



Republic of Azerbaijan

Construction of the Gasan Su Cay and
Shemkir Bridges

**DRAFT
TENDER DOCUMENT**

JULY 2001

CONSORTIUM composed of

KOCKS CONSULT GMBH
Germany

BCEOM
France

FINNROAD LTD.
Finland

represented by KOCKS CONSULT GMBH

Construction of the Gasan Su Cay and Shemkir Bridges

Table of Content

LETTER OF INVITATION TO TENDER

VOLUME 1 INSTRUCTIONS TO TENDERERS

Section 1	Instructions to Tenderers
Section 2	Form of Tender, Appendix to Tender
Section 3	Form of Tender Guarantee
Section 4	Questionnaire
	Form 4.1 General Information about the Tenderer
	Form 4.2 Organisation Chart
	Form 4.3 Power of Attorney
	Form 4.4 Financial Statement
	Form 4.5 Financial identification
	Forms 4.6.1.1 through 4.6.10 Technical Qualifications
	Cash Flow Schedules
Section 5	Glossary of Terms
Section 6	Draft template Evaluation Grid

VOLUME 2 CONTRACT

Section 1	Form of Contract
Section 2	General Conditions
Section 3	Special Conditions
Section 4	Form of Performance Guarantee
Section 5	Form of Advance Payment Guarantee (if applicable)
Section 6	Form of Retention Money Guarantee

VOLUME 3 TECHNICAL SPECIFICATIONS

VOLUME 4 BILL OF QUANTITIES/PRICE SCHEDULE

VOLUME 5 DESIGN DOCUMENTS INCLUDING DRAWINGS

ANNEX

DRAWINGS

<LETTER OF INVITATION TO TENDER>

< Place and date >

[Name and address
of potential Tenderer]

[Letterhead of the Contracting
Authority]

Publication ref:

Dear Sir/Madam,

**Subject: Works procurement notice for Construction of the Gasan Su Cay
and Shemkir bridges in Azerbaijan**

Further to your enquiry regarding the publication of the above-mentioned works procurement notice, please find enclosed the following documents, which comprise the corresponding tender dossier:

VOLUME 1 INSTRUCTIONS TO TENDERERS

Section 1	Instructions to Tenderers
Section 2	Form of Tender, Appendix to Tender
Section 3	Form of Tender Guarantee
Section 4	Questionnaire
	Form 4.1 General Information about the Tenderer
	Form 4.2 Organisation Chart
	Form 4.3 Power of Attorney
	Form 4.4 Financial Statement
	Form 4.5 Financial identification
	Forms 4.6.1.1 through 4.6.10 Technical Qualifications
	Cash Flow Schedules
Section 5	Glossary of Terms
Section 6	Draft template Evaluation Grid

VOLUME 2 CONTRACT

Section 1	Form of Contract
Section 2	General Conditions
Section 3	Special Conditions
Section 4	Form of Performance Guarantee
Section 5	Form of Advance Payment Guarantee (if applicable)
Section 6	Form of Retention Money Guarantee

VOLUME 3 TECHNICAL SPECIFICATIONS

VOLUME 4 BILL OF QUANTITIES/PRICE SCHEDULE

VOLUME 5 DESIGN DOCUMENTS INCLUDING DRAWINGS

If you request any clarification to the tender dossier, such a request must be received in writing by the Contracting Authority no later than 21 days before the deadline for submission of tenders. The Contracting Authority will reply to all Tenderers' questions at least 11 days before the deadline for submission of tenders. If the Contracting Authority, either on its own initiative or in response to a request from a Tenderer, provides additional information on the tender dossier, it will send such information in writing to all Tenderers at the same time.

Costs incurred by the Tenderer in preparing and submitting the tender proposals shall not be reimbursed. All such costs shall be borne by the Tenderer.

For full details of the tender procedures, please refer to the Practical Guide to contract procedures, which may be downloaded from the 'Useful documents' page of the following Web site:

http://europa.eu.int/comm/europeaid/index_en.htm

We look forward to receiving your tender proposal and tender Guarantee before the date of 90 days from the date of the publication of the procurement notice> at 12.00 hours local time at

Azeravtoyol, State Road Concern
Mr. Yusif Novruzov, President
72/4, Uzeyir Hajibeyov street
370010 BAKU
AZERBAIJAN REPUBLIC

Tel +994 12 – 93 80 93 / 93 01 30 / 98 55 86
Fax +994 12 - 98 55 86

Yours faithfully,

Name and signature

VOLUME 1

SECTION 1

INSTRUCTIONS TO TENDERERS

SECTION I INSTRUCTIONS TO TENDERERS

Project title: **Construction of the Gasan Su Cay and Shemkir bridges in Azerbaijan**

Tender number: [.....]

CONTENTS

GENERAL

1. OVERALL INSTRUCTIONS-----	1
2. SOURCE OF FUNDS-----	1
3. ELIGIBILITY REQUIREMENTS-----	1
4. INFORMATION / DOCUMENTS TO BE SUPPLIED BY THE TENDERER-----	3
5. ONLY ONE TENDER PER TENDERER-----	6
6. TENDER EXPENSES-----	6
7. SITE INSPECTION-----	6

TENDER DOCUMENTS

8. CONTENT OF TENDER DOCUMENTS-----	7
9. EXPLANATIONS CONCERNING TENDER DOCUMENTS-----	7
10. AMENDMENTS TO TENDER DOCUMENTS-----	8
11. LABOUR-----	8
12. LAW-----	8

PREPARATION OF TENDERS

13. LANGUAGE OF TENDERS-----	8
14. CONTENT AND PRESENTATION OF TENDER-----	8
15. TENDER PRICES-----	10
16. CURRENCIES OF TENDER AND PAYMENT-----	10
17. PERIOD OF VALIDITY OF TENDERS-----	10
18. TENDER GUARANTEE-----	11
19. VARIANT SOLUTIONS-----	11
20. PREPARATION AND SIGNING OF TENDERS-----	12

SUBMISSION OF TENDERS

21. SEALING AND MARKING OF TENDERS-----	13
22. EXTENSION OF TIME FOR SUBMISSION OF TENDERS-----	13
23. LATE TENDERS-----	13
24. TENDER ALTERATIONS AND WITHDRAWALS-----	13

OPENING AND EVALUATION OF TENDERS

25. OPENING OF TENDERS -----	14
26. SECRECY OF PROCEDURE -----	15
27. CLARIFICATION OF TENDERS -----	15
28. CHECKING OF TENDERS AND THEIR COMPLIANCE WITH THE REQUIREMENTS OF THE TENDER DOCUMENTS -----	15
29. EVALUATION AND COMPARISON OF TENDERS -----	16
30. CORRECTION OF ERRORS -----	16

AWARD OF CONTRACT

31. CRITERIA FOR AWARD -----	17
32. RIGHT OF THE CONTRACTING AUTHORITY TO ACCEPT ANY TENDER AND TO REJECT ANY OR ALL TENDERS -----	17
33. NOTIFICATION OF AWARD, CONTRACT CLARIFICATIONS -----	17
34. CONTRACT SIGNING AND PERFORMANCE GUARANTEE -----	18
35. COMMENCEMENT OF WORKS -----	18
36. ETHICS CLAUSES -----	19
37. APPEALS -----	20

Preliminary provisions

In submitting his tender, the Tenderer accepts in full and without restriction the special and general conditions, including any addendum, governing this contract as the sole basis of this tendering procedure, whatever may be his own conditions of sale, which he hereby waives.

Tenderers are expected to examine carefully and comply with all instructions, forms, terms and specifications contained in this tender dossier. Failure to furnish on time all the required information and documentation, or the submission of tenders not substantially responsive in every respect to the tender dossier may result in the rejection of the tender.

1. OVERALL INSTRUCTIONS

- 1.1. Tenderers shall submit their offers for the whole Works as required per the Tender dossier. No Tenders will be accepted for partial lots
- 1.2. In accordance with the European Commission regulations for international Tendering, no preferences shall apply for local Tenderers.
- 1.3. The Tenderer shall bear all costs associated with the preparation and submission of his Tender and the Contracting Authority will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the tendering process.

2. SOURCE OF FUNDS

- 2.1 The Project is financed by the European Union in accordance with the Tacis Programme.
- 2.2 The Beneficiary of the grant is Azeravtoyol, State Road Concern, and is acting as the Contracting Authority in this Tender.

3. ELIGIBILITY REQUIREMENTS

- 3.1. Tender Participation is open on equal terms to all natural and legal persons of the Member States of the European Union and the beneficiary countries of the Tacis Programme. All works, supplies and services must originate in one or more of these countries.
- 3.2. These terms refer to all nationals of said states and to all legal entities, companies or partnerships, constituted under and governed by civil, commercial or public law, formed in accordance with the law of any one of said states and having their statutory office, central administration or principal place of business in one of these States. A legal entity, company or partnership having only its statutory office there must be engaged in an activity which has an effective and continuous link with the economy of the respective State. Tenderers shall provide evidence thereof.
- 3.3. Tenderers shall certify that they meet these conditions and prove their eligibility by a document, dated less than 180 days earlier than the deadline for the submission of Tenders, drawn up in accordance with their national law or practice or by copies of the original documents defining the constitution and/or

legal status and establishing the place of registration and/or statutory seat and, if it is different, the place of central administration. The Contracting Authority may accept other satisfactory evidence that these conditions are met.

3.4. Tenderers shall not be considered eligible if:

3.4.1. they are bankrupt or being wound up, are having their affairs administered by the courts, have entered into an arrangement with creditors, have suspended business activities or are in any analogous situation arising from a similar procedure provided for in national legislation or regulations;

3.4.2 they are the subject of proceedings for a declaration of bankruptcy, for winding-up, for administration by the courts, for an arrangement with creditors or for any similar procedure provided for in national legislation or regulations;

3.4.3 they have been convicted of an offence concerning professional conduct by a judgement which has the force of *res judicata*;

3.4.4 they are guilty of grave professional misconduct proven by any means which the Contracting Authority can justify;

3.4.5 they have not fulfilled obligations relating to the payment of social security contributions in accordance with the legal provisions of the country where they are established;

3.4.6 they have not fulfilled obligations relating to the payment of taxes in accordance with the legal provisions of the country where they are established;

3.4.7 they are guilty of serious misrepresentation in supplying the information required by the Contracting Authority as a condition of participation in an invitation to tender or contract;

3.4.8 they have been declared to be in serious breach of contract for failure to comply with obligations in connection with another contract with the same Contracting Authority or another contract financed with Community funds;

3.4.9 they are in one of the situations allowing exclusion referred to in the Ethics Clauses in connection with the tender or contract.

3.5. Tenderers shall certify by an affidavit signed by their representative to the Contracting Authority that none of the situations detailed in Sub-Clauses 3.4.1. to 3.4.9. inclusive above applies to them.

3.6 The eligibility requirements detailed in Sub-Clauses 3.1. to 3.4. inclusive apply additionally to all partners in a Joint Venture/Consortium, all subcontractors and all suppliers to Tenderers. In addition to their own documents and certificates, therefore, Tenderers shall submit with their Tenders the documents and certificates called for in Sub-Clauses 3.1. to 3.4. inclusive, in respect of:

3.6.1 every partner in a Joint Venture/Consortium.

3.6.2 every subcontractor providing more than ten per cent of the works.

3.6.3 every supplier providing more than ten per cent of the works.

3.6.4 subcontractors and suppliers must satisfy eligibility requirements specified in Sub-Clauses 3.1 and 3.2.

3.7 All materials, equipment and services to be supplied under the contract shall have their origin in eligible source countries, as defined in Sub-Clause 3.1 above. Tenderers shall certify by an affidavit signed by their representative to the Contracting Authority that they comply with this requirement.

3.8 For the purposes of Sub-Clause 3.7 above "origin" means the place where the materials and/or equipment are mined, grown, produced, manufactured or assembled and/or from which services are provided.

4 INFORMATION / DOCUMENTS TO BE SUPPLIED BY THE TENDERER

4.1. All Tenderers must supply the following information and documents with their Tenders:

4.1.1. Copies of documents showing the organisation chart, legal status and place of registration of the headquarters of the Tenderer and a written Power of Attorney authorising the signatory of the Tender and all related documentation. These documents shall be provided in the form of the following forms contained in Volume 1, Section 4 of the Tender Documents:

- General Information about the Tenderer (Form 4.1)
- Organisation Chart (Form 4.2)
- Power of Attorney (Form 4.3).

4.1.2. Evidence showing that the liquid assets and access to credit facilities are adequate for this Contract, confirmed by a financial statement for the last 3 years verified by a chartered accountant. This evidence shall be provided in the form of Form 4.4, Financial Statement, in Volume 1, Section 4 of the Tender Documents.

4.1.3. Financial projections for the forthcoming 2 years. This information shall be included in the Form 4.4 Financial Statement provided in accordance with Volume 1, Section 4 of the Tender Documents.

4.1.4. Financial identification (Form 4.5, Volume 1)

4.1.5. Information about Tenderers' technical qualifications. This information shall be provided in the form of the Technical Qualification forms contained in Volume 1, Section 4 of the Tender Documents, and shall include:

- A presentation of the Tenderer's organisation, including the number of all staff employed (Form 4.6.1.1)
- A list of staff proposed to be employed for execution of the Contract, including CV's of key employees. In this particular case, the following members of staff will be taken in consideration Project Manager, Quality Control Manager, Main Foreman for structures and pavement, surveyor (Forms 4.6.1.2 and 4.6.1.3)

- A list of equipment for execution of the Contract. The descriptions shall demonstrate his ability to complete the works and should include *inter alia*:
 - Concrete mixing and placing plant
 - Cranes and lifting plant for precast pre-stressed concrete beams 22.2 m long
 - excavation equipment, compaction equipment for foundations
 - dozers, graders, rollers, for access road,
- equipment for mixing and laying of the asphalt concrete access roads

The tenderer is to indicate whether such equipment is owned, hired or used by a sub-Contractor. Manufacturer's documents fully describing the equipment shall be submitted with the Tender (Form 4.6.2)

- A Work Programme with brief descriptions of major activities (Form 4.6.3), showing the order of procedure and timing in which the Tenderer proposes to carry out the Works. In particular the proposal shall detail the temporary and permanent works to be constructed. The Tenderer shall take note of the prevailing climatic conditions and the requirement to prepare designs and obtain building permits prior the execution of construction works. In addition the Tenderer shall submit a comprehensive Method Statement, with drawings where applicable, showing the methods proposed by the Tenderer for carrying out the Works. In particular the Tenderer shall indicate the numbers, types and capacities of Contractor's Equipment and labour he proposes to use on the major activities of work.
- A Graphic Work Schedule (Bar chart) showing times and duties allocated for employees for this Contract (Form 4.6.3)
- Data concerning subcontractors and the percentage of works to be subcontracted or sublet (Form 4.6.3)
- Evidence of relevant experience in execution of Works of a similar nature, including the extent and value of the relevant contracts, as well as works in hand and contractually committed (Form 4.6.4). The evidence shall include successful experience as the prime Contractor in construction of at least 5 projects of the same nature and complexity comparable to the tendered works during last 5 years
- Information regarding the proposed Site Office, if any (Form 4.6.3)
- An outline of the Quality Assurance System(s) to be used (Form 4.6.7)
- If appropriate, information about Joint Venture/Consortium Tenderers (Form 4.6.5)
- Details of their litigation history over the last 5 years (Form 4.6.6)
- Details of the accommodation and facilities to be provided for the Project manager (Form 4.6.8)
- Any other information (Form 4.6.9).

- 4.2 In order for Tenderers to be considered eligible for award of Contract it will be necessary for them to provide evidence that they meet or exceed certain minimum qualifying criteria. This evidence shall be provided by Tenderers in the form of the information and documents described in Sub-Clause 4.1 above, through the provision of all parts of each Tenderer's Tender, and in whatever additional form Tenderers may wish to utilise.

The minimum qualifying criteria for each Tenderer include:

1. He shall be a registered firm or natural person capable of carrying out the specified Works.
2. In case of a joint-venture, specify one of the following possibilities:
at least 1 member shall have at least 5 projects of the same nature and complexity comparable to the tendered works during last 5 years

In any case the joint-venture as a whole must reach the minimum qualification as requested here below

3. The average annual turnovers in the past 5 years shall be of at least EURO or National Currency (NC) 7.5 million. equivalent.
4. If he is a sole Tenderer (i.e. he may have subcontractors, but he is not a partner in a Joint Venture/Consortium for the purposes of the Tender) he shall carry out at least 70 % of the Contract Works by his own means, defined as meaning that he must have the equipment, materials, human and financial resources necessary to enable him to carry out this percentage of the Contract.
5. If he is a sole Tenderer he also must have access to credit and other financial facilities adequate to assure the required cashflow for the duration of the Contract. In any case the credit amount should exceed EURO or NC 0.5 million Equivalent.
6. If he is the Leading Partner in a Joint Venture/Consortium he shall have the ability to carry out at least 50 % of the Contract Works by his own means, as defined in Sub-Clause 4 above.
7. If he is another partner in a Joint Venture/Consortium (i.e. not the Leading Partner) he shall carry out at least 10 % of the Contract Works by his own means, as defined in Sub Clause 4 above.
8. He shall have completed at least 5 projects of the same nature/amount/complexity comparable to the tendered works over the last 5 years. The Contracting Authority reserves the right to ask for copies of the respective certificates of final reception signed by the project managers/Contracting Authority of the concerned project].
9. All his key personnel shall have at least 10 years of adequate experience and proven qualifications relevant to works of a similar nature to this project

4.3 Tenders submitted by companies being partners of two or more firms forming a Joint Venture/Consortium shall additionally fulfil the following requirements:

- The Tender shall comprise all information required by Sub-Clause 4.1 for each partner of the Joint Venture/Consortium as well as the summary data for execution of Works by the Tenderer.
- The Tender shall be signed in a way that legally binds all partners. See Form 1.5.6.7 in VOLUME 1, Section 1.5 of the Tender Documents.
- One partner shall be appointed as the Leading Partner responsible for the Contract and such appointment shall be confirmed by submission of Powers of Attorney signed by legally authorised signatories representing all the individual partners.
- The Tender shall include a preliminary agreement or a letter of intent stating that all partners shall be legally responsible, jointly and severally, for the execution of the Contract, that the Leading Partner shall be authorised to obligate and receive instructions for and on behalf of each and all partners, and that the execution of the Contract, including payments, shall be responsibility of the Leading Partner.
- All partners in the Joint Venture/Consortium shall be bound to remain in the Joint Venture/Consortium for the whole period of the execution of Contract.

5 ONLY ONE TENDER PER TENDERER

5.1 A tenderer may participate in only one Tender, either individually or as a partner in a Joint Venture/Consortium for the same Contract. Submission or participation by a Tenderer in more than one Tender for a Contract will result in the disqualification of all those Tenders for that Contract in which the party is involved. The same company may only participate as sub-contractor in different tenders, if it is justified by market specificities.

6 TENDER EXPENSES

- 6.1 All costs associated with the preparation and submission of the Tender shall be exclusively for the account of the Tenderer.
- 6.2 The Contracting Authority shall not be responsible for, or pay for, any expenses or losses of which kind may be incurred by the Tenderer in connection with visits to, and examination of, the site of the Works, or of any other aspect of this Tender.

7 SITE INSPECTION

7.1 The Tenderer is strongly advised to visit and inspect the Site of the Works and its surrounds for the purpose of assessing, at his own responsibility, expense and risk, all data which may be necessary to prepare his Tender and sign the Contract for the Works.

- 7.2 clarification meeting and /or a site visit will not be held by the Contracting Authority, the Tenderer may forward any request for clarification in writing as stated in the Notice of Invitation to Tender.
- 7.3 All Tenderers shall confirm in writing receipt of clarifications and or Addenda to the Tender Documents issued by the Contracting Authority within 3 days and shall include in their offer their certificate of Site Visit.

8 CONTENT OF TENDER DOCUMENTS

- 8.1 The set of Tender Documents comprises the following documents and should be read in conjunction with any Addenda issued in accordance with Clause 10:

VOLUME 1	INSTRUCTIONS TO TENDERERS
VOLUME 2	CONTRACT
VOLUME 3	TECHNICAL SPECIFICATIONS
VOLUME 4	PRICE SCHEDULE/BILL OF QUANTITIES
VOLUME 5	DRAWINGS

- 8.2. Tenderers shall be solely responsible for examining with appropriate care the Tender Documents, including those Design Documents available for inspection, any Addendum to the Tender Documents issued during the tendering period, and for obtaining reliable information with respect to any and all conditions and obligations which may in any way affect the amount or nature of the Tender or the execution of the Works. In the event that the Tenderer is successful, no claim for alteration of the Tender Amount will be entertained on the grounds of errors or omissions in the obligations of the Tenderer described above.
- 8.3. The Tenderer shall provide all documents required by the provisions of the Tender Dossier. All such documents, without exception, shall be strictly in accordance with the conditions and provisions contained within the Tender Documents and with no alterations made by the Tenderer. Tenders, which are not compliant with the requirements of the Tender Documents, shall be rejected.

9 EXPLANATIONS CONCERNING TENDER DOCUMENTS

- 9.1. Tenderers may submit questions in writing up to 21 days before the deadline for submission of tenders. The Contracting Authority must reply to all tenderers' questions at least 11 days before the deadline for receipt of tenders.
- 9.2. Copies of written responses will be sent to all known Tenderers (including the query but without identifying the source of the enquiry). They should confirm receipt of these answers in writing within 3 days.

10 AMENDMENTS TO TENDER DOCUMENTS

- 10.1 The Contracting Authority may amend the Tender Documents by publishing Addenda up to 11 days before the date for submission of Tenders.
- 10.2 Each Addendum published shall constitute a part of the Tender Documents and shall be sent, in writing, to all known Tenderers. The Tenderers shall confirm in writing receipt of such Addendum within 3 days, sign each page and attach it to the Tender Documents.
- 10.3 The Contracting Authority may, as necessary and in accordance with Clause 22. hereof, extend the deadline for submission of Tenders to give Tenderers sufficient time to take into account such Addendum when preparing Tenders.

11 LABOUR

- 11.1 Particular attention is drawn to the conditions concerning the employment of labour in Azerbaijan and the obligatory compliance with all regulations, rules or instructions concerning the conditions of employment of any Class of employee.

12 LAW

- 12.1 By submitting their Tenders, Tenderers are considered to have become familiar with all relevant laws, acts and regulations of Azerbaijan that in any manner may affect, or apply to the operations and activities under the Tender and subsequent Contract.

13 LANGUAGE OF TENDERS

- 13.1 The Tender and all correspondence and documents related to the Tender exchanged by the Tenderer and the Contracting Authority shall be written in the language of the procedure.
- 13.2 Supporting documents and printed literature furnished by the Tenderer may be in another language provided they are accompanied by an accurate translation into the language of the procedure. For the purposes of interpretation of the Tender, the language of the procedure shall prevail.

14 CONTENT AND PRESENTATION OF TENDER

- 14.1 Tenders shall comply with the following conditions:
- 14.1.1 All tenders must be submitted in one original, marked "original", and 4 copies signed in the same way as the original and marked "copy".
- 14.1.2 All tenders must be received at 12.00 hours before the 90 days after the date of publication of the procurement notice] date and time, by registered letter with acknowledgement of receipt or hand-

delivered against receipt signed by the President of Azeravtoyol or his representative.

14.1.3 All tenders, including annexes and all supporting documents, must be submitted in a sealed envelope/package bearing only:

- a) the above address;
- b) the reference of the invitation to tender concerned;
- c) if applicable, the number of the lot(s) to which the tender refers;
- d) the words "Not to be opened before the tender opening session" in the language of the procedure and in the local language;
- (e) name of the tenderer.

The price proposal must be placed in a sealed envelope with the technical proposal for each lot. The envelopes should then be placed in a single sealed other envelope/package, unless their volume requires a separate submission for each lot.

14.2 Where works have been divided into lots, the Tenderer may submit a tender for –not applicable–

14.3 The Tender submitted by the Tenderer shall comprise the following duly completed Documents :

14.3.1 Form of Tender and Appendix to Tender, in the forms provided in VOLUME 1, Section 2 hereof;

14.3.2 Tender Guarantee, in the form provided in VOLUME 1, Section 3 hereof;

14.3.3 Eligibility Certificates and Declarations as required by Sub-Clauses 3.3., 3.5. and 3.6. hereof;

14.3.4 Documentation as required in the Questionnaire in VOLUME 1, Section 4 of the Tender Documents, including all Forms attached;

14.3.5 Breakdown of Tendered Lump Sum/Bill of Quantities, in the form provided in VOLUME 4;

14.3.6 Addendum (if any);

14.3.7 Certificate of Site Visit if applicable;

14.3.8 Financial identification;

14.3.9 Cash Flow Schedules;

14.3.10 All other documents requested in article 4.

14.4 All the documents specified in Sub-Clauses 14.1.1 to 14.3.9 inclusive shall be signed on the relevant pages of these Documents as indicated.

15 TENDER PRICES

15.1 The Tender Price shall cover the whole of the Works as described in the Tender Documents.

15.2 The Tenderer shall provide Breakdown of Tendered Lump Sum in EURO or national currency/filled Bill of Quantities.

15.3 Tenderers shall quote all components of the Breakdown of Tendered Lump Sum/Bill of Quantities exclusive of taxes and customs and import duties. Any item without a price shall not be paid for and shall be deemed to be included in other unit price of the Bill of Quantities.

15.4 Separately, Tenderers shall quote the relevant taxes, customs and import duties in EURO or in national currency.

15.5 If discount is offered by the Tenderer, it must be clearly specified in the Breakdown of Tendered Lump Sum/Bill of Quantities in VOLUME 4 and indicated in the Form of Tender in Section 1.2, VOLUME 1. The discount shall be quoted out of the price excluding taxes and for the whole of the Works.

15.6 If the Tenderer offers discount, each Interim Payment Certificate shall include the discount. The discount quoted in the Interim Payment Certificate shall be calculated on the same basis as in the Tender.

16 CURRENCIES OF TENDER AND PAYMENT

16.1 The currency of the Tender is EURO or the national currency. All sums in the Breakdown of Tendered Lump Sum/Bill of Quantities, Questionnaire and other documents shall be expressed in EURO or in the national currency with the exception of the original bank and annual financial statements.

16.2 Payments shall be made only at the request of the Contractor accepted by the Contracting Authority.

16.3 All correspondence due to payments including invoices, interim and final payment certificates shall be sent to the Contracting Authority in the language of the procedure.

17 PERIOD OF VALIDITY OF TENDERS

17.1 Tenders shall remain valid for a period of 90 days after the deadline for submission of Tenders indicated in the Notice of Invitation to Tender, VOLUME 1, Section 1.1, or as modified in accordance with Clauses 10.3 and/or 22 herein. Any Tender valid for a shorter period shall be rejected.

17.2 In exceptional circumstances the Contracting Authority may request Tenderers to extend the validity of Tenders for a specified number of days, which may not exceed 40 days. Such requests and answers concerning the extension shall be made in writing. A Tenderer may refuse to comply with such a request

without forfeiture of his Tender Guarantee. If the Tenderer complies with such a request he shall neither be required to nor shall he be allowed to modify his Tender. However, he shall be bound to extend the validity of his Tender Guarantee for the revised period of validity of the Tender.

- 17.3 The successful Tenderer must maintain its tender for a further 60 days from the date of notification of award.

18 TENDER GUARANTEE

18.1 The Tenderer shall provide, as a part of his Tender, a Tender Guarantee in the form set out in VOLUME 1, Section 3 of the Tender Documents, or in another form acceptable to the Contracting Authority and meeting the essential requirements set out therein. The Tender Guarantee shall be in an amount not less than 30,000 €. The original guarantee must be included in the original Tender.

18.2 It may be provided in the form of a bank guarantee, a banker's draft, a certified cheque, a Guarantee provided by an insurance and/or guaranteeing company or an irrevocable letter of credit made with the Contracting Authority. If the performance guarantee is to be provided in the form of a bank guarantee, a banker's draft, a certified cheque or a Guarantee, it shall be issued by a bank or guaranteeing and/or insurance company in accordance with the eligibility criteria applicable for the award of the Contract.

18.3 The Tender Guarantee shall be valid for not less than 90 days from the deadline for submission of Tenders and shall be issued to the Contracting Authority as one guarantee in the requested amount. In exceptional cases, before the period of validity expires, the Contracting Authority may ask tenderers to extend the period for a specific number of days, which may not exceed 40 days.

18.4 Any Tender not secured with a Tender Guarantee in an acceptable Form shall be rejected by the Contracting Authority.

18.5 The Tender Guarantee of the unsuccessful Tenderers shall be released as soon as possible, and in any event no later than 30 days after the expiry of the period of validity of the Tender as required by Sub-Clause 18.3. hereof.

18.6 The Tender Guarantee of the successful Tenderer must be maintained for a further 60 days from the date of notification of award. It shall be released upon the signing of the Contract Agreement by the Tenderer and upon provision of the required Performance Guarantee.

19 VARIANT SOLUTIONS

19.1 Tenderers shall submit a Tender in accordance with the requirements of the Tender Documents. If the invitation to tender has made provision for variant solutions to be submitted, the Special conditions must specify the subject, limits and basic conditions applying to them. Should the Tenderer wish to submit variant technical proposals he may do so. **Only the variant proposal of the lowest evaluated Tender conforming to the original requirements of the Tender Documents shall be considered by the Contracting Authority.**

19.2 Variant solutions may not derogate from the requirements of the Tender dossier. Such variant proposals shall give full details necessary for its complete evaluation, including drawings, design calculations, technical specifications, breakdown of prices and proposed construction methods.

The submission of any variant solution shall comprise:

- (a) an individual tender for the variant solution;
- (b) a demonstration of the benefit of the variant solution over the conforming solution, including quantifiable justification of any economic and/or technical advantage;
- (c) a draft of the amendments to the technical provisions of the special conditions necessitated by the variant solution;
- (d) the drawings and specifications provided for in the conforming solution, but not affected by the variant solution;
- (e) the drawings and specifications affected by the variant solution;
- (f) a technical note on the conception of the variant solution and where appropriate, drawings and the calculations;

19.3 The rates and prices inserted in the breakdown of the Tender Price shall be based on the details specified in the Tender Documents and the Tenderer shall state clearly in his variant proposals the additions or deductions to be made to each of the relevant rates and prices, if the variant proposal for such construction details is accepted and approved by the Contracting Authority.

For lump sum contracts, he shall include an itemised breakdown of the overall price as modified by the variant solution.

For unit-price contracts, he shall include a bill of quantities as modified by the variant solution.

20 PREPARATION AND SIGNING OF TENDERS

20.1 Tenders shall comprise the documents specified in Clause 14. above. Each complete Tender shall be prepared in 1 original and 4 copies in the language of the procedure, clearly marked "Original" or "Copy". In case of divergence between them, the original shall prevail.

20.2 The original of the Tender shall be typewritten or written in indelible ink and signed by a person or persons authorised to sign on behalf of the Tenderer by the Power of Attorney submitted by the Tenderer in accordance with Form 1.4.3 of VOLUME 1, Section 4 of the Tender Documents. All pages where entries or amendments have been made shall be initialled against the entries or amendments by the person or persons signing the Tender. All pages shall be numbered consecutively by hand, machine or in any other way acceptable to the Contracting Authority.

20.3 The Tender shall not comprise any changes or amendments, except those made in accordance with instructions issued by the Contracting Authority or

necessary adjustment made by the Tenderer of errors made by the Tenderer. In such case, amendments shall be initialled by the person signing the Tender.

20.4 The Tender may be rejected if any alteration, addition or deletion to the Tender documents, not specified in an Addendum issued by the Contracting Authority, is made, or if the Tender Documents are incompletely or improperly filled in.

21 SEALING AND MARKING OF TENDERS

21.1 The Tenders shall be delivered by registered mail with acknowledgement of receipt, or by hand against receipt signed by the Contracting Authority or his duly authorised representative.

21.2 Tenderers shall seal the original and all the copies of their Tenders in an envelope or package.

21.3 The envelope shall be delivered to the address of the Contracting Authority as stated in the Notice of Invitation to Tender.

21.4 If the outer envelope is not sealed and marked as required in Sub-Clause 21.3, the Contracting Authority will assume no responsibility for the misplacement or premature opening of the Tender.

21.5 Variant proposals, if any, shall be submitted in a separate inner envelope, clearly marked "Variant".

22 EXTENSION OF TIME FOR SUBMISSION OF TENDERS

22.1 The Contracting Authority may, at his sole discretion, extend the deadline for submission of Tenders by issuing an Addendum in accordance with Clause 10. hereof. In such case, all rights and obligations of the Contracting Authority and the Tenderer regarding the original date specified in the Notice of Invitation to Tender shall be subject to the new date.

23 LATE TENDERS

23.1 All Tenders received after the deadline for submission, stated in the Notice of Invitation to Tender, will be kept by the Contracting Authority. The associated guarantees may be returned to the Tenderers on request.

23.2 No liability can be accepted for late delivery of Tenders. Late Tenders will be rejected and not admitted for evaluation.

24 TENDER ALTERATIONS AND WITHDRAWALS

24.1 Tenderers may alter or withdraw their Tenders by written notification prior to the deadline as stated above. No Tender may be altered after the deadline for submission of Tenders.

