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13 Habits of

**Super Persuasive
People**

JANUARY 2017 ISSUE # 1

MENTOR

KNOWLEDGE MULTIPLIES IN SHARING

MAI
JAH JAH



**PHOTOGRAPHIC
ESSAY**

**CIVIL
ENGINEERING**

Museum Design
On ERITREA's National
Martyrs Park

**COMPUTER
ENGINEERING**
as WE should know it

JANUARY'S QUOTE OF THE MONTH

With
each DROP
of your
Knowledge,
we
will create the
ocean.



Send your Articles at
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MENTOR Magazine is dedicated to all Eritrean High School and College Students as well as Graduates. It envisions to disseminate academic knowledge on various disciplines through sharing.

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Up on Choosing

EDITOR'S LETTER

I would like to wish a very HAPPY NEW YEAR 2017 for all our readers. For this January edition of Mentor Magazine, we are showcasing many talented people including beginners, photographers and writers. Our Cover Article is Asmara's famous fountain - Mai Jah Jah with a special twist. We have all seen and walked through, this place so many times. Thus, Many of us probably think we know it very well. That's what I thought too until I saw these photos. They capture Mai Jah Jah's beauties hidden in plain sight. So, it is the time now to see and witness what we have been missing. Enjoy the rest!

Editor-in- Chief
Saba Tekeste



Museum Design On ERITREA National Martyrs Park

BY Petros Berhane Asfha

INTRODUCTION:

Eritrean natural landscape is one of the greatest futures of the country. The untouched setting of the environment is so mesmerizing and breathtaking that describing it or even a photograph cannot express the feeling. So, the design of museum was selected on one of the top mountains located on the national martyr's park on Asmara. The architectural design of the museum was done keeping in mind that the museum will display the history of Eritrea and memorize the Eritreans who lost their life by viewing the beautiful land, they gave their life.

As my architectural mentor Frank Lloyd Wright, believed that “a building’s form should be determined by its environment and the contrasts in the textures and colors of natural exterior are characteristic of innovative style”. That is the reason I chose the shape of the building to be a half dome like; where it is roofed with natural ground and vegetation from the surrounding area. This is done, so; the structure can blend in with the natural background.

The building has a large geometrical shape reinforced glass skylight at the middle of the building. And the front of the building that views the natural landscape is partitioned with a clear glass. So, the people attending the museum can have a clear view of the surrounding landscape of the country side. The inside of the building is separated into working area for the museum quarters and viewing area, where the art work and scripter is hanged or laid. The viewing area is composed out of pre-cast slabs hanged in steel frames and leading up to the different levels there is a pre-cast slabs with a gently inclined ramps. The working area for the museum quarters is located at the

two sides of the entrance and a whole floor at the basement.

Structurally the roofing frame is designed by of steel tubes covered by steel sheets and over that geotextile shaped to the shape of the dome. The internal frames of the building is the combination of steel frames, pre-cast and pre-stressed concrete except in the basement; which was designed up of stone masonry and cast in-situ concrete.

GENERAL TECHNICAL BACKGROUND:

The design of the building included architectural, structural, water supply and sanitary design.

ARCHITECTURAL DESIGN: as described in the introduction the museum was designed to reflect it's in environment. The concept of design was determined from the activities that will be done in the building. After determining the different activities that will be conducted there the design of building was considered after determining:

- **The site location:** After reconnoitering of the area; we have determined the right area to place the building, at a high elevation without any abstraction to view the landscape.
- **The calculation to determine the comfort level of the building:** the placement of the opening was done after calculating the natural and artificial lighting and ventilation required for this building.
- **Preparing different sketches of the building:** after reviewing the different sketches the right one was selected by the majority of the group. Before starting any the other design; all the architectural drawing was prepared.

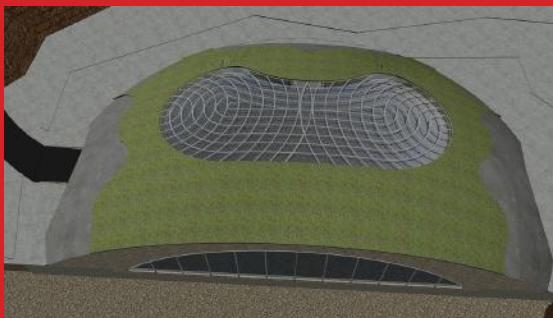
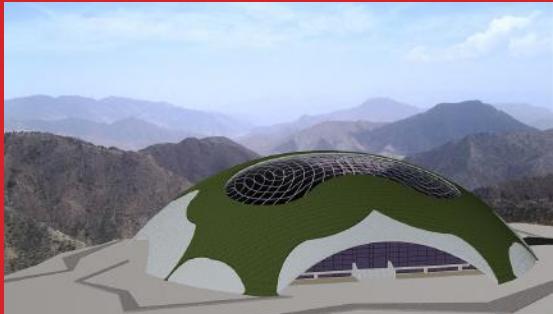


Fig-02 Architectural Drawing of the Museum

STRUCTURAL DESIGN: in design was divided in to five parts;

1. Frame analysis: used in determination of the effects of loads on physical structures and their components. Structural analysis incorporates the fields of applied mechanics, materials science and applied mathematics to compute a structure's deformations, internal forces, stresses, support reactions, stability, and accelerations. The results of the analysis are used to verify a structure's fitness for use, often saving physical tests. Structural frame analysis is thus a key part of the engineering design of structures. The analysis can be performed using different methods like

a. Slope Deflection Method: This method requires less work both to write the necessary equations for the solution of a problem and to solve these equations for the unknowns.

b. Moment distribution method: is a displacement method of analysis which is easy to apply once certain elastic constant have been determined. This method of successive estimate, which begins by assuming each joint of a structure is fixed. Then by unlocking and locking each joint in succession, the internal moments at joints are distributed and balanced until the joints have been rotated to their final or nearly final position.

c. Kani's method: is similar to the moment distribution method in that both these method use Gauss-Seidell iteration procedure to solve the slope deflection equations, without explicitly writing them down. Kani's method essentially consists of a single, simple numerical operation, performed repeatedly at the joints of a structure, in a chosen sequence.

2. Dome Structure Design: The dome element of the structure was chosen for its structural strength as well as the savings envisaged by replacing a conventional roofing system with a monolithic element. Before analyzing any structure, the first thing to do in dome design is determine the type of bracing depending on the material used and the diameter of the dome. So, in our case we have chosen Schwedler dome.

The dome has a height of 21 m. and a radius of 45 m. The bracing of the steel cover is a pin-connected type steel dome with 751 members, 293 joints and 323 plates. The two important loads for dome structures are wind and earthquake loads. Therefore, the loads are analyzed using design code, BS 5950.

