Malika Salomova
Feruza Sharipova

BUILDING CONSTRUCTION

Textbook

LAP LAMBERT Academic Publishing

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Imprint
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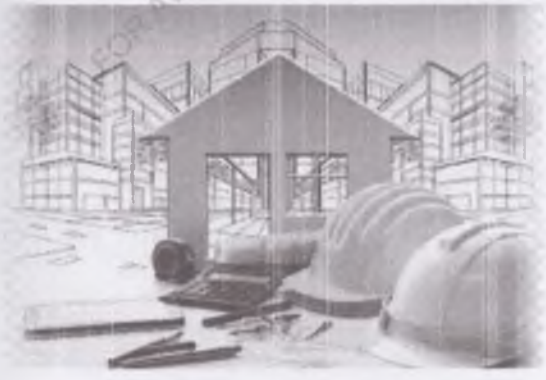
MINISTRY OF HIGHER AND SECONDARY SPECIAL EDUCATION OF THE REPUBLIC OF UZBEKISTAN

BUKHARA ENGINEERING TECHNOLOGICAL INSTITUTE

"English language" department

Salomova M.Z., Sharipova F.N.

BUILDING CONSTRUCTION



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Building construction.

The textbook is intended for the development of speech skills in the English language among students studying in the specialty "Construction". The publication consists of four sections, each of which contains texts for study and introductory reading and tasks to check the reading (Comprehension); exercises to expand and consolidate active vocabulary general and professional plan (Vocabulary; Discussion); exercises based on professional vocabulary section tasks, aimed at developing students' written communication skills (Writing). The manual includes a glossary as well as additional reading texts. Complies with the current requirements of the Federal State educational standard of secondary vocational education and professional requirements. For students studying in the specialty "Construction" and mastered the basic English course (level B1-B2 on the CEFR scale).

Mas'ul muharrir:

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CONTENTS

Units	Lessons	Can do	Vocabulary
UNIT I Industrial and civil engineering	**1. From the history of human dwellings. (6-17 pp)**	Talk about the houses which are built for dwelling; for industrial purposes and for cultural activities of the people.	effort, dwellings, prototypes, hut, support, pillar, wick, quarter,ceiling,pole, roof, primitive man, prehistoric times, skin, cave
	2. The House. (17-25 pp)	Give an information about the first houses.	made of wood ,to tie together, the skins of, tent,hut, primitive people, earthen houses, a shallow hole, oval shape, limestone slabs, conical,poles
	3. New building technology. (26-37 pp)	Speak about present-day housing projects, a countless number of new buildings and sky-scrapers	to reveal, attitude, appreciate,captivate, fresh materials, to illustrate, to exem-plify,selection, to supersede, ferro-concrete blocks, building site, prefabricated, construction of dwelling, adequate
	4. Residential and industrial buildings. (37-44 pp)	Understand about residential public and industrial construction and the problems of construction.	scale, building, industry, issue, to comprise, skilled, to affect, residen-tial, to envisage, architect,amenities. designer, to advocate, to tenant
	5. Town planning. (44-51 pp)	Talk about town planning and its purpose.	purpose,inevitable, plan,functional, construction,core, individual,to contain

	6. Egyptian Pyramids. **(52-60 pp)**	Speak about the history of old colossal pyramids of Egypt and their construction.	the sort, colossa pyramids, triangular. tombs, civilization, hard,durable stone, poor, timber, granite, blocks
UNIT II Building materials.	**7. Building materials.** **(60-67 pp)**	Describe the most widely used building materials in building construction.	steel , to select, artificial, to adapt, conglomerate , means, crushed stone, civil, gravel, to consider,mortar, availability, mixture , property screenings, lime, durable, gypsum
	8. Strength of materials. **(68-75 pp)**	Discuss the problems of strength of materials.	quality, reliability of machines, large measure, has con-fronted, unprece-dented scope, urgent solution, the bane of under-graduate,unsophis-ticated,withstand-ding cosmic cold and vacuum, the strains,stresses
	9. More about strength of materials. **(75-83 pp)**	Speak about the creation of extremely tough composite materials.	tackle, experts, to be conducted, single, state plan, sectors, to be coor-dinated, the Scien-tific Council on Strength and Plas-ticity, a complex concept, include, range, devising
	10. Foundation materials. **(84-90 pp)**	Give an information about the materials which are used as foundations	silt,width,fine sand, earth dams,seepage, cutoff wall depth, percolating water, non – erosive rate, bearing power,com-pression, confine

	11. Non – uniform materials. (91-98 pp)	Explain what are non – uniform foundation materials	non – uniform conceivable, stratify, stratum, pervious. impervious,overlie, apron, upstream, downstream, a wide – based dam
	12. Reinforced – concrete elements production. (98-106 pp)	Talk about plants producing precast reinforced-concrete elements	equipment, adequate, contribution, tool, drainage, pebble, abroad,obstruction, sufficient,interfere, capacity, truck, reasonable, casting bed, margin, regardless
UNIT III Means of services in buildings.	13. Panel heating. (106-113 pp)	Describe the systems of heating.	heating, to prevent, ventilation, loss, to connect, ambient, therefore, ceiling, to treat, to obtain, to concern, precise, transmission, to maintain, wave
	14. Air conditioning, ventilation and gas supply. (113-123 pp)	Explain the implementation of air conditioning, concernment of ventilation and utilization of gas.	to imply, precipita-tor, humidity, statement, purity, assembly, motion, excess, enclosure, odour, significan-ce, leakage, to perform, crack, coil, to associate,
	15. Water supply. (124-134 pp)	Speak about the importance of a sufficient supply of water for domestic and industrial purpose.	constantly,advanta-ge, intensively, to establish,resources. proximity, desert, consumption,whole - some, preliminary, palatable,treatment protection,demand, possibility,locality, evident,inland,cam-paigns,elaborate

	16. Sewerage. (134-141 pp)	Talk about the types of waste products.	pressing, sink, development,bath, disinfection,human, society, removal, sewer,to accomplish,social, growth, composition, to designate, waste, sewerage
UNIT IV Road engineering.	17. Roads. (141-149 pp)	Give the definitions to a road junction, roundabout and fly – over junctions.	junction, example, intersection, to cross, clover-leaf, danger, to occur, to reduce, vehicle, traffic,level,converging, collision
	18. Roads and tunnels. (149-162 pp)	Speak about the classification of British roads.	to be classified, the arterial roads, to be compared, principal roads, joining, important, official name, signposts, a motor driver, previously
	19. Tunnels. Tunnels under channel. (162-171 pp)	Talk about difficult, expensive and dangerous engineering work of tunneling.	extensive, drain, remain, cross – section,permanent, actually, mainland, invade, revive, afresh, dense,
	20. Bridges. (172-182 pp)	Explain where and how can the bridges be built.	bridge-building, measure,barriers, to concern, fast – flowing, rocky canyons, fallen, bracket, cantilever, to evolve, timber beams,embedded

INTRODUCTION.

Attention to the foreign languages has greatly changed in the Independent Republic of Uzbekistan. There appeared a chance for studying in foreign countries, our youth must have a possibility to do their works in foreign languages, as they do it in their native language. Taking this fact into consideration this textbook "English for builders" is worked out for the further improving of oral speech and writing skills, studying the third course students at higher educational technical establishments. This textbook consists of 20 lessons and includes texts on this speciality, dialogues, pictures, exercises on the given texts, tables and crosswords Besides a wordlist in English, Russian and Uzbek languages, tests for self - control is also attached. We think that every theme and exercise of this textbook will give a possibility to students for studying hard and developing their world – view and help to extend their thinking ability.

Authors.

LESSON 1. FROM THE HISTORY OF HUMAN DWELLINGS.

Interesting facts

1.The Stone Age is the name given to **the earliest period of human culture when stone tools were first used**. In Britain, the Stone Age was **around 12,000 years ago**.

2.Homo habilis, an early human who evolved around 2.3 million years ago, was probably the first to make stone tools.

3.Our ancestor, modern man **Homo sapiens**, emerged around 200,000 years ago.

4.When people began smelting metal around 4500 years ago the Bronze Age began in the British Isles.

5. The houses in **Skara Brae**, a Neolithic Orkney village, had beds, cupboards, dressers, shelves and chairs.

6.During the Stone Age, people had a nomadic lifestyle and kept moving from one place to another in search of food.
They stayed in caves where they cooked meat and drew art on the walls.

Read the text. **From the history of human dwellings.**

Where did primitive look for protection?

What are the earliest types of human dwellings?

1. Most of the time of a modern man is spent within the walls of some building. Houses are built for dwelling; large buildings are constructed for industrial purposes; theatres, museums, public and scientific institutions are built for cultural activities of the people. The purpose of modern buildings differ widely, but all of them originate from the efforts of primitive men to protect themselves from stormy weather, wild animals and human enemies.Protection was looked for everywhere. In prehistoric times men looked for protection under the branches of trees; some covered themselves with skins of animals to protect themselves from cold and rain; others settled in caves.

Why were the houses in town higher than in the country?

2. When the Ice Age had passed Europe remained very cold, at least in winter, and so the people of the Old Stone Age had to find some warm and dry place to shelter from bad

weather. They chose caves, dwelling places that storm and cold could not destroy. On the walls of their caves ancient people painted pictures. Such decorated caves are found in Europe, Asia and Africa. When man began to build a home for himself, caves were limited in stone structures, trees were taken as a model for huts built of branches, skins were raised on poles and formed tents.Primitive stone structures, huts and tents are the earliest types of human dwellings; they are lost in the prehistoric past but serve as prototypes for structures of later historic times.

What were the houses in Egypt built of?

3. In the days of early civilization, once men had learnt how to build simple houses for their families. they began to feel a need to have a number of different kinds of houses in one place. At first the difference was mainly in size - the chief or leader had a larger hut or tent than the rest of the people. Much later, when men began to build towns, there grew up a difference between town houses and country houses. The streets in towns were very narrow and there was not much place for building within the town walls, and therefore houses had to be built higher than they were in the country. A typical town house consisted of a shop opening on the street where the man did his work or sold his goods, with a kitchen behind and a bedroom above.

4. In the country ordinary people lived in simple one-storey cottages which did not differ much from the mud and stone huts of an earlier age.

The rich people in the country, on the other hand, built huge castle with thick walls and narrow windows. These castles were built not only as dwellings, but also to stand up to enemy attack and to be strong bases in time of war. The earliest houses of which anything is known are those of ancient Egypt. They were built of bricks dried in the sun. Some of them were built around a courtyard or garden with rooms opening into it.

How did the light come into early English houses?

5. Greek houses, too, had a courtyard in the middle and round their courtyard ran a covered walk, its ceiling supported by pillars. There were special women's quarters, usually upstairs on the second storey.

In Rome bricks were used for building and houses were often finished with plaster over bricks on both inside and outside walls. The centre of family life was a garden-courtyard, surrounded by columns and with rooms opening out onto it. The earliest houses in Britain were rounded, built of wood or wicker basket work plastered over with clay. In the centre of the houses was the hearth and light came in through the hole in the roof above it and through the door because there were no windows.

VOCABULARY

effort – tirishish, bosim – усилие, напряжение

dwellings – turar joy – жилище, дом

prototypes - timsol – прототип

chief – rahbar, yo'lboshchi – глава, руководитель

hut – kulba – хижина

support – qo'llab – quvvatlamoq, yordam bermoq – поддержка, поддерживать

pillar – tirgak, tayanch – столб, опора

wick – pilik – фитиль

quarter – xona, joy –квартал, квартира

ceiling – shift – потолок

pole – ustun – столба, полюс

roof – tom – крыша

primitive man – ibtidoiy odam – первобытныйчеловек

enemy – dushman – враг

prehistoric times – tarixgacha bo'lgan davr – доисторически

skin – teri – кожа

cave – g'or – пещера

settle – joylashmoq –располагаться

shelter – boshana, yashirinmoq, o'zini panaga olmoq – приют, убежище, спрятаться, укрыться

tent – chodir – палатка

mud – loy, botqoq – грязь, слякоть

castle – qasr, qal'a, saroy, qo'rg'on – замок

courtyard – ichki hovli – внутренныйдвор

plaster – suvamoq – штукатурка, намазывать

hearth – xonadon, kamin (o'choqsimon uy pechkasi) – домашнийочаг, камин

SPEAKING

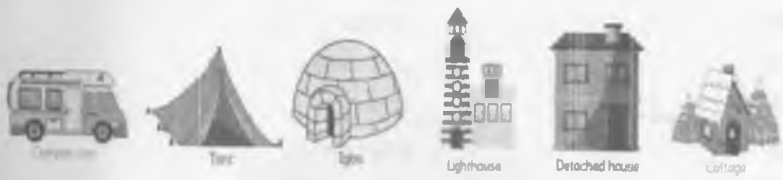
Exercise 1. Answer the following questions.

1. What is the purpose of modern buildings?
2. Why did the people of the Old Stone Age have to find some warm and dry place?
3. Where were decorated caves found?
4. Why did the men have to learnt to build somple houses for their families?
5. What is the difference between town houses and country houses?
6. In what kind of houses did people live in the country?
7. What were the houses built of?
8. What did the Greek houses built of?
9. Why were the bricks used for in Rome?
10. What kind of houses were in Britain?

Exercise 2. Give the short information to the following themes.

1. Earliest types of human dwellings.
2. First towns.
3. Earliest Egyptian houses.
4. Earliest Greek houses.
5. Earliest Roman houses.
6. Earliest British houses.

Exercise 3. What kind of types of house do you know and what are the most important things to look for when buying a house?



WRITING

Exercise 4 Write an essay "What is the function of a building?"

Exercise 5. In the blanks below insert the proper preposition:

1. The building profession attracts many numbers ... young men and women.
2. Builders construct residential and industrial buildings, palaces ... culture, etc.
3. Hundreds ... dams, reservoirs, pump stations have been erected ... our hydrotechnicians.

Exercise 6. Open the brackets and use the proper tense:

1. The building profession (to attract) many numbers of young people. 2. It (to be) an honourable profession. 3. The person (to enter) this profession must (to have) a scientific attitude, imagination, initiative and good judgement. 4. A sanitary engineer (to protect) the quality of water by treating and purifying this water when it (to be) used for domestic purposes. 5. An architect (to be) a person who (to design) buildings,

Exercise 7. Match the synonyms and make up sentences

1) simple	a) before
2) major	b) main
3) wooden	c) to construct
4) to build	d) huge
5) prior to	e) primitive
6) enormous	f) arrival
7) passage	g) timber
8) to destroy	h) important
9) advent	i) way
10) significant	j) to ruin

Exercise 8. Match the words.

1. prehistoric	people
2. skin of	structure

3. ancient	dwellings
4. stone	courtyard
5. human	houses
6. garden	times
7. the earliest	cultural

Exercise 9. Do you know?

The earliest traces of human habitation in the area of Uzbekistan date back to the Paleolithic Era. Ancient settlements prove that the earliest architecture can be found in Sapallitepa (14th–17th centuries BC) and Jarkutan (9th–14th centuries BC). Buddhist monuments, namely Fayaz Tepe and Kara Tepe, have also been found in the Surhandarya region (1st–3rd centuries AD). Each of these sites reflect the different stages of Central Asian civilization.

The ancient city of Khorezm is a significant factor in Uzbek architecture. Khorezm was established 982 years before Alexander the Great invaded Central Asia, over 34 centuries ago. Settlements of ancient Khorezm antiquity are defined by notable architecture, such as Janbaskala (4th century BC), Koi Krilgankala (2nd century BC–4th century AD), Toprakkala (1st century BC–6th century AD) and Ayazkala (2nd century BC, in the territory of Republic of Karakalpakstan).

LISTENING

3L3-haybridge-hall.mp3

Exercise 10. Fill the gaps.

Welcome to Haybridge Hall and thank you for ____ to use our Guide-O-Matic to help you make the most out of your stay here. This guide is ____ in six other languages. Just ask at the ___office. The general history of the house is as follows:

Haybridge Hall was constructed at the end of the 15th Century and was originally called Hawken Hall ____ the first family who owned it. Jack Hawken was a local businessman

who had become wealthy thanks to success with wool exports. The _____ has changed very little in the last 500 years with the exception of the Dawson Conservatory _____ can be found behind the ticket office. This was added in 1941 when the British Army was using Haybridge Hall as a headquarters for the 8th Army. Churchill is said to have spent two nights at Haybridge in the ____ guest bedroom in the build up to the Normandy Landings in June 1944.

The Hawken family only managed to hold onto this fine property for around a decade ____ they had to sell up and the name Haybridge was ____by the aristocrats who bought it. The Yardley family were not from this area, but from the north of England. They owned Haybridge for some 200 years and _____ the surrounding area into productive farmland where various crops, from wheat to potatoes, were grown.The Yardley ____ left Haybridge in 1722 and the property was left empty for some sixty years or so, falling, in the meantime, into quite a state of _____. It was during this period of neglect that the small church built on the grounds of the house in the early 16th Century, crumbled into ruins. _____ is known about this church although one drawing of it survives. A local artist, Timothy Warsden, sketched the _____ in 1728, a mere six years after the Yardley family moved out.Haybridge Hall's destiny seemed to have been that of long-term neglect and eventual destruction but the renowned ____ author William Hoaten bought Haybridge in 1784 and _____ three years and a considerable amount of money renovating the mansion. By now, the amount of land belonging to the property had been considerably ____ and consisted of the few acres you see today.The Hoaten family stayed at Haybridge until the beginning of the Second World War when the British Army took over the property. After the war, the surviving members of the Hoaten family decided it would prove too costly to move back into Haybridge Hall and so the property _____ to be owned by the charitable organisation English Heritage, who runs it to this day.

English Heritage undertook an extensive renovation operation in the 1970's, costing over ten million dollars. The ____ of this work was to return Haybridge Hall to something of its glory days when it was owned by the Yardley _____ for two centuries. Specialist builders and craftsmen from all over the world were employed in an attempt to reconstruct the best possible example of a 17th Century country house.Haybridge Hall

remains to this day one of the finest examples of British renaissance _____ and the furnishing within gives an authentic idea of what country life was like three to four centuries ago in this country. ____, over 60,000 visitors took the same path through Haybridge Hall that you yourself are taking _____.Now, please press button 2 if you would like to hear something about the first floor furniture. Press ____3 if you would like to hear more information about the gardens of Haybridge Hall.

LESSON 2. THE HOUSE

"House is where one starts from."
–T.S. Eliot

"Houses are like people - some you like and some you don't like - and once in a while there is one you love."
— L.M. Montgomery, Emily Climbs

In Uzbekistan in the period from 2000 to 2014 the construction sector grew faster than other sectors of the economy. If the output of industrial products for the period from 2000 to 2014 increased by 3.2 times, agriculture - by 2.4, then the volume of construction - more than 4.3 times.

As a result of the implementation of the housing policy in the Republic of Uzbekistan at the previous stages, serious results have been achieved to date. We managed not only to preserve but also to increase the country's housing stock. If before 1991 the total area of the housing stock was 258.4 million m2, then by the end of 2013 it reached over 457.1 million m2. (an increase of 1.76 times).

Read the text.

The House

1. Man has always been a builder. The kind of house he built in the beginning depended upon the climate, upon his enemies, and upon the building materials at hand. The first houses in many parts of the world were made of wood, for in those days the greater part of the earth was covered with forests. Men tied together the tops of several trees and covered them with the skins of animals or with leaves and grass. So a tent, or hut, was the first house of the primitive people who lived where there was much wood.

In other regions the most convenient building material was stone. Men began building houses out of stone very long ago. Although they were built without cement, the remains of a few of them still exist.

It appears that the most ancient homes on the territory of our country were earthen houses. One such home was discovered near Voronezh in 1927. It consisted of a shallow hole of oval shape. The floor was covered with limestone slabs. The roof had been conical and stood on poles covered by branches or animal skins. Such dwellings existed in that part of the country in the Upper Paleolithic Period (from 40,000 to 12,000 years ago).

2. The ancient Egyptians built very simple houses by present standards. Having dried the bricks in the sun, they put up four walls, and above these they placed a flat roof. The roof was flat because there was very little rain in Egypt. Although their buildings were simple in construction, the Egyptian art of building was very beautiful. Their

pyramids and monuments, sphinxes and palaces arouse our wonder to this day. An important part in the history of building has been played by the column, and it was ancient Egypt that gave the world it's the first lessons in the art of making columns.

The Greeks learned much from Egypt. But they did not borrow the flat roof They built a slanting roof because there was much rain in their country. The Greeks made the roof slant in two directions from the middle. They also improved on Egypt's columns and soon became the teachers of the world in column making.

The Romans, in turn, learned much from the Greeks. First of all, they borrowed the slanting roof and the columns. But they added the arch, thus adding much strength and beauty to their buildings.

3. In our country architecture flourished for the first time in Kiev Russ. Unfortunately, only a few of the church buildings of that period have remained. The churches of the time were strong buildings with thick walls and small windows. They often had to serve as fortresses during enemy invasions. Tourists from all over the world come to see the famous Cathedral of St. Sophia, the cornerstone of which was laid in 1037 to commemorate a victory over the Pechenegs. Having been forced out of Kiev the German fascists did their best to destroy its finest ancient architecture, although it had no military significance. Great effort has gone into restoring them.

4. Having become very acute in many countries after World War II, the housing problem called for a solution. As a result of the damages caused by the war there has been a great housing shortage. The Government set itself the task of housing all the homeless people, who had lost their flats and of improving the living conditions of those who lived in crowded and uncomfortable flats.

To solve the problem great housing construction has started since the end of the war. Millions of people have already moved into new flats.

5. A very advanced construction technique today is the use of precast concrete. According to this technique, the reinforced concrete units of which a building is to be made are manufactured at a factory and are then simply assembled on the site.

The use of precast concrete has many advantages over other building methods. For one thing, building work is industrialized more highly. The site becomes something like an assembly shop which cuts the labour needed for building by 60 to 70%, the main

part of the work being done at the factory. The building season is also extended. After all, in the greater part of our country the winter lasts for several months.

Precast building units are manufactured in heated premises and can be assembled at the site all the year round in any frost. Furthermore, the duration of building is cut. And, finally, materials and money are saved, as, for example; it is possible to do away with expensive scaffolding.

The precast concrete technique, which is continuously being improved in our country, has a big part to play in the country's huge building program.

VOCABULARY

to depend upon – bog'liq bo'lmoq – быть зависимым, зависимый

made of wood - yog'ochdan tayyorlangan – сделанныйиздерево, деревянный

to tie together - bir – biri bilan bog'lanmoq, birlashmoq – связыватьсядругдругом, присоединяться

the skins of animals – hayvonlarning terisi – кожа (шкура) животных

tent – chodir – палатка

hut – kulba – хижина, барак

primitive people – ibtidoiy odam – первобытныйчеловек

earthen houses – tuproqli, loyli uylar - земляные, глиняные, земныедома

a shallow hole – kichik, chuqur bo'lmagan teshik – мелькаядыра, яма

oval shape - oval shakl – овальная фигура

limestone slabs - ohaktosh plitalari – известняковыеплиты

conical – konusga oid (o'xshagan) – конусный

poles – stolba, ustun – столба

precast concrete - zavodda ishlab chiqarilgan tayyor beton – готовыйбетон

reinforced concrete – temir beton – железобетон

for one thing – birinchidan – во-первых

after all – nihoyatda – вконцеконцов

premises – bino, inshoot – помещение

to do away –tugatmoq – покончить

scaffolding – havoza (qurilishlarda ko'tarib ishlangan ish joyi), qurilish o'rmonlari – леса, строительныеслеса

Speaking

Exercise 1.

Part 1. Prepare a minute and speak 2 minutes.

Topic : Describe your dream house

- Where you want to live
- Describe your sitting room
- What your favorite room is
- Why you want to live in this house

Part 2. Two-way discussion.

1.What would you like to change in your home?

2.Would you prefer living in a house or a flat?

3.Do you live with your parents?

4. Can you describe your home?

5.Describe a (an imaginary) room that you would like to spend time in?

Exercise 2. Try to guess the meaning of these words in the text.

1. house	5. finish
2. stick	6. finally
3. at first	7. link
4. building	8. depend on

Exercise 3. Ask your friend about his flat or house where he (she) lives using the following words and word combinations.

house, brick, stone, wooden, concrete, ceiling, floor, walls, windows, doors, balcony, roof, flat, kitchen, bathroom, living-room, bedroom, facilities, gas, electricity, running water, central heating, telephone, refrigerator, huge, thick, light, comfortable, modern, high.

More information about houses

a terraced house	a house next to an other house
a semi-detached house	a house that is attached to another house on one side
a cottage	a small house in the country
a bedsit	a flat with one main room and no separate bedroom

Places

a city	a big and important town
a suburb	close to, but away from the centre of a town or city
a town	a large area with houses, shops, offices etc where people live and work
a village	a very small town in the country
in the country	land that is outside towns and cities, including land used for farming

Other

a tenant	someone who rents a house from another person
a landlord/lady	someone who owns a house and rents it to people

Exercise 4.

What types of houses are there?

Cottage

Block of flats

Writing

Exercise 5. Write a letter consisting of 80-120 words.

One of your neighbor's children has accidentally broken the window of your home.

You should write a letter to his/her parents and in your letter you should:

- introduce yourself
- explain how it happened
- and what they should do.

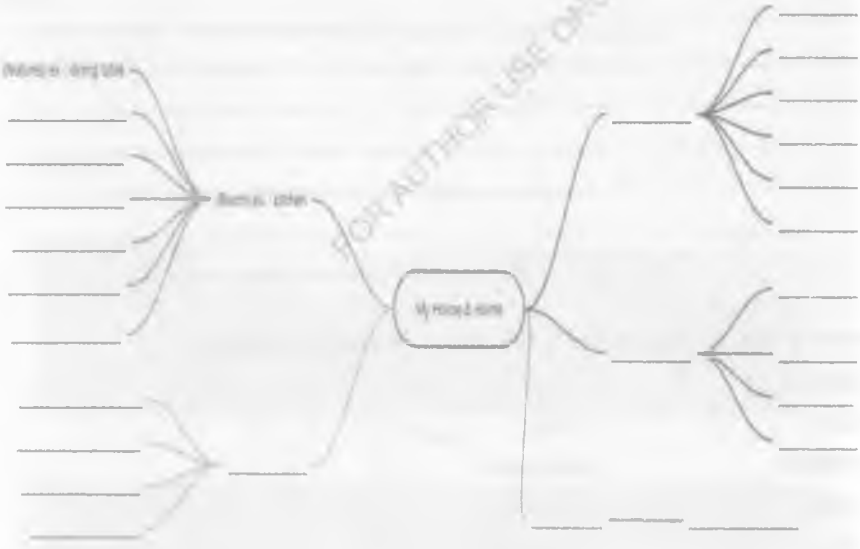
Exercise 6. Match the adjectives to the nouns and make up a dialogue.

1) physical	a) types
2) major	b) log
3) industrial	c) purposes
4) wooden	d) obstacle
5) military	e) Romans
6) volcanic	f) stone
7) natural	g) revolution
8) tensile	h) rock
9) ancient	i) strength
10) Chinese	j) bridges

Exercise 7. Match the words to make phrases and make up situations with them.

1) crossbeam	a) bamboo
2) plaited	b) account
3) historically	c) significant
4) to support	d) purposes
5) bridge	e) times
6) ancient	f) engineering
7) mythological	g) support
8) simple	h) construction
9) wooden	i) load
10) commercial	j) arrangement

Exercise 8. Complete the exercise on the topic "My House & Home"



Exercise 9. Read and translate.

At the end of the 19th century and the beginning of the 20th century, residential architecture began to focus around ordinary Uzbek citizens. Everyday buildings reflect historical background as well as local and modern conditions of the region. For instance,

a house in Bukhara may have a closed character and may be isolated from the street noise and dust. Its isolated rooms may be built according to the climate, creating unique micro-climates suitable for both heat and cold. Another example is Khiva, which has a high terrace opened to the wind to promote favorable micro-climates in houses. In Ferghana, houses have sliding walls and shutters and are frequently decorated with niches, ganch (wooden architecture), and other features. Although simple in design, residential architecture throughout the country is often rational, yet shows the originality of Uzbek culture.

In conclusion, special features of Uzbek architecture harmonize traditional design, original structures, and innovative consideration of micro-climates. The cities of Tashkent, Samarkand, Bukhara and Khiva are famous for fantastic architectural ensembles such as Khazrat Imam, Registan, Lyabi Khaus, and Ichan Kala.

Listening

homes.mp3

Exercise 10.Fill in the gaps

"Home is where the heart is." That's _____. I've lived in many different houses during my life _____ them have been home. When you are growing up, home is where your family lives. I left home _____ 18 and slowly my childhood home _____. Now it's my parents' house and not my home. I moved around a lot and only spent _____ in most places I lived. They never really felt like home. A home is somewhere you _____ relaxed and want to _____. The expression "Home Sweet Home" is also true. You have to have nice feelings about _____ home. Home doesn't have _____ home country. I've lived in several countries and have had a home _____

LESSON 3. NEW BUILDING TECHNOLOGY.

"It has become appallingly obvious that our technology has exceeded our humanity."
- Albert Einstein

"We shape our buildings; thereafter, they shape us." – Winston Churchill

On the way to improving the technological effectiveness of the construction industry, it is planned to: Develop a program for creating a "technology transfer center" under the Ministry of Construction of the Republic of Uzbekistan. At the same time, these centers should function as platforms where the world's leading researchers and manufacturers of modern technologies in the field of construction will organize presentations and training seminars in order to familiarize Uzbekistan market participants with their developments. Within the framework of these centers, the economic possibilities of introducing these technologies will be studied during the implementation of construction projects in the Republic of Uzbekistan.

Read the text. **NEW BUILDING TECHNOLOGY.**

Of all the arts architecture most vividly reveals the life of time, its social, economic, aesthetic and technological attitude to building techniques. The historian needs only glance at the new building techniques. The historian needs only glance at the new buildings to appreciate that within rather a short period of time our architects, designers, engineers and builders have been captivated by fresh forms, fresh materials and fresh techniques.

Everything taken together illustrates that the building technology has made more progress in the last twenty years than in the previous forty or fifty. The new technology is exemplified by a selection of outstanding buildings that show how the traditional building is rapidly being superseded by structures of factory - made components fastened together. The new techniques have logically led to new forms.

Architects have done some very good work in designing new houses. They are planning standard 9, 12 and 16 storey building with three and four –roomed family flats. Many of these houses are built out of prefabricated ferro–concrete blocks and panels. It means that as much of the building work as possible is done not on the building site but in factories where mass production methods can be used.

Today mass construction of dwelling – houses and public and cultural establishments has top priority in every city. Many production lines for large panels have been built in our country. Mass housing construction would not be possible if there were no such production lines and other advanced methods. Present-day housing projects are essentially different from those of former years.

Tashkent today has an adequate building materials industry, which facilitates rapid building and the use of new prefabricated section assembly methods. A countless number of new buildings and sky-scrapers have come into existence in the centre of Tashkent as well as in the new suburbs.