24.2 Any such notification of alteration or withdrawal shall be prepared, sealed, marked and submitted in accordance with the provisions of Clause 21. above, and the envelope shall, in addition, be marked as "Alteration" or "Withdrawal".

- 24.3 The withdrawal of a Tender in the period between the deadline for submission of Tenders and the date of expiry of the validity of the Tender shall result in forfeiture of the Tender Guarantee, as provided for in Sub-Clause 18.6. hereof.

25 OPENING OF TENDERS

- 25.1 Tenders shall be opened in public session on [the date *90 days from the date of publication of the procurement notice*] at 12.00 hours local time at

**Azeravtoyol, State Road Concern
Mr. Yusif Novruzov, President
72/4, Uzeyir Hajibeyov street
370010 BAKU
AZERBAIJAN REPUBLIC**

**Tel +994 12 – 93 80 93 / 93 01 30 / 98 55 86
Fax +994 12 - 98 55 86**

by the committee appointed for the purpose. The committee shall draw up minutes of the meeting, which shall be available to those Tenderers requesting them in writing.

- 25.2 At the tender opening, the Tenderers' names, the tender prices, any discount offered, written notifications of modification and withdrawal, the presence of the requisite tender guarantee and such other information as the Contracting Authority may consider appropriate shall be announced.
- 25.3 The Chairman shall open the Tenders, including valid Variant solutions, submitted in accordance with the provisions of Clauses 21. and 24. hereof.
- 25.4 Envelopes marked "Withdrawal" shall be opened and read out first. Tenders, including any variant solutions, for which an acceptable notice of withdrawal has been submitted in accordance with Clause 24. shall not be opened but shall be returned to the Tenderer.
- 25.5 Tender prices, totals of every Tender, any reductions, variants and withdrawals of Tenders, presence of Tender Guarantee and other particulars the Evaluation Committee considers important shall be announced by the Chairman of the Evaluation Committee during the public opening.
- 25.6 Any reductions or alterations to Tender prices made by the tenderers after the opening of tenders shall not be taken into consideration during the analysis and evaluation of Tenders.
- 25.7 After the public opening of the tenders, no information about the examination, clarification, evaluation or comparison of tenders or decisions about the contract award can be disclosed before the signature of the contract by the Contracting Authority and the successful Tenderer.

26 SECRECY OF PROCEDURE

- 26.1 Information concerning checking, explanation, opinions and comparison of Tenders, and also recommendations concerning the award of Contract, shall not be disclosed to Tenderers or to any other person who is not officially involved in the process until the name of the successful Tenderer is announced.
- 26.2 Any attempt by a Tenderer to directly approach any member of the Evaluation Committee/Contracting Authority during the evaluation period shall be considered as a legitimate reason to disqualify his Tender.

27 CLARIFICATION OF TENDERS

- 27.1 Tenders which are incomplete, conditional, illegible, obscure or that contain additions not called for or other irregularities may be rejected.
- 27.2 The Evaluation Committee may, at its discretion, ask any Tenderer to clarify any aspect of his Tender, when this is required to check and compare Tenders.
- 27.3 Such requests and the relevant responses shall be made in writing or by fax, but shall not be allowed to propose, alter or try to change the price or content of the Tender, except to adjust arithmetical errors discovered by the Evaluation Committee when analysing Tenders in accordance with Clause 30. hereunder.

28 CHECKING OF TENDERS AND THEIR COMPLIANCE WITH THE REQUIREMENTS OF THE TENDER DOCUMENTS

- 28.1 Before a detailed analysis of Tenders is undertaken the Evaluation Committee shall determine if each Tender:
- 28.1.1 has been properly signed, and
 - 28.1.2 has the required Tender Guarantee, and
 - 28.1.3 in its substance complies with the requirements stated in the Instructions to Tenderers.
- 28.2 A complying Tender is one which conforms to the requirements and specifications described in the Tender Documents without essential deviations or reservations. Essential deviations and reservations include those which:
- 28.2.1 in any way influence the scope, quality or execution of Works, or
 - 28.2.2 limit the rights of the Contracting Authority or the obligations of the Tenderer under the Contract in a way inconsistent with the Tender Documents, or
 - 28.2.3 whose rectification would affect unfairly the competitive position of other Tenderers presenting complying Tenders.

28.3 If any Tender does not comply with the following requirements of the Tender Documents, it shall be rejected by the Evaluation Committee during the conformity check :

- (a) A tender not accompanied by the tender security in the specified form shall be rejected
- (b) A tender which is not signed by an authorised representative as confirmed by public notary or any authorised body in conformity of the tenderers country of registration will be rejected
- (c) A tender which does not bear such authorised signature on the Appendix to Tender will be rejected
- (d) A tender which does not contain the Appendix to tender duly filled in will be rejected
- (e) A tender which does not contain the Bill of Quantities duly filled in shall be rejected
- (f) A tender which does not provide the confirmation by a Bank of having liquid assets in the minimum amount specified in this tender will be rejected.

29 EVALUATION AND COMPARISON OF TENDERS

29.1 The Evaluation Committee shall evaluate and compare only those Tenders determined as substantially compliant in accordance with Clause 28. above.

29.2 The aim of the tender evaluation process is to identify the Tenderer who is most likely to enable the Contracting Authority to achieve his objectives of having a completed facility on time, meeting the required quality criteria and within the budget for the Works. The evaluation of Tenders may take into account not only Construction cost, but also Operation cost and resources required (ease of operation and maintenance) in line with the requirements of the technical specifications.

29.3 The above will feature in the assessment of which Tender (if any) appears to be in the Contracting Authority's best interests. The Contracting Authority will scrutinise in detail all the information supplied by the Tenderers and will formulate his judgement on the basis of technical expertise, Tender Sum, and present value of operating costs, if necessary.

29.4 The Contracting Authority reserves the right to seek such clarification of any part of the Tenderer's offer as the Evaluation Committee may consider necessary for the evaluation of the offer.

29.5 The Contracting Authority reserves the right to carry out such verification of information submitted with the Tender as the Evaluation Committee may deem appropriate.

30 CORRECTION OF ERRORS

30.1 Complying Tenders shall be checked for arithmetical errors by the Evaluation Committee. Errors shall be corrected by the evaluation committee as follows:

- where there is a discrepancy between amounts in figures and in words, the amount in words shall prevail;

- except for lump-sum contracts, where there is a discrepancy between a unit price and the total amount derived from the multiplication of the unit price and the quantity, the unit price as quoted shall prevail.

30.2 The amount stated in the Form of Tender shall be adjusted by the Evaluation Committee in a case of error and such adjusted amount shall bind the Tenderer. If the Tenderer does not accept such adjustment his Tender shall be rejected and his Tender Guarantee shall be forfeited.

30.3 When analysing the Tender, the Evaluation Committee shall state the final Tender price after adjusting the Tender price as provided for in Clause 30.

31 CRITERIA FOR AWARD

31.1. The Evaluation Committee shall select the Tenderer whose Tender has been determined to meet the administrative and technical criteria, and has offered the lowest price.

32 RIGHT OF THE CONTRACTING AUTHORITY TO ACCEPT ANY TENDER AND TO REJECT ANY OR ALL TENDERS

32.1 The Contracting Authority reserves the right to accept or reject any Tender and/or cancel the whole process of Tendering and reject all Tenders. He may do so at any time before awarding the Contract without any liability to the Tenderers. The Contracting Authority reserves the right to initiate a new Tender.

32.2 The Contracting Authority reserves the right to conclude the Contract Agreement with the successful Tenderer for the sum of available funds only.

32.3 Should the Tender Sum of the lowest compliant Tender exceed the available budget, the Contracting Authority reserves the right to negotiate with the relevant Tenderer with the aim of reducing the scope of the Work and or revising other provisions of the Contract, which shall produce reductions in the Tender Price satisfactory to the Contracting Authority. Such negotiations shall be finished in X days after the invitation to negotiations regarding the scope of works has been received by the Tenderer.

33 NOTIFICATION OF AWARD, CONTRACT CLARIFICATIONS

33.1 Prior to the expiration of the period of validity of Tender, the Contracting Authority will notify the selected Tenderer, in writing, that his Tender has been considered the most favourable and draw attention to any arithmetical errors which were corrected during the evaluation process.

33.2 This notification could be in the form of an Invitation to contract clarifications, listing a number of issues to be the subject of the discussion, for which the Tenderer will prepare himself. The clarifications will be limited only to the issues that have not substantially contributed to the selection of the most favourable Tender. The outcome of the contract clarifications will be reflected in a Memorandum of Contract clarifications, to be signed by both parties,

which shall then be included in the Contract Documents forming a consisting part of the Contract.

33.3 Only the signed Contract Agreement shall constitute an official commitment on the part of the Contracting Authority and no activities can commence before the Contract Agreement has been signed by the Contracting Authority and the successful Tenderer.

33.4 After the Contract Agreement has been signed by the Contracting Authority and the successful Tenderer, and the Performance Guarantee has been provided by the successful Tenderer, all in accordance with Clause 34. following, the Contracting Authority shall notify, without delay, other Tenderers that their Tenders have not been successful and release their Tender Guarantee.

34 CONTRACT SIGNING AND PERFORMANCE GUARANTEE

34.1 The successful Tenderer will be required to enter into a Contract Agreement in the form provided in VOLUME 2, Section 1 of the Tender Documents and to provide a Performance Guarantee in the form provided in VOLUME 2, Section 4 of the Tender Documents.

34.2 Prior to signing of the Contract, he could further be required to provide a re-confirmation of the financial statement provided as part of the Tender in accordance with form 4.4. This statement shall indicate his access to credit facilities sufficient to ensure his liquidity during his Contract performance. In case of failure by the Tenderer in providing this statement, the Tender will no longer be considered and the Tenderer whose Tender has been evaluated as second most advantageous may be invited for contracting and so forth.

34.3 Upon signing by the successful Tenderer:

34.3.1 The successful Tenderer shall become the Contractor, and

34.3.2 The Contract shall become effective.

34.4 If he fails to sign and return the Contract and any financial guarantee required within 30 days after receipt of notification, the Contracting Authority may consider the acceptance of the Tender to be cancelled without prejudice to any claims rights, or remedies the Contracting Authority may have in respect of such failure and the successful Tenderer shall have no claim whatsoever on the Contracting Authority.

35 COMMENCEMENT OF WORKS

35.1 Following the signature of the contract by both parties, the Contracting Authority's Representative will issue a written "Notice to Commence the Works" in accordance with Clause 31 of the General Conditions of Contract, as specified by the Special Conditions and the Appendix to Tender.

35.2 The Contractor shall inform the Contracting Authority's Representative by return of the date of receipt of the notice.

36 ETHIC CLAUSES

- 36.1 Any attempt by a candidate or Tenderer to obtain confidential information, enter into unlawful agreements with competitors or influence the committee or the Contracting Authority during the process of examining, clarifying, evaluating and comparing tenders will lead to the rejection of his candidacy or tender and may result in administrative penalties.
- 36.2 Without the Contracting Authority's prior written authorisation, a Contractor and his staff or any other company with which the Contractor is associated or linked may not, even on an ancillary or subcontracting basis, perform other services, carry out works or supply equipment for the project. This prohibition also applies to any other projects that could, owing to the nature of the contract, give rise to a conflict of interest on the part of the Contractor.
- 36.3 When putting forward a candidacy or tender, the candidate or Tenderer must declare that, he is affected by no potential conflict of interest, and that he has no particular link with other Tenderers or parties involved in the project. Should such a situation arise during performance of the contract, the Contractor must immediately inform the Contracting Authority.
- 36.4 The Contractor must at all times act honourably and impartially in accordance with the code of conduct of his profession. He must refrain from making public statements about the project or services without the Contracting Authority's prior approval. He may not commit the Contracting Authority in any way without its prior written consent.
- 36.5 For the duration of the contract, the Contractor and his staff must respect human rights and undertake not to violate the political, cultural and religious mores of the recipient state.
- 36.6 The Contractor may accept no payment connected with the contract other than that provided for therein. The Contractor and his staff must not exercise any activity or receive any advantage inconsistent with their obligations to the Contracting Authority.
- 36.7 The Contractor and his staff are obliged to maintain professional secrecy for the entire duration of the contract and after its completion. All reports and documents drawn up or received by the Contractor are confidential.
- 36.8 The contract shall govern the contracting parties' use of all reports and documents drawn up, received or presented by them during the execution of the contract.
- 36.9 The Contractor shall refrain from any relationship likely to compromise his independence or that of his staff. If the Contractor ceases to be independent, the Contracting Authority may, regardless of injury, terminate the contract without further notice and without the Contractor having any claim to compensation.
- 36.10 The Commission reserves the right to suspend or cancel project financing if corrupt practices of any kind are discovered at any stage of the award process and if the Contracting Authority fails to take all appropriate measures to remedy the situation. For the purposes of this provision, "corrupt practices" are the offer of a bribe, gift, gratuity or commission to any person as an inducement or

reward for performing or refraining from any act relating to the award of a contract or implementation of a contract already concluded with the Contracting Authority.

- 36.11 All tenders will be rejected or contracts terminated if it emerges that the award or execution of a contract has given rise to unusual commercial expenses. Such unusual commercial expenses are commissions not mentioned in the main contract or not stemming from a properly concluded contract referring to the main contract, commissions not paid in return for any actual and legitimate service, commissions remitted to a tax haven, commissions paid to a recipient who is not clearly identified or commissions paid to a company which has every appearance of being a front company.

37 APPEALS

- 37.1 Tenderers believing themselves the victims of an error or irregularity during the selection procedure or award process may petition the Contracting Authority directly within 30 days of the award of the contract, informing the Commission. The Contracting Authority must reply within 90 days of receipt of the complaint.
- 37.2 Where informed of such a complaint, the Commission shall communicate its opinion to the Contracting Authority and do all it can to facilitate an amicable solution between the complainant (Tenderer) and the Contracting Authority.
- 37.3 If the above procedure fails, the Tenderer may have recourse to procedures established under the national legislation of the Contracting Authority.

VOLUME 1

SECTION 2

**FORM OF TENDER
APPENDIX TO TENDER**

**TENDER FORM FOR A WORKS CONTRACT
FINANCED BY EUROPEAN COMMISSION - Tacis**

PROJECT: Construction of the Gasan Su Cay and Shemkir bridges in Azerbaijan

INVITATION TO TENDER NO [.....]

[Place and date]

A: Contracting Authority Azeravtoyol, State Road Concern
Mr. Yusif Novruzov, President
72/4, Uzeyir Hajibeyov street
370010 BAKU
AZERBAIJAN REPUBLIC

Tel +994 12 – 93 80 93 / 93 01 30 / 98 55 86
Fax +994 12 - 98 55 86

1 SUBMITTED by

	Name(s) of Tenderer(s)	Nationality
Leader*		
Partner 2*		
Etc ... *		

*Add / delete additional lines for partners as appropriate.

Note that a sub-Contractor is not considered to be a partner for the purposes of this application form.

2 CONTACT PERSON (for this application)

Name	
Organisation	
Address	
Telephone	
Fax	
e-mail	

We, the undersigned, hereby declare that:

- 1 We have examined and accept in full the content of the dossier for invitation to tender no [.....] of [./././]. We hereby accept without reserve or restriction and in their entirety its provisions.

- 2 We offer to execute, in accordance with the terms of the tender dossier and the conditions and time limits laid down, without reserve or restriction, the following works:
Construction of the Gasan Su Cay and Shemkir bridges in Azerbaijan
- 3 The price of our tender [*excluding the discounts described under point 4,*] is:
- 4 Not applicable
- 5 This tender is valid for a period of **90 days** from the final date for submission of tenders, i.e. until [././..].
- 6 If our tender is accepted, we undertake to provide a performance guarantee of 10 per cent of the contract price as required by Article 13 of the General Conditions.
- 7 Our firm / company [*and our subcontractors*] has / have the following nationality:
 [.....]
- 8 We are making this application in our own right and [**as partner of the consortium** led by < name of the leader / ourselves >]* for this Tender . We confirm that we are not participating in any other application for the same contract, whatever the form of the application. [We confirm as partner of the consortium that all partners are legally responsible, jointly and severally, for the execution of the Contract, that the Leading Partner is authorised to obligate and receive instructions for and on behalf of each and all partners, and that the execution of the Contract, including payments, shall be responsibility of the Leading Partner and that all partners in the Joint Venture/Consortium shall be bound to remain in the Joint Venture/Consortium for the whole period of the execution of Contract].
- 9 We are not in any of the situations excluding us from participating in contracts which are listed in Section 2.3 of the Manual of Instructions for External Relations Contracts (available from the following Internet address:
http://europa.eu.int/comm/europeaid/index_en.htm
- 10 We agree to abide by the ethics clauses in Section 7 of the Manual of Instructions and, in particular, have no potential conflict of interests or any relation with other candidates or other parties in the tender procedure at the time of the submission of this application;
- 11 We will inform the Contracting Authority immediately if there is any change in the above circumstances at any stage during the implementation of the contract. We also fully recognise and accept that any inaccurate or incomplete information deliberately provided in this application may result in our exclusion from this and other contracts funded by the European Communities.
- 12 We note that the Contracting Authority is not bound to proceed with this invitation to tender and that it reserves the right to award only part of the contract. It shall incur no liability towards us should it do so.

Name and first name: [.....]

Duly authorised to sign this tender on behalf of:

[.....]

Place and date: [.....]

Stamp of the firm / company:

This tender includes the following annexes:

[Numbered list of annexes with titles]

**APPENDIX TO TENDER FOR A WORKS CONTRACT
FINANCED BY EUROPEAN COMMISSION - Tacis**

PROJECT Construction of the Gasan Su Cay and Shemkir bridges in Azerbaijan

INVITATION TO TENDER NO [.....]

(Note: Tenderers are required to fill in the blank space in this Appendix to Tender)

Definition	Sub-Clauses of General Conditions of Contract (GCoC) or Special Conditions of Contract (SCoC)	Description
Contracting Authority's name and address	GCoC 1.1 ff SCoC 1.4	Azeravtoyol, State Road Concern Mr. Yusif Novruzov, President 72/4, Uzeyir Hajibeyov street 370010 BAKU AZERBAIJAN REPUBLIC Tel +994 12 – 93 80 93 / 93 01 30 / 98 55 86 Fax +994 12 - 98 55 86
Contractor's name and address	GCoC 1.1 ff SCoC 1.1 ff	
Name and address of the Contracting Authority's Representative- "Project Manager"	GCoC 1.1 ff SCoC 1.4	to be designated
Financing Authority	GCoC 1.1 ff SCoC 1.4	EUROPEAN COMMISSION – Tacis Programme
Time for Notice to Commence	SCoC 31.1	Within 30 days from the date following notification of approval of the contract
Time for Completion of the Works	GCoC 32.1 SCoC 32.1	240 calendar days from the date of notification of approval of the contract
Currency	GCoC 43.1	EURO €, and/or national currency Azeri Manat (AZM)

Definition	Sub-Clauses of General Conditions of Contract (GCoC) or Special Conditions of Contract (SCoC)	Description
Law of the Contract	GCoC 2.1	The law of the Republic of Azerbaijan
Ruling language	SCoC 2.2	The English language
Language for communications	SCoC 2.3	The English language; and in correspondence with the Contracting Authority and other Government institutions in addition to the English language the Azeri and/or the Russian language
Time for access to the Site	SCoC 9.1	Within 30 days from the date following notification of approval of the contract
Amount of Performance Guarantee	GCoC 13.1	10 per cent of the amount of the Contract Price
Time for submission of programme	GCoC 15.1 ff SCoC 15.1 ff	Within 30 days from the date following notification of approval of the contract
Normal working hours	SCoC Article 67	<i>Contractor to enter the normal working hours above which overtime will be paid to the workers in consideration of SCoC Article 67</i>
Period after the Effective Date within which the Notice to Commence shall be issued by the Contracting Authority's Representative	SCoC 31.1 ff GCoC 31.1 ff	Within 30 days from the date following notification of approval of the contract, but not later than the 90th day following notification of approval of the contract.
Liquidated damages for the Works	GCoC 34.1 ff SCoC 34.1 ff	At the rate of 1,500 € per calendar day
Limit of liquidated damages for delay	GCoC 34.1 ff SCoC 34.1 ff	Up to the maximum of 5 per cent of the contract price
Percentage of retention	GCoC 45.1 ff SCoC 45.1 ff	10 per cent of the contract price
Minimum amount of Interim Payment Certificates	GCoC 48.1 ff SCoC 48.7	The minimum amount for an interim certificate is 5 per cent of the contract price
Percentage for adjustment of Provisional Sums	SCoC Article 68	

Definition	Sub-Clauses of General Conditions of Contract (GCoC) or Special Conditions of Contract (SCoC)	Description
Amount of insurance for design	GCoC 11.1.2 GCoC 14.1 ff & SCoC 11.1.2 SCoC 14.1 ff	The Works to full replacement cost plus an additional sum of 15 per cent of such replacement costs
Amount of third party insurance	GCoC 14.1 ff	2,000,000 € per accident with the number of occurrences unlimited
Periods for submission of insurance	GCoC 14.5	Within 30 days of notification of award of contract

Number of members of Dispute Adjudication Board	SCoC 65.2	One
Member of Dispute Adjudication Board (if not agreed) to be nominated by	SCoC 65.2	EUROPEAN COMMISSION Tacis
Arbitration rules	GCoC 65.5	Arbitration will take place in accordance with the United Nations Commission on International Trade Law UNCITRAL procedures
Number of arbitrators	SCoC 65.5	One arbitrator
Language of arbitration	SCoC 65.5	The English language
Place of arbitration	SCoC 65.5	Brussels, Belgium
.....		

Signature _____

in the capacity of _____

duly authorised to sign Tenders for and on behalf of _____

VOLUME 1

SECTION 3

FORM OF TENDER GUARANTEE

MODEL FOR TENDER GUARANTEE

Works contract

Invitation to tender no [.....]

The undersigned, [*name, company name, address*], hereby declare that we will guarantee, not merely jointly and severally, but as principal debtor, to [*Contracting Authority's name and address*] on behalf of [*Contractor's name and address*], the payment of [*amount of the tender guarantee*], without dispute, on receipt of a first written request from the recipient.

The guarantee will enter into force and take effect from the [*deadline for submitting*]. It will remain in force up to and including the date 90 days after this deadline. It may be extended by the Contracting Authority, for a further 40 days in exceptional cases, notice of which extension(s) to the Guarantor is hereby waived.

Should [*Contractor's name and address*] be notified as successful tenderer, this guarantee will be extended for a further 60 days from the notification of award. It shall be released upon the signing of the Contract Agreement by the Tenderer and upon provision of the required Performance Guarantee.

Any demand in respect of this Guarantee should reach the Guarantor not later than the above date. We note that you will release the guarantee and notify us of the fact at the latest within 30 days of the expiry of the tender validity period, including any extensions, in accordance with the Instructions to Tenderers.

Any dispute concerning this guarantee shall be governed by [*enter the law applicable*] and fall within the competence of [*indicate which jurisdiction applies*].

Done at,/./..

Name and first name: On behalf of:

Signature:

[stamp of the body providing the Guarantee]

VOLUME 1

SECTION 4

QUESTIONNAIRE

VOLUME 1
SECTION 4
QUESTIONNAIRE

CONTENTS

	ADDITIONAL NOTICE TO TENDERERS
FORM 4.1	GENERAL INFORMATION ABOUT THE TENDERER
FORM 4.2	ORGANISATION CHART
FORM 4.3	POWER OF ATTORNEY
FORM 4.4	FINANCIAL STATEMENT
FORM 4.5	FINANCIAL IDENTIFICATION
FORM 4.6	TECHNICAL QUALIFICATIONS
4.6.1	PERSONNEL
4.6.2	EQUIPMENT
4.6.3	WORKPLAN AND PROGRAMME
4.6.4	EXPERIENCE AS CONTRACTOR
4.6.5	DATA ABOUT JOINT VENTURES
4.6.6	LITIGATION HISTORY
4.6.7	QUALITY ASSURANCE SYSTEM(S)
4.6.8	ACCOMMODATION FOR THE PROJECT MANAGER
4.6.9	FURTHER INFORMATION

**VOLUME 1
SECTION 4
QUESTIONNAIRE
ADDITIONAL NOTICE TO TENDERERS**

1. All questions contained in all the Forms shall be answered by the Tenderer.
2. Additional sheets may be attached as necessary.
3. If a question does not apply to the Tenderer "Not applicable" shall be written against it, with a brief explanation of why it does not apply.
4. Each page of every individual form shall be numbered consecutively in the lower right corner.
5. Financial data and declarations presented by the Tenderer shall be given in EURO or in the national currency. Original bank statements may be also attached for reference.
6. Attached documentation/certificates must always be accompanied by a relevant translation into the language of the procedure.
7. Each partner of a Joint Venture/Consortium shall fill in and submit every form.
8. Firms applying as a Joint Venture/Consortium additionally shall fill in Form 4.5.5 concerning Joint Ventures/Consortia.
9. The signatory of this questionnaire guarantees the truth and accuracy of all the statements made.
10. Accuracy in the filling in of the questionnaire, its completeness and attached documentation will be taken into account in the Tender evaluation. The attention of Tenderers is also drawn to the fact that absence of some data may cause their non compliance in the related item of evaluation.

VOLUME 1
SECTION 4
FORM 4.1
GENERAL INFORMATION ABOUT THE TENDERER

- 4.1.1. Name of Company
4.1.2. Registered Address
4.1.3. Telephone, Telefax, Telex, E-mail
4.1.3. Names and nationalities of Principals/Directors & Associates
4.1.4. Type of Company
4.1.5. Description of Company
4.1.6. Company's Original Nationality
4.1.7. Number of Years experience as Contractor
4.1.8. Registration Particulars
4.1.9. Participation in the Company
4.1.10. Name(s) and address(es) of associated Company(ies)
4.1.11. If the company is a subsidiary...
4.1.12. Foreign Companies shall indicate whether or not they are established in the State of the Contracting Authority...

Signature :
(a person or persons authorised to sign on behalf of the Tenderer)
Date: }

**VOLUME 1
SECTION 4
FORM 4.2
ORGANISATION CHART**

{Please give details here below of the **Organisation Chart** of your Company, showing the position of directors, key personnel and functions.

Signature

(a person or persons authorised to sign on behalf of the Tenderer)

Date.....}

**VOLUME 1
SECTION 4
FORM 4.3
POWER OF ATTORNEY**

Please attach here the **Power of Attorney** authorising the signatory of the Tender and all related documentation.

Signature :

(a person or persons authorised to sign on behalf of the Tenderer)

Date:}

VOLUME 1 SECTION 4 FORM 4.4 FINANCIAL STATEMENT

Please provide all of the information required by this form in EURO or National currency equivalent.

4.4.1 Basic Capital

Amount..... EURO or NC
 Currency..... EURO or NC
 Authorised..... EURO or NC
 Issued..... EURO or NC

4.4.2 Annual value of construction work undertaken for each of the last 3 years, and projected for the next two years

EURO or NC	Year -3	Year -2	Last Year	Current Year	Year +1	Year +2
Home						
Abroad						
Total						

4.4.3 Approximate value of Work in hand (home and abroad)
EURO or NC

4.4.4 Please attach copies of the Company's previous X years certified statements of account (with translations into the language of the procedure if necessary) from which the following basic data shall be abstracted; and provide the same information projected forward for the next two years.

EURO or NC	Year -2	Year -1	Last Year	Current Year	Year +1	Year +2
1.Total Assets
2.Total Liabilities
<i>Net Value (1-2)</i>
3.Current Assets
4.Current Liabilities
<i>Working Capital (3-4)</i>
5.Profit (before taxation)
6.Loss

4.4.5 Name and address of Banks (principal/others):

.....
.....
.....

4.4.6 Please enclose a reference/certificate about the financial situation of the Company and its access to credit facilities (maximum amount of credit facility to be stated) equivalent EURO or national currency.

Signature:

(a person or persons authorised to sign on behalf of the Tenderer)

Date:}

**VOLUME 1
SECTION 4
FORM 4.6.1 to 9
QUESTIONNAIRE
TECHNICAL QUALIFICATIONS**

**VOLUME 1
SECTION 4
FORM 4.6.1.1
TENDERER'S OVERALL PERSONNEL**

- {i - Overall
 - a - Directors and Management
 - b - Administrative Staff
 - c - Technical Staff
 - Project Managers
 - Surveyors
 - Foremen
 - Mechanics
 - Technicians
 - Machine Operators
 - Drivers
 - Other skilled staff
 - Labour and unskilled staff
-
- Total =====

- ii - Site Operative Staff to be employed on the Contract (if relevant)
 - a - Site Management
 - b - Administrative Staff
 - c - Technical Staff
 - Project Managers
 - Surveyors
 - Foremen
 - Mechanics
 - Technicians
 - Machine operators
 - Drivers
 - Other skilled staff
 - Labour and unskilled staff
-
- Total =====

Signature

(a person or persons authorised to sign on behalf of the Tenderer)

Date}

**VOLUME 1
SECTION 4
FORM 4.6.1.2
Personnel to be employed on the Contract**

Function/Name	Nationality	Age	Education	Years of experience (With the Company/ in construction)	Major Works for which Re- sponsible (Project/Value)
Project Manager				/	
Asst. Project Manager				/	
Quality Control				/	
Others Responsible for				/	
Others Responsible for				/	

Signature

(a person or persons authorised to sign on behalf of the Tenderer)

Date.....}

VOLUME 1
SECTION 4
FORM 4.6.1.3
PROFESSIONAL EXPERIENCE RECORD FOR KEY
PERSONNEL
CURRICULUM VITAE

(Maximum 3 pages + 3 pages of annexes)

{Proposed position in the Contract:

1. Surname:
2. Name:
3. Date and place of birth:
4. Nationality:
5. Civil Status:
Address (phone/fax/e-mail):
6. Education:

<i>Institutions:</i>	
<i>Date:</i>	
<i>From (months/year)</i>	
<i>To (months/year)</i>	
<i>Degree:</i>	

7. Language skills (Mark 1 to 5 for competence, where 5 is the highest):

<i>Language</i>	<i>Level</i>	<i>Passive</i>	<i>Spoken</i>	<i>Written</i>
	<i>Mother Tongue</i>			

8. Membership of Professional Bodies:
9. Other skills (e.g. computer literacy, etc.):
10. Present Position:
11. Years of professional experience:
12. Key qualifications:
13. Specific experience in non-industrialised countries:

<i>Country</i>	<i>Date: from (month/year) to (month/year)</i>	<i>Name and brief description of the project</i>

14. Professional experience:

<i>Date: from (month/year) to (month/year)</i>	
<i>Location</i>	
<i>Company / Organisation</i>	
<i>Position</i>	
<i>Job Description</i>	

15. Others:

15a. Publications and Seminars:

15b. References:

Signature

(a person or persons authorised to sign on behalf of the Tenderer)

Date.....}

**VOLUME 1
SECTION 4
FORM 4.6.2
EQUIPMENT**

{ Equipment proposed and available for the execution of the Contract ¹

	DESCRIPTION (Type/Make/Model)	Power/ Capacity	No. of Units	Age (years)	Owned (O) or hired(H)/ and Per- centage of Ownership	Origin (Country)	Present approximate Value in EURO or in NC
A)	CONSTRUCTION EQUIPMENT						
					/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		

¹ Not the whole fleet of equipment owned by the Contractor

	DESCRIPTION (Type/Make/Model)	Power/ Capacity	No. of Units	Age (years)	Owned (O) or hired (H)/ and Percent- age of Own- ership	Origin (country)	Present approxi- mate Value in EURO or in NC
B)	VEHICLES AND TRUCKS						
					/		
					/		
					/		
					/		
					/		
C)	OTHER EQUIPMENT				/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		
					/		

Signature

(a person or persons authorised to sign on behalf of the Tenderer)

Date.....}

**VOLUME 1
SECTION 4
FORM 4.6.3
WORKPLAN AND PROGRAMME**

- 4.6.3.1 State the proposed location of your Main Site Office, plant, (steel structure/concrete/asphalt) yard, laboratory, site accommodation, etc. (sketches to be attached as required)
- 4.6.3.2 Give a brief outline of your programme for the completion of the Works in accordance with the required method of construction and stated time of completion
- 4.6.3.3 Attach a critical milestone bar chart (Schedule of Execution) representing the Construction Programme and detailing the relevant activities, dates, allocation of labour and plant resources, etc.
- 4.6.3.4 If the Tender intends to sub-contract part of the Works under the Contract he is required to provide the following details:

Work intended to be sub-contracted	Name and details of Sub-Contractor	% Value of Subcontract as Percentage of Total Cost of the Project	Experience in Similar Work (Details to be Specified)

Signature

(a person or persons authorised to sign on behalf of the Tenderer

Date}

VOLUME 1
SECTION 4
FORM 4.6.4
EXPERIENCE AS CONTRACTOR

{4.6.4.1} List of Contracts of similar nature and extent performed during the past *<insert number>* years

Name of Project/Kind of Works	Total Value of Works the Contractor was responsible for	Period of Contract	Commencement Date	% of Works Completed	Contracting Authority and Place	Prime Contractor (P) or Sub-Contractor (S)	Final Acceptance Issued? - Yes - Not Yet (Current Contracts) - No
A) In home country							

Name of Project/Kind of Works	Total Value of Works the Contractor was responsible for	Period of Contract	Commencement Date	Percentage of Works Completed	Contracting Authority and Place	Prime Contractor (P) or Sub-Contractor (S)	Final Acceptance Issued? - Yes - Not Yet (Current Contracts) - No
B) Internationally							

4.6.4.2 Please attach here available references and certificates from the relevant Contracting Authorities

Signature

(a person or persons authorised to sign on behalf of the Tenderer)

Date}

VOLUME 1
SECTION 4
FORM 4.6.5
DATA ABOUT JOINT VENTURES

{4.6.5.1 Name

4.6.5.2 Managing Board Address

Telex

TelephoneTelefax.....E-mail.....

