

Construction Site Management



Construction Site Management

- Construction site is considered as an absolute chaos at first glance.
- Actually, it is well-orchestrated by superintendents and his on-site project team.
- The superintendents should
 - organize the construction site in systematic and logical fashion.
 - Manage, control and coordinate
 - Subcontractors
 - Labor
 - Materials
 - Equipment
 - Deliveries
 - Noise
 - Dust
 - Security
 - Safety
 - Quality
 - So on

Construction Site Management

- Construction site can be considered as a **temporary factory** employing the necessary resources to **successfully fulfil a contract**.

The construction industry is different than many manufacturing industry in many perspective. The most unique and prominent properties are:

- 👷 Construction site is a temporary factory, and the schedule of the construction is stated in the contract, in other words the construction site exists throughout the construction.
- 👷 Most of the workers in the construction industry are unqualified, since the construction industry employs high amount of unqualified workers.

Construction Site Management

The properties of construction site;



The relation between the productivity of the workers and the production is different from other industries. The processes performed in the construction is not automated. The workers should be inspected regularly in order to increase the productivity of the workers.



Construction companies typically work outside, something that distinguishes them from manufacturing companies.



The construction equipment are under the effects of outside conditions, such as dust, moist and temperature difference, therefore the replacement and maintenance of the construction equipment is very important.

Construction Site Management

Properties of construction site;



The construction site in large projects such as road, dam and electrical power stations is mobilized like a small town. It includes from offices to the dry shacks, and from houses to the sport facilities in order to provide living standards.



The production of many construction structures and materials are performed in the construction site. Even, the number of the production in a small construction can be stated as more than hundred.



Construction Site Management

Properties of construction sites;




Since, the construction heavily rely on the workers' abilities, there is a direct relationship between the psychology of the workers and their production. Therefore, human resources management is one of the important duties of the superintendent.



Health and safety issues are usually ignored by the workers. This leads to big problems in aspect of losing life and money. All of the materials, manpower, and equipment move in and out of the construction area throughout the duration of project.

Construction Site Management



Due to the differences stated above, the effective construction site management is very important and challenging process for the success in the construction industry.

The superintendent should have psychological and social abilities besides management skills in order to manage the construction site effectively.

The personal relationship plays an important role in the construction site management.



