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**İnşaat Sektöründe
ALTERNATİF ANLAŞMAZLIK ÇÖZÜMLERİ**

**ADR
ALTERNATIVE DISPUTE RESOLUTION
in
Construction Sector
and
A CASE STUDY**

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SLIDE-01

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DISPUTES ARE INEVITABLE IN CONSTRUCTION CONTRACTS

AMICABLE SETTLEMENT IS RECOMMENDED, BECAUSE :

- COST SAVING
- TIME-SAVING
- PRACTICAL



Methods Of Dispute Settlement

- **Negotiation;**
- **Mediation;**
- **Conciliation;**
- **Mini Trial;**
- **Dispute Resolution Board or Dispute Adjudication Board**
- **Rent a Judge;**
- **Pre-Arbitral Referee Procedure (ICC);**
- **Arbitration; and**
- **Litigation.**

The last two of the above methods involve an imposed dispute resolution on the parties involved. The other methods are amicable and thus the parties have a say in and can control the outcome of the dispute. In this paper, it will only be dealt with the first five methods due to time constraints.



Why Methods of Amicable Dispute Settlement ?

Traditionally, the main advantages of arbitration have been privacy, speed of resolution, cost effectiveness, convenience, finality, certainty and choice of tribunal. However, in recent years, there have been some unhappy experiences in arbitration, especially in the construction field, which have diminished the effect of these advantages, or at least some of them. The technical and legal journals are full of examples of **horrendous** experiences. These experience left some employers and contractors disenchanted with the arbitral process and led them to search for a more attractive method.

The solution adopted in the FIDIC Form of Contract for civil engineering construction to the problem of the diminishing benefits of arbitration was the introduction of the idea of amicable settlement as a pre-requisite step to arbitration. This was done in the last revision to the Red Book in 1987, where the authors, to their credit, adopted a more sensible approach than that of a total rejection of the arbitration process. Sub-Clause 67.2 of the Fourth Edition of the Red Book provides as follows:

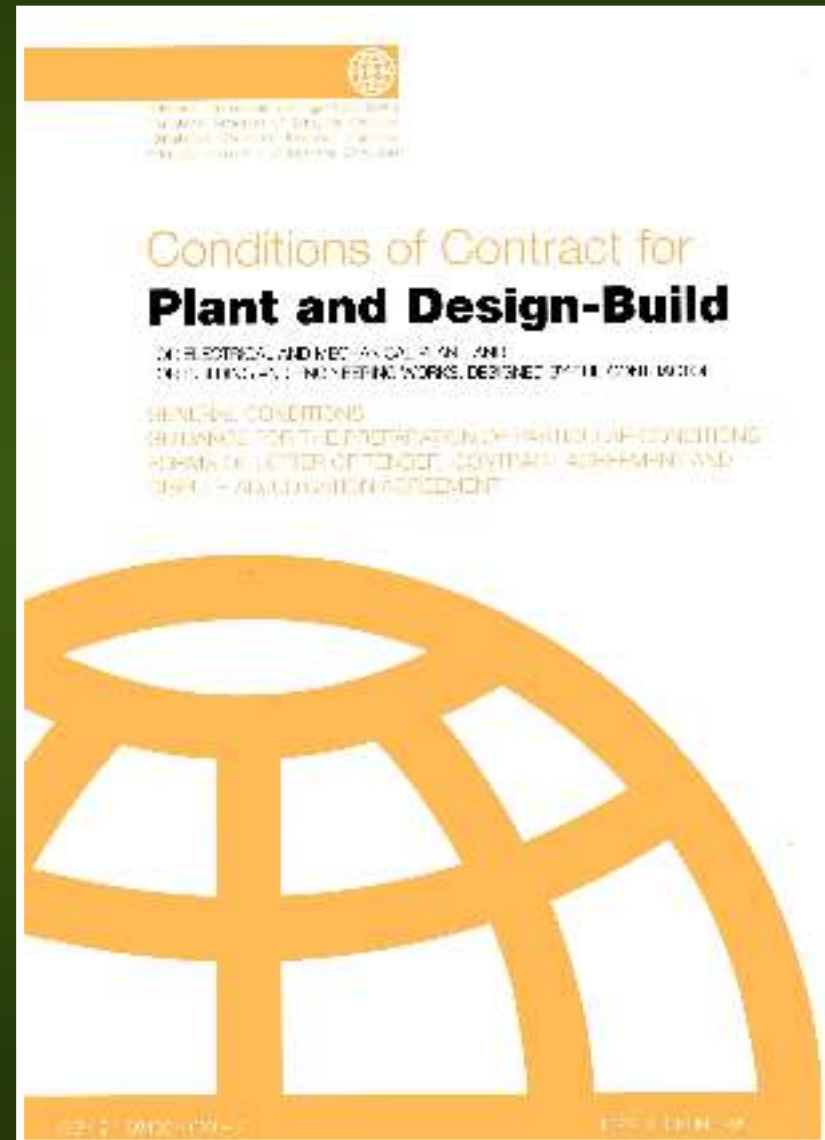
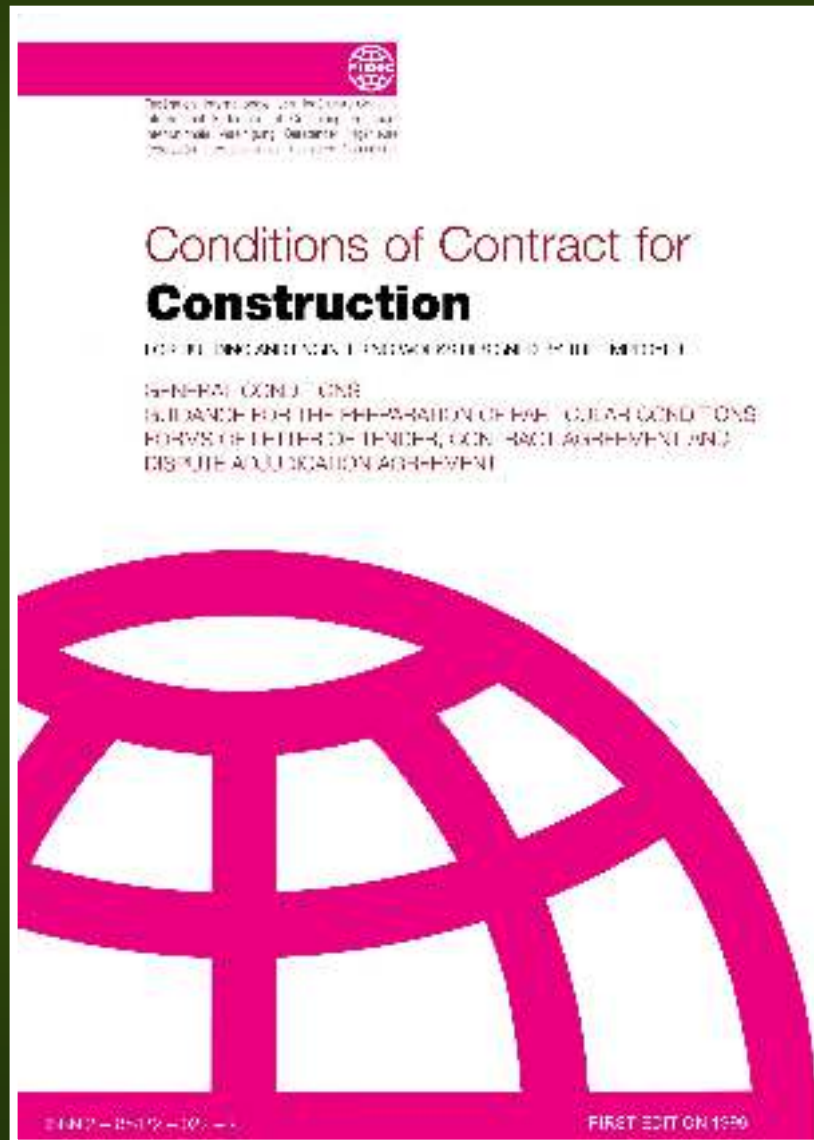


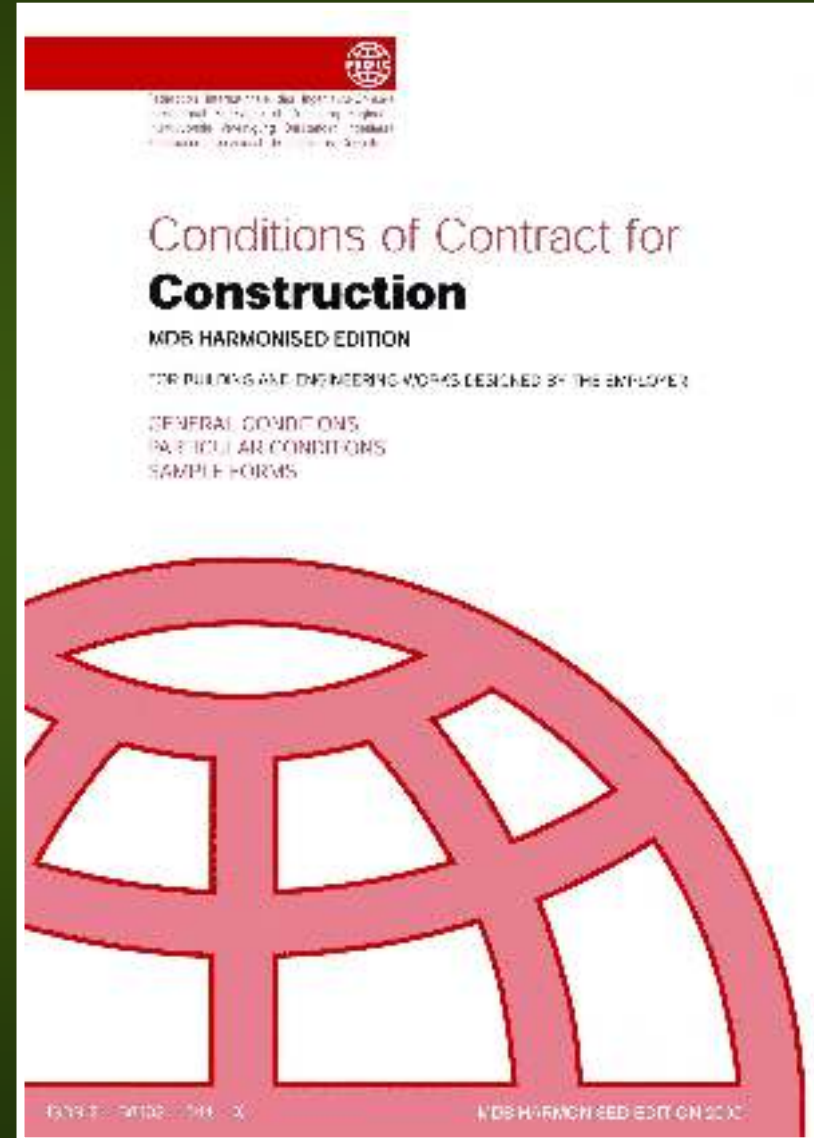
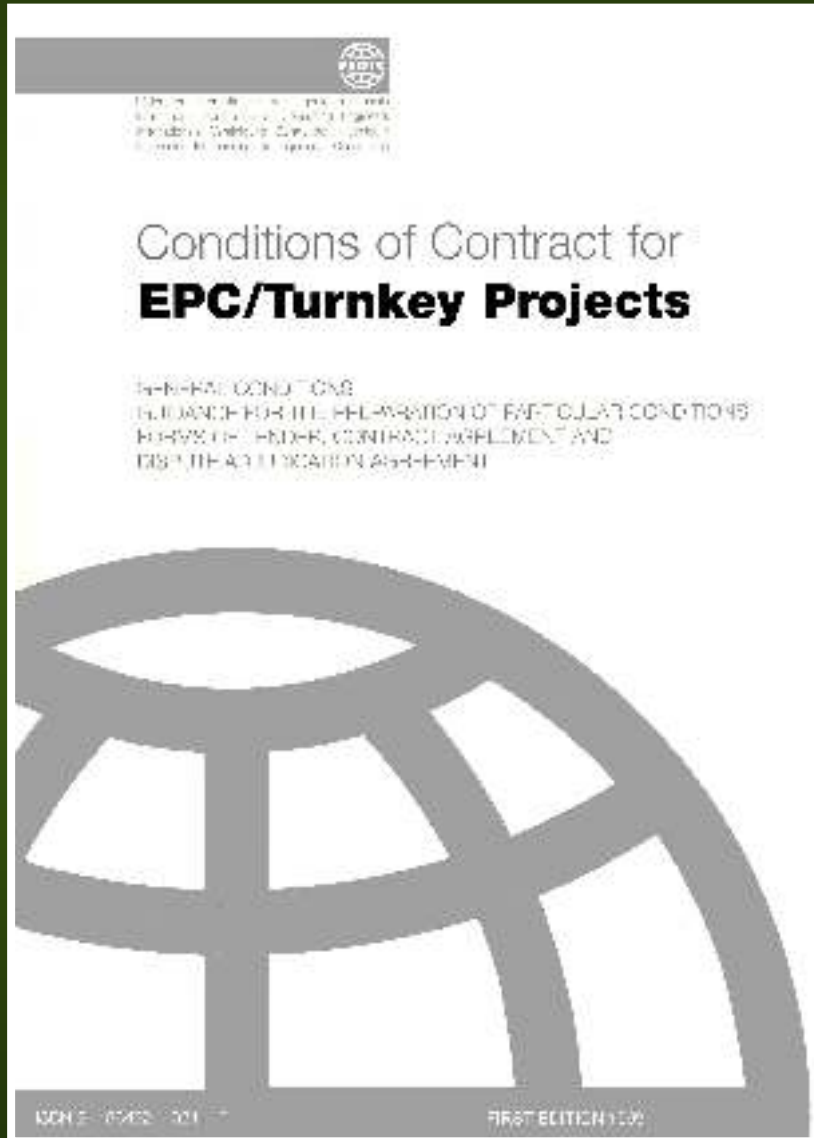
“Amicable Settlement-67.2

“Where notice of intention to commence arbitration as to a dispute has been given in accordance with Sub-Clause 67.1, arbitration of such dispute shall not be commenced unless an attempt has first been made by the parties to settle such dispute amicably. Provided that, unless the parties otherwise agree, arbitration may be commenced on or after the fifty-sixth day after the day on which notice of intention to commence arbitration of such dispute was given, whether or not any attempt at amicable settlement thereof has been made.”

Such amicable methods of dispute resolution known sometimes as **Alternative Dispute Resolution methods (ADR)** have become popular and many of them are fast growing.

The more recent forms of contract published by FIDIC, the contract for Design-Build and Turnkey and that for the Sub-contract also incorporate amicable dispute settlement methods in their conditions.







STANDARD BIDDING DOCUMENTS

**Procurement of Works
&
User's Guide**



The World Bank
Washington, D.C.

May 2005

STANDARD BIDDING DOCUMENTS

**Supply and Installation
of Plant and Equipment**

The World Bank



May 2005



Settlement of Disputes

OLD FIDIC 1987-1992	NEW FIDIC 1999	MDB ⁽³⁾ HARMONIZED EDITION 2005
Engineer's Determination	Engineer's determination	Engineer's Determination
Engineer's Decision	— (2)	—
—	Adjudication Board's Decision (2)	Dispute Board's Decision
Amicable Settlement	Amicable Settlement	Amicable Settlement
Arbitration (ICC) (1)	Arbitration (ICC)	Arbitration (ICC)

(1) or litigation

(2) Or Engineer's Decision

(3) Multilateral Development Bank



Methods of Dispute Settlement under the FIDIC Forms

Form of Contract	Engineer's Decision	Adjudication	Amicable Settlement	Arbitration	Rules of Arbitration
Red, 4 th Ed., 1992	Yes, within 84 days *	No	Yes, within 70 days **	Yes, within 56 days ***	ICC
Red, 4 th Ed. & Suppl. 1996.	No	DAB to decide within 84 days	Yes, within 28 days ¹	Yes, within 70 days ²	ICC
Yellow, 3 rd Ed., 1988	Yes, within 28 days of N. dissatisfaction	No	No	Yes, within 56 days of Eng.'s Dec.	ICC
Orange, 1 st Ed., 1995	No	DAB to decide within 56 days	Yes, within 28 days ¹	Yes, within 56 days ²	As named in the Appendix
Maroon, 1 st Ed. 1999.	No	DAB to decide within 84 days	Yes, within 28 days ¹	Yes, within 56 days ²	ICC
New Yellow, 1999.	No	DAB to decide within 84 days	Yes, within 28 days ¹	Yes, within 56 days ²	ICC
Silver, 1 st Ed. 1999.	No	DAB to decide within 84 days	Yes, within 28 days ¹	Yes, within 56 days ²	ICC
Green, 1 st Ed. 1999.	No	Yes, by spec. Rules	No	Yes, within 28 days	As named in the Appendix
White, 3 rd Ed., 1998.	No Engineer	No	Yes ³	Yes	As named in the Par. Cond.



FOOTNOTES:

- * Engineer's Decision must be given within 84 days after receipt of the Reference to him under Clause 67.
 - ** Within 70 days of the Engineer's decision, a dissatisfied party must give Notice of intention to commence arbitration.
 - *** Within 56 days of the Notice of intention to commence arbitration, the Parties shall attempt to settle the dispute amicably.
1. Within 28 days after receipt of the Decision of the DAB, either party may notify the other of its dissatisfaction of that Decision. No arbitration can commence without this Notice.
 2. Within the next 56 days, the Parties shall attempt Amicable Settlement.
 3. The Parties should attempt Negotiation in Good Faith. Failing settlement in 14 days, then dispute to be resolved by their designated representatives. Failing settlement in 14 days, then amicable settlement through mediation (a procedure of appointment of mediator and for the process itself is set out in the Agreement). Mediator has 28 days from the date of appointment to settle the dispute.



Negotiation, Mediation, Conciliation and Dispute Boards?

Negotiation, Mediation and Conciliation are considered the most informal dispute resolution methods providing two important advantages over the more formal methods of dispute resolution. These are flexibility and choice.

It is notable that the best time to decide on an amicable method of dispute resolution as the first step is at the time of writing the contract agreement. This is because once a dispute has arisen, any proposal by one party towards amicable settlement may be perceived as a sign of weakness by the other party or parties and may lead to the opposite result: that of entrenchment.

Another successful amicable method of dispute settlement in recent years has been through the formation of a dispute resolution board at the commencement of the construction project. The Board is normally composed of three technically qualified people who undertake to familiarise themselves with the project and the progress of the Works during the construction period. Thus, members of the Board can respond quickly to any sign of a dispute and may render non-binding recommendations for its resolution.



As per Black's Law Dictionary:

Mediation – a private, informal dispute resolution process in which a neutral third party, the mediator, helps disputing parties to reach an agreement – the mediator has no power to impose a decision on the parties.

Conciliation – the adjustment and settlement of a dispute in a friendly, unantagonistic manner.

In its Professional Liability Insurance – a Primer, FIDIC defined mediation as:

“ A voluntary non-binding technique utilizing an impartial third party to assist in settling disputes between parties which may, by agreement, become binding on the parties.”

The role of the conciliator is described as falling between that of mediator and arbitrator, but without the arbitrator's power to make a binding decision.