VOCABULARY

architecture –arxitektura - архитектура

to reveal – ochib bermoq, ko'rsatmoq, namoyon qilmoq – открывать, разоблачать, показывать, обнаруживать

attitude – munosabat – позиция, отношение

appreciate –baholamoq – оценивать, ценить, учитывать

captivate – shaydoqilmoq, maftunqilmoq – пленять, очаровывать, увлекать

fresh materials – sof materiallar – чистые (новые) материалы

to illustrate – cutalar bilan bezamoq, tushuntirmoq – иллюстрировать, пояснять

toexemplify – misolkeltirmoq – приводить пример, служить примером

selection - tanlov – выбор, подбор, набор, селекция

to supersede – almashtirmoq, o'zgartirmoq, siqib chiqarmoq, egallamoq – заменять, смещать, вытеснять, занимать

ferro–concrete blocks – temir – beton bloklari – железобетонные блоки

building site – qurilish maydonchasi – строительная площадка

prefabricated – zavod usulida tayyorlamoq – изготовлять заводским способом

construction of dwelling – houses – uy – joy qurilishi – строительство жилых мест

adequate – muvofiq, to'g'ri keladigan, mos – соответствующий, достаточный

facilitates – yengillashtirmoq, ko'maklashish, yordam bermoq – облегчать, содействовать

suburbs – shahar tashqarisi – пригород, предместья окрестности

existence –mavjud bo'lmoq – существование, всё существующее

top priority – katta ahamiyat, yuksak ustunlik – большое значение, высокий приоритет

former years – ilgarigi yillar – прежние годы

rapid – tez – быстро

a countless number – cheksiz son – несчётный номер, неисчислимый

sky-scrapers – osmon o'par binolar – небоскрёбы

housing projects – uy joy loyihalari - проекты жилых мест

production lines – ishlab chiqarish tarmoqlari – отрасли производства

traditional building – an'anaviy bino – традиционное, основанное жилище, здание, строительство

new techniques – yangi jihozlar – новые оборудования

building technology – qurilish texnologiyasi – технология строительства

vividly – yorug', ravshan, yorqin – ярко, ясно, живой, яркий, пылкий

Speaking.

Exercise 1

Prepare a minute and speak 2 minutes.

Topic :Describe what kind of new building technologies you see in your city?

▶ **Make an analysis of the implementation of new building technologies in Uzbekistan.**

▶ **SWOT**

Strengths	Weaknesses
1. 2. 3.	1. 2. 3.
Opportunities	**Threats**
1. 2. 3.	1. 2. 3.

Writing.

Exercise 2. Write an essay consisting of 100-120 words on the topic "The advantages and disadvantages of new building technologies in human life."

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Exercise 3.Translate the sentences paying attention to the meaning of the words in boldtype.

1. Copper for overhead lines can be **substituted** by aluminum alloys.
2. The alloy we offer you may **substitute** silver.
3. The vacuum tubes were **replaced** by transistors.
4. The liquid is **displaced** by the admitted air.
5. The worn parts should be **renewed.**
6. The controller mechanism **takes theplace** of the human eye and brain.
7. The transistor will **oust** the thermionic valve from its place in electronics.

Exercise 4. Choose the correct answer

PLACES

1) There is a bus _____ just outside the house.

a) station
b) stop
c) platform
d) start

2) They are pulling down all those buildings to build a new _____.

a) parking
b) letter box
c) car park
d) car place

3) Where can I _____ a bus to the cinema?

a) leave
b) catch
c) ask
d) become

4) My train leaves from the other _____.

a) stop
b) park
c) platform
d) block

5) I'll meet you outside at the _____ pool.

a) swim
b) football
c) swimming
d) tennis

6) I'm just going to _____ a photo of the square.

a) take
b) make
c) paint
d) draw

7) Don't walk in the road! Stay on the _____!

a) way
b) pavement
c) route
d) street

8) She works at the _____ at the check in counter.

a) post office
b) police station
c) supermarket
d) airport

9) We need some bread. Please go to the _____ to buy some.

a) butcher
b) baker
c) barber
d) library

10) Let's go to the _____ to get a stamp.

a) post office
b) supermarket
c) police station
d) shoemaker

Exercise 5. Identifiy the building materials in the following buildings

SAND

BRICKS

CEMENT

STONE

Exercise 6. Write the words in the correct order to make sentences.

1. for / been / built / have / panels / our / in / large / many / production / country / lines.
2. techniques / the / needs / glance / new / building / historians / at / only / the.
3. new / have / led / to / logically / the / new / techniques / forms.
4. are / out / of / many / these / of / ferro / panels / built / prefabricated / blocks / houses / and / concrete.
5. years / projects / present – day / are / form / of / farmer / different / housing / essentially / those.
6. done / have / very / in / new / architects / some / good / designing / houses / work.

Pictures of Famous Structures

Statue of Liberty

The white house

Taj Mahal

Mount Rushmore

Djoser Step Pyramid

The Parthenon

Exercise 7. Do you know?

Construction in Uzbekistan

The statistical compendium contains information characterizing the development of investment and construction activities in the Republic of Uzbekistan.

The compilation presents indicators characterizing the structure and dynamics of investments in non-financial assets, investments in fixed assets, commissioning of fixed assets, production facilities, residential buildings, social facilities.

A significant place in the collection is given to indicators characterizing the development of the economy: industry, agriculture, housing and socio-cultural construction, transport and communications, trade and services in the regions.

Listening

130703-largest_building.mp3

Exercise 8. Listen and fill in the gaps

China is (1) _____ collection of the biggest things in the world. The latest addition is the world's largest building. It is called the New Century Global Center (2) _____ in Chengdu, Sichuan province, in China's southwest. It is 500 meters long, 400 meters (3) _____. The area

inside covers an amazing 1.76 million square meters. The (4) _____ Sydney Opera Houses could fit inside. It is almost three times the size of the Pentagon in Washington, D.C. It took thousands (5) _____ to build the enormous structure. The center is an important part of plans to make Chengdu a 21st-century city. It (6) _____, "Chengdu – Can Do".The inside of the center is almost (7) _____There are around 400,000 square meters of shopping space, a 15-screen IMAX movie theater complex and (8) _____ to hold international competitions. There are also offices, hotels, a replica Mediterranean village and a water park. (9) _____ will attract business and tourists from across China and the world. It is all (10) _____ put Chengdu on the global map. Around 14 million people currently live in the city, but that is set to increase. The (11) _____ investment and is one of China's most important industrial regions. The area is (12) _____ largest giant panda nature reserve.

Exercise 9. TRUE / FALSE: Read the headline. Guess if a-h below are true (T) or false (F).

a. The world's largest building is now an army headquarters in China. T / F
b. The building is 100 meters high and 500 meters long. T / F
c. 20 Sydney Opera Houses could fit inside the building. T / F
d. It took 13 years to build. T / F
e. There are 400,000 small stores in the building. T / F
f. The building has a village that looks European. T / F
g. 14 million people will use the building every week. T / F
h. The city with the building is also famous for pandas. T / F

Exercise 10. SYNONYM MATCH: Match the following synonyms from the article.

1. collection	a. huge
2. addition	b. set
3. amazing	c. motto
4. enormous	d. copy

5. slogan
6. theater
7. competitions
8. replica
9. attract
10. regions

e. extra
f. areas
g. cinema
h. contests
i. unbelievable
j. win over

Exercise 11. PHRASE MATCH: ***(Sometimes more than one choice is possible.)***

1. building up a
2. The area inside covers an amazing
3. It took thousands of workers
4. enormous
5. plans to make Chengdu
6. 400,000 square meters
7. big enough to hold
8. it will attract
9. a magnet
10. giant panda

a. a 21st-century city
b. business and tourists
c. of shopping space
d. for investment
e. large collection
f. structure
g. nature reserve
h. 1.76 million square meters
i. international competitions
j. just three years to build

Exercise 12. LISTENING - Guess the answers. Listen to check.

1) China is building up a large collection of the biggest _____
   a. thing in the world
   b. things on the world
   c. things in a world
   d. things in the world
2) The area inside covers an amazing _____ meters
   a. 1.76 million square
   b. 176 million square
   c. 17.6 million square
   d. 1.076 million square

3) The building is so big that 20 Sydney Opera Houses _____
   a. could fitting side
   b. could fit tin side
   c. could fit inside
   d. could fit insides
4) It took thousands of workers just three years to build _____
   a. the enormously structure
   b. the enormous structures
   c. the enormous structure
   d. the enormously structured
5) The center is an important part of plans to make Chengdu _____
   a. a 20th-century city
   b. a 22nd-century city
   c. a 21st-century city
   d. a 31st-century city
6) The inside of the center is almost like a small _____
   a. city inner itself
   b. city in it self
   c. city in its self
   d. city in itself
7) an ice rink big enough to hold _____
   a. international competition
   b. internationally competitions
   c. inter-nation all competitions
   d. international competitions
8) The building's owners hope it will attract _____
   a. businesses and tourists
   b. business and tourist
   c. businesses and tourist
   d. business and tourists

9) all part of a wider plan to put Chengdu _____

a. on the globe all map

b. on a global map

c. on the global map

d. in the global map

10) The area is also home to the world's largest giant _____

a. panda natural reserve

b. panda nature reserves

c. panda natural reserves

d. panda nature reserve

LESSON 4.

RESIDENTIAL AND INDUSTRIAL BUILDINGS.

"You can dream, create, design, and build the most wonderful place in the world. But it requires people to make the dream a reality." – Walt Disney.

"Building is about getting around the obstacles that are presented to you."

— Jeremy Renner

***The word skyscraper** originally referred to a type of sail on a sailing ship.*

In Uzbekistan in the period from 2000 to 2014. the construction sector grew faster than other sectors of the economy. If the output of industrial products for the period from 2000 to 2014 increased by 3.2 times, agriculture - by 2.4, then the volume of construction - more than 4.3 times. The industry's share in the structure of the national economy increased 5.1% in 2000 to 6.8% in 2014.

Read the text.

Residential and Industrial Buildings.

In technically developed countries the building industry, comprising skilled and unskilled workers in many trades, building engineers and architects, managerial staff, and designers employs a considerable proportion of the available labour force.

Building industry including residential public and industrial construction holds a considerable place in the National Economy and is being carried on a large scale. It is the largest single industry in the country. The problems of construction have grown into major, political issues in most countries.

Housing is prominent among the factors affecting the level of living. The improvement of the housing represents a concrete and visible rise in the general level of living. In many countries residential construction has constituted at least 12 per cent and frequently more than 25 per cent of all capital formation. Research and development in housing technology is carried out on a national scale.

Present-day design for residential construction envisages all modern amenities for a dwelling, they advocate larger, better built and better equipped flats and houses. There is a marked improvement in the heating and ventilating systems as well as in hot-water supply, kitchen and sanitary fittings. Many tenants now can afford better furnishings, refrigerators, washing machines, etc.

Industrial buildings comprise another significant type of construction. This type of construction involves factories, laboratories, food processing plants, mines, office buildings, stores, garages, hangars and other storage facilities, exhibitions, halls, etc.

Modern industrial buildings have demonstrated the advantages of reinforced concrete arches, metal frames, glass walls and etc. Steel was gradually substituted for iron and permitted wider rooms and larger windows. Windows can be enlarged to the extend that they constitute a large fraction of the wall area.

VOCABULARY

technical- texnikaviy – технический, промышленный, технические подробности

scale- masshtab – масштаб, шкала

building- bino, qurilish – здание, строительство

political- siyosiy – политический, государственный

industry- sanoat - промышленность, отрасль

issue- muammo – проблема, вытекание, разногласие

to comprise- ichiga olmoq – включать, охватывать, заключать в себе

prominent-taniqli, bo'rtib chiqqan – известный, торчащий, видный

skilled- malakali – квалифицированный, опытный

to affect- ta'sir qilmoq – действовать, влиять

trade- savdo - торговля

residential- turar joy – место жительство, жилой

engineer- muhandis – инженер, механик

to envisage- ko'rib chiqmoq – рассматривать, предусматривать

architect- arxitektor – архитектор, создатель

amenities- qulayliklar – благоприятные условия

designer- loyihachi – конструктор, проектировщик, чертёжник, модельер

to advocate- qo'llab quvvatlamoq - поддерживать

to employ- ish bermoq - предоставлять работу

to tenant- ijaraga bermoq – понимать, арендовать

available- yengil, mumkin - доступный, действительный

reinforced concrete- temir beton - железобетон

labour- ish – труд, работа, рабочий класс

frame- qurilish – строение, структура

to substitute- almashtirmoq – заменять, замещать

fraction- qism, bo'lak – дробь, частица, обломок

industrial- sanoatlashgan – промышленный, индустриальный, производственный

concrete- beton – бетон

Speaking

Exercise 1. Two-way discussion.

1.Who employs a considerable proportion of the available labour force in technically developed countries?

2. Why sometimes conflicts arise between workers and employers

3. What advantages can be seen in modern industrial buildings?

Exercise 2. Try to guess the meaning of these words in the text.

1. replace	5. rent
2. part	6. protect
3. link	7. convenience
4. include	8. work

Exercise 3. Give the past tense forms of the verbs.

Make, build, pull, lift, put, water, substitute, develop, create, complete.

Writing

Exercise 4. Write an essay on the topic consisting of 80-120 words.

" Reasons of Building Houses for Needy Families"

Exercise 5. Give more examples.

Materials	Clothes	House	Transport	Places
brick	gloves	kitchen	lorry	lake

Exercise 6. Find pairs of related words, taking a word from each box.

Model: ambulance – hospital

Ambulance	Engine
Fire	Fish
House	Hospital
Plane	Kitchen
Ring	Jewellery
River	Job
Storm	Roots
Tree	Smoke
Workman	Wind

Exercise 7. Circle the correct answer.

It's rubbish. Put it in the	a) television b) bed c) waste – paper basket
They are our	a) kiosks b) neighbours c) supermarkets
I liked the film. It was very	a) windy b) boring c) interesting
I am going to a pop	a) concert b) band c) ticket
Can Must would	I borrow some money, please?

Exercise 8. Choose the right answer.

1. What's a hammer used for?	a) It's used for digging rock.
2. What's a screwdriver used for?	b) They are used for beams, brick and tile and whole wall panels that glow with soft, colourful light.
3. What is a hammer used for?	c) They were used for conducting water to the house.
4. What's painting spray guns used for?	d) It is used for knocking nails into wood.
5. What were lead or clay pipes used for?	e) It is used for driving in screws and for taking them out.
6. What are plastics used for?	f) It is used for painting.

Exercise 9. Write your questions.

a) .....?

- Mr. Morgan.

b) .....?

- From Canada.

c) .....?

- I work for a building company.

d) .....?

- Yes. I do. I like it. It is an interesting job.

e) .....?

- A block of flats, trade centers, buildings.

Exercise 10. Translate into native language

Ancient Greek Furniture

In Ancient Greece even in a rich home furniture was basic. The Greeks stored things in wooden chests or hung them from wooden pegs on the walls. A rich home would also have a dresser to display expensive cups. People reclined on couches (which could also act as beds). The couches were simply wooden frames with rope webbing and mats or rugs laid on top.

Listening

IELTS - Building the Eiffel tower (listening).mp4

Exercise 11. Here are the listening questions for the Eiffel Tower video lesson. Read the questions below or download the worksheet: esl-eiffel-tower-worksheet.

Vocabulary

- Bird's eye view
- Triumph
- Skyscrapers
- Vulgar
- Architects
- Rivets
- Radio antenna
- Landmark
- Masterpiece

Questions

1. What is the nickname of Paris?
2. Why was the Eiffel Tower built?
3. When did it open?
4. How many people visited the tower when it first opened?
5. Why was the tower special when it opened?
6. Did the people of Paris like the tower when it first opened?
7. How long did it take to build?
8. How many metal parts are there?
9. How many rivets are there?

10. How much does it weigh?
11. How much did it cost?
12. What is the tower's height?
13. What was scheduled for 1909?
14. How many annual visitors are there?
15. How did the tower get its name?

LESSON 5. TOWN PLANNING.

Building facts

Around 20000 workers helped build the Taj Mahal, a famous mausoleum and landmark in Agra, India, that attracts millions of visitors every year.

Restoration work in 1990 and 2001 shifted the Leaning Tower of Pisa back to an angle of 4 degrees after it was previously leaning at an angle of 5.5 degrees.

The Colosseum in Rome, Italy, is an elliptical amphitheatre that was completed in 80 AD. It held around 50000 spectators and was used for a variety of events including gladiator contests, animal hunts and mythology based dramas.

The roofs of the Sydney Opera House are covered in a total of 1056006 tiles.

The world's largest office building by floor size is the Pentagon in Virginia, USA, with over half of its 6500000 square foot (604000 square metres) floor area used as offices.

Reading

Town Planning.

That cities should have a plan is now admitted in our time of large-scale construction and plan making has become an every- day activity. The purpose of a town plan is to give the greatest possible freedom to the individual. It does this by controlling development in such way that it will take place in the interest of the whole population. The plan is never a complete and fixed thing, but rather one that is continually being adapted to the changing needs of the community for whom it is designed. Until quite recent years town plans were always made as inflexible patterns, but history has shown that a plan of this description inevitably breaks down in time.

The flexible plan, preceded by a survey, is one of the most revolutionary ideas that man has ever had about the control of his environment. Most towns today have a characteristic functional pattern as follows: a central core containing the principal shopping centre, business zones, surrounded by suburbs of houses. Most town planners accept the traditional town pattern. In the preparation of a master plan they are preoccupied with the definition of the town centre, industrial areas, and the areas of housing; the creation of open space for recreation, the laying down of a pattern of main roads which run between the built-up areas (thus leaving them free of through traffic) and connect them to each other.

The master plan thus has to define the ultimate growth of the town, but though the master plan is a diagram, and even a flexible one, it is the structure upon which all future development is to take place.

VOCABULARY

purpose- maqsad – цель, намерение, назначение, результат

inevitable- muqarrar – неизбежный, неизменный

plan- reja – план, проект, схема, чертёж

functional- funksional – функциональный, конструктивный

construction- qurilish – строительство, стройка, здание

core- markaz, yadro – сердцевина, внутренность, центр

individual- yakka tartibda – индивидуальный, особенный, отдельный

to contain- o'z ichiga olmoq – содержать

population- aholi – население, заселённость

to accept- qabul qilmoq – принимать, признавать, относиться

to complete- tugatmoq – заканчивать, завершать

creation- bunyod qilish – создавать, творить, формировать

to fix- o'rnashtirmoq – укреплять, устанавливать, подстроить

road- yo'l – дорога, путь

to design- loyihalashtirmoq – делать эскизы, предназначать, изображать

to connect- ulamoq – соединять, связывать

town- shahar - город

master plan- asosiy reja – главный план, основной план

inflexible- bukiluvchan emas – негибкий, несгибаемый, непреклонный

ultimate- oxirgi, so'nggi – последний, конечный, самый отдалённый

pattern- namuna, shablon – рисунок, изображение, модель, структура

development- rivojlanish – развитие, расширение

description- ta'riflash – описание, изображение

future- kelajak – будущее, впредь

Speaking

Exercise 1. Prepare a minute and speak 2 minutes.

Topic: Planning

1. What is the plan?
2. What is the purpose of a town plan?
3. Can you explain the flexible plan?
4. Do the most town planners accept the traditional town pattern?
5. What are they preoccupied in the preparation of a master plan?
6. What can you say about the master plan?

Exercise2

- **act out the roles with a partner use language such as:**

Student A:

- You are a student.
- Talk to Student B about:
- his or her experience as an
- Architect
- a project he or she worked on
- what he or she is doing now

Student B:

- You are an instructor.
- Talk to Student A about your
- experience as an architect.

Exercise 3. Try to guess the meaning of these words according to the vocabulary.

1. project
2. road
3. beton
4. nail
5. main
6. centre

7. concrete

8. set

9. brick

10. timber

Exercise 4 Answer the following questions.

PLACES AROUND TOWN

1. About how many people live in your town or city?
2. About how old is your town or city?
3. Where is your favorite shopping place?
4. What are three good things about your town or city?
5. What are three bad things about your town or city?
6. Is it better to live downtown or in the suburbs? Why?
7. Do you prefer living in a small town or a big city? Why?
8. Do many tourists visit your town or city? Why? / Why not?
9. Who are some famous people in your town or city?
10. How was your town or city different 100 years ago?

Writing

Exercises 5. Write an essay on the topic "How can we protect our house?"

You should spend about 20 minutes and write 50-80 words.

Exercise 6. Make up sentences with new words

reinforced concrete	tile	aggregate	shingle	brick	aluminate
plaster	Concrete	Shortcrete	lathe	nail	cement

Exercise 7. Circle the odd word in each group.

a) reinforced concrete, happy, mixture, clay, water, cement

b) nylon, leather, trumpet, cotton, wood

c) doctor, forecast, architect, optician, builder

d) barrel, pocket, parcel, plan, box

e) suspicious, moody, amazed, astonished, visible.

Exercise 8. Write the correct word in the space.

1. A ..... is a person who flies planes.
2. A ..... is a person who designs the plans.
3. A ..... is a person who cuts people's hair.
4. A ..... is a person who builds a block of flats.
5. A ..... is a person who prepares food in a restaurant.
6. A ..... is a person who looks after sick people.
7. A ..... is a person who makes a plan of buildings.

Exercise 9. Write words that sounds the same as the words in the boxes.

witch	
their	
here	
steel	
spot	

too	
for	
sore	
fill	
meet	

Exercise 10. Rewrite the letters to find out what things are used in building and make up your own sentences with them.

a) nads

b) elset

c) eston

d) rtwea

e) cbkri

f) ntmeec

g) crifderneo

h) nrotecce

Speaking

Exercise 10. What kind of tools are there?

1. This tool is used to digging and to place concrete, cement mortar in head pan
2. This one is used to transport materials
3. This is used to measure
4. This tool is used in fomwork to remove nails from boards
5. This is used to avoid direct contact with dangerous tools, machines or to avoid any direct chemical material contact
6. This tool is used to make pilot holes, replacing jumper (special type of drill should be used while drilling concrete)

Exercise 11. Are you aware of that?

Urban development will be proactive

Uzbekistan creates the Republican Agency for Urbanization and the Fund for the Development of Urbanization. Institutions will start working under the Ministry of Economy and Industry, as it was stated in Presidents Decree of January 10, 2019. They are to play an important role in the implementation of the Concept of Urbanization Development in the Republic of Uzbekistan until 2030. The main tasks of the Agency will be the implementation of unified state policy in the sphere of urbanization regulation, long-term planning of stages and results, long-term demographic trends analysis in cities and villages, and much more.

The Fund for the Development of Urbanization will accumulate funds from the land privatization, as well as sell them through auction sales, finance construction projects and develop the mortgage loan market.

Listening

Exercise 12. Fill in the blanks.

2apartment0101.mp3

In the USA, _____ apartments; in the UK they're called flats. They are a _____ . I don't particularly like them. I don't think it's good for so many people to _____ together. It's not good for people to live _____ each other. I don't understand how people can live _____ second floor. It's not natural to live in the sky. The thing _____ about apartments are the lifts (Americans say elevator) and _____ no garden. More and more people are moving into apartments. This _____ with overcrowding. There aren't enough spaces _____ car, there's nowhere to throw your rubbish and you have _____ to reach your floor. Give me a little house with a little garden any day.

LESSON 6. EGYPTIAN PYRAMIDS.

Egyptian Pyramid Facts

1.Most Ancient Egyptian pyramids were built as tombs for Pharaohs and their families.

2.Over 130 pyramids have been discovered in Egypt.

3. Saqqara is a huge ancient burial ground built near the Egyptian city of Memphis.

4.The Great Pyramid of Giza is the oldest and largest of three pyramids in the Giza Necropolis.

5.The first Egyptian pyramid is believed to be the Pyramid of Djoser, it was built in Saqqara around 4650 years ago (2640 BC).

6.For over 3800 years, the Great Pyramid of Giza was the tallest man made structure in the world.

7. Also known as the Pyramid of Khufu, it is the oldest of the Ancient Wonders of the World and the last one still largely intact.

8. Bodies placed in the tombs were preserved by mummification.

Egyptians buried their dead with burial goods that ranged from everyday items they believed would useful in the afterlife to more expensive items such as jewelry.

Read the text.

Egyptian Pyramids.

Architecture is the art which makes buildings beautiful to look at as well as useful. A man who designs buildings and makes the plans for them is called an architect. He has to think not only of what he wants the building to look like when it is finished, but also what it is to be used for. He must not forget the sort of material to be used in the building. This may be stone, brick, wood or steel and concrete.

There have been many different styles or kinds of architecture in the past and there are many different styles today in different parts of the world.

The oldest monuments which are met within architecture are the colossal pyramids of Egypt most of which were constructed about 6000 years ago.

The pyramids are large triangular buildings which were placed over the tombs of Egyptian kings. The best known of the pyramids are a group of three built at Giza south of Cairo. The largest of these is 482 feet high. They tell us of the advanced civilization of ancient Egypt which is much spoken about even in our days.

It was a country which had expert mathematicians and engineers, where astronomy and philosophy were known and studied.

The country was rich in hard and durable stone, but poor in timber and metal, so that the main material used for construction was granite, and this was the reason for the durability of the pyramids.

Large blocks of stone were transported over long distances by land and water, and placed into position with the help of the most primitive equipment. That was done by slaves working for thirty or forty years. All this great amount of work was done; masses of material and a large territory, sometimes of about 52,000 square meters were used only for protecting the body of dead king and constructing a dwelling place for his happy life in the "other world".

VOCABULARY

the sort – nav, xil, tur - сорт

colossal pyramids – ulkan piramidalar – (колоссальные) большие пирамиды

triangular – uch burchakli – треугольный

tombs – qabr – могила

advanced civilization – ilg'or sivilizasiya – развитая цивилизация

hard – qattiq, mustahkam – твёрдый, упорный, трудный

durable stone – mustahkam tosh – прочный камень

poor – kambag'al, bechora – бедный

timber – o'rmon, yog'och – taxta materiallar, yog'och brus. balka – лес, лесоматериал деревянныйбрус, балка

granite – granit (rangdor tog' jinsi)– гранит

blocks – tosiq - преграда, затор, блок

to be transported – tashimoq, kochirmoq – транспортировать (ся)

position – o'rnashgan joy, joylashgan yer – местоположение

primitive – ibtidoiy – первобытный

slaves – qul – раб

amount – miqdor, son, yig'indi – величина, количество

mass – omma – масса

protect – himoyaqilmoq, saqlamoq – защищать, сохранять

dead king – o'lik qirol – мёртвый король

a dwelling place – turar joy – местожительство

Speaking

Exercise 1.

Two-way discussion.

1. What is the meaning of the word "architect"?
2. Who is an architect?
3. Do you think this is an interesting job?
4. What abilities you need to be an architect?
5. What famous architects do you know?

Exercise 2. Find the correct answer.

1. An architect is a person who:

1) makes a building;

2) designs a building;

3) founds a building;

2. The oldest architectural monuments are:

1) the tents of primitive people;

2) the Cathedral of St. Sophia in Kiev;

3) Egyptian pyramids;

3. The main building material of pyramids was:

1) timber and metal;

2) bricks;

3) granite;

4. Large blocks of building material were:

1) found in place;

2) transported over long distances;

3) imported from Giza;

5. The pyramids were constructed for:

1) slaves to live;

2) a dead king;

3) Military purposes.

Why were the pyramids built?

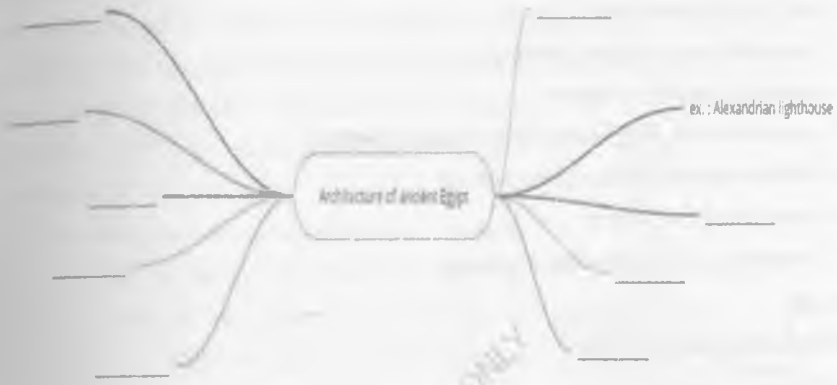
The pyramids were built as a resting place and to protect the Kings and queens of Egypt and other important people. Around were 130 pyramids built, the biggest one was the Great Pyramid of Giza. This was the tallest building in the world for 3800 years until the Eiffel Tower was built. It was built for the Pharaoh Khuf and took 20 years to build it! They were built next to the River Nile, this was because it was easier for the builders to move the large stones by boat and then they were pulled to the building area. Scientists today are still not completely sure how the ancient Egyptians moved the massive stones. Once a pyramid was finished it was covered with white stone and gold was put on the top. In the bright Egyptian sunshine, the white and the gold would have gleamed brightly.

The ancient Egyptian engineers planned the pyramids so that there were many rooms and tunnels. It was thought that the pyramid rooms were for the pharaohs and all of their valuables. The engineers knew that thieves would try to steal the gold and jewels, so they made traps and false rooms. They put doors which opened onto a wall. But it didn't stop the thieves as many of the pyramids were robbed. Anyone who tried to steal from the pyramids was immediately put to death.

The Egyptians believed that people would move on to another life, so they filled the pyramids with many jewels, gold and even food. They thought that the pharaoh would need these things in their next life. The body was cleaned and wrapped in bandages to protect it and put into a stone case. They also have many of their things buried with them and people drew beautiful pictures on the walls which told the story of their lives. The ancient Egyptians used a language called 'Hieroglyphics' which was a mixture of drawings and signs. So we can discover how these kings and Queens lived.

Writing

Exercise 3 Fill in the table on the topic: "Ancient architecture of Egypt"



Exercise 4. Choose the word out.

1. masses, granite, winter, stone
2. bed, table, ceiling, desk
3. see, watch, look, listen
4 lavatory, man, kid, lady
5. district, wall, window, door

Exercise 5. Write an essay consisting of 100-120 words on theme:" For what purposes the Egyptian pyramids can now be used?"

Exercise 6. Match the groups of words with the correct categories.

1. a bedsit/a studio flat/a villa

2. a wooden floor/a rug

3. in the basement/in the loft

4. convenient/isolated/not far from

5. modern/classical/elegant/ minimalist

6. spacious/huge/tiny/cramped

7. cosy/intimate 8. high ceilings/tall windows/ fireplace

9. chilly/draughty/airy/has central heating

10. overlooks/has a view of

11. brand new/second hand/old-fashioned

a) age

b) type of accommodation

c) floor

d) location

e) style

f) feel/atmosphere

g) size

h) features

i) warm/cold interior

j) view

k) position in the building

Speaking

Exercise 7. Prepare a minute and speak 2 minutes.

Topic : Ancient Egypt.

- Where and when ancient Egypt started
- Name things the ancient Egyptians made or built
- Why Egyptians preserved dead bodies
- How important the pyramids are nowadays.

Exercise 8. It is interesting!

The **Kalyan Minaret** is a minaret of the Po-i-Kalyan mosque complex in Bukhara, Uzbekistan and one of the most prominent landmarks in the city. The minaret, designed by Bako, was built by the Qarakhanid ruler Mohammad Arslan Khan in 1127 to summon Muslims to prayer five times a day. An earlier tower collapsed before completion. It is made in the form of a circular-pillar baked brick tower, narrowing upwards. It is 45.6 metres (149.61 ft) high (48 metres including the point), of 9 metres (29.53 ft) diameter at the bot tom and 6 metres (19.69 ft) overhead.

