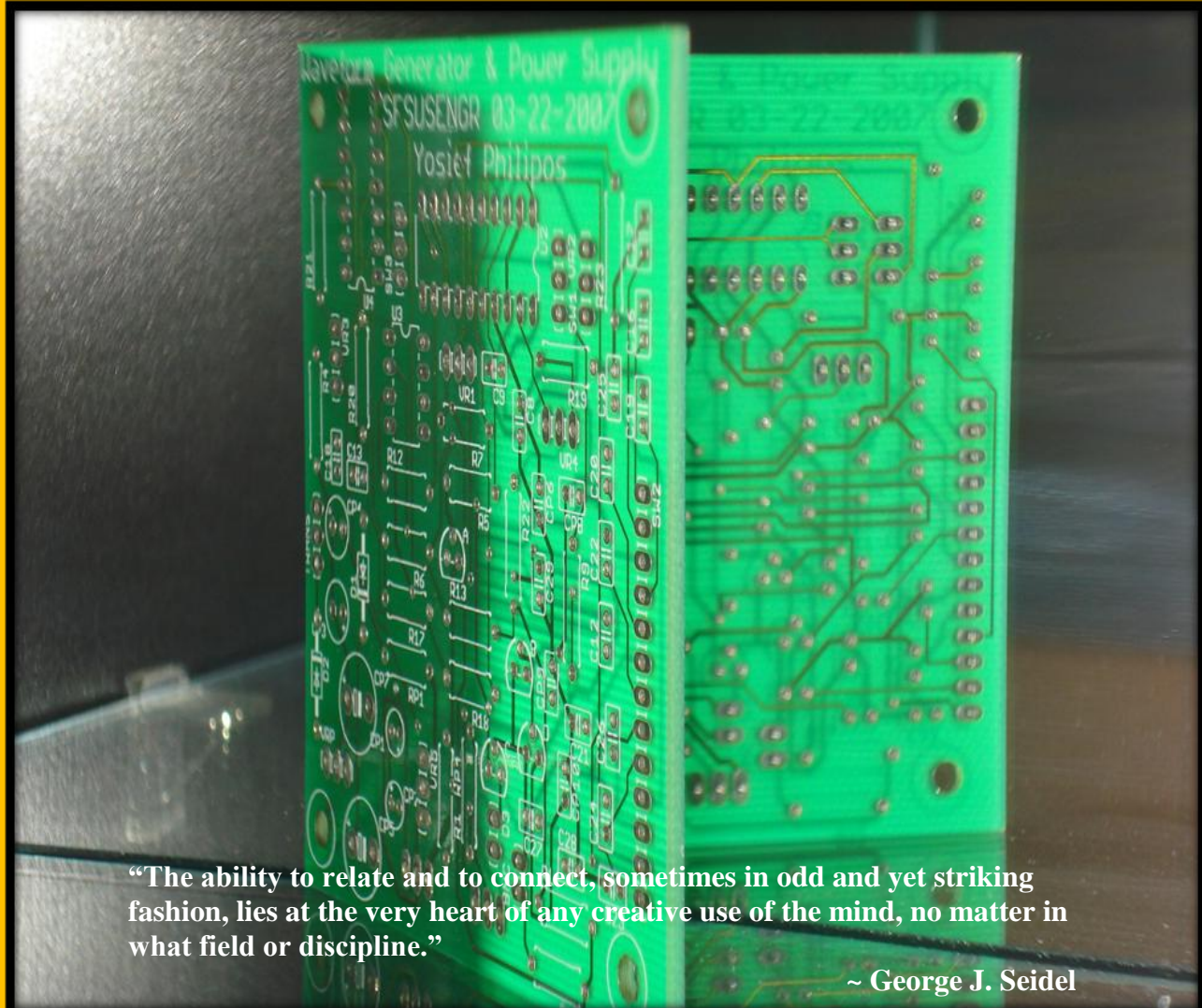


Alpha Eritrean Engineers Community

VOL. 2 NO. 2 June 2011

STRIVING FOR EXCELLENCE

BIM GOES BEYOND DESIGN PHASE



“The ability to relate and to connect, sometimes in odd and yet striking fashion, lies at the very heart of any creative use of the mind, no matter in what field or discipline.”

