ЧАСТНОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ
ПРОФЕССИОНАЛЬНОГО ОБРАЗОВАНИЯ
СТАВРОПОЛЬСКИЙ МНОГОПРОФИЛЬНЫЙ КОЛЛЕДЖ

МЕТОДИЧЕСКИЕ УКАЗАНИЯ

к практическим занятиям по дисциплине
«ИНОСТРАННЫЙ ЯЗЫК В ПРОФЕССИОНАЛЬНОЙ ДЕЯТЕЛЬНОСТИ»
для обучающихся по специальности
08.02.01 «Строительство и эксплуатация зданий и сооружений»

Ставрополь 2026 г.

Методические указания составлены в соответствии с федеральным государственным образовательным стандартом среднего профессионального образования для специальности 08.02.01«Строительство и эксплуатация зданий и сооружений»

В методических указаниях представлен краткий практический материал, направленный на усвоение лексики и дальнейшее обучение грамматики при подготовке к практическим занятиям.

Целью практических работ по дисциплине «Иностранный язык» является проведение практических занятий и овладение фундаментальными знаниями, профессиональными умениями и навыками по профилю изучаемой дисциплины, закрепление и систематизация знаний, формирование умений и навыков и овладение опытом творческой, исследовательской деятельности.

Задачи практических занятий:

- обобщить, систематизировать, углубить, закрепить полученные знания по изучаемым темам;

- сформировать умения применять полученные знания на практике;

- выработать при решении поставленных задач таких профессионально значимых качеств, как самостоятельность, ответственность, точность, творческая инициатива.

В результате обучающийся осваивает следующие общие компетенции:

ОК 01. Понимать сущность и социальную значимость своей будущей профессии, проявлять к ней устойчивый интерес.

ОК 02. Организовывать собственную деятельность, выбирать типовые модели и способы выполнения профессиональных задач, оценивать их эффективность и качество.

ОК 03. Принимать решения в стандартных и нестандартных ситуациях и нести за них ответственность.

ОК 04. Осуществлять поиск и использование информации, необходимой для эффективного выполнения профессиональных задач, профессионального и личностного развития.

ОК 05. Использовать информационно-коммуникационные технологии в профессиональной деятельности.

ОК 06. Работать в коллективе и команде, эффективно общаться с коллегами, руководством, потребителями.

ОК 07. Содействовать сохранению окружающей среды, ресурсосбережению, эффективно действовать в чрезвычайных ситуациях;

ОК 09. Использовать информационные технологии в профессиональной деятельности.

ПК 1.3 Разрабатывать архитектурно-строительные чертежи с использованием средств автоматизированного проектирования;

ПК 3.3. Взаимодействовать с членами профессиональной бригады и добровольными помощниками в условиях чрезвычайных ситуаций.

Планируемые **личностные результаты** в ходе реализации образовательной программы:

ЛР 8. Проявляющий и демонстрирующий уважение к представителям различных этнокультурных, социальных, конфессиональных и иных групп. Сопричастный к сохранению, преумножению и трансляции культурных традиций и ценностей многонационального российского государства.

ЛР 13. Способный при взаимодействии с другими людьми достигать поставленных целей, стремящийся к формированию в строительной отрасли и системе жилищно-

коммунального хозяйства личностного роста как профессионала.

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Перечень практических работ

№ практ. занятия	Наименование тем практических работ	Кол-во часов
Раздел I. Иностранный язык в профессиональном общении		
Тема I. Мой колледж. Моя профессия. Содержание учебного материала – 14 часов. В том числе, практических занятий – 12 часов		
ПР №1	Учеба в колледже. Система профессионального образования./ Пр.	2
ПР №2	Моя специальность. /Пр	2
ПР №3	Возможности карьерного роста. /Пр.	2
ПР №4	История развития строительства. Первые постройки. /Пр.	2
ПР №5	Современные тенденции в развитии строительного производства. /Пр.	2
ПР №6	Требования к профессии. /Пр.	2
Раздел II. Профессиональный модуль		
Тема 1. Введение в основы перевода текстов профессиональной направленности и технической документации Содержание учебного материала – 8 часов. В том числе, практических занятий – 6 часов		
ПР №7	Научно-технические стили русского и английского языков. /Пр.	2
ПР №8	Особенности лексики и перевода иностранной научно-технической литературы. /Пр.	2
ПР №9	Перевод инструкций при работе на строительной площадке. /Пр.	2
Тема 2. Виды, свойства и функции современных строительных материалов, изделий и конструкций Содержание учебного материала – 34 часа. В том числе, практических – 32 часа		
ПР №10	Строительные материалы, их свойства и функции. /Пр.	2
ПР №11	Натуральные строительные материалы. /Пр.	2
ПР №12	Древесина. Свойства. Пр	2
ПР №13	Детали из дерева, преимущества и недостатки. /Пр.	2
ПР №14	Искусственные строительные материалы. /Пр./	2
ПР №15	Химия в строительстве. /Пр.	2
ПР №16	Композитные материалы. /Пр.	2
ПР №17	Стекло.\Пр.	2
ПР №18	Материалы из пластика. /Пр.	2
ПР №19	Металлы. Свойства металлов. /Пр./	2
ПР №20	Сплавы в строительстве. /Пр.	2
ПР №21	Кирпич. Свойства и применение. /Пр.	2
ПР №22	Виды кирпича. /Пр.	2
ПР №23	Керамика. /Пр.	2
ПР №24	Строительный раствор.\Пр	2
ПР №25	Бетон. Виды и свойства бетона. /Пр.	2
Тема 3. Части здания Содержание учебного материала – 32 часа. В том числе, практических занятий – 30 часов		
ПР №26	Части здания. /Пр	2
ПР №27	Фундамент. /Пр.	2
ПР №28	Виды фундамента. /Пр.	2
ПР №29	Крыша. Ее функции. /Пр.	2
ПР №30	Виды крыш.\Пр.	2
ПР №31	Потолок. Подвесной потолок. /Пр./	2
ПР №32	Балки. /Пр.	2
ПР №33	Стены. Классификация стен /Пр.	2
ПР №34	Дизайн стен /Пр.	2
ПР №35	Перекрытия. /Пр.	2
ПР №36	Кладка из кирпича. /Пр.	2
ПР №37	Окна. /Пр.	2
ПР №38	Материал для оконных рам. /Пр.	2
ПР №39	Пол. Напольные покрытия. /Пр.	2
ПР №40	Паркетный пол. /Пр.	2
Тема 4. Оборудование строительной площадки, строительная техника		

Содержание учебного материала – 16 часов. В том числе, практических занятий – 14 часов		
ПР №41	На строительной площадке.\Пр.	2
ПР №42	Оборудование стройплощадки. /Пр.	2
ПР №43	Строительные леса. /Пр./	2
ПР №44	Группы строительных машин. /Пр.	2
ПР №45	Транспортировочные машины. /Пр.	2
ПР №46	Машины для земляных работ. /Пр.	2
ПР №47	Техника безопасности при работе на стройплощадке. /Пр.	2
Тема 5. Здание, типы зданий		
Содержание учебного материала – 26 часов. В том числе, практических занятий – 24 часа		
ПР №48	Архитектура зданий. /Пр.	2
ПР №49	Здания и требования к ним. /Пр.	2
ПР №50	Нагрузки и воздействия в здании. /Пр.	2
ПР №51	Гражданское строительство. /Пр.	2
ПР №52	Конструкции гражданских зданий. /Пр.	2
ПР №53	Типы гражданских зданий. /Пр.	2
ПР №54	Жилищное строительство. /Пр.	2
ПР №55	Способы строительства. /Пр.	2
ПР №56	Промышленное строительство. /Пр.	2
ПР №57	Виды промышленных зданий. /Пр.	2
ПР №58	Конструкции промышленных зданий.\Пр.	2
ПР №59	Необычные архитектурные решения. /Пр.	2
Раздел 3. Деловая и профессиональная среда общения. Этика и нормы делового и профессионального общения		
Тема 1 Документы, деловая переписка, переговоры		
Содержание учебного материала – 10 часов. В том числе, практических занятий – 8 часов		
ПР №60	Деловое письмо, структура. Виды деловых писем. /Пр.	2
ПР №61	Письмо-запрос. /Пр.	2
ПР №62	Письмо-предложение. /Пр.	2
ПР №63	Договор. Правила делового общения. /Пр.	2
Тема 2 Карьера, устройство на работу		
Содержание учебного материала – 10 часов. В том числе, практических занятий – 8 часов		
ПР №64-65	Устройство на работу. Документы. /Пр.	2 2
ПР №66	Написание заявления. /Пр.	2
ПР №67	Заполнение анкеты. /Пр.	2
ПР №68	Собеседование /Пр.	2
Всего		**152**

ПОРЯДОК ВЫПОЛНЕНИЯ ПРАКТИЧЕСКИХ РАБОТ

Практическая работа №1 - №6 Тема «Мой колледж. Моя профессия».

Учеба в колледже. Система профессионального образования. Моя специальность. Возможности карьерного роста. История развития строительства. Первые постройки. Современные тенденции в развитии строительного производства. Требования к профессии.

Цель: создать условия для развития умений связного описания своего учебного заведения, изучить лексику

Содержание работы: прочитать тексты по данной теме, составить рассказ о своей специальности, о своем колледже, сравнить систему среднего профессионального образования в России и США, рассказать о современном строительстве, о требованиях к своей профессии.

Задание: Прочитать, перевести тексты, выписать и выучить новые лексические единицы**.**

Текст 1

The Stavropol Multidisciplinary College.

The Stavropol Multidisciplinary College is one of the largest educational institutions of secondary professional education in the Stavropol region. It was founded in 2014.

Now in college there are about 1,500 students. The education of our college is both on budget and on commercial basis. Full-time training is conducted in four specialties.

The number of teaching staff is 120 people, most of them have higher education, corresponding to the profile trades and professions.

During its history, the Stavropol Multidisciplinary College prepared more than 10 thousand professionals. In the past three years, 12% of graduates finished college with honors.

The Stavropol Multidisciplinary College possesses a good material base. Now in college there are 9 computer classes, 2 gymnasiums, a dining-room, a medical center, library with reading room, sport club, etc.

The graduates of our college are in demand in the labor market (employed 100%), many of them continue their education in the Universities.

Текст 2

Building

Construction is one of the oldest human occupations. The ancient people, if there were no caves, they had to build themselves small huts to wait out the cold night, shelter from insects or predators. Later, people began to show a creative approach to construction. So, in ancient Egypt, people without technology, thanks to only one labor, huge costs, knowledge and skills of Egyptian architects and builders were able to build huge structures that have survived to this day. The skill of builders can also confirm that sometimes they have to work without insurance. Remember at least a photo from the construction of Rockefeller Center in Manhattan, when workers at a giant height quietly enjoy a lunch break. And it’s not that it’s a staged photo or not, and that it was typical of the time, insurance that the builders there. The profession of the Builder is very ancient. People began to build their first homes in the primitive time when he decided to get out of the caves. In antiquity, the construction was engaged in a multi-million army of slaves. Later these works were performed by employees. But always appreciated the master of his craft. It was their hands that created masterpieces of world architecture: palaces, temples, pyramids and just houses. To this day, many

buildings have survived, the age of which is measured by millennia. As for the profession itself, choosing it, you need to keep in mind that it is difficult and requires constant dedication combined with painstaking daily work. This is difficult in the snow, in wind, in heat, no retreat, no surrender positions. But it is difficult to imagine today the modern life of the city and the village without masons, installers, finishers, carpenters, welders. Therefore, I believe that the profession of Builder opens a list of the most necessary professions today. At the same time, the construction profession is the most peaceful, because it is the builders who give people shelter, a sense of comfort and security of their own home. Now the profession of the Builder is not only one of the most popular and demanded, but also one of the highest paid working professions. After all, a new modern society is built not only in the figurative sense of the word, but literally. And construction, in turn, activates many other industries and the economy, supplying construction sites with various materials, transport, construction equipment and many others. Build-does do not mean only to build any structure. It also means creating, create and create, because the construction of a truly beautiful building requires not only certain knowledge and experience but also talent. Therefore, the profession of Builder at all times was surrounded by universal honor and respect. In addition, the work of the Builder is always in front of everyone and skillfully performing it, a person brings joy and aesthetic pleasure to others. Creation is inherent in human nature, which can be proved by the fact that from the first days of its existence, man is engaged in construction. For a person who has chosen the profession of a Builder, however, as for any other profession, the defining qualities are decency, responsibility, diligence and, of course, love for their work. Thus, construction ensures the development of production and guarantees employment. All this gives a real visibility of changes for the better and guarantees the need for good builders for many years to come.

Текст 3

Education in Russia and in the USA

Education system in Russia is different from the one in the USA, the contrasts are both minor and significant, at all study stages. We have made an analysis how do American and Russian schools and universities compare to understand how Russian education correlates with American education.

Preschool Education Russia: a system of kindergartens is developed throughout the country, where children receive pre-school education while playing. Children are brought to such facilities aged of 2 or 3 and stay there until they are 6 or 7 depending on the region. *USA: preschool education* is carried out by parents and family members; schools have so-called reception classes, where children are brought at the age of 5. Reception class is optional but almost everyone attends it.

School Education The difference between Russian and American schools lies in the structure and the approach to the study process. *Russia*: school is conventionally divided into primary, secondary and senior, and all stages can be attended in the same educational institution. The programme for primary and secondary school is designed to be equal for all pupils in the class, whereas in senior school several subjects can be optional (elective) as required for future study in Russian Institutions. *USA*: junior, secondary and senior school can operate in different educational institutions. Junior school offers a unified programme, whereas secondary school adds elective courses to the compulsory programme. In senior school a pupil makes independently more than 50% of the schedule planning his/her future education. Along with community schools, there are private schools, and if we make a comparison between state and private schools, it becomes obvious that the latter provide enhanced knowledge of many subjects. In Russia: children can enter any

school, regardless of their residence address, although the priority is given to children living in the area of the given district of the city and registered here. American cities are divided into school districts, this division determines which school the child will attend, depending on the address to which he lives. Intellectual abilities of the child are not taken into account, he will still go to the school that is assigned to his address. To enroll in another school, one will first have to move to a new home, in another district

Higher Education Russian and American systems of higher education have many differences in educational process organization and in the form of submissions. In Russia it is possible to study at the university for free, if you pass through the competition, and in the US the education is paid. *Russia:* to enter a university, you should pass the Unified State Examination and score the required number of points or pass entrance exams. There are 2 semesters that make an academic year. At the end of every semester is the examination session, that is, the cycle of examinations and tests and term paper defense. *USA:* enrollment to the university is a multi-stage process, which includes questioning, writing an essay, interviewing and teachers' recommendations. In addition to school assessments, extra-curricular work and personal qualities are taken into account. Assessment takes place at examinations; within the academic semester much attention is paid to regular knowledge tests.

Практическая работа №7 - №9 Тема: Введение в основы перевода текстов профессиональной направленности и технической документации

Цель: освоить навыки работы при переводе текстов профессиональной направленности, технических текстов

Содержание работы: прочитать тексты по данной теме, перевести, выписать и выучить новые лексические единицы

Задание: перевести тексты, выписать и выучить новые лексические единицы

Текст 1.

Site instructions: Here's the correct format for your book

What are site instructions? And when are they used?

A site instruction is a formal instruction typically issued by the head or lead contractor with instructions and directives to other contractors or subcontractors. These instructions must be written and formalized because they fall outside the original project scope or plan - and hence require additional 'instruction'. Site instructions can be delegated to the contractor or subcontractor for the execution of particular works, the purchase of new or additional goods, the testing of materials and design or defect issues which need rectification.

Contractors obviously prefer not to issue site instructions, as they either:

Point to a problem or defect associated with the initial construction or works which could have been done right the first time

Point to a delay or holdup with an element of the project which needs to be adjusted through additional supplier, ordering etc.

Fall outside the original scope of the contract and work, which isn't ideal for any parties - who plan and schedule their people and assets based on that original plan (with some wriggle room)

A perfect project would result in no variations or site instructions, but as we know, that is rare/almost impossible.

Why do site instructions matter?

Site instruction are very important for projects and companies in the industries.

Logistically, they are important to moving projects forward. A contractor who is largely responsible for the safe delivery of the asset must have a mechanism for pushing adjustments down through the chain of command. If a subcontractor is falling behind on schedule or the client requests a change from the original plan, the contractor needs to have a formal method for ensuring that other contractors and subcontractor are informed and compensated for this change - and execute the new instruction properly. Because site instructions often fall outside the original scope of the contract, they aren't necessarily 'covered' by the contract.

If site instructions aren't or weren't issued, contractors and subcontractors alike can fall into a grey area of work where claims and disputes arise because of the ambiguity of the work required, whose fault it is/was, and how much people need to be payed or compensated.

The additional instruction, which contains directives as to the type and scope of additional work necessary ensures that the work is covered what is essentially a 'supplemental' contract.

Getting your site instruction format and documents right

Getting the format of your site instructions is important. Site instruction carry weight and importance, and can be important for legal and financial matters.

In order to protect yourself against unfair claims and disputes, it's important to keep a thorough and standardized site instruction template which you can issue every time.

The site instruction example you see below was issued to a subcontractor. Due to the speed

and changing nature of works, the concrete supplier needed to deliver an additional 100 tonne of concrete to site. The contractor issued this site instruction so that the amount of concrete kept up with other works - and didn't delay the project.

Текст 2

HISTORY OF SURVEYING

Surveying can be determined as a means of making relatively large-scale, accurate measurements of the Earth's surfaces. It includes the determination of the measurement data, the reduction and interpretation of the data to usable form, and, conversely, the establishment of relative position and size according to given measurement requirements. Thus, surveying has two similar but opposite functions: 1) the determination of existing relative horizontal and vertical position, such as that used for the process of mapping, and 2) the establishment of marks to control construction or to indicate land boundaries. Surveying has been an essential element in the development of the human environment for so many centuries that its importance is often forgotten. It is an imperative requirement in the planning and execution of nearly every form of construction. Surveying was essential at the dawn of history, and some of the most significant scientific discoveries could never have been implemented were it not for the contribution of surveying. Its principal modern uses are in the fields of transportation, building, apportionment of land, and communications. It is quite probable that surveying had its origin in ancient Egypt. The Great Pyramid of Khufu at Giza was built about 2700 BC, 755 feet (230 5 meters) long and 481 feet (147 metres) high. Its nearly perfect squareness and north-south orientation affirms the ancient Egyptians' command of surveying. Evidence of some form of boundary surveying as early as 1400 BC has been found in the fertile valleys and plains of the Tigris, Euphrates, and Nile rivers. Clay tablets of the Sumerians show records of land measurement and plans of cities and nearby agricultural areas. Boundary stones marking land plots have been preserved. There is a representation of land measurement on the wall of a tomb at Thebes (1400 BC) showing head and rear chainmen measuring a grainfield with what appears to be a rope with knots or marks at uniform intervals. There is some evidence that in addition to a marked cord, wooden rods were used by the Egyptians for distance measurement. There is no record of any angle-measuring instruments, but there was a level consisting of a vertical wooden A-frame with a plumb bob supported at the peak of the A so that its cord hung past an indicator, or index, on the horizontal bar. The index could be properly placed by standing the device on two supports at approximately the same elevation, marking the position of the cord, reversing the A, and making a similar mark. Halfway between the two marks would be the correct place for the index. Thus, with their simple devices, the ancient Egyptians were able to measure land areas, replace property corners lost when the Nile covered the markers with silt during floods, and build the huge pyramids to exact dimensions.

