Development and Implementation of Project Culture—Case Study of New Campus Building of SUES

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ABSTRACT

Establishing good project culture in a project is the important precondition to achieve project success or to ensure outstanding results, but project management culture in the project application are ordinarily neglected or misunderstood at present in China. The project of new campus building projects of Shanghai University of Engineering Science (SU ES) is system engineering has the characteristics of big sum of investment, urgent schedule, and high-level quality standard. With good project culture plays important role it, this project got eminent achievement. This paper takes the SU ES as an actual case to systematically analyze the specific measures, methods, procedures and processes of how to apply the project culture in a project from the two perspectives of development and implementation. The ways and means will provide exercisable reference for similar projects.

INTRODUCTION

The new campus of Shanghai University of Engineering Science (SU ES) is a system engineering project with large sum of investment, multiple project items, and urgent schedule. After laying the foundations in March 2003, many individual buildings including teaching building, dining hall, graphics and text information center, engineering practice center, administrative building, teacher and student activity center, gymnasium and art building have been built one after another. Since then SU ES solved many problems such as scattered layout, narrow spaces and outdated facilities. The new campus, which is called Songjiang Campus, has a floor area of 78 hectares and building area of 230,000 square meters. It is now a modern and garden-like campus equipped with information system. Although the requirements on construction schedule, quality, and budget were very high, the project achieved a great success, thanks to the efforts of the management team of the owner.

Knowing that a good culture is extremely important for success of the project, members of the project management team paid great efforts in establishing project
culture and rules from the initial stages of the project. The results proved that project
culture played an essential role for success of the project.

ESTABLISHING PROJECT CULTURE IN THE NEW CAMPUS OF SUES

Guiding Ideology: Foundation of Project Culture

In the planning stage, SUES developed the guiding ideology and total construction
goal of the project, which serves as a basis to build a modern and garden-style campus
with well-established information network according to high construction standards.
In the first regular construction meeting for the new campus of SUES, which was held
on March 18, 2003, members of project management team (Construction Department)
informed companies involved in the project the guiding ideology: five objectives -
quality, progress, investment, management and safety of the project, which in details are:

- Ensure 100% first-passing rate, district-level quality structure and obtain the
  Magnolia Award;
- Ensure completion of the project as scheduled before start of the new semester;
- Comply with management standards for city-level construction site;
- Ensure safety and zero accident; and
- Make sure the total project investment is within the budget.

Based on these targets, project management team made a general working target
and detailed management requirements on “work quickly while maintaining a good
order”, “respect science”, “enhance management”, “safety”, “ensure quality”,
“reasonable organization”, “complete the project according to the schedule”, “team
work and cooperation”, “timely communication”, “fair and justice”, “observe code of
conduct and perform duties faithfully”, “overcome difficulties”, and “pioneering
spirit”. The general target and detailed management requirements laid a solid
foundation of the project culture. They were essential for internal management of the
project team and construction works. They reflected the attitude and spirits of site
management staff and ensured reasonable organization of construction work and
completion of the project as a “double A” project.

To ensure smooth implementation of the project, the project management team
made a series of management measures, including “work in accordance with
regulations and strive for double A project”, “establish one ideology (hard working and
dedication) and two concepts (responsibility and integrity), enhance three aspects
(on-going education on site, well-established rules and regulations, and standardization
of operation) and carry out four prevention (prevention of quality risk, economic crime,
major accident, and impact to local residents), and ensuring quality work, protecting
good managers, ensuring well-being of workers and peaceful life of local residents”.
These measures were advertised regularly in the construction site and accepted by
participating parties of the project. With such well-defined guiding ideology, it was
able to clarify the direction that people need to follow and targets people need to work
for. This allowed smooth implementation of the project.

Values: Core of Project Culture

Project values are the core of project culture and can affect behaviors of people
involved. Therefore, it is necessary to select values that are characteristic to the project.
This project has several unique characters. First of all, it is a university construction project and different from development of residential or commercial buildings. Secondly, the project is featured of big budget, short construction period and high standard. Thirdly, there are many organizations involved in the project. One construction unit may include 40-50 subcontractors and hundreds of materials. And the construction work was also very complicated. Fourthly, members of the management team of the owner (Construction Department of SUES) had been working on infrastructure construction, design and project management for a long time, and were very experienced in these fields. Finally, the construction teams and management companies were highly skilled.

