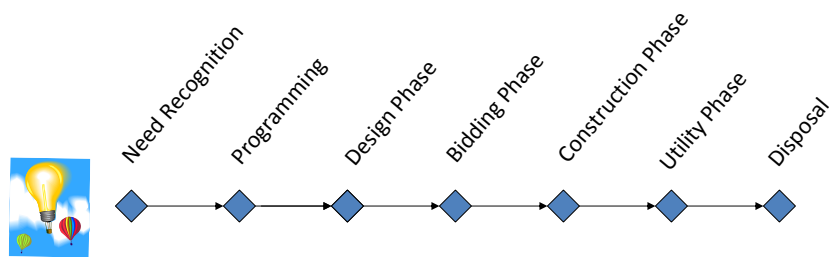


PROJECT LIFE CYCLE

Project Life Cycle

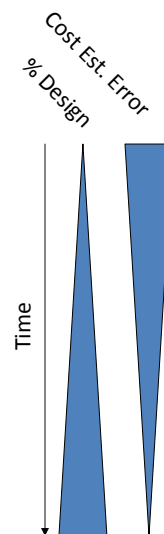


- Need Recognition needs to be translated into definite requirements.
- Programming is the process of listing requirements that will help the designer translate words into graphics
- Some projects are complex, or specialized that a consultant is used to delineate the programming requirements
- Feasibility Studies respond to any or all of the following unknowns:
 1. Economic Feasibility (most common)
 2. Technical Feasibility
 3. Social Feasibility
 4. Environmental Feasibility

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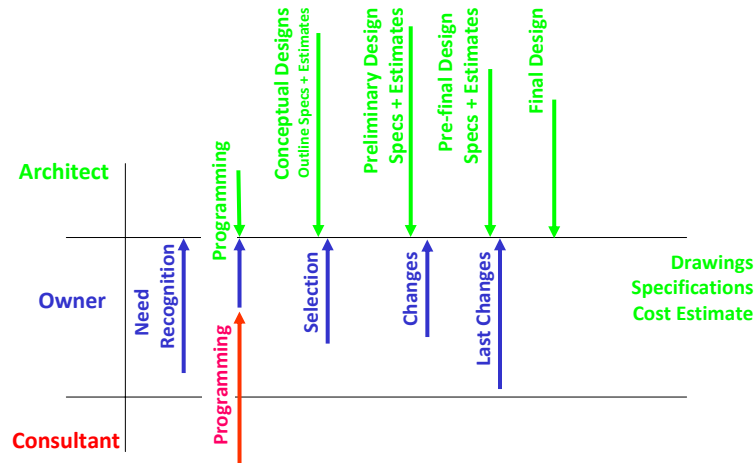
Design Phase

- Conceptual Design:
Single Line Drawings + Outline Specifications + rough Cost Estimates
- Preliminary Design (10%):
Incorporates Owner's changes + refined Specs. & better Cost Estimate
- Pre-Final Design (90%): Due to project complexity or owner requirements.
- Final Design (100%): Final Design + Specifications
- End Result: Drawings, Specifications & Cost Estimate



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Design Timeline



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Design Team A/E

- Architect (Spatial design, Team leader)
- Civil Engineer (Structural, Site, Survey)
- Mechanical Engineer (HVAC, Plumbing)
- Electrical Engineer (Lighting, Communications ..)
- Specialty (Interior design, Landscape ..)

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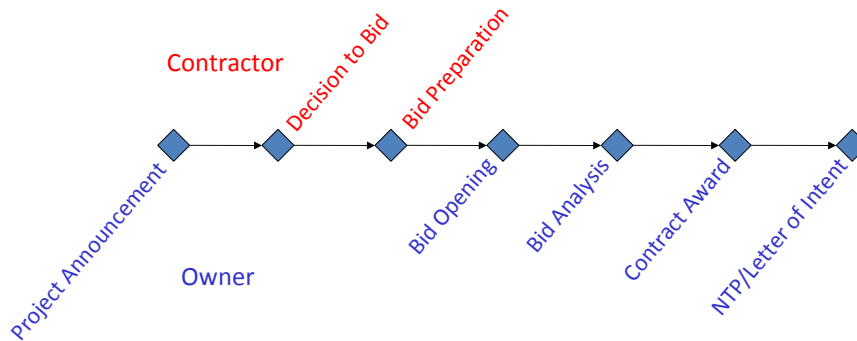
Bidding Phase

