O’zbekiston Respublikasi Oliy va O’rta Maxsus Ta'lim Vazirligi

Toshkent avtomobil – yo’llar instituti

“Tillar-I” kafedrasi

H.Sh. Xamidova, A.M. Qoraboev, S.Z. Kurbonov

INGLIZ TILI

“AVTOMOBIL YO’LLARI VA AERODROMLAR”
mutaxassisligi bo’yicha o’quv qo’llanma

АНГЛИЙСКИЙ ЯЗЫК

учебное пособие по специальности
«АВТОМОБИЛЬНЫЕ ДОРОГИ И АЭРОДРОМЫ»

(O’ZBEKCHA - RUSCHA)

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Taqrizchilar: t.f.d., prof. Shohidov A.F.
katta o’qit. Madaminova M.A.

O’quv qo’llanma Kasbiy ta’lim fakulteti uslubiy Hay’ati tomonidan ko’rib chiqildi («_27_» may__ 2009 y. Majlis bayoni № 11) .

Mazkur qo’llanmaning maqsadi tilshunoslik mutaxassisligi bo’lmagan oliy va o’rta maxsus ta'lim muassalari uchun chet tillar Dasturi talablariga muvofiq holda mutaxassislik bo’yicha asl texnik adabiyotlar tarjima malakasini, shuningdek og’zaki nutq mahoratini shakllantirish va rivojlantirishdan iboratdir.

Matn materiallari asl britaniya va amerika ilmiy texnikaviy adabiyotlardan olingan va aniq logik ketma - ketlikda joylashtirilgan. Tanlab olingan mavzu materiallari ushbu mutaxassislik bo’yicha asosiy atamalarni, xorij davlatlarida avtomobil yo’llarini loyihalash, qurish va saqlashning asosiy mezonlari bilan talabalarni keng tanishtirishga imkon beradi. Qo’llanma 10 mavzudan, ya'ni tarjima jarayonida gramatik qiyinchiliklarni echishga imkon beradigan mustaqil o’qish uchun mavzular, gramatik mashqlarni o’z ichiga olgan kompleksdan ibrat.

O’quv qo’llanma “Avtomobil yo’llari va aerodromlar” mutaxassisligidan ta'lim olayotgan kollej talabalari, bakalavr va magistrlarga mo’ljallangan. Shuningdek undan yo’l mutaxassisligi bo’yicha ilmiy ishlar olib borayotgan aspirantlar va tadqiqotchilar foydalanishi mumkin.

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ст. преп. Мадаминова М.А.

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Целью пособия является формирование и развитие навыков перевода оригинальной литературы по специальности и навыков устной речи, что соответствует требованиям Программы по иностранным языкам для вузов неязыковых специальностей.

Текстовой материал заимствован из оригинальной британской и американской научно-технической литературы и расположен в определенной логической последовательности. Тематический отбор материала позволяет широко ознакомить студентов с терминологией по данной специальности, с основами проектирования, строительства и содержания дорог в зарубежных странах. Пособие состоит из 10 уроков - комплексов, текстов для самостоятельного чтения, грамматических упражнений, которые позволяют снять грамматические трудности при переводе.

Учебное пособие предназначено для студентов коллежей, бакалавров и магистров, обучающихся по специальности «Автомобильные дороги и аэродромы». Также оно может быть использовано аспирантами и соискателями ученых степеней, выполняющих научные исследования по дорожной специальности.

LESSON 1

Roads and Society

Vocabulary

1. road	yo’l	путь, дорога
2. network	yo’l tarmog’i	сеть дорог
3. society	jamiyat	общество
4. development	rivojlantirish	развитие
5. means of moving	harakatlanish vositasi	средства передвижения
6. victim	qurbonlik, talofat	жертва
7. construction	qurilish	строительство
8. maintenance	saqlash va ta'mirlash	содержание и ремонт
9. traffic	transport harakati	движение транспорта
10. growth	rivojlanish	рост
11. over-congestion	ko’cha harakati tirbandligi	затор уличного движения
12. pollution	ifloslanish	загрязнение
13. to be aware	tushunib etmoq	сознавать
14. to demand	talab qilmoq	требовать
15. to provide	ta'minlamoq	обеспечить
16. to prove	isbotlamoq	доказывать
17. to represent	taqdim etmoq	представлять
18. to create	yaratmoq	создавать
19. to solve	echmoq	решать
20. to increase	o’smoq	расти
21. to permit	ruxsat etmoq	позволять
22. to propose	taklif etmoq	предлагать
23. to establish	tashkil etmoq	создавать, учреждать
24. to improve	takomillashtirmoq	улучшать, совершенствовать

Text

Roads and society

The development of means of moving people and goods has been one of the main factors in the development of civilization. The Romans were fully aware of the value of road systems in the administration of their empire. The building of the Interstate system in the United States is an example of the importance of good highways in modern industrial states.

Modern society demands good standards of accommodation, instant telecommunications and freedom to travel wherever and whenever it is desired. That freedom has been provided primarily by road networks since the beginnings of modem society. Roads have proven worldwide to be the most effective means of solving transportation problems. Road transport represents on average 70% (per cent) of passenger and goods transport. Accelerating demand for road transport leads to increasing need for the construction of new highways, modification to existing ones and high quality maintenance to both of them.

In developed countries, highways have to some extent been the victims of their own success. With increased private mobility and increasing industrialization, more and more road traffic has been generated. That growth has created some problems, like over-congestion and pollution, but these problems can be solved by increasing of highway networks. Now society demands not only better highways but the integration of them. City-to-city highways must be interconnected in systems which permit communications from and to any point on the network.

Historically, the construction of roads has been associated with economic development. Without highways there would be no trade, little agriculture, no industry and growth. Life is impossible without movement, so the market and international cooperation is impossible without roads and integrated motorway systems. That is why the International Road Federation proposes to establish an Integrated Motorway System in Europe which will connect 12 European states. This Pan-European motorway network will be me road of future.

Answer the following questions:

1. What problem does the article deal with?
2. Were the Romans fully aware of the value of road systems in the administration of their empire?
3. What does modern society demand?
4. Are roads the most effective means of solving transportation problems?
5. Why is it necessary to construct the new highways and modify the existing ones?
6. How can the problem of highways in developed countries be solved?
7. What is the role of highways in modern economy?
8. What motorway will be the road of future?

Text

Roads and Society

Practice 1.

1. Matnni o'qing va uning mazmuni va sarlavhasi o'rtasida muvofiqlikni isbotlang. 2. Ushbu matnni shartli ravishda necha qismga ajratish mumkinligini ko'rsating, har bir qismga sarlavha qo'ying. 3. Matnning asosiy mazmunini saqlagan holda uni qisqartiring.	1. Прочитайте текст и докажите соответствие между его содержанием и заглавием. 2. Укажите, на сколько частей можно условно разделить этот текст; озаглавьте каждую часть. 3.Сократите данный текст, сохранив его основное содержание.

Practice 2.

-ion; -tion; -ation; -er; -or suffikslar yordamida ot yasang va ularni tarjima qiling. Masalan:	Образуйте существительные с помощью суффиксов **-ion; -tion; -ation; -er; -or** и переведите их. Например*:*

to create	yaratmoq	создавать
creation	yaratish, ijod	создание, творение
creater	yaratuvchi	создатель

to represent; to permit; to construct; to build; to provide; to administrate; to transport; to modify; to integrate; to communicate; to accommodate.

Practice 3.

Quyidagi so'zlarni o'qing va lug'atsiz tarjima qiling:	Прочитайте и переведите следующие слова без словаря:

civilization; system; administration; modern; industrial; standard; telecommunication; effective; transportation; problem; modification; mobility; integration; historically; to associate; economic; market; international; cooperation; pan-European.

Practice 4.

Quyidagi so'z birikmalarini tarjima qiling:	Переведите следующие словосочета-ния:

road administration; motorway and trunk roads; road transport; road construction and maintenance; widening of existing roads; road equipment and road traffic technology; design; testing and operation of roads; road safety; speed limits; single carriage-way road; multi-lane highways.

Practice 5.

So'z tartibiga va kesimni aks ettirish usuliga e'tibor berib quyidagi gaplarni tarjima qiling:	Переведите следующие предложения, обращая внимание на порядок слов и на способы выражения сказуемого:

1. The road system of the United Kingdom is one of the best in the world.
2. Planning, design, construction and maintenance of the UK roads are based on

new techniques and equipment.

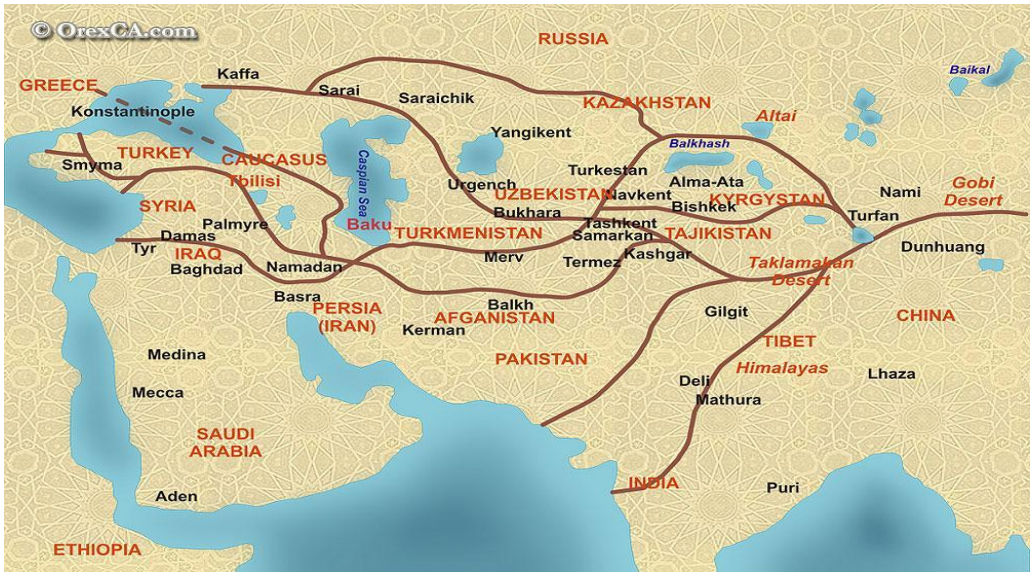
3. There are national speed limits of 97 km/h on single carriageway roads and 113 km/h on dual carriage-way roads.
4. In modern society transport has grown from a weak child into a giant whose habits are hard to live with.
5. The fast growing transport systems call for higher costs.

Practice 6.

1. “A” matnni o’qing va uni tarjima qiling. 2. Asosiy mazmunni og’zaki shaklda ifoda eting.	1. Прочитайте текст “A” и переведи-те его. 2. Передайте основное содержание в устной форме.

Text A

The Great Silk Road yesterday and today



The growth of scientific and public interest towards the **Great Silk Road,** its significance and its role in the development of world's civilization is not accidental, as this notion is much broader than just "a caravan road". The Great Silk Road had a considerable impact on the formation of political, economic and cultural order of the countries located along these routes. Time and again this

region underwent predatory and internal wars; powerful and small states appeared and collapsed; former capitals gave way to new ones.

Named in the middle of the 19th century by the German scholar, Baron Ferdinand von Richthofen, the Silk Road, which is regarded as the greatest East-West trade route, was first traveled by Zhang Qian when he was sent on a diplomatic mission to the Western Regions in the Han dynasty (206 BC-AD 220). The Silk Road was the information super highway of its age, serving as the conduit not only for goods but also for the transmission of knowledge and ideas between east and west.

The Silk Road originated in the 2nd century BC from a desire for military and political purpose instead of for trade. In order to seek allies to fight against Xiongnu's repeated invasion, a court official named Zhang Qian was sent by Han Wudi to the Western Regions. However, on the way to the Western Regions, the Xiongnu captured Zhang and detained him for ten years. Escaped from Xiongnu's detention, Zhang Qian continued his journey to the Central Asia. While at that time, the local rulers were satisfied with their status and refused to ally with Han Empire. Although the mission failed in its original purpose, the information Zhang Qian conveyed to China about Central Asia, and vice versa, made people in each area desire goods produced in the other. Silk that was favored by Persians and Romans, inaugurated the trade along the Silk Road.

Today, the development of transport communications on the Great Silk Road also contributes to its revival. During the years of independence the transport system of Uzbekistan, Kyrgyzstan and Turkmenistan obtained new outlets to China, Iran and through Georgia to Turkey.

It is planned to gradually build new routes to the west, in particular, Lyanyungan (China) - St.Petersburg and Lyanyungan - Rotterdam.

An important project, which is being carried out at present, is creation of a transport corridor Europe - Caucasus - Asia (TRASECA). At the heart of all these projects is an idea of the Great Silk Road revival - building up of a through highway across two continents.

The Great Silk Road has luckily escaped the common lot of many ancient roads, known in the past but well forgotten today, as for instance 'via Appia' - a road in ancient Rome. Today the Great Silk Road has been called for by the world community and experiences its rebirth, its renewed popularity. And for all those who take the routes of the Great Silk Road - the road of communication between the East and the West, we say: "Have a good trip on the Silk Road!"

Answer the following questions:

1. What do we understand when speak about “Great Silk Road”?
2. When did the idea of creation of “Great Silk Road” originate?
3. What were the main purposes of “Great Silk Road”?
4. What can you tell of today’s development of transport communications on the Great Silk Road in our Republic?
5. How can we revive the development of “Great Silk Road”?

signifance	ahamiyat	значение
route	marshrut, yo’l	маршрут, путь
purpose	maqsad, niyat	цель, намерение
invasion	birdan (to’satdan) kelib qolish	вторжение, нашествие
local	mahalliy	местный
communication	aloqa	связь, сообщение
experience	tajriba	опыт
popularity	ommaboplik,shuhrat	популярность
trip	safar	поездка, путешествие
detention	qoldirish	оставление
journey	safar	поездка, путешествие

Practice 7.

1. “B” matnni o’qing va matnda qanday axborot berilganini aytib bering.	1.Прочитайте текст "B" и скажите, какая информация приводится в тексте.
2. Bu axborot qanday kalit gaplar orqali yoritilgan.	2.Какими ключевыми предложениями передается эта информация.
3. Asosiy mazmunni og’zaki shaklda ifoda eting.	3.Передайте основное содержание в устной форме.

Text B

Roads in Australia

The problems of land travel presented obstacles to the development of Australia since the beginning of European settlement just over 200 years ago. Roads have become a vital element in the country lifestyle and economy: in Australia, road transport contributes almost exactly the same amount towards the costs of industry as all other transport modes combined.

Australia is vast. Its land area, at almost 7,7 million km^2, is larger than the whole of the European Community and only slightly smaller than the continental United States. It is also largely empty. Its population 17 million lives mainly along the seaboard and is especially concentrated in the south-east.

The total length of roads in Australia is 870,000 km. Only 15% of the nation's roads are multi-lane highways. All of these multi-lane roads have concrete or heavy-duty bituminous pavements. But the most common type of road is the traditional two-lane, bitumen sealed country highway. Despite 25 years of sustained effort, 255,000 km (about 30% of the total) of the nation's roads still have unsealed gravel pavements. There is also some 300,000 km of dirt roads.

The State Government's road improvement programme to ensure the development and improvement of the road system throughout the nation was adopted in 1974.

Practice 8.

1.“C” matnni o’qing va uni tarjima qiling. 2. Matndan "road" so’zli so’z birikmasini ajratib oling, ularni tarjima qiling. 3. Matn mazmunini og’zaki shaklda ifoda eting.	1. Прочитайте текст "C" и переведите его. 2. Выберите из текста словосочетания со словом "road", переведите их. 3. Передайте содержание текста в устной форме.

Text C

Roads in the United Kingdom

The road adrninistration in the United Kingdom for the national system of Motorway and Trunk Roads are Government Departments in England, Scotland, Wales and Northern Ireland. The United Kingdom is very dependent on road transport. Their road system is one of the best in the world. Annual expenditure in the UK on road construction and maintenance currently amounts to about GBP 4 billion. New inter-urban road policy is concentrated on widening of existing roads, including many sections of motorways. The UK is a world leader in road equipment and road traffic technology. Planning, design, construction, testing, maintenance and operation of the UK roads are based on new techniques and equipment development by industry, universities and research centers.

Although Britain has one of the highest densities of road traffic in the world it has a good record on road safety. They drive on the left in the UK. There are national speed limits of 97 km/h on dual carriageway roads including motorways. In urban areas there is usually a limit of 48 km/h.

Practice 9.

" D" va "E" matnlarni o'qing va ularning asosiy mazmunini ifoda eting.	Прочитайте тексты "D" и "E" и передайте их основное содержание.

Text D

History of road improvement

The history of the Japanese roads is relatively old, and we can find a word of "road" in the record prepared about 2000 years ago, though it meant mainly the road for pedestrians. In 1920, the 1st improvement plan of roads was prepared and followed by several long-term road improvement plans before the second World War, but those plans were not fully implemented because of the Great Earthquake of 1923 and World War II.

In 1954 the first Five-Year Road Improvement Programm was prepared, contributed to the significant improvement of roads.

Text E

New plan for Finland

A new road plan Finland has been proposed by the Finnish National Road Administration. The plan includes 7100 km of main roads. According to the proposal Finland would have in 2010 in total 820 km of motorways and 150 km of four-lane roads. The rest of the main road network would be high class two-lane roads, 5190 km of which are 10,5 m wide and 630 km in Northern Finland are 9 m wide. Total cost would be 32 billion FIM (S 9m).