Based on the characters of the project and the guiding ideology, the owner and participating parties agreed on common values to be followed in implementation of the project. These values are:

- Creating a building brand and applying good control of quality, progress, budget, and safety;
- Making sure “the interests of the project are of the highest priority”. All participating parties were required to be “devoted” and “less selfish”. The project is a public project. It is different from commercial projects that aim for the maximum profit, thus all participating parties should consider public interests more than those of individuals or organizations.
- Establishing awareness of total quality management: allow everybody to be aware of the project quality. Attach importance to process quality and intermediate work quality, so as to ensure quality of the project.
- Cooperating and coordinating as a team for the same target; and
- Ensuring mutual trust, responsibility, integrity, and creating a harmonious working environment.

**Rules: Success of Project**

Rules, procedures and code of conduct guarantee normal operation of organizations, achievement of targets and ensure good behaviors of members of organizations. They are also essential for ensuring timely completion of project and encouraging workers to strive for achieving project targets. Rules reflect characteristics of project and the values, style, and traditions of project management team, and are standards that need to be enforced compulsorily. Therefore they constitute an important part of project culture. To ensure implementation of the project culture of the new campus project of SUES, the management team has made many rules.

**PROFESSIONAL MANAGEMENT SYSTEM**

Considering the characteristics of the project, including short construction period, large construction site, high workload and high requirement on quality, SUES established a construction leader team and a site working group (“Headquarter”). Members of the leader team included leaders of the university and those from University Office, Construction Department, Financial Department, Accounting Department, Auditor Department, President Office, Logistics and Asset Department, among others. The investment supervisor, who was the representative of the owner, was also involved in the leader team and participated in discussions for making decisions related to the new campus construction. The site working group, which was a
highly efficient team, consisted of experienced members from the Construction Department and other departments of SUES. SUES also employed project supervisors, investment supervisors and agents to help the owner of the project. The organizational structure and responsibilities were clearly defined in the whole project. Organizational structure is the precondition for implementation of project culture and smooth implementation of the project.

CONSTRUCTION MANAGEMENT RULES

In initial stage of the project, SUES prepared a Collection of Rules/Regulations for Construction of New Campus (Collection of Rules), which included Rules and Regulations for Construction Management, Project Fund Management, Code of Conduct for New Campus Construction, Warnings on New Campus Construction, Code of Conduct for Procurement of Materials and Equipments, Rules for Procurement of Materials and Equipments, Invoice Management Rules, Reimbursement Rules of Internal Invoices, New Campus Construction Fund Management, Contract Transfer & Approval Procedure, Project Review Form (investment supervision procedure), Project Review Form (construction company procedure), Safety Responsibility Agreement, Integrity Agreement, Integrity Commitment, etc. All participating parties were required to abide by these rules and effective supervision and monitoring was conducted during the entire construction period. As a matter of fact, the Collection of Rules was effectively observed during the entire construction period. It constituted a well-established system and played a good role in regulating and constraining behaviors.

FIVE-LEVEL MEETING SYSTEM

A five-level meeting system, including weekly meeting of the leader team, regular meeting of the Headquarter, regular construction meeting (scheduled and unscheduled), regular meeting of general contractor, and regular meeting of subcontractors, was adopted to ensure the guiding principles and targets were informed to site workers precisely. It was a guarantee for achievement of the targets and an application of target management and process management in this project. The five-level meeting system, as a part of project culture, was promoted by the leader team of SUES. The former three-level meeting includes:

1. Weekly meeting of leader team
   This meeting, which was held every Saturday or Sunday, discussed problems occurred during construction period as well as solutions to them. A typical agenda of this meeting is as follows:
   - University leaders inspect works of the previous week.
   - University leaders assign works to each unit.
   - Coordinate relationship between various departments and units.

2. Regular construction meeting
   This meeting was held every Wednesday. The purpose was to:
   - Inspect work quality, progress and safety issues in the previous week;
   - Coordinate relationship between participating parties;
   - Assign works to participating parties;
   - Promote progress of schedule;
   - Review work quality, progress and safety performance of participating parties;
• Unify thinking, enhance cooperation, and promote synergy.