The cover features a green vertical bar on the left with the text "Dispute Resolution Services" written vertically. At the top left of the white background is the ICC logo with the tagline "The world's leading commerce organization". The main title is "ADR Rules" in a large, elegant serif font, followed by "in force as from 1 July 2001" in a smaller font. Below this is the word "and" in a bold sans-serif font, followed by "Guide to ICC ADR" in the same elegant serif font as the main title.

The cover is white with black text. At the top, it reads "ICC Rules of" in a serif font, followed by "ARBITRATION" in a large, bold, sans-serif font. Below that, in a smaller font, it says "in force as from January 1, 1999". Further down, it reads "ICC Rules of" in a serif font, followed by "CONCILIATION" in a large, bold, sans-serif font, and "in force as from January 1, 1998" in a smaller font. At the bottom center is the ICC logo with the tagline "International Chamber of Commerce" and "The world's leading business organization".



ICC Alternative Dispute Resolution Techniques

1. Mediation;
2. Neutral evaluation;
3. Mini - trial;
4. Any other settlement technique;
5. A combination of settlement techniques.



1) MEDIATION

Mediation is the settlement technique in which the **Neutral** (Mediator) acts as a facilitator to help the parties try to arrive at a negotiated settlement of their dispute. The **Neutral** is not requested to provide any opinion as to the merits of the dispute.

To facilitate an amicable settlement, the Neutral generally holds joint meetings with all of the parties present and may also hold separate meetings, often called caucuses, with each of the parties alone. These meetings permit the Neutral to create an atmosphere appropriate for **negotiations**, obtain useful information, identify the interests of each party and help parties find common ground for the resolution of their dispute. Any oral statements or written documents provided to the Neutral by one party during a separate meeting or otherwise will not be conveyed to the other party unless the first party has explicitly authorized the Neutral to do so.





Negotiation

Wherever there is human endeavour, there is conflict. Negotiation is a process where two or more parties in conflict attempt to reach an agreement to settle their differences and where that agreement is such that all the parties involved are prepared to live with it and accept it.

Although the simplest and quickest way of solving disputes is through negotiation, this is not in fact an easy method, especially if there is a clash of personalities behind the dispute, or if in the parties' opinion there are matters of principle at stake.

Furthermore, until any of the other methods of resolution have been invoked, the costs involved are rarely appreciated. In some cases, parties embark on litigation simply because they want their day in court; in other cases some are badly advised.

Negotiation is a skill. Few of us are born with it and most of us become trained in its ways and means through day to day interaction with those around us. However, even if we were born with it, training is essential if we are to succeed in achieving a positive outcome in all the transactions we face.



NEUTRAL ?

The success of ICC ADR proceedings depends in large Part upon the abilities of the Neutral.

The parties should seek to ensure that the Neutral:

- has the professional capabilities and experience needed to understand the various aspects of the dispute between the parties;
- has the human qualities needed to create an atmosphere of trust between the parties and encourage constructive discussions.



Selection of Neutral

The success of ICC ADR proceedings depends in large Part upon the abilities of the Neutral.

The parties should seek to ensure that the Neutral:

- by joint designation by all of the parties;
- by agreement of the parties on the qualifications or attributes of the Neutral and appointment of the Neutral by ICC;
- by appointment by ICC when there is no joint designation by the parties or agreement of the parties concerning the qualifications or attributes of the Neutral;
- by appointment by ICC when the Neutral designated by the parties does not accept his or her mission.



2) NEUTRAL EVALUATION

In accordance with this settlement technique, the parties ask the Neutral (Conciliator) to provide a non-binding opinion or evaluation concerning one or more matters, such as:

- an issue of fact;
- a technical issue of any kind;
- an issue of law;
- an issue concerning the application of the law to the facts;
- an issue concerning the interpretation of a contractual provision;
- an issue concerning the modification of a contract.



3) MINI - TRIAL

Mini-trial is the settlement technique in which a panel is constituted comprising the Neutral, as a facilitator, and a manager of each of the parties to the dispute. Each manager should in principle have the authority to bind the party which selected him or her and should not have been directly involved in the dispute. Each party presents its position to the panel in a concise and brief manner, after which, depending upon the situation, the panel seeks a solution acceptable to all of the parties or expresses an opinion on the positions of each side.



4) Any other settlement technique

The parties, in consultation with the Neutral and may agree upon any appropriate ADR settlement technique that would help them resolve their dispute amicably.

5) Combination of settlement techniques

It may be useful to conduct ICC ADR proceedings using a combination of settlement techniques. For example, the parties must exercise good faith in their interactions with the Neutral.



Dispute Adjudication Board

Dispute Resolution Boards (DAB's), which are similar to Dispute Review Boards (DRB's) have been used successfully on several major domestic and international construction projects.

A Dispute Adjudication Board or Review Board is generally established, by the appointment of a panel composed of three expert neutral persons. The three panel members should be technically qualified in the type of construction work involved in that particular contract. They are appointed by both the Employer and the Contractor and a chairman is selected or appointed from amongst the Panel. The Chairman must have extensive construction experience, but must also be qualified in the field of dispute resolution. The panellists should be familiar with the scope of the particular contract and can begin the dispute resolution process once a claim reaches the DAB.

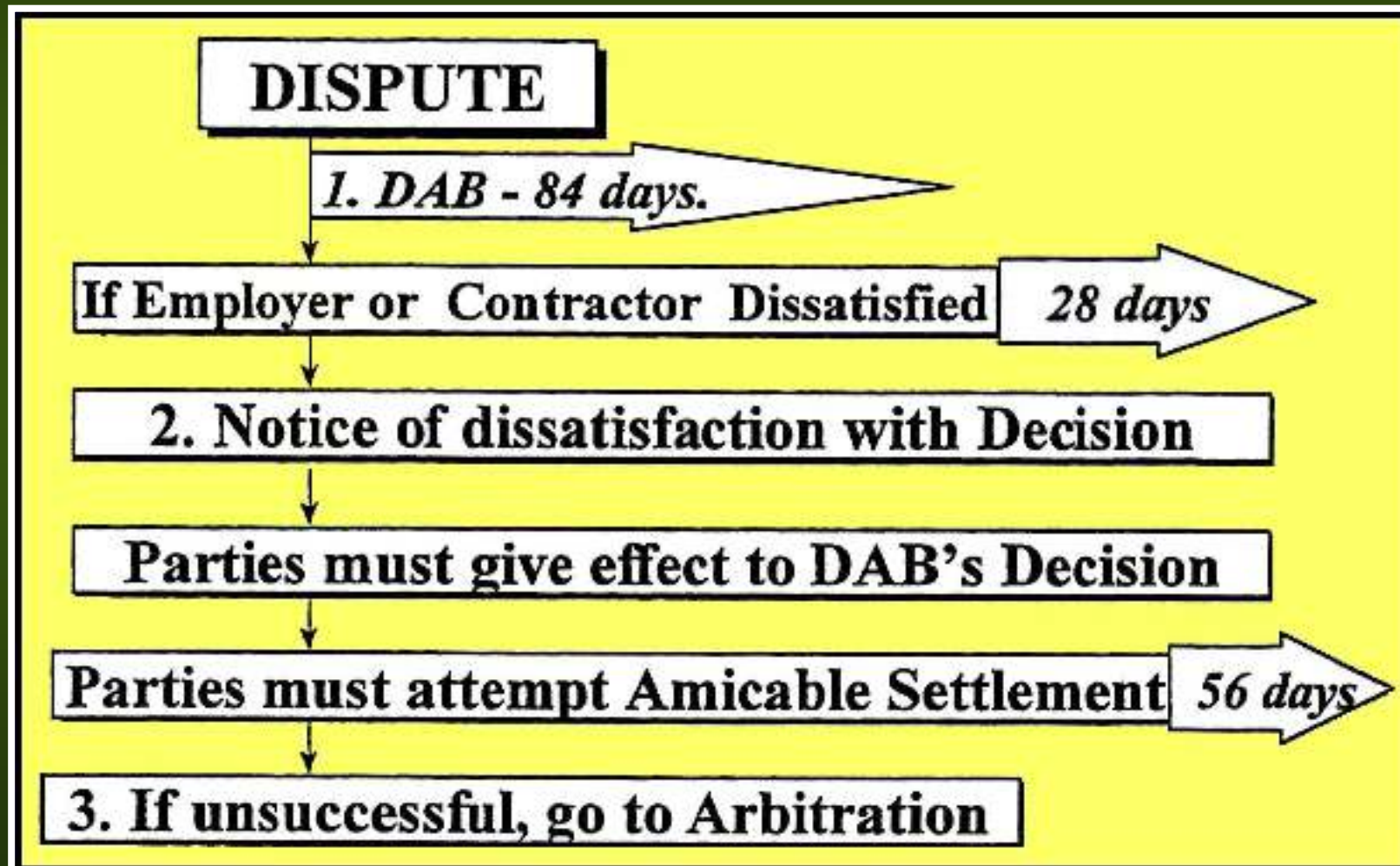


With smaller contracts, the panel might be a single person, normally referred to as Dispute Adjudication or Review Adviser, an appointment which may be regarded as equivalent to appointing an expert conciliator/mediator for the duration of the contract. An important difference between a DAB and conciliation/mediation is that members of the Board do visit the job regularly during construction and are kept advised regarding progress. They can therefore actually observe the problems at the time they occur and, based on their own construction experience, understand the technical details and contractual ramifications of the problem.

The DAB may hold hearings, review the record, and take testimony. Upon completion its deliberations, the DAB makes a non-binding recommendations to all parties. The DAB's action is a condition precedent to implementation of the contract's dispute clause. No party is obliged to accept the Board's decision, in which case, the dispute may proceed to a subsequent forum of dispute resolution, which is amicable dispute settlement in the case of the FIDIC Forms of Contract. Failing agreement the Parties must proceed to arbitration.



Time limits under New Red Book





CASE STUDY

SEYAŞ, in a joint venture, was responsible to prepare the Tender Documents for a design-built project on the basis of new FIDIC Yellow Book with some inclusions from new FIDIC Red Book.

The Client insisted to use the attached text for the DAB, however SEYAŞ, as faithful advisers, objected by writing the attached comments.

The Client disregarded these comments. The lead partner (foreign firm) having no contractual and legal knowledge, which is surprising, disregarded also the comments with the aim to curry favour with the Client.

And, finally the text of the Client was inserted in the Tender Documents.



The text of the Client

Sub-Clause 20.3 Dispute Adjudication Board

The Dispute Adjudication Board shall be established in accordance with the rules of procedure for arbitration under Turkish Law, including International Arbitration Act No. 4686 of the Republic of Turkey:

...

The Dispute Adjudication Board shall be composed of three members. Each party shall appoint one member, and the two members shall appoint the third member. The party wishing to submit the matter to the Dispute Adjudication Board shall inform the other party in writing through a Notary Public by giving the name and address of the **arbitrator** he selects and shall request the other party to select his **arbitrator** within 15 days, and shall at the same time clearly inform the second party in writing of the points at issue and his claims and demands concerning the problem forming the basis of the dispute.



Should the other party fail to respond or if they cannot agree on the third member within 28 days the second and third members shall be selected by the Courts in Bursa.

...

Within 60 days from receiving an application from both parties the Board shall meet in Bursa. At its first meeting, legal and technical advisers representing each party shall be present. The Board will conclude its meeting and announce its final decision within 6 months after their first meeting in Bursa. **Otherwise the dispute will be resolved at the Courts in Bursa.** However the period of **6 months** can be extended by the agreement of both parties.

In order to cover the fees and expenses of the Dispute Adjudication Board, the claimant shall deposit in advance 5% of the amount subject to dispute to a bank in Bursa specified by the Dispute Adjudication Board within 15 days following the date of the request made by Board. The fees to be paid to the arbitrators shall be established by the parties, and each party shall pay half such fees. In the event of disagreement, the amount of the fees to be paid to the arbitrators will **be established by the Turkish Court in Bursa.**



SEYAŞ's Comments

The aim of the DAB is to prevent the disputes by issuing the decisions quickly. In the previous FIDIC contracts, the Engineer had to issue decisions within 84 days. The new FIDIC gave this duty to the adjudicators who will issue their decisions again within 84 days, because in the new FIDICs the Engineer is no more impartial. According to the legal counsellors of the Consultants, the proposed clause in BUSKI WWTP will only prolong the disputes, due to the involvement of the courts, and will not be applicable due to the following reasons:

- In the Turkish Arbitration Law, there is not such a provision for pre-arbitral committee.
- In the event of non-selection of the third adjudicator within 28 days, the Court can not select the third adjudicator, because the Court can only select the arbitrator not the adjudicators (pre-arbitrators).
- If the Courts are to be referred to case of non-decision within six months, the provisions of Sub-Clause 20.5 and 20.6 (the Arbitration) cannot be implemented and the arbitration process of the Contract will never come into force (*).



Whereas:

The Adjudicator can be easily selected by the Employer at this stage from the reliable persons over whom the Employer has complete confidence. At the bidding, it is very difficult for any bidder to afford to object the Adjudicator selected by the Employer.

A different Appointing Authority may also be decided to the satisfaction of the Employer (such as ATCEA, or Bursa Trade Chamber etc.)

Otherwise the only way is to use Sub-Clause 20.4 of New Red-Book with the sample paragraph for the pre-arbitral decisions of the Engineer proposed in page 21 of Particular Conditions of Yellow Book.

() If the DAB fails to issue its decision within 84 days or either Party is dissatisfied with the DAB's decision, then either Party may initiate first amicable settlement process, after that, arbitration process, without going to litigation.*



CONCLUSION

In Turkey, application of ADR is not frequent.

Let alone the common ADR methods, some of the Employers do not even understand the meaning or purpose of **Adjudication**, or are misled by bad advice.



Thank you...

TRAINING KIT
FOR
CONTRACT ADMINISTRATION
OF
CIVIL WORKS CONTRACTS
BASED ON



FIDIC 4th EDITION

Presented by



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CONTENT

Session I : Introduction to Contract Administration

Session II : Contract Documents

Session III : Timing of Contract Administration

Session IV : Responsibilities in Selected Clauses



SESSION I

**INTRODUCTION
TO
CONTRACT ADMINISTRATION**



What is the Contract ?

Contract is the agreement entered into between the Employer and the Contractor for the execution of the Works.

Who are the Parties to the Contract ?

The Parties of such a Contract (namely, construction contract) are the Employer and the Contractor.



What does the “Employer” mean ?

The Employer is the Promoter who initiates the Project and is responsible for providing funds for its execution. He is defined as the “Employer” in the “Conditions of Contract” issued by FIDIC (International Federation of Consulting Engineers) as well as by various international and national bodies. In other forms of contract he may also be referred to as the “Purchaser” or the “Owner”.

Who is the Promoter ?

The “Promoter” is a sole trader, a firm, company, a governmental organization or an international funding agency who brings forward the Project, acquires or provides the land and pays the Consultant and the Contractor, for the realization of the Project.



What are the differences between Employer, Client, Customer, Owner or Purchaser ?

EMPLOYER : A person or organization who employs others.
He is one of the two parties to the Construction Contract.

CLIENT : A person or organization who pays a professional for advice.
He is one of the two parties to the Consultancy Contract.



CUSTOMER : A person who buys goods or services from a shop or person trading, especially regularly.

- One is a customer if one gets thing for one's money, as in a shop.
- If one gets services, as from a lawyer, a bank or a hairdresser, one is a client; except in the case of medical services, when one is a patient; in the case of hotels, at which one is a guest.

OWNER : A person who owns something esp. one who possesses something by lawful right.

PURCHASER : A person who obtains goods etc. by payment.



What does the “Contractor” mean ?

The “Contractor” is the organization or individual entrusted with the construction of the Works.

What are the “Works” ?

The “Works” comprise all those items which are to be constructed under the terms of the Contract, i.e, all Permanent and Temporary Works.

What does “Temporary Works” mean ?

“Temporary Works” are those items which are built to facilitate the construction of the Works and are generally removed on completion of the Project.



Who administers the Contract ?

- The Employer ?
- The Engineer ?

Almost all over the World, the Contract for Works of Civil Engineering Construction (namely Civil Works Contract) is administered by the “Engineer”.

The Contract for Works of building construction is administered by the “Architect”.

In some forms of contract he may also be referred to as the Contract Administrator.



What does the “Engineer” mean ?

In civil works contracts, the term of the “Engineer” refers to the person representing the organization which provides professional advice on the investigation for, and the design and construction of the Works. However, in some cases the designer and the contract administrator may be different persons or organizations.

Who appoints the Engineer ?

The Engineer is appointed by the Employer either to have overall engineering responsibility for the investigation and design of the project and to supervise its construction, or to supervise the construction only.



Who may become the Engineer ?

Sometimes, the Engineer may be an employee of the Employer, but generally is a consulting engineer.

What does the “Consulting Engineer” mean ?

Professionally qualified architects, engineers, planners, economists, environmentalists in private practice may be regarded as the “Consulting Engineer”. He maintains his own office, either alone or in association with other professionals and employs staff to assist him to provide Consultancy Services. A “Consulting Engineering Firm” may be organized as a sole proprietorship, a partnership or a company, depending on the size and type of its operation and the conditions set by their national association in the country.



How is the Consulting Engineer appointed by the Employer ?

The Consulting Engineers are generally engaged by the Employers under the terms of “Consultancy Contract” issued by the Association of Consulting Engineers of that country or by the International Federation of Consulting Engineers, namely FIDIC. In the case of projects financed by the International Financing Agencies (such as IBRD, IDB, EBRD, ADB, KfW, KFAED) the model form of contracts issued by such Agencies are generally used.

Who are the Parties to the Consultancy Contract ?

The Parties of such a contract are the Client (not the Employer) and the Consultant.



What is FIDIC ?

FIDIC is the abbreviation of “Fédération Internationale des Ingénieurs - Conseils” based in Lausanne, Switzerland. This is an organization of consulting engineers’ associations in a number of countries throughout the world which have similar interests to those of the Association of Turkish Consulting Engineers and Architects (ATCEA).

FIDIC is the international federation of national associations of independent consulting engineers who comply with FIDIC’s code on professional status, independence and competence.



What is ATCEA ?

ATCEA means “Association of Turkish Consulting Engineers and Architects” based in Ankara. A consulting engineer or consultancy firm in Turkey should be a member of ATCEA and registered with FIDIC.

What is “Professional Status” ?

In the exercise of their profession the consulting engineers must act in the legitimate interest of their client. They must discharge their duties with complete fidelity and conduct themselves in such a manner as faithfully to serve the best interests of society and to uphold the standing and reputation of the profession.



What is “Independence” ?

A consulting engineer’s professional advice, judgement or decision must not be influenced in any way by a connection with another person or organisation. Control of the policies and management of a consulting engineering firm which is partly or wholly owned by entities other than consulting engineers shall be vested in consulting engineers.

The remuneration of a consulting engineer for professional services should be derived only from the fees paid by clients, with the exception that a consulting engineer may nevertheless also benefit from equity participation in ad hoc groups formed with others to undertake design and construct, project management or similar activities.



What is “Competence” ?

Consulting engineers must have the necessary knowledge and experience to enable them to fulfil their mission.

Impartiality

The Engineer is appointed and paid by the Employer. Even if the Engineer is an employee of the Employer, he must be impartial in the administration of the Contract. This concept is adopted in various type of construction contracts.



