Existing Road Maintenance System in Kazakhstan

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Activities

Operation of roads and artificial structures

Main Tasks

Routine repair, maintenance and planting of republican roads

Ensuring of uninterrupted and safe traffic on republican roads

Prevention and elimination of emergencies on roads, maintenance of mobilization units

Committee for Roads MTC RK

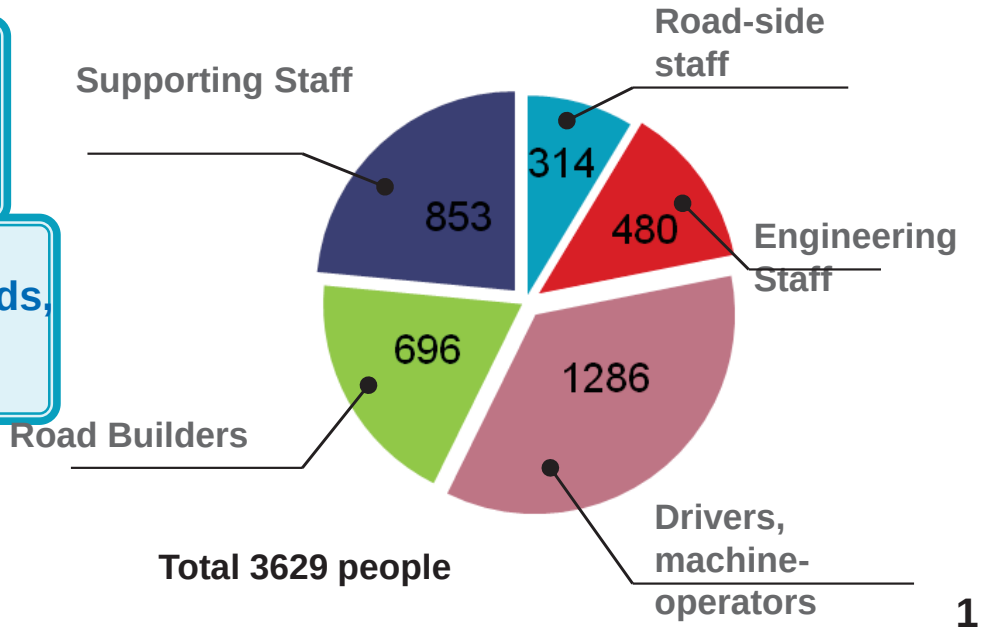
Headquarter

14 oblast branches, Subsidiary State Enterprise «Kazakhavrodor -Kokshetau»