4.6.5.3 Agency in the State of the Contracting Authority, if any (in the case of a Joint Venture/Consortium with a foreign Leading Partner)

Office Address

Telex

TelephoneTelefax.....

4.6.5.4 Names of partners

i)

ii)

iii)

etc.

4.6.5.5 Name of leading partner

.....

4.6.5.6 Agreement governing the formation of the Joint Venture/Consortium

i) Date of signature:

ii) Place:

iii) Enclosure - Joint Venture/Consortium agreement

4.6.5.7 Proposed proportion of responsibilities between partners (in %) with indication of the type of the Works to be performed by each

.....

.....

.....

.....

.....

Signature :

(a person or persons authorised to sign on behalf of the Tenderer)

Date:}

**VOLUME 1
SECTION 4
FORM 4.6.6
LITIGATION HISTORY**

{Please provide information on any history of litigation or arbitration resulting from contracts executed during the last X years or currently under execution.

A separate sheet should be used for each partner of a Joint Venture/Consortium.

Year	Award FOR or AGAINST Tenderer	Name of client, cause of litigation, and matter in dispute	Disputed amount (current value in EURO or in NC)

Signature

(a person or persons authorised to sign on behalf of the Tenderer)

Date}

**VOLUME 1
SECTION 4
FORM 4.6.7
QUALITY ASSURANCE SYSTEM(S)**

{Please provide hereunder details of the Quality Assurance System(s) it is proposed to use to ensure successful completion of the Works.

Signature

(a person or persons authorised to sign on behalf of the Tenderer)

Date}

**VOLUME 1
SECTION 4
FORM 4.6.8
ACCOMMODATION FOR THE PROJECT MANAGER**

{Please attach sketches and data detailing the characteristics of the accommodation and facilities intended to be provided by the Tenderer under the relevant items in the Bill of Quantities/Breakdown of Lump Sum.

Signature

(a person or persons authorised to sign on behalf of the Tenderer)

Date}

**VOLUME 1
SECTION 4
FORM 4.6.9
FURTHER INFORMATION**

{Tenderers may add here any further information that they may deem useful for the evaluation of their Tenders.

Signature

(a person or persons authorised to sign on behalf of the Tenderer)

Date

.....}

VOLUME 1

SECTION 5

GLOSSARY OF TERMS

Definitions

Commission: The Commission of the European Communities

Contracting Authority (Employer as per FIDIC rules): The Commission, or the State, or the legal person governed by public or private law which concludes the contract as set out in the Financing Agreement.

Works contract: A contract concluded between a Contractor and the Contracting Authority for the execution of works or the building of a structure.

Mixed contract: A contract concluded between a Contractor and the Contracting Authority which at the same time comprises at least two different types of input, i.e., works, supply or services.

Tenderer: Any natural or legal person or group of such persons submitting a tender, with a view to concluding a contract.

Successful Tenderer: The Tenderer selected after a procurement procedure.

Restricted procedures: The procedure in which following a procurement notice, only the candidates invited by the Contracting Authority may present an offer.

Simplified procedure: The procedure in which without a procurement notice only the candidates invited by the Contracting Authority may present an offer (see Manual point 3.3)

Negotiated procedure: The procedure in which without a procurement notice the Contracting Authority consults with the candidate or candidates of his own choice and negotiates the contract conditions with one or several of them (see Manual points 10.1.2, 14.1.2 and 19.1.3).

Suitable media: The publication in the Official Journal of the European Communities and on Internet is obligatory in all the cases specified in the Manual. Publication in the journals in the beneficiary country and where necessary other specialised journals may be necessary or recommended as the case may be.

Tender dossier: The document drafted by the Contracting Authority and which contains all necessary documents for the preparation and the presentation of an offer.

General Conditions: The general provisions, which contain the contractual clauses of an administrative, financial, legal and technical nature with regard to the execution of the contract.

Special Conditions (Conditions of Particular Applications as per FIDIC rules): The special provisions drafted by the Contracting Authority which form an integral part of the tender dossier and which contains any modifications to the General Conditions, the specific contractual clauses and the Terms of Reference (in a service contract) or the technical specifications (in a supply or works contract).

Evaluation committee: A committee which is composed of an odd number of members, minimum three members, each of whom must have the necessary technical and administrative expertise to assess tenders.

Time limits: Time limits shall begin to run from the day following the act or event which serves as the starting point for those periods. Should the last day of the period fall upon a non-working day, the period shall expire at the end of the first working day following the last day of the period.

Breakdown of the overall price: The itemised list of rates and prices showing the build-up of the price in a lump sum contract.

Project manager (Engineer as per FIDIC rules): the government department, legal person governed by public law, or the natural or legal person designated by the Contracting Authority in accordance with the law of the State of the Contracting Authority, who is responsible for directing/or monitoring the execution of the works contract, or to whom the Contracting Authority may delegate rights and/or powers, under the contract.

Communications: certificates, notices, orders and instructions issued in writing under the contract.

Administrative order: any instruction or order issued by the Project manager to the Contractor in writing regarding the execution of the works.

Conflict of interest: any event influencing the capacity of a candidate, Tenderer or Contractor to give an objective and impartial professional opinion, or preventing him, at any moment, from giving priority to the interests of the Contracting Authority. Any consideration relating to possible contracts in the future or conflict with other commitments, past or present, of a candidate, Tenderer or Contractor, or any conflict with his own interests. These restrictions also apply to Sub-contractors and employees of the candidate, Tenderer or Contractor.

Bill of quantities: the document containing an itemised breakdown of the tasks to be carried out in a unit price contract, indicating a quantity for each item and the corresponding unit price.

Day: calendar day.

In writing: this includes any hand-written, type written or printed communication, including telex, cable and fax transmissions.

Foreign currency: any currency permissible under the applicable provisions and regulations other than the EURO, which has been indicated in the tender.

National currency: the currency of the country of the Contracting Authority.

Tender price: the sum stated by the Tenderer in his tender for carrying out the contract.

Contract price: the sum stated in the contract representing the initial estimate payable for carrying out the works, or such other sum as ascertained at the end of the contract as due under the contract.

International open procedure: procedure in which any natural or legal person or group thereof may, after publication by the Commission on the OJCE and on its internet site of a call for tender, submit a tender in response to a procurement notice.

Local open procedure: procedure in which any natural or legal person or group thereof may, after publication of a call for tender locally, submit a tender in response to a procurement notice

Candidate: any natural or legal person or group of such persons applying to take part in a restricted or simplified procedure or selected under a simplified or negotiated procedure.

Contractor: the successful Tenderer once all parties concerned have signed the contract.

Liquidated damages: the sum stated in the contract as compensation payable by the Contractor to the Contracting Authority for failure to complete the contract or part thereof within the periods under the contract, or as payable by either party to the other for any specific breach identified in the contract.

General damages: the sum not stated beforehand in the contract, which is awarded by a court or an arbitration tribunal, or agreed between the parties, as compensation payable to an injured party for a breach of the contract by the other party

Project manager's Representative: any natural or legal person, designated by the Project manager as such under the Contract, and empowered to represent the Project manager in the performance of his functions, and in exercising such rights and/or powers as have been delegated to him. Accordingly, where functions, rights and/or powers of the Project manager have been delegated to the Project manager's Representative, references to the Project manager include the Project manager's Representative.

Works: the temporary and permanent Works to be carried out under the Contract.

Plant: machinery, apparatus, components and all items to be provided under the Contract for incorporation in the Works.

Equipment: appliances and other machinery, and, where applicable under the law and/or practice of the State of the Contracting Authority, the temporary structures on the Site required for carrying out the Works but excluding plant or other items required to form part of the permanent works.

Drawings: drawings provided by the Contracting Authority and/or the Project manager, and/or drawings provided by the Contractor and approved by the Project manager, for the carrying out of the Works.

Site: the places provided by the Contracting Authority where the Works are to be carried out and other places stated in the Contract as forming part of the Site.

Defect Liability Period : the period stated in the Contract immediately following the date of provisional acceptance, during which the Contractor is required to complete the Works and to remedy defects or faults as instructed by the Project manager.

Final Acceptance Certificate: certificate(s) issued by the Project manager to the Contractor at the end of the Defect Liability Period stating that the Contractor has completed his obligations to construct, complete, and maintain the Works concerned.

Provisional Sum: a sum included in the contract and so designated for the execution of work or the supply of goods, materials, plant or services, or for contingencies, which sum may be used in whole or in part, or not at all, as instructed by the Project Manager

Dayworks: varied work inputs subject to payment on a time basis for the Contractor's employees and Equipment, in addition to payments for associated Materials and Plant.

Variation: an instruction given by the Project manager, which varies the Works.

VOLUME 1

SECTION 6

EVALUATION GRID AND OTHER ANNEXES

ADMINISTRATIVE COMPLIANCE GRID

Contract title :	Publication reference :
-------------------------	--------------------------------

Tender envelope number	Tenderer name	Nationality of tenderer (consortium) ² eligible? (Yes/No)	Documentation complete? (Yes/No)	Language as required? (Yes/No)	Tender submission form duly completed? (Yes/No)	Consortium agreement signed by all partners? (Yes/No/ Not Applicable)	Sub-contracting statement acceptable? (Yes/No/ Not Applicable)	Other administrative requirements in tender dossier? (Yes/No/ Not Applicable)	Overall decision? (Accept / Reject)
1									
2									
3									
4									
5									
6									
7									
8									

Chairman's name	
Chairman's signature	
Date	

² If the tender has been submitted by a consortium, the nationalities of **all** the consortium partners must be eligible

ADMINISTRATIVE COMPLIANCE GRID

Contract title :		Publication reference :	
-------------------------	--	--------------------------------	--

Tender envelope No	Tenderer name	Rules of origin respected? (Yes/No)	Economic & financial capacity? (OK/a/b/...)	Professional capacity? (OK/a/b/...)	Technical capacity? (OK/a/b/...)	Compliance with technical specifications? (OK/a/b/...)	Ancillary services as required? (OK/a/b/.../NA)	Nationalities of any experts and/or sub-contractors eligible? (Yes/No)	Other technical requirements in tender dossier? (Yes/No/Not applicable)	Technically compliant? (Y/N)	Comments

Evaluator's name	
Evaluator's signature	
Date	

VOLUME 2

SECTION 1

FORM OF CONTRACT

AGREEMENT

FINANCED BY EUROPEAN UNION IN ACCORDANCE WITH THE TACIS
PROGRAMME.

**PROJECT: Construction of the Gasan Su Cay and
Shemkir bridges in Azerbaijan**

CONTRACT [*number*]

This Contract made between:

.....
address:

.....
(hereinafter called "the Contracting Authority") of the one part and

.....
address:

.....
(hereinafter called "the Contractor") of the other part.

Whereas the Contracting Authority is desirous that certain Works should be executed by the Contractor, viz.:

Construction of

.....
and has accepted a Tender by the Contractor for the execution and completion of such Works and the remedying of any defects therein.

It is hereby agreed as follows:

1. In this Contract words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

2. The following Documents shall be deemed to form and be read and construed as part of this Contract, in the following order of precedence:

- (a) The Contract,
- (b) The Special Conditions of Contract,
- (c) The General Conditions of Contract,
- (d) The Technical Specifications,
- (e) The Design Documentation (Drawings),
- (f) The Priced Bill of Quantities (after arithmetical corrections)/Price Schedule,
- (g) The said Tender with Appendixes,
- (h) Any other Documents forming part of the Contract:

Addenda and memoranda have the order of precedence of the document they are modifying.

3. In consideration of the payments to be made by the Contracting Authority to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Contracting Authority to execute and complete the Works under this Contract and within the liability period remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The Contracting Authority hereby agrees to pay the Contractor in consideration of the execution and completion of the Works and remedying of defects therein the amount of:

- Contract Price (excluding VAT/other taxes) EURO or NC
(The EC component in words..... EURO¹)
- VAT & other taxes..... EURO or NC
- Total Contract Price (in words:..... EURO or NC) or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract. VAT shall be paid in compliance with the binding regulations, national law and international agreements concerning the execution of the program. VAT and other taxes shall not be paid on the funds originating from EC funds

5. **In Witness** whereof the parties hereto have caused the Contract. This Contract becomes effective from the day the last party, that is the Contractor, has signed it.

CONTRACTING AUTHORITY:

Signed and sealed by

.....

 Date.....

CONTRACTOR:

Signed and sealed by

.....

 Name of the signatory (with capital letters)

 In the capacity of

 Being fully authorised by and acting on behalf of

 Date

¹ If there is co-financing, the EC contribution should normally be mentioned as a lump sum

.....
.....

**ENDORSED FOR FINANCING IN THE NAME
OF EUROPEAN COMMISSION ²**

.....
.....
.....
..... Date
.....
.....
.....
.....

² If required by EC procedures

VOLUME 2

SECTION 2

GENERAL CONDITIONS FOR WORKS CONTRACTS

THESE GENERAL CONDITIONS REMAIN FULLY
APPLICABLE UNLESS THEY ALLOW THE SPECIAL
CONDITIONS TO STIPULATE OTHERWISE

CONTENTS

PRELIMINARY PROVISIONS

Article 1	Definitions.....	1
Article 2	Law and Language of the Contract	1
Article 3	Order of Precedence of Contract Documents	1
Article 4	Notices and Written Communications	2
Article 5	Project manager and Project manager's Representative	2
Article 6	Assignment	3
Article 7	Sub-contracting	3

OBLIGATIONS OF THE CONTRACTING AUTHORITY

Article 8	Supply of Documents	4
Article 9	Access to Site	5
Article 10	Assistance with Local Regulations	5

OBLIGATIONS OF THE CONTRACTOR

Article 11	General obligations.....	6
Article 12	Superintendence of the Works	8
Article 13	Performance Guarantee	8
Article 14	Insurance	9
Article 15	Performance Programme	10

Article 16	Detailed Breakdown of Prices	11
Article 17	Contractor's Drawings	11
Article 18	Sufficiency of Tender Prices	12
Article 19	Exceptional Risks	12
Article 20	Guarantee of Sites	13
Article 21	Safeguarding Adjacent Properties	14
Article 22	Interference with Traffic	14
Article 23	Cables and Conduits	14
Article 24	Setting-Out	15
Article 25	Demolished Materials	15
Article 26	Discoveries	16
Article 27	Temporary Works	16
Article 28	Soil Studies	17
Article 29	Overlapping Contracts	17
Article 30	Patents and Licences	17

COMMENCEMENT AND DELAYS

Article 31	Commencement Orders	18
Article 32	Period of Performance	18
Article 33	Extension of Period of Performance	18
Article 34	Delays in Performance	19
Article 35	Variations and modifications.....	19
Article 36	Suspension	22

MATERIALS AND WORKMANSHIP

Article 37	Work Register	22
Article 38	Origin	23
Article 39	Quality of Works and Materials	23
Article 40	Inspection and Testing	24
Article 41	Rejection	25
Article 42	Property of Plant and Materials	26

PAYMENTS

Article 43	General Provisions.....	27
Article 44	Advances	27
Article 45	Retention Sum	28
Article 46	Revision of Prices	28
Article 47	Measurement	29
Article 48	Interim Payments	30
Article 49	Final Statement of Account	31
Article 50	Delayed Payments	32
Article 51	Payments to Third Parties	33
Article 52	Claims for Additional Payment	33
Article 53	Payments in Foreign/National Currency	33

ACCEPTANCE AND MAINTENANCE

Article 54	General Clauses	34
Article 55	Tests on Completion	34
Article 56	Partial Acceptance	34
Article 57	Provisional Acceptance	35
Article 58	Maintenance Obligations	36
Article 59	Final Acceptance	37

BREACH OF CONTRACT AND TERMINATION

Article 60	Breach of Contract	37
Article 61	Termination by the Contracting Authority	39
Article 62	Termination by the Contractor	41
Article 63	Force Majeure	41
Article 64	Decease	42

SETTLEMENT OF DISPUTES

Article 65	Settlement of Disputes	43
------------	------------------------------	----

ETHICS CLAUSES

Article 66	Ethics Clauses	43
------------	----------------------	----

PRELIMINARY PROVISIONS

ARTICLE 1

Definitions

- 1.1 The headings and titles in these General Conditions shall not be taken as part thereof or be, taken into consideration in the interpretation of the Contract.
- 1.2 Where the, context so permits words importing the singular shall be deemed to include the plural and vice versa and words importing the masculine shall be deemed to include the feminine and vice versa.
- 1.3 Words importing persons or parties shall include firms and companies and any organisation having legal capacity.

ARTICLE 2

Law and Language of the Contract

- 2.1 The law of the Contract shall be the law of the State of the Contracting Authority unless otherwise stated in the Special Conditions.
- 2.2 The tender and the contract documents, all correspondence relating to them, the instructions for use and the maintenance instructions shall be drawn up in the language indicated in the Special Conditions.
- 2.3 For all matters not covered by the above provisions, the law applicable shall be stated in the Special Conditions.

ARTICLE 3

Order of precedence of Contract Documents

- 3.1 The contract is made up of the following documents, in order of precedence:
 - (a) The Contract Agreement,
 - (b) The Special Conditions of Contract (Part II),
 - (c) The General Conditions of Contract (Part I),
 - (d) The Technical Specifications,
 - (e) The Design Documentation (Drawings),
 - (f) The Priced Bill of Quantities (after arithmetical corrections)/Price Schedule,
 - (g) The said Tender with Appendixes,
 - (h) Any other Documents forming part of the Contract:

Addenda and memoranda have the order of precedence of the document they are modifying.

- 3.2. The various documents making up the contract shall be deemed to be mutually explanatory; in cases of ambiguity or divergence, they should be read in the order in which they appear above.

ARTICLE 4

Notices and Written Communications

- 4.1 Unless otherwise specified by the Special Conditions, communications between the Contracting Authority and/or the Project manager on the one hand, and the Contractor on the other hand, shall be sent by post, cable, telex, fax transmission, or personal delivery, to the appropriate addresses designated by these parties for that purpose.
- 4.2 If the sender requires evidence of receipt, he shall state such requirement in his communication and shall demand such evidence of receipt whenever there is a deadline for the receipt of the communication. In any event, the sender shall take all the necessary measures to ensure receipt of his Communication.
- 4.3 Wherever in the Contract provision is made for the giving or issue of any notice, consent, approval, certificate or decision, unless otherwise specified such notice, consent, approval, certificate or decision shall be in writing and the words "notify", "certify", "approve" or "decide" shall be construed accordingly. Any such consent, approval certificate or decision shall not unreasonably be withheld or delayed.

ARTICLE 5

Project manager and Project manager's Representative

- 5.1 The Project manager shall carry out the duties specified in the Contract. Except as expressly stated in the Contract, the Project manager shall not have authority to relieve the Contractor of any of his obligations.
- 5.2 The Project manager may, from time to time, while retaining ultimate responsibility, delegate to the Project manager's Representative any of the duties and authority vested in the Project manager and he may at any time revoke such delegation or replace the representative. Any such delegation, revocation or replacement shall be in writing and shall not take effect until a copy thereof has been delivered to the Contractor.
- 5.3 Any communication given by the Project manager's Representative to the Contractor in accordance with the terms of such delegation shall have the same effect as though it had been given by the Project manager, provided that:
 - a) any failure on the part of the Project manager's Representative to disapprove any work, materials or plant shall not prejudice the authority of the Project manager to disapprove such work, materials or plant and to give the instructions necessary for the rectification thereof;
 - b) the Project manager shall be at liberty to reverse or vary the contents of such Communication.
- 5.4 Instructions and/or orders issued by the Project manager shall be by way of Administrative Orders. Such orders shall be dated, numbered and entered by the Project manager in a register, and copies thereof delivered by hand, where appropriate, to the Contractor's representative.
- 5.5 The Contractor shall ensure that the project manager has free access to the places in which the works covered by the contract are carried out and shall provide the project manager with any information he might require. The project manager may arrange for

the supervision and inspection of any item being prepared and manufactured for supply under the contract. To this end, he may apply such tests as he considers necessary from among those provided for in these General Conditions, supplemented and amended where appropriate by the Special Conditions, in order to establish whether the materials and objects are of the requisite quality and quantity. He may require the replacement or repair, as the case may be, of items which do not conform with the contract, even after their installation. He may also propose a reduction in price, which, if accepted by the Contractor, shall cover the latter for any imperfections which have been found. The Contractor may not rely on the fact that such supervision and inspection have been effected in order to avoid his responsibility in the event of the works being rejected by the project manager.

- 5.6 The Contractor shall place at the disposal of the project manager, temporarily and free of charge, the patterns and instruments specified in the Special Conditions which are considered necessary for verifying and inspecting the works to be carried out and the items to be provided.
- 5.7 In the performance of his duties, the project manager shall not disclose information on the methods of manufacture and operation of the undertakings, which he has obtained by reason of his supervision and inspection except to those authorities that need to know it.

ARTICLE 6

Assignment

- 6.1 An assignment shall be valid only if it is a written agreement by which the Contractor transfers his Contract or part thereof to a third party.
- 6.2 The Contractor shall not, without the prior written consent of the Contracting Authority, assign the Contract or any part thereof, or any benefit or interest thereunder, except in the following cases:
- a) a charge, in favour of the Contractor's bankers, of any monies due or to become due under the Contract; or
 - b) assignment to the Contractor's insurers of the Contractor's right to obtain relief against any other person liable in cases where the insurers have discharged the Contractor's loss or liability.
- 6.3 For the purpose of Article 6.2, the approval of an assignment by the Contracting Authority shall not relieve the Contractor of his obligations for the part of the Contract already performed or the part not assigned.
- 6.4 If the Contractor has assigned his Contract without authorisation, the Contracting Authority may, without giving formal notice thereof, apply as of right the sanctions for breach of Contract provided for in Articles 60 and 61.
- 6.5 Assignees must satisfy the eligibility criteria applicable for the award of the Contract.

ARTICLE 7

Sub-Contracting

- 7.1 A sub-contract shall be valid only if it is a written agreement by which the Contractor entrusts performance of a part of his Contract to a third party.

- 7.2 The Contractor shall not sub-contract without the prior written authorisation of the Contracting Authority. The works to be sub-contracted and the identity of the sub-Contractors shall be notified to the Contracting Authority. The Contracting Authority shall with due regard to the provisions of Article 4.3, within 30 days of receipt of the notification, notify the Contractor of his decision, stating reasons should he withhold such Authorisation.

If the Contractor enters in to a sub-contract without approval, the Contracting Authority may apply, as of right without giving formal notice thereof, the sanctions for breach of Contract provided for in the General Conditions.

- 7.3 Sub-Contractors must satisfy the eligibility criteria applicable for the award of the Contract.
- 7.4 The Contracting Authority shall have no contractual relations with the sub-Contractors under this contract.
- 7.5 The Contractor shall be responsible for the acts, defaults and negligence of his sub-Contractors and their agents or employees, as if they were the acts, defaults or negligence of the Contractor, his agents or employees. The approval by the Contracting Authority of the sub-contracting of any part of the Contract or of the sub-Contractor to perform any part of the Works shall not relieve the Contractor of any of his obligations under the Contract.
- 7.6 If a subcontractor has undertaken any continuing obligation extending for a period exceeding that of the Defect Liability Period under the Contract towards the Contractor in respect of the work executed or the goods, materials, Plant or services supplied by the sub-Contractor, the Contractor shall, at any time after the expiration of the Defect Liability Period, transfer immediately to the Contracting Authority, at the Contracting Authority's request and cost, the benefit of such obligation for the unexpired duration thereof,

OBLIGATIONS OF THE CONTRACTING AUTHORITY

ARTICLE 8

Supply of Documents

- 8.1 Unless otherwise provide by the Special Conditions, within 30 days of the establishment of the performance guarantee provided for in Article 13, the Project manager shall on behalf of the Contracting Authority provide to the Contractor, free of charge, a copy of the Drawings prepared for the performance of the Contract as well as two copies of the specifications and other Contract documents. The Contractor may purchase additional copies of these Drawings, specifications and other documents, insofar as they are available. Upon the issue of the maintenance certificate, or upon final acceptance, the Contractor shall return to the Project manager all Drawings, specifications and other Contract documents.
- 8.2 Unless it is necessary for the purposes of the Contract, the Drawings, specifications and other documents provided by the Contracting Authority shall not be used or communicated to a third party by the Contractor without the prior consent of the Project manager.

- 8.3 The Project manager shall have authority to issue on behalf of the Contracting Authority to the Contractor Administrative Orders incorporating such supplementary documents and instructions as shall be necessary for the proper and adequate execution of the Works and the remedying of any defects therein.
- 8.4 The Special Conditions shall indicate the procedure used by the Contracting Authority and the Project Manager to approve drawings and other documents produced by the Contractor, if necessary.

ARTICLE 9

Access to Site

- 9.1 The Contracting Authority shall, in due time and in conformity with the progress of the Works, place the Site and access thereto at the disposal of the Contractor in accordance with the programme of performance referred to in these General Conditions. The Contractor shall afford all reasonable opportunities to other persons concerned for carrying out their work as set out in the Special Conditions or as required by Administrative Orders.
- 9.2 Any land procured to the Contractor by the Contracting Authority shall not be used by the Contractor for purposes other than the performance of the Contract.
- 9.3 The Contractor shall preserve any premises placed at his disposal in a good state while he is in occupation and shall, if so required by the Contracting Authority or the Project manager, restore them to their original state on completion of the Contract, taking into account normal wear and tear.
- 9.4 The Contractor shall not be entitled to any payment for improvements resulting from work carried out on his own initiative.

ARTICLE 10

Assistance with Local Regulations

- 10.1 The Contractor may request the assistance of the Contracting Authority in obtaining copies of laws, regulations and information on local customs, orders or bye laws of the country where the Works are located, which may affect the Contractor in the performance of his obligations under the Contract. The Contracting Authority may provide the assistance requested to the Contractor at the Contractor's cost.
- 10.2 Subject to the provisions of the laws and regulations on foreign labour of the State in which the Works are to be carried out, the Contracting Authority shall make all efforts necessary to facilitate the procurement by the Contractor of all required visas and permits, including work and residence permits, for the personnel whose services the Contractor and the Contracting Authority consider necessary as well as residence permits for their families.

OBLIGATIONS OF THE CONTRACTOR

ARTICLE 11

General Obligations

- 11.1 The Contractor shall, with due care and diligence, and in accordance with the provisions of the Contract, design the Works to the extent stated in the Contract, and execute, complete and remedy any defects in the Works. The Contractor shall provide all superintendence, personnel, materials, Plant, Equipment and all other items, whether of a temporary or permanent nature required in and for such design, execution, completion and remedying of any defects, insofar as specified in, or can be reasonably inferred from, the Contract.
- 11.2 The agents and workmen employed by the Contractor must be sufficient in number, and each must have the qualifications necessary to ensure due progress and satisfactory execution of the works. The Contractor shall immediately replace all persons indicated by the project manager, in a letter stating reasons, as hampering the proper execution of the works. The Contractor shall make his own arrangements for the engagement of all staff and labour. He shall comply with all the relevant labour laws applying to his employees, shall duly pay them and afford them all their legal rights.
- 11.3 The equipment, which the Contractor has at the site, shall be deemed to be for the purpose of carrying out the works. The Contractor shall not be entitled to remove it without the written consent of the project manager unless he shows that the said equipment is no longer required for the performance of the works.
- 11.4 The Contractor shall take full responsibility for the adequacy, stability and safety of all operations and methods of construction under the Contract.
- 11.5 The Contractor shall comply with Administrative Orders given by the Project manager. Where the Contractor considers that the requirements of an Administrative Order go beyond the authority of the Project manager or of the scope of the Contract he shall, on pain of being time-barred, give notice, with reasons, to the Project manager within 10 days after receipt thereof. The Contracting Authority shall be informed. Execution of the Administrative Order may be suspended during this period.

The Contractor shall draw up and submit for the Project manager's approval a programme of performance of the contract, in accordance with the detailed rules laid down in the Special Conditions.

Where appropriate, and in response to a reasoned request from the Project manager, the Contractor must be able to provide a detailed breakdown of his prices. He shall be given no more than 3 weeks to comply.

The Special Conditions shall specify any detailed plans to be drawn up by the Contractor and submitted for the project manager's approval; the same shall apply to documents and items, which are to be submitted to the project manager for endorsement or acceptance. These detailed plans, documents and items may not be reproduced or used for another purpose by the Contracting Authority, nor

communicated to third parties, except with the Contractor's agreement and on payment of fair compensation.

- 11.6. The Contractor shall either give an address for service or give an address close to the works, or appoint an agent residing at that address. He shall notify the Contracting Authority of the address for service or other address. Should he fail to fulfil this obligation within 2 months of being notified of the approval of the contract, all notifications concerning the contract shall be valid when they are sent to the address given in the Special Conditions.

After final acceptance of the works, the Contractor shall be relieved of this obligation. Should he fail to inform the Contracting Authority of a change of address before final acceptance of the works, all notifications concerning the contract shall be valid when they are sent to the address given in the Special Conditions.

- 11.7 The Contractor shall respect and abide by all laws and regulations in force in the State of the Contracting Authority and shall ensure that his personnel, their dependants, and his local employees also respect and abide by all such laws and regulations. The Contractor shall indemnify the Contracting Authority against any claims and proceedings arising from any infringement by the Contractor, his employees and their dependants of such laws and regulations.
- 11.8 If the Contractor or any of his sub-Contractors, agents or servants offers to give or agrees to offer or to give or gives to any person, any bribe, gift, gratuity or commission as an inducement or reward for doing or forbearing to do any act in relation to the Contract or any other contract with the Contracting Authority; or for showing favour or disfavour to any person in relation to the Contract or any other Contract with the Contracting Authority, then the Contracting Authority may, without prejudice to any accrued rights of the Contractor under the Contract, terminate the Contract in accordance with the relevant provisions of these General Conditions.
- 11.9 The Contractor shall treat all documents and information received in connection with the Contract as private and confidential, and shall not, save insofar as may be necessary for the purposes of the execution thereof, publish or disclose any particulars of the Contract without the prior consent in writing of the Contracting Authority or the Project manager after consultation with the Contracting Authority. If any disagreement arises as to the necessity for any publication or disclosure for the purpose of the Contract, the decision of the Contracting Authority shall be final.

The Special Conditions shall list the documents and items which may be placed at the disposal of the Contractor, at the latter's request, to facilitate his work. The Special Conditions shall specify the date and conditions for the return of these documents and items. The Contractor may purchase additional copies of these plans, documents and items for as long as supplies of them are available. The Project manager may not hand over these plans, documents and items until the performance guarantee is established.

- 11.10 If the Contractor is a joint venture or consortium of two or more persons, all such persons shall be jointly and severally bound to fulfil the terms of the Contract according to the law of the State of the Contracting Authority and shall, at the request of the Contracting Authority, designate one of such persons to act as leader with authority to bind the joint venture or consortium. The composition or the constitution of the joint venture or consortium shall, not be altered without the prior consent of the Contracting Authority.

ARTICLE 12

Superintendence of the Works

- 12.1 The Contractor shall himself superintend the Works or shall appoint a representative to do so. Such appointment shall be submitted to the Project manager for approval. The approval may at any time be withdrawn. Should the Project manager refuse to approve, or withdraw approval of the appointment, he shall set out the grounds on which his decision is based, and the Contractor shall submit an alternative appointment without delay. The address of the Contractor's representative shall be deemed to be the address for service given by the Contractor.
- 12.2 If the Project manager withdraws his approval of the Contractor's representative, the Contractor shall, as soon as is practicable, after receiving notice of such withdrawal, remove the representative from the Works and replace him with another representative approved by the Project manager.
- 12.3 The Contractor's representative shall have full authority to make any decision necessary for the execution of the Works, to receive and carry out Administrative Orders and to countersign the work register referred to in these General Conditions or attachment, where appropriate.

In any event, the Contractor shall be responsible for ensuring that the Works are carried out satisfactorily including ensuring that the specifications and Administrative Orders are adhered to by his own employees and by his sub-Contractors and their employees.

ARTICLE 13

Performance Guarantee

- 13.1 The Contractor shall, within 30 days of receipt of the notification of the award of Contract, provide to the Contracting Authority a guarantee for the full and proper performance of the Contract. The amount of the guarantee shall be as specified in the Special Conditions and shall not exceed 10% of the amount of the Contract Price, including any amounts stipulated in addenda to the Contract.
- 13.2 The performance guarantee shall be held against payment to the Contracting Authority for any loss resulting from the Contractor's failure to fully and properly perform his obligations under the Contract.
- 13.3 The performance guarantee shall be in the format given in Volume 2 of the Tender Dossier. It may be provided in the form of a bank guarantee, a banker's draft, a certified cheque, a Guarantee provided by an insurance and/or Guaranteeing company or an irrevocable letter of credit made with the Contracting Authority. If the performance guarantee is to be provided in the form of a bank guarantee, a banker's draft, a certified cheque or a Guarantee, it shall be issued by a bank or guaranteeing and/or insurance company in accordance with the eligibility criteria applicable for the award of the Contract.
- 13.4 Unless stated otherwise in the Special Conditions, the performance guarantee shall be denominated in EURO or in national currency.