Relationship between the Employer, the Engineer and the Contractor

The Engineer is not a party to the Construction Contract between the Employer and the Contractor, but he is named in this Contract and has a number of duties of responsibilities as set out therein for the administration of this Contract.

The Engineer has a separate agreement between himself and the Employer, where he is named as “the Consultant” and the Employer is named as “the Client”. This agreement, namely Consultancy Contract covers all the Services required to carry out of the Employer. This may embrace some or all of the following:



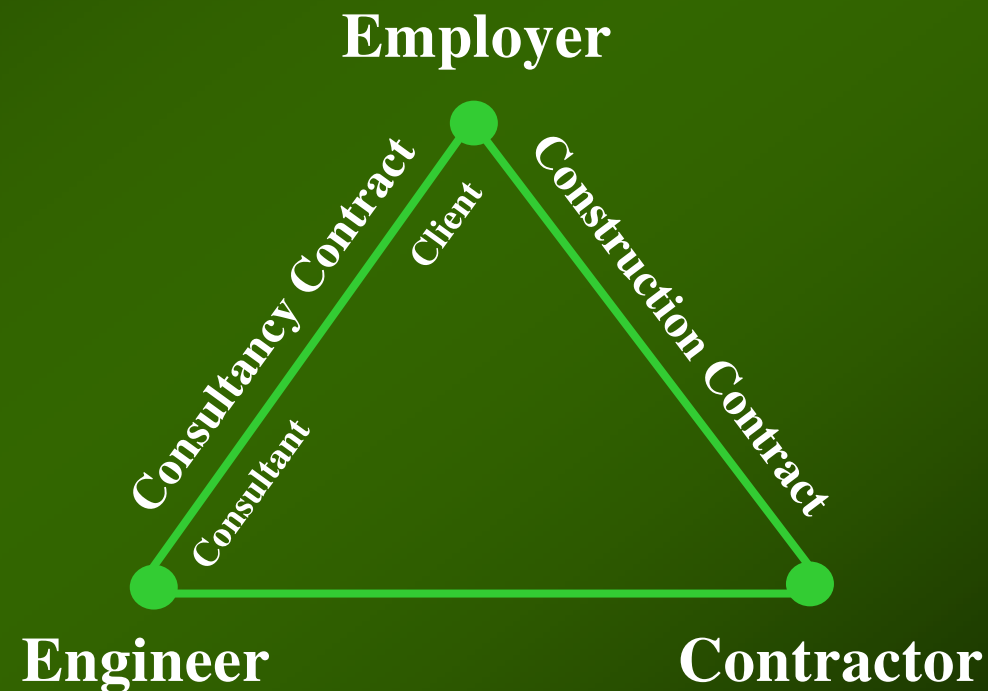
SERVICES

- Feasibility Studies
- Design of the Works
- Tender Documentation
- Prequalification of the Tenderers
- Assessment of Tenders
- Supervision of the Works
- Supervision of commissioning and testing
- Supervision of operation of the Works
- Training of the personnel



RELATIONSHIP

The relationship between the Employer, the Engineer and the Contractor is described in a magic triangle



MAGIC TRIANGLE



SESSION II

CONTRACT DOCUMENTS



Under which documents is the Contract administered ?

The Contract is administered according to the provisions of the “Contract Documents”.

What are the differences between “Tender” and “Contract” Documents ?

Tender Documents are issued to the bidders in order to enable them to prepare their Tenders and submit them properly to the Employer.

The documents in connection with an admeasurement contract generally consist of four volumes.



TENDER DOCUMENTS

Volume I : Administrative Conditions

- Invitation to tender,
- Instructions to Tenderers, which do not usually form part of the “Contract” Documents,
- The Conditions of Contract,
- The Form of Tender (with which may be associated the requirements for a tender security, details of experience and financial resources),



TENDER DOCUMENTS

Volume I (continued)

- The Form of Agreement,
- The Form of Tender Security,
- The Form of Performance Security,
- The Form of Advance Payment Guarantee,
- Data affecting the execution of the Works, including such things as a site investigation report, details of access, limitations of working hours, local conditions and other work being carried out on site, machinery, services and supplies which will be provided by the Employer for the Contractor's use; hydrographic surveys and special safety measures etc.



TENDER DOCUMENTS (continued)

Volume II – Technical Specifications

Volume III – Bill of Quantities

Volume IV – Drawings

In lump sum, cost reimbursement and all-in contracts, some of these documents may not be required, depending on the circumstances.



What are the “Contract Documents” ?

“Contract Documents” form the Contract between the Employer and the Contractor for the execution of the Works

The Contract Documents also consist of four volumes.

These are different versions of Tender Documents :

- Volume I : Administrative Conditions
- Volume II : Technical Specifications
- Volume III : Bill of Quantities
- Volume IV : Drawings



Volume I : Administrative Conditions

- Contract Agreement,
- Letter of Acceptance,
- Memorandum of Understanding (if any),
- Addendum (if any),
- Conditions of Contract, Part I and Part II,
- Form of Performance Security,
- Form of Bank Guarantee for Advance Payment.

Volume III : Bill of Quantities

- The Bid,
- Appendix to Bid,
- Preamble,
- Dayworks Schedule,
- Priced Bill of Quantities.



What is the “Contract Agreement” ?

It is an agreement entered into and executed (namely signed) by the Contractor and the Employer where the purpose of the Contract is defined and the documents forming the Contract are listed.

What is the “Letter of Acceptance”?

“Letter of Acceptance” means the formal acceptance by the Employer of the Tender (or the Bid, they are synonymous).

Following the negotiations with the Tenderers (Bidders), the Letter of Acceptance is issued by the Employer to the Successful Bidder, informing him of the acceptance of his tender as finally modified and agreed between the Employer and the selected contractor.



Letter of Acceptance (continued)

This informs the Successful Bidder that all future correspondence regarding the administration of the Contract, other than any formal requirement to the contrary in the Contract, should be addressed to the Engineer.

When the Letter of Acceptance is issued by the Employer, a legally binding contract is deemed to have been established between the Employer and the Successful Bidder.

The sum stated in the Letter of Acceptance forms the “Contract Price”.



What is the “Contract Price”?

“Contract Price” means the sum stated in the Letter of Acceptance as payable to the Contractor for the execution and completion of the Works and the remedying of any defects therein in accordance with the provisions of the Contract.

What are the “Conditions of Contract” ?

The Conditions of Contract define the terms under which the work is to be carried out, the relationship between the Employer and the Contractor, the powers of the Engineer and the terms of payment. The Conditions of Contract consist of two parts :

- Part I : covers the General Conditions,**
- Part II : covers the Conditions of Particular Application.**



CONTRACT ADMINISTRATION

Slide 29
September 2001





In the World, there are various types of conditions issued by various organisations for various types of contracts. If the work is mainly civil engineering and is to be valued by admeasurement, based on a Bill of Quantities, then the FIDIC 'Red Book' standard form will be suitable. As a matter of fact, almost all international agencies have adopted FIDIC Conditions for the constructions financed internationally.

The terms of the Fourth Edition of the Conditions of Contract for Works of Civil Engineering Construction issued by FIDIC in 1987 and reprinted in 1988 and 1992 with editorial and further amendments are still recommended for general use for the purpose of construction of such works where tenders are invited on an international basis, although FIDIC has recently issued new versions. These Conditions, subject to minor modifications, are also suitable for use on domestic contracts.



The version in English of the Conditions is considered by FIDIC as the official and authentic text for the purpose of translation. FIDIC Red Book has been translated in various languages.

In the preparation of the Conditions it was recognised that while there are numerous Clauses which will be generally applicable there are some Clauses which must necessarily vary to take account of the circumstances and locality of the Works. The Clauses of general application have been grouped together in this document and are referred to as “Part I – General Conditions”. They have been printed in a form which will facilitate their inclusion as printed in the contract documents normally prepared.

The “General Conditions” are linked with the “Conditions of Particular Application”, referred to as Part II, by the corresponding numbering of the Clause, so that Parts I and II together comprise the Conditions governing the rights and obligations of the parties.



Part II must be specially drafted to suit each individual Contract.

It should be noted that “Red Book” is not intended to cover works valued on a Lump Sum, Cost Plus or Target Cost of a Design and Build Basis. It is not recommended that the FIDIC ‘Red Book’ be varied to accommodate other type of works as it is dangerous to amend any form of contract to cover work for which it was not intended.

There were other forms of conditions previously issued by FIDIC for other works under the name of “Yellow” and “Orange Books”, however FIDIC has recently issued new sets including “Green” and Silver Books”.



What is the Form of “Performance Security”?

Almost all types of contracts require the Contractor to obtain a security for his proper performance of the Contract. This is generally a letter of guarantee issued by a reputable bank acceptable to the Employer. This letter of guarantee must be in the form included in the Tender Documents as well as in the Contract Documents.

The Contractor must supply it to the Employer at his own cost within 28 days of his receipt of the Letter of Acceptance, simultaneously informing the Engineer as set forth in Clause 10 of the General Conditions. The amount must be as stated in the Appendix to Tender. In most cases, satisfactory submission of this document to the Employer is a pre-requisite to the signing of the Contract Agreement by the Employer.



Performance Security (continued)

The security must be valid until the issue of the Defects Liability Certificate whereupon it must be returned to the Contractor within 14 days.

If the Contractor fails to fulfil his obligations, some certain Clauses of the Conditions entitles the Employer to liquidate the Performance Security. However, before claiming on the Security the Employer must inform the Contractor of the claim.



What is the Form of “Advance Payment Security” ?

Frequently, provision is made in overseas contracts for advance payments to the Contractor in respect of plant and materials, to assist the financing of the high cost of mobilization. This payment is made to the Contractor against a Letter of Advance Payment Guarantee issued by a reputable bank acceptable to the Employer. This document must be in the form included in the Tender Documents as well as in the Contract Documents.

However, no amount will be certified by the Engineer for advance payment, until the Performance Security has been satisfactorily submitted to the Employer, the Contract Agreement has been signed by both Parties and the letter of Guarantee has been satisfactorily submitted to the Employer.



How is the Advance Payment be recovered ?

The Advance Payment is recovered from the Monthly Payments to be made to the Contractor on a pro rata basis. This Guarantee is also subject to liquidation by the Employer as in the Performance Security.



What is Volume II : Technical Specifications?

“Specification” means the specification of the Works included in the Contract and any modification thereof or addition thereto made under Clause 51 or submitted by the Contractor and approved by the Engineer. It means that unless a variation is made under Clause 51 or proposed by the Contractor and approved by the Engineer, neither the Contractor nor the Employer and his Representatives have any right to modify the Specifications.

Unless it is legally or physically impossible, the Contractor shall execute and complete the Works and remedy any defects therein in strict accordance with the Contract to the satisfaction of the Engineer as stated in Clause 13.



What is Volume III : Bill of Quantities ?

This Volume includes :

- The Bid
- Appendix to Bid
- Preamble
- Dayworks Schedule
- Priced Bill of Quantities



What is the “Bid” (or Tender) ?

“Tender” means the Contractor’s priced offer to the Employer for the execution and completion of the Works and the remedying of any defects therein in accordance with the provisions of the Contract, as accepted by the Letter of Acceptance.

The Tender is a letter to submitted by the bidder to the Employer in accordance with the Tender Documents. The Tender must be in the form stipulated in the Tender Documents.



What is the “Appendix to Bid” ?

“Appendix to Tender” means the appendix comprised in the form of Tender annexed to the Tender Documents. This Appendix includes data specific to this Contract and some data to be filled by the bidder. In Contract Documents, it is an integral part of the Bid.

What is the “Preamble” ?

“Preamble” is the preamble of the Bill of Quantities, where the Method of Measurement on which the Bill of Quantities is prepared is stated. Method of Payment is also described or referred in the Preamble.



What is the “Priced Bill of Quantities”?

In the Contract, whenever “Bill of Quantities” is referred to, it means the priced and completed bill of quantities submitted by the Contractor to the Employer forming part of his Tender in accordance with Tender Documents.



What is Volume IV - Drawings?

This volume covers the Drawings submitted to the bidders by the Employer as part of Tender Documents and returned by the bidders to the Employer in accordance with the provisions of Tender Documents. However, wherever in the Contract, the “Drawings” are referred to, means all drawings calculations and technical information of a like nature provided by the Engineer to the Contractor under the Contract (namely in course of the Contract) and all drawings, calculations, samples, patterns, models, operation and maintenance manuals and other technical information of a like nature submitted by the Contractor to and approved by the Engineer.



SESSION III

TIMING

OF

CONSTRUCT

ADMINISTRATION



When is the Contract administered ?

The Contract is administered during the construction period followed by a Defects Liability Period.

What is the Contraction Period ?

Construction Period is defined in FIDIC Conditions of Contract as “Time for Completion”.



What is the “Time for Completion” ?

“Time for Completion” means the time for completing the execution of and passing the Tests on Completion of the Works or any Section or part thereof as stated in the Contract (or as extended under Clause 44) calculated from the “Commencement Date”.

What is the “Commencement Date” ?

“Commencement Date” means the date upon which the Contractor receives the notice to commence issued by the Engineer pursuant to Clause 41.



What is the Notice to Commence ?

The Notice to Commence is the first task of the Engineer following the Letter of Acceptance has been issued by the Employer. The Notice to Commence must be issued within the time stated in the Appendix to Tender.

When is the Construction deemed to have been Completed ?

The construction is deemed to have been completed, when the “Taking-Over Certificate” is issued by the Engineer for the whole of the Works or any Section or part thereof.



What is the “Taking-Over Certificate” ?

“Taking-Over Certificate” means a certificate issued pursuant to Clause 48, by the Engineer following the whole of the Works or any Section or part thereof have been substantially completed and have satisfactorily passed any “Tests on Completion” prescribed by the Contract.

What do the “Tests on Completion” mean ?

“Tests on Completion” mean the tests specified in the Contract or otherwise agreed by the Engineer and the Contractor which are to be made by the Contractor before the Works or any Section or part thereof are taken over by the Employer.



What is the “Defects Liability Period” ?

Pursuant to Clause 49, the expression “Defects Liability Period” means the defects liability period named in the Appendix to Tender, calculated from :

(a) the date of completion of the Works certified by the Engineer in accordance with Clause 48, or

(b) in the event of more than one certificate having been issued by the Engineer under Clause 48, the respective dates so certified.

and in relation to the Defects Liability Period the expression “the Works” shall be construed accordingly.



When is the Contract deemed to have been completed?

Pursuant to Clause 62, The Contract is not considered as completed until a Defects Liability Certificate is issued by the Engineer to the Employer, with a copy to the Contractor, stating the date on which the Contractor has completed his obligations to execute and complete the Works and remedy any defects therein to the Engineer's satisfaction. The Defects Liability Certificate given by the Engineer within 28 days after the expiration of the Defects Liability Period, or, if different defects liability periods become applicable to different Sections or parts of the Permanent Works, the expiration of the latest such period, or as soon thereafter as any works instructed, pursuant to Clauses 49 and 50, have been completed to the satisfaction of the Engineer.

It should be noted that the Defects Liability Certificate does not affect the Contractor's and Employer's obligations to one another.



What are the Procedures for Commencement and the Final Stages?

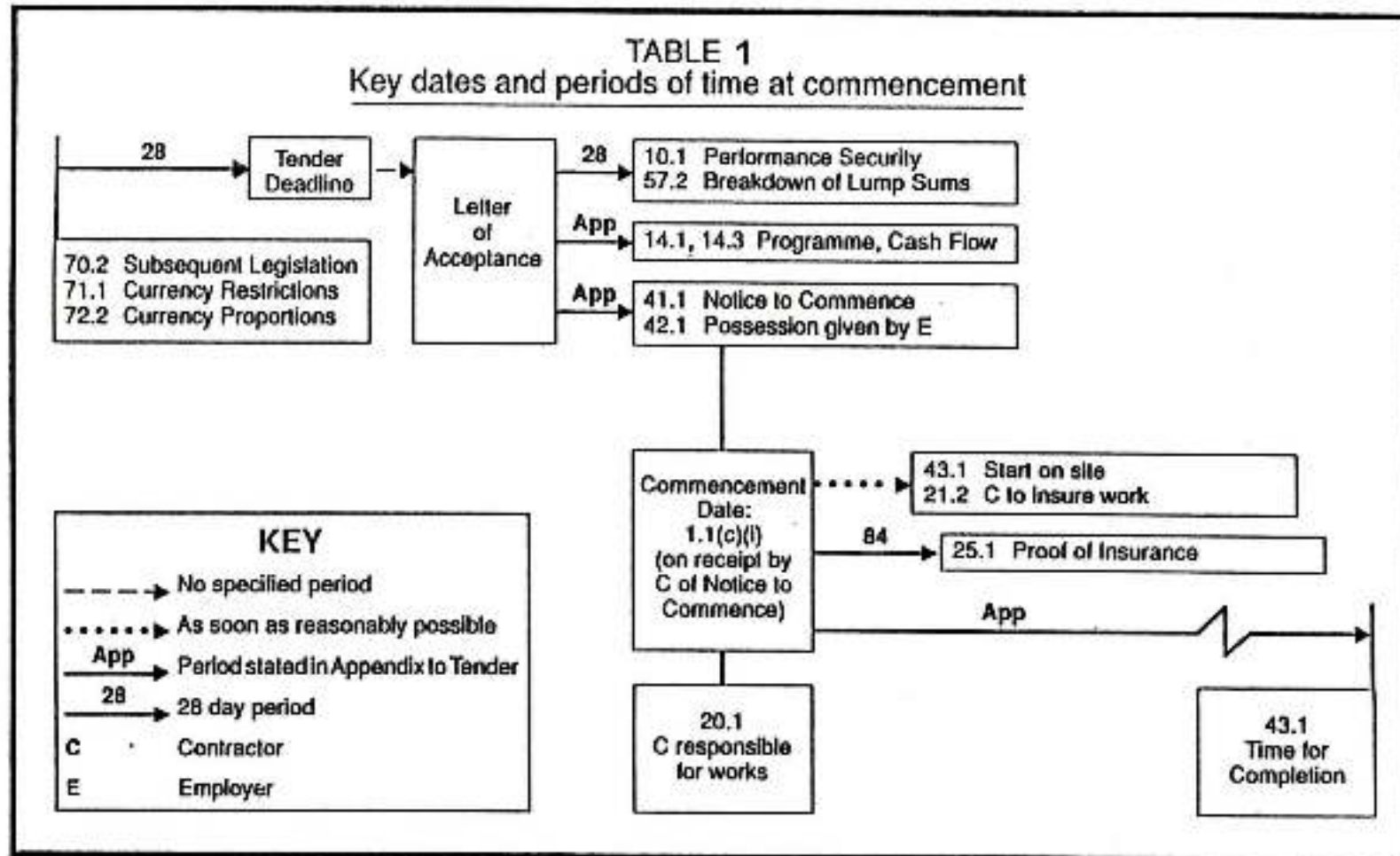
Tables 1 and 3 illustrate the activities and time periods at the beginning and end of the project. Table 1 demonstrates the significance of the letter of acceptance as a trigger for time periods under five clauses. The discrepancy between the Contractor's responsibility for the works under clause 20.1 (Care of Works) and his obligation to insure those works under clause 21.2 (Scope of cover) is also demonstrated.