The Greeks used a form of log line for recording the distances run from point to point along the coast while making their slow voyages from the Indus to the Persian Gulf about 325 BC. The magnetic compass was brought to the West by Arab traders in the 12th century AD. The astrolabe was introduced by the Greeks in the 2nd century BC. An instrument for measuring the altitudes of stars, or their angle of elevation above the horizon, took the form of a graduated arc suspended from a hand-held cord. A pivoted pointer that moved over the graduations were pointed at the star. The instrument was not used for nautical surveying for several centuries, remaining a scientific aid only.

The Greeks also possibly originated the use of the groom, a device used to establish right angles, but Roman surveyors made it a standard tool. It was made of a horizontal wooden cross pivoted at the middle and supported from above. From the end of each of the four arms hung a

plumb bob. By sighting along each pair of plumb bob cords in turn, the right angle could be established. The device could be adjusted to a precise right angle by observing the same angle after turning the device approximately 90°. By shifting one of the cords to take up half the error, a perfect angle would result.

About 15 BC the Roman architect and engineer Vitruvius mounted a large wheel of known circumference in a small frame, in much the same fashion as the wheel is mounted on a wheelbarrow; when it was pushed along the ground 6 by hand it automatically dropped a pebble into a container at each revolution; giving a measure of the distance traveled. It was, in effect, the first odometer. The water level consisted of either a trough or a tube turned upward at the ends and filled with water. At each end there was a sight made of crossed horizontal and vertical slits. When these were lined up just above the water level, the sights determined a level line accurate enough to establish the grades of the roman aqueducts. In laying out their great road system, the Romans are said to have used the plane table. It consists of a drawing board mounted on a tripod or other stable support and of a straightedge - usually with sights for accurate aim (the alidade) to the objects to be mapped - along which lines are drawn. It was the first device capable of recording or establishing angles. Later adaptations of the plane table had magnetic compasses attached.

Plane tables were in use in Europe in the 16th century, and the principle of graphic triangulation and intersection was practiced by surveyors. In 1615 Willebrord Snell, a Dutch mathematician, measured an arc of meridian by instrumental triangulation. In 1620 the English mathematician Edmund Gunter developed a surveying chain, which was superseded only by the steel tape beginning in the late 19th century.

The study of astronomy resulted in the development of angle-reading devices that were based on arcs of large radii, making such instruments too large for field use. With the publication of logarithmic tables in 1620, portable angle-measuring instruments came into use. They were called topographic instruments, or theodolites. They included pivoted arms for sighting and could be used for measuring both horizontal and vertical angles. Magnetic compasses may have been included on some.

The vernier, an auxiliary scale permitting more accurate readings (1631), the micrometer microscope (1638), telescopic sights (1669), and spirit levels (about 1700) were all incorporated in theodolites by about 1720. Stadia hairs were first applied by James Watt in 1771. The development of the circle dividing engine about 1775, a device for dividing a circle into degrees with great accuracy, brought one of the greatest advances in surveying methods, as it enabled angle measurements to be made with portable instruments far more accurately than had previously been possible.

Modern surveying can be said to have begun by the late 18th century.

One of the most notable early feats of surveyors was the measurement in the 1790s of the meridians from Barcelona, Spain, to Dunkirk, France, by two French engineers, Jean Delambre and Pierre Mechain, to establish the basic unit for the metric system of measurement.

Many improvements and refinements have been incorporated in all the basic surveying instruments. These have resulted in increased accuracy and speed of operations and opened up possibilities for improved methods in the 7 field. In addition to modification of existing instruments, two revolutionary mapping and surveying changes were introduced: photogrammetry, or mapping from aerial photographs (about 1920), and electronic distance measurement, including the adoption of the laser for this purpose as well as for alignment (in the 1960s). Important technological developments starting in the late 20th century include the use of satellites as reference points for geodetic surveys and electronic computers to speed the processing and recording of

survey data.

Notes:

1) Measurement data - данные измерений;
2) Apportionment of land - распределение земель;
3) Boundary surveying - межевание земель;
4) Land plot - земельный участок;
5) Nautical surveying - гидрографическая съёмка;
6) Circumference - окружность;
7) Odometer - одометр, измерительное колесо;
8) Plane table - мензула;
9) Vernier - верньер;
10) Telescopic sight - визирная труба;
11) Spirit level - спиртовой уровень;
12) Stadia hairs - дальномерные нити;
13) Alignment - визирование.

Текст 3.

MODERN SURVEYING AERIAL SURVEYING

Aviation and photography have revolutionized detailed mapping of features visible from the air. An aerial photograph, however, is not a map. In the case of the House of Parliament and Westminster Bridge, London, for example, the tops of the towers would coincide with the corners of the foundations when mapped. In an aerial photograph, however, they would not, being displaced radially from the centre. An important property of vertical aerial photographs is that angles are correctly represented at their centres, but only there. Similar distortions are present in photographs of hilly ground. This problem may be dealt with in two principal ways, depending on the relative scales of the map and the photographs and on whether contours are required on the map. The older method, adequate for planimetric maps at scales smaller than the photographs, was used extensively during and after World War II to map large areas of desert and thinly populated country; mountainous area could be sketched in, but the relief was not accurately shown.

As in ground survey, a framework of identified points is necessary before detailed mapping can be carried out from the air. The photographs are ordinarily taken by a vertically aligned camera in a series of strips in which each picture overlaps about 60 percent of the preceding one; adjacent strips overlap only slightly. The overlaps make it possible to assemble a low-order framework or control system based on small, recognizable features that appear in more than one photograph. In the simplest form of this procedure each photograph is replaced by a transparent template on which rays are drawn (or slots are cut) from the centre of the picture to the selected features. The angles between these rays or slots are correct, and slotted templates can be fitted together by inserting studs, which represent the features, into the appropriate slots and sliding the templates so that each stud engages the slots in all the pictures showing the corresponding feature. This operation ensures that the centres of the pictures and the selected features are in the correct relationship. The array of overlapping photographs can be expanded or contracted by sliding them about on the work surface as long as the studs remain engaged in the slots, so the assemblage can be positioned, oriented, and scaled by fitting it to at least two - preferably several -ground control points identified on different photographs.

This technique may be extended by using two additional cameras, one on each side, aimed at

right angles to the line of flight and 30 degrees below 18 the horizontal. The photographs taken by the side cameras overlap those taken by the vertical one and also include the horizon; the effect is to widen the strip of ground covered and thus to reduce the amount of flying required. Points in the backgrounds of the oblique photographs can be incorporated in the overlapping array as before to tie the adjacent flight paths together. Photography from high-flying jet aircraft and satellites has rendered this technique obsolete, but before those advances took place it greatly facilitated the mapping of underdeveloped areas.

For the production of maps with accurate contours at scales five or six times that of the photographs, a more sophisticated approach is necessary. The ground-survey effort must be expanded to provide the heights as well as the positions of all the features employed to establish the framework.

In this technique the details within each segment of the map are based not on individual photographs but on the overlap between two successive ones in the same strip, proceeding from the positions and heights of features in the corners of each area. A three-dimensional model can be created by viewing each pair of consecutive photographs in a stereoscope; by manipulation of a specially designed plotting instrument, the overlapping area can be correctly positioned, scaled, and oriented, and elevations of points within it can be derived from those of the four corner points. These photogrammetric plotting instruments can take several forms. In projection instruments the photographs are projected onto a table in different colors so that, through spectacles with lenses of complementary colors, each eye sees only one image, and the operator visualizes a three-dimensional model of the ground. A table or platen, with a lighted spot in the middle, can be moved around the model and raised or lowered so that the spot appears to touch the ground while the operator scans any feature, even if it is located on a steep hillside. A pencil directly beneath the spot then plots the exact shape and position of the feature on the map. For contouring the platen is fixed at the selected height (at a scale adjusted to that of the model), and the spot is permitted to touch the model surface wherever it will; the pencil then draws the contour.

With more complex mechanical devices, rays of the light reaching the aircraft taking the two photographs are represented by rods meeting at a point that represents the position of the feature of the model being viewed. With a complicated system of prisms and lenses the operator, as with projection instruments, sees a spot that can be moved anywhere in the overlap and up or down to touch the model surface. A mechanical or electronic system moves a pencil into the corresponding position on a plotting table to which the map manuscript is fixed.

With computerized analytic instruments the mechanical operation is limited to measuring coordinates on the two photographs, and the conversion 19 to a three-dimensional model is performed entirely by the computer. It is possible with the most precise plotting instruments of either type to draw a map at four to six times the scale of the photographs and to plot contours accurately at a vertical interval of about one one-thousandth of the height from which the photographs were taken. With such analytic instruments the record can be stored in digital as well as graphic form to be plotted later at any convenient scale.

All these methods produce a line or drawn map; some of them also create a data file on disk or tape, containing the coordinates of all the lines and other features on the map. On the other hand, aerial photographs can be combined and printed directly to form a photomap. For flat areas this operation requires simply cutting and pasting the photographs together into a mosaic. For greater accuracy the centres of the photographs may be aligned by the use of slotted templates to produce a photomap called a controlled mosaic.

A much more precise technique is based on the use of an orthophotoscope. With this device,

overlapping photographs are employed just as in the stereoscopic plotter, but the instrument, rather than the manual tracing of the features and contours, scans the overlap and produces an orthophotograph by dividing the area into small sections, each of which is correctly scaled. This procedure is best applied to areas of low relief without tall buildings; the resulting maps can then be substituted for line maps in rural areas where they are practically useful in planning resettlement in agricultural projects. Because no fair drawing is required, the final printed map can be produced much more quickly and cheaply than would otherwise be possible.

Notes:

1) Planimetric map - карта без изображения рельефа;
2) Adjacent strip - смежный маршрут;
3) Overlap - перекрытие (листов карты или аэроснимков);
4) Transparent template - прозрачный шаблон;
5) Plotting instrument - картосоставительский прибор;
6) Platen - прижимное устройство;
7) Photomap - карта, составленная по аэрофотосъёмочным данным;
8) Controlled mosaic - ориентированный фотоплан;
9) Orthophotoscope - ортофотоскоп;
10) Stereoscopic plotter - стереообрабатывающий прибор.

Текст 4.

3D LASER SCANNING FOR CULTURAL HERITAGE

In the last years, thanks to the advances of surveying sensors and techniques, many heritage sites could be accurately replicated in digital form with very detailed and impressive results. The actual limits are mainly related to hardware capabilities, computation time and low performance of personal computer.

Often, the produced models are not visible on a normal computer and the only solution to easily visualize them is offline using rendered videos.

This kind of 3D representations is useful for digital conservation, divulgation purposes or virtual tourism where people can visit places otherwise closed for preservation or security reasons. But many more potentialities and possible applications are available using a 3D model.

Almost 50 years ago, the Venice Charter (International Charter for the Conservation and Restoration of Monuments and Sites, 1964) stated: “It is essential that the principles guiding the preservation and restoration of ancient buildings should be agreed and be laid down on an international basis, with each country being responsible for applying the plan within the framework of its own culture and traditions”. But nowadays the need for a clear, rational, standardized terminology and methodology, as well as an accepted professional principle and technique for interpretation, presentation, digital documentation and presentation is still not established. Furthermore, “...Preservation of the digital heritage requires sustained efforts on the part of governments, creators, publishers, relevant industries and heritage institutions. In the face of the current digital divide, it is necessary to reinforce international cooperation and solidarity to enable all countries to ensure creation, dissemination, preservation and continued accessibility of their digital heritage” (UNESCO Charter on the Preservation of the Digital Heritage 2003). Therefore, although we may digitally record and produce models, we also require more international collaborations and information sharing to digitally preserve and make them accessible in all the possible forms and to all the possible users and clients. But despite all these international statements, the constant pressure of international heritage organizations and the recent advances of

3D recording techniques, a systematic and targeted use of 3D surveying and modelling in the Cultural Heritage field is still not yet employed as a default approach for different reasons:

1) the idea of high costs for 3D models;

2) the difficulties in achieving good 3D models by everyone;

3) the thought that 3D is an optional process of interpretation and an additional 'aesthetic' factor, i.e. traditional 2D documentation is enough;

4) the difficulty of integrating 3D worlds with other more standard 2D 25
material;

5) the lack of powerful and reliable software to handle 3D data and produce standard documentation material.

New technologies and new hardware are pushing to increase the quality of 3D models with the purpose of attracting new people into the 3D world. Many companies entered inside this market developing and employing software and survey systems with good potentialities and often very impressive results. Indeed, the number of 3D products is huge and if one hand the cost of these technologies is slowly reducing, on the other hand it's difficult, in particular for nonspecialists, to select the right product due to a lack of standard terminology and specifications. Furthermore, new technologies can for sure be a powerful tool to improve the classical standard of documentation and create a new methodology, however caution must be used and they have to be further studied and customized to be fully effective and useful, since even the standard bi-dimensional representations are still not problem-free.

When planning a 3D surveying and modeling project, beside all the technical parameters that should be kept in mind (e.g. location, accessibility, geometric detail, budget), a very crucial thing to know is the final user of the 3D data and the final project's goal, in order to clarify what is actually needed. Nowadays there is a large number of geomatics data acquisition tools for mapping purposes and for visual Cultural Heritage digital recording. These include satellite imagery, digital aerial cameras, radar platforms, airborne and terrestrial laser scanners, UAVs, panoramic linear sensors, SRL or consumer-grade terrestrial digital cameras and GNSS/INS systems for precise positioning. Beside data acquisition systems, today new software has been developed and many automated data processing procedures are available. For what concerned new functionality for 3D data management, there are new advances in Geographic Information Systems (GIS) and 3D repositories (e.g. BIM) while in the visualization field the rendering and animation software are now more affordable with lower costs and higher results. The continuous development of new sensors, data capture methodologies and multi-resolution 3D representations are contributing significantly to the documentation, conservation, and presentation of heritage information and to the growth of research in the Cultural Heritage field. The generation of reality-based 3D models of heritage sites and objects is nowadays performed using methodologies based on passive sensors and image data, active sensors and range data, classical surveying (e.g. total stations or GNSS), 2D maps, or an integration of the aforementioned techniques.

The choice or integration depends on the required accuracy, object dimensions, location constraints, instrument's portability and usability, surface 26 characteristics, project's budget and final goal of the 3D survey. Identify the best approach in every situation is not an easy task but it is nowadays clear that the combination and integration of different sensors and techniques, in particular when surveying large and complex sites, is the ideal solution in order to: 1) exploit the intrinsic strengths of each technique, 2) compensate for weaknesses of individual methods, 3) derive different geometric Levels of Detail of the scene under investigation that show only the necessary information and 4) achieve more accurate and complete geometric surveying for

modelling, interpretation, representation and digital conservation issues. The Stonehenge laser scan survey undertaken back in 2011 successfully demonstrates the recording, documentation and archaeological analysis application of laser scanning as well as its latent potential for deriving new data. This new survey aimed to record both the world famous prehistoric monument and 'The Triangle' landscape immediately surrounding it by applying a range of laser scanning systems from Leica Geosystems and Zoller und Fruhlich (Z+F) with varying specifications and data capture capabilities.

In December 2013 a new visitor centre was opened at Stonehenge containing a number of displays based on the laser scan data. These included interpretation and tactile reconstructions of the henge monument and a new 'Stand in the Stones' virtual display that every visitor now experiences when entering the new centre. Such a project therefore demonstrates that laser scanning can successfully record heritage sites and monuments and provides a range of useable outputs encompassing traditional, modern and virtual requirements.

The importance of Cultural Heritage documentation is well recognized and there is an increasing pressure at international level to preserve them also digitally with long-lasting and standard formats. Indeed, 3D data are today a critical component to permanently record the shape of important objects so that, in digital form at least, they might be passed down to future generations. This concept has produced firstly a large number of projects, mainly led by research groups, which have realized very high quality and complete digital models and secondly has alerted the creation of guidelines describing standards for correct and complete 3D documentations and digital preservation.

Notes:

1) Geomatics - геоинформатика (geo+informatics);

2) Digital recording - цифровая регистрация;

3) Satellite imagery - изображение спутниковых данных;

4) Radar platform - радиолокационная установка;

5) Panoramic sensor - панорамный датчик;

6) GNSS (Global Navigation Satellite System) - глобальная навигационная спутниковая система (ГНСС);

7) INS (Inertial Navigation System) - инерциальная навигационная система (ИНС).

Практическая работа №10- 25. Тема: Виды, свойства и функции современных строительных материалов, изделий и конструкций

Цель: освоить навыки работы при переводе текстов профессиональной направленности, технических текстов, ознакомиться с различными видами строительных материалов, их свойствами и функциями

Содержание работы: прочитать тексты по данной теме, перевести, выписать и выучить новые лексические единицы

Задание: Прочитать, перевести тексты, выписать и выучить новые лексические единицы

Текст 1.

Construction Materials

There are many types of building materials used in construction such as Concrete, Steel, Wood and Masonry. Each material has different properties such as weight, strength, durability and cost which makes it suitable for certain types of applications. The choice of materials for construction is based on cost and effectiveness to resisting the loads and stresses acting on the structure. As a structural engineer, I work with my clients to decide on the type of materials used in each project depending on the size and use of the building.

The manufacturing of building materials is a well-established and standardized industry capable of providing a reliable supply of high-quality materials for our structures. The production of structural- grade building materials is subject to quality control procedures that involve inspection and testing according to national standards and scientific testing methods.

Building materials can generally be divided into two categories: Natural building materials such as stone and wood, and Man-made building materials such as concrete and steel. Both categories usually require a certain level of preparation or treatment before the use in a structural application. Below is the list of materials I used the most in engineering consulting projects.

There are lots more that can be covered on the topic of construction materials, but hopefully this gives you a good understanding of each of the major materials and the applications that are best suited for each of them. If you have any questions on any of these materials, feel free to leave them in the comment section below.

Materials used for construction purposes possess different properties. They differ in durability, strength, weight, fire-and decay-resistance and, naturally, cost.

Wood, timber, brick, stone, concrete, metals, and plastics belong to the most popular building materials used nowadays. They all have their advantages and disadvantages that are taken into account when designing a structure.

Текст 2.

Modern Building Materials: Classification Natural materials. Extracted materials

Materials are solid substances of which manufactured products are made. A variety of materials are used in different products. Basic types of materials range from wood, which has been used for thousands of years, to composite materials, which are still under development.

Materials belong to two groups: (1) natural materials and (2) extracted materials. Natural materials, which include stone, wood, and wool, are used much as they occur in nature. Extracted materials, such as plastics, alloys (metal mixtures), and ceramics, are created through the processing of various natural substances.

Natural materials generally are used as they are found, except for being cleaned, cut, or processed in a simple way that does not use much energy. Natural materials include stone and biological materials.

Certain types of rock are extremely strong and hard, and are therefore used as building stone. There are two types of building stone — crushed stone and dimension stone.

Biological materials are substances that develop as part of a plant or animal. Common plant materials include wood and various fibers such as cotton. Animal materials include leather and fibers such as wool.

Wood is a valuable biological material because of its strength, toughness, and low density. These properties make wood an excellent material for thousands of products, including houses, sailboats, furniture, baseball bats, and railroad ties.

Extracted materials are created through processes that expend a great deal of energy or alter the microstructure of the substances used to make the materials. Extracted materials include ceramics, metals and their alloys, plastics, rubber, composite materials, and semiconductors.

Ceramics include such everyday materials as brick, cement, glass, and porcelain. These materials are made from mineral compounds called silicates, including clay, feldspar, silica, and talc.