- 13.5 No payments shall be made in favour of the Contractor prior to the provision of the guarantee. The guarantee shall continue to remain valid until the Contract has been fully and properly performed.
- 13.6 During the performance of the Contract, if the natural or legal person providing the guarantee is not able to abide by his commitments, the Contracting Authority shall give formal notice to the Contractor to provide a new guarantee on the same terms as the previous one. Should the Contractor fail to provide a new guarantee, the Contracting Authority may terminate the Contract. Before applying these measures, it shall send the Contractor a registered letter with acknowledgement of delivery serving notice for the establishment of the performance guarantee. Such notice shall set a new time limit, which may not be less than 15 days and which shall commence on the date of delivery of the letter.
- 13.7 The Contracting Authority shall demand payment from the guarantee of all sums for which the guarantor is liable under the guarantee due to the Contractor's default under the Contract, in accordance with the terms of the guarantee and up to the value thereof. The guarantor shall, without delay, pay those sums upon demand from the Contracting Authority and may not raise any objection for any reason whatsoever. Prior to making any claim under the performance guarantee, the Contracting Authority shall notify the Contractor stating the nature of the default in respect of which the claim is to be made.
- 13.8 Unless the Special Conditions provide otherwise, the performance guarantee shall be released or within 30 days of the issue of the signed final statement of account. However, in view of the special features of the contract, the Special Conditions may provide that one half of the guarantee should be released or refunded on the date of provisional acceptance.

ARTICLE 14

Insurance

- 14.1 The Contractor shall insure in the joint names of the Contracting Authority and himself against loss or damage for which he is liable under the Contract. Such insurance shall, unless the Special Conditions provide otherwise, cover:
- a) the Works, together with materials and Plant for incorporation therein, to the full replacement cost against all loss or damage from whatever cause arising other than from force Majeure or risks attributable under the Contract to the Contracting Authority;
 - b) an additional sum of 15% of such replacement cost, or as may be specified in the Special Conditions, to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatever nature;
 - c) the Contractor's Equipment and other things brought onto the Site by the Contractor, for a sum sufficient to provide their replacement at the Site.
- 14.2 The Contractor may substitute the insurance provided for in Article 14.1 by a global policy of insurance that covers, *inter alia*, the elements of Article 14.1(a), (b) and (c). In such case, the Contractor shall notify the insurer of the Contracting Authority's interest.

- 14.3 The Contractor shall take out insurance covering his liability with regard to industrial accidents and civil liabilities to any person employed by him on the Works, to the Contracting Authority and any employee of that authority, arising from the execution of the Works. Such liability shall be unlimited in the case of personal injuries.
- 14.4 The Contractor shall take out insurance covering liability with regard to risks and civil liability resulting from an act or omission attributed to him, to his legal successors or agents. Such insurance shall be for at least the amount stated in the Special Conditions. Furthermore, he shall ensure that all his sub-Contractors have taken out a similar insurance.
- 14.5 All the insurance referred to in this Article shall be taken out within 30 days of the notification of the award of the Contract, and shall be subject to approval by the Contracting Authority. Such insurance shall take effect from the commencement of the Works and remain in force until final acceptance of the Works. The Contractor shall produce to the Contracting Authority the insurance policy and shall furnish proof of regular payment of premiums without delay whenever he is required to do so by the Contracting Authority or the Project manager.
- 14.6 Notwithstanding the obligations of the Contractor to insure in accordance with Article 14, the Contractor shall be solely liable and shall indemnify the Contracting Authority and the Project manager against any claims by third parties for damage to property or personal injuries arising from the execution of the Works by the Contractor, his sub-Contractors and employees in connection with the Works.

ARTICLE 15

Performance Programme

- 15.1 The Contractor shall draw up, and submit for the approval of the Project manager, a programme of performance of the Contract, in accordance with the Special Conditions. The programme shall contain at least the following:
- a) the order in which the Contractor proposes to carry out the Works;
 - b) the Time Limits within which submission and approval of the Drawings are required;
 - c) a general description of the methods which the Contractor proposes to adopt for carrying out the Works, and
 - d) such further details and information as the Project manager may reasonably require.
- 15.2 The Special Conditions shall specify the time limit within which the programme of performance must be submitted to the Project manager for approval. They may set time limits within which the Contractor must submit all or part of the detailed plans, documents and items. They shall also state the time limit for approval or acceptance by the project manager of the programme of performance, detailed plans documents and items.
- 15.3 No material alteration to the programme shall be made without the approval of the Project manager. If, however, the progress of the Works does not conform to the programme, the Project manager may instruct the Contractor to revise the programme and submit the revised programme to him for approval. The approval of the programme by the Project manager shall not relieve the Contractor from any of his obligations under the Contract.

ARTICLE 16

Detailed Breakdown of Prices

- 16.1 Where appropriate and within a period of not more than 20 days following the Project manager's reasoned request, the Contractor shall provide a detailed breakdown of his rates and prices, where such breakdown is required for any purpose under the Contract by the Special Conditions.
- 16.2 After the notification of award, the Contractor shall, within the Time Limit stated in the Special Conditions, provide to the Project manager for his information only, a detailed cash flow estimate, in quarterly periods, of all payments which may be due to the Contractor under the Contract. The Contractor shall subsequently supply revised cash flow estimates at quarterly intervals, if so required by the Project manager. The Communication shall not impose any liability whatsoever on the Contracting Authority or the Project manager.

ARTICLE 17

Contractor's Drawings

- 17.1 The Contractor shall submit to the Project manager for approval:
- a) such drawings, documents, samples and/or models as may be specified in the Contract/Special Conditions within the Time Limits laid down therein or in the programme of performance;
 - b) such drawings as the Project manager may reasonably require for the performance of the Contract.
- 17.2 If the Project manager fails to notify his decision of approval referred to in Article 17.1 within the Time Limits referred to in Contract or the approved programme of performance, such drawings, documents, samples or models shall be deemed to be approved at the end of the Time Limits specified. If no Time Limit is specified, they shall be deemed to be approved 30 days after receipt.
- 17.3 Approved Drawings, documents, samples and models shall be signed or otherwise identified by the Project manager and shall not be departed from except as otherwise instructed by the Project manager. Any Contractor's drawings, documents, samples or models which the Project manager fails to approve, shall be forthwith modified to meet the requirements of the Project manager and resubmitted by the Contractor for approval.
- 17.4 The Contractor shall supply additional copies of approved Drawings in the form and numbers stated in the Contract or in subsequent Administrative Orders.
- 17.5 The approval of the Drawings, documents, samples or models by the Project manager shall not relieve the Contractor from any of his obligations under the Contract.
- 17.6 The Project manager shall have the right at all reasonable times to inspect all Contract Drawings, documents, samples or models at the Contractor's premises.
- 17.7 Before provisional acceptance of the Works, the Contractor shall supply operation and maintenance manuals together with drawings, which shall be in such detail as will

enable the Contracting Authority to operate, maintain, adjust and repair all parts of the Works. Unless otherwise stated in the Special Conditions, the manuals and drawings shall be in the language of the Contract and in such forms and numbers as stated in the Contract. The Works shall not be considered to be completed for the purpose of provisional acceptance until such manuals and drawings have been supplied to the Contracting Authority.

ARTICLE 18

Sufficiency of Tender Prices

- 18.1 The Contractor shall be deemed to have inspected and examined the Site and its surroundings and to have satisfied himself before submitting his tender, as to the nature of the ground and sub-soil, and to have taken into account the form and nature of the Site, the extent and nature of the work and materials necessary for the completion of the Works, the means of communication with and access to the Site, the accommodation he may require and in general to have obtained for himself all necessary information as to risks, contingencies and all other circumstances influencing or affecting his tender.
- 18.2 The Contractor shall be deemed to have satisfied himself before submitting his tender as to the correctness and sufficiency of the tender and of the rates and prices stated in the Bill of Quantities or Price Schedule which shall, except in so far as it is otherwise provided in the Contract, cover all his obligations under the Contract.
- 18.3 Since the Contractor is deemed to have determined his prices on the basis of his own calculations, operations and estimates, he shall carry out without additional charge any work which is the subject of any item whatsoever in his tender for which he neither indicates a unit price, nor a firm sum.

ARTICLE 19

Exceptional Risks

- 19.1 If during the execution of the Works the Contractor encounters artificial obstructions or physical conditions which could not reasonably have been foreseen by an experienced Contractor, and if the Contractor is of the opinion that additional costs will be incurred and/or an extension of the period of performance of the Contract will be necessary as a result of this, he shall give notice to the Project manager in accordance with the articles of the General Conditions related to Extension of Period of Performance and claims for Additional Payments. The Contractor shall specify in such notice the artificial obstructions and/or physical conditions, giving details of the anticipated effects thereof, the measures he is taking or intends to take and the extent of the anticipated delay in or interference with the execution of the Works.
- 19.2 Following receipt of the notice, the Project manager may *inter alia*:
- a) require the Contractor to provide an estimate of the cost of the measures he is taking or intends to take;
 - b) approve measures referred to in Article 19.2 (a) with or without modification;
 - c) give administrative orders as to how the artificial obstructions or physical conditions are to be dealt, with,
 - d) order a variation, a suspension, or termination of the Contract.

- 19.3 To the extent that the Project manager shall decide that the whole or part of the said artificial obstructions or physical conditions could not reasonably have been foreseen by an experienced Contractor, the Project manager shall:
- a) take into account any delay suffered by the Contractor as a result of such obstructions or conditions in determining any extension of the period of performance to which the Contractor is entitled under the General Conditions; and/or
 - b) in case of artificial obstructions or physical conditions other than weather conditions, determine additional payments due to the Contractor in accordance with the General Conditions.
- 19.4 If the Project manager decides that the artificial obstructions or physical conditions could, in whole or in part, have been reasonably foreseen by an experienced Contractor, he shall so inform the Contractor as soon as practicable.
- 19.5 Weather conditions shall not entitle the Contractor to claims for Additional Payments under Article 52. The project manager may suspend for a period the execution of works which he judges difficult to complete without problems as a result of climatic conditions which are normally foreseeable or set out in the Special Conditions. During the periods of suspension, the Contractor shall take every protective measure needed to safeguard the works and materials, at his own expense.

ARTICLE 20

Security of Sites

- 20.1 The Contractor shall have the right to forbid access to the site to any person not involved in the performance of the Contract, with the exception of persons authorised by the Project manager or representatives of the Contracting Authority.
- 20.2 The Contractor shall ensure the security of sites, during the whole period of execution and shall be responsible for taking the necessary steps, in the interests of his employees, agents of the Contracting Authority and third parties, to prevent any loss or accident which may result from carrying out the Works.
- 20.3 The Contractor shall take all essential steps, on his own responsibility and at his expense, to ensure that existing structures and installations are protected, preserved and maintained. He shall be responsible for providing and maintaining at his own expense all lighting, protection, fencing and security of equipment which proves necessary for the proper performance of the Works or which may reasonably be required by the Project manager.
- 20.4 If, during the performance of the Contract, urgent measures are necessary to obviate any risk of accident or damage or to ensure Guarantee following any accident or damage, the Project manager shall give formal notice to the Contractor to do what is necessary. If the Contractor is unwilling or unable to undertake the necessary measures, the Project manager may arrange for these measures to be implemented at the expense of the Contractor to the extent that the Contractor is liable.

ARTICLE 21

Safeguarding Adjacent Properties

- 21.1 On his own responsibility and at his expense, the Contractor shall take all the precautions required by good construction practice and by the prevailing circumstances to safeguard adjacent properties and avoid causing any abnormal disturbance therein.
- 21.2 The Contractor shall indemnify the Contracting Authority against the financial consequences of all claims by neighbouring landowners or residents to the extent that the Contractor is liable and to the extent that the damage to adjacent properties is not the result of a hazard created through the design or method of construction imposed by the Contracting Authority or the Project manager upon the Contractor.

ARTICLE 22

Interference with Traffic

- 22.1 The Contractor shall ensure that the Works and installations do not cause damage to, or obstruct traffic on communication links such as roads, railways, waterways and aerodromes, save as permitted under the Special Conditions. He shall, in particular, take account of weight restrictions when selecting routes and vehicles.
- 22.2 Any special measures which the Contractor considers necessary or which are specified in the Special Conditions or which are required by the Contracting Authority in order to protect or strengthen sections of roads, tracks or bridges, shall be at the expense of the Contractor, whether or not they are carried out by the Contractor. The Contractor shall inform the Project manager of any special measures he intends to take before carrying them out. The repair of any damage caused to roads, tracks or bridges by the transport of materials, Plant or Equipment shall be at the expense of the Contractor.

ARTICLE 23

Cables and Conduits

- 23.1 Where, in the course of carrying out the Works, the Contractor encounters benchmarks indicating the course of underground cables, conduits and installations, he shall keep such benchmarks in position or replace them, should execution of the Works have necessitated their temporary removal. Such related operations require the prior Authorisation of the Project manager.
- 23.2 The Contractor shall be responsible for the preservation, removal and replacement, as the case may be, of the cables, conduits and installations specified by the Contracting Authority in the Contract and for the cost thereof.
- 23.3 Where the presence of cables, conduits and installations has not been specified in the Contract but is revealed by benchmarks and references, the Contractor shall be under a general duty of care and similar obligations regarding preservation, removal and replacement to those set out above. In this case, the Contracting Authority shall compensate him for expenditure, to the extent that such work is necessary for the execution of the Contract.

- 23.4 However, the obligations to remove and replace cables, conduits and installations and the expenditure resulting therefrom shall not be the responsibility of the Contractor if the Contracting Authority decides to accept that responsibility. The same shall apply where this obligation and the expenditure resulting therefrom devolve upon another specialist administration or an agent.
- 23.5 When any work on the Site is likely to cause disturbances in or damage to a public utility service, the Contractor shall immediately inform the Project manager in writing, giving a reasonable period of notice so that suitable measures can be taken in time to allow work to continue normally.

ARTICLE 24

Setting-Out

- 24.1 The Contractor shall be responsible for:
- a) the accurate setting-out of the Works in relation to original marks, lines and levels of reference given by the Project manager;
 - b) the correctness, of the position, levels, dimensions and alignment of all parts of the Works, and
 - c) the provision of all necessary instruments, appliances and labour in connection with the foregoing responsibilities.
- 24.2 If, at any time during the execution of the Works, any error appears in the position, levels, dimensions or alignment of any part of the Works, the Contractor shall, if the Project manager so requires, at the Contractor's cost, rectify such error to the satisfaction of the Project manager, unless such error is based on incorrect data supplied by the Project manager, in which case the Contracting Authority shall be responsible for the cost of rectification.
- 24.3 The checking of any setting-out or of any line or level by the Project manager shall not in any way relieve the Contractor of his responsibility for the accuracy thereof and the Contractor shall carefully protect and preserve all benchmarks, sightrails, pegs and other items used in setting-out the Works.

ARTICLE 25

Demolished Materials

- 25.1 Where the Contract includes demolition work, materials and articles obtained therefrom shall, unless the Special Conditions and/or the law of the State of the Contracting Authority otherwise provide and subject to the provisions on Discoveries of the General Conditions, be the property of the Contractor.
- 25.2 Should the Special Conditions reserve to the Contracting Authority the right of ownership of materials or all or part of the articles obtained from the demolition work,

the Contractor shall take all the necessary precautions to ensure that these are preserved. He shall be liable for any destruction of, or damage to, such materials or articles caused by him or his agents.

- 25.3 Irrespective of the use to which the Contracting Authority intends to put the materials or articles, in respect of which he reserves the right of ownership, all costs incurred in transporting and storing them and all warehouse charges at the place indicated by the Project manager shall be borne by the Contractor for any carriage not exceeding 100 metres.
- 25.4 Save where the Special Conditions provide otherwise, the Contractor shall, at his expense, progressively remove rubble and other demolition materials, rubbish and debris from the site.

ARTICLE 26

Discoveries

- 26.1 Discoveries of any interest whatsoever made during excavation or demolition work shall be brought immediately to the attention of the Project manager. The Project manager shall decide how such discoveries are to be dealt with, according to the law of the State of the Contracting Authority.
- 26.2 Unless otherwise provided by the Special Conditions, the Contracting Authority reserves the right of ownership of materials found during the excavation and demolition works, carried out on land belonging to him, subject to compensating the Contractor for any special efforts.
- 26.3 Unless otherwise provided by the Special Conditions, artefacts, antiquities and natural, numismatic, or other objects which are of scientific interest, and also rare objects or objects made of precious metals found during excavation or demolition work shall be the property of the Contracting Authority.
- 26.4 In the event of disagreements, the Contracting Authority shall have sole authority to decide as to the qualifications set out in Articles 26.1 and 26.3.

ARTICLE 27

Temporary Works

- 27.1 The Contractor shall carry out at his expense all the temporary works to enable the Works to be carried out. He shall submit to the Project manager the drawings for temporary works, which he intends to use, such as cofferdams, scaffolding, trusses and shuttering. He shall take into account any observations made to him by the Project manager while assuming responsibility for these drawings.
- 27.2 Where the design of particular temporary works is specified in the Special Conditions to be the responsibility of the Contracting Authority, the Project manager shall provide the Contractor with all Drawings necessary in reasonable time to enable the Contractor to undertake the temporary works in accordance with his programme. In such cases,

the Contracting Authority shall be solely responsible for the safety and adequacy of the design, while the Contractor shall be responsible for the proper construction.

ARTICLE 28

Soil Studies

- 28.1 Subject to the Special Conditions and to the Technical Specifications, the Contractor shall make available to the Project manager, the personnel and Equipment necessary for carrying out any soil survey, which the Project manager considers reasonably necessary.
- 28.2 The Contractor shall be compensated for the actual cost of the manpower and Equipment used or made available in such work, if not already provided for in the Contract.

ARTICLE 29

Overlapping Contracts

- 29.1 The Contractor shall, in accordance with the requirements of the Project manager, afford all reasonable opportunities for carrying out their work to any other Contractors employed by the Contracting Authority and their workmen, to the workmen of the Contracting Authority and of any other public authorities who may be employed on or near the Site in the execution of any work not included in the Contract, or of any Contract which the Contracting Authority may enter into in connection with, or ancillary to, the Works.
- 29.2 However, if the Contractor, on the written request of the Project manager, makes available to any such Contractor, or public authority, or to the Contracting Authority, any roads or ways for the maintenance of which the Contractor is responsible, or permits the use by any such other persons of the Contractor's temporary works, scaffolding or other Equipment of the Site, or provides any other service of whatsoever nature, which was not provided for in the Contract, the Contracting Authority shall pay to the Contractor in respect of such use or service, such sums and/or grant such extension of time, as shall, in the opinion of the Project manager, be reasonable.
- 29.3 The Contractor shall not by reason of Article 29 be relieved of any of his obligations under the Contract nor shall he be entitled to any claims other than those provided for in Article 29.2.
- 29.4 No difficulties arising with regard to one contract may under any circumstances entitle the Contractor to amend or delay performance of other contracts. Similarly, the Contracting Authority may not take advantage of such difficulties to suspend payments due under another contract.

ARTICLE 30

Patents and Licences

- 30.1 Save where otherwise provided in the Special Conditions, the Contractor shall indemnify the Contracting Authority and the Project manager against any claim resulting from the use as specified in the Contract of patents, licences, Drawings, designs, models, or brand or trade marks, except where such infringement results

from compliance with the design or specification provided by the Contracting Authority and/or the Project manager.

COMMENCEMENT AND DELAYS

ARTICLE 31

Commencement Orders

- 31.1 The Contracting Authority shall fix the date on which performance of the Contractor is to commence. Unless otherwise provided by the Special Conditions, the date on which performance of the contract is to commence cannot be later than the 180th day following notification of approval of the contract.
- 31.2 If the date established for the commencement of performance of the contract does not fall within the period of 180 days provided for in the first paragraph, the Contractor shall have the right not to perform the contract and to have it terminated or obtain compensation for the damage he has suffered. The Contractor shall forfeit this right unless he exercises it within 30 days of the expiry of the 180-day period.

ARTICLE 32

Period of Performance

- 32.1 The period of performance shall commence on the date fixed in accordance with Article 31.1 and shall be as stated in the Special Conditions, without prejudice to extensions of the period, which may be granted.

ARTICLE 33

Extension of Period of Performance

- 33.1 The Contractor may request an extension to the period of performance if he is or will be delayed in completing the Contract by any of the following causes:
- a) exceptional weather conditions in the State of the Contracting Authority;
 - b) artificial obstructions or physical conditions which could not reasonably have been foreseen by an experienced Contractor;
 - c) Administrative Orders affecting the date of completion other than those arising from the Contractor's default;
 - d) failure of the Contracting Authority to fulfil his obligations under the Contract;
 - e) any suspension of the Works which is not due to the Contractor's default;
 - f) force Majeure,
 - g) any other causes referred to in these General Conditions which are not due to the Contractor's default.

- 33.2 The Contractor shall, within 30 days of becoming aware that delay may occur, notify the Project manager of his intention to make a request for extension of the period of performance to which he may consider himself entitled, and shall, as soon thereafter as is reasonable in the circumstances, deliver to the Project manager full and detailed particulars of the request, in order that such request may be investigated at the time.
- 33.3 The Project manager shall, by written notice to the Contractor after due consultation with the Contracting Authority and, where appropriate, the Contractor, grant such extension of the period of performance as may be justified, either prospectively or retrospectively, or inform the Contractor that he is not entitled to an extension

ARTICLE 34

Delays in Performance

- 34.1 If the Contractor fails to complete the Works within the time period(s) specified in the Contract, the Contracting Authority shall, without formal notice and without prejudice to his other remedies under the Contract be entitled to Liquidated Damages for every day or part thereof which shall elapse between the end of the period specified for performance or extended period of performance and the actual date of completion, at the rate and up to the maximum amount specified in the Special Conditions. If the Works have been the subject of partial acceptance, the Liquidated Damages specified in the Special Conditions may be reduced in the proportion, which the value of the accepted part bears, to the value of the whole of the Works.
- 34.2 If the Contracting Authority has become entitled to the maximum claim under the provisions of the General conditions related to delays in performance he may, after giving notice to the Contractor:
- a) seize the performance guarantee; and/or
 - b) terminate the Contract; and
 - c) enter into a contract with a third party at the Contractor's cost for the provision of the balance of the Works

ARTICLE 35

Variations and modifications

- 35.1 The Project manager shall have power to order any variation to any part of the Works necessary for the proper completion and/or functioning of the Works. Such variations may include additions, omissions, substitutions, changes in quality, quantity, form, character, kind, position, dimension, level or line and changes in the specified sequence, method or timing of execution of the Works. No order for a variation shall have the effect of invalidating the Contract, but the financial effect, if any, of all such variations shall be valued in accordance with the following provisions.
- 35.2 No variation shall be made except by Administrative Order, provided that:

- a) if for any reason, the Project manager shall find it necessary to give an order orally, he shall as soon as possible thereafter confirm the order by an Administrative Order;
 - b) if the Contractor shall confirm in writing an oral order given for the purpose of Article 35.2 (a) and the confirmation shall not be contradicted in writing forthwith by the Project manager, an Administrative Order shall, unless the Special Conditions stipulate otherwise, be deemed to have been issued for the variation;
 - c) an Administrative Order for variation shall not be required for increase or decrease in the quantity of any work where such increase or decrease is the result of the quantity exceeding or being less than that stated in the Bill of Quantities or Price Schedule.
- 35.3 Save as provided by Article 35.2, prior to any Administrative Order for variation, the Project manager shall notify the Contractor of the nature and form of such variation. Within the time limit specified in the notice, the Contractor shall submit to the Project manager a proposal containing:
- a) a description of the tasks, if any, to be performed or the measures to be taken and a programme for execution; and
 - b) any necessary modifications to the programme of performance or to any of the Contractor's obligations under the Contract, and
 - c) any adjustment to the Contract Price in accordance with the rules as set out in Article 35.
- 35.4 Following the receipt of the Contractor's submission referred to in Article 35.3, the Project manager shall, after due consultation with the Contracting Authority and, where appropriate, the Contractor, decide as soon as possible whether or not the variation shall be carried out. If the Project manager decides that the variation shall be carried out he shall issue the Administrative Order stating that the variation shall be carried out at the prices and under the conditions given in the Contractor's submission referred to in Article 35.3 or as modified by the Project manager in accordance with Article 35.5.
- 35.5 The prices for all variations ordered by the Project manager in accordance with Articles 35.2 and 35.4 shall be ascertained by the Project manager in accordance with the following principles:
- a) where work is of similar character and executed under similar conditions to work priced in the Bill of Quantities or Price Schedule it shall be valued at such rates and prices contained therein;
 - b) where work is not of a similar character or is not executed under similar conditions, the rates and prices in the Contract shall be used as the basis for valuation so far as is reasonable, failing which, a fair valuation shall be made by the Project manager;
 - c) if the nature or amount of any variation relative to the nature or amount of the whole of the Contract or to any part thereof shall be such that in the opinion of the Project manager any rate or price contained in the Contract for any item of work is by reason of such variation rendered unreasonable, then the Project manager shall fix such rate or price as in the circumstances he shall think reasonable and proper;

- d) where a variation is necessitated by default or breach of Contract by the Contractor, any additional cost attributable to such variation shall be borne by the Contractor.
- 35.6 On receipt of the Administrative Order requesting the variation, the Contractor shall proceed to carry out the variation and be bound by these General Conditions in so doing as if such variation were stated in the Contract. The Works shall not be delayed pending the granting of any extension of time for completion or adjustment to the Contract Price. Where the order for a variation precedes the adjustment to the Contract Price, the Contractor shall keep records of the costs of undertaking the variation and of time expended thereon. Such records shall be open to inspection by the Project manager at all reasonable times.
- 35.7 Unless otherwise provided by the Special Conditions, in the event of an increase/decrease in the total volume of work required by the Contracting Authority or resulting from circumstances which are caused neither by the Contractor's negligence nor by any action on his part, the Contractor may not claim any compensation on the ground of damages, unless that increase/decrease, calculated on the basis of the original prices and without varying the object of the contract, exceeds a percentage of the original contract price which shall be laid down in the Special Conditions and which must not be more than 15% nor less than 10%. In these circumstances, on making a reasoned request submitted to the Contracting Authority, the Contractor shall be entitled to an extension (reduction) of the contractual period of performance.
- 35.8 Where the increase/decrease, calculated in the manner described, exceeds the percentage laid down in the Special Conditions, the Contractor may, when the general statement is drawn up, make a request for compensation on the grounds of any damage he has suffered as a result of modifications to the original project. He shall also be entitled, on making a reasoned request submitted to the Contracting Authority, to an extension of the contractual period of performance. Where the increase/decrease, calculated in the manner described, exceeds 33%, the Contractor can be entitled to refuse to carry out any work beyond that value. If this is the case, he shall inform the Contracting Authority of his decision by registered letter with acknowledgement of delivery within 2 months of the administrative order specifying that increase/decrease.
- The Project manager shall, after consultation with the Contracting Authority and the Contractor, determine any addition/compensation and extension of period of performance.
- 35.9 Subject to the limits indicated in the Special Conditions, if the contract contains a bill of quantities or breakdown of the overall price giving an itemised list of the scale and prices of the various works, and changes required by the Contracting Authority or resulting from circumstances which are caused neither by the Contractor's negligence nor by any action on his part alter the scale of some of the works in such a manner that the quantity shown for any item is altered upwards or downwards by 20% (unless the Special Conditions provide otherwise), the Contractor shall, on making a reasoned request submitted to the Contracting Authority, be entitled to compensation on the grounds of any damage he has suffered as a result of modifications to the original project, once all the quantities in the relevant item have been executed for the purposes of the contract.
- 35.10 Contract modifications must be formalised through an addendum to the contract and signed by all parties. Changes of address, bank account may be simply notified in writing by the Contractor to the Contracting Authority. All contract modifications have to respect the general principles defined in the Manual of Instructions for External Relations Contracts.

ARTICLE 36

Suspension

- 36.1 The Contractor shall, on the order of the Project manager, suspend the progress of the Works or any part thereof for such time or times and in such manner as the Project manager may consider necessary.
- 36.2 During the period of suspension, the Contractor shall take such protective measures as may be necessary to safeguard the Works, Plant, Equipment and Site against any deterioration, loss or damage. Additional expenses incurred in connection with such protective measures shall be added to the Contract Price, unless such suspension is:
- a) otherwise provided for in the Contract; or
 - b) necessary by reason of some default of the Contractor; or
 - c) necessary by reason of normal climatic conditions on Site; or
 - d) necessary for the safety or the proper execution of the Works or any part thereof insofar as such necessity does not arise from any act or default by the Project manager or the Contracting Authority or from any of the exceptional risks of Article 19.
- 36.3 The Contractor shall not be entitled to such additions to the Contract Price unless he notifies the Project manager, within 30 days after receipt of the order to suspend the Works, of his intention to make a claim or them.
- 36.4 The Project manager, after consultation with the Contracting Authority and the Contractor, shall determine such extra payment and/or extension of the period of performance to be made to the Contractor in respect of such claim as shall, in the opinion of the Project manager, be fair and reasonable.
- 36.5 If the period of suspension exceeds 180 days (or a shorter period specified in the Special Conditions) and the suspension is not due to the Contractor's default, the Contractor may, by notice to the Project manager and the Contracting Authority, either request permission to restart or terminate the Contract within 30 days.

MATERIALS AND WORKMANSHIP

ARTICLE 37

Work Register

- 37.1 A work register shall, unless otherwise provided by the Special Conditions, be kept on the Site by the Project manager, who shall enter in it at least the following information:
- a) the weather conditions, interruptions of work owing to inclement weather, hours of work, number and type of workmen employed on the Site, materials supplied, equipment in use, equipment not in working order, tests carried out in situ, samples dispatched, unforeseen circumstances, as well as orders given to the Contractor;

- b) detailed statements of all the quantitative and qualitative elements of the work done and the supplies delivered and used, capable of being checked on the Site and relevant in calculating payments to be made to the Contractor.
- 37.2 The statements shall form an integral part of the work register but may, where appropriate, be recorded in separate documents.
- The technical rules for drawing up the statements shall be as set out in the Special Conditions.
- 37.3 The Contractor shall ensure that statements are drawn up, in good time and in accordance with the Special Conditions, in respect of work, services and supplies which cannot be measured or verified subsequently; failing this, he shall accept the decisions of the Project manager unless, at his own expense, he provides evidence to the contrary.
- 37.4 Entries made in the work register as work progresses shall be signed by the Project manager and countersigned by the Contractor or his representative. If the Contractor objects, he shall communicate his views to the Project manager within 15 days following the date on which the entry or the statements objected to are recorded. Should he fail to countersign or to submit his views within the period allowed, the Contractor shall be deemed to agree with the notes shown in the register. The Contractor may examine the work register at any time and may, without removing the document, make or receive a copy of entries which he considers necessary for his own information.
- 37.5 The Contractor shall, on request, provide the Project manager with the information needed to keep the work register in good order.

Article 38

Origin

- 38.1 Except when otherwise provided for in the Special Conditions, goods and materials must originate in a member State of the European Union or in one of the beneficiary countries as stated in the Invitation to Tenderers. The origin of the goods and materials must be determined according to the rules laid down in the Community Customs Code.
- 38.2 The Contractor must certify that the goods tendered comply with this requirement, specifying the respective country of origin. He may be required to provide more detailed information in this respect.
- 38.3 The Contractor shall present an official Certificate of Origin on provisional acceptance. Failure to comply with this obligation shall lead, after formal notice, to termination of the contract.

ARTICLE 39

Quality of Works and Materials

- 39.1 The Works, components and materials shall conform, to the specifications, drawings, surveys, models, samples, patterns and other requirements in the Contract which shall be held at the disposal of the Contracting Authority or the Project manager for the purposes of identification throughout the period of performance.

- 39.2 Any preliminary technical acceptance stipulated in the Special Conditions should be the subject of a request sent by the Contractor to the Project manager. The request shall indicate the reference to the Contract, the lot number and the place where such acceptance is to take place, as appropriate. The components and materials specified in the request must be certified by the Project manager as meeting the requirements for such acceptance prior to their incorporation in the Works.
- 39.3 Even if materials or items to be incorporated in the Works or in the manufacture of components have been technically accepted in this way, they may still be rejected and must be replaced immediately by the Contractor if a further examination reveals defects or faults. The Contractor may be given the opportunity to repair and make good materials and items which have been rejected, but such materials and items will be accepted for incorporation in the Works only if they have been repaired and made good to the satisfaction of the Project manager.