There is a brick spiral staircase that twists up inside around the pillar to the rotunda. The tower base has narrow ornamental strings belted across it made of bricks which are placed in both straight or diagonal fashion. The frieze is covered with a blue glaze with inscriptions. In times of war, warriors used the minaret as a watchtower to lookout for enemies. About a hundred years after its construction, the tower so impressed Genghis Khan that he ordered it to be spared when all around was destroyed by his men. It is also known as the Tower of Death, because until as recently as the early twentieth century criminals were executed by being thrown from the top. Fitzroy Maclean, who made a surreptitious visit to the city in 1938, says in his memoir *Eastern Approaches*, "For centuries before 1870, and again in the troubled years between 1917 and 1920, men were cast down to their death from the delicately ornamented gallery which crowns it."

Listening

pyramids.mp3

Exercise 9. Gap filling.

The Pyramids in Cairo are my favourite buildings in the whole world. I _____ when I was very young. They have always fascinated me. They really _____ wonders. People still don't know how they were

built. I think _____ greatest architectural achievement ever. Even the tallest buildings today are easy to build. The Pyramids _____ to build, but they did it. Two _____ about The Pyramids – their beautiful shape and their mystery. I love _____ The Pyramids. When I visited Egypt, their _____. And the great thing was I also felt their mystery. The Pyramids are _____ secrets, history and mysteries.

Exercise 10.

1.The Pyramids in Cairo are my favourite buildings in the whole world. T-F

2. They have never fascinated me. T-F

3. Even the tallest buildings today are difficult to build. T-F

4. People still don't know how they were built. T-F

5. And the great thing was I also felt their mystery. T-F

LESSON 7.

BUILDING MATERIALS.

Building facts

"Each of us is carving a stone, erecting a column, or cutting a piece of stained glass in the construction of something much bigger than ourselves."
– Adrienne Clarkson

Architecture is the science of the design of structures or buildings such as houses, places of worship, office buildings. Architecture is also the profession of an **architect.**

The decree of the President of the country "On deepening economic reforms and accelerating the development of the building materials industry" of March 24, 2005 became a powerful impetus for the development of production of building materials. In the course of its implementation, a large-scale work was carried out to increase the volume and expand the range of production of building materials, to introduce and master new modern technologies, to ensure a rational territorial distribution of production of building materials.

The strengthening of the industry's position and the growth of its competitiveness was facilitated by the presidential decree "On the program of modernization and technological re-equipment of enterprises in the building materials industry for the period 2007-2011" dated June 1, 2007. As a result of its implementation, dozens of projects were implemented for the further development of the industry.

Read the text.

Building Materials.

The designer must be able to select and adapt such materials of construction that will give the most effective result by the most economical means. In this choice of materials for any work of construction, the civil engineer must consider many factors. These factors include availability, cost, physical properties of materials and others.

Lime, gypsum and cement are the three materials most widely used in building construction for the purpose of binding together masonry units, such as stone, brick and as constituents of wall plaster. Cement is furthermore the most important component of concrete. These materials form very important elements in all masonry structures. As a class they are designed as cementing materials.

The most important building materials may now be considered to be structural steel and concrete. Concrete may be considered an artificial conglomerate of crushed stone, gravel or similar inert material with a mortar. A mixture of sand, screenings or similar inert particles with cement and water, which has the capacity of hardening into a

rocklike mass, is called mortar. The fundamental object in proportioning concrete or mortar mixes is the production of a durable material of requisite strength, water tightness and the other essential properties at minimum cost. To attain this end careful attention must be given to the selection of cement, aggregate and water.

The most accurate method of measuring proportion is to weigh the required quantities of each material. This may be done whether the proportions are based upon volumes or weights. This method is being extensively used in road construction and in many central mixing and in central proportioning plants. It is also widely used in large building construction, but in small building construction the less accurate method of measuring proportions by volumes is frequently used. It is always for a building engineer to bear in mind that workability and strength tests are the chief control tests made on concrete. To be able to undergo high compressive loads is a specific characteristic of this material.

VOCABULARY

steel - po'lat - сталь

to select - ajratib olmoq – отбирать, выбирать, подбирать

artificial - yasama, sun'iy – искусственный, притворный

to adapt - moslamoq, moslashmoq – приспосабливать, адаптировать

conglomerate - quyuq massa – конгломерат, обломочная горная погода

means – vositalar - средства

crushed stone - mayda tosh – раздробленный камень

civil – fuqaro - гражданин

gravel - shag'al – гравий, золотоносный песок

to consider – hisoblamoq - считать, полагать, принимать во внимание

mortar – ohakli qorishma – известковый раствор, строительный раствор

availability – yaroqlilik - годность

mixture – aralashma – смешивание, смесь

property - xususiyat, xossa – имущества, собственность

screenings - qo'shilmalar – прикрытие, завеса, высевки

lime – ohak - известь

durable – mustahkam – прочный, долговременный

gypsum – ganch - гипс

requisite – kerakli – то что необходимо, требуемый

to bind - bog'lamoq – связывать, обшивать

watertightness – suv o'tkazmaslik - водонепроницаемый

masonry – tosh terish – каменная кладка, масонства

essential – muhim – важный, ценный

constituents – tarkibiy qismlar – составная часть

accurate – aniq – точный, правильный

plaster – suvoq – штукатурка, гипс, пластырь

extensively – keng – широко, пространно

concrete – beton - бетон

workability – yaroqlilik – применимость

Speaking

Exercise 1.

Prepare a minute and speak 2 minutes.

Topic . Describe the process of building a house.

Exercise 2. Try to guess the meaning of these words in the text.

1. important	6. fitness
2. tie	7. component
3. necessary	8. inhabitant
4. strong	9. actually
5. wide	10. specifity

Writing

Exercise 3. Put *a little* or *a few*.

1. There is …. gypsym in the box .
2. There is …. lime in the bowl.
3. Put … cups of milk into a mixing bowl.

4. Slice … of plastics are under that box.

5. Cut up … steel.

6. Add … mixture.

7. Pour … water.

8. Add …. motar

9. There is …. gravel in the box.

10. Add …. crushed stones into conglomerate.

Exercise 4. Translate the sentences into your native language.

1. The pneumatic drill could strike a hundred blows to the labourer's.

2. Not only tools used on the construction site improved, but factory production of building materials was also facilitated by the introduction of machinery.

3. On the superstructure, hoists and cranes were adapted to building construction.

4. In most carpentry, a change from hand work to mill work was experienced.

5. Painting spray guns were invented.

6. Lead or clay pipes were used to conduct water to the houses.

7. The water tower interior was divided into four compartments – to tank itself and three subsidiary tanks.

8. The Romans, although they didn't invent paved roads, advanced road building to a new height.

9. Like other ancient systems, the Romans' set – up had no main pipe leading from the reservoir to the town.

Exercise 5. Put in the sentences appropriate allied words.

So .. as; both … and; not so … as; as.

1. Concrete …. building material is more suitable …. timber.

2. …. workability …… tests are the chief control tests.

3. The designer selects such materials ….. ….. to give the most effective result .

4. Timber is …. …. durable ….. concrete.

Exercise 6. Give these sentences into Present Perfect Tense.

1. The builders are working in the camping site.

2. That engineer is helping me to solve a difficult problem.

3. The workmen are mixing the concrete and the gravel.

4. Architect is making the plans of town.

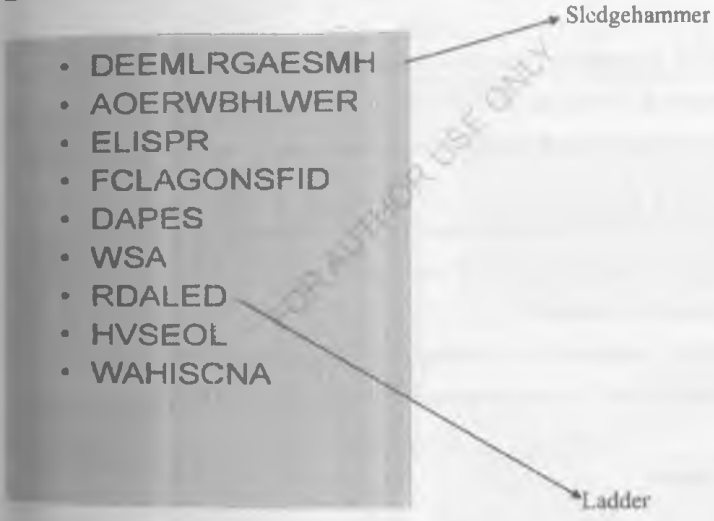
5. The builder is opening the boxes of brick.

6. The skilled designer is working in this building company.

Exercise 7. Choose one topic related to the history of architecture.

TOPIC	
MAIN IDEA	
SUPPORTING DETAIL	
SUPORTING DETAIL	

Exercise 8. Re-ordet the letters



Exercise 9. Read and translate.

Association of Enterprises of Building Materials Industry of Uzbekistan established.

President of Uzbekistan signed a resolution "On measures for radical improvement and integrated development of the building materials industry". In

accordance with the resolution, the Association of Enterprises of Building Materials Industry of Uzbekistan ("Uzpromstroymaterialy") is being created.

"Uzstroymaterialy" JSC will be closed and its shares in companies of the industry will be transferred to the Agency for Management of State Assets.

Chairman of the Association "Uzpromstroymaterialy" and his deputies are elected by the decision of the general meeting of its founders on the proposal of the Ministry of Economy and Industry of the Republic of Uzbekistan.

Up to 1 January 2022, deductions of enterprises under contracts to the Association "Uzpromstroymaterialy" are excluded from the taxable base for corporate income tax.

Starting from 1 April 2019, a license for the right to use a subsoil block containing non-metallic minerals is issued for geological study within ten days from the date of receipt of the application.

In 2019–2021, 67 investment projects will be implemented for the technical and technological upgrading of existing and creation of new industries with a total value of US$1.3 billion, including through foreign direct investment in the amount of US$692 million.

The specialized design and research institute of "StroymaterialyLITI" is renamed into the Research and Engineering Center "UzstroymaterialyLITI", which is part of the Association "Uzpromstroymaterialy".

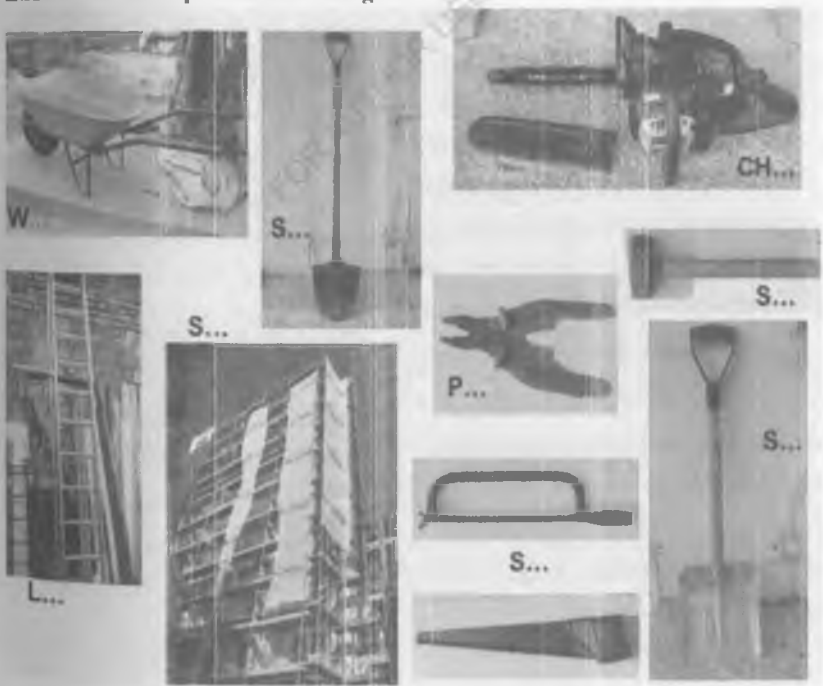
A list of investment projects in the building materials industry, as well as a plan of comprehensive measures for their implementation, will be approved for the period until 1 April 2019.

Listening.

tools (1).m4a

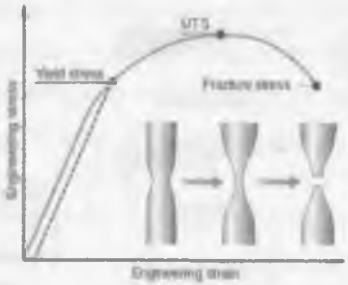
Exercise 10. Listen and guess.

Exercise 11. Complete the following words



LESSON 8. STRENGTH OF MATERIALS.

Strength of Materials



Stress - Strain Diagram

Building facts

Plastic, polymeric material that has the capability of being molded or shaped, usually by the application of heat and pressure. This property of plasticity, often found in combination with other special properties such as low density, low electrical conductivity, transparency, and toughness, allows plastics to be made into a great variety of products.

Metal, any of a class of substances characterized by high electrical and thermal conductivity as well as by malleability, ductility, and high reflectivity of light.

Glazing is a process of providing a glassy layer on the surface of clay products or ceramics. The glazing layer is fused to a ceramic body by burning at a high temperature.

Sand or fine aggregate is one of the most important construction materials at any construction site. Its selection should be done very carefully as it contributes to the strength of various important mixtures like concrete, plasters and mortar.

Read the text.

Strength of materials.

One of today's important tasks is to raise production efficiency and quality. To achieve this requires contributions from many scientific disciplines, among them the science of materials strength. The quality and reliability of machines and structures depend in large measure on its advances. The modern age has confronted this science with tasks of unprecedented scope demanding urgent solution.

The great Galileo is considered to be the father of the science of materials strength, one of the basic engineering disciplines, and the bane of undergraduates at technological colleges. There is probably historic justice in the fact that Galileo was also the first man to whom it occurred to direct an unsophisticated optical instrument skywards in order to see the mountains of the Moon: today we are faced with problems of the strength of instruments and apparatus studying the Moon, Venus, Mars... .

But before it could produce mechanisms capable of withstanding cosmic cold and vacuum, the strainsand stresses of take-off and return to Earth, the science of materials strength had to cover a long and difficult path. Its progress accelerated markedly in the 19th century, when people began to lay thousands of miles of railway tracks, erect bridges and digs tunnels, build ocean-going ships and complex machines.

Our predecessors managed to cope with their tasks. Many structures built centuries ago have not only survived to our day but even remain in use. In Transcaucasia, for example, a bridge built in 1234, almost 750 years ago, is still open.

To be sure, there were also errors and tragedies, when machines broke down or bridges collapsed. Yet more often than not the causeof mishaps was not any lack of knowledge on the part of the experts. The problems of strength of materials are hidden so deep in the mysteries of atomic and molecular structure that it took many decades of advance in practically all branches of learning before they could be mastered. It was only at the beginning of this century that research began in the physics of strength, and this science itself emerged. This was none too early: mankind was entering the age of electricity, electronics, aviation, automobiles and nuclear physics which characterize the world we know today. It was appearing in an age of high speeds, pressures and temperatures which

could be generated and withstood only with the help of new and hitherto unknown materials. In 1920 the top speed of an airplane was not more than 200km per hour. In our day its speed is approaching 3,000km per hour. The turbine that drives such an aircraft is a miracle of material strength.

Of tremendous importance over and above these problems in deciding concrete questions of strength is the creation of new materials.

VOCABULARY

efficiency – amaliy natija beradigan, samaradorlik – действенность, эффективность, продуктивность

quality – sifat – качество, свойство, особенность

to achieve – erishmoq – достигать, добиваться, достичь цели

contribution – yordamlashmoq, hamkorlik – содействие, вклад, сотрудничество

scientific disciplines - ilmiy fanlar – научные предметы

reliability of machines – mexanizmlarning chidamliligi, ishonchliligi – надёжность, прочность, достоверность машин

large measure – katta o'lchov, katta masshtab – большая мера, масштаб

has confronted – qarama – qarshi turish – стоять лицом к лицу, стоять против

unprecedented scope – misli yo'q, hech ko'rilmagan masshtab – беспрецедентный, беспримерный масштаб

urgent solution – qattiq qorishma – настоятельный раствор, растворение

the bane of undergraduate – talabalarning zaharlinishi – отравление студентов

unsophisticated – oddiy, tabiiy, toza – простой, безыскусственный, чистый

with standing cosmic cold and vacuum – kosmik sovuq va past bosimga qarshi turish – противостояние космическому холоду и пониженному давлению

the strains – deformatsiya, mexanik bosim, taranglik, cho'ziluvchanlik – напряжение, натяжение, растяжение

stresses – bosim, kuchlanish – давление, нажим, напряжение

accelerate – tezlashtirmoq – ускорять

to cope – uddalamoq, eplamoq – справиться, совладать, покрывать, обхватывать

survive – bardosh berib yashamoq – пережить, выдержать, перенести

collapse - buzish, buzilish, vayronagarchilik – разрушение, осадка, крушение

mishap – omadsizlik, baxtsizlik – неудача, несчастье

lack of knowledge – bilimsizlik – недостаток знания, отсутствие знания

emerge – bo'lmoq, ko'rinmoq – появляться, всплывать, выходить, возникать

hitherto – haligacha, hozirgi kunga qadar – до настоящего времени, до сих пор

tremendous – qo'rqinchli, dahshatli, ulkan – страшный, ужасный, огромный

aircraft – samolyot – самолёт

Speaking

Exercise 1.

Two-way discussion

1. What does the raise of production efficiency require?
2. What do the quality and reliability of machines and structures depend on?
3. Did the progress of science of materials strength markedly accelerate in the 19th century?
4. People began to lay the railway tracks and erect bridges in the 19th century, didn't they?
5.

Exercise 2. Try to guess the meaning of these words in the text.

1. sort	6. destruction
2. poison	7. unluck
3. simple	8. aero plane
4. pressure	9. so far
5. stretch	10. shortage

Exercise 3. *Choose one the words below that you know and explain its meaning etc until your partner guesses which one it is.*

(student) halls/ dorm(itory)	accommodation	affordable	almost always
apartment/ flat	armchair	awful	B&B/ bed and breakfast
bathtub	brick	bungalow	candle
carport	cellar/ basement	central heating	condominium/ condo
congestion	cottage	detached (house)	double glazing
exorbitant/ pricey	fall apart	flood/ flooding	fluorescent strip
frantic/ chaos	green spaces	hedge/ bush	ivy
lack	loft/ attic	mansion	mellow
memorable	mock	mortgage	mugging
multicultural	notorious	outstanding	poverty
ramshackle	riot	semi-detached (house)	shower cubicle
shutter	suburb(s)	terraced (house)	thatched (roof)
varied/ diverse	wardrobe/ closet		

Writing

Exercise 4.Write a letter consisting of 80-100 words on the topic

You ordered a set of materials for building a garage from a building company, but there were no instructions for building in this set. Write a letter to the construction company and in your letter

• introduce yourself

- say what the problem is
- and mention what action you need the company to take

Exercise 5. Rewrite the letters to find out what things are used in building and make up your own sentences with them.

1. tilub
2. nporiotdcu
3. smeancih
4. lmaitarc
5. etbu
6. emreusa
7. esti
8. stecueqhin
9. hstrtgne
10. nwedoo

Exercise 6. Put questions to the underlined words.

1. The turbine that drives such an aircraft is a miracle of material strength.
2. To be sure, there were also errors and tragedies, when machines broke down or bridges collapsed.
3. The first houses in many parts of the world were made of wood, for in those days the greater part of the earth was covered with forests.

a) main building materials such as rocks and artificial stones, timber and metals, which are used for bearing structures.

b) binding materials such as lime, gypsum and cements, which are used for jointing different planes.

c) secondary or auxiliary materials which are used for interior parts of the buildings, such as: tiling, synthetic linoleum, coatings and other facing materials.

Read the text.

More About Strength of Materials.

Now some of the problems of strength of materials are being tackled by experts. The problems confront experts all over the world, as well as in our country, where research in strength of materials is conducted according to a single state plan by establishments of the Academy of Sciences, sectors in many colleges and research, design and industrial institutes in various parts of the country. All research work in the field is coordinated by the Scientific Council on Strength and Plasticity, Academy of Sciences Department of Mechanics and Control Processes.

Strength of materials is a complex concept that includes a wide range of problem. Many research establishments in our country are busy devising such materials, for example, studying optical strength with the help of a laser beam, testing future building materials for thermal shock, testing materials being used in building nuclear power plants and so on.

Metallurgists studying a new class of aluminium-lithium-magnesium system alloys have produced a highly durable alloy which is being used in aircraft and rocket engineering. The alloy helps to reduce the weight of apparatuses substantially by effecting a considerable saving of materials.

One of the newest trends in research, hardly ten years old, is the creation of extremely tough composite materials. The idea is simple enough: a light but fragile base is taken and pervaded with a system of very tough fibres or wires. A new one is aluminium reinforced with boron fibres. In elasticity and strength the material substantially surpasses

aluminium alloys, and in specific strength is even better than titanium alloys. Having found such a good principle for designing materials, our experts have gone on to produce a whole range based on alloys, ceramics or plastics reinforced with metal, glass, quartz, organic, graphite and other fibres. Such materials find applications in all spheres of technology, science and in everyday life.

VOCABULARY

strength of materials – materiallar chidamliligi – прочность материалов

tackle – ushlamoq, arqonlar bilan mustahkamlamoq – схватывать, энергичнобраться, закреплять с настями

experts – eksperlar – эксперты

to be conducted – olib bormoq – вести, руководить

single – yagona, yakka, yolg'iz – единственный, одинокий

state plan – davlat rejasi – государственный план

sectors – sector, maydon, soha – участки, части

to be coordinated – mos bo'lmoq, muvofiq bo'lmoq – координировать, согласовывать, устанавливать правильные соотношение

the Scientific Council on Strength and Plasticity – chidamlilik va egiluvchanlik sohasidagi ilmiy sovet – научный совет прочности и пластичности

a complex concept – murakkab tushuncha – сложное понятие, общее представление

include – o'z ichiga olmoq, qamrab olmoq – содержать в себе, заключать, включать

range – qator – ряд, линия

devising – kashf qilmoq – придумывать, изобретать

optical – ko'rishga oid – оптический, зрительный

a laser beam – lazer nuri – лазерный луч

thermal shock – issiqlikka oid tebranish – тепловой (термический) удар

nuclear power – atom kuchi – ядерная, атомная сила

metallurgists – metallurglar – металлурги

alloys – qotishma – сплав, примесь

durable – mustahkamlik, ishonchlilik – прочность, надёжность

to reduce – pasaytirish, kamaytirish – понижать, ослаблять, уменьшать

substantially – aslini olganda, to'g'risini aytganda – посуществу, восновном, основательно

trends – yo'nalishlar – напрвления

tough composite materials – qattiq aralashma materiallar – жёсткие, плотные составные материалы

fragile base – mo'rt (tez) sinadigan manbaa – хрупкая (ломкая) база

pervaded – keng tarqalgan, yoyilgan – распространённый, охватывающий

fibres – to'qima, tola, ip – волокно, фибра, нить

wires – sim – проволок, провод

reinforced – kuchaytirmoq – усиливать, подкреплять

boron – qarag'ayzor – бор

surpasses – ortiq bo`lmoq, oshib ketmoq – превосходить, превышать

quartz – kvarts, chaqmoqtosh – кварц

organic – tarkibiy – органический, системазированный

graphite – grafit - графит

applications – ariza – заявление, применение

Speaking

Exercise 1. Two-way discussion.

1. How is the strength of materials conducting?
2. Whoco-ordinatesall research work in the field?
3. Strength of materials is a complex concept, isn't it?
4. What does modern industry requires?
5. Is a highly durable alloy used in aircraft and rocket engineering?
6. Who studies a new class of aluminum-lithium-magnesium system alloys?
7. Does the alloy help to reduce the weight of apparatuses substantially by effecting a considerable saving of materials?
8. What is one of the newest trends in research?

9 Is the creation of extremely tough composite materials one of the newest trends in research?

10 What have our experts gone on to produce?

Exercise 2. Try to guess the meaning of these words in the text.

1. only
2. section
3. row
4. invent
5. down
6. fix
7. rule
8. correspond
9. consist
10. direction

Writing

Exercise 3. Match the words.

primitive	houses
to tie	shape
made of	slabs
shallow	people
the skin of	animals
limestone	hole
oval	wood
earthen	together

Exercise 4. Rewrite the letters to find out what words are used in building.

1. evriusv
2. sristan
3. yiuqlat
4. ergeme
5. asykwrds
6. peoc
7. relag
8. exmitru
9. sestrse
10. uamerse

Exercise 5. Suggested passive sentences to describe architecture

1.It has been renovated… times

2.It is (mainly) made from…

3.It is connected to…

4.It is criticised…

5.It is decorated…

6.It is lit up…

7.It is located near to…

8.It is made of/ made from…

9.It is opened to the public…

10.It is painted…

11.It is situated in…

12.It is surrounded by…

Exercise 6. What does one need? Complete this table with your partner(s). Change partners often and share what you wrote.

21st-Century…	In your home!	In a 21st-Century city
transport		
schools		
parks		
museums		
hotels		
shopping malls		

Exercise 7. Continue the sentence:

1. The framework is intended for safely carrying …

a) The weight of the walls.

b) The weight of the doors and roofs.

c) The loads imposed.

2. Foundations guard the walls against the action of …

a) Sun.

b) Frost.

c) Thunder.

3. Floors may be ...

a) neither of timber nor of a re-resisting material.

b) of a re-resisting material only.

c) either of timber or of a re-resisting material.

4. The materials used for the wall construction can be ...

a) Natural only.

b) artif cial only.

c) natural and artif icial.

Exercise 8. Write an essay on the theme "What are different types of buildings?"

Exercise 9. Put the missing words into the gaps, using the words under the line.

1. Materials that are used for structural purposes should ... . They should be hard ... . 2. Reinforced concrete is a building material in which the ... of concrete and good ... of steel are effectively ... . 3. In building field we usually ... complex plastics. 4. Bricks generally ... a pleasing appearance and can be ... with various qualities, colours and textures. 5. Building mortars are classified according to the applications and kind of ...

material, which is used to produce them. 6. There are three stage in producing concrete …, settings, … . 7. A further step in rubber technology was the … of rubber with metals, wood and asbestos, so as to … a product having the elasticity of rubber and the strength or special properties of the other components.

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meet requirements; the compressive strength, good elastic properties, combined; durable, fire-resistant, acid-resistant; present, obtained; mixing, hardening; deal with; binding; combining, obtain.

Exercises 10. Put the verbs in brackets in the correct tense, active or passive.

1. The term "aggregate" … (use) to describe inert substances, which … (mix) with cement to produce concrete. **2.** Reinforced concrete … widely (use) in construction since the 19th century throughout, as bearing elements, beams, floors, spans, columns, panels. **3.** A great economic advantage … already (obtain) from the usage of polymer and plastic materials in a number of structural elements and different components. **4.** Aggregates … (divide) into heavy and lightweight. **5.** Most new materials … (discover) by complete accident, some by trail and error. **6.** The problems of strength of materials …. (hide) in the mysteries of atomic and molecular structure. **7.** Contacting with water many metals … (subject) to corrosion. **8.** The simulation … (begin) with rules of quantum mechanics that … (govern) the matter on the atomic and subatomic level.

Exercise 11. Use the Passive instead of the Active Voice.

For example: Builders use concrete practically everywhere.

Concrete is used practically everywhere by builders.

1. The Egyptians did not know cement in old times.
2. They used clay for producing concrete.
3. The Romans and Greeks made concrete of gypsum and lime.
4. For what structure did the Egyptians. Romans and Greeks use concrete?
5. Builders today produce concrete by mixing water, cement and aggregates.
6. We know different kinds of concrete today.
7. Many factors influence the strength of any concrete.
8. Students prepare concrete during their practice.

Listening

rent-an-apt.mp3

Exercise 12. Fill in the gaps.

Renting An Apartment

Woman: Hi, I saw your ad1 online, is the apartment still available?

Man: Yes, it is. Would you ..... and see it?

Woman: Maybe, but ..... I ask you some questions first?

Man: Sure.

Woman: How far is it from the subway?

Man: It's about a ten-minute walk2, ...

Woman: Is it fully furnished3?

Man: Yes, fully furnished.

Woman: And ..... is $550 a month, right? Including bills?

Man: No, plus4 bills.

Woman: OK, I think I'd like to ..... it. When would be .....?

Man: How about Tuesday?

Woman: ....., in the morning?

Man: No problem. Let's say ten o'clock. By the way, ... thinking of moving in?

Woman: I need a place as soon as possible.

Man: OK, that's great. I need ..... quickly as well.

Woman: OK, so see you ....., thanks a lot, bye.

Man: Bye.

Exercise 13. Match the words with the same meaning

1. available	a. perhaps
2. subway	b. a flat
3. maybe	c. free
4. an apartment	d. a home
5. a place	e. metro

LESSON 10. FOUNDATION MATERIALS.

Fun Facts About Your Home Foundation

The cement industry of Uzbekistan is the basic branch of the construction complex, on which the state and development of the country's economy as a whole depend. Indicators show the scale of its production. If in 1990 the volume of cement production exceeded 3.4 million tons, then by 2015 its production reached 8.2 million tons, having increased by 2.4 times.

"It is not the beauty of the building you should look at: it's the construction of the foundation that will stand the test of time."
– David Allen Coe

"A world which sees art and engineering as divided is not seeing the world as a whole."
Professor Sir Edmund Happold

Read the text. **Foundation Materials.**

A dam may be founded on any kind of material from silt to the most solid rock by giving the proper relative base width to height of structure and the proper treatment to the foundation materials. Silt and fine sand are successfully used as foundations for low masonry dams usually of the diversion weir type, generally not more than 26 ft. in height, and are used for foundations of earth dams of all heights. Seepage through such foundations is expected, but the base lengths and cutoff wall depths are made sufficient to reduce the

velocities of the percolating water to a non – erosive rate. The bearing power of such soils may be increased through artificial compression, the use of concrete of wood piles, the employment of sand piles, the addition of coarse sand or gravel to the natural foundation material, the increasing of the depth of the foundation or otherwise confining the foundation material, and, in some cases, the drainage of the foundation material. The bearing power of such soils untreated, may be as low as 1 to 2 tons per square foot but by treatment as suggested the bearing power may be greatly increased. Clay makes permissible foundation for a masonry dam of not more than 30ft. in height, if properly treated; but such treatment is not always easy to secure. The bearing power of clay is greatly reduced by moisture and the securing of a dry foundation for a dam in such material is impracticable. For this reason, confining the material to present spreading, on loading it artificially may be resorted to. The use of pilling may be of advantage, or drainage may be applied in some cases with beneficial results.

Foundations on clay soils may generally be considered capable of carrying from 2 to 4 tons per square foot without treatment.

VOCABULARY

Silt - loy, balchiq – ил, осадок, наносы

Width – kenglik – ширина, широта

Fine sand – mayday qum, mayin qum – мелкий песок

Earth dams – tuproqdan qurilgan damba – дамба из песка

Seepage – suvning sizib o'tishi – просачивание, утечка

Cutoff wall depth – kesilgan devor balandligi – высота обрезанной стены

Percolating water – filtrdan o'tkazilgan suv -- фильтрованная вода

Non – erosive rate – eroziyaga olib kelmaydigan tezlik – скорость не приводящий к эрозию

Bearing power – chidash (bardosh) bermoq; ish qobiliyati – опора силы, выдерживать

Compression – bosim – давление

Confine – cheklamoq – ограничивать

Resort – tayanmoq, qo'llamoq – обрашаться за помощью

artificially – sun'iy – искусственно, притворно

capable – qobiliyatli - способный, притворный

beneficial – foydali – выгодный, полезный

impracticable – yaramaydigan, foydasiz – негодный, бесполезный

permissible – ijozat etilgan, bo'lishi mumkin – допустимый, позволительный

coarse – yirik – крупный

Speaking

Exercise 1.