~ George J. Seidel

CHALLENGES ON HANDLING CLAIMS

LIST OF COMPANIES HIRING



AEEC

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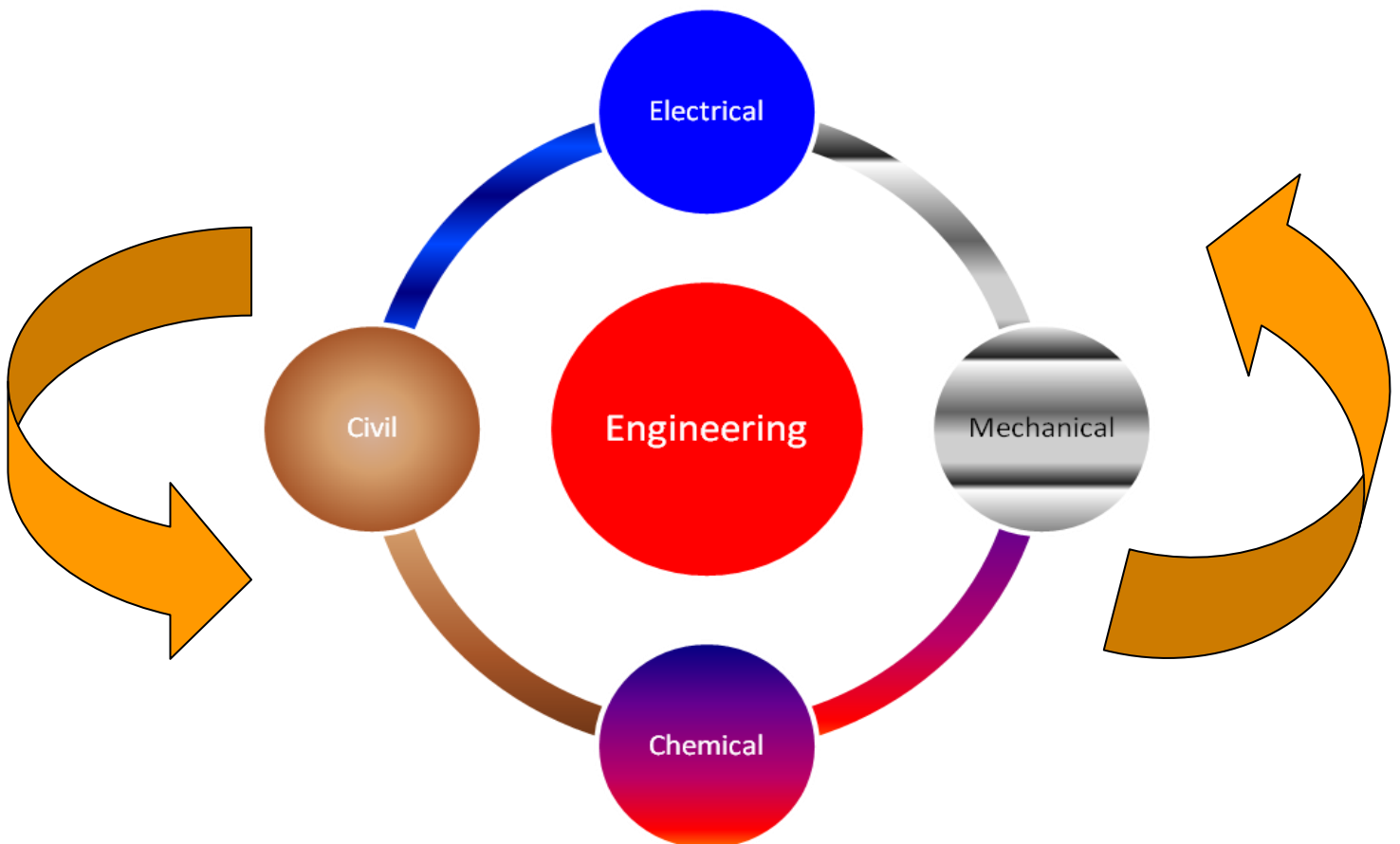
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First of all, I feel honored to write an article in the Alpha Eritrean Engineers Community (AEEC) magazine. The fact that this magazine is run by Eritrean Engineers for the sole benefit and reaching Eritrean Engineers gives me an added desire to contribute and do my share as an Eritrean. In order for you, as the reader, to understand my experience and desire to excel, I wish to begin from my childhood so that my story can encourage young Eritreans who think they do not have enough drive to excel in life.