ARTICLE 40

Inspection and Testing

- 40.1 The Contractor shall ensure that the components and materials are delivered to the Site in time to allow the Project manager to proceed with acceptance of the components and materials. The Contractor is deemed to have fully appreciated the difficulties, which he might encounter in this respect, and he shall not be permitted to advance any grounds for delay in fulfilling the obligations.
- 40.2 The Project manager shall be entitled, either by himself or his representative, to inspect, examine, measure and test the components, materials and workmanship, and check the progress of preparation, fabrication or manufacture of anything being prepared, fabricated or manufactured for delivery under the Contract in order to establish whether the components, materials and workmanship are of the requisite quality and quantity. This shall take place at the place of manufacture, fabrication, preparation or on the Site or at such other places as may be specified in the Special Conditions.
- 40.3 For the purposes of such tests and inspections, the Contractor shall:
- a) provide to the Project manager, temporarily and free of charge, such assistance, test samples, parts, machines, equipment, tools or materials and labour as are normally required for inspection and testing;
 - b) agree, with the Project manager, on the time and place for tests;
 - c) provide access for the Project manager at all reasonable times to the place where the tests are to be carried out.
- 40.4 If the Project manager is not present on the date agreed for tests, the Contractor may, unless otherwise instructed by the Project manager, proceed with the tests, which shall be deemed to have been made in the Project manager's presence. The Contractor shall forthwith forward duly certified copies of the test results to the Project manager, who shall, if he has not attended the test, be bound by the test results.
- 40.5 When components and materials have passed the above-mentioned tests, the Project manager shall notify the Contractor or endorse the Contractor's certificate to that effect.

- 40.6 If the Project manager and the Contractor disagree on the test results, each shall give a statement of his views to the other within 15 days after such disagreement arises. The Project manager or the Contractor may require such tests to be repeated on the same terms and conditions or, if either party so requests, by an expert to be selected by common consent. All test reports shall be submitted to the Project manager who shall communicate the results of these tests without delay to the Contractor. The results of the re-testing shall be conclusive. The cost of the re-testing shall be borne by the party whose views are proved wrong by the re-testing.
- 40.7 In the performance of his duties, the Project manager and all persons authorised by him shall disclose only to those persons who are entitled to know of it information which he has obtained by reason of his inspection and testing of the methods of manufacture and operation of the undertaking.

ARTICLE 41

Rejection

- 41.1 Components and materials which are not of the specified quality shall be rejected. A special mark may be applied to the rejected components or materials. This shall not be such as to alter them or affect their commercial value. Rejected components and materials shall be removed by the Contractor from the Site within a period which the Project manager shall specify, failing which they shall be removed by the Project manager as of right at the expense and risk of the Contractor. Any work incorporating rejected components or materials shall be rejected.
- 41.2 The Project manager shall, during the progress of the Works and before the Works are taken over have the power to order or decide:
- a) the removal from the Site, within such Time Limits as may be specified in the order, of any components or materials which, in the opinion of the Project manager, are not in accordance with the Contract;
 - b) the substitution of proper and suitable components or materials; or
 - c) the demolition and proper re-execution, or satisfactory repair, notwithstanding any previous test thereof or interim payment therefor, of any work which, in respect of components, materials, workmanship or design by the Contractor for which he is responsible, is not, in the opinion of the Project manager, in accordance with the Contract.
- 41.3 The Project manager shall, as soon as reasonably practicable, give to the Contractor notice in writing of his decision specifying particulars of the alleged defects.
- 41.4 The Contractor shall with all speed and at his expense make good the defects so specified. If the Contractor does not comply with such order, the Contracting Authority shall be entitled to employ other persons to carry out the same and all expenses consequent thereon or incidental thereto may be deducted by the Contracting Authority from any monies due or which may become due to the Contractor.
- 41.5 The provisions of Article 41 shall not affect the right of the Contracting Authority to claims for delays in Performance and Breach of contract, if any.

ARTICLE 42

Property of Plant and Materials

- 42.1 All Equipment, temporary works, Plant and materials provided by the Contractor shall, when brought on the Site, be deemed to be exclusively intended for the execution of the Works and the Contractor shall not remove the same or any part thereof, except for the purpose of moving it from one part of the Site to another, without the consent of the Project manager. Such consent shall, however, not be required for vehicles engaged in transporting any staff, labour, Equipment, temporary works, Plant or materials to or from the Site.
- 42.2 The Special Conditions may provide that all Equipment, temporary works, Plant and materials on Site owned by the Contractor or by any company in which the Contractor has a controlling interest shall, for the duration of the execution of the Works, be:
- a) vested in the Contracting Authority; or
 - b) made subject to a lien in favour of the Contracting Authority; or
 - c) made subject to any other arrangement regarding priority interest or Guarantee.
- 42.3 In the event of termination of the Contract due to the Contractor's breach of Contract, the Contracting Authority shall be entitled to use the Equipment, temporary works, Plant and materials on Site in order to complete the Works.
- 42.4 Any agreement for the hire by the Contractor of Equipment, temporary works, Plant or materials brought onto the Site, shall contain a provision that on request in writing made by the Contracting Authority within 7 days after the date on which the termination as per the General Conditions becomes effective, and on the Contracting Authority undertaking to pay all hire charges in respect thereof from such date, the owner thereof will hire such Equipment, temporary works, Plant or materials to the Contracting Authority on the same terms as they were hired by the Contractor, save that the Contracting Authority shall be entitled to permit the use thereof by any other Contractor employed by him for completing the Works under the provisions of the General conditions related to Termination of contract.
- 42.5 Upon termination of the Contract before completion of the Works, the Contractor shall deliver to the Contracting Authority any Plant, temporary works, Equipment or materials the property in which has vested in the Contracting Authority or been made subject to a lien by virtue of Article 42.2. If he fails to do so, the Contracting Authority may take such appropriate action as it deems fit in order to obtain possession of such Plant, temporary works, Equipment, and materials and recover the cost of so doing from the Contractor.

PAYMENTS

ARTICLE 43

General Provisions

- 43.1 Payments shall be made in EURO or in the national currency, except if otherwise stipulated in the Contract.
- 43.2 The administrative or technical conditions to which the payment of advances, interim and/or final payments made in accordance with the General Conditions are subject, shall be stated in the Special Conditions.

ARTICLE 44

Advances

- 44.1 If the Special Conditions so provide, advances shall be granted to the Contractor, at his request, for operations connected with the execution of the Works, in the cases listed hereinafter:
- a) as a lump sum advance enabling him to meet expenditure resulting from the commencement of the Contract;
 - b) if he affords proof of the conclusion of a Contract for the purchase or order of materials, Plant, Equipment, machines and tools, necessary for the execution of the Contract, and of any other substantial prior expenses such as the acquisition of patents or study costs.
- 44.2 The Special Conditions shall state the amount of the advances which shall not exceed 10% of the original Contract Price in respect of the lump-sum advance in Article 44. 1 (a) and 20% of such prices for all other advances in Article 44. 1 (b).
- 44.3 No advance shall be granted until:
- a) the conclusion of the Contract;
 - b) provision to the Contracting Authority by the Contractor of the performance guarantee in accordance with Article 13; and
 - c) provision to the Contracting Authority by the Contractor of a separate directly liable guarantee for the full amount of the advance by the institutions referred to in Article 13.3, which shall remain effective until the advance has been completely-repaid by the Contractor out of interim payments under the Contract.
- 44.4 The Contractor shall use the advance exclusively for operations connected with the execution of the Works. Should the Contractor misuse any portion of the advance, it shall become due and repayable immediately and no further advance payments will be made to him.

- 44.5 Should the advance guarantee cease to be valid and the Contractor fail to re-validate it, either a deduction equal to the amount of the advance may be made by the Contracting Authority from future payments due to the Contractor under the Contract, or the Contracting Authority may apply the provisions of Article 13.6.
- 44.6 If the Contract is terminated for any reason whatsoever, the guarantees securing the advances may be invoked forthwith in order to repay the balance of the advances still owed by the Contractor, and the guarantor shall not delay payment or raise objection for any reason whatever.
- 44.7 The advance guarantee provided for in Article 44 shall be released as and when advances are repaid.
- 44.8 Further conditions and procedures for granting and repaying advances shall be as laid down in the Special Conditions.

ARTICLE 45

Retention Sum

- 45.1 The sum which shall be retained from interim payments as a guarantee to meet the Contractor's obligations during the Defect Liability Period, and the detailed rules governing that guarantee, shall be stipulated in the Special Conditions, provided that it shall, in no case, exceed 10% of the Contract Price.
- 45.2 Subject to the approval of the Contracting Authority, the Contractor may, if he so wishes, substitute, not later than the date fixed for the commencement of the Works, these retention sums by a retention guarantee issued in accordance with Article 13.3.
- 45.3 The sum retained or the retention guarantee shall be released within 60 days of the date of final acceptance of the Works.

ARTICLE 46

Revision of Prices

- 46.1 Unless otherwise stipulated in the Special Conditions, and except as provided in Article 46.4, the Contract shall be at fixed prices which shall not be revised.
- 46.2 Where prices may be revised under the Contract, such revision shall take into account variations in the prices of significant local or external elements which served as a basis for the calculation of the tender price, such as manpower, services, materials and supplies, as well as charges laid down by law or regulation. The detailed rules for revision shall be as laid down in the Special Conditions.
- 46.3 Prices contained in the Contractor's tender shall be deemed:
- a) to have been determined on the basis of the conditions in force 30 days prior to the latest date fixed for submission of tenders; or in the case of direct agreement Contracts, on the date of the Contract;
 - b) to have taken account of the legislation and the relevant tax arrangements applicable at the reference date fixed in Article 46.3, (a).

- 46.4 In the event of changes to, or introduction of, any national or State statute, ordinance, decree or other law, or any regulation or bye-law of any local or other public authority, after the date stated in Article 46.3 which causes a change in the contractual relationship between the parties to the Contract, the Contracting Authority and the Contractor shall consult on how best to proceed further under the Contract, and may as a result of such consultation decide:
- a) to modify the Contract; or
 - b) on payment of compensation for the resulting imbalance by one party to the other; or
 - c) to terminate the Contract by mutual agreement.
- 46.5 In the event of a delay in the execution of the Works for which the Contractor is responsible, or at the end of the period of performance revised as necessary in accordance with the Contract, there shall be no further revision of prices within the 30 days before provisional acceptance, except for the application of new price indexation, if this is to the benefit of the Contracting Authority.

ARTICLE 47

Measurement

- 47.1 The following principles shall apply to the valuation of Works Contracts:
- a) For lump-sum contracts, the amount due under the Contract shall be determined on the basis of the breakdown of the overall Contract Price, or on the basis of a breakdown expressed as a percentage of the Contract Price corresponding to completed stages of the Works. Where items are accompanied by quantities, these shall be firm quantities for which the Contractor has submitted his all-in price, and shall be paid for irrespective of the quantities of work actually carried out.
 - b) For unit price contracts:
 - i) the amount due under the Contract shall be calculated by applying the unit rates to, the quantities actually executed for the respective items, in accordance with the Contract;
 - ii) the quantities set out in the Bill of Quantities shall be the estimated quantities of the Works, which shall not be taken as the actual and correct quantities of the Works to be executed by the Contractor in fulfilment of his obligations under the Contract;
 - iii) the Project manager shall determine by measurement the actual quantities of the Works executed by the Contractor, and these shall be paid for in accordance with the provisions of the General conditions related to Interim Payments. Unless otherwise provided in the Special Conditions no additions shall be made to the items in the Bill of Quantities except as a result of a variation in accordance with Article 35 or other provision of the Contract entitling the Contractor to additional payment;
 - iv) the Project manager shall, when he requires any parts of the Works to be measured, give reasonable notice, to the Contractor to attend, or to send a

qualified agent to represent him. The Contractor or his agent shall assist the Project manager in making such measurements and shall furnish all particulars required by the Project manager. Should the Contractor not attend, or omit to send such agent, the measurement made by the Project manager or approved by him shall be binding on the Contractor;

- v) the Works shall be measured net, notwithstanding any general or local custom, except where otherwise provided for in the Contract.

47.2 The Special Conditions shall specify the method that is applied and the provisions for measurement.

ARTICLE 48

Interim Payments

48.1 Unless otherwise specified in the Special Conditions, the Contractor shall submit an application for interim payment to the Project manager at the end of each month in a form approved by the Project manager. The application shall include the following items, as applicable:

- a) the estimated Contract value of the permanent Works executed up to the end of the period in question;
- b) an amount reflecting any revision of prices pursuant to Article 46,
- c) an amount to be withheld as retention sum under of Article 45;
- d) an amount to be deducted on account of the advance repayment under the provisions of Article 44;
- e) any credit and/or debit for the period in question in respect of plant and materials on site intended for, but not yet incorporated in, the permanent works in the amount and under the conditions set out in Article 58 (2);
- f) any other sum to which the Contractor may be entitled under the Contract.

48.2 The Contractor shall be entitled to such sums as the Project manager may consider proper in respect of Plant and materials intended for, but not yet incorporated in, the permanent Works provided that:

- a) the Plant and materials conform with the specifications for the permanent Works and are set out in batches in a way that they may be recognised by the Project manager;
- b) such Plant and materials have been delivered to the Site, and are properly stored and protected against loss or damage or deterioration to the satisfaction of the Project manager;
- c) the Contractor's record of requirements, orders, receipts and use of Plant and materials under the Contract are kept in a form approved by the Project manager and such records are available for inspection by the Project manager;

- d) the Contractor submits with his statement, the estimated value of the Plant and materials on Site together with such documents as may be required by the Project manager for the purpose of valuation of the Plant and materials and providing evidence of ownership and payment therefor; and
 - e) where the Special Conditions so provide, ownership of the Plant and materials referred to in Article 42 shall be deemed to be vested in the Contracting Authority.
- 48.3 Approval by the Project manager of any interim payment certified by him in respect of Plant and materials pursuant to Article 48 shall be without prejudice to the exercise of any power of the Project manager under the Contract to reject any Plant or materials which are not in accordance with the provisions of the Contract.
- 48.4 The Contractor shall be responsible for any loss or damage to, and for the cost of storing and handling of, such Plant and materials on Site and shall effect such additional insurance as may be necessary to cover the risk of such loss or damage from any cause.
- 48.5 Within 30 days of receipt of the said application for interim payment, it shall be approved or amended in such manner that, in the Project manager's opinion, the application reflects the amount due to the Contractor in accordance with the Contract. In cases where there is a difference of opinion as to the value of an item, the Project manager's view shall prevail. On determination of the amount due to the Contractor, the Project manager shall issue to the Contracting Authority and the Contractor an interim payment certificate for the amount due to the Contractor and shall inform the Contractor of the Works for which payment is being made.
- 48.6 The Project manager may, by an interim payment certificate, make any corrections or modifications to any previous certificate issued by him and shall have power to modify the valuation in, or withhold the issue of, any interim payment certificate if the Works or any part thereof are not being carried out to his satisfaction.

ARTICLE 49

Final Statement of Account

- 49.1 Not later than 90 days after the issue of the Final Acceptance certificate, the Contractor shall submit to the Project manager a draft final statement of account with supporting documents showing in detail the value of the work done in accordance with the Contract, together with all further sums which the Contractor considers to be due to him under the Contract in order to enable the Project manager to prepare the final statement of account. The Special Conditions may, however, in accordance with Article 49.6, state that the draft final statement of account and further proceedings related thereto, be dealt with before the issue of the provisional acceptance certificate.
- 49.2 Within 90 days after receipt of the draft final statement of account and of all information reasonably required for its verification, the Project manager shall prepare the final statement of account, which determines:
- a) the amount which in his opinion is finally due under the Contract; and

- b) after establishing the amounts previously paid by the Contracting Authority and all sums to which the Contracting Authority is entitled under the Contract, the balance, if any, due, from the Contracting Authority to the Contractor, or from the Contractor to the Contracting Authority, as the case may be.
- 49.3 The Project manager shall issue to the Contracting Authority or to its duly authorised representative, and to the Contractor, the final statement of account showing the final amount to which the Contractor is entitled under the Contract. The Contracting Authority or its duly authorised representative and the Contractor shall sign the final statement of account as an acknowledgement of the full and final value of the work performed under the Contract and shall promptly submit a signed copy to the Project manager. However, the final statement of account shall not include amounts in dispute, which are the subjects of negotiations, conciliation, arbitration or litigation.
- 49.4 The final statement of account signed by the Contractor shall constitute a written discharge of the Contracting Authority confirming that the total in the final statement of account represents full and final settlement of all monies due to the Contractor under the Contract, other than those amounts which are the subject of amicable settlement, arbitration or litigation. However, such discharge, shall become effective only after any payment due in accordance with the final statement of account has been made and the performance guarantee referred to in Article 13 has been returned to the Contractor.
- 49.5 The Contracting Authority shall not be liable to, the Contractor for any matter or thing whatsoever arising out of, or in connection with, the Contract or execution of the Works, unless the Contractor shall have included a claim in respect thereof in his draft final statement of account.
- 49.6 The provisions of Article 49 may be varied by the Special Conditions having regard to the practices in the State of the Contracting Authority.

ARTICLE 50

Delayed Payments

- 50.1 Payment to the Contractor of the amounts due under each of the advance/interim payment certificates and the final statement of account issued by the Project manager shall be made by the Contracting Authority within 60 days of such certificate or statement being delivered to the Contracting Authority. If the period laid down for payment has been exceeded, the Contractor shall qualify for interest calculated pro rata on the basis of the number of days delay at the rate specified in the Special Conditions, subject to a maximum period, also specified therein. The Contractor shall be entitled to such payment without prejudice to any other right or remedy under the Contract. In the case of the final statement of account, the interest for the delayed payment shall be calculated on a daily basis at the rate specified in the Special Conditions.
- 50.2 Any default in payment of more than 120 days (or a shorter period specified in the special conditions) from the expiry of the period laid down in Article 50.1 shall entitle the Contractor either not to perform the Contract or to terminate it, with a prior notice of 30 days to the Contracting Authority and the Project manager.

ARTICLE 51

Payments to Third Parties

- 51.1 All orders for payments to third parties may be carried out only after an assignment made in accordance with Article 6.
- 51.2 Notification of beneficiaries of the assignment shall be the sole responsibility of the Contractor.

ARTICLE 52

Claims for Additional Payment

- 52.1 If under the Contract there are circumstances, which the Contractor considers entitle him to additional payment, the Contractor shall:
- a) if he intends to make any claim for additional payment, give to the Project manager notice of his intention or make such claim within 15 days after the said circumstances become known to the Contractor, stating the reason for his claim; and
 - b) as soon as is reasonably practicable after the date of such notice but not later than 60 days after such notice, unless otherwise agreed by the Project manager, submit to the Project manager full and detailed particulars of his claim. In any event, such particulars shall be submitted no later than the date of submission of the draft final statement of account. The Contractor shall thereafter promptly submit such further elements as the Project manager may reasonably require to assess the validity of the claim.
- 52.2 When the Project manager has received the full and detailed elements of the Contractor's claim that he requires, he shall, after due consultation with the Contracting Authority and, where appropriate, the Contractor, determine whether the Contractor is entitled to additional payment and notify the parties accordingly.
- 52.3 The Project manager may reject any claim for additional payment, which does not comply with the requirements of Article 52.

ARTICLE 53

Payments in Foreign/National Currency

- 53.1 *Where under the Contract the Contractor is entitled to payments in Foreign/National Currency, the rates of exchange for calculating the payments shall be those published in the Official Journal of the European Communities, Supplement S, 30 days prior to the latest date fixed for the submission of tenders for the Contract. Such rates of exchange shall not be varied.]*

ACCEPTANCE AND MAINTENANCE

ARTICLE 54

General Clauses

- 54.1 Verification of the Works by the Project manager with a view to provisional or final acceptance shall take place in the presence of the Contractor. The absence of the Contractor shall not be a bar to verification on condition that the Contractor has been notified in due form at least 30 days prior to the date of verification.
- 54.2 Should exceptional circumstances make it impossible to ascertain the state of the Works or otherwise proceed with their acceptance during the period fixed for provisional or final acceptance, a statement certifying such impossibility shall be drawn up by the Project manager after consultation, where possible, with the Contractor. The verification shall take place and a statement of acceptance or rejection shall be drawn up by the Project manager within 30 days following the date on which such impossibility ceases to exist. The Contractor shall not invoke these circumstances in order to avoid his obligation to present the Works in a state suitable for acceptance.

ARTICLE 55

Tests on Completion

- 55.1 The Works shall not be accepted until the prescribed verifications and tests have been carried out at the expense of the Contractor. The Contractor shall notify the Project manager of the date on which such verification and tests may commence.
- 55.2 Works which do not satisfy the terms and conditions of the Contract, or in the absence of such terms and conditions, which are not carried out in accordance with trade practices in the State where the Works are located, shall, if required, be demolished and rebuilt by the Contractor or repaired to the satisfaction of the Project manager. Otherwise, this shall be done as of right after due notice, at the expense of the Contractor, by order of the Project manager. The Project manager may also require the demolition and reconstruction by the Contractor, or repair to the satisfaction of the Project manager, under the same conditions of work, in which unacceptable materials have been used, or carried out in the periods of suspension provided for in Article 36.

ARTICLE 56

Partial Acceptance

- 56.1 The Contracting Authority may make use of the various structures, parts of structures or sections of the Works forming part of the Contract as and when they are completed. Any taking over of the structures, parts of structures or sections of the Works by the Contracting Authority shall be preceded by their partial provisional acceptance. However, Works may in cases of urgency be taken over prior to acceptance provided an inventory of outstanding work is drawn up by the Project manager and agreed to by the Contractor and the Project manager beforehand. Once the Contracting Authority has taken possession of a structure, a part thereof or

- section of the Works, the Contractor shall no longer be required to make good any damage resulting otherwise than from faulty construction or workmanship.
- 56.2 The Project manager may, at the request of the Contractor and if the nature of the Works so permits, proceed with partial provisional acceptance, provided that the structures, parts of structures or sections of the Works are completed and suited to the use as described in the Contract.
- 56.3 In the cases of partial provisional acceptance referred to in Article 57.1 and 57.2 the Defect Liability Period provided for in Article 58 shall, unless the Special Conditions provide otherwise, run as from the date of such partial provisional acceptance.

ARTICLE 57

Provisional Acceptance

- 57.1 The Works shall be taken over by the Contracting Authority when they have satisfactorily passed the tests on completion and a certificate of provisional acceptance has been issued or is deemed to have been issued.
- 57.2 The Contractor may apply, by notice to the Project manager, for a certificate of provisional acceptance not earlier than 15 days before the Works, in the Contractor's opinion, are complete and ready for provisional acceptance. The Project manager shall within 30 days after the receipt of the Contractor's application either:
- a) issue the certificate of provisional acceptance to the Contractor with a copy to the Contracting Authority stating, where appropriate, his reservations, and, *inter alia*, the date on which, in his opinion, the Works were completed in accordance with the Contract and ready for provisional acceptance; or
 - b) reject the application giving his reasons and specifying the action, which, in his opinion, is required of the Contractor for the certificate to be issued.
- 57.3 If the Project manager fails either to issue the certificate of provisional acceptance or to reject the Contractor's application within the period of 30 days, he shall be deemed to have issued the certificate on the last day of that period. The certificate of provisional acceptance shall not be deemed to be an admission that the Works have been completed in every respect. If the Works are divided by the Contract into sections, the Contractor shall be entitled to apply for separate certificates for each of the sections.
- 57.4 Upon provisional acceptance of the Works, the Contractor shall dismantle and remove temporary structures as well as materials no longer required for use in connection with the performance of the Contract. He shall also remove any litter or obstruction and redress any change in the condition of the Site as required by the Contract.
- 57.5 Immediately after provisional acceptance, the Contracting Authority may make use of all the Works as completed.

section of the Works, the Contractor shall no longer be required to make good any damage resulting otherwise than from faulty construction or workmanship.

- 56.2 The Project manager may, at the request of the Contractor and if the nature of the Works so permits, proceed with partial provisional acceptance, provided that the structures, parts of structures or sections of the Works are completed and suited to the use as described in the Contract.
- 56.3 In the cases of partial provisional acceptance referred to in Article 57.1 and 57.2 the Defect Liability Period provided for in Article 58 shall, unless the Special Conditions provide otherwise, run as from the date of such partial provisional acceptance.

ARTICLE 57

Provisional Acceptance

- 57.1 The Works shall be taken over by the Contracting Authority when they have satisfactorily passed the tests on completion and a certificate of provisional acceptance has been issued or is deemed to have been issued.
- 57.2 The Contractor may apply, by notice to the Project manager, for a certificate of provisional acceptance not earlier than 15 days before the Works, in the Contractor's opinion, are complete and ready for provisional acceptance. The Project manager shall within 30 days after the receipt of the Contractor's application either:
- a) issue the certificate of provisional acceptance to the Contractor with a copy to the Contracting Authority stating, where appropriate, his reservations, and, *inter alia*, the date on which, in his opinion, the Works were completed in accordance with the Contract and ready for provisional acceptance; or
 - b) reject the application giving his reasons and specifying the action, which, in his opinion, is required of the Contractor for the certificate to be issued.
- 57.3 If the Project manager fails either to issue the certificate of provisional acceptance or to reject the Contractor's application within the period of 30 days, he shall be deemed to have issued the certificate on the last day of that period. The certificate of provisional acceptance shall not be deemed to be an admission that the Works have been completed in every respect. If the Works are divided by the Contract into sections, the Contractor shall be entitled to apply for separate certificates for each of the sections.
- 57.4 Upon provisional acceptance of the Works, the Contractor shall dismantle and remove temporary structures as well as materials no longer required for use in connection with the performance of the Contract. He shall also remove any litter or obstruction and redress any change in the condition of the Site as required by the Contract.
- 57.5 Immediately after provisional acceptance, the Contracting Authority may make use of all the Works as completed.

- 58.8 After provisional acceptance and without prejudice to the obligations referred to in Article 58, the Contractor shall no longer be responsible for risks which may affect the Works and which result from causes not attributable to him. However, the Contractor shall be responsible as from the date of provisional acceptance for the soundness of the construction, as laid down in the Special Conditions or in the law of the State of the Contracting Authority.

ARTICLE 59

Final acceptance

- 59.1 Upon the expiration of the Defect Liability Period, or where there is more than one such period, upon the expiration of the latest period, and when all defects or damage have been rectified, the Project manager shall issue to the Contractor a Final Acceptance Certificate and a copy thereof to the Contracting Authority stating the date on which the Contractor completed his obligations under the Contract to the Project manager's satisfaction. The Final Acceptance Certificate shall be given by the Project manager within 30 days after the expiration of the above stated period, or as soon thereafter as any Works as instructed, pursuant to Article 58, have been completed to the satisfaction of the Project manager.
- 59.2 The Works shall not be considered as completed until a Final Acceptance Certificate shall have been signed by the Project manager and delivered to the Contracting Authority, with a copy to the Contractor. In the case of a non-justified inaction of the Project manager at the end of the period mentioned above, the Contractor may send a formal notice to the Contracting Authority. At the end of a new period of 30 days from receipt of the formal notice by the Contracting Authority, the final acceptance certificate shall be deemed to have been issued.
- 59.3 Notwithstanding the issue of the Final Acceptance Certificate, the Contractor and the Contracting Authority shall remain liable for the fulfilment of any obligation incurred under the Contract prior to the issue of the Final Acceptance Certificate, which remains unperformed at the time such Final Acceptance Certificate is issued. The nature and extent of any such obligation shall be determined by reference to the provisions of the Contract and the Special Conditions.

BREACH OF CONTRACT AND TERMINATION

ARTICLE 60

Breach of Contract

- 60.1 Either party commits a breach of Contract where he fails to discharge any of his obligations under the Contract. Breaches of contract shall be entered in the work record. Where a breach of contract occurs, the party injured by the breach shall be entitled to damages and/or termination of the contract.
- 60.2 Within 30 days of the date of entry of the breach of contract in the work record, the Contractor shall be obliged to forward the grounds of his defence to the Contracting Authority by registered letter with acknowledgement of delivery. Within 1 month, the Contracting Authority shall study the defence submitted by the Contractor and shall inform him of its decision by registered letter with acknowledgement of delivery.

- 60.3 Where a breach of Contract occurs from the Contractor, the Contracting Authority shall also be entitled to the following remedies as of right:
- (a) performance of all or part of the works using directly-employed labour;
 - (b) termination of all or part of the contract with or without compensation payable by the Contractor;
 - (c) conclusion of a contract with a third party replacing the Contractor, after prior termination of the original contract;
 - (d) temporary or permanent exclusion from the award of contracts.

- 60.4 The following procedures must be used for the application of measures taken as of right:

Any decision relating to the application of measures taken as of right shall be adopted by the Contracting Authority and notified to the Contractor by registered letter with acknowledgement of delivery.

In applying any of these measures, the project manager shall take all appropriate steps to protect or ensure proper performance of the works.

In the event of the works being executed by directly-employed labour or by a contract with a third party replacing the Contractor, the project manager shall inspect the works, draw up an inventory of plant and materials and make out a statement of emoluments due and amounts owed by the Contractor under the contract, after summoning the Contractor by registered letter with acknowledgement of delivery.

In the event of the works being executed by directly employed labour, the project manager shall be entitled to use the Contractor's equipment to complete the performance of the contract. Where the works are undertaken using directly employed labour, the Contractor shall be permitted to observe the operations without, however, being able to interfere in the execution of instructions given by the project manager. The use of directly employed labour may be discontinued if the Contractor furnishes proof of the necessary means to resume the works and bring them to a satisfactory conclusion.

Additional expenditure resulting from the use of directly employed labour or of a contract with a third party replacing the Contractor shall be borne by the latter.

If the use of directly employed labour or a contract with a third party replacing the Contractor results in a reduction in expenditure, the Contractor may not claim any part of the profit thus derived; it shall be the property of the Contracting Authority.

- 60.5 In addition to the above-mentioned measures, damages may be awarded. They may be either:

- a) General Damages; or
- b) Liquidated Damages.

The amount and procedures for these damages shall be laid down in the Special Conditions. In any case where the Contracting Authority is entitled to damages, he may deduct such damages from any sums due to the Contractor or from the appropriate guarantee.

- 60.6 Recovery of damages, disbursements or expenses resulting from the application of measures provided for in this Article shall be effected by deduction from the sums due to the Contractor, from the deposit, or by payment under the guarantee.

ARTICLE 61

Termination by the Contracting Authority

- 61.1 The Contracting Authority may, at any time and with immediate effect, terminate the Contract, except as provided for under Article 61.2.
- 61.2 Except as otherwise provided in these General Conditions, the Contracting Authority may, after giving 7 days notice to the Contractor, terminate the Contract, and expel the Contractor from the Site in any of the cases where:
- a) the Contractor fails to carry out the Works substantially in accordance with the provisions of the Contract;
 - b) the Contractor fails to comply within a reasonable time with a notice given by the Project manager requiring him to make good any neglect or failure to perform his obligations under the Contract which seriously affects the proper and timely performance of the Works;
 - c) the Contractor refuses or neglects to carry out administrative orders given by the Project manager;
 - d) the Contractor assigns the Contract or sub-contracts without the Authorisation of the Contracting Authority;
 - e) the Contractor becomes bankrupt or insolvent, or has a receiving order made against him, or compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or goes into liquidation;
 - f) any adverse final judgement is made in respect of an offence relating to the professional conduct of the Contractor;
 - g) any other legal disability hindering performance of the Contract occurs;
 - h) any organisational modification occurs involving a change in the legal personality, nature or control of the Contractor, unless such modification is recorded in an addendum to the Contract;
 - i) the Contractor fails to provide the required guarantee or insurance, or if the person providing the earlier guarantee or insurance required under the present contract is not able to abide by his commitments;
- 61.3 Termination shall be without prejudice to any other rights or powers under the Contract of the Contracting Authority and the Contractor. The Contracting Authority may, thereafter, complete the Works himself or conclude any other Contract with a third party for the account of the Contractor. The Contractor's liability for delay in completion shall immediately cease when the Contracting Authority expels him from the Site without prejudice to any liability thereunder that may have already occurred.

- 61.4 The Project manager shall, upon the issue of the notice of termination of the Contract, instruct the Contractor to take immediate steps to bring the Works to a close in a prompt and orderly manner and to reduce expenditure to a minimum.
- 61.5 The Project manager shall, as soon as is possible after termination, certify the value of the Works and all sums due to the Contractor as at the date of termination.
- 61.6 In the event of termination:
- a) the report of work performed by the Contractor shall be drawn up by the Project manager as soon as possible after inspection of the Works, and inventory taken of temporary structures, materials, Plant and Equipment. The Contractor shall be summoned to be present during the inspection and the taking of the inventory. The Project manager shall also draw up statements of emoluments still owed by the Contractor to workers employed by him in relation to the Contract and of sums owed by the Contractor to the Contracting Authority;
 - b) the Contracting Authority shall have the option of acquiring in whole or in part temporary structures which have been approved by the Project manager, Plant and materials specifically supplied or manufactured in connection with the execution of work under the Contract;
 - c) the purchase price of the temporary structures, Equipment, Plant and materials referred to above shall not exceed the unpaid portion of the expenditure incurred by the Contractor, such expenditure being limited to that required for the performance of the Contract under normal conditions;
 - d) the Contracting Authority may purchase, at market prices, the materials and items supplied or ordered by the Contractor and not already paid for by the Contracting Authority on such conditions, as the Project manager considers appropriate.
- 61.7 The Contracting Authority shall not be obliged to make any further payments to the Contractor until the Works are completed, whereupon the Contracting Authority shall be entitled to recover from the Contractor the extra costs, if any, of completing the Works, or pay any balance due to the Contractor prior to the termination of the Contract.
- 61.8 If the Contracting Authority terminates the Contract, it shall be entitled to recover from the Contractor any loss it has suffered up to the maximum amount stated in the Contract. If no maximum amount is stated, the Contracting Authority shall not be entitled to recover more than the part of the Contract Price corresponding to the value of that part of the Works which cannot, by reason of the Contractor's failure, be put to the intended use.
- 61.9 Where the termination is not due to an act or omission of the Contractor, the latter shall be entitled to claim in addition to sums owing to him for work already performed, an indemnity for loss suffered.