Table 2 and 3 illustrate the complexity of the provisions governing the end of the project and also the need to distinguish between the date of issue of the Taking-Over Certificate which governs various matters and the date stated within the Certificate from which date the Defects Liability Period runs.



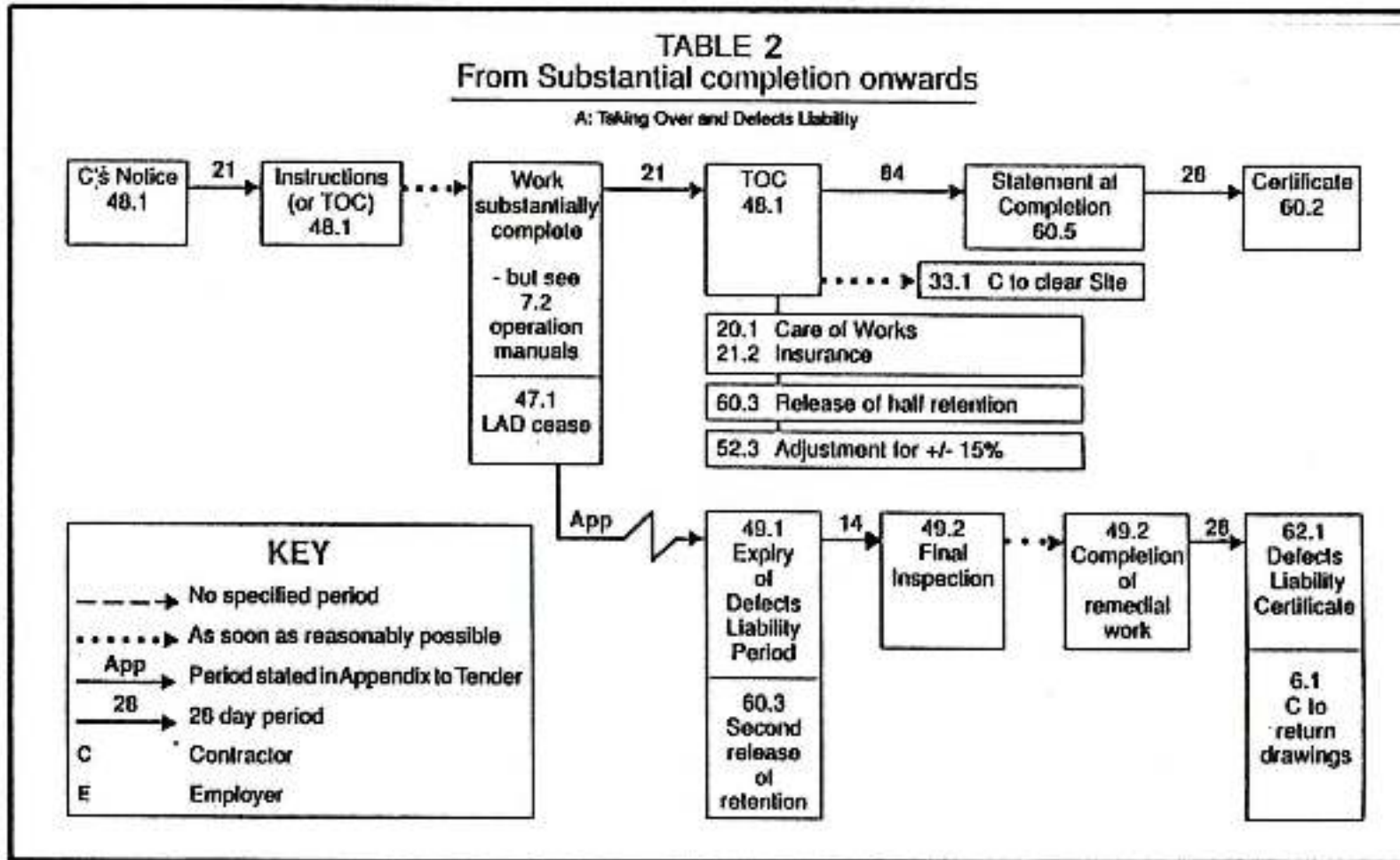
CONTRACT ADMINISTRATION

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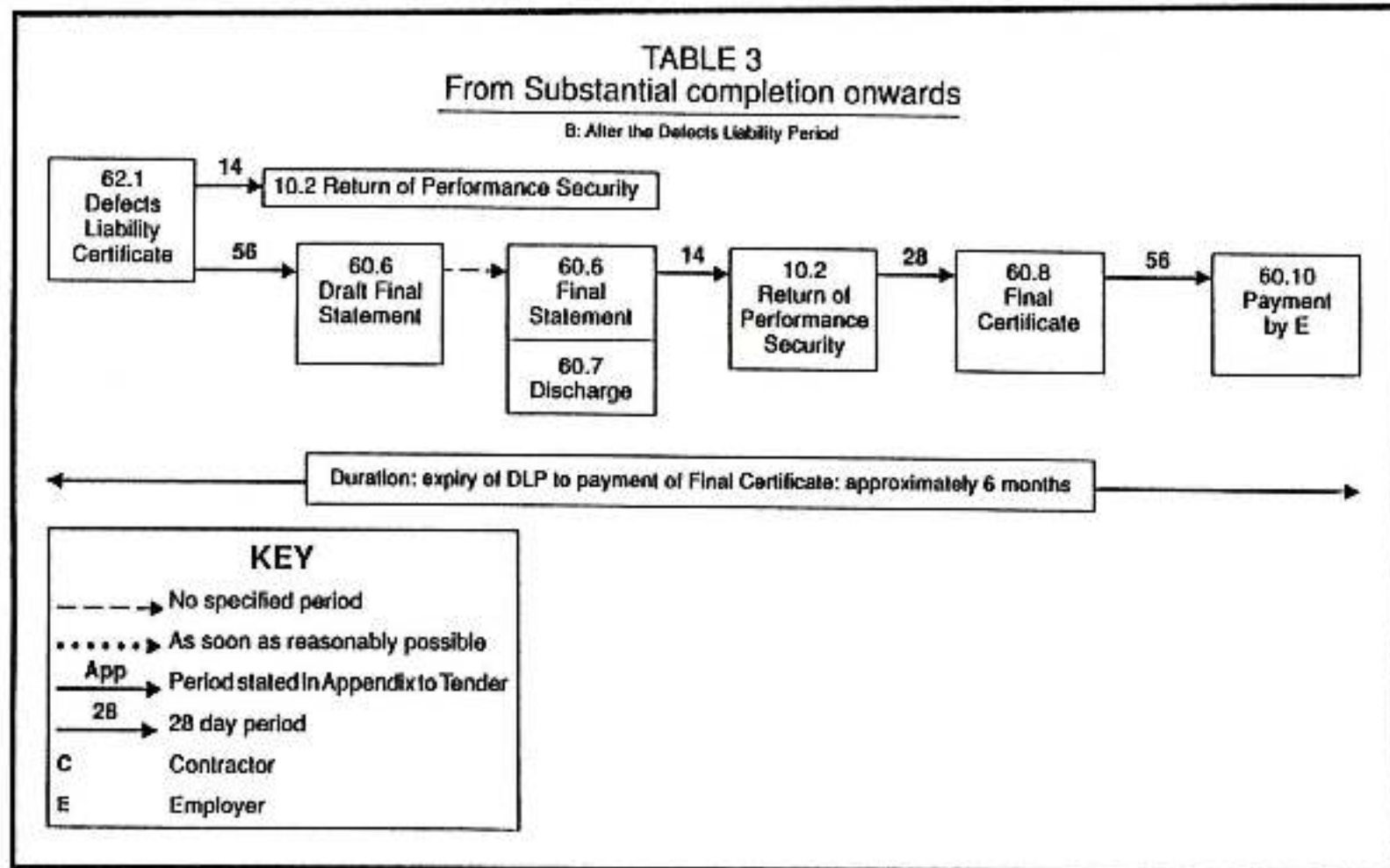
CONTRACT ADMINISTRATION





CONTRACT ADMINISTRATION

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What is the Relationship between the Phase of Contract Administration and the Other Phases of a Project?

A project, usually, has four different phases, and the phase of Contract Administration is one of them.

Traditionally there are three parties involved in a project :

- The Promoter,
- The Consultant,
- The Contractor,



PROJECT PHASES

The Parties have different roles and activities in these phases, These are:

- Promotion of the Project by the Promoter,
- Study and Investigations by the Consultant,
- Design and Tender Documents by the Consultant,
- Construction of the Works by the Contractor under the supervision of the Consultant, as “the Engineer”,
- Use of Construction by the User.

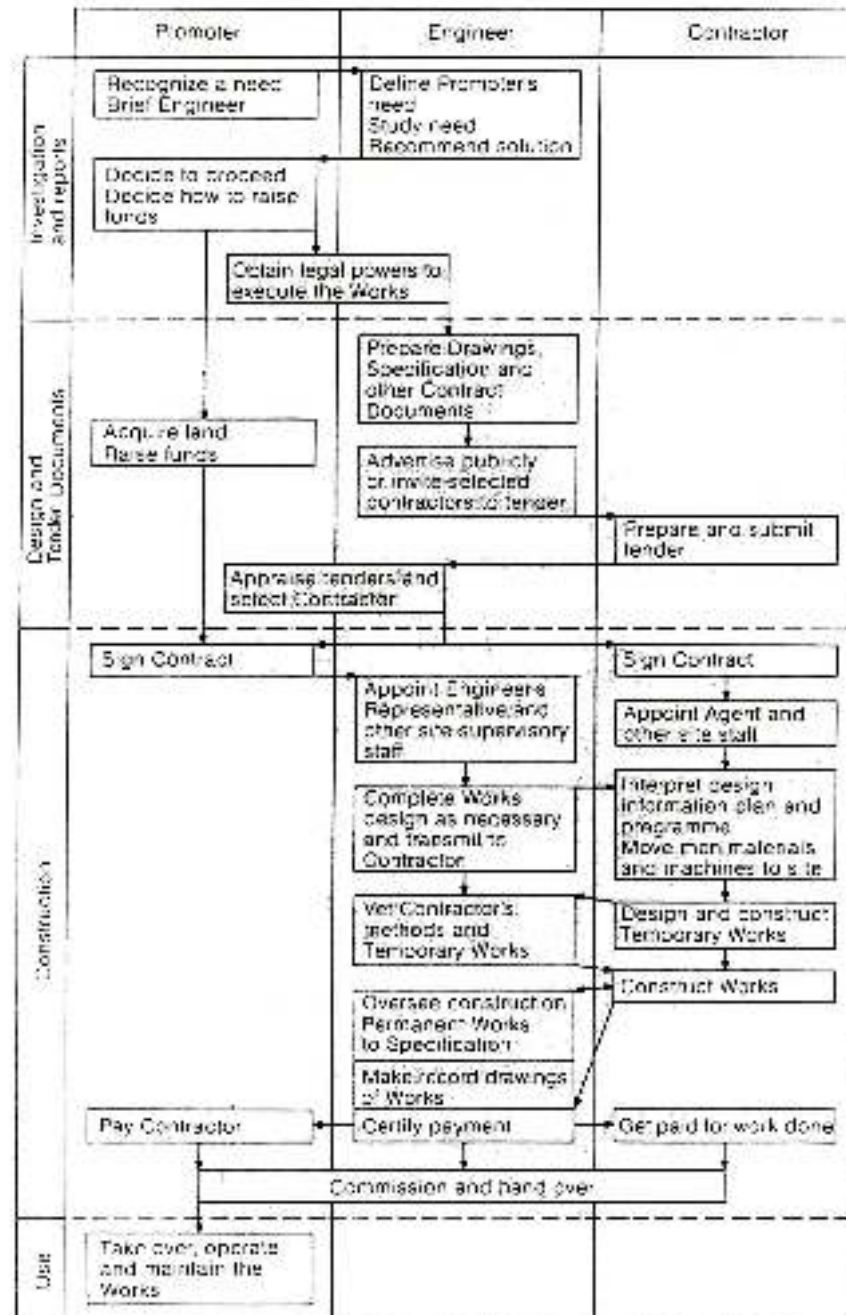


Table 4.
Activities of the parties to a project



SESSION IV

**RESPONSIBILITIES
IN
SELECTED CLAUSES**



COMMUNICATION SYSTEM

The FIDIC document demands a system of communication which cannot be shortened or ignored without putting at risk the rights of any one Party to the Contract. It is therefore important to remember that when communications are required to be in writing, this means precisely that, and in like manner, the giving of notices, instructions or certificates should follow the timing and procedures precisely as dictated by the Conditions of Contract, and in the detail required. In the event of a dispute, the legal representatives of all Parties will rely more than anything else on written evidence, documents, and diaries, and if one Party has failed to fulfil its obligations properly in this respect, then its chances of success may be considerably reduced.



RESPONSIBILITIES IN FIDIC

Both Parties to the Contract, and the Engineer, have a number of responsibilities, which are set out very clearly in the Conditions of Contract. These must be fully observed if work is to progress properly and without too many arguments. Some Clauses require particular attention by each of the three main participants of the Contract. So that they can be identified without difficulty, these have been listed under the name of each of those responsible – the Employer, the Contractor and the Engineer. These are given in the booklet.

In each section the Clause number and description are given in the left-hand column and the corresponding responsibility is given in the right-hand column in this booklet.



COMMENCEMENT OF WORKS

CLAUSE 4.1 : This clause defines the start of the construction of the project. Once the tender has been accepted, the Employer has a period, set out in the tender, to give the go-ahead via a notice from the Engineer. When the Contractor has received the notice, time is running and the Contractor is obliged to start work and proceed “with due expedition.”

THE ENGINEER : To give notice to the Contractor to commence the Works within the time stated in the Appendix after the date of the Letter of Acceptance.

THE CONTRACTOR : To commence the Works as soon as practicable after receipt of the Notice from the Engineer issued within the time stated in the Appendix to the Tender after the date of the Letter of Acceptance; once started he must get on with the Works expeditiously and without delay.



CLAUSE 14 PROGRAMME, METHOD STATEMENT, CASH FLOW

14.1. Within a set time of the Letter of Acceptance the Contractor is to submit for approval his programme in the form required by the Engineer. He is also to provide a written method statement as and when required by the Engineer.

14.2. If the Engineer considers that progress does not match the approved programme, he may require the Contractor to produce a revised programme showing how the works are to be completed on time.

14.3. Within a set time of the Letter of Acceptance, the Contractor is to submit a detailed cash flow estimate of payments due to the Contractor and will revise the estimate quarterly if the Engineer so requires.

14.4. The Engineer's consent to programmes, method statements or cash flow estimates will not relieve the Contractor of any of this contractual responsibilities.



CLAUSE 42 : POSSESION OF SITE

42.1. Unless the Contract contains specific provisions, the Employer is to hand over possession of as much of the site and the agreed means of access as necessary to enable the Contractor to proceed with his programme or proposals for the project.

42.2. If the Contractor is delayed or incurs costs due to a failure by the Employer to give necessary possession, the Engineer is to grant an extension of time and costs.

42.3. The Contractor is to pay for any special way leaves or additional facilities required off-site



What will happen if the Contractor fails to start to work ?

- If the Contractor fails to commence the Works in accordance with Sub-Clause 41.1, without reasonable excuse,
- If the Engineer certifies this default under Sub-clause 63.1 (b) (I), then,
- The Employer give two weeks' notice before terminating the contract and taking over the site. The Employer is then free to complete the works himself or with another contract and use the Contractors plant, materials, etc. to do so.



What will happen, if the Contractor is in culpable delay ?

- If the Contractor has started to work, but his rate of progress is too slow, then :
- The Engineer shall notify the Contractor to expedite progress under Sub-Clause 46.1,
- If the Contractor without any reasonable excuse, fails to expedite progress within 28 days after receiving notice of Sub-Clause 46.1, then
- The Engineer certifies this default under Sub-Clause 63.1 (b) (ii), and the Employer may take action.



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**FCIC INTERNATIONAL WORKSHOP ON NATURAL DISASTER-RESPONSE AND
MANAGEMENT SYSTEMS IN OIC MEMBER COUNTRIES-ROLE OF CONSULTANTS
21 March 2006**

**THE ROLE OF CONSULTANTS IN THE DESIGN,
PLANNING AND IMPLEMENTATION OF THE SYSTEM**

A CASE STUDY

**1992 ERZINCAN POST-EARTHQUAKE HOUSING
REHABILITATION AND RECONSTRUCTION PROJECT**

Presented by

Assoc. Prof. Dr. Yalçın Tezcan,



SLIDE-01



CONTENTS

- 1. Natural Disasters**
- 2. Role of Consultants in Earthquake Risk Management**
- 3. Role of Consultants in Managing Earthquake Disaster Relief**
- 4. Case Study : 1992 Erzincan Post-Earthquake Housing Rehabilitation and Reconstruction**



1. Natural Disasters ⁽¹⁾

Earthquakes : 130 million people are exposed every year to earthquake risk.

Hurricanes : 120 million people are exposed every year to hurricane hazard.

Floods/Landslides : 200 million people are exposed every year to catastrophic flooding.

Droughts : 220 million people are exposed annually to drought.

(1) Murat Sungur Bursa, "Pro-active Disaster Management" paper, EFCA 2004 Istanbul Conference



Global cost of natural disasters is enormous⁽¹⁾ :

- 2.1 billion people affected by natural disasters from 1991 to 2000.
- 1.5 million people killed by natural disasters in recent 20 years.
- 3000 people exposed to natural disasters per killed person.
- Global economic losses for 1992-2002 were 7.3 times greater than the 1960's.
- Average yearly losses due to natural disasters during 1990s is US\$63 billion.
- The global cost of natural disasters is anticipated to top US\$300 billion annually by 2050.

(1) Murat Sungur Bursa, "Pro-active Disaster Management" paper, EFCA 2004 Istanbul Conference



Costs are not evenly borne ⁽¹⁾ :

- 97% of people killed due to disasters are from low-income or developing countries.
- Although 15% of exposed population live in developed countries, only 1.8% of killed people live in these countries.
- With similar patterns of disasters, Peru fatalities average 2900 a year and Japan averages 63.
- Annual GDP losses in developing countries is 2- 15%.
- Economic loss (as a percent of GNP) in developing countries is 20 times greater than developed ones.
- 94% of major natural disasters occurred in developing countries.
- 98% of people affected by natural disasters live in developing countries.
- The average number of victims disasters in the developing world is 150 times larger than in the developed world.

(1) Murat Sungur Bursa, "Pro-active Disaster Management" paper, EFCA 2004 Istanbul Conference



The World by Income ¹³⁰

This map presents economies classified according to World Bank estimates of 1997 GNP per capita. Not shown on the map due to space constraints are: American Samoa (upper middle income); Fiji, Kiribati, Samoa, Tonga (lower middle income); French Polynesia (high income); Tuvalu (no data).

- Low \$785 or less
- Lower middle \$786 to \$3,125
- Upper middle \$3,126 to \$9,655
- High \$9,656 or more
- No data





WE ARE ALL IN DEVELOPING ENVIRONMENTS

All the IDB member countries (except Brunei, Kuwait, Qatar and UAE) are developing countries.

Almost all the members of FCIC are in developing environments.