Managerial Functions

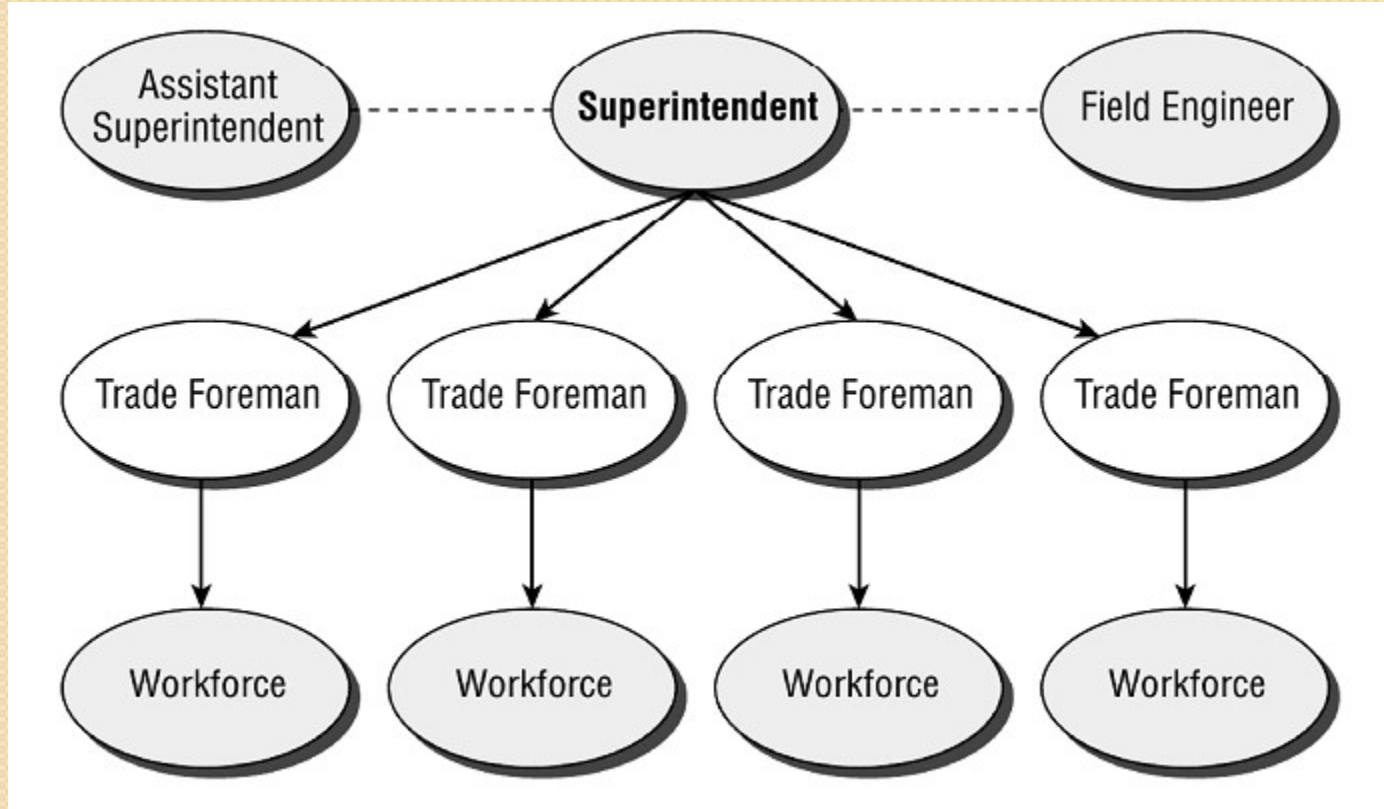
- **Relations with others**
 - **Figure head**- attends ceremonies, meetings, fairs, conferences
 - **Leadership**- hire and fire people, motivate, coordinate and support
 - **Establish contacts**- with personal relations to gather information from outside
- **Use knowledge and information**
 - **Monitoring** – to obtain information from the environment and screen the information
 - **Distribute the information**
 - **Spokesman** – speak on behalf of his department or organization and convey the information to people outside his department



Managerial Functions

- Decision making – (main function)
 - Initiating and enterprising – to develop the department and to adjust to changing environment
 - To meet the undesired situations -strike of personnel, shortage in supply of raw materials, bankruptcy of client
 - Allocation of resources – who will work where, how the work will be divided
 - Negotiator – makes meeting to have contracts with others

An example of a organization structure of project team





Construction Site Management

On-site construction management teams' concerns

- Subcontractor coordination
- Material and equipment deliveries
- Productivity
- Coordination with outside agencies
- Job site safety
- Quality control

Subcontractor coordination

Proper scheduling, preparation and planning are keys to successful subcontractor coordination.

Successful subcontractor coordination is at the heart of successful construction management.

- Resist bringing subcontractors onto job site until you are 100 percent ready for them
- Once you bring them onto the job, make sure that they have everything they need to proceed
- Pay all subs promptly upon completion of the work

Weekly subcontractor meetings can help to improve the coordination efforts.

Material and equipment deliveries



The goal is to make sure that the material is on site when it is needed and preferably not before.



Once the product or piece of equipment arrives at the job site, it is very important to make sure that someone is there to receive the order and direct the driver to place the material as close to the work site as possible.



If the order is not as it should be, the delivery should be refused and sent back to the supplier immediately. Proper inspection at the time of delivery will prevent the problem of arguing with suppliers later.

Productivity



The construction manager must keep a close watch on productivity and do everything to optimize the conditions that contribute to enhance productivity.