People have used such metals as copper, gold, iron, and silver for thousands of years to make various practical and decorative objects. Today, metals are important in all aspects of construction and manufacturing.

Plastics are synthetic materials made up primarily of long chains of molecules called polymers. There are two basic types of plastics: (1) thermosetting plastics (usual called thermosets) and (2) thermoplastics.

Rubber is made up of elastomers, polymers that stretch easily to several times their length and then return to their original shape.

Engineers may artificially combine various materials to create a new composite material. Many composite materials contain a large amount of one substance to which fibers, flakes, or layers of another substance are added.

Semiconductors are materials that conduct electricity better than insulators, but not as well as conductors, at room temperature.

Текст 3.

Properties of Materials

Manufacturers determine which material to use for a given product by evaluating properties (qualities) of materials. Some properties can be linked with a material's macrostructure (structure visible to the unaided eye).

Other properties are explained by a material's microstructure (structure that can be seen only through a microscope). The properties of materials are determined by their internal structure—that is, the way in which the fundamental parts of the materials are put together. At the most basic level, properties of materials are determined by chemical bonds, forces that attract atoms to one another and hold them together.

Materials scientists study how the structure of materials relates to their properties. A large part of their work involves experimentation. Scientists group the properties of materials according to various functions that must be performed by objects made of the materials. Most properties of materials fall into six groups: (*1) mechanical, (2) chemical, (3) electrical, (4) magnetic, (5) thermal, (6) optical.*

Mechanical properties are critical in a wide variety of structures and objects — from bridges, houses, and space vehicles to chairs and even food trays. Some of; the most important mechanical properties are (1) stiffness, (2) yield stress, (3) toughness, (4) strength, (5) creep and (6) fatigue resistance.

Stiffness measures how much a material bends when first subjected to a mechanical force.

Yield stress measures how much force per unit area must be exerted on a material for that material to permanently deform (change its shape).

Toughness measures a material's resistance to cracking. The tougher a material, the greater the stress necessary to break that material near a crack.

Strength measures the greatest force a material can withstand without breaking. A material's strength depends on many factors, including its toughness and its shape.

Creep is a measure of a material's resistance to gradual deformation under a constant force.

Fatigue resistance measures the resistance of a material to repeated applications and withdrawals of force.

Chemical properties include catalytic properties and resistance to corrosion.

Electrical properties are important in products designed either to conduct (carry) or block the flow of electric current.

Dielectric strength describes a material's response to an electric field.

Magnetic properties indicate a material's response to a magnetic field — the region around a magnet or a conductor where the force of magnetism can be felt.

Thermal properties reflect a material's response to heat. Thermal conductivity is a measure of how well a material conducts heat.

Текст 4.

Wood

Wood has been used as a construction material for thousands of years and if properly maintained can last for hundreds of years. It is a readily available and economically feasible natural resource with a light weight and highly machinable properties. It also provides good insulation from the cold which makes it an excellent building material for homes and residential buildings.

Wood pieces used in construction are machine-planed and sawn into certain dimensional specifications. Dimensional lumber comes in widely available sections such as 2”x4”, 2”x6”, etc. This is commonly used in the construction of walls and floors. Believe it or not, a 2”x4” is actually 1 Ц” wide x 3 Ц” high. Wood that comes in larger dimensions are referred to as timber or beams and are commonly used to construct the frames of large structures such as bridges and multi-story buildings. Engineered wood is another type of wood used in construction that consist of various forms of wood glued together to form a composite material suitable for specific construction applications. Examples of engineered wood is glued laminated wood (glulam), plywood and fiberboard.

Because of its light weight, wood is not the most suitable construction material to support heavier loads and not ideal for long spans. Wood is rarely used for foundations and basement walls, as it needs to be pressure treated because of its contact with soil/moisture which can be fairly expensive. In a wood framed house, the foundations and basement walls are usually constructed with reinforced concrete.

Wood belongs to naturally growing materials. It is known to be the oldest construction material and is still widely used for different purposes. Wood is popular since it has low weight and is easy to work. Besides, it grows naturally and is cheap. But its usage is limited because of its

disadvantages: it easily burns and decays. As to stone, it also belongs to the oldest building materials. Among its advantages there are strength, high heat insulation and fire-resistance.

Wood has been a highly used building material since prehistoric times. Among other highly used construction materials there are concrete, steel, brick, stone, and plastics. They all differ in their properties and in the methods of usage. Construction materials are known to differ in strength, hardness, fire-and corrosion-resistance durability, and, naturally, cost.

Being the oldest building material, wood is also known to be the only naturally growing organic material. Is wood strong? Hardly so, because wood always contains some water which decreases its strength. But after the wood is cut, the water content starts to evaporate and as the water content decreases the strength of cut wood and its hardness start to increase. It is a well-known fact that the drier is the cut wood the greater is its strength and hardness.

Trees are known to grow naturally, which makes wood a constantly renewable natural resource. Among other advantages of wood there are its low cost, low weight, and high workability. But, as any other construction material, wood has its disadvantages. The main ones are the following-it is not fireresistant, it easily burns. Besides, it easily decays.

Текст 5

TIMBER.

Timber belongs to one of the oldest building materials. It has been from ancient times and is still produced from cut wood. Timber has always been highly usable in construction because of its many advantages. To these belong its strength, light weight, cheapness, and high workability. Its other advantage is that it belongs to natural resources and is naturally renewable. It is the more so that about a third of the world is still considered to be covered with forests. Besides, timber is resistant to corrosion produced by chemical substances in the modern polluted atmosphere.

One more advantage of timber is that it can be used for many construction purposes. But, naturally, timber has disadvantages and the main ones are that it is not fire-resistant and it easily decays; especially if it is not impregnated. Besides, freshly cut timber contains water that may cause great structural defects. Removal of water from timber is a necessary procedure that should take place before timber is used in practice. It increases strength and work-ability of the material and, of course, its durability.

What is timber mainly used for? Because of its many advantages it is highly used for producing window and floor frames, for flooring and roofing and for other various woodwork. The two main types of timber are hardwoods and softwoods. Of them, hardwoods are popular as materials used for decorative purposes: veneering in furniture and paneling. As to softwoods, they are mainly used for producing window and door frames and other kinds woodwork.

Текст 6

PLASTICS

Plastics are man-made materials that can be shaped into any form. They are one of the most useful materials ever created. Engineers have developed plastics that are as rigid as steel or as soft as cotton. They can make plastics that are any color of the rainbow - or as clear and colorless as crystal. Plastics can be rubbery or rigid, and they can be shaped into an endless variety of objects. Plastic products often have a useful life of many years. But why are the chemists so enthusiastic about plastics? Plastics are rapidly becoming important synthetic materials because of their great variety, strength, durability and lightness. A synthetic product must necessarily be both better and cheaper in order to justify its manufacture. This is essentially true of the various plastics when

compared to the material they are to replace.

Since plastics combine all the fine characteristics of a building material together with good insulating properties, and are fireproof as well, it is no wonder that the architects and engineers have turned to them to add color and attractiveness to modern homes and offices. Engineers have created hundreds of different plastics, each with its own properties. They have developed plastics that can replace metals, natural fibers, paper, wood and stone, and glass and ceramics. For example, plastic siding does not dent as easily as that made of aluminum.

Plastic pipes are lightweight and easy to cut and join. Moreover, they do not corrode like metal pipes. Plastic wall tiles, bathtubs, and sinks are less fragile, cheaper and easier to install than ceramic ones. Plastics are also used to make insulating foam that blocks the flow of heat and sound.

Foamed plastics have very low compressive and tensile strength. They can be used between two layers of a hard surface material, such as a metal or plywood, to create a laminated sandwich panel with high stiffness.

Laminated panels are used as floors, partitions and exterior walls in building.

Nowadays, builders are using plastics in almost any part of a building from the foundation to the final coat of paint.

Текст 7

METALS.

From the History of Metals.

Metals began to be widely used as construction materials not so long ago. Before the beginning of the nineteenth century metals played little structural role in the process of building. Mostly they served for joining parts of buildings. The ancient Greeks and Romans are known to use bronze for joining slabs of stone.

It was only in the eighteenth century when the first all-metal structure was built in Europe. It was a cast-iron bridge across the River Severn in more than two centuries after its construction, it still carries heavy modern traffic across the Severn.

In the first half of the nineteenth century cast iron and wrought iron were introduced and used for industrial construction in Europe and North America. Steel was not widely used, being considered a rare and expensive building material. Inexpensive steel first began to be produced and used only with the invention of the Bessemer process, in the 1850s. From that period on, metal started to be used as rather popular and useful building material. The famous Eiffel Tower of Paris was constructed of wrought iron in 1889. By that period several steel frame skyscrapers had already been built in the United States. That was the beginning of the new era; a new highly useful and popular construction material had been born and introduced into building industry.

FERROUS AND NON-FERROUS METALS

All metals, with the exception of mercury (ртуть), are hard-and fire-resistant. The common properties of metals being hardness and high fire-resistance, they are widely used in modern construction.

Metals are divided into two main groups: ferrous and non-ferrous. Iron, steel and their various alloys belong to the group of ferrous metals, while the main component of non-ferrous metals is not iron.

All metals have some common properties: they can be pulled, forged, and melted. They are also good conductors of electricity.

Ferrous metals are commonly used for construction of supporting members. Steel and other ferrous metals serve as reinforcement in ferroconcrete constructions.

As to non-ferrous metals, their advantage is their being light. Metals possess high resistance.

Текст 8

METALS

Iron and steel are the world's cheapest and most useful metals. These hard, durable metals are used in making thousands of products, from paper clips to automobiles.

The word iron can refer to both an element and a number of alloys of iron and other metallic elements. As an element, iron is one of the most common chemical substances, but it is never found in pure form. Almost all iron occurs in ores, though some meteorites also contain iron. The properties of any kind of iron depend largely on the chemical composition of the alloy. Heating and shaping the metal can greatly change its physical properties.

Manufactures use iron alloys in the manufacture of so-called iron products.

Cast iron is any iron alloy that contains from 2 to 4 per cent carbon and from 1 to 3 per cent silicon. Because of its high carbon content, solid cast iron cannot be shaped, no matter how hot it is heated. This kind of iron is made into useful objects by pouring the liquid metal into molds and letting it harden. Cast iron's hardness, low cost, and ability to absorb shocks make it an important construction material.

Steel is produced by refining iron and alloying it with other metals. Steel finds its use in corrugated sheets for roofing, for girders, frames, etc. Various shapes are employed in construction.

Aluminum is the oldest and best known light metal. It is the most plentiful metallic element in the earth's crust and the third most common of all the elements, after oxygen and silicon. But unlike some other metals, such as gold and silver, aluminum is always chemically combined with other elements. Aluminum, with its alloys, has such valuable properties as light weight, strength, corrosion resistance, electrical conduction, heat conduction, light and heat reflection.

The world construction industry uses more aluminum than any other metal except iron and steel. It is very suitable for framing members in building and prefabricated housing, for window frames and for the skin of the building in curtain-wall construction. Aluminum is also used in such items as utters, panels, residential roofing, tubes for electric wires.

Steel

Steel is one of the strongest building materials available with excellent strength capacity in both tension and compression. Because of its high strength-to-weight ratio, it is ideal for structural framework of tall buildings and large industrial facilities. Structural steel is available in standard shapes such are angles, I beams and C-channels. These shapes can be welded together or connected using high- strength bolts to build structures capable of resisting large forces and deformations.

Steel is a relatively expensive building material so it is the structural engineer’s responsibility to choose economic sizes and shapes according to the actual loads on the building to avoid overdesign. Because of the the higher cost of steel, I often get questions from our clients asking if there is a way to reduce the weight and size of some of steel members in the structure. This can be done if the loads can be reduced on the members and/or additional vertical supports can be introduced. The installation of steel is less time consuming compared to concrete and can be installed in any type of environment.

What is steel as a construction material? Steel may be classified as iron with the controlled amount of carbon. The amount of carbon in steel is generally less than 1.7 per cent. Ordinary structural steel should contain less than three tenth of one per cent carbon. This king of steel also contains small amounts of phosphorus, sulfur, oxygen, nitrogen and silicon. Like iron and its alloys, steel belongs to ferrous metals. It is a hard substance. Accordingly, it can be pulled, forged, and

melted. Generally, steel, this strong metal, like other metals, is a good conductor of electricity. Alloyed steel and stainless steel are corrosion-resistant kinds of steel. Corrosion-resistant materials are known to be widely used for plant equipment, furnaces, valves, etc.

It should be noted that steel frames as a whole and their separate parts should be carefully designed: their function is to able to carry the loads imposed on them and supported by them.

Текст 9

BRICK. TERRACOTTA. CERAMIC TILES.

Brick, stone, and timber are known are to be the oldest building materials. Bricks belong to artificial (man-made) materials. Their production started in prehistoric times. Since then they have been produced and tested in all types of climate and in many countries. Thousands of years ago the builders in Egypt already knew the advantages of bricks and used them for construction. In those days the production of bricks was quite different from the modern one: bricks were produced not by burning but by drying in the sun, there being much sunshine in Egypt all the year round. Bricks work was also popular in Rome, there being very few growing forests and as a result little timber there.

In modern times bricks can be made of concrete, mortar, of burnt clay and of a combination of some other substances. For example, different types of clay and shale can be used as raw materials. Accordingly, bricks produced nowadays have different sizes, shapes, colours, and textures. Bricks also vary with the method of fabrication and temperatures of burning. It should be noted that some types of brick, such as, for example, salmon bricks are underburnt and highly porous. Naturally, their strength is extremely poor. This property of salmon bricks should be taken into account when choosing brick material for construction. But there exist many other types of brick that are extremely strong and almost glass hard. Between these extremes there lie some other types of bricks with different properties. Bricks properties are of great importance and should be taken into account while choosing material for construction purposes.

Brick belongs to artificial construction materials. It has been used in many countries and in different climates. In modern times bricks vary widely with the method of production and temperature of burning.

Текст 10

Masonry: masonry and brick building foundations

Masonry construction is using individual units to build structures that are usually uses mortar to bound the units together. The most common material I use in the design of masonry structures is concrete block, with vertical steel reinforcing if required. Masonry is strong in resisting compression loads/stresses which makes it ideal to use for the construction of load bearing walls. Other masonry materials include brick, stone and glass block. Masonry is a highly durable and fire-resistant material, however it can be sensitive to mortar and workmanship quality.

There has been an increase in the use of masonry as load bearing walls for the design of multi-story buildings in my office. The structural system typically consists of concrete floors supported on a combination of masonry and reinforced concrete walls depending on the number of floors and amount of load on the walls. Masonry walls with windows or openings need horizontal beams or lintels to span the weight of the wall above across the opening. Masonry is not as accommodating to large openings in walls as concrete or steel framing is, but can be an economical choice if the framing and opening sizes are reasonable and length of wall segments are not too short.

Load bearing masonry walls can be stacked up on top of one another to build multi-story buildings. The load on the first floor masonry wall is the accumulation of all the weight of the floors above it. Therefore, the bottom floor wall must be stronger than the upper floor walls. This can be achieved by reinforcing the voids in the bottom masonry walls with steel bars and concrete grout. More steel bars closer spacing of grouted cores equals stronger masonry walls. If a load bearing masonry wall does not extend all the way down to the foundation because of required openings such as parkade drive aisles, large concrete or steel transfer beams are required to support the wall above the opening.

Текст 11

CONCRETE ENGINEERING MATERIALS

Concrete is known to be one of the most popular building materials. It is produced by mixing cement, gravel, water, and sand in the proper amounts.

Concrete is a composite material made from mixing cement, aggregates such as sand and crushed stone and water. The properties of concrete depend on the ratios used in the mix design. Therefore, it's a standard practice for concrete suppliers to provide material properties and test results for each concrete patch.

Fresh concrete can be poured into form works to take any shape or form and takes time to harden into a stone-like material. It takes up to 7 days for concrete to reach the majority of its strength and will need special attention to curing to avoid cracking or reduction in capacity. Concrete is very versatile and is my go to material for applications that require a combination of strength and durability. For example, concrete is an excellent material for building foundations where the weight of the structure meets the ground. This requires strength to carry the load and also durability to withstand the contact with the surrounding soil.

Concrete is very strong when exposed to compression stresses however, it's brittle and has limited tensile strength. Combined with steel rebar, reinforced concrete is stronger and more suitable for a wide range of structures such as tall multi-story buildings, bridges, roads, tunnels and so many other applications.

Concrete is considered to be a universal material for construction. Different kinds of concrete can be used practically for every building purpose. The raw materials for producing concrete can be found in every part of the world. The main property that makes concrete so popular is that it can be formed into strong monolithic slabs. Another good quality is its relatively low cost. Besides, Concrete is known to be fire-and decay-resistant.

Concrete is produced by combining coarse and fine aggregates, Portland cement, and water. Coarse aggregate is generally gravel or crushed stone, and fine aggregate is sand. Cement, sand, gravel, and water are taken in proportional amounts and mixed. The quality of concrete depends mostly on the quality of the cement used. The process of production consists in pouring the mixed components into forms and holding them there until they harden. The process of hardening generally lasts for about 28 days.

There exist different ways of producing concrete. It can be produced by mixing the ingredients and pouring the mixture into position on the very site of building. Concrete can also be produced in a factory, and used as a material for manufacturing prefabricated blocks. Accordingly, there exit the so- called in-situ (cast-in-place) concrete and precast concrete.

Concrete, as any other building material, has not only advantages but also disadvantages. Its main disadvantage is that it has no form of its own. Also, it does not possess useful tensile strength. Because of these qualities, in modern times construction concrete is very frequently combined with

different metals. Most common of them are iron and steel.

The introduction of metal into the structure of concrete is highly advantageous. It strengthens the material and helps to realize its limitless construction and architectural potential. It should be noted that the use of ferro-concrete started only in the nineteenth century and is still gaining popularity.

Текст 12

Different kinds of concrete.

Concrete is a mixture of portland cement, water, and aggregates. Aggregates are materials such as sand, gravel, crushed rock, and blast furnace slag The cement and water form a paste that binds the aggregates into a rocklike mass as the paste hardens. Builders generally use both a fine aggregate such as sand, and a coarse aggregate such as crushed rock, to make concrete. The aggregates must be free from silt, mud, clay, dust, and other materials that might weaken the concrete. The water used to make concrete should also be free from dirt and other impurities.

Concrete is highly fire-resistant, watertight, and comparatively cheap and easy to make. When first mixed, concrete can be molded into almost any shape. It quickly hardens into an extremely strong material that lasts a long time and requires little care.

Nearly all skyscrapers and factories and many homes stand on concrete foundations. These buildings may also have concrete frames, walls, floors and roofs. Concrete is used to build dams to store water and bridges to span rivers. Cars and trucks travel on concrete highways, and airplanes land on concrete runways.

Major kinds of concrete include (1) reinforced concrete, (2) prestressed concrete, and precast concrete.

Reinforced concrete is made by casting concrete around steel rods or bars. The steel strengthens the concrete. Almost all large structures, including skyscrapers and bridges, require this extra-strong type of concrete.

Prestressed concrete usually is made by casting concrete around steel cables stretched by hydraulic jacks.

After the concrete hardens, the jacks are released and the cables compress the concrete. Concrete is strongest when it is compressed. Steel is strong when it is stretched, or in tension. In this way, builders combine the two strongest qualities of the two materials. Prestressed concrete beams, roofs, floors, and bridges are often cheaper for some uses than those made of reinforced concrete.