More Need For Pro-active Strategies in OIC Member Countries

As low-income or developing countries are more exposed to the disaster hazards, there is more need for Pro-active Strategies for Disaster Management in OIC Member Countries

- Natural disaster risks are inevitable, but predictable,
- Communities can prepare for natural disasters and so disaster losses can be minimized or some times can be avoided, in case properly managed.

With this aim, pro-active strategies should be adopted and implemented in risk management in OIC member countries

Therefore

Especially in OIC Member Countries, the role of consultants in :

- Disaster Risk Management
 - Disaster Relief Management
- } **are essential**

The role of consultants in these two aspects will be discussed from earthquake viewpoint



2. The Role of Consultants in Earthquake Risk Management

- **Disaster preventive urban planning**
 - Criteria development for urban planning to reduce potential earthquake disaster effects,
 - Planning of the new towns, satellite cities, compounds as per preventive criteria,
 - Modifications in the existing city plans, as per these criteria.
 - Supervision of implementation.
- **Earthquake-resisting structural design**
 - Criteria development • Plan check • Advanced analysis of complex structures
 - Earthquake - resisting structural design • Client-specific seismic structural design • Construction documents • Supervision of construction • Project management.
- **Seismic strengthening of existing buildings**
 - Seismic risk survey • Seismic vulnerability assessment • Detailed seismic risk analysis • Strengthening design • Retrofit construction documents • Supervision of retrofit works • Project management.



2.1 DISASTER PREVENTIVE URBAN PLANNING

The urban planners, sociologists and engineers have to take an active role in :

- refraining from hazard ignorant physical planning,
- carrying out vulnerability assessment of illegal and unplanned settlements,
- implementing urban regeneration plans for such settlements,
- decreasing density in congested areas,
- enforcing earthquake resisting building codes,
- establishing organizational and legislative frameworks,
- assisting in public awareness and preparedness.



2.2 EARTHQUAKE-RESISTING STRUCTURAL DESIGN

In the countries of devastating earthquakes, all buildings, structures and infrastructure facilities have, therefore to be earthquake - resisting. The consultants have to provide structural designs always fully in compliance with earthquake codes prevailing in the country.



2.3 SEISMIC STRENGTHENING OF EXISTING BUILDINGS

As structures age, they often become less fit for service and/or current earthquake codes, and may best be utilized in an adapted and strengthened form. As a matter of fact, the buildings, structures, industrial facilities designed and constructed in Turkey well before 1997/98 Earthquake Code, whether they were effected or unaffected by the 1999 Kocaeli Earthquake, need to be assessed with regard to reduction of their seismic risks.



Damage Control and Building Performance Levels

Levels	Overall Damage	Risk	Expected Post-Earthquake Damage State	Target Performance Versus Loss
Operational	Very Light	Much Less Damage and lower risk.	Backup utility services maintain functions; very little damage	Higher Performance less loss
Immediate Occupancy	Light	Less damage and lower risk.	The building remains safe to occupy; any repairs are minor	
Life Safety	Moderate	Somewhat more damage and slightly higher risk.	Structure remains stable and has significant reserve capacity; hazardous nonstructural damage is controlled.	
Collapse Prevention	Severe	Significantly more damage and greater risk.	The building remains standing, but only barely; any other damage or loss is acceptable	Lower performance more loss



2. The Role of Consultants in Earthquake Risk Management

- **Disaster preventive urban planning**
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- **Seismic strengthening of existing buildings**
 - Seismic risk survey • Seismic vulnerability assessment • Detailed seismic risk analysis • Strengthening design • Retrofit construction documents • Supervision of retrofit works • Project management.



3. The Role of Consultants in Managing Earthquake Disaster Relief

- *Post-earthquake repair and rehabilitation*
- Damage assessment
- Analysis and design of structural repairs and retrofits of damaged buildings
- Construction documents
- Supervision of repair and rehabilitation works
- Project Management.

- *Post-earthquake reconstruction*
- Site surveys and investigations
- Seismic risk assessment of the site
- Planning criteria development
- Planning and design of earthquake-resisting buildings and infrastructure
- Construction documents
- Supervision of construction
- Project management.



3.1 POST-EARTHQUAKE REPAIR AND REHABILITATION

- **Repair Methods:**
- Injections of cracks with chemical resins
- Confinement of joints, columns or beams with steel laminates, carbon fiber reinforced plastic plates and composite fabrics
- Reinforced concrete jacketing of columns
- Cosmetic repairs with repair mortars or grouts.
- **Retrofit Methods:**
- Shear Walls,
- Steel Bracing,
- Base isolation and damping
- **Services:**
- Damage Assessment
- Analyses
- Design
- Supervision and Project Management



3.2 POST-EARTHQUAKE RECONSTRUCTION

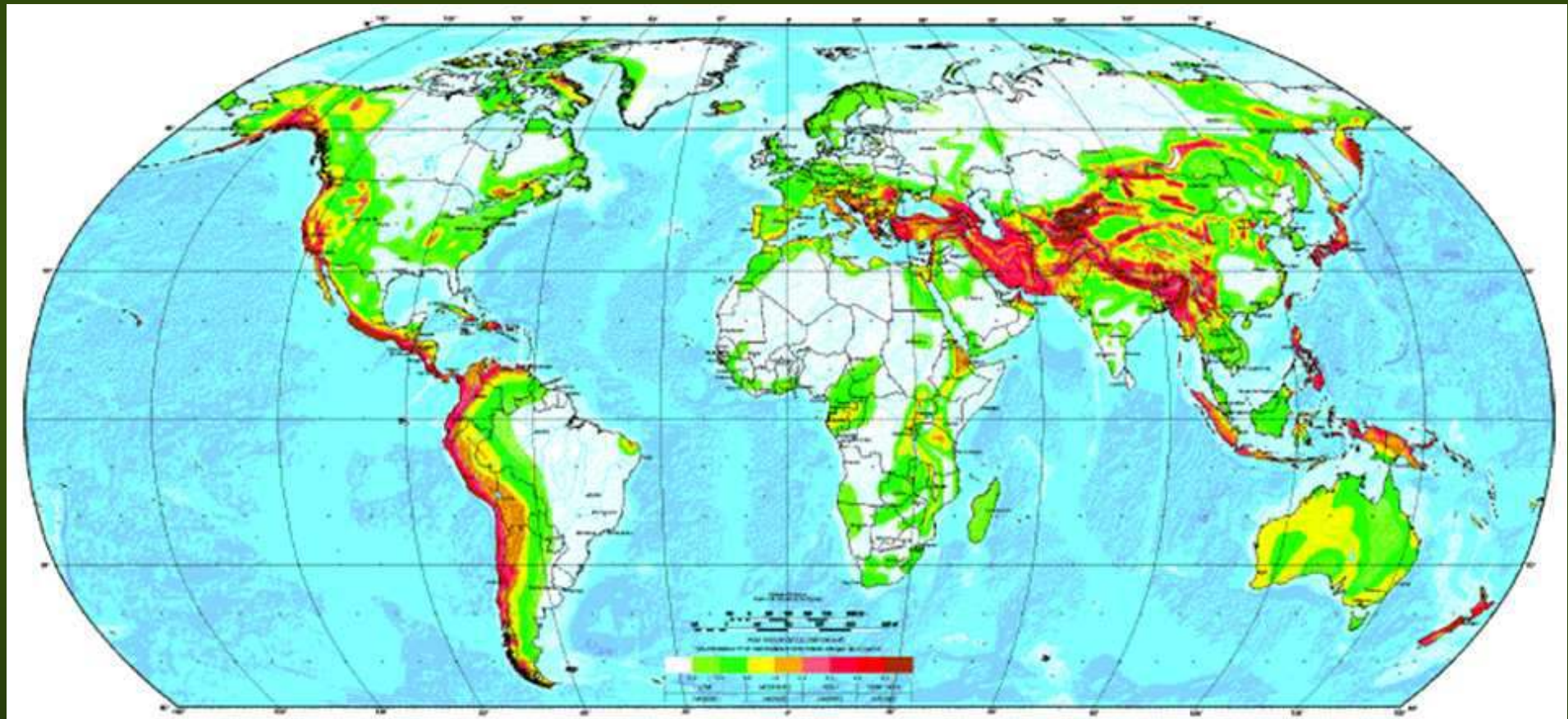
- Site Surveys and Investigations
- Seismic Risk Assessment of the Site
- Planning Criteria Development
- Planning and Design of Earthquake-resisting Buildings and Infrastructure
- Construction Documents
- Supervision of Construction
- Project Management



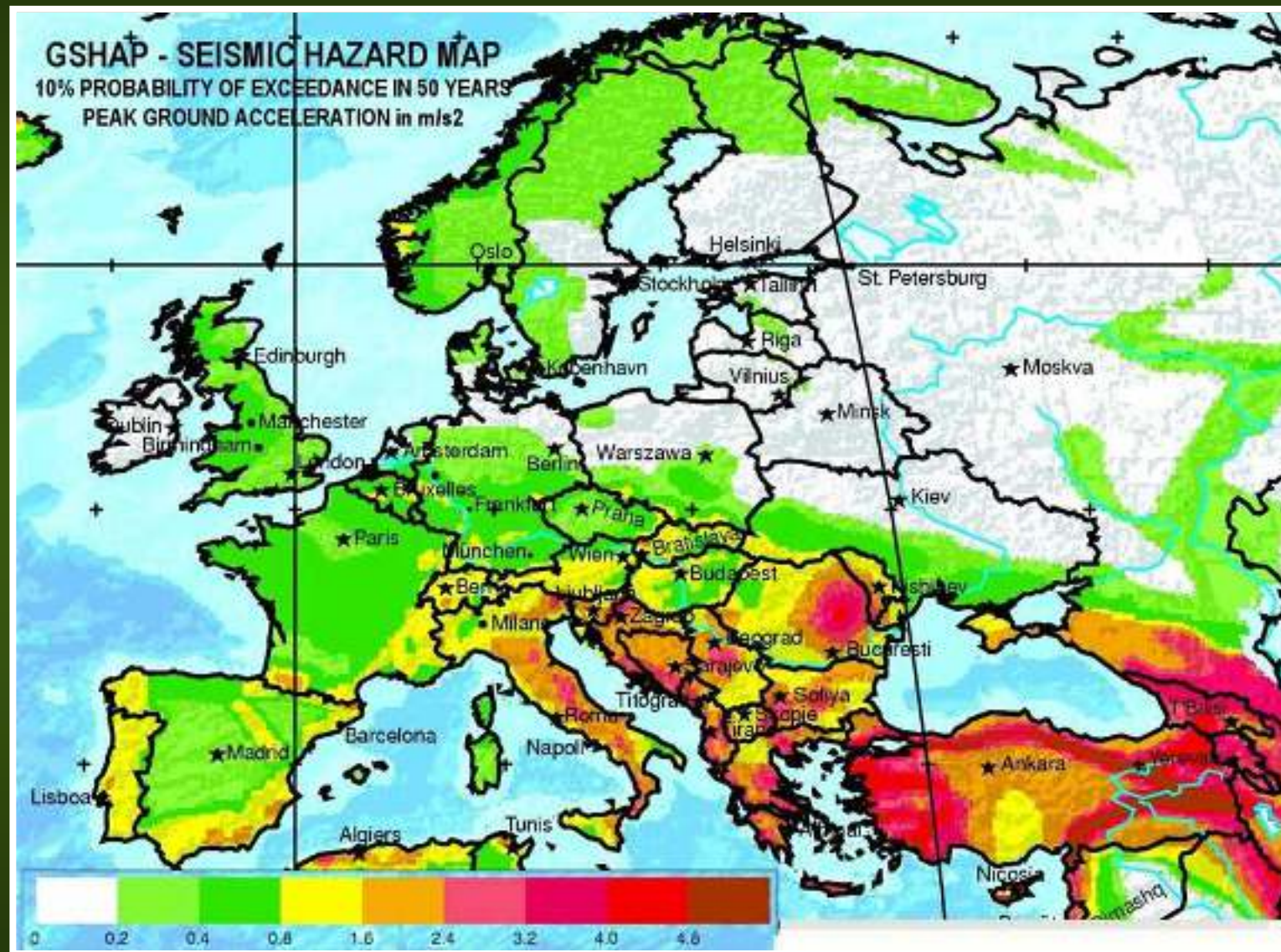
4. Case Study : 1992 Erzincan Post - Earthquake Housing Rehabilitation and Reconstruction Project



GLOBAL SEISMIC HAZARDS^(x) AND ANATOLIA



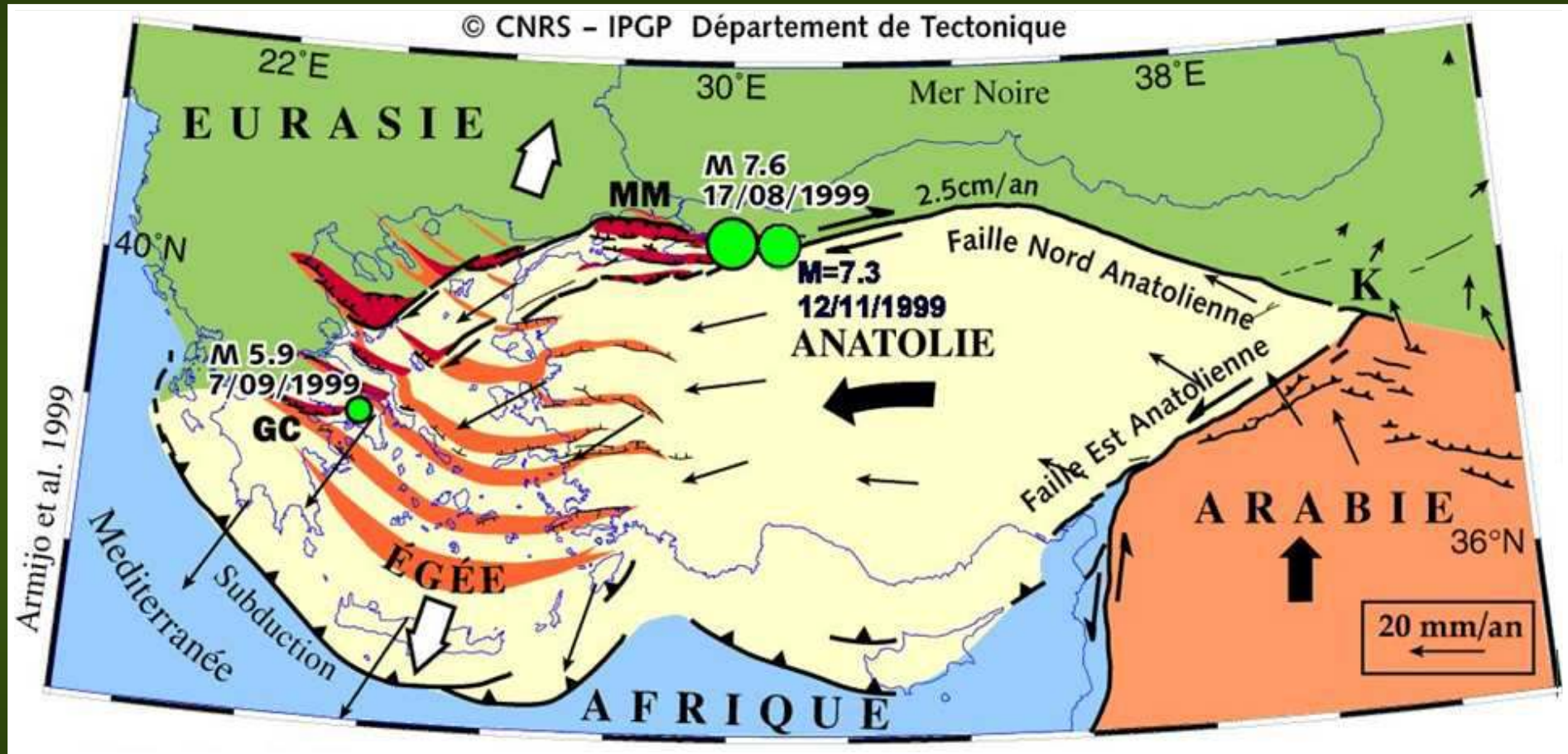
(x) By courtesy of Prof. Dr. Mustafa Erdik, Bosphorus University



(x) By courtesy of Prof. Dr. Mustafa Erdik, Bosphorus University

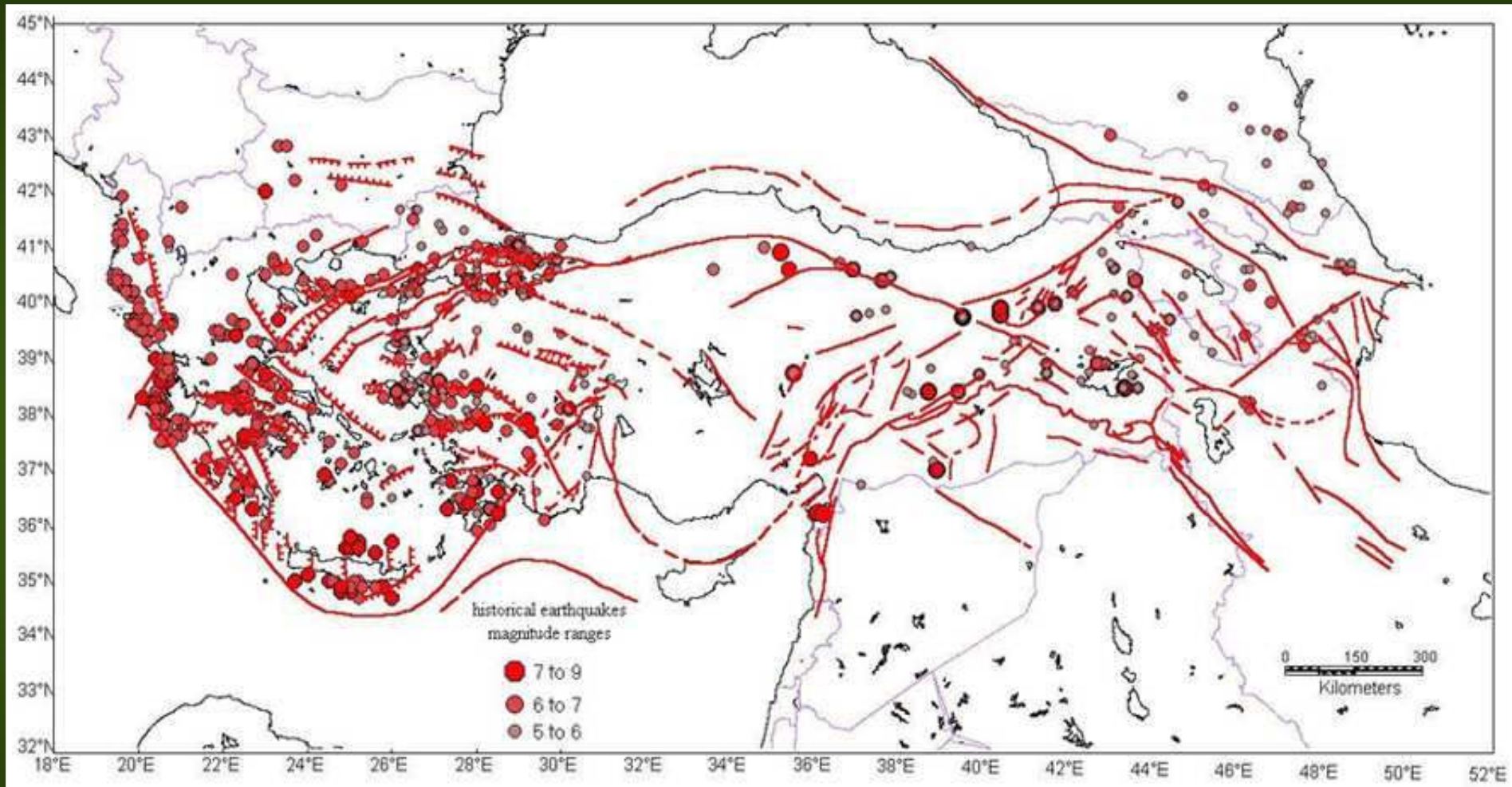


(x) Yücel Yılmaz, Erdoğan Yüzer “Disasters and Environmental Effects caused by Naturel Forces as exemplified from Anatolia”, paper, EFCA 2004 Istanbul conference