(3) Regular meeting of Headquarter
This meeting was held in the morning of every Tuesday. The purpose was to:
• Inspect work of teach team in the previous week;
• Assign works to each department/team;
• Coordinate relationship between departments/individuals;
• Discuss and solve problems happened; and
• Discuss internal issues.
Through internal meetings, the Headquarter became a highly efficient and unified team, which guaranteed completion of the project.

CONTRACT MANAGEMENT RULES

Contract management rules mainly include signing, review, performance, change or termination of contract, settlement of dispute, archiving, and detailed principles, methods, and procedures for contract management. SUES ensures that its interests are protected through implementation and interpretation of rules, methods and procedures for contract management.

PAYMENT MANAGEMENT RULES

The basic principle of payment management rules is to ensure payment is made according to contract terms and no payment is made if there is no contract. In general, the payment includes advanced payment, intermediate payment, payment on completion, and final payment at the end of guarantee period.
• The advance payment is usually less than 30% of the contract price. The intermediate payment is made according to the qualified work or contract terms. Before completion of the project, the accumulated payment should not exceed 70% of the contract price.
• Settlement: After successful completion of work, a price review is conducted to evaluate the price of works completed. Afterwards, according to the result of the price review, a settlement is made, with repair fund reserved by construction organization according to contract terms.
• Final settlement: The final settlement is made at the end of the guarantee period according to work quality and performance of guarantee service.

SAFETY EDUCATION AND APPROVAL

Considering the large scale of construction site, the number of processes, complicated operation procedures, cross operation of operators, mobility of equipments and tools, large area of works at height, and short construction period, it was assumed there was a high level of safety risk on site. To ensure safety and prevent accident, the Headquarter, agent of the owner and supervisors adopted the principle of “Safety First” and conducted safety education on a regular basis, even during the period when the temperature was very high and when SARS struck. Participating parties were required to set up slogans and warning plates to remind workers the importance of safety.

Approval system is another effective means to ensure safety. It was decided that temporary use of electricity, tower crane, erection and dismantling of scaffolding, works at height, and works with relatively high level of safety risk should be approved
by the construction company manager, construction supervisor and project management team. In works with extremely high level of safety risk, for example the steel arch and net rack of the gymnasium, experts were employed to decide the operation procedure.

**Team Work Spirit of Project Management Team**

A capable, highly efficient, practical and honest management team with high integrity was formed during construction of the new campus of SUES. Through cooperation with the site Headquarter and agent of the owner, the team applied successful control and management of all construction works, including planning and design of the entire campus and individual building, bidding and procurement, construction, and contract management. The team attached high importance to unity, cooperation, and coordination. Members of the team worked for the same target and helped each other in problem solving and communication. All these contributed to the formation of a highly efficient workforce.

**TRANSPARENT, FAIR, AND IMPARTIAL**

Even from the first stage of the project, leaders of SUES insisted that the principle of “Open, Fair, and Impartial” should be followed throughout the entire construction period. For two years, the Headquarter followed this principle. At the beginning of the first stage of the project, there were tens of companies and organizations with qualifications (Grade A or First Level) of design, construction, supervision, survey, gardening, municipal work, low-voltage electricity etc. in this project. Guided by university leaders, the Headquarter reviewed these companies and organizations and finally decided contractors and subcontractors through open bidding. Since the Headquarter followed the principle of “Open, Fair, and Impartial”, they succeeded in finding excellent contractors and subcontractors, including grade A design institutes (Architectural Design Institute of the Tongji University, East China Construction Design and Development), grade A construction companies (Zhejiang Shunjie Construction Group, a top-3 company in Shanghai Construction Comprehensive Examination, and The 7th Construction Company, a company ranked No.1 in Shanghai Construction Company Comprehensive Examination). Some famous companies are used in investment supervision, construction supervision, survey, municipal work, road construction, gardening such as Shanghai Hugang Construction Consulting, Shanghai Construction Consulting and Supervision, Shanghai branch of Survey and Research Institute (Ministry of Metallurgical Industry), Genggeng Municipal Works, and Shanghai Gardening Construction, for the first stage of the project. For the second stage of the project (including the administration building, information center, gymnasium, and activity center), subcontractors were also decided through open bidding including Longyuan (Zhejiang) Group, Shanghai Second Construction Company, Huaxing, Zhong Tian, Construction Supervision Company of Shanghai Construction Research, Shanghai University Construction Supervision and Shanghai Fuda Supervision. It is proved that open bidding is an effective mean to select good design, construction, supervision and survey companies, which are essential for ensuring successful construction of the first-class university campus.