Precast concrete is cast and hardened before being used for construction. Precasting firms make concrete sewer pipes, floor and roof units, wall panels, beams, and girders, and ship them to the building site. Precasting makes possible the mass production of concrete building materials. Nearly all prestressed concrete is precast.

Текст 13

«COMPOSITE MATERIALS»

The combinations of two or more different materials are called composite materials. They usually have unique mechanical and physical properties because they combine the best properties of different materials. For example, a fibre-glass reinforced plastic combines the high strength of thin glass fibres with the ductility and chemi-cal resistance of plastic. Nowadays composites are being used for structures such as bridges, boat-building etc.

Composite materials usually consist of synthetic fi-bres within a matrix, a material that

surrounds and is tightly bound to the fibres. The most widely used type of composite material is polymer matrix composites (PMCs). PMCs consist of fibres made of a ceramic mate-rial such as carbon or glass embedded in a plastic matrix. Usually the fibres make up about 60 per cent by volume. Composites with metal matrices or ceramic matrices are called metal matrix composites (MMCs) and ceramic matrix composites (CMCs), respectively.

Continuous-fibre composites are generally required for structural applications. The specific strength (strength-to-density ratio) and specific stiffness (elastic modulus-to-density ratio) of continuous carbon fibre PMCs, for example, can be better than metal alloys have. Composites can also have other attractive properties, such as high thermal or electrical conductivity and a low coefficient of thermal expansion.

Although composite materials have certain advan-tages over conventional materials, composites also have some disadvantages. For example, PMCs and other com-posite materials tend to be highly anisotropic — that is, their strength, stiffness, and other engineering proper-ties are different depending on the orientation of the com-posite material. For example, if a PMC is fabricated so that all the fibres are lined up parallel to one another, then the PMC will be very stiff in the direction parallel to the fibres, but not stiff in the perpendicular direction. The designer who uses composite materials in structures subjected to multidirectional forces, must take these anisotropic properties into account. Also, forming strong connections between separate composite material com-ponents is difficult.

The advanced composites have high manufacturing costs. Fabricating composite materials is a complex proc-ess. However, new manufacturing techniques are devel-oped. It will become possible to produce composite mate-rials at higher volumes and at a lower cost than is now possible, accelerating the wider exploitation of these materials.

Текст 14

Adhesive

An adhesive is any substance that, when applied to the surfaces of materials, binds the surfaces together and resists separation. The term "adhesive" may be used interchangeably with glue, cement, mucilage, or paste. Adjectives may be used in conjunction with the word “adhesive” to describe properties based on the substance's physical form, its chemical form, the type of materials it is used to join, or the conditions under which it is applied.

The use of adhesives offers many advantages over other binding techniques such as sewing, welding, bolting, screwing, etc. These advantages include the ability to bind different materials together, the ability to distribute stress more efficiently across the joint, the cost effectiveness of an easily mechanized process, an improvement in aesthetic design, and an increased design flexibility. Disadvantages of adhesive use include decreased stability at high temperatures, relative weakness in bonding large objects with a small bonding surface area, and greater difficulty in separating objects during testing.

Adhesives may be found naturally or be produced synthetically. The earliest use of adhesive-like substances by humans was approximately 200,000 years ago. From then until the 1900s, increases in adhesive use and discovery were relatively gradual. Only since the last century has the development of synthetic adhesives accelerated rapidly, and innovation in the field continues to the present.

Текст 15

Alloys

Alloy, metallic substance composed of two or more elements, as either a compound or a solution. The components of alloys are ordinarily themselves metals, though carbon, a nonmetal, is an essential constituent of steel.

Catalan hearth or forge used for smelting iron ore until relatively recent times. The method of charging fuel and ore and the approximate position of the nozzle supplied with air by a bellows are shown.

Almost all metals are used as alloys — that is, mixtures of several elements — because these have properties superior to pure metals. Alloying...

Alloys are usually produced by melting the mixture of ingredients. The value of alloys was discovered in very ancient times; brass (copper and zinc) and bronze (copper and tin) were especially important. Today, the most important are the alloy steels, broadly defined as steels containing significant amounts of elements other than iron and carbon. The principal alloying elements for steel are chromium, nickel, manganese, molybdenum, silicon, tungsten, vanadium, and boron. Alloy steels have a wide range of special properties, such as hardness, toughness, corrosion resistance, magnetizability, and ductility. Nonferrous alloys, mainly copper-nickel, bronze, and aluminum alloys, are much used in coinage. The distinction between an alloying metal and an impurity is sometimes subtle; in aluminum, for example, silicon may be considered an impurity or a valuable component, depending on the application, because silicon adds strength though it reduces corrosion resistance.

The term fusible metals, or fusible alloys, denotes a group of alloys that have melting points below that of tin (232° C, 449° F). Most of these substances are mixtures of metals that by themselves have low melting points, such as tin, bismuth, and lead. Fusible alloys are used as solder, in safety sprinklers that automatically spray out water when the heat of a fire melts the alloy, and in fuses for interrupting an electrical circuit when the current becomes excessive.

Many fusible alloys are formulated to melt at 90-100° C (194-212° F); for example, Darcet’s alloy (50 parts bismuth, 25 lead, 25 tin) melts at 98° C. By replacing half the tin in Darcet’s alloy with cadmium, the alloy Wood’s metal, which melts at 70° C, is obtained. See also amalgam; ferroalloy; intermetallic compound.

Практическая работа № 26-40. Тема. Части здания

Цель: освоить навыки работы при переводе текстов профессиональной направленности, технических текстов, ознакомиться с частями здания, их свойствами и функциями

Содержание работы: прочитать тексты по данной теме, перевести, выписать и выучить новые лексические единицы

Задание: Прочитать, перевести тексты, выписать и выучить новые лексические единицы

Текст 1.

What is Building? Basic Components of a Building

Building or housing is the most fundamental needs for humankind. It gives us shelter. When we see or hear the "Building" word, we imagine that a building is tall and has a roof, walls, rooms, etc. However, in a broader sense, the definition of a building is structurally constructive based on bricks, sands, types of cement, water, concrete, metal, etc.

What is Building?

Building is a kind of structure which is built with materials and including with foundation, plinth, walls, floors, roofs, chimneys, plumbing and building services, fixed platforms, veranda, balcony, cornice or projection, part of a building or anything affixed thereto or any wall enclosing or intended to enclose any land or space and signs and outdoor display structures. For example, houses, factories, shopping malls, hospitals, etc.

The aim of a building is giving shelter along with security. Other purposes such as buildings serve several needs of society primarily as shelter from the weather, security, living space, privacy, to store belongings, supplied electricity and to comfortably live and work.

Types of Buildings

Buildings may be load bearing masonry buildings, RCC or steel framed structure buildings. There are many different types of Buildings. Such as:

Residential houses,
Schools, Colleges & Universities,
Hospitals,
Factories, Workshops,
Mosques, Churches, Temples,
Malls etc.

Basic Components & Parts of Buildings

Building components or parts are essential materials for building construction. All buildings built with the same components such as foundations, walls, floors, rooms, and roofs. Buildings need to decorate or renovate with paints, plasters, supplied electricity, and doors and windows fittings, fencing, and external other works to finish accurately. All these works called Building Service.

A building has three basic requirements and components. They are:

Foundation
Plinth
Superstructure

Текст 2

FOUNDATION.

It is a well-known fact that every building needs permanent stability. In order to have stability, buildings should have foundations. We know that the function of a foundation is to transfer the loads of a building into the soil. Foundations keep the walls and the floors of buildings from direct contact with the soil. They guard the walls and the floors against the action of the weather- rain, snow, and wind. They also guard buildings against sinking that may cause cracks in the walls. Foundation design is very special. It may be both rather complex or very simple. It is a common practice that for very small buildings foundation design is usually mush simpler than for large ones. Why is it so? Firstly, because foundations loads of small buildings are usually low.

What kinds of loads are supported by foundations? A foundation may support different kinds of loads. Among them there are dead loads and live loads. The dead load of a building includes the weights of the ceilings, the frame, the floor, roofs and the walls. Besides, every modern building is known to have water, electricity, heating, ventilation and dispose of waste systems and, accordingly, their equipment. The dead load also includes the weights of this electrical and mechanical equipment and the weight of the foundation itself. As to the live load, it includes the sum of the weights of the people and other living beings, the furnishings, and equipment they use. The live load also includes snow, ice, and water of the roof.

Foundation is the most critical work of building construction. A load of buildings depends on the foundation which is the strength of buildings. It is one kind of substructure. Foundations can be divided into two categories such as Shallow and Deep Foundations. The words shallow and deep indicate as the depth of foundation in the soil. Shallow foundations used for small and light buildings for e.g. a small or medium size houses, small shopping centers, etc. and deep foundations used for heavy and large buildings for e.g. tall buildings, huge shopping malls, large hospitals, and universities, etc. Generally, shallow foundations can be made in depth of as little as 3ft (1m) and deep foundations made at depth of 60-200ft (20-65m).

Текст 3

Types of Foundation and their Uses

There are various types of foundations in building construction.

Strip Foundation (shallow foundations)

Footing Foundation (shallow foundations)

Pad Foundation (shallow foundations)

Grillage Foundation (shallow foundations)

Raft Foundation (shallow foundations)

Pile Foundation (deep foundations)

Pier Foundation (deep foundations)

Cassion Foundation (deep foundations).

All these foundations work to make columns, walls, rooms, and living spaces. Depends on different types of foundations, workers use various amounts of building materials, for example, in beam work, workers make pile foundations.

Functions of Foundations:

1. Plinth

The plinth is that part of between surrounding ground surface and floor space immediately the above the ground of a building. Plinth resists entry of rainwater and insects inside the building. General plinth height is 45, 60, 75, 90, 120 cm.

2. Superstructure

The Superstructure constructed above the underground level. The location between the

underground level and the ground level is known as the plinth. In this structure, walls and rooms are constructed and transfer loads from the upper part to the substructure. In this part, a building has the following components:

3. Floor Structures

It is an important element of building construction. It is located at the lower level surface of a room. Floors can decorate in various ways. Floors are here to move around for e.g. walking from room to another room.

4. Roof Structures

It is located at the upper-level surface of a room. Depends on the weather, roofs can be different categories such as- blue roof, cold roof, collar roof, fabric roof, a domestic roof, domestic roofing, fiber cement, flat roof, green roof, pitched roof, mono-pitched roof, warm roof, shell roof, metal roof, roof tiles, skillion roof, etc. Most of the time, flat roofs, domestic roofs, and fiber cement roofs are used in building constructions.

Текст 4

Roof

The roof is a necessary component of practically every building. It serves to protect the interior of the building from rain, snow, wind, and cold. There exist many types of roofs, the main ones being sloping (pitched) roofs and flat (or nearly flat) ones.

It is a well-known fact that every roof should have a covering. The type of covering of a roof mainly depends on the form of the roof and some other factors. The pitched roof is known to dry itself quickly of water. Therefore, it can be covered with roofing materials consisting of small individual units. To these belong, for example, slate, shingles of wood, tiles of fired clay or concrete. These materials are widely used and popular as roofing coverings since they have a number of useful qualities. Firstly, the small units they consist of are easy to install. Secondly, they are easy to repair since they are individual and small. Thirdly, it should be taken into account that they are rather cheap. So if a pitched roof is manufactured of properly chosen material and is well installed, it looks beautiful and attractive. But, of course, pitched roofs have their disadvantages. Roofs of this kind should not be installed on broad and large buildings. They do not look attractive on such buildings. As to flat roofs, they can cover very broad buildings. Another advantage of these roofs is that they can serve as balconies and decks and even be landscaped parts of buildings they cover. But they also have some disadvantages. One of them is that water evaporates too slowly from their surfaces.

Different roof coverings are used and they serve different purposes: of them shingle and sheet metal roofs may cover any type of building. But as to thatched roofing it is mostly used for country buildings, historic restorations and some types of specialized buildings.

Текст 5

Types of roof

Depending on a home’s architecture, a roof can potentially make up 40% of the exterior, often playing a big role in its overall look and curb appeal. So, when the time comes to install a new roof, you’ll want to pick roofing materials and shingle colors that work well with the shape and slope of your roof, as well as complement your home’s exterior design.

Understanding the potential performance and design impact of different roof shapes and slopes can help you decide which shingles and roofing materials are best for your home from both a performance and an aesthetic point of view.

Common Roof Types and Styles

Owens Corning® roofing shingles work on nearly all types of roof designs, provided the roof slope meets the minimum requirements outlined. From three-tab to architectural shingles, Owens Corning® offers various types of roofing shingles in a wide range of colors that complement any roof style and home exterior, and are durable to help protect your home from the elements. You can "try on" different roofing shingles and colors using our Design EyeQ® Visualizer to see which products and colors you like best for your home and roof type.

Roof Slope

The slope of your roof has both a practical and aesthetic function. Water from rain or snow, for example, tends to shed, or run off, quicker on a steep slope roof. The roof's slope is expressed in a ratio based on the roof's proportions.

Roofing contractors may use the term 6 in 12 or use a contracted version such as 6:12 or 6/12. What this means is that the roof rises 6 inches vertically for every 12 inches (or 1 foot) horizontally. This can easily be translated for any number. A roof with a 4 in 12 slope will rise four inches vertically and 12 inches horizontally.

As you're choosing roofing materials, keep in mind that the steeper the slope, the more visible your roof's surface is from the ground, potentially creating an even greater impact on the exterior design aesthetics of your home.

Most homeowners can leave these calculations to their roofing contractor. However, it's important to know that the International Residential Code has specific minimum slope requirements for all roof coverings, including asphalt roofing shingles. Your roofing contractor can help you select the right choice for your slope.

Although some roof styles are traditionally built with a certain slope, it's not a hard and fast rule.

Gable Roof

Think back to your first crayon drawing of a home. Chances are you drew a gable roof. It's basically a triangle with the base resting atop the house and the two sides rising to meet the ridge. Slopes can vary drastically on the gable roof from steep chalet-style designs to rooftops with a gentle grade.

Gable Roof Illustration

The gable is an extremely popular roof style, and it works well on a variety of home designs. You can fancy it up with front gables over your entryways or go with a crossed gable design that consists of two ridges set at right angles.

Clipped Gable Roof

The clipped gable roof goes by several names, including bullnose. Clipped gable roofs are designed with the basic shape of a gable, with two sides rising to meet a ridge, but then borrow an element from hip roofs: the top peaks are "bent in," creating small hips at the ends of the roof ridge. These hips provide an interesting architectural detail to homes and help showcase high-performance, designer shingles.

Dutch Gable Roof

The Dutch gable roof is another combination style roof that uses design elements of both gable and hip roofs. A miniature gable roof, or "gablet", is perched atop a traditional hip roof.

The gable portion provides homeowners with increased attic space and can even be fitted with windows for added sunlight.

Gambrel Roof

Picture a classic red barn with white trim, and you've just envisioned a gambrel roof. Its two

sides have two slopes each, one steep and one gentle. The design permits the use of the upper floor either as an attic room or loft. Adding windows to the sides of the gambrel roof can bring natural light in and increase the use of the upper story.

The steep sections of gambrel roofs are very visible, so homeowners should carefully consider the appearance of their roofing shingles.

Hip Roof

A traditional hip roof consists of four equal-length slopes that meet to form a simple ridge. There are variations, though, such as a half-hip that features two shorter sides with eaves.

If you have a hip roof, then you may have already realized that most of the roof is visible when looking at your house. The type and color of roofing shingles you get installed on a hip roof will make up a big piece of your home's overall exterior look because it is so highly visible.

Mansard Roof

The Louvre Museum in Paris is an excellent example of the mansard roof, which takes its classic shape from French architecture. This four-sided design with double slopes has very steep lower slopes, which can be flat or curved.

Although the mansard roof originated in France, it quickly became popular in the United States. The style lets homeowners make full use of the upper story with an abundance of interior attic space and multiple windows, and it looks especially appealing when dormers are added.

Shed Roof

If you favor modern home designs, you'll likely appreciate a shed roof. This "lean-to" style resembles half of a traditional gable. While it's long been used for porches and additions, the shed roof now graces the entire structure on ultra-modern builds. Most shed roofs tend to have lower slopes, with 4 in 12 and below most common, although steeper slopes will speed up water runoff.

Homes with shed roofs tend to be unique structures that reflect their owners' style and personality. Shed roofs allow for some interesting window placement opportunities, from small rows of glass panes directly beneath the roof to large picture windows across the front of the house.

Flat Roof (Low Slope Roof)

When most people think of flat roofs, strip malls and industrial complexes often come to mind. However, during the period between 1945 and 1970, many mid-century modern architects experimented with flat rooflines creating dream homes for movie stars and wealthy businessmen. Flat roofs matched the look of the period, blending with the environment and providing large open floor plans. Some homes feature a limited flat surface area with the rest of the roof having a gable or hip design. Additionally, some home additions may use a flat roof to provide extra second floor living space.

Keep in mind flat doesn't really mean flat —there needs to be some incline to allow for water drainage.

Flat roofs (low-slope) are particularly vulnerable to leaks, so they must be thoroughly waterproofed and topped with an appropriate material, such as a self-adhered, multi-ply, SBS modified bitumen membrane system, a PVC, TPO or rubber membrane.

Текст 6

Ceiling

The ceiling surface is an important functional component in any room. It can have a luminous surface or a richly ornamented and decorated surface. It is of importance to note that it should be constructed in such a way as to help control the spread of light and sound about the room. One more important feature of the ceiling surface is its resistance to the spread of fire.

Ceilings are considered to be extremely important parts of any room. A well-designed ceiling is one of the most pleasing features of a room. In modern constructions the variants of ceilings are limitless.

Ceilings can be produced of many various materials both natural and artificial. Their colours, texture, pattern, and shape are of great importance for the visual impression of the room. Ceilings of any materials may be attached to wood joists. Usually they are attached very carefully and tightly. They may be attached to wood joists, wood rafters, or steel joints.

A ceiling can be a simple, level plane. Or it can be two or more sloping planes. It should be noted that these planes correspond to the form of the roof construction above.

Suspended ceilings can be produced of almost any materials. Among them the most widely used are gypsum, board, plaster, and various boards made of fibers. Each of these materials is supported on its own system of small steel framing members. The framing members, in their turn, are hung from the structures on heavy and strong steel wires.

Suspended plaster ceilings are rather popular in modern constructions of different kinds. Ceilings produced of fibrous materials are classified as acoustical ceilings. Their most useful property is high absorption of sound energy. As to plaster of gypsum board ceilings, they are highly reflective of sound energy.

Nowadays suspended ceilings have become a very popular and economical feature in many types of buildings. The most numerous among these buildings are office and laboratory structures. Many of them install and maintain complex mechanical and electrical installations above the ceiling. These installations include air conditioning ducts, water and waste piping, and electrical and communications wiring. They also include such services as fume ducting, vacuum piping, fuel gas lines, compressed air lines, water piping, and chemical waste piping. All these ducts and pipes occupy a considerable space in the buildings. In some of them they may be equal to the amount of their living space.

Ducts, pipes, and conduits can be placed in the space between the ceiling and the structure. Lighting fixtures, loudspeakers, and fire detection devices may also be installed into the ceiling. Many such constructions can serve as membrane fire protection for the floor and roof structure above.