Anatolia, a point of convergence and subsidence

(x) By courtesy of Prof. Dr. Mustafa Erdik, Bosphorus University



Historical Seismicity with the Major Tectonic Features

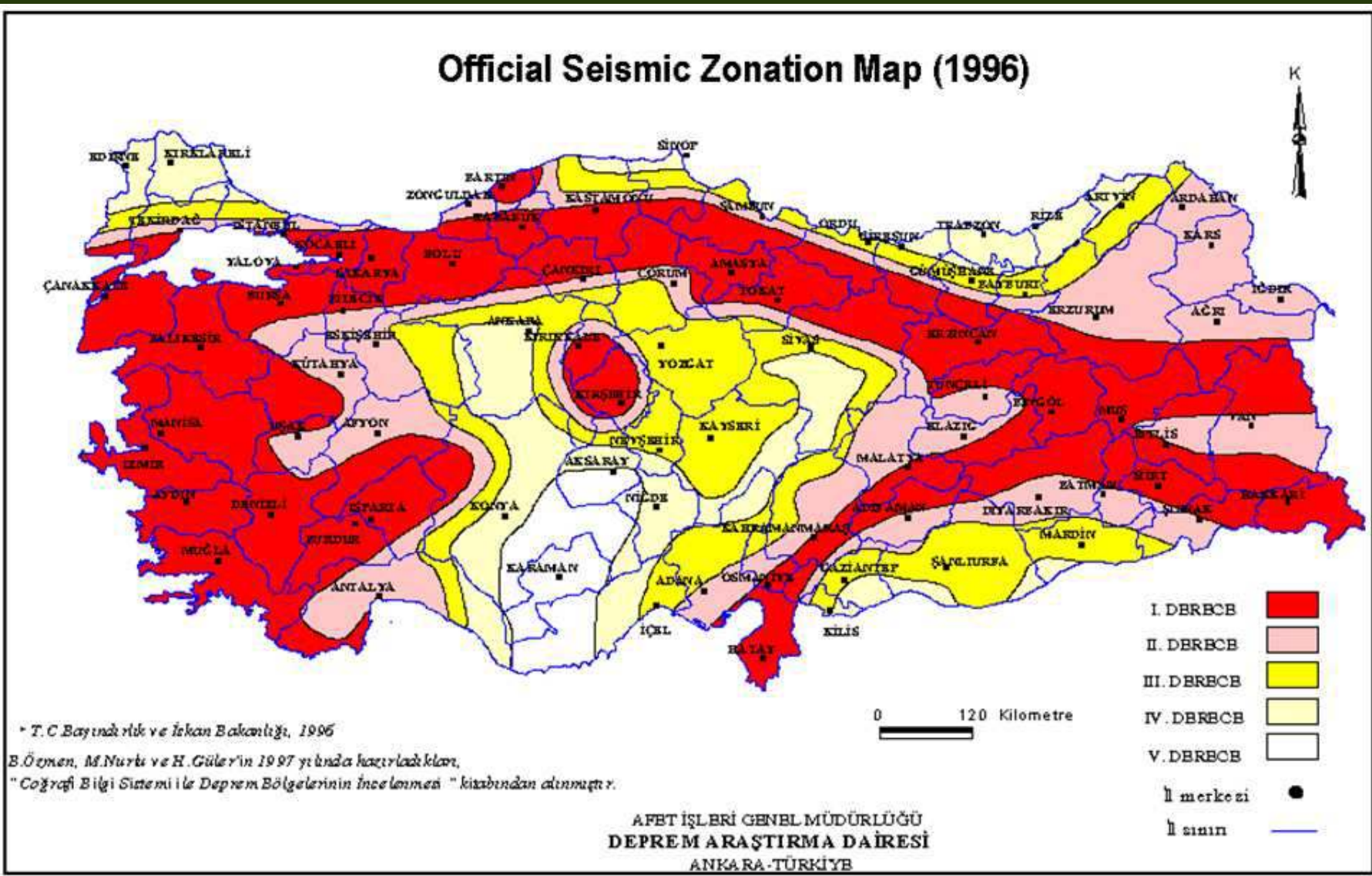
(x) By courtesy of Prof. Dr. Mustafa Erdik, Bosphorus University



(x) Murat Sungur Bursa, Pro-Active Disaster Management



Official Seismic Zonation Map (1996)



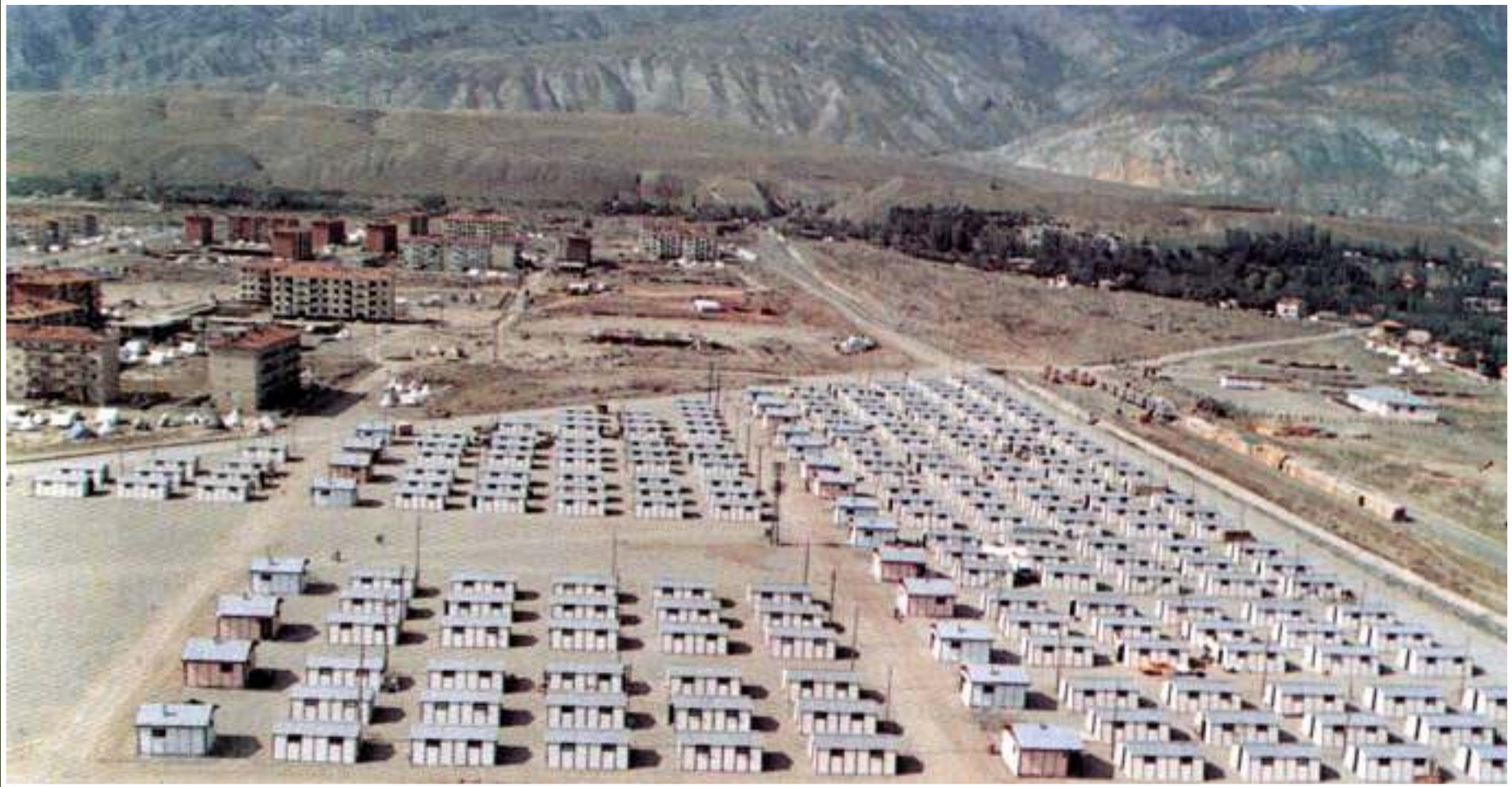
(x) By courtesy of Prof. Dr. Mustafa Erdik, Bosphorus University



Just after the Earthquake of 1992



A view of Erzincan in 1995 after rehabilitation and reconstruction



Temporary Accomodation



Emergency Repair, Rehabilitation and Reconstruction by the Ministry of Public Works and Settlement



ERZINCAN POST - EARTHQUAKE REHABILITATION AND RECONSTRUCTION PROJECT

Financed by the World Bank

Components :

- 1. Rehabilitation and Reconstruction of Hospitals**
- 2. Rehabilitation and Reconstruction of Private and Public Houses**
- 3. Rehabilitation and Reconstruction of Public Buildings**
- 4. Rehabilitation and Reconstruction of Commercial Facilities**
- 5. Rehabilitation and Reconstruction of Infrastructure**



ERZİNCAN POST - EARTHQUAKE HOUSING PROJECT

Repair, Rehabilitation and Reconstruction of
Cooperative Housing
(1132 dwellings)

Reconstruction of Public Housing
(1052 dwellings)

CONSULTANTS

SEYAŞ + TİMAT CONSORTIUM

LEADING CONSULTANT

SEYAŞ Sey Architects, Engineers, Consultants Inc.

SUB-CONSULTANTS

- DAMES + MOORE, Los Angeles, USA
 - WIDNELL, London, UK
 - WALLACE EVANS, Penarth, UK
 - IMPERIAL COLLEGE Experts, UK/Egypt
 - GENEL Mechanical Engineering Ltd., İstanbul
 - SEYAŞ+WIDNELL Cost Consultants, İstanbul
 - ZETAŞ Earth Technology, İstanbul
 - ELSAN Electrical Engineering Ltd. İstanbul
- Design Check and Approval : İTÜ Building and Earthquake Research & Imp. Center, İstanbul



LOAN RECEIVED FROM THE WORLD BANK FOR HOUSING PROJECT

Repair, Rehabilitation and Reconstruction of Cooperative Housing 10.7 M US \$

Reconstruction of Government Housing	<u>\$ 19.6</u>	5.0 M US \$
Reconstruction of Medical Staff Housing		9.2 M US\$
Reconstruction of Teachers Housing		5.4 M US \$

Total Estimated Cost **30.3 M US \$**



ERZINCAN HOUSING PROJECT STAGES OF CONSULTANCY SERVICES

- **Assessment Stage**
- **Planning and Preliminary Design Stage**
- **Design Stage**
- **Tender Documentation Stage**
- **Tender Stage**
- **Construction Stage**
- **Post-Construction Stage**



1. ASSESSMENT STAGE



STAGES OF CONSULTANCY SERVICES

PUBLIC HOUSING

• ASSESSMENT STAGE

- Field Survey
- Data Collection
- Examination of Geotechnical Conditions
- Assessment Report

• PLANNING & PRELIMINARY DESIGN STAGE

- Preliminary Planning Studies
- Architectural Preliminary Design
- Structural Preliminary Design
- Mechanical/Electrical/Civil & Landscape Preliminary Designs
- Geotechnical Investigations
- Cost Plan
- Development Control Plan and Report

• DESIGN STAGE

- Site Lay-out Final & Detailed Plans
- Architectural Final and Detailed Design
- Structural Final and Detailed Design
- Mechanical/Electrical/Civil/Landscape Final and Detailed Design

PRIVATE HOUSING

• ASSESSMENT STAGE

- Reconnaissance Visit
- Visual Emergency Inspection
- Data Collection for the Buildings
- Preparation of Survey Drawings
- Damage Recording
- Assessment Report

• PLANNING & PRELIMINARY DESIGN STAGE

- Preliminary Repair Design
- Preliminary Retrofit Design
- Preliminary Overall Design for New Buildings
- Geotechnical Investigations
- Cost Plan
- Development Control Plan and Report

• DESIGN STAGE

- Seismic Performance Analyses
- Detailed Repair and Retrofit Designs
- Overall Detailed Designs for the Reconstructions
- Structural Designs for the Partial Completions



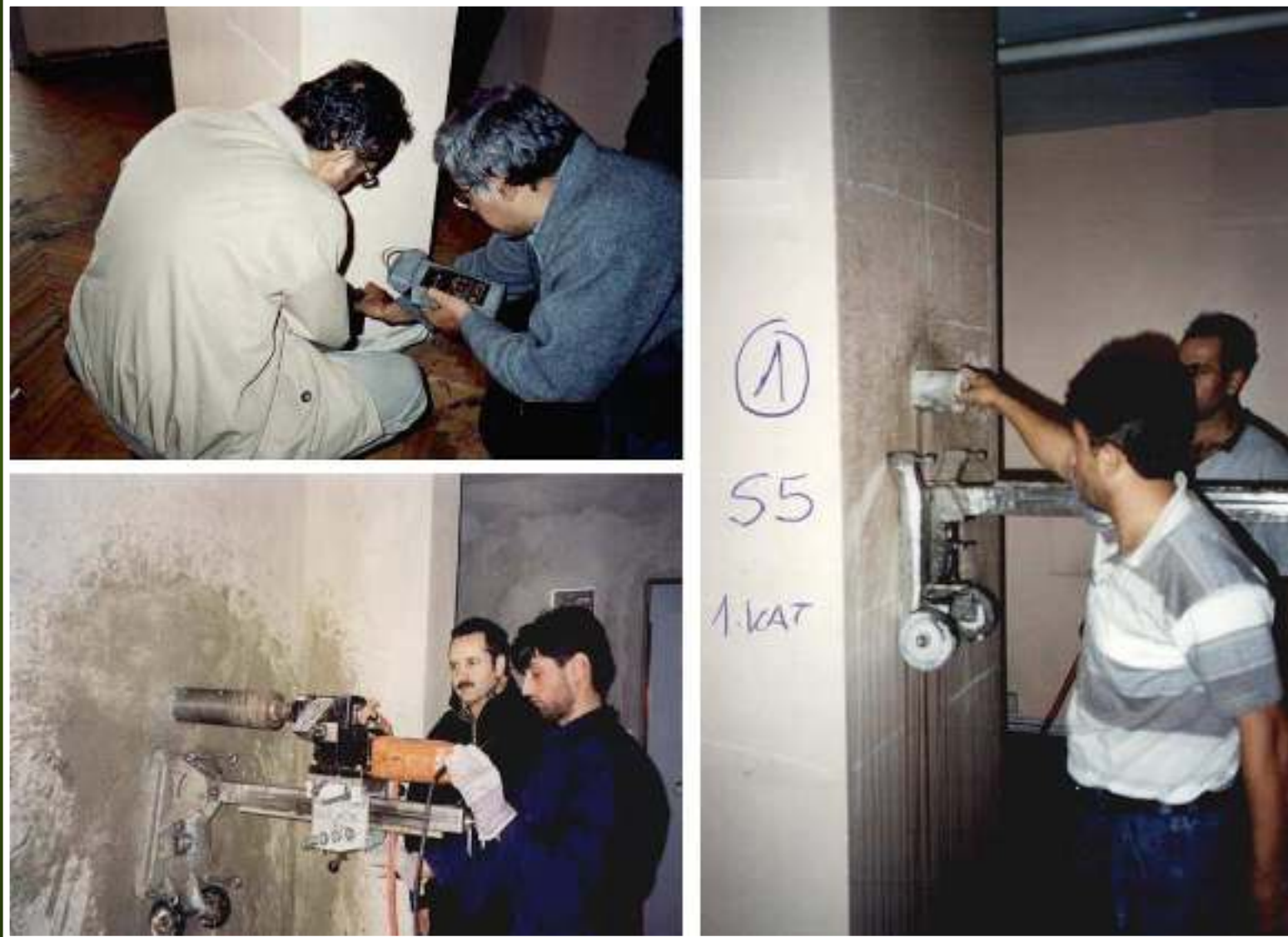
Masonry Houses collapsed due to Earthquake



Damage Assessment



Damage Assessment



Concrete tests



Assessment Report – Private Housing

Cooperative buildings were categorized :

- No damage
- Lightly damaged
- Moderately damaged
- Heavily damaged

and, a performance criteria for the evaluation and retrofit of the cooperative apartment buildings was given.

Possible repair and retrofit methods for achieving the “target” building seismic performance were proposed :

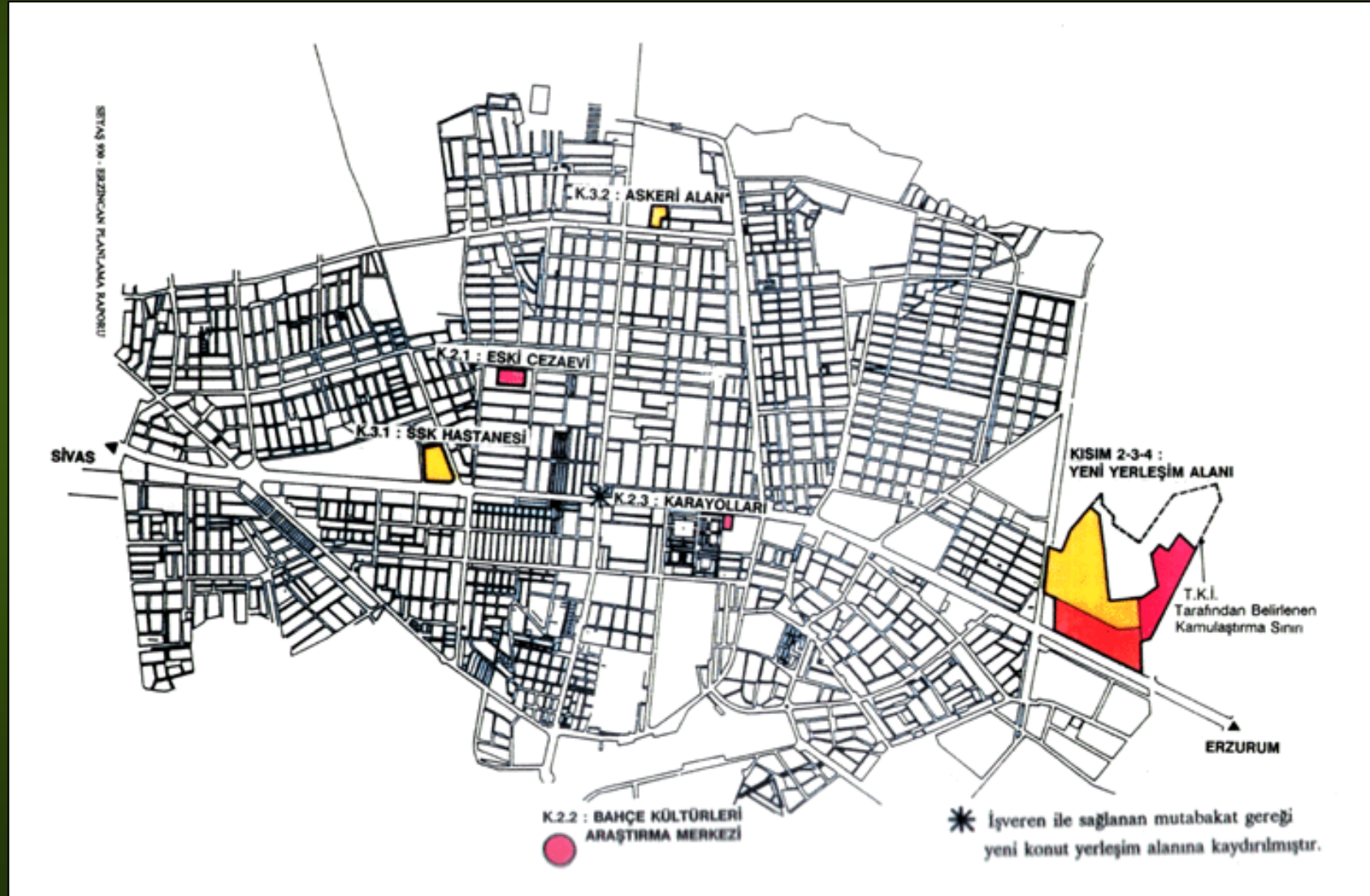
Repair Methods :

- Epoxy injection;
- Replacement of damaged concrete;
- Local and surface treatment for partially damaged concrete.

