Horizons

Issue 3 *July 2011*

The Newsletter from Aarvee Associates

Food For Thought…

"Quality in a product or service is not what the supplier puts in. It is what the customer gets out and is willing to pay for. A product is not quality because it is hard to make and costs a lot of money, as manufacturers typically believe. This is incompetence. Customers pay only for what is of use to them and gives them value. Nothing else constitutes quality."

"We now accept the fact that learning is a lifelong process of keeping abreast of change. And the most pressing task is to teach people how to learn."

"Management" means, in the last analysis, the substitution of thought for brawn and muscle, of knowledge for folklore and superstition, and of cooperation for force. . ."

"We no longer even understand the question whether change is by itself good or bad, …We start out with the axiom that it is the norm. We do not see change as altering the order… We see change as being order itself--indeed the only order we can comprehend today is a dynamic, a moving, a changing one."

"In the political, the social, the economic, even the cultural sphere, the revolutions of our time have been revolutions "against" rather than revolutions "for"… On the whole throughout this period the man--or party--that stood for doing the positive has usually cut a pathetic figure; well meaning but ineffectual, civilized but unrealistic, he was suspect alike to [by both] the ultras of destruction and the ultras of preservation and restoration."

…Peter Drucker

(Peter Drucker (1909 – 2005) was a writer and management consultant whose books and articles explored how humans are organized across the business, government and the nonprofit sectors of society. He is one of the best-known and most widely influential thinkers and writers on the subject of management theory and practice.)

In this issue:

Cover Photograph: Ana Martin, stockvault·net

This newsletter can succeed only if people and projects from all our divisions and locations find a place in these pages. We invite you to make it happen, by contributing articles and profiles about your division and your branch, and other issues of interest to your colleagues.
Please send your contributions to newsletter@aarvee.net. or aarvee@aarvee.net

Kukatpally ROB

Steel Concrete Composite Continuous Bridge with 55^0 Skew Angle

Background

The design of the 120m railway portion of the Kukatpally ROB was a learning experience for Aarvee.

The ROB was originally designed as a 910m long ROB with pre-stressed concrete beams for all the spans. The original railway portion of the ROB was 120m and had a span configuration of 4 x 30.1m. This original configuration had a pier (RP18/LP19) at the centre of the two railway tracks with a 30.1m span on both sides of the centre of the tracks. Railway authorities had requested the pier RP18/LP19 to be removed due to its close proximity to the railway track.

This had changed the span over the railway tracks to a single span of 60.2m from the original 30.1m on both sides of the railway tracks. Also, by this time, the approaches and the piers on both sides were already constructed. This had restricted the Road Crest Level (RCL) from changing. Also, since a minimum vertical clearance of 6.250m is required from the soffit of the deck to the top of the rail level, there was little leeway in changing the soffit level of the deck. The above two factors restricted any major change in the depth of the superstructure.

At this stage, the re-design of the railway span portion of the ROB was awarded to Aarvee by the client, Hyderabad Metro Development Authority (HMDA). The scope of the work involved the design of both the superstructure and the substructure and obtaining design approvals from railways for the 120m railway span.

Features of the Railway Portion of the ROB

The Kukatpally ROB connects the main spinal road from KPHB to the Hi-Tech City. It crosses two railway tracks beside the Hi-Tech City MMTS Station. It has two carriageways each carrying two lanes of traffic. The ROB is on a high skew angle of 55 degrees.

The superstructure for the non - railway portion of the ROB consisted of four pre-stressed concrete (PSC) girders with a concrete deck slab on top.

The revised superstructure for the railway portion of the ROB consisted of a span arrangement of a 35m simply supported section and a 50m + 35m continuous span. Four steel beams have been proposed for each carriageway of the 35m simply supported span and Six steel beams for each carriageway of the 50m + 35m continuous spans. A reinforced concrete deck slab is provided on top of the steel beams.

The substructures are four circular piers connected by a pier cap at the top. The piers are supported on open foundations.

The Preliminaries

The first task was to fix the structural type and the suitable span arrangement for the 60.2m railway portion. The depth of the deck could be increased only marginally, since the top of the deck level was fixed and the soffit level had little lee-way to lower it.
Considering the above facts, it was found difficult to design the 60.2m superstructure as a PSC beams–slab deck system. PSC beams, due to their own weight, give large deflections at the mid span. This would reduce the vertical clearance available above the Rail Level. Hence PSC beams-slab deck could not be used as the superstructure.
To reduce the self-weight of the beam and the deflections, steel beams were proposed to be used as the main beams. Hence a Steel-Concrete Composite girder deck was decided to be used.

To reduce the self-weight of the beam and the deflections, steel beams were proposed as the main beams.

With regards to the span arrangements, the following options were considered:

a) Steel-concrete composite simply supported spans of 35m, 50m and 35m: The advantages with this system are that it is simple and it is easy to erect. However, the central span of 50m required deep girders (more than 2.3m) to restrict the deflections to approved limits. The steel quantity was also found to be uneconomical. Hence, this system was not taken forward.

b) Three span continuous steel-concrete composite girder system with a span arrangement of 35m + 50m + 35m: This option had advantages like:

- Reduced deflections in the central span to permissible limits.
- Sizes that can be conveniently fabricated and erected.
- Economical size of end spans (ideally 80–85% of internal spans)

By the time the job was awarded to Aarvee, the pier RP16/LP17 was already constructed with 4 girders for each of the two-lane as per the original approved plan. Also, the piers are located directly below the girder bearing positions. Hence, only four girders could be accommodated on this pier cap. However, six girders were required in the central span to control deflections. Since six girders cannot be accommodated on the pier cap of pier RP16/LP17, this option was not considered further.

c) One 35m simply supported span and one 50m + 35m continuous span, both with steel-concrete composite girder system: The form of structure proposed is a Steel-Concrete Composite Girder System with a reinforced concrete deck slab on top of the steel girders.