Some of the factors can affect the low productivity



Crowded work spaces



Poor coordination of work activities



Poor supervision or lack of supervision



Inexperienced or poorly trained workforce



Not having the proper tools and equipment



Adverse weather conditions



Confusing plans and specs



Changes in the work plan



Inefficient job site layout



The construction manager can achieve the desired productivity goals with keen planning, excellent organization skills, and effective communication.

Coordination with local agents



There are secondary players that can affect the efficiency of the construction process, such as the building department that issues the building permit for the project, health and safety inspectors, independent testing agencies and planning commissions so on.



One of the major challenges associated with managing construction operations is coordinating building activities with these agencies.

Job site safety



Although poorly managed subcontractor coordination, low productivity, or delayed material deliveries can result in cost overruns and scheduling fiascoes, serious job site accidents can prove catastrophic in terms of loss of life and personal injury.



The construction manager make every effort to prevent such accidents from happening and protect all workers and the public from these potential hazards.



Job site safety must be the number one priority when it comes to managing construction operations.

Quality Control



Quality control has the greatest influence on long-term project success.

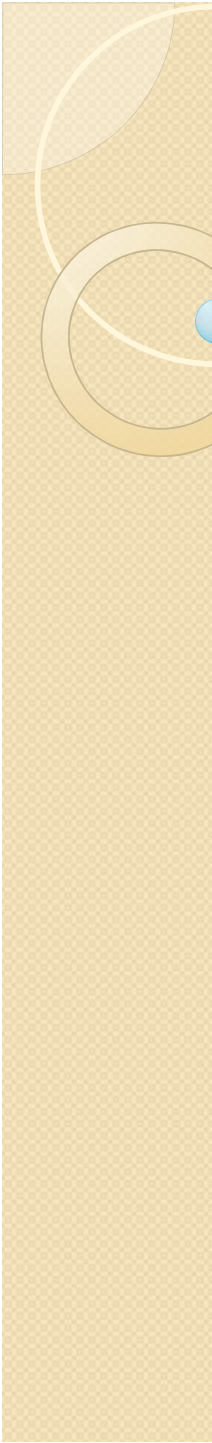


Poor work performance and quality not only impact the immediate schedule and budget but can also contribute to additional damage and liability, resulting in even higher losses.



The best way to control quality during construction is to develop a comprehensive plan to avoid defects, deficiencies, and problems from the start.

Superintendent

- 
- Initially, the superintendent should do before the construction work can begin
 - Set up the field office
 - Organize the job site
 - Establish work hours



Setting up the field office

- Field office is the command center of construction operations.
- The superintendent directs all activities needed to get the project completed.
- The size of the field office can vary according to the size of the project.
- However, each field office is fully equipped with every kind of office supply and equipment needed to carry on business from the building site.



Setting up the field office

- **Temporary utilities**
 - Our temporary command center can't function without proper utilities—water, electricity, heat, air conditioning, and telephone.
 - These utilities are required as soon as the project team arrives on the site, and will be needed for the duration of the project.
 - The construction work itself depends on having these services; all of the various power tools and equipment needed to cut, drill, saw, and weld operate on electricity.



Setting up the field office

- **Portable facilities**

- There are a number of portable facilities that support the field office and construction operations.
- The contractor needs to provide secure tool storage, dry shacks, and temporary toilets that are available to all workers on the job site
- The placement of each of these facilities is important to the overall efficiency of operations.



Organizing the job site

- The superintendent should organize the job site for the greatest efficiency and safety.
- The superintendent must have a strategy for directing and organizing all materials, manpower and equipment.
- Every aspect of getting the job done must be considered when trying to prepare the site for construction operations.