LESSON 2

Geometric design of highways

Vocabulary

1.secondary highways	ikkinchi darajali magistral	второстепенная магистраль
2.trunk highway	asosiy magistral	основная магистраль
3.controlled-access	nazoratli kirish yo'li	дорога с контролируемым въездом
4. volume ot traffic	harakat jadalligi	интенсивность движения
5. cross-section	ko'ndalang kesim	поперечное сечение
6. cross-fall	ko'ndalang qiyalik	поперечный уклон
7. curve	egri	кривая
8. curvature	egrilik, egilgan joy	кривизна, изгиб
9. superelevation	virajni ajratish, viraj qiyaligi	отгон виража, уклон виража
10. transition	o'tish egrisi	кривая переходная
11. widening	kenglik	уширение
12. grade	qiyalik	уклон
13. alignment	trassalashtirish	трассирование
14. straight	to'g'ri chiziqli avtomobil yo'li	участок дороги прямолинейный
15. sight distance	ko'rish masofasi	расстояние видимости
16. lateral force	ko'ndalang kuch	поперечная сила
17. available	ixtiyorida bor, mavjud	имеющийся в распоряжении, наличный
18. adequate	muvofiq, mos	соответствующий
19. grade line	loyiha chizig'i, yo'l o'qi bo'ylab bo'ylama profil	проектная линия, продольный профиль по оси дороги

20. arc	yoy	дуга
21. tangent	urinma	касательная
22. safe	xavfsiz	безопасный
23. accident	yo'l-transport hodisasi	дорожно-транспортное происшествие
24. sharp curve	kichik radiusning egriligi	кривая малого радиуса
25. to avoid	qochmoq	уклоняться, избегать
26. to term	aytmoq	называть

Text

Before starting design, it is necessary to establish the classification of the highway. Highway may be classified into three main groups:

1. Secondary highways.
2. Trunk highways.
3. Controlled-access highways.

Each of these groups is subdivided in classification depending on topography, volume of traffic and the character of the area.

The basic aim of geometric design is to provide roads which are bom efficient and safe. The main geometric elements to be considered in road design are:

a) cross section (including width and cross-fall);
b) horizontal curves (including curvature, superelevation, transitions and pavement widening);
c) grade and vertical curves.

Horizontal alignment

The position of the road in the horizontal plane is termed its horizontal alignment, which consists of a series of straight and curved sections. The curves are usually

segments of circles connected to the straights by the transition curves. Horizontal curves design standards are based on the two criteria of ensuring that:

a) the available sight distance is adequate for the design speed;
b) lateral forces are not excessive.

Vertical alignment

The position of a highway in the vertical plane is termed its grade line. The grade line is a series of straight lines connected by vertical parabolic arcs, to which the straight grades are tangent. The grade is a most important element of design because it influences on safe and economical vehicle operation.

Transition curves

Transition curves are used to connect two lengths of road. Curves connecting straight lengths and circles are known as simple transition curves and those connecting two circular curves are known as compound transition curves.

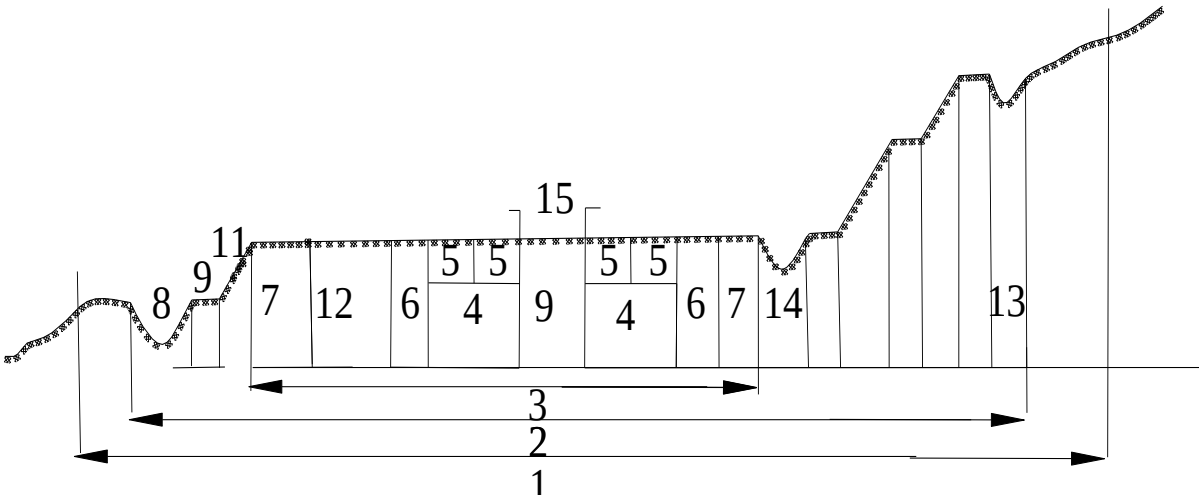
Sight distance

Sight distance is defined as the distance at which a driver can see an object ahead of him. There are seven main types of sight distance. The minimum sight distance for the modern traffic is about 300-400 m.

Sharp curves

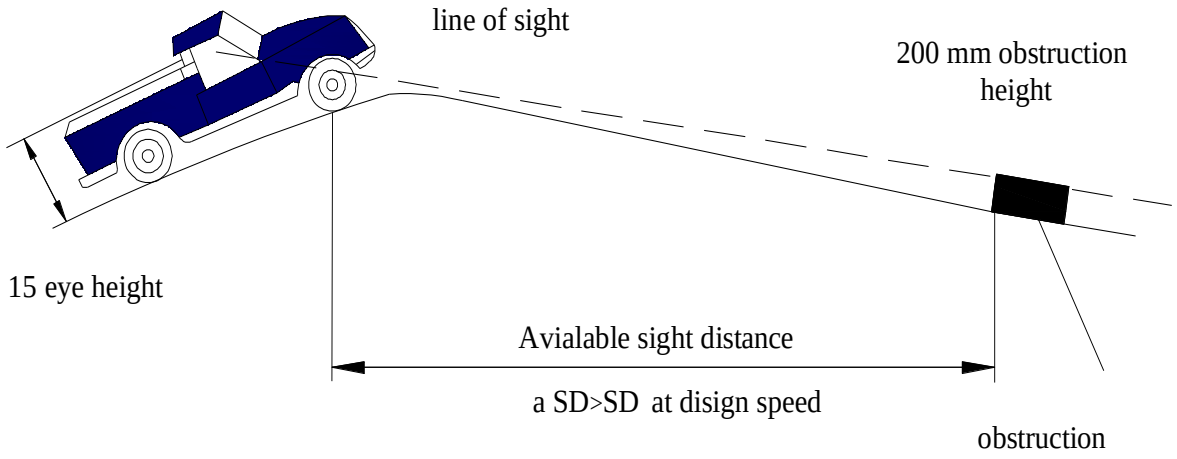
The significant role of small radius curves in road accidents is well known. Severe accidents are connected with curves with a radius of 600 m or less. Isolated curves of less than 400 m radius should be avoided on roads where free speeds is more than 100 km/h.

COMPONENTS OF THE ROAD	YO`L ELEMENTLARI	ЭЛЕМЕНТЫ ДОРОГИ

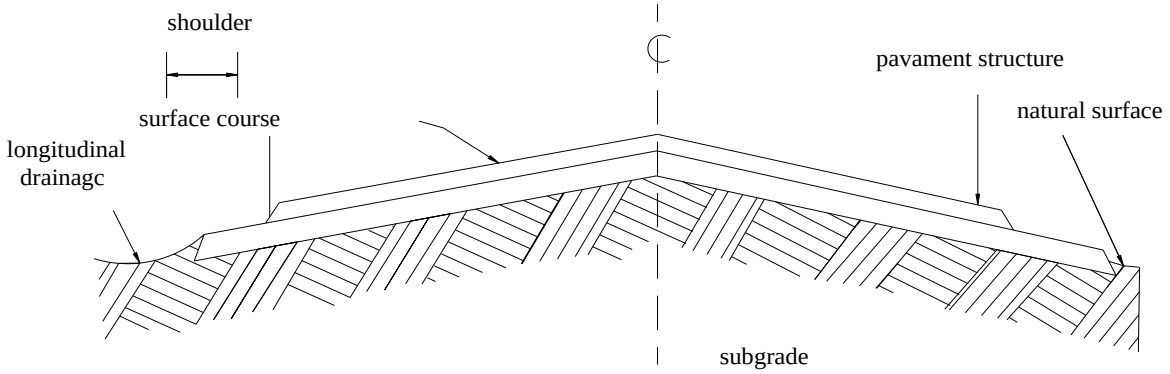


1 - total land requirement, land take right-of –way (USA)	ajratish mintaqasi	полоса отвода
2 - construction limitis (USA)	konstruksiya chegarasi	границы конструкции
3 - roadway, roadbed (USA)	yo’l qoplamasi	дорожное полотно
4 - carriageway, traveled way (USA), roadway (USA)	yo’lning loyihaviy qismi	проектная часть дороги
5 - lane	harakat tasmasi	полоса движения
6 - hard shoulder for emergency use	avtomobilning majburiy to’xtashida foydalani-ladigan mustahkamlangan yo’l yoqasi	обочина, укреплённая для аварийного использования
7 – verge, shoulder	yo’l yoqasi	обочина
8 - ditch	kyuvet	кювет

9 – bench (USA)	berma	берма
10 – central reserve, central reservation, median (USA)	markaziy ajratilgan tasma	полоса разделитеьная центральная
11 – slope	qiyalik	откос
12 – cycle track, bicycle path (USA)	velosiped yo'lagi	дорожка велосипедная
13 – ditch at top of slope	yuqori kyuvet	кювет верховой
14 – ditch at foot of slope, toe ditch	quyi kyuvet	кювет низовой
15 – safety barrier	to'xtovchi to'siq	ограждение удерживающее



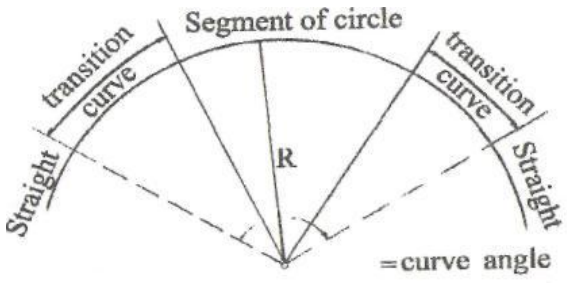
Avoidance sight distances



preferred full width construction with zero or minimal “boxing” to achieve minimum moisture effect

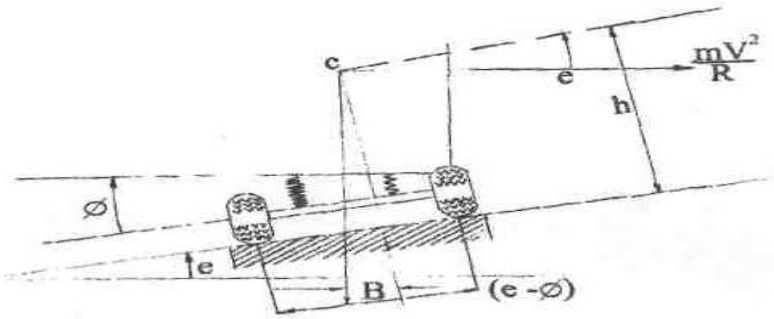
Common forms of road

cross - section



Road alignment components

e = curve super - elevation (small angle)
Ø = body roll
(e -Ø) = body rotation from horizontal
c = center of mass
m = vehicle mass
g = gravity acceleration



Forces on vehicle on curve

Answer the following questions:

1.What is necessary to establish before starting design?

2.What are the main groups in highway classification?

3.How is each of these groups subdivided?

4.What is the basic aim of geometric design?

5.What are the main geometric elements in road design?

6.What is the horizontal alignment?

7.What criteria are horizontal curves design standards based on?

8.What is the grade line?

9. What is the difference between simple transitions curves and compound transition curves?

10.What is the minimum sight distance for the modem traffic?

11.What radius of sharp curves should be avoided on road where free speed is more than 100 km/h.

12.What is the difference between simple transitions curves and compound transition curves?

13.What is the minimum sight distance for the modern traffic?

14.What radius of sharp curves should be avoided on road where free speed is more than 100 km/h.

Practice 1.

1. Matnni o’qing, uni tarjima qiling va o’qilgan matn mazmuniga muvofiq savollarga javob bering. 2. Rasmdan foydalangan holda yo’lni loyihalashdagi ba'zi elementlarni so’zlab bering.	1. Прочитайте текст, переведите его и ответьте на вопросы в соответствии с содержанием прочитанного текста. 2. Расскажите о некоторых элементах проектирования дороги, используя рисунок.

Practice 2.

Loyihalash elementlarini bayon etilishiga muvofiq ularni aytib bering.	Назовите элементы проектирования в соответствии с их описанием.

Ex. Element which consists of a series of straight and curved sections (horizontal alignment).

1. Element which is a series of straight lines connected by the vertical parabolic arcs, to which the straight grades are tangent.
2. Element which is used to connect two lengths of road.
3. Element which is defined as the distance at which a driver can see an object ahead of him.
4. Element which plays a significant role in road accidents.

Practice 3.

Qo`shma gap turlarini aniqlang va ularni tarjima qiling:	Определите виды придаточных предложений и переведите их:

1. He explained that the network of roads that covered the country was concentrated in the Eastern part.
2. Since the speed limit was introduced the traffic moved at the speed of 60 km an hour.
3. The access to the airport will not be safe if the obstacle is not eliminated.
4. Since this road was broadened it has become the main traffic artery in the area.
5. The design of the road which we are discussing has a number of disadvantages.
6. No accidents will happen provided you observe the traffic rales strictly.

Practice4.

Kesimni bayon etish usullariga e`tibor berib gaplarni tarjima qiling:	Переведите предложения, обращая внима-ние на способы выражения подлежащего:

1. One should be very careful when driving along the roads with heavy traffic.
2. One must strictly observe the rules of the city traffic.
3. It is obvious that in city planning transport has become problem number one.
4. To become a highway engineer was his school-days dream.
5. He is responsible for maintenance of this road.
6. These are the factors to be taken into consideration.
7. Speeding causes accidents, so most countries have speed limits.
8. Coming to a street crossing one must wait for a green light to cross the street.
9. The trend of population increase is expected to continue.

Practice 5.

"A" matnni o`qing va uni yozma shaklda tarjima qiling.	Прочитайте текст "A" и переведите его в письменной форме.

Text A

The highway cross section and the landscape

The first standard cross sections for state highways were for horse-drawn traffic. The standard width of two-lane surfacing gradually increased from 15 to 20 feet and now-often is 22 feet or wider. Shoulders have been designed of harder material to permit emergency turnout at speed. The width of shoulders has increased from 3 feet to as much as 10 feet or more, to permit safe parking off the pavement. On sharper curves, roads and pavements are often widened. The highway cross section must be adapted to the right-of-way width.

1.to increase	ko`paymoq, oshmoq	увеличиваться
2.shoulder	yo`l yoqasi	обочина
3. emergency	o`ta zaruriyat, ehtiyoj	крайняя необходимость
4. turnout	burilish	поворот
5. right-of-way	ajratish mintaqasi	полоса отвода

Practice 6.

«B» matnni o`qing va quyidagi savollarga javob bering: 1. Ikki tasmali shahar tashqarisidagi yo`lda YTH ning sababi nimada? 2. Yo`lni rekonstruktsiyalashda quruv-chilar oldida qanday vazifa turgan? 3. Yo`lning tajriba uchastkasida olib borilgan tadqiqot natijalari qanday?	Прочитайте текст «B» и ответьте на вопросы: 1. Что явилось причиной ДТП на двухполосных внегородских дорогах? 2. Какая задача стояла перед строителями при реконструкции дорог? 3. Каковы результаты исследований, проведенных на опытных участках дорог?

Text B

Geometric design of two-lane rural roads in the USA

Abrupt change in speed created by horizontal alignment is one of the leading causes of accidents on two-lane rural roads. One of the important tasks in modern rehabilitation of the two-lane rural network is to ensure design consistency and to detect poor horizontal Resigns. Research which evaluated the impact of design parameters (degree of curve, length of curve, lane width, shoulder width, sight distance and traffic volume) on 322 curved sections of two-lane rural highways in the state of New York, has demonstrated that the main Parameter in explaining the variability in

operating speeds and Residents was the "degree of curve". With increasing degree of curve, the operating speed is decreasing while the accident rate is increasing.

cause	sabab	причина
rural roads	shahar hududidan tashqari-dagi yo`llar	внегородские дороги
to ensure	ta`minlamoq	обеспечить
design consistency	loyihalashdagi ketma-ketlik	последовательность при проектировании
impact	ta`sir	влияние
variability	o`zgarib turuvchi	изменчивость

Practice 7.

"C" matnni o`qing va uning asosiy mazmunini tushunishga harakat qiling. 1. Maqolada qanday asosiy muammo hal qilinayotganligi haqida javob bering.	Прочитайте текст «С» и постарайтесь понять его содержание. 1.Ответьте, какая основная проблема решается в статье.

Text C

The A

470 in Wales

The A 470 Trunk Road between North Wales and South Wales passes through the Snowdonia National Park. The narrow twisting nature of this section of road creates problems for traffic, especially large vehicles such as tourist coaches and farm lorries. The Welsh Office investigated means of improving the route preserving the beauty of the area.

