Highway No. 12, part of the East-West Economic Corridor, with Udon Thani and Nong Khai provinces and further linking with the ASEAN Economic Community (AEC). This link promotes transportation development and facilitates border trade economics with Vientiane, Lao PDR. Increased traffic in Nong Bua Lam Phu province, particularly on Highway No. 228 that runs through the city center, has led to congestion and accidents. The constrained right-of-way and dense community within the Si Bun Rueang district market area further limit expansion. Therefore, the Si Bun Rueang Bypass project will address these issues by providing a safer, more efficient alternative, aligning with the Department of Highways' strategy to promote economic development and enhance highway safety and services.

The project alignment is a new route across agricultural flatlands in Si Bun Rueang, Han Na Ngam, and Mueang Mai sub-districts of Si Bun Rueang District, Nong Bua Lam Phu Province. It will begin at approximately Sta. 2+000 on Highway No. 2133 (Si Bun Rueang District to Ban Nong Na Kham section) and end at approximately Sta. 59+500 on Highway No. 228 (Si Bun Rueang District to Nong Bua Lam Phu Province section), both in open areas with minimal community presence.







At-grade intersection with National Highway No. 2133: project starting point



At-grade intersection with National Highway No. 228 (Ban Nong Bua Noi)



At-grade intersection with National Highway No. 2420 (Ban Prong Chaeng)



At-grade intersection with National Highway No. 228 (Ban Thung Phatthana) - project endpoint.

Since the Constitution of the Kingdom of Thailand, B.E. 2560 (2017) aims to ensure that citizens receive information and participate in governing Thailand as the rightful holders of sovereign power, it outlines this participation in terms of "rights, freedoms, and duties" for Thai citizens. According to Section 58, if any state operations or actions authorized by the state have the potential to impact natural resources or environmental quality, the state is required to conduct studies and assessments of environmental and public health impacts. Additionally, it must organize public hearings involving stakeholders, affected citizens, and communities prior to proceeding.

The implementation of public participation adheres to the guidelines for public participation and social and environmental impact assessment as outlined by the Office of Natural Resources and Environmental Policy and Planning. The primary objective of public participation is to disseminate project information to stakeholders, local residents, private organizations, government officials, and interested members of the public. This ensures accurate, clear, and consistent information sharing throughout the process. Additionally, it aims to gather opinions and suggestions from various stakeholder groups, which will be integrated into different stages of the project study to enhance its effectiveness and inclusivity.



General public relations meeting
on 5 August 2024







Expected Benefits

The highway network will be more efficiently integrated with Udon Thani and Nong Khai provinces, facilitating convenient and rapid transportation while stimulating economic activities in the project area. Additionally, traffic congestion in Si Bun Rueang District will be significantly reduced, ensuring smoother, faster, safer, and more convenient travel. This project also supports the development of transportation and logistics systems, aligning with the objectives of the National Economic and Social Development Plan.

Land Acquisition Process

The Department of Highways prioritizes fairness and accuracy in its land acquisition process, ensuring just treatment for all affected individuals. The process employs a conciliation-based approach, comprising the following steps:

Conducting meetings to inform and engage with affected communities

↓

Surveying and preparing detailed topographic maps within the right-of-way

↓

Assessing the value of expropriated land and any remaining land after the acquisition

↓

Verifying legal documents and investigating ownership rights to identify individuals eligible for compensation

↓

Conducting preliminary assessments and valuations of buildings, structures, crops, trees, and related rights

Eligible Recipients of Compensation

1. Landowners subject to expropriation: Individuals holding legal ownership or title deeds to the expropriated land, supported by valid legal documentation – land title deeds.
2. Owners of buildings, structures, or other immovables attached to the land subject to expropriation.
3. Owners of perennial trees growing on the land subject to expropriation.
4. Tenants or subtenants of land, buildings, or other structures subject to expropriation.
5. Individuals with rights to use the land for pathways, pipelines, drainage systems, power lines, or other similar utilities crossing the expropriated land.
6. Owners or individuals residing, conducting businesses, or legally working within the expropriated property who suffer damages due to displacement.

Criteria for Determining Preliminary Real Estate Prices

1) Land Value

(1) Expropriated land

1. The price is determined by considering the market price, property condition, reasons, and objectives together, which include:

1.1 Normal market prices.

1.2 Land appraisal prices set by the government for land and building tax collection.

1.3 Land capital appraisal prices set for collecting rights and legal act fees under the Land Code.

1.4 The condition and location of the land.

1.5 The reasons and objectives of the expropriation.

(2) Remaining land in the same plot

1. Price Increase (Section 22, Paragraph 1)

1.1 The increased price shall be deducted from the compensation.

1.2 In any case, the deduction shall not exceed fifty percent of the compensation.

1.3 It shall be in accordance with the rules and methods specified in the Ministerial Regulation.

2. Price Decrease (Section 22, Paragraph 3)

2.1 Compensation shall be determined for the remaining land that has decreased in price.

2.2 It shall be in accordance with the rules and methods specified in the Ministerial Regulation.

2) Demolition Costs, Relocation Costs, Building Costs, New Building Construction Costs, and Costs for Other Damages Arising from the Land Owner's Relocation from the Expropriated Land

(1) Criteria and methods for determining prices

1. Criteria and methods shall be in accordance with the Ministerial Regulation specifying compensation other than land value.

2. Criteria and methods shall be in accordance with the criteria and methods for determining construction work median prices as announced by the Median Price Committee.

3. In the case of special buildings such as Thai-style buildings, high-rise buildings, etc., where it is evident that the demolition costs are higher than the specified rate, the officials shall consider appropriately with reasons and supporting evidence on a case-by-case basis.

4. Design and supervision costs shall be in accordance with the Government Procurement and Supplies Management Act.

5. Building permit fees shall be determined according to the rates charged by the government agencies.

6. Various accident prevention costs shall be determined by the lump sum investigation method.

7. Other expenses such as demolition, relocation, and installation costs for electrical, plumbing, telephone, air conditioning, and television signal equipment shall be determined not exceeding the actual amount paid.

3) Other Property Attached to the Land

(1) Compensation for perennial trees

1. Criteria and methods for determining prices

1.1 Criteria and methods shall be in accordance with the Ministerial Regulation specifying compensation other than land value.

1.2 Compensation for perennial trees shall be determined according to the Provincial Agricultural Office's list.

1.3 If there is no such price, the price set by the Energy Regulatory Commission or other government agencies during the past 3 years may be used.

1.4 If there is no price according to 1.1 and 1.2, the market transaction price in the nearby area as of the effective date of the royal decree on land expropriation shall be used.

1.5 If the owner of the perennial trees wants to remove the perennial trees from the expropriated land, only the excavation and removal costs shall be paid, but the total shall not exceed the determined tree price.

(2) Real estate other than perennial trees

1. Criteria and methods for determining prices

1.1 Criteria and methods shall be in accordance with the Ministerial Regulation specifying compensation other than land value.

1.2 The officials shall consider appropriately with reasons and supporting evidence on a case-by-case basis.



4) Compensation for Loss of Rights to Use of Real Estate

(1) Compensation for loss of right to use a passageway: A person who must pass through another plot of land to access a public road due to their land being expropriated is eligible for compensation, provided they have paid compensation to the owner of the surrounding land.

(2) Compensation for the installation of water pipes, electrical wires, or other structures: Individuals who lose the right to use land due to expropriation and have installed infrastructure such as water pipes or electrical wires may receive compensation, but only if they have paid compensation to the owner of the expropriated land.

(3) Eligibility for compensation: To be eligible for compensation, the individual must have registered their rights in the expropriated land. If no registration exists, there must be substantial evidence proving the use of such rights.

(4) Compensation payments shall be made in accordance with the ministerial regulations prescribing additional compensation beyond land value.

5) Costs for Other Damages Arising from the Land Owner's Relocation from the Expropriated Land

(1) During the period of securing a new residence or business location, compensation shall be set at 2.5% of the value of the building or structure, with a minimum payment of 25,000 baht.

(2) Emotional distress compensation due to relocation from a residential home:

1. A lump sum of 50,000 baht shall be paid.
2. If multiple residences are expropriated or if there are multiple joint owners, only one compensation payment shall be provided.

(3) Compensation for loss of income from legal business operations including loss of income from renting property for residential or commercial purposes, either wholly or partially:

1. For individuals: Compensation is based on the net monthly income over a six-month period, calculated from the personal income tax return filed in the year prior to the enactment of the royal decree.
2. For legal entities: Compensation is based on the net monthly profit over a six-month period, calculated from the corporate income tax return filed in the year prior to the enactment of the royal decree.
3. For real estate rentals (with a formal lease agreement): Regardless of any sublease agreements, compensation shall be equivalent to six months' rent, as reported in the personal or corporate income tax return filed in the year prior to the enactment of the royal decree.
4. If compensation cannot be calculated under the above methods: a lump sum payment of 20,000 baht shall be provided.

(4) When expropriations involve land, buildings, structures, or other real estate fixtures, compensation for moving costs shall be based on the standard market rates for moving services.

(5) For the loss of income generated by agricultural production, a compensation amount equal to 20% of the value of perennial trees shall be provided.

(6) Compensation for time and travel expenses related to expropriation procedures:

1. If the entire land plot is expropriated, a lump sum of 5,000 baht shall be provided, regardless of whether one or multiple plots are involved.
2. If only part of the land is expropriated or if buildings or structures (either entirely or partially) are affected, a lump sum of 10,000 baht per case shall be provided, regardless of the number of plots involved.
3. If multiple individuals share ownership, they shall be considered as one claimant for compensation.

(7) All compensations shall be in accordance with the ministerial regulations prescribing additional compensation beyond land value.





Material Analysis and Inspection

1. Improvement of the DH-S 203 Standard for "Cement Modified Crushed Rock Base"

Signed in 2016, the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC), to which Thailand is a party, sets a long-term goal to reduce global greenhouse gas (GHG) emissions by 20-25% by 2030 compared to the base year (2007). Accordingly, the Thai Cabinet Resolution of 30 September 2015 aims to reduce the country's GHG emissions from 2021-2030 (Nationally Determined Contribution Roadmap on Mitigation 2021-2030: NDC). Committed to both the Paris Agreement and the NDC as well as the Ministry of Transport's Strategy, the Department of Highways signed a "Memorandum of Understanding on Integrating Cooperation in Climate Change Management for Thailand to Achieve Greenhouse Gas Emission Reduction Goals in the Industrial Process and Product Use Sector: Cement Substitution Standards" on 31 August 2020, to promote and support the use of construction materials, specifically cement types, that meet industrial product standards and reduce carbon dioxide emissions in various construction projects.



Figure 1: Research, experimentation, and analysis to use the conclusions as data for improving the DH-S 203 Standard for "Cement Modified Crushed Rock Base"

The Bureau of Material Analysis and Inspection, which has the important mission of controlling and inspecting the quality of roadwork materials, has conducted extensive research and testing to revise the DH-S 203 Standard for "Cement Modified Crushed Rock Base." This revision introduces the use of hydraulic cement (TIS 2594) as a viable alternative to Portland cement Type 1 (TIS 15) in base course layers. The research included comparative laboratory analyses of hydraulic and Portland cement properties, followed by field test sections. Samples were collected and evaluated for compaction density, unconfined compressive strength (UCS), and pavement structural strength using the falling weight deflectometer (FWD). The results demonstrated that hydraulic cement (TIS 2594) achieves comparable performance to Portland cement Type 1 (TIS 15).

Based on these findings, the Bureau of Material Analysis and Inspection drafted the revised DH-S 203 Standard for "Cement Modified Crushed Rock Base." This draft was subsequently approved by the DOH's Committee for Supervision of Improvement and Development of Standards and Specifications Related to Road Engineering, and officially announced by the Director-General on 4 June 2024, as DH-S 203/2024 Standard for "Cement Modified Crushed Rock Base." This updated standard, replacing DH-S 203/2013, incorporates requirements for environmentally friendly, high-quality road materials and the use of efficient construction equipment aligned with current road engineering technology.



2. Correction and Prevention of Erosion and Movement of the Slope at Highway No. 12, Wang Thong - Khek Noi Section, approximately at Sta. 297+800 - Sta. 297+900 on the right side of the road

Long-term subsidence along the side slope of Highway No. 12, a key component of the East-West Economic Corridor, was identified between Sta. 297+800 and Sta. 297+900 on the right side of the Wang Thong - Khek Noi section. This posed a potential threat to provincial and national economic activity due to possible traffic disruption.