Organizing the job site

- What temporary facilities are needed depends on
 - Project type (building, tunnel or others)
 - Scale (small or large)
 - Design (cast-in-place or pre-cast)
 - Organization of construction work



Temporary facilities

- Fences and gate
- Offices for
 - Dispensary and first aid
 - Owner's engineers and staff
 - Contractor's engineers and staff
 - Subcontractors' engineers and staff
 - Laboratory
- Warehouses
- Storage areas for
 - Materials
 - Earth
 - Construction forms
 - Equipment



Temporary facilities

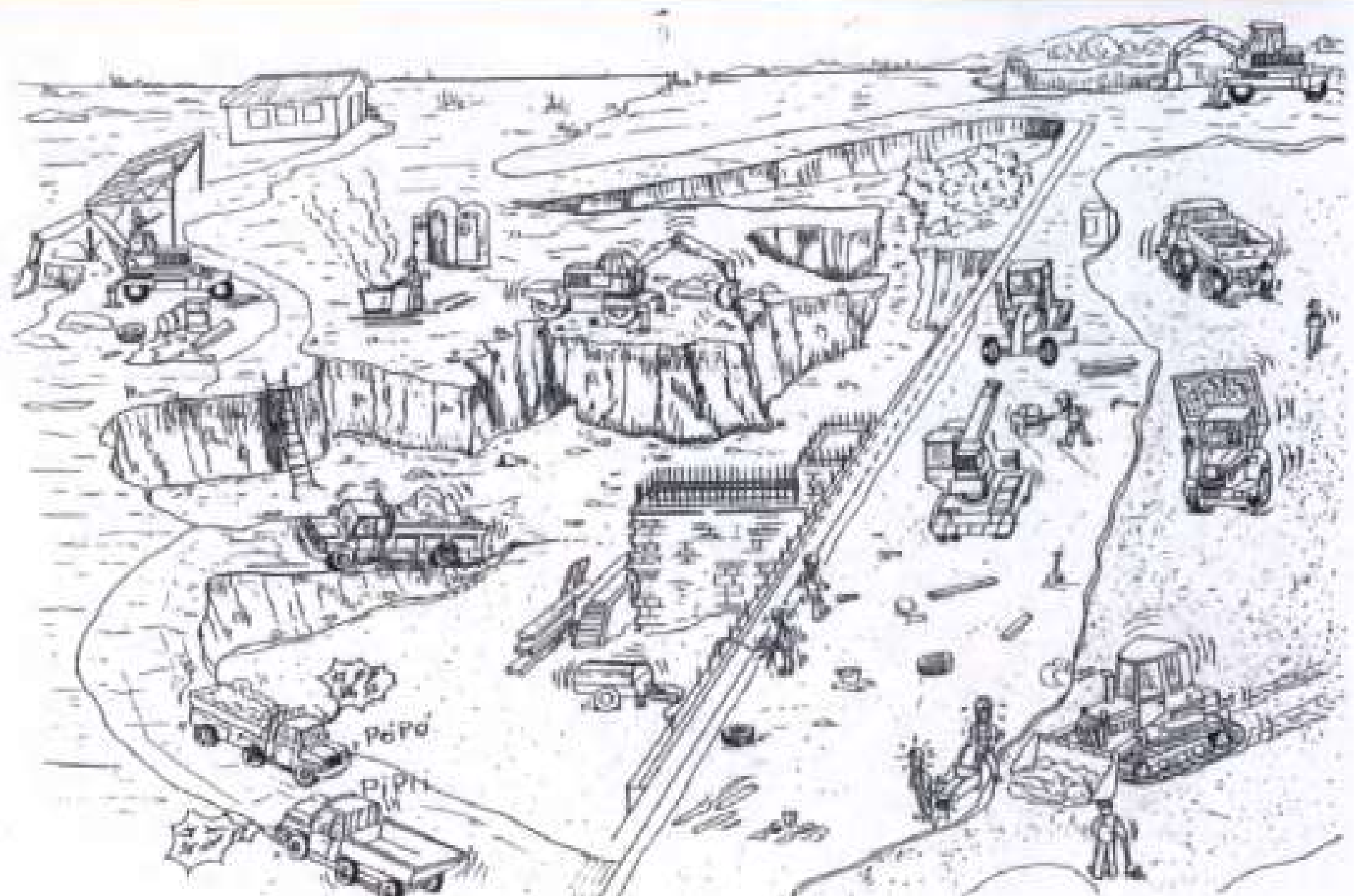
- Workshops
- Fabrication yards
- Plants
 - Concrete plants
 - Crushing plants
 - Asphalt plants
- Maintenance area
- Parking lot
- Staging areas
 - Scaffolding
 - Platforms
- Toilets