Branches of Civil Defense and Emergencies

83 maintenance depots, 7 forest-planting units, 2 road repair divisions

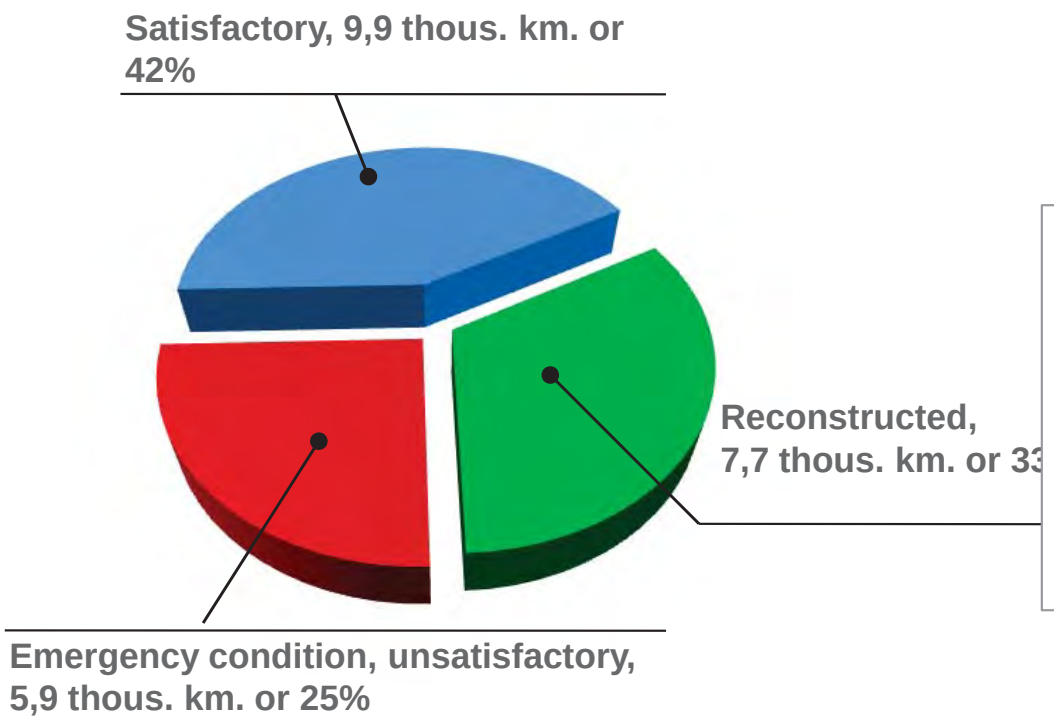
176 maintenance units



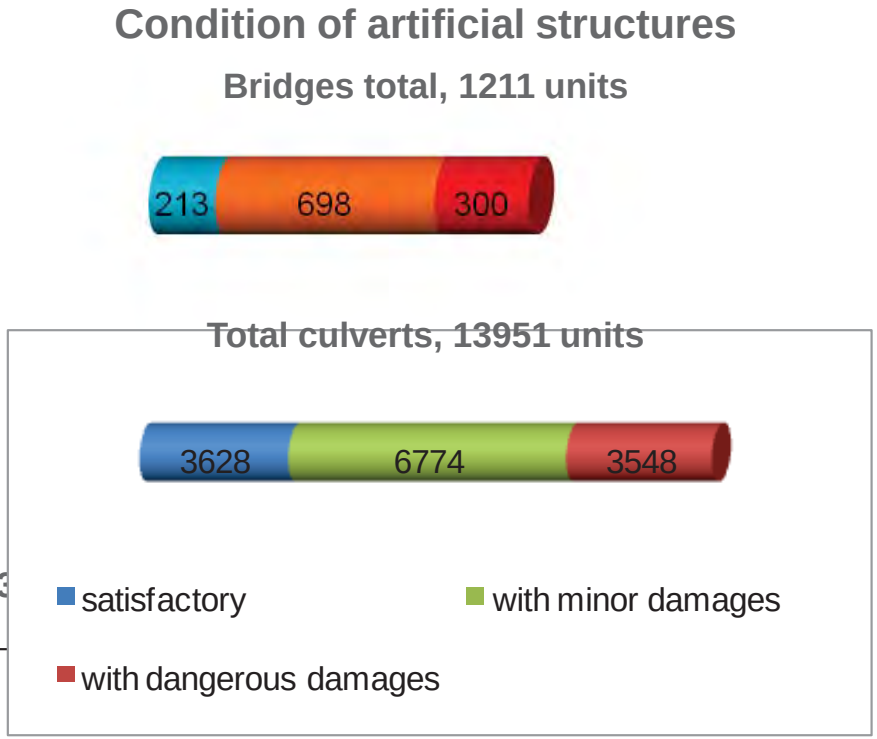
Total 3629 people

TRANSPORT AND OPERATIONAL CONDITION OF REPUBLICAN ROAD NETWORK

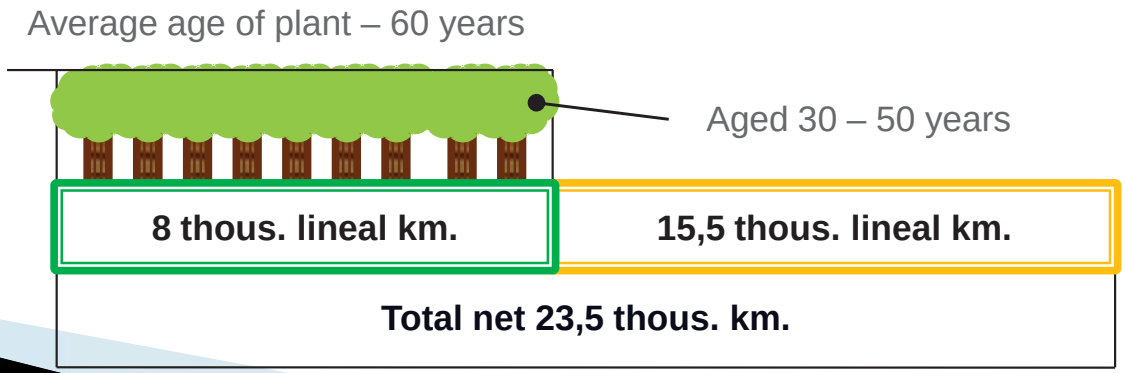
Condition of Roads



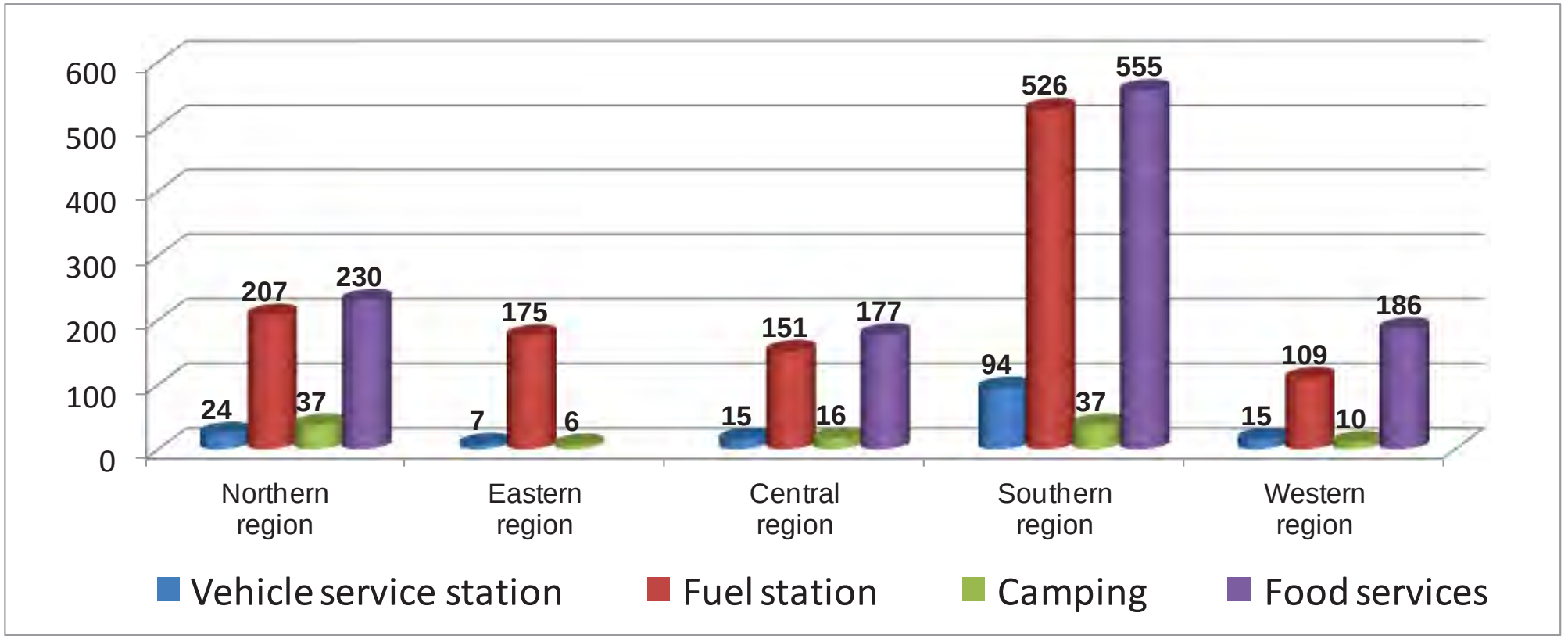
Condition of artificial structures