Retrofit Schemes :

- Concrete jacketing;
- Steel jacketing;
- Additional steel plates and/or steel profiles;
- Shotcrete application;
- Shear wall constructions;
- Steel stability elements.

Assessment Report – Public Housing Areas





2. PLANNING & PRELIMINARY DESIGN STAGE



STAGES OF CONSULTANCY SERVICES

PUBLIC HOUSING

- **ASSESSMENT STAGE**
 - Field Survey
 - Data Collection
 - Examination of Geotechnical Conditions
 - Assessment Report

- **PLANNING & PRELIMINARY DESIGN STAGE**
 - Preliminary Planning Studies
 - Architectural Preliminary Design
 - Structural Preliminary Design
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PRIVATE HOUSING

- **ASSESSMENT STAGE**
 - Reconnaissance Visit
 - Visual Emergency Inspection
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 - Assessment Report

- **PLANNING & PRELIMINARY DESIGN STAGE**
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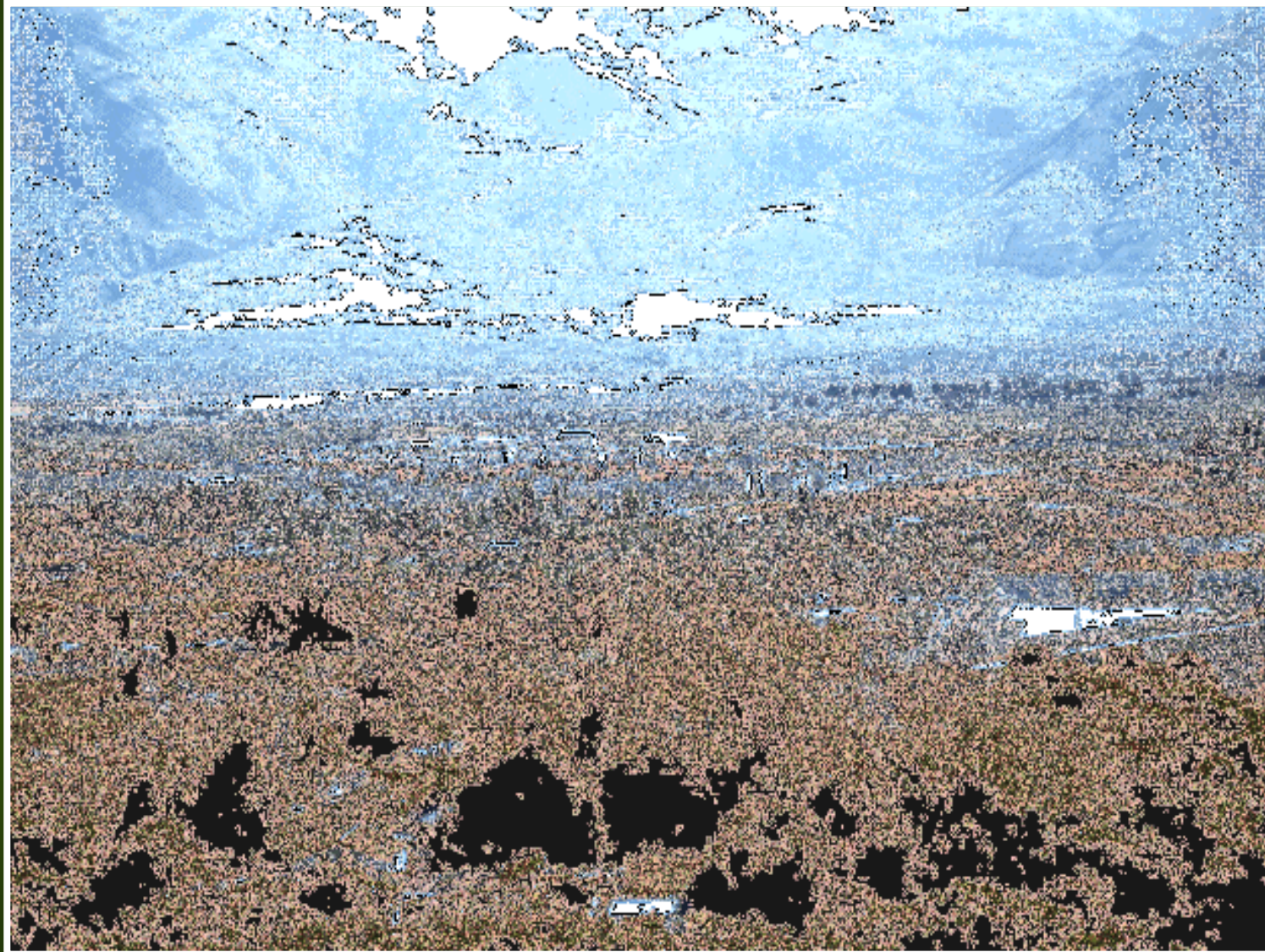
PRIVATE HOUSING PLANNING STRATEGY FOR NEW SITES

- Reduce disaster effects,
- Comply with the requirements of rapid construction system,
- Create common spaces within housing lots, where possible,
- Utilise optimum daylight and orientation, where possible,
- Provide contemporary approach to the service and pedestrian roads, where possible.

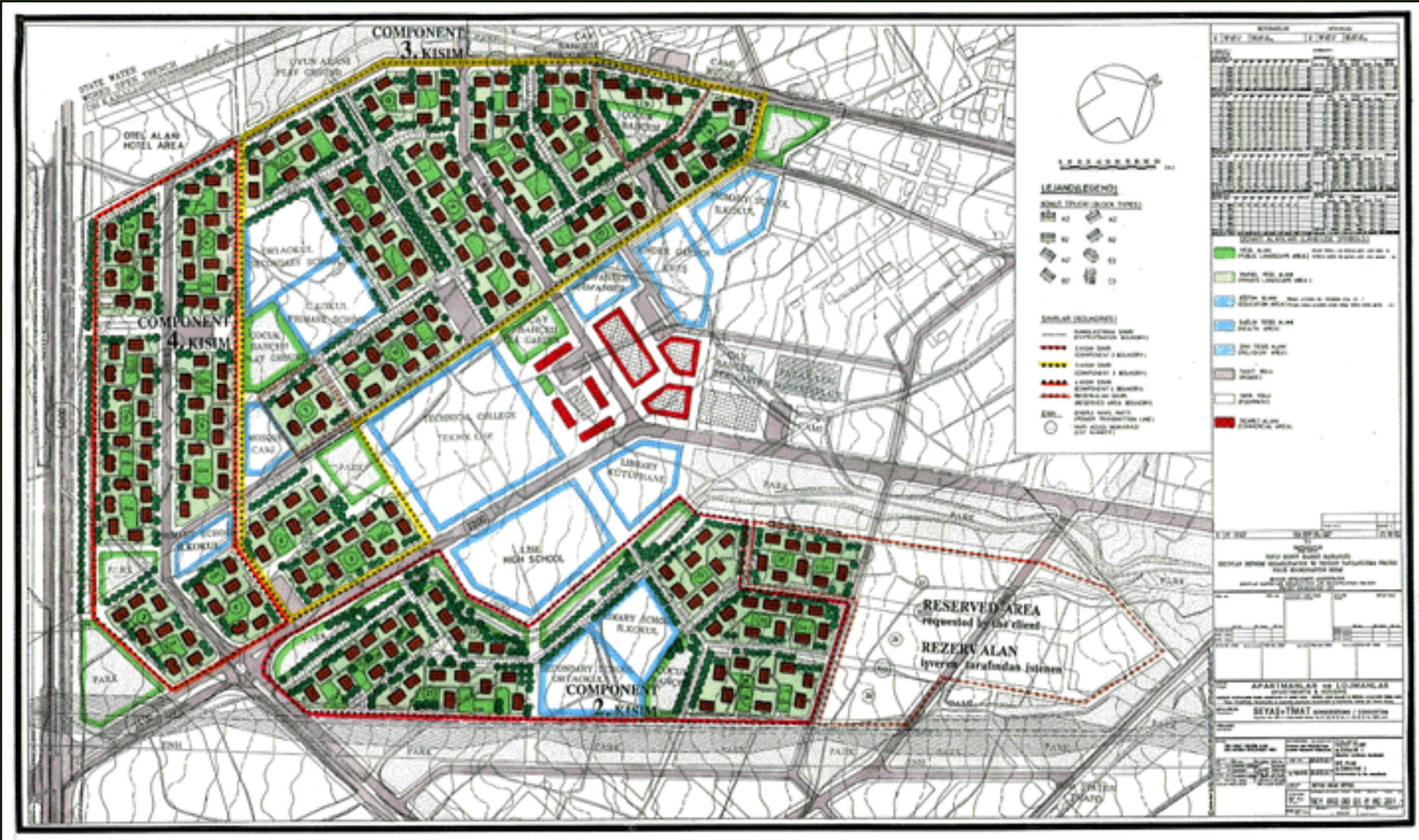


NEW PRIVATE HOUSES - DESIGN CRITERIA

- Reduce disaster impact
 - Use as simple a building form as possible,
 - Maintain homogeneity in form and in structural design,
 - Avoid long and tall buildings, L and zig-zag shapes, wings and internal court yards,
 - Provide, where possible, symmetry in structural systems and sufficient and well balanced shear walls in both directions,
- Comply with the requirements of rapid construction, especially tunnel shuttering systems,
- Minimize the number of different formwork types,
- Use standard formwork as much as possible,
- Try to use same formwork in the basements in order to rapidly reach the ground level.
- Try to remove formworks in two directions rather than four,
- Apply rapid construction system not only to the structural system, but also to the other parts of the building, namely, using precast elements for stair slabs,
- Comply with climatic conditions. Minimize the area of external wall and optimize window sizes for heat economy,
- Design as close to the traditional way of living as possible,
- Have the living room and at least one bedroom face a better direction than North,
- Minimize the circulation areas on the plans,
- Combine wet areas, where possible.



Completed status of the New-Residential Estate



General Layout Plan Alternative I



PUBLIC HOUSING PLANNING CRITERIA

Reduce disaster effects,

Comply with the requirements of rapid construction system,

Create common spaces within housing lots,

Provide assortments in town scaping and richness in perspective,

Utilise optimum daylight and orientation,

Provide contemporary approach to the service and pedestrian roads



GUIDELINES FOR DISASTER PREVENTION

by

UNITED NATIONS



Shapes of buildings ⓘ

GOOD		BAD	
BETTER		WORSE	
THE BEST		THE WORST	

GOOD **WRONG**

Shapes of buildings ⓘ

GOOD **WRONG**



Setting of buildings ③

GOOD WRONG

This panel, labeled 'Setting of buildings ③', shows six pairs of building models. Each pair consists of a 'GOOD' model on the left and a 'WRONG' model on the right. The 'GOOD' models show buildings with clear setbacks, uniform spacing, and simple rectangular forms. The 'WRONG' models show buildings that are too close together, have irregular setbacks, or feature complex, non-uniform shapes that disrupt the street frontage.

Setting of buildings ④

GOOD WRONG

This panel, labeled 'Setting of buildings ④', shows six pairs of building models. Each pair consists of a 'GOOD' model on the left and a 'WRONG' model on the right. The 'GOOD' models show buildings with consistent setbacks, uniform spacing, and simple rectangular forms. The 'WRONG' models show buildings that are too close together, have irregular setbacks, or feature complex, non-uniform shapes that disrupt the street frontage.



Exits from housing units



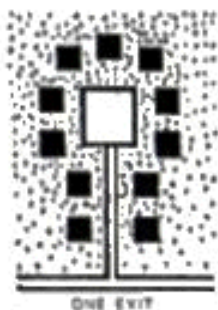
Never one exit!



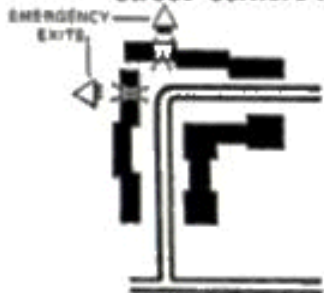
No dead end streets!



No dead end streets!



No buildings on street corners!

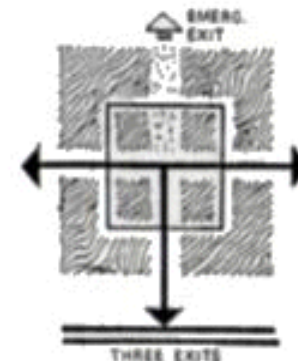
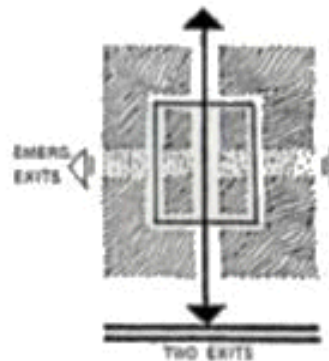
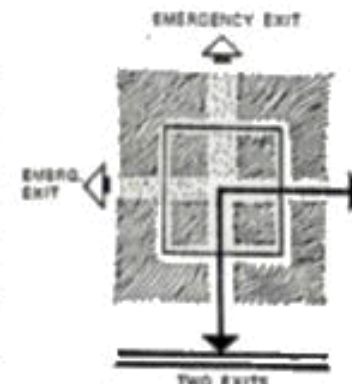
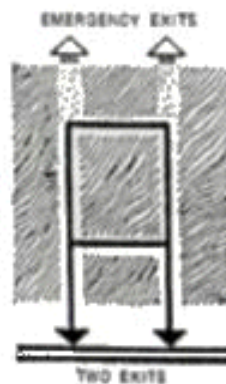


WRONG

Exits from housing units



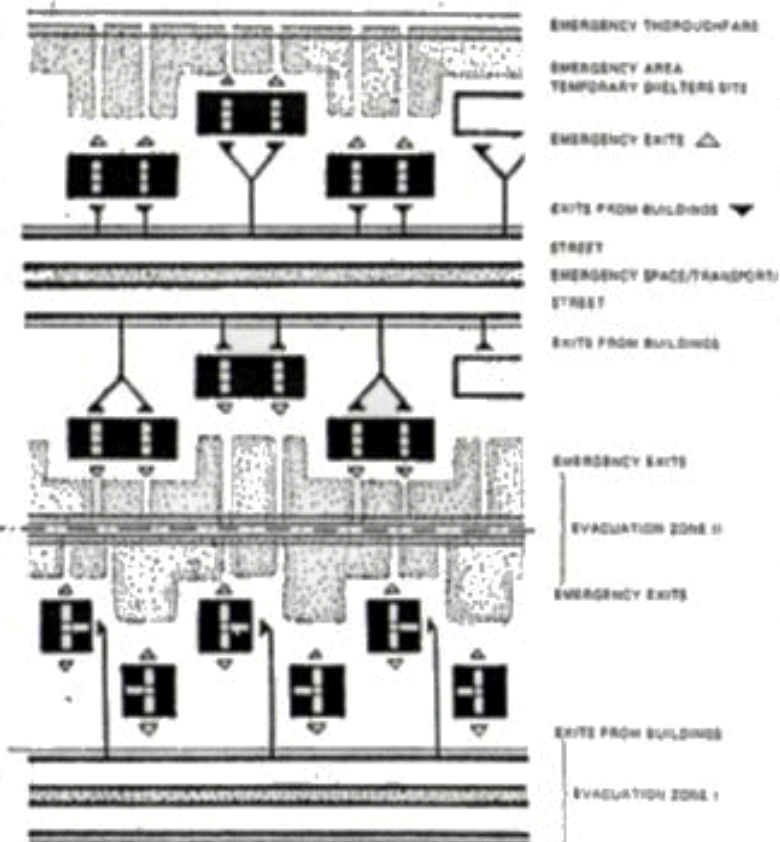
Always more than one exit!
+ Emergency exits / Green belts /





Exits from buildings evacuation system ⑦

Always more than one exit from one staircase!