Besides selection of high-quality design and construction companies through open bidding, the Headquarter also considered the characteristics of the project and decided
to have a meeting participated by university leaders, auditors, supervisors, accountants, owner representatives and members of the Headquarter on each Saturday or Sunday. The purpose of the meeting was to share the project progress, discuss issues related to materials and equipments procurement, and compare price, quality, capability and services of suppliers for all materials and equipments, including large equipments and small ones such as lamps and fans. Through implementation of the principle of “Open, Fair and Impartial”, the Headquarter succeeded in cost control and prevention of corruption.

CLEANING MANAGEMENT THROUGHOUT THE ENTIRE PROCESS

To ensure “good construction quality and high quality managers” of the project, the Headquarter, which was led by university leaders, attached great importance to a clean management system. The first action was to document 16 rules and hand them out to all relevant departments to ensure excellent performance of management, department leaders and workforce. The President of SUES and representatives of general contractor signed a Clean Operation Agreement in the meeting after the General Contractor Agreement. Department leaders and relevant individuals also signed the Clean Operation Agreement.

The Headquarter gave full play of the Disciplinary Committee, Supervision Committee and Audit Department to ensure that corruption is eliminated from the source. In addition to participating in weekly meetings, auditors, supervisors and accountants also reviewed contracts and performed monitoring on payment of construction price (delay or advance in payment, payment not according to contract terms, and extra payment that is not specified in the contract etc.). During the second stage of the project, the Headquarter set up a “6-man Material Procurement Team”, whose members included those from the owner, owner representative, investment Supervision, Audit, Supervision and Financial Departments, to be in charge of material bidding and pricing, so as to ensure transparency and fairness in material procurement. Along development of the construction work, the Headquarter held communication meetings on integrity and clean operation with participating parties and organized visits to picture exhibitions related to job-related crimes in construction field held by the Procuratorate of Songjiang District. Through such meetings and exhibitions, participating parties have deep understanding of clean operation and realized that in order to achieve the project targets; they must follow rules of the Headquarter on clean operation and keep on learning and constantly warning their employees to be clean in their work.

IMPLEMENTATION OF PROJECT CULTURE IN SUES’ PROJECT

Select Appropriate Project Culture and Values

Since project values are the core and soul of project culture, they need to be selected with consideration based on project characteristics (large investment, long construction period, large number of participating parties, and high complexity of work). Although there were many guiding principles and project targets, the core value was “the highest priority of the project interests”, which was one of the principles promoted to avoid individuals or departments of the owner work for their own interests.
Another important concept was common performance in organization and contract management. By communicating this concept to all participating parties, they were able to realize that their interests were based on common performance of all parties rather than their individual performance. To promote this concept, the Headquarter held regular meetings with participating parties and emphasized that all parties need to work as a team to ensure smooth implementation of the project, and that they need to cooperate with each other to solve problems, but not just argue with each other or make excuses when something went wrong.

**Enhance Acknowledgement of Project Culture**

Advantages of project culture were advertised by using all possible tools and means. To ensure implementation of a good project culture, all participating parties must acknowledge and agree with it. Only in this way can it be possible to form a good working environment characterized of collaboration, free communication and mutual support.

**Combination of Training, Education, Advertisement, Inspection, Comparison, and Meeting**

Multiple means, including training, education, advertisement, inspection, comparison and meeting, are used to foster project culture, which in turn promoted smooth implementation of the project. An example is the Safety Inspection & Comparison Rule, which aims to ensure effective safety management and benign competition of subcontractors and establish a good working environment that encourages mutual support and improve together. The safety inspection team, whose members came from general contractor, supervision company, owner and agent of the owner, conducted daily safety inspection with award and punishment according to results of inspection. Daily safety inspection helped to increase motivation of participating parties and had educating effects on their employees, so that the safety management is achieved.

**CONCLUSIONS**

The new campus of SUES laid a solid foundation for further development of the university. It is a historical event of all. Looking back at the entire construction process, it can be concluded that a good project culture, which was built by all participating parties, who demonstrated dedication, pioneering spirit, contribution and team work, played an invaluable role in project success.

**REFERENCES**