The Bureau of Material Analysis and Inspection, in collaboration with officials from the Department of Highways' central and regional offices (Office of Highways 5 and Phitsanulok Highway District 2), conducted a site survey to determine the causes and develop remediation strategies. The investigation revealed longitudinal cracking and subsidence of the road surface, affecting one traffic lane (Figure 2) and damage and breakage of the underlying box culvert, leading to water seepage (Figures 3 and 4). This resulted in soil movement and washout, a primary cause of the damage. Additionally, surface water erosion of the slope face (Figure 5) and groundwater seepage from the toe slope area were discovered. To address these issues, a comprehensive stabilization plan was implemented, including box culvert replacement and embankment reconstruction.

Due to the mountainous terrain and limited right-of-way, a modular block wall reinforced soil embankment was chosen, allowing for a steep slope within the available space. The project also included the installation of subsurface and surface drainage systems. The successful completion of the project effectively resolved the slope erosion and road subsidence, restoring safe and convenient travel for road users.



Figure 2: Road surface cracking and subsidence



Figure 3: Water seepage within the box culvert



Figure 4: Damaged box culvert



Figure 5: Slope face erosion



Figure 6: Site preparation



Figure 7: Construction in progress



Figure 8: Completed modular block wall reinforced soil embankment, with traffic flow restored.



Figure 9: The 5th International Conference on Highway Engineering (iCHE 2024): Track C (Resilience and Sustainable Infrastructure)

3. Recommended Pavement Structure Design Based on the Concept of "Resilience and Sustainable Infrastructure" and the ADB Green Roads Toolkit

The 5th International Conference on Highway Engineering (iCHE 2024), themed "Future-proofing Roads for Asia and Beyond," was held from 4-6 September 2024, at the Bangkok International Trade & Exhibition Centre (BITEC), Bang Na, Bangkok. The conference facilitated knowledge exchange on: (1) Efficient, Inclusive, and Safe Road Management; (2) Smart Mobility, Digital Technology, and Innovation for Roads; and (3) Sustainability and Resilience of Road Networks.

The Bureau of Material Analysis and Inspection, responsible for recommending pavement structure designs to the Department of Highways, has enhanced its expertise through extensive research and development of new technologies in pavement structure design and material quality improvement for soil stabilization. These innovations have been incorporated into practical applications, aligning with the conference's emphasis on "Resilience and Sustainable Infrastructure." The focus is on maintaining serviceability and reliability of road transport systems, mitigating the impacts of climate change and natural disasters, and reducing carbon dioxide (CO_2) emissions from road construction and maintenance.

Additionally, the bureau has integrated principles from the Asian Development Bank's (ADB) Green Roads Toolkit principles into its recommendations. The goal is to foster the development of resilient and sustainable roads, considering both environmental and social factors. Key design considerations include:

1. Selection of pavement structure materials for environmental sustainability: Transitioning from Portland cement Type I (TIS 15) to the more environmentally-friendly hydraulic cement (TIS 2594), and promoting pavement recycling.
2. Embankment stability guidelines: Addressing failure, settlement, and sliding by considering flood levels, elevating pavements, and using high-drainage materials to minimize damage from water exposure.
3. Cement-treated base (CTB) standards: Implementing cement-treated crushed rock base to reduce CO_2 emissions during construction, following the DH-S 214/2566 Standard for Cement-Treated Base, which was approved by the Director-General of the Department of Highways on 16 March 2023.
4. Low-emission concrete pavement designs: Recommending designs that minimize GHG emissions, aligning with the "Green Roads" concept, aiming to reduce environmental impacts and promote long-term improvements in quality of life.
5. Environmentally conscious materials and techniques: Utilizing materials like Asphalt Cement AC 40/50 instead of Asphalt Cement AC 60/70, where appropriate, to mitigate rutting and extend road lifespan.



Figure 10: Damaged road condition at the settlement area

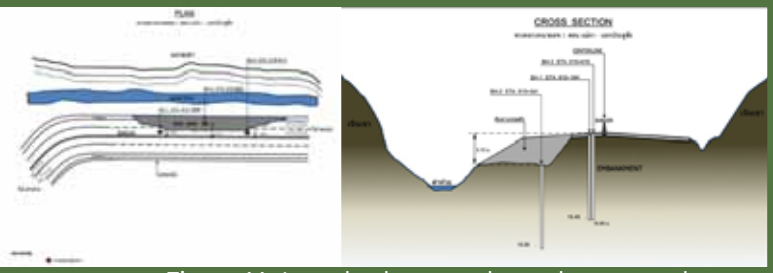


Figure 11: Investigation area plan and cross-section



Figure 12: Drilling in progress



Figure 13: Boring log records for boreholes BH-1, BH-2, and BH-3

4. Exploration and Testing of Soil Properties in the Case of Embankment Settlement on Highway No. 1, Mae Ka - Pratu Chai Intersection (Sta. 815+564 – Sta. 815+615)

Due to heavy rainfall in the northern region, an embankment settlement occurred on Highway No. 1, Mae Ka - Pratu Chai Intersection, at Sta. 815+564 - Sta. 815+615, in Mueang Phayao District, Phayao Province. The Phayao Highway District thus requested the Bureau of Material Analysis and Inspection to investigate the settlement, which affected approximately 100 meters of the road's left side, so as to develop a suitable design solution to the settlement issue.

The bureau conducted soil investigations at three locations, utilizing rotary drilling rigs with power augers to drill boreholes (15-19 meters deep, 3½ inches diameter throughout their depth). Four-inch casing was used to prevent collapse. Soil samples were collected, and Standard Penetration Tests (SPT) were performed according to ASTM D-1586 standards, with testing intervals at 1.00-meter intervals from 0.00-6.00 meters, and 1.50-meter intervals from 6.00 meters to final depth. SPT N-values and soil characteristics, such as type and color, were recorded in field logs. The investigation results were reported to relevant agencies for the design and implementation of corrective measures.

5. Subsurface Void Detection Using GPR on Highway No. 3902 Following Embankment Settlement

On 5 January 2024, a significant embankment settlement, approximately 30 meters in diameter and 1.30 meters deep, was observed at Sta. 15+500 on Highway No. 3902, Phra Pradaeng - Bang Khae Section. This settlement was attributed to underground tunneling for a water transmission system by the Metropolitan Waterworks Authority, associated with Motorway No. 9 (Kanchanaphisek Road).

The following day, 6 January 2024, the Bureau of Material Analysis and Inspection conducted a Ground Penetrating Radar (GPR) survey to identify potential subsurface voids beneath the pavement.



Figure 14: GPR subsurface void detection on Highway No. 3902

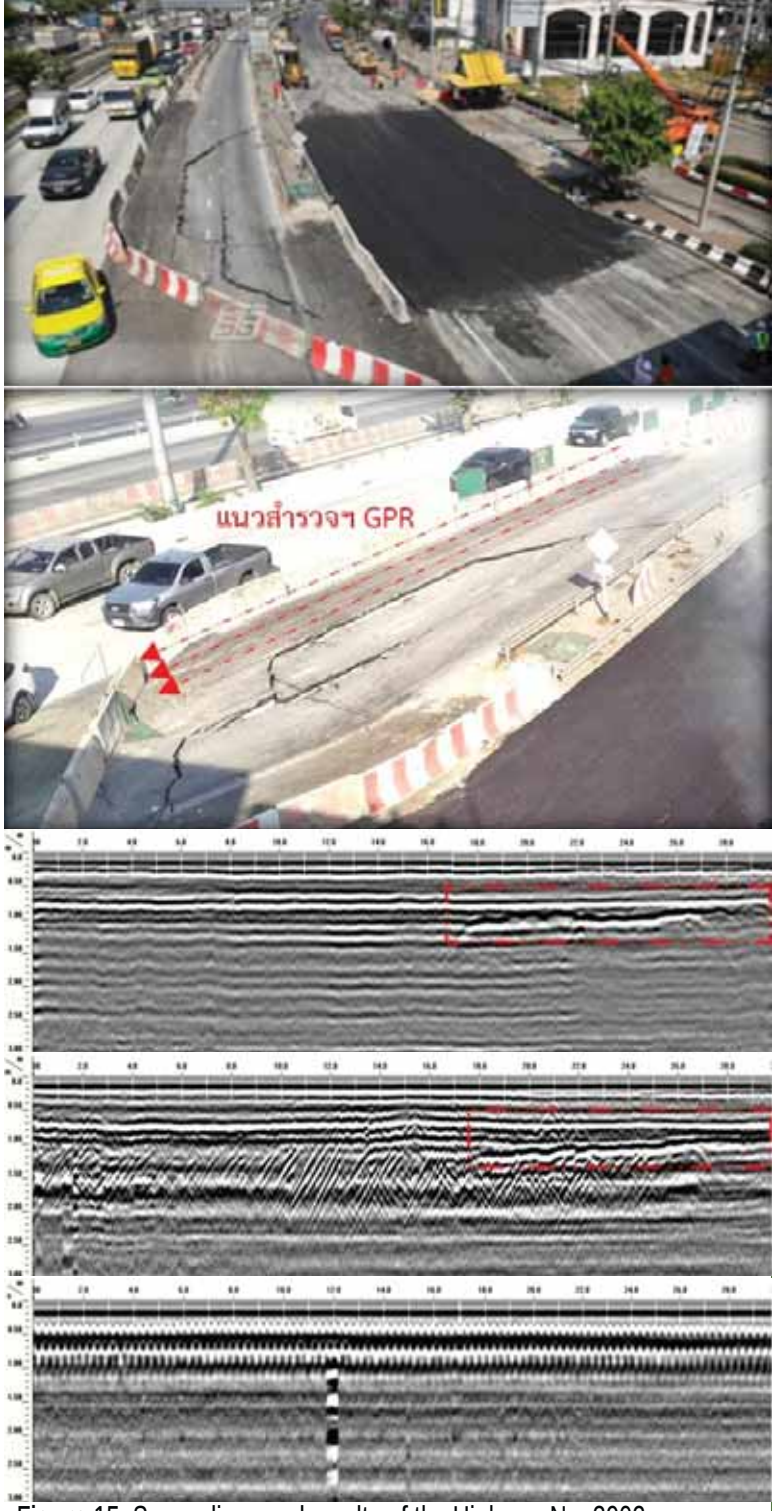


Figure 15: Survey lines and results of the Highway No. 3902 settlement investigation

Survey Lines 1 and 2, positioned 0.8 meters and 1.5 meters from the settlement edge, revealed a substantial void at a depth of 1.00-1.20 meters, extending approximately 13 meters laterally. Survey Line 3, located 2.5 meters from the settlement and conducted on the completed concrete pavement of Motorway No. 9, showed no anomalies in the GPR signals. These findings were reported to relevant agencies for the development of appropriate road repair and maintenance strategies.

6. Quality Evaluation of Newly Constructed Roads Using FFWD

In 2024, the Department of Highways incorporated pavement structural strength as a key criterion in its annual quality assessment of newly constructed roads. The Bureau of Standards and Evaluation, acting as the department's secretariat, commissioned the Bureau of Material Analysis and Inspection to perform pavement strength testing using the Fast Falling Weight Deflectometer (FFWD). The results were used to evaluate 22 newly constructed road projects under the 2024 assessment framework.



Figure 16: Road sections evaluated for quality in new construction projects



Figure 17: Road quality assessment using FFWD

The FFWD testing method, which measures pavement deflection, was employed to assess construction quality based on the following factors:

1. Material quality: Higher deflection indicates weaker materials, while lower deflection signifies stronger, more durable materials.
2. Compaction efficiency: Excessive deflection may suggest inadequate compaction, potentially leading to structural failures. This allows for timely corrective measures.
3. Load-bearing capacity: Minimal deflection under load indicates a strong pavement structure, reflecting its strength and durability.
4. Pavement structure uniformity: The FFWD test helps identify inconsistencies in pavement layers. Areas with significantly higher deflection areas may indicate potential construction defects or material variations requiring further investigation.

This pavement deflection testing ensures that newly constructed roads meet specified strength and durability requirements, contributing to longer service life and efficient traffic flow. Without proper testing and corrective actions, premature pavement deterioration can result in increased maintenance costs, reduced road safety, and public inconvenience.