The design philosophy accepted that normal trunk road standards with a highway width of 14,3 m would create adverse environmental impact. A compromise solution was proposed with the carriageway width of 7,3 m. The alignment was based on design

speeds of 85 km/h. To minimize environmental damage on the enclosed valley sides an absolute minimum design speed of 50 km/h was selected. The selection of this project was based on considerations of alignment standards, safety, environmental impact, ease and cost of works.

1. to preserve	saqlamoq	сохранять
2. to accept	qabul qilmoq	принимать
3. adverse	noqulay	неблагоприятный
4. environment	atrof-muhit	окружающая среда
5. consideration	ko`rib chiqish	рассмотрение

LESSON 3

Pavements

Vocabulary

1. pavement	yo`l to`shamasi	одежда дорожная
2. surface	yo`l sirti	поверхность дороги
3. riding quality	transport - ekspluatatsion sifat ko`rsatkichlari	ездовые качества, эксплуата-ционные качества дороги
4. skid resistance	avtomobillarni surilishga qarshiligi	сопротивление заносу автомобиля, шероховатость
5. course	g'adir - budirlik	слой, пласт
6. thickness	qatlam, qavat	толщина
7. layer	qalinlik, qatlam	слой
8. objective	maqsad, vazifa	цель, задача
9. wheel-load	g'ildirakdan tushadigan yuklama	колесная нагрузка
10. wearing course	qoplamaning yuqori qatlami, ediriladigan qatlam	слой износа, верхний слой одежды
11. base course	yo`l qoplamasi asosi	основание дорожной одежды
12. sub-base	asosning quyi qatlami	нижний слой основания
13. subgrade	yo`l poyi	земляное полотно
14. drainage	zax qochirish, quritish, drenaj	дренаж, осушение
15. moisture	namlik	влажность
16. fines	gruntning mayda zarrachalari	мелкие частицы грунта
17. fill	ko`tarma	насыпь
18. to compact	zichlamoq	уплотнять
19. to include	singmoq, tarqalib ketmoq	включать
20. vice versa	aksincha	наоборот
21. to enter	o`z ichiga olmoq	проникать

Text

The primary purpose of the pavement is to provide a surface of acceptable riding quality with adequate skid resistance and low noise.

The pavement structure is composed of a number of horizontal courses which are rarely less than 75 mm in thickness. The courses are often subdivided into layers which are portions of a course which are placed and compacted as a single entity.

Pavement courses are also known by their location and function within the pavement structure. The uppermost course is often a surface course, the prime objectives of which are:

1. Resist the local action-of vertical and horizontal wheel-loads.
2. Withstand the atmospheric environment;
3. Provide a good running surface with adequate skid resistance
4. Keep out water;

It is also called a wearing or friction course. The surface course is not included in pavement thickness design.

The base course is the main load carrying within the pavement.

The sub-base is a course whose prime purpose is to protect and separate the base course from the subgrade and vice versa. It may act as a drainage filter layer, as a barrier to prevent moisture or subgrade fines from entering the base course. It may also provide a working platform over weak subgrade.

The subgrade is the natural or compacted fill formation on which the pavement structure is constructed.

Answer the following questions:

1. What is the primary purpose of the pavement structure?
2. What is the pavement structure composed of?
3. What course is the uppermost one?
4. What are the prime objectives of the surface course?

5. How many functions has the sub-base?
6. What is the subgrade?

Practice 1.

1. Matnni o'qing va uni tarjima qiling 2. Matnning mazmuniga muvofiq yo'l to'shamasi konstruktsiyasi sxemasini tuzing. 3. Yo'l to'shamasi har bir qatlamining vazifasi haqida qisqacha so'zlab bering.	1. Прочитайте текст и переведите его. 2. Составьте схему конструкции дорожной одежды в соответствии с содержанием текста. 3. Кратко расскажите о функциях каждого слоя дорожной одежды.

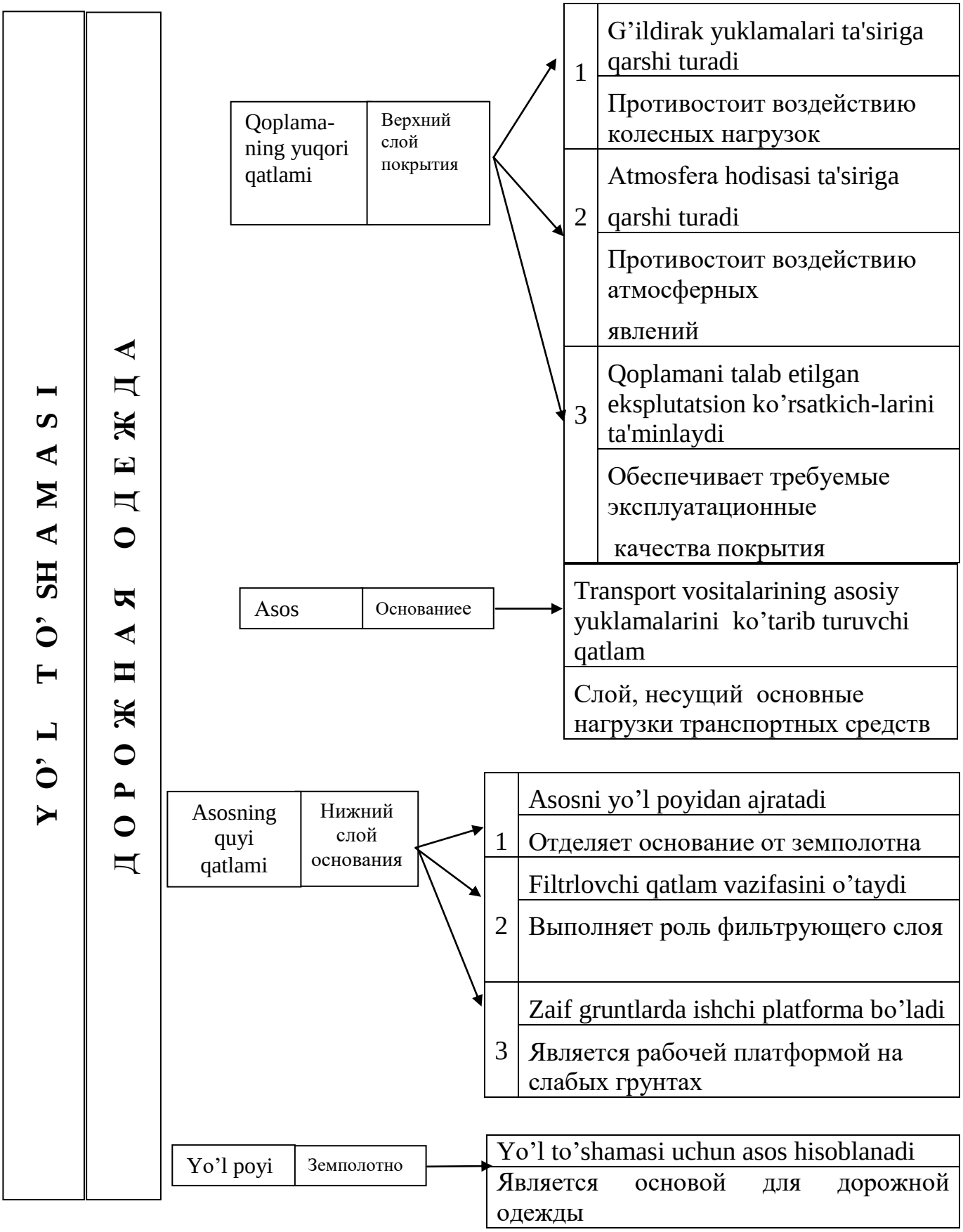
Practice 2.

O'ng tomondagi so'zlarni chapdagiga moslashtiring.	Сочетайте слова правой колонки с левой.

to resist	layers
to subdivide	acceptable riding quality
to provide	moisture
to prevent	working platform
to include	skid
to withstand.	courses
	atmospheric environment

Practice 3.

<u>Vazifalar:</u>	<u>Функции:</u>
Sxemadan foydalanib yo'l to'shamasi konstruktsiyasini tavsiflab bering.	Опишите конструкцию дорожной одежды, пользуясь схемой:


Y O’ L T O’ SH A M A S I
Д О Р О Ж Н А Я О Д Е Ж Д А
Qoplama-ning yuqori qatlami
Верхний слой покрытия
1
G’ildirak yuklamalari ta'siriga qarshi turadi
Противостоит воздействию колесных нагрузок
2
Atmosfera hodisasi ta'siriga qarshi turadi
Противостоит воздействию атмосферных явлений
3
Qoplamani talab etilgan eksplutatsion ko’rsatkich-larini ta'minlaydi
Обеспечивает требуемые эксплуатационные качества покрытия
Asos
Основаниее
Transport vositalarining asosiy yuklamalarini ko’tarib turuvchi qatlam
Слой, несущий основные нагрузки транспортных средств
Asosning quyi qatlami
Нижний слой основания
1
Asosni yo’l poyidan ajratadi
Отделяет основание от земполотна
2
Filtrlovchi qatlam vazifasini o’taydi
Выполняет роль фильтрующего слоя
3
Zaif gruntlarda ishchi platforma bo’ladi
Является рабочей платформой на слабых грунтах
Yo’l poyi
Земполотно
Yo’l to’shamasi uchun asos hisoblanadi
Является основой для дорожной одежды

Practice 4.

Gaplarni tarjima qiling.	Переведите предложения.

1. They were glad to take part in our expedition.
2. He was happy to be working for many years with the famous scientist.
3. To drive a car in a big city is very difficult.
4. To widen the main street they had to destroy some old buildings.
5. The new road to be constructed here will be the longest in the country.
6. Shoulders have been designed of harder material to permit safe turnouts.
7. To minimize environmental damage on the valley an absolute minimum design speed was selected.
8. The main geometric elements to be considered in road design are cross section, horizontal curves and grades.

Practice 5.

Lug'atdan foydalanib "A" matnni o'zbek tiliga tarjima qiling.	Переведите текст "A" на русский язык, пользуясь словарем.

Text A

Bound and unbound courses

Courses are termed bound or unbound. An unbound course is formed of independent granular particles which are commonly compacted into a relatively dense layer. An unbound course behaves under load as if its component parts were not linked together. Unbound courses must be restrained against lateral movements by kerbs and shoulders.

A bound course is one in which the particles are strongly linked together by binders such as cement or bitumen. The course behaves under load as a continuous system.

The choice between bound and unbound courses is usually on the basis of cost and construction constraints. Bound courses will have a higher volumetric cost but will require less material. Hence, then-total cost may be lower. Bound courses are often the only alternative where: 1) the watertable is high; 2) drainage is poor; 3) a working platform is needed; 4) pavement thickness or construction time must be minimized; 5) traffic volumes are high.

Practice 6.

1. “B” matnni o’qing va tarjima qiling. 2. Quyidagi savollarga javob bering.	1. Прочитайте и переведите текст "B". 2. Ответьте на следующие вопросы:

1.What is macadam?

2.Who was the inventor of the macadam?

3.What are the main advantages and disadvantages?

Text B

Macadam

Macadam is a term properly used to describe an open-graded unbound pavement course constructed using single-sized angular aggregate. It was named after its inventor whose advance at the beginning of the 19-th centry was to replace the commonly used larger rounded natural stones by smaller broken angular particles.

One problem with macadam is that the subgrade tends to penetrate the lower base course layer. This can be avoided by the use of sub-bases or membranes. A second problem is that, if the macadam course is to carry traffic directly, smaller size fine aggregate must be rolled or vibrated into surface. If water is not used in this surfacing stage, the process is called drystone and the resulting product is drybound macadam. In waterbound macadam, water is added before, during or after surface rolling depending on local construction practice.

1. open-graded 2. single-sized angular-aggregate 3. waterbound	ochiq strukturali bir xil o'lchamdagi qirra zarrachali tosh materiali suv bilan bog'lanuvchi	с открытой структурой каменный материал с угловатыми частицами одного размера водосвязный

Practice 7.

1."C" matnni o'qing 2. Rasmdan foydalanib yuklama ostida yo'l to'shamasi holatini so'zlab bering. 3. Yo'l to'shamasida hosil bo'ladigan zo'riqishlar haqida so'zlab bering. Zo'riqishlar turini ayting.	1. Прочитайте текст "C ". 2. Расскажите о поведении дорожной одежды под нагрузкой, используя рисунок. 3. Расскажите о напряжениях, которые возникают в дорожной одежде. Назовите виды напряжения.

Text C

Pavement behavior under load

The basic function of a pavement is to support the applied traffic loading within acceptable limits of riding quality and deterioration over its design life. To do this the pavement must:

a) reduce subgrade stresses that the subgrade does not deform excessively;

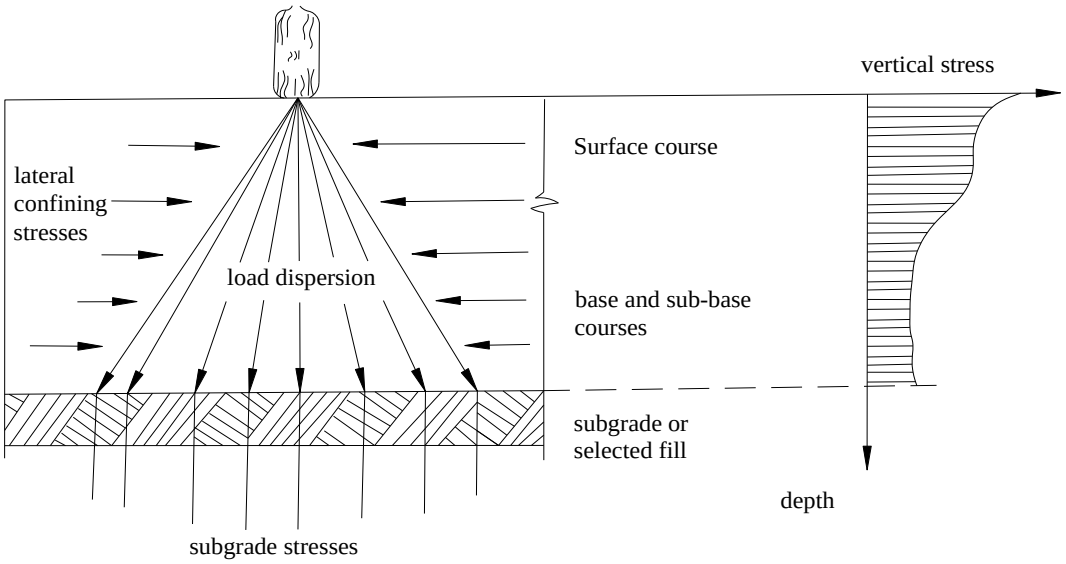
b) reduce pavement stresses such that the pavement courses do not crack or deform excessively;

c) protect the pavement structure and the subgrade from the effects of the environment, particularly moisture;

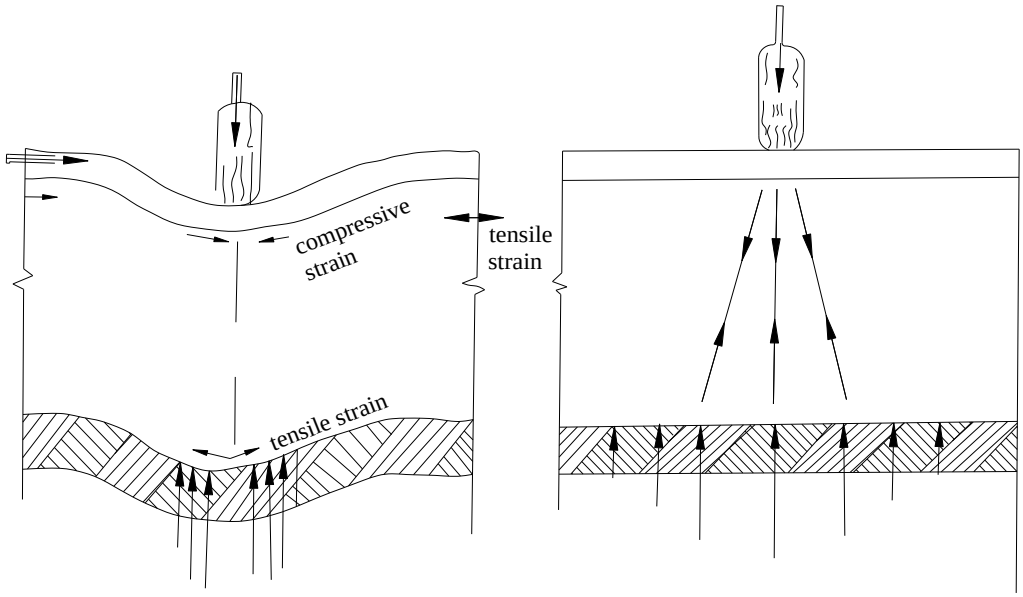
d) provide an acceptable running surface.

Requirements (a) and (b) are achieved by using the pavement layer thickness to disperse the concentrated surface load to stress level acceptable to the various materials.

The flexing of the pavement layer under load means that horizontal bending stresses are produced in each layer. The vertical compressive strains in the pavement produce the deformations which lead to rutting, whereas the horizontal stresses create cracking in bound layers and horizontal deformation unbound ones.



Load dispersion



(a) flexible pavement

(b) rigid pavement

Response of different pavement types to load

Practice 8.

“D” matnni o’qing va uning mazmunini tarjima qiling.	Прочитайте текст “D” и переведите его содержание.