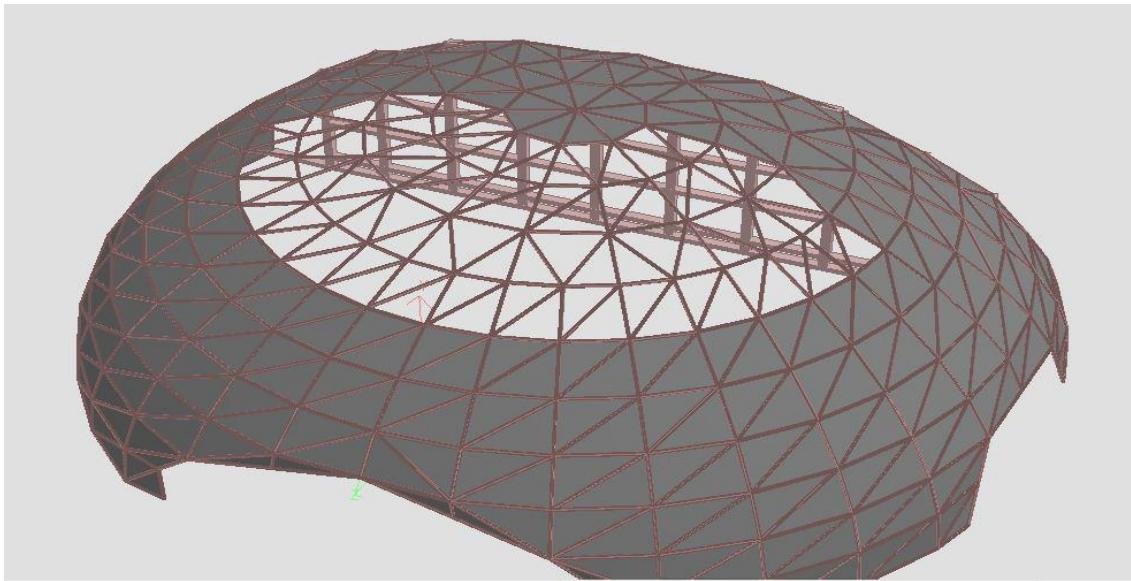


Fig-03 3D view of the Dome Frame

Domes are constructed as single layer or double layer. Single layer systems permit smaller spans of about 40 m while double layer systems can enclose more than 200 m span lengths. Double layer domes are exceptionally rigid and are used for very large spans. These systems can be designed as rigidly-jointed system or pin-connected system. Since perfect pin connection is not possible, semi-rigid connected systems are used. The analysis for the dome structure was done by using

a. **Dome/Ring Theory:** is the theory applied to dome structures with a ring beam at the base of the structure. The structure does not behave as if it were fixed or pinned, but somewhere between these two conditions. The ring beam will allow a certain amount of rotation and outward displacement at the base, which a fixed base would not.

b. **Finite Element Analysis:** is used as an approximate solution to engineering problems. It is important to understand the limitations of this type of analysis, as well as the methods of assessing and improving the analysis when modeling a structure.

c. **Structural Optimization:** is the derivations of objective functions and constraints with respect to design variables are designed. This approach is referred to as gradient-based search. Because of the facts that it is very hard to calculate the derivative of objective functions explicitly, and that some functions may not be continuous. The most popular techniques, which have emerged are

i. **Evolutionary Algorithms (EAs):** are computer-based problem solving systems. They use computational models of evolution mechanisms in their design and implementation.

ii. **Genetic Algorithms (GAs):** In GAs, a population with a fixed number of individuals is created. After evaluating the fitness scores of individuals, highly fit members are allowed to survive and poor individuals with low fitness scores are discarded.

Design constraints are the limitations which must be obeyed for the safety of the structure such as stresses, displacements, stability, etc. Abundance of different search and optimization techniques are used in opti-

mum Structural design applications. These techniques can be categorized as shown in Fig. below.

d. Design Loads: The practical design of any large dome requires that at least three different loading Systems should be fully analyzed:

- Dead load and live over the whole dome.
- Dead load and un-symmetric live load. It is usual to allow for the possibility of a buildup of live load on one side of the dome.
- Dead load and wind.

The different software (Staad, SSTOGA and SSTOSA) which utilize two techniques (Genetic Algorithms and Simulated Annealing) are made use of in the analysis. The graphs of evolution to optimum design for both techniques (SSTOGA using Genetic Algorithm and SSTOSA using Simulated Annealing) are presented in Fig. below. In SSTOGA, 1000 generations each having 100 structural analyses is performed. This software uses totally 100,000 structural analyses to converge the optimum solution as seen from the graph (blue line).

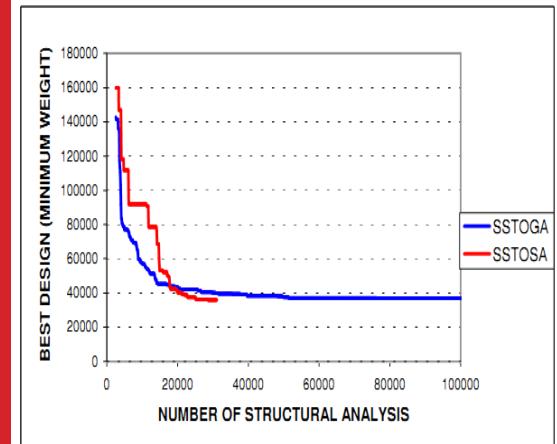


Fig-04 A Graph of Number of Structural Analysis vs. Feasible Best Design by Using SSTOGA and SSTOSA