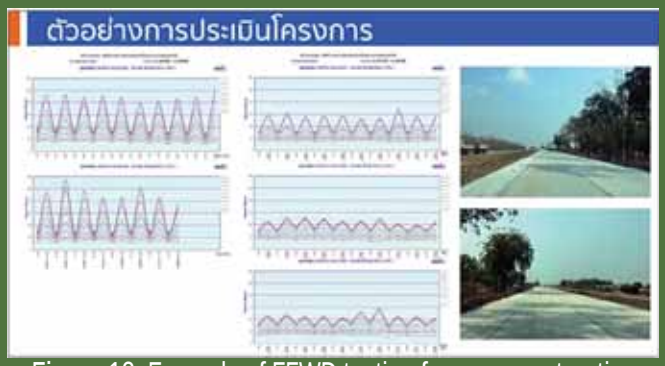
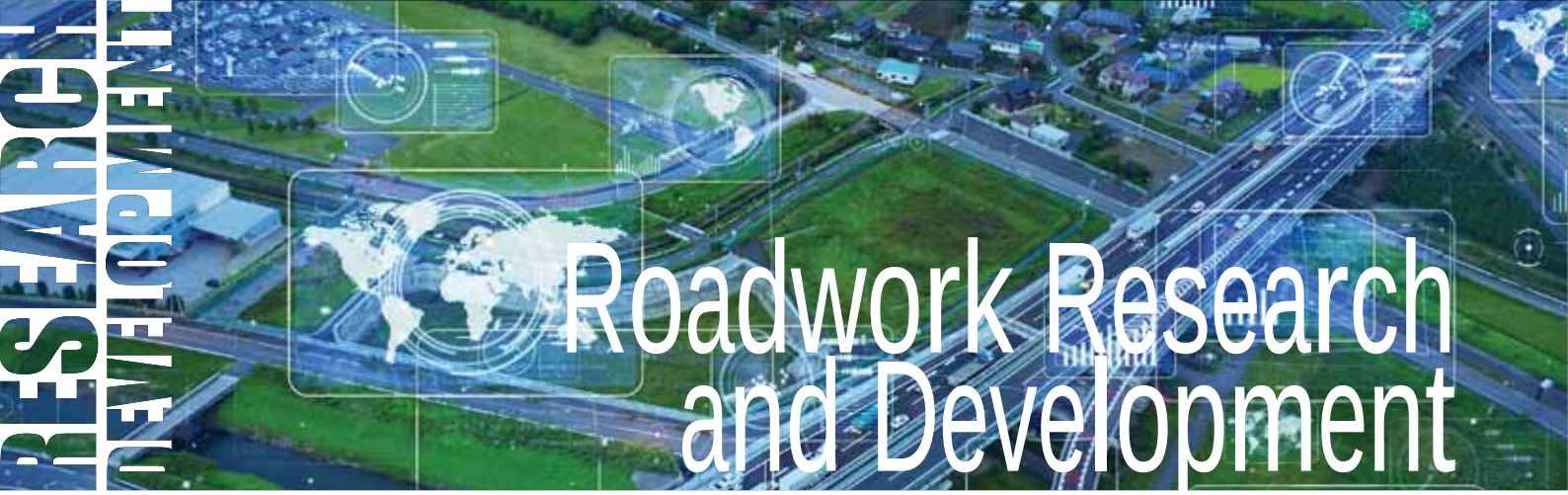


Figure 18: Example of FFWD testing for new construction project evaluation

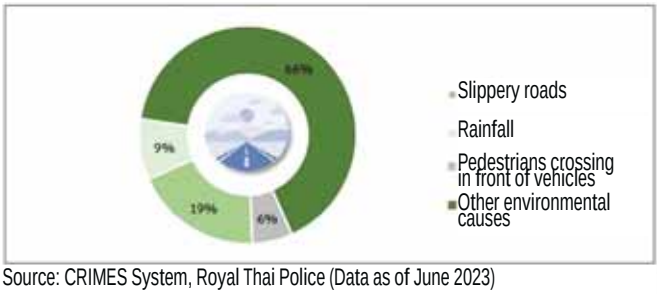


Roadwork Research and Development

Using AI to Predict the International Friction Index

According to the Ministry of Transport's road accident analysis report in 2022, slippery roads accounted for 19% of road accidents in terms of environmental factors, ranking second among all contributing causes. This highlights a significant road safety concern. In response, the Department of Highways, which oversees Thailand's highway network, has identified skid resistance as a key indicator of road safety.

Proportion of Road Accidents Caused by Environmental Factors



Source: CRIMES System, Royal Thai Police (Data as of June 2023)

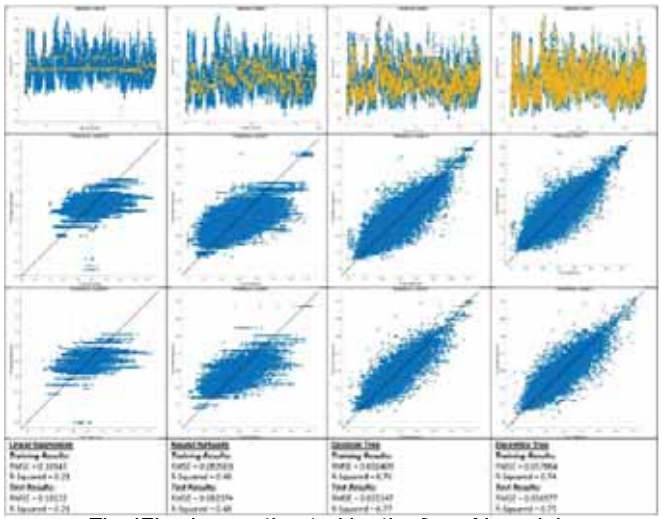
The International Friction Index (IFI) is a globally recognized metric used to evaluate the frictional properties of road surfaces. Developed through collaboration among international research and standards organizations, such as the American Society for Testing and Materials (ASTM) and the World Road Association (PIARC), the IFI aims to establish a universal standard for accurate and comparable measurement of road surface friction. However, current IFI measurement methods rely on complex equipment, incur high operational costs, and require significant time to assess Thailand's extensive highway network.





Collection of road surface friction data

Artificial Intelligence (AI) technology offers a promising solution to this challenge. AI enables machines or computer systems to perform tasks that typically require human-like intelligence, such as learning, analyzing, and making decisions based on trained data and models. By leveraging relevant data as input, AI can be used to develop prediction models that quickly estimate IFI values. This research evaluates four AI-based methods: 1) Multiple Linear Regression, 2) Neural Networks, 3) Decision Tree Models, and 4) Random Forest (Ensemble Tree).



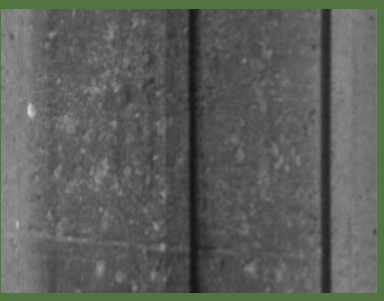
The IFI values estimated by the four AI models

The accuracy of these models is measured using the R^2 value, where a value closer to 1 indicates better predictive performance. Analysis of IFI data using these models reveals that Decision Tree and Random Forest models achieve an R^2 of 0.75, demonstrating sufficient accuracy for IFI prediction. In contrast, Multiple Linear Regression and Artificial Neural Networks yield lower R^2 values of 0.21 and 0.48, respectively, making them less suitable for this purpose. In the future, the proposed IFI prediction model can be integrated into the Department of Highways' Thailand Pavement Management System (TPMS).

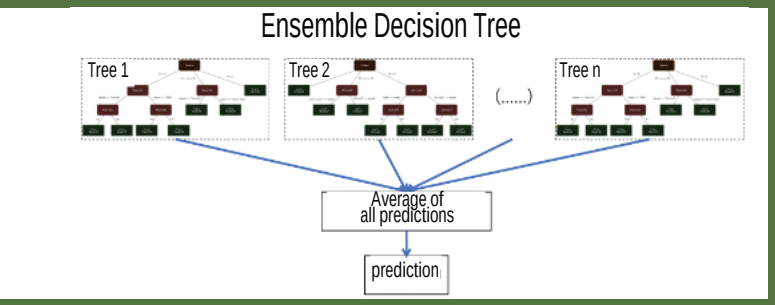
Using AI to Predict the International Roughness Index and Remaining Service Life of Roads

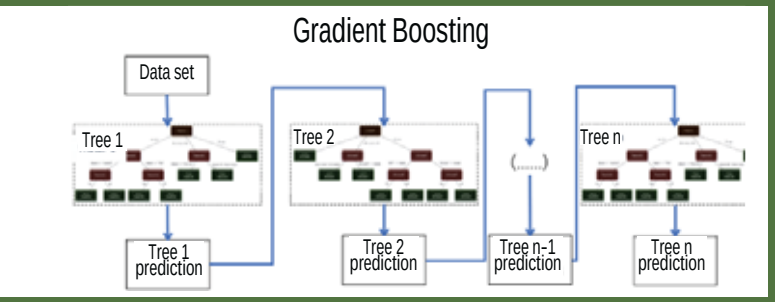












The highway network is a critical component of land transportation infrastructure, supporting economic growth and social development. Rapid urbanization, the expansion of major cities, and the increasing demand for the transportation of people and goods have led to a significant rise in heavy vehicle and freight traffic. This surge in traffic volume has accelerated the deterioration of road surfaces.

In Thailand, the Department of Highways is responsible for maintaining and rehabilitating road infrastructure. The International Roughness Index (IRI) is a key metric used to assess pavement performance, with higher IRI values indicating greater surface roughness and reduced driving comfort. Traditionally, IRI values are obtained using road survey vehicles, which are expensive to operate and can disrupt traffic flow during data collection. Additionally, IRI values can vary significantly along the same road due to various pavement factors.

To address these challenges, the Department of Highways has developed AI models to predict IRI values. Furthermore, it has introduced a complementary metric, the Remaining Service Life (RSL), which estimates the remaining lifespan of roads based on historical highway data collected over the past three years. These AI models enable accurate prediction of both IRI and RSL values, reducing the reliance on road survey vehicles and improving the efficiency of road maintenance operations. By integrating these AI-driven tools, the Department of Highways can enhance road safety.

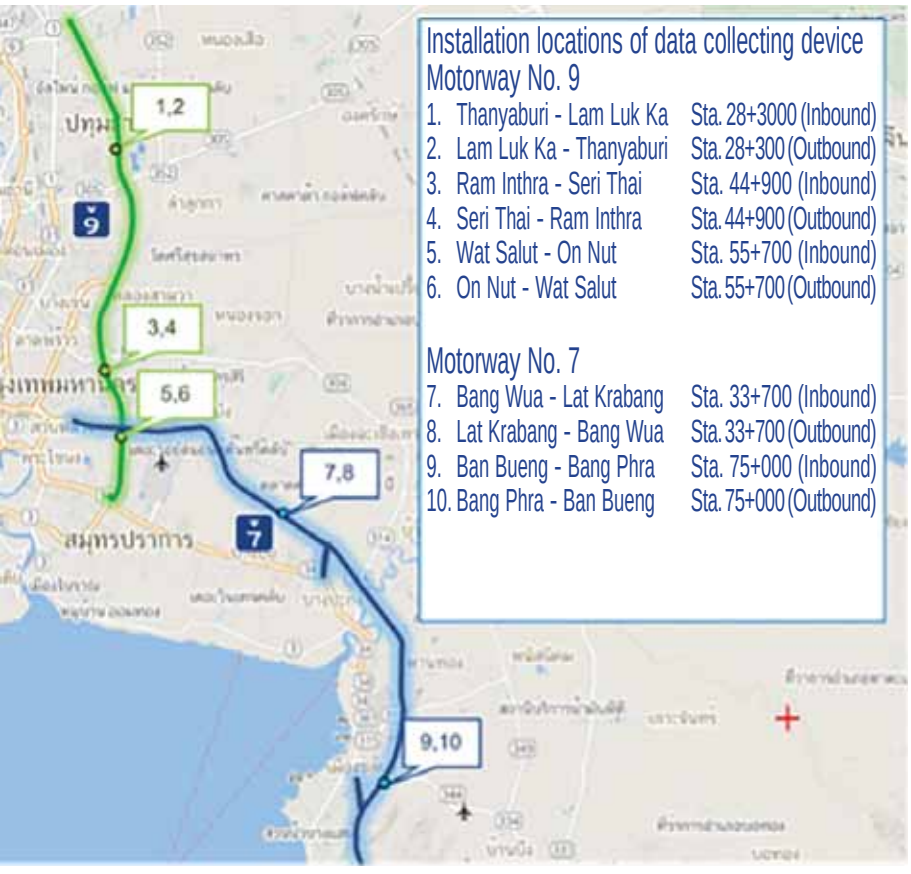
Calculating Passenger Car Equivalent from Traffic Data for Multi-lane Roads

Passenger Car Equivalent (PCE) is a metric used to quantify the impact of large vehicles, such as trucks and buses, on traffic flow in comparison to passenger cars. Large vehicles affect traffic dynamics due to their slower speeds, larger dimensions, and greater road space requirements, which can reduce the overall capacity of a road. In many countries, including the United States, PCE values are standardized and used to analyze the influence of large vehicles on traffic flow, as well as to guide the design of highways and multi-lane roads. However, applying PCE values from other countries to Thailand may not yield accurate results due to differences in vehicle characteristics and sizes. This discrepancy can lead to road designs that do not align with actual traffic conditions.