Condition of forest planting

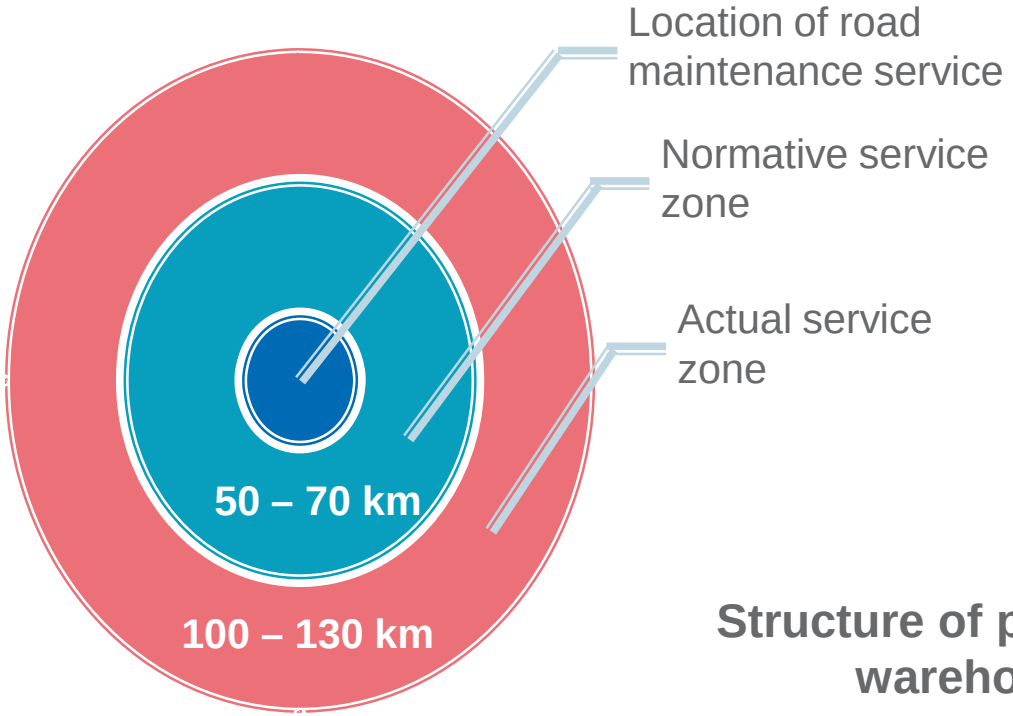


ROAD-SIDE SERVICE CONDITION ON REPUBLICAN ROAD NETWORK



DEVELOPMENT OF MAIN PARTS OF ROAD MAINTENANCE SERVICES

Service zone



Technical warehouse

1678 units

Structure of production warehouse

- Administrative building
- Boiler-house (84 units)
- Warm garages (180 units)
- Heating Stations (120 units)
- Sand warehouses (77 units)