Owner

- RFP: **Request For Proposal**
For specialized construction
- Public Bid

Contractor

- Pre-Qualification
- Available resources
- Work Load



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Bidding Documents

- Drawings (Dimensions + Graphics)
- Specifications (Method & Mat'l description)
- General Conditions (Common to ALL contracts)
- Supplementary Conditions (Specific to current Project)
- Proposal Form (To facilitate bid analysis)
- Addenda (Addition, Deletion, or Changes to design before bid opening)

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General Conditions of the Contract (EJDC)

1. Definitions and Terminology
2. Preliminary Matters
3. Contract Documents; Intent, Amending Reuse
4. Availability of Lands; Subsurface and Physical Conditions; Reference Points
5. Bonds and Insurance
6. Contractor's Responsibilities
7. Other Work
8. Owner's Responsibilities
9. Engineer's Status During Construction
10. Changes in the Work; Claims
11. Cost of the Work; Cash Allowance; Unite Price Work
12. Change of Contract Price; Change of Contract Times
13. Test and Inspections; Correction, Removal or Acceptance of Defective Work
14. Payments to Contractor and Completion
15. Suspension of Work and Termination
16. Dispute Resolution
17. Miscellaneous

Special Conditions of the Contract (Typical)

1. SCOPE
2. CONTRACT TERM
3. CONTRACT QUANTITIES / NEW OR DELETED ITEMS
4. CONTRACT REQUIREMENTS AND BIDDER/CONTRACTOR QUALIFICATIONS
5. SPECIFICATIONS
6. DELIVERY
7. F.O.B. DESTINATION FREIGHT INCLUDED / INSTALLED / ON SITE SERVICE
8. METHOD OF BID
9. BID RESPONSE REQUIREMENTS
10. METHOD OF AWARD
11. MINORITY BUSINESS PARTICIPATION
12. SUBCONTRACTING OR THIRD PARTY PAYMENTS
13. FIRM PRICES
14. ORDERS
15. INVOICING REQUIREMENTS
16. ITEM RETURN POLICY
17. SHIPMENTS, DUPLICATES AND OVER SHIPMENTS
18. CONTRACT CANCELLATION
19. CERTIFICATION FOR COLLECTION OF SALES AND USE TAX
20. BIDDER RESPONSE SHEET