Two-way discussion.

1. What materials are used as foundations?
2. What is the foundation of your house?
3. have you ever worked with foundation materials?

Exercise 2. Topics for discussion.

1. Foundation materials.
2. The advantages and disadvantages of foundations materials.

Writing

Exercise 3.

a) What is a building construction?

.....

.....

b) Can you name two main characteristics of a building construction?

.....

.....

Exercise 4. Match the words.

Earth	water
Fine	power
Percolating	type
Non – erosive	rate
Weir	sand

Bearing dams

Exercise 5. Suggested passive sentences to describe architecture

1.It is used for…

2.It is visited…

3.It isn't used (…)

4. It used to be used for…

5. It was bought by…

6. It was bought…

7. It was built by…

8. It was built in…

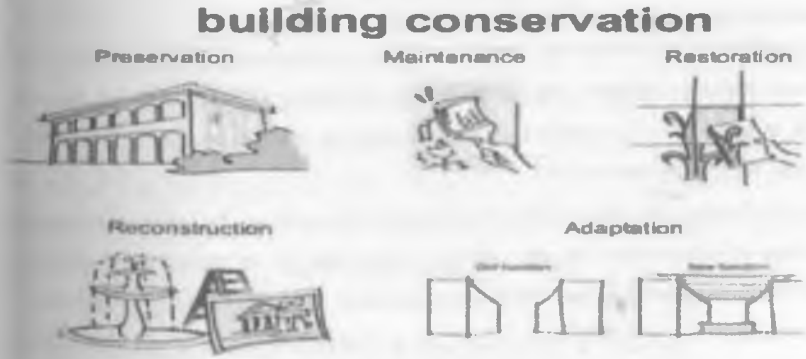
9. It was built…

10. It was criticised…

Exercise 6. Complete the sentences using the words from the box to characterize the significance of civil engineering today.

Construction	*mastery*	*technology*	*economics,*	*to develop*	*projects*	*Changing*

Exercise 7. Write an essay "Preservation and Restoration of Historical Buildings".



Exercise 8. Building materials

WOOD .....

STONE .....

BRICK .....

METAL ..,.....

CONCRETE .....

GLASS .....

Exercise 9. Match the numbers 1-9 with the letters a-i; Translate the unknown words.

1.portico	a) An architectural ornament representing a face or head. This head (a human or an animal) is often frightening.
2.festoon	b) A grotesquely carved figure that serves as a spout to carry water from a gutter away from the building.
3.dome	c) A decorative element shaped in the form of four leaves.
4.keystone	d) Ornamental garland, usually suspended from both ends
5.gargoyle	e) The wedge-shaped stone at the crown of an arch that locks all parts together
6.quatrefoil	f) A vaulted structure with an elliptical plan, usually a cross-section of a sphere, used to distribute an equal thrust in all directions.
7.pediment	g) A tall ornamental structure, usually surmounting a tower and ending in a spire.
8.mascaron	h) A wide, low-pitched gable, often surmounting a colonnade
9.steeple	i) A roofed porch usually supported by columns, often leading to the entrance of the building.

Exercise 10. Do you know?

The **Architectural Institute of Japan**, or **AIJ**, is a Japanese professional body for architects, building engineers, and researchers in architecture. The institute was founded in 1886 as an institute for architects. It was renamed the Architectural Institute in 1905, and given its present name in 1947.

Today the institute has about 38,000 members. Its mission is to advance the science and technology of architecture through mutual collaboration by its members. It sponsors roughly 600 sub-committees and working groups under 16 standing research committees. The institute's central office and library is in Tokyo with nine regional chapters (Hokkaido, Tohoku, Kanto, Tokai, Hokuriku, Kinki, Chugoku, Shikoku and Kyushu).

The institute publishes the *Journal of Architecture and Building Science*, *Transactions of AIJ*, *Selected Architectural Designs of the Architectural Institute of Japan*, the *AIJ Journal of Technology and Design*, *Summaries of Technical Papers of Annual*

Convention, the *Journal of Asian Architecture and Building Engineering* (JAABE), and technical standards and specifications for the architectural design and construction professions. It also publishes the results of research committee studies, terminology dictionaries, textbooks, slides, videotapes, and books for the general public.

Prizes awarded by the institute for individual achievement, built work, and research are among the most prestigious in the industry.

Listening

050529-bigben-e.mp3

Exercise 11. Listen and fill in the spaces.

Time stands still in London

Time _____ _____ in London on May 27. Big Ben, the 147-year-old clock that is famous around the world, _____ _____ for 90 minutes. The clock's minute hand froze at 10.20 PM and then started moving again at 11.50 PM. Engineers ___ _____ and cannot explain why the clock stopped. It is usually _____ _____ and rarely loses even one second. Big Ben is well known for _____ ___ _____ and its hourly chimes. It miraculously survived the bombing attacks on London during World War II. It _____ _____ to keep time to within one and a half seconds of GMT (Greenwich Mean Time). However, it hasn't always _____ __ _____: snow caused the clock to ring in the New Year ten minutes late in 1962. Many people _____ _____ Big Ben is either the name of ___ _____ _____ or of the clock tower. In fact, it is neither. Big Ben is the name of the 13-ton _____ _____ _____ on every hour. It was named after Sir Benjamin Hall, who ordered the clock's construction. The official name for the _____ _____ _____ Big Ben is St. Stephen's Tower.

Exercise 12. Guess whether these sentences are true (T) or false (F):

a. The staff of Time magazine in London has gone on strike. T / F

b. The London landmark Big Ben stopped working for a while. T / F

c. Big Ben's engineers cannot explain why the clock stopped. T / F

d. Big Ben usually loses one second every day. T / F

e. Big Ben was half-destroyed during World War II. T / F

f. Snow caused the clock to be 10 minutes late in 1962. T / F

g. Big Ben is the name of a famous London clock. T / F

h. The tower that houses Big Ben is called Big Ben Tower. T / F

Exercise 13. Match the following synonyms:

a. stood still	trustworthy
b. mysteriously	incorrectly
c. baffled	rings
d. reliable	unexplainably
e. accuracy	accommodates
f. chimes	stopped
g. late	building
h. mistakenly	precision
i. construction	slow
j. houses	puzzled

Exercise 14. Match the following phrases (sometimes more than one combination is possible.

a. minute	baffled
b. Engineers are	one and a half seconds of GMT
c. rarely loses even	the New Year
d. well known for	on every hour
e. miraculously	hand
f. keep time to within	both its accuracy and its hourly chimes
g. hasn't always been	believe
h. ring in	one second
i. mistakenly	so reliable
j. strikes	survived

LESSON 11. NON – UNIFORM FOUNDATIONS.

Fun Facts About Your Home Foundation

Doors and windows are also indicators of any potential challenges. When you swing a door open or closed, does it do so properly? Or does it fail to return to its original position. If you experience the latter, that's a telling sign that things are moving and shifting.

The proper name for foundation experts is structural engineers. They've been educated and trained to know all of the ins and the outs of your foundation. This knowledge expands to knowing exactly how to design your home so that it's yours for generations.

It's never too soon to get your foundation checked out. A common misconception is that issues are only found in older homes. This is not the case, as you can see from the fun facts above!

Reinforcing your foundation doesn't take as long as you'd think. Many are averse to getting after the work because they think they'll be kicked out of their home for weeks. In fact, this work can be done in as little as 10 days and in some scenarios does not even require displacing your family.

You need to lift entire sections of your home in order to repair foundation damage. This is also a good way to remedy any issues with your walls or ceilings. This can be an issue with older homes as the materials, like tile are easily breakable.

Read the text.

NON – UNIFORM FOUNDATIONS.

In addition to the construction of dams on foundation materials of uniform character it is often necessary to build dams on materials of non – uniform character. In many case such foundations involve the most different problems of dam design. In as much as foundations involve individual problems of design due to many conceivable mixtures of foundation materials, only general principles relating to the most important and common types can here be considered. Generally speaking, the foundation materials are stratified and the strata may be classed as previous or impervious, hard or soft. Combinations of impervious and hard strata give little trouble, but strata of previous or soft materials often involve serious problems of design.

Where impervious foundation materials overlie pervious foundation materials, the problem is sometimes made difficult, particularly if the pervious stratum lies at such depth or is of such a thickness as to make a complete solution by means of a cutoff wall impracticable. In such cases, the path of percolation is lengthened by use of a cutoff wall reasonable depth. together with impervious aprons both upstream and downstream of the dam or a wide – based dam, or a combination of these. One of the most difficult foundation problems involved in dam design is caused by the occurrence of a soft stratum in the foundation either adjacent to the base of the dam or at the considerable depth below it. If the soft foundation is adjacent to the base of the dam, it is generally considered best practice to remove the soft material if possible. In some cases drainage may help to solve the problem. In such a case an apron may be extended upstream from the dam to prevent percolation into the soft stratum, a cutoff wall being placed at the upper end of the apron and drainage being provided under the body of the dam.

VOCABULARY

non – uniform – bir jinsli bo'lmagan - разнообразный

conceivable – mumkin bo'lgan – возможный

stratify (v) – qat – qatlamoq, qavatlamoq–наслаиваться, напластовываться

stratum (strata) – qatlam – слой, пласт, напластование

pervious – o'tadigan - проходимый, проницаемый

impervious - o'ta olmaydigan - непроходимый, непроницаемый

overlie – yotmoq – лежать на чем – либо

apron –fartuk – водобой, козырёк

upstream – oqimga qarshi, oqim bo'ylab yuqoriga – против течения, вверх по течению

downstream – oqim bo'ylab quyiga – вниз по течению

a wide – based dam – keng fundamentli to'g'on – широко–фундаментная дамба

occurrence - kengayish – случай, распространение

extend – cho'zmoq, tortmoq – тянуть, натягивать

involve – jalb qilinmoq – быть задействованным/ заинтересованным

dueto – mos keladigan, … ga ko'ra – благодаря, соответствующий

Speaking

Exercise 1. Two-way discussion.

1. What are non – uniform foundation materials?
2. How are the strata classed?
3. What strata involve serious problems of design?
4. When is the path of percolation lengthened?
5. Why is the occurrence of a soft stratum one of the most difficult problems involved in dam design?
6. How is this problem solved?

Exercise 2. Explain the following terms.

Bearing capacity, percolation, apron, wide – based dam, a soft stratum, uniform foundation, pervious strata.

Writing

Exercise 3. Complete the following words by adding the missing vowels. Find these words in the text.

1. c – nc – – v – bl –
6. – v – rl – –

2. str – t – f –
3. – mp – rv – – – s
4. – pstr – – m
5. – pr – n
7. d – wnstr – – m
8. str – t – m
9. dr – – n – g –
10. p – rc – l – t – – n

Exercise 4. Match the words.

1. bearing	strata
2. pervious	stratum
3. a soft	foundation
4. uniform	materials
5. wide	based dam
6. foundation	principles
7. general	capacity

Exercise 5. Match the words with the meanings.

1. flanking tower	a) Area of some size enclosed by a stockade and located around the castle.
2. rampart	b) Wall enclosing the base of the keep to defend it.
3. machicolation	c) Small box or machicolation projecting from the wall to reinforce its defense
4. bailey	. d) Wall allowing defenders of the fortification to fire from a protected position.
5. lists	e) Freestanding defense with arrow slits used to defend the castle's footbridge.
6. battlement	f) Thick wall that formed the castle's outer defense
7. barbican	g) Balcony made of masonry with apertures in the floor through which projectiles were dropped on assailants.

8. corbel	h) Stone projection on a wall to support the top of a tower or wall
9. brattice	i) Uncovered space bordered by the castle's buildings and curtain walls
10.chemise	j) Defense tower making it possible to fire a shot parallel to the curtain wall.

Exercise 6. Give Uzbek equivalents to the following:

Transportation engineering– _____

Foundation _____

To be concerned with _____

Use _____

Synthetic _____

Interaction _____

Moving _____

Goods _____

Efciently _____

Safely – _____

In a manner – _____

Specifying – _____

Maintaining – _____

Highways – _____

Include – _____

Exercise 7. Suggested passive sentences to describe architecture

1.It was damaged by…

2.It was designed by…

3.It was designed to…

4.It was knocked down…/ Part of it was knocked down…

5.It was moved…

6.It was named a World Heritage site…

7.It was renovated…

8.It was replaced by…

9.It was sold…

10.It will be knocked down…

11.It will be renovated…

12.It will be used…

13.Photos are often taken of…

14.The design was based on…

15.The space outside is used for…

Exercise 8. Are you aware of that?

The **American Institute of Architects (AIA)** is a professional organization for architects in the United States. Headquartered in Washington, D.C., the AIA offers education, government advocacy, community redevelopment, and public outreach to support the architecture profession and improve its public image. The AIA also works with other members of the design and construction team to help coordinate the building industry. The AIA attempts to meet the needs and interests of the nation's architects and the public by raising public awareness of the value of architecture and the importance of good design. To mark the AIA's 150th anniversary and to showcase how AIA members have helped shape the built environment, the AIA and Harris Interactive released findings from a public poll that asked Americans to name their favorite 150 works of architecture. Two of the AIA's public outreach efforts, the Blueprint for America nationwide community service initiative marking its 150th anniversary and the Sustainability 2030 Toolkit, a resource created to encourage mayors and community leaders to advocate environmentally friendly building design both earned an Award of Excellence in the 2007 Associations Advance America Awards, a national competition sponsored by the American Society of Association Executives and the Center for Association Leadership.

Listening

100105-worlds_tallest_building (1).mp3

Exercise 9. Listen and fill in the gaps.

The world's tallest building _____ Dubai on January the 4th. The height of the 828-metre Burj Khalifa was _____ the opening ceremony. It is twice the height of New York's Empire State Building. Another big surprise at the opening _____ the tower. The building had always been called Burj Dubai. However, Dubai's ruler announced it would now be called Burj Khalifa _____ Abu Dhabi, Dubai's neighbour. The oil-rich emirate of Abu Dhabi helped save Dubai _____ collapse. The chairman of the company that built the Burj, Mohamed Alabbar, said the building gives "hope and optimism". He added: "The world has gone through ...difficult times... this is the beginning _____ forward." It is likely the Burj _____ world's tallest building for a while to come. Since the 2008 global financial crisis, there seems to be _____ ambitious construction projects from property developers. The Burj's owners, however, are confident the building will be a success. More than 90 per cent _____ been sold. It cost $22 billion to build and has broken many records. The opening celebrations included the world's highest fireworks, which _____ the world's tallest fountain. The building houses the world's highest mosque and swimming pool, _____ 158 and 76. Burj Khalifa has 1,044 luxury apartments, 49 _____ and the 160-room Armani hotel. Around 12,000 people will live and work in the tower.

Exercise 10. MOST / BEST: What's so good about having the biggest/best things in your city? Complete this table with your partner(s). Change partners and share what you heard.

	Good things	Bad things
Tallest building		
Biggest mall		
Highest rents		
Most cosmopolitan		
Best football club		
Poorest areas		

Exercise 11. Guess if a-h below are true (T) or false (F).

a) Everyone knew the height of the world's tallest building ages ago. T / F

b) The Burj Khalifa is three times the height of the Empire State Building. T / F

c) The building is named after Dubai's ruler. T / F

d) A property developer said the Burj is a symbol of good times to come. T / F

e)Another project will soon beat the Burj as the world's tallest building. T / F

f) Between 90 and 100 per cent of space in the Burj has been sold. T / F

g) The Burj contains the world's tallest mosque. T / F

h) There will be around 20,000 people living and working in the Burj. T / F

LESSON 12.

REINFORCED – CONCRETE ELEMENTS PRODUCTION.

Cement Mortars are prepared from Portland cement or its varieties, sand and water.

Lime mortars are mixture of air hardening lime or hydraulic lime, sand and water.

Mud mortars are prepared from clay nodules and are used in construction of houses for poor and temporary construction works.

Gypsum mortars are prepared from gypsums or anhydride binding materials.

Composite mortars may be surkhi-motar (surkhi, lime and water), lime-surkhi-sand mortar, cement-lime mortar and cement-clay mortar.

Read the text.

Reinforced - Concrete Elements Production.

With the rapid growth in the employment of precast concrete products, and particularly of wall panels, slabs, beams, etc., to serve a multitude of building needs, this industry has inevitably incurred an obligation to maintain and improve the quality of the products. A vast amount of excellent work has already been done to raise the standards of this still comparatively young industry to their present level. Machinery and equipment designers have made important contributions by creating better machines and tools for the industry.

A great number of plants producing precast reinforced-concrete elements is now in operation in our country and abroad. A well-designed plant must have sufficient capacity for the normal output plus a reasonable margin for a possible increase. The design should specifically and carefully anticipate the future installation of additional equipment for increased production without disrupting the original layout.

The following general aspects should be kept in mind when designing a plant. The plant floor level should be not less than 6 inches above the general grade of the yard to assure adequate drainage. In addition, concrete yard runways should be slightly above the level of the surrounding yard so that they will remain free pebbles and other obstructions that might interfere with the operation of trucks or other equipment.

Adequate space should be allowed at sides and in front of machines and casting beds. Regardless of the general layout of the plant, aggregates and cement should be stored as close to the mixers as possible.

VOCABULARY

rapid- tez – скорый, быстрый

anticipate- kutmoq (oldindan) – ожидать, предвидеть

precast- zavodda ishlangan – заводского изготовления, сборного типа

additional- qo'shimcha – добавочный, дополнительный

slab – plita – плита, плоская заготовка

to disrupt- buzmoq – разрывать, разрушать, срывать

beam- balka, brus – балка, брус, перекладина

lay-out- chizma plan – расположение, планировка, план

multitude- ko'p, omma – множество, большое число, масса

inch- dyum (o'lchovbirligi) – дюйм, высота, рост

to incur- duchor bo'lmoq – подвергаться, навлечь на себя

grade- daraja – степень, градус, качество, сорт

obligation- majburiyat – обязательство, обязанность, долг

to assure- kafolat bermoq - гарантировать, обеспечивать

equipment- jihozlar – оборудование, арматура, материальная часть

adequate- talabga javob beradigan - соответствующий

contribution- ko'mak – содействие, вклад

drainage- drinaj – дренаж, канализация

tool- uskuna – инструмент, орудие

pebble- shag'al, mayda tosh – голыш, галка, горный хрусталь

abroad- chet el – за границей, вне дома

obstruction- qiyinchilik – затруднение, препятствие

sufficient- yetarli - достаточный

interfere- aralashmoq, suqilmoq – вмешиваться, надоедать, мешать, вредить

capacity- quvvat - ёмкость, объём, мощность, вместимость

truck- yuktashish – перевозить на грузовиках, грузить на платформу

reasonable- muvofiq keladigan – подходящий, умеренный

casting bed- eritib quyish joyi – отливать, лить

margin- zapas, ehtiyot – запас, безопасность

regardless- hisoblashmasdan – несчитающийся, невзирая

Speaking

Exercise 1.

Prepare a minute and speak 2 minutes.

Describe how reinforced concrete products changed our lives.

You should say:

Where in your daily life you come across it.

How it affected your life.

Exercise 2. Match the words and their definitions.

1. to shape	a. particular, certain needs
2. design	b. the work of building
3. to deal with	c. to make the form of something
4. affinity	d. to do business or connection
5. construction	e. close likeness or connection
6. approach	f. a drawing showing how something is to be made
7. specific needs	g. a manner or method of doing something

Writing

Exercise 3. Put the words in right order.

1. of, determine, plastics, properties, uses, the.
2. blocks, or, sheets, rods, some, tubes, the, in, made, plastics, are, form, of.
3. rapidly, the, is, expanding, plastic, industry.
4. history, evolution, of, the, of, architecture, a, is, record, continuous
5. architecture, best, what, way, learn, to, is, about, the.

Exercise 4. Choose 15 words on your speciality from the text and make up your own sentences with them.

Exercise 5. Put special questions to the underlined words.

1. [redacted] history of architecture is a record of continuous revolution.
2. Properties determine the uses of plastics.
3. Transparent plastics are used to make huge domes and large curved windows.
4. [redacted] large – skyscraper may have its whole outer concrete surface sprayed with a colourful plastic.
5. The plastic industry is expanding rapidly.

Exercise 6. Do you know?

Tashkent Architectural Construction Institute was organized by the Decree of the President of the Republic of Uzbekistan (№400, May 6, 1991) as part of Tashkent State Technical University. The Institute offers architectural and construction. The Institute has the faculty of Architecture, Department of Building and Construction, Civil Engineering and Construction Management, as well as the department of International Relations.

Full-time and part-time faculty train more than 3,000 students from 16 educational areas, which include 20 specialties. During training, students have the opportunity to develop theoretical knowledge and research skills. Scientific and educational work are by more than 200 highly qualified professors. Specialised unions offer doctoral and master's theses in architecture and construction.

The Institute's research is included in the State Science and Technology Plan of the Republic of Uzbekistan. The Institute's specialists design public and residential buildings, industrial and agricultural waste disposal facilities, develop and organize production of efficient building materials and construction, and ensure earthquake resistance.

TIACI is collaborating with more than 36 leading universities and institutes of the world.

Exercise 7. ***Write an essay consisting of 50-80 words on the topic" Advantages and disadvantages of reinforced concrete materials when building a house"***

Exercise 8. Choose the modal verb (should, can, must) that is most appropriate.

1 An architect .....create building designs and highly detailed drawings both by hand and by using specialist computer-aided design (CAD) applications.

a) Should	b) Can	c) Must	d) Nothing

2 Most architects ..... interact with construction professionals about the feasibility of potential projects.

a) Should	b) Can	c) Must	d) Nothing

3 Some architects ..... work closely with a team of other professionals such as building service engineers, construction managers, quantity surveyors and architectural technologists.

a) Should	b) Can	c) Must	d) Nothing

4 They ..... apply for planning permission and advice from governmental new build and legal departments.

a) Should	b) Can	c) Must	d) Nothing

Listening

Exercise 9. Listen and fill in the gaps.

Drivers the world over may (1) _____ from potholes and cracks in the road. Scientists from the universities of Bath, Cambridge and Cardiff (2) _____ a novel and innovative solution to plugging gaps and holes in roads and highways. They have created a bacteria-filled concrete (3) _____ in a road from becoming larger. The concrete is full of bacteria that open when water seeps into a crack. The bacteria (4) _____ inject limestone into the crack, thus filling and repairing (5) _____ more serious damage. The scientists believe their discovery could considerably (6)

_____ of roads, reduce repairs, and lower roadwork costs by up to 50 per cent.

The new concrete could be (7) _____ the environment. Scientists estimate that over seven per cent of the world's CO2 emissions come from the production of cement. If less (8) _____ to repair roads, there will be (9) _____ entering the atmosphere. Another benefit of the new cement is a reduction in accidents, injuries and deaths (10) _____ potholes. Thousands of motorists and pedestrians worldwide are killed because drivers swerve to avoid holes in roads. There is (11) _____ for local governments. In Britain alone, at least 40,000 drivers a year claim compensation for damages to their car caused by potholes. The concrete could (12) _____ the next 20 years.

Exercise 10. How can we make them better? Complete this table with your partner(s). Change partners often and share what you wrote.

	Problems now	Solutions
Safety		
Signs		
Internet		
Rest stops		
Pedestrians		
Road works		

Exercise 11. TRUE / FALSE: Read the headline. Guess if a-h below are true (T) or false (F).

a. Only drivers in British university cities will get the new roads. T / F

b. Scientists have developed a bacteria that is sprayed on top of roads. T / F

c. The bacteria open to release gap-plugging limestone. T / F

d. Scientists estimate the new concrete will reduce repair costs by 20%. T / F

e. Seven per cent of CO2 emissions is from the production of concrete. T / F

f. The new concrete could lead to a reduction in levels of pollution. T / F

g. Around 40,000 motorists in the UK die each year because of potholes. T / F

h. The new concrete could be in use in the next two decades. T / F

Exercise 12. SYNONYM MATCH: Match the following synonyms from the article.

1.	drivers	a.	leaks
2.	respite	b.	change direction
3.	novel	c.	reduce
4.	seeps	d.	original
5.	lower	e.	guess
6.	estimate	f.	not less than
7.	benefit	g.	motorists
8.	swerve	h.	ask for
9.	at least	i.	advantage
10.	claim	j.	relief

Exercise 13. PHRASE MATCH: (Sometimes more than one choice is possible.)

1.	a novel and innovative	a.	entering the atmosphere
2.	when water seeps	b.	to 50 per cent
3.	repairing it to avert	c.	pedestrians
4.	considerably increase the lifespan	d.	news
5.	lower roadwork costs by up	e.	more serious damage
6.	The new concrete could be good	f.	solution
7.	CO2	g.	put to use
8.	there will be fewer pollutants	h.	of roads
9.	motorists and	i.	into a crack
10.	The concrete could be	j.	emissions

Exercise 14. Choose the right answer

1	Drivers the world over may soon _____ potholes	a. have rest from b. have despite from c. have respite from d. have rest spite from
2	Come up with a novel and innovative solution to plugging _____	a. gapes and holes b. gaps and holes c. caps and holes d. capes and holes
3	The concrete is full of bacteria that open when _____ a crack.	a. water seeps into b. water sweeps into c. water sleeps into d. water steeps into

4	The scientists believe their discovery could considerably increase _____	a. the lifespan for roads b. the lifespan from roads c. the lifespan of roads d. the lifespan if roads
5	Reduce repairs and lower roadwork costs _____ 50 per cent	a. buy up to b. by upper to c. by up too d. by up to
6	Over seven per cent of the world's _____	a. CO2 emissions b. see O2 emissions c. CO two emissions d. sec oh too emissions
7	Another benefit of the new cement is a reduction _____	a. in accidents b. on accidents c. an accidents d. of accidents
8	There is also good news for _____	a. locals governments b. local governments c. locally governments d. locale governments
9	Claim compensation for damages to their car _____	a. cause by potholes b. causal by potholes c. causes by potholes d. caused by potholes
10	The concrete could be put to use in _____	a. the next 20 years b. a next 20 years c. from next 20 years d. this next 20 years

LESSON 13. PANEL HEATING

Thermocol is a light and cellular plastic material used for sound and heat insulation of ceiling, walls, refrigerators and for air conditioning of the buildings. It is soft, light, strong and durable having compressive strength in the range of 11.7 to 14.4 N/mm2. It has excellent heat, sound and electric insulating properties.

Heat insulating materials The purpose of thermal insulation is to restrict the heat transfer from warmer to cooler areas. The commonly used heat insulating materials work on principle of either air spaces formed between structural components, surface insulation or internal insulation. Well known products are aerated concrete, gypsum boards, fibre boards, asbestos cement boards, chip boards, cork boards, foam plastic, aluminium foil, reflecting paints, expanded blast furnance slag,vermiculite*, fibre glass, glass wool, etc. Cavity wall, though costly, provides good insulation.

The number of different heating systems is almost unlimited. But all of them may be classified as "direct" or "indirect" systems. A "direct" system is a system in which the 179 fuel (or energy) is consumed in the room to be heated. An "indirect" system is one in which the energy is consumed outside the room to be heated. Open fires were the primitive source of heat.

Read the text.

Panel Heating.

Heating and ventilation are two branches of engineering, which are very closely connected; they are therefore treated as a dual subject. Both are concerned with providing a required atmospheric environment within a space, the former with respect to heat supply to produce a desired temperature for maintaining comfort, health or efficiency of the occupants, the latter with regard to supply and removal of air frequently with emphasis on contamination of the air.

Air-conditioning is closely related to both heating and ventilation and will therefore be dealt with later. It is for heating to prevent the too rapid loss of heat from the body. By heating the ambient air of walls, ceiling or floor the rate of heat loss from the body is controlled. Some old concepts of heating were gradually changed since engineers

obtained more precise knowledge about how the body loses heat. Insufficient attention was paid formally to loss by radiation, which is the transmission of energy in the form of waves from a body to surrounding bodies at a temperature.

The most widely used system of heating is the central heating, where the fuel is burned in one place - the basement or a specially designed room and from which steam hot water or warm air is distributed to adjacent and remote spaces to be heated.

There are two most common systems of heating - hot water and steam. Both systems are widely used nowadays. A hot-water system consists of the boilers and a system of pipes connected to radiators suitably located in rooms to be heated. The pipes, usually of steel or copper, feed hot water to radiators or convectors, which give up their heat to the room. The water, now cooled, is returned to the boiler for reheating. As for fuels used for heating buildings they include coal, oil, manufactured and natural gases and wood. Nowadays gas fuel is being used on an ever-increasing level.

VOCABULARY

heating-isitish – нагревание, подогревание, отепление

to prevent- ehtiyot qilmoq – предотвращать, предохранять

ventilation-havo almashtirish – проветривание, вентиляция

loss-yo'qotish – потеря, утрата, пропажа, ущерб

to connect- ulamoq – соединять(ся), связываться, сочетаться

ambient- o'rab olgan – окружающий, обтекающий

therefore- shuning uchun - поэтому

ceiling-shift – потолок, перекрытие, обшивка

to treat- munosabatda bo'lmoq – относиться, иметь дело

to obtain-olmoq, hosil qilmoq – получать, добывать, приобретать

to concern- aloqasi bo'lmoq – касаться, иметь отношение

precise- aniq – точный, определённый

environment-atrof muhit – окружение, окружающая обстановка

transmission-uzatish – передача, пересылка

to maintain- ta'minlamoq, saqlamoq – сохранять, содержать, обеспечивать

wave-to'lqin - волна

efficiency-ishga qobiliyatlilik – работоспособность, умение, продуктивность

surrounding- o'rab olingan – окружающий, близлежащий

occupant-yashovchi – житель, временный владелец

fuel-yoqilg'i – топливо, горючее

emphasis-kuch – сила, выразительность, эмфаза

basement-poydevor – основание, фундамент, подвал

contamination-ifloslanish – загрязнение, порча, заряжение

steam- bug' – пар, эне ргия

conditioning- shamollatish - провстривать

to distribute- tarqatmoq – раздавать, распределять

to relate- taalluqli bo'lmoq – относиться, иметь отношение

adjacent- yondosh, qo'shni – примыкающий, соседний

to deal- munosabatda bo'lmoq – иметь дело, вести дело

remote-uzoq – дальний, далёкий, дистанционный

Speaking

Exercise 1.

Two-way discussion.

1. Do you have panel heating at home?
2. How effective is panel heating in winter?
3. Which is better panel heating or a stove?

Exercise 2. Try to guess the meaning of these words in the text.

1. link
2. treat
3. power
4. exact
5. far
6. take care
7. give out
8. foundation

Exercise 3. Find pairs of related words, taking a word form each box.

1. water	a) air
2. house	b) butter
3. sea	c) ceiling
4. oil	d) table
5. wood	e) fuel
6. milk	f) wave
7. conditioning	g) steam

Exercise 4. Speak about Heating Systems using key-words and word combinations:

to classify, to consume, heated, central heating, direct, indirect, electric heating, hotwater system, gas fires, radiant elements.

Writing

Exercise 5.

What is it? It is used ...