MAIN INNOVATION ACTIVITIES OF REGIONAL STATE ENTERPRISE «KAZAKHAVTODOR»

- ***introduction of satellite navigation system***
- ***creation of ITS***
- ***telephonization***
- ***decision on the roads passing near settlements***
- ***modern road monitoring systems***
- ***creation of on-line electronic map of roads in the Republic of Kazakhstan***
- ***improvement of forest shelter belts***
- ***use of progressive technology for all season pavement repair***
- ***application of progressive types of marking***

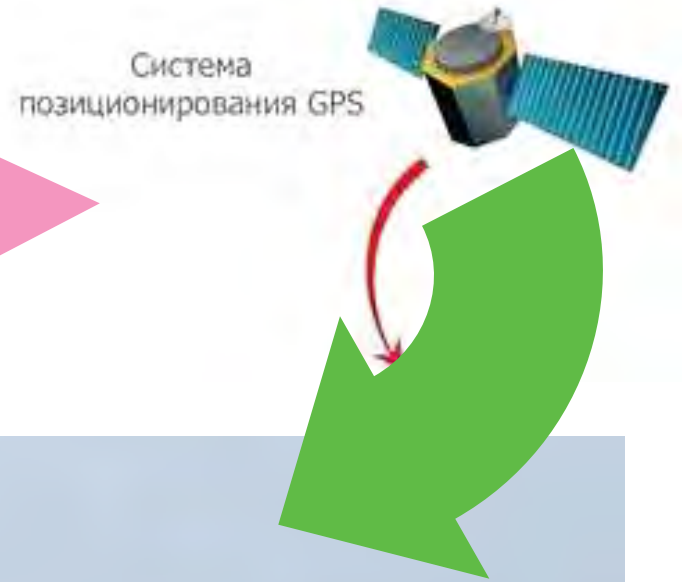
INNOVATIONS IN STATE ENTERPRISE «KAZAKHAVTODOR»

INTRODUCTION OF SATELLITE NAVIGATION SYSTEM

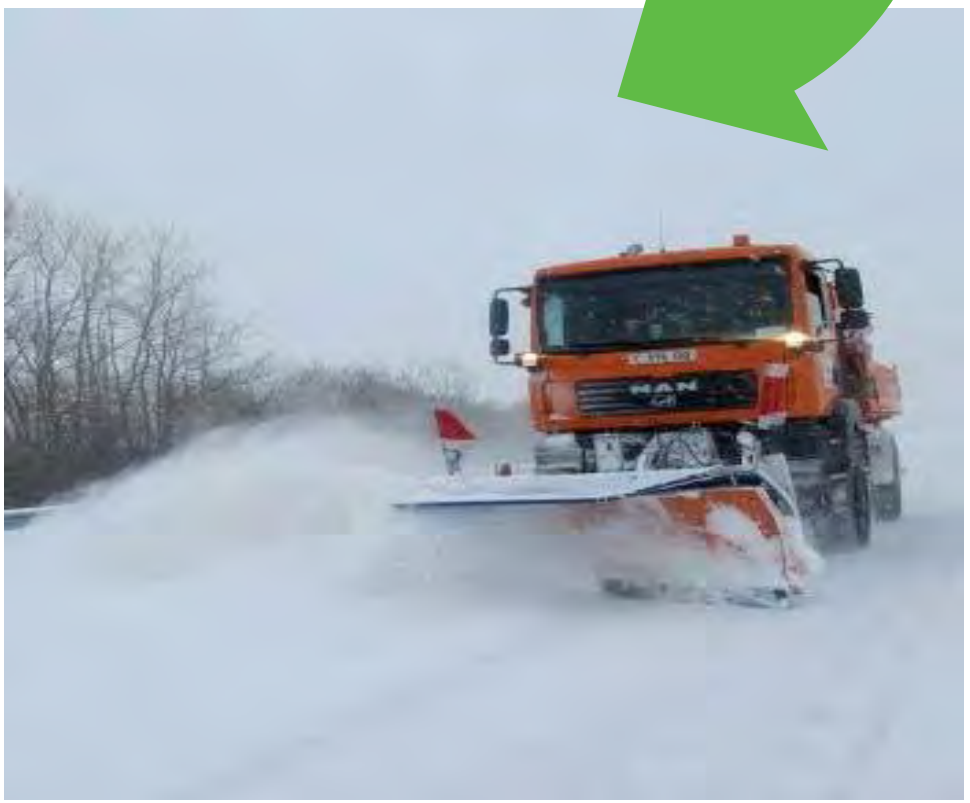
Application of navigation system enables to:

✓ increase efficiency of control over correct use of budget proceeds, allocated under government work;

✓ ensure timely snow clearing of roads and elimination of consequences of complicated natural processes.