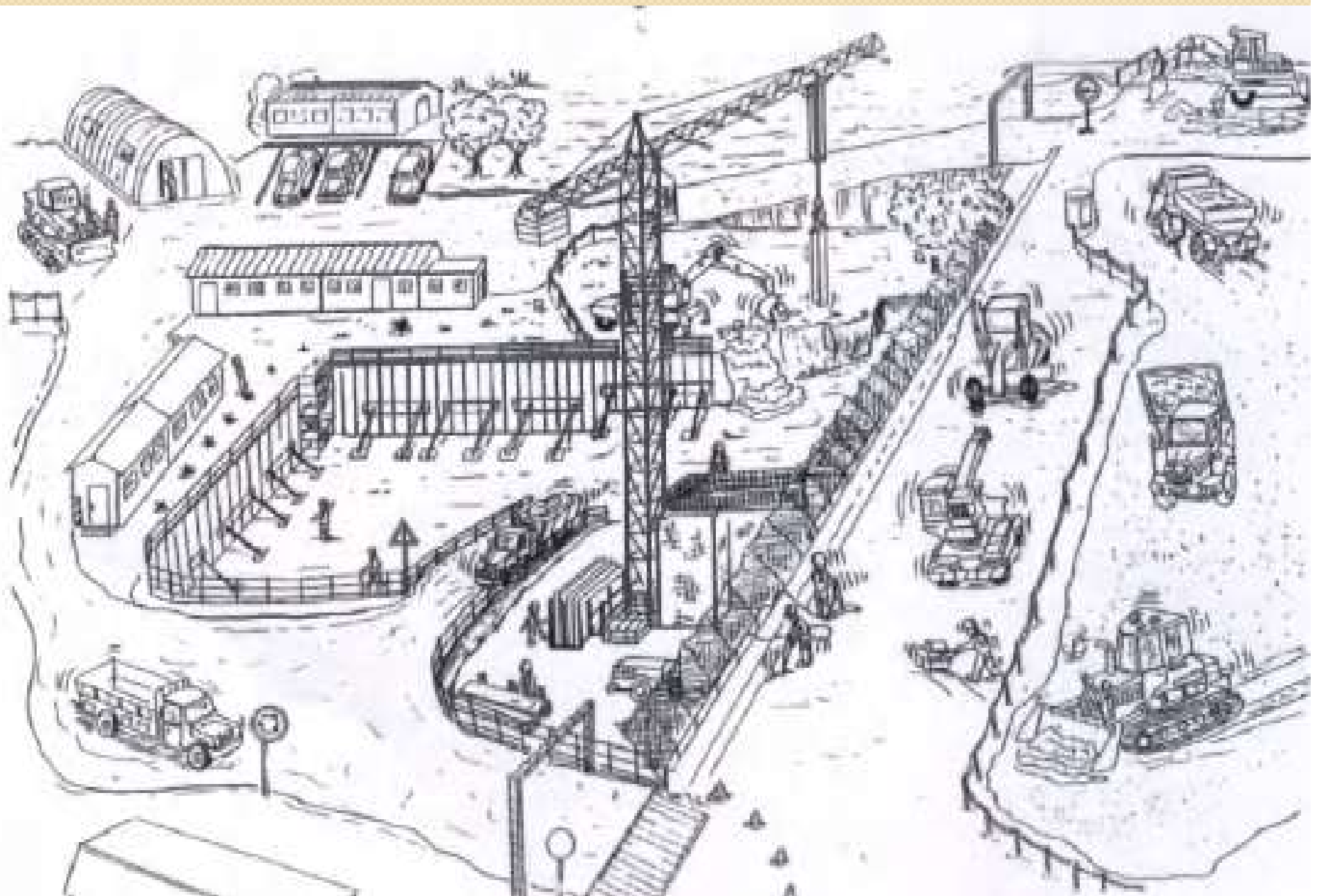
Temporary facilities

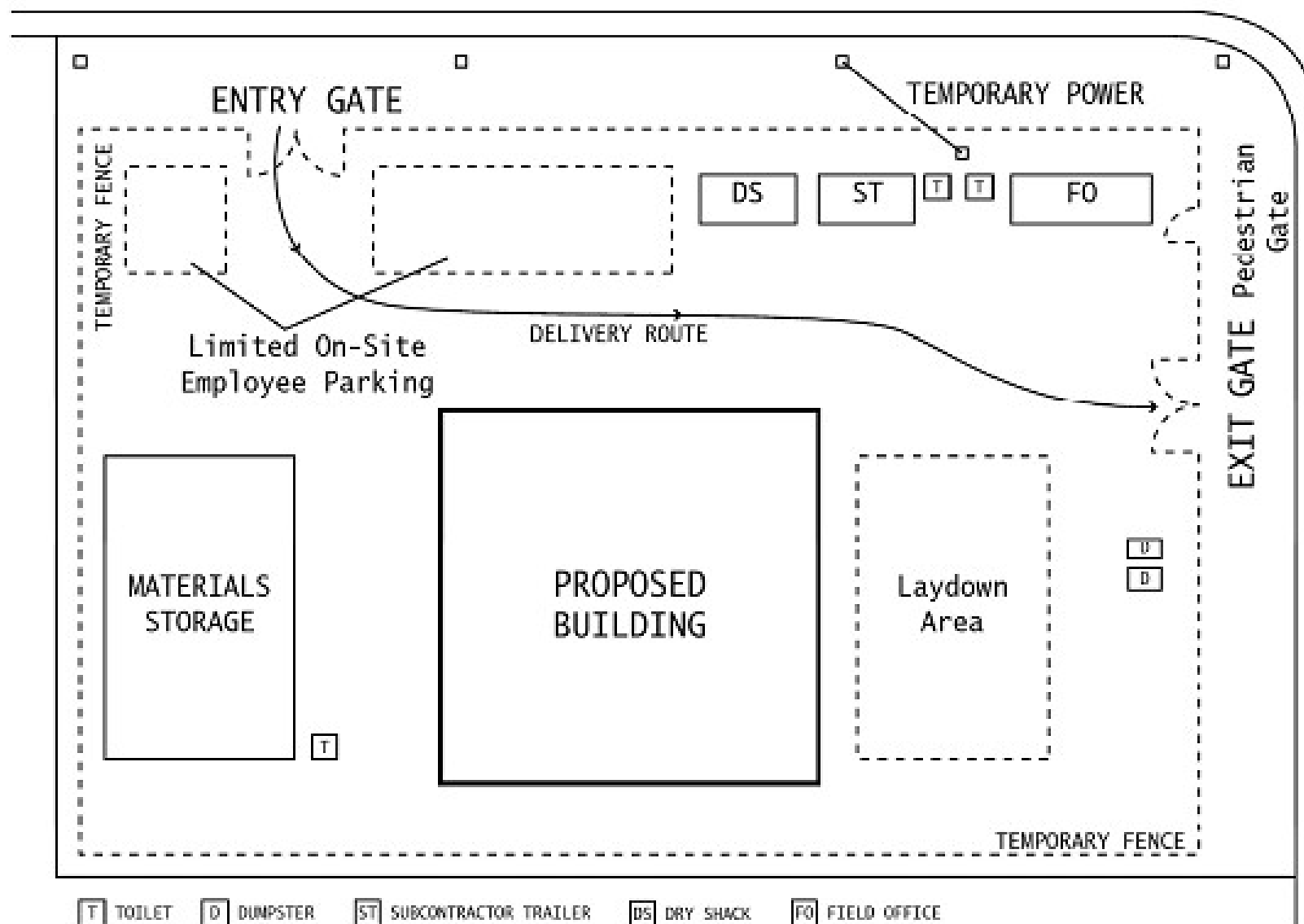
- Labor camps
 - Dormitories
 - Mess-hall and canteens
 - Channing rooms
 - Recreation areas
 - Social and religious facilities
- Access and site roads
- Utilities
 - Petrol pumps and tanks
 - Water supply
 - Telephone lines
 - Water supply
 - Sewerage
- Tower crane and lifters for tall buildings