Текст 7

WINDOWS

The main functions of windows are light and ventilation. Windows also serve for ornamentation of a building since ancient times. In those faraway days windows were frequently produced in shops. While nowadays windows are mostly produced in factories. What are the necessary components of a window? To these belong glass, frames, and sashes. The area of glass in windows of different types is determined according to the regulations. For example, in a modern housing construction the area of a glass should be There exist single-hung and double-hung windows. Both of these types possess one or two moving sashes, securely held in tracks in the frame. Sashes can be fixed or sliding that slide up and down in tracks in the frame. In order to counterbalance the weight of the sashes, double-hung windows are supplied with a system of special springs. Fixed windows are practically impenetrable: they do not leak air or water; they are wind-proof. But they have their disadvantages: they can be opened only to not more than theipsize.

Windows may also be placed in roofs. Roof windows may be fixed or openable. Fixed windows are skylights while openable are roof windows. equal at least to one length of the floor space. Window frame may be solid or cased.

Текст 8

TYPES OF WINDOWS

Windows were formerly made on the job site by highly skilled carpenters, but are now produced almost exclusively in factories. Some manufacturers make a range of standard sized from which the designer can select, while others build windows to order. The rationale for factory production in either case is one of higher efficiency, lower cost, and most importantly, better quality. Windows need to be made to a very high standard of precision if they are to operate easily and maintain a high degree of weathertightness over a period of many years. In cold climates especially, a loosely fitted window with single glass and a frame that is highly conductive of heat will significantly increase heating fuel consumption for a building, cause noticeable discomfort to the people in the building, and create large quantities of condensate to stain and decay finish materials in and the window.

There are also different types of windows such as:

Fixed
Pivoted
Double Hung
Sliding
Casement
Sash
Louvered
Metal
Bay
Corner window
Dormer window
Gable window
Lantern
Skylight

Текст 9

Walls

The walls are building blocks of bricks or stones. They divide the building space into various support space slabs into various beams and rooms. They safely transmit the loads coming on them from beams and slabs to the foundation. They provide privacy and protection against heat, cold, rain, noise, dust winds. Walls can be Brick masonry walls and Stone masonry walls.

Classification and design of walls are divided into two categories: external and internal construction. They possess different functions. The function of external walls is to support the upper floors and roof. The units employed for construction of walls are brick, timber, or stone masonry. As to interior walls they are mostly self-supporting. Their main function is dividing the space of the construction. They divide the gross floor area of a building into smaller units —compartments, or rooms. Their next function may be to transmit floor/roof loads to a foundation. The constructional form for internal walls may be concrete block, timber frame, or stud, and demountable frame. If a high standard of fire resistance is required, bricks may also be used to construct internal walls.

Interior walls and partitions have simple surfaces but materials they are made of should be carefully chosen and combined. Their function is to guarantee structural strength, fire resistance, durability and acoustical isolation. An internal wall may be framed and the framing materials may

be steel or wood s The function of a fire wall is to form a required separation in order to restrict the spread of fire through a building.

Every *fire wall* should extend from the foundation of a building to its roof. Every fire wall is supplied with an opening. It is of great importance to note that openings should be strictly restricted in size. Besides they must be closed with fire doors or wired glass.

A fire separation wall, like a fire wall, forms a required separation to restrict the spread of fire through a building. But, unlike a fire wall, a fire separation wall does not extend from foundation to roof. Openings in fire separation walls are also restricted in size and must be closed with fire doors or wired glass. Fire separation walls are used to divide a building between mixed occupancies and for enclosure of stairways and exitway corridors.

Shaft walls are used to enclose a multistory open space in a building. To shaft walls belong elevator shafts, conduits, or pipes. Walls for elevator shafts must be strong enough to bear air pressure and loads placed on them by the movements of the elevator cars within the shaft. Also, it is of importance to note that the noise of elevator machinery must be prevented from reaching other areas of the building. tuds.

Plywood siding materials are widely used in modern construction-business. They are popular because of their light weight and their relative cheapness. The cost ofthe material per unit area of wall is usually less than for other siding materials. Besides, the labor costs are also relatively low. The reason for it is the fact that large sheets of plywood are more quickly installed than the boards ofthe same area. In many cases, if it is necessary, the sheathing can be eliminated from the building if plywood is used for siding. This operation, if it is performed, leads to further cost saving.

It should be taken into account that usually plywood sidings must be painted in order to save them from decay. But if they are produced from decay-resistant material, they can be left to weather effects without the surface coverage.

Текст 10.

Floor

Floors belong to one of the most important functional components of a building. Floors influence the acoustics of a room: it depends on whether a hard or soft flooring is used. Floors also react in various ways with light. Some flooring materials are known to produce mirrorlike reflection. As to dark flooring materials, they, on the contrary, absorb light and this absorption makes a room darker. As to light materials, they reflect Hght and help create a lighter and brighter room.

Floors are subject to moisture, dirt, and dust. They are also subject to the action of feet and the load of furniture. That is why they require more cleaning and maintenance work than any other components of a building.

It should be taken into account that floors should be designed in such a way as to deal with the problems of sanitation, fire-resistance, and combustibility. They should also be designed so as to deal with the structural loads they will place on the frame of the building.

Poured-in-place floors

One should strictly follow the job practice for making poured-in-place floors. The measured materials for making the mastic must be put into the concrete mixer in the strictly correct order. The water and the emulsion should be carefully mixed till the mastic becomes homogeneous.

When making a poured-in-place floor, mastic is applied with a spray gun and its nozzle must be kept away from the floor surface.

Практическая работа №41-№ 47. Тема: Оборудование строительной площадки, строительная техника

Цель: освоить навыки работы при переводе текстов профессиональной направленности, технических текстов, ознакомиться с основным оборудованием строительной площадки и строительной техники.

Содержание работы: прочитать тексты по данной теме, перевести, выписать и выучить новые лексические единицы

Задание: Прочитать, перевести тексты, выписать и выучить новые лексические единицы

Текст 1

Equipment Is Used in Industrial Construction

The types of construction equipment and their uses often depends on an industrial construction project's size and purpose. However, industrial construction methods for highway construction, routine road maintenance, forestry, bridge construction and erecting structures employ many of the same tools and pieces of heavy equipment and machinery. Laborers across many different industries use these heavy machines to complete their desired task — to build.

Structural building sites, roadway creation and other civil engineering projects, such as sewer and pipeline projects, utilize earth-moving and excavation equipment. Excavating both earth and rock with heavy equipment and explosive blasting is important for the removal of natural obstacles from building sites.

Explosives and heavy machines overcome the rough terrain of any building site and allow for the creation of our modern highways, rail lines and tunnels. Almost all construction sites employ some excavation tools: backhoes, bulldozers, loaders and graders. Using these tools, construction teams can shape the land in ways that will provide the safest and most structurally sound area possible.

Transportation methods are also a vital part of construction. Building materials, tools and waste need to be transported in and out of most work sites regularly. In many cases, dump trucks haul earth, rock and construction materials to or from building sites — depending on the needs of a project. Machines, like cranes, hoist beams, heavy pieces of equipment, materials and tools to hard-to-reach places where contractors are working.

1. guide

In this guide, we will break down each type of tool or piece of heavy equipment into categories based on their use and design — and how Quincy compressors can provide power to industrial construction machines on job sites.

Construction equipment encompasses everything from hand tools and pneumatic air compressor systems to other pieces of industrial machinery like loaders and scrapers. Many of the industrial machines used in construction fall into these categories: earth-moving, transportation and hauling, hoisting, material handling, pile-driving, tunneling and drilling.

2. industrial-machines

In addition to looking at larger pieces of heavy equipment, we will look at other common tools used in construction. Other equipment includes general-purpose tools used in most construction projects. These include pneumatic hand tools, hydraulic hammers and compressed air systems used to power a variety of general-purpose tools for nailing, grinding and drilling.

Other systems, such as conveyors, move heavy materials across a job site or help to remove

waste efficiently. In other projects, especially those using concrete, pumping systems and hoses supply or remove water and other materials.

The goal of this guide is to provide you with an understanding of what types of heavy equipment are used in industrial construction. Each chapter outlines the types of systems and machines employed, how they are used, and what they offer in terms of performance and versatility during the construction process. Each chapter will outline the different types of industrial construction equipment and their unique uses in the industry.

Earth, rock and clay provide unique problems for construction workers. In some cases, mountains may need to be blasted through for railroad and roadway tunnel development. Extracting precious minerals and other valuables provided by Mother Nature may require mining, drilling and excavating for miles underground.

Almost any building project will need earth-moving equipment. Even architectural or landscape development requires detailed planning regarding topography, grades and slopes.

3. earth-moving

Gravity acting on the earth and natural elements such as rain can pose risks to not only workers but also to completed structures in the form of landslides and sinkholes. When conducting analysis for earth-moving measures, you should understand the intricate geologic makeup of an area to identify any potential problems for the present and in the future.

Unless rock or large areas are a major obstacle, most projects do not require heavy blasting. For this chapter, we will look at the various types of heavy equipment used in the movement and excavation of earth. These pieces of machinery are used primarily for shifting large areas of soil and landscapes. These projects can take the form of digging foundation areas and general landscaping. Heavy equipment includes excavators, or backhoes, bulldozers, loaders and other machines used for grading and scraping.

4. heavy-equipment

Each piece of equipment provides unique advantages to earth-moving, and in some cases may be needed for harder-to-reach places.

Excavators

The excavator represents one of the most common, and important, pieces of heavy equipment seen in construction. Excavation widely depends on these machines, also referred to as diggers, as they utilize a boom-stick and a bucket with a cab on a rotating platform. These machines provide easier access to harder-to-reach places and a full range of motion, with the ability to rotate the bucket on any side of the machine.

The house sits upon an undercarriage with tracks and wheels that allow for easy transportation as well. Also, diggers are highly effective at removing large amounts of earth and other obstacles quickly and efficiently. Some of their most common uses in the field include:

Bulldozers: Moving the Earth at Construction Sites

As with excavators, bulldozers are common at numerous types of job sites. These pieces of heavy equipment utilize tracks and a large metal blade primarily for pushing earth at a construction site. They're considered crawlers because of their use of tracks, which provides more ground stability through weight displacement across the entire machine.

Typically, at the rear, another device called a ripper is attached and used to loosen up soil, dirt and rock. The front blade can then be used to move sand, dirt and rock as well as other materials. Bulldozers are powerful and versatile machines that can navigate over rough terrain and move large amounts of material quickly and efficiently.

The use of wide tracks provides the machine with good traction for rough working

environments such as sandy or muddy areas. In addition, they offer incredible power for moving some of the heaviest materials at construction sites.

However, certain areas may not be as accessible for bulldozers as other types of earth-moving machines because of their bulkier size. Different models of bulldozers are available and can offer some flexibility depending on the terrain and working environment.

Loaders: Transporting Materials Around the Job Site

Loading heavy materials such as asphalt, rock, debris, snow or construction waste in large quantities will require the use of another type of heavy equipment. You will see many sizes of loaders, but the main goal at any job site is to load material on or into some other piece of equipment to transport it to another location.

Even large amounts of gravel, wood, logs or sand can pose a challenge for construction projects. Large quantities of any heavy material require safe handling. Having a good loader with the right specifications can prove invaluable for any project.

One of the most common types of loaders is the skid-loader, or skid-steer loader. Powered by an engine, its rigid frame sits on durable wheels, or tracks, that operate differently from other vehicles through the use of skid-steering. Skid-steer loaders have lift arms attached that are capable of being fitted with a variety of job-specific tools.

The way it operates makes the loader unique:

The wheels on each side of the vehicle are locked and synchronized with one another.

This placement makes it possible for an operator to drive one side independently of the other, which offers extra maneuverability.

Crawler loaders, which have tracks, are very maneuverable at job sites, capable of traveling under their own power. However, due to the increased power of hydraulic excavators, crews may not utilize crawler loaders as often, and their use has been in decline for several decades.

Trenchers: Digging Ditches at Construction Sites

Trenchers are designed to create ditches, or trenches. Crews also refer to them as ditchers because of this function. These machines look like other excavating equipment but are optimized for the digging of trenches, typically for piping projects.

You may spot two main types of trenchers at a construction site. The ladder trencher and the wheel trencher both offer incredible versatility for digging trenches and operate at much higher rates of speed than any other type of excavating equipment for the task. Depending on the operation, trenchers may be utilized to expedite the installation or maintenance of projects such as wastewater or drainage piping.

Graders: Creating Level Surfaces for Construction

As with bulldozers, graders represent another vital piece of engineering equipment used to move large amounts of earth. The overall goal of graders is to finish the grade and ensure properly smoothed and flat surfaces for development. In architectural design, graders may be employed to create wider, flat areas to form the foundation for buildings and structures.

In civil engineering projects such as road work and maintenance, graders help level the surface for asphalt roadways. Graders often employ six wheels and a powerful engine to power the vehicle. Like bulldozers, graders are equipped with blades. These engineering vehicles act similarly to scrapers as well and are all used in unison on projects that require precision when finishing the grade.

Scrapers: Scooping and Hauling on the Job Site

As with bulldozers and graders, scrapers offer unique advantages in civil engineering. Scrapers are machines equipped with a hopper that can be raised and lowered, depending on the job,

with hydraulics. The hopper, or bowl, cuts into the soil with its sharp edge. Once the hopper gets full from scraping, the vehicle can transport the material to the desired site.

Scrapers can transport large amounts of material easily and dump loads without the use of any additional machinery. Scrapers offer unique advantages and can cut down on the need for a loader. Once the scraper drops the load, it can return to the work site and fill its hopper again.

Compactors: Increasing Earth Density for a Firmer Foundation

Loose soil can pose numerous problems for building projects, so often job sites must increase the overall density of the earth through compacting. Compactors are specialized machines that can be used for soil compaction, or in some cases in landfills to save space. You may see different types of compactors at a job site:

Vibratory compactor machines use tamping foot roller systems.

Other machines may be equipped with a plate system used for ramming.

One of the most common types is the roller-based compactor. Smooth roller compactors designed for compaction of gravel and other materials need a smooth surface. Another type of wheel roller is the sheep foot wheel, used for deeper areas of soil compaction.

Tractors: Towing Equipment From Place to Place

The tractor is one of the most versatile and common pieces of heavy machinery used in the industry. Tractors move or tow heavy equipment around the job site. With much more horsepower — your average homeowner's contractor ranges from 20 horsepower to 60 horsepower, while diesel tractors meant for heavy construction are at least in the 200 to 600 horsepower range — industrial tractors can provide the power for nearly any earth moving task.

5. horsepower-tractor

Whether they have wheels or tracks, tractors provide an important service around the job site. What they lack in tools, they make up for in raw power, providing multiple uses in earth-moving projects. Crawler tractors enjoy advantages on rough terrain with increased stability. However, wheeled tractors are faster and offer a better speed for long-distance hauling of equipment across larger construction sites.

Текст 2.

Scaffold

Scaffold, in building construction, temporary platform used to elevate and support workers and materials during the construction, repair, or cleaning of a structure or machine; it consists of one or more planks of convenient size and length, with various methods of support, depending on the form and use.

Scaffolding on a building.

In timber scaffolding, support for the planks is provided by a timber frame fabricated and erected at the site. The frame may consist of vertical posts, horizontal longitudinal members, called ledgers, transverse members supported by the ledgers, and longitudinal and transverse cross-bracing. The planks rest on the transverse members.

Trestle supports are used for work on a large area if little or no adjustment of height is required (e.g., for plastering the ceiling of a room). The trestles may be of special design or simply wooden sawhorses of the type used by carpenters. Specially designed trestles may be adjusted to provide for working heights of from 7 to 18 feet (2 to 5 m).

Tubular scaffolding of steel or aluminum has largely replaced timber scaffolding on most construction projects. Tubular scaffolding can easily be erected in any shape, length, or height. Sections may be mounted on casters to provide a highly mobile staging. The scaffolding may be

enclosed with canvas or plastic sheeting for protection against the weather.

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Tubular hoisting towers may be quickly assembled from steel tubes or pipes about 3 inches (8 cm) in diameter with standard connections.

A suspended scaffold consists of two horizontal putlogs, short timbers that support the flooring of the scaffold, each attached to a drum mechanism. Cables extend from each drum to an outrigger beam attached overhead to the structure frame. Ratchet devices on the drums provide for raising or lowering the putlogs between which spanning planks form the working surface. Power scaffolding may be raised or lowered by means of an electric motor operated by the worker on the scaffold.

What is “Scaffolding”?

Well, scaffolding is a provisional framework which is usually used to give support to the building’s structure, and at the same time frame, it also works as a platform for the laborers to do the construction works. Based on the type of construction work, the type of scaffolding may differ. Scaffolding needs to be well-built, firm and strong to support laborers and various other construction material placed on it. Scaffolding is usually made up of timber or steel.

The different most-used types of scaffolding in construction are briefly discussed below:

1. Kwikstage Scaffolding

The Kwikstage system is made of durable galvanized steel.

Kwikstage scaffolding is trouble-free to erect and assemble and easy to take down. Builders who workin small or big projects, this type of scaffolding is very useful. Wherever regular scaffolding is used, Kwikstage scaffold can also be used as a substitute.

Using a safe and strong ringlock system (read a further explanation about ringlock system), the branded Kwikstage modular unit can easily be built to just about any height.

2. Cantilever Scaffolding

In this type of scaffolding, the standards are reinforced by a string of needles, and these needles are usually drawn out via holes in the walls. This is why it is known as single frame scaffolding.

Needles are usually reinforced inside the ground via the holes, and this is known as double or independent frame scaffold type. When building cantilever scaffold, care and attention must be taken. Usually, cantilever scaffolding is used under below-mentioned conditions.

When the upper area of the wall surface is being built

When the ground is free from traffic and is close to the wall

When the ground is able to support poles

3. Patented Scaffolding

Patented scaffolding is also manufactured from steel; having said that; they’re equipped with specific frames and couplings, etc. Most of these are ready-made scaffoldings that are available on the market. A platform for working is built on the mounting brackets which are custom-fit for the required levels.

4. Single Scaffolding

Single scaffolding is generally used for brickwork, and therefore it is known as a brick layer’s scaffold.

This type of scaffolding includes ledgers, standards, putlogs, etc. which fit the wall surface at a particular distance of about 2.1 m. The difference between the standards is about 2 to 2.6 m. Ledgers connect all standards at a vertical gap of 1.3 to 1.6 m. Putlogs are usually taken out from

the visible difference left in the wall to one end of the ledgers. Putlogs tend to be placed at a space of 1.3 to 1.6 m.

5. Steel Scaffolding

Steel scaffolding is made of steel pipes that are connected jointly by steel couplers.

This type is easy to dismantle and to build. This scaffolding has better sturdiness and greater toughness with exceptional fire resistance qualities. Although it isn't economical price wise, it gives better safety for laborers.

6. Trestle Scaffolding

A platform of working for laborers is reinforced on portable scaffold boards or tripods. This type of scaffolding consumes a height of 5m, and it is generally used for work in small spaces such as rooms or halls for paintings or repairing.

7. Suspended Scaffold

A suspended scaffold is mostly used for repair works, paintings, and so on. With this type, with the help of wire ropes or chains, the platform can easily be suspended from roofs. It can easily be lowered or lifted to the required level.

Текст 3

Safety engineering

His field of engineering has as its object the prevention of accidents. In recent years safety engineering has become a speciality adopted by individuals trained in other branches of engineering. Safety engineers develop methods and procedures to safeguard workers in hazardous occupations. They also assist in designing machinery, factories, ships and roads, suggesting alterations and improvements to reduce the possibility of accident. In the design of machinery, for example, the safety engineer tries to cover all moving parts or keep them from accidental contact with the operator, to put cutoff switches within reach of the operator and to eliminate dangerous sharp parts. In designing roads the safety engineer seeks to avoid such hazards as sharp turns and blind intersections that lead to traffic accidents.

