

## 1. **MANAGEMENT CONTRACTING (Mgt-Ctr)**

### 1.1 Features

- **Management Contractor (Mgt-C)** contribute in design expertise
- Mgt-C takes up the management role from the start till the end of project on a cost-plus basis
- The management fee is pre-determined and agreed b4 award of Mgt-Ctr
  - certainty in cost & programme
- Mgt-C does not normally carry out construction works directly
  - dividing the works into self-contained packages
- Close the gap between Mgt-C & consultants & to adopt Mgt-C's technical expertise

### 1.2 Roles & duties

#### (a) Employer

- Define the project, any limitations & conditions
- Make decisions, give approvals & provide guidance
- Make prompt payment of all accounts

#### (b) Consultants

- Responsible for architectural & M/E design, employer's project cost control
- Prepare methods of construction & quality control with Mgt-C

#### (c) Mgt-C

##### Pre-construction duties

- Design stage
  - ✓ Provide check **survey of the site** / existing building
  - ✓ Provide **buildability advice** on selection of materials & plants, manufacture, fabrication, off-site design, and **attend meetings**
  - ✓ **Review the practical implications** of all issues **of all drawings & spec** including NSC which has design responsibility
  - ✓ Formulating alternative construction methods for review & report time & cost implications
  - ✓ Undertake a complete temp work appraisal to analyze the possible delay, alternative solutions & design responsibility between Mgt-C & NSC
- S/C works packages
  - ✓ Breakdown of project into suitable packages & facilitates effective **cost control**
  - ✓ Collaborate with QS in providing cost advice, cost plan & cashflow forecasts
  - ✓ **Check NS/C documents** & enter into NS/C with NSC b4 execution of NSC works
  - ✓ **Prepare** & update detail project & package procurement **programme** with all key dates of submission

- ✓ **Coordinate with consultants & supervise NSC's** pre-construction works
- ✓ Arrange **pre-qualification & pre-tender interviews** with consultants in order to minimize employer's exposure to additional costs
- ✓ **Advise on bonds** & parent company guarantees
- ✓ Joint with consultants to **analyze NSC's tenders** & make recommendations
- ✓ **Achieve value for money** in order to obtain competitive S/C price
- ✓ Ensure all NSC tender queries are dealt with efficiently
- Insurance
  - ✓ Agree the terms of joint name insurance policies, ensure all **insurances are maintained**, and NSCs maintain their own ECI and plant insurance

#### Post-construction duties

- Quality control & site management
  - ✓ Regular **site visits**, monitoring standard of workmanship & **highlight potential areas of difficulties**
  - ✓ **Identify design deficiencies**, any inconsistencies & errors between documents, and **keep all records** & correspondence in a tidy manner
  - ✓ **Check any conflicts** between design works & **shop drawings** between NSCs
  - ✓ Carry out & check **setting out** of all works contracts
  - ✓ Examine NSC's works proposals & **monitor NSC's T&C** process
- Planning & programming
  - ✓ **Prepare**, update & obtain employer's consent on construction **programme** & incorporate consultants' detailed design information & set-up key dates
  - ✓ **Check** applications for **statutory consents**
  - ✓ Check NSC's programmes & **prevent any delay by NSC**
  - ✓ Prepare bi-weekly & monthly **progress reports**
- Reporting & meeting
  - ✓ **Establish meetings**, lay down procedures & circulation of information
  - ✓ Agree with consultants the reporting & recording procedures
- Cost control – Payments & F/A
  - ✓ Liaise with consultants, **make payment to NSC** & check with employer on the valuation of MC's & NSC's variations
  - ✓ Monitor & record any expenditure of PC sums & prov'l sums
  - ✓ Assist employer in preparing & **settlement of NSC's F/A**
  - ✓ **Settle inter-company contra charges** & deducting admin fee (e.g. 15%)
- Contract management
  - ✓ **Check materials ordering** especially for long-delivery materials
  - ✓ Manage & **supervise NSC** & ensure the execution of NS/C works

- ✓ **Coordinate with consultants** on providing information to suit the programme
- ✓ **Check the variations** & instructions are prepared in a timely manner, and **circulate to relevant NSC**
- ✓ **Coordinate technical queries** raised by NSC and pass to consultants
- ✓ Participate in **assessment of NSC's EOT claims**
- ✓ Arrange with consultants & NSC on **handover to employer**
- ✓ **Recover LD & L&E from defaulting NSC** and pay to employer the amount no more than Mgt-C can recover from NSC
- ✓ **Identify defects** & prepare defects reports with consultants & promptly **urge NSC to make good** defects
- ✓ Establish & clarify with employer regarding his requirements of **partial possession** & sectional completion
- Statutory approvals
  - ✓ **Review & monitor NSC's shop drawings**, ensure compliance with consultants' requirements
  - ✓ Check whether the statutory approvals are submitted on time & whether the fees for the same are paid
  - ✓ **Advice on labour employment** relating to legislation & site procedures
  - ✓ **Liaise with public authorities**, police & other 3<sup>rd</sup> parties (adjoining occupiers) for obtaining any consents
- Insurance
  - ✓ Advise employer on any insurance claims
- Site facilities & Temp works → provide to NSC