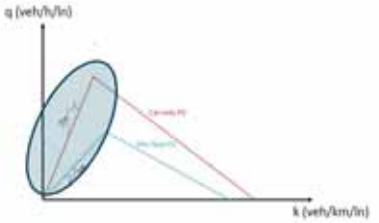
To address this issue, the Department of Highways, through the Bureau of Road Research and Development, has calculated PCE values based on traffic density, which reflects the level of service (LOS) of roads. These calculations were derived from real traffic data collected on highways across Thailand, ensuring that the resulting PCE values are tailored to local conditions and more accurately represent the impact of large vehicles on traffic flow.

This study utilized traffic data collected from Motorways No. 7 and 9 between January and March 2020. Data was gathered from 10 survey locations with flat terrain, where the proportion of trucks varied by location. Vehicles were classified into three categories based on length: 1) passenger cars and small trucks (5.1 meters or less in length); 2) medium trucks (5.2-13.0 meters in length); and 3) large trucks (13.0 meters or more in length). The analysis revealed that the PCE value for medium trucks was 1.46, while the PCE value for large trucks was 2.08 for flat terrain and roads with four or more lanes.

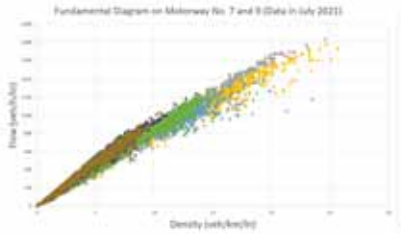
By incorporating these locally derived PCE values, the accuracy of calculating passenger car equivalent traffic flow can be significantly improved. This leads to more precise density estimations, which are critical for determining the LOS on multi-lane roads. Ultimately, these findings will support the design of highway improvements, ensuring that the number of lanes and road capacity align with Thailand's actual traffic conditions.



Hypothesized fundamental diagram



Survey-based fundamental diagram







Environmental Protection and Public Participation

Environmental Protection and Public Participation

Recognizing the importance of mitigating environmental and social impacts arising from highway development, the Department of Highways has adopted a policy to promote sustainable highway development. This policy emphasizes transparent, fair, and auditable operations while providing opportunities for public participation in the development process. These efforts align with the National Environmental Quality Promotion and Conservation Act, B.E. 2535 (1992) and its Amendment No. 2, B.E. 2561 (2018). In 2024, the Department of Highways has prepared Environmental Impact Assessment (EIA) reports for several significant projects. These include the construction of a parallel bridge across the Kolok River in Su-ngai Kolok District, a project under the Thailand - Malaysia Committee on Joint Development Strategy (JDS) for Border Areas, and the Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT) development plan.

In addition, the department has monitored and inspected environmental quality for 22 highway projects under construction and operational phases:

1) The interchange at the Khao Ngu Intersection of Highway No. 4 and Highway No. 3087

2) Highway No. 3646 (Aranyaprathet District - Thai/Cambodian Border [Ban Nong Ian - Stueng Bot]), at the intersection of Highway No. 33 and Highway No. 3586, Sa Kaeo Province (operational phase)

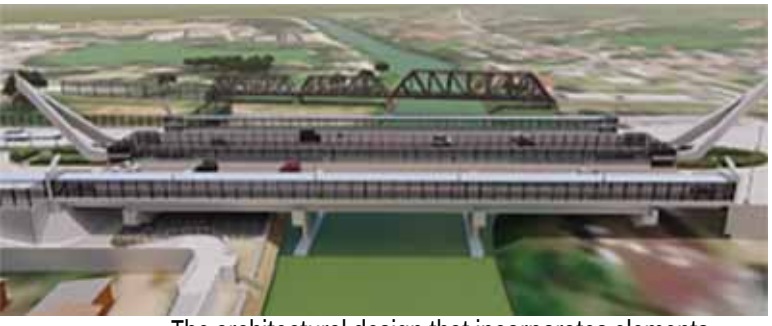
3) Highway No. 348 (Pakham District - Nang Rong District), Buri Ram Province (operational phase)

4) Highway No. 319 (Prachin Buri - Phanom Sarakham District), Ban Nong Bua Mu - Phanom Sarakham District Section 2, Prachin Buri Province (operational phase)

5) The Borommaratchachonnani Elevated Parallel Road Extension and Highway No. 338 (Pin Klao - Nakhon Chai Si) Improvement Project, Bangkok (Phase 2)

6) Highway No. 101 (Rong Kwang - Nan), Section 2, Nan Province (Phase 2)

7) Intercity Motorway No. 82 (Bang Khun Thian - Ban Phaeo)



The architectural design that incorporates elements reminiscent of local fishing boats, serving as a symbolic landmark of the area's heritage



Door patterns featuring the Broom Weed (Sida acuta Burm.f. or *Ya Khat* in Thai) motif, a native plant species, to reinforce the area's unique cultural identity



Nets installed beneath bridge structure to prevent debris from falling onto road users



Concrete barriers installed in sensitive areas to clearly demarcate construction zones

8) Intercity Motorway No. 7 (Bangkok - Ban Chang), Chon Buri - Map Ta Phut Section

9) Intercity Motorway No. 81 (Bang Yai - Kanchanaburi)

10) Intercity Motorway No. 6 (Bang Pa-In - Nakhon Ratchasima)

11) The construction of a bridge over Sukhrip Canal on Highway No. 3, Sta. 112+875, Chon Buri Province

12) Railway overpass on Highway No. 226, Sta. 62+886 (adjacent to Surin Highway District area) - Uthumphon Phisai Intersection at Sta. 75+971, Si Sa Ket Province

13) The interchange at the Chok Chai Intersection of Highway No. 24 and Highway No. 224, Nakhon Ratchasima Province

14) The road parallel to the bridge across the Chao Phraya River (under the Western Bangkok Outer Ring Road Intercity Motorway project, Bang Khun Thian - Bang Pa-In)

15) Nakhon Ratchasima Ring Road from the intersection of Highway No. 205 to intersection of Highway No. 226, Nakhon Ratchasima Province



Navigation buoys deployed to enhance water traffic management and safety



Bridge piers marked with painted indicators to enhance water traffic management and safety

16) Railway overpass on Highway No. 4114, from the intersection of Highway No. 41 (Samo Thong) to seaside at Sta. 4+492, Surat Thani Province

17) Highway No. 333 (Nong Chang District - Uthai Thani), Nong Phai Subdistrict - Uthai Thani Section, Uthai Thani Province

18) Highway No. 304 (Chachoengsao - Khao Hin Son Subdistrict), Mueang Kao Subdistrict - Phanom Sarakham District Section, Chachoengsao Province (operational phase)

19) The interchange at the Pradok Intersection of Highway No. 2 (Mittraphap Road) and Municipal Road or Chang Phueak Road, and the tunnel at the intersection of Highway No. 2 and Highway No. 224 (Nakhon Ratchasima Intersection), Nakhon Ratchasima Province

20) The construction of a 4-lane Highway No. 304, Kabin Buri District - Pak Thong Chai District Section, Nakhon Ratchasima Province, and the wildlife corridor project on Highway No. 304, Kabin Buri District - Pak Thong Chai District Section , Prachin Buri Province (operational phase)

21) The construction of Highway No. 3702, Bang Khwai - Khao Din (bridge over the Bang Pakong River) Section, Chachoengsao Province

22) International highway network connection, Highway No. 101, Nan - Chaloem Phra Kiat District Section 2, Nan Province



Soil stockpiling zones established to prevent soil loss and displacement from the project area



Collaborating with the Office of Natural Resources and Environmental Policy and Planning in ongoing monitoring and inspection of environmental quality within the project area

Public Engagement for Transparent Highway Development

The Department of Highways prioritizes public involvement throughout all stages of highway development. To ensure transparency and responsiveness, public participation activities are conducted, including public hearings during the construction phase, as mandated by the Prime Minister's Office Regulations on Public Consultation, B.E. 2548 (2005). These hearings facilitate the collection of public feedback and suggestions, which are incorporated to better align projects with local community needs. In 2024, the department conducted public participation activities for 295 projects, categorized as follows:

1) Standard elevation and highway efficiency enhancement: 172 projects

2) Development of highways passing through community areas: 59 projects

3) Large-scale construction projects allocated with the 2024 budget: 64 projects









Collaborating for a Sustainable Green Future

The Department of Highways is dedicated to fostering a sustainable green future by actively integrating environmental considerations into its operations and collaborating with other agencies. Key collaborative efforts include participation in:

- The National Agenda Subcommittee on Particulate Matter Pollution
- The Subcommittee on Wildfire, Haze, and Particulate Matter Prevention and Resolution
- The Subcommittee on Pollution Control Zone Management
- The Subcommittee on Integrated Coastal Erosion Management.
- The Committee on Environmental Monitoring and Enforcement for the Den Chai - Chiang Rai - Chiang Khong Railway Project.

Furthermore, the Department of Highways actively engages in environmental conservation initiatives. In 2024, the department collaborated with various organizations to contribute to environmental preservation through both research-based initiatives and practical, on-site activities.











Highway Maintenance

Highway maintenance is a core responsibility of the Department of Highways, requiring continuous effort to maintain roads in optimal condition, ensuring convenience, speed, safety, and aesthetic appeal. Effective highway maintenance planning, execution, and monitoring are essential to maximize efficiency within budgetary constraints. Maintenance strategies must be tailored to the specific type and extent of damage to optimally extend the lifespan of highways.

For fiscal year 2024, the Department of Highways received a total budget of 31,682.1231 million baht for highway maintenance. The budget was allocated as follows: basic plan for enhancing competitiveness which consisted of administrative and support activities for highway development (433.2645 million baht); highway maintenance activities (25,266.5786 million baht); bridge and structure maintenance activities (679.577 million baht); emergency restoration of disaster damage (200 million baht); and integrated transport and logistics development plan which consisted of major highway network rehabilitation activities (4,602.303 million baht),improvement of drainage efficiency on highways (133.8 million baht), and rest stop construction to improve road standards (366.6 million baht). A budget breakdown is shown below.

Output 1: Highway Network Development		
1) Administrative and Support Activities for Highway Development	433.2645	million baht
1.1 Construction of residential buildings and associated structures	160.5000	million baht
1.2 Construction of office buildings and associated structures	105.0750	million baht
1.3 Renovation of office buildings and associated structures	66.5904	million baht
1.4 Renovation of residential buildings and associated structures	51.6950	million baht
1.5 Construction of office and residential buildings, along with associated structures, for the Ranong Highway District	49.4041	million baht