Text D

A new composite road pavement system "Ecopave" (Economic Pavement) promises to offer great potential to the road building industry. The composite pavement design consisting of a cementbound road base with an asphalt wearing course, combines the best characteristics of proven load-bearing technology and surfacing materials using advanced engineering technology. It is expected to be significantly cheaper to construct that conventional pavements in terms of materials, labour and plant, while also being stronger and durable than conventional systems.

LESSON 4

Soils

Vocabulary

1. soil	grunt	грунт
2. bedrock	qoya toshli asos	скальное основание
3. weathering	nurash, eroziya	выветривание, эрозия
4. granular	donadorli, granulali	зернистый,
5. clay	loy, gil	гранулированный глина
6. boulder	shag’al	галька
7. sand	qum	песок
8. silt	loyqa, balchiq	ил
9. density	zichlik	плотность
10. strength	mustahkamlik	прочность
11. consolidation	mustahkamlash, qotirish	укрепление, твердение
12. content	saqlash	содержание
13. California Bearing Ratio	gruntning ko’tarish qobiliyati uchun Kaliforniya koeffitsienti	Калифорнийский коэффициент несущей способности грунта

Text

Soil is naturally occurring loose material above bed-rock and includes both mineral particles and organic materials. The term "soil" is used in preference to "earth". Soils composed of mineral particles formed by the physical weathering of rock are usually called granular soils, whereas soils formed from chemical weathering are called clays. The subdivision of soils depended on particle size includes boulders, gravels, sands, silts, clays.

One of the most common tests for soil for road making is the California Bearing Ratio (CBR) test which was developed in the early 1940-s by the Corps of Engineers. Other soil tests methods are soil moisture content tests, soil

classification tests, soil chemical tests, soil compaction and density tests and soil strength and consolidation tests.

Answer the following questions:

1. Where do soils naturally occur?
2. What materials do soils include?
3. What soil are usually called granular soils?
4. What soils are called clays?
5. What test is one of the most common test for soil?
6. What are other soil tests?

Aggregates

Vocabulary

1. aggregate	tosh materiali	каменный материал
2. source	manba	источник
3. igneous rocks	vulqonli jinslar	вулканические породы
4. sedimentary rocks	cho'kindi jinslar	осадочные породы
5. artificial rocks	su'niy material (sanoat chiqindilari)	искусственный материал (отходы промышленности)
6. coarse	yirik	крупный
7. fine	mayda	мелкий
8. binder	bog'lovchi modda	связывающее вещество
9. filler	to'ldiruvchi	заполнитель
10. sieve	elak	сито
11. to pass	o'tmoq	проходить
12. to retain	to'xtab qolmoq	задерживаться
13. lime stone	ohaktosh	известняк
14. slag	toshqol	шлак

Text

Aggregate is the granular material used in construction. Aggregate may be natural, artificial or recycled.

Aggregate are classified by their size:

1. Coarse aggregate - The larger aggregate sizes used in a mixture, the lower limiting size (2 or 4 mm) being dependent upon end use.
2. Fine aggregate - The smaller aggregate sizes used in a mixture, the upper limiting size (2 or 4 mm) being dependent upon end use.
3. Fines - Very small particles (e.g. passing a 0,06 mm sieve in Germany and Switzerland; a 0,075 mm sieve in the United States.

Answer the following questions:

1. What are the principal aggregate sources?
2. How are aggregate classified?
3. What aggregates are called coarse aggregates?

Practice 1.

1."Soil" va "Aggregate" matnlarini o'qing va tarjima qiling.	1. Прочитайте и переведите тексты "Soil" и "Aggregate".

Practice 2.

Ingliz tiliga tarjima qiling: grunt, tuproq, mineral zarrachalar, nurash, zarracha o'lchamlari, gruntlarni sinash usullari, namlik miqdorini aniqlash maqsadida sinash, zichlash, cho'kindi jinslar, vulqonli jinslar, yirik tosh materiali, to'ldiruvchi, elak, ohaktosh, qum, gil (loy), o'tmoq, to'xtab qolmoq.	Переведите на английский язык: грунт, земля, минеральные частицы, выветривание, размеры частиц, методы испытания грунтов, испытание с целью определения содержания влаги, уплотнение, осадочные породы, вулканические породы, крупный каменный материал, заполнитель, сито, известняк, песок, глина, проходить, задерживаться.

Practice 3.

Gapni tarjima qiling.	Переведите предложения.

1. The new materials recommended for road construction were very expensive.
2. The new road has been made possible through cooperation between the local government and the owner of the project.
3. This technique originated in Norway and has been used in Scandinavia to build roads over poor ground.
4. The success of the method has led to more widespread use including projects in France and the UK.
5. The blocks are laid across the width of the road.
6. A network of highways is under construction using new soil stabilization methods.
7. The regional computers are linked to a traffic control centre.
8. Modern technology was applied to the problem, and the most effective traffic control system was developed.
9. The construction was carried out under normal commercial contract conditions.
10. The section of the road was opened to traffic last month.

Practice 4.

Ingliz tiliga gapni tarjima qiling:	Переведите предложения на английский язык:
1. Bu ikki shaharni bog'lovchi yo'l o'tgan yili qurilgan edi. (to link, to construct)	1. Дорога, соединяющая эти два города, была построена в прошлом году. (to link, to construct)
2. Gruntni zichlikga aniqlash bo'yicha sinovni bizning gurut talabalari tomonidan o'tkazilgan edi. (to carry out)	2. Испытания по определению плотности грунта были проведены студентами нашей группы. (to carry out)
3. Yo'lni qurishda yangi yo'l-qurilish jihozlari qo'llanildi. (to use)	3. При строительстве дороги применялось новое дорожно-

	строительное оборудование. (to use)
4. AQShda ishlab chiqilgan tezkor magistralni qurish texnologiyasi Xitoyda muvaffaqiyatli qo'llanildi, (to develop, to use)	4. Технология строительства скоростной магистрали, разработанная в США, успешно применялась в Китае, (to develop, to use)
5. Tosh materiallari zarracha o'lchamlari bo'yicha tasniflanadi. (to classify)	5. Каменные материалы классифицируются по размеру частиц. (to classify)
6. Teshik o'lchami 2,36 mm bo'lgan elakdan o'tgan material mayda zarrachali deb ataladi. (to pass, to call)	6. Материал, проходящий через сито с размером ячеек 2,36 мм, называется мелкозернистым. (to pass, to call)

Practice 5.

1. "A" matnni o'qing va uni lug'at yordamida tarjima qiling.	1. Прочитайте текст «А» и переведите его при помощи словаря.
2. Tosh materiallarini olish jarayoni haqida so'zlab bering.	2. Расскажите о процессе получения каменного материала.
3. O'z lug'atingizga "Yo'l qurilish materiallari" mavzusi bo'yicha atamalarni yozib oling.	3. Выпишите в свой словарь термины по теме "Дорожно-строительные материалы".

Text A

Quarrying

Aggregate is sometimes obtained from deposits of naturally occurring rock, usually gravels. It is sometimes obtained from soft rock which is rock that can be removed from its location by conventional earthmoving equipment, and also it is obtained by blasting or mechanical means.

The next step is the breaking or crashing or large pieces of quarried rock into a smaller size. This is usually done by impact crushers. The resulting product is called crushed rock and is distinguished by both its size and the angularity of the individual particles.

Screening is a process used to remove oversized material and produce size grading by passing the material through a screen. It is often conducted together with crushing. Dry screening is a very dusty operation used to remove undersized material. Washing is used to remove undersized material from sand.

Practice 6.

1. Zarur holatlarda lug'atdan foydalanib quyidagi jadvalni tarjima qiling.	1. Переведите следующую таблицу, при необходимости воспользуйтесь словарем.
2. O'z lug'atingizga "Yo'l qurilish materiallarining xossalari" mavzusi bo'yicha barcha atamalarni ko'chirib oling.	2. Выпишите в свой словарь все термины по теме "Свойства дорожно-строительных материалов".
3. "Yo'l qurilishi materiallari sifatiga talablar" mavzusi bo'yicha qisqacha so'zlashuv tayyorlang.	3. Подготовьте краткое высказывание по теме "Требования к качеству дорожно-строительных материалов".
4. Sizning fikringiz bo'yicha yaxshi yo'llarni qurishni asosi nimada?	4. Что по вашему мнению является основой строительства хороших дорог?

Pavement material requirements

Property	Definition	Range
1. Workability	the ability to be placed, compacted and formed to the required condition and shape	
2. Economy	the material must be available and workable at an acceptable cost	Construction
3. Strength	the ability to resist loads without deformation or crashing	
4. Durability	the ability to maintain its desired characteristics time	In service
5. Volume stability	the ability to resist changes in volume	
6. Wear resistance	the ability to resist erosion, abrasion and polishing	Surface course
7. Impermeability	the ability to resist moisture penetration	

Practice 7.

Bir minut davomida “B” matnni o’qing va uning asosiy mazmunini yetkazing.	Прочитайте текст "B" за 1 мин. и передайте его основное содержание.

Text B

Dynamic soil properties are essential for the analysis of soil behavior under dynamic loads such as traffic loads and earthquake. Hundreds times subgrade soils undergo stress by cars, buses and other vehicles. From these aspects, the dynamic properties of granular soil under dynamic repeated loads were studied using special device developed at the University of Texas.

Text C

The choice of the aggregates for the concrete is based in the first place on geographic and economic considerations. From a technical point of view, concrete roads can be constructed with aggregates of lower hardness. The stones and the sands must meet certain criteria which have a direct influence on the properties of the fresh and hardened concrete, especially durability under the climatic conditions of the country. The use of round sands (river sand, sea sand) leads to a better workability than the use of crashed sand which is more angular. Although a certain amount of fines is essential to the production of good quality concrete, their percentage should be restricted, because they lead to an increase in the water demand of the mix.

Particular emphasis should be paid on the cleanness of the sand. Chlorides in the sand and in sea water contribute to the corrosion of any steel in the concrete, while shell fragments may have an adverse effect on workability and microtexture.

Practice 8.

Matn tarjimasini yozma ravishda bajaring.	Выполните письменный перевод текста.

LESSON 5

Bituminous material

Vocabulary

1.bituminous	bitumli	битумный
2. bitumen	bitum	битум
3. asphalt	asfalt	асфальт
4. deposit	qatlam, cho'kindi (tog')	залежь (горн), отложение нефть
5. petroleum	neft	дистилляция, перегонка
6. distillation	distillash, haydash	сырая нефть
7. crade oil	xom neft	распространенный
8. prevalent	tarqalgan	жидкость
9. liquid	suyuqlik	вязкость
10. viscosity	qovushqoqlik	сорт
11. grade	nav	смола, деготь, гудрон
12. tar	smola, qatron, gudron	эмульсионный
13. emulsified	emulsiyali	эмульсия
14. emulsion	emulsiya	поверхностная обработка
15. coating	sirtga ishlov berish	изменяться
16. to vary	o'zgarmoq	включать в себя,
17. to involve	o'zida saqlamoq	содержать

Text

Asphalt is one of the oldest engineering materials. In 3800 B.C. asphalt mortar was used with stones and paving blocks. The known natural deposit is the island of Trimdat.

Petroleum asphalt produced by distillation from asphalt-beanng crade oils are the most prevalent liquid bituminous binders. They are subdivided into grades according to their viscosity which is an important characteristic of asphalt.

Besides the liquid asphalt road tars are used in construction. They are subdivided according to the character of oil or coral used and to the methods and temperatures involved in their production.

In addition to the liquid asphalts and tars the emulsified asphalts are used. They are combinations of asphalt and water.The emulsions are brown liquids but turn black when applied *to* mineral aggregate. They were used in the East as early as 1908 in surface coating.

Emulsified asphalts are produced by combining heated asphalt with water. The amount of asphalt varies from about 55 to 75 per cent of the total emulsion.

Answer the following questions:

1. Is asphalt one of the oldest engineering materials?
2. Where is the best known natural deposit of asphalt?
3. What asphalts are the most prevalent bituminous binders?
4. How are they subdivided?
5. What other bituminous materials are used in road construction?
6. What is the composition of the emulsified asphalt?
7. When were they used for the first time?
8. What is the amount of asphalt of the total emulsion?

Practice 1.

1. Matnnni o'qing va tarjima qiling.	1. Прочитайте и переведите текст.
2. Matndan kalit so'zlarni yozib oling.	2. Выпишите ключевые слова из текста.
3. Kalit so'zlardan foydalanib bitumli bog'lovchi haqida so'zlab bering.	3. Используя ключевые слова, расскажите о битумных вяжущих.

Cement

Vocabulary

1. cement	sement	цемент
2. concrete	beton	бетон
3. clinker	sement toshqoli	шлак
4. pre-stressed	avvaldan zo’riqtirilgan	предварительно-напряженный
5. elasticity	elastiklik, egiluvchanlik	упругость
6. bubble	pufakcha (havo yoki gaz)	пузырек (воздуха или газа)
7. research	tadqiqot	исследование
8. soft	yumshoq	мягкий
9. to squeeze	siqmoq, ezmoq	сжимать, сдавливать
10. to bend	bukmoq, egmoq	гнуться, изгибаться
11. to add	qo’shmoq	добавлять
12. to foam	ko’pirmoq	пениться
13. to crack	sinmoq	трескаться
14. to freeze	muzlamoq	замерзать
15 to lack	nimagadir muhtoj bo’lmoq	нуждаться в чем-либо

Text

One of the man's oldest materials is concrete first discovered by the Romans. The main ingredient that makes concrete possible is cement. Concrete is a synthetic stone which can be formed while soft into practically any shape.

Portland cement mixed with water is the paste that binds sand, gravel, clinker into an artificial rock and becomes harder as the years pass.

What is new about cement? Several things. One item is “squeezed" concrete, known technically as pre-stressed concrete. By giving concrete a big squeeze after it has hardened, builders can increase its elasticity ten times, so that it will bend under a heavy load without breaking.

Until recently, the aim of engineers was to make concrete with as few bubbles as possible. Now they have come up with a new concrete which has millions of microscopic bubbles per cubic foot. It is made by adding an agent which foams to form the bubbles when the concrete is mixed. This concrete doesn't crack when freezing.

Another discovery is "soil cement". Several years ago road builders lacking funds that they could mix cement with soil on the site of the road, wet and compact it, then cover it with bitumen.

Scientist are working on research into the behavior of cement and concrete under all kinds of conditions. They are developing new ways of using concrete.

Practice 2.

1. Matnnni o'qing va tarjima qiling. 2. Matn mazmuniga muvofiq keladigan tasdiqni tanlang.	1. Прочитайте текст и переведите его. 2. Выберите утверждения, соответствующие содержанию текста

1. Builders can increase the strength of cement by squeezing it

1) while it is hardening; 2) after it had been hardened; 3) before hardening.

2. Cement with microscopic bubbles

1) is cheaper to produce; 2) is resistant to low temperature; 3) cracks when freezing.

3. The main factor stimulated the discovery of "soil cement" was to make the process of building the road

1) easier; 2) cheaper; 3) quicker.

Practice 3.

Gapni tarjima qiling.	Переведите предложения

1. Instead of restoring the old road they decided to build a new one.
2. They improved the mix by adding the filler.

3. New possibilities for applying concrete open up.

4. The idea of creating Portland cement belongs to an English builder Joseph Aspdin.

5. Reinforcing concrete with fibres may change its properties.

6. Heating the substance up to 85 °C was absolutely necessary.

7. The period of collecting statistical information has come to an end.

8. The process of mixing water with asphalt is very simple.

9. We see the advantages of using these road materials.

Practice 4.

Quyidagi so’z va so’z birikmalarini ingliz tiliga tarjima qiling:	Переведите на английский язык следующие слова и словосочетания:
bitumli bog’lovchi, asfaltbeton, bitum, gudron, neft, haydash, qovushqoqlik, bitumli emulsiya, avvaldan zo’riqtirilgan beton, elastiklik, gruntsement, penobeton, aralashtirmoq, sementni tutishi, betonni qotishi.	битумные вяжущие, асфальтобетон, битум, гудрон, нефть, перегонка, вязкость, битум-ные эмульсии, предварительно-напряженный бетон, упругость, грунто-цемент, пенобетон, смешивать, поведение цемента, твердение бетона.

Practice 5.

Shimol sharoitida yo’l to’shamasi qatlamini qurishda siz qanday yo’l qurilishi materiallarini tanlaganingizni ko’rsating.	Укажите, какие дорожно-строительные материалы вы выберите для строительства слоев дорожной одежды в условиях Севера.

	aggregates, tar
Pavement	asphalt concrete, stone,
	Portland cement, foam concrete,
Base	pre-stressed concrete,
Subbase	bituminous binders, emulsions,
Subgrade	soil cement, gravel, sand, clay

Text A

Porous asphalt

The tyre/road interaction generates running noise. In order to limit mis noise a new material-porous asphalt has been developed. Porous asphalt brings considerable noise reduction while preserving the economy of a road project and in most cases improving the safety of road users.

Porous asphalt differs from conventional dense asphalt in its composition. It has a void content of 20%. During rainfall the asphalt soaks up and channels the water through the body of the pavement into drains at the side of the road.

1. tyre	shina	шина
2. noise	shovqin	шум
3. void content	g’ovaklik miqdori	содержание пустот
4. to soak up	shimmoq, yutmoq	впитывать, поглощать
5. to channel	yo’lga solmoq	направлять в русло
6. drain	drenaj tizimi	дренажная система

Practice 6.

1. Bir minut davomida matnni o’qing va asosiy mazmunini tarjima qiling. 2. Bu ma'lumotda qanday muammo echilmoqda	1. Прочитайте текст за 1 мин. и переведите основное содержание. 2. Какая проблема решается в этом сообщении.