(d) Package contractors (NSC)

- Contracts formed between Mgt-C & NSC
- Carry out direct construction works on site
- Prepare submissions of all method statements, shop drawings, O&M manuals
- Provide surety bond to employer & pay statutory levies
- Liable for delay, L&E and LD to the employer

### 1.3 Considerations to employer

(a) Regarding the use of Mgt-Ctr:

- Adequacy of **management resources**
- Whether the **time is critical** → ∴ design & construction in parallel
- Whether the **project is large & complex**
  - future occupants may have different requirements which complicate the design (e.g. Landmark)

- **any specialized technology** incorporated & specialist level of management required
- Whether greater control and flexibility in the use of labour is required
- Suitable for complex & high-quality projects
- Not suitable for inexperienced employer / PM

(b) Regarding the running of Mgt-Ctr:

- **Select capable Mgt-C + consultants** and build-up good communication within the employer's own organization
- **Setting out a full requirements** for the Mgt-Ctr works & **defining clear roles** of each party (e.g. prepare schedule of responsibility and form part of contract)
- Defining clear basis for fees & charges
- **Assessing risks** objectively and allocating them fairly (e.g. prepare risk register)

#### 1.4 Advantages

(a) To employer

- Consultants & Mgt-C at the same management level  
→ **create team spirit** + find the best solution to solve problems + achieve budgets & programme
- **Early construction b4 design** is completed
- Unlikely to overrun ∴ sufficient monitoring by the Mgt-C & consultants
- Each **S/C packages could obtain competitive prices** by directly dealing with NSC due to well-developed design
- Allow to identify all packages & prioritize them into the programme
- Use of Mgt-C's construction expertise & resources to improve the management
- Early involvement of Mgt-C in design development

(b) To consultants

- More time to develop a complete design
- Assisted by Mgt-C on buildability & programming

(c) To Mgt-C

- Same as Const-Mgr's advantages

#### 1.5 Disadvantages

(a) To employer

- **Impossible to assure the final cost** at the start of project  
→ ∴ design is continuing through construction → **many VO to early award packages !**
- **Cost monitoring is much less effective** than under traditional system

- Risks on time & cost are borne by the employer if the Mgt-C, consultants & employer do not commit to achieve employer's objective
- **Less cost incentive** to Mgt-C to minimize cost & delay by NSC
- **Lack of design information** through the project will lead to **Mgt-C's claim**
- NSC's tender price may be high ∵ MC usually require discounts
- Lack of direct contractual link between employer & NSC (unless collateral warranty)

(b) To Mgt-C

- Most of the time & cost claims are excluded  
→ ∵ Mgt-C carry out management only, no direct works are undertaken
- In case of late information → cause NSC delay → claimed by NSC

## 1.6 Risks

(a) To employer

- Normally have to accept increased exposure of risks  
→ cost for MC to accept the risks is borne by the employer  
→ employer is responsible for NSC's defaults → risks !!!
- Improve the management of design & construction can reduce the risks in terms of time overrun & claims

(b) To Mgt-C

- Relatively **free of risks but** liable to his own **professional negligence**
- If there are risks → usually reflects in the tender price by open-book basis

## 1.7 Contract price of Mgt-Ctr

- Tender based on outline Bills of prov'l qty + specification and preambles
- Prelim bill will be priced firm with detailed build-up for each item
- In case of new items  
→ fair valuation with Mgt-C's substantiation of: profit + O/H + inflation + allowance for prelim items not priced in original prelim + NSC's attendance + any other allowance

## 1.8 Mgt-C's Fee

- Cost of management staff provided by Mgt-C (staff cost schedule)
- The reimbursable cost (including site prelim except staff costs) subject to quotations so as to obtain best value of money
- The management fee will be reimbursed in monthly basis

## 1.9 Tendering procedures for works packages

- i) Provide & agree with consultants for the breakdown of the project into suitable works packages, and facilitate effective cost control
- ii) Prepare statements for the relationships & interfacing problems between NSCs
- iii) Prepare & update detailed procurement programme, identify the dates for issue tenders, returns & examinations
- iv) Assist consultants in preparing NSC tender documents
- v) Ensure all the work items of the project are identified & included in works packages, which avoiding overlapping / duplication of responsibilities
- vi) Arrange pre-qualification & pre-tender interview, and advice on bonds & guarantees
- vii) Participate tender examination, and preparing tender analysis & reports
- viii) Participate in negotiation with NSC/NS and make recommendations
- ix) Procure the work packages at the lowest reasonable price, or if over-budget, provide alternatives or re-tender

## 2. **CONSTRUCTION MANAGEMENT (Const-Mgt)**

### 2.1 Suitability of Const-Mgt

- Used in **large, complex projects** with **tight time constraints & lots of design variations** are foreseeable
- Seldom used in government projects ∴ impossible for price certainty
- Suitable for employer with no competent design team