There is a snowdrift on km 249. You are the nearest crew. Quickly make your way there.
Crews from km 267 and km 230 are forwarded there as well



CREATION OF INTELLIGENT TRANSPORT SYSTEMS

1. Sight-emitting diode signs

- Actively manage the traffic
- Inform on road traffic (road works, traffic jams, column, accident).
- Inform on precipitation and occurrences: closing, deviation of traffic.

2. Metrological stations

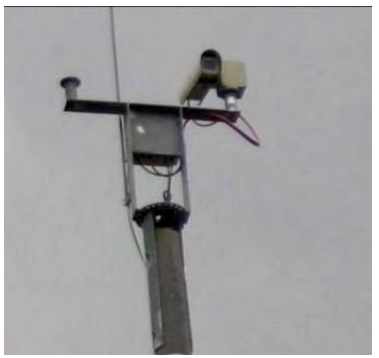
- Carry out automatic collection of data.
- Define Определять meteo parameters: visibility, rain, snow, air temperature, direction and speed of wind, ice-covered ground.
- Effectively manage the traffic based on meteo data.

3. Transport counters

- Keep automatic calculation and classification of vehicles
- Measure total weight, axle load, speed of vehicles
- Plan relying on data of traffic intensity

4. Video cameras

- Keep records of situation on selected road sections, important objects (bridges, overpasses).
- Zoom and enlargement of objects of shoot.
- Identify dangerous situations (slow down, stop, accident, column).

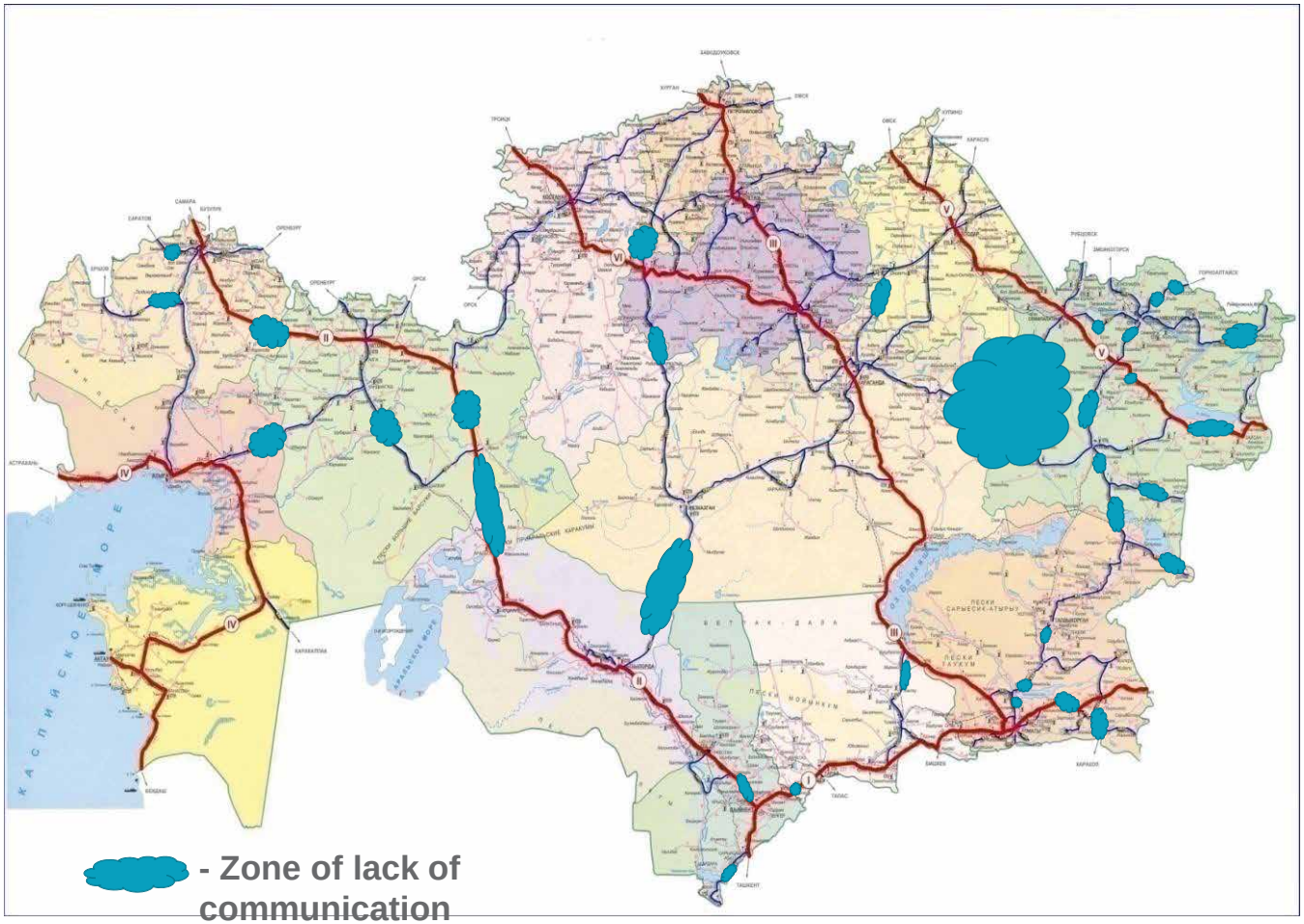


TELEFONIZATION OF REPUBLICAN ROADS

Installation of monetary telephones on highways to call for road police, ambulance, in the event of breakage, accidents:

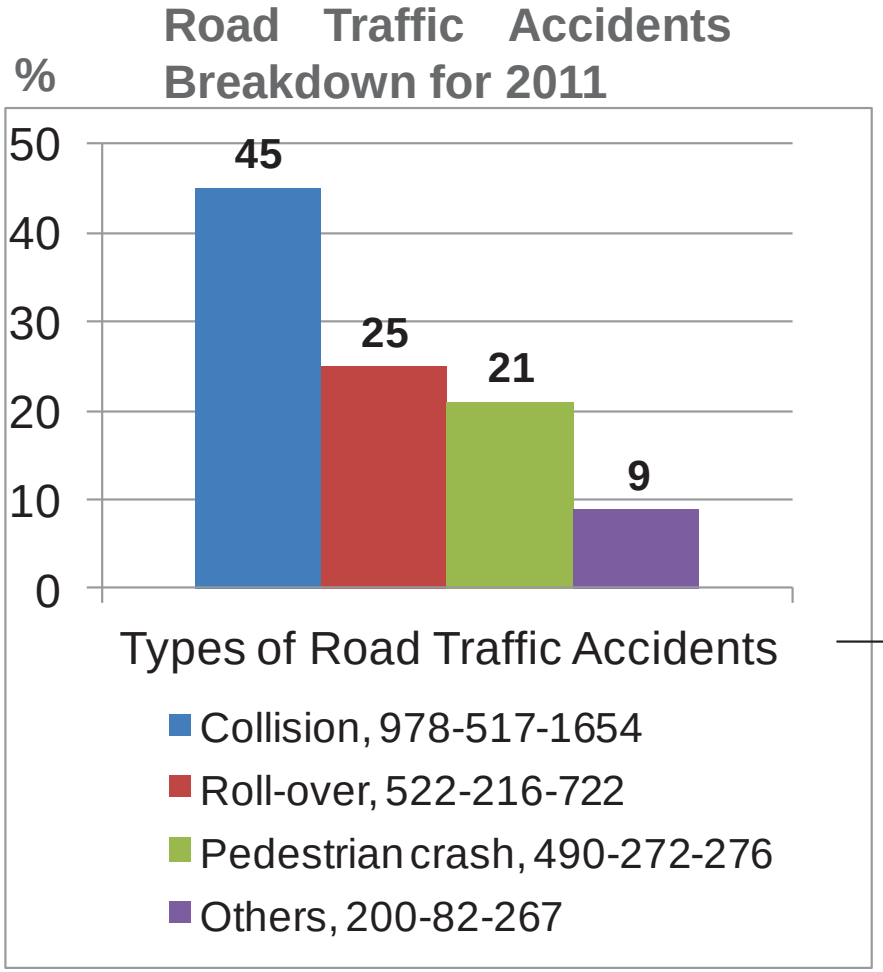
- «Astana – Schuchinsk» - 10 units
- «Almaty – Taraz – Shymkent» - 20 units.

Zone of lack of cellular communications



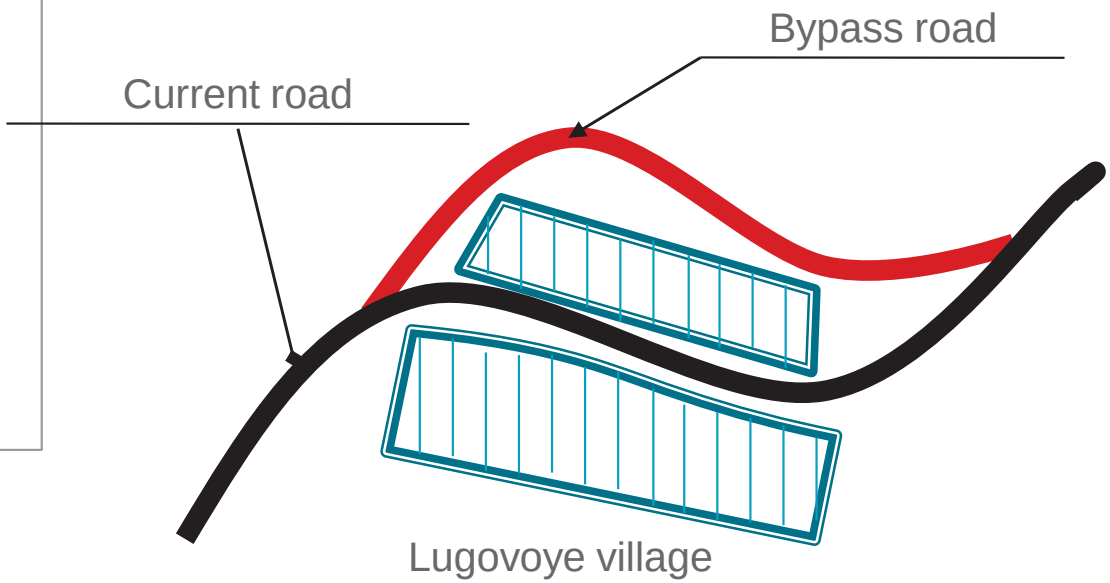
Work on full cellular coverage of all road sections must be carried out