For the 35m simply supported span, the girder locations were matched with pier locations, so that the already constructed pier cap of RP16/LP17 is not subjected to additional forces from the superstructure of composite span. For the superstructure, four steel beams at 2.75m c/c spacing were proposed for each of the two lanes. The pier cap and pedestals at RP16/LP17 were already constructed. In order to minimise the modifications to the pedestals, the depth of the girder was adopted as 1768 mm (including flange plates) close to the original PSC beam depth of 1800mm. The cross section details of the deck for the 35m simply supported span are shown in Figure-1 below.

For the continuous span of 50m + 35m, six beams at 1.8m c/c spacing were proposed for each of the two lanes (refer figure-3). The depth of girders proposed was 1968mm (including flange plates).

Present Status of the Project

With the above span arrangement and girder sizes, the detailed designs were undertaken and completed. The designs were proof-checked and approved by the Civil Engineering Department, Osmania University. The proof-checked designs and drawings were submitted to the railways for their scrutiny and approval. The substructure designs and drawings were approved by the railway authorities and the work at site is progressing on the substructure part. The superstructure design is presently being reviewed by the railway authorities.

Challenges Faced

1) Launching/erection of Steel girders: The steel girders are fabricated at the factory and transported to the site in pieces. At site, these are launched onto the top of the pier cap and over the railway track. The girders will be launched during railway block periods and during nights. Due to the high skew angle of 55 degrees of the ROB, the access available for cranes to lift and place the girders on the pier caps is restricted, which necessitates cranes with high load capacity and boom length.

Also, due to the terrain, the cranes cannot reach the position to launch the girders. To enable them to reach the position, ramps have to be prepared from the nearest road/access point to the launching position on both sides of the railway tracks. Due to the high skew and the large span of 50m, it is difficult to lift and place in position a full 50m long girder. Hence, splices are provided in the girders which will be joined at site through bolt splicing. To temporarily support the girder at the centre, temporary crib supports will be erected between the railway tracks. (See figure-3 for the proposed launching scheme).

2) Safety of the railway embankment during construction: Due to the proximity of the substructure foundations to the railway embankment, it is necessary to ensure the embankment's safety during the construction of the adjacent substructures. The safety of the embankment will ensured by providing slope protection works to the embankment. Soil nailing, (using High Tensile Strength Wires) of the embankment with vertical ISMB beams to hold the embankment in place is recommended.

For both girder launching and embankment protection, detailed method statements explaining the procedures to be adopted will be submitted to the railway authorities for their scrutiny and approval before the actual construction starts at the site.

Knowledge gained

It was an interesting experience to design a steel-concrete composite bridge conforming to the latest IRC and IRS codes. This project has given Aarvee lot of confidence in the design of steel-concrete composite bridges.

Due to the complexities involved in the launching of the girders, meetings were conducted with the concerned railway authorities. These meetings have enabled Aarvee to gain knowledge about the railway procedures involved in obtaining the permissions for track possession (block periods) and their constraints in sanctioning approvals.

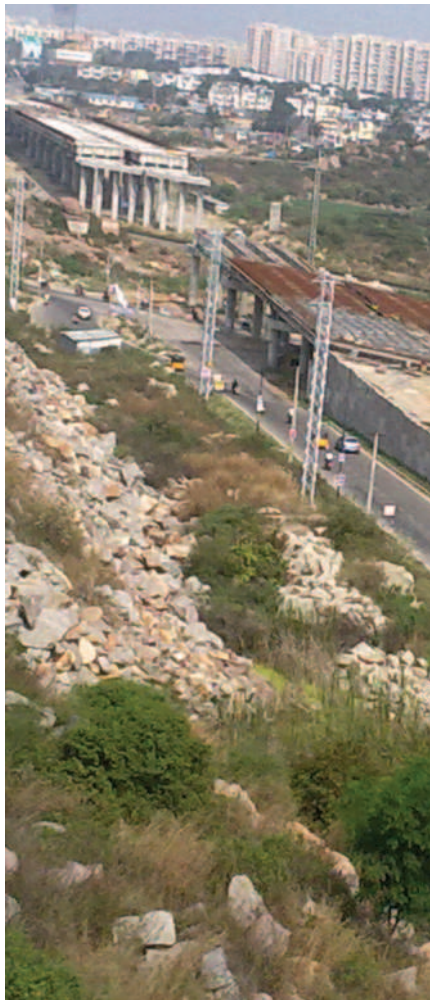
Meetings were also conducted with the girder fabricator and the launcher, which have enabled Aarvee to understand the basic intricacies involved in the fabrication and launching operations and the constraints faced by them in fabrication, transporting and launching the girders.

It was realized that all these meetings with various concerned people were really vital to understand the fabricators and the launchers' problems so that any issues could be resolved in the initial stages itself.

With all the knowledge gained, Aarvee is now better equipped technically to accept more such challenging projects.

