吴兴征老师指导的 2017 级土木工程毕业设计列表（2021 年）

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No	毕设论文题目	学号	姓名	备注
1	海上风电单桩基础荷载分析与设计	20171603113	刘德广	A01

　　海上风电正在成为越来越多的沿海地区获取高效清洁能源的选择，目前随着石油等化石燃料资源的枯竭，新能源逐渐将代替过往的高污染排放方式的能源类型。而海上风电能源在新能源当中又有着独特的优势，全球海洋面积广大，适用性广；海洋风电机组充分利用了海上的风能和波浪能两种能源来进行发电，效率高。

　　本文分析了海上风电机组单桩基础的研究现状，对设计当中涉及的荷载计算模型和理论公式进行描述。对于波浪荷载公式主要介绍了我国规范建议的莫里森公式，并对其中涉及的线性波浪理论进行简述。考虑波浪荷载、水流荷载和风荷载进行荷载组合来实施基桩设计，并采用钢管桩形式。

关键词：海上风电；线性波浪理论；荷载组合；单桩基础；钢管桩设计

　　Offshore wind power is becoming the choice for more and more coastal areas to obtain efficient and clean energy. With the depletion of fossil fuel resources such as petroleum, new energy will gradually replace the past high-polluting energy types. The offshore wind power energy has unique advantages in new energy sources. The global ocean area is large and the applicability is wide, and the offshore wind turbines make full use of the two energy sources of offshore wind and wave energy to generate electricity with high efficiency.

　　This paper analyzes the research status of the single pile foundation of offshore wind turbines, and describes the load calculation models and theoretical formulas involved in the design. For the wave load formula, the Morrison formula recommended by our country's code is mainly introduced, and the linear wave theory involved in it is briefly described. Considering the wave load, water load and wind load to carry out the load combination to implement the foundation pile design, and adopt the form of steel pipe pile.

Key Words：offshore wind power; linear wave theory; load combination; single pile foundation; steel pipe pile design

No	毕设论文题目	学号	姓名	备注
2	通州交通枢纽站房支盘灌注桩基础设计	20171603205	章浩东	A02
	桩基础在高层建筑、港口桥梁工程等项目上有着广泛的应用。结合通			

州交通枢纽工程站房项目的桩基础进行设计，采用支盘桩这一异形桩的形式，此类型桩与同直径普通桩相比，可以有效缩短桩长，提高承载能力。本文根据场地岩土工程初步勘察报告和规范选定了桩型，确定了桩的持力层、设计了桩的几何尺寸，选定了承台埋深，根据规范和实际情况确定了支盘尺寸，验算了单桩承载力、承台稳定性，进行了柱冲切、角桩冲切、抗剪验算。在完成支盘桩设计方案之后，还设计了同一项目下同直径同长度的普通桩方案。最后，对二者进行造价分析与方案比较，展现支盘桩方案和普通桩方案的不同之处。

关键字：桩基础；支盘桩；桩承台验算

Pile foundations are widely used in high-rise buildings, port and bridge projects and other projects. Combined with the design of the pile foundation of the Tongzhou Transportation Hub Project, the special-shaped pile of branch and plate piles is adopted. Compared with ordinary piles of the same diameter, this type of pile can effectively shorten the pile length and increase the bearing capacity. In this paper, the pile type is selected according to the preliminary survey report and specifications of the geotechnical engineering of the site. The bearing stratum of the pile is determined and the dimension of the pile is designed. The buried depth of the cap is selected, and the size of the support plate is determined according to the specifications and actual conditions. The single pile bearing capacity and the stability of the cap were checked, and the column punching, corner pile punching, and shear resistance were analyzed. After completing the design of the branch piles, the traditional scheme of piles with the same diameter and length under the same project were also developed, and the necessary structural check calculations were carried out. Eventually, the cost analysis and comparison of the two schemes are carried out to show the difference between the branch pile scheme and the ordinary pile scheme.