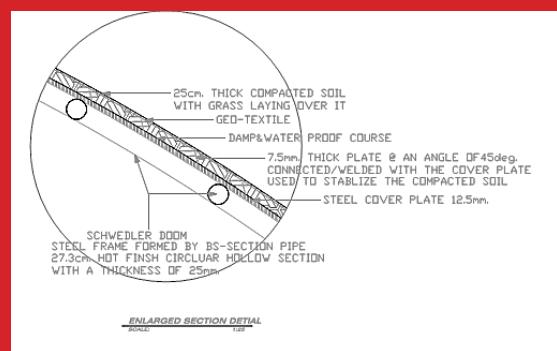


Fig-05 a Detailed Section View of the Dome

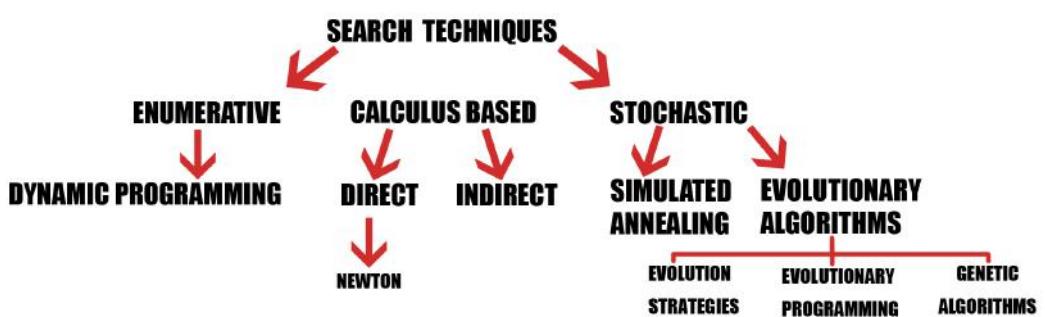
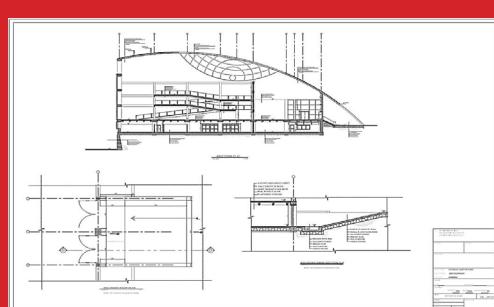
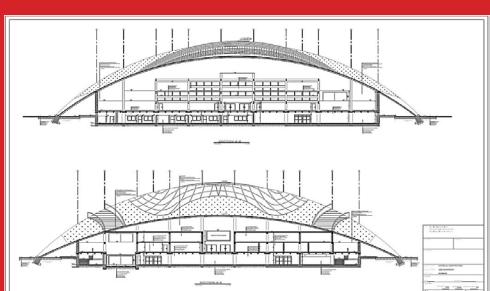
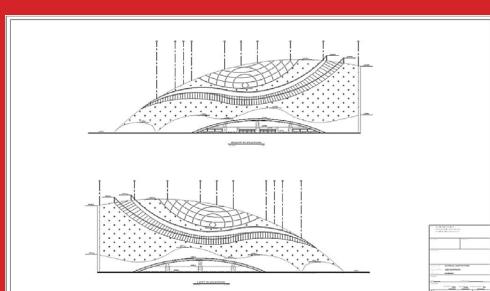
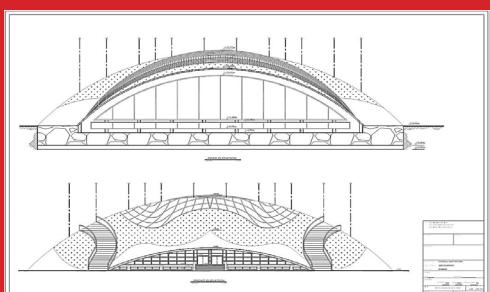
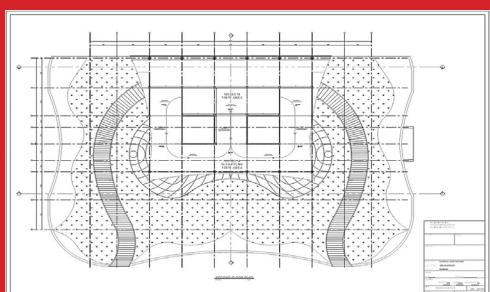
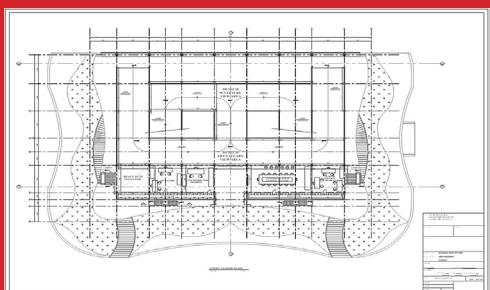
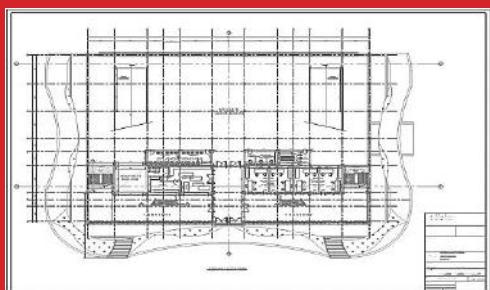
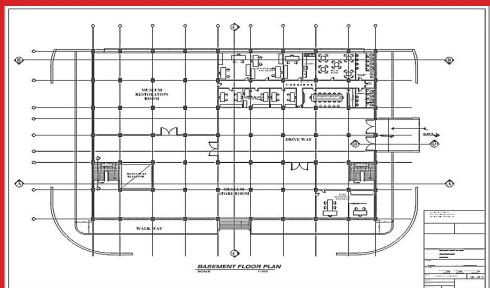


Fig-02

ARCHITECTURAL DRAWING of the MUSEUM



3. Steel Structure Design: as described on the above, the building frames above the basement are designed with steel frames. The frames in the front are covered with concrete and other half frames are uncovered. The reasons for selecting steel frames are;

- a. It allows for reduced frame construction time and the ability to construct in all seasons. And also it is durable, long-lasting, recyclable, and lightweight and can reduce foundation costs.
- b. It makes large spans and bay sizes possible, providing more flexibility on the span of frame. And it is easier to modify and reinforce if architectural changes are made to a facility over its life.
- c. Steel is excellent in both tension and compression. Since steel is primarily made of thin plate-like elements; they are susceptible to buckling (local and overall). Connections in steel are considerably different from those in concrete.

The analysis of the steel frame requires to take account of the effects of the deformed geometry on the structure. First order analysis may be used where the increases in internal forces and moments are less than 10%. This implies a critical load ratio (λ_{cr}), under factored loading, of more than 10; it is equivalent to the BS 5950-1: 2000 'non-sway' frame approach. A range of second order approaches may be used for structures for which λ_{cr} is less than 10. These methods include:

- Effective length approaches
- Amplification factors
- Energy methods
- Formal second order analysis.

The design for frame will be done after completing the analyses of the end moments and support reactions using Kani method. The design for the frames will be divided into;

- a. **Design of Beam:** the first thing to do is select the section that is convenient for the structure. For convenience the various phenomena are first considered principally within the context of using standard hot-rolled sections, i.e. UBs, UCs, RSJs and channels. After selecting, check for moment capacity, effect of and deflection. Then re-select the size of the section depending on these results.
- b. **Design of Column:** The most important property of a column as far as the determination of its load-carrying capacity is concerned is its slenderness. Column design will require, a trial member which its loading and support conditions determined, attention be given to whichever of the following checks are relevant for the particular application:
 - 1. Overall flexural buckling
 - 2. Local buckling
 - 3. Buckling of component parts
 - 4. Torsional or torsional
- c. **Cross-sectional considerations:** Since the maximum attainable load-carrying capacity for any structural member is controlled by its local cross-sectional capacity (factors such as buckling may prevent this being achieved in practice), the first step in strut design must involve consideration of local buckling as it influences axial capacity.
- d. **Connection:** The basis of the design of connections must reflect the identified load

paths throughout a framework, assuming a realistic distribution of internal forces, and must have regard to local effects on flanges and webs. The type of connection we used the combination of bolt and welding connection, where the bolts are greatest resultant shear force when combined the vertical shear force. And in the welding connection the extreme fibers of the weld most distant from the center of gravity of the fillet weld group are subjected to the maximum stress.