- R Krishnakanth
Railways Bridges Design

- M.V. Suresh Kumar
Associate Vice President, Railways



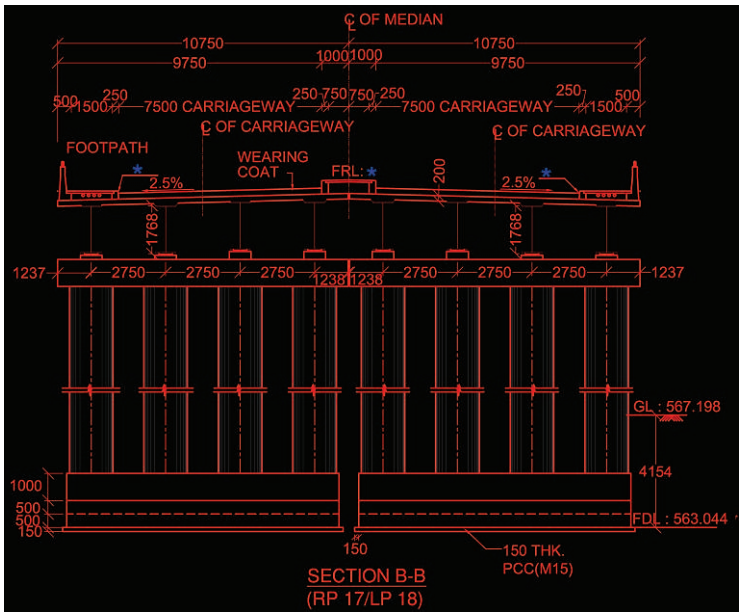


Figure 1: Cross section of the ROB in the 35m simply supported span

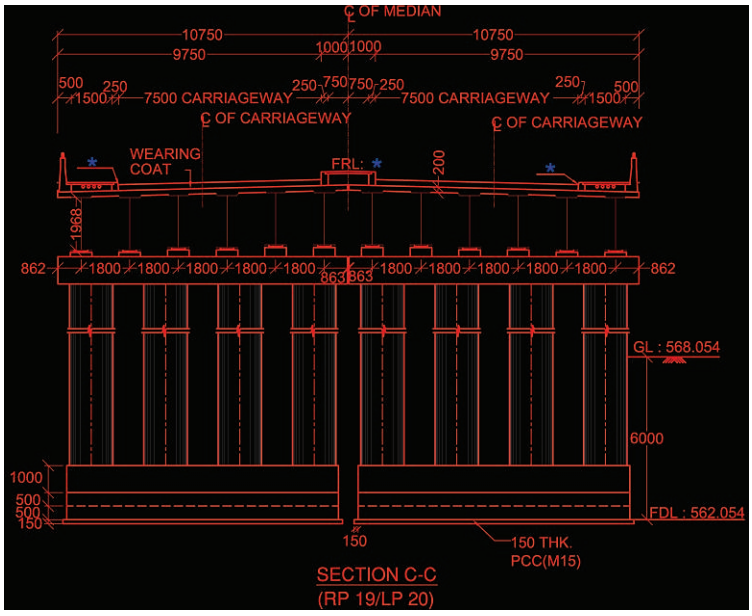


Figure 2: Cross section of the ROB in the 50 + 35m continuous span

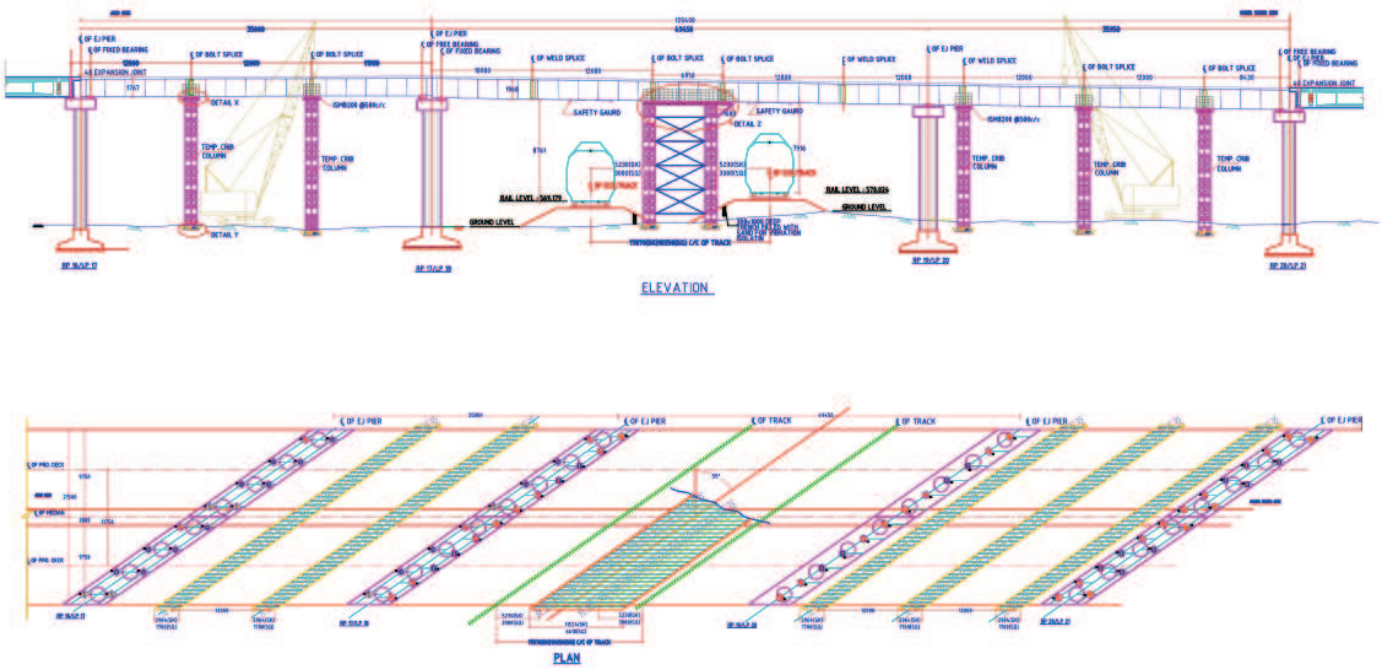


Figure 3: Proposed Launching Scheme

Lift Irrigation

Lift Irrigation

Lift irrigation projects, despite their high initial & recurring investments, are likely to play major role in irrigation sector in future as conventional systems of dams and barrages involve several problems such as submersion, rehabilitation & resettlement, environmental issues, inter state disputes, etc.

Introduction

Though more than six decades have passed since India became independent, the country still has many regions that face water shortages for irrigation and drinking. Many areas are yet to be brought under irrigation, those areas that are already irrigated experience periodic droughts due to the failure of the monsoon and other reasons. This exacerbates the income disparities between the areas that are already developed and enjoying assured water supply and the areas that are yet to be developed.