- to knock down walls of old buildings
- to move earth and sand
- to spread mortar on bricks
- to dig heavy stones out of the ground
- to chip off corners from bricks
- to carry small quantities of sand or water
- to break up hard earth before we remove it with a shovel
- to climb to the top of a wall
- to move things that are too heavy to carry

Sledge hammer	shovel	Pickaxe	Trowel	Crowbar	Hammer	Bucket	Ladder	Wheel barrow

Exercise 8.Write a short paragraph about the main tools for painting.

.....

.....

.....

.....

Exercise 9. Prepare a report about a castle at your choice; describe its main architectural features

Exercise 10. Fill in the blanks with the necessary words given below:

1. Heating prevents the body from . . . too much heat. **2.** Making a fire was man's first . . . at artificial heating. **3.** A chimney was formed for . . . the smoke. **4.** The hot gases traveled to a . . . formed in the wall. 5. The next . . . was to introduce the hot water boiler. 6. The pipes were placed under . . . . **7.** . . . took its place as a medium for heating. **8.** Our

present fireplaces are . . . coming from old methods. **9.** The Romans had an idea of heating 2,000 years ago. **10.** Gradually the . . . of aesthetic considerations became manifest.

Steam, flue, grilles, losing, attempt, step, conveying, importance, artificial, heirlooms.

Exercise 11. Read and translate.

Moscow Architecture Institute (State Academy)

Moscow Architectural Institute trains architects of wide-range specialization in Town-Planning, Architecture of Residental and Public Buildings, Architectural Design, Architecture of Industrial Buildings, Architecture of Agricultural Complexes, Theory and History of Architecture, Restoration of Architectural Monuments, Interior Architecture, Landscaping.

The language of education is Russian. The full course of studies lasts 6 years. But if you don't have enough skills in Russian, Artistic and Technical Drawing, you'll have to attend to a special Preparatory Course during one academic year before being accepted as a student. Having completed the full course of studies (6 years) students are qualified as architects and get the Master's Degree with the corresponding diploma. After 4 years students get the Bachelor's Degree and diploma.

Listening

electricity.mp3

Exercise 12. Fill in the gap.

Electricity _____ most important inventions ever. It is the thing that powers the Earth. _____ no electricity, we'd be back in the dark ages. Few people stop and _____ amazing electricity is. With the

flick of a switch, _____ almost anything. Think _____ happen if there was no electricity. We'd have no TV, no computers, no traffic signals. It would be like _____ living in caves. There are a few _____ about electricity, of course. Number one, it's dangerous. Thousands _____ each year from electrocuting themselves or in electrical fires. And number two, it _____ the environment. Most electricity comes from _____ and that creates greenhouse gasses.

LESSON 14.

AIR CONDITIONING, VENTILATION AND GAS SUPPLY.

1. The term air-conditioning is often used loosely to describe any ventilation system with fan and heater.

2. True air-conditioning is the provision of means for control of temperature, humidity and purity of ventilation air both in summer and winter, and involves not only means for warming and humidifying in winter, but also for cooling and dehumidifying in summer. The latter calls for mechanical cooling.

3. Essential to any air-conditioning system are the controls without which satisfactory results are unobtainable.

Read the text.

Air Conditioning, Ventilation and Gas Supply.

Air conditioning implies the control of temperature, humidity, purity, and motion of the air in an enclosure. In our modern world of science and highly developed technology air conditioning is of a great significance for industrial process as well as for human comfort. Air conditioning systems must provide means for performing all the processes required for winter and summer air conditioning. The basic pieces of equipment are the filters, preheat coils, humidifiers, and dehumidifiers, and reheat coils, additional cooling coils, fans and controls. The control of air purity can be achieved in various degrees. As a minimum control some sort of filtering must be done near the entrance of the air conditioning system. Possibly the most efficient filtering device is the electrostatic precipitator.

As far as ventilation is concerned the modern theory to this effect can be summed up in the statement that for places of general assembly the purpose of ventilation is to carry away excess heat and odours. In buildings such as homes, the leakage of air through cracks in doors and windows is usually sufficient to meet this requirement. Although ventilation was formerly concerned with the supply of fresh air to and the removal of hot and contaminated air from the space it gradually came to be associated with cleaning of air.

Another indispensable part of modern amenities is gas supply. It has come now to be of a very wide use. With an intensive exploration of finding natural gas it has gradually replaced the manufacture in its utilization. At the present time natural gas is put to large-scale economic use. The principal utilization of natural gas is as a clean, convenient, economical source of heat. In homes it is used for cooking, water heating. Nowadays most of the homes are heated by natural gas and the number of gas-supplied homes was increasing at a rate limited chiefly by the ability of the steel industry to produce the pipe through which the gas is transported.

VOCABULARY

to imply- nazarda tutmoq – значить, подразумевать, предполагать

precipitator-tezlashtiruvchi – ускоритель, ускорение

humidity-namlik – сырость, влажность

statement-bayonot – заявление, изложение. официальный отчёт

purity-tozalik – чистота

assembly-yig'ilish – собрание, сбор, монтаж

motion- harakat – движение

excess- ortiqcha – излишек, избыток

enclosure - devor, to'siq – ограждение. огорожённое место

odour-hid - запах, аромат, налёт

significance - muhimlik, ma'no – значение, смысл, значительность

leakage-chakka o'tmoq – дать течь, утечка

to perform- namoyish qilmoq – представлять, исполнять, выступать

crack-yoriq – треск, трещина, щёлканье

coil-simli spiral – проволочная спираль, змеевик, катушка

to associate- birlashtirmoq – соединять, связывать, присоединятся

humidifier-namlovchi – увлажняющий, увлажнять

to clean- tozalamoq – чистить, очищать, протирать

dehumidifier-qurituvchi – высушивающий

indispensable-kerakli, zarur – необходимый, обязательный

fan-ventilyator – вентилятор

exploration- tadqiqot - исследование

various- har xil - различный, разный

utilization-ishlatish, qo'llash – использование, утилизация

entrance-kirish joyi – вход, вступление, вхождение

convenient- qulay – удобный, подходящий, пригодный

device-asbob – устройства, прибор, схема, проект

source-manba, kon – исток, верховье, источник

Speaking

Exercise 1. Two-way discussion.

1. What does air conditioning do?
2. What are the basic pieces of equipment?
3. What is the most efficient filtering device?
4. Do you know the purpose of ventilation?
5. With what was ventilation formerly concerned?
6. What is indispensable part of modern amenities?
7. Why is gas used in homes?
8. Why do we use the pipe?

Exercise 2. Try to guess the meaning of these words in the text.

1. different	5. necessary
2. tool	6. use
3. wire	7. link
4. extra	8. suitable

Exercise 3. Group the following sentences into:

A. Air Conditioning. **B. Gas Supply.** **C. Ventilation.**

1. Gas supply has come to be very widely used.

2. In industrial buildings three types of ventilation are in use so as to control dangerous gases and dusts.

3. In buildings such as homes, the leakage of air through cracks in doors and windows is usually sufficient.

4. As for the purpose air-conditioning system may be described as winter, summer and all year.

5. The main utilization of natural gas is as a clean, convenient, economical source of heat. 6. Natural gas supply is used also as a heat source in commercial establishments.

7. Certain industrial process requirements and human comfort are the two major factors to be considered when designing air – conditioning system.

8. Air conditioning is meant for the control of temperature, humidity, purity and motion of the air in an enclosure.

9. The main purpose of ventilation is to carry away excess heat and odours.

Writing

Exercise 4 Write an essay consisting of 80-100 words about "Is the air conditioner a non-versatile home temperature control device?"

Exercise 5. Look at the items and write which ones you need.

What do you need if you want to:

a) make a raft?

b) built a house?

c) make coffee?

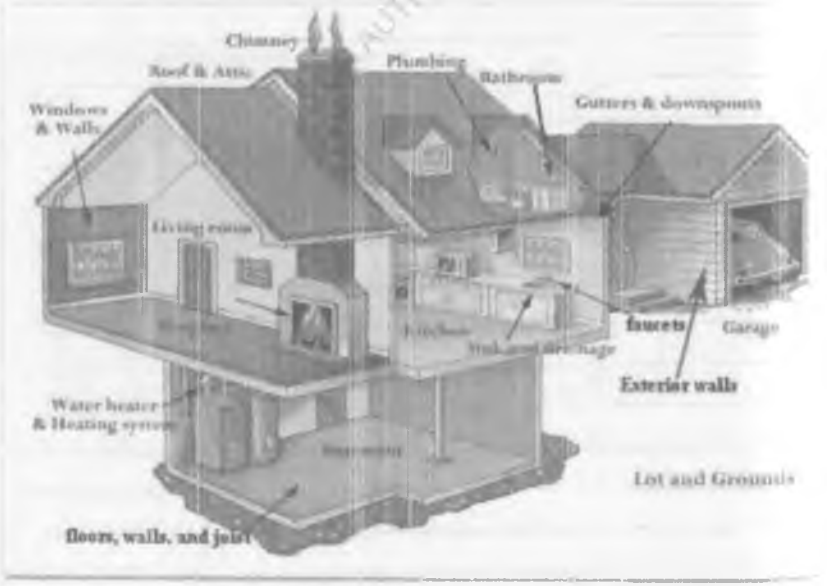
d) wrap up parcel?

e) make a fire in the open air?

f) make a concrete?

g) sew on a button?

matches	cream	scissors	string
dry wood	sticky tape	brown paper	nails
needle	saucepan	wooden spoon	writing paper
cotton	water	cement	planks of wood
newspaper	hammer	rope	butter
sugar	button	brick	sand



Exercise 6. Read and translate.

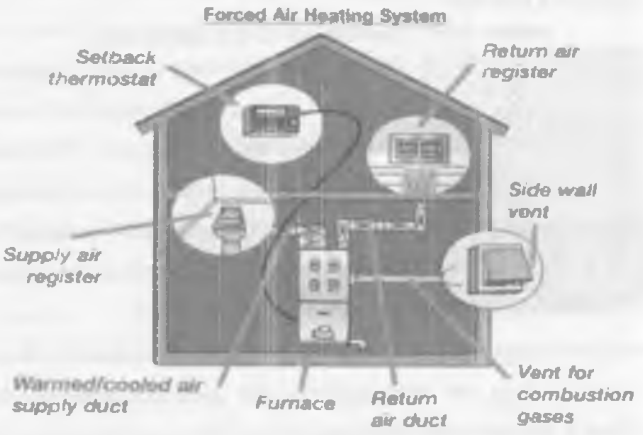
Rostov State University of Civil Engineering.

Rostov State University of Civil Engineering is the institution of higher education in Rostov-on-Don. RSBU dates back to February 1944 when Rostov Civil Engineering Institute was opened. By order of the Ministry of Common and Vocational Training of Russian Federation the Institute was assumed to the University in February 1997.

The University has trained more than 50 000 civil engineers, architects and economists during its activity. About 600 post-graduates and doctorates defended their thesis successfully.Over 1 500 specialists including 52 Candidates and 2 Doctors of Technical science have been trained in RSBU for 57 foreign states.Nowadays more than 6 000 students and about 200 post-graduates get education at 5 Institutes of the University.Highly qualified scientists with international appreciation conduct a professional activity at 45 chairs of the University. 13 academicians, 15 corresponding members and councilors of Architecture and Construction Science Academy, 8 Honoured Scientists of Russian Federation are among them. More than 75 per cent of the staff possesses the scientific degrees, including 18 per cent professors, Doctors of Science. There are libraries, sport halls, and sport-sanitation complex at the Black Sea coast, a dispensary and three student's hostels at the University.

Listening

170215-air-conditioning.mp3



Exercise 7. Fill in the gaps.

Engineers have made a thin material (1) _____ plastic. It can cool buildings and things (2) _____ hot Sun. It (3) _____ energy or water to work. It could replace air conditioners, which (4) _____ power and water. The material is not like (5) _____. It is as thin as the aluminium foil we use (6) _____. The engineers explained (7) _____ works First, it cools anything under it (8) _____ Sun. Second, it takes away heat from (9) _____ it. An engineer (10) _____ it. He wants to see it in the power industry, aerospace, (11) _____. Just a little of the material could cool (12) _____ summer.

Exercise 8. KEEPING COOL: How can buildings keep these areas cooler? Complete this table with your partner(s). Change partners often and share what you wrote.

	Problems	Solutions
Shopping malls		
Office buildings		
Apartment buildings		
Schools		
Homes		
Museums		

Exercise 9. Listen the headline. Guess if a-h below are true (T) or false (F).

a. A team of computer scientists created the super-thin material. T / F

b. The super-thin cooling materials does not work under direct sunlight. T / F

c. The new material does not need energy and water to work. T / F

d. The material is thinner than the aluminium foil we use for cooking. T / F

e. The material works by absorbing the sun's rays and keeping the heat. T / F

f. The material works all day, every day. T / F

g. An engineer is looking forward to seeing the material used in agriculture. T / F

h. Around 15 square meters on a roof could cool a house in the summer. T / F

Exercise 10. Match the following synonymsThe words in bold are from the news article.

1. super	a. thing
2. revolutionary	b. mixture
3. under	c. benefit
4. provide	d. advanced
5. hybrid	e. possible
6. object	f. ultra
7. happens	g. only
8. advantage	h. give
9. potential	i. takes place
10. just	j. beneath

Exercise 11. C OMPREHENSION QUESTIONS

1. Who created the super-thin material?
2. What does the material not need to work?
3. What could the new material provide an answer to?
4. How thick is the new material?
5. What is the new material slightly thicker than?

6. How many things happen when the material is put on top of something?

7. What does the material reflect back into space?

8. How often will this new material work?

9. What industry was mentioned besides power and aerospace?

10. How much of the material could cool down a house in the summer?

Exercise 12. Listening – Guess the answers. Listen to check.

1) A team of engineers has created a super-thin material that could help keep _____

a. buildings cools

b. buildings cool

c. building cool

d. building school

2) Engineers from the university developed the _____ material

a. revolution airy new

b. revolutionise a new

c. revolutionaries new

d. revolutionary new

3) very thin and can cool objects even under _____

a. directed sunlight

b. directs sunlight

c. direct sunlight

d. directly sunlight

4) The material is unlike anything _____

a. funded in nature

b. found in nature

c. found in natural

d. fund in naturism

5) That's slightly thicker than the aluminium foil we _____

a. use for cooking

b. useful cooking

c. use for cook in

d. useful cook in

6) The first thing is that it cools the object underneath by reflecting _____

a. the Sun's rays

b. a Sun's rays

c. the Sun's ray

d. a Sun's ray

7) The material removes the object's own heat and sends _____

a. that into the stare

b. that into the bear

c. that into the where

d. that into the air

8) The key advantage of this technology is that _____

a. it works 20/4/7

b. it works 7/24

c. it works 24/7

d. it works 20/7/4

9) We're excited about the opportunity to explore potential uses in the _____

a. powering industry

b. powered industry

c. power industrial

d. power industry

10) Just 10 to 20 square meters of this material on the rooftop could nicely cool _____

a. down a house

b. downer house

c. down a horse

d. downer horse

LESSON 15. WATER DISTRIBUTION SYSTEM CHALLENGES AND SOLUTIONS.

At present the problem of water supply and treatment are the most essential for mankind. Water taken from natural sources such as rivers and lakes often requires purification.

Water may contain bacteria, mineral elements, suspended matters and impurities. Some of these impurities may be removed easily, others require complex treatment.

Some mineral elements are removed by aerating water. The suspended materials require coagulation and settling process. Bacteria are eliminated from water with the addition of chemicals and sand filtration.

The purpose of purifying drinking water is to make it more pleasant and more wholesome to drink. It's necessary to make it more acceptable to the senses of taste, smell and sight.

There are 50 reservoirs in Uzbekistan with a total capacity of about 19 km3; 21 of them with a total capacity of 5 km3 in the Syr Darya basin, and 29 with a total capacity of 14 km3 in the Amu Darya basin. The largest reservoirs are multipurpose dams, used for irrigation, flood control and hydropower production.

Water is industry's life flood. Just as water within a human body sustains life. water in industry maintains the product line – it is at various times a catalyst, chemical, lubricant, conveyor, coolant, binder or cleanser.

Read the text.

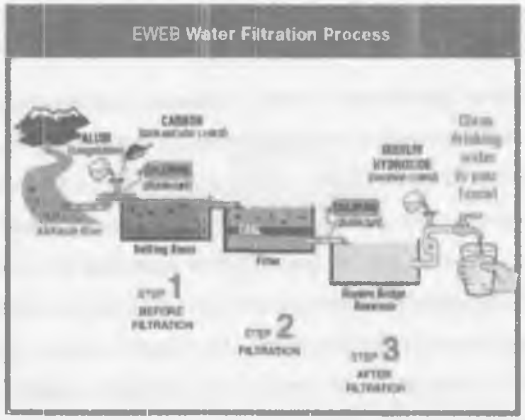
Water Distribution System Challenges And Solutions

Providing sufficient water of appropriate quality and quantity has been one of the most important issues in human history. Most ancient civilizations were initiated near water sources. As populations grew, the challenge to meet user demands also increased.

Water is an important part of nature, which surrounds us, and of those natural conditions we are changing constantly and ever more intensively: the flora, the soil, the mountains, mineral resources and the deserts. An adequate supply of pure, wholesome and palatable water is essential to the maintenance of high standards of health and to provide the convenience modern society demands. In some localities water is available in unlimited quantities and converting it to use is not a difficult problem. This is especially true of towns situated on large inland lakes or rivers. On the other hand there are cities where geographical location requires elaborate systems of water supply, and to provide a satisfactory supply of water in these localities becomes a large engineering task.

The importance of a sufficient supply of water for domestic and industrial purpose has long been a deciding factor in the location of cities. The earliest settlers realized this need and took advantage of natural water sources by establishing colonies in close proximity to them. Water may be taken from any sources of water for human consumption after it has undergone a preliminary treatment to assure its purity. As man's communities grew in population, the demand for water increased and the need for protection of the source of water supply against the possibility of contamination became evident. Progress and civilization have called for elaborate and various systems and methods of water treatment.

Water is power not only in the hydraulic sense, but also in relation to progress and culture; campaigns as well as fortresses have been lost, projects rendered impracticable and communities have decayed for want of water. Long after man had found ways and means to organize water supplies, find them where they were hidden and lead them to where he wanted them, streams and pools in their natural state have served as communal water supplies.



The requirements of water supply in our capital both for the people and industry are fully met by some water treatment stations. In our capital water consumption per capita is very high. It is more than 400 litres per day.

VOCABULARY

constantly- doimo, hamisha – постоянно, неизменно, твёрдо, верно

advantage-ustunlik – преимущество, выгода, польза

intensively- zo'r, shiddatli – интенсивно, напряженно, усилительно

to establish- o'rnatmoq – основывать, создавать, устанавливать, устранвать

resources-resurslar – ресурсы, средства, запасы

proximity-yaqinlik - близость

desert-cho'l – пустыня

consumption-iste'molqilish – потребление, расход

wholesome- foydali – полезный, благотворный, безопасный, здоровыйpreliminary-dastlabki, taxminiy – предварительный, приблизительный

palatable- yoqimli – приятный, вкусный

treatment-ishlovberish – обращение, обработка

maintenance-yordam, madad – поддержка, сохранение, содержание, уход

protection-himoya – защита, охрана, прикрытие

demand-talab – требование, потребность, запрос, спрос

possibility-ehtimollik, imkoniyat – возможность, вероятность

locality-joy – местность, местоположение, населенные пункты

evident- oydin, shubhasiz – очевидный, ясный

inland-ichki – внутренняя часть страны

[illegible]nigns-kompaniyalar – компании

elaborate- puxta o'ylangan – тщательно разработанный, продуманный, [illegible]работанный, усовершенствованный

fortress-qal'a - крепость

satisfactory- qoniqarli – удовлетворительный, достаточный, приятный

to render- to'lamoq – платить, отдавать, оказывать

domestic-xonaki, uyga doir – домашний, внутренний

impracticable- bajarib bo'lmaydigan – невыполнимый, неисполнимый

settler-ko'chib kelgan odam – поселенец, отстойник

to decay- so'nmoq, kuchsizlanmoq – гнить, раздагаться, портиться, ухудшаться

to realize- amalga oshirmoq – представлять себе, осуществлять, выполнять, реализовать

percapita- odam boshiga – на человека, за каждого

Speaking

Exercise 1.

Prepare a minute and describe the environmental effects of water pollution.

You should say:

- If you faced water pollution in life;
- If you take any action to prevent water contamination;
- how the clean water supply can be improved in your city.

Exercise 2. Try to guess the meaning of these words in the text.

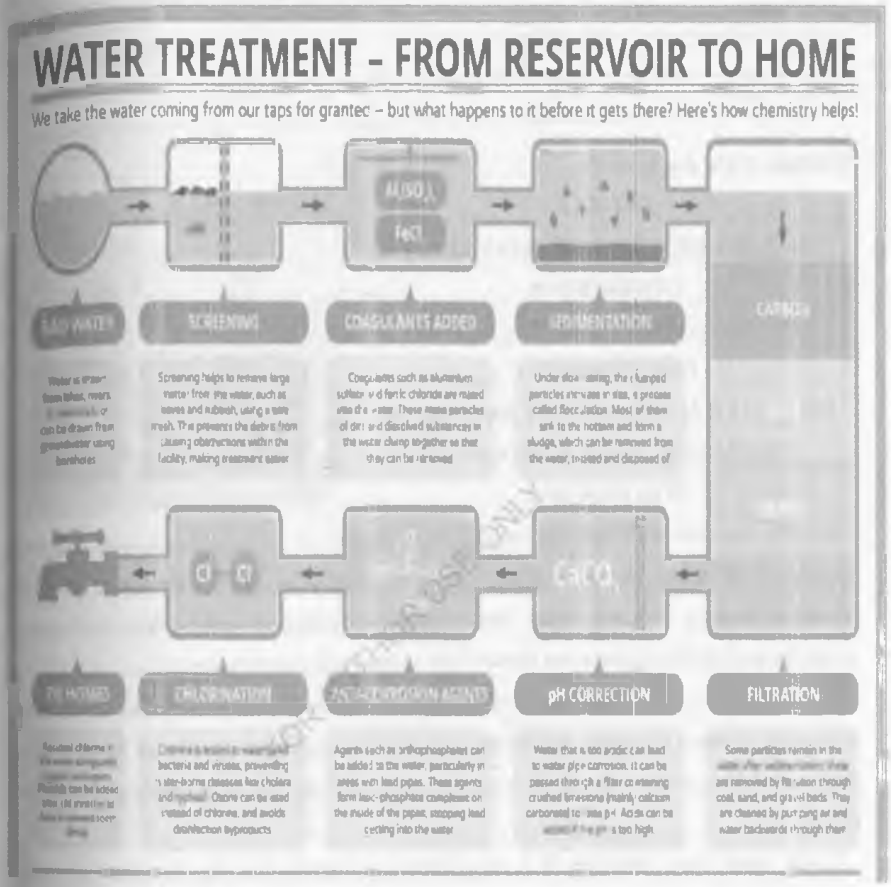
1. regularly
2. useful
3. place
4. fix
5. love
6. pay
7. actually
8. help
9. rapidly

Writing

Exercise 3. Write a letter consisting of 80-100 words on the topic:

Brown dirty water flows from under your tap. Write a letter to the water supply company and in your letter you should:

- *introduce yourself.*
- *indicate a possible reason for what is happening.*
- *write how the company can help you*



Exercise 4. WATER SHORTAGES: How do water shortages affect people and how can problems be overcome? Complete this table with your partner(s). Change partners often and share what you wrote.

	Problems	Solutions
Golf courses		
Gardeners		
Restaurants		

Schools		
Homes		
Water parks		

Exercise 5. Do you know?

DECREE

THE PRESIDENT OF THE REPUBLIC OF UZBEKISTAN

ON approval OF THE CONCEPT OF DEVELOPMENT

OF WATER MANAGEMENT SECTOR OF THE REPUBLIC OF UZBEKISTAN

FOR 2020-2030

In order to ensure stable and guaranteed water supply for households, as well as for all sectors of the economy, large-scale efforts are underway in our country to develop irrigation system, improve water management infrastructure and quality of irrigated lands, as well as the efficient and rational use of land and water resources.

At the same time, due to global climate change, continuing growth of the population and increasing demand for water, the shortage of water resources is aggravated from year to year, which may become the main hindering factor for the country's development in the future.

At the same time, absence of a long-term concept for the development of water management sector impedes the efficient use of water resources, widescale channeling of investments in this sector, promoting R&D and innovative potential in water sector, implementation of R&D products know-how, and broad utilization of modern information and communication technologies and innovative solutions.

Based on this, in order to ensure water and food security of the country by organizing effective water resources management and their rational use in the medium- and long-run, reforming the water sector and introducing market principles and mechanisms, information and communication technologies, as well as efficient use R&D potential in the sector.

Listening

Exercise 6. Fill in the gaps.

150525-water.mp3

The U.S. state of California is going through (1) _____ in its history. Water supplies are now (2) _____ levels. The state government has introduced many laws to try to prevent water shortages. California farmers have stepped (3) _____ part in helping to conserve water. California's agriculture sector has agreed (4) _____ water use by 25 per cent. This will be on a voluntary basis. The agreement follows a move by California's governor Jerry Brown (5) _____ in cities by 25 per cent. This was introduced as an emergency measure and it made many city residents angry. They did not (6) _____ only people having to cut back on water. California's water (7) _____ 30 million people and irrigates nearly six million acres of farmland. It is the world's largest and most productive water system (8) _____ the most difficult systems because too many people (9) _____ water. There is a great demand for water in the state. Farmers say it is important they get water first because growing (10) _____. However, some crops, like almond trees, need a lot of water. People in the cities say they need water the most (11) _____ live. There is also demand from California's many golf courses and for the swimming pools of the wealthy people in the state. California's population will be almost 50 million people (12) _____.

Exercise 7. TRUE / FALSE: Listen the headline. Guess if a-h below are true (T) or false (F).

a. California is suffering from its second worst ever drought. T / F
b. The California government has not yet passed water shortage laws. T / F
c. California farmers agreed to cut back on water by 25%. T / F
d. California residents totally understand the 25% cuts. T / F
e. Over 30 million people use the California water system. T / F

f. The water system in California is the biggest in the world. T / F

g. Almond trees need very little water. T / F

h. The population of California will be 50 million by 2020. T / F

Exercise 8. Match the following synonyms from the article.

1.	worst	a.	deal
2.	prevent	b.	economise
3.	conserve	c.	call
4.	agreement	d.	necessary
5.	cut back	e.	most terrible
6.	irrigates	f.	require
7.	demand	g.	safeguard
8.	essential	h.	rich
9.	need	i.	stop
10.	wealthy	j.	waters

Exercise 9. Guess the answers. Listen to check.

1 The U.S. state of California is going through the worst drought _____

A. on its history

b. in its history

c. and its history

d. un its history

2 Water supplies are now at dangerously _____

a. lowly levels

b. low level

c. lowly level

d. low levels

3 California farmers have stepped in to do their part in helping _____

a. to con serve water

b. toucan swerve water

c. two can save water

d. to conserve water

4 California's agriculture sector has agreed to cut back on its water _____

a. used by 25 per cent

b. use by 25 per cent

c. uses by 25 per cent

d. usage by 25 per cent

5 They did not want to be the only people having to _____

a. cutback on water

b. cutbacks on water

c. cuts back on water

d. cut back on water

6 California's water system serves over 30 million people and irrigates _____ acres

a. near six million

b. nearly six million

c. in early six million

d. on early six million

7 It is also one of the most difficult systems because too many people _____

a. want too little water

b. want too few water

c. want too small water

d. want two little water

8 Farmers say it is important they get water first because growing _____

a. food is essential

b. food is essentially

c. food is essence shall

d. food is essence stall

9 People in the cities say they need water the most to _____

a. be able to live

b. bay ball to live

c. be able too live

d. be able to lives

10 California's population will be almost 50 million people _____

a. buy the year 2020

b. bye the year 2020

c. bay the year 2020

d. by the year 2020

LESSON 16. SEWERAGE.

Sewage is the liquid waste produced by us all when using the toilet, having a bath or shower or washing clothes and dishes. In some places it also includes rain-water falling on houses and roads. In big towns and cities it can also have liquid waste from factories in it. It flows in pipes called sewers to be cleaned up at a sewage treatment works.

1. Sewers have been in Existence for Thousands of Years many credits the Romans for having developed sewerage, but there is proof that sewers already existed long before that. Archaeologists say the ancient Indus Valley civilization city of Mohenjo-Daro, which predates the Romans by more than two thousand years, had sophisticated sewers that featured brick-lined pits no different to modern septic tanks and enclosed drains that carried both sewage and stormwater out of the city.

2. There are Three Types of Sewer Systems most of us lump sewers under one category, but there are actually three distinct types of sewer systems: Foul or sanitary sewers, which carry wastewater from our homes into wastewater treatment plants; surface water or storm sewers, which carry rainwater from roof and roads into streams and rivers; and combined sewers, which are a single pipe system which carries both wastewater and surface water to wastewater treatment works.

Sewage is mostly water but it also has many microbes some of which can be harmful. It can have many chemicals in it which can also cause harm to animals and humans.

Read the text.

Sewerage.

The problem of protecting natural water resources has grown very pressing for many countries since the beginning of the second half of the 20th century. The development of human society, the growth of civilization and social and technical progress has resulted in the changing of the composition of natural water resources.

The waste products that result from the daily activities in a community are of two general types: the liquid waste, known as sewage and the solid waste, known as refuse. The different wastes of which sewage is composed are the following: the wastes from lavatories, baths, sinks, laundry tanks in residences, institutions and business buildings.

The removal of all kinds of sewage is usually accomplished by means of sewers. The sewers are placed in the streets at several feet below the ground surface. The general process of removing sewage is designated as sewerage and the entire systems of sewers including a sewage treatment plant are known as a sewerage system.

During primary treatment the larger and heavier solid particles settle out from the liquid. These solid particles that settle out form a slimy paste, which is known as sludge. The partly clarified sewage that has been given primary treatment generally contains

much decomposable materials. Therefore, further treatment, which is known as secondary treatment, is usually required. An auxiliary treatment, which may be used with either primary or secondary treatment is disinfections or the killing of the most of the bacteria in the sewage by means of chemicals.

VOCABULARY

pressing-qoldirib bo'lmaydigan – выжать до конца, выжимать, неотложный, настоятельный

sink-rakovina, chanoq – раковина, сточная труба

development- rivojlanish – развитие, эволюция

bath-dush – ванна, купание, баня

disinfection-dizinfeksiya – дезинфекция, обеззараживание

human-inson - человек

society-jamoa – общество, объединение

removal-bartaraf qilmoq – устранять, передвигать, уносить, отодвигать

sewer-kanalizatsiya quvuri – канализационная труба

to accomplish- bajarmoq – выполнять, совершать, достигать

social-ijtimoiy – общественный, социальный, общительный

growth-o'sish – рост, развитие, увеличение

composition-struktura, tuzilish – построение, структура

to designate- aniqlamoq – определять, обозначать, назначать

waste-chiqindi – отходы, отбросы

sewerage-kanalizatsiya - канализация

activity-harakat – деятельность

entire-to'liq – полный, совершенный, целый

slimy paste- shilliqli pasta – скользкий, слизистая паста

primary-boshlang'ich – предварительный, первоначальный, первичный

sewage-axlat suvlar – сточные воды, нечистоты

liquid-suyuq – жидкий, ликвидный

sludge-axlat suv qoldig'I - густая грязь, отстой, грязевой нанос

solid-qattiq – твёрдый, цельный, прочный, крепкий, плотный

decomposable-ajralishga qobiliyatli, tarkibiy qismlarga ajratmoq – разлагаться на составные части, растворяться

to clarify- tozalamoq – чистить, делать(ся) ясным, выносить ясность

lavatory-hojatxona -туалет, уборная

refuse-axlat, qoldiq – отбросы, остатки, мусор

laundry tank- kir yuvish baki – прачечная, бак для стирки

auxiliary-yordamchi – вспомогательный, добавочный, запасной

Speaking

Exercise 1. Two-way discussion.

