

# The Calculator Technique Is In The Applied Overview In The Civil Engineering

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**Abstract.** The production of building products is a complex and tedious process, the paper products for every stage of construction of computer technology, particularly the use of CAD technology to do a more detailed elaboration. Also pointed out in the field of civil engineering, computer applications are no longer limited to computer-aided design, but extends to the full life cycle of the project in every aspect and every link. For engineers in this field to provide some of the more efficient and convenient method of work.

**Keywords:** Construction engineering; Calculator technique; CAD technique; Applied

## 1. Construct the Construction Procedure of Product

Usually, a creation that constructs a product should be followed certain construction procedure to carry on. Construct procedure to mean in the process of constructing conceive, choose, evaluate, making policy, design, starting construction, finishing construction of item that the acceptance, devotion produces the whole construction in, each work has to obey order of sequence of rule. The rule is people in realizing the foundation of objective regulation what establishment come out, is construct item science decision and smooth progress of important assurance.

Not the construction procedure of item our country possesses singly. International community include World Bank at inside, while carrying on item construction, all have respectively of construction procedure. Press the current rules, our country generally big medium-sized with quota above of the item is from the construction expect to work to construct and throw to produce the work that to experience a few stages as follows[1]:

Develop a farsighted programming, combine the request that profession and region develop a programming and put forward an item suggestion book according to national economy and society.

Draw up a possibility research paper in investigate, testing, investigating researching and detailed technique economic argument of foundation.

Consult a valuation circumstance and carry on decision to the construction item according to the item, draw up to design a document according to the possibility research paper again.

Initial design through after granting, each preparation work before working well a construction.

Construction implementation, according to the work project, work well production preparation.

The item Be finished according to the design contents of approval and finish construction to check and accept qualified after, formally hurl produce, consign a production use.

Production luck camp a period of time after (general is two years), evaluate after carrying on item.

It is thus clear that, a creation that constructs a product is a complicated and tedious process.

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## **2. Calculators Lend Support to the Development History of Design**

The calculator lends support to a design's (Computer Aided Design) first development to trace back to till 60's in 20th century, Sutherland of M.I.T [2] .(MIT), the United States put forward person's machine to hand over first sketch communication system with each other, and the calculator in 1963 unite exhibition of meeting, aroused people tremendous interest. In the whole 60's, people learned to carry on a great deal of research to the calculator sketch, till 80's, because of lowering of calculator equipments price, make the general design unit able to accept of system. Meanwhile, some in general use CAD sketches hand over software to successfully transplant miniature on board with each other and thus started to be tiny applying CAD on board.

The our country begins from 70's in 20th century to the CAD application and research and turned into the overall development application stage in the mid 80's, and brought the more and more great influence on the work of each stage of civil engineering.

## **3. Calculators Lend Support to a Design (CAD) in the Application in the Civil Engineering**

Today that applies a high-speed development in the calculator, each part of stage in the civil engineering or all the work all can complete by the help of CAD. [3]

Development and research of civil engineering CAD are much academics knowledge to synthesize applied realm and involve mathematics, mechanics and calculator sketch to learn, the software engineering learn and each professional design theory. (such as building learn, city planning, structure engineering, give catchment engineering and warm engineering, and electrical engineering...etc.) Turn to the integration with intelligence to turn CAD system, also involve database theory and artificial intelligence theory, and expert system, the artificial nerve network system knowledge.

### **3.1. Buildings and Programming Design a Medium Application**

To any engineering item, programing the works is all very important, the programmings of general flashing construction engineering all need to consider numerous factors. For example the land make use of, economy, transportation law, view etc. relevant social factor of economy; Weather, geology, geography, and hydrology...etc. concerning the natural factor, all of any programmings are a decision. To should mainly there are 3 types at the CAD system of the stage. Category 1 is saving of relevant programming information and searches system, for example system, geography information system, and policy information system in city...etc. of the soil quality database system, region information, this system adopts more the form of database system; Category 2 is information analysis system, for example programming information analysis system etc.; Category 3 is the assistance performance and creation system of programming, for example view performance system, transportation programming assistance system etc.. [4].

Local building and programming's designing CAD software is mostly the system that takes AutoCAD as sketch to prop up platform to make two developments. These softwares generally can carry on the shape design of building and bridge, from two dimensions of even, sign, cross section arrive the 3D clairvoyance diagram even exaggerate effect diagrams all ability born.

The building design software of domestic fad mainly has currently:

Positive TARCH, House in the sky, virtuous gram of match promise ARCH-T and China sets up APM of grinding the hospital, ABD, Hungary ARCHICAD of the GRAHPISOFT company etc..