I was born in a village in the Southern Zone of Eritrea in 1980. I did not have the fortunate chance to enjoy my father's care and love as he died when I was one year old. My mother, as a single parent, struggled to raise me, my brothers and sister and supported the family through farming. At an early age, I learned to work hard since I shared the responsibility with others. My mother greatly encouraged me to learn and try to change my life through education because that was my opportunity to break through the harsh and demanding life of the countryside such as my village. Being young, I was not completely aware of the importance and usefulness of education. Thus, during my elementary school, which was during the Ethiopian Colonial era, academically I performed below average.

After the independence of Eritrea, my interest in education started to grow. For the first time in my life I started dreaming of becoming like my big brothers, a medical doctor or an electrical engineer. Having the desire and goal to succeed helped me tremendously during my junior and high school education. In school, I excelled academically and as a result won academic

recognition each year. The involvement and support of my family and teachers was very important in the transformation of how I viewed things and my interest about education. After I graduated high school,

I joined University of Asmara as one of the 32 students who got full mark (4.0 points) in the Matriculation exam of 1998. University life was a bit tough for me since I was separated from my mother and people I cared about from my village. For the first time in my life, I had to live and attend school in an urban city. As a university student, I targeted to strive for excellence in my studies to become an engineer and finish my undergraduate study with good grades and this in turn would allow me to continue my postgraduate studies easily. After I joined the department of civil engineering in Asmara University, I did my best to reach my objective and finish my undergraduate study in 2003 with honors.

Once I finished my B.S. study, I was recruited within the Engineering department to tutor students in the graduate program majoring in civil engineering for their course and lab works. Due to policy in Eritrea, at that time, I was unable to achieve my long dream of continuing my postgraduate studies until 2010. I must admit that this period was the hardest and most difficult time in my life. I started realizing I was not going to be able to reach my ambition of completing my masters degree first. Instead, I was teaching civil engineering student at Asmara University and later at the Eritrea Institute of Technology (EIT) in Mai-Nefhi. During 2010, I received a wonderful opportunity to continue my education and I immediately took the chance

Now, at Masdar Institute (www.masdar.ac.ae) in United Arab Emirates (UAE), Abu Dhabi, I am studying Water and Environmental Engineering. The new Masdar Institute is a world-class research graduate university which focuses on sustainability and renewable energy.

This university is located at the center of Masdar City, a new field, which is carbon neutral and zero waste city. The university was established in collaboration with MIT thus has excellent faculties and research standards with full facilities backup. My master's thesis focuses in desalination of seawater, (i.e. getting fresh water out of the saline seawater) Desalination is an excellent and sometimes the only source of fresh water for regions which suffer from water scarcity. Such regions, mostly found in North Africa and the Middles East, have good saltwater resource making desalination an attractive option.

Currently the desalination process is an energy intensive technology; however the development of renewable energy is making the industry very promising even for developing countries like Eritrea. Eritrea, with its long coastal sea and many islands, may benefit from desalination technologies. The fact that this region of Eritrea suffers from lack of natural freshwater resources highlights the importance and relevance of desalination. The potential to develop our coastal area and islands into a tourist attraction sites and

resorts can only be achieved by having a reliable freshwater source. Hence the future importance and need of desalination technology for Eritrea is beyond question.

In conclusion, I would like to thank members of AEEC in reaching out to me and informing me about AEEC. Had it not been for them I would not have known about the magazine. I am happy to see Eritrean Engineers coming together via AEEC. So, let us work hard to improve ourselves first and then reach out to our country and people with what we have and can.

~ **Engineer Mussie Seyoum**

Hard to reach doesn't have to mean hard to do

A
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C

Bringing the **best** and the **brightest** together

“It is only through raising expectations and striving for excellence that our children can reach their full potential. “

~ **Brad Henry**



Comments & Suggestions Page

I just had a chance to glance on the AEEC magazine which you sent me in April. I will tell you my first impression waswoow. You guys are doing a phenomenal work! It is very informative and inspiring magazinegood job... keep it up.