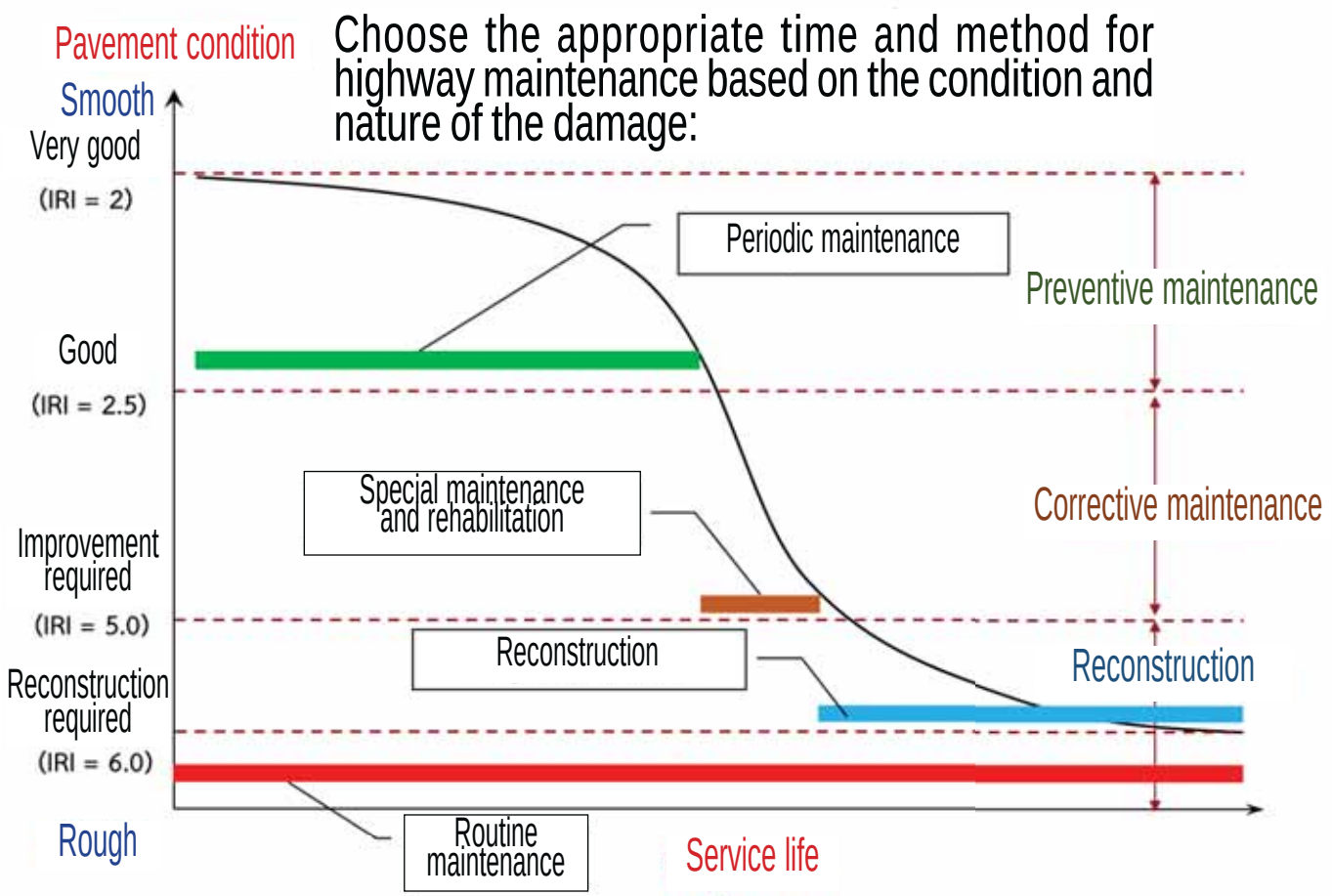
Output 2: Highway Network Maintenance		
1) Highway maintenance	25,266.5786	million baht
1.1 Routine maintenance	7,056.3600	million baht
1.2 Periodic maintenance	6,919.6880	million baht
1.3 Special maintenance and rehabilitation	9,140.0415	million baht
1.4 Sustainable restoration of disaster damage	1,697.3959	million baht
1.5 Improvement of low volume roads	365.2760	million baht
1.6 Other expenditures (Five consultancy projects)	87.8172	million baht
2) Bridge and structure maintenance	679.5770	million baht
3) Emergency restoration of disaster damage	200.0000	million baht
Integrated Transport and Logistics Development Plan		
• Major highway network rehabilitation	4,602.3030	million baht
• Improvement of drainage efficiency on highways	133.8000	million baht
• Rest stop construction to improve road standards	366.6000	million baht

The Department of Highways conducted the following maintenance activities and projects in 2024:

1. Administrative and Support Activities for Highway Development

This category encompassed the construction and renovation of departmental office buildings and residential facilities. Many of these structures, having aged over time, required maintenance to ensure continued functionality. A total of 712 facilities were addressed, including office buildings, residential buildings, and related structures across 18 highway offices, 5 road construction centers, 4 bridge construction and rehabilitation centers, 104 highway district offices, and 581 highway depots.





2. Highway Maintenance Activities

The Bureau of Highway Maintenance Management developed strategic maintenance plans based on thorough road inspections and condition analysis. These plans were aligned with departmental and Ministry of Transport policies, incorporating budget requests from Highway Offices and Districts. The maintenance framework prioritizes highway performance relative to its service life.

2.1 Routine Maintenance:

Routine maintenance involves regular upkeep, minor repairs, and cleaning to ensure highways remain in optimal condition, providing convenience and safety for road users. These activities may also include minor modifications or upgrades as needed.

Routine maintenance methods include:

1) Pavement and Shoulder Maintenance

Asphalt pavement and shoulder maintenance

1. Crack filling
2. Surface sealing
3. Surface leveling
4. Skin patching
5. Deep patching
6. Surface grinding

Concrete pavement and shoulder maintenance

1. Repair of joints
2. Crack sealing
3. Concrete pavement leveling
4. Concrete pavement patching

Unpaved road and shoulder maintenance

1. Surface patching
2. Light grinding
3. Heavy grinding

2) Maintenance of Sidewalks, Connection Roads, Medians, and Bicycle Lanes

3) Drainage Systems, Bridges, and Structures

Drainage system maintenance

1. Maintenance of open channels (e.g. cleaning, dredging, modifying, extending, repairing, or relocating drainage channels and components)
2. Maintenance of culverts (e.g. cleaning, dredging, modifying, extending, repairing, or relocating drainage channels and components)

Bridge and structure maintenance

1. Bridge maintenance (e.g., sealing concrete cracks, repairing bridge decks and railings, or repainting)
2. Repair of bridge approaches (e.g. mortar rip-rap)
3. Repair of retaining structures (e.g. repairing concrete cracks on retaining structures)
4. Repair of pedestrian bridges and underpasses
5. Repair of road tunnels

4) Traffic and Safety Devices

Traffic sign and marking maintenance

1. Repair of traffic signs (e.g. cleaning, repairing, painting, relocating, or installing traffic signs)
2. Traffic painting and marking

Safety device maintenance

1. Maintenance of guide posts, kilometer markers, right-of-way markers, and other survey markers.
2. Maintenance of guard rails, guard fences, guard cables, barriers, R.O.W. fences, barricades, crash cushions and others
3. Maintenance of other safety devices

Road lighting and traffic signal maintenance

1. Cleaning, repairing, painting, or replacing damaged components, as well as installing or relocating lighting fixtures and traffic signals
2. Traffic signal maintenance

5) Highway Landscaping

6) Supplementary Activities for Enhancing Highway Maintenance Efficiency







2.2 Periodic Maintenance

Periodic maintenance is a preventive highway maintenance activity that must be carried out to extend service life and strengthen the highway to support future traffic volumes. It includes concrete pavement joint replacement, unpaved surface reinforcement, asphalt surface reinforcement, asphalt seal coating, and para-slurry seal coating.

Periodic maintenance methods include:

1) Asphalt seal coating
2) Asphalt overlay
3) Asphalt hot mix recycling
4) Re-graveling
5) Replacement of joint sealant
6) Surface repairing of bridges and structures



2.3 Special Maintenance and Rehabilitation

1) Special Maintenance: This involves highway repairs for damage of which the task exceeds the scope of regular maintenance work. Special maintenance repair methods include:

1. Surface leveling
2. Major repair of asphalt pavement
3. Major repair of concrete pavement
4. Major repair of side slope and back slope

2) Rehabilitation: This involves repairing severely damaged highways that cannot be addressed through special maintenance. Rehabilitation methods include:

1. Asphalt pavement rehabilitation
2. Concrete pavement rehabilitation

2.4 Sustainable Restoration of Disaster Damage

This involves restoring highways or government property damaged by disasters. Restoration will be carried out as appropriate or as specified in future plans. This includes improving drainage system efficiency and reinforcing highway stability to address slope failure issues.



2.5 Improvement of Low Volume Roads

This involves upgrading highways to strengthen infrastructure that supports local travel and facilitates connectivity at the community level. These roads also play a vital role in the transportation of agricultural products, ensuring efficient movement from farms to distribution points both within and beyond communities. The networks include routes in remote or challenging terrains, terminal roads, and highways transferred from other agencies that were not originally designed for goods transportation or freight traffic, such as secondary roads, unpaved roads, and irrigation canal embankments. These thoroughfares have been upgraded to meet safety and quality standards to provide smooth, convenient, and safe travel, fostering equitable access between communities and essential public services such as hospitals, schools, and government offices.

Main Objectives:

- To promote equal access to infrastructure, ensuring remote and difficult-to-reach areas are well-connected.
- To improve infrastructure to empower locals, particularly farmers, by enabling access to essential services and economic opportunities.
- To reduce long-term maintenance costs.

Target Areas:

- Remote areas at the ends of highway networks
- Roads transferred from other agencies.
- Highways with four-digit route numbers and traffic volumes below 2,000 vehicles per day, since budget constraints prioritize high-traffic roads.

3. Maintenance of Bridges and Structures

This encompasses the repair and upkeep of structural components of bridges, interchanges, retaining structures, bridge approaches, tunnels, underpasses, and concrete walls. These tasks, exceeding routine maintenance, may include traffic facilitation and safety measures (excluding new bridge construction, extensions, and expansions.)

4. Emergency Restoration of Disaster Damage

This refers to urgent repairs to highways or government property damaged by disasters. The objective is to rapidly restore essential functionality and basic usability.

5. Rehabilitation of Major Highway Networks

This focuses on maintaining primary transportation routes connecting regions, provinces, and countries. These highways serve strategic points such as ports, airports, border crossings, industrial estates, and special economic zones. Due to high traffic volume and heavy truck usage, these roads deteriorate quickly, necessitating specialized maintenance. A dedicated budget is required for regular maintenance and rehabilitation to ensure efficient, safe, and continuous transportation, supporting national economic and social development.

6. Improvement of Drainage Efficiency on Highways

This addresses critical drainage issues, particularly during the rainy season. Heavy rainfall can overwhelm roadside and under-road drainage systems, causing flooding and traffic disruptions. Improving drainage systems is essential for maintaining traffic flow and safety.

7. Rest Stop Construction for Enhanced Road Safety

This involves constructing rest stops to support transportation and logistics, adhering to the Land Transport Act, B.E. 2522 (1979), which mandates driver breaks of at least 30 minutes after driving for no more than four consecutive hours. The Department of Highways has established dedicated rest areas for large vehicles, providing essential services and security. These facilities mitigate accidents caused by driver fatigue and prevent unsafe roadside parking, improving overall road safety.





8. Consultancy Projects

8.1 Thailand Pavement Management System (TPMS) Enhancement Project for Integrated Maintenance Work

The Department of Highways manages Thailand's extensive road network, comprising 79,011 kilometers (two-lane equivalents), including approximately 70,722 kilometers of asphalt roads, 8,235 kilometers of concrete roads, and 54 kilometers of unpaved roads (as of 18 March 2024). Road surface conditions are surveyed and stored in the Roadnet highway network information system, providing essential data for budget planning and maintenance management. This data is crucial for the Bureau of Highway Maintenance Management to effectively execute its mission: developing highway maintenance strategies, plans, and projects, and advancing highway management and maintenance practices. To maximize the utility of this data, a precise and comprehensive budget analysis system is required, addressing service delivery and safety enhancement at both network and individual road levels.

Road maintenance budget analysis is a critical task for the bureau. The Department of Highways previously implemented the Pavement Management System, with World Bank assistance, utilizing Highway Development and Management (HDM) software. Adapted to Thailand's conditions, this system, known as the Thailand Pavement Management System (TPMS), has been used for nationwide highway maintenance management since 1987. However, the current TPMS does not fully meet evolving user needs. It primarily focuses on economic efficiency and general engineering maintenance at the network level, lacking detailed project-level analysis and area-specific budget allocation. Moreover, it does not incorporate safety factors, such as friction values, into maintenance planning, limiting its effectiveness to service and network-level analysis.

To address these limitations and meet the changing demands for road maintenance budget analysis, the TPMS requires enhancement. This includes developing predictive deterioration, road work effect, and road user effect models, refining budget allocation processes, and incorporating variables like smoothness and friction into maintenance planning. These improvements will enhance management and operational efficiency, ensuring sustainable highway maintenance.

Objectives and Goals

1) To study and review the TPMS highway maintenance budget analysis system.
2) To establish criteria for road surface condition data collection aligned with TPMS principles.
3) To enhance and develop the TPMS to meet user requirements.
4) To optimize the TPMS to incorporate safety dimensions and quality standards for various highway types.
5) To effectively integrate data such as traffic volume and road condition surveys with Roadnet, Plannet, and other systems.
6) To develop a system for presenting analyzed data in info-graphical reports, aligning with usage needs and budget analysis requirements.

Implementation

The Bureau of Highway Maintenance Management is implementing the TPMS to enhance highway maintenance budget management efficiency. This involves studying and improving the system to meet current needs, establishing road surface data collection criteria aligned with TPMS principles, and optimizing the system to address safety and quality standards. Critical data, like traffic volume and road conditions, are integrated with Roadnet and other systems to support effective budget allocation. Info-graphical reports enhance the clarity and usability of analysis results, facilitating the highway maintenance management process.