Key words：Pile foundation; branch pile; pile cap check

No	毕设论文题目	学号	姓名	备注
3	通州交通枢纽咽喉区大直径扩底桩基础设计	20171603135	韩旭	A03

桩基础一般由基桩和承台两部分构成，为了提升基桩综合承载能力一般设置承台，适用大型桥梁工程与高层房建等。结合北京城市副中心站综合交通枢纽工程西喉区的桩基础进行设计，地面上部拟建 80m 的高层建筑，决定将基础桩修改为扩底桩，进一步提升其承载能力。将扩底桩与等直径常规桩进行对比，结果显示前者方案更为适宜。进而探讨了扩底桩持力层、桩型选择、承台埋深以及尺寸确定。就工程量而言，扩底桩和常规桩的方案对比显示前者工程量较大。最后提出一些需要注意的施工要点。

关键词：扩底桩设计；承台验算；配筋；工程量；施工要点

Pile foundation is generally composed of foundation pile and pile cap. In order to improve the comprehensive bearing capacity of foundation pile, pile cap is generally installed, which is suitable for large bridge engineering and high-rise building construction. Combined with the design of the pile foundation of the West Throat of the Comprehensive Transportation Hub Project of Beijing City Sub-Central Station, a high-rise building of 80m is planned to be built on the ground, and the foundation pile is modified into a bottom-expanding pile to further enhance its bearing capacity. The scheme of expanding bottom pile is compared with the one of conventional pile, and the result shows that the scheme is more appropriate. Several aspects including the expanding bottom pile bearing layer, the selection of pile type, the embedded depth of pile caps, and the size of the pile cap are discussed. With regard to the cost, the scheme of expanding bottom pile is larger than the one by using the conventional piles. Finally, some points for construction are raised.

No	毕设论文题目	学号	姓名	备注
4	基于侧向弹性抗力的盾构衬砌分析与设计	20171603114	刘江东	A04

为缓解交通与环境所带来的压力，发展地下轨道交通已成大势之趋。这里以上海市地铁七号线上海大学站-祁连山站盾构隧道进行设计。

针对该地区的地质条件，采用侧向弹性抗力均质模型，得出管片结构内力（弯矩、剪力、轴力），完成标准管片配筋及抗浮，局部抗压安全性设计。此外，通过 ANSYS 软件分析得到了类似的内力。最后，对该项工程进行工程造价分析。

关键词：盾构隧道；侧向弹性抗力均质模型；ANSYS；经济评估

In order to relieve the pressure brought by the development on traffic and environment, the development of underground transportation has become a general trend. A shield tunnel between Shanghai University Station and Qilianshan Station of Shanghai Metro Line 7 is taken as a design example.

According to the geological conditions in this area, the internal forces (bending moment, shear force and axial force) of segment structure are analyzed by using the lateral elastic resistance homogeneous model. Based on the results of the internal forces, the design of the standard segment reinforcement, anti-

floating, and local compressive safety is discussed. In addition, similar results of internal forces are achieved by using the ANSYS software. Finally, a cost analysis for the economic assessment of this project is present.

Key words：Shield tunnel；lateral elastic resistance homogenization model；ANSYS；economic assessment

No	毕设论文题目	学号	姓名	备注
5	轻型加筋挡土墙设计	20171603125	于策	A05

由于传统施工方法的技术限制，锚杆之类的传统挡土墙在道路交通设施上使用效果并不理想，为了打破技术壁垒，节约成本并提高道路交通设施的质量，这就需要我们研究出更新更好的施工方法。加筋土挡土墙技术就是在这一背景下形成的一种新的技术。这里基于公路加筋土挡土墙规范设计一座路堤式加筋土挡土墙，并分析了挡土墙的内部与外部稳定性。先通过应力分析法求出拉筋的受力，然后根据计算结果对加筋土挡土墙进行设计；用库仑土压力理论算出主动土压力，利用算出的土压力对加筋土挡土墙进行地基应力验算、抗滑、抗倾覆验算、整体滑动稳定验算；根据墙体所受的最大弯矩计算面板厚度并设计了相关排水措施。

关键词：加筋土挡土墙；稳定性分析；排水

Due to the technical limitations of traditional construction methods, traditional anchor rods retaining walls are not ideally used in road traffic facilities. In order to break technical barriers, save costs and improve the quality of road traffic facilities, we need to study and update better construction methods. Reinforced wall technology is studied in this thesis. Based on the standard of highway reinforced soil, an embankment-style reinforced earth retaining wall is taken as an example, and its internal and external stabilities are analyzed. Firstly, the force of the stretch is obtained by a stress analysis, and then the reinforcement is designed according to the calculation results. The active earth pressure is calculated by the Coulomb's earth pressure theory, and a series of validation including anti-sliding, anti-tipping, overall sliding are carried out. The thickness of the panel according to the maximum bending moment affected by the wall and the relevant drainage measures are determined.