Dr. Mengis Manna EE



I just read the article on AEEC which is great. I'm really proud of you guys. I was wondering if you guys know about EriSPN. Go to www.erispn.org and check it out. If you like it and if you would like me too I can share your article with our members. EriSPN stands for Eritrean Students and Professional Network and we have over six hundred members all over the world and we have many engineers so I'm sure they would find it interesting.



Engineer Mahta Woldelassie



Congratulation for issuing your AEEC's Magazine, Great topics.



Engineer Isaac Misgena



BIM goes beyond the design phase

Recently, I had the opportunity to attend a five week program on Construction Management offered by Turner Construction, which is a well known construction companies in the nation. Of the twelve topic covered, one of them was Building Information Modeling (BIM). As an Engineer, I have always been fascinated by the technological development and how the power of information and technology plays an important role in the world's future. I first heard about BIM at the workshop and had the opportunity to learn and understand more about this subject there. Based on what I learned, I would like to share this technological development and the undeniable benefits with all the readers of AEEC magazine.

When President Barack Obama gave his State of the Union address, he highlighted the need for investment in innovation, infrastructure and a clean energy economy. The President called for renewed attention to restore the country's prominence in math and science education and the importance of hiring new and qualified teachers in science, technology, engineering and the mathematics fields. President Obama received strong applause when he said, "We need to teach our kids that it's not just the winner of the Super Bowl who deserves to be celebrated but the winner of the science fair". Obama specifically made a reference to the power of Building Information Modeling (BIM) and recognized the role BIM can play in emergency management. The president stated, "It's about connecting every part of America to the digital age...It's about a firefighter who can download the design of a burning building onto a handheld device."

This sharing of information has stimulated awareness at the global level that is truly amazing.

BIM is the process of generating and managing building data during its life cycle.

It covers geometry, spatial relationships, light analysis, geographic information, and quantities and properties of building components such as manufacturers' details.

BIM utilizes the entire building life cycle, including the processes of construction and facility operation. Quantities and shared properties of materials can be extracted easily and scopes of work can be isolated as well as defined.

Systems, assemblies and sequences can be shown in a relative scale with the entire facility or group of facilities. Dynamic information of the building, such as sensor measurements and control signals from the building systems can also be incorporated within BIM to support analysis of building operation and maintenance.

This new technology, is fast establishing itself as a brand new approach to design-build-operate buildings within the twenty first century. Decades of efforts made by academic and research institutions have also resulted in this technology to be a reality in the Architectural-Engineering-Construction (AEC) sector. BIM is still at its infancy level and has not yet been common knowledge to the constituents of the AEC industry.

Building Information Modeling is more than just geometry. BIM addresses issues such as Cost Management, Project Management and provides a way to work concurrently on most aspects of building life cycle processes. BIM goes far beyond switching to new software. Instead, BIM requires changes to the definition of traditional architectural phases and requires more data sharing than most architects and engineers are used to. BIM is also able to achieve such improvements by modeling representations of the actual

parts and pieces being used to build a building. As a result, this is a substantial shift from the traditional computer aided drafting method of drawing with vector file-based lines that combine to represent objects.

Currently the interoperability requirements of construction documents include the drawings, procurement details, environmental conditions, submittal processes and other specifications for building quality. It is anticipated by proponents that Virtual Design Construction (VDC) utilizing BIM can bridge information loss associated with handing a project from design team, to construction team and building owner/operator, by allowing each group to add to and reference back to all information they acquire during their period of contribution to the BIM model. For example, a building owner may find evidence of a leak in his building. Instead of exploring the physical building, he can utilize his BIM to identify where the water valve, with a leak, is located in the specific area of the building. The owner may be also be able to identify the model the specific valve size, manufacturer, part number, and any other related information researched in the past, pending adequate computing power.

The use of BIM goes beyond the design phase of the project. It takes an important role during construction of a project as well as post construction and facility management. The purpose of BIM is to make the construction process more efficient and eliminate as much uncertainties as possible before starting.

Participants in the building process are constantly challenged to deliver successful projects despite tight budgets, limited manpower, accelerated schedules, and limited or conflicting information. Innovations in BIM boast of capabilities to ease the pain of project delivery.