8.2 Department of Highways Command Center Capability Enhancement Project, Phase 2

Phase 1 of the Department of Highways Command Center Capability Enhancement Project had been implemented to enhance the center's disaster management and emergency response capabilities. This initial phase involved studying, reviewing, and compiling data on existing highway maintenance management systems. Focuses were on internal data integration, prototype development, and upgrade of the center in order to lay the groundwork for future integration of data and collaboration with external agencies, enabling real-time incident reporting and response through advanced technologies and improved communication channels. These enhancements also aimed to provide faster and more efficient public information services. However, a critical gap remains: the lack of effective real-time disaster and emergency information dissemination to the public. This limits travelers' ability to make informed decisions and reduces overall operational efficiency.

Building upon the completed Phase 1 study, the Bureau of Highway Maintenance Management will conduct Phase 2, focusing on developing an advanced coordination, monitoring, and real-time communication system. This system will integrate data from relevant units within the Department of Highways, ensuring seamless information flow and adaptable reporting formats based on incident specifics. The goal is to maximize the command center's effectiveness in managing disasters and emergency incidents.

Objectives and Goals

1) To examine and compile data from relevant units within the Department of Highways for data integration to improve analysis and visualization capabilities.
2) To research and test equipment and technologies for collecting disaster, public safety, and emergency data from highways, including a pilot testing area.
3) To upgrade and develop the central command system to provide real-time updates to executives and decision-makers. This includes refining data presentation formats based on different situations and expanding communication channels through social media for more efficient and timely public information dissemination.
4) To enhance the knowledge and skills of Bureau of Highway Maintenance Management personnel for effective system utilization.

Implementation

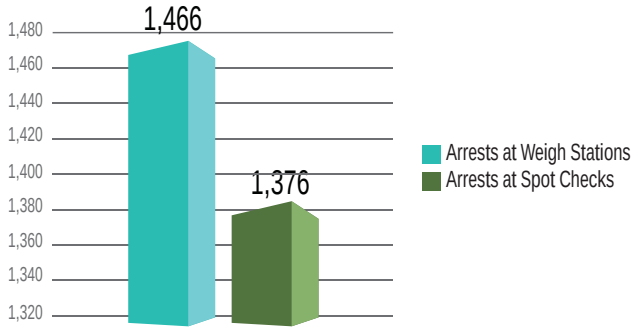
Phase 2 will concentrate on data compilation and integration from relevant units within the Department of Highways, strengthening the command center's capabilities. These improvements will enable more effective disaster and emergency management, ensuring more timely and coordinated incident responses.



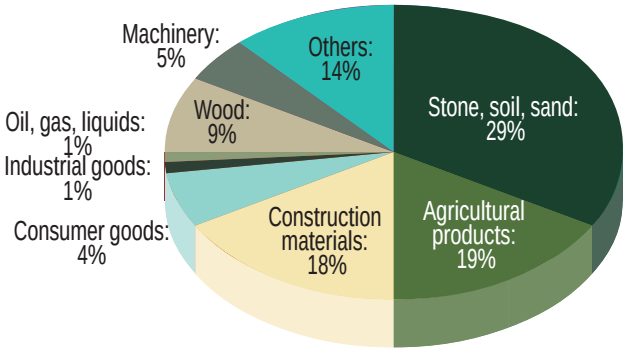


Weight and Vehicle Control

Statistics on Overweight Truck Arrests in 2024



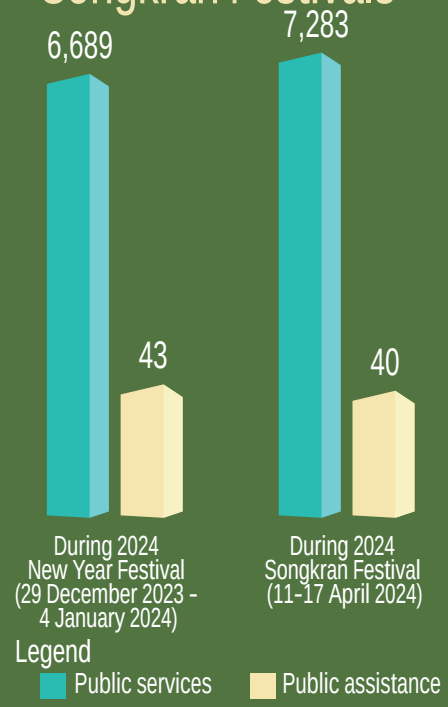
Data on Overweight Truck Arrests, Categorized by Type of Cargo



Overweight Truck Arrests



Statistics on Public Service and Assistance during New Year and Songkran Festivals



Public Service and Assistance in 2024



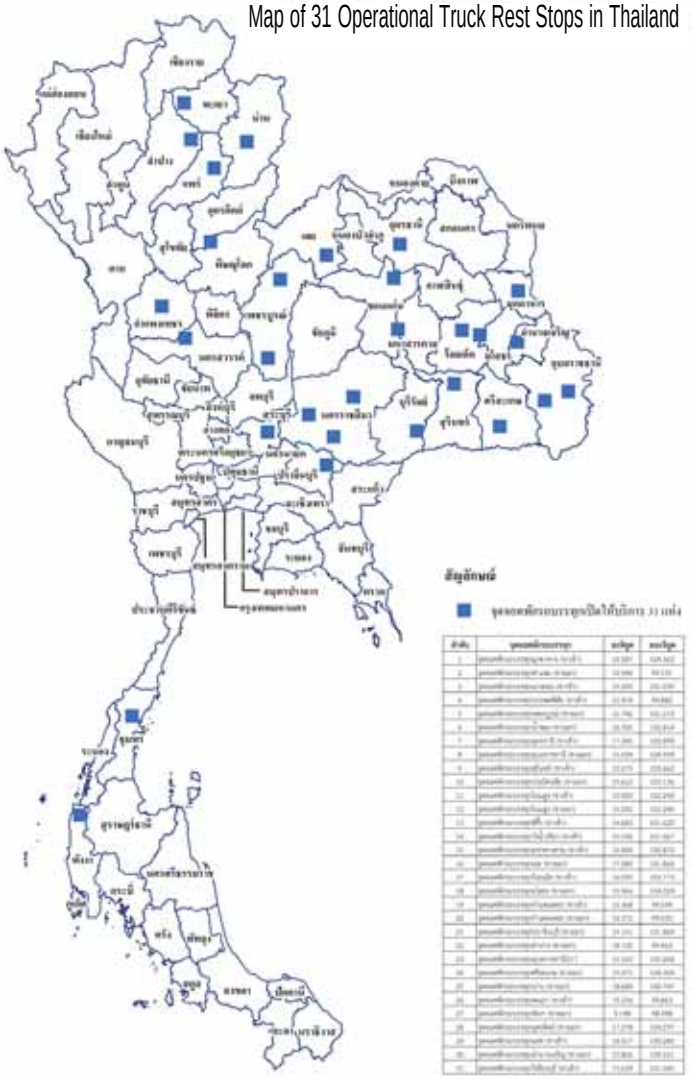
Statistics on Truck Rest Stop Usage in 2024

- 700,541 vehicles (1 October 2023 - 30 September 2024)

Statistics on Rest Stop Usage (Private Vehicles) in 2024

- 31,147 vehicles (1 October 2023 - 30 September 2024)

Map of 31 Operational Truck Rest Stops in Thailand



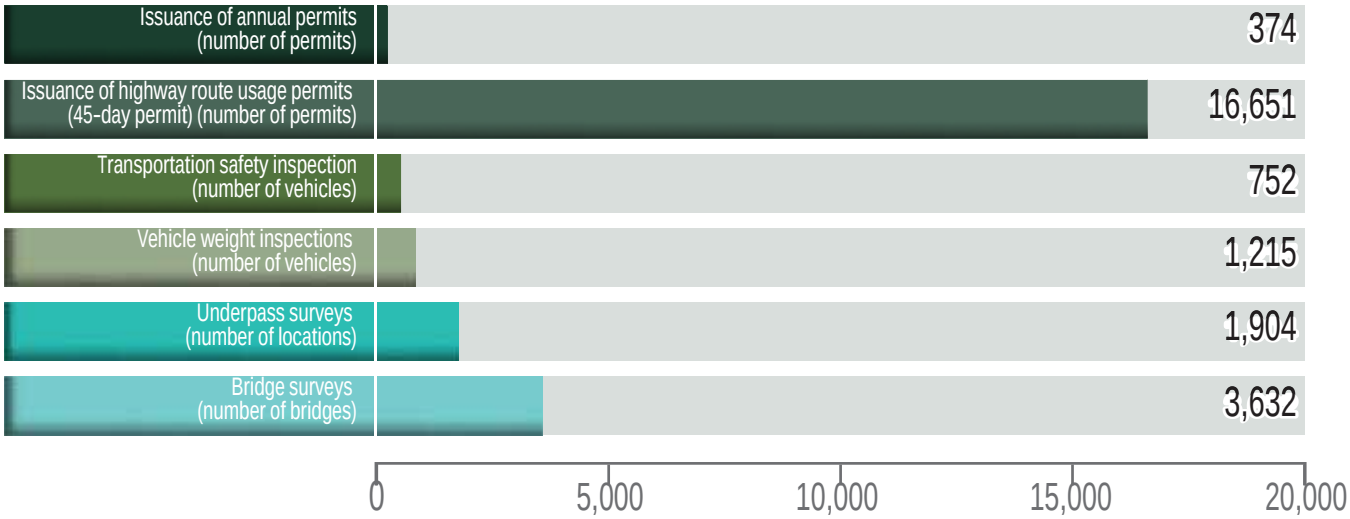






Truck Rest Stop Usage in 2024

Permit Application Inspection Operations in 2024





Safety Management

Road Marking Work on Highway No. 107,
Chiang Mai - Khilek Luang Section, Sta. 4+202 - Sta. 18+500



Traffic Sign Work on Highway No. 21,
Dan Khu - Khok Ngam Section, Sta. 321+987 - Sta. 345+903



Lighting and Traffic Signal Work on Highway No. 1,
Phan - Rong Khun, Section 9, Sta. 906+000 - Sta. 914+034



Guardrail Work on Highway No. 333, Uthai Thani - Bridge over the Chao Phraya River, Section 2, Sta. 174+500 - Sta. 180+818



Safety Enhancement Activity at Major Intersections on Highway No. 2226, Wang Hin - Nong Nang Dam Section, Sta. 34+500 - Sta. 35+226



Improvement of Traffic Sign and Road Marking Efficiency on ASEAN Highways on Highway No. 33, Non Chik - Aranyaprathet (Thai/Cambodia Border) section, Sta. 279+700 - Sta. 280+700



Standardization Activity for Roadside Hazard Protection on Highway No. 11, Khun Tan - Tunnel, Section 2,
Sta. 522+700 - Sta. 525+100



Traffic Lane Division Improvement Activity for Safety on Highway No. 212, Klang Noi - Yom Phatthana Section,
Sta. 351+332 - Sta. 357+393



Safety Improvement Activity at School Zones on Highway No. 222, Tha Kok Daeng - Bueng Kan, Section 10,
Sta. 81+504 - Sta. 81+704

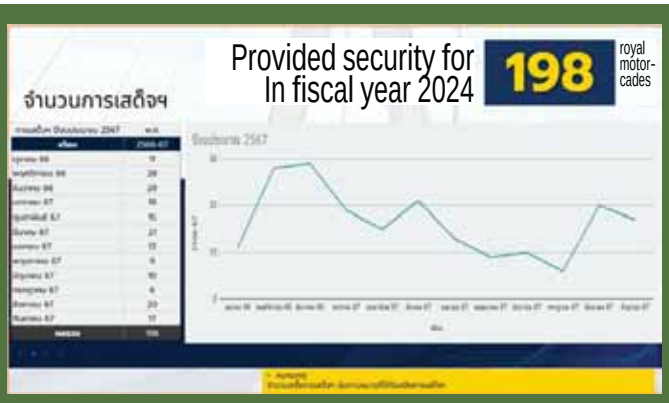


Safety Improvement Activity at Hazardous Intersections on Highway No. 1280, Thung Maha Chai - Rahan Section,
Sta. 17+255 - Sta. 18+075





Highway Police



Highway police are also vested with the authority and responsibility to provide security for His Majesty the King, Her Majesty the Queen, the Heir to the Throne, the Regent, members of the Royal Family, royal representatives, royal guests, and other dignitaries. In fiscal year 2024, they successfully conducted security operations for 198 royal motorcades.