ARTICLE 62

Termination by the Contractor

- 62.1 The Contractor may, after giving 30 days notice to the Contracting Authority, terminate the Contract if the Contracting Authority:
- a) fails to pay the Contractor the amounts due under any certificate issued by the Project manager after the expiry of the Time Limit stated in Article 50.2; or
 - b) consistently fails to meet his obligations after repeated reminders; or
 - c) suspends the progress of the Works or any part thereof for more than 180 days (or a shorter period specified in the Special Conditions), for reasons not specified in the Contract, or not due to the Contractor's default.
- 62.2 Such termination shall be without prejudice to any other rights of the Contracting Authority or the Contractor under the Contract. Upon such termination, the Contractor shall, subject to the law of the State of the Contracting Authority, be entitled to immediately remove his Equipment from the Site.
- 62.3 In the event of such termination, the Contracting Authority shall pay the Contractor for any loss or damage the Contractor may have suffered. Such additional payment shall not exceed a limit, which has to be specified in the Special Conditions.

ARTICLE 63

Force Majeure

- 63.1 Neither party shall be considered to be in default or in breach of his obligations under the Contract if the performance of such obligations is prevented by any circumstances of force Majeure which arises after the date of notification of award or the date when the Contract becomes effective, whichever is the earlier.
- 63.2 The term "force Majeure", as used herein shall mean acts of God, strikes, lock-outs or other industrial disturbances, acts of the public enemy, wars whether declared or not, blockades, insurrection, riots, epidemics, landslides, earthquakes, storms, lightning, floods, washouts, civil disturbances, explosions, and any other similar unforeseeable events, not within the control, of either party and which by the exercise of due diligence neither party is able to overcome.
- 63.3 Notwithstanding the provisions of the General conditions related to Delays in Performance and Termination by the Contracting Authority, the Contractor shall not be liable to forfeiture of his performance guarantee, liquidated damages or termination for default if, and to the extent that, his delay in performance or other failure to perform his obligations under the Contract is the result of an event of force Majeure. The Contracting Authority shall similarly not be liable, notwithstanding the provisions of the General conditions related to Delayed Payments and termination by the Contractor, to payment of interest on delayed payments, for non-performance or for termination by the Contractor for default, if, and to the extent that, the Contracting Authority's delay or other failure to perform its obligations is the result of force Majeure.

- 63.4 If either party considers that any circumstances of force Majeure have occurred which may affect performance of his obligations, he shall promptly notify the other party and the Project manager, giving details of the nature, the probable duration and the likely effect of the circumstances. Unless otherwise directed by the Project manager in writing, the Contractor shall continue to perform his obligations under the Contract as far as is reasonably practicable, and shall seek all reasonable alternative means for performance of his obligations, which are not prevented by the force Majeure event. The Contractor shall not put into effect such alternative means unless directed so to do by the Project manager.
- 63.5 If the Contractor incurs additional costs in complying with the Project manager's directions or using alternative means under Article 63.4, the amount thereof shall be certified by the Project manager.
- 63.6 If circumstances of force Majeure have occurred and continue for a period of 180 days then, notwithstanding any extension of time for completion of the Works that the Contractor may, by reason thereof have been granted, either party shall be entitled to serve upon the other 30 days' notice to terminate the Contract. If, at the expiry of the period of 30 days, force Majeure still continues, the Contract shall terminate and, in consequence thereof under the law governing the Contract, the parties shall be released from further performance of the Contract.

ARTICLE 64

Decease

- 64.1 Where the Contractor is a natural person, the contract shall be automatically terminated if that person dies. However, the Contracting Authority shall examine any proposal made by the heirs or beneficiaries if they have notified they wish to continue the contract. The decision of the Contracting Authority shall be notified to those concerned within 30 days of receipt of such proposal.
- 64.2 Where the Contractor consists of natural persons and one or more of them die, a report shall be agreed between the parties on the progress of the works and the Contracting Authority shall decide whether to terminate and continue the contract with the undertaking given by the survivors and by the heirs or beneficiaries, as the case may be.
- 64.3 In the cases provided for in articles 64.1 and 64.2, persons offering to continue to perform the contract shall notify to the Contracting Authority thereof within 15 days of the date of decease. They are jointly and severally liable, or as otherwise stated in the Special Conditions, for the proper performance of the contract to the same extent as the deceased contractor. Continuation of the contract shall be subject to the rules relating to establishment of the guarantee provided for in article 13.

SETTLEMENT OF DISPUTES

ARTICLE 65

Settlement of disputes

- 65.1 The Contracting Authority and the Contractor shall make every effort to amicably settle disputes relating to the Contract which may arise between them, or between the Project manager and the Contractor.
- 65.2 The Special Conditions shall prescribe:
- a) the procedure for the amicable settlement of disputes;
 - b) the Time Limits within which the amicable settlement procedure may be invoked after notification of the dispute to the other party and the maximum Time Limit within which such settlement may be reached, which may not exceed 120 days from the commencement of the adopted procedure;
 - c) the Time Limits for responding in writing to a request for amicable settlement or to other requests permitted during the course of that procedure and the consequence of failure to comply with those Time Limits.
- 65.3 The parties may agree to the settlement of the dispute by conciliation within a specific Time Limit by a third party after the amicable settlement procedure adopted has failed.
- 65.4 The amicable settlement or conciliation procedure adopted shall in all cases involve a procedure in which complaints and responses are notified to the other party.
- 65.5 In the absence of an amicable settlement or settlement by conciliation within the maximum Time Limits specified, the dispute shall:
- a) in the case of a national contract, be settled in accordance with the national legislation of the State of the Contracting Authority; and
 - b) in the case of a transnational Contract, be settled, either:
 - i) if the Parties to the Contract so agree, in accordance with the national legislation of the State of the Contracting Authority or its established international practices; or
 - ii) by arbitration in accordance with the procedural rules adopted in accordance with the Special Conditions.

ETHICS CLAUSES

ARTICLE 66

Ethics clauses

- 66.1 Without the Contracting Authority's prior written authorisation, a Contractor and his staff or any other company with which the Contractor is associated or linked may not, even on an ancillary or subcontracting basis, perform other services, carry out works

- or supply equipment for the project. This prohibition also applies to any other programmes or projects that could, owing to the nature of the contract, give rise to a conflict of interest on the part of the Contractor.
- 66.2 When putting forward a candidacy or tender, the candidate or Tenderer must declare that he is affected by no potential conflict of interest, and that he has no particular link with other Tenderers or parties involved in the project. Should such a situation arise during performance of the contract, the Contractor must immediately inform the Contracting Authority.
- 66.3 The Contractor must at all times act honourably and impartially in accordance with the code of conduct of his profession. He must refrain from making public statements about the project or services without the Contracting Authority's prior approval. He may not commit the Contracting Authority in any way without its prior written consent.
- 66.4 For the duration of the contract, the Contractor and his staff must respect human rights and undertake not to violate the political, cultural and religious mores of the recipient state.
- 66.5 The Contractor may accept no payment connected with the contract other than that provided for therein. The Contractor and his staff must not exercise any activity or receive any advantage inconsistent with their obligations to the Contracting Authority.
- 66.6 The Contractor and his staff are obliged to maintain professional secrecy for the entire duration of the contract and after its completion. All reports and documents drawn up or received by the Contractor in connection with the contract are confidential.
- 66.7 The contract shall govern the contracting parties' use of all reports and documents drawn up, received or presented by them during the execution of the contract.
- 66.8 The Contractor shall refrain from any relationship likely to compromise his independence or that of his staff. If the Contractor ceases to be independent, the Contracting Authority may, regardless of injury, terminate the contract without further notice and without the Contractor having any claim to compensation.
- 66.9 The Commission of the European Communities reserves the right to suspend or cancel project financing if corrupt practices of any kind are discovered at any stage of the award process and if the Contracting Authority fails to take all appropriate measures to remedy the situation. For the purposes of this provision, "corrupt practices" are the offer of a bribe, gift, gratuity or commission to any person as an inducement or reward for performing or refraining from any act relating to the award of a contract or implementation of a contract already concluded with the Contracting Authority.
- 66.10 The Contractor undertakes to provide the Commission of the European Communities on request with supporting evidence regarding the conditions in which the contract is being executed. The Commission may carry out whatever documentary or on-the-spot checks it deems necessary to find evidence in cases of suspected unusual commercial expenses.
- 66.11 Contractors found to have paid unusual commercial expenses on projects funded by the Community are liable, depending on the seriousness of the facts observed, to have their contracts terminated or to be permanently excluded from receiving Community funds.

- 66.12 Failure to comply with one or more of these ethics clauses may result in the exclusion of the Contractor from other Community contracts and in penalties. The individual or company in question must be informed of the fact in writing.
- 66.13 Throughout the period of performance of the contract and for a period of five years following completion, the Contractor shall undertake to ensure that the services of the Commission of the European Communities, the Court of Auditors of the European Communities and the authorities of the recipient countries are given access (including by any subcontractors) to all supporting documents required for carrying out the necessary checks. To this end, he shall undertake, given notice of eight working days, to authorise access to his premises to all persons authorised to carry out these checks.

VOLUME 2

SECTION 3

SPECIAL CONDITIONS

SECTION 3
SPECIAL CONDITIONS
CONTENTS

The General Conditions referred to above remain fully applicable unless they allow the Special Conditions to stipulate otherwise. The Special Conditions amplify, supplement or modify if necessary the General Conditions applying to the contract.

The numbering of the Articles of the Special Conditions is not consecutive and follows the numbering of the Articles of the General Conditions in Roman numerals. Other Special Conditions should be indicated after.

PRELIMINARY PROVISIONS

ARTICLE 1

Definitions

1.4 The definitions are:

Commission: The Commission of the European Communities

Financing Authority: EUROPEAN COMMISSION _ Tacis Programme

Contracting Authority. The Contracting Authority is set out in the Appendix to Tender

Works contract: The contract concluded between The Contractor and the Contracting Authority for the execution of works under this contract.

General Conditions: The general provisions, which contain the contractual clauses of an administrative, financial, legal and technical nature with regard to the execution of the contract.

Special Conditions (Conditions of Particular Applications as per FIDIC rules): The special provisions drafted by the Contracting Authority which form an integral part of the tender dossier and which contains any modifications to the General Conditions, the specific contractual clauses or the technical specifications.

Time limits: Time limits shall begin to run from the day following the act or event which serves as the starting point for those periods. Should the last day of the period fall upon a non-working day, the period shall expire at the end of the first working day following the last day of the period.

Project manager (Engineer as per FIDIC rules): The government department, legal person governed by public law, or the natural or legal person designated by the Contracting Authority in accordance with the law of the State of the Contracting Authority, who is responsible for directing/or monitoring the execution of the works contract, or to whom the Contracting Authority may delegate rights and/or powers, under the contract.

Project manager's Representative: Any natural or legal person, designated by the Project manager as such under the Contract, and empowered to represent the Project manager in the performance of his functions, and in exercising such rights and/or powers as have been delegated to him. Accordingly, where functions, rights and/or powers of the Project manager have been delegated to the Project manager's Representative, references to the Project manager include the Project manager's Representative.

Communications: Certificates, notices, orders and instructions issued in writing under the contract.

Administrative order: Any instruction or order issued by the Project manager to the Contractor in writing regarding the execution of the works.

Conflict of interest: any event influencing the capacity of a candidate, Tenderer or Contractor to give an objective and impartial professional opinion, or preventing him, at any moment, from giving priority to the interests of the Contracting Authority. Any consideration relating to possible contracts in the future or conflict with other commitments, past or present, of a candidate, Tenderer or Contractor, or any conflict with his own interests. These

restrictions also apply to Subcontractors and employees of the candidate, Tenderer or Contractor.

Bill of quantities: The document containing an itemised breakdown of the tasks to be carried out in a unit price contract, indicating a quantity for each item and the corresponding unit price.

Day: Calendar day.

In writing: This includes any hand-written, type written or printed communication, including telex, cable and fax transmissions.

Foreign currency: Any currency permissible under the applicable provisions and regulations other than the EURO, which has been indicated in the tender.

National currency: The currency of the country of the Contracting Authority, Azeri Manat.

Tender price: The sum stated by the Tenderer in his tender for carrying out the contract.

Contract price: The sum stated in the contract representing the initial estimate payable for carrying out the works, or such other sum as ascertained at the end of the contract as due under the contract.

Contractor: The successful Tenderer once all parties concerned have signed the contract and whose name and address has been entered in the Appendix to Tender

Liquidated damages: The sum stated in the contract as compensation payable by the Contractor to the Contracting Authority for failure to complete the contract or part thereof within the periods under the contract, or as payable by either party to the other for any specific breach identified in the contract.

General damages: The sum not stated beforehand in the contract, which is awarded by a court or an arbitration tribunal, or agreed between the parties, as compensation payable to an injured party for a breach of the contract by the other party

Works: The temporary and permanent Works to be carried out under the Contract.

Plant: Machinery, apparatus, components and all items to be provided under the Contract for incorporation in the Works.

Equipment: Appliances and other machinery, and, where applicable under the law and/or practice of the State of the Contracting Authority, the temporary structures on the Site required for carrying out the Works but excluding plant or other items required to form part of the permanent works.

Drawings: Drawings provided by the Contracting Authority and/or the Project manager, and/or drawings provided by the Contractor and approved by the Project manager, for the carrying out of the Works.

Site: The places provided by the Contracting Authority where the Works are to be carried out and other places stated in the Contract as forming part of the Site.

Defect Liability Period : The period stated in the Contract immediately following the date of provisional acceptance, during which the Contractor is required to complete the Works and to remedy defects or faults as instructed by the Project manager.

Final Acceptance Certificate: Certificate(s) issued by the Project manager to the Contractor at the end of the Defect Liability Period stating that the Contractor has completed his obligations to construct, complete, and maintain the Works concerned.

Provisional Sum: A sum included in the contract and so designated for the execution of work or the supply of goods, materials, plant or services, or for contingencies, which sum may be used in whole or in part, or not at all, as instructed by the Project Manager

Dayworks: Varied work inputs subject to payment on a time basis for the Contractor's employees and Equipment, in addition to payments for associated Materials and Plant.

Variation: An instruction given by the Project manager, which varies the Works.

ARTICLE 2

Law and Language of the Contract

- 2.1 The law of the Contract shall be the law of the State of Azerbaijan unless otherwise stated in the Special Conditions.
- 2.2. The tender and the contract documents, all correspondence relating to them, the instructions for use and the maintenance instructions shall be drawn up in the English language.
- 2.3 The language for communication shall be the English language; and in correspondence with the Contracting Authority and other Government institutions in addition to the English language the Azeri and/or the Russian language

OBLIGATIONS OF THE CONTRACTING AUTHORITY

ARTICLE 8

Supply of Documents

- 8.4 The procedure used by the Contracting Authority and the Project Manager to approve drawings and other documents produced by the Contractor, is as follows:
 - a) For all temporary works, camp and work site, traffic safety and diversion, lifting and placing of temporary and permanent bridge members, the Contractor shall produce drawings and other documents in consideration of the nature of the works under the contract, and in consideration of the applicable standards and norms, and of the traffic safety and local legislation.
 - b) The Project Manager will check the Contractor's Drawings and will notify the Contractor in case of any deficiency. The Contractor will correct the deficiency and resubmit to the Project Manager, who will check and forward the checked documents for comment and approval to the Contracting Authority. The time for approval after any initial defect has been rectified is 30 days.
 - c) The Contractor shall further check all of the Contracting Authorities and the Project Manager's drawings and other documents, to ensure that the works will be correct and complete under the contract. The Contractor shall bring to the Project Manager's attention any deficiencies in the documents before commencing any

construction. The Contractor shall notify his checking and acceptance of the documents to the Project Manager 30 days prior to the commencement of the construction of the relevant part of the permanent works.

ARTICLE 9

Access to Site

- 9.1 The Contractor shall afford all reasonable opportunities to other persons concerned, and persons concerned with the project for the Rehabilitation and Upgrading for the Ganja – Shemkir Road Rehabilitation and Upgrading, scheduled to commence by the end of 2001 under World Bank (IDA) finance, for carrying out their work as set out adjacent to the bridges, and crossing and hauling materials and other and general construction traffic over the bridges. The traffic of the road rehabilitation project is considered normal traffic and shall not give rise to additional costs under the subject contract for bridges.

OBLIGATIONS OF THE CONTRACTOR

ARTICLE 11

General Obligations

- 11.9 The documents and items which may be placed at the disposal of the Contractor, at the latter's request, to facilitate his work, are listed in Volume 3 Technical Specifications, and in Volume 5 Design Documents including Drawings of the Contract. These documents will be handed over to the Contractor at the time of signing the Contract.

The Contractor shall notify his checking and acceptance of the documents to the Project Manager 30 days prior to the commencement of the construction of the relevant part of the permanent works.

- 11.11 The Contractor shall carry out, and be responsible for, the design of the works that shall be prepared by qualified designers who comply with the criteria set out by the Contracting Authority in sub-clause 8.4 of the Special Conditions.. The contractor elaborates the technical documents required by the Special Conditions and the Technical Specifications.

These documents shall be approved by the Project Manager according to the Special Conditions and may be corrected at the Contractor's costs to comply with its contractual requirements and to eliminate errors, omissions, ambiguities, inconsistencies or other design defects.

ARTICLE 13

Performance Guarantee

- 13.1 The Contractor shall, within 30 days of receipt of the notification of the award of Contract, provide to the Contracting Authority a guarantee for the full and proper performance of the Contract. The amount of the guarantee shall be as specified in the Appendix to Tender.

ARTICLE 14

Insurance

- 14.1 The Contractor shall insure in the joint names of the Contracting Authority and himself against loss or damage for which he is liable under the Contract. Such insurance shall, unless the Special Conditions provide otherwise, cover:
- a) the Works, together with materials and Plant for incorporation therein, to the full replacement cost against all loss or damage from whatever cause arising other than from force Majeure or risks attributable under the Contract to the Contracting Authority;
 - b) an additional sum of 15% of such replacement cost to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatever nature;
 - c) the Contractor's Equipment and other things brought onto the Site by the Contractor, for a sum sufficient to provide their replacement at the Site.
- 14.2 The Contractor may substitute the insurance provided for in Article 14.1 by a global policy of insurance that covers, *inter alia*, the elements of Article 14.1(a), (b) and (c). In such case, the Contractor shall notify the insurer of the Contracting Authority's interest.
- 14.3 The Contractor shall take out insurance covering his liability with regard to industrial accidents and civil liabilities to any person employed by him on the Works, to the Contracting Authority and any employee of that authority, arising from the execution of the Works. Such liability shall be unlimited in the case of personal injuries.
- 14.4 The Contractor shall take out insurance covering liability with regard to risks and civil liability resulting from an act or omission attributed to him, to his legal successors or agents. Such insurance shall be for at least the amount stated in the Appendix to Tender. Furthermore, he shall ensure that all his sub-Contractors have taken out a similar insurance.
- 14.5 All the insurance referred to in this Article shall be taken out within 30 days of the notification of the award of the Contract, and shall be subject to approval by the Contracting Authority. Such insurance shall take effect from the commencement of the Works and remain in force until final acceptance of the Works. The Contractor shall produce to the Contracting Authority the insurance policy and shall furnish proof of regular payment of premiums without delay whenever he is required to do so by the Contracting Authority or the Project manager.
- 14.6 Notwithstanding the obligations of the Contractor to insure in accordance with Article 14, the Contractor shall be solely liable and shall indemnify the Contracting Authority and the Project manager against any claims by third parties for damage to property or personal injuries arising from the design and execution of the Works by the Contractor, his sub-Contractors and employees in connection with the Works.

ARTICLE 15**Performance Programme**

- 15.1 The Contractor shall draw up, and submit for the approval of the Project manager, a programme of performance of the Contract, in accordance with the information requested under Volume 1 Section 4 of the Contract. The programme shall contain at least the following:
- a) the order in which the Contractor proposes to carry out the Works, showing every item of the Bill of Quantities as far as relevant and to the approval of the project manager,
 - b) the specific time periods within which submission and approval of the Drawings are required;
 - c) a general description of the methods which the Contractor proposes to adopt for carrying out the Works together with the detail designs thereto
 - d) such further details and information as the Project manager may reasonably require.
- 15.2 The time limit within which the programme of performance must be submitted to the Project manager for approval is set out in the Appendix to Tender.

COMMENCEMENT AND DELAYS**ARTICLE 31****Commencement Orders**

- 31.1 The date on which performance of the Contractor is to commence is within 30 days following notification of approval of the contract. The date on which performance of the contract is to commence cannot be later than the 90th day following notification of approval of the contract.
- 31.2 If the date established for the commencement of performance of the contract does not fall within the period of 90 days provided for in the first paragraph, the Contractor shall have the right not to perform the contract and to have it terminated or obtain compensation for the damage he has suffered. The Contractor shall forfeit this right unless he exercises it within 30 days of the expiry of the 90-day period.

ARTICLE 32**Period of Performance**

- 32.1 The period of performance shall commence on the date fixed in accordance with Article 31.1 and shall be 240 calendar days from the date of notification of approval of the contract, without prejudice to extensions of the period, which may be granted.

ARTICLE 34**Delays in Performance**

- 34.1 If the Contractor fails to complete the Works within the time period(s) specified in the Contract, the Contracting Authority shall, without formal notice and without prejudice to his other remedies under the Contract be entitled to Liquidated Damages for every day or part thereof which shall elapse between the end of the period specified for performance or extended period of performance and the actual date of completion, at the rate of 1,500 € per calendar day and up to the maximum amount of 5 per cent of the Contract Amount. If the Works have been the subject of partial acceptance, the Liquidated Damages specified in the Special Conditions may be reduced in the proportion, which the value of the accepted part bears, to the value of the whole of the Works.
- 34.2 If the Contracting Authority has become entitled to the maximum claim under the provisions of the General conditions related to delays in performance he may, after giving notice to the Contractor:
- a) seize the performance guarantee; and/or
 - b) terminate the Contract; and
 - c) enter into a contract with a third party at the Contractor's cost for the provision of the balance of the Works

ARTICLE 35**Variations and modifications**

- 35.7 In the event of an increase/decrease in the total volume of work required by the Contracting Authority or resulting from circumstances which are caused neither by the Contractor's negligence nor by any action on his part, the Contractor may not claim any compensation on the ground of damages, unless that increase/decrease, calculated on the basis of the original prices and without varying the object of the contract, exceeds a percentage of the original contract price of more than 15%. In these circumstances, on making a reasoned request submitted to the Contracting Authority, the Contractor shall be entitled to an extension (reduction) of the contractual period of performance.

PAYMENTS**ARTICLE 43****General Provisions**

- 43.1 Payments shall be made in EURO or in the Azeri Manat, except if otherwise stipulated in the Contract.

ARTICLE 44**Advances**

- 44.1 If the Special Conditions so provide, advances shall be granted to the Contractor, at his request, for operations connected with the execution of the Works, in the cases listed hereinafter:
- a) as a lump sum advance enabling him to meet expenditure resulting from the commencement of the Contract;
 - b) if he affords proof of the conclusion of a Contract for the purchase or order of materials, Plant, Equipment, machines and tools, necessary for the execution of the Contract, and of any other substantial prior expenses such as the acquisition of patents or study costs.
- 44.2 The amount of the advances shall not exceed 10% of the original Contract Price in respect of the lump-sum advance in Article 44. 1 (a) and 10% of such prices for all other advances in Article 44. 1 (b).

ARTICLE 45**Retention Sum**

- 45.1 The sum which shall be retained from interim payments as a guarantee to meet the Contractor's obligations during the Defect Liability Period, and the detailed rules governing that guarantee, shall not exceed 10% of the Contract Price.

ARTICLE 46**Revision of Prices**

- 46.1 The Contract shall be at fixed prices which shall not be revised, except as provided in Article 46.4,

ARTICLE 50**Delayed Payments**

- 50.1 Payment to the Contractor of the amounts due under each of the advance/interim payment certificates and the final statement of account issued by the Project manager shall be made by the Contracting Authority within 60 days of such certificate or statement being delivered to the Contracting Authority. If the period laid down for payment has been exceeded, the Contractor shall qualify for interest calculated pro rata on the basis of the number of days delay at the rate specified in the Special Conditions, subject to a maximum period, also specified therein. The Contractor shall be entitled to such payment without prejudice to any other right or remedy under the Contract. In the case of the final statement of account, the interest for the delayed payment shall be calculated on a daily basis at the rate of LIBOR plus 1 (one) per cent for a 3-monthly payment in the range of an average monthly payment certified to the Contractor,

ARTICLE 53**Payments in Foreign/National Currency**

- 53.1 Where under the Contract the Contractor is entitled to payments in Foreign/National Currency, the rates of exchange for calculating the payments shall be those published in the Official Journal of the European Communities, Supplement S, 30 days prior to the latest date fixed for the submission of tenders for the Contract. Such rates of exchange shall not be varied.

SETTLEMENT OF DISPUTES**ARTICLE 65****Settlement of disputes**

- 65.1 The Contracting Authority and the Contractor shall make every effort to amicably settle disputes relating to the Contract which may arise between them, or between the Project manager and the Contractor.

- 65.2 The procedure for the amicable settlement of disputes

- a) Amicable settlement by adjudicator

If the Contractor believes that a decision taken by the Project Manager was either outside the authority given to the Project Manager by the Contract or that the decision was wrongly taken, the decision shall be referred to the Adjudicator

- b) The dispute shall be referred to the Adjudicator within 14 days of the notification of the Project Manager's decision. The Adjudicator shall give a decision in writing within 28 days of receipt of a notification of a dispute.
- c) The Adjudicator shall be paid by the hour at the rate specified in the Appendix to Tender, together with reasonable reimbursable expenses, and the cost shall be divided equally between the Employer and the Contractor, whatever decision is reached by the Adjudicator. Either party may refer a decision of the Adjudicator to an Arbitrator within 28 days of the Adjudicator's written decision. If neither party refers the dispute to arbitration within the above 28 days, the Adjudicator's decision will be final and binding.

The arbitration shall be conducted in accordance with the arbitration procedure published by the institution named and in the place shown in the Appendix to Tender.

- 65.3 The parties may agree to the settlement of the dispute by conciliation within a specific Time Limit by a third party after the amicable settlement procedure adopted has failed. This procedure is proposed in accordance with Clause 67 of the FIDIC Conditions of Contract, Dispute Resolution by the Project Manager (Engineer under FIDIC)
- 65.4 The amicable settlement or conciliation procedure adopted shall in all cases involve a procedure in which complaints and responses are notified to the other party.

- 65.5 In the absence of an amicable settlement or settlement by conciliation within the maximum Time Limits specified, the dispute shall:
- a) in the case of a national contract, be settled in accordance with the national legislation of the State of the Contracting Authority; and
 - b) in the case of a transnational Contract, be settled, either:
 - i) if the Parties to the Contract so agree, in accordance with the national legislation of the State of the Contracting Authority or its established international practices; or
 - ii) by arbitration in accordance with the procedural rules adopted in accordance with the Special Conditions.

ETHICS CLAUSES

ARTICLE 66

Ethics clauses

- 66.1 Without the Contracting Authority's prior written authorisation, a Contractor and his staff or any other company with which the Contractor is associated or linked may not, even on an ancillary or subcontracting basis, perform other services, carry out works or supply equipment for the project. This prohibition also applies to any other programmes or projects that could, owing to the nature of the contract, give rise to a conflict of interest on the part of the Contractor.
- 66.2 When putting forward a candidacy or tender, the candidate or Tenderer must declare that he is affected by no potential conflict of interest, and that he has no particular link with other Tenderers or parties involved in the project. Should such a situation arise during performance of the contract, the Contractor must immediately inform the Contracting Authority.
- 66.3 The Contractor must at all times act honourably and impartially in accordance with the code of conduct of his profession. He must refrain from making public statements about the project or services without the Contracting Authority's prior approval. He may not commit the Contracting Authority in any way without its prior written consent.
- 66.4 For the duration of the contract, the Contractor and his staff must respect human rights and undertake not to violate the political, cultural and religious mores of the recipient state.
- 66.5 The Contractor may accept no payment connected with the contract other than that provided for therein. The Contractor and his staff must not exercise any activity or receive any advantage inconsistent with their obligations to the Contracting Authority.
- 66.6 The Contractor and his staff are obliged to maintain professional secrecy for the entire duration of the contract and after its completion. All reports and documents drawn up or received by the Contractor in connection with the contract are confidential.
- 66.7 The contract shall govern the contracting parties' use of all reports and documents drawn up, received or presented by them during the execution of the contract.

- 66.8 The Contractor shall refrain from any relationship likely to compromise his independence or that of his staff. If the Contractor ceases to be independent, the Contracting Authority may, regardless of injury, terminate the contract without further notice and without the Contractor having any claim to compensation.
- 66.9 The Commission of the European Communities reserves the right to suspend or cancel project financing if corrupt practices of any kind are discovered at any stage of the award process and if the Contracting Authority fails to take all appropriate measures to remedy the situation. For the purposes of this provision, "corrupt practices" are the offer of a bribe, gift, gratuity or commission to any person as an inducement or reward for performing or refraining from any act relating to the award of a contract or implementation of a contract already concluded with the Contracting Authority.
- 66.10 The Contractor undertakes to provide the Commission of the European Communities on request with supporting evidence regarding the conditions in which the contract is being executed. The Commission may carry out whatever documentary or on-the-spot checks it deems necessary to find evidence in cases of suspected unusual commercial expenses.
- 66.11 Contractors found to have paid unusual commercial expenses on projects funded by the Community are liable, depending on the seriousness of the facts observed, to have their contracts terminated or to be permanently excluded from receiving Community funds.
- 66.12 Failure to comply with one or more of these ethics clauses may result in the exclusion of the Contractor from other Community contracts and in penalties. The individual or company in question must be informed of the fact in writing.
- 66.13 Throughout the period of performance of the contract and for a period of five years following completion, the Contractor shall undertake to ensure that the services of the Commission of the European Communities, the Court of Auditors of the European Communities and the authorities of the recipient countries are given access (including by any subcontractors) to all supporting documents required for carrying out the necessary checks. To this end, he shall undertake, given notice of eight working days, to authorise access to his premises to all persons authorised to carry out these checks.

VOLUME 2

SECTION 4

TEMPLATE FOR PERFORMANCE GUARANTEE

Invitation to tender no [.....]

The undersigned, [*name, company name, address*], hereby declare that we will guarantee, not merely jointly and severally, but as principal debtor, to [*Contracting Authority's name and address*] on behalf of [*Contractor's name and address*], the payment of [*amount of the performance guarantee*], representing the performance guarantee mentioned in article 13 of the General conditions without dispute, on receipt of a first written request from the recipient.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed thereunder or of any of the Contract Documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

The guarantee will enter into force and take effect from the [*indicate the date of entry into force of the contract*] and shall be valid until the date of issue of the final statement of account.

We note that you will release the guarantee and notify us of the fact at the latest within thirty days of the date of issue of this Certificate.

Any dispute concerning this guarantee shall be governed by [*enter the law applicable*] and fall within the competence of [*indicate which jurisdiction applies*].

Done at, ./. /..

Name and first name: On behalf of:

Signature:

[*stamp of the body providing the Guarantee*]

VOLUME 2

SECTION 5

TEMPLATE FOR ADVANCE PAYMENT GUARANTEE

Invitation to tender no [.....]

The undersigned, [*name, company name, address*], hereby declare that we will guarantee, not merely jointly and severally, but as principal debtor, to [*Contracting Authority's name and address*] on behalf of [*Contractor's name and address*], the payment of [*indicate the amount*], corresponding to the advance/balance as mentioned in Article 44 of the Special Conditions without dispute, on receipt of a first written request from the recipient.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed thereunder or of any of the Contract Documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

The guarantee will enter into force and take effect from the [*indicate the date of payment of the advance*] and shall be valid until [*Contracting Authority's name and address*] has received full repayment of the same amount from the Contractor.

We note that you will release the guarantee and notify us of the fact at the latest within thirty days of this date.

Any dispute concerning this guarantee shall be governed by [*enter the law applicable*] and fall within the competence of [*indicate which jurisdiction applies*].

Done at,/./..

Name and first name: On behalf of:

Signature:

[*stamp of the body providing the Guarantee*]

VOLUME 2

SECTION 6

TEMPLATE FOR RETENTION MONEY GUARANTEE

Invitation to tender no [.....]

The undersigned, [*name, company name, address*], hereby declare that we will guarantee, not merely jointly and severally, but as principal debtor, to [*Contracting Authority's name and address*] on behalf of [*Contractor's name and address*], the payment of [*indicate the amount*], corresponding to the advance/balance as mentioned in Article 45 of the Special Conditions without dispute, on receipt of a first written request from the recipient.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed thereunder or of any of the Contract Documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

The guarantee will enter into force and take effect from the [*indicate the date of payment of the retention money under the contract*] and shall be valid until the date of issue of the certificate of final acceptance.

We note that you will release the guarantee and notify us of the fact at the latest within thirty days of the date of issue of this Certificate.