The idea of Building Information Modeling is to construct a building virtually prior to building it physically, in order to work out problems, and simulate and analyze potential impacts. Furthermore, along the project anticipation and ease of project delivery, overall safety of the project will improve due to the elimination of uncertainty. Work sites will be safer because more items will be pre-assembled off site and trucked into the site to keep the on-site trades to a minimum. By using BIM, waste will be minimized on-site and products will be delivered as needed and not stock piled on site. This will further make a great impact in the way a construction project is managed by bring a safer jobsite, more accurate construction utilizing sophisticated design process which allowing sub contractors from every trade to add on critical information into the software before the actual construction begins.

We are fortunate to be alive during these interesting times and be in the construction industry. As professionals we are witnessing history being made every day. The internet is constantly changing in how we do business. Now we can see how Building Information Modeling (BIM) is radically shifting the construction business.

~ Engineer Samson Gonnnetz

“Never before in history has innovation offered promise of so much to so many in so short a time.”

~ Bill Gates

Electrical Engineering

Software Engineering

Mechanical Engineering

Bio - Engineering

Computer Engineering

Industrial Engineering

Civil Engineering

Nuclear Engineering

AEEC

Connecting & inspiring
one another to stir up
each and every one's
potential to come up &
reach higher

Eritreans who are currently looking for Engineering/Technical jobs

Name	Degree	Experience	Email	Phone Number
Samson Gonnetz	Civil Engineer	Five Year	samigonnetz@yahoo.com	(510) 495-4538
Thomas Araya	Computer Science	Seven ears	thomasaraya@yahoo.com	(510) 757-7352
Simon Haile	Electrical Engineer	One year	dhaile8@gmail.com	(678) 982-0147
Samuel Fessehaye	Electrical Engineer	Eight years	SBFessehaye14@gmail.com	(510) 830-7082
Kibrom Hadgu	Electrical Engineer	17 years	kibromwoldehaimanot@yahoo.com	(415) 678-7179

Current Job Opportunities

Companies or Government Jobs	Location & Number	Closing Date
Electrical Engineering		
http://jobs-boeing.com/st-louis/electrical-engineering	Saint Louis, MO (USA) (111013250)	July 07, 2011
http://jobs-boeing.com/los-angeles/electrical-engineering	El Segundo, CA (USA) (11-1013486)	July 07, 2011
http://jobs-boeing.com/los-angeles/electrical-engineering	El Segundo, CA (USA) (11-1013491)	July 07, 2011
http://jobs-boeing.com/los-angeles/electrical-engineering	El Segundo, CA (USA) (11-1013491)	July 07, 2011
Software Engineering		
http://jobs-boeing.com/washington	Kent, WA (USA) (11-1013427)	July 14, 2011
http://jobs-boeing.com/dallas	Dallas, TX (USA) (11-1012346)	July 11, 2011
http://jobs-boeing.com/riyadh/software-engineering	Riyadh, Saudi Arabia (11-1009023)	July 11, 2011
Industrial Engineering		
http://jobs-boeing.com/seattle	Auburn, WA (USA) (11-1013415)	July 13, 2011
http://jobs-boeing.com/seattle	Seattle, WA (USA) (11-1013415)	July 13, 2011
http://jobs-boeing.com/seattle	Tukwila, WA (USA) (11-1013415)	July 13, 2011
Mechanical and structural Engineering		
http://jobs-boeing.com/pennsylvania	Ridley Park, PA (USA) (111011817)	July 14, 2011
http://jobs-boeing.com/huntsville	Huntsville, AL(USA) (11-1012800)	July 01, 2011
Information Technology		
http://jobs-boeing.com/bristol/information-technology	Bristol, UK (England) (11-1013587)	August 23, 2011
http://jobs-boeing.com/bristol/information-technology	Bristol, UK (England) (11-1013510)	August 23, 2011
http://jobs-boeing.com/seattle/information-technology	Seattle, WA (USA) (11-1012649)	July 08, 2011

First of all, I am grateful to write this article for the Eritrean Engineers Community (AEEC) magazine. This magazine targets prospective engineers and in this article I will discuss means of succeeding in construction claims, since I work in construction management.