Street crossection ①





Buildings were located at a distance



Exists from the Buildings



Emergency Access-roads, Evacuation Roads



Road Cross Sections



Parking Lots



PUBLIC HOUSING PLANNING CRITERIA

Reduce disaster effects,

Comply with the requirements of rapid construction system,

Create common spaces within housing lots,

Provide assortments in town scaping and richness in perspective,

Utilise optimum daylight and orientation,

Provide contemporary approach to the service and pedestrian roads



Rapid Construction System – Tunnel Shuttering



PUBLIC HOUSING PLANNING CRITERIA

Reduce disaster effects,

Comply with the requirements of rapid construction system,

Create common spaces within housing lots,

Provide assortments in town scaping and richness in perspective,

Utilise optimum daylight and orientation,

Provide contemporary approach to the service and pedestrian roads



A view from a common space in a housing lot



Richness in Perspective



Controlled Traffic in Service and Pedestrian Roads



PUBLIC HOUSING PLANNING CRITERIA

Reduce disaster effects,

Comply with the requirements of rapid construction system,

Create common spaces within housing lots,

Provide assortments in town scaping and richness in perspective,

Utilise optimum daylight and orientation,

Provide contemporary approach to the service and pedestrian roads



A courtyard protected from the wind and oriented to sunlight



Side windows to receive sunlight



Design Criteria for Public Houses

- **Diminish disaster impact**
 - Shape the buildings as simple as possible,
 - Maintain homogeneity in form and in structural design,
 - Avoid from long and tall buildings, L and zig-zag shapes, wings, internal court yards
 - Provide, where possible, symmetric structural system, and sufficient and well balanced shear walls in both directions,
- **Comply with the requirements of rapid construction, especially tunnel shuttering system,**
- **Minimize the number of different formwork types,**
- **Use standard formworks as much as possible,**
- **Try to use same formworks in the basements in order to reach quickly the ground level,**
- **Try to remove formworks in two directions rather than four directions,**
- **Apply rapid construction system not only to the structural system, but also to the other parts of the building, namely, clad the façades with precast components, make the stair wings with precast elements,**
- **Comply with climatic conditions rules of building physics, in design and detailing, avoid from cold bridges, minimize the area of external walls and optimise the window sizes as per heat economy,**
- **Design as close to the traditional way of living as possible,**
- **Have the living room and at least one bedroom face a better direction other than North,**
- **Minimize the circulation areas on the plans,**
- **Combine wet areas, where possible,**
- **Try to standardize façade elements, at the same time provide variety and attractive appearance by using texture and color on the façades under contemporary techniques,**
- **Try to bring reminiscences of traditional architectural exclusive to Erzincan, to the appearance of the buildings.**



One of the 3 Final Building Types



3. DESIGN STAGE



STAGES OF CONSULTANCY SERVICES

PUBLIC HOUSING

- **ASSESSMENT STAGE**
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 - Data Collection
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4. TENDER DOCUMENTATION STAGE

5. TENDER ASSISTANCE STAGE



PUBLIC HOUSING

• TENDER DOCUMENTATION STAGE FOR CONTRACT II & III

- Preparation of Conditions of Contact on the FIDIC basis.
- Preparation of Technical Specifications
- Preparation of Bill of Quantities

• TENDER STAGE FOR CONTRACT II & III

- Assistance to the Client during Tendering
- Preparation of Addendums
- Evaluation of Tenders
- Evaluation Report

• CONSTRUCTION STAGE FOR CONTRACT II & III

- Notice(s) to commence the Works
- Supervision of Construction(s)
- Issue Taking-Over Certificate(s)

• POST-CONSTRUCTION STAGE FOR CONTRACT II & III

- Supervision of outstanding works
- Advice Client on disputes
- Review and approve final accounts
- Issue Defects Liability Certificate(s)

PRIVATE HOUSING

• TENDER DOCUMENTATION STAGE FOR CONTRACT I

- Preparation of Conditions of Contact on the FIDIC basis.
- Preparation of Technical Specifications
- Preparation of Bill of Quantities

• TENDER STAGE FOR CONTRACT I

- Assistance to the Client during Tendering
- Preparation of Addendums
- Evaluation of Tenders
- Evaluation Report

• CONSTRUCTION STAGE FOR CONTRACT I

- Notice(s) to commence the Works
- Supervision of Construction(s)
- Issue Taking-Over Certificate(s)

• POST-CONSTRUCTION STAGE FOR CONTRACT I

- Supervision of outstanding works
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- Review and approve final accounts
- Issue Defects Liability Certificate(s)



The Project was divided into three contract packages :

Contract I : Repair, Retrofit, and structurally completion or reconstruction of 1132 number damaged/demolished cooperative apartment units.

Contract II : Reconstruction of 588 number 2 and 3 storey public dwelling units in new Housing Estate, plus additional compounds.

Contract III : Reconstruction of 464 number 2 storey public dwelling units in new Housing Estate plus additional compounds.



PUBLIC HOUSING

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6. CONSTRUCTION STAGE

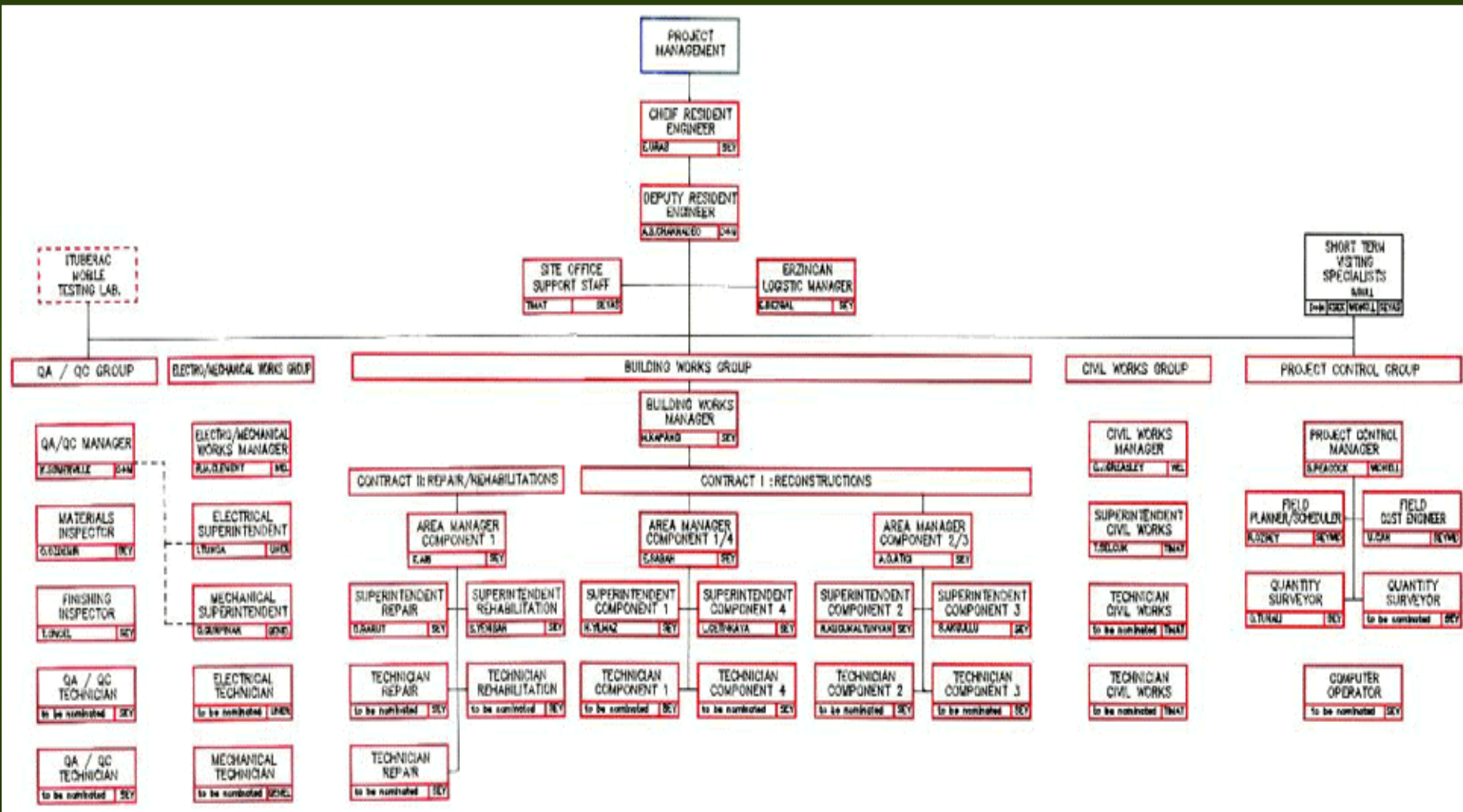


PUBLIC HOUSING

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Supervision Team



A view from shear wall construction



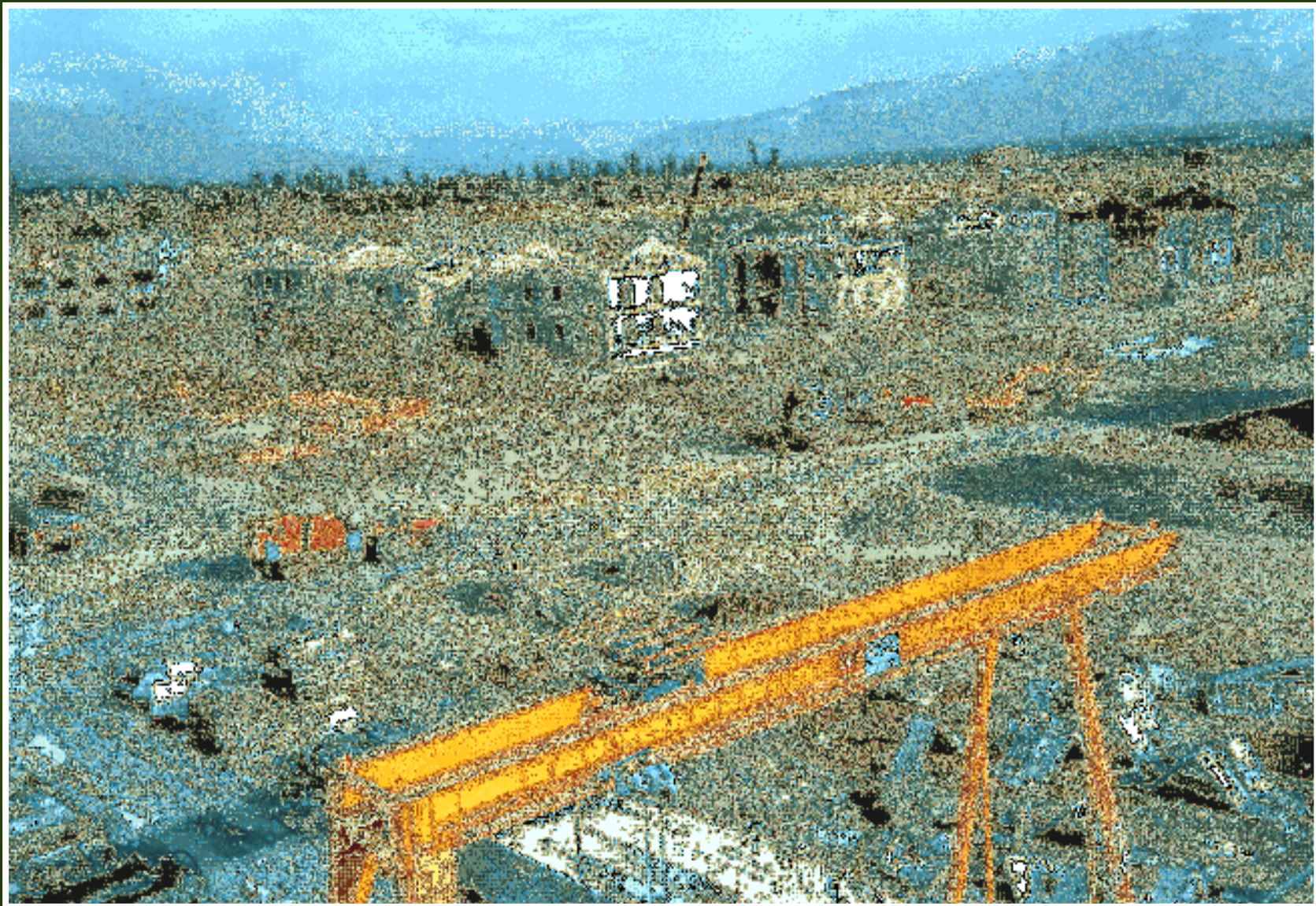
Column Jacketing



A view from completed Cooperative Apartments



Groundbreaking Ceremony



Construction Site



A view from Residential Estate



Inauguration honoured by the President and Prime Minister



Türkiye
Türkesinde

28 Ekim 1996 Pazartesi

Kurucusu: Sedat Simavi 1890-1953

Amerika, Çiller'in önerisini reddetti

■ ABD, Dışişleri Bakanı ve Başbakan Yardımcısı Celal Çiller'in Kürtler için yasadışı yerleşim kantonlarına son verilecek 100 yerleşim köyü önerisini reddetti.

■ ABD Dışişleri Bakanı Madeline Albright, bu önerinin kabul edilmesini istediğini belirterek, yasadışı Amerikan sivil toplum kuruluşları ve 66 uluslararası kuruluşun önerdiği yerleşim kantonlarının redd edildiğini belirtti. ■ Zeynep GURCAN'ın haberi 23'de



Erzincan mucizesi

4.5 yıl önceki depremde yerle bir olan Erzincan, devlet-millet işbirliğiyle yeniden inşa edilerek modern ve çağdaş bir kent haline getirildi.

Deprem evi değil, sanki villa



NELER YAPILDI?

- 2,230,000 dolar civarında 11 bin 111 m² alan yapıldı
- 1100 köyde 100 ev yapıldı
- Herkesin evinde elektrik, su ve gaz vardır
- 2 katlı, 4 yataklı ve 1.5 km çapında kapalı alanla donatılmış okullar yapıldı
- Devlet hastaneleri ve 27 tane sağlık tesisleri yapıldı
- 200 ve 300 kişi kapasiteli marketler yapıldı
- 100 ve 150 kişilik 17 bin kişi kapasiteli oturma alanları yapıldı

Demirel, Hürriyet okulunu da açtı



Hürriyet okulu önünde

Yeni eğitim bakanı Demirel, Hürriyet Okulu'nun açılışında öğrencilerle birlikte fotoğraf çektirdi.

Bedelinin sorumluluğu İktidarın

Çok sayıda vatandaşın, bedelinin sorumluluğu İktidarın olduğunu belirten Demirel, 'Bu bedelin sorumluluğu İktidarın' dedi.

Dinar da anahtar teslimi bugün

■ Dinar'da anahtar teslimi bugün teslim edildi. Zeynep GURCAN'ın haberi 23'de

Yeni trafik cezaları 1 Ocak'ta

■ Yeni trafik cezaları 1 Ocak'ta uygulanacak. Zeynep GURCAN'ın haberi 23'de

Cankaya

Reflections in the Media : Erzincan Miracle



PUBLIC HOUSING CONSTRUCTIONS

	Contract Package II	Contract Package III
Contract Award Date	04 April 1994	30 March 1994
Contract Sum	\$ 15 827154	\$ 14 236 192
Building Type	A,B,C	A,B
Number of Storey	2 and 3 storeys	2 storeys
Building Number	133	116
Dwelling Number	588	464
Cost per Dwelling	\$ 26 917	\$ 30 681
Gross Area per Dwelling (incl.commonspaces)	\$ 26 917	\$ 30 681
Gross Area per Dwelling (excl.common spaces)	100 m ²	100 m ²
Net Area per Dwelling	60-65 m ²	65m ²
Cost per m ² (incl.infrastructure)	\$ 269/m ²	6,7 milyon TL/m ²

Public Housing Characteristic



CONCLUSION

If the post-earthquake reconstructions are not planned and designed haphazardly and hastily, then the target is achieved.

Because, we believe that the earthquake victims deserve to live not only in earthquake resisting dwellings but also in a modern and contemporary environment.

4 HABER

Hürriyet İstanbul

30 AĞUSTOS 1999 PAZARTESİ

Şimdi sırada toplu konut seferberliği var. Bu konudaki son başarılı proje 1992 Erzincan depreminden sonra gerçekleştirildi

Erzincan'ın gerisinde kalmasın



370 MİLYON DOLAR Erzincan'ın inşaatı Toplu Konut ve Bayındırlık Bakanlığı yürüttü. Toplu Konut kamu binalarını, Bakanlık da okul ve konutları inşa etti. Toplam 370 milyon dolar harcanmış oldu. Erzincan depremezdekileri daha sonra yeni evlerine girdiler.

Erzincan'ın geçmiş, çözümlerini ortaya koymuş bir olarak şimdi işe neyle başlanmalı?

Bir defa hasar tespiti çalışması yapılmalı. Bu çalışmaları bizi Erzincan'da ODTÜ ve İTÜ'nün deprem araştırma enstitülerine yaptırarak. On hasar tespiti yapılabiliyor ama uzman komisyonlar buraları derecelendirmeli. Ağır, orta ve hafif hasar olmak üzere binalar sınıflandırılacak. Buna göre binalarında oturulabilir, binaların yıkılması gerekir, binaların statik olarak güçlendirilebilir tespit edilecek.

Rehabilite edilecek binalar güvenli olur mu?

Tabii. Hatta rehabilitasyonda yeni deprem yönetmeliği uygulanacağından eskisinden daha sağlam olur. Çünkü binaların çoğu deprem yönetmeliğinden önce inşa

İster yeni konut, ister rehabilitasyon, bunlar zaman alır. Bitmesi gelecek yaz bulur. Ancak önce projelendirme, sonra ihale edilmesi, ardından kontrol edecek şirketlerin ihalesi var ki, temel binalardan sonra atılır. Bunların belirli bir kısmı kışın önce yapılabilir. Ayrıca bu bölgede çok sert bir kış olmadığı için, inşaatlar kış olsa da devam edebilir. Örneğin aralık ayına kadar inşaatın kabını bitse, içeride işe devam edilir.

Kış engel değil

Depremzedeler hiç değilse bu konuda şanslılar.

Evet. Biz Erzincan'da sığınaklar yüzünden inşaatı iki ay arza vermek zorunda kalmışık. Bu bölgede böyle birşeyye gerek yok. Katkı maddesiyle betonarme formu derecesi düşürülür.

Bayındırlık Bakanı Koray Aydın'ın belirttiğine göre, ilk tespitlerde 170 bin daire yokolmuş durumda. Yani yüzbinlerce insan şu anda sokakta. Çözüm olarak ilk aşamada prefabrik konutlar düşünülüyor. Ama asıl çözüm toplu konut inşaatında. 1992 Erzincan depreminin ardından ortaya çıkan daha küçük çaplı benzer sorunda, devlet Toplu Konut İdaresi ve Bayındırlık Bakanlığı kanalıyla çok kısa sürede, bir toplu konut projesini hayata geçirmiş. 1995'te Habitat'ın ödül almıştı. Dönemin Toplu Konut İdaresi Başkanı Yiğit Özgökçözelli ile o dönem Erzincan'da yapılanları konuştuk.



Erzincan projesi sırasında Toplu Konut İdaresi Başkanı Yiğit Özgökçözelli

ihale o kadar şirket arasında paylaşırlar. Kapasiteleri 500-1000 konut arasındaki firmalar arasında paylaşırlar. Türkiye'de bu güçte 100'ün üzerinde firmamız var. Her biri ihtisaslaşmış firmalar. Topluca girerler ve inşaat tamamlarlar. Örneğin altyapıyı başkası yapar, konutların bir bölümünü başkası yapar.

Prefabrik binalar şart

Evsiz kalanların geçici bir süre prefabrik binalarda barındırılması şart mı? Oraya ayrılmamak kaynağın toplu konut inşaatına aktarılıp daha geçici barınma modelleri veya başka bölgelere geçici nakiller uygulanamaz mı?

Bir ara kademe var. Sınırlık koşullarda geçirin demek zorunda değiliz. Sonuçta bu prefabrik binaları yaparsanız, insanların bir

TOPLU KONUT ERZİNCAN'DA NE YAPTI?

- 1052 kamu lojmanı
- 1130 kooperatif konutunun taşıyıcı sistemli
- 6 iş merkezi
- Yekilan bütün kamu binaları
- 3 hastane
- 40 işyeri binasının rehabilitasyonu
- Kentisel ve kentsel altyapı inşaatı
- Şehir için pis su arıtma tesisi ve çöp depolama tesisi
- Hastaneler için mobilya ve ekipmanlar
- Okullar için eğitim araç ve gereçleri

1992 Kocaeli Post-Earthquake Activities should not fall back behind
1992 Erzincan Post-Earthquake Housing Project which was the last successful one.



Thank you...