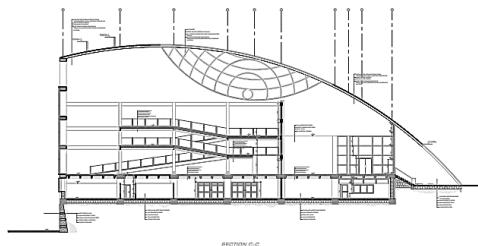


Fig-06 Section View of the Entire Building

4. Reinforced Concrete Structure Design: the basement of the frame structure and the flooring of the viewing and working space are designed out of reinforced concrete. The different component of reinforced concrete design used in this structure are:

a. Slab: are used to provide flat, useful surfaces. A reinforced concrete slab is a broad, flat plate, usually horizontal, with top and bottom surfaces parallel or nearly so. Reinforcing steel for slabs is primarily parallel to the slab surfaces straight bar reinforcement is generally used, although in continuous slabs bottom bars are sometimes bent up to serve as negative reinforcement over the supports. The different type of slabs used in this project are:

i. Pre-stressed Slab: is different from a conventional structure due to the application of an initial load on the structure prior to its use. The initial load or 'pre-stress' is applied to enable the structure to counteract the stresses arising during its service pe-

riod. These types of slabs are used in the viewing room from the ramps to the different levels of floors, fixed between I-section steel bars. The design of pre-stressed concrete members should include:

1. Design of sections for flexure
 2. Design for Shear
 3. Checking for deflection
 4. Detailing requirements for flexure (The detailing of the pre-stressing tendons and the reinforcing bars is important to satisfy the assumptions in the analysis, proper placement of concrete and durability.)
- ii. Waffle slab: are used in cases where the effective span is long in both x, and y axes. To overcome the bending stress along the length of the slab, large thickness of solid slab is required. This type of slab is located in our project on the floor level between the ground floor and basement. The design of waffle should include:
1. Design for bending reinforcement
 2. Design for shear reinforcement
 3. Reinforcement in the topping (Fabric mesh reinforcement should be provided in the center of the topping, with the cross-sectional area greater than 0.12% of the area of the topping.)
 4. Checking for deflection

b. Shear Wall: Structural walls in frame building should be so proportional that they possess the necessary stiffness needed to reduce the relative inter story distortions caused by seismic induced motions. The building we designed used shear wall in the walls of service elevator from the basement to the second level of the

show room.

c. Staircase: For purpose of design, stairs are classified into two types; transversely, and longitudinally supported.

i. Transversely supported (transverse to the direction of movement): Simply supported steps supported by two walls or beams or a combination of both and the steps are cantilevering from a wall or a beam.

ii. Longitudinally supported (in the direction of movement): These stairs span between supports at the top and bottom of a flight and unsupported at the sides. This type of stairs is designed as one-way slab supported at the top and bottom of the flight, while the steps themselves are treated as nonstructural elements.

d. Retaining wall: are structures used to retain earth which would not be able to stand vertically unsupported. Since our structure is hanging over the cliff of one of the top mountain, retaining wall is placed to support the structure from overturning. Although retaining walls may give the appearance of being unyielding, some wall movement is to be expected. Clean granular material (no silt or clay) is the standard recommendation for backfill material. There are several reasons for this recommendation:

i. Predictable Behavior: Besides the swelling pressure induced by the expansive soil, there can also be groundwater on the retaining or basement wall because of the poor drainage of clayey soils.

ii. Drainage system: To prevent the build-up of hydrostatic water pressure on the retaining wall, a drainage system is constructed at the heel of the wall.

iii. Frost action: In cold climates, frost action has caused many retaining walls to move so much that they have become unusable. Backfill soil consisting of clean granular soil and the installation of a drainage system at the heel of the wall will help to protect the wall from frost action.



Fig-07 3D view the Internal Frame

5. Foundation Design: there are three types of footing used in this structure; one is spread footing for the loads that come from the dome frame. The second one is combined footing that carry the loads of the R.C. frames that carries the dome, located at the front of the building at the edge of the cliff. And the third is a mat footing at the base of the entire building. The design of the base is made for the ultimate load delivered to the base by the column shaft, i.e. the design load is $1.4 G_k + 1.6 Q_k$. The critical sections in design are set out as follows:

- a. Design for bending moment.
- b. Design for distribution of reinforcement
- c. Design for shear on vertical section across full width of base
- d. Check for punching shear around the loaded area
- e. Anchorage of column starter bars: the compression bond stresses that develop on starter bars within bases do not need to be checked provided that
 - i. The starter bars extend down to the level

of the bottom reinforcement

ii. The base has been designed for the moments and shear set out above

f. Check for cracking

g. Check for minimum grade of concrete

h. Check for nominal cover: the minimum cover should be 75 mm if the concrete is cast directly against the earth or 40 mm if cast against adequate blinding.

6. Water Supply and Sanitary design: since the site is located at an elevated area the water supply needed to facilitate the building is necessary cannot be fulfilled only from the main municipality line; so secondary storage may also help to supplement to direct municipal supply in case of excess or peak demand. As the result Water distribution system in the building should convey water adequately both in quantity and pressure, to the required appliance without being contaminated and without leakage. Water distribution piping and fittings should be easily accessible, optimally placed for at least damage in case of leakages not hampering any normal activities with in buildings and should be in accordance with the provision of sanitary standards.

False ceiling is provided throughout the building to conceal water and waste water pipe coming out from toilet below roof. Sometimes floor of the toilet is raised or lowered than other floors to accommodate water and waste water from one floor to another. The water supplied into the house and used is discharged through the drainage system. This system is either sanitary drainage system carrying just interior waste water or a combined system carrying interior waste and roof runoff.

The proper sizing of the sanitary drain or house drain depends on the number of fixtures it serves. The materials used are usually cast iron, vitrified clay, plastic, and in rare cases, lead. For proper flow in the drain, the pipe should be sized so that flow is approximately one-half full. This ensures proper scouring action so that the solids contained in the waste will not be deposited in the pipe. Foul drainage system of a building consists of the following drainage pipes:

a. Stack (waste water is collected and conveyed to branch drain then to a vertical pipe passing through different floors of a building.)