An construction site example.



A construction site example







Establishing work hours

- Setting work hours is another responsibility associated with construction operations and job site management that the superintendent must attend to.
- The standard 8-to-4 routine is not always valid for the construction site.
- Adjusting work hours to accommodate the task at hand or to accommodate special conditions happens all the time. It is normal in the construction industry.

Demobilizasyon

Mobilizasyon (şantiye kuruluşu), yapılan işin önemli bir kademesi olduğu gibi demobilizasyon (şantiyenin sökülmesi ve taşınması) işlemi, işin diğer önemli aşamalarından biridir ve önemli masraf kalemlerindendir.

İhale hesapları sırasında mobilizasyon ve demobilizasyon faaliyetleri, mobilizasyon adı altında, genellikle maliyetleri toplam olarak ve tek kalem içinde gösterilir.

Proje müdürünün bunu bilerek şantiye kuruluş masraflarını ihale hesapları ile karşılaştırırken mobilizasyon ve demobilizasyon maliyetlerini ayrı ayrı göz önünde bulundurması gerekir.

Şantiyenin Sökülmesi ve Taşınması (Demobilizasyon)

Demobilizasyon, mobilizasyon işlemlerinin sondan başa yapılması ile gerçekleşir. Önce kurulan tesisler kaldırılır, sonra alt yapı temizlenir ve arazinin topoğrafyası eski durumuna getirilemeyeceğine göre arazi olabildiğince düzenlenir. Gerektiğinde eski duruma benzer peyzajı yapılır ve teslim edilir.

Şantiye sökümü sırasında tesislere verilebilecek hasarların en az olmasına özen gösterilir.

Tesislerden prefabrik olanların olabildiğince çok sayıda kullanılacağı unutulmamalıdır. Sabit olan tesislerin bazı parçaları yeniden kullanılabilir. Örneğin, çelik elemanlar, tesisat boruları, elektrik kabloları, çatı örtü malzemeleri gibi.

Şantiyenin Sökülmesi ve Taşınması (Demobilizasyon)

Sökümün ardından elde edilen hurda malzeme satılarak değerlendirilebilir.

Makine-ekipmanın şantiyeden taşınmadan önce bakım ve tamirleri yapılır ve gittiği yerde çalışmaya hazır duruma getirilir.

Tesisler, malzeme ve makineler yeni bir şantiyeye gönderiliyorsa demobilizasyon masrafları ile bedelleri, şirketin bu konudaki talimatlarına uygun olur. Genel uygulamalarda söküm, nakliye masrafları (nakliye sigortası dahil) yeni şantiyeye ait kabul edilir, tamir, bakım ve yükleme masrafları eski şantiye tarafından karşılanır.

Şantiyenin Sökülmesi ve Taşınması (Demobilizasyon)

Gönderilen makine, ekipman ve tesislerin bedelleri şirket üst yönetimi tarafından saptanır.

Taşımlar sırasında olabilecek kazalara karşı nakliye sigortası yaptırılır.

KAYNAKLAR

Niyazi GALİPOĞULLARI, Uygulamalı Toplam İnşaat Yönetimi, Birsen Yayınevi, İstanbul, 2007.