Lift Irrigation projects are likely to play major role in the irrigation sector in the future.

Why Lift Irrigation?

The use of dams and barrages as water retaining structures is on the decline, owing to problems such as submersion, rehabilitation, environmental impact, inter-state problems etc. Further, there are regions at higher altitudes to which gravity flow may not be possible.

Similarly, site conditions at source may not permit construction of dam or barrage. Lift irrigation schemes have assumed greater importance in this changed scenario. Owing to the above reasons, though the operating cost of lift irrigation schemes is high due to the cost of power consumption, they are still preferred in many cases.

Though the concept of lift irrigation is centuries old, with today's magnitude of head, discharge and pump capacities, the design of major lift irrigation schemes has become a science with advanced technology.

Objective of Lift Irrigation Schemes

A lift irrigation scheme can have many objectives like:

- Diversion of flood water to upland areas.
- Supplying water to regions located at higher elevation.
- Feeding tanks for future needs.
- Optimum utilization of water.
- Interlinking of rivers. Transfer of surplus water from reservoirs to regions where it is required

Planning and Design of Lift Irrigation Schemes

Although lift irrigation in the past sed to be proposed for smaller discharges, heads and lengths, today, major lift irrigation schemes with high discharges and heads are being planned to meet the growing demand for water.

The planning and design of major lift irrigation schemes involve the following components:

- Project Hydrology
- Alignment
- Scheme Hydraulics
- Pumps and Motors
- Pressure mains
- Surge protection system
- Pump houses
- SCADA – System

Project Hydrology

This involves assessing parameters like water availability, low water level, maximum water level and maximum flood level during the pumping period. The design discharge is arrived at based on crop and drinking water requirements duly considering seepage and evaporation losses. The water requirement of the crops will be non-uniform during the cropping period with lower values in the initial and final stages and higher values constituting the peak requirement in the middle stage. But the design discharge is made uniform by optimization duly utilizing balancing reservoirs en-route. The balancing reservoirs are provided for storing water during the high flows and releasing during the lean flows.

The number of pumping hours in a day is one of the governing factors in arriving at the design discharge of a lift irrigation scheme. For major lift irrigation scheme, the pumping could be 24 hours a day with dedicated power lines. However for minor lift irrigation schemes, the pumping may be 16 or 20 hours a day. The pumping hours for major lift irrigation scheme should be decided carefully as it has impact on cost of the scheme, due to pump capacity, pressure main diameter, surge pressures and power consumption.

Alignment

While selecting and finalizing the alignment of the water conductor system, the following aspects are considered:

- Topography
- Pump house locations
- Approach and gravity canal lengths
- Length of pressure mains
- Utilization of en route tanks as balancing tanks

Scheme Hydraulics

Upon finalizing the conceptual plan and alignment with balancing reservoirs and pump house locations, the hydraulic particulars should be finalized for the design of various components of the scheme. The design discharge for pumping should be worked out duly considering the water requirements for various purposes at different locations. If any balancing reservoirs are proposed between lifts, the design discharge is optimized accordingly.

The balancing reservoir standards - i.e., capacity, maximum drawdown level, full reservoir level, and maximum water level - should be finalized based on the ayacut proposed, pumping discharge and self yield. Finally all the balancing reservoirs is integrated in the system as a whole.

Pumps and Motors

In a lift irrigation scheme, pumps play a vital role in the performance and the efficiency of the scheme. The efficiency of lift irrigation scheme depends on the number, size, and type of pumps/ motors. A judicious combination of these parameters is very important in design as higher number of pumps makes the scheme costly where as lower number of pumps make the system prone to higher degree of risk.

Following are the important aspects to be judiciously studied while finalizing pumps and motors.

- Number of Pumps
- Capacity of the Pumps
- Types of Pumps
- Motor Capacity

Pressure mains

Pressure mains functions as artery of lift irrigation scheme and they consume lion's share of the project cost where particularly pressure main length is large. The type and diameter of pipe lines is judiciously adopted wherever lengthy pipes are proposed as length of pipe has a direct bearing on pumping head and on pump capacity and surge protection system.

In general, MS and PSC pipes are more common in irrigation schemes. Recently GRP pipes are also being used, but the performance of which is yet to be established. Some of the important aspects in design of pressure mains in lift irrigation schemes are as follows:

- Velocity/Diameter
- Number of Rows
- Thickness
- Spacing
- Laying of Pipe

Surge Protection System

Whenever power failure occurs, rapid changes in velocity and associated change in pressure results in the pipe line causing surge pressure. Power failure leads to movement of surge waves up and down along the rising main and which travel with high speed developing lower and high pressure all along the pipe line.

The surge generated can be controlled by providing air vessels, air valves, one way surge tanks, stand pipes etc as primary surge protection devises. In addition to the primary surge protection devices, some secondary devices like pressure relief valves, man holes etc., are also provide.

Surge analysis is a very complicated procedure and needs thorough analysis of the pipe line profile with respect to surge heads to assess the type and number of surge protection devices and their Locations. Due attention is given to the surge analysis of pipe lines for schemes with high head and lengthy pipes.

Pump Houses

The arrangement of pump house is not the same for all type of pumps. Based on the type of pumps the pump house may be classified as:
Wet Pit Pump House
Dry pit Pump house

SCADA System

Wherever multiple pumping stations are involved in a lift irrigation scheme, it needs proper monitoring and vigilance for better synchronization, for which SCADA (Supervisory Control and Data Acquisition) installation is mandatory. This collects and detects data such as:

- Non-functioning of pump / pumps in any of the pumping stations.
- Non Performance of any of the surge protection devices such as air vessels/one way surge tanks etc.
- Monitoring the inflow and outflow discharges of pumping station as well as pump discharges.
- SCADA will be controlled at one station and the total alignment can be monitored with it. The origin of failure of any component of the system en-route the alignment can be detected using SCADA, by which operation of other pumping stations can be controlled.