Accidents to people in industrial enterprises are called industrial traumatism (injury). They occur when workers have not acquired the requisite for skill and lack the necessary experience in handling tools and equipment. Accidents are also caused through neglect of safety rules and regulations in the factories and training workshops.

The purpose of safety engineering is to prevent accidents and to create such conditions of work in industry which will ensure maximum productivity of labour.

When taking up new duties or when first going to work at any industrial enterprise each worker is obliged to acquaint him thoroughly with, and to master the safety instructions.

Практическая работа №48 -№ 59. Тема: Здание, типы зданий

Цель: освоить навыки работы при переводе текстов профессиональной направленности, технических текстов, ознакомиться с архитектурой зданий, типами зданий, способами строительства.

Содержание работы: прочитать тексты по данной теме, перевести, выписать и выучить новые лексические единицы

Задание: Прочитать, перевести тексты, выписать и выучить новые лексические единицы

Текст 1.

The most critical stage of a structure's lifetime is that of construction. Many, perhaps most, construction disasters occur as a result of the failure of temporary structures, and far more disasters occur during construction than after completion of projects. The most serious deficiency in formwork design is in the consideration of lateral loads. Also, a great deal of damage and loss of property during construction are caused by wind. Consequently, determination of load distribution during construction is one of the critical factors in assessing the structural safety during the construction of reinforced concrete structures. Herein, realistic models of the structure in the construction phase are developed. A practical method to check the slab adequacy during construction is presented.

Extensive numerical studies of the distribution of construction loads between multistory framed structures and the shoring and reshoring systems are made, using the computer models developed. A simplified procedure to include the construction live load in the analysis of construction loads is proposed. Furthermore, a simple modification of the popular simplified method for calculating the load distribution during construction is presented. Also, a precise method for assessing wind loads to be used in the design of temporary lateral bracing for open frame buildings is given. Furthermore, a threedimensional computer model capable of simulating the concrete construction process is developed. The effect of construction process in the analysis of multistory concrete buildings is investigated.

It has been found that the simplified method is adequate for predicting the construction location of the maximum slab and shore loads. However, it generally overestimates the actual load ratios. Furthermore, it is concluded that ACI-347 minimum requirement for horizontal loads can underestimate design wind loads by as much as 50%. It is also found that the effect of lateral loads on the construction load distribution is very small and can be neglected for practical purposes. In addition, it is found that neglecting the construction process in an elastic analysis of multistory buildings leads to a significant error in stresses due to dead loads.

A large number of wind pressure experiments have been performed to investigate the influence of surrounding buildings on wind pressures and forces on a cubical low-rise building. The primary purpose of the present work was to understand the effects of surrounding buildings and to examine methods for estimating wind loads. The considered parameters were area density and upstream distance under a turbulent boundary layer representing a suburban area. Results show that wind pressures decrease with increasing area density because of the surrounding buildings, but the variations of mean and fluctuating components within one area density are relatively small.

The local wind pressure coefficients increase significantly, and this is originated from the rapid decrease in the local velocity pressure at the model position. Last, after discussing the design approach of a target low-rise building in a large group, a methodology for estimating wind loads on

a target low- rise building was examined by introducing the (zoning) interference factor.

In engineering, beams are of several types:

Simply supported - a beam supported on the ends which are free to rotate and have no moment resistance.

Fixed - a beam supported on both ends and restrained from rotation.

Over hanging - a simple beam extending beyond its support on one end.

What are examples of resistive loads?

Two common examples of resistive loads are incandescent lamps and electric heaters. Resistive loads consume electrical power in such a manner that the current wave remains in phase with the voltage wave. That means, power factor for a resistive load is unity.

The weight or force on a joint, connection, beam, column, etc. Load is the biggest engineering factor when designing any structural element. The load can be a live load or a dead load. The live load is the ever changing loads imposed by occupants, snow, water, ice, etc.

Текст 2

CIVIL CONSTRUCTION

CIVIL CONSTRUCTION IS THE CREATION OF INFRASTRUCTURE INVOLVING ANYTHING TO DO WITH WATER, EARTH OR TRANSPORT.

It is a branch of Civil Engineering involved with the maintenance, design and construction of both natural and physically built environments such as roads, railways, buildings, water reservoirs, subdivisions, airports, bridges, sewer systems, tunnels and dams.

The civil construction industry consists of the individuals, companies and other interested parties who are involved in the planning, creation and designing of our infrastructure.

WORK PERFORMED IN THE CIVIL CONSTRUCTION INDUSTRY

Tasks performed in the industry include the planning, creation and maintenance of public infrastructure - basically anything that will make the lives of people easier. These include:

Liaising with governments, clients and other professionals

Studying, evaluating and investigating the land and building sites suitable for the possible creation of infrastructure

Adhering to the guidelines created by government, local bodies and clients when planning, creating and maintaining infrastructure

Creating infrastructure plans and having these approved by governing bodies and local authorities

Creating cost estimates and contracts

Tendering the contracts and hire contractors

Supervising and monitoring the construction of the infrastructure to ensure it matches the plan

JOBS IN THE CIVIL CONSTRUCTION INDUSTRY

There are a wide variety of careers available in the industry and these include:

Civil Engineers

Supervisors

Surveyors

Site management

Demolition staff

Road Markers

Concreters

Welders

Rollers
Dump truck operators
Project managers
Civil labourers
Traffic management
Electricians
Compactors
Loaders
Construction management
Excavator staff
Steel fixers
HOW CAN I ENTER THE CIVIL CONSTRUCTION INDUSTRY?
There are three main pathways you can take to gain access to the industry.

Trade - This is the entry level, suitable for individuals who enjoy being hands-on, using machinery and being physically active. It is done over three years by completing an apprenticeship or traineeship, or by completing a professional Certificate in Civil Construction.

TAFE - This is a suitable level to start at for individuals who enjoy a mixture of both physical and management type work. It involves completing a Diploma in Engineering Technology over two years and allows you to work as a Project Manager, Estimator or as another type of manager.

University - This is a suitable entry level for individuals who enjoy academic subjects such as mathematics and physics and who wish to become Civil Engineers. It involves completing a four year university degree and gives you the opportunity to undertake senior management roles in the civil construction industry.

Текст 3

Types of civil construction

Civil engineering is a professional engineering discipline that deals with the design, construction, and maintenance of the physical and naturally built environment, including public works such as roads, bridges, canals, dams, airports, sewerage systems, pipelines, structural components of buildings, and railways.

Civil engineering is traditionally broken into a number of sub-disciplines. It is considered the second- oldest engineering discipline after military engineering, and it is defined to distinguish non-military engineering from military engineering. Civil engineering can take place in the public sector from municipal public works departments through to federal government agencies, and in the private sector from locally based firms to global Fortune 500 companies.

History

Civil engineering as a discipline

Civil engineering is the application of physical and scientific principles for solving the problems of society, and its history is intricately linked to advances in the understanding of physics and mathematics throughout history. Because civil engineering is a broad profession, including several specialized subdisciplines, its history is linked to knowledge of structures, materials science, geography, geology, soils, hydrology, environmental science, mechanics, project management, and other fields.

Throughout ancient and medieval history most architectural design and construction was carried out by artisans, such as stonemasons and carpenters, rising to the role of master builder. Knowledge was retained in guilds and seldom supplanted by advances. Structures, roads, and

infrastructure that existed were repetitive, and increases in scale were incremental.

One of the earliest examples of a scientific approach to physical and mathematical problems applicable to civil engineering is the work of Archimedes in the 3rd century BC, including Archimedes Principle, which underpins our understanding of buoyancy, and practical solutions such as Archimedes' screw. Brahmagupta, an Indian mathematician, used arithmetic in the 7th century AD, based on Hindu- Arabic numerals, for excavation (volume) computations.

Civil engineering profession

Engineering has been an aspect of life since the beginnings of human existence. The earliest practice of civil engineering may have commenced between 4000 and 2000 BC in ancient Egypt, the Indus Valley Civilization, and Mesopotamia (ancient Iraq) when humans started to abandon a nomadic existence, creating a need for the construction of shelter. During this time, transportation became increasingly important leading to the development of the wheel and sailing.

Leonhard Euler developed the theory explaining the buckling of columns.

Until modern times there was no clear distinction between civil engineering and architecture, and the term engineer and architect were mainly geographical variations referring to the same occupation, and often used interchangeably. The construction of pyramids in Egypt (circa 2700-2500 BC) were some of the first instances of large structure constructions. Other ancient historic civil engineering constructions include the Qanat water management system (the oldest is older than 3000 years and longer than 71 km, the Parthenon by Iktinos in Ancient Greece (447-438 BC), the Appian Way by Roman engineers (c. 312 BC), the Great Wall of China by General Meng T'ien under orders from Ch'in Emperor Shih Huang Ti (c. 220 BC) and the stupas constructed in ancient Sri Lanka like the Jetavanaramaya and the extensive irrigation works in Anuradhapura. The Romans developed civil structures throughout their empire, including especially aqueducts, insulae, harbors, bridges, dams and roads.

Chichen Itza was a large pre-Columbian city in Mexico built by the Maya people of the Post Classic. The northeast column temple also covers a channel that funnels all the rainwater from the complex some 40 metres (130 ft) away to a rejollada, a former cenote.

In the 18th century, the term civil engineering was coined to incorporate all things civilian as opposed to military engineering. In 1747, the first institution for the teaching of civil engineering, the Ecole Nationale des Ponts et Chaussëes was established in France; and more examples followed in other European countries, like Spain. The first self-proclaimed civil engineer was John Smeaton, who constructed the Eddystone Lighthouse. In 1771 Smeaton and some of his colleagues formed the Smeatonian Society of Civil Engineers, a group of leaders of the profession who met informally over dinner. Though there was evidence of some technical meetings, it was little more than a social society.

John Smeaton, the "father of civil engineering"

In 1818 the Institution of Civil Engineers was founded in London, and in 1820 the eminent engineer Thomas Telford became its first president. The institution received a Royal Charter in 1828, formally recognising civil engineering as a profession. Its charter defined civil engineering as:

the art of directing the great sources of power in nature for the use and convenience of man, as the means of production and of traffic in states, both for external and internal trade, as applied in the construction of roads, bridges, aqueducts, canals, river navigation and docks for internal intercourse and exchange, and in the construction of ports, harbours, moles, breakwaters and lighthouses, and in the art of navigation by artificial power for the purposes of commerce, and in the construction and application of machinery, and in the drainage of cities and towns.

Civil engineering education

The first private college to teach civil engineering in the United States was Norwich University, founded in 1819 by Captain Alden Partridge. The first degree in civil engineering in the United States was awarded by Rensselaer Polytechnic Institute in 1835.The first such degree to be awarded to a woman was granted by Cornell University to Nora Stanton Blatch in 1905.

In the UK during the early 19th century, the division between civil engineering and military engineering (served by the Royal Military Academy, Woolwich), coupled with the demands of the Industrial Revolution, spawned new engineering education initiatives: the Class of Civil Engineering and Mining was founded at King's College London in 1838, mainly as a response to the growth of the railway system and the need for more qualified engineers, the private College for Civil Engineers in Putney was established in 1839, and the UK's first Chair of Engineering was established at the University of Glasgow in 1840.

Education

Civil engineers typically possess an academic degree in civil engineering. The length of study is three to five years, and the completed degree is designated as a bachelor of technology, or a bachelor of engineering. The curriculum generally includes classes in physics, mathematics, project management, design and specific topics in civil engineering. After taking basic courses in most sub-disciplines of civil engineering, they move on to specialize in one or more sub-disciplines at advanced levels. While an undergraduate degree (BEng/BSc) normally provides successful students with industry-accredited qualification, some academic institutions offer post-graduate degrees (MEng/MSc), which allow students to further specialize in their particular area of interest.

In most countries, a bachelor's degree in engineering represents the first step towards professional certification, and a professional body certifies the degree program. After completing a certified degree program, the engineer must satisfy a range of requirements including work experience and exam requirements before being certified. Once certified, the engineer is designated as a professional engineer (in the United States, Canada and South Africa), a chartered engineer (in most Commonwealth countries), a chartered professional engineer (in Australia and New Zealand), or a European engineer (in most countries of the European Union). There are international agreements between relevant professional bodies to allow engineers to practice across national borders.

The benefits of certification vary depending upon location. For example, in the United States and Canada, "only a licensed professional engineer may prepare, sign and seal, and submit engineering plans and drawings to a public authority for approval, or seal engineering work for public and private clients". This requirement is enforced under provincial law such as the Engineers Act in Quebec. No such legislation has been enacted in other countries including the United Kingdom. In Australia, state licensing of engineers is limited to the state of Queensland. Almost all certifying bodies maintain a code of ethics which all members must abide by.

Engineers must obey contract law in their contractual relationships with other parties. In cases where an engineer's work fails, they may be subject to the law of tort of negligence, and in extreme cases, criminal charges. An engineer's work must also comply with numerous other rules and regulations such as building codes and environmental law.

Sub-disciplines

There are a number of sub-disciplines within the broad field of civil engineering. General civil engineers work closely with surveyors and specialized civil engineers to design grading, drainage, pavement, water supply, sewer service, dams, electric and communications supply. General civil engineering is also referred to as site engineering, a branch of civil engineering that primarily

focuses on converting a tract of land from one usage to another. Site engineers spend time visiting project sites, meeting with stakeholders, and preparing construction plans. Civil engineers apply the principles of geotechnical engineering, structural engineering, environmental engineering, transportation engineering and construction engineering to residential, commercial, industrial and public works projects of all sizes and levels of construction.

Coastal engineering

Coastal engineering is concerned with managing coastal areas. In some jurisdictions, the terms sea defense and coastal protection mean defense against flooding and erosion, respectively. The term coastal defense is the more traditional term, but coastal management has become more popular as the field has expanded to techniques that allow erosion to claim land.

Construction engineering

Construction engineering involves planning and execution, transportation of materials, site development based on hydraulic, environmental, structural and geotechnical engineering. As construction firms tend to have higher business risk than other types of civil engineering firms do, construction engineers often engage in more business-like transactions, for example, drafting and reviewing contracts, evaluating logistical operations, and monitoring prices of supplies.

Earthquake engineering

Earthquake engineering involves designing structures to withstand hazardous earthquake exposures. Earthquake engineering is a sub-discipline of structural engineering. The main objectives of earthquake engineering are to understand interaction of structures on the shaky ground; foresee the consequences of possible earthquakes; and design, construct and maintain structures to perform at earthquake in compliance with building codes.

Environmental engineering

Environmental engineering is the contemporary term for sanitary engineering, though sanitary engineering traditionally had not included much of the hazardous waste management and environmental remediation work covered by environmental engineering. Public health engineering and environmental health engineering are other terms being used.

Environmental engineering deals with treatment of chemical, biological, or thermal wastes, purification of water and air, and remediation of contaminated sites after waste disposal or accidental contamination. Among the topics covered by environmental engineering are pollutant transport, water purification, waste water treatment, air pollution, solid waste treatment, recycling, and hazardous waste management. Environmental engineers administer pollution reduction, green engineering, and industrial ecology. Environmental engineers also compile information on environmental consequences of proposed actions.

Forensic engineering

Forensic engineering is the investigation of materials, products, structures or components that fail or do not operate or function as intended, causing personal injury or damage to property. The consequences of failure are dealt with by the law of product liability. The field also deals with retracing processes and procedures leading to accidents in operation of vehicles or machinery. The subject is applied most commonly in civil law cases, although it may be of use in criminal law cases. Generally the purpose of a Forensic engineering investigation is to locate cause or causes of failure with a view to improve performance or life of a component, or to assist a court in determining the facts of an accident. It can also involve investigation of intellectual property claims, especially patents.

Geotechnical engineering

A phase diagram of soil indicating the weights and volumes of air, soil, water, and voids.

Geotechnical engineering studies rock and soil supporting civil engineering systems. Knowledge from the field of soil science, materials science, mechanics, and hydraulics is applied to safely and economically design foundations, retaining walls, and other structures. Environmental efforts to protect groundwater and safely maintain landfills have spawned a new area of research called geoenvironmental engineering.

Identification of soil properties presents challenges to geotechnical engineers. Boundary conditions are often well defined in other branches of civil engineering, but unlike steel or concrete, the material properties and behavior of soil are difficult to predict due to its variability and limitation on investigation. Furthermore, soil exhibits nonlinear (stress-dependent) strength, stiffness, and dilatancy (volume change associated with application of shear stress), making studying soil mechanics all the more difficult. Geotechnical engineers frequently work with professional geologists and soil scientists.

Materials science and engineering

Materials science is closely related to civil engineering. It studies fundamental characteristics of materials, and deals with ceramics such as concrete and mix asphalt concrete, strong metals such as aluminum and steel, and thermosetting polymers including polymethylmethacrylate (PMMA) and carbon fibers.

Materials engineering involves protection and prevention (paints and finishes). Alloying combines two types of metals to produce another metal with desired properties. It incorporates elements of applied physics and chemistry. With recent media attention on nanoscience and nanotechnology, materials engineering has been at the forefront of academic research. It is also an important part of forensic engineering and failure analysis.

Site development and planning

Plan draft of proposed mixed-use site

Site development, also known as site planning, is focused on the planning and development potential of a site as well as addressing possible impacts from permitting issues and environmental challenges.

Structural engineering

Structural engineering is concerned with the structural design and structural analysis of buildings, bridges, towers, flyovers (overpasses), tunnels, off shore structures like oil and gas fields in the sea, aerostructure and other structures. This involves identifying the loads which act upon a structure and the forces and stresses which arise within that structure due to those loads, and then designing the structure to successfully support and resist those loads. The loads can be self weight of the structures, other dead load, live loads, moving (wheel) load, wind load, earthquake load, load from temperature change etc. The structural engineer must design structures to be safe for their users and to successfully fulfill the function they are designed for (to be serviceable). Due to the nature of some loading conditions, subdisciplines within structural engineering have emerged, including wind engineering and earthquake engineering.

Design considerations will include strength, stiffness, and stability of the structure when subjected to loads which may be static, such as furniture or self-weight, or dynamic, such as wind, seismic, crowd or vehicle loads, or transitory, such as temporary construction loads or impact. Other considerations include cost, constructability, safety, aesthetics and sustainability.

Surveying

Surveying is the process by which a surveyor measures certain dimensions that occur on or near the surface of the Earth. Surveying equipment such as levels and theodolites are used for accurate measurement of angular deviation, horizontal, vertical and slope distances. With

computerisation, electronic distance measurement (EDM), total stations, GPS surveying and laser scanning have to a large extent supplanted traditional instruments. Data collected by survey measurement is converted into a graphical representation of the Earth's surface in the form of a map. This information is then used by civil engineers, contractors and realtors to design from, build on, and trade, respectively. Elements of a structure must be sized and positioned in relation to each other and to site boundaries and adjacent structures.

Although surveying is a distinct profession with separate qualifications and licensing arrangements, civil engineers are trained in the basics of surveying and mapping, as well as geographic information systems. Surveyors also lay out the routes of railways, tramway tracks, highways, roads, pipelines and streets as well as position other infrastructure, such as harbors, before construction.