Text B

Hot bituminous mixes

These are the most widely used mixes for wearing courses, especially those carrying heavy traffic and subject to winter climate.

The maximum size for aggregates varies from 8 to 16 mm. Binders are usually bitumen, with the addition of 50% Trinidat asphalt. There is also a modem tendency to use modified binders. Central European countries continue to use hot rolled asphalt type dense graded mixes. A very significant development in the field of hot asphalt concrete is the very opentextured drainage mixes with between 15 and 20% air voids.

Practice 7.

1. “B” matnni o’qing va lug’atsiz tarjima qiling. 2. O’ngdan chapga “zanjir” sifat tarjimasi amalga oshadigan ajratilgan so’z birikmalari tarjimasiga alohida e'tibor bering.	1. Прочитайте текст "B" и переведите, не обращаясь к словарю. 2. Особое внимание обратите на перевод подчеркнутых словосочетаний, в которых перевод осуществляется как бы по "цепочке" справа налево.

Text C

Novolastic - a surface dressing binder

Novolastic is a catkmic emulsion incorporating 70% of polymer modified bitumen. It may be applied to the road at 80 and 85 degrees centigrade. It is therefore a warm applied binder and is designed to fulfil the following criteria:

1. High viscosity
2. The need for only moderate spraying temperature
3. Greater tolerance to weather conditions.

1. surface dressing 2. to spray 3. tolerance	sirtga ishlov berish purkamoq, sepmoq o'ziga yuqtirmaslik	поверхностная обработка распылять, разбрызгивать невосприимчивость

Practice 8.

"C" matnni o'qing va yo'l qoplamasi sirtiga ishlov berish uchun yangi materiallar haqida axborot bering.	Прочитайте текст "C" и сделайте сообщение о новом материале для поверхностной обработки дорожных покрытий.

Text D

The common varieties of cement produced in India are Portland cement and Portland Puzzoland cement. Portland cement has been divided into two grades e.g. Ordinary Portland Cement and High Strength Portland cement with minimum 7 day compressive of 220and 330 kg/cm respectively. In addition to these a special cement known as "Sleeper Cement" which gives still higher strength of 380 kg/cm^2, and is used mainly for manufacture of railway sleepers. Rapid hardening Portland cement and Hydrophobic cement are also produced.

Practice 9.

1. Matnni o'qing va uni yozma shaklda tarjima qiling. 2. Matnga sarlavha qo'ying.	1. Прочитайте текст и переведите его в письменной форме. 2. Озаглавьте текст.

puzzolana	pussolan, vulqonli tuf	пуццолан, вулканический туф
railway sleepers	tormoz kolodkalari	тормозные колодки
compressive strength	siqilishga mustahkamlik chegarasi	предел прочности при сжатии
hydrophobic	suv o'tkazmaydigan	водонепроницаемый

LESSON 6

Design and building of fills and embankments

Vocabulary

1. fill	ko’tarma	насыпь
2. embankment	ko’tarma, damba	насыпь, дамба
3. latitude	tanlash imkoniyati	возможность выбора
4. cutting	o’yma	выемка
5. bottom	tub	дно
6. settlement	grunt qoldig’i	осадка грунта
7. movement	harakatlanish, ko’chish	движение, перемещение
8. sampling	namuna olish	отбор образцов
9. degree of compaction	zichlash darajasi	степень уплотнения
10. to ensure	kafolatlamoq	гарантировать
11. to subside	cho’kmoq	оседать
12. to shrink	cho’kmoq, ezilmoq	давать осадку, сжимать
13. to swell	shishmoq	разбухать
14. to assume	qabul qilmoq, yo’l qo’ymoq	принимать, допускать
15. to result	natijaga keltirmoq	приводить к результату
16. to restrict	chegaralamoq	ограничивать
17. to move	harakatlanmoq, ko’chmoq	перемещать, двигаться
18. to eliminate	inkor (rad) etmoq	исключать
19. to require	talab etmoq	требовать
20. to obtain	qabul qilmoq	получать
21. needed	kerakli, zarur	необходимый
22. successive	birin - ketin, ketma - ket	следующий один за другим
23. extended	cho’zilgan, rostlangan	растянутый, вытянутый

Text

One important aim in making fills is to ensure that they do not subside, shrink or swell. Assuming stable ground conditions, construction of the fill in compacted layers, extended fully across the subgrade at a given level, usually results in a final stability. The amount of machine compaction will depend somewhat on the characteristics of that material and on its moisture content. The selection of fill material, on account of cost, usually is rather restricted. However, some latitude exists in the order in which material is moved from cuttings for the layers of corresponding fills. For example, coarse rocky material from a cut often may be placed economically in the bottom of the fill.

A standard method of making embankments from earth excavations is to compact each successive layer to an amount needed to eliminate settlement, swell or other movement. Usually watering the layers is required.

Modern design and construction requires accurate control of the embankment at all stages. This control is obtained by sampling the material actually in place in the fill and then testing for its degree of compaction.

Answer the following questions:

1. What is the aim in making fills?
2. How construction of the fill is carried out?
3. What will the amount of machine compaction depend on?
4. Is the selection of fill material restricted?
5. Is there any latitude to select fill materials?
6. What is a standard method of making embankments?
7. Is watering usually required?
8. What does modern design and construction require?
9. What is the control obtained by?

Practice 1.

1. Matnni o’qing va tarjima qiling. 2. Matnni necha qismga bo’lish mumkinligini va har bir qismi nimaga bag’ishlanganligini ko’rsating. 3. Matnga reja tuzing.	1. Прочитайте и переведите текст. 2. Укажите, на сколько частей можно поделить текст и чему посвящена каждая часть. 3. Составьте план текста.

Practice 2.

Matndan barcha baynalminal so’zlarni ko’chirib oling va tarjimasini bering.	Выпишите из текста все интернациональные слова и дайте перевод.

Text A

Expanded polystyrene blocks (EPS) used in road construction across peaty ground

The paper describes a road constructed across peaty and soft ground in the County on the west coast of Norway. The County engineers decided to use EPS blocks over the whole length, 200 meters, on a full scale experiment. The construction was made in the following way.

The peat was excavated to predetermined depth and the EPS blocks were placed. A concrete slab with light reinforcement was cast on the top of the EPS blocks and me road was constructed on the top of the slab. There were a number of different construction problems but the work was finally finished and has to this day proved satisfactory.

Practice 3.

1. Ma'ruzaning (Text "A") xulosasini o’qing va uni tarjima qiling 2. Torfli gruntlarda yo’l qurilishi usuli haqida so’zlab bering.	1. Прочитайте резюме доклада (Text "A") и переведите его. 2. Расскажите о методе строительства дороги на торфянистых грунтах.

Practice 4.

Ingliz tiliga tarjima qiling:	Переведите на английский язык:
-zaif gruntlarda ko’tarma	- насыпь на слабых грунтах
-grunt qoldig’i	- осадка грунта
-konstruktsiyaga barqarorligini ta'minlamoq	- обеспечить устойчивость конструкции
-materialni tanlash	- выбор материала
-xarajatlarni hisobga olgan holda	- с учетом затрат
-o’ymalar va ko’tarmalar	- выемки и насыпи
-grunt o’ymasi	- выемка грунта
-shishishni yo’qotmoq	- исключить вспучивание
-gruntni namlamoq	- смачивание грунта
-puxta nazorat	- тщательный контроль
-namuna olish	- отбор образцов
-bevosita qurilish maydonida	- непосредственно на строительной площадке
-sinov o’tkazmoq	- проводить испытания

Slope works and slope protection

Vocabulary

1. slope	yon bag’ir	откос
2. protection	himoya	зашита
3. disturbance	shikastlanish	повреждение
4. repairing	ta'mirlash	ремонт
5. proximity	yaqinlik	близость
6. landscape	landshaft	ландшафт
7. vegetation	ko’kalamzorlashtirish	озеленение
8. adjacent	tutashish	примыкающий
9. damages	shikastlangan (buzilgan)	поврежденный

10. to collapse	buzilmoq	рушиться
11. to hinder	aralashtirmoq	мешать
12. to avoid	qutilmoq	избегать
13. to keep	saqlamoq	сохранять

Text

When roads are constructed in mountainous or hilly areas, natural and artificial slopes are adjacent to the road. There are different kinds of slopes, i.e. natural slopes made of rock and soil, cutting slopes and filling slopes created by construction work, and combinations of both. Slopes are often damaged and they sometimes collapse as a result of weathering, rainfall, snow or earthquake. Collapsed or damages slopes greatly hinder construction and maintenance work. Moreover, changes in the condition of slopes are directly related to traffic safety when slopes are near roads. Once a slope collapses, it leads to traffic disturbance and requires high repairing costs. To avoid this slopes should be kept in good conditions by periodical inspection and repair.

In designing slopes the most careful consideration should be given to geological and topographical conditions, proximity to adjacent housing and environmental conditions. Landscape and construction costs are also important factors.

Methods protecting slopes from weathering and erosion may be classified into two categories: vegetation and structure.

Answer the following questions:

1. What are different kinds of slopes?
2. What are the causes of slope damage?
3. Do damaged slopes hinder traffic?
4. What measures are carried out to avoid this problem?
5. What consideration should be given in designing slopes?
6. What are the methods of slope protection?

Practice 5.

1. Matnni o’qing va uning asosiy mazmunini so’zlab bering.	1. Прочитайте текст и передайте его основное содержание.
2. Matndan quyidagilar haqidagi gaplarni toping:	2. Найдите в тексте предложения, в которых говорится:
a) yon bag’irlarning buzilishi sababi haqida;	а) о причинах разрушения откосов;
b) yon bag’irni loyihalashda zaruriy hisobga olish haqida.	б) о том, что необходимо учитывать при проектировании откосов.

Practice 6.

So’zlarga mos tarjimani tanlang:	Выберите соответствующий перевод слов:

greatly	sezilarli(aytarli) darajada, anchagina,	значительно,
	ahamiyatli,	значительный,
	ahamiyat	значимость
directly	bevositali,	непосредственный,
	bevosita	непосредственно
condition	shartlilik,	условность,
	shartli,	условный,
	shart	условие
require	talab,	требование,
	talab etilgan	требуемый
adjacent	tutashmoq,	примыкать,
	tutashadigan,	примыкающий,
	tutashishi	примыкание

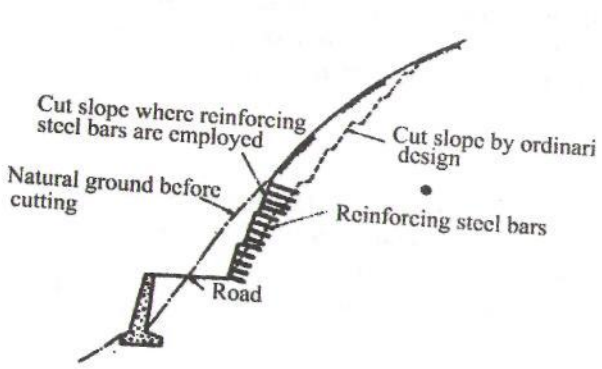
Text B

The problem of the stability of cut slopes in steep mountainous roads has been receiving intense attention of engineers in recent years, if a steep natural slope is cut with an ordinary standard gradient, the slope will be as shown by a broken line in Fig.1 and a large and long slope will appear. This kind of large and long slopes creates various problems.

A new method for stabilizing slopes was developed recently in Japan. In this method a slope is reinforced as shown by the solid line in Fig.1 thus permitting steeper slopes to be used.

According to this method a slope is reinforced with steel bars inserted into the slope, and the reinforced zone acts as a strengthening structure of the whole slope.

Fig.l. Slope reinforcement.



Practice 8.

1. “B” matnni o’qing va unga sarlavha qo’ying.	1. Прочитайте текст "B" и озаглавьте его.
2. 1-rasmdan foydalanib yon bag’irni mustahkamlash usuli haqida gapirib bering.	2. При помощи рис. 1 расскажите о методе укрепления откоса.
3. Siz yon bag’irni mustahkamlashni qanday usullarini bilasiz? “C” matnni o’qing va tarjima qiling.	3. Какие методы укрепления откосов вы знаете? Прочитайте и переведите текст "C".

Text C

Retaining walls are the old standby for containing steep slopes. These walls are constructed of reinforced concrete and are designed to resist the weight of the retained slope without overturning.

Ground anchors are used frequently in the construction of retaining walls. Retained Earth Walls are becoming increasingly popular in many countries. Stone columns are used either to repair landslides or as permanent slope stabilization.

LESSON 7

Subgrade

Vocabulary

1. technique	usul, uslub	способ, метод
2. borrow	karer	карьер
3. preference	afzal ko'rish	предпочтение
4. geotextile	geomato	геотекстиль
5. contamination	ifloslanish	загрязнение
6. leveling	tekislanish	выравнивание
7. identification	aniqlanish	определение
8. constituting	tuzilma	составляющий
9. complex	murakkab	сложный
10. bound material	bog'lovchi bilan ishlov berilgan material	материал, обработанный вяжущими
11. to stabilize	barqarorlamoq, mustahkam-lamoq	стабилизировать, упрочить

The subgrade is the part of the pavement located between the soil constituting the embankment or the natural ground and the road foundation. It is intended to form a more or less complex structure. The upper surfece of this structure constitutes the pavement formation. This structure may be quite different according to the nature or the soils, climate, hydrogeological environment, site traffic. In general, the subgrade is constructed through the usual earthworks techniques. For the construction of the subgrade layers unbound granular materials are used. Unbound materials are simply selected the cuttings or taken out from borrow. In order to stabilize a wide range of soil type's line, cement and bitumen are used. These bound materials are used for construction. In general, preference is given to granular materials rather man to bound ones for reasons of cost and ease of work. The subgrade is most frequently constructed in a single layer. Sometimes

geotextiles are used to ensure non-contamination of the granular materials by the clayey elements within the natural ground. The thickness of the subgrade is depended on the CBR value of the natural ground underneath.

There are the following types of control: identification of the materials, thickness of the layer, leveling, bearing capacity and compaction.

Answer the following questions:

1. What part of the pavement is subgrade?
2. Does the upper surface of this structure constitute the pavement formation?
3. What influences this structure?
4. How is this structure constructed?
5. What materials are used for the construction?
6. What is the difference between bound and unbound materials?
7. What materials preference is given to?
8. Are geotextiles sometimes used?
9. What is the thickness of the subgrade depended on?
10. What are the main types of control?

Practice 1

Matn manbaiga asoslanib quyida keltirilgan qaysi tasdiqlar mos, qaysilari mos emas.	Укажите, ссылаясь на текст, какие из приведенных ниже утверждений соответствуют тексту, а какие нет.

1. The subgrade is the upper part of the pavement.
2. For the construction of the subgrade layers concrete is used.
3. The subgrade is most frequently constructed in a single layer.
4. The thickness of the subgrade is depended on the CBR value of the natural ground.
5. There is only one type of control.

Practice 2.

1. Matndan yo’l to’shamasiga taalluqli atamalarni yozib oling. 2. Matndan yo’l qurilish materiallariga taalluqli atamalarni yozib oling.	1. Выпишите из текста термины, относящиеся к конструкции дорожной одежды. 2. Термины, относящиеся к дорожно - строительным материалам.

Practice 3.

Gaplarni tarjima qiling	Переведите предложения

1. Environmental factors can influence the type of structure.
2. To stabilize this structure they must use bound granular materials.
3. We could complete the work last year.
4. Our research group had to work very hard last May.
5. He was able to do this experiment last week.
6. We cannot measure the density in this way.
7. The particles of clay may penetrate into granular materials.
8. We might get interesting results with our new method but we don't know for sure.
9. According to the program the construction was to take three months.
10. The material is to be bound.
11. The samples are to be analyzed.

Text A
Geotextile fabric

Geotextile fabric as an earth reinforcing material was considered to have potential in solving soft and wet ground problem. The advantage of using geotextile fabric is that the more it deforms, the more load it can carry; there by reducing the stresses reaching the underlying soft ground. A nonwoven geotextile fabric "Polyfelt TS" was selected. The fabric also acted as a separator.

Text B
Cement as a stabilization agent

The use of cement instead of lime as a stabilization agent is at present the object of some research work at the Swedish Geotechnical Institute including both laboratory and field experiments on the stabilization of different types of soil. The results show that the cement has a good and rapid effect in soft clays and that this effect is improved when increasing the quantity of cement and the time for the mixing operation. According to the laboratory tests the shear strength of a clay stabilized with cement increases faster during the first weeks than when using lime for the stabilization.

Practice 4.

1. .“A” va “B” matlarni o’qing va uning asosiy mazmunini so’zlab bering. 2. Gruntni mustahkamlashdagi har bir usul afzalliklarini gapirib bering.	1. Прочитайте тексты .“A” и “B” и передайте их основное содержание. 2. Расскажите о преимуществах каждого метода укрепления грунта.

Text C
Dynaflect-new control equipment

Conventional methods of controlling the quality of earthworks such as the sand-replacement method for measuring in-situ density were used in the past in Kuwait. The expanding highway construction program created a need for an improved method of controlling the compaction of subgrade soils. This approach, based on the assessment of the stiffness of the compacted subgrade, uses the Dynaflect equipment.

The Dynaflect was first introduced in 1975, and since then it has played an important role in the quality control of road construction. It is now required that in new construction the new courses should not be laved before the subgrade has been accepted according to the criteria set by Dynaflect measurements.