b. Branch drain or fixture discharge pipe

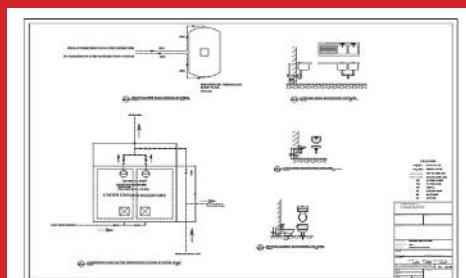
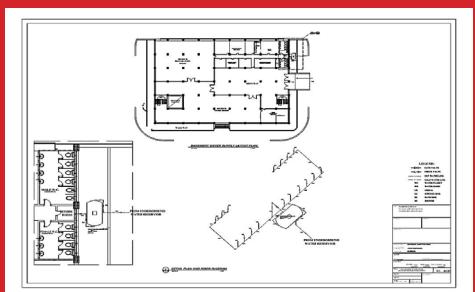
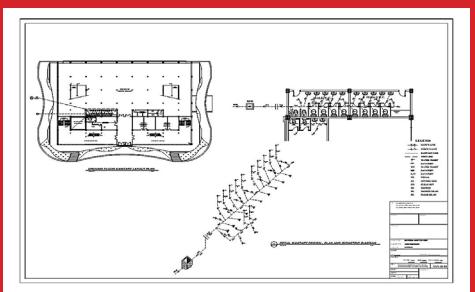
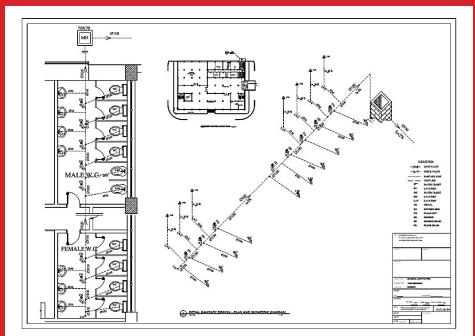
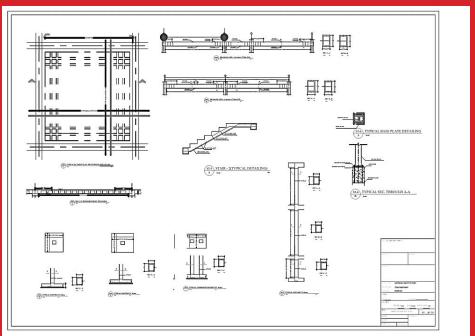
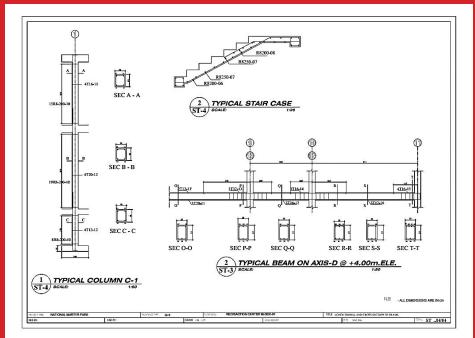
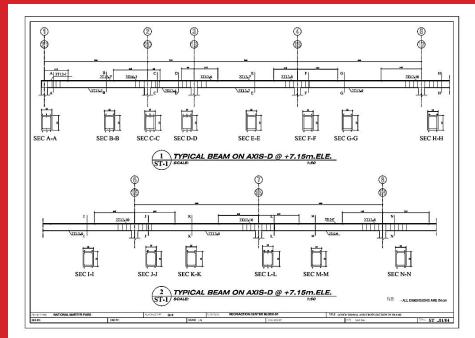
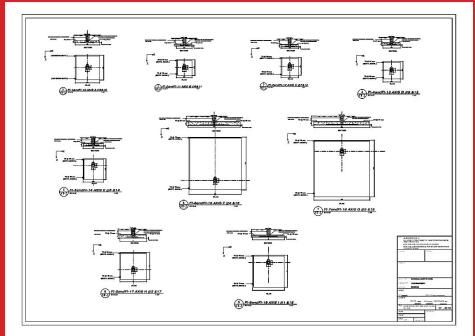
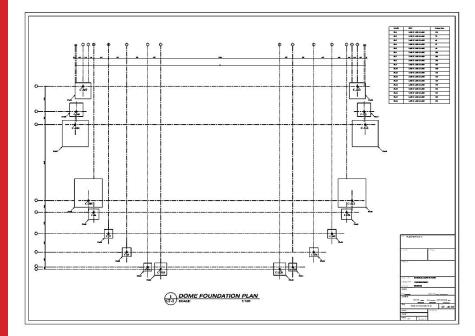
c. Horizontal drain

The factors which are to be considered while designing horizontal drain are:

- Number and type of sanitary appliances
- Possible peak frequency use of sanitary appliances
- Average duration of discharge of appliance
- The volume of the waste water discharging from the appliances

The fixture units are used as a waste load to determine the size of the waste pipe. Numerous tests were conducted on various plumping fixtures in order to determine the amount of water in fixture in one minute interval through their outlet orifices.

Fig-08 Structural, Water supply and Sanitary Drawing of the Museum



REFERENCES:

- Adeli, H., and Kumar, S. (1995). Distributed Genetic Algorithm for Structural Optimization. *Journal of Aerospace Engineering*, 156-163.
- Lopez, A., Puente, I., Serna, M.A. (2004). Buckling Loads of Semi-Rigidly Jointed Single Layer Latticed Domes. Computer Aided Engineering Group, Graduate Institute of Civil Engineering, National Taiwan University, <http://www.tecnun.es/estructuras/paper04.pdf>. Last visited on November 12th, 2005.
- Mitchell, M. (1996). *An Introduction to Genetic Algorithms*. The MIT Press.
- Montes, P., and Fernandez, A. (2001). Behaviour of a Hemispherical Dome Subjected to Wind Loading. *Journal of Wind Engineering*, 89, 911-924.
- Niemi, E., and Mäkeläinen, P. (Editors) (1990). *Tubular Structures*, the Third International Symposium. Elsevier Applied Science.
- Ulusoy, A.F. (2002). *Use of Evolution Strategies in Optimum Structural Design*, M.S.Thesis.

Software used:

- Architectural Software: Auto Cad, Auto Cad 3D, ArcGIS and Maya
- Structural Software: Staad, Staad foundation, Ms. Excel, Straus7, SSTOGA and SSTOSA(used in generating algorism)

FURTHER IMPROVEMENT AND FEEDBACK QUESTION:

If I was asked to design the building again now; I wouldn't limit my architectural vision and holdback, because of restraint in multifaceted structural understanding. As I presented my first sketch of the building to my group. The building included an access to the topmost edge of the dome in order visitors to feel the wind and view the majestic landscape. The slab that would come from the sides of the entrance to the topmost edge of the building would have been a three dimensional curved reinforced concrete ramp. And another entrance was suggested from the top of the dome where the skylight would slinked in to the viewing area in vortex shape. As you can imagine calculating three dimensional curves requires in generating your own algorism in analyzing the frame, which was limiting at that time. But, now everyone in the group would have been open to try and experiment in creating and analyzing any structural frame.

Further Information about the project you can contact me



13 Habits of Super Persuasive People

Human Behaviour in Numbers

In the following series, Dr. Travis Bradberry's captivating lessons on Emotional Intelligence will be covered. Dr. Travis Bradberry is an award-winning co-author of Emotional Intelligence 2.0 and the co-founder of TalentSmart® the world's leading provider of emotional intelligence tests and training serving more than 75% of Fortune 500 companies. His bestselling books have been translated into 25 languages and are available in more than 150 countries.

1 | They're pleasers. Persuasive people never win the battle only to lose the war. They know how and when to stand their ground, and yet they are constantly making sacrifices that help their cause. They are always giving in, giving ground, and doing things for other people that make them happy. Persuasive people do this because they know in the long run this wins people over. They know it's better to be successful than it is to be "right."

2 | They aren't pushy. Persuasive people establish their ideas assertively and confidently, without being aggressive or pushy. Pushy people are a huge turn off. The in-your-face approach starts the recipient backpedaling, and before long, they're running for the hills. Persuasive people don't ask for much, and they don't argue vehemently for their position because they know that subtlety is what wins people over in the long run. If you tend to come across as too aggressive, focus on being confident but calm. Don't be impatient and overly persistent. Know that if your idea is really a good one, people

will catch on if you give them time. If you don't, they won't catch on at all.

3 | They aren't mousy, either. On the other hand, presenting your ideas as questions or as though they need approval makes them seem flawed and unconvincing. If you tend to be shy, focus on presenting your ideas as statements and interesting facts for the other party to mull over. Also, remove qualifiers from your speech. When you are trying to be persuasive, there is no room for "I think" or "It is possible that."

4 | They know their audience. Persuasive people know their audience inside and out, and they use this knowledge to speak their audience's language. Whether it's toning down your assertiveness when



talking to someone who is shy or cranking it up for the aggressive, high-energy type, everyone is different, and catching on to these subtleties goes a long way toward getting them to hear your point of view.

5. They paint a picture. Research shows that people are far more likely to be persuaded by something that has visuals that bring it to life. Persuasive people capitalize on this by using powerful visual imagery. When actual images aren't available or appropriate, these people tell vivid stories that breathe life into their ideas. Good stories create images in the mind of the recipients that are easy to relate to and hard to forget.