For over 64 years, the Highway Police Division has been a steadfast pillar of support for the public. Committed to continuous improvement, the division focuses on highway and expressway traffic management and traffic law enforcement. It also prioritizes public assistance to ensure safe travel. Beyond traffic management, the division plays a crucial role in crime prevention and suppression. This includes apprehending offenders who damage Department of Highways' property and those using highways for illegal transit. Its mission is to protect lives and property while safeguarding national interests. Notably, the division actively enforce regulations against illegal waste disposal along highways, including garbage, sewage, and other pollutants. Furthermore, the Highway Police Division strictly enforces road safety measures, including conducting sobriety checkpoints to deter and apprehend intoxicated drivers and persistently cracking down on illegal street racing on highways.















Man Arrested Smuggling Meth, AK-47, and M16 to the South; Risks 5 Trips for Half a Million Baht



สกัดจับหนุ่มขนยาบ้า อาก้า เอ็ม 16 พร้อมกระสุนอื้อส่งลงใต้ สารภาพรับจ้างลำเลียง 5 ครั้งได้ค่าเสี่ยงครึ่งล้าน







The Highway Police Division actively cultivates civic engagement by building a network of citizen volunteers, fostering a sense of social responsibility. This initiative encompasses community development, disaster relief, and special operations. Collaborating with government and private sectors, the division organizes volunteer activities to assist the public during long holiday travel periods, promote community unity, and provide essential supplies and moral support. Notably, it joins forces in restoring people's houses through the "From the Heart: Flood Recovery Volunteer Project," aiding disaster victims.

Dedicated to youth well-being, the division is committed to promoting traffic discipline through the "Kids Crossing Safety" project, which provides traffic management around school areas. It also conducts safe driving education and road safety awareness campaigns.







To combat driver fatigue, a major cause of accidents, the Highway Police Division has established free rest stops at 205 Highway Police service units nationwide. These facilities, allowing travelers to rest and refresh or even stay overnight before continuing their journey, offer accommodations, restrooms, and refreshments. These Highway Police service units also feature self-sufficiency projects, including vegetable gardens and livestock (egg-laying chicken coops and fish ponds), where visitors can learn, seek advice, and take home produce.

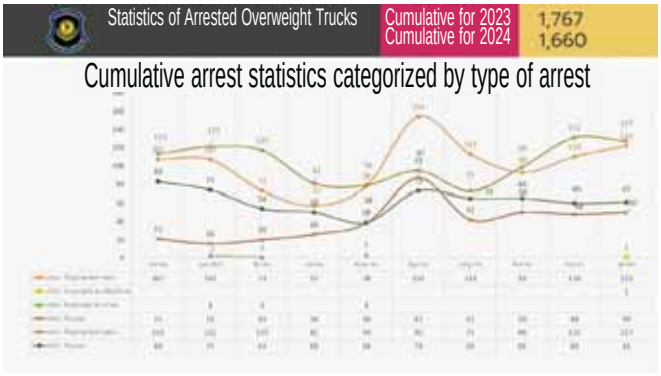






Driver Arrests under the Highways Act and Road Traffic Act (10 major offenses)
Highway Police Division (Fiscal Year 2024)

Month/Year	Speeding	Overtaking in dangerous conditions	Driving under the influence of alcohol	Not wearing a helmet	Not wearing a seatbelt	Driving without a valid license	Incomplete or faulty vehicle equipment	Running a red light	Driving against traffic	Using a mobile phone while driving	Total
Oct 2023	270,306	155	4	59	193	1,260	1,742	41,855	114	191	355,932
Nov 2023	42,743	1	15	2	6	1	2	26,487	17	3	69,280
Dec 2023	168,842	60	437	93	224	73	32	21,874	39	79	190,760
Jan 2024	273,556	124	281	179	772	186	312	33,483	156	179	309,723
Feb 2024	314,964	91	75	209	340	227	85	41,954	115	106	378,956
Mar 2024	363,051	171	44	213	423	302	330	39,244	103	127	404,878
Apr 2024	357,883	157	703	454	342	944	1,317	102,705	159	138	465,249
May 2024	359,492	160	40	128	188	1,307	1,383	101,928	135	90	465,879
Jun 2024	348,113	167	39	101	248	1,964	1,378	95,173	151	88	451,424
Jul 2024	361,943	179	27	102	218	1,390	1,460	126,287	169	115	519,430
Aug 2024	369,390	157	16	106	212	1,771	1,177	131,023	161	100	505,197
Sept 2024	347,519	179	21	102	174	1,465	1,469	124,540	165	94	474,859
Total	3,510,787	1,676	1,755	1,752	3,475	11,823	11,777	1,010,551	1,574	1,225	4,556,012



Traffic Facilitation and Road Accident Prevention

The Highway Police Division is dedicated to instilling a sense of responsibility in society by promoting road safety awareness and highlighting the importance of preventing traffic accidents. A significant cause of accidents is driver negligence and recklessness, including traffic law violations and vehicle overloading. Overloading not only damages road surfaces but also increases the risk of accidents. To address this, the division has intensified enforcement against negligent motorists, overloaded vehicles, and offending operators.

In fiscal year 2024, the division prosecuted 4,556,012 cases involving cars and motorcycles and 1,660 cases involving overloaded trucks.

Efficient Management Systems

The Highway Police Division is responsible for maintaining public order and preventing crime across the nation, with specific focus on enforcing criminal law on highways and expressways. To ensure the greatest operation efficiency and to align with the vision of the Royal Thai Police, “To be a modern law enforcement organization that meets international standards, earning public trust and confidence,” the division has established a Traffic Control Center and a Suspect Vehicle Command Center (SVCC). The Traffic Control Center utilizes integrated CCTV footage to optimize traffic flow and operates the 1193 hotline for immediate incident reporting, allowing for timely resolution of traffic issues. The SVCC employs a nationwide license plate recognition and alert system, notifying officers via the LINE application of flagged vehicles, thereby strengthening surveillance and response capabilities. This integrated approach allows for swift coordination and enhances public trust.

Public Service Units





The Highway Police operates 41 stations and 205 public service units nationwide. These units offer rest stops equipped with essential facilities, including restrooms, showers, sleeping quarters, and tire inflation stations, along with 24/7 officer assistance. The Highway Police Operations Center utilizes real-time data from CCTV and speed detection systems to monitor traffic conditions, enabling prompt deployment of officers to manage congestion and implement special lanes when necessary. The center also tracks suspicious vehicles involved in criminal activities, such as smuggling, to ensure public safety and security on the highways.



Public Relations

The Department of Highways recognizes the vital role of public relations in ensuring transparent communication and building strong relationships with the public. This involves disseminating information about the department's activities, fostering understanding and trust, and promoting cooperation through diverse media channels.

In fiscal year 2024, key public relations activities of the department included:

1. Television Media

Promoted the department's work through television appearances, including the "Thailand Morning" live discussion program broadcast on Channel 5, 30-second television spots, and 2-minute documentary programs.



2. Print Media

Produced the Highways Relations journal to highlight mission operations and special activities of central and regional units, and publishing an annual report to provide a comprehensive overview of the department's achievements.

3. Online Media

Utilized various online platforms, including the department's website, social media channels (Facebook, X (Twitter), YouTube, TikTok, Instagram), and the G-News application to disseminate news and reach target audiences effectively.

4. Media Interviews

Coordinated interviews with department executives to discuss important project outcomes and provide accurate information on relevant topics and government policies in the IA-IRChat and Fake News formats through various media channels.



5. Audiovisual and Exhibition Activities

Recorded, archived, and published photographs and videos, as well as designing and producing graphic works and various media for public relations purposes, such as displays within the department, public relations boards, online platforms (website, Facebook, YouTube, TikTok, Instagram), and print media. This also involved producing cutout signs, organizing exhibitions, and maintaining an image library.

6. Other Activities

Actively participated in events with affiliated agencies under the Ministry of Transport and media organizations to strengthen relationships and promote collaboration. This included inviting media to cover important department events such as anniversary celebrations.



Information Service Center

INFORMATION CENTER

The Department of Highways Information Service Center provides public access to information about the department, in accordance with the Official Information Act, B.E. 2540 (1997). Managed by the Information and Complaint Management Subdivision under the department's Office of the Secretary, the center offers both physical and online services.

Physical Information Service Center

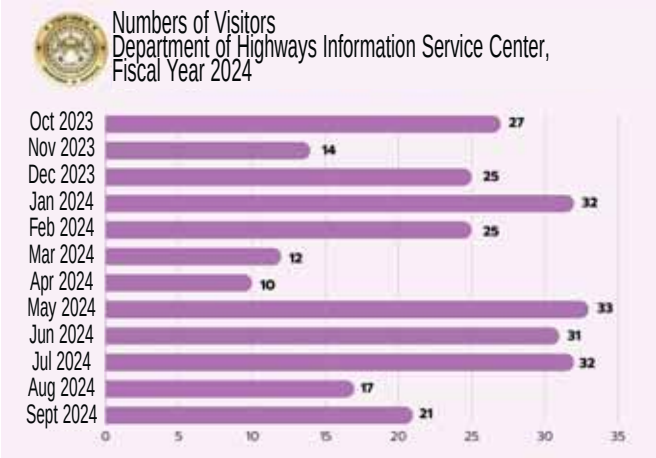
Located on the first floor of the Phahon Yothin Building on Si Ayutthaya Road, the Information Service Center offers a range of services. Visitors can access a variety of resources, including materials, equipment, and facilities. Knowledgeable staff members are available to provide consultations and guidance. The center also serves as a venue for submitting complaint letters, requesting meetings with executives, conducting other official matters. It also functions as a reception area for the department executives and staff on various occasions.

In the fiscal year 2024 (October 2023 - September 2024), the Information and Complaint Management Subdivision compiled service statistics and summarized the Information Service Ccenter's performance as follows:

Number of Inquiries at the Department of Highways Information Service Center

The center received 279 inquiries. The most common inquiries related to general information about the Department of Highways, land expropriation details, construction project progress, new route information, and Submission of official documents and letters.

Monthly visitor numbers are shown in the following graph.



Electronic Information Service Center

The Department of Highways also provides an online information service center, accessible through the department's website (http://www.doh.go.th/information). This online platform provides access to information as required by Sections 7 and 9 of the Official Information Act, B.E. 2540 (1997). In fiscal year 2024, the electronic Information Service Center recorded 20,628 visits, monthly breakdown is shown in the table below.

Month/Year	Number of visits (views)	Month/Year	Number of visits (views)
October 2023	1,923	April 2024	1,504
November 2023	1,874	May 2024	1,779
December 2023	1,689	June 2024	1,953
January 2024	1,995	July 2024	1,819
February 2024	1,672	August 2024	1,515
March 2024	1,430	September 2024	1,475
Total		20,628 views	

Source: Information Service Center, Department of Highways

According to the statistics, website traffic to the Department of Highways Electronic Information Service Center increased compared to fiscal year 2023 (16,355 views). This growth is attributed to the Information and Complaint Management Subdivision's proactive publication of Department of Highways information, in accordance with the Official Information Act, B.E. 2540 (1997), in an accessible electronic format. Additionally, the subdivision provided public educational materials on the Official Information Act, including information about the Information Service Center's services, procedures, location, and facilities. The highest monthly traffic was recorded in June 2024, with 1,953 views.

Information Access Requests under Section 11 of the Official Information Act, B.E. 2540 (1997)

Three information access requests were received via mail. One requester paid the document copying fee of 204 baht, which was submitted to the Finance and Accounting Division as government revenue. The remaining two requesters have not yet paid the required fees.

Activities/Projects Related to the Information Service Center (Fiscal Year 2024)

1. The Department of Highways, through Office of the Secretary, participated in the Outstanding Government Information Center Competition for 2024, with information and evidence according to the evaluation criteria being submitted. The department received 206 out of 300 points, which did not meet the criteria for an outstanding information center.

2. Two Department of Highways officials participated in the Effective Government Information Management Knowledge Enhancement Project organized by the Ministry of Transport on 21 August 2024, at Raja 2 Room (11th floor, Building 2) at Prince Palace Hotel, Bangkok. The project aimed to enhance knowledge and understanding of laws and regulations related to implementing the Official Information Act, B.E. 2540 (1997).

3. Educational Activity for Information Service Center Staff: The department's Office of the Secretary, in collaboration with the Training Division, organized an online seminar for the Department of Highways complaint handling network via Zoom Video Conference on 21-22 August 2024. Attended by 164 officials from all Department of Highways units and led by Ms. Pontip Srangsuan, Policy and Planning Analyst (Senior Professional Level) from the Office of the Official Information Commission, Office of the Prime Minister, the seminar focused on the Official Information Act, B.E. 2540 (1997), specifically "Complainant Information" and legal compliance. The aim was to improve the staff's ability to correctly handle complaints in accordance with the law.

Additionally, from 1 October 2023 to 30 September 2024, the Office of the Secretary conducted a satisfaction survey for the services of the the Information Service Center. Seven users responded, with an overall satisfaction level of 4.68 out of 5, representing 93.65% satisfaction.