Key words：Reinforced earth retaining wall; Stability analysis; Drainage

No	毕设论文题目	学号	姓名	备注
6	山东日照直立式防波堤设计	20171603104	赵新鹏	A06

港口是交通运输的关节，海陆通行的喉咙，国内外贸易的命脉，它的开发利用直接关系到国家经济建设的发展与方向。港口工程中不可或缺的

部分是防波堤，防波堤在工程造价占据着很大一部分内容，因而使其正常使用关系到港口工程正常工作的中流砥柱作用。经多年使用，直立式和斜坡式防波堤组成了目前最主要的断面结构形式。

本文通过对越浪量计算和边坡稳定性研究现状的分析，考虑山东日照的防波堤工程的实际情况，采用直立式防波堤设计，其中对于平均越浪量公式主要介绍合田良实法、Franco L 法和我国规范方法。直立式防波堤的稳定分析主要涉及抗倾覆稳定和边坡整体稳定分析。在边坡分析中主要介绍了极限平衡法中的瑞典条分法和毕肖普法，采用 Rocscience Slide 软件上通过建立该工况的模型完成了对边坡稳定安全系数的计算。

关键词：直立式防波堤设计；平均越浪量计算；边坡稳定性分析

Port is the joint of transportation, the throat of sea and land traffic, and the lifeblood of domestic and foreign trade. Its development and utilization is directly related to the development and direction of national economic construction. Breakwater is an indispensable part of port engineering, which accounts for a large part of the project cost, so its normal use is related to the mainstay of the normal work of port engineering. After years of use, vertical breakwater and sloping breakwater constitute the most important section structure.

Based on the reviewing of the overtopping analysis and the slope stability, the actual situation of the Breakwater Project in Rizhao of Shandong Province is taken as an example. The vertical breakwater is chosen. The validation of the stability of this kind of breakwater mainly includes the anti overturning stability and the overall slope stability should be performed. For the average overtopping formula, it mainly introduces the HetianLiangshi method, Franco L method and Chinese standard method. In the slope analysis, it mainly introduces the Swedish slice method and Bishop method in the limit equilibrium method, and the safety factor of slope stability is calculated by using the Rocscience slide software.

Key words：Vertical breakwater design; Average overtopping calculation; Analysis of slope safety and stability

No	毕设论文题目	学号	姓名	备注
7	北京市顺义区金宝花园基坑支护设计	20171603077	邢洲硕	A07

本工程位于北京市顺义区，永丰路北侧，建有地下 2 层，基础埋深 9m。基坑开挖长度东西约 250m，南北长约 160m，基坑开挖深度约 10～12m，基坑周围已有建成建筑物及城市道路。

结合其地层勘察成果，周围环境，工程周期，以及地下水位等影响，决定采用放坡加土钉墙的基坑支护设计方案。由于基坑底部标高高于本地

层地下水位标高，不考虑地下水影响。

本设计包括土钉墙间距设计比选，土钉墙内部稳定性，土坡整体稳定性验算及施工监测内容。

关键词：土钉墙；基坑支护结构；土钉间距；稳定性验算；施工监测

This project is on the north side of Yongfeng Road, located at Shunyi District of Beijing. It has two underground floors and a foundation buried depth of 9m. The excavation length of the foundation pit is about 250m from east to west and 160m from north to south. The excavation depth of the foundation pit is about 10-12m. Buildings and urban roads have been built around the foundation pit.

Based on its stratigraphic survey results, surrounding environment, construction period, and groundwater level and other influences, a foundation pit support with sloping and soil nailing walls is proposed. Since the elevation of the bottom of the foundation pit is higher than the elevation of the groundwater level, the influence of groundwater is not considered.

Selection of soil nail wall spacing, the internal stability of the soil nail wall, the overall stability of the soil slope and the monitoring are discussed.