Within the last 10 years of my professional experience, I believe this area has been my biggest challenge in construction management field. From a contractor's viewpoint, claims are unresolved change orders. In fact, a contractor needs to make every effort to avoid or decrease any submissions of claims. It is clearly evident that a Contractor has to perform all the necessary procedures to prevent and alleviate delays to the Progress of Works which are beyond ones control. Pursuant to Clause (XX.x) and (YY.y) of the Conditions of Contract, in order to enable a Contractor to complete the whole Works without sustaining additional liabilities, an Engineer needs to approve the application after due consultation with the Employer for the requested Extension of Time along with all related cost implications. In my experience, Lack of document and knowledge has been the difficulty in preparing the claim analysis. Every steps requires reason how the delay impacted Critical Path Method (CPM). Fixed project schedule used in measuring project progress and contract performance.

Any change caused by change in scope of the project invalidates the original schedule and necessitates a new baseline schedule. Due to lack of coordination and knowledge in the area within the project teams resulting in big challenges to create a workable baseline schedule. I my last two projects, 860 Atlantic Improvement and Al Qusais pond park project, I received an extension of 22 and 120 days respectively. Based on my experience, I would like to share with my fellow engineers the necessary steps and procedures in documenting all required steps and processing claim analysis for time extension.

The documents required to analyze claim are:

CONTRACT INFORMATION

- a. Contract Data (prior to the impact)
 - i. Project Title :
 - ii. Project NO :
 - iii. Original Contract Duration. (Copy Attached in appendix #)
 1. Original project End Date :
 2. Contract Letter of Approval Dates.
 3. Contract Notice to Contract Dates.
 4. Site Possessing date :
- iv. Specific Key Dates. (The following dates should be relevant to the subjective Event)
 1. Project Pre-Set Mile Stone(s):

2. Receipt date of Contract Document(s) :
3. Drawings (DWGS) (For Construction):

4. The manner in which the work is to be prosecuted

b. Contractual References (Clauses under which the claim is made)

- i. Clause 00700 of General Conditions of Contract
- ii. Clause Section 8.02 of the General Conditions
- iii. DWGS NO# - Rev (Tender / For Construction) Consented to Clause 14 Program of Works. –
- iv. Contemporary Site Records.

c. Relevant Contract Parties

Parties involved in the activities related to the claim in subject are:

The Employer:

The Architect:

The Construction manager:

The Main Contractor:

BASIS OF CLAIM

Base of claim should be divided into three parts:

- I. Unavoidable Delays:
 1. Order issued by the Architect or
 2. Unforeseen delays changing the amount of work to be done,

II. Inclement Weather Delays

The contractor is prevented by inclement weather or conditions from proceeding with at least 75% of the schedule labor, material and equipment resources at least (5) five hours per work day on activities shown as critical on the most current and accepted schedule update.

CPM analysis starts when you have a table showing each activity in your project. For each activity, you need to know which other activities must be done before it starts, and how long the activity takes.

Notices and Mitigation Measures made by The Contractor.

As per the norms of construction industry, a keen contractor should show his best care, endeavors, and due diligence to facilitate the interest of both the project and the employer, and maintain project progressing throughout set of proactive preventive notices upon first spotting and prior to impact of any foreseeable Events.

Whilst, Te should upon The Occurrence of such delay event / factor, utilizing his best endeavors to set measurements (during, and after) necessary to prevent and/or mitigate

Such Event impacts on Part or all of The Project Progress.