1. What is necessary for protecting the purity of natural water resources?
2. Why do large modern cities suffer mostly from water pollution?
3. How many general types of the waste products do you know?
4. What can you say about the different wastes?
5. Where the sewers placed?
6. How is general process of removing sewage designated?
7. What is sludge?
8. Why must sewage undergo secondary treatment?

Exercise 2. Try to guess the meaning of these words in the text.

1. person
2. shower
3. find out
4. clean
5. rubbish
6. structure
7. toilet
8. action
9. complete

Writing

Exercise 3. Complete them by adding vowels. Find these words in the text.

1. c– mp – s – t – – n
2. r– f – s –
3. — x – l — r –
4. s – l – d
5. r – m – v – l
6. l– v – t – r –
7. s – w – g –
8. s – w – r
9. l – q – – d
10. –ct– v – t –

Exercise 4. Match the words (1-5) with the definitions (A-E).

1.school	**A** any structure with walls and a roof
2. building	**B** a structure with a large, open space inside
3 .warehouse	**C** a structure with many stories
4. high-rise	**D** a structure where people work
5 .office building	**E** a structure where people go to learn

Exercise 5. Fill in the blanks with the correct words:

parking	***structure***	***airport***	***structure***	***residence***	***hospital***	***Skyscraper.***

1 The tallest building in a big city is usually a(n) _____ .

2 The workers keep their cars in a(n) _____during the day.

3 When people are sick, they go to a(n) _____ .

4 A single-family house is an example of a(n) _____ .

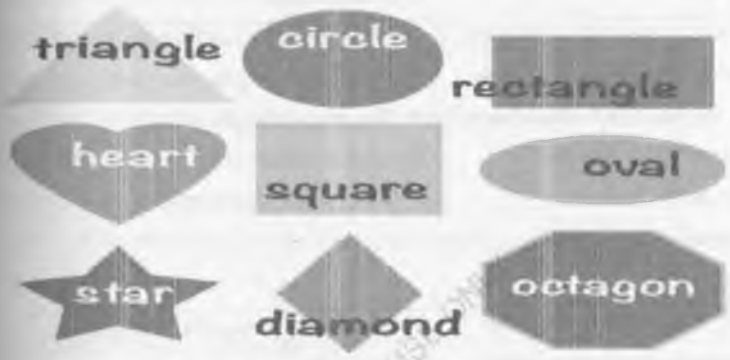
5 The city put up a small _____ at the bus stop to protect people from the rain.

6 People travel in and out of the _____ on planes.

Exercise 6. Place the words from the word bank under the correct headings.

Side ,oval .corner, polygon, diamond .rectangle, circle

Parts of a shape	Shapes with curved edges	Shapes with straight edges



Exercise 7. Translate into native language

Water Day

World Water Day is a fairly new global observance. It was proposed in 1992 at the United Nations Conference on Environment and Development in Rio de Janeiro, Brazil. The holiday was adopted in 1993. On this day the public is encouraged to turn off their tap and not use them for the entire day in an effort to conserve water and appreciate this valuable natural resource.

As awareness for this day grows so too does the awareness of the general public about the safety and availability of clean water around the world. 71% of the Earth's surface is covered by water and yet so many countries are unable to provide citizens with clean, safe drinking water.

Exercise 8. The Water Cycle. How much do you know?

1. This is the name for rain or snow. A. Precipitation B. Condensation C. Evaporation	2. As the sun warms the earth, it turns water on earth into water vapour that rises into the air. This is called… A. Evaporation B. Precipitation C. Condensation
3. As water vapour rises, it meets cooler air that changes it back to water droplets or ice which form clouds. This is called… A. Evaporation B. Precipitation C. Condensation	4. The water that you had in your bath or shower you had last week… A. Has gone underground B. Has evaporated C. Is still in the water cycle
5. The process that keeps water moving around the earth is called… A. The water cycle B. Precipitation c. Evaporation d. Condensation	6. After rain falls on earth, it may… A. Evaporate B. Travel downhill until it reaches the sea C. Stay underground for years
7. If we use too much water, we could use up all of the water on earth. A. True B. False	8. Saving water is not important A. True B. False

Listening

plumb.mp3

Exercise 9. Listen to the text. Then, mark the following statementsas true (T) or false (F).

A: I am having some plumbing problems and need them fixed. T/F

B: What exactly is wrong with the plumbing? T/F

A: The bathroom flushes really slowly. T/F

B: Are there any problems with the plumbing in the toilet? T/F

A: Both the kitchen and the bathroom plumbing are messed up. T/F

B: How long have you had these problems? T/F

A: It has been going on for a while, but just started to get worse this morning. T/F

B: I will send someone out to take a look at the problem. T/F

Will you be home this afternoon?

A: Yes, I will be at home this evening. T/F

B: Fine. I will be there around 4:00. If someone is not there, I will use my key to get in. T/F

LESSON 17. ROADS.

Parts, which performed similar functions in different machines, are called general-purpose parts. They are screws, bolts, gear wheels, bearings. Machines employed for road making can be classified according to their purpose as follows:

a) transporting facilities – crawler and wheel-mounted tractors, trucks, general and special purpose trailers and semi-trailers.

b) Materials handling equipment – winches, cranes, hoists, loading and unloading machines.

c) machines for land clearing and earthwork – rippers, bulldozers, scrapers, elevating graders, revolving shovels.

d) Machines for highway maintenance – sweepers, snow and ice sweepers,repair trucks, etc.

Read the text.

Roads.

A road junction is the point at which, one road meets another; an intersection is the point at which two or more roads cross each other. Both junctions and intersections are the worst danger spots in a road system. The problem of reducing danger at these points is this of cost and space. If junctions and intersections are such that all classes of traffic meet each other at the same level, there is a danger of collision, not only between cars of the same class but between those of different classes. Almost complete segregation of different classes can be achieved, and the need for users of the same class to cross traffic streams, the most dangerous process of all, can be avoided.

The perfect example of complete segregation of different classes of traffic and of the avoidance of crossing traffic streams is the clover-leaf junction, at which no collision can occur between vehicles if the drivers of those leaving the junction can manage to avoid those already on the road which they are approaching. All forms of road junction can be classified into two groups: roundabouts and flyover-junctions.

Roundabouts. The success of a roundabout depends greatly upon the ease with which vehicles using it can 'weave' or pass from one traffic lane to another. The greater the length of the road in which the weaving can be carried out and the smaller the angle of approach of converging streams of traffic, the more easily can weaving be performed. The angle should not be greater than 30 degrees. The greater the diameter of the island, the smaller the angle of convergence.

Flyover-junctions. These have been developed chiefly at places where there are no pedestrians. These 'flyovers', which enable high speeds to be maintained, are extremely expensive, costing about ten times as much as a roundabout, so it is much better to have ten roundabouts at ten dangerous junctions than a single flyover at a single junction.

VOCABULARY

junction- chorraha, kesishish – перекрёсток, узловой пункт

example- namuna, misol – пример, образец

intersection- kesishish – пересечение, точка, перекрёсток

different- harxil - разный, другой, несходный, необычный

to cross- kesib o'tmoq – пересекать, переходить, перечёркивать

clover-leaf- beda bargi – клеверный лист (конструкция пересечения автомобильных дорог)

danger-xavf – опасность, угроза

to occur- sodir bo'lmoq – случаться, происходить, приходить на ум, попадаться

to reduce- kamaytirmoq – понижать, уменьшать, приводить в определённое состояние

vehicle-ot-ulov, transport – перевозочное средство, связующее вещество

traffic-harakat – движение, транспорт

level-daraja – уровень, степень, этаж

converging- ro'para kelayotgan – сходиться, сводить в одну точку, приближаться

collision-to'qnashish – столкновение

to avoid- o'zini chetga olmoq – избегать, сторониться, отменять

roundabout-aylanma yo'l – кружный, обходной, окольный путь

to manage- boshqarmoq – руководить, управлять, стоять во главе

fly over-estakada – эстакада, пересечение дорог на разных уровнях

segregation-ajratish, izolyatsiya – отделение, выделение

angle-burchak,угол

to achieve- erishmoq, yetishmoq – достигать, добиваться, доводить до конца

pedestrians-piyodalar – пешеходы, пешеходный, место пешехода

stream-oqim – поток, направление, течение

value-narx – цена, стоимость, значение

convergence-ro'para kelish – схождение в одной точке, сходимость

enable-imkoniyat bermoq – давать возможность или права, приспосабливать, делать годным

Exercise 5. Complete the sentences with the correct words from boxes.

between	in	on	next to	in the middle

1. I met him .... the market square.
2. The market square is ..... of the town.
3. There's a library ..... the north side of the square.
4. The school is .....the library.
5. St. Mary's Church is ..... North Street and Dean Street.

Exercise 6. Write your own version.

How do you build a road?	
What types of materials are used to build roads?	
Does it take a long time to build a road?	

	Asphalt wearing surface
	Aspahlt intermidate layer
	Asphalt base layer
	Aggragate base
	Subsoil

Exercise 7. Matching – Construction Tools

A) tape measure	1) 
B) nail	2) 
C) hammer	3) 
D) screwdriver	4) 
E) wrench	5) 
F) drill	6) 
G) pliers	7) 
H) saw	8) 
I) circular saw	9) 

Exercise 8. Which of these verbs are regular and which are irregular? Write them in the correct columns.

Give, build, stop, make, keep, want, dig, design, connect, accept, create, contain, fix, develop, meet, avoid, cross, manage, achieve, construct, describe, use, occur, drive.

Listening

4L8-anger-behind-the-wheel.mp3

Exercise 9. Listen and answer the following questions.

1. What does Neil say about the American Road accident figures?
   - They have improved recently.
   - A minority of accidents are caused by aggressive driving.
   - Some form of Road rage causes about one third of these casualties.

2. Why does Neil believe cars are being used more often as weapons?
   - People preferred this to one-to-one physical confrontation.
   - Cars are getting faster and more powerful.
   - People are afraid of carjacking.

3. Why does Beth mention her father and how driving was in his day?
   - To demonstrate that Road rage existed in the past but on a smaller scale.
   - To demonstrate that people drove very well in the past.
   - To demonstrate that people's reactions to bad driving have changed remarkably.

4. Which of these does Neil not mention as a contributing factor towards an increase in road rage?
   - New Road construction has not kept up with increase in traffic quantity.

   - A lack of proper education of young drivers to prepare them for modern driving.
   - High traffic periods being concentrated in the mornings and evenings.
   - People being increasingly in a rush and not leaving enough time for journeys.

5. What does the expression "unforeseen circumstances" mean in the context of this radio program?
   - People are surprised at the destructive force of a car.
   - People are surprised by the aggressiveness of other drivers.
   - People don't expect such heavy sentences for traffic offences.

6. What basic advice does Neil give at the end of his talk with Beth?
   - Drive slower.
   - Get to work earlier.
   - Leave home earlier.

LESSON 18. ROADS AND TUNNELS.

About four to five thousand years B. C. the introduction of the wheel constituted a major technical achievement and greatly accelerated the development of road construction. The possibility of carrying a greater load on wheels than could be moved by dragging it, called for a corresponding improvement in carriageway and bridge flooring and also created a demand for more convenient road alignments and the bypassing of marshland and loose sands.

Road engineering is one of the earliest arts known to mankind. Road making originated in the period of early human settlements. People would choose the most convenient and the shortest ways of approach to their hunting and fishing grounds, gradually making footpaths.

In the second half of the 18th century a period of intensive road building began,the rate of building being dependent upon the rate of development of industry and commerce in various states. The construction of roads with uniform hard surface substantially improved the conditions for the transportation of raw materials and of finished products by reducing the tractive resistance and hence allowing an increase in the load carried by individual vehicles.

At first, roads similar to the Roman roads were built. However, owing to a scarcity of suitable material and the high cost of labour, the amount of stone material used was progressively reduced, and the work was carried out less thoroughly. Research was undertaken with a view to finding more rational methods of using stone for pavement construction which would reduce both the amount of labour and the cost.

Reading

Roads and Tunnels.

1. British roads are classified in three groups. The arterial roads, so called because they might be compared to the arteries in the human body, are known as *A* or Class I roads. The arterial roads include the principal roads radiating from London to far parts of the country, and many roads joining big cities. The second group of classified roads consists of *B* or Class II roads which are a little less important than *A* roads. Last comes a third group, which has no official name. Each road of the first two classes, *A* and *B*, has a different number, which appears on all signposts, so that a motor driver can find his way across Britain if he has previously looked up the number on a map.

2. The crowded state of the British roads caused many accidents and delays even before World War II and became much worse afterwards. For some years little was done to tackle the problem apart from widening the roads in places and making by-pass roads around towns to avoid traffic jams in busy streets. In the late 1950s a programme was

begun for building some 400 miles of motorways in the form of a network over the country, the chief ones radiating from London to the

industrial areas in South Wales, the Midlands, and Lancashire. These modern double-track highways are being built with fly-over junctions and crossings and will in time form part of a system of motorways running right across Europe.

3. A motorway is usually designed with two carriage-ways, one for traffic in each direction. These should be at least 30 feet apart to avoid the vision of drivers being dazzled by the lights of vehicles coming the other way. The two carriage-ways needn't run side by side. A width of 24 feet between kerbs usually gives ample room for passing, but some roads are wider, for example the London-Birmingham motorway is 36 feet wide. At all cross-roads there are fly-over or clover-leaf crossings.

4. In thinly populated tropical countries, where the earth is dry and sandy, roads to carry occasional traffic can be made quite cheaply. The soil is turned over and mixed with a small quantity of cement, watered, and finally rolled, after which it has quite a good hard surface.

5. In many countries there are high-speed motorways, like the German "autobahnen" or Italian "autostrade". They are usually fenced in, and motorists are admitted to them only at special gates where they pay a toll. Once inside, they can travel at 80 or 90 miles an hour, for there are hardly any junctions, and no slow moving traffic is allowed.

6. Europe's first automobile tunnel under the Alps – the 3.4-mile Great St. Bernard Tunnel between Italy and Switzerland - was officially opened to traffic on the 19 March 1969. The tunnel was under construction slightly over five years and cost about 38 million dollars. Actual digging starting from both sides was under way from February 1959 to April 1961. Some 1,650 tons of explosives were used to excavate more than a

million cubic yards of rock. The project also required 44,000 tons of steel for use in the construction of walls and roadbed, and 165,000 tons of reinforced concrete for lining the inside of the tunnel. The tunnel has a two- line road bed, 24 ft. wide and is 14 ft. 9 in high. Leading up to it on both sides are several miles of approaches built on concrete stilts and roofed with concrete to protect the roads from snow and avalanches and make them useable throughout the year. Up to now the Great St. Bernard Pass has been closed much of the year by snow.

7. More than 30,000 cars a year are expected to use the tunnel. Tools range from 2.10 dollars to 4.65 depending on the engine, size of the car and number of passengers. There are 12 other important tunnels under the Alps in central Europe all for rail traffic. Soon a second Alpine motor tunnel will be ready. It will connect Italy and France under Mont Blanc.

VOCABULARY

to be classified - tasniflangan bo'lmoq - быть классифицированным

the arterial roads – magistral yo'llar – магистральные дороги

to be compared - qiyoslangan bo'lmoq – быть сравненным

principal roads – asosiy yo'llar – основные дороги

radiating – nur sochadigan – расходящийся лучами, сиять

joining – birlashuvchi - присоединяющий

important – muhim – важный

official name – rasmiy nom – официальное (формальное) имя

sign posts – ramzlar viveskasi – вывеска символов

a motordriver – mashina haydovchisi - машиноводитель

previously – oldindan, ilgaridan – предварительный

the crowded state – to'lib ketgan shtat – переполненный штат

caused – sabab bo'lmoq – быть причиной

accidents – baxtsiz hodisalar – несчастные случаи

delays – kechiktirish – отлагательство, задержка

afterwards – nihoyasida, natijasida – в последствии, потом

to tackle – arqon bilan mustahkamlamoq, ushlamoq – закреплять снастями, схватить

crossroads – o'tish yo'llari – проходящие дороги

to avoid – o'zini chetga olmoq, xatodan qutulmoq – избегать, сторониться

traffic jams – transport vositalarining to'planib qolishi – дорожная «пробка», скопление транспорта

network – tarmoq – сеть

chief – rahbar, boshliq – глава, руководитель

double-track highways – ikki koleyali (izli) baland (temir) yo'l – двухколейные высокие дороги

fly-over junctions – estakada, yo'l tepasiga qurilgan (osma) ko'prik, sohilda kemalar to'xtashi uchun qurilgan ko'priksimon maydon – эстакада

two carriage-ways – ikki tomonlama yo'l – двухсторонние дороги

the vision – ko'rinish – вид

dazzled – ko'zni qamashtiradigan – ослепительный

vehicles – tashish vositalari – перевозочные средства

a width – kenglik, bepoyonlik – ширина

24 feet – fut (30,48 sm.ga teng o'lchov birligi) – 24 фут

kerbs – yo'l cheti, yo'l yoqasi – обочина, край тротуара

ample room – keng inshoot – обширное помещение

clover-leaf – beda bargi – клеверный лист

thinly – ingichka, yupqa – тонко, худо

tropical countries – tropik mamlakatlar – тропические страны

sandy – qumli – песчаный, песочный

occasional – tasodifiy, kutilmagan – случайный, редкий

the soil – yer – почва, земля

rolled – o'ralgan, dumalangan – катить, вертеть, вращать

surface – yuza, ust – поверхность, внешность

fenced in – himoya qilmoq, o'rab olmoq – ограждать, окружать

a toll – qo'ng'iroq ovozi – колокольный звон

slightly – bir oz, yengilgina – слегка, немного

digging – yer ishlari, ekskavator bilan qazish – земляные работы, черпание экскаваторная выемка

explosives – portlovchi, portlaydigan – взрывчатый, взрывной

to excavate – qazish, kovlash – копать, рыть, выкапывать

rock – qoya, jarlik, osilib turgan qoyatosh – скала, утёс, горная порода камень

steel – po'lat – сталь

roadbed – ko'tarma yo'l (shag'al to'kib ko'tarilgan)– полотно дороги

lining – chiziq o'tkazish – проводить линии

avalanches – tog'lardan ko'chib tushadigan qor – лавина, снежный обвал, град

tools – ish asboblari, dastgohlar – рабочие инструменты, станки

Speaking

Exercise 1. Two-way discussion.

1. Are British roads classified in three groups?

2.Has the third groupan official name?

3. Each road of the first two classes, *A* and *B* has a different number, hasn't it?

4. Are there fly-over or clover-leaf crossings at all cross-roads?

5. How many cars a year are expected to use the tunnel?

6. Will a second Alpine motor tunnel connect Italy and France under Mont Blanc?

7. Has the Great St. Bernard Pass been closed much of the year by snow up to now?

8. When was Europe's first automobile tunnel under the Alps – the 3.4-mile Great St. Bernard Tunnel between Italy and Switzerland –officially opened to traffic?

9. Can in thinly populated tropical countries, where the earth is dry and sandy, roads to carry occasional traffic be made quite cheaply?

10. What caused many accidents and delays even before World War II and became much worse afterwards?

Exercise 2. Try to guess the meaning of these words in the text.

1. reason
2. beforehand
3. then
6. view
7. transport
8. postpone

4. blind
5. head

9. evade
10. linking

Reporting a Car Accident

If you have a vehicle accident, there are several things you must do.

1. You must always stop. NEVER drive or walk away.
2. You must report the accident to the police if someone was hurt, or if there was damage over $1,000 to the vehicles or to someone's property. You have 21 days to report the accident.
3. Write down the information of the other driver's license and registration.
4. Write down the names and addresses of passengers.
5. Write down the names and addresses of witnesses.
6. Write down the time and the location of the accident.
7. Write down the road conditions and how the weather was.
8. Report all accidents to MPI. The accident might be a minor accident or it might not be your fault but you should report it.
9. After MPI makes an appointment with you and inspects your vehicle, take it to an auto body mechanic to get it repaired.

Exercise 3. Read each sentence. If it is true, write T. If it is false, write F.

1. Always stop if you are in an accident. _____
2. Write down all the information at home. _____
3. You should report all accidents to the insurance company. _____
4. Write down the names and addresses of all the people who were in the accident. _____
5. If no one is hurt but your car has $8,000 damage, you don't have to report the accident to the police. _____

6. An auto body mechanic makes the inspection on your vehicle. _____

Exercise 4. Complete the following words by adding the missing vowels. Find these words in the text.

1. v – h – cl – s
2. – v – – d
3. d – l – – s
4. c – – s – d
5. j – – n – ng
6. – cc – d – nt
7. – mp – rt – nt
8. pr – v – – – sl –
9. r – d – – t – ng
10. ch – – f

Exercise 5. Retell the text according to the plan.

1. British roads.
2. The crowded state of the British roads.
3. Europe's first automobile tunnel under the Alps.
4. Motorways.

Exercise 6. Do you know?

Tashkent Automobile and Road Construction Institute.

The Tashkent Automobile and Road Construction Institute was established in Tashkent, Uzbekistan to cover the high demands for professionals in the transportation and

automobile field. The Tashkent Institute of Design, Construction and Maintenance of Automobile Roads (TIDCMAR) is known as the only one and unique institute in Central Asia which focuses on training highly qualified professional engineers on automobile and road construction fields. It was first established during Soviet times by the edict of Uzbek government number 697 on 27 December of the year 1971 and by the edict of "Ministry of Higher and Secondary Education Affairs" number 27 on 21 January of the year 1972 under the base of automobile-road faculty at "Tashkent Poly Technical Institute". The first academic year at the institute started on 1 September 1972.

TIDCMAR's main building is located in the center of Tashkent, near to the metro station "Oybek" and next to the "State Museum of Arts" of Uzbekistan. Tashkent Institute of Design, Construction and Maintanace of Automobile Roads is well known as one of the leading universities of Central Asia in fields of auto-constructing, automobile transports, road and airport construction. The campus of the institute is fully supplied with modern rooms to hold classes, with rooms for experimental subjects and a techno park.

Exercise 7. Answer the questions using the following expressions:

I think that …, it should be noted that …, it is no doubt that …, it should be mentioned that …, I'm quite sure that…, etc.

1. Are roads important for present-day society?
2. Why is road design so complicated nowadays?
3. What are roads intended for?
4. What obstacles preclude the building of roads along the shortest distance?
5. The influence of what natural factors are pavements and road subgrades subject to?
6. When are surveys needed in road construction?
7. How may basic earthwork operations be classified?
8. What is the carriageway covered with?
9. Why are road jobs essentially labour-consuming and complicated?
10. Are many new roads put into service every year?

Writing

Exercise 8. Write about roads for 2-5 minutes. Comment on your partner's paper.

Exercise 9. Put the articles *a, an, the* or *zero article* into the gaps.

1. Road construction hasn't been always known to … man. **2.** Mr. Brown, … senior vice president for … locally-based engineering company, said that … project would improve traffic safety on one of … most heavily traversed urban highways in … world **3.** innovative reversible-lane elevated toll road is beginning to take shape in Hillsborough County, Florida. …three-lane, precast concrete elevated portion is being built on piers within … median of … Lee Roy Selmon Crosstown Express Way. **4.** Materials used in … construction of … Roman roads were … gravel, …cobblestone and … hewn stone in … form of … slabs. **5.** … Arkansas State Highway and Transportation Department is using netting to prevent nesting, which delayed … last year's key bridge project by more than three months. **6.** This is … very Ralph Hall, … chief engineer for transportation department, I told you about. **7.** … motorway is … complex engineering structure incorporating … lot of structural details. **8.** At … distance of several miles from … big cities and towns traffic intensity decreases. **9.** Winston Churchill, … famous English Prime Minister, called … car the curse of … twentieth century. **10.** Motorway signs are … source of the important information for … driver.

Exercise 10. Complete the text using the linking words.

because so that and that who which where

British roads are classified in three groups. The arterial roads are called so … they might be compared to the arteries in the human body. They are known as A or Class I roads. The second group consists of B or Class II roads … are a little less important than A roads. Last comes the third group … has no official name. The number of each road of the first two classes appears on all signposts … a motor driver can find his way across Britain.

In many countries there are high-speed motorways, e.g. the German "autobahnen" or Italian "autostrade". The motorists ... are admitted to them only at special gates can travel 80 or 90 miles an hour.

In Russia there is the federal road classification ... the roads are divided into the following groups according to their importance for the national life of the country, as well as according to administrative needs:

1. Federal roads.
2. Regional roads.
3. Local roads.
4. Internal economic roads.
5. Town roads and streets.

Exercise 11. Do you agree or disagree with the following opinion? Write an essay of 100-120 words to support your opinion.

Environmentalists are saying that we should put more money into public transport.

Listening

drive.ogg

Exercise 12. Fill in the gaps.

Driving Officer: Okay. Mr. Smith. Let's begin your road test.

Mr. Smith: Oh. I know I'm ready. I've been practicing in my ———— all week.

Driving Officer: Okay. Mr. Smith. As I'm sure you are aware, you will not only be tested on your ———— of the rules of the road, but on your behavior toward other motorists.

Mr. Smith: Okey-dokey.

Driving Officer: Okay. Now you can start your car.

Mr. Smith: Yeah, right. Here we go!

Driving Officer: Whoa! Take it easy. The speed _____in this business district is only 25 miles an hour. [Oh]. All right. Now, turn right at the next corner . . . [*This corner?*] Na, not here! Wow! You forgot to ———— too!

Mr. Smith: Gosh. I didn't see that one, and . . . Ah, Could you grab my cell phone under my seat. [*Huh*] Nah, I'll get it.

Driving Officer: Oh, Mr. Smith. Keep your eyes on the road!

Mr. Smith: Oh yeah.

Driving Officer: Okay. Now, ———— over here and show me that you can parallel park.

Mr. Smith: Sure. Wait. Hey bud. Move your car. I was here first!

Driving Officer: Ah. Forget it. Just keep driving.

Mr. Smith: So, how am I doing? Can I just take a ———— at your notes?

Driving Officer: No! And, uh, watch out. Mr. Smith. Now you're _____ the vehicle in front of us.

Mr. Smith: Oh, yeah. I'm just so excited about getting my license today. [*Right.*].

Driving Officer: Okay. Now carefully, CAREFULLY turn right here, and wait, wait, WAIT . . . STOP!! You almost hit that ———— how in the world did you pass the written test anyway? [*Well . . .*]You have to give way to any pedestrians crossing the street. Jeez!

Mr. Smith: Oh. Sorry about that. It won't happen again.

[*Car screeching to a stop . . .*]

Driving Officer: Whoa! Get out! [*What?*] Get out! I'm driving back to the office.

Mr. Smith: Does this mean I didn't pass the test?

Driving Officer: Look, Mr. Smith. Could you do me a _____? When you come back to take the test again, plan on coming on Friday.

Mr. Smith: Again? Why? Is it less ———— that day?

Driving Officer: No. It's my day off.

Exercise 13. Listen the text and choose the right answer

1. Where has the man been practicing for his road test this past week?

A. at a driving school

B. on streets around town

C. at home

2. In what part of town do they begin the road test?

A. in a commercial area

B. in a residential district

C. in a school zone

3. What was the situation with the vehicle in front of them?

A. Mr. Smith is following too closely.

B. The driver of the other car is tailgating them.

C. The car ahead of them is driving below the speed limit.

4. What did Mr. Smith almost hit in the road?

A. another vehicle

B. a person

C. a street sign

5. What does the driving officer suggest Mr. Smith do at the end of the conversation?

A. He should come back on Friday to take the test.

B. He had better take more driving lessons before trying the test again.

C. He ought to take the test with another driving officer.

LESSON 19. TUNNELS. TUNNEL UNDER CHANNEL.

The Channel Tunnel is an undersea rail tunnel that links the United Kingdom and France. Opened in 1994, it carries both passenger and freight trains. The tunnel stretches 50.5 kilometres (31.4 miles) in length and is 75 metres (246 feet) deep at its lowest point.

The first ever proposal for a tunnel between the UK and France was put forward by a French mining engineer named Albert Mathieu back in 1802.

As well as being built for human use, tunnels can also be built for the safety and convenience of animals. More than 600 tunnels have been built under roads in the Netherlands to help increase the population numbers of endangered animals such as the European Badger.

Tunnel boring machines are often used to excavate major tunnels. These huge machines can bore through all kinds of sand, clay and hard rocks. The largest tunnel boring machines feature diameters of over 14 metres (46 feet).

When dealing with water crossings, building a tunnel is usually more expensive than building a bridge. Tunnels however preserve the above water scenery, are unaffected by weather conditions, and require less land on the shore.

The Lincoln Tunnel is a well known tunnel in the USA, it connects Weehawken, New Jersey and Manhattan, New York. Stretching 1.5 miles (2.4 kilometres) under the Hudson River, the Lincoln Tunnel has an average daily traffic of around 110000 vehicles

Reading

Tunnels.

1. Tunneling is difficult. expensive and dangerous engineering work. Tunnels are built to provide direct automobile or railway routes through mountain ranges, under or over rivers. They can also provide underground channels for water, sewage or oil. Before the 19th century men had not acquired enough skill in engineering to carry out extensive knelling. Tunnels however were known in ancient times. They were, for instance, driven into the rick under the Pyramids of Egypt, and the Romans built one in Rome for their chief drain, parts of which still remain. One of the earliest tunnels known was made in Babylon. It passed under the Euphratesriver, and was built of arched brickwork being 12 feet high and 15 feet wide.

Other ancient tunnels were built for water supply and for drainage.

2. Modern tunnels are often very long and deep. The Simplon tunnel on the France-to-Italy railway, for example, is 12 miles long and in one place the peaks of the Alps rise over 6,000 feet above it. Some tunnels are over 50 feet in diameter. Many are circular in cross-section. Others are horseshoe-shaped, with a level floor on which it is easy to lay permanent roads and railways.

Tunnel under Channel.

3.A tunnel under the English Channelwas first suggested in 1856. It was agreed in 1875 to build it and work was actually begun. However, the British War Office objected that an enemy on the European mainland could easily invade England through such a tunnel, and the British Government objected to the scheme.

In 1957 interest revived in the idea of a Channel Tunnel and the question was studied afresh by a group of French and British engineers. Such a Tunnel between Dover and Sagatte would have a length of about 36 miles of which 24 miles would be under the sea, and would run through a layer of dense chalk which is known to be free from cracks and allows water to penetrate it slowly. It would probably have to be a twin railway tunnel. There are several difficulties in having a road tunnel of this length, the chief of which is the enormous cost of ventilating it. Total cost is estimated at between 450 and 560 million dollars, to be shared by Britain and France with possibly some other European country.

No dates have so far been mentioned definitely but it might be completed at the earliest in 1980. The plan for the railway is to sink a metal pipe or bore a hole across the 21 mile Dover-Calais Strait.

Trains would each carry about 300 automobiles driven by owners on to flat-cars, and journeys would last 45 minutes.