6. They use positive body language.

Becoming cognizant of your gestures, expressions, and tone of voice (and making certain they're positive) will engage people and open them up to your arguments. Using an enthusiastic tone, uncrossing your arms, maintaining eye contact, and leaning towards the person who's speaking are all forms of positive body language that persuasive people use to draw others in. Positive body language will engage your audience and convince them that what you're saying is valid. When it comes to persuasion, how you say something can be more important than what you say.

7. They smile. People naturally (and unconsciously) mirror the body language of the person they're talking to. If you want people to like you and believe in you,



smile at them during a conversation, and they will unconsciously return the favor and feel good as a result. Persuasive people smile a lot because they have genuine enthusiasm for their ideas. This has a contagious effect on everyone they encounter.

8. They acknowledge your point of view.

An extremely powerful tactic of persuasion is to concede the point. Admit that your argument is not perfect. This shows that you are open minded and willing to make adjustments, instead of stubbornly sticking to your cause. You want your audience to know that you have their best interests at heart. Try using statements such as, "I see where you are coming from," and "That makes a lot of sense." This shows that you are actively listening to what they are saying, and you won't just force your ideas upon them. Persuasive

people allow others to be entitled to their opinions and they treat these opinions as valid. They do this because it shows respect, which makes the other person more likely to consider their point of view.

9. They ask good questions.

The biggest mistake people make when it comes to listening is failing to hear what's being said because they are focusing on what they're going to say next or how what the other person is saying is going to affect them. The words come through loud and clear, but the meaning is lost. A simple way to avoid this is to ask a lot of questions. People like to know you're listening, and something as simple as a clarifica-

tion question shows not only that you are listening but also that you care about what they're saying. You'll be surprised how much respect and appreciation you gain—just by asking questions.

10. They use your name. Your name is an essential part of your identity, and it feels terrific when people use it. Persuasive people make certain they use others' names every time they see them. You shouldn't just use someone's name only when you greet him or her. Research shows that people feel validated when the person they're speaking with refers to them by name over the course of a conversation.

11. They form connections. People are much more likely to accept what you have to say once they have a sense of what kind of person you are. In a negotiation study, Stanford students were asked to reach agreement in class. Without instruction of any kind, 55% of the students successfully reached agreement. However, when students were instructed to introduce themselves and share their background before attempting to reach agreement, 90% of the students did so successfully. The key here is to avoid getting too caught up in the back and forth of the negotiation. The person you are speaking with is a person, not an opponent or a target. No matter how compelling your argument, if you fail to connect on a personal level, he or she will doubt everything you say.

12. They are genuine. Being genuine and honest is essential to being persuasive. No one likes a fake. People gravitate toward those who are genuine because they know they can trust them. It's difficult

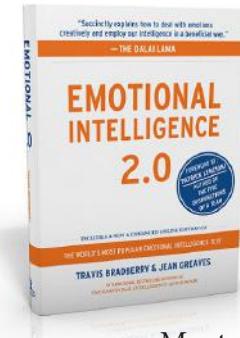
to believe someone when you don't know who they really are and how they really feel. Persuasive people know who they are. They are confident enough to be comfortable in their own skin. By concentrating on what drives you and makes you happy as an individual, you become a much more interesting and persuasive person than if you attempt to win people over by trying to be the person they want you to be.

13. They know when to pull back. Urgency

is a direct threat to persuasion, so tread lightly. When you try to force people to agree instantly, studies show that they are actually more likely to stand by their original opinion. Your impatience causes them to counter your arguments in favor of their own. If your position is strong, you shouldn't be afraid to back off and give it time to sink in. Good ideas are often difficult to process instantly, and a bit of time can go a long way.

Bringing It All Together

Persuasive people are adept at reading and responding to other people. They rely heavily on emotional intelligence (EQ) to bring people to their way of thinking. With 90% of top performers high in emotional intelligence, it's no wonder that persuasive people rely on this skill to get ahead. Add these skills to your repertoire, and you're on your way to joining this exclusive group.





MAI-JAH JAH

A PHOTOGRAPHIC ESSAY

BY YONAS BERHANE

A panoramic shot from the road level, emphasising how beautifully Mai - Jah Jah descends from the top.



DESCRIPTION

“Asmara was not without its civic spaces in the 1930’s, as the Italians set out the planning the city to incorporate numerous small parks or civic areas. The Mai Jah Jah fountain is one of the more distinguishable public areas, with its modern stepped fountain surrounded by colorful gardens. It lies at the intersection of the city centre and the suburb of Gheza Banda, which was developed in the late 1930’s.”

THE NAME

The name ‘Mai - Jah Jah’ is a tigrinya onomatopetic term, that captures the sound of thundering water over its laddered structure.



The open floor before the entrance,
leading to the stairs

THE POWER OF SYMMETRY







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The side view pics capture the descending majesty of Mai Jah Jah. It looks like it is racing for the finish line in a tight 100 mts Olympic game. Any vehicle driver or bike rider can tell you the sensation felt competing against it.

REMINISCENCE OF THE PAST: MAI JAH-JAH OF OLD



Fontana di Ghezzabai

Ufficio tecnico del municipio di Asmara. Anno 1938



da geom. Lorenzo Azzoni



MYSTERY

Do you know that
the architectural brain
behind Mai Jah Jah is

UNKNOWN

?



Viale Bellini

for Janus



viale Bellini

THE GARDEN





The greeney is currently well treated. No doubt it will be an attractive site for wedding photography and other ceremonies.

Quote of the MONTH

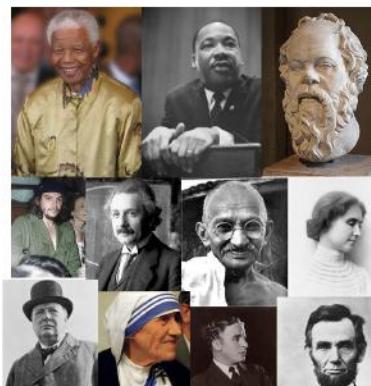
"All sciences are vain and full of errors that are not born of Experience, the mother of all Knowledge".

Leonardo Da Vinci
1452-1519

A genuine conviction from a man, who was a great experimentalist himself. No wonder he had it all in every field he ventured. A stroke of a genius maestro does not descend from heaven; it is the result of thousands and thousands of hours trying as a novice.

Well said, Leo.

“ Send us
your Favourite Quotes
and impression notes
HERE! ”



Women in the Workplace

by Rigat Tesfamichael
NUWE



The overall concept of equality and empowerment is the sum up of individual's journey towards the goal. To make the wholesome picture achievable, it demands pursue of individuals investment on themselves through right attitude on themselves, education, economic independence and professionalism which is embedded in self- empowerment.

These days the engagement of women in education is becoming less debatable and more of a consensus that is widely accepted. Yet, the positive attitude towards women in workplace is still contentious.

The remarkable increase in the labor force participation of women has been called the "the single most outstanding phenomenon of the 20th century". This global participation of women in the labor force had its effect on every aspect of life, including child bearing patterns, trends of fertility, marriage and divorce, patterns of marital economy.