SOLUTIONS FOR PARTS OF ROADS, PASSING ALONG SETTLEMENTS



Construction of pedestrian underpasses and overpasses

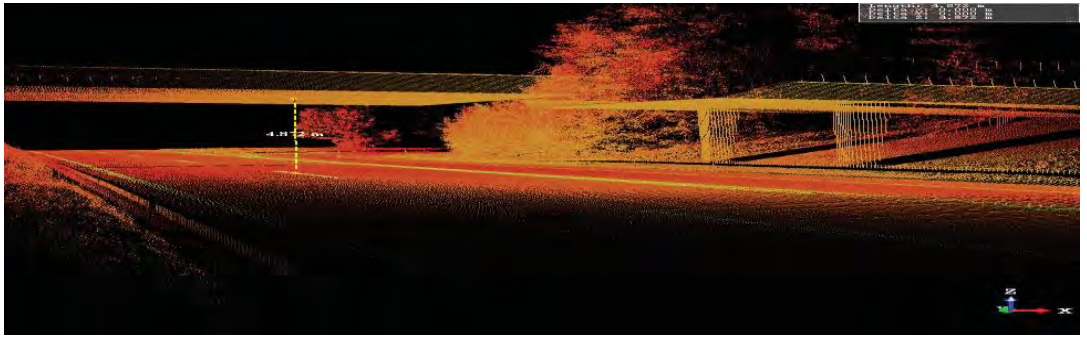
Bypass roads to settlements



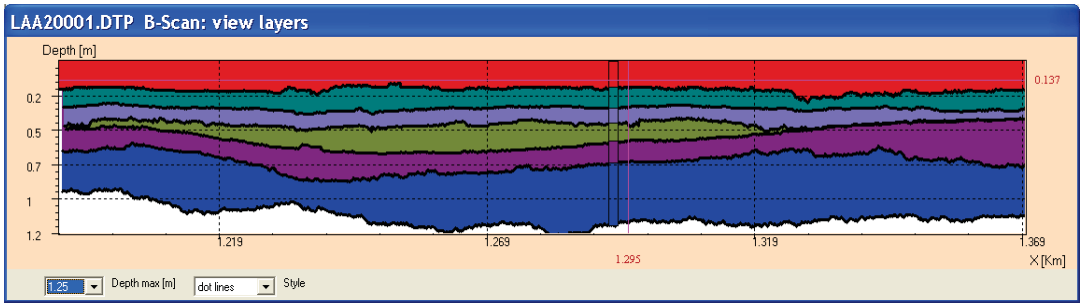
MODERN ROAD MONITORING SYSTEM

1. Cameras for road pavement
2. Wide-angle cameras
3. Laser scanner
4. Georadar GPR

Laser scanning of road and artificial structures



Processed date of georadar: Identifying thickness of pavement layers and road bed



CREATION OF ON-LINE ELECTRONIC MAP OF REPUBLICAN ROADS

Purpose of creation of on-line electronic map

- Orientation of road users during movement on republican roads
- Informing on traffic close due to adverse weather conditions
- Information on all road-service stations
- Information on road repairs, emergency sections

ACTIVITIES ON IMPROVEMENT OF FOREST SHELTER BELTS ALONG ROADS FOR 2012 – 2015

Renewal of existing forest belts and their expansion will be carried out.