Any dispute concerning this guarantee shall be governed by [*enter the law applicable*] and fall within the competence of [*indicate which jurisdiction applies*].

Done at,/..

Name and first name: On behalf of:

Signature:

[stamp of the body providing the Guarantee]

VOLUME 3

TECHNICAL SPECIFICATIONS

Preamble

Since the independence of the Caucasian Republics from the former Soviet Union, their national economics have declined and their road rehabilitation and maintenance has been neglected. Therefore, extensive road rehabilitation and improvement programmes are required throughout the region. Several International Financial Institutions (IFI) and other donors are planning major investments in road works for Azerbaijan.

The scope of this project is the construction of two bridges (Gasau Su Cay and Shemkir) on the Ganja to Gazakh road in support of the rehabilitation of the whole of the remaining section.

The designs for these two bridges were prepared over ten years ago, and work on replacement bridges was started. However, activities were suspended because of budget constraints. At Gasau Su Cay foundation piles have been driven and at Shemkir the bridge piers are mostly complete. Both constructions are situated alongside the existing bridges. This project will combine the recuperating of the existing works which are under suspension, as well as the demolition of the old existing structures.

Existing bridges

At each bridge site, there are the old existing bridges and the suspended structures. The old existing bridges were inspected and are in a poor condition, and cannot be repaired, but need replacement.

Existing Shemkir bridge (road chainage 382+690)

3 spans – bridge length 67.88 m – bridge width 8.50 m.

Existing Gasau Su Cay bridge (road chainage 447+650)

Length of the old bridge 37.94 m. – width of the old bridge 8.50 m.

Suspended construction of bridges

The investigation of the condition of the existing elements of the suspended bridges construction was carried out by visual inspection and testing, using various Schmidt hammer (concrete strength testing equipment) and reinforcement steel thickness gauge. Azeravtoyol made available the existing design documents including drawings and construction details. The data were checked in course of the bridge inspection and, corrected and/or supplemented as necessary. The structure conditions are summarised as follows

Suspended Shemkir Bridge

The suspended bridge structure is located to the north and downstream of the existing bridge. Measured concrete strength of the foundation elements (shafts below the round columns) is about 120 kp/cm² and lower, much below the required concrete strength. Reinforcement in the cross beams is not sufficient. Main reinforcement in the spans of the cross beams $\Phi 20 / 5$ cm. Stirrups $\Phi 4 / 25$ cm. The reinforcement does not have adequate concrete cover. The suspended structure cannot be used because of the low and sub-standard quality of the structural members.

The design of the suspended bridge does not comply with the requirement of the site situation (existing bridge and hydraulic situation of the river bed). The general arrangement of a new structure should follow the general arrangement of the existing bridge, which is 3 spans: 22.22 - 22.22 - 22.22 m. Total length of bridge: ~ 67.0 m. The cross section of the new bridge superstructure should provide a total width of 14.94m, e.g. carriageway 2x3.74m, shoulders 2x2.00m, sidewalks 2x1.72 m. The suspended structure has a general arrangement with 6 spans of 18 m (total length 119.0 m). The 2 exterior spans are situated just above the embankment. The hydraulic section of the river was also maintained. Level of river bed ~ + 65.45 m; high water level given in the drawing: +69.40 m.

Suspended Gasan Su Cay Bridge

Existing at site is the pile foundation for:

2 piers = 2 x 8 pipes diameter 530 mm
2 abutments = 2 x 4 pipes diameter 530 mm

Reinforcement of the piles is: 4 Φ 20 + 4 Φ 16 stirrups Φ 10/20 cm.

The measured concrete strength at the left side cross beam was 110 kp/cm². At the right side cross beam 150 kp/cm². The cross beams on the abutment piles cannot be used for the new structure and must be demolished.

Brief Description of the Works

Construction of bridges

For the design of repairs, extension, widening or replacement the prevailing FSU bridge standard has been applied in principle, so that one uniform standard is used on the structural components. The traffic class is A 11, and the load category is NK-80, in accordance with SNIP 2.05.03-84. The structural standards for a para-seismic should be considered.

The installations and bridge furniture such as concrete repair, sealing, surfacing, drainage, bridge bearings etc. are selected from international standards in order to improve previous and identified shortcomings.

Shemkir bridge

The new bridge over Shemkir Cay river will be located upstream on the proposed second carriageway of the road.

The design bridge is a 3 span, reinforced concrete bridge, with 11.50 m carriageway width and 1.00 m width walkways.

Span scheme of the designed bridge is 3 x 22.2 meters.

Bridge superstructure beams are precast and of the same length as the existing bridge beams, equal to 22.2 meters. In order not to break the hydraulic mode of flood water flow, the openings of the design bridge are similar to the existing ones.

Bridge superstructure beams are designed as pre-stressed concrete. Design standard loading is A-11 and NK-80. Piers are designed to be made with cast in-situ reinforced concrete. The upper part of piers are located higher than the flood water level and are designed to be made of in-situ reinforced concrete posts.

Abutments are also designed to be made of monolithic concrete. Abutment body are made of flat walls, which are, in purpose of stability, of increasing thickness towards its foundation. Flow shaping structures are designed to be made with gabions. Bridge design seismic loading is equal to seismic zone 8 on the intensity scale.

For all visible concrete surfaces – wing walls and the cornices of the sidewalks, the concrete surfaces shall be of high grade.

The foundations consists of in-situ reinforced concrete slabs 5.0 x 14.06 x 3.80 m for the piers and 7.0 m x 15.25 x 2.50 m for the abutment column, as shown on the drawings. The dimension of the foundation consider the earthquake and breaking force and the level of local scour.

For the river bed and slopes an erosion protection of gabions will be provided.

Expansion joints type 'MAURER' are selected. Parapets, sidewalks and crush barriers are proposed to international standard.

Gasas Su Cay bridge

The designed bridge over Gasas Su Cay will be located downstream on the proposed second carriageway of the road.

The designed bridge is a 3 span, reinforced concrete bridge, with carriageway width equal to 11.5 meters and 1 meter width walkways.

Span scheme of the designed bridge is 12 + 18 + 12. Bridge superstructure beams are precast T pre-stressed concrete beams. Design standard loading is A-11, NK – 80. Piers are designed to be made as in-situ concrete walls and are resting on the existing piles foundations

Abutments are piles structure, with resting on the existing, earlier driven, piles backwalls. Flow shaping structures are designed to be made with gabions. Bridge design seismic loading is equal to seismic zone 8 on the intensity scale.

For all visible concrete surfaces – wing walls and the cornices of the sidewalks, the concrete surfaces shall be of high grade.

The existing pile foundation was constructed 1988/1989 under supervision of Azeravtoyol according the detailed design documents from Azdorprojekt. According to the design documents the piles were driven up to 12 m below ground level. The diameter of the piles are 730 mm. The concrete quality of visible parts of the piles is satisfactory and the measured concrete strength is sufficient. Before construction of the new bridge it is recommended that the bearing capacity of the existing piles should be confirmed.

For the river bed and slopes an erosion protection of gabions will be provided.

Special expansion joints are selected. Parapets, sidewalks and crush barriers are proposed to international standard.

Construction of new Approach Roads

The design comprises of measures to construct the approach road in consideration of the following:

- Former Soviet Union Standard (SNIP) 2.05.02-85
- Junction standard drawings 503-0-44
- Marking standard drawings 503-0-04
- Pavement in accordance with the TRL Road Note 31
- The selection and/or adaptation of the appropriate designs standards
- Consideration of pavement strength field investigation results
- Consideration of traffic volumes
- Consideration of the equivalent standard axles

Road design standards

The geometric design will be carried out according to the Former Soviet Union Standard (SNIP) 2.05.02-85, which is in use in Azerbaijan.

Within the present project only the approach roads to the new bridges will be constructed. The approach roads to the new bridges are located on the proposed second carriageway of the road.

The design elements for the cross section are half the width of the cross section for a category I (4 lane) road.

Lane width:	3.75 m	
Carriageway:	7.50 m	
Width of shoulder:	3.75	Paved shoulder: 0.75 m on the outside, 1.00 m on side of the future median

The minimum superelevation of the carriageway is 1.5 % with a shoulder inclination of 3 %.

The horizontal and vertical alignment will generally follow the existing carriageway.

TECHNICAL SPECIFICATIONS

100 General

101. Scope

This Specification defines the standard and quality of materials and workmanship to be used in the Construction of the Gasan Su Cay and Shemkir bridges and their approach roads.

102. Specifications

Specifications for this Contract are included in this Document except where stated otherwise.

103. Standards and Codes

For convenience and in order to establish the minimum standard of quality, reference has been made to certain Former Soviet Union (FSU), British, American, German DIN, and other International Standards in this Specification. Subject to the approval of the Project Manager any other national or international accepted Standard which maintains the standard of quality may be used.

The standards referred to shall be latest editions published at the time of Tender. All the conditions and particulars as to standard of materials, workmanship and tests contained in such Standards shall be compiled with for various items unless otherwise agreed by the Project Manager. Copies, in English language (as available) of any Standards used in connection with the Works shall be supplied to the Project Manager within 14 days of the Project Manager's written request stipulating the required standards.

Where such standards and codes are national in character, or relate to a particular country or region, other authoritative standards which ensure an equal or higher quality than the standards and codes specified will be accepted subject to the Project Manager's prior review and written approval. Differences between the standards specified and the proposed alternative standards must be fully described in writing by the Contractor and submitted to the Project Manager at least 15 days prior to the date when the Contractor desires the Project Manager's approval. In the event the Project Manager determines that such proposed deviations do not ensure equal or higher quality, the Contractor shall comply with the standards set forth in the documents.

104. Trade Names

Where trade names or manufacturers catalogue reference numbers are mentioned in the Specifications or Bill of Quantity, they are intended only to serve as a guide to the type of article or material similar and equal to those specified subject to approval of the Project Manager and shall give where stated in the Bill of Quantity the manufacturer and type of offered material.

105. Materials and Manufactured Articles

The Contractor shall before placing any order for materials and manufactured articles for incorporation in the Work submit to the Project Manager the names of the firms from whom he proposes to obtain such materials and manufactured articles giving for each firm a description of the materials and manufactured articles to be supplied, their origin, the manufacturer's specification, quality, weight, strength and any other relevant details. The Contractor shall deposit with the Project Manager samples of such materials and manufactured articles when requested and, where appropriate, manufacturer's certificates of recent tests carried out on similar materials and manufactured articles.

The Contractor shall provide the Project Manager with copies of all orders for the supply of materials and manufactured articles required in connection with the Works as the Project Manager may require.

106. Storage of Materials and Manufactured Articles

All materials and manufactured articles shall be stored on Site in a manner acceptable to the Project Manager and the Contractor shall carefully protect from weather and vermin all work, materials and manufactured articles which may be affected. Materials subject to deterioration from prolonged storage shall be used in the sequence of dates of delivery or dates of manufacture whichever is more applicable.

107. Sources and Types of Material for Incorporation in the Works

The Contractor shall be responsible for locating and selecting materials complying with the Specification and for ensuring that materials processed for incorporation into the Works comply with the Specifications. The location of the source, trial pit logs, results of tests required by the Specification, and representative samples of sufficient size for the Project Manager to perform the same tests shall be submitted to the Project Manager for acceptance of the source well in advance of transporting to the site and commencement of working with the material. No material shall be used which is not secured from a source accepted by the Project Manager. Acceptance of a source does not mean that all material from the source will be accepted.

108. Water and Power

The Contractor shall

- (a) provide at his own risk and cost all water, lighting and electric power required for use in the works and shall pay all costs, fees and charges in connection therewith and allow all sub-contractors free use of the same. The Contractor shall make his own arrangement for his requirements of potable water, by
- (b) provide and maintain temporary water storage together with any distribution piping which may be necessary and subsequently remove all installations to the approval of the Project Manager
- (c) provide, wire for, and connect lighting and power for the works.

109. Method of Construction

The Contractor shall submit to the Project Manager not later than 28 days from the date of award of the Contract, a general description of his proposed arrangements and methods for the execution of the Works, including, inter alia, temporary offices, buildings, access roads, deviations, constructional plant and its intended production output, working shift arrangements, labour strength, skilled and unskilled and supervision arrangements, power arrangements, supply of materials, stone crushing, aggregate production and storage, cement handling, concrete mixing and handling, methods of excavation, dealing with water, testing methods and facilities.

During the execution of the Works, the Contractor shall also submit to the Project Manager full and detailed particulars of any proposed temporary works and amendments to the arrangements and methods submitted in accordance with the foregoing.

110. Notice of Operation

No important operation or change of operation shall be undertaken without the consent in writing of the Project Manager.

111. Site

The Site of the Works shall be the area within the various road reserves, quarries, borrow pits, asphalt plants, spoil areas, access roads and deviations, Contractor's Plant Yard and installations, storage areas, camp sites, Project Manager's offices, laboratories and accommodation, shown on the Drawings or established specifically for the Contract.

Negotiations for any additional land required outside the permitted working space which may be required by the Contractor for any purpose whatsoever shall be carried out by the Contractor.

The Contractor's Plant Yard or Quarries shall be used by the Contractor for his offices, stores, plant, workshops, latrines and messing accommodation. The erection of temporary buildings or structures on other parts of the Site will not be allowed without the permission in writing of the Project Manager's Representative.

Before the erection of any building or plant in the Contractor's Plant Yard or quarries, the Project Manager's Representative shall be supplied with a drawing showing the layout of the area. Areas which the Contractor uses for his installations shall be fenced.

The Contractor is solely responsible for the mobilisation, transport and maintenance of all construction plant, equipment and materials, needed for the execution of the project.

Where it is necessary for any reason whatsoever to enter on to land which does not form part of the Site, the Project Manager's Representative shall be informed of the details and the land owner or occupier shall be consulted by the Contractor and his written permission obtained. In the event of the owner or occupier withholding his

permission, full circumstances of the case shall be referred to the Project Manager and no further action shall be taken until his instructions are received.

Under no circumstances is land to be interfered with whether for Permanent or Temporary Works until permission to proceed has been received from the Employer.

From the date of such possession of the Site until a certificate of completion has been given, the Contractor shall be responsible for maintaining the old and new roads on the Site in a satisfactory and usable condition.

111.1 Demobilisation, Reinstatement

Following the completion of works, the Contractor shall gradually remove all construction plant, equipment and temporary installations, imported, erected or connected to permanent installations from the project zone and adjacent areas.

This includes all temporary buildings, accommodation or staff – facilities, unless specified to be left in place for later use by the employer.

Following the removal of temporary installations, as described above, all surfaces formerly occupied by the Contractor have to be made good and reinstated to their former or natural stage, unless otherwise agreed by the Project Manager.

112. Construction Generally

Materials available on the Site or materials made available or supplied by the Employer shall be used solely for the execution of the Works.

The Contractor shall be absolutely and solely responsible for the adequacy, safety and security of Temporary Works.

The Contractor shall minimise disturbance to lands, roads and other places on and around the site. No trees or other vegetation shall be removed except to the extent necessary for the carrying out of the Works.

Access shall be maintained to all properties adjacent to the Site. Temporary access tracks shall be constructed as required and maintained for the duration of the Contract.

All buildings erected by the Contractor on the Site shall comply with all bye-laws in so far as they may be applicable.

113. Protection From Water

the Contractor shall keep the whole of the Works free from water. Except as otherwise specified, he shall be responsible for dealing with water, whether from existing drainage systems, water courses, underground springs, precipitation or any other source or cause. In discharging and diverting water he shall avoid flooding or damaging other works or services and causing erosion.

114. Pollution

The Contractor shall be fully responsible for the disposal of all waste matter from the Site and take all necessary precautions to avoid pollution to water courses, neighbouring land and the environment generally.

115. Protection of Existing Works and Services

The Contractor shall establish the position of existing services such as pipelines, sewers, surface water drains, cables for electricity and telephones, overhead lines and water mains, before starting any excavation or other work likely to damage them.

Where work is to be carried out in the vicinity of overhead power lines, the Contractor shall ensure that all persons working in such areas are aware of the relatively large distance that high voltage electricity can 'short' to earth when cranes, or other large masses of steel, are in the vicinity of power lines. The Contractor's attention is drawn to BS 162 which gives safe clearances for the various voltages.

The Contractor shall be held responsible for damage to existing works or services, and shall indemnify the Employer against any claims in this respect (including consequential damages). The Contractor shall be responsible for the reinstatement of services so affected.

In all cases where works or services are exposed, they shall be properly shored, supported or otherwise protected. Special care shall be exercised in filling and compacting the ground under mains, cables, etc., and to leave uncovered exposed water meters, stopcock boxes and other accessories.

The Contractor shall ensure that no fence or gate, except where these are required to be removed or altered for the proper execution of the Works, is damaged and that no gates are left open which may allow livestock to stray.

Installations adjacent to the Works, shall be kept securely in place until the work is completed and shall then be made as safe and permanent as before.

Notwithstanding the foregoing requirements, and without reducing the Contractor's responsibility, the Contractor shall inform the Project Manager immediately if any existing works or services are exposed, located or damaged.

116. Diversion of Services

The Contractor shall be responsible for arranging in liaison with the appropriate Authority, the moving of or alterations to services such as pipelines, power and telephone lines, water mains, sewers and surface water drains which are affected by the Works. The arrangements for such moving or alteration shall be subject to the agreement of the Project Manager and the appropriate Authority.

117. Progress Photographs

Coloured photographs showing the progress of the works shall be taken every month from positions to be selected by the Project Manager. Photographs shall not be less

than 150 mm x 100 mm and shall be inscribed with the location, date when taken and a brief description or title. Each set shall comprise six prints of each of up to twenty negatives. All negatives shall be numbered and retained on the Site. On completion of the works, the negatives shall become the property of the Employer. Two prints of each photography shall be signed and dated on the back by the Project Manager and the Contractor and one print each shall be retained by the Employer and the Project Manager as an agreed record.

118. Signboards

The Contractor shall provide, erect and maintain signboards to the layout, colours and dimensions as the Project Manager will direct.

These signboards are to be erected within one month of the date of commencement of the Contract. The Contractor shall remove the signboards at the end of the Defects Liability Period or its equivalent.

119. Health, Safety and Accidents

The Contractor shall ensure, so far as is reasonably practicable, the health, safety and welfare at work of his employees including those of his sub-contractors and of all other persons on the Site. The organisation of the construction sites and work places shall generally be in accordance with the existing safety regulations SNIP III 4-80 and the Safety Regulations for Construction, Rehabilitation, and Maintenance of Roads (corresponding to SNIP III A-11-70. His responsibilities shall include:

- (a) the provision and maintenance of constructional plant, equipment and systems of work that are lighted, safe and without risks to health
- (b) the execution of suitable arrangements for ensuring safety and absence of risks to health in connection with the use, handling, storage, transport and disposal of articles and substances
- (c) the provision of protective clothing and equipment, first aid stations with such personnel and equipment as are necessary and such information, instruction, training and supervision as are necessary to ensure the health and safety at work of all persons employed on the Works all in accordance with the Laws of Azerbaijan.
- (d) the provision of a qualified officer or designation as Safety Officer of one of his senior staff who has specific knowledge of safety regulations, and experience of safety precautions on similar works and who shall advise on all matters affecting the safety of workmen and on measures to be taken to promote such safety.
- (e) the provision and maintenance of access to all places on the Site in a condition that is safe and without risk of injury.
- (f) the provision of adequate waterborne sanitation, refuse collection and disposal, complying with the Laws of Azerbaijan, all local Bye-laws and to the satisfaction of the Project Manager, for all houses, offices, workshops and laboratories erected on the camp site or sites

- (g) the provision of an adequate number of suitable latrines and other sanitary arrangements at sites where work is in progress to the satisfaction of the Medical Officer in the area.
- (h) the execution of appropriate measures in consultation with the appropriate Public Health Authority to control within the Site, including the camp sites, mosquitoes, flies and pests including the application of suitable chemicals to breeding areas.
- (i) reporting details of any accident to the Project Manager and the Police, if appropriate, as soon as possible after its occurrence
- f) assure permanent availability of appropriate serum at first aid station against effects from snakebite species *Vipera lebetina*
- (j) execute appropriate measures in consultation with the appropriate Public Health Authority control within the site and the camp sites mosquitoes, flies, and pests including the application of suitable chemicals to breeding areas.

120. Specifications for Impact Mitigation During Construction

These specifications have been selected and formulated with a view to support the implementation of environmental protection during the construction phase of the project. Where regulations exist, the respective reference is given under the individual section with the description of the recommended measures. Where these regulations were deemed to require more detailed statements amendments have been made.

In addition to the generally required standard measures for impact mitigation this report contains a few supplementary measures for further environmental enhancement.

Impact Mitigation

Preservation / Protection of Trees and Bushes

Trees and bushes outside the construction width but within the bridge construction zone and road reserve shall be generally preserved and protected from damages related to construction wherever possible.

The Project Manager shall arrange that the above sections are specifically demarcated and that the existing trees and bushes are cordoned off during construction. Where required, trees immediately adjacent to the required construction corridor shall be lopped prior to the commencement of works. Also, the Project Manager shall brief his personnel according to the above regulations prior to the commencement of works.

Cutting down shall not take place without the prior approval of the Project Manager. The Project Manager may also give instructions that specific trees shall not be removed during the site clearance operation and to plant new tree to replace a destroyed or cut tree.

Removal and Storage of Topsoil

Location: Throughout the construction corridor

Reference: SNIP 2.05.02-85, no 3.4. and 3.5

Existing top soil shall be stripped to a depth of 20 cm from all areas of cutting and from all areas to be covered by embankment or by other areas of fill.

Top-soil shall wherever practicable be used immediately after its stripping and if not shall be stored in stockpiles not exceeding 3 m height. Topsoil shall not be unnecessarily trafficked either before stripping or when in a stockpile. Stockpiles shall not be surcharged or otherwise loaded and multiple handling shall be kept to a minimum. Excavated top soil shall be reused on the new embankments remaining materials may be spread.

Protection of Water Resources

Location: Throughout the construction corridor

Sources: BCH 8-89 no. 2.2 and 2.4.11, Sanitary Norms SN 245-71

- (i) During construction, the contractor shall carry the full administrative and legal responsibility for any pollution of surface waters according to the existing legislation (BCH 8-89 no 2.2.10).
- ii) The contractor shall ensure, that no oil products, fuel, lubricants, detergents, paint or other harmful substances are introduced into streams and irrigation or drainage facilities.
- iii) The storage of wastes or production waste as well as filling and parking of machinery or cars is not permitted within a distance of 100 m of any stream including drainage or irrigation facilities (BCH 8-89 no 2.2.9.); The discharge of oil and fuel onto open soils is prohibited. Filling of any machinery shall be restricted to stationary and or mobile filling stations and shall exclusively be carried out by using suitable taps or nozzles (BCH 8-89 no 2.4.11). The contractor shall make all necessary arrangements to ensure that pollution of soils and groundwater will be avoided as far as possible (BCH 8-89 no 2.5).
- iv) The contractor shall submit a plan to the relevant authorities indicating the type of installation and their respective locations e.g. fuel and material storage, stationary filling sites, asphalt plant, mixing plant, car wash facilities etc. For each installation the contractor shall indicate the approximate closest distances to irrigation and drainage channels as well as public or private wells. For each installation beforehand the contractor shall indicate in written form to the Project Manager in addition to the above the approximate closest distances not less than 250 m to the specified green or protected areas indicated in the section 120.
- v) the Contractor shall submit to the Project Manager an emergency plan for hazardous spills and leakage subject for approval before commencement of the works. This does not overrule requirements of the section i) above
- vi) The direct discharge of sewage from worker's camps into any stream is prohibited (BCH 8-89 no 2.2.1). Sewage from these installations shall be collected in septic tanks or soaking pits.

Noise Control

Location: Throughout the construction corridor

Sources: Sanitary Norms SN 245-71, BCH 8-89

The Contractor shall follow all the existing laws and regulations concerning the noise control in construction works, asphalt plant and borrow pit activities. The contractor shall submit a plan to the relevant authorities indicating the type of installation and their respective locations e.g. asphalt plant, mixing plant etc, which is subject for approval before commencement of the works.

Also, the Project Manager shall brief his personnel according to the above prior to the commencement of works.

Dust Control

The contractor shall submit a plan indicating the proposed routes for material transport and make statements on the proposed method of dust control where transport through settlements cannot be avoided.

In accordance with the provisions of BCH 8-89 no 4.1.1 the contractor shall, within settlements, avoid dust development associated to material transport.

Management of Solid Waste From Construction and Construction Camps

Location: Throughout the construction corridor

Sources: Regulation of Azerbaijan Republic on Waste generated in Production and Municipalities, Sanitary Norms SN 245-71

- i) Wherever possible recycling / re-use of materials shall be considered.
- ii) As a rule, solid wastes generated during the construction phase shall be systematically collected, stored and disposed of in suitable locations in accordance with ASCE.

Construction debris (waste from bridge demolition, the replacement of culverts, crash barriers or handrails from bridge etc.) shall generally be removed from the site in an orderly manner and disposed off in accordance with the existing regulation and ASCE.

Clean soil material, i.e later indicated as Spoil Material that is not reusable shall be removed from the site and transported to the soil dumping areas in accordance with the ASCE, or designated in the design documents or

Domestic waste from temporary construction camps shall be systematically collected and hauled to the designated areas in accordance with the ASCE. Should construction camps be erected within a reasonable distance to larger settlements, camp's solid waste may be integrated into existing collection and disposal facilities of nearby communities by their approval.

Fire Protection

The contractor shall comply with the provisions for fire protection according to BCH 8-89 no 2.7 or as otherwise directed by the Project Manager.

Restoration of work and storage sites, construction site roads

Location: Throughout the construction corridor

Sources: BCH 8-89 no. 2.4.2 and below:

As a rule, the contractor shall restore all working sites during termination of the work. This includes:

- removal of all machinery
- removal of all waste material
- landscaping of the site
- re-spreading of the topsoil over the site

121. Facilities for the Project Manager and his Staff

The Contractor shall provide and maintain laboratories, survey and laboratory equipment, furniture, transport and facilities for the Project Manager and his staff,

A description of the laboratories and equipment required is given below.

On completion of the Contract, the ownership of all laboratories equipment shall revert to the Contractor.

121.1 Equipment for Project Manager's Representative and his Staff**(i) Equipment for Office**

A schedule of office requisites, shown in the Schedules shall be provided by the Contractor and all items shall be subject to the approval of the Project Manager's Representative.

(ii) Portable Site Offices for Project Manager's Representative's Staff

The Contractor shall provide 2 nos. portable offices for the use of the Project Manager's Representative's Staff, one for each bridge construction site..

The portable offices shall be of type 40 feet office trailers, containers or similar, fully equipped with office furniture, as tables, chairs, drawers, bookshelves and the like, all to the satisfaction of the Project Manager, to enable permanent working of four Nos. staff.

The portable offices shall be fully electrified and equipped with mobile-fax-machine, copy-machine, airconditioners (2 nos.) and fridge.

Windows shall be burglar-proof and entrance doors shall be supplied with lock and four keys.

(iii) The Contractor shall provide and maintain 2 nos. fully equipped toilet – containers for the sole use of the Project Manager and his staff, one for each site of bridge – construction.

The toilet-containers shall be equipped with water- and septic tanks.

(iv) Testing Laboratory

The Contractor shall provide and maintain a laboratory and office to be sited in the Contractor's plant yard. The said laboratory and offices shall be in a water-proof and heat and cold isolated building of at least 60 m² internal floor area.

The building shall comply with the requirements specified for Housing and Offices in relation to rapid re-siting.

The laboratory and office is to be used exclusively for design and control testing and it shall be maintained in a clean and tidy fashion to the satisfaction of the Project Manager's Representative. It shall be connected to the water and electricity supplies. The office shall be provided with all necessary furniture and equipment, stationery, etc. to the satisfaction of the Project Manager.

All samples and records shall be preserved as long as the Project Manager may direct and they shall be kept and labelled in orderly fashion to his satisfaction. The laboratory, its equipment as detailed in the Schedule and all samples and all records shall be open to inspection by the Project Manager's Representative during all site working hours.

The laboratory shall be staffed by the Contractor with an Materials Engineer, well experienced in the testing of soils, concrete and bituminous materials.

The Contractor shall submit the name of the manufacturers and a list of laboratory equipment which he intends to provide for the approval of the Project Manager.

The Contractor shall perform tests on materials as specified and shall supply the Project Manager with two copies of the results of each test, such results being entered on a printed form approved by the Project Manager.

A third copy of the results of each test shall be retained in the laboratory.

The Contractor shall at all times maintain a sufficient stock of all laboratory glassware, plasticware, rubberware etc., to allow for breakages and deterioration. In the event of any of the equipment becoming unusable through any cause the Contractor will, if required to do so by the Project Manager's Representative, order replacements to be made.

On completion of the Contract the laboratory, equipment and air conditioners shall remain the property of the Contractor.

- (v) The Contractor shall give the highest priority to the construction and of the laboratory. No permanent work on any section of the Contract shall be paid for until these items are made available for use unless otherwise agreed by the Project Manager's Representative.

The time schedule for providing the laboratory ready for occupation and use is thus:

- Within 60 days from the date of the Order to Commence all facilities for the laboratory as specified shall be available and ready for use.

121.2 Accommodation for the Project Manager

The Contractor shall provide and maintain 2 nos. Accommodation (Flat or House) of the following description :

The house shall have 3 bedrooms and a minimum internal floor area of not less than 140 sq. m excluding verandas, porches, car ports etc.

The house shall have a lounge/dining room, a kitchen, store, bathroom, and a separate toilet. The kitchen shall be furnished with benches having drawers, fixed shelves and a sink. The bedrooms shall be provided with airing cupboards having shelves and lockers, all to the satisfaction of the Engineer.

The house shall be equipped with airconditioning, heating and water heaters as directed. All expenses in connection with the installation and maintenance of heaters shall be included in the tendered rates for the houses.

The Contractor shall provide the house with a telephone with IDD facility. All expenses in connection with the installation and maintenance of the telephone including telecommunication-costs up to the amount of 1,000.00USD per month shall be included in the tendered rates for the houses.

A lockable garage shall be provided adjacent to the house.

One of the houses shall be chosen in the town of Ganja, the other one in the town of Astfaga,-the detailed setting to be in agreement with the Project Manager.

The Project Managers house shall as a minimum be supplied with the furniture and equipment stated in Table 1 of the Appendix to the Special Specification. The house shall additionally be equipped with reserve watertank and pumping or boosting facilities for potable water

The building with its equipment and furniture shall become the property of the Employer upon completion of the Contract

121.3 Staff

- (i) Project Manager's Representative's clerical and technical staff

The Contractor shall be responsible in respect of wages, salaries, insurance, provident fund and all other costs or charges incurred for watchmen, chainmen, cleaners, recruited by the Project Manager's Representative or the Contractor and employed on the Works, in the office and in the laboratory.

- (ii) Assistance for Project Manager's Representative

The Contractor shall provide at all times during the continuance of the Contract all such soils and survey assistants, workmen, pegs, tools etc., and transport therefore as the Project Manager's Representative may require for the carrying out of his duties in connection with the Contract. The instruments and tools listed in the Schedules shall in any case be provided for the sole use of the Project Manager's

Representative and once supplied shall not be changed or removed without his consent.

121.4 Tele Communication System

The Contractor shall provide and maintain 4 nos. mobile telephones for the sole use of the Project Manager and his staff, including the related cost for communication up to the amount of 1,000.00 USD per month.

The Contractor shall provide and maintain 2 nos. Mobile fax-machines for the sole use of the Project Manager and his staff, including the related costs for communication, up to the amount of 300.00 USD per month.

122. Vehicles for the Works Supervision

One Four Wheel Drive 5-door vehicle and two Four Wheel Drive Double Cabin - Pick-up vehicles of new manufacture shall be supplied, registered, comprehensively insured, maintained, fuelled and repaired. One driver for each vehicle shall be provided and paid for by the Contractor including all overtime. The vehicles shall be air-conditioned.

123. Survey Equipment for the Project Manager's Use

The Contractor shall provide the survey equipment for the Project Manager. The equipment shall be modern and include a self registering theodolite and electro-optical distance measuring instruments (total station) and automatic levelling instrument.

Survey assistants shall be provided by the Contractor.

124. Existing Ground Levels

The Contractor shall measure jointly with the Project Manager the existing ground and commencing levels. The Contractor shall submit to the Project Manager cross sections of the position and levels. The existing ground shall not be disturbed nor overlaid before the acceptance of the measurements and reports by the Project Manager. As the Project Manager may decide new construction elevations may be issued as necessary.

125. Contractor's Office, Stores, Workshops

The Contractor shall provide and maintain on approved sites suitable offices, sufficient stores, tanks and workshops for the proper storage of materials, fuel, potable water, plant and equipment. The stores shall be of such size and construction that they provide adequate storage and protection of stocks of materials, fuel, spares, etc. in quantities ensuring uninterrupted progress of the works, and the workshops shall be suitably equipped to provide for carrying out major repairs, overhaul or modification by the Contractor of all plant and equipment in or on the works.

The Contractor shall be responsible for the water supply, electricity supply, telephone, sanitary and all other services necessary for constructional and domestic purposes for the duration of the Contract. He shall make all necessary arrangements with the authorities or persons for such electricity supply, telephone and shall make his own arrangements for water supply and sanitary services.