Conclusions

In the prevailing circumstances, the major lift irrigation schemes do play a vital role in the irrigation sector. Due attention is paid to the planning and design for better performance and efficiency of schemes.

Pumps function as heart of lift irrigation scheme and hence attention is paid in finalization of number, size, and type of pumps for better efficiency. Major lift irrigation schemes are designed for 24 hours pumping. The design discharge has to be optimised duly utilizing balancing reservoirs en-route.

As the pressure mains act as arteries of lift irrigation scheme, care is taken for pipes when they are to be laid in black cotton soils, water logged areas and at crossing of drains etc. Low velocity in pipe would be economical for the schemes with lengthy pressure mains, however higher velocity may be permitted for schemes with shorter lengths of pipes. Larger diameter pipes with less number of rows may be economical with respect to installation cost as well as running cost. Adequate clearance is maintained between pipes for stability as well as maintenance purpose. Due attention is given to surge parameters which are important for proper functioning of the pipe line.

Though the lift irrigation schemes are becoming common, they should be proposed judiciously as they require huge amounts of power for operation.

- B. Venkateswar Reddy
Director

- V. Balaguravaiah
Associate Vice President

In conversation with

Mr. M. Kishore Kumar

Director

Can you please tell us something about your family, childhood and education?

I was born in a village in Guntur district in Andhra Pradesh and both my parents were teachers in an upper primary school. I have two younger brothers. I was with my parents only up to the age of 9 and later I was put in boarding schools. I have been visiting my parents only once a while since then. I have studied from 5th to 10th standard in A.P. Residential School, Tadikonda and Intermediate in A.P. Residential Junior College, Nagarjuna Sagar. I was one of those few privileged students who have received free education for a continuous period of 8 years in those institutions that time as one had to pass through entrance examinations at three stages. I proudly owe my entire grooming to the foundation laid in those schools in my childhood.

Why did you choose civil engineering as a career?

To be honest, I always wanted to become an English Teacher till I got in to Civil Engineering in REC, Nagpur. I liked teaching and I liked English and people see the influence of those desires even now.

Who was your role model while growing up?

I always wanted to be myself. When I joined Engineering I was inspired by the teachings of Swami Vivekananda. His famous words – You can drink oceans and crumble mountains by your will - always used to ring in my ears and instill confidence. That spirit keeps me going even now.

Where was your first job? Can you tell us more about your career before joining Aarvee?

I joined as a junior Engineer in AFCONS, a Mumbai based Marine Construction Company and worked for 12.5 years till I joined Aarvee in Oct'98. During my tenure in AFCONS, I worked on marine projects for 6.5 years and on road projects for 6 years. I was involved in building the port facilities, fabrication of barges, under water river training works and road works. The river training works in Haldia were not only challenging but also life threatening. I was trained by nature on a daily basis to face any kind of tough situation in life. Every time I had to learn things from scratch with no one to guide - it was very frustrating but provided a wealth of insight in to the nitty-gritty of everything. I can never forget my life there.

Can you tell us more about your life at Aarvee and the high-points of your work here?

Aarvee was an entirely new experience! It was hard to change my tough style to a softer one. It took some time to understand the service industry and its requirements. But, it was not that difficult as I had my boss to emulate. I had to change my attitude of calling a spade a spade to more of a diplomatic style. I learnt that my behavior has to reflect the attitude of the organization and I can no more be myself! My actions or reactions represent my organization and not me! I cannot have a free will. That was the first lesson I learnt. Learning from the team mates, guiding them to achieve their goals with my experience in getting things done, was the way I started and I gained the grip on all the activities soon to be on my own and lead the Highway Design and Supervision Projects under the guidance of the Managing Director. I had the privilege to work under the Managing Director(s) from day one.

The nicest experience I had was to see an organization built carefully brick by brick with a clear vision, direction and values. I have seen almost all the divisions spread their wings and

emerge in to independent and full-fledged profit centers in front of my eyes. The focused business development activities, the recruitment drives, the setting up of systems, I loved all of them. Every design project was a challenging and learning experience. Every supervision project posed new contractual issues and nurtured my skills in handling the projects and clients.

What has been the proudest moment in your engineering career so far?

I am yet to see the pinnacle of my career. There have not been any proud moments as I always looked at the empty portion of the glass. I am overwhelmed by the distance I have to travel before I can think I am successful. There is so much to learn, so much to do, when will I reach there! Well, there have been many happy moments! The joy of achieving short goals and milestones kept me progressing till now and will keep doing so in future.

Each step we take and each moment we live, should take us closer to our goal.

What is it about your work that you most enjoy? And what are the biggest day to day problems you face? How do you tackle them?

As such I enjoy every aspect of my job. Dealing with technical and contractual issues on a day to day basis keeps me healthy and sharp and I like it. What I am able to tackle, are not problems. What I can't tackle, I delegate upwards!

Can you tell us more about your division and its achievements?

There is so much to do I really can't relish what we have achieved. I always look towards the future and the long wide road ahead. We don't brood over the past but dream of the future.

What are the opportunities and challenges that your division is facing now? What are your plans for the future of your division?

It's an era of abundance! There is ample work for everyone! There are so many opportunities around! We need more resources! We need systems and committed staff to deliver a quality product under the current pressure for quick deliveries - They always need things to be delivered yesterday! The main challenge before us is to expand the capacity of the Division further to deliver more projects - get the right people, train the young teams and build the capacity! It's always less in the ever expanding world of opportunities. If you relax, you are left behind! You better be running to maintain your position!

What is your secret mantra for managing your division? What do you think are the most important qualities in a leader?

Motivation to Compete! But, it's not a secret anymore and my people know it! Beyond that I mingle with them like a friend and try to reduce the hierarchical difference at least up to one level.