- Increase the number of forest belts up to 10 units
- Establishment of farms for growing planting stocks – 10 zones
- Planting of stocks in age of 3 – 5 years along roads – 800 thous. units
- Planting of one-year seedling – 1 mln. units
- Increase of portion of precious trees: pine, elm, birch
- Growing the flower gardens on entries to big settlements
- Sanitary cutting down of old trees and bushes

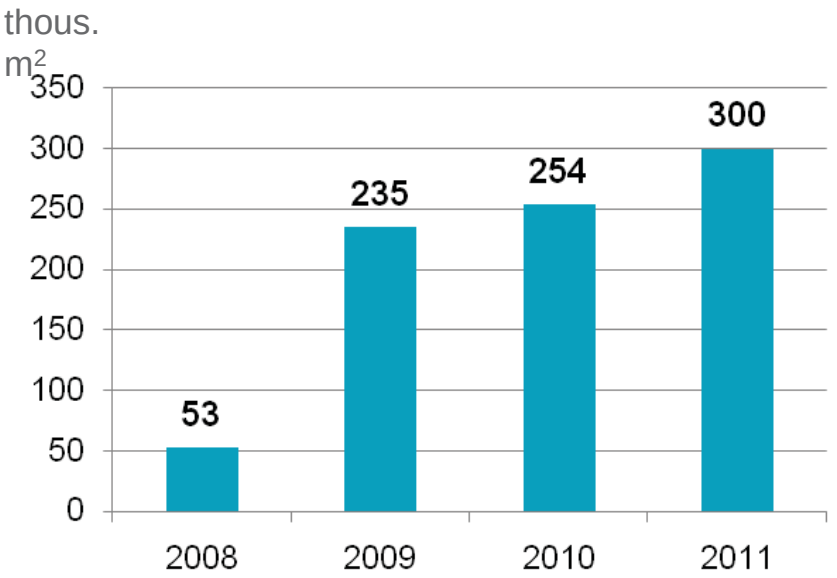
USE OF PROGRESSIVE TECHNOLOGIES FOR ALL SEASON PAVEMENT REPAIR

In 2009 – 2010 Ministry of Transport and Communications and Committee for Roads introduced recommendations on repair of asphalt concrete by cold bitumen and mineral mixes based on MAC-powder of asphalt concrete of MAC-SMA. RK 218 – 74 – 2009, RK 218 – 82 – 2010.

Patching with application of MAC-asphalt

Merits

- ❖ patching at low temperature up to -20 ^{o}C.
- ❖ resistance to formation of washboard
- ❖ self-sealing of cracks and seams
- ❖ facilitation of process of cutting of pot-holes



Execution of works with application of MAC-asphalt

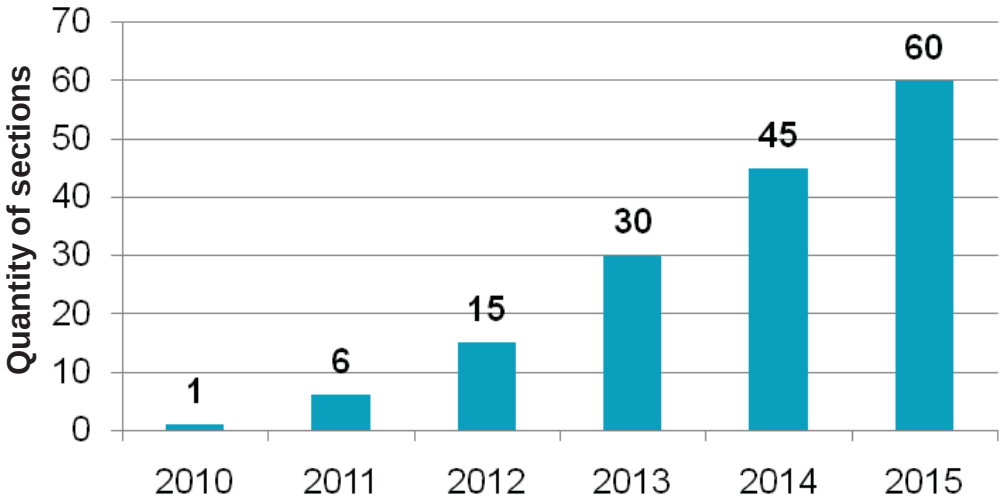
APPLICATION OF PROGRESSIVE TYPES OF ROAD MARKING

Increase the amount of noise band to prevent loss of vigilance and falling asleep of drivers on road sections, which allow to move continuously with high speed. When reaching the noise band, driver feels strong noise and vibratory influence – thus, noise marking makes the driver to increase attention and return vehicle to traffic line.

Noise bands to increase road safety

Perfection of paintwork materials for road marking to increase their durability, improvement of lighting characteristics and adhesion features. Result:

- **Decreased time for drawing of marking;**
- **Improved adhesion of applied materials;**
- **Increased functional durability of marking;**
- **Ensuring road safety;**
- **Decreased material cost**



Plan of infliction of noise bands for 2012 – 2015

RESULT OF INNOVATION ACTIVITIES OF STATE ENTERPISE «KAZAKHAVTODOR»

- ✓ **Timely provision of safe passage, rescue of people and transport, fallen into emergency, placement of people in heating points**
- ✓ **Bringing exterior of roadside service to modern design, culture improvement, observation of sanitary norms**
- ✓ **Employment of local population in road-side service objects location**
- ✓ **Decrease of accidents and mortality on roads**
- ✓ **Increase of traffic safety, observation of speed limit, informing drivers about situation on roads**
- ✓ **Increase the quality of works execution**

Thank You for Attention!