الشروط العامة – عقد الاشغال

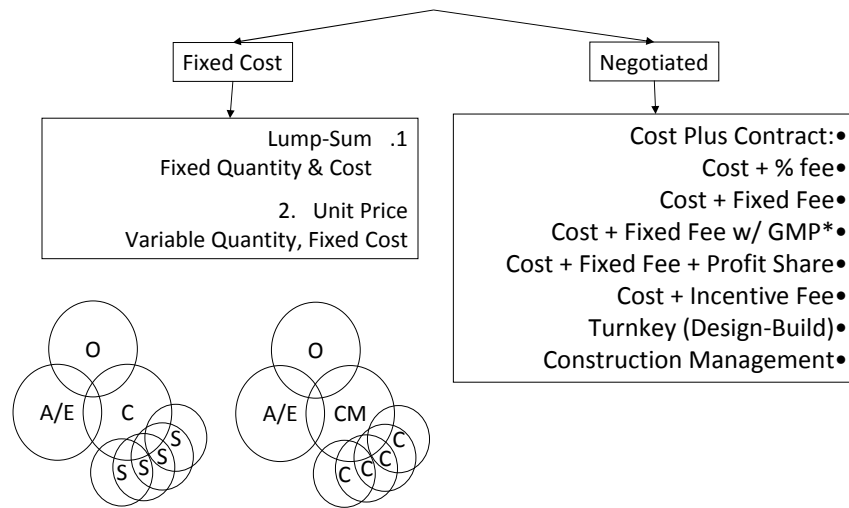
- | | |
|--|--|
| المادة رقم 1 : التعريفات والتفسيرات | المادة رقم 27 : كشوفات العمل |
| المادة رقم 2 : المهنيين | المادة رقم 28 : المواد وأصول الصنع (المصنعية) |
| المادة رقم 3 : التنازل للآخرين | المادة رقم 29 : الوصول إلى الموقع |
| المادة رقم 4 : التعاقد من الباطن | المادة رقم 30 : خصص العمل قبل تغطيته |
| المادة رقم 5 : نطاق العقد | المادة رقم 31 : إزالة الأعمال والمواد المخالفة للعقد |
| المادة رقم 6 : لغة العقد | المادة رقم 32 : إيقاف العمل |
| المادة رقم 7 : حفظ المخططات | المادة رقم 33 : بدء الأعمال |
| المادة رقم 8 : صلاحيات المهندس للتعديل | المادة رقم 34 : تسليم الموقع وحيازته |
| المادة رقم 9 : ضمان التنفيذ | المادة رقم 35 : مدة إنجاز الأعمال |
| المادة رقم 10 : معاينة الموقع | المادة رقم 36 : تمديد مدة إنجاز الأعمال |
| المادة رقم 11 : كفاية العطاء | المادة رقم 37 : منعه العمل ليلاً وفي أيام العطل الرسمية |
| المادة رقم 12 : تنفيذ الأعمال | المادة رقم 38 : معدل تقدم سير العمل |
| المادة رقم 13 : برنامج العمل | المادة رقم 39 : غرامة التأخير |
| المادة رقم 14 : إشراف المقاول | المادة رقم 40 : تكاليف الإشراف على التأخير |
| المادة رقم 15 : مستخدمو المقاول | المادة رقم 41 : فترة الصيانة |
| المادة رقم 16 : تحديد مواقع الأعمال | المادة رقم 42 : التزام المقاول بالبحث عن أسباب العيب أو الخطأ والخلل |
| المادة رقم 17 : الحراسة والائتار | المادة رقم 43 : التعديلات والاضافات والإلغاءات |
| المادة رقم 18 : الأضرار التي تلحق بالأشخاص والممتلكات | المادة رقم 44 : تقويم التغييرات والمطالبات |
| المادة رقم 19 : إرسال الإشعارات ودفع الرسوم والغرامات | المادة رقم 45 : المعدات والأعمال المؤقتة والمواد |
| المادة رقم 20 : بقايا الأثار والأشياء ذات القيمة وغيرها | المادة رقم 46 : الكميات |
| المادة رقم 21 : حقوق براءات الاختراع وملكيته | المادة رقم 47 : قياس الأعمال |
| المادة رقم 22 : عرقلة حركة المرور والإضرار بالممتلكات المجاورة | المادة رقم 48 : طريقة القياس |
| المادة رقم 23 : حركة المرور غير العادية | المادة رقم 49 : استعمال المتفرجات |
| المادة رقم 24 : إتاحة الفرصة للمقاولين الآخرين | المادة رقم 50 : الدفع والتسليم الابتدائي والنهائي، ومدة الضمان |
| المادة رقم 25 : إخلاء الموقع بعد إنجاز الأعمال | المادة رقم 51 : التسلم الابتدائي |
| المادة رقم 26 : استخدام العمال | المادة رقم 52 : التسلم النهائي |

Bonds

A bond is a guarantee from a responsible & able third party

- **Bid Bond:** 1-2% of bid submitted
- **Performance Bond:** 5% of Contract value
- **Advanced Payment Bond:** 100% of advanced payment (5% of Contract value, not to exceed 50M)

Construction Contracts



* GMP Guaranteed Maximum Price

Bid Preparation

Direct Cost (Cost of Labor, EQP & Material used in the completion of the work itself)

Indirect Cost (Shared cost that cannot be assigned to specific work, such as crane used for different work items on the same project)

Overhead (Shared Administrative cost among projects - %age of Direct & Indirect)

Profit/Loss

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Bid Opening

- Each organization forms a Bid Opening Committee
- Functions:
 1. Opens each bid submitted
 2. Ascertains the presence of Bid Bond
 3. Announces the name of bidder & bid amount
 4. Announces alternate bid if present
 5. Records each bid's particulars

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Acceptance Period/Withdrawal

Withdrawal of Bids: No submitted bid may be withdrawn for a period of sixty (60) days after the scheduled closing time for the receipt of bid.

...w bidder is identified,
...contract or forfeit his bid

...a failure by the
...instructions agreement.

- The contractor is protected by the **acceptance period**. The notice to bidders specifies a period following bid opening during which the proposed bids are to remain in force. The indication is that if the owner does not act in this period to accept one of the bids, then the contractors can **withdraw** or adjust their bids.
- Withdrawal of Bids: “No submitted bid may be withdrawn for a period of sixty (60) days after the scheduled closing time for the receipt of bid.”