The Dynafiect device is an electromechanical unit which induces a dynamic load and measures the dynamic deflections of the compacted surface. The deflection measurements in the vicinity of the load are made using motion sensing geophones.

Practice 5.

1. Matnni o'qing, lug'at yordamida tarjima qiling. 2. "Dynaflect"harakatidagi asosiy prinsiplar haqida gapirib bering. 3. Mazmunnoma tuzing.	1. Прочитайте текст, переведите с помощью словаря. 2. Расскажите об основных принципах действие при "Dynaflect". 3. Составьте аннотацию.

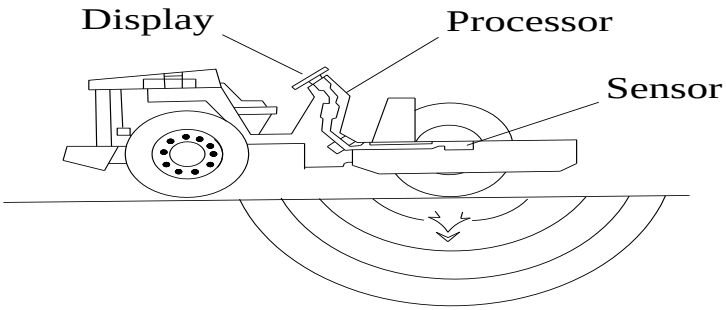
Practice 6.

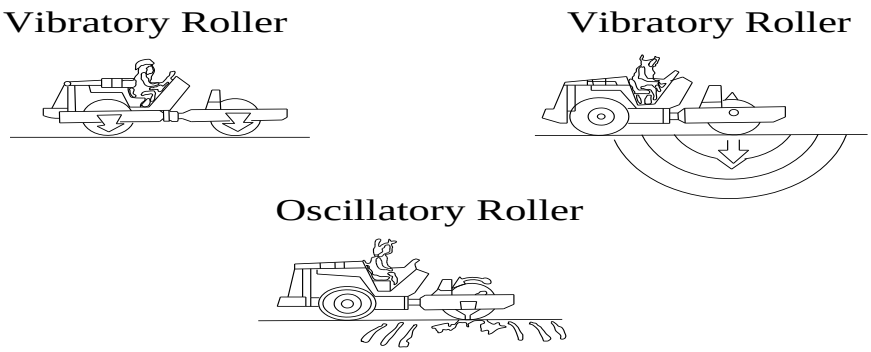
1."D" matnni o'qing. 2. Rasm yordamida turli xildagi katoklarni ishlash prinsipi haqida gapirib bering. 3. O'ylab ko'ring, katok xillari qanday to'g'ri tarjima qilinadi.	1. Прочитайте текст "D". 2. При помощи рисунков расскажите о принципах работы катков разного типа. 3. Подумайте, как правильно перевести типы катков.

Text D

Compaction techniques and compaction equipment have a long tradition in Sweden. The Swedish invention of a Compactometer - the first compaction meter on the market introduce a roller integrated device. Another invention, the oscillatory compaction principle uses alternating shear force in combination with static load for compaction of asphalt layers. Oscillating rollers have no vertical amplitude.

There are two main types of static rollers: the three wheel version and the two-wheel tandem version. The compaction effect is determined by wheel load and the ground contact pressure of the type.





Vibratory rollers use a vibrating mechanism which consists of a rotating eccentric weight placed inside the drum. Vibratory rollers use a combination of vibration and static loads.

1. compaction	zichlash	уплотнение
2. static roller	statik katok	статичный каток
3. wheel	g'ildirak	колесо
4. tyre	shina	шина
5. to determine	aniqlamoq	определять
6. drum	katok g'altagi	валец катка
7. oscillatory	tebranma	колебательный
8. shear force	kesuvchi kuch	срезывающая сила

Practice 7.

Matnni yozma ravishda tarjima qiling.	Сделайте письменный перевод текста.

Text E

Making the choice

Compaction is necessary in all types of construction jobs from the bottom of a pipe trench to the surface of a runway at an international airport. You need to compact to overcome the natural resistance in most materials and as materials differ from site to site, each job will have its own particular compaction requirements. The universal compactor has not yet been invented so each job requires careful consideration before selecting type of equipment and the method to be used.

Static pressure, impact and vibration are the three main categories of compaction. The choice depends on the local conditions, specifications, required capacity, time scale and even weather. The aim must always choose an optimum solution.

Static compaction is achieved by loading a surface area. By increasing or decreasing this load or changing the contact area you can vary the static pressure. Static rolling has only a limited compaction effect, normally no more than 25 cm on sand or gravel. On asphalt static compactors can normally achieve adequate compaction on 5 cm lifts.

Impact or drop-weight compaction is only used on soils. It is used in compaction where rollers cannot be used. Lifts of up to 4 m can be compacted using drop-weight. As a rule, the compaction effect is very good, but capacity is limited. It can be used on all types of soils, except of rock fill.

Vibratory compactors use a combination of vibration and static loads to achieve compaction effect. Initially vibratory compaction was only considered

suitable for rock fill, sand and gravel, but with development of vibratory techniques the method has come to be successfully used for soils and asphalt compaction, too. Vibration can be used to compact the full range of soil materials, and vibratory equipment now accounts for some 70% of the total market.

Oscillation is another form of "dynamic" compaction. Oscillating rollers have no vertical amplitude. The actual compaction effect is similar to that provided by static rollers. Oscillating rollers generate less surface waves than vibratory equipment, when working close to buildings.

LESSON 8

Surfacing. Unsealed roads

Vocabulary

1. surfacing	qoplama	покрытие
2. wear resistant	edirilishga mustahkam	износостойкий
3. excess	ortiqcha	избыток
4. slick	sirpanchiq	скользкий
5. to seal	o’tkazmaydigan qilmoq	сделать непроницаемым
6. to bond	bog’lamoq	связывать
7. to interfere with	xalaqit bermoq, qarshilik qilmoq	мешать, препятствовать
8. to spray	purkamoq	распылять
9. to reduce	kichraytirmoq, kamaytir-moq	уменьшать
l0. to damage	buzmoq	разрушать

Text

With unsealed roads, naturally well bonded fine materials such as sand-clays and granite-sands can be used. These aggregate mixtures should contain both wear resistant stone and natural binder, such as clay. For the surface course the maximum stone size should be less than 40 mm. Larger stones interfere with maintenance of the surface and give a poorer ride. On the other hand, an excess of fines can produce a surface which is slick when wet and dusty when dry. To control dust such techniques are used: water spraying, application of modified bitumen to the road surface, use of calcium chloride and others. All these techniques are relatively unsatisfactory and so road surfaces are usually sealed with a thin bitumen and stone film. In addition to suppressing dust, the initial sealing of an unbound pavement will reduce the moisture content and protect the pavement

materials from damage due to traffic, wind and water and water erosion. From a user's viewpoint, sealing provides a better driving surface.

Answer the following questions:

1. What materials are used with unsealed roads?
2. What should these mixtures contain?
3. How does stone size for the surface course influence on the characteristics of the surface?
4. What techniques are used to control dust?
5. Are these techniques satisfactory?
6. What are the advantages of sealing?

Practice 1.

Jadval bo'yicha gap tuzing va uni tarjima qiling.	Составьте предложения по таблице и переведите их.

The purposes of sealing		to control dust to reduce the moisture content
The purpose of water spraying	is are	to provide better driving surface to protect the pavement materials from damage

Practice 2.

Nuqtalar o'rniga mazmuni bo'yicha kerakli shaklda fe'llar qo'ying:	Вставьте вместо точек необходимые по смыслу глаголы в нужной форме:

1 Sand-clays and granite-sands.....with unsealed roads (to use).
2. Road surfaces.....with a thin bitumen and stone film (to seal).
3. All these techniques.....relatively unsatisfactory (to be).
4. Sealing.....abetter driving surface (to provide).
5. The stone size.....40 mm (to be).

Practice 3.

1. Matnni o'qing va uni tarjima qiling. 2. Rasmdan foydalanib qoplamaga sirtga ishlov berish jarayonini gapirib bering.	1. Прочитайте текст и переведите его. 2. Пользуясь рисунком, расскажите о процессе поверхностной обработки покрытия.

Text A

The process of sealing (or seal coating, or surface dressing) is the application to the surface of a thin layer of bitumen into which aggregate *is* then incorporated. In most cases the bitumen is applied by spraying and the one-sized aggregate is then rolled in. The aggregate pieces protrude both above the bitumen film, providing surface texture and protection the bitumen film from traffic damage; and below the film into the base course, to provide bearing independent of the bitumen (Fig. 2.). The aggregate placement is subsequently rearranged by traffic action.

The three types of spray seals are:

1. One application of binder and one layer of aggregate;
2. One application of binder and two layers of aggregate;
3. Two applications of binder and two layers of aggregate.

Spray seal construction is best undertaken in warm, dry weather. The spraying equipment must be capable of providing uniform spray.

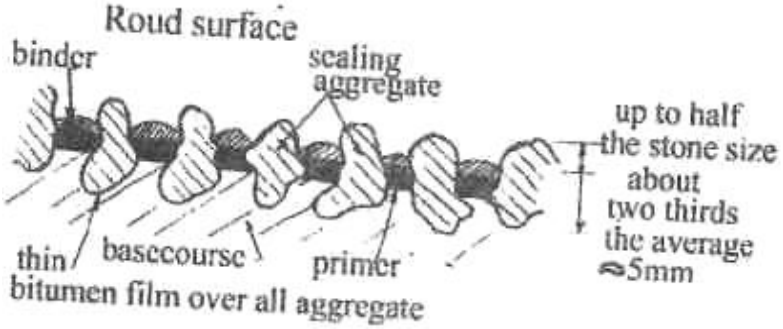


Fig. 2. - Section of a new seal coat (with base course shown idealised - it of course is also composed of interiocked aggregate)

Fig. 3.- Seal coat after some traffic action

Text

Flexible (asphaltic concrete) pavements

Vocabulary

1. flexible pavements	nobikr turdagi qoplama	покрытия нежесткого типа
2. mixing plant	asfaltbeton qorishmasini tayyorlash uchun qurilma	установка для приготовления асфальтобетон смеси
3. fly ash	uchuvchan kul	летучая зола (зола-унос)
4. fine filler	mayda to'ldirgich	мелкий заполнитель
5. texture	tekstura, tuzilish	текстура, строение
6. stiff	bikr	жесткий
7. durable	umrboqiy	долговечный
8. placement	qorishmani yotqizish	укладка смеси
9. paver	asfaltbeton yoki beton qorishmasini yotqizuvchi mashina	укладчик асфальтобетон или бетонной смеси
10. finisher	yakunlovchi, pardozlovchi	финишер, отделочник

Asphaltic concrete surface layers can have thickness down to 25 mm. Full depth asphalt is a term used to describe a pavement in which all the courses are comprised of asphaltic concrete.

Asphalt concrete is a bitumen-aggregate mix produced at a plant or on site. A plant mix is a mixture of bitumen, as a binder, and mineral aggregates, prepared

hot at a mixing plant and maintained at about 150°. Fly ash, Portland cement and ground limestone are used as fine fillers.

The objective of asphalt mix design is to determine the proportion of bitumen, filler and aggregate which will produce a mix which can be spread and compacted, will have a suitable surface with respect to skid resistance and which will be stiff (particularly in hot weather), durable and waterproof. It is common to base the structural design of the pavement on properties obtained from tests on the proposed mix.

Bituminous mixtures require compacting during placement. The main purposes of compaction are (1) to increase stiffness and strength, and (2) to protect mixes from rapid bitumen hardening.

The basic equipment consists of an asphalt mixing plant, an asphalt paver, a roller and a finisher.

Answer the following questions:

1. What is the thickness of asphaltic concrete layers?
2. What is full depth asphalt?
3. What are the components of a plant mix?
4. What temperature is the mix prepared at?
5. What is the objective of asphalt mix design?
6. What are the main purposes of compaction?
7. What does the basic equipment consist of?

Practice 4.

1. Matnni o'qing va uning asosiy mazmunini tarjima qiling. 2. Matndan quyidagi so'zlar bo'lgan gaplarni toping: a) asfaltbeton qorishmasining tarkibi	1. Прочитайте текст и переведите его основное содержание. 2. Найдите в тексте предложения, в которых говорится: а) о составе асфальтобетонной смеси;

bo’yicha; b) asfaltbeton qorishmasini zichlashni asosiy maqsadlari to’g’risida; v) nobikr turdagi qoplama qurilishidagi asosiy jihozlar to’g’risida. 3. Matnning mazmuniga muvofiq savollarga javob bering.	 б) об основных целях уплотнения асфальтобетоной смесей; в) об основном оборудовании при строительстве покрытий нежесткого типа. 3. Ответьте на вопросы в соответствии с содержанием текста.

Practice 5.

1. Quyidagi so’z va so’z birikmalaridan foydalanilgan holda asfaltbeton qorishmasining tarkibi haqida so’zlab bering:	1. Расскажите о составе асфальтобетонной смеси, используя следующие слова и словосочетания:

coarse aggregate; asphaltic concrete mix; fine aggregate; filler; bitumen; content; per cent by mass; stone size; particle size; to contain; to include; void content.

Practice 6.

Quyidagi so’z birikmalarini ingliz tiliga tarjima qiling: qurilmada tayyorlangan issiq asfaltbeton qorishmasi; to’liq chuqurlikka yotqiziladigan asfaltbeton; mineral material; mayda to’ldirgich; bog’lovchi; yirik donadorli chaqiqtosh; tezda qotuvchi; suv o’tkazmaydigan; qoplama g’adir-budirligi; qorishma tarkibini loyihalash; qatlam qalinligi	Переведите следующие словосочетания на английский язык: горячая асфальтобетонная смесь, приготовленная в установке; асфальтобетон, укладываемый на полную глубину; минеральный материал; мелкий заполнитель; вяжущее; крупнозернистый щебень; быстрое твердение; водонепроницаемый; шероховатость покрытия; проектирование состава смеси; толщина слоя.

Practice 7.

Quyidagi so’zlarni o’qing va tarjima qiling:	Прочитайте и переведите следующие слова:

thickness	suitable	to require
to comprise	durable	to increase
mixture	properties	to obtain

Practice 8.

“A” matnni o’qing va u nima haqida ekanligini ayting.	Прочитайте текст "A" и скажите, о чем он.

Text B

Overlays

If strength or stiffness of pavement must be corrected, a new layer of material is required. This process is called resheeting and the added layers are called overlays. A thin overlay of asphaltic concrete can be used for the correction of surface deteriorations - roughness, excessive permeability, low skid resistance, etc. These overlays are generally either 25 or 40 mm thick. The overlays are produced by applying a layer of plant mix to the road surface.

Practice 9.

1. Matnni o’qing va tarjima qiling. 2. Sxema yordamida zo’riqish qatlamini hisoblashda qanday asosiy parametrlardan foydalanishni so’zlab bering.	1. Прочитайте текст и переведите его. 2. При помощи схемы расскажите какие основные параметры используются при расчете слоя усиления.

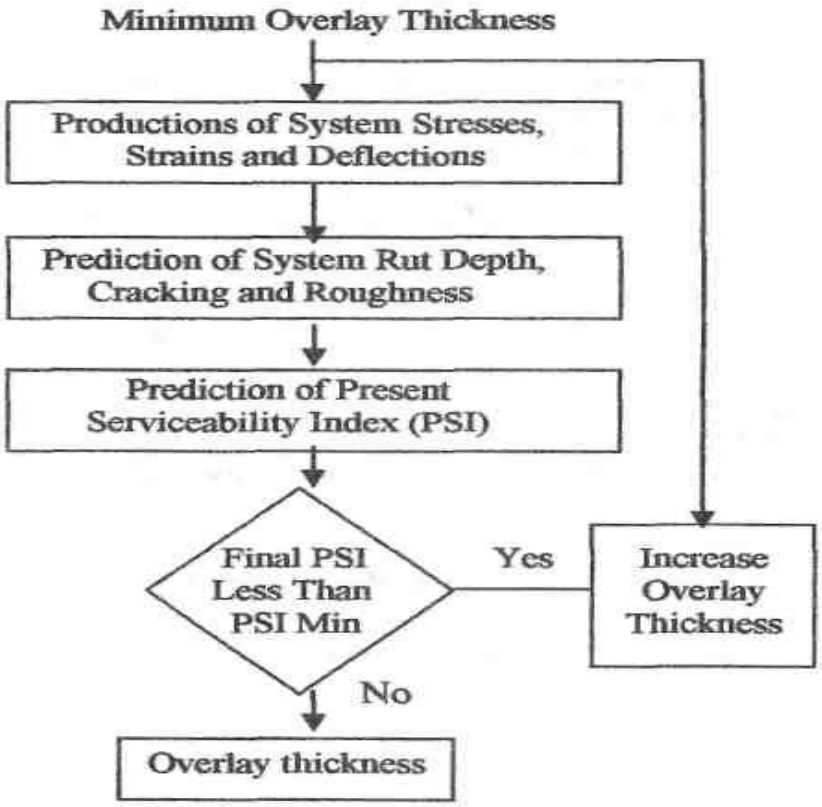
Text C

Many different methods have been developed for determining an overlay thickness. Deflection based methods use nondestractive testing to measure surface deflection of the existing pavement. In such methods, surface deflection is frequently used as an indicator of the load-carrying capacity of the pavement.

A new overlay design method which uses the VESYS computer program has been developed in Canada. This method considers both functional and structural types of pavement performance.