Keywords: soil nail wall; foundation pit; soil nail spacing; stability; construction monitoring

No	毕设论文题目	学号	姓名	备注
8	北京市丰台区中高层住宅楼碎石桩与CFG桩复合地基设计	20171603154	何宇航	A08

本文是对北京市丰台区一座高层住宅的地基基础进行设计，采用碎石桩和 CFG 桩组合而成的复合地基。其中碎石桩用于处理液化，CFG 桩用于提高承载力，既发挥了碎石桩和 CFG 的优点又互相弥补了它们的缺点。基于该地区的地质勘探报告，土层上部大部分为含水量较多的细砂和粉质黏土，比较容易发生地基液化现象。为了使其能够达到抗液化设计要求，需用碎石桩对其进行处理，对土层进行初步判别，然后再通过标准贯入度实验进行液化判别。用 CFG 桩作为上部结构的基础，进行桩基础承载力的验算。对碎石桩和 CFG 桩组合桩复合地基承载力进行了分析，并给出符合设计要求的结论。

关键词：碎石桩：CFG 桩组合桩；地基变形验算；工程造价

The foundation of a high-rise residential building in Fengtai District is designed. The composite foundation is made up of the gravel pile and Cement Fly ash Gravel (CFG) pile. The gravel pile is used to deal with liquefaction, and

the CFG pile is used to improve the bearing capacity. It not only brings into play the advantages of gravel pile and CFG, but also makes up their disadvantages. Based on the geological exploration report, most of the upper part of the soil stratum is fine sand and silty clay with high water content, and the foundation liquefaction can be potentially occurred. In order to meet the requirements of anti-liquefaction design, it is necessary to treat the soil layer with crushed stone pile, and then to liquefy the soil layer by standard penetration test. The CFG pile is used as the foundation of the superstructure to check the bearing capacity of the pile foundation. The bearing capacity of composite foundation of gravel pile and CFG pile is analyzed, and a conclusion which accords with the design requirement is made.

Keywords: gravel Pile; CFG pile; foundation settlement; project cost

No	毕设论文题目	学号	姓名	备注
9	高层住宅楼的复合桩基设计	20171603068	梁佳乐	A09

在地基基础设计中，经常会用到灌注桩和挤密砂桩的技术。本文是对北京市星东天地高层住宅的地基基础进行设计，根据已有的地质勘探报告，浅土层含有粉质黏土和砂土，且含水量较高，易引起地基液化。为防止土层液化时，可以联合挤密砂桩进行地基处理。首先根据规范对土层类别进行初步判断，进而再通过标准贯入度实验来验证是否液化。然后将混凝土灌注桩作为上部结构的基础，接着验算桩基础承载力。最后计算承台的设计与配筋。

关键词：灌注桩；挤密砂桩；承台设计计算；土层液化

In the design of a foundation, the technology of cast-in-place pile and compaction pile is often used. This thesis designs the foundation of Beijing Xingdongtiandi high-rise residential buildings. According to the existing geological exploration reports, the shallow soil stratum contains silty clay and sand, and the water content is high, which is likely to cause the foundation to liquefy. In order to prevent soil liquefaction, the two technologies can be combined for the design. First, a preliminary judgment on the type of soil layer according to the specifications is made, and then whether it is liquefied or not through the standard penetration test is justified. Then, the concrete cast-in-place pile as the foundation of the superstructure is determined, and then the pile foundation bearing capacity is calculated. Finally, the design and reinforcement of the cap is developed

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Keywords：Cast-in-place pile; compacted sand pile; cap design; liquefaction; safety

factor

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10	通州蓝光广场抗浮锚杆设计与质量评价	20171603044	孟特	A10

　　本工程位于通州区蓝光广场地下车库，建有地下 1 层。分为A区和B区两个区域，周边为已有建筑物和城市主要道路。

　　结合本工程地层性质、周围环境等诸多因素，地下车库的抗浮采用抗浮锚杆设计方案，分别进行非预应力普通锚杆和预应力螺纹钢筋进行设计。该设计的主要内容包括抗浮设计方案的比较和选择、抗浮锚杆的方案设计、锚杆截面积验算、整体稳定性验算等内容。此外，对锚杆进行基本试验、蠕变试验、验收试验来检测其施工质量。最后，计算工程造价进行方案比较。

　　关键词：抗浮设计；锚杆；工程造价；整体稳定性

The project is located in the underground garage of Tongzhou blue square, with one of underground floor. It is divided into zone A and zone B, surrounded by existing buildings and main urban roads.

Considering of many factors such as the nature of the stratum and the surrounding environment of the project, the anti-floating anchor design scheme is adopted for the anti-floating of the underground garage. The non-prestressed ordinary and prestressed anchors are discussed respectively. The main contents of the design include the comparison and selection of anti-floating design schemes, the scheme of anti-floating anchor, and the calculation of overall stability. In addition, the rationality of the anchor is validated by basic test, creep test and acceptance test. Finally, the project cost is calculated and compared.

Key words: anti-floating design; anchor; project cost; overall stability