The building effect of the CAD creation diagram it clairvoyance relation, lighting relation, building material of texture, all true reappear, lifelike, and the true tree and person, the sky and car goes together with a view, several can in disorder true. If again plus the spot environment photograph the fusion even has conviction. CAD creates effect diagram advantage to still lie in, as long as constructs of the 3D model build completion, can arbitrarily specify to see through angle, model material, quickly much borner effect piece's diagram but don't need to be done it over again, this is the traditional hand-drawing effect diagram to compare. The all theses all let designer the income is also not- shallow, even have conviction while promoting his/her own design achievement toward the first party on the building design.

### **3.2. Structure Designs a Medium Application**

Design aspect in the structure, some at tiny develop more mature CAD software of development on board, is developing an aggressive function in each design unit currently. The characteristics of these softwares is: Take tiny machine as main development model, match our country the current norm request have relation with the calculator procedure acquainted with by design habit, ability and people to unite and automate degree Gao, operate Jian Ming, there is certain person's machine handing over function canning adapt to the use of different layer personnel with each other. [6] In regard to its function, they basically can complete to compute to all or big part works of drawing the structure construction diagram from the structure and make the traditional structure design method take place basic variety thus. On the other hand, due to computing strengthening of ability and sketch function in the past the structure acquainted with by people calculation method, namely limited unit method analysis procedure part, in the CAD system also big for present new look. In the system because of have function well-found but again vivid processing function in the front and back of the convenience, consumedly raised the user's work efficiency, reduced an opportunity to come amiss and check wrong time. More important BE, diverse vivid menu, sketch etc. hands over a type work method to make with each other the operation of modern CAD system since make it truly become each own engineer emollient tool in brief and convenient.

Currently, domestic popular of the structure CAD software have:

China sets up the PK of grinding the hospital, PM, TAT, SATWE, TBSA-F, TBFL, LT, PLATE, BOX, EF, JCCAD, and ZJ...etc..

The bridge of science in the Ministry of Transportation & Communications highway graduate school designs software QXCAD, GQJS, SBCC, and STR...etc..

TUS of Chin Hua university, BICAD of building design hospital in Beijing City.

AUTO-FLOOR of virtuous gram of match promise and AUTO-LINK.

In these softwares, initiate China to set up to grind the PKPMCAD system that the hospital develops. PKPMCAD is to face to a frame, row and frame-shear a dint wall and shear structure systems, such as dint wall and tube body...etc., can used for the concrete structure, steel structure, hybrid structure and type steel concrete the structure, brick mix structure designs, such as structure and first floor frame upper level brick house...etc. and calculation and be applicable to generally many industrial and public construct, and the 100 F is as follows the high building of the complicated body figure is a function more well-found design software.

### **3.3. Give Drain to Design Medium of Application**

At give drain design in, currently domestic popular of the CAD software have: WPM, PLUMBING, and GPS...etc..

### **3.4. Designs a Medium Application**

The warm of the local fad design software mainly has currently: HPM, CPM, HAVC, THAVC, SPPINC, AEDOT, and COMBINE...etc..

### **3.5. Building Application Within Electricity Construction**

Currently the building electricity of the domestic fad designs the software mainly have: TELEC, ELECTRIC, EPM, EES, and INTER-DQ...etc..

### **3.6. Construct an Under Construction Application**

The information-based construction of our country is already a modern building industry very familiar phenomenon currently. Is so-called information-based to start construction, be point in the process of starting construction in involve of the extensive application calculator in each stage account Shu and expect to the work, the manpower, material, machine, funds, progress etc. information carry on a collections, saving, exchanges and processing, and take into the comprehensive exploitation of science, for start construction to manage to in time and accurately provide decision basis. The information-based construction searched

solution while canning also pass the engineering database contact of network and region, part or nation, being within the reach of while meeting a new difficulty problem.

The information-based construction significant exaltation starts construction efficiency and assurance engineering quality, reduce or eradicate completely engineering trouble, effectively control cost, carry out a construction management modernization.

Our country of the building industry lead the calculator into a construction technique is in the 80's in 20th century, involve engineering to cost calculation, reinforcing bar calculation, supplies set debt management, engineering plan network establishment etc. conduct to manage aspect. Expand to the engineering to measure calculation, big physical volume concrete to protect in the 90's, deep radicle pit protect, the engineering repairs management and building perpendicular degree diagram and the spot CAD etc. start construction technique of application. Currently, cost such as the engineering, engineering quantity calculation, reinforcing bar's computing to integrate software have been already developed more perfect. Its product basically overalies a whole country, from the single-item profession application development apply for information-based platform system. Such as currently, construct company class to use to use information-based management platform with the item manager's department, can circulate on the platform from bid to mark a book creation, network plan to draw up cost to manage complete set software, for development is suitable for the information product of state of the nation to lay technique foundation.