Rigid (concrete) pavements

Vocabulary



1. rigid	bikr	жесткий
2. side form	qolip	опалубка
3. slipform	sirg'aluvchi qolip	скользящая опалубка
4. joint	chok	шов
5. beam	balka, brus	балка, брус
6. to shrink	kichraymoq, siqilmoq	давать усадку,
7. to warp	deformatsiya bermoq, qiyshaymoq	сжиматься деформироваться, коробиться
8. rainforced concrete	temirbeton	железобетон
9. continuously	uzluksiz	непрерывно
10. fibre reinforced concrete	fibrli beton	фибробетон

Concrete pavements offer advantages in: a) residential streets, due to their construction simplicity and low maintenance costs; b) and on heavy-loaded roads on poor subgrades, due to the ability of the rigid pavements to disperse the loads widely.

The concrete is placed either within conventional side forms or by slipforming using mechanical plant. The basic equipment used consists of a concrete spreader, vibrating compactors, a finishing beam, joint forming equipment, surface texturing devices and curing facilities.

Joints and reinforcing steel are used to:

a) prevent or control cracking due to concrete shrinkage;

b) prevent and control temperature and induced expansion, contraction and warping;

c) provide construction convenience;

Joints for (a) and (b) are called control joints and joints for (c) are called construction joints.

There are five main types of concrete pavements:

1. Jointed unreinfored concrete
2. Jointed reinforced concrete
3. Continuously reinforced concrete
4. Prestressed concrete
5. Fibre reinforced concrete

} pavements

Concrete pavement design is very much based on elastic analysis of the slab.

Answer the following questions:

1. What are the advantages of concrete pavements?
2. How is the concrete placed?
3. What does the basic equipment consist of?
4. What are joints and reinforcing steel used for?
5. What joints are called control ones?
6. What joints are called construction ones?
7. What are the main types of concrete pavements?

Practice 10.

Matnni o'qing va tarjima qiling. Savollarga javob bering. Matnni qayta so'zlashga tayyorlang.	Прочитайте и переведите текст. Ответьте на вопросы. Подготовьте пересказ текста.

Practice 11.

"D" matnni o'qing va tarjima qiling.	Прочитайте и переведите текст «D»

Text D

Steel-fibre concrete overlays

Up to date there has been only a very limited application of thin (30 to 50 mm thickness) steel fibre concrete overlays to bridge decks and road pavements. For such thin overlay applications, the steel fibre content is generally 110 kg per cubic metre of concrete and the maximum aggregate size is 10 mm. Bond is achieved by

the use of a cement mortar applied by broom or squeegee to the thoroughly cleaned and mechanically prepared (by needle gun) existing concrete surface.

1. squeegee	rezinali valik	резиновый валик
2. broom	supurgi	метла
3. thoroughly	sinchkovlik bilan	тщательно
4. bridge deck	ko’prik to’shamasi	настил моста

Practice 12.

“E” matnni o’qing va tarjima qiling	Прочитайте и переведите текст “E”

Text E

In Japan continuously reinforced concrete pavement was first constructed as a test pavement in 1963. Since then CRCP has been employed in road construction at 15 places giving a total length of about 14.6 km to date.

The newest CRCP was constructed in 1985. Over a stretch of 2,188 m at the Tsukiono Bypass of the National Highway Rotfte 17 which runs through a mountainous area. The typical cross-section of the pavement is shown in Fig. 1.

Continuous reinforced concrete slab	25 cm
Asphalt cushion course	4 cm
Subbase (graded crushed stone)	15 cm

The spreading and compaction of concrete was performed in one layer because of reinforcement being present. The paving machines included side loading carriers, box type spreaders, concrete finishers, leveling and sprinkler pumps.

LESSON 9

Maintenance of roads

Vocabulary

1. maintenance	saqlash, ta'mirlash	содержание, ремонт
2. behaviour	o’zini tutish	поведение
3. imperfection	nuqson	дефект
4. fault	kamchilik, nuqson	недостаток, дефект
5. patching	chuqurchaviy ta'mirlash	ямочный ремонт
6. repair	ta'mirlash	ремонт
7. pot-hole	o’nqir-cho’nqir, o’yiq	рытвина, выбоина
8. deficiency	nuqson	дефект
9. failure	lat eyish лат ейиш	повреждение
10. judgement	baholash	оценка
11. evaluation	aniqlash, baholash	определение, оценка
12. performance	foydalanishda o’zini tutishi	поведение в эксплуатации
13. to complete	yakunlamoq	завершать
14. to be in operation	foydalanishda bo’lmoq	находиться в эксплуатации
15. to become evident	shubhasiz shakllanmoq	становиться очевидным
16. to occur	ro’y bermoq	случаться, происходить
17. to worsen	yomonlashmoq	ухудшаться
18. to rectify	to’g’irlamoq	исправлять
19. to rip	yumshatmoq	рыхлить
20. to demand	talab qilmoq	требовать

The behavoiur of a road passes through a number of stages. After construction has been completed and the road is in operation, it enters a setting down stage which may last for one or two years. During this time construction imperfections become evident, particularly after a wet season. Such faults can usually be

corrected by routine maintenance means such as minor patching and pot-hole repair.

As a road is subjected to traffic it is progressively damaged. The road enters its next life cycle stage when the surface deficiencies have worsened to the extend that they require some major repair effort, usually in the form of resealing or overlaying.

The final stage in the life of the road occurs when deformation-related deficiencies, indicating structural failure, begin to occur. These can only be rectified by major rehabilitation of the road structure such as ripping up the existing base course and either replacing it or adding additional material.

The role of experience and judgement in pavement design, construction and maintenance is so great that good engineering practice demands that the performance of all roads be consistently evaluated. The basic aims of this evaluation are:

1. To check the pavement function and performance;
2. To provide guidance for planning maintenance;
3. To detect condition changes from one year to the next.

Answer the following questions:

1. When does the road enter a setting down stage?
2. How such faults can be corrected?
3. When does the road enter its next life cycle?
4. What repair does the road require?
5. When does the final stage occur?
6. How can the structural failure be rectified?
7. What does the good engineering practice demand?
8. What are the basic aims of this evaluation?

Practice 1.

1. Matnni o’qing va uni tarjima qiling. 2. Matnga ko’ra savollarga javob bering.	1. Прочитайте текст и переведите его. 2. Ответьте на вопросы, данные к тексту.

Practice 2.

Quyida berilgan so’zlardan juft sinonimlarni tashkil eting:	Образуйте пары синонимов из приведенных ниже слов:

Maintenance, imperfection, fault, repair, deficiency, judgement, failure, evaluation.

Practice 3.

Quyidagi so’z va so’z birikmalarini ingliz tiliga tarjima qiling: foydalanishda yo’lni tutishi, prafilaktik ta'mir, chuqurchaviy ta'mir, asta-sekin buzilish, konstruktsiyani buzilishi, ta'mirlashni rejalash uchun qo’llanma, sirtga ishlov berish, qayta qurish, mayda ta'mir, ko’p ta'mir ishlari, nuqsonlar, lat eyish.	Переведите следующие слова и словосочетания на английский язык: поведение дороги в эксплуатации, профилактический ремонт, ямочный ремонт, постепенно разрушаться, разрушение конструкции, руководство для планирования ремонта, поверхностная обработка, реконструкция, мелкий ремонт, большие ремонтные работы, дефекты, повреждения.

Practice 4.

one, ones, that, those, it so’z ma'nolariga e’tibor berib quyidagi gaplarni tarjima qiling.	Переведите следующие предложения, обращая внимание на значение слов **one, ones, that, those, it.**

1. One thing is clear to everybody: one must study hard if one wants to pass one's exams well.
2. This TV set is very expensive, show me another one.

3. One never knows what may happen.

4. The more one studies, the more one knows.

5. He is one of the most experienced drivers.

6. I am afraid that he has fallen ill.

7. That he agreed to help his comrades is only natural.

8. The book that you gave me is very interesting.

9. Those children are always very noisy.

10. He thought that all those were not important (things).

11. It is warm today.

12. It is silver that is the best conducting metal.

Practice 5.

1. Matnni o'qing va tarjima qiling. 2. Uning asosiy mazmunini tushuntiring.	1. Прочитайте и переведите текст. 2. Передайте его основное содержание.

Text A

Some 22% (per cent) of the major new road that have been constructed in England since 1970 have been built in concrete and there are now nearly 700 km of concrete roads in service throughout Great Britain. There are a number of examples of old concrete roads located in various parts of the country that have performed well for a long time, for example a heavily trafficked road near London that was built 54 years ago. Several of these old roads have required very little maintenance, apart from routine resealing of joints and the restoration of surface texture, but others are in need of more extensive repair. The main aspect of maintenance and repair are: the structural strengthening of old pavements, emergency and temporary repair.

Practice 6.

1. Matnni tarjima qiling. 2. Lug'at yordamida eski asfaltbeton	1. Переведите текст. 2. При помощи словаря переведите

qoplamasini regeneratsiya qiladigan qurilma tuzilishini tarjima qiling. 3. Matn mazmunini tarjima qiling.	устройство установки для регенерации старых асфальтобетон покрытий. 3. Переведите содержание текста.

Text B

The remix process for asphalt recycling in situ

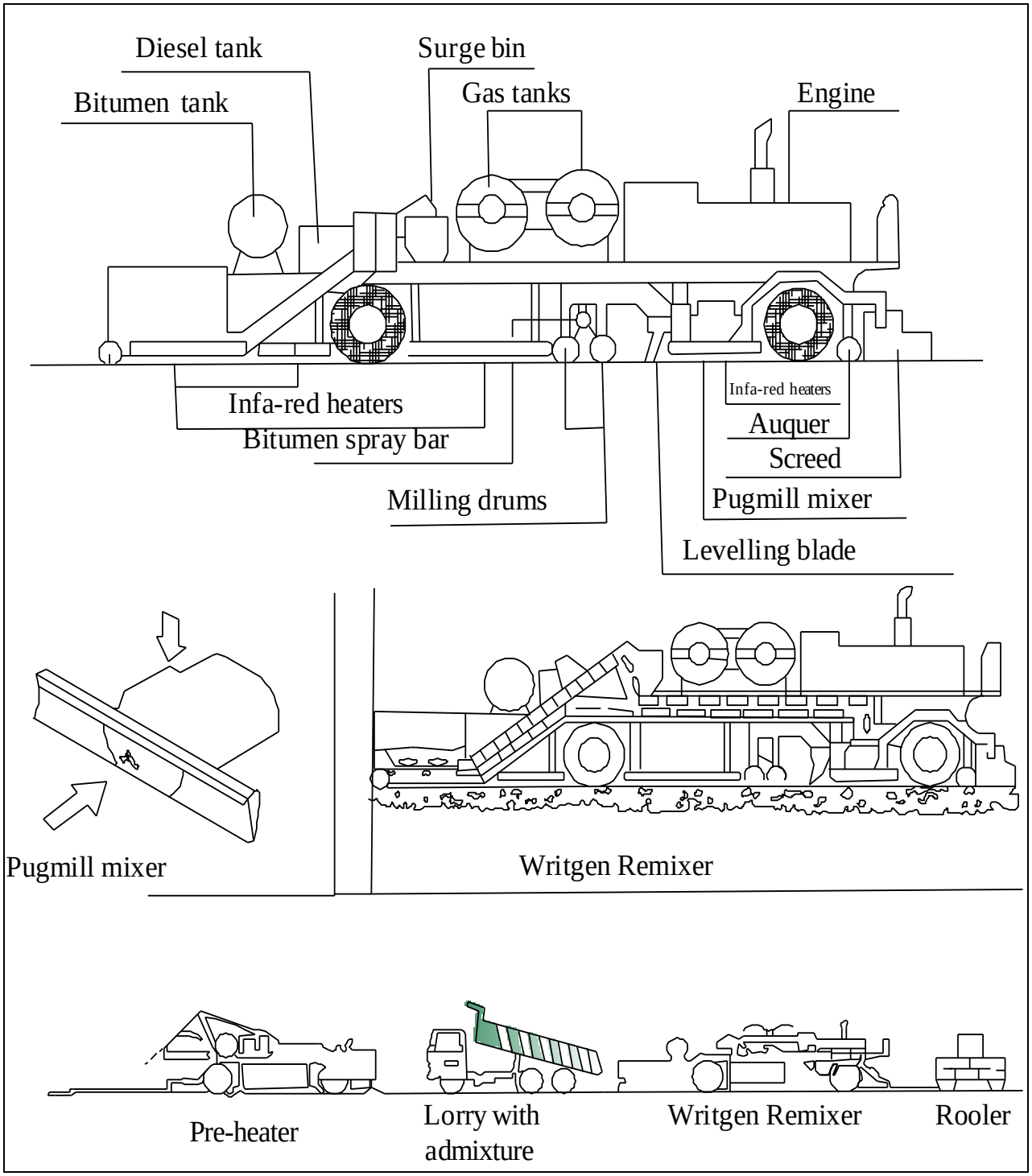
Recycling must ensure that the critical requirements of the pavement are restored at a cost which does not exceed an equivalent pavement made from virgin materials.

Central plant recycling is now well established in the USA with over 28 million tons produced annually. Hot in-place recycling is very much smaller, some 750.000 tons which has been largely covered by the Repave process. In this process the existing pavement is heated and scarified, and if required, a recycling agent is mixed into the scarified material, the surface is reprofiled and a new overlay is bonded to the existing material.

In the Remixer process the existing pavement is heated, scarified and modified as required by the addition of virgin and/or a recycling agent which are mixed in a pugmill mixer. The recycled mix is then laid by the tamping and vibrating screed and compacted to the required thickness and density.

The Repaver/Remixer Train consists of:

- A unit for preheating the asphalt surface.
- Tracks for supplying virgin add mix.
- A tanker for supplying recycling agent.
- The processing and paving unit i.e. the Repaver/Remixer.
- Conventional roller for compaction.


Diesel tank
Surge bin
Bitumen tank
Gas tanks
Engine
Infa-red heaters
Bitumen spray bar
Milling drums
Infa-red heaters
Auquer
Screed
Pugmill mixer
Levelling blade
Pugmill mixer
Writgen Remixer
Pre-heater
Lorry with admixture
Writgen Remixer
Rooler

Text Safety

Vocabulary

safety	xavfsizlik	безопасность
concern	muhim, mazmun	важность, значение
death rate	yo’q bo’lish ko’rsatkichi	показатель изчизновения
decline	kamayishi, pasayishi	снижение, понижение
share	qism, bo’lak, ulush	часть, доля
superior	yaxshi	лучший
rural	shahardan tashqarida	внегородской
reduction	pasayishi	снижение
seat belt	bog’lovchi tasma	привязной ремень
air bag	dam beruvchi qurilma	надувное устройство
urban	shahar	городской
processing	ishlov berish	обработка
data	ma'lumotlar	данные
emergency	favqulotdagi vaziyatlar	чрезвычайные обстоятельства
information board	axborot tablosi	информационное табло

Highway safety has always been a major concern in the United States. Historically, the nation has had the lowest highway death among tfae developed countries. A significant component in the decline of deaths in the USA has been the increasing share of total travel on freeway-like highways, which have superior safety characteristics. For instance, rural interstate highways have a death rate of 1.35 per 10.000 vehicles, while local rural roads have a rate of 4.48. A reduction in the proportion of very young drivers in the population also helps explain the decline. Other significant factors include improvements to roads, better vehicle design, and increasing use of seat belts. Now, air bags are being installed in many cars.

Road traffic information is provided on urban expressways, national highways and other roads. It is aimed to ensure safe and smooth road traffic by analyzing road and traffic conditions on the entire road network and by providing drivers with proper information.

The system comprises collection processing and provision of information. Data collected by means of vehicle detectors, television cameras, emergency telephones, road patrols are processed by computer into information suited for drivers. And the processed is provided to drivers through road information boards, highway adviser information by radio.

Answer the following questions:

1. Has highway safety always been a major concern in the United States?
2. What death rate has had the nation?
3. What are the significant factors in the decline of deaths in the USA?
4. What is the aim of road traffic information system?
5. What does the system comprise?

Practice 7.

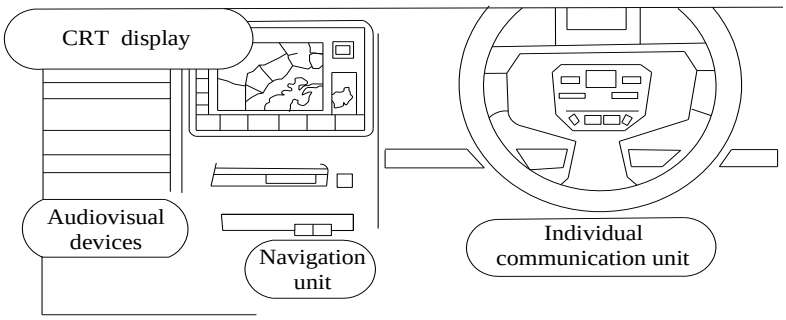
1. Matnni o'qing, uni tarjima qiling, savollarga javob bering. 2. Ushbu matndan siz nima yangiliklarni bilib olganingizni ko'rsating.	1. Прочитайте текст, переведите его, ответьте на вопросы. 2. Укажите, что нового вы узнали из этого текста.