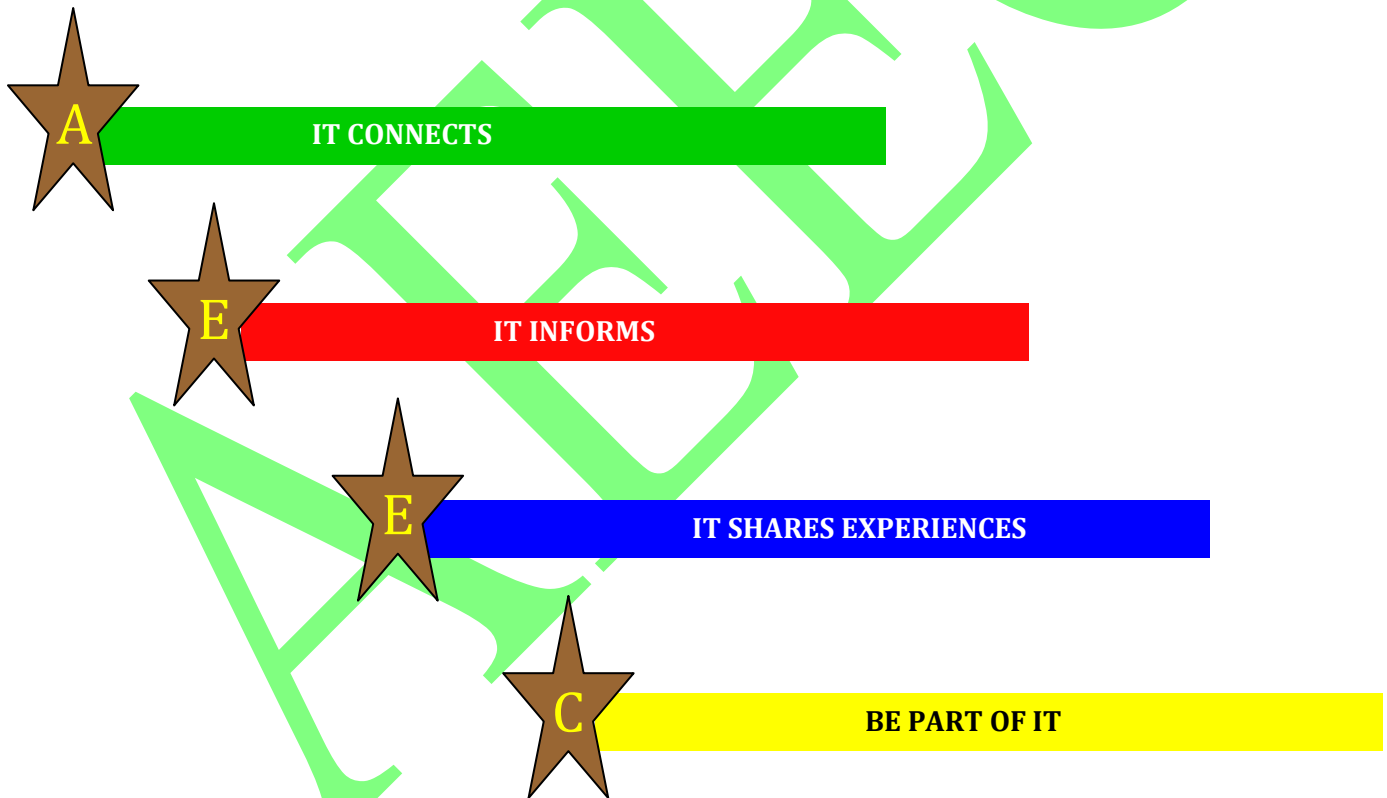
Handling claims and changes orders that affect cost and schedule will be discussed as below:

- I. Scope of change clauses
- II. Authority of owner personnel
- III. Types of Changes
- IV. Contract modifications : Reservation of impact and delay damages
- V. Proving Responsibility for delay
- VI. Pricing Certain changes
- VII. Disputes

I am thankful to write this article with relating construction claim the best way to solve analysis construction claim with establish of a reliable, realistic and accurate baseline schedule is extremely important because the basis upon which damages are measured for delay claims is usually the baseline schedule. Therefore, a baseline schedule's quality is essential.

I am thankful to write this article and I am looking forward to support my fellow engineers in this area. I would like to thank to AEEC magazine board member for the opportunity.

~ **Engineer Adane Woldeghergish**



About the authors

Mussie Seyoum (mussie_n@yahoo.com) earned his B.S. in Civil Engineering from Asmara University. Currently he is studying for his Masters in Water and Environmental Engineering at Masdar Institute (UAE).

Samson Gonnetz (samigonntz@yahoo.com) received his B.S. in civil Engineering from San Francisco State University.

Adane Woldegergish (adane.wold@gmail.com) holds B.S. in Civil Engineering from Asmara University. Currently he is working with W.J.R. construction and Management Company as Project Manager.

Got an Engineering experiences to share?

All you need to do is put them in writing with not less than 250 and not more than 650 words. We will put them on subsequent issues.

Send them to:

<Alpha0909@mail.com>

The logo for AEEC (African Engineering Education Council) features the acronym "AEEC" in a bold, yellow, serif font. The text is centered within a red oval. This oval is superimposed on a horizontal band that is divided into three equal-width stripes of green, red, and blue. The entire graphic is set against a white background.

AEEC