Despite the significant progress in the increase of number of employed women in various professions and the momentum in the decrease of gender gaps in the work

place in respect to payment and opportunities is still slow. Narrowing the gender gap in work place is still an elusive goal where the circumstance worsens in developing countries. With higher prevalence of problems of high working poor, lower income, higher unemployment rate worsened with fewer opportunities to education and skill enhancement.

To many, professional carrier is not so important to women's lives as it is to men where it makes the situation something that can be compromised.

This perception emanates from the philosophy of patriarchal society that alienates women's role in a society with reproductive roles of the domestic sector while assigning the public sector along with

it's deceive power to the domain of men.

But what makes women's employment so vital is its role in making women economically independent in which at the same time plays a pivotal role for guarantying the access for a voice and power for de-

**The remarkable
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20th century".**

cision making. In its smallest scale of household, families with women engaged professional world has a better economic status, access to information, and better consciousness regarding their issues. Where the cumulative impact has tremendous effect when it comes to women's issue in societal level.

Along with the importance of work for financial income that derives from wages and salaries, it is the source of personal identity, social and economic rewards in addition to the economic needs. Because professionalism creates a sense of purpose on women's lives that override the limited purpose that the society assigns to women which is the reproductive roles related with rearing children and take caring of families.

In which this new outlook of women on their life and its purpose, shaping their dreams and ambitions, making themselves competent, reliable and competitive part of the workplace, fighting the systematic glass ceiling that hinders them from promoting themselves in climbing the ladder of professional upgrade is a crucial parcel of their journey towards equality that every women should have a right and access and ground.

Looking at all these breakthroughs of women and the new mark they were able to make, there are still enormous challenges that need attentive and conscious perspective. Even though the engagement of women in work place opened a path to farther participation in vari-

ous socio- economic and political sectors and its decision making process, yet they are not still delivered from the discriminated burden they are responsible for in the household.

So been unable to be free from the tough burdens of reproductive roles and striving to be equally competitive on workplace has created a double burden on the lives of most working women. To tackle this equality and equal allocation of roles that we see in the public is something that should be reality in the private sector. Unless male parts of the families, spouses, fathers, brothers, and sons take the initiative with full understanding to share these burdens, it becomes a tougher voyage of the wives, mothers, and sisters to be fully accomplishing and competitive in the professional world.



COMPUTER ENGINEERING

as we should know it

By Noah Measho (BSc. Computer Engineering)

Computer Engineering is a discipline that integrates several fields of electrical engineering and computer science required to develop computer hardware and software. It blends together electrical engineering and computer science for further advancements in digital technology, computer networking and computer systems. Computer engineers work with hardware and software, ensuring that the two are seamlessly integrated and functioning properly. Computer engineers focus on innovation—making computing systems safer, faster and more powerful. They use their extensive knowledge of hardware and software design and computer programming to make computing platforms and applications more efficient and effective. Seamlessly integrating the latest innovations, computer engineers develop new computer hardware, design and implement software applications, and enhance the capabilities of networks and communications systems. Computer engineers usually have training in electronic engineering (or electrical engineering), software design, and hardware-software integration instead of only software engineering or electronic engineering; and are involved in many hardware and software aspects of computing, from the design of individual microprocessors, personal computers, and supercomputers, to circuit design. This field of engineering not only focuses on how computer systems them-

selves work, but also how they integrate into the larger picture. At the career level, there are two main avenues: hardware and software engineering. Hardware engineers focus their skills on computer systems and components, designing microprocessors, circuit boards, routers and other embedded devices. On the software side, these engineers create, test and debug programs and applications that run on computers, mobile devices and more.

Usual tasks involving computer engineers include writing software and firmware for embedded microcontrollers, designing VLSI chips, designing analog sensors, designing mixed signal circuit boards, and designing operating systems. Computer engineers are also suited for robotics research, which relies heavily on using digital systems to control and monitor electrical systems like motors, communications, and sensors.

In many institutions, computer engineering students are allowed to choose areas of in-depth study in their junior and senior year, because the full breadth of knowledge used in the design and application of computers is beyond the scope of an undergraduate degree. Other institutions may require engineering students to complete one year of General Engineering before declaring computer engineering as their primary focus.

There are two major specialties in computer engineering: software and hardware.

COMPUTER SOFTWARE ENGINEERING

Computer Software Engineering is the study and application of engineering to the design, development, and maintenance of software. The term has been less formally used as the broad term for all aspects of the practice of computer programming, as opposed to the theory of computer programming, which is called computer science. Software engineers develop, design, and test software. Some software engineers design, construct, and maintain computer programs for companies. Some set up networks such as "intranets" for companies. Others make or install new software or upgrade computer systems. Computer software engineers can also work in application design. This involves designing or coding new programs and applications to meet the needs of a business or individual.

COMPUTER HARDWARE ENGINEERING

Most computer hardware engineers research, develop, design, and test various computer equipment. This can range from circuit boards and microprocessors to routers. Some update existing computer equipment to be more efficient and work with newer software. Most computer hardware engineers work in research laboratories and high-tech manufacturing firms.

FIELDS OF SPECIALITY IN COMPUTER ENGINEERING

There are many specialty areas in the field of computer engineering.

Coding, cryptography, and information protection

Computer engineers work in Coding, Cryptography, and Information Protection to develop new methods for protecting various information, such as digital images and music, fragmentation, copyright infringement and other forms of tampering. Examples include work on wireless communications, multi-antenna systems, optical transmission, and digital watermarking.

Communications and wireless networks

Those focusing on communications and wireless networks work advancements in telecommunications systems and networks (especially wireless networks), modulation and error-control coding, and information theory. High-speed network design, interference suppression and modulation, design and analysis of fault-tolerant system, and storage and transmission schemes are all a part of this specialty.

Compilers and operating systems

This specialty focuses on compilers and operating systems design and development. Engineers in this field develop new operating system architecture, program analysis techniques, and new techniques to assure quality. Examples of work in this field include post-link-time code transfor-

mation algorithm development and new operating system development.

Computational science and engineering

Computational Science and Engineering is a relatively new discipline. Computational methods are applied to formulate and solve complex mathematical problems in engineering and the physical and the social sciences. Examples include aircraft design, the plasma processing of nanometer features on semiconductor wafers, circuit design, radar detection systems, ion transport through biological channels, and much more.

Computer networks, mobile computing, and distributed systems

In this specialty, engineers build integrated environments for computing, communications, and information access. Examples include shared-channel wireless networks, adaptive resource management in various systems, and improving the quality of service in mobile and ATM environments. Some other examples include work on wireless network systems and fast Ethernet cluster wired systems.

Computer systems: architecture, parallel processing, and dependability

Engineers working in computer systems work on research projects that allow for reliable, secure, and high-performance computer systems. Projects such as designing processors for multi-threading and parallel processing are included in this field. Other examples of work in this field include development of new theories, algorithms, and other tools that add performance to computer systems.

Computer vision and robotics

In this specialty, computer engineers focus on developing visual sensing technology to sense an environment, representation

of an environment, and manipulation of the environment. The gathered three-dimensional information is then implemented to perform a variety of tasks. These include improved human modelling, image communication, and human-computer interfaces, as well as devices such as special-purpose cameras with versatile vision sensors.