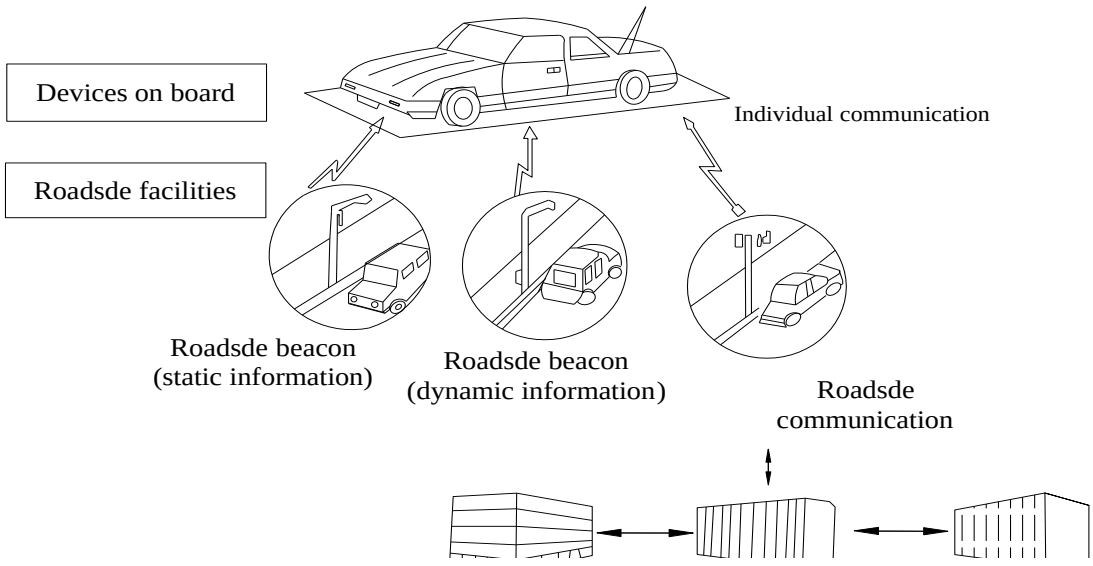
Practice 8.

Rasm - sxemani diqqat bilan o'rganing va "yo'l - avtomobil" axborot tizimi haqida so'zlab bering.	Внимательно изучите рисунок-схему и расскажите об информационной системе «дорога-автомобиль».

In order to obtain detailed information on road traffic conditions, various individual data communication services are made available and a road-vehicle information system is currently being developed to provide drivers in vehicles with road information.

1. road facilities	yo'lni jihozlash vositalari	средства обустройства дорог
2. device	o'lchov asbobi	прибор сигнальный
3. beacon	signal beradigan mayak	маяк





Practice 9.

Quyidagi gaplarni tarjima qiling.	Переведите следующие предложения.

1. It is necessary that a research institution should bring together representatives of interrelated areas.
2. It is important that applied research be carried on in cooperation with industrial engineers.
3. It is natural that the Academy of Sciences should control the distribution of finds for research.
4. It is advisable that the student should be able to become acquainted with laboratory research in his field.
5. It is essential that the beginner be introduced to the fundamentals of science.
6. They recommended that laboratory tests be conducted before the system in installed in the pavement.
7. They gave him the plan of the district less he should lose his way.
8. If we had some minutes earlier we should have met the delegation at the station.
9. Whatever form in the interchange of information may take in the coming years, it will certainly be better than it is.
10. Certain changes were introduced into the design of this device so that it might better meet the necessary specifications.

Practice 10.

Matnni yozma ravishda tarjima qiling.	Сделайте письменный перевод текста.

Roads that talk

The last five years have seen increasing interest in the world in the Intelligent Vechicle/Highway System, IVHS which is based on the application of telecommunications and computer automation technology. Joining computers, roads and vehicles, IVH systems, would provide drivers with information on traffic

conditions; would manage urban traffic by adjusting traffic signals for maximum throughput; and would automate vehicle functions like obstacle detection and even highway driving.

IVHS technologies are generally classified into four functional categories. Three of these categories involve the use of telecommunications technology, while the fourth emphasizes automation technology.

The first category of IVHS is traffic management which consists of three components: traffic sensors, a central computer data-base and traffic control devices.

The second category is traveller information systems which would supply traffic information to the drivers of vehicles or to individuals at home who are considering a trip. This system consists of an information centre, some kind of broadcast medium and display systems inside vehicles or buildings.

Commercial vehicle systems are the third general group of IVHS technologies which provide drivers with nontraffic services such as fleet monitoring and emergency services. The fourth category of IVHS vehicle control systems, would automate the following functions:

- sensing objects around the vehicle;
- warning the driver of an impending collision and so on.

Practice 11.

Matnni o'qing va uning asosiy mazmunini tushuntiring.	Переведите текст и передайте его основное содержание.

Text

Road environment measures

Noise, vibration and air pollution are the most frequently mentioned environmental problems raised by road traffic. In order to reduce road traffic noise it is important to take comprehensive measures at all levels: motor vehicle

construction, traffic control, road side measures, improvement of the road structure.

The improvement of motor vehicle is the most fundamental measure for the preservation of the roadside environment. Thus the regulation concerning these structures has been gradually tightened with respect to noise and exhaust gas.

The fundamental measure to be taken by highway administrators consists of decentralizing and reducing road traffic by systematically developing the road network. For such purpose, development of by passes and ring roads is promoted.

The noise barrier is one of the most conventional environmental measures.

Speed control, traffic control and traffic signs also constitute important environmental measures.

LESSON 10

Road construction equipment

Text

Road compaction equipment

Vocabulary

1. tandem roller	ikki g’altakli katok	двухвальцовый каток
2. vibratory	tebranma	вибрирующий
3. drum	katok g’altagi	валец катка
4. engine	dvigatel	двигатель
5. controls	boshqaruv richaklari	рычаги управления
6. hydrostatic drive	gidrostatik uzatma	гидростатический привод
7. centre articulated	markazlashgan birikma	с центральным сочленением
8. specification	texnikaviy xususiyat	технические характеристика
9. self-propelled	o’zi yuruvchi	самоходный
10. to offer	taklif etmoq	предлагать
11. to contain	saqlamoq	содержать
12. to meet requirements	talabni qondirmoq	удовлетворять требованиям
13. to be capable	nimadir qilishga layoqatli bo’lmoq	быть способным что-то делать
14. to be powered	harakatga keltirmoq	приводиться в действие
15. to be designed	mo’ljallamoq	предназначаться
16. demanding	talab etiladigan	требующийся
17. respectively	muvofiq	соответственно
18. cylinder	silindr	цилиндр
19. oscillatory	tebranma	колебательный

20. (m)-meter	metr	метр
21. (kg)-kilogram	kilogramm	килограмм
22. (kw)-kilowatt	kilovatt	киловатт
23. (t)-ton	tonna	тонна
24. DTp - Department of Transportion	Transport Vazirligi (AQSh)	Министерство Транспорта (США)

Text A

New compaction products mclude the DD-22, DD-23 and DD-32 tandem vibration rollers. Based on a modern design they dram widths of 1.0, 1.2 and 1.32 m respectively. The rollers are fitted with Deutz cylinder engines. High levels of operator comfort are provided by isolating the seat from machine vibrators. Controls are easy to operate and both the seat and control console can *be* moved for optimum visibility.

TV 100 and TV 120 are new hydrostatic drive, centre articulated tandem vibrating rollers with corresponding drum widths of 1.0 and 1.2 m.

Weighing in at 2215 and 2660 kg, both rollers quality for inclusion in DTp-s 700-1300 kg/m compaction category as contained in their "Specifications for Road and Bridge Works", and are designed to meet the more demanding requirements involved in road surfacing repair and highway maintenance work.

Capable of compacting a wide variety of materials including sub-base, road base and blacktop, these rollers are used on many light to medium duty applications such as sports grounds, car parks, tennis courts.

Both rollers are powered by Deutz twin cylinder air-cooled diesel engines.

The world's first self-propelled oscillatory asphalt compactor is 2315 SDO. Powered by a 49 kw engine, the machine has an operating weight of 7.951 and a working width of 1.8 m.

Answer the following questions:

1. What are the specifications of DD-22, DD-32 tandetfi vibratory rollers?
2. How are high levels of operator comfort provided?
3. What are the specifications of TV 100 and TV 120 rollers?
4. Are these rollers designed to meet high requiremetfts in road construction?
5. What engines are both rollers powered by?
6. What is an operating weight and a working width of the self-propelled oscillatory asphalt compactor?

Practice 1.

1. Matnni o'qing va tarjima qiling. 2. Mashina bozorda qanday rusumli katok eng yangi deb hisoblanadi?	1. Прочитайте и переведите текст. 2. Какая модель катка является новейшей на рынке машин?

Practice 2.

Quyidagi so'z va so'z birikmalarini ingliz tiliga tarjima qiling: tandem vibrakatoki, zamonaviy dizayn, g'altak eni, dvigatel, boshqaruv richaklari, maqbul ko'rinish, texnikaviy xususiyatlar, mo'ljallangan, talablar, ta'mirlash ishlari, asfaltobeton qoplama, hajmi bo'yicha katta bo'lmagan va o'rtacha ishlar, harakatga keltiriladi, o'zi yuruvchi	Переведите на английский язык следующие слова и словосочетания: виброкаток тандем, современный дизайн, ширина вальца, двигатель, рычаги управления, оптимальный обзор, технические характеристики, предназначены, требования, ремонт-ные работы, асфальтобетонное покрытие, небольшие и средние по объему работы, приводятся в действие, самоходный

Practice 3.

Qanday ishlar olib borilayotganda katoklardan foydalanishni ko’rsating.	Укажите при производстве каких работ используются катки.

1. Earthworks
2. Base construction
3. Rigid pavement construction
4. Drainage
5. Surfacing repair
6. Winter maintenance

Text B

Komatsu equipment-stabilizer, cutter, excavators, bulldozer

Vocabulary

1. crawler	zanjirli g’ildirak harakati	гусеничный ход
2. stabilizer	gruntni mustahkamlash uchun qurilma	установка для укрепления грунтов
3. cutter	freza	фреза
4. wheel	g’ildirak	колесо
5. excavator	ekskavator	экскаватор
6. bucket	cho’mich	ковш
7. capacity	idish	емкость, вместимость
8. hydraulic	gidravlik	гидравлический
9. boom	kran strelkasi	стрела, вылет (крана)
10. emission	ishlab chiqarish	выпуск
11. biodegradeable	ekologik toza	экологически чистый
12. fluid	suyuqlik	жидкость
13. output	unumdorlik, quvvat	производительность, мощность

14. to fit whit	ta'minlamoq	снабжать
15. bulldozer	buldozer	бульдозер
16. mammoth	mamont	мамонт
17. drawbar	uzatma	тяга
18. to pull	tortmoq,sudramoq	тянуть, тащить
19. ripper	er yumshatkich	рыхлитель
20. to handle	boshqarmoq	управлять
21. (l)-litre	litr	литр

Komatsu is signaling its commitment to the European market with many new products designed with European requirements in mind. A new crawler stabilized is developed for improvement of soft ground and road improvement work. Key performance statistics include a 36.3 KPa ground pressure and 700 mm mixing depth.

Also offered is a new road cutter. Weighing 2.5 t with a travel speed of 0-4 km/hr and a working speed of 0-8 m/min the machine has a cutting width of 300 mm and depth of 100 mm.

The first in a range of new wheeled excavators is PW 170-5 with an operating weight of 19.1 t. It is powered by a 76 kw engine and has a bucket capacity of 0.4-1.14 m^3.

The walking excavators have been found ideal for working on the slopes of motorway embankments, where their ability to operate safety and efficiently on gradients far steeper than could be handled by ordinary rnachines has led to their application in a wide variety of tasks.

The machines have operating weights ranging from less than 1500 kg to nearly 9000 kg and hydraulic booms of 500 to 2000 mm. Fitted with low emission diesel engines and extensive noise control systems, the machines can also be supplied biodegradable hydraulic fluid.

The new crawler excavator has high engine output and excellent stability. The unit is fitted with a standard 6001 bucket with a turning angle of up to 176°.

After 12 years of development work Komatsu has introduced the world's largest bulldozer the D 575 A-2. this mammoth machine, weighing in at 132 tonnes, is said to be able to move more per hour than any other unit currently available.

Powered by V 12 diesel engine with an output of 1050 hp (784 kw), it can produce a drawbar pull in excess of 200 tonnes. When equipped with a ripper, it is capable of operating at more than the productivity of Komatsu's next largest unit.

Answer the following questions:

1. For what work is a new crawler stabilizer developed for?
2. What do key performance statistics include?
3. What are the specifications of a new road cutter?
4. What bucket capacity has a new wheeled excavator?
5. What are the advantages of the walking excavators?
6. What is the new crawler excavator fitted with?

Practice 4.

Matndan mashinalarni yangi rusumi yaratilayotganda ekologik omillarni (atrof muhitni himoyalash) hisobga olish tasdig'ini toping.	Найдите в тексте подтверждение тому, что при создании новых моделей машин учитывается экологический фактор (защита окружающей среды).

Practice 5.

Matndan mashinalarni texnikaviy xususiyatlariga taalluqli so'z va so'z birikmalarini yozib oling.	Выпишите из текста слова и словосочетания, которые относятся к техническим характеристикам машин.

Practice 6.

Quyidagi so’zlar bilan siz qanday o’lchov birliklarini ishlatishingizni ko’rsating:	Укажите, какие единицы измерения вы употребите со следующими словами:

(KPa; mm; m/min^3; t; m; kg; km/hr; kw)

width; depth; engine; pressure; capacity; speed; weight.

Practice 7.

1. Jadvalni tarjima qiling. 2. “Joyida regeneratsiyalash” usuli bilan eski asafaltbeton qoplamani ta'mirlashda qo’llaniladigan mashinalar majmuasini tuzing.	1. Переведите таблицу. 2. Составьте комплект машин, применя-емых при ремонте старого асфальтобетонного покрытия методом «регенерации на месте».

Earthworks	Base Construction	Flexible Pavements Construction	Rigid Pavements Construction
Bulldozer Excavator Grader Scraper Roller Loader Tractor Dump-truck	Cutter; Mill Stabilizer Profiler Grader Dump-truck Roller	Asphalt Paver Finisher Roller Dump-track Mix Plant	Slip form Paver Concrete Profiler Vibroplate Pneumatic Roller

Practice 8.

Yozma shaklda tarjima qiling.	Сделайте перевод в письменной форме.

Hyster vibratory compactor specifications

Frame and Hitch	Material - Construction	Steel Unitized, all welded
	Hitch; Oscillation	±-10°
	Articulation (Steering)	±-40°
Engine	Standard	Cummins 4 BTA
	Brake Horsepower	107 HP
Transmission	Type	Hydrostatic
	Pump	Axial-Piston
Final Drive	Three low speed hightorque, hydrostatic wheel motors.	
Brakes	Hydrostatic, through transmis-sion	
Steering	Hydraulic	
Drum	Size	54" (1372 mm) x 66" (1690 mm)
Tires	Standard	
Vibration System	Pump: Type	
Controls and Indicators	Standard	
Capacities (Fluid)	Fuel	1331
	Cooling System	14.21
	Hydrolic Oil Reservoir	1991
Weights	Shipping Weight	6600 kg
	Operating Weight	6800 kg

Practice 9.

Matnni o'qing va u nima haqida ekanligini ayting.	Прочитайте текст и скажите о чем он.

Vielhaben cold milling machine

A big machine capable of covering widths of over 2 m to depths of 200 mm, it is powered by a 405 kw engine and weighs 321. Using a milling depth of 50 mm has an output of 5.000-12.000 m /day.

It forms part of a range of cold millers designed for high reliability and efficiency.

Practice 10.

Lug'atdan foydalanib matnni tarjima qiling.	Переведите текст, пользуясь словарем.

Text D

Concrete profiler

Versatility is the strong point of the concrete profiler from HIT. The company says it can handle median barriers, curbs and gutters, irrigation and drainage ditches, cable trenches foundations, sidewalks or concrete slabs up to 1.5 m wide and 1.1 m high.

The machine operates on three crawlers which can be independently driven. Form work is attached by quick-acting coupling with the concrete hopper located above it, fed by a swiveling conveyor Level and cross fell steering is automatic and height and direction are monitored by an ultrasonic sensor reading off the string-line. All information is fed to a central control console, enabling the HIT to be operated by one man.

Practice 11.

Matnni o’qing va ushbu jihoz qayerda ishlatilishini ayting.	Переведите текст и скажите, где используется данное оборудование.

Text E

Asphalt pavers and finishers

New machines from the well-known Blaw-Knox range of asphalt pavers and road wideners have been developed recently.

Both the BR-450 track mounted paver and BK-191 wheeled paver can handle widflis in the 2.5-8.0 m range. The BK-191 is fitted with the hydraulically extendible screed, the material control sensing system and the new automatic leveling control.

The Titau 455 wheeled paver can be equipped with three different types of screed and can handle widths up to 8.0 m with laydown capacity up to 500 t/hr.

The new 322 and 422 paver finishers are both fitted with the Synchromatic electronic control system for exact steering on lines and curves, plus a variety of other improvements for high-speed trouble free operation and maintenance.

Maintenance

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H.SH. XAMIDOVA, A.M. QORABOEV, S.Z. KURBONOV

INGLIZ TILI

«AVTOMOBIL YO'LLARI VA AERODROMLAR»

mutaxassisligi bo'yicha o'quv qo'llanma

АНГЛИЙСКИЙ ЯЗЫК

учебное пособие по специальности

«АВТОМОБИЛЬНЫЕ ДОРОГИ И АЭРОДРОМЫ»

(O'ZBEKCHA - RUSCHA)

Toshkent 2009