VOCABULARY

extensive – keng, bepoyon – обширный, пространный

for instance – masalan – например

drain – kanalizasiya o'tkazish, kanalizasion truba –проводить канализацию, канализационная труба

remain – qoldiq - останки

circular – aylana - круговой, круглый

cross – section – ko'ndalang kesishish –поперечное сечение. поперечный разрез

permanent – doimiy –постоянный, неизменный

actually – aslida – фактически, на самом деле

mainland – qit'a – материк, континентальный

invade – bostirib kirmoq – вторгаться, захватить

revive – qaytadan tiklamoq – оживлять, возобнавлять, возобновить

afresh – qayta – снова

dense – zich, quyuq – плотный, густой

penetrate – ichigakirmoq – проникать. проходить

estimate – baholamoq – оценивать, смета

bore – parmaloq, o'ymoq – растачивать, сверлить

Speaking

Exercise 1. Answer the following questions.

1. What kind of work is tunneling?
2. When were the tunnels known?
3. Why were other tunnels built for?
4. When was a tunnel under the English channel first suggested?
5. How long is the Tunnel between Dover and Sagatte?
6. Are there any difficulties in having a road tunnel of this length?
7. How much does this tunnel cost?
8. How long does the journey last when the trains carry about 300 automobiles?

Exercise 2. Match the words.

1. underground	tunnels
2. engineering	ranges
3. ancient	roots
4. mountain	channels
5. railway	work
6. metal	channels

7. English pipe

Exercise 3. Read the following text and translate in to your native language

Le Shuttle

Le Shuttle is the rail transport system which carries vehicles between the two countries. It is known as 'piggyback transport' as the cars, motorcycles, coaches and lorries are driven onto the trains for the journey through the tunnel. It carries 2.5 million cars and1.5 million trucks every year. The Truck Shuttles are 800 metres long and can transport 32 heavy goods vehicles, while the Passenger Shuttles can carry 120 cars and 12 coaches. They both travel at 140 kilometres per hour.

The Eurostar

The Eurostar is the name for the high-speed passenger trains that connect the UK to France and Belgium. It is possible to travel from London to Brussels in 2 hours and from London to Paris in 2 hours 15 minutes. Trains leave from St. Pancreas International station in the north of London, and also from two stations in Kent. As well as Paris and Brussels, destinations include Calais, Lille and Disneyland Paris. The high frequency of services, the city-centre arrivals and departures and competitive rates mean the Eurostar is an excellent alternative to travelling by plane. In addition, carbon dioxide emissions can be as much as 80% less per passenger journey than when travelling by plane.

The 'Chunnel'

In the 19th century, various proposals – from the sensible (a tunnel to b sed by horse drawn vehicles, lit by candles and with air shafts built above th eight of the waves) to the weird (sections of tunnel moved into place by balloon) /ere made to link England and France across the English Channel. In the 1970s lan was adopted then abandoned. It was not until 1986 that the British and Frenc overnments finally agreed on the project for a high-speed rail link and work gc nderway in 1987. French and English tunnelling teams met and shook hands unde ıe middle of the English Channel in 1990 as the two sections of the first tunn /ere joined up. The Channel Tunnel – or 'Chunnel' as it is often known – wa ompleted in 1994 and officially opened by Queen Elizabeth II and Frenc resident François Mitterrand on 6th May 1994.

Exercise 4. Discuss these questions in small groups.

1 Have you ever been through the Channel Tunnel? If so, what did you think?

2 Would you prefer to cross the English Channel by Eurostar train or ferry? Why?

3 How do you think the Channel Tunnel has improved the transport of freight and passengers between France and the UK?

4 Are there any large infrastructure projects (already built or planned) in your country? What do you think of them?

Channel Tunnel Facts

The Channel Tunnel is a 50 kilometre (31 miles) rail tunnel linking Folkestone in Kent with Coquelles, Pas-de-Calais, near Calais in northern France.

At its lowest point, it is 75 metres deep below the sea bed and 115 metres below sea level. At 37.9 kilometres (23.5 miles), the tunnel has the longest undersea portion of any tunnel in the world.

Despite what you might think, you cannot drive through the Channel Tunnel as it carries trains only. However, you can take your car with you because the Eurotunnel Shuttle is a train that transports cars and people through the tunnel. Travellers drive their vehicle onto the train, park it, and stay inside while the train takes them to the end of the line. Then they start up their car again, drive off the train and continue their journey.

Construction began in 1988 and finished in 1994.

The first idea to build a tunnel underneath the English Channel was by a French engineer called Albert Mathieu way back in 1802. That tunnel would have been very different; instead of a railway line, requiring an island halfway across for the changing of horses!

- At its busiest, approximately 14,000 people were employed in the construction of the tunnel. Sadly, ten workers - eight of them British - were killed building it.
- There are actually three tunnels down there! Two are for trains and there is also one smaller service tunnel that can be used in emergencies.
- 11 machines were used to bore, or dig, the tunnel under the sea bed. Each machine was as long as two football pitches. One of them is still buried under the Channel today. And another was sold on eBay in 2004 for £39,999!
- It takes around 35 minutes to travel the length of the Channel Tunnel. That's definitely faster than swimming...
- More than one million dogs and cats have travelled through the tunnel since the year 2000.
- Up to 400 trains pass through the tunnel each day. On average, those trains carry 50,000 passengers, 6,000 cars and 180 coaches from country to country.
- The Channel Tunnel Rail Link, now called High Speed 1, is a train that goes from St Pancras railway station in London to the tunnel entrance in Folkestone. Because High Speed 1 trains travel at up to 300 km per hour (186 miles per hour), travellers can go from London to Paris in just 2 hours 15 minutes.

Exercise 5 Answer the following questions

1. How long is the tunnel?

2. When was the first idea for a Channel Tunnel?

3. How many years did it take to build?

4. How long does it take to travel through the tunnel?

5. How many trains can pass through the tunnel per day?

Exercise 6. Do you know?

PRESIDENTAL DECREE ADOPTED TO DEEPEN REFORMS IN CONSTRUCTION INDUSTRY

On March 13, 2020, the Decree of the President of the Republic of Uzbekistan on additional measures for deepening reforms in construction industry of the Republic of Uzbekistan was adopted.

According to the document, in order to further deepen reforms in construction industry, reduce bureaucratic barriers, widely introduce innovative ideas, developments and advanced information and communication technologies, as well as ensure transparency at all stages of construction, foreign regulatory documents are allowed until December 31, 2028 in the Republic of Uzbekistan in the technical regulation in the field of urban development:

Center for Technical Regulation in Construction under the Ministry of Construction of the Republic of Uzbekistan in the form of a state institution will be established.

Writing

Exercise 7. Read the texts and write down what these figures and dates refer to.

1. 1986 _____
2. 1990 _____
3. 1994 _____
4. 3 _____
5. 50 km _____
6. 300 million _____
7. 2 hours _____
8. 80% _____
9. 800 metres _____
10. 140 kph _____

Exercise 8. Match the words with the definitions

Pipe	material which you get when you mix sand, stones, cement and water
barn	a long, heavy piece of wood or metal with which houses are built
frame	tube through which water or gas flows
replace	a long thin piece of metal through which electricity flows
resident	a person who lives in a certain place
cement	to exchange or to use instead of
wire	the structure and main outside parts of a building
beam	a small house in the country
entrance	a large farm building in which you keep animals or have crops
cottage	a door to get into the house

Exercise 9. Fill in all the gaps

air conditioning concrete construction decorated electricians foundation insulated permit planning plumbing roof stilts winter wires

There is a lot of_____to do before you build a house. First you must buy land and then draw a _____plan of the house. It should show you where the doors and windows are, how big the rooms are and where to install the _____ and electrical _____. Most of the time you need a _____ to start building the house. Construction workers start with the_____. They pour _____ into frames that reach into the ground. This keeps the house from moving during the _____. Not all houses have basements. In wet regions they are often built on _____. Workers put beams into the foundation to support the walls. When the outside frame is finished walls are put in. Finally the _____ is built and covered with material that is typical of the region you live in.

After the outside work is finished work in the house begins. Windows and doors have to be inserted. Pipes and wires must be installed by plumbers and _____. New houses must be _____ to save energy costs. In some regions houses have _____ that is turned on during the hot summer months. Finally the walls are painted and the rooms are _____.

Listening

englishclub-news-musk-tunnel123.mp3

Exercise 10. Listen and fill in the gaps.

Elon Musk Reveals Tunnel Prototype

SpaceX entrepreneur Elon Musk revealed a prototype of an underground tunnel for_____cars this week. The prototype is 1.6 kilometres long and runs under the city of Hawthorne,_____where Musk's Boring Company is headquartered. Musk's goal is to build underground high-speed_____for modified electric cars in order to alleviate traffic in_____centres like LA. While the test ride was bumpy and slow, Musk confirmed that the ride will be fast (up to 150 km/hour) and "smooth as_____"

Exercise 11. Answer the questions.

1. What invention did Elon Musk unveil this week?
2. Where is the prototype located?
3. What is the main purpose of this invention?

LESSON 20. BRIDGES.

Bridge Facts

1. Common types of bridges include beam bridges, arch bridges, suspension bridges, cantilever bridges, truss bridges, and cable-stayed bridges.

2. Bridge designs depend on their intended function, financial resources and also the type of terrain where they are constructed. While an arch bridge might be suited in one situation, a suspension bridge might be suited in another.

3. The Zhaozhou Bridge is the oldest standing bridge in China and the world's oldest stone segmental arch bridge. Built in 605 AD, it is still standing strong today, over 1400 years later.

4. The first welded road bridge was designed by Polish engineer Stefan Bryla in 1927.

5. During the Industrial Revolution of the 19th century wrought iron was introduced into the design of large bridges. Wrought iron was later replaced by steel because it has a higher tensile strength.

6. The Golden Gate Bridge in San Francisco, USA is a well known suspension bridge that was completed in 1937. It has a total length of 8981 feet (2737 metres) and features 80000 miles 129000 kilometres) of wire in its two main cables.

Read the text.

Bridges.

1. One of the outstanding statesmen once said in his speech, "there can be little doubt that in many ways the story of bridge-building is the story of civilization. By it we can readily measure an important part of a people's progress." Great rivers are important means of communication for in many part of the world they have been, and still are, the chief roads. But they are also barriers to communication, and people have always been concerned with finding ways to cross them.

2. For hundreds of years men have built bridges over fast-flowing rivers or deep and rocky canyons. Early man probably got the idea of a bridge from a tree fallen across a stream. From this, at a later stage, a bridge on a very simple bracket or cantilever principle was evolved. Timber beams were embedded into the banks on each side of the river with their ends extending over the water. These made simple supports for a central beam reaching across from one bracket to the other. Bridges of this type are still used in Japan, and India. A simple bridge on the suspension principle was made by early man by means of ropes, and is still used in countries such as Tibet. Two parallel ropes suspended from rocks or trees on each bank of the river, with a platform of woven mats laid across them, made a secure crossing,. Further ropes as hand-rails were added. When the Spaniards reached South America, they found that the Incas of Peru used suspension bridges made of six strong cables, four of which supported a platform and two served bas rails.

3. All these bridges made possible crossings only over narrow rivers. The type of temporary floating bridge, the

pontoon bridge, has been used for military engineers can construct a temporary bridge on this principle, able to carry all the heavy equipment of a modern army, in an extremely short time.

The idea of driving wooden piles into the bed of the river in order to support a platform was put into practice 3,500 years ago. This is the basis of the 'trestle' or pile bridge which makes it possible to build a wider crossing easier for the transport of animals and goods.

4. With the coming of the railway in the 19th century there was a great demand for bridges, and the railway had capital for building them. The first railway bridges were built of stone or brick. In many places long lines of viaducts were built to carry railways; for instance, there are miles of brick viaducts supporting railways to London.

The next important development the bridge-building was the use of iron and, later, steel. The first iron bridge crossed the river Severn in Great Britain.

The idea of a drawbridge, a bridge hinged so that it can be lifted by chains from inside to prevent passage, is an old one. Some Leningrad bridges were built on this principle. A modern bridge probably demands greater skill from designer and builder than any other civil engineering project. Many things should be taken into consideration, and these may vary widely according to local conditions. In deciding what type of bridge is most suitable the designer has to allow for the type and weight of the traffic, and width and depth of the gap to be bridged, the nature of the foundations and the method of erecting the bridge. The designer has to calculate carefully how the various loads would be distributed and to decide which building materials are more suitable for carrying these loads.

VOCABULARY

bridge-building - ko'prik qurilishi – мостостроение

readily – tezda, darhol, tezlik bilan – быстро, легко, без труда

measure – o'lchov, me'yor – мера, степень, масштаб

barriers – g'ov, to'siq – барьеры, заставы, преграды

to concern – aloqador bo'lmoq, dahldor bo'lmoq – касаться, иметь отношение

fast - flowing – mustahkam, pishiq biriktirilgan – прочный, крепкий

rocky canyons – qoyalardan iborat toshli, tog'li daralar – скалистый, камненистый, крепкий каньон, глубокое ущелье

fallen – tushgan, pasayib ketgan – падать, пониженный

bracket – kronshteyn (devor yoki kolonkaga mustahkamlangan tokcha (tayanch)) – кронштейн

cantilever – konsol (to'sinning, balkaning devoridan chiqib turgan va balkon, karniz, haykal singarilarni ko'tarib turadigan qismi) – консоль

to evolve – rivojlanmoq – эволюционировать, развиваться

timber beams – yog'och – taxta materiallari, yog'och – taxtalar – лесоматериалы, бревно, брус, балка

embedded – o'rnatmoq, o'yib o'rnatmoq, singdirmoq – вставлять, врезать, внедрять

extending – cho'zmoq, kengaytirmoq – тянуть, вытягивать, расширять

supports – tirgak, tayanch, tutib turadigan ustun – поддержка опорная стойка

beam – balka, to'sin, brus (chorqirra yoki boshqa shakldagi yog'och, temir va h.k.) – балка, брус

suspension – to'xtatish, tugatish – приостановка, прекращение

ropes – arqon, ip, tros – канат, верёвка, трос

mats – bo'yra, gilamcha, kleyonka – мат, циновка, коврик, клеёнка

a secure crossing – xavsiz kesib o'tish joyi – безопасное, надёжноепересечение, перекрёсток, переход

hand-rails – to'siq, panjara, tutqich, dasta – перила, поручень

temporary – vaqtinchalik – временный

floating bridge – o'zgaruvchan ko'prik – плавающий, изменчивый мост

the pontoon bridge – vaqtincha qurilgan ko'chma ko'prik – понтон моста

military engineers – harbiy muhandislar – военные инженеры

extremely – haddan tashqari, nihoyatda – чрезвычайно, крайне

wooden piles – yog'och ustunlar – деревянные столбы

trestle – estakada, taxta to'shama (ko'chadan yo'lovchilar o'tishi uchun qilingan maxsus yo'l, yog'ochdan qilingan trotuar) – эстакада, подмости

pile – ustun – столб

viaducts – kesishgan yo'l ustidan o'tkazilgan ikkinchi yo'l (ko'prik yo'l) – путепроводы

drawbridge – ko'tarma ko'prik – подъемный мост, разводный мост

hinged – osilmoq – висеть, зависеть

chains – zanjir – цепь

to prevent – oldini olmoq, saqlab qolmoq – предохранять

depth – chuqurlik – глубина

gap – uzilish, farq, kovak – зазор, промежуток, щель, разрыв

erecting – bino – inshootlarniqurish – строить, возводить (здание, сооружение)

loads – yuk, og'irlik – груз, загрузка

to be distributed – tarqatmoq, taqsimlamoq – распределять, распространять, размещать

Speaking

Exercise 1.

Prepare a minute and speak 2 minutes.

Topic :What role do you think bridges play in human history at different times?

Exercise 2. Read and learn.

Interesting facts

Ancient Houses

20,000 BC People live in caves or in tents made of mammoth skins

6,000 BC People in Catal Huyuk in Turkey live in houses made of mud brick. Walls are plastered and sometimes painted.

2,000 BC Rich people in Iraq live two story houses arranged around a courtyard. Poor people live in one room huts

1,500 BC People in bronze age England live in round huts made of wattle and daub with thatched roofs

400 BC People in Greece live in houses of brick and plaster with tiled roofs

100 AD In Roman Britain rich people live in villas with mosaics, murals on their walls and glass windows. They even have a form of central heating called a hypocaust. Poor people live in simple wooden huts.

Medieval Houses

800 AD Saxons live in wooden huts with no panes of glass in the windows. There are no chimneys.

1200 Peasants in England live in simple huts of one or two rooms. There are no panes of glass in windows and no chimneys. Rich people live in stone castles. In a castle the main rooms are the great hall and the solar, which is used by the lord and his family. In towns rich merchants live in stone houses.

13th century Well off people have glass windows

Renaissance Houses

1540 Life is safer now so rich people live in houses designed for comfort rather than defense. Houses are divided into more rooms so there is more privacy.

1580 Glass windows are becoming common. So are chimneys. However poor people continue to live in simple huts.

1630 Brick or stone houses are becoming common. They are replacing wooden ones.

1680 Furniture is much more ornate with inlaying, veneering and lacquering. The rich have new types of furniture such as bookcases and chest of drawers. By now even poor people usually have glass windows and chimneys. However some poor families still live in one room.

1750 Rich people have very comfortable upholstered furniture. Furniture for the rich is beautifully decorated. Poor people continue to live in simple houses with very simple furniture.

1840 Many houses for the workers in the new industrial towns are dreadful. Some houses are back-to-backs.

Modern Houses

1880 Houses for the poor are getting much better. For the middle class mass production of furniture and carpets makes it much easier to create comfortable homes. In a working class home the family spend most of their time in the kitchen. They can only afford to properly furnish one room, which is kept for best. Many towns are building sewers and piped water supplies. Most homes have gas lighting.

1900 Some rich people have electric light. Gas cookers are becoming cooking. Flushing toilets are now usual (although outside lavatories are common) However some houses for skilled workers are built with inside toilets and bathrooms.

1935 Electric light is common in Britain. Rising incomes mean more and more people can afford comfortable furniture. Some people can afford electric fires but most still use coal. In many towns slums are demolished and replaced by more modern houses.

1965 In most British cities slum clearance continues. Central heating is becoming common.

1979 The British government introduces a policy of selling council houses

Exercise 3. Match the words.

bridge	bridge
fast	rails
timber	canyons
floating	engineers
military	flowing
rocky	piles
hand	flowing
the pontoon	beams
hand	building
wooden	bridge

Exercise 4. Answer the questions.

1. How many continents do you know? What are they?
2. How many oceans are there in the world? What are they?
3. What countries are washed by the oceans?
4. What mountains do you know in Asia?

5. What rivers do you know in Asia?

6. What seas do you know?

7. On what continent is Uzbekistan situated?

8. What territory does it occupy?

9. What climate has Uzbekistan?

10. What is the hottest place in Uzbekistan?

Exercise 5. Translate the passage.

INDUSTRY

In January-December 2016 industrial enterprises of the republic produced goods to the amount of 111 267,2 billion soums, the growth rate to the same period of 2015 was 106,0 percent. Measures aimed at technological renovation of production facilities allowed labor productivity to grow by 4,1 percent. According to the International Standard Industrial Classification the industrial production index, including construction, for the reporting period was 106,6 percent. Implementation of measures to improve the business environment and support the development of private enterprise led to the increase in the share of small business in industrial production to 45,0 percent in January-December 2016 versus 40,6 percent in the corresponding period of 2015. The implementation of the Program on localization of production of finished products, components and materials, in the framework of which in January-December 2016 there were manufactured products to the amount of 6 145,8 billion soums, contributed to the development of cooperative ties among domestic producers. In the reporting period the production of consumer goods amounted to 47 359,2 billion soums or 105,4 percent to the corresponding period of 2015, of which food products – 23 617,2 billion soums (111,4 percent), non-food products – 23 742,0 billion soums (100,1 percent). The share of consumer goods in the total volume of industrial production has reached 42,6 percent.

Writing

Exercise 5. Write the words in the correct order to make sentences.

1. bridges / the / or / were / brick / first / of / stone / built / railway

2. man / got / idea / a / tree / a / stream / across / early / probably / bridge / the / of / from / fallen

3. were / this / principle / some / built / Leningrad / on / bridges

4. Severn / iron / first / river / the / Britain / in / Great / crossed / bridge / the

5. over / rivers / all / made / these / possible / only / narrow / bridge / crossing

6. Japan / type / in / India / and / bridges / of / still / are / used / this

Listening

181024-sea-bridge_2 (1).mp3

Exercise 6. Listen and give information about your country.

	What?	What do you think?
Tallest building		
Longest tunnel		
Best hotel		
Coldest place		
Most expensive house		
Longest bridge		

Exercise 7. Fill in the gap.

The world's longest sea (1) _____. It links Hong Kong and Macau to mainland China. The bridge is called the Hong Kong-Zhuhai-Macau Bridge and is 55 kilometres long. The bridge (2) _____ decade to construct. Builders had to make artificial islands in the Pearl River Delta to provide (3) _____ the bridge. There is also a 6.7-kilometre underwater tunnel in the middle of the bridge. This is to allow ships to sail through the Delta. The new bridge (4) _____ 14 Golden Gate Bridges lined (5) _____ end. The bridge will greatly cut the time it takes to travel from mainland China to Hong Kong and Macau. The journey time to Macau has (6) _____ over three hours to just 30 minutes.

Chinese President Xi Jinping (7) _____ ceremony of the bridge on Thursday. He hopes the new crossing will help to connect 68 million (8) _____ different cities. China's government believes that up to 29,000 cars will cross the sea link daily by the year 2030. A trade (9) _____ said: "This makes Hong Kong a lot more accessible for goods, passengers and trade, so this (10) _____ from the economic perspective." The bridge will be open to tourists to drive across it. However, local car owners will not be able to cross the bridge unless they have (11) _____. Most drivers will take a shuttle bus to make the journey. The shuttle buses will cost $8-$10 for (12) _____

Exercise 8. .TRUE / FALSE: Read the headline. Guess if 1-8 below are true (T) or false (F).

1. The new bridge links Hong Kong, Macau and China. **T / F**
2. The new bridge took over 20 years to build. **T / F**
3. Construction of the bridge included the making of manmade islands. **T / F**
4. The bridge will cut over two hours from the journey time to Macau. **T / F**
5. The new bridge will connect 11 million people in 68 different cities. **T / F**
6. As many as 29,000 cars will cross the bridge every day by next year. **T / F**
7. Only tourists can drive across the bridge without a special permit. **T / F**
8. There is a shuttle bus that will take people across the bridge for $20. **T / F**

Listening

181024-sea-bridge-a.mp3

Exercise 9. Put the words below in the correct order to make the questions.

1.you when think did you What the read headline?

2. the you mind in hear when your images are What word 'sea'?

3. think What of new bridge? do you the

4. does What country need? your new bridges

5. is sea? the How a across safe bridge
6. a is 2.7-kilometre the sea? safe tunnel How under
7. bridges? your country be would What without like
8. is What bridge, your and why? favourite
9. created? environmental the bridge What have might
10. best this three describe story? What adjectives
11. this like you article? reading Did
12. do 'bridge'? when What think word of you the hear you
13. what about you What think do read? you
14. the like? What do opening you ceremony think was
15. opening ceremony? an attended ever Have you
16. about might bridge? Chinese people proud this How be
17. you Would see Moon? a to like bridge the to
18. will Macau? benefit How Hong bridge Kong and this
19. car bridge? Why owners across the drive local can't
20. ask bridge's you What designer? questions to would the like

Self –study texts

1. Check your reading skill.

In the process of studying the baked bricks used in the construction of the tomb of Ismail Somoni, they were tested on a modern test tool Onyx-2.51, which determines their strength without breaking. Initial tests were carried out inside the lower part of the wall inside the building and the following results were obtained: compressive strength of bricks 74, 100, 129, 96 and 105 kgk / sm^2 or brand M75 ... M125, The following strength results were obtained at the top of the wall: 120, 136, 76 , 94 and 125 kgk / sm^2 or brand M75 ... M125. The strength of the term mix is around 50 kgk / sm^2 and the brand is M50.

Comparative analysis corresponds to the requirements of KMK 2-01-03-96 for the strength of historical bricks, i.e. the required strength of bricks and building mixtures in seismic areas. Hence, the quality of these walls is within the current seismicity requirements.

The maximum strength of the bricks in the south-facing wall on the outside of the mausoleum was 75 kgk / sm^2. The strength of the bricks in the east and west facing wall was greater, with results ranging from 118–125 kgk / sm^2. The strength of the bricks in the north-facing wall was found to be the highest, averaging 148 kgk / sm^2 or close to the M150 mark.

Of course, when the structure is built, bricks with a different strength for each wall are not provided, they are usually of the same brand. The results obtained here show that there is another reason. In our opinion, this is due to the rapidly changing dry-hot climate, the sudden heating of the material during the day and night, its deterioration, the formation of microcracks and cracks due to changes in the daily temperature deformation of the material, increased porosity, and moisture in these pores in winter (condensate water) can be explained by a decrease in quality as a result of freezing.

The results of the main physical and mechanical properties of ceramic bricks of all architectural monuments studied in the study showed that the density of baked bricks is around 1.5 g / sm^3, and their strength varies from 6.8 MPa to 21.9 MPa.

An electron microscope with a magnification of 100 times the structure of the brick from the tomb of Ismail Somoni found that the crystals and pores in the structure of the brick were evenly distributed in size and did not contain cracks, fissures and other defects.

In addition to the study of the quality indicators of the above-mentioned brick harvest and materials, the chemical composition of historical bricks was also studied. The results showed that the largest part of the composition of the studied bricks, i.e. 53.85 - 63.60%, is silicon oxide - $Si0_2$. In fact, it is clear that the bulk of the clay soil is composed of silicon oxide. The amount of detected silica is in some cases 5-10% higher than the data in the published studies. In the historical bricks we studied, Al_2O_3 - 10.44 - 10.92%, Fe_20_3 - 3.96-4.47%, CaO - 10.03-14.63%, MgO 2.5 -4.5%, CO_2 (p.p.p. - 4.54-

6.68%). Comparing the relative amounts of the remaining oxides, we found that Al_2O_3 was slightly less, CaO was almost equal, and CO_2 was much less.

In general, the results of the comparative analysis are almost consistent with the data in the published literature and do not negate them. The difference in the amount of oxides is due to the composition of local raw materials used in the production of bricks. The amount of minerals in the studied historical bricks is in descending order: diopside-augite, quartz, clinoenstatite, carbonates, albite, etc. This means that the mineralogical composition of bricks is not the same everywhere, it depends on local conditions. It is advisable to use local materials in the restoration of monuments.

The department of research of the composition of historical mixtures in brick piles studied the chemical composition of building mixtures obtained from different parts of architectural monuments and determined that their chemical composition consists of the following oxides: SiO_2 , Al_2O_3 , Fe_2O_3 , CaO, MgO, SO_3 , Na_2O, K_2O.

From the chemical analysis of the samples taken from the mausoleum of Ismail Somoni, it became clear that the main component of the building mix in this mausoleum is calcium and silicon oxides. The chemical analysis of the sample taken from the Kalon Tower proves that the main composition of the building mix obtained from this tower also consists of calcium and silicon oxides. The amount of PPP-CO_2 in the construction mix used for the brickwork of the studied material is 23.9-33.14%, respectively.

A comparative analysis of the results of our research with the sources shows that the content of calcium and silicon oxides in the brick mixture of the Ismail Somoni Mausoleum and the Kalon Tower, built in the IX-XII centuries, was the main component. Mixtures used in Shahi-Zinda and other architectural monuments, built a little later in Samarkand, contain not only calcium and silicon oxides, but also aluminum oxides.

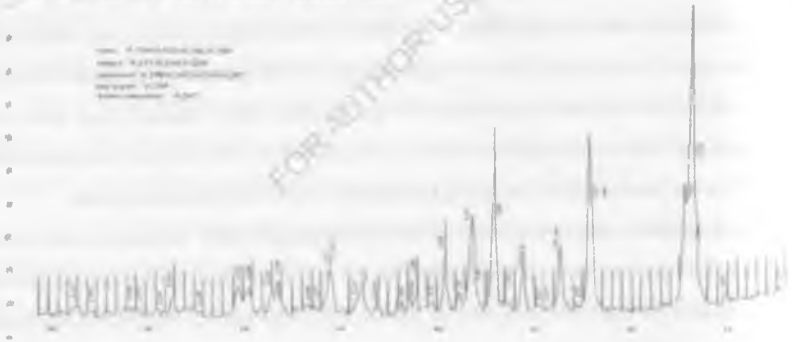
The composition of the building mix used in Ismail Somoni and Kalon Tower differs from them by the small amount of alumina, which means that if the older building mix was gypsum and lime, later clay was also added to the building mix.

Based on the results of the chemical analysis, it was initially assumed that the brickwork mixture used in Ismail Somoni and Kalon Tower could be gypsum, lime, or a mixture of both.

However, DTA and X-ray analyzes of the mixtures were also performed to obtain more accurate information, and this conclusion was supported by the results obtained. For example, the results show (Picture 1) that the following thermal effects occurred in the mineralogical composition of the samples taken from the upper part of the wall of the Ismail Somoni mausoleum. Exothermic effects occurred at temperatures 246 and 627 ^{0}C, and endothermic effects occurred at temperatures 162, 187, 220, 331, 376, 416, 489, 728 ^{0}C.

Picture 1. An X-ray of a sample taken from the top of the wall of the tomb of Ismail Somoni

Diffraction maxima d = 0.756 in samples taken from the upper part of Ismail Somoni mausoleum; 0.422; Occurred at 0.306 and 0.208 nm. These measurements in the DTA indicate the presence of gypsum mineral in the mixture. The mixture was also found to contain quartz (d = 0.334; 0.245; 0.228 Nm), albite (d = 0.310; 0.402 Nm) and dolomite (d = 0.290; 0.241; 0.221; 0.202 Nm).



Diffraction maxima d = 0.756 in samples taken from the lower part of Ismail Somoni mausoleum; 0.427; Occurred at 0.306 and 0.208 nm. These measurements in the DTA indicate the presence of gypsum mineral in the mixture. The mixture also contains quartz (d = 0.334; 0.245; 0.2228 Nm), basanite (d = 0.606; 0.281 Nm), albite (d = 0.310; 0.402 Nm), KPSh (d = 0.324 Nm), clinoenetite (d = 0.893 Nm).) and calcite (d 0.187Nm) were also detected.

The difference in minerals in the mixtures of the upper and lower parts of the architectural monument can be explained by the formation of additional minerals (KPSh.

clinoenetite and calcite) in the lower part of the mausoleum during the operation of the mausoleum.

The physical and mechanical properties of the above-mentioned architectural monuments used in the collection of bricks are given in Table 1 below.

Table 1

Architectural monument name	Medium density, g / sm^3	Porosity,%	Compressive strength, kgk / sm^2
Ismail Somoni	1.32	44.2	98.2
Kalon tower	1.34	43.9	127.3
Abdulazizkhan Madrassah	1.38	42.6	55.2
Mausoleum of Abdukholiq Gijduvani	1.30	44.4	100.5

As a result of research, the tomb of Ismail Somoni was found to contain modified mixtures of moisture-resistant gypsum-based ash, semyanka and lime. It was discovered that modified mixtures of gypsum-based ash, semyanka and lime were used in the first part of the Kalon Tower and the Magoki Attor Mosque, which was built almost at the same time as it. The construction mixes of Abdulazizkhan and Ghaziyan madrassahs contain gypsum, clay, ash, semyanka and lime.