Bid Analysis

- Contractor Prequalification: competence of the contractor.
- **Responsive Bid**: The bid should address project & owner requirements for quality and time.
- **Front-End Loading** (Unbalanced Bids) : The process of increasing the cost of early completion components of a project or the unit cost of items with wide margin of error in quantity, without changing the overall bid price.
- Any conditions attached to the bid (Ex: Owner supply of power).
- Comparing bid with the Engineer’s Estimate

Contract Award

- Acceptance period ends with contract award.
- **NTP:** Notice to Proceed is the legal Project Start and contractor access to project site.
- **Letter of Intent:** Signals contract award when site access is delayed so the contractor can buy mat'ls & EQP, mobilize, and obtain bank facilities
- If acceptance period ends without award, contractors can withdraw or amend their bids.

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Contract Agreement

- Contract is formalized by signing Agreement
- [Contract Agreement](#) is the single document that binds the parties and by reference describes the work to be performed for a consideration.
- Contract documents are: (1) signed contract agreement, (2) the supplementary conditions, (3) the general conditions, (4) the specific specifications, (5) the drawings, (6) the general specifications, (7) priced bill of quantity and (8) letter of acceptance or NTP.

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Time Extensions

[\(Clause 36\)](#)

- Often circumstances beyond the contractor's control, which could not have been reasonably anticipated at the time of bidding, lead to delays.
- These delays make it difficult or impossible to meet the projected completion date.
- Claims for extension of time must be based on delays that are caused by the owner or the owner's agents or on delays due to acts of God.
- Time extensions are added to the original duration.

Changed Conditions & Change Orders

(Clause 43 & 44)

- Changes that are dictated, for any reason, during construction represent an alteration of a legal arrangement and, therefore, must be formally handled as a modification to the contract.
- **Changed Conditions:** Unknown sub-surface conditions. Contractors are awarded damages + time extension
- **Change Order:** Addition, deletion, or changes that impacts cost A/O time.
- Since change orders are mini contracts, their implementation has many of the elements of the original contract bid cycle.

Liquidated Damages

(Clause 39)

- Arbitrary daily delay charges to encourage the contractor to maintain completion schedule
- Liquidated Damages: Justified penalties, that reflect actual loss due to project delay

Progress Payments and Retainage

(Clause 50)

- Work completed is estimated by contractor at end of each month, and approved by the resident engineer (owner's representative).
- Estimates of completion are percentages, and valuation is cumulative.
- Work Items as stated in the proposal form, modified by contract negotiation.
- Retainage: Deduction from contractor's monthly payments to guarantee project completion

Progress Reporting

- After Award, the contractor must submit a schedule of activities
- Progress Payments reflect value of work completed, not the time to complete
- Baseline Schedule, using any of the following:
 - Cumulative (S-Curve)
 - Bar/Gantt chart
 - Network (CPM)
- Monthly update reflecting progress month to month

Legal Structure

- Proprietorship (single owner): is the oldest form of construction organization
- Partnership: As the need for capital, or expertise grew, Partnership evolved. Each partner is liable up to his total assets (Risk/Reward Sharing)
- LLP: Limited Liability Partnership, similar to partnership but with limit to partners.
- Corporation: The development of Capital Markets led to the creation of separate legal entity, with limited liability

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Management Structure

- Management Functions:
 - Organize (Chart, Description, Line of Authority)
 - Staff
 - Plan, Direct, Monitor & Control
- Leadership & Delegation of Authority
- Construction's Dual Organizations
- Evolution of Organizations:

Centralized → Horizontal → Vertical → Matrix

Span of Control
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فئات تصنيف المقاولين السعوديين

الحدود المالية تمثل الحد الأعلى بملايين الريالات لقيمة المشروع الواحد الذي يمكن إسناده للمقاول السعودي المصنف في فئة ومجال معين.

م	المجال	الفئة				
		الأولى	الثانية	الثالثة	الرابعة	الخامسة
1		200	200	50	15	5
2		300	300	100	30	10
3		300	300	100	30	10
4		200	200	50	15	5
5		200	200	50	15	5
6		200	200	50	15	5
7		300	300	100	30	10
8		300	300	100	30	10
9		100	100	50	15	5
10		10	10	2	3	1

المصدر: <http://www.mpwh.gov.sa>

فئات تصنيف المقاولين غير السعوديين

الحدود المالية تمثل الحد الأعلى بملايين الريالات لقيمة المشروع الواحد الذي يمكن إسناده للمقاول الغير سعودي المصنف في فئة ومجال معين.

600	600	250	75	1
500	500	200	50	2
500	500	200	50	3
600	600	250	75	4
500	500	200	50	5
500	500	200	50	6
600	600	250	75	7

المصدر: <http://www.mpwh.gov.sa> - Construction Management