### 2.2 Features (also refer to Adv to employer)

- **Construction manager (Const-Mgr)** is employer's agent, which performs the design functions from the project start to the end
- Construction work is administratively controlled by Const-Mgr which performs little or no direct construction works, while trade contractors are appointed to undertake works by negotiation / tender
- Const-Mgt consists of pre-determined fee (fixed / %) + O/H costs
- Fast-track construction ∴ overlapping of planning + design + tender + award + construction
- Trade contracts between employer & trade contractors
  - direct deal with competitive price & reduce O/H costs
  - employer can observe & understand the level of performance of the trade contractors

### 2.3 Roles & Duties

(a) Employer → same as under Mgt-Ctr

(b) Const-Mgr

- Input to design & **applying value management** in providing alternatives
- Evaluate design & construction methods
- Advice on materials selection & availability
- **Develop construction planning** & phasing strategy
- **Prepare tender & contract documents** of trade contracts with consultants
- Responsible for **tendering examinations**, arranging security & checking insurance
- Responsible for **cost control** on site prelim & management of trade contractors
- Responsible for **progress payment**, issue instructions & **variations** to trade contractors
- Report of building **cost against budget**
- **Chair site meetings** including progress & safety, and carry out **risk analysis**
- **Provide site facilities**, security & cleaning-up services (sometimes provided by major trade contractors to other minor SC)
- Undertake works with own labour force if works are not undertaken by trade contractors
- T&C of equipments

(c) Trade contractors → same as NSC under Mgt-Ctr

## 2.4 Advantages

(a) To employer (also refer to Features)

- **Const-Mgr's fee** is generally **lower than** traditional **MC's profit**
- Const-Mgr's knowledge of buildability can result in a more cost efficient design
- **Const-Mgr's hand-on experience** of actual cost & time considerations, and construction procedures
- Identification of time with long lead times at the start of project
- **Better pre-construction planning** can result in a quick start of project & shorten construction period
- **Concept of cost & value management** can be applied

(b) To Const-Mgr

- Many risks & costs incurred when acting as a MC are removed
- **Only liable** to employer for **professional negligence**, not for cost overrun & LD
- Profit margin is determined upon the award of contract, O/H is normally reimbursable
- **Bond & guarantee are not necessary** → reduce Const-Mgr's financial commitment

## 2.5 Disadvantages

(a) To employer

- Coordination problems which add a heavy burden to the employer
- Trade contractors enter into direct contracts with employer  
→ ∴ employer is **responsible for trade contractors'** performance
- Employer is **responsible for delays and associated costs** → indicates greater risks and liability on time & cost
- **No guaranteed final cost at the initial stage**
- Admin cost will be higher ∴ increase paperwork & documentation

(b) To Const-Mgr

- Consultants under supervision of Const-Mgr  
→ **no traditional status** (e.g. issue instructions) → feel uncomfortable  
→ will result in **lack of team spirit & poor cooperation**

(c) To trade contractors

- **Not exclusive possession of site** → interfacing problems with other contractors
- Responsible for checking the earlier works if the trade contractor has to carry out works on top of that previous work



## 2.6 Factors affecting the success of Const-Mgt

- Agree to a detailed split of responsibilities between all parties
- Clearly define the scope of works to be undertaken
- Good communication & organization with the consultant team
- Early award of piling, structural steel, M&E packages
- Establish a detailed programme for design, approvals & documentations
- Develop & define onshore/offshore sourcing of plants & equipments
- Develop S/C strategy to suit the project requirements
- Establish quality requirement and a sensible design approach
- Mock-up on site in order to establish the agreed finishes quality & materials
- Identify documentation requirement & approvals

## 2.7 Difficulties in implementation of Const-Mgt

- **Unfamiliarity of Const-Mgt** by the tenderers
- MC finds it **difficult to coordinate various professionals** under Const-Mgt which demands a multi-disciplinary organization
- **Const-Mgt requires a well-organized system** for registration, licensing & certification of a Const-Mgr

## 2.8 Selection criteria of Const-Mgr

- Const-Mgr must have suitable staff, resources, skills & experience
- Able to provide professional services rather than a commercial role
- Should have hand-on experience in construction (i.e. ever being a contractor) as well as design knowledge

## 2.9 Const-Mgr's Fee

- Use "**Fixed fee**" when the project scope & size are well defined  
→ in case of significant changes → appropriate adjustment to the fee
- "**Fixed fee + reimbursable costs**" → frequently used method  
→ while the Const-Mgr's site O/H are being reimbursed
- "**Percentage of cost**" → not a preferable choice  
→ ∴ lack of motivation & result in inefficiency

## 2.10 Risk analysis by Const-Mgr → refer to Risk management notes

- Define the risks which could prevent the achievement of project objectives in terms of cost, time & quality
- Identify & evaluate causes which lead to exposure to the defined risks at each project stage

- Common project risks → refer to Factors affecting success of CM
- Develop strategy to avoid the causes of risks. If avoidance is impossible, develop contingency plan to mitigate the effects of risks.
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