### **3.7. Maintenance Application within Management**

CAD technique in the middle of supporting a management the earliest application is a coal gas and top and bottom the calculator of the pipe line line diagram manage and include the laying of position and pipeline condition of pipeline among them, for example the material of pipeline, tube path, cover up deep etc.. System like this undoubtedly to tube road analytical, check etc. provided tremendous convenience. In recent years, the road facilities that appeared to take database as center supports to manage CAD system. This kind of system has two to re-act to use: on the other hand is to used for keeping informations like periodical check result, etc, is the programming and design used for lending support to maintain and reinforce on the other hand. [5]

### **3.8. Calculators Emulations Imitate Really in the Application in the Civil Engineering**

Much engineering structure is ruined to natural disaster of earthquake, stage manners, and flood...etc. in, carry to this kind of small frequency, big lotus function under of the engineering structure function can hardly be used to do the experiment verifies, reason BE:13 number the variety condition impossibly and completely imitate; Two experiment the cost lead Gao; Three break to test in danger, the equipments is hard to keep up with. But the calculator imitate a true technique to imitate the civil engineering of prototype size to construct on board in the calculation the thing carries a function in the disaster lotus the bottom transforms to tumble down of whole processes, announce to public the link and factor of structure insecurity thus. Using this instruction design can consumedly raise the credibility of civil engineering.

### **3.9. Calculator Eemulations Imitate Really in the Application in the Disaster Prevention Engineering**

The mankind and natural disaster or artificial disaster did a long-term conflict. Because the repeated experiment of disaster is almost impossible, as a result the calculator imitates really in the application of this realm and then has meaning more.

Currently, if there has been, many emulation concerning anti- disaster disaster preventions imitating true software be developed success. Such as in the flood disaster, there has been flood deluge drown area development process of show software. The software in advance saved geography, geography and ground thing of the district of flood deluge, also Gao Cheng's data, made sure contour line in maps. Like this as long as inputing flood standard, the calculator can measure according to water, current velocity and district area and Gao Cheng's data, compute a different time drown of district and Gao Cheng, and show on the diagram. People can see from the calculator screen the flowing out of flood go into, and from the geography

low place the whole processes that drown gradually toward the eminence, can provide good data for disaster prevention measure like this.

Moreover, for the earthquake, and a fire...etc., all can carry on imitating to play to show.

### **3.10. Calculator Emulations Imitate Really an Application within Engineering at the Rock Soil**

Because the rock soil is placed in an underground, people are usually more difficult than a direct observation, but calculator's imitating really then can come out internal process demonstration and have very greatly practical value. [7]

## **4. Conclusion**

First, confirm that you have the correct template for your paper Therefore, in the civil engineering realm, the application of calculator has already no longer limited at a calculator assistance design, but expands to each aspect of the engineering item whole life cycles is with each link. CAD already the direction of facing CAE (Computer Aided Engineering) development, in each aspect and each link of the engineering item whole life cycles completely applied calculator assistance design technique (CAD), science calculation can see to turn a technique (VISC), virtual realistic technique (VR), Internet technique (Internet), multi-media calculators, such as technique (Multimedia) and 3 Ss (geography information system GIS and world fixed position system GPS and Yao system RS)...etc. new technique.

Prospect future, the calculator technical development is unending, we each engineering design the personnel will take this forerunner's technique as means, at respectively post up develop the best ability, and with enthusiasm of service, superior quality of design, respect-work spirit, design profession to do for the engineering our to contribute.

## **5. References**

- [1] YeZHiMing, *Civil engineering general outline*, Higher education publisher, 2009.
- [2] FengJian, *Civil engineering CAD*, Southeast university publisher, 2005.
- [3] YangZhenFeng and ChaoLiHua, *The AutoCAD software designs a medium application in the engineering*, Shanxi constructs, 2010 (28) : 362
- [4] TianZhenFeng, *The CAD technique is in the application in the construction engineering*, Science and technology in Gansu , 2009 (17) : 144
- [5] QiuWei and ChenHuaLong, *The calculator technique is in the application in the construction engineering* , Science and technology square , 2006 (2) : 82
- [6] LiShuHong, *Turn the research of design according to the engineering drawing number of entity model*, University of Jilin , 2007.
- [7] HuChangMing and BaiMaoRui, *Civil engineering general outline*, Metallurgy industrial publisher , 2009.