A leader should live the life he preaches and set an example before others to follow! Lead them, guide them, laugh with them, take responsibility for the mistakes they do and give credit for their achievements. The objective of a leader is to see that everyone performs their best all the time – in a sentence 'Use all your people, all their skills, all the time'! Imagine the quality and magnitude of the results we would achieve!

A leader cannot succeed alone. It's a team game, we have to play together. No single person is as good as a team. Further, having a leader at the top is not adequate! Leaders should be there at every level. One should choose to lead and take charge, wherever they are. A leader must teach his people how to make decisions, give a lot of freedom and protect them as and when they are making the wrong decision. Prevent them from committing mistakes by close communication.

The greatest challenge before a leader, beyond everything, is to groom his successors! Multiple successors! Who can perform better than the leader himself!

What, in your opinion, are Aarvee's strengths and what are the areas that need to be strengthened?

Aarvee's strength is its leaders and its people! The vision, the drive and the tenacity of purpose of the management sets the course and the people explore unknown territories and lead themselves to success. Aarvee had always demonstrated unusual boldness and came out successful in every new venture. It found opportunities even in failures!

The key to Aarvee's success is the freedom that the management gives to its leaders! The freedom which comes with guaranteed support,

guidance, understanding and invisible presence of the management.

Aarvee needs trainers and time for dedicated training! We have to train everyone! At every level! Altogether! Aarvee has to nourish the natural zeal dormant in its employees to learn! Make them powerful! They have got to be the best! Wherever they go! We have to achieve such Competitive Competence! I also began to understand that a little more emphasis on Employees' Welfare can invoke irrevocable commitment in them.

The feel good factor of 'we are a family', which was responsible for the success of the company till now, needs to be preserved in the scenario of ever exploding employee population and it is a challenge!

In a sentence – what is your philosophy of life?

I borrow it from Robert Frost – 'The Woods are Lovely dark and Deep, But, I have promises to keep, I have miles to go before I sleep, I have miles to go before I sleep!'

As such, I believe, each step we take and each moment we live, should take us closer to our goal.

What is your advice for the young engineers who are beginning their careers at Aarvee?

Performance is generally measured by whether you fall short of the expectations of your superior or whether you exceed. Doing your best is not adequate but you must achieve the desired results. So, you should seek to know the expectations of your boss regarding the performance of an activity and desired results. You should ask for the required resources and guidance. Ask what you want and give in return what is expected of you.
Secondly, think about the company and contribute to the company's growth, your individual goals will automatically get fulfilled.

Your technical, interpersonal and communication skills will take you a long way in your career. Develop them consciously and consistently. Knowledge is Power! Build it up! Keep thinking about your organization's goals, read codes, journals, manuals, books, listen to the professionals, attend conferences, workshops, seminars, observe successful people, learn from other's mistakes and keep learning! We can't make all the mistakes ourselves and learn! We don't have such a long life! Make the best of the time you have! It's very precious!

Email and Internet Usage Tips

For email security, don't use gmail or yahoo for emailing work information. Use your company email account responibly and only for business purposes. Email etiquette does exist. Minimize internet surfing during work hours and separate Facebook or MSN chat time from work time

Some tips for making a professional impression when using email:

- If you are writing to someone you don't know, a simple "Hello" is adequate. Using a salutation such as "Dear Mr Smith," is too formal.
- Clearly summarize the contents of your message in the subject line.
- Don't use the CC (Carbon Copy) function to copy your message to everyone.
- Use BCCs (Blind Carbon Copies) when addressing a message that will go to a large group of people who don't necessarily know each other. Just as it is not polite to give out a person's telephone number without his or her knowledge, it is not polite to give out someone's e-mail address.
- Keep your messages short and focused.
- Check your spelling and grammar.
- Avoid using all capital letters. IT'S THE EQUIVALENT TO SHOUTING IN SPEECH.
- Don't use emoticons in business emails.
- Don't write anything you wouldn't say in public. Nasty e-mails should always be avoided.
- When responding to e-mail, do not respond to all recipients, unless you absolutely need to.
- Avoid sending e-mails to large numbers of people unless you have a serious reason to do it. You could be accused of 'spamming'.
- As a courtesy to your recipient, include your name at the bottom of the message.
- Consider using a signature at the bottom of your email. This will provide the recipient with all your contact information.

Cell Phone Usage Tips

Having your cell phone at work can be useful but it can also be very disruptive. Your friends and family can reach you anytime, anywhere, which can be annoying. When you're on your own time, the choice to turn off your cell phone is entirely yours. When it comes to using your cell phone at work, however, you have to be mindful of your co-workers and your boss, not to mention your own ability to get your job done. Here are some rules you should follow if you have your cell phone at work.

1. Turn Your Cell Phone Ringer Off
If you have your cell phone at work, it shouldn't ring. If you don't want to turn off your cell phone completely, at least set it to vibrate. The sounds of different ring tones going off all the time can be very annoying to others.

2. Use Your Cell Phone Only for Important Calls
If you have your cell phone at work, you should only use it for important calls. What should you classify as an important call? Your child calling to say he's arrived home from school safely, and family emergencies that you must deal with immediately are important. Your friend calling to chat, your child calling to say the dog had an accident, or your mom calling to tell you your cousin is engaged should not be considered important.

3. Find a Private Place to Make Cell Phone Calls
While it's okay to use your cell phone at work for private calls during breaks, don't stay at your desk. Find somewhere else to talk, where your conversation can't be overheard, even if what you're discussing isn't personal. You may be on a break but your co-workers have a job to do.

4. Don't Bring Your Cell Phone to Meetings
Even if you have your cell phone set to vibrate, if you receive a call you will be tempted to see who it's from. This is not only rude; it is a clear signal to your boss that your mind isn't 100 percent on your job. All calls can wait until your meeting is over or until there is a break. Remember, there was a time before we had cell phones.

Oops! Watch your English!