Information Technology

The Information Technology Center of the Department of Highways plays a crucial role in facilitating the efficient adoption of digital technology within the department. Key initiatives in 2024 included:

Department of Highways Digital Action Plan

The Department of Highways Digital Action Plan (2023-2027) aligns with the Digital Development Plan for Economy and Society while also addressing government digital technology policies, national strategic plans, and the Digital Transport Development Plan 2027 (2023-2027). This plan aims to minimize redundancy in digital technology tasks across agencies, ensure compliance with government policies, and support the department's objectives—particularly in public administration reform and service enhancement. Serving as a framework and guideline, this action plan directs government agencies and state enterprises in formulating their own digital strategies at the ministry, department, and enterprise levels. It emphasizes clarity and conciseness in defining vision, mission, strategies, and objectives, ensuring alignment with the agency's core responsibilities in internal management and stakeholder services. Furthermore, it integrates various components into a comprehensive, strategic roadmap, providing clear operational guidelines that align with the Digital Development Plan for Economy and Society.



Figure 1: Department of Highways Digital Action Plan (2023-2027)

The Department of Highways Strategic Plan envisions fostering innovation in service delivery to transform the department into a fully digital organization. It is built around four key objectives:

- Enhancing digital infrastructure and security to ensure system readiness.
- Developing integrated systems that facilitate seamless data exchange, enabling staff to work more efficiently.
- Providing the public with fast, convenient, and transparent services from the Department of Highways.
- Strengthening digital skills among personnel to improve overall work efficiency.

The Department of Highways Digital Action Plan (2023-2027) is structured around four strategic pillars:

Strategy 1: Strengthening digital technology infrastructure and security

Strategy 2: Developing innovative solutions and integrating information systems to enhance management efficiency

Strategy 3: Improving public service delivery and promoting open government data

Strategy 4: Enhancing human resource capabilities in digital technology



The Alignment of the Department of Highways' Digital Technology Development Strategy with Related Strategies



Figure 2: The alignment of the Department of Highways' digital technology development strategy with related strategies

To clearly visualize the Department of Highways' Digital Technology Development Plan for 2023-2027, the Information Technology Center has developed the Road Map DOH DE Plan 2023-2027, divided into Phase 1 to Phase 3, as shown in Figure 3.



Figure 3: Road Map DOH DE Plan 2023-2027

Based on the digital technology development guidelines outlined in the Department of Highways Digital Action Plan (2023-2027), the development process is structured into three phases:

- Phase 1 (2023-2024): Strengthening digital technology infrastructure and security.
- Phase 2 (2025-2026): Driving innovation in service delivery and information system management.
- Phase 3 (2027): Achieving a full transition into a fully digital organization.

To successfully enhance digital infrastructure and security and realize the vision of becoming a digital organization by 2027, it is crucial for the Department of Highways to prioritize the Digital Action Plan and ensure continuous budget allocation for project implementation. This sustained investment will facilitate a smooth, efficient, and effective transition into a truly digital organization.



Electronic Signature (e-Signature)

The Department of Highways has adopted the Electronic Document Management System (e-Saraban) from the Digital Government Development Agency (Public Organization) to reduce budget expenses, minimize system maintenance burdens, and reduce hardware and data storage requirements. Utilized by agencies nationwide, this Software as a Service (SaaS) solution, hosted on the G-Cloud platform includes functions that support the operations of the department's staff. This initiative aims to enhance electronic signature (e-Signature) efficiency across all organizational levels and support the department's goal of becoming a high-performance organization capable of delivering advanced digital services. By integrating technology into management and workflows, the department can reduce organizational expenses and contribute to reducing global warming.



Figure 4: An overview of the e-Saraban system

To promote and encourage internal usage, the Department of Highways established an Electronic Signature Oversight Committee and an Electronic Signature Driving Workforce. The Information Technology Center is responsible for managing the rollout, which commenced on 3 July 2024.



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Figure 5: The Department of highways Announcement regarding e-Signature

Currently, the Information Technology Center has integrated user data covering management, group/division directors, and highway subdistricts, resulting in 6,500 users within the system. The target is to include all 11,000 government officials and civil servants by the end of 2024. Future development plans aim to extend e-Signature access to 30,000 permanent and temporary employees by 2025, providing cost-free access via email. The center prioritizes compliance with personal data protection laws. From 1 July to 30 September 2024, the e-Signature system has helped reduce paper usage by 1,466,428 sheets, resulting in an estimated reduction of 15,426.82 kilograms of carbon dioxide emissions.



Figure 6: The carbon credit quantity of the e-Saraban system

Server Consolidation for Enhanced Information System Support

The Department of Highways relies on information systems to support operations, management, and service delivery across its central and regional units. These units are connected via a network for seamless data communication.

A recent assessment revealed that several information systems operate on outdated servers, many of which are nearing the end of their lifecycle. This poses risks of downtime and information technology (IT) security vulnerabilities. To mitigate these risks, the Information Technology Center initiated a migration of certain systems to the Government Data Center and Cloud Service (GDCC). However, compatibility issues arose due to outdated operating systems (OS), rendering the migrated systems vulnerable and incompatible with GDCC's supported OS versions.

To ensure system reliability and security, servers must be in optimal condition to meet user demands at all times. The Department of Highways thus adopted Hyper-Converged Infrastructure (HCI). This modern technology integrates servers and storage, reducing complexity, lowering operational and capital expenditures (OpEx/CapEx), enhancing server performance, and simplifying scalability. Managing a diverse server infrastructure with varying architectures and operating systems presents significant maintenance and troubleshooting challenges. To address this, the Information Technology Center consolidated the servers supporting the information systems. This initiative involved deploying HCI hardware and software, consolidating 40 servers into 5, and optimizing Data Center space.

The followings are the benefits of server consolidation to the Department of Highways:

1. A data storage system that is secure, stable, and meets Information Technology service requirements for good management according to international standards, with data center management processes that comply with standards.

2. Reduced long-term expenses in energy costs and computer system maintenance and repair.

3. Support for new technologies, leading to continuous and efficient operation.

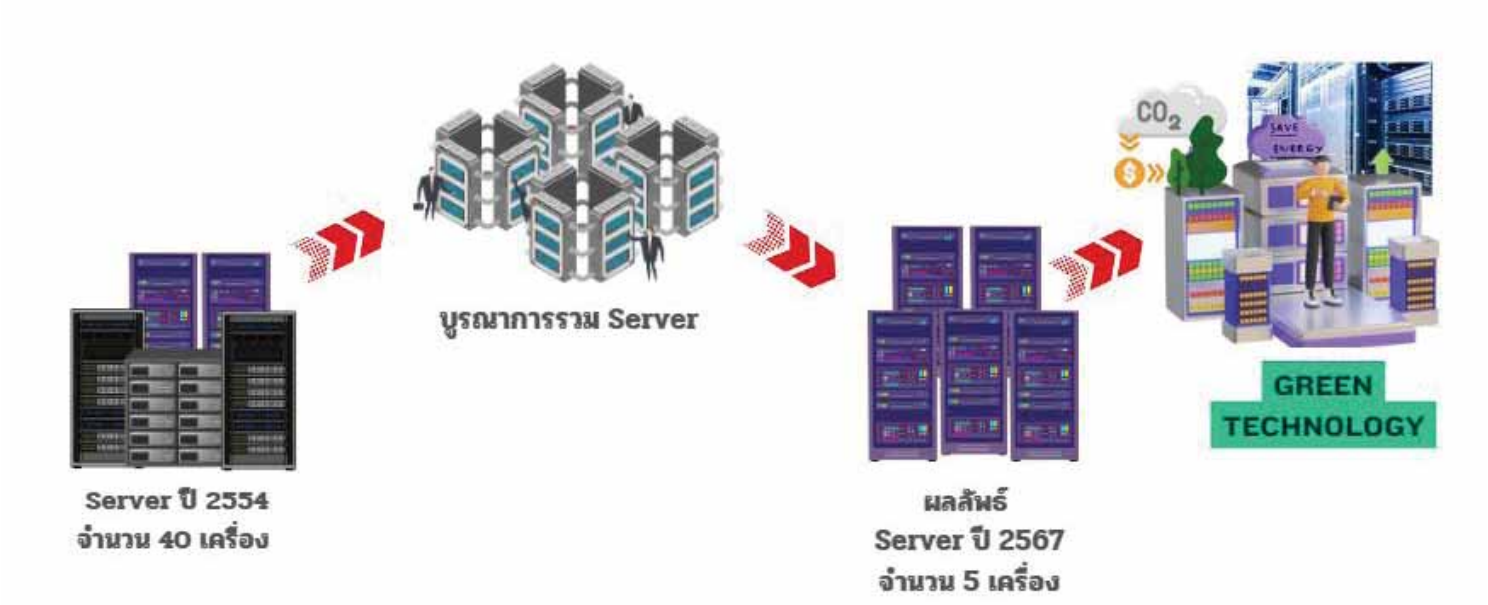


Figure 7: Department of Highways server consolidation timeline

Information Technology Security System Installation

The Department of Highways operates an extensive information system network, connecting communication data between central and regional units. This network supports various system operations and facilitates online information exchange across 138 units nationwide. Recognizing growing cybersecurity threats and the importance of ensuring system safety, the Information Technology Center thus initiated the Information Technology Security System Installation Project. The project aims to implement prevention, monitoring, warning, and resolution systems to counter cybersecurity threats, ensure uninterrupted system operations and maintain service continuity, facilitate real-time access to public travel safety information with speed and convenience, and support compliance with the Cybersecurity Act, B.E. 2562 (2019).

Surveys revealed that existing security devices, installed in 2014 and 2017, had been in operation for several years. As a result, the equipment had deteriorated, become obsolete, and was no longer functional. Replacement was essential due to increasing cybersecurity challenges, including rising cybercrime incidents, personal data privacy violations, and national security threats. These risks posed potential damage at individual, organizational, and national levels, affecting both public and private sectors.

The Information Technology Center has successfully installed new cybersecurity systems across 138 central and regional units. The upgraded system includes artificial intelligence (AI) technology for advanced threat analysis and prevention, a threat intelligence database for real-time detection and response, protection against unauthorized network intrusions by malicious hackers, and defense mechanisms against internal network attacks that attempt to connect to external internet networks.

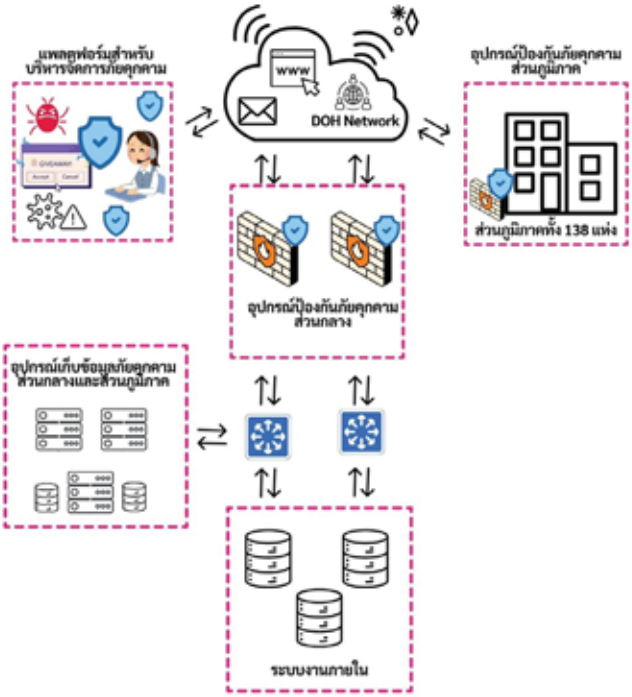


Figure 8: Operation of the information technology security system

Conclusion

The Department of Highways Information Technology Center has successfully implemented key digital security measures, including server consolidation, implementation of an e-Signature system, and deployment of an advanced IT security system. These actions align with the Department of Highways Digital Action Plan (2023-2027), supporting the transition into a fully digital organization. Additionally, the initiatives help reduce long-term energy expenses and minimize environmental impact in line with the principle of “Green Technology.”

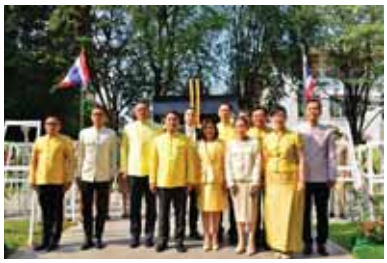




Highlight Activities

The Foundation Day: 112th Anniversary of the Department of Highways





















Assistance to people affected by Typhoon Yagi

















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