Land surveying

In the United States, Canada, the United Kingdom and most Commonwealth countries land surveying is considered to be a separate and distinct profession. Land surveyors are not considered to be engineers, and have their own professional associations and licensing requirements. The services of a licensed land surveyor are generally required for boundary surveys (to establish the boundaries of a parcel using its legal description) and subdivision plans (a plot or map based on a survey of a parcel of land, with boundary lines drawn inside the larger parcel to indicate the creation of new boundary lines and roads), both of which are generally referred to as Cadastral surveying.

Construction surveying

Construction surveying is generally performed by specialised technicians. Unlike land surveyors, the resulting plan does not have legal status. Construction surveyors perform the following tasks:

Surveying existing conditions of the future work site, including topography, existing buildings and infrastructure, and underground infrastructure when possible;

Transportation engineering

Transportation engineering is concerned with moving people and goods efficiently, safely, and in a manner conducive to a vibrant community. This involves specifying, designing, constructing, and maintaining transportation infrastructure which includes streets, canals, highways, rail systems, airports, ports, and mass transit. It includes areas such as transportation design, transportation planning, traffic engineering, some aspects of urban engineering, queueing theory, pavement engineering, Intelligent Transportation System (ITS), and infrastructure management.

Municipal or urban engineering

Municipal engineering is concerned with municipal infrastructure. This involves specifying, designing, constructing, and maintaining streets, sidewalks, water supply networks, sewers, street lighting, municipal solid waste management and disposal, storage depots for various bulk materials used for maintenance and public works (salt, sand, etc.), public parks and cycling infrastructure. In the case of underground utility networks, it may also include the civil portion (conduits and access chambers) of the local distribution networks of electrical and telecommunications services. It can also include the optimizing of waste collection and bus service networks. Some of these disciplines overlap with other civil engineering specialties, however municipal engineering focuses on the coordination of these infrastructure networks and services, as they are often built simultaneously, and managed by the same municipal authority. Municipal engineers may also design the site civil works for large buildings, industrial plants or campuses (i.e. access roads, parking lots, potable water supply, treatment or pretreatment of waste water, site drainage, etc.)

Water resources engineering

Water resources engineering is concerned with the collection and management of water (as a natural resource). As a discipline it therefore combines elements of hydrology, environmental science, meteorology, conservation, and resource management. This area of civil engineering relates to the prediction and management of both the quality and the quantity of water in both underground (aquifers) and above ground (lakes, rivers, and streams) resources. Water resource engineers analyze and model very small to very large areas of the earth to predict the amount and content of water as it flows into, though, or out of a facility. Although the actual design of the facility may be left to other engineers.

Hydraulic engineering is concerned with the flow and conveyance of fluids, principally water. This area of civil engineering is intimately related to the design of pipelines, water supply network, drainage facilities (including bridges, dams, channels, culverts, levees, storm sewers), and canals. Hydraulic engineers design these facilities using the concepts of fluid pressure, fluid statics, fluid dynamics, and hydraulics, among others.

Civil engineering systems

Civil engineering systems is a discipline that promotes the use of systems thinking to manage complexity and change in civil engineering within its wider public context. It posits that the proper development of civil engineering infrastructure requires a holistic, coherent understanding of the relationships between all of the important factors that contribute to successful projects while at the same time emphasising the importance of attention to technical detail. Its purpose is to help integrate the entire civil engineering project life cycle from conception, through planning, designing, making, operating to decommissioning.

Текст5

Housing construction

Home construction is the process of constructing a house, [1] generally referred to as a 'home' when giving consideration to the people who might now or someday reside there. Beginning with simple prehistoric shelters, home construction techniques have evolved to produce the vast multitude of living accommodations available today. Different levels of wealth and power have warranted various sizes, luxuries, and even defenses in a "home". Environmental considerations and cultural influences have created an immensely diverse collection of architectural styles. From castles to mud thatches, mansions to shanties, the 'home' has grown to represent a seemingly limitless array of structures.

The modern realty trade conventionally gives preference to 'home' as a warmer term in reference to the house structure; in the speculative context, terminology reverts back to 'house' as a unit of built residential property, as in the board game Monopoly. Note that a duplex is a housing structure which consists of two separate homes; a duplex amounts to a single building construction project, later marketed independently as two separate homes. The level of economic activity in the home-construction section is reported as housing starts, though this is contrarily denominated in terms of distinct habitation units, rather than distinct construction efforts. 'Housing' is also the chosen term in the related concepts of housing tenure, affordable housing, and housing unit (aka dwelling).

Four of the primary trades involved in home construction are carpenters, masons, electricians and plumbers, but there are many others as well. Modern home construction is regarded as a form of residential construction.

History

While homes may have originated in pre-history, there are many notable stages through which

cultures pass to reach the current level of modernization. Countries and communities throughout the world currently exhibit very diverse concepts of housing, at many different stages of home development.

Finding or buying parts

Two methods for constructing a home can be distinguished: the method in which architects simply assume free choice of materials and parts, and the method in which reclaimed materials are used, and the house is thus during its entire construction a "work in progress" (meaning every single aspect of it is subject to change at any given time, depending on what materials are found).
The second method has been used throughout history, as materials have always been scarce.

Specifications

Civil Site Plans, Architectural Drawings and Specifications comprise the document set needed to construct a new home. Specifications consist of a precise description of the materials to be used in construction. Specifications are typically organized by each trade required to construct a home.

The modern family home has many more systems and facets of construction than one might initially believe. With sufficient study, an average person can understand everything there is to know about any given phase of home construction. The do it yourself (DIY) boom of the late twentieth century was due, in large part, to this fact. And an international proliferation of kitset home and prefabricated home suppliers, often consisting of components of Chinese origin has further increased supply and made DIY home building more prevalent.

Procedures

The process often starts with a planning stage in which plans are prepared by an architect and approved by the client and any regulatory authority. Then the site is cleared, foundations are laid and trenches for connection to services such as sewerage, water, and electricity are established. If the house is wooden-framed, a framework is constructed to support the boards, siding and roof. If the house is of brick construction, then courses of bricks are laid to construct the walls. Floors, beams and internal walls are constructed as the building develops, with plumbing and wiring for water and electricity being installed as appropriate. Once the main structure is complete, internal fitting with lights and other fitments is done, Decorate home and furnished with furniture, cupboards, carpets, curtains and other fittings.

Costs

The cost of building a house varies by country widely. According to data from the National Association of Realtors, the median cost of buying an existing single-family house in the United States is $274,600, whereas the average cost to build is $296,652. Several different factors can impact the cost of building a house, including the size of the dwelling, and availability of resources, the slope of the land, the quality of the fixtures and fittings, and the difficulty in finding construction and building materials talent]. Some of the typical expenses involved in a site cost can be connections to services such as water, sewer, electricity, and gas; fences; retaining walls; site clearance (trees, roots, bushes); site survey.

Текст 6

Types of industrial buildings

A general warehouse is one used predominantly for storing goods. Because goods are stored for longer periods of time, location isn’t typically as important.

Truck terminals aren’t warehouses so much as they are intermediate sites where goods are moved from one truck to another. These sites are devoted to transportation only, so they tend to have little to no storage space.

Flex properties are specially designed to serve multiple purposes. For instance, these buildings usually have more square feet dedicated to office space (often more than 30 percent). There are three types of flex properties: research and development, data centers and showrooms.

In a research and development space, a company uses the property to create, test and improve new and existing products. The space often contains labs, offices, testing spaces and some light manufacturing area. The products stored are for testing purposes only.

A data center is where a company keeps the equipment it uses to maintain network connectivity and store its data. These spaces tend to be large, usually at least 100,000 square feet. Further, they often require special wiring, security and cooling systems.

Showroom properties are a combination of offices, warehouses and showrooms. In most cases, at least half the space is used for showcasing and selling products. The most common type of industrial building in this category is a car dealership.

Текст 7

Different types of building construction

Buildings are everywhere! We see them every day, as we drive or walk to where we need to go. However, how often do we all pay attention to any of the details from the structures themselves? Do we ever wonder what the buildings were constructed from? How long it took to build from start to finish? Or wonder what it looks like on the inside?

Most of the time, the answer to those questions is no, because we are too busy with other aspects of our life to have the time to care or wonder. However, it is important that we all know the main types of building structures, even though we may hardly ever use that knowledge unless we are in the construction field.

When a person is trying to determine what type of building structure they want, they often ask themselves certain questions. Those questions include the following:

What is the purpose of the structure? - The answer to this question will give you the reason why you are building the structure, to begin with, as well as how you plan to use it.

What is the size of the structure? - It is important to know the size of the structure because it will allow you to plan accordingly with the materials that you want, or need, to use.

Are there any load-bearing constraints? - The taller the building, the more load bearing restraints there might be. This information is needed sooner than later, so the proper issues and changes can be addressed.

Are there any environmental factors to consider? - Everyone wants to be environmentally friendly nowadays, which is good news. This question will allow you to see potential issues prior to the construction process and make the necessary changes before the work even starts.

How soon does the building need to be completed? - Some people want their buildings constructed faster than others, so a different building type might need to be chosen to get the desired results.

What are the costs of the materials? - The cost of the materials being used may cause you to choose a different building type over another.

Here are some of the building structures that are found in the field of construction:

1. Wood frame

Wooden frame buildings have been around for many years and in fact, this type of building structure is the oldest of them all. It is also the type that is used the most everywhere in the world. These building structures are completely made from wood that is cut and then put together on-site. That means that the workers are cutting the studs, plates, joists, and rafters as they are needed and

putting them in place before installing the drywall, paneling, and all other materials.

The advantages to wooden frame building structures are that the materials are renewable, the cost is fairly low, and they can be put up fairly quickly using basic construction tools. Of course, there are also disadvantages, which include the structure being flammable, subject to deteriorating due to the elements, and not being strong enough to withstand the winds from hurricanes and tornadoes.

2. Light gauge steel

Steel is becoming more commonly used for the construction of some buildings, because it does allow buildings to be built much faster. The materials all arrive at the job site ready to put in place, so there is never any cutting required once the construction starts. All the rafters, joists, studs, and plates are made from steel. Every piece of steel is protected by a galvanized coating, protecting it from the elements. Currently, this material is being found in more commercial buildings, but some homeowners are choosing to have their homes built with it as well.

When you are considering light gauge steel for a building structure, you will see that it has many advantages. A few of those include having a high strength compared to the weight of the building, low cost for the construction, and capable of being erected quickly.

This material is also flame-resistant, so you will never need to worry that it will catch on fire. The downside to light gauge steel is that if any adjustments need to be made on-site, the tools needed are not the everyday construction tools. Specific cutting and fastening tools are required to construct with this material.

3. Steel frame

A steel frame is slightly different than light gauge steel, as this is much stronger and normally used for larger buildings. These types of building structures are made from steel columns and trusses, which easily support the larger roofs and floors. You will see this used on many high-rises, as it is simple to get the materials up high using a crane before quickly welding them all together.

The advantages of steel frame include being strong, flexible when it comes to assembling, easy to weld to get the building constructed faster, and all the components are readily available. This material is perfect for areas that are prone to hurricanes and tornadoes and the material can easily be recycled and used again in the future. The disadvantages include being prone to corrosion in areas where there are high humidity and the fact that the material will lose strength in temperatures that reach higher than five hundred degrees.

4. Concrete frame

High rise buildings and parking garages are normally built using a concrete frame because it is stronger than many other building materials. Concrete frame construction utilizes reinforced concrete columns, as well as concrete slabs and concrete beams to construct the support structure of the building. Most reinforced concrete is readily available, but it can be a time-consuming process if it needs to be cast on the construction site. Unfortunately, building structures often require that the concrete components are cast on-site. That means that it takes longer for completion due to the curing process.

The advantages of a concrete frame building structure are that it can use recycled steel for the reinforced steel portions. The concrete can also be locally sourced and formed into almost any shape that is desired. As mentioned above, this can be a time-consuming process, plus the concrete may need to be substantially engineered if the building is in an area prone to earthquakes.

5. Pre-engineered

Sometimes, the best building structure is pre-engineered, because it goes together quickly, and you can begin using it sooner than you thought possible. Oftentimes, you can design the building to

meet your specifications and then pieces are made and put together to be shipped to the construction site.

The advantages of pre-engineered are that they are put together quickly, they are strong, and they are easy to personalize. Unfortunately, they are more expensive than other building types and you must keep your design within a square or rectangular shape.

Now that you know the different types of building structures in construction, you can easily decide which one you want to use in the future for your home, business, or other building that you need. The best part is that you can even mix and match some of these building structures so that you have the building that best fits your needs.

Практическая работа №60 -№ 63. Тема: Документы, деловая переписка, переговоры

Цель: освоить навыки работы при переводе текстов деловой документации, научиться правильно составлять деловую документацию на английском языке.

Содержание работы: прочитать тексты по данной теме, перевести, составить свои примеры деловой документации

Задание 1: Прочитать, перевести текст, написать деловое письмо

How to write a formal business letter

Whenever you need to communicate with another company or share important news, business letters can present your message in a classic, polished style. Unlike internal memos, business letters are usually written from one company to another, which is why they're so formal and structured. However, letters are also quite versatile, as they can be used for official requests, announcements, cover letters, and much more.

Despite the formality, letters can still have a friendly tone, especially because they include brief introductions before getting to the main point. Regardless of the tone you use in your letter, your writing should remain concise, clear, and easy to read.

The structure of a business letter

The business letter's precise structure is crucial to its look and readability. As you write your letter, you can follow the structure below to create an effective document.

Opening: Include your mailing address, the full date (for example, July 30, 2017), and the recipient's name, company, and address. Skip one line between your address, the date, and your recipient's information. Don't add your address if you're using letterhead that already contains it.

Salutation: Address the recipient using "Dear," along with their title and last name, such as "Dear Mr. Collins" or "Dear Director Kinkade." If you don't know the recipient's gender, use their full name, such as "Dear Taylor Dean." Finally, be sure to add a colon to the end of the salutation.

Body: In the first paragraph, introduce yourself and the main point of your letter. Following paragraphs should go into the details of your main point, while your final paragraph should restate the letter's purpose and provide a call to action, if necessary.

Closing: Recommended formal closings include "Sincerely" or "Yours truly." For a more personal closing, consider using "Cordially" or "Best regards." Regardless of what you choose, add a comma to the end of it.

Signature: Skip four lines after the closing and type your name. Skip another line and type your job title and company name. If you're submitting a hard copy, sign your name in the empty space using blue or black ink.

Enclosures: If you're including documents with this letter, list them here.

Another important part of the structure is the layout, which determines how the text is formatted. The most common layout for a business letter is known as block format, which keeps all text left-justified and single spaced, except for double spaces between the paragraphs. This layout keeps the letter looking clean and easy to read.

Revision

As stated in Business Writing Essentials, revision is a crucial part of writing. Review your letter to keep it concise, and proofread it for spelling and grammar errors. Once you're finished writing, ask someone to read your letter and give you feedback, as they can spot errors you may have missed. Also make sure any enclosures are attached to your document and that any hard copies

are signed.

After revising the content, consider the appearance of your letter. If you're printing a hard copy, be sure to use quality paper. Also try using letterhead to give your document a more official look.

Задание 2

Прочитать, перевести текст, написать письмо - запрос

Inquiry

What is an inquiry letter?

Inquiry letters are written for the purpose of asking for something from the recipient. Inquiries can be sent as a formal business letter (outside of your company) or as an e-mail.

How do I write an inquiry letter?

Letters of Inquiry

In the first paragraph, identify yourself and, if appropriate, your position, and your institution or firm.

In the second paragraph, briefly explain why you are writing and how you will use the requested information

There are two types of inquiry letters: solicited and unsolicited. You write a solicited letter of inquiry when a business or agency advertises its products or services.

What are the elements of a letter of inquiry?

A letter of inquiry typically has the following components:

Introduction. Introduce your organization

Explain the connection

Build credibility

Briefly describe the proposed project and related need

Request their consideration

Conclusion.

A Business inquiry letter is a type of business letter written to communicate with a business organization to ask for information about specific jobs, products, or services. Usually, these letters are written in response to some kind of advertisement that you may have seen on television or the Internet. If you want to buy any product after seeing an advertisement but having trouble making up your mind, then you can write a product Inquiry letter to the organization to ask for more detailed information about the product. There are many types of inquiry letters, but two major types are product inquiry letters and job inquiry letter.

Advertisements

By writing an inquiry letter or email, you can ask the company to provide you a catalog or brochure with more details of their product. So, you can be sure about a certain thing before buying the product.

Business Inquiry Letter is written in a formal business letter format and should be straightforward, compact & precise.

Structure of a Business Inquiry Letter

A letter can be divided into a few basic sections for better understanding;

A formal introduction needs to be used like "Dear Sir", "Dear Ma'am" to start your letter. A formal introduction is required as you are not familiar with the recipient.

A description of your request is required; it includes the reference of the advertisement and

name of the product or service. After writing down the reference, you have to ask for the details you require about the product. You can also ask for a catalog or brochure to help you with the details. If you have some additional details to ask for, except for the information on brochures or catalogs, you can specifically ask for that information.

A final summary can be written to explain your overall request.

A Signature of your agency or yours in a very formal way.

Tips for writing a Business Inquiry Letter

Keep your letter short and precise. Don't mention unnecessary information in such letters. Be very specific about the information you need. If you put only the necessary details, then your letter will look more readable, and you will still be able to convey your message.

If you are inquiring about a job or work-related vacancy, then you should try to properly start your letter with a professional but friendly tone. But always remember that rest of the letter should live up to the anticipation build by your impressive opening.

You should know the exact source of your information. In an office, there are a number of people with dozens of different designations, and it is very important to know the appropriate recipient and direct your letter to him.

You must research properly on the topic of your inquiry before you start writing the letter, to know as much as possible about your query.

A Simple I nquiry letter to ask for information on a particular product

John Smith
221 C Cake Street
London
Date
Johnson Brothers
5468 54th Street
New York
Dear ,

I am writing to you in reference to your advertisement on The Daily Bugle, and I would like to receive a catalog about product X.

I would also like to know about some more details about the product.

Yours Faithfully
John Smith (Signature)
Logistics Head
Shelby Company Limited

Inquiry letter about Jobs or inquiry letter for funds can be lengthier, but the basic format to write the letter remains the same.

Задание 3. Прочитать, перевести текст, написать письмо - предложение

Proposial letter

Businesses often work with one another to gain mutual benefits. The collaboration is intended to produce a specific result, such as introducing a proposal for a product or service to a prospective client or providing solutions to problems facing the other party. One of the effective methods to communicate the desire to work together is a business proposal letter. In this article, we explain how to write a business proposal letter and examine a few sample letters.

What is a business proposal letter?

A business proposal letter is a document used to invite or propose cooperation between organizations. The cooperation can be in the form of agreements to supply products and or services and outlines the benefits that the cooperation provides. You can send a business proposal letter as part of a response to a request for information about your business, or you could send business proposal letters to prospective clients to introduce your company and the products you provide. Here are some uses of a business proposal letter:

To propose a partnership

To provide marketing services

To ask for sponsorship

To propose internal collaboration

To provide a solution in the form of a service or product

Related: Integrative Negotiation: Definition, Tips and Examples

How to write a business proposal letter

There are a few steps to take to ensure that your business is well-formatted and compelling:

Create a business header. Write your contact information at the top of the letter followed by the date. Then add the contact information of the recipient. If you're sending an email proposal, you'll use a subject line with your name and general purpose instead of a business header.

Address the recipient properly. Begin the body with a formal salutation using the correct title of the recipient, such as "Mr.," "Ms." or "Dr." For example, "Dear Dr. Mong."