The concept of errors in English usage is an indistinct one. No list of errors—no matter how diligently memorized—can make a person into a fine writer. The best alternative is to do lots of reading and writing. However, in today's world, this has become quite redundant. There are tiny deviations from standard practice few people will notice or care about. It is these which should be dwelt upon at length.

A glance at some of the common errors in English usage:

1. Ampersand (&)

- Used when they are part of the name of a company (e.g. Proctor & Gamble etc.)
- Used when two names are linked to form one unit (e.g. Batley & Morley)
- Used in 'R&D' and 'S&T'
- Shouldn't be used in between sentences instead of 'and'

2. Definite article (The)

If an abbreviation can be pronounced, e.g., UNESCO, NATO, it does not require the definite article. Other organizations except companies should usually be preceded by 'The'.

Example: The BBC, The KGB etc.

3. Apostrophes

For singular words, names ending in s and plurals that do not end in s use the possessive ending 's.

Example: Boss's, Jones's, Children's etc.

For words ending in s, s' is used for the plural form.

Example: Cisco Systems'

4. Brackets

There is not gap between the brackets and the text enclosed, but there is a gap before the opening of the bracket and after the closing of the bracket.

Example: On those (hopefully) very rare occasions

If a sentence is enclosed in brackets put the full stop inside the brackets.

If the information in the brackets is part of the sentence the first letter is not capitalized (as in the above example).

5. Where colon is used, there is no gap between the end of the word and the colon.

Example:

6. Initials in people's and companies' names take point (.) with a space between initials and name, but not between initials.

Example: P.Q. Kumar

7. **Units**

Lower case abbreviations should be used with no space after the number.

Example: Kilometers is km (NOT Km/ kms) as in 15km, 15kg etc.

Usages of units:

Meter – m (NOT mts.)
Litre – l (NOT lts.)
Square meter – sq. m
Cubic kilometer – cu. km

Don't use nos. to indicate number of units.

Example: 2 Bridges, NOT 2 Nos. Bridges.

To use abbreviation for number use No.

8. Use lower case for i.e. and e.g.

9. Never start a sentence with a figure; write the number in words instead.

10. Compass points

Lower case shall be used for east, west, north, south, north-east, north-west etc., except when part of a name.

Example: North Korea, South Africa etc.

11. City is capital 'C', even though City is not integral part of their names.

Example: New York City

12. Watch out for the homophones – Words that sound the same but have different spellings. Sometimes your spell check might correct the spelling to the wrong word.

Examples: Break and Brake, Cite and Site, Coarse and Course, Hole and Whole, Here and Hear, Plain and Plane, Steel and Steal, Threw and Through, To, Too and Two, Wait and Weight, Where, Were and Wear, Weather and Whether, Weak and Week, Would and Wood, Write and Right etc.

These are just the tip of the iceberg. Do not forget to spell check your mail/document before you send it. Spell Check… Spell Check… SPELL CHECK!!! While spell checks might save you a lot of embarrassment, if you don't proof read in the end, it might just be the cause for more trouble. When in doubt take a moment to verify the meaning in the dictionary (integrated in your word document/mail). Watch out for the Autocorrect bloopers or the next time you want to say "Let's meet tomorrow" you might end up saying "Let's meat tomorrow!"

An internal review meeting among division heads, for the implementation of Quality Management System (QMS) in the organization, was held on 31st of May to discuss about

- Initiation of QMS in each division
- Current Status and pending issues of each division
- Target dates for further reviews and next level meeting
- Discussion about QMS procedures adopted by Irrigation division

The kick-off meeting with consultants (Confluence Business Solutions (P) Ltd.), for implementation of Quality Management System in the organization was held on 5th of July, wherein the key discussion was about implementation of QMS and fixing the time line for baseline assessment and auditing.

WELCOME TO GTEs & PGTEs

We welcome the 50 new trainees who have joined the Aarvee family through interviews conducted on 14th May and 25th June at Hyderabad and campus recruitments at NIT Warangal and IIT Kharagpur. Training sessions for the new recruits were held from 11th of July, 2011.

'All the best to the sports persons of Aarvee for the upcoming indoor games!'

Kansai International Airport

Opened in 1994, the Kansai International Airport is one of the biggest civil engineering projects ever undertaken. It involved the creation of a large-scale man-made island in the middle of Osaka Bay using unique technologies . A 3km long bridge connects the island and the mainland. The island, which is a 30m layer of earth over the sea floor, required 21,000,000 m3 of landfill (acquired by excavating three mountains). A sea wall was first constructed, prior to the full scale reclamation work, to prevent dispersion of turbidity into the surrounding sea. The island had been predicted to sink gradually due to its own weight. But even today, more than 15years after the opening of the airport, it is still sinking!

Why? The sea bed consists of a clay layer called the Holocene clay layer, approximately 20m in thickness, below which is the Pleistocene layer, that consists of alternating layers of hard clay and gravel, adding up to hundreds of meters. Sand Drain Method was used to artificially speed up the process of settlement in the Holocene clay layer. The continued settlement of the island is due to the settlement in the Pleistocene layer. This can never be stopped! The pillars under the airport terminal building are being jacked up to compensate the effects of unequal settlement of the Island. Also, the airport has survived natures' most devastating furies - are earth quake (M7.2), due to its earthquake engineering and a typhoon with wind speeds of up to 200 km/h.

Kansai International Airport

Overview

Dimensions of the Island	: Length – 4km; Width – 2.5km
Volume of Landfill	: 21,000,000 m3
Ground treatment technology used	: Sand Drain Method
Predicted settlement	: 5-8m
Actual settlement (upto Dec '10)	: 12.78m
Average depth of settlement in 1994	: 50cm/year
Average depth of settlement in 2010	: 7cm/year
Foundation of Terminal Building	: Raft foundation directly on the seabed
Awards	: One of the ten 'Civil Engineering Monuments of the Millennium' – ASCE

Projects won (from March - May 2011)

Highways & Bridges

Construction Supervision and Contract Administration of KSHIP II Stage I Roads in Karnataka.