Therefore, for the next restoration work of the Ismail Somoni mausoleum, it was considered expedient to develop modified mixtures based on gypsum with the addition of moisture-resistant ash, semyanka and lime, similar to historical mixtures in its wet part. In order to facilitate the restoration work, it is also necessary to use a small amount of additives that allow the mixture to slow down and maintain its strength so that it does not harden quickly. It is advisable to develop optimal recipes for modified mixtures of gypsum-based ash, semyanka and lime for the Kalon Tower. Therefore, in the next stages of the research, optimal recipes of similar compositions similar to historical mixtures based on modified gypsum for the restoration of the mausoleum of Ismail Somoni, Kalon Tower and Abdulazizkhan Madrasah were identified, technologies were developed and their basic physical and mechanical properties were studied.

The fourth chapter of the dissertation, entitled The Study of the Composition of Gypsum-Based Modified Building Mixtures for the Restoration of Architectural Monuments, examines organic admixtures, mineral admixtures, and complex admixtures. [1]

Bukhara School of Architecture has further developed the traditions of the most advanced construction culture of the XV-XVII centuries. Extensive urban planning work has been carried out by creative architects, knowledgeable builders and engineers, master craftsmen. The Bukhara School of Architecture at that time, as the only leading force in Central Asia, also played an important role in the development of schools of architecture and architecture in other regions. The Bukhara school of architecture and construction of the next period was further developed by such great architects of the XX century as the master Shirin Murodov. The fact that the city of Bukhara has been declared a historical and architectural museum-reserve is a testament to the importance of architectural structures. Bukhara has not only ancient mosques, madrassas and mausoleums, but also a number of residential buildings and other types of buildings built on the basis of ancient plans.

There are 660 cultural heritage sites in Bukhara region, where 997 architectural monuments are registered. In particular, there are 264 cultural heritage sites in Bukhara, which include more than 350 architectural monuments. Of the 264 facilities listed above, 183 are public and 81 are residential. There are more than 30 architectural monuments in the Bahauddin Nakshbandi cultural heritage site alone.

Bukhara is located in the middle of the continent, far from the oceans, at an altitude of 226 m above sea level. Precipitation will be very low. The climate is harsh and dry, with very hot summers. While the average temperature in July is above 30 ^{0}C, there are also days when the summer temperature is above 45 ^{0}C.

During his visit to Bukhara region on July 13-14, 2007, First president Islam Karimov expressed his views on the preservation of the city's unique appearance, in-depth study of cultural heritage sites, the creation of modern buildings and structures, taking into account nationality and the summer heat, expressed their views. In order to

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[1] Tadzhiev Inomjon Ilkhomovich. Modified gypsum solutions for restoration of architectural monuments (for example, Bukhara). hD thesis, Tashkent, 2020

deepen the study of cultural heritage sites, architectural monuments and to continue the traditions of the local school of architecture and construction, attention was paid to the training of architects with higher education in Bukhara. Accordingly, since 2008, the Bukhara Institute of Technology has been accepting architects as well as civil engineers who have been previously trained.

Bukhara is a city rich in historical monuments with high urban planning styles, rich in architectural decor, high-quality tile work, bright colors, architectural form and proportions of the arches and spherical domes. Unique creations of architecture and construction (Ark cultural heritage site, Ismail Somoni architectural monument, Poyi Kalon, Labi hovuz architectural ensembles, etc.) are also here.

Architectural buildings and ensembles were decorated with ornaments, which were the only artistic expression; mosaics, majolica and oriented baked bricks, various patterns have added beauty and elegance to the architectural monuments of Bukhara.

During the years of independence, Bukhara has undergone centuries-old construction, repair, reconstruction and restoration, beautification, restoration of existing historical monuments. A number of national buildings and structures have been created. The study of the architecture of our cultural heritage sites, historical architecture is important in educating young people, directing them to life, improving their attitude to our cultural heritage. The following is important information about the most important architectural monuments of Bukhara. [1]

WORDLIST

A

a complex concept – murakkab tushuncha – сложное понятие, общее представление
a countless number – cheksiz son - несчётный номер, неисчислимый
a dwelling place – turar joy – местожительство
a laser beam – lazer nuri – лазерный луч
a motor driver – mashina haydovchisi – машиноводитель
a secure crossing – xavsiz kesib o'tish joyi – безопасное, надёжное пересечение, перекрёсток, переход
a shallow hole – kichik, chuqur bo'lmagan teshik - мелькая дыра, яма

[1] M. M. Vaxitov. Bukhara architectural monuments. - Bukhara, 2009

a toll – qo'ng'iroq ovozi – колокольный звон
a width – kenglik, bepoyonlik – ширина
abroad- chet el – за границей, вне дома
accelerate – tezlashtirmoq – ускорять
accidents – baxtsiz hodisalar – несчастные случаи
accurate – aniq - точный, правильный
activity- harakat - деятельность
additional- qo'shimcha – добавочный, дополнительный
adequate – muvofiq, to'g'ri keladigan, mos – соответствующий, достаточный
adjacent- yondosh, qo'shni – примыкающий, соседний
advanced civilization – ilg'or sivilizasiya – развитая цивилизация
advantage- ustunlik – преимущество, выгода, польза
after all - nihoyatda - в конце концов
afterwards - nihoyasida, natijasida – в последствии, потом
aircraft – samolyot – самолёт
alloys – qotishma – сплав, примесь
ambient- o'rab olgan – окружающий, обтекающий
amenities- qulayliklar – благоприятные условия
amount – miqdor, son, yig'indi – величина, количество
ample room – keng inshoot – обширное помещение
angle- burchak, угол
anticipate- kutmoq (oldindan) – ожидать, предвидеть
applications – ariza – заявление, применение
appreciate –baholamoq – оценивать, ценить, учитывать
artificial - yasama, sun'iy – искусственный, притворный
assembly- yig'ilish – собрание, сбор, монтаж
attitude – munosabat –позиция, отношение
auxiliary- yordamchi – вспомогательный, добавочный, запасной
availability – yaroqlilik - годность
available- yengil, mumkin – доступный, действительный
avalanches – toglardan ko'chib tushadigan qor – лавина, снежный обвал, град

B

barriers – g'ov, to'siq – барьеры, заставы, преграды
basement- poydevor – основание, фундамент, подвал
beam – balka, to'sin, brus (chorqirra yoki boshqa shakldagi yog'och, temir va h.k.) – балка, брус
beam- balka, brus – балка, брус, перекладина
blocks – tosiq – преграда, затор, блок
boron – qarag'ayzor – бор
bracket – kronshteyn (devor yoki kolonkaga mustahkamlangan tokcha (tayanch)) –

bridge-building – ko'prik qurilishi – мостостроение
building site – qurilish maydonchasi – строительная площадка

C

campaigns- kompaniyalar – компании
cantilever – konsol (to'sinning, balkaning devoridan chiqib turgan va balkon, karniz, haykal singarilarni ko'tarib turadigan qismi) – консоль
capacity- quvvat - ёмкость, объём, мощность, вместимость
captivate – shaydo qilmoq, maftun qilmoq – пленять, очаровывать, увлекать
casting bed- eritib quyish joyi – отливать, лить
caused – sabab bo'lmoq - быть причиной
ceiling- shift – потолок, перекрытие, обшивка
chains – zanjir – цепь
chief – rahbar, boshliq – глава, руководитель
civil – fuqaro - гражданин
clover-leaf- beda bargi - клеверный лист (конструкция пересечения автомобильных дорог)
coil- simli spiral – проволочная спираль, змеевик, катушка
collapse – buzish, buzilish, vayronagarchilik – разрушение, осадка, крушение
collision- to'qnashish – столкновение
colossal pyramids – ulkan piramidalar – (колоссальные) большие пирамиды
composition- struktura, tuzilish – построение, структура
concrete - beton - бетон
conditioning- shamollatish - проветривать
conglomerate - quyuq massa – конгломерат, обломочная горная погода
conical – konusga oid (o'xshagan) – конусный
constantly- doimo, hamisha – постоянно, неизменно, твёрдо, верно
constituents - tarkibiy qismlar – составная часть
construction of dwelling – houses – uy – joy qurilishi – строительство жилых мест
construction- qurilish – строительство, стройка, здание
consumption- iste'mol qilish – потребление, расход
contamination- ifloslanish – загрязнение, порча, заряжение
contribution – yordamlashmoq, hamkorlik – содействие, вклад, сотрудничество
converging- to'para kelayotgan – сходиться, сводить в одну точку, приближаться
core- markaz, yadro – сердцевина, внутренность, центр
crack- yoriq – треск, трещина, щёлканье
creation- bunyod qilish – создавать, творить, формировать
crushed stone - mayda tosh – раздробленный камень

D

danger- xavf – опасность, угроза
dazzled – ko'zni qamashtiradigan – ослепительный

dead king – o'lik qirol – мёртвый король
decomposable-ajralishga qobiliyatli, tarkibiy qismlarga ajratmoq – разлагаться на составные части, растворяться
dehumidifier- qurituvchi - высушивающий
delays – kechiktirish – отлагательство, задержка
demand- talab – требование, потребность, запрос, спрос
depth – chuqurlik – глубина
description- ta'riflash – описание, изображение
desert- cho'l – пустыня
designer- loyihachi – конструктор, проектировщик, чертёжник, модельер
device- asbob – устройства, прибор, схема, проект
devising – kashf qilmoq – придумывать, изобретать
different- har xil – разный, другой, несходный, необычный
digging – yer ishlari, ekskavator bilan qazish – земляные работы, черпание, экскаваторная выемка
disinfection- dizinfeksiya – дезинфекция, обеззараживание
domestic- xonaki, uyga doir – домашний, внутренний
double-track highways – ikki koleyali (izli) baland (temir) yo'l – двухколейные высокие дороги
drainage- drinaj – дренаж, канализация
drawbridge – ko'tarma ko'prik – подъёмный мост, разводный мост
durable – mustahkamlik, ishonchlilik – прочность, надёжность
durable stone – mustahkam tosh – прочный камень

E

earthen houses – tuproqli, loyli uylar – земляные, глиняные, земные дома
efficiency- ishga qobiliyatlilik – работоспособность, умение, продуктивность
elaborate- puxta o'ylangan – тщательно разработанный, продуманный, выработанный, усовершенствованный
embedded – o'rnatmoq, o'yib o'rnatmoq, singdirmoq – вставлять, врезать, внедрять
emerge – bo'lmoq, ko'rinmoq – появляться, всплывать, выходить, возникать
emphasis- kuch – сила, выразительность, эмфаза
enable- imkoniyat bermoq – давать возможность или права, приспосабливать, делать годным
enclosure- devor, to'siq – ограждение, огорожённое место
entire- to'liq – полный, совершенный, целый
entrance- kirish joyi – вход, вступление, вхождение
environment- atrof muhit – окружение, окружающая обстановка
equipment- jihozlar – оборудование, арматура, материальная часть
erecting – bino – inshootlarni qurish – строить, возводить (здание, сооружение)
essential – muhim – важный, ценный

evident- oydin, shubhasiz – очевидный, ясный
example- namuna, misol – пример, образец
excess- ortiqcha – излишек, избыток
existence –mavjud bo'lmoq – существование, всё существующее
experts – eksperlar – эксперты
exploration- tadqiqot - исследование
explosives – portlovchi, portlaydigan – взрывчатый, взрывной
extending – cho'zmoq, kengaytirmoq - тянуть, вытягивать, расширять
extensively – keng – широко, пространно
extremely – haddan tashqari, nihoyatda – чрезвычайно, крайне

F

facilitates – yengillashtirmoq, ko'maklashish, yordam bermoq – облегчать, содействовать
fallen – tushgan, pasayib ketgan – падать, пониженный
fan- ventilyator - вентилятор
fast - flowing – mustahkam, pishiq biriktirilgan – прочный, крепкий
fenced in – himoya qilmoq, o'rab olmoq – ограждать, окружать
ferro–concrete blocks – temir – beton bloklari – железобетонные блоки
fibres – to'qima, tola, ip – волокно, фибра, нить
floating bridge – o'zgaruvchan ko'prik – плавающий, изменчивый мост
fly-over junctions – estakada, yo'l tepasiga qurilgan (osma) ko'prik, sohilda kemalar to'xtashi uchun qurilgan ko'priksimon maydon - эстакада
for one thing – birinchidan - во-первых
former years – ilgarigi yillar – прежние годы
fortress- qal'a - крепость
fraction- qism, bo'lak – дробь, частица, обломок
fragile base – mo'rt (tez) sinadigan manbaa – хрупкая (ломкая) база
frame- qurilish - строение, структура
fresh materials – sof materiallar – чистые (новые) материалы
fuel- yoqilg'i – топливо, горючее
functional- funksional – функциональный, конструктивный

G

gap – uzilish, farq, kovak – зазор, промежуток, щель, разрыв
grade- daraja – степень, градус, качество, сорт
granite – granit (rangdor tog' jinsi)– гранит
graphite – grafit – графит
gravel - shag'al - гравий, золотоносный песок
growth- o'sish – рост, развитие, увеличение
gypsum – ganch - гипс

H

hand-rails – to'siq, panjara, tutqich, dasta – перила, поручень
hard – qattiq, mustahkam – твёрдый, упорный, трудный
has confronted - qarama – qarshi turish – стоять лицом к лицу, стоять против
heating- isitish – нагревание, подогревание, отопление
hinged – osilmoq – висеть, зависеть
hitherto – haligacha, hozirgi kunga qadar – до настоящего времени, до сих пор
housing projects – uy joy loyihalari – проекты жилых мест
human- inson - человек
humidifier- namlovchi – увлажняющий, увлажнять
humidity- namlik – сырость, влажность
hut – kulba – хижина, барак

I

important – muhim – важный
impracticable- bajarib bo'lmaydigan – невыполнимый, неисполнимый
inch- dyum (o'lchov birligi) – дюйм, высота, рост
indispensable- kerakli, zarur – необходимый, обязательный
individual- yakka tartibda – индивидуальный, особенный, отдельный
industrial- sanoatlashgan – промышленный, индустриальный, производственный
inevitable- muqarrar – неизбежный, неизменный
inflexible- bukiluvchan emas – негибкий, несгибаемый, непреклонный
inland- ichki – внутренняя часть страны
intensively- zo'r, shiddatli – интенсивно, напряженно, усилительно
interfere- aralashmoq, suqilmoq – вмешиваться, надоедать, мешать, вредить
intersection- kesishish – пересечение, точка, перекрёсток
issue- muammo – проблема, вытекание, разногласие

J

joining – birlashuvchi – присоединяющий
junction- chorraha, kesishish – перекрёсток, узловой пункт

K

kerbs – yo'l cheti, yo'l yoqasi – обочина, край тротуара

L

labour- ish – труд, работа, рабочий класс
lack of knowledge – bilimsizlik – недостаток знания, отсутствие знания
large measure – katta o'lchov, katta masshtab – большая мера, масштаб
laundry tank- kir yuvish baki – прачечная, бак для стирки
lavatory- hojatxona туалет, уборная
lay-out- chizma plan – расположение, планировка, план
leakage- chakka o'tmoq – дать течь, утечка
level- daraja – уровень, степень, этаж
lime – ohak - известь

limestone slabs – ohaktosh plitalari – известняковые плиты
lining – chiziq o'tkazish – проводить линии
liquid- suyuq – жидкий, ликвидный
loads – yuk, og'irlik – груз, загрузка
locality- joy – местность, местоположение, населенные пункты
loss- yo'qotish – потеря, утрата, пропажа, ущерб

M

made of wood - yog'ochdan tayyorlangan – сделанный из дерево, деревянный
maintenance- yordam, madad – поддержка, сохранение, содержание, уход
margin- zapas, ehtiyot – запас, безопасность
masonry - tosh terish – каменная кладка, масонства
mass – omma – масса
master plan- asosiy reja – главный план, основной план
mats – bo'yra, gilamcha, kleyonka – мат, циновка, коврик, клеёнка
means – vositalar - средства
measure – o'lchov, me'yor – мера, степень, масштаб
metallurgists – metallurglar – металлурги
military engineers – harbiy muhandislar – военные инженеры
mishap – omadsizlik, baxtsizlik – неудача, несчастье
mixture – aralashma – смешивание, смесь
mortar - ohakli qorishma – известковый раствор, строительный раствор
motion- harakat – движение
multitude- ko'p, omma – множество, большое число, масса

N

network – tarmoq – сеть
new techniques – yangi jihozlar – новые оборудования
nuclear power – atom kuchi – ядерная, атомная сила

O

obligation- majburiyat – обязательство, обязанность, долг
obstruction- qiyinchilik – затруднение, препятствие
occasional – tasodifiy, kutilmagan – случайный, редкий
occupant- yashovchi – житель, временный владелец
odour- hid – запах, аромат, налёт
official name – rasmiy nom – официальное (формальное) имя
optical – ko'rishga oid – оптический, зрительный
organic – tarkibiy – органический, систематизированный
oval shape - oval shakl – овальная фигура

P

palatable- yoqimli – приятный, вкусный
pass roads – o'tish yo'llari – проходящие дороги

pattern- namuna, shablon – рисунок, изображение, модель, структура
pebble- shag'al, mayda tosh – голыш, галка, горный хрусталь
pedestrians- piyodalar – пешеходы, пешеходный, место пешехода
per capita- odam boshiga – на человека, за каждого
pervaded – keng tarqalgan, yoyilgan – распространённый, охватывающий
pile – ustun – столб
plan- reja – план, проект, схема, чертёж
plaster – suvoq - штукатурка, гипс, пластырь
poles – stolba, ustun – столба
political- siyosiy – политический, государственный
poor – kambag'al, bechora – бедный
population- aholi – население, заселённость
position – o'rnashgan joy, joylashgan yer – местоположение
possibility-ehtimollik, imkoniyat – возможность, вероятность
precast concrete – zavodda ishlab chiqarilgan tayyor beton – готовый бетон заводского изготовления, сборного типа
precipitator- tezlashtiruvchi – ускоритель, ускорение
precise- aniq – точный, определённый
prefabricated - zavod usulida tayyorlamoq – изготовлять заводским способом
preliminary- dastlabki, taxminiy – предварительный, приблизительный
premises – bino, inshoot – помещение
pressing- qoldirib bo'lmaydigan – выжать до конца, выжимать, неотложный, настоятельный
previously – oldindan ilgaridan – предварительный
primary- boshlang'ich – предварительный, первоначальный, первичный
primitive people – ibtidoiy odam – первобытный человек
principal roads – asosiy yo'llar – основные дороги
production lines - ishlab chiqarish tarmoqlari – отрасли производства
prominent-taniqli, bo'rtib chiqqan – известный, торчащий, видный
property - xususiyat, xossa – имущества, собственность
protect – himoya qilmoq, saqlamoq – защищать, сохранять
protection- himoya – защита, охрана, прикрытие
proximity- yaqinlik - близость
purity- tozalik – чистота

Q

quality – sifat – качество, свойство, особенность
quartz – kvarts, chaqmoqtosh – кварц

R

radiating – nur sochadigan – расходящийся лучами, сиять
range – qator – ряд, линия

rapid- tez – скорый, быстрый
readily – tezda, darhol, tezlik bilan – быстро, легко, без труда
reasonable- muvofiq keladigan – подходящий, умеренный
refuse- axlat, qoldiq – отбросы, остатки, мусор
regardless- hisoblashmasdan – не считающийся, не взирая
reinforced – kuchaytirmoq – усиливать, подкреплять
reinforced concrete – temir beton – железобетон
reliability of machines – mexanizmlarning chidamliligi, ichonchliligi – надёжность, прочность, достоверность машин
remote- uzoq – дальний, далёкий, дистанционный
removal- bartaraf qilmoq – устранять, передвигать, уносить, отодвигать
requisite – kerakli – то что необходимо, требуемый
residential- turar joy – место жительство, жилой
resources- resurslar – ресурсы, средства, запасы
roadbed – ko'tarma yo'l (shag'al to'kib ko'tarilgan)– полотно дороги
rock – qoya, jarlik, osilib turgan qoyatosh – скала, утёс, горная порода камень
rocky canyons – qoyalardan iborat toshli, tog'li daralar – скалистый, камнеистый, крепкий каньон, глубокое ущелье
rolled – o'ralgan, dumalangan – катить, вертеть, вращать
ropes – arqon, ip, tros – канат, верёвка, трос
roundabout- aylanma yo'l – кружный, обходной, окольный путь

S

sandy – qumli – песчаный, песочный
satisfactory- qoniqarli – удовлетворительный, достаточный, приятный
scaffolding – havoza (qurilishlarda ko'tarib ishlangan ish joyi), qurilish o'rmonlari – леса, строительные леса
scale- masshtab – масштаб, шкала
scientific disciplines - ilmiy fanlar – научные предметы
screenings - qo'shilmalar – прикрытие, завеса, высевки
sectors – sector, maydon, soha – участки, части
segregation- ajratish, izolyatsiya – отделение, выделение
selection - tanlov – выбор, подбор, набор, селекция
settler- ko'chib kelgan odam – поселенец, отстойник
sewage- axlat suvlar – сточные воды, нечистоты
sewer- kanalizatsiya quvuri – канализационная труба
sewerage- kanalizatsiya - канализация
significance- muhimlik, ma'no – значение, смысл, значительность
signposts – ramzlar viveskasi – вывеска символов
single – yagona, yakka, yolg'iz – единственный, одинокий
sink- rakovina, chanoq – раковина, сточная труба

skilled- malakali – квалифицированный, опытный
sky-scrapers – osmon o'par binolar – небоскрёбы
slab – plita – плита, плоская заготовка
slaves – qul – раб
slightly – bir oz, yengilgina – слегка, немного
slimy paste- shiliqli pasta – скользкий, слизистая паста
sludge- axlat suv qoldig'i - густая грязь, отстой, грязевой нанос
social- ijtimoiy - общественный, социальный, общительный
society- jamoa – общество, объединение
solid- qattiq – твёрдый, цельный, прочный, крепкий, плотный
source- manba, kon – исток, верховье, источник
state plan – davlat rejasi – государственный план
statement- bayonot – заявление, изложение, официальный отчёт
steam- bug' – пар, энергия
steel – po'lat – сталь
stream- oqim – поток, направление, течение
strength of materials – materiallar chidamliligi – прочность материалов
stresses – bosim, kuchlanish – давление, нажим, напряжение
substantially – aslini olganda, to'g'risini aytganda – по существу, в основном, основательно
suburbs – shahar tashqarisi – пригород, предместья окрестности
sufficient- yetarli - достаточный
supports – tirgak, tayanch, tutib turadigan ustun – поддержка опорная стойка
surface – yuza, ust – поверхность, внешность
surpasses – ortiq bo'lmoq, oshib ketmoq – превосходить, превышать
surrounding- o'rab olingan – окружающий, близлежащий
survive – bardosh berib yashamoq – пережить, выдержать, перенести
suspension – to'xtatish, tugatish – приостановка, прекращение

T

tackle – ushlamoq, arqonlar bilan mustahkamlamoq – схватывать, энергично браться, закреплять снастями
temporary – vaqtinchalik – временный
tent – chodir – палатка
the arterial roads – magistral yo'llar – магистральные дороги
the bane of undergraduate – talabalarning zaharlinishi – отравление студентов
the crowded state – to'lib ketgan shtat – переполненный штат
the pontoon bridge - vaqtincha qurilgan ko'chma ko'prik – понтон моста
the Scientific Council on Strength and Plasticity – chidamlilik va egiluvchanlik sohasidagi ilmiy sovet – научный совет прочности и пластичности
the skins of animals – hayvonlarning terisi – кожа (шкура) животных

the soil – yer – почва, земля
the sort – nav, xil, tur – сорт
the strains – deformatsiya, mexanik bosim, taranglik, cho'ziluvchanlik – напряжение, натяжение, растяжение
the vision – ko'rinish – вид
therefore- shuning uchun - поэтому
thermal shock – issiqlikka oid tebranish – тепловой (термический) удар
thinly – ingichka. yupqa – тонко, худо
timber – o'rmon, yog'och – taxta materiallar, yog'och brus, balka – лес, лесоматериал, деревянный брус, балка
timber beams – yog'och – taxta materiallari, yog'och – taxtalar – лесоматериалы, бревно, брус, балка
to accept- qabul qilmoq – принимать, признавать, относиться
to accomplish- bajarmoq – выполнять, совершать, достигать
to achieve – erishmoq – достигать, добиваться, достичь цели
to achieve- erishmoq, yetishmoq – достигать, добиваться, доводить до конца
to adapt - moslamoq, moslashmoq – приспосабливать, адаптировать
to advocate- qo'llab quvvatlamoq - поддерживать
to affect- ta'sir qilmoq – действовать, влиять
to associate- birlashtirmoq – соединять, связывать, присоединятся
to assure- kafolat bermoq – гарантировать, обеспечивать
to avoid – o'zini chetga olmoq, xatodan qutulmoq – избегать. сторониться
to avoid- o'zini chetga olmoq – избегать, сторониться, отменять
to be classified – tasniflangan bo'lmoq – быть классифицированным
to be compared – qiyoslangan bo'lmoq – быть сравненным
to be conducted – olib bormoq – вести, руководить
to be coordinated – mos bo'lmoq, muvofiq bo'lmoq – координировать, согласовывать, устанавливать правильные соотношение
to be distributed – tarqatmoq, taqsimlamoq – распределять, распространять, размещать
to be transported – tashimoq, kochirmoq - транспортировать (ся)
to bind - bog'lamoq - связывать, обшивать
to clarify- tozalamoq – чистить, делать(ся) ясным, выносить ясность
to clean- tozalamoq – чистить, очищать, протирать
to complete- tugatmoq – заканчивать, завершать
to comprise- ichiga olmoq – включать, охватывать, заключать в себе
to concern – aloqador bo'lmoq, dahldor bo'lmoq – касаться, иметь отношение
to concern- aloqasi bo'lmoq – касаться. иметь отношение
to connect- ulamoq – соединять(ся), связываться, сочетаться
to consider – hisoblamoq - считать, полагать, принимать во внимание

to contain- o'z ichiga olmoq – содержать
to cope – uddalamoq, eplamoq – справиться, совладать, покрывать, обхватывать
to cross- kesib o'tmoq – пересекать, переходить, перечёркивать
to deal- munosabatda bo'lmoq – иметь дело, вести дело
to decay- so'nmoq, kuchsizlanmoq – гнить, разлагаться, портиться, ухудшаться
to depend upon – bog'liq bo'lmoq – быть зависимым, зависимый
to design- loyihalashtirmoq – делать эскизы, предназначать, изображать
to designate- aniqlamoq – определять, обозначать, назначать
to disrupt- buzmoq – разрывать, разрушать, срывать
to distribute- tarqatmoq – раздавать, распределять
to do away –tugatmoq – покончить
to employ- ish bermoq – предоставлять работу
to envisage- ko'rib chiqmoq – рассматривать, предусматривать
to establish- o'rnatmoq – основывать, создавать, устанавливать, устраивать
to evolve – rivojlanmoq – эволюционировать, развиваться
to excavate – qazish, kovlash – копать, рыть, выкапывать
to exemplify – misol keltirmoq – приводить пример, служить примером
to fix- o'rnashtirmoq – укреплять, устанавливать, подстроить
to illustrate – cutalar bilan bezamoq, tushuntirmoq – иллюстрировать, пояснять
to imply- nazarda tutmoq – значить, подразумевать, предполагать
to incur- duchor bo'lmoq – подвергаться, навлечь на себя
to maintain- ta'minlamoq, saqlamoq – сохранять, содержать, обеспечивать
to manage- boshqarmoq – руководить, управлять, стоять во главе
to obtain-olmoq, hosil qilmoq – получать, добывать, приобретать
to occur- sodir bo'lmoq – случаться, происходить, приходить на ум, попадаться
to perform- namoyish qilmoq – представлять, исполнять, выступать
to prevent – oldini olmoq, saqlab qolmoq – предохранять
to realize- amalga oshirmoq – представлять себе, осуществлять, выполнять, реализовать
to reduce- kamaytirmoq – понижать, уменьшать, приводить в определённое состояние
to relate- taaluqli bo'lmoq – относиться, иметь отношение
to render- to'lamoq – платить, отдавать, оказывать
to reveal – ochib bermoq, ko'rsatmoq, namoyon qilmoq – открывать, разоблачать, показывать, обнаруживать
to select - ajratib olmoq – отбирать, выбирать, подбирать
to substitute- almashtirmoq – заменять, замещать
to supersede – almashtirmoq, o'zgartirmoq, siqib chiqarmoq, egallamoq – заменять, смещать, вытеснять, занимать
to tackle – arqon bilan mustahkamlamoq, ushlamoq – закреплять снастями, схватить

to tenant- ijaraga bermoq – понимать, арендовать
to tie together – bir – biri bilan bog'lanmoq, birlashmoq – связываться с друг другом, присоединяться
to treat- munosabatda bo'lmoq - относиться, иметь дело
tombs – qabr – могила
tools – ish asboblari, dastgohlar – рабочие инструменты, станки
top priority – katta ahamiyat, yuksak ustunlik – большое значение, высокий приоритет
tough composite materials – qattiq aralashma materiallar – жёсткие, плотные, составные материалы
trade- savdo - торговля
traditional building – an'anaviy bino - традиционное, основанное жилище, здание, строительство
traffic- harakat – движение, транспорт
traffic jams – transport vositalarining to'planib qolishi – дорожная «пробка», скопление транспорта
transmission- uzatish – передача, пересылка
treatment- ishlov berish – обращение, обработка
tremendous – qo'rqinchli, dahshatli, ulkan – страшный, ужасный, громадный, огромный
trends – yo'nalishlar - направления
trestle – estakada, taxta to'shama (ko'chadan yo'lovchilar o'tishi uchun qilingan maxsus yo'l, yog'ochdan qilingan trotuar) – эстакада, подмости
triangular – uch burchakli – треугольный
tropical countries – tropik mamlakatlar – тропические страны
truck- yuk tashish – перевозить на грузовиках, грузить на платформу
two carriage-ways – ikkitomonlama yo'l – двухсторонние дороги

U

ultimate- oxirgi, so'nggi – последний, конечный, самый отдалённый
unprecedented scope – misli yo'q, hech ko'rilmagan mashtab – беспрецедентный, беспримерный масштаб
unsophisticated - oddiy, tabiiy, toza – простой, безыскусственный, чистый
urgent solution - qattiq qorishma – настоятельный раствор, растворение
utilization- ishlatish, qo'llash – использование, утилизация

V

value- narx – цена, стоимость, значение
various- har xil – различный, разный
vehicle- ot-ulov, transport, tashish vositalari – перевозочное средство, связующее вещество
ventilation- havo almashtirish – проветривание, вентиляция
viaducts – kesishgan yo'l ustidan o'tkazilgan ikkinchi yo'l (ko'prik yo'l) – путепроводы

vividly – yorug', ravshan, yorqin – ярко, ясно, живой, яркий, пылкий

W

waste- chiqindi – отходы, отбросы
water tightness - suv o'tkazmaslik - водонепроницаемый
wave- to'lqin - волна
wholesome- foydali – полезный, благотворный, безопасный, здоровый
wires – sim – проволок, провод
withstanding cosmic cold and vacuum – kosmik sovuq va past bosimga qarshi turish – противостояние космическому холоду и пониженному давлению
wooden piles – yog'och ustunlar – деревянные столбы
workability – yaroqlilik – применимость

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Building construction.

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