Include relevant background details. In the first paragraph, address the subject of your proposal. You could describe the challenge the recipient faces or explain the project or event you're working on.

State the purpose of the proposal. In the next paragraph, state your reason for the proposal. Be as clear and concise as possible with the terms and any relevant statistics that demonstrate your claim.

Include a request to follow up. State the potential benefits to the recipient, along with a time or opportunity for further contact.

Close the letter appropriately. Thank the recipient and invite a contact to answer questions. Suitable closings are "Sincerely" or "Regards" followed by a comma with your signature and name printed two lines below.

Include supporting documentation. Attach any sales records, forms the recipient may need to fill out or additional information about your project or business.

Business proposal sample letter for marketing services

This sample proposes an agreement to provide public relations and marketing services:

Timothy Caldwell Johnson

Johnson Public Relations, Inc. 976 Stratmore Ave.

Houston, TX 75822

March 17, 2019

Mr. William Billington, Marketing Director

Houston Preventative Services

62350 Hollingwood Drive

Houston, TX 96703

Dear Mr. Billington,

I am Timothy Johnson of Johnson Public Relations, and after having been involved in the area for a few decades, I understand the frustrations that you may face regularly. If you are like

other marketing directors, you are very likely to face the continuing challenge of trying to determine how to find the best service to fill your needs for public relations. I have some information that you should find appealing.

As a premier PR firm, Johnson Inc. has been providing public relations services to companies like yours for more than 25 years. We thoroughly understand the needs of marketing firms in our locale and know how to provide the best services for your needs.

We are justifiably proud of our record of providing highly rated customer services, with an equally responsive 24-hour turnaround time on almost every request. With a dedicated team, we provide services to help you handle or manage situations of crisis, promote positive messages about your company, handle requests from the media and positively manage your reputation.

We have three customizable options that we would love to provide for you:

- ***A Full Representation package: With this all-inclusive package, Johnson, Inc. would manage your company reputation, create positive publicity, teach your staff effective methods for handling the media and provide support for managing crises. We also provide encouraging internal PR support to help your staff be fully appreciative and supportive of your company mission.***
- ***A Comprehensive External Representation program: With this alternative, Johnson, Inc. provides only strong public-facing support. We will help you with the development of a crisis-management response plan and employ supportive methods to engage the media in providing positive coverage.***
- ***The Crisis Management and Control package: It is our sincere hope that no crises ever occur at your company, however, our experience shows that the most effective part of mitigation is to be prepared. We will help you to develop a full crisis management and response plan to help your company return to normal if something does go wrong.***

I would love to meet with you and demonstrate how we can eliminate your public relations concerns. I can call you on Monday, March 17 to address your concerns and answer questions about the three options that we can offer we offer.

Sincerely,

Tim C. Johnson Chief PR Officer Johnson PR Inc.

Задание 3. Прочитать, перевести текст, написать электронное деловое письмо.

Email business letter

Introduction

Email has changed the way we work - allowing us to communicate cheaply and quickly with colleagues, suppliers and other contacts around the world. Many of us now use it as our main means of communication during the working day. But what are the best techniques to use when writing emails?

Are the rules for writing emails different to those we have already learned?

Emails are written communications, and their purpose, generally, is to send information. If we relax the rules of grammar and clear communication, we will fail to get our message across. So it is important to stick to the usual guidelines. However, emails are normally less formal than a printed business letter.

Etiquette

There is still some confusion about the correct way to write emails, which 'tone' is

appropriate, and whether to use slang or abbreviations. It is best to open and close an email using 'Dear' at the beginning and 'Best wishes' or 'Regards' at the end.

'Hi' is not really appropriate for business emails unless you are familiar with the person you are writing to. If you do not know the person's full name, use the person's title (for example 'Dear Director of Customer Services').

Always think about the reader. Remember that people are unlikely to be offended if you are tooformal, but some may think you are being rude if you are too informal.

Spelling and grammar

You should always write emails with the same care you would use to write a formal letter.

Always check your spelling and grammar - most email applications have a tool which you can use to do this automatically. Remember that sloppy communication gives a bad impression of both you and your organisation.

Resist the temptation to use the shortcuts of 'text messaging'. While some people may understand what 'cant w8 2 cu' means, a lot of people do not.

Addressing an email

To - this is where you type the email address of the person you are writing to.

CC (courtesy copy) - this is for the email addresses of other people who need to see the information in your email.

BCC (blind courtesy copy) - addresses that you put in this field are 'hidden' from the other people who receive the message. For example, if you wrote an email to your insurance company but wanted a solicitor to read it for reference without the insurers knowing, you would use this field for the solicitor's address.

Always use the correct field so people know who you expect to act first on the information.

Email examples:

Here are two email examples. The first contains all the worst aspects of a bad business email. The second shows you a good example template you might want to bear in mind when writing your business email.

How not to write a business email

Whatever you do, don't do this...

Dude!

I'm just wondering about a possible meeting being set up. What it is, don't worry about it, but could we, like, arrange something maybe? No rush!

Hey did you see Eastenders the other night? I love it, it's AMAZING. ©

Anyway, yeah, cool. Speak soon, if you want. Don't worry if not.

Cheers!

Dx

The opening is clearly too informal and impersonal - if you don't know the name of the recipient use 'To whom it may concern' or 'Dear Sir/Madam'.

However, if you do know the name of the recipient, use it. 'Dear Name' - as by not doing so you'll seem ignorant. After all, you're meant to be building a professional relationship with the person in question.

The opening paragraph is too casual, informal and unprofessional. And, crucially, there's no thank you for responding to the initial email.

The second paragraph is a poor attempt at adding a 'personal touch'. As long as you're professional, courteous and polite, there's no need to throw anything like this in. Yes, it's email, not a letter - but there is no reason or excuse for letting standards drop, or giving the wrong impression.

The third paragraph is far too casual and indecisive, leaves too much room for doubt, and suggests someone easily placated and generally not all that bothered. And emoticons are a definite no-no.

'Cheers!' is best avoided, unless you've already developed a long-term relationship with the recipient. Even then, it's not ideal in a business capacity.

Finally, always finish with both your full first name (at least) and a proper sign-off. This is far too casual and is what you might expect to see in a text message. You must remember that it's incredibly easy to slip into bad habits. Always write as though to a managing director - because, until you know otherwise, you might be!

How to write a business email

Far better to follow this example...

Dear Stephen

I hope you are well. It was great to hear from you - thank you for your time.

Could we set up a meeting on this? Let me know when's best for you and we can arrange something. It'd be great to discuss this in person, rather than by email.

If you have any further questions on this, don't hesitate to ask.

I look forward to speaking to you again.

Kind regards

David

Key points to remember

- Be concise. Remember that some people receive and read hundreds of emails every day. Try to keep to a maximum length of five paragraphs. If your message is very long (for example, notes about a report) consider sending it as an attachment.
- Don't use an inappropriate email address from which to send your email (such as 'hotlips@yahoo.co.uk'). If you do not have a business email address, set one up using your name or your company name.
- Make sure you title your email clearly in the subject box as this helps the reader to refer to your email at a later date. Try to keep titles short.
- Use 'plain-text' for your formatting rather than HTML (which creates web-page-style emails). This will mean that everyone reading your email will see it as you intended. Bear in mind that not everyone uses a computer to access their email, and people may be using a device that can only display text.
- Use bulleted lists and keep paragraphs short. If you are writing to someone for the first time, structure your email as you would a letter, with a beginning, a middle and an end.
- Do not use block capitals. They give the impression you are shouting at your reader.
- Do not use 'emoticons' (combinations of letters which represent emotions) in formal emails.
- For example: :-) (happy) or :-((sad)
- Avoid over-familiar language, slang or abbreviations - such as LOL (laugh out loud) or BTW (by the way).
- Don't be sloppy with grammar or ignore formatting. It may be quicker to write your email without using capital letters, but it looks unprofessional to the reader.
- If you are sending pictures or documents with your email, make sure that they are a reasonable file size (less than 5MB) as big files can cause problems for the person receiving

them. Make sure you tell the reader that you have included an attachment.

- Always reply to an email as soon as possible to show the sender that you are dealing with the information.
- Try to avoid sending unnecessary replies (Thanks!) as they waste readers' time as well as clogging up email systems.

Disclaimers

Many companies insist on using an email 'disclaimer' at the bottom of all their outgoing emails. There is some doubt as to how legally binding these disclaimers are, and they are best used simply to tell the reader that the contents of an email are confidential. If you are responsible for drafting a disclaimer for your department or company, try to keep the length to a minimum, and make sure that readers can distinguish it from the rest of the text.

Don’t forget that a disclaimer doesn't necessarily mean you are not liable for any defamatory statements you make in the email.

Signatures

Like disclaimers, 'signatures' should be kept short. Include your name, company address and contact details, and a company registration number where appropriate. Avoid including product slogans or website links that are irrelevant to the content of your email, and don't include 'meaningful quotations' such as 'Seek and ye shall find' when writing business emails. It looks pretentious, and won’t necessarily convey the right image of your company.

Практическая работа №64 -№ 68. Тема: Карьера, устройство на работу

Цель: освоить навыки работы при переводе текстов деловой документации, научиться правильно составлять заявления, заполнят анкету на английском языке.

Содержание работы: прочитать тексты по данной теме, перевести, написать заявление на английском языке

Задание 1: Прочитать, перевести текст, написать заявление

Personal statement

Prospective employers and universities may ask you for a personal statement that details your qualifications for a position or degree program. Writing a compelling personal statement is an excellent way to highlight your skills and goals to an employer or university. A well-written personal statement can give you a competitive advantage over other candidates and help you secure a new job or college placement. In this article, we discuss how to write an effective personal statement for your job or university application.

What is a personal statement?

A personal statement is an account of your achievements, talents, interests and goals often included in job or university applications or on resumes. Personal statements for university and jobs have similar content, but university personal statements are usually longer and more detailed. University personal statements are typically three or four paragraphs. When included in job applications and resumes, these statements are generally a single paragraph. Employers and universities may have their own requirements, so make sure to heed any word or character limits.

How to write a personal statement

Breaking the task of writing a personal statement down into small, manageable steps can help you write a strong statement for a job or university placement. While your introduction, body and conclusion sections should be in that order, you can write them in any order that best helps you effectively write your statement. For example, writing your body first and then returning to write the introduction can help you craft a stronger opening because you already know what the rest of your statement discusses.

The following approach ensures you include all essential components and make each sentence as effective as it can be:

1. Write a personal introduction

Write an introduction that reflects you and your personality. It should say why you are interested in the job or degree and, if appropriate, your recent experience with the job type or course topics. Starting a personal statement with sentences that show who you are can help encourage the recipient to read further.

For a job application, consider addressing what first interested you in the position's listing. Use a single, strong sentence to mention the most relevant aspects of your personality and interests in the role or company. For a university application, discuss what parts of the program or school align with your passions. Your university introduction should be a full paragraph.

2. Expand on relevant skills, interests and experiences

The body of your personal statement lets you share more about your relevant skills, interests and experiences. Write about personal details that relate to the job or course for which you are applying. You could write about the following elements, where relevant, in the body of your personal statement:

Your achievements and experience: Write about your degrees, certifications, awards, years of

industry experience and positions you have held that relate to the job's responsibilities or the university's educational offerings.

Your relevant skills and talents: Describe the talents and skills you have learned during university or on your career path. Consider mentioning specific skills discussed in a job listing or values the school is looking for in students.

What you would bring to the organization: Discuss why you feel you would be an asset to the company or university. You can mention your experience or eagerness to learn specific skills, perform tasks or earn credentials in a field.

Your professional or academic goals: Write about how the job or course you are applying for fits into your dreams for the future. Consider selecting a specific goal the job or course can help you achieve.

Two sentences should be sufficient for the body of your job personal statement. You may choose two or three of the previously listed elements to discuss in those sentences to keep it comprehensive while also being brief. If your university personal statement is a general prompt asking about your interest and goals, the body of your college personal statement should be one or two paragraphs. A recent high school graduate may need just one paragraph, while someone applying for an advanced degree should write two paragraphs when discussing the professional experience and skills they have in their chosen field.

3. Write a strong conclusion

Craft a conclusion that leaves a strong, lasting impression on the prospective employer or university admissions officer. It should be a clear restatement of why you applied and what you hope to achieve with the experience. It should also persuade the reader to take action on you as a candidate, either reading through the rest of your resume or reviewing your other academic credentials.

In this final section of your statement, you can include:

Extension of your professional goals: Some statements for job applications may include specific reference to your goals and how the position can help you achieve those goals. For a university personal statement, reinforce how the school's mission or coursework can prepare you for a career. In both types of statements, consider discussing relevant short- and long-term goals, such as what you hope to achieve in the school or position and where you see yourself in 5-10 years.

Summary of your personal statement: A brief summary of the main points in your statement can be an effective strategy for a one-sentence conclusion or one sentence of a larger conclusion. Be sure to connect your achievements, experiences and skills directly to your future contributions with the company or university.

Link back to your introduction: Revisit your introduction and what interested you in the position, school or degree program. Consider extending this idea by combining your desire with your qualifications. Ending a personal statement on your enthusiasm for the opportunity can influence a company or university to consider your candidacy seriously.

The conclusion of your personal statement for a job should be a single sentence, so consider selecting only one of the above strategies. Write a full paragraph for the conclusion of your personal statement for a university and consider using a blend of two or three of these strategies for a comprehensive and engaging conclusion.

4. Proofread and edit

Once you have written your personal statement, take the time to proofread and edit it. Read your personal statement aloud to hear how your writing sounds and find areas of improvement, such

as:

Spelling and grammar

Relevancy

Specificity

Passive voice

Clear phrasing

Simple, easy-to-understand language

Review your personal statement to find these areas yourself, and consider having a friend or colleague read it for you, too. This person can give you feedback on improving it in those areas.

Tips for writing a strong personal statement

The best personal statements have a personal yet professional tone and relevant, direct information. Understanding what strong personal statements have in common can help you create your own. Keep the following tips in mind when writing your own personal statements:

Write in your own voice: Use your own words to describe your qualifications to make your statement feel more personal and uniquely you.

Keep it simple: Short sentences and simple language can ensure your personal statement is clear and effective.

Have a positive tone: Use language that demonstrates your enthusiasm for the opportunity and gratitude for the reader's consideration.

Use active voice: Active voice means using strong verbs that engage a reader and directly identify your accomplishments, which can make your personal statement more effective.

Be unique: Your personal statement should be unique to you, so discuss what makes you different from other candidates. Include specific details and brief examples of your experiences to help your personal statement stand out.

The following is an example of a personal statement that could appear on a resume or in a job application.

"I recently graduated from the University of Indiana with a Bachelor of Arts in Fashion Design, and I would love to apply the skills I refined at university and my passion for fashion to your design assistant role. In addition to my studies, I have spent the last five years designing and creating dresses to sell at the monthly Indianapolis Arts Market. Seeing the excitement on my regular customers' faces trying my new creations strengthened my commitment to a career in fashion. I am a quick learner who thrives on challenges, which I believe I would find at your design house."

Задание 2: Прочитать, перевести текст, составить анкету на английском языке.

Job questionnaire

What is a job questionnaire?

The purpose of the Job Description Questionnaire (JDQ) is to gather information about the duties and responsibilities that are assigned to a staff job. The JDQ information will be used to evaluate the responsibilities of the job and to determine FLSA classification, appropriate job title, and pay band.

How do you write a questionnaire?

General Instructions for filling the Questionnaire

Please fill in the following questionnaire on the basis of the facts of your company.

All Questions carry Weightage. Please answer all questions. In case any question is not applicable to your company, please tick the 'not applicable' or write the same.

The Questionnaire contains different type of questions viz.:

Who prepares the job description?

The immediate supervisor or the employee can complete the job description, depending on which person is more familiar with the position. If the incumbent is new to the job or the position is new, the Manager may wish to complete the job description. If the employee completes it, the Manager needs to validate it.

What questions do you ask in a job description?

Your role

Can you offer specific details about the position's day-to-day responsibilities?

How does this position contribute to the organization's success?

How does the company culture affect this role?

What do you enjoy most about working here?

Can you walk me through your typical work day?

What is the purpose of a position analysis questionnaire?

Position analysis questionnaire (PAQ) is a job analysis questionnaire that evaluates job skill level and basic characteristics of applicants for a set match of employment opportunity. PAQ was developed at Purdue University by McCormick, E.J., & Jeanneret, and Mecham in 1972.

What type of questions are in a questionnaire?

6 main types of survey questions

- Open-ended questions.
- Closed-ended questions.
- Nominal questions.
- Likert scale questions.
- Rating scale (or ordinal) questions.
- 'Yes' or 'no' questions.

Задание 3: Прочитать, перевести текст, составить вопросы для собеседования на английском языке.

Job interviews.

Preparation is the key to a successful job interview. Here's how to be ready for some common question types.

Job interviews can be a nerve-racking experience, especially when you don't feel prepared for them. And with the variety of interview questions that can be asked these days, it's hard to know what type of questions you should prepare for.

Here are three types of interview questions that you should practise answering before that important job interview.

1. Common interview questions

Tell us about yourself.

What are your strengths and weaknesses?

Why do you want to leave your current job?

These questions are for the interviewer to get to know you and to see if you're the best person for the job. Don't simply list things like your hobbies, your strengths or your work experience. Instead, give examples and use them to show your personality and the characteristics you have that make you perfect for the job. Your interviewer may want to ask questions about certain areas of your CV, so use this opportunity to link your experience to the job you're applying for.

Avoid: Giving a detailed life history or telling long stories that are irrelevant to the job or to the company.

2. Competency questions

Tell me about a time you had to work as a team.

Tell me about a time you had to use your creativity to solve a problem.

Tell me about a time when you experienced conflict with a colleague and how you handled that situation.

Here, the candidate is asked questions about situations they have faced in the past that can demonstrate a particular skill they have. These could include skills like critical thinking, influencing, problem solving or flexibility. Interviewers often want to hear about challenges you've had, not just about times when everything went smoothly, so be ready with examples such as how you resolved conflict in your team or dealt with someone who was not working well. This will demonstrate that you can handle difficult situations.

When preparing for the job interview, read the job description carefully for the required skills and abilities and try to recall situations where you had to use these skills. Then use the STAR technique when talking about these examples:

Situation - Give details about the context of your example and what you were trying to do.

Task - Describe your responsibilities and the challenges you faced.

Action - Describe what steps you took to deal with the situation.

Result - Talk about the end result and how you contributed to this outcome.

Avoid: Going in unprepared and having to think up examples, or saying you've never faced any challenges at work.

3. Hypothetical questions

What would you do if you had a different opinion from your boss about how to do something?

How would you deal with a large volume of work with several staff members off work?

What would you do if you had to introduce a new policy that you knew was going to be unpopular in your team?

Hypothetical interview questions are similar to competency questions except that instead of asking you to talk about an experience you've had in the past, they present you with an imaginary situation that you might face in your new job.

This might seem difficult to prepare for, but remember that your answers are meant to demonstrate the skills needed for the job. When preparing for the interview, consider the qualities that the interviewer might be looking for, qualities like conflict management, time management or people skills. Then think about how you can demonstrate those qualities in a range of situations. Start with situations that you've experienced and move on to other possible situations that you might encounter in the role you're applying for.

Avoid: Going off-topic, changing the subject and not answering the original question.

Whatever type of questions they ask, interviewers want to find the right person and are keen to give you the opportunity to demonstrate what you can do. With some preparation, you can show them that you're the perfect fit for the job.

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