Pre-bid Services for Gwalior – Shivpuri Section of NH 3 in the State of Madhya Pradesh.

Construction of Bridges across Dibang river system and connecting road between Bomjur-Meka Section of NH 52 and construction of a bridge across river Lohit at Alubari Ghat and the connecting road between Chowkham-Digaru Section in Arunachal Pradesh

Feasibility study for identification of External Road Connectivity for the proposed port at Nargol in Gujarat.

International Projects

Design and Detailed Engineering of Alembi to Mikouy road section in Gabon.

Irrigation

Pre-bid Engineering services for the 2 EPC Irrigation canal packages for the Sardar Sarovar Narmada Nigam Limited (SSNNL) in Gujarat.

DPR for Remodelling of Tungabadhra Project Right Bank Low Level main canal in Karnataka.

Architecture & Buildings

Planning and designing of conference halls block at NSP Campus for World Bank office accommodation at Nagarjunsagar in Andhra Pradesh.

Urban Planning

Preparation of Master Plan for Kurnool Municipal Corporation area in Andhra Pradesh.

Railways & Metro Rail

Design Engineering & Project Management Services for construction of Private Railway Siding taking-off from Bandidih Station under Adra Division of SE Railway in West Bengal.

DPR for the development of Railway Infrastructure and Private Railway Siding work for the proposed 6 x6 660 MW Coal Based Power Plant at Dabhaura, of WC Railway, in Madhya Pradesh.

FS, Engineering cum Traffic Survey and DPR for the development of rail infra facilities of the railway siding taking-off from Bamur RS to serve the proposed 1980 MW JRPL Power Plant at Kishorenagar, of ECo Railway, in Orissa.

Techno-feasibility Study Report and DPR for obtaining approval of SEC Railway for the development of private railway siding taking-off from Murhipar railway station under Nagpur division in Maharashtra.

DPR for the provision of Railway Siding facilities at Hotgi, of Central Railway, in Maharashtra.

FS for the proposed private railway siding taking-off from Banspani railway station in CKP Division of SE Railway in Orissa.

Feasibility Study for providing In-motion weighbridge in the existing Orient Cement Devapur Yard, of SC Railway, in Adilabad District of Andhra Pradesh.

FS for the proposed modification of rail infrastructure for the Raigarh Plant of M/s. JPL and upcoming projects, under SEC Railway Zone, in Chhattisgarh.

Survey, Preparation of Feasibility Report, RTC, Design and DPR for the construction of proposed railway siding taking-off between the mid-sections of Silyari & Baikunth railway stations, of SEC Railways, in Chattisgarh.

Feasibility Study and report on the rail connectivity taking-off from the mid-section of Robertson & Bhupdeopur, of SEC Railway, for 1200 MW Coal based Thermal Power Project in Kharsia Tehsil, Raigarh District of Chattisgarh.

Pre-Feasibility and Alignment Study of 3 sites, of EC Railway, for proposed super critical thermal power project near Boinda, Angul District in Orissa.

Pre-Feasibility Study for proposed railway siding taking-off from Saketeshgarh station of NC Railway, in Village Dadri Khurdh near Mirzapur District of Uttar Pradesh.

Reconnaissance Survey, Feasibility Study, Preliminary Engineering Survey and DPR including approval from Railways and Project Management to provide Rail Connectivity to CSPPL at Chattisgarh.

Reconnaissance, Techno-economic and feasibility survey for construction of a Private Railway Siding providing direct connectivity from M/s. Welspun Plant at Anjar to MPSEZ Railway Line between Adipur & Mundra on Western Railway in Gujarat.

DPR for the construction of container terminal yard for the south port of MPSEZL and connecting the rail line to the existing rail line between Cargo Complex and R & D Yard, in Western Railway, in Gujarat.

Consultancy Services for provision of RLPF & barricading in between GLE yard main line and NBVL through railway siding in Andhra Pradesh.
Client: Nava Bharat Ventures Ltd.
Reconnaissance Survey and Feasibility Report to provide goods line & rack point facility Kultharia Railway on Danapur of EC Railway in Bihar.

Feasibility Report, DPR, Detailed Engineering and Project Managemet Services for Construction of Railway Siding at Kakinada in Andhra Pradesh.

Reconnaissance Survey for the proposed siding locations with suitable take-off and connectivity arrangement with the proposed common Rail Corridor at Angul District for evacuation of Coal from Mandakini -A Coal Block in Orissa.

Reconnaissance Survey and Feasibility Study for the Rail Connectivity and proposed Private Siding for BCCL for transporting Bulk Cement for three stations between Karjat to Panvel Section within the existing railway network in Maharashtra.

Feasibility Study for Railway Siding for Gadarwara Super Thermal Power Project in Madhya Pradesh.

DPR for the development of rail siding at Nagulapally Station on Secunderabad – Wadi Section of South Central Railway in Andhra Pradesh.

Design of Sikanderpur and Gateway Tower railway stations, of NC Railway, in Uttar Pradesh.

Detailed Survey, Feasibility Report, DPR, obtaining approvals from Railways and Detailed Engineering for the proposed railway siding taking-off from feasible location on the RCF line near Ispat Plant on Pen, Thal section, of Central Railway, in Maharashtra.

Rail Connectivity related Survey for Nargol Port, of Central Railway, in Maharashtra.

Reconnaissance Survey, Feasibility Report and Detailed Engineering for proposed railway siding taking-off from Tattaparai railway station, of Southern Railway, near Tuticorin in Tamil Nadu.

Feasibility Study for Muniguda Railway Siding, of Eco Railway, in Orissa.

International Projects

Feasibility Study for site selection for railway siding and assessment of facility required for transporting the material at Libreville, Gabon.

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