Embedded systems

Individuals working in this area design technology for enhancing the speed, reliability, and performance of systems. Embedded systems are found in many devices from a small FM radio to the space shuttle. On-going developments in embedded systems include automation of vehicles and equipment to conduct search and rescue, automation of transportation systems, and human-robot coordination to repair equipment in space etc.

Integrated circuits, VLSI design, testing and CAD

This specialty of computer engineering requires adequate knowledge of electronics and electrical systems. Engineers working in this area work on enhancing the speed, reliability, and energy efficiency of next-generation very-large-scale integrated (VLSI) circuits and microsystems. An example of this specialty is work done on reducing the power consumption of VLSI algorithms and architecture.

Signal, image and speech processing

Computer engineers in this area develop improvements in human-computer interaction, including speech recognition and synthesis, medical and scientific imaging, or communications systems. Other work in this area includes computer vision development such as recognition of human facial features.

Computer Engineering Frequently Asked Questions

Q. What set of skills do I need to be a computer engineer?

A. A firm foundation and interest in basic science and mathematics is needed. In addition there is a need to be able to work in teams and to communicate their ideas both verbally and in writing. Computer engineers specifically are comfortable with both hardware and software. Depending on where your interests lie, either one can be emphasized.

Q. What job opportunities are there for a computer engineer?

A. This field holds probably the best job opportunities for the coming years. Computer engineers work for computer companies such as Intel, HP, and Texas Instruments, and also in industries that build or use computer-based systems, such as telecommunications, automotive, software production companies etc. Many computer engineers also get jobs as programmers. They may have less programming experience than computer science graduates, but their understanding of hardware gives them an advantage in dealing with overall systems.

Q. What is the difference between computer engineering and computer science?

A. Computer Science is software oriented whereas Computer engineering is oriented towards both hardware and software together. The difference is that computer engineers build hardware while computer scientists generally do not. However, computer scientists certainly know enough about hardware to analyze computer system operations and to interact with hardware engineers.

Φατηλε

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UP ON CHOOSING

?



By Muller

Most of us face a challenge during selecting our stream of study and future professional life. In fact, as many of us would agree, the moment of choosing is like finding yourself at a crossroad having a number of options, where you really don't have clear idea about the other end of each road line. "Right or wrong; follow your friends' line!" is the generally laid rule which is commonly seen as a quick fix solution in such situations. Others try to consult their parents and/or any other close relatives, who would express the options through their own perspectives of sight. And usually, the advisors' view is fifty percent likely to much with the demands and personal realities of the youth raising a question.

To find psychologically studied service that helps you to lead yourself to your line of happiness is an attractive chance which some lucky ones would get in their early ages. "Looking deeply at yourself and following your heart!" is a concept which we hear repeatedly from the mouths of many acceptably successful men and women. It is to say, "The Power is within you!" Your future success as

a person depends not on the department that you choose, but on the relationships you have with your area of actions. The core idea is, 'If you identify yourself at the beginning, you need less effort to achieve higher results.' And off course, personally increased confidence and usual moments of happiness are to be expected. And probably every one of us agrees that, "HAPPINESS" is inbuilt within the dreams of every youth. Who would dare to be unhappy in his/her life?

The main purpose of this short script is to enumerate some of the internal differences between humans, which will in turn affect our different areas of actions and our lives results. Up to now, scientists have never agreed yet, whether it is the human inborn gene or the environment, which determines human intelligences. But they have identified that we show intelligences in different areas. And the departmental choice is supposed to be made having this concept. First accept that there is difference and this difference is the source of all magnificent beauties and inventions. Let's look at the major areas where individuals show intelligences.

1 Sound

To some people sound is everything. Out of all their sense organs, they use their ears more efficiently. They are very good listeners. They have talented ears in differentiating between noise and music. And can create music by combining noises. They can hear from winds, human whispers, the sea's tides, the birds' interactions etc... They look at the world through the sounds it creates.

2 Vision

Some people's eyes are brighter than others. Their emotions arise when they see coloured flowers; while to some others, it

is not clear whether there exist flowers in the world or not. The people who have vision inspirations are most likely to create special designs by combining different colours. Like designing clothes, architectural things, decorating activities ...etc. A person especially a boy who can't identify the colour of a trouser which he is wearing is less likely to go to such disciplines. If he tells you that, his dream is to become an excellent architect, don't trust him. He is talking only about money which is the need of everybody.

3 Numbers

Some people enjoy the challenges with numerical problems and puzzles. Who would imagine that a computer works using the numbers zero (0) and one (1) except those ones. Follow them and watch them. Those peoples' dream is to digitalize the whole world. Their aim to control criminals using interconnected computer codes. They don't have time to teach people. They feel that they can contribute or enjoy more using numbers and puzzles. And some of them only enjoy their game with the puzzles they don't care whether the world benefits from their acts or not.

4 Physic

To some people the muscles are of more importance than the mind and soul. They take care of their physical body than their mind. Look at them and don't disturb them. They have something to contribute using their legs, hands, height. . . If they intend to defend their personal security they would rather use their body, instead of playing a complicated mind game. They are either legend athletes or hero soldiers who would defend their country. Respect them if not watch them.

5. The earth's taste

Some people are more attracted to the existing mother earth while others dream of the unseen things. They have full respect to the soil, stones, trees, water ...etc around them. They touch the soil and stones around them, taste it with inspirations and think what to do with it. They feed us with their harvests. They are the ones who would give us a shelter. They have shown skills of picking something from the earth and converting it to a usable item. Follow them, may be they are the majority.

6 Connection

To some people, interactions with other people is number one skill. They love to meet with people and talk. They have interpersonal skills. They look more at people from the whole physical nature of the world. When looking at people they don't care about biology. They are not interested why a tree falls down. They would think and care only, "What will people say and do if the tree falls?" They are either born or grown in that manner. They are social science people. Don't insult them just watch them. They have something to contribute to a nation. Because to them a nation is a combination of people on top of the stones. Their dream is to connect people for higher results. They wouldn't dare to touch the soil.

7 Integration

Although anyone with remarkable outputs in one of the above areas can't be rated zero in another area, we need to admit that some people have demonstrated talents in a combination of areas. They try to see the whole instead of in parts. They integrate things. And intend to give an integrated and comprehensive result. Some people have shown remarkable skills in listening, observing, calculating, talking and convincing to peo-

ple etc... to get a whole solution. It is a blessing that God has created such individuals among us.

It may be better to illustrate some of the above mentioned human behaviours using commonly understandable examples.

- a. Suppose that a very strong dog is barking and running towards you. You have two options: to run away with all your energy or to defend yourself and even harm the dog. If you take the second option, you may be a good soldier. May be your ultimate position is to be a General, Brigadier, Colonel or so...
- b. Among your friends, suppose that one is behaving unfairly to the other. If you feel discomfort with the situation and try to balance the relation of your friends, then you would join the school of Law.
- c. Suppose the tough dog mentioned above is biting a young child. If you try to rescue the child, you better join the health college.
- d. If you entertain games and mathematical puzzles until your breakfast is forgotten, and when your mom asks you to stop, you fail to listen and say: "Ha!", then you may go to the computer sciences and engineering areas.
- e. If you don't bother to spend days of work and somebody's marriage or funeral ceremony then probably you are of the social science type. Remember that if people of your type are more in a society, then a country may be peaceful and die of hunger.

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OCTOBER 2016



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