126. As-Built Drawings

The Contractor shall prepare as-built drawings on the basis of construction drawings and the actual construction performed.

Such drawings shall show the actual works as built all to the approval by the Project Manager.

All as-built drawings shall be available within 30 days after the Issue of the Taking Over Certificate in respect of the whole of the works.

127. Testing

The Contractor shall provide and maintain for the duration of the construction period the relevant DIN, BS, ASTM & AASHTO, SNIP literature etc. for testing referred to the Specifications and Drawings. This laboratory is also for the use by the Project Manager.

Testing equipment shall comprise apparatus and everything necessary to carry out testing as required in the technical specifications, standards and codes.

Testing may be carried out at approved laboratories at the Contractor's expense, where the equipment/facilities on site are insufficient, and where the progress of the works is not delayed.

Wherever in the Specification tests on materials, tests on completed work and construction control tests are called for or implied, they shall be carried out according to and the materials shall comply with the requirements of the Specification issued by:

SNIP	Standard of the Former Soviet Union
DIN Deutsches Institut für Normung e. V. -	German Standards and/or
BS	British Standard Code of Practice
BSCP or CP	British Standard Code of Practice
AASHTO	American Association of State Highway and Transportation Officials
ASTM	American Society of Testing and Materials
ISO	International Organisation for Standardisation

Certain SNIP, DIN, BS, AASHTO and ASTM Specifications are listed in the various sections of this Specification for the Contractor's guidance but listing of a certain standard does not exclude materials complying to other standards accepted by the Project Manager.

The Contractor shall carry out and report to the Project Manager the results of the specified material and construction control tests before submitting materials and finished work to the Project Manager.

All costs entailed in sampling, testing and in carrying out trial areas of construction as called for in the Specification and in the reinstatement of sampling and testing holes, shall be deemed to be included in the prices and rates entered by the Contractor in the Bill of Quantities.

The laboratory shall be operational and fully equipped before commencement of permanent works.

Testing by the Project Manager

The Project Manager shall, from time to time and when he deems necessary, perform such tests as are required to ensure that all requirements specified herein are being fulfilled.

In these cases the Project Manager shall be allowed free access at all time to the Contractor's laboratory and test facilities and also to carry out without cost to the Employer any tests which the Project Manager may deem necessary in connection with the works. The Contractor shall furnish all assistance to the Project Manager, e. g. by the Contractor's laboratory technicians, as the Project Manager may require.

All the costs incurred in the sampling and testing of materials and finished work, in carrying out trial areas of construction and other tests to ascertain Job-Mix Formulae as called for in the Specification, and in the reinstatement of sampling and testing holes, shall be deemed to be included in the price and rates entered by the Contractor in the Bill of Quantities.

200 Site Clearance

Scope of Section

This section covers general site clearance, stripping of topsoil and removal of bushes and trees, structures and other obstructions.

201. Site Clearance

201.1 General

No clearance of or alteration to any main service or apparatus shall be done unless specifically ordered by the Project Manager.

Site clearance is defined as the clearing, grubbing, removal and disposal of all vegetation, grass, debris, bushes, scrub, dense bush, trees, hedges, undergrowth, stumps, roots, shrubs, plants and backfilling of holes left by the removal of stumps and roots.

The width and length over which site clearance is to be carried out shall be shown on the Drawings or instructed by the Project Manager.

The width of the site clearance is specified in the preamble.

Site clearance over the area of quarries, borrow pits, stockpiles, spoil tips, road junctions, ditches and drains and other areas shall be carried out where shown on the Drawings or instructed by the Project Manager.

The Project Manager may give instructions that specific trees, stumps or objects shall not be removed during the site clearance operation.

201.2 Clearing, except trees

Where site clearance is required, the defined area shall be cleared.

Vegetation, perishable material and other debris shall be carted to spoil areas. Disposal by burning may be authorised by the Project Manager provided no fire hazard would result.

201.3 Removal of trees

Trees outside the construction width but within the road reserve shall not be cut down without the prior approval of the Project Manager.

Stumps and tree roots shall be grubbed up. All holes left by removal of stumps and roots shall be backfilled with approved material compacted to 92 % MDD (AASHTO T180) up to the existing ground level or up to the formation level if the area is in cut.

202. Topsoil Stripping

Where shown on the Drawings or directed by the Project Manager the Contractor shall remove topsoil. The depth of the topsoil shall be as directed by the Project Manager.

The Contractor shall, prior to removal of topsoil, excavate trial holes of a depth sufficient to enable the Project Manager to measure the depth of topsoil.

Topsoil shall be stripped, loaded, transported and deposited in stockpile areas.

Should the Contractor strip to depths greater than those instructed by the Project Manager then the Contractor shall replace the material with fill material at the Contractor's expense.

203. Removal of Structures, Fences and Obstructions

When instructed by the Project Manager, the Contractor shall demolish wholly or in part, remove and dispose of all buildings, foundations, underground chambers, pits, tanks, structures, fences and any other obstructions which have not been designated to remain. Prior to demolition the Contractor shall ensure that services have been disconnected to the satisfaction of the appropriate authorities and/or owner. All holes resulting from the removal of structures below ground shall be backfilled with approved material compacted to 92 % MDD (AASHTO 180) up to existing ground level or up to formation level if the area is in cut.

The Contractor shall carefully take down such buildings, structures, fences etc. and the components shall be dismantled, cleaned and stacked in separate heaps. All materials which, in the opinion of the Project Manager, are not fit for re-use shall be removed from the site to spoil areas. All materials which are re-usable shall remain the property of the Employer and shall be preserved and protected by the Contractor until removed by the Employer or until the expiry of the Defects Liability Period or its equivalent.

204. Protection of Fences, Trees, Hedges etc.

All existing paths, fences, walls, hedges, trees, shrubs and other features which are not removed or otherwise dealt with, shall be protected from damage.

300 Earthworks, Quarries, Borrow Pit, Stockpiles and Spoil Areas

Scope of Section

This section covers all excavation of cuttings including side drains and benches, the placing and compaction of hard and soft material for fill in embankments, ground compaction, the formation of the subgrade, excavation and rockfill to swamps, topsoiling and grassing.

301. Definitions and Classifications

- (a) 'Original Surface': means the surface of the ground before any work has been carried out.
- (b) 'Stripped ground level': means the surface of the ground after the completion of clearing operations, and removal of topsoil.
- (c) 'Formation level': means the level at the completion of earthworks for roadworks prior to the laying of the pavement and surface soiling. The earthworks immediately below formation level is known as the subgrade.
- (d) 'Unsuitable material' shall include the following: material from swamps, marshes and bogs, peat, logs, stumps, roots and other perishable or combustible material; surface soil and highly organic clay and silt; material having a liquid limit above 65 % or more than 80 % passing the 75 microns sieve to BS 410; such other material as the Project Manager may decide.
- (e) 'Suitable material': shall exclude unsuitable material as defined previously, and shall comprise all other natural materials acceptable to the Project Manager's Representative for use in the Works.
- (f) 'Selected Fill': shall be material having liquid limit below 30 % and not more than 30 % passing the 75 microns sieve to BS 410.
- (g) 'Topsoil': shall mean soil from the surface layers of ground with sufficient humus content to support vigorous plant growth.
- (h) 'Hard material': shall be material which cannot be ripped to an average depth of rip greater than 300 mm by a track type crawler tractor complying with the following:
 - (i) in good order complete with all equipment and accessories as supplied;
 - (ii) rated 300 BHP flywheel power or over;
 - (iii) an operating weight of not less than 37.2 tonnes;
 - (iv) equipped with a hydraulically operated single tine ripper compatible with the tractor used; and
 - (v) operated by a qualified operator in accordance with the manufacturer's recommendations and to the satisfaction of the Project Manager.

Where it is impracticable to prove hard material by the above method then the quantity of hard material, if any, shall be determined by the Project Manager.

Where excavation contains individual boulders of hard material greater than 0.3 m³ each in volume then such boulders shall be classified as hard material.

Hard material shall not be placed within 600 mm of the formation level in embankments and shall be removed to a depth of 300 mm or as otherwise instructed by the Project Manager below formation level in cuttings.

- (i) 'Soft Material': Soft material shall be all materials other than hard material, except for material within swamps.

302. Explosives and Blasting

302.1 The Contractor shall not use or bring onto the Site explosives of any kind without the prior consent in writing of the Project Manager. The explosives shall be stored in a manner and quantities acceptable to the Project Manager in magazines provided by the Contractor at suitable positions. The Contractor shall be responsible for the prevention of unauthorised issue or improper use of explosives brought on the Works, and shall employ only experienced and responsible men to handle explosives for the purpose of the Works.

302.2 The shots shall be properly loaded, tamped and where necessary, the Contractor shall use heavy blasting nets. Blasting shall be restricted to such periods as the Project Manager may agree to. If in the opinion of the Project Manager, blasting would be dangerous to persons or property, or to any finished work, or is being carried on a reckless manner, he may prohibit it and require excavation by other means. Use of explosives by the Contractor in large blasts as in seams, drifts, shafts, pits or large holes is prohibited unless authorised in writing by the Project Manager.

303. Preparation Prior to Forming Embankments

303.1 The Contractor shall excavate benches in natural ground having a side slope greater than 1 in 5 or as instructed by the Project Manager. The existing slopes, after the removal of topsoil shall be benched in accordance with the Drawings prior to the construction of embankments. The material which is excavated to form benches shall either be taken to spoil or if suitable used as fill. The actual bench widths will be shown on the Drawings or instructed by the Project Manager.

303.2 The existing ground under embankments, and bench surfaces where appropriate, shall be compacted over the full width of construction to 92 % MDD (AASHTO T180) to a depth of 150 mm.

303.3 Where the existing ground is unsuitable for receiving fill, the Contractor shall excavate to the depth instructed by the Project Manager, remove the material to a spoil area and replace it with suitable material compacted as for embankment earthworks.

304. Construction of Embankments and Cuttings

Material obtained from cuttings or from side borrows or borrow areas adjacent to the road shall be used to construct embankments.

- 304.1** The Contractor may, to suit his method of working, take suitable fill material obtained from cuttings to spoil provide he substitutes an equivalent quantity of suitable fill material from a borrow pit or other source. The Contractor shall be solely responsible for the acquisition of land for the spoil and borrow areas required in these circumstances and any additional costs due to the substitution over and above the cost of taking the material from cuttings or benches to fill shall be at the Contractor's expense.
- 304.2** Material for use in the 300 mm below formation level in both embankments and cuttings shall not contain particles larger than 50 mm, unless permitted by the Project Manager. In addition the material shall have a CBR of not less than 3.5 % measured after a 4-day soak on a laboratory mix compacted to a dry density of 95 % MDD (AASHTO T180), a swell of less than 1 % and a Plasticity Index of less than 30 %. In situ material in the 300 mm below formation level in cutting that does not meet these requirements shall either be cut to spoil or if suitable placed in the embankment and replaced with materials from cuttings or borrow pits that does meet the requirements for soft material for use in the 300 mm below formation level.
- 304.3** Where materials of differing quality are available for placing in embankments the Project Manager may instruct that certain materials should be excluded from the upper 300 mm of fill and he may instruct that certain materials should be set apart, or obtained from borrow pits, for use in these upper layers.
- 304.4** Soft material as filled shall be deposited in layers not exceeding 150 mm compacted depth unless, as a result of site compaction trials, the Contractor has satisfied the Project Manager that his compaction plant is capable of consistently achieving the specified densities at a greater depth; in no case shall this depth exceed 250 mm. Each layer shall extend over the full width of the embankment.
- 304.5** Hard material used for fill shall be of maximum dimension 250 mm, and be deposited in horizontal layers not exceeding 400 mm loose depth and shall extend over the full width of the embankment except for any specified external cover to slopes. The material shall be spread and levelled by a crawler tractor weighing not less than 15 tonnes. Each layer shall consist of reasonably well graded rock and shall be blinded with smaller rock fragments and gravel so as to fill as many of the voids as possible before the next layer is placed. The top 600 mm of the earthworks below formation level shall be formed using soft material.
- 304.6** During the construction of embankments the Contractor shall control and direct constructional traffic uniformly over the full width. Fill material shall not be stockpiled on embankments without the express permission of the Project Manager.

304.7 When constructing embankments up to bridges and up to and over culverts, the Contractor shall raise the embankment equally on each side of such structures and shall unless otherwise instructed by the Project Manager carry out this work concurrently with the filling to the structure as is feasible without damaging the structure.

305. Compaction of Earthworks

305.1 The moisture content of fill material, shall be adjusted immediately prior to compaction by either uniformly mixing in water or drying out the material such that the moisture content during compaction is within the range shown by field trials or laboratory tests to be suitable for obtaining the required densities.

305.2 Each layer of material shall be compacted at a moisture content within the above limits to a dry density equal to at least the percentage of the Maximum Dry Density (MDD) specified below:

- (i) All fill material in embankments, except the 300 mm below formation: 92 % MDD (AASHTO T180)
- (ii) The 300 mm below formation in embankments: 95 % MDD (AASHTO T180)
- (iii) the 300 mm below formation in cutting under the carriageway and shoulders: 95 % MDD (AASHTO T180).

305.3 Each layer of hard material used as fill in embankments shall be systematically compacted by at least 8 passes of a towed vibrating roller weighing not less than 5 tonnes dead weight or a grid roller weighing not less than 13 tonnes dead weight or other approved plant. During compaction the surface of the layer shall be watered as necessary to facilitate the filling of the voids with the blinding material.

306. Spoil Material

306.1 Spoil material shall be material from cuttings which is surplus to that required for fill or unsuitable material from cuttings which the Project Manager has instructed to be excluded from use as fill in embankments or below formation level in cuttings. It shall also include unsuitable material from underneath embankments.

306.2 Spoil material shall be deposited in spoil areas located by the Contractor, subject to the approval of the Project Manager. The Contractor shall give the Project Manager at least 24 hours notice of his intention to commence placing spoil material at a particular location.

307. Borrow Pits

Fill material which is required in addition to that provided by the excavation or widening of cuttings shall be obtained from borrow pits provided and operated in accordance with Section 600 of this Specification.

308. Proofrolling

All subgrade and embankment layers, cuttings, benches and original ground shall be proofrolled with a loaded scraper or truck with a minimum axle load of 8 tonnes. Proofrolling shall be satisfactorily completed before the layer is submitted to the Project Manager for approval and shall be carried out in the presence of the Project Manager. All such proofrolling shall be at the Contractor's expense.

309. Trimming of Slopes

The slopes of cuttings and embankments shall be trimmed to uniform batters as shown on the Drawings or as instructed by the Project Manager. Such trimming shall be completed before the commencement of sub-base construction.

Any rock or boulder appearing in the face of a cutting or embankment shall be trimmed back to within the tolerances specified and, in addition, any such rock or boulder which is unstable shall be completely removed and the resulting void filled with suitable material compacted to the same standard as the surrounding earthworks.

310. Topsoiling and Grassing

310.1 Where specified or instructed by the Project Manager, the Contractor shall provide protection to embankment slopes, cut faces, side drains, shoulders, guiding dams and spoil or borrow areas by topsoiling.

310.2 The minimum compacted thickness of topsoil shall be 50 mm and the quality of the topsoil shall be to the approval of the Project Manager. Light compaction shall be carried out to the approval of the Project Manager.

311. Subgrade Surface Tolerances

The level tolerance on the surface shall be - 35 to +10 mm

312. Borrow Pits, Stockpiles, Spoil Areas

312.1 It is the responsibility of the Contractor to identify and to select the sources of aggregate for concrete and lean concrete, stone for bases, sub-bases, bituminous mix bases, binder course and wearing courses, chippings for surface dressings and rock-fill for swamps. Such sources shall be designated as quarries or as borrow pits for the sources of natural materials such as fill materials for the construction of embank-

ments, and gravel for sub-base, base, surfacing and shoulders. Such potential quarry or borrow pit sites as may have been identified prior to commencement of the Contract and were available for inspection at the time of Tender will also be the responsibility of the Contractor should he elect to use them.

- 312.2** Additional borrow pits or quarries shall be identified and located by the Contractor during the Contract. These are subject to the approval of the Project Manager. Stockpile and spoil areas shall be located by the Contractor subject to the approval of the Project Manager.

313. Entry Upon Land

- 313.1** The Contractor shall, before entering upon any land provided by the Employer, satisfy himself that legal rights of entry have been obtained.

- 313.2** Where it is necessary to agree levels for the calculation of quantities, the Contractor shall not enter the area until such levels have been agreed and the Project Manager's approval obtained.

314. Access Roads

The Contractor shall provide the construction and maintenance of access roads to quarries, borrow pits, spoil and stockpile areas and for traffic operations. The costs for the provision and maintenance of such access roads shall be deemed to be included in the costs for roadworks, as entered by the contractor in the Bill of Quantities

315. Site Clearance

- 315.1** Unless otherwise directed by the Project Manager the Contractor shall remove topsoil and/or overburden from quarries, borrow pits, spoil and stockpile areas. The Project Manager shall direct whether topsoil shall be stripped and stockpiled separately or shall be excavated and taken to spoil areas together with overburden. The Project Manager may direct that suitable overburden be used in the Works.

- 315.2** On completion of work in any quarry, borrow pit, spoil or stockpile area the overburden and/or topsoil which has not been used in the Works shall be pushed back, spread and landscaped over the area of the quarry, borrow pit, spoil or stockpile area. Where topsoil has been stockpiled separately it shall be pushed back and spread over the quarry, borrow pit, spoil or stockpile area after landscaping.

400 Passage of Traffic

Scope of Section

This Section covers the provisions that the Contractor must make to facilitate the safe and convenient movement of public traffic through the Works.

401. Summary of Provisions

- (a) Where public traffic using an existing road is affected by construction of the new road, the Contractor shall carry out one or more of the following:
 - (i) Effect improvements to and maintain existing roads.
 - (ii) Construct and maintain deviations.
 - (iii) Pass traffic through or over the Works.
- (b) The Contractor shall provide and maintain temporary signs, barriers, lights etc. along deviations and existing roads adjacent to the Works in order to ensure the safe passage of traffic during the Contract.
- (c) The Contractor shall provide adequate notice of the implementation of deviations etc. and shall ensure efficient and safe passage of traffic at all times.
- (d) The Contractor shall be required to provide and maintain all access and haul roads to ensure access to all parts of the Site for his plant, labour and materials.
- (e) The Contractor shall protect adjacent public roads from the effects of his own construction traffic.

402. Construction of Deviations

402.1 General

The length of a deviation shall be the shortest practicable route taking into account gradients and obstructions. Detailed alignment shall be agreed between the Project Manager and the Contractor.

The Contractor shall give at least 1 month's notice in writing of his intention to commence construction of any deviation. Such notice shall include details of cross-covers, one-way traffic operations, restricted widths, culverts, drainage, drifts, bridges, earthworks, signs, barriers, lights, traffic lights, and methods of operation of the entire system. Upon approval of such notice in writing from the Project Manager the Contractor shall become responsible for the passage of traffic including maintenance of the deviation and the project road in that section.

402.2 Geometry

Single-lane traffic operation shall not be permitted unless in the opinion of the Project Manager, it is impracticable to provide a two-lane deviation. A single-lane carriageway shall not be less than 4.0 m wide with traffic control and passing bays provided at approximately 250 metre intervals.

402.3 Drainage and Drifts

Temporary bridges shall be constructed by the Contractor if an existing bridge is inadequate and cannot be strengthened or if a drift would not be practicable.

402.4 Reinstatement of Deviation

The Contractor shall reinstate the deviation to a condition similar to the condition prevailing prior to the commencement of construction of the deviation. Where the deviation is on private land the Contractor may obtain a written statement, signed by the landowners, requesting that the deviation be left unreinstated in lieu of reinstating the deviation. Where the deviation is within the road reserve or on other land owned by the Government the Contractor shall reinstate the deviation to a condition prevailing prior to the commencement of construction of the deviation, or such lesser reinstatement as may be agreed by the Project Manager.

403. Maintenance of Deviations

The Contractor shall maintain the deviations until the adjacent section of new road is opened to public traffic..

404. Passage of Traffic Through

404.1 Where traffic is to be passed through or across the Works the Contractor shall so order his work in half widths or in short lengths, so as to pass traffic over or across his work or in short lengths, so as to pass traffic over or across his work.

404.2 The frequency and duration of delays to traffic while being passed through or across the Works, shall be kept to a minimum and shall not exceed 30 minutes without the prior agreement of the Project Manager and should normally be less than 5 minutes. Any method of working, which requires a road closure in excess of 30 minutes shall require 48 hours prior notice to, and the agreement of, the Project Manager, who may refuse to allow such closure in default of due notice or may require rescheduling of the closure.

404.3 The Contractor shall ensure, when passing traffic through the Works, that all excavations and other hazards are properly protected with barriers and are illuminated at night.

405. Signs, Barriers and Lights

- 405.1** The Contractor shall provide, erect and maintain temporary signs, barriers, lights, traffic lights etc. along existing roads and along deviations.
- 405.2** The number, type and siting of these signs etc. shall be as directed by the Project Manager.
- 405.3** The construction of all informatory signs, warning signs, mandatory signs and priority signs used for temporary signing shall comply with the requirements of the Azerbaijan Traffic Law.
- 405.4** Where one-way traffic operation is necessary the Contractor shall provide, maintain and operate traffic lights. The use of 'Stop' and 'Go' boards provided, maintained and operated by the Contractor shall be permitted during day light in lieu of traffic lights. Traffic lights shall be used at all other hours.

406. Assistance to Public

The Contractor shall render such assistance to the public as shall be necessary to allow safe and convenient passage of traffic at all times.

407. Contractor's Construction Traffic**407.1 Use of new road or road under construction**

The Contractor will not be permitted to use completed sections of the road or deviation or any completed pavement or surfacing layer for hauling earthworks, pavement or other materials with earthwork plant or vehicles having axle loads exceeding the legal limit. Furthermore, the use of completed sections of the road or completed pavement layers will be restricted if, in the opinion of the Project Manager, damage to structures, subgrade, the formation, pavement or surfacing could ensue.

- 407.2** The Contractor shall allow the Project Manager to carry out check axle weighings on his vehicles and shall observe any instructions given by the Project Manager with regard to reduced loadings should this prove necessary.

500 Pavements

501. General Requirements

- 501.1** Prior to the construction of each pavement layer the previously prepared formation or layer shall be thoroughly cleaned of all foreign substances. Any ruts or soft spots which occur or any deviation from the specified tolerances or degree of compaction shall be corrected by scarifying, removing and/or adding approved material, relaying and recompacting the unsatisfactory areas to the required density and to the required lines and levels. Should any damage occur to the formation or a pavement layer prior to the construction of the next layer, it shall be rectified to the satisfaction of the Project Manager at the expense of the Contractor.

Before the commencement of pavement construction, all subgrade drainage, open ditches, culverts or other special works shall be completed.

501.2 Alignment and Level Control

Survey shall be provided and maintained by the Contractor in order that the Works will conform to the lines and levels shown on the drawings. Stakes, boards and boning rods shall be painted red and white in such a manner as to indicate clearly the lines and levels to be worked for each layer of pavement.

Before commencement of work on any section, the Contractor shall obtain the approval of the Project Manager to the type of construction, alignment and levels of all such stakes, boards and boning rods.

501.3 Thickness and Surface Tolerances

The thickness of each pavement layer shall be such that the depths from the required finished surface levels of the pavement to the surface of each pavement layer shall nowhere be less than the depths shown on the drawings. The surface of each layer other than the final layer may be lower than the required surface within the tolerances stated below, provided that any such deficiency shall be made good at the Contractor's expense by increasing the thickness of the course above the surface in question.

Each layer of pavement shall be finished to a surface profile parallel to the finished surface of the pavement shown on the drawings within the level tolerances shown below.

Layer	Level Tolerance Mm	Smoothness Tolerance Maximum Depression under a 4 m straight edge Mm
Granular capping or sub-grade	+ 0 to - 35	25
Granular subbase course	+ 0 to - 35	25
Bituminous roadbase layer	+ 0 to - 10	10
Bituminous base course	+ 0 to - 7	6
Surface layer	+ 5 to - 5	4

The above tolerances apply on straight profiles.
Equivalent tolerances shall apply on vertical curves.

501.4 Thickness of Pavement Layers

The thickness of the surface layer and binder layer together shall not be less than that shown on the drawings at any point. The thickness of other pavement layers may be less than that shown on the drawings provided that the level tolerances are met and the total thickness of the pavement is not deficient.

501.5 Rectification of Surfaces out of Tolerances

Areas of subbase course and base course which are too high may be cut down to the correct level provided that the surface can be regulated and compacted so that all the requirements of the Specifications are met. Otherwise they shall be cut out to the full depth of the layer and replaced. Areas of base course, which are too low may be levelled up with specified material or they may be left for filling with the next layer provided that the depression does not exceed the smoothness tolerance stated. Otherwise, areas which are too low shall be cut out to the full depth of the layer and replaced.

Areas of binder layer and surface layer (wearing course) which do not comply with the specified thickness, level and smoothness tolerances shall be cut out to the full depth of the layer and replaced.

501.6 Junctions between Stages of Construction

At junctions between stages of construction each complete layer of pavement structure shall be stepped back from the layer under. Each step shall have a width of at least 1.00 m.

501.7 Construction Joints

Construction joints in the bituminous pavement layers shall be staggered by at least the following distances:

- | | |
|--|--------|
| (a) Joints in binder layer relative to joints in surface layer (wearing course) | 500 mm |
| (b) Joints in bituminous base course and compensation layer relative to joints in binder layer | 300 mm |

The Contractor shall produce a plan showing the position of all pavement construction joints for approval before pavement construction commences.

501.8 Damage to Pavements

All pavement layers shall be properly protected against the risk of damage by water, slips, falls, subsidence and floods from whatever cause. Any completed pavement layer which suffers damage shall be removed and replaced to the satisfaction of the Project Manager and in accordance with the requirements of the Specification.

The sites of all pavement works shall, before work is commenced and throughout its execution, be drained of rain and subsoil water by means of temporary ditches, rubble and other drains or pumping.

The cost of complying with the requirements of this Clause shall be included in the rates entered in the Bills of Quantities for pavement items.

501.9 Trial Construction

Before commencing the construction of any pavement layer the Contractor shall carry out a trial for each of the layers concerned. These trials shall consist of the construction of areas of each pavement layer to the thickness shown on the drawings. A trial area shall be constructed for each pavement type (i.e. all the layers comprising each type) forming part of the permanent works. Each pavement trial shall be at least the full width of carriageway and 30 metres long. The location of the trial areas shall be agreed with the Project Manager before their construction.

The Contractor shall prepare and test the formation in the trial areas in accordance with the Specification and when it is approved shall prepare, lay and compact each pavement layer in sequence as specified according to the thickness shown on the drawings so as to form a trial area for each type of pavement. Each pavement layer shall be subject to control testing by the Contractor and by the Project Manager and shall be approved by the Project Manager before the construction of the subsequent layer commences.

The plant, materials and methods used are to be those which will be used in the permanent works. The construction operations and compaction methods are to be varied so as to identify the optimum procedures which will satisfy the requirements of the Specification.

The test will be intended as non-destructive and will generally be made at the surface existing at the time of test, but some damage may occur and some tests may be made after excavation below the surface.

The construction of pavement layers forming part of the permanent works may commence only when trial construction of the layers concerned has been carried out to the satisfaction of and approval by the Project Manager. The Contractor shall include in the rates entered in the Bills of Quantities for pavement items the costs of areas of trial construction for testing and for any delays or disruption which may arise therefrom.

501.10 Aggregate Storage

Aggregates shall be stored in single sizes in separate bins or on areas covered with tightly laid wood planks, sheet metal, hard compact gravel, concrete or other hard and clean surfaces; which surface shall be self draining and in such a manner that will preclude the inclusion of foreign material. Aggregates of different grades and sizes and from different sources shall be stored in separate piles, and if these piles are close together they shall be separated by bulkheads.

501.11 Inspection of Plant and Equipment

The Project Manager shall have access at all time to all parts of any plant or equipment in use, for checking its adequacy and operation, and verification of weights, proportions, temperatures and any other characteristics relevant to the clauses of the Specification.

501.12 Construction Control Testing

Each layer of pavement shall be subject to construction control testing as described below. Each pavement layer must be tested by the Contractor to demonstrate compliance with the requirements of the Specifications and the Standards. Only when test results demonstrate such compliance, shall the Contractor submit the layer for approval. The submission shall be made in writing, shall define the boundaries of the area of the layer for which approval is sought and shall be accompanied by the relevant control test results. Upon receipt of each submission, the Project Manager may without unreasonable delay carry out such further testing and inspection as he considers necessary and shall thereafter either approve or reject the area and layer concerned. If the area and layer are rejected, the Project Manager will give reason in writing.

Work on subsequent layers of pavement may not commence until the preceding layer has been approved in writing by the Project Manager. The Contractor shall at his own expense remove any material deposited contrary to this requirement.

The Contractor is wholly responsible for protecting and maintaining the condition of the work submitted for approval and shall at his own expense remove or reconstruct as the Project Manager directs any material which may have deteriorated before the subsequent layer has been completed and approved.

The costs of any disturbances or delays due to construction control testing procedures shall be deemed to be included in the rates entered in the Bill of Quantities for pavement items.

502. Natural Material Sub-base and Capping Layer

Scope of Section

This Section cover the provision, laying and compacting of natural gravel material for sub-base and capping layer.

502.1 Definitions

Natural Materials

The term 'natural material' includes lateritic gravel, quartzitic gravel, calcareous gravel, soft stone, conglomerate, sand or clayey sand or a combination of any of these materials. A natural material is also referred to as 'gravel'.

Natural material shall be material which can be extracted from a borrow area or a road cutting by ripping to a depth of 300 mm with a single tine hydraulic ripper acceptable to the Project Manager drawn by a track type crawler tractor in good order complete with all equipment and accessories as supplied and rated at 300 BHP flywheel power and over with an operating weight of not less than 37.2 tonne and being operated in accordance with the manufacturer's recommendations.

The material may require the use of either a grid or sheepsfoot roller with more than 8000 kg mass per metre width of roll to break it down and/or screening to achieve the specified grading.

Natural material for sub-base and capping layer may be obtained from any of the existing or new gravel pits.

502.2 Material Requirements

The grading and other requirements after placing and compaction of the materials shall conform to the following tables:

Table 502.1

Plasticity characteristics for granular sub-base		
Liquid Limit	Plasticity Index	Linear Shrinkage
< 45	< 12	< 6

Table 502.2

Typical particle size distribution for sub-bases	
BS Sieve size (mm)	Percentage by mass of total aggregate passing test sieve
50	100
37.5	80 – 100
20	60 – 100
5	30 – 100
1.18	17 – 75
0.3	9 – 50
0.075	5 – 25

Table 502.3

Embankment Heights and CBR Values	
Embankment Height (m)	Required CBR Value
< 1.0	> 30 % dry
> 1.0	> 30 % soaked (4 days)

503. Existing Base Course Downgraded to Subbase

In sections of road reconstruction the existing base course material shall be considered downgraded as subbase material. The material so considered subbase shall be tested for the requirements set out in tables 502.1 through 502.3. Where the requirements are not met in quality or in thickness, additional subbase material shall be added to provide the quality and thickness specified.

Subbase material as specified shall also be used for the construction of shoulders.

504.N/A

505. Selected Subgrade Material and Capping Layers

These materials are specified to provide sufficient cover on weak subgrades. A minimum CBR of 15 per cent is specified at the highest anticipated moisture content measured on samples compacted in the laboratory at the specified field of 95 per cent of the maximum dry density in the British Standard (Heavy) Compaction Test, 4.5 kg rammer. The built-in thickness is 400 mm in areas susceptible to increased moisture content where the height of the dam is less than 1.00 m.

506. Bituminous Pavement

506.1 Bituminous Prime Coat

Materials

Bituminous materials to be used shall be as specified below or similar approved.

Prime coat: RC 30

506.2 Construction and Equipment Requirements

(a) Application of bituminous spray treatments

(i) Prime Coat

The exact quantities to be applied may be varied to suit field conditions and will be proposed by the Contractor from trials for the approval of the Project Manager.

A prime coat shall be applied over the full width of the surface of the subbase to receive the bituminous rolled asphalt roadbase.

(b) Weather Limitation

Bituminous spray treatments shall not be carried out during rain. They shall only be applied when the surface is dry or contains moisture not in excess of that which will permit uniform distribution and the desired penetration.

(c) Preparation of Surface

Immediately before applying the prime coat, all loose material, dirt or other objectionable material shall be removed from the surface to be treated by power brooms and/or blowers, supplemented by hand brooms if necessary. If the surface to receive prime coat is excessively dry and/or dusty so that the bituminous material freckles, it shall be lightly and uniformly sprinkled with water immediately in advance of priming, but bituminous material shall not be applied until all free surface water has disappeared.

(d) Equipment

All equipment, tools and machines used in the performance of the work shall be subject to the approval of the Project Manager and shall be maintained in satisfactory working condition at all times.

(i) The distributor for the bituminous material shall be self-propelled, pneumatic tyred and have sufficient power to maintain uniform speeds for proper application of bitumen. It shall be so designed and equipped as to distribute the bituminous material uniformly on variable widths of surface at readily determined and controlled rates within the ranges specified. The distributor shall be equipped with an accurate tachometer showing the driver the speed in metres per minute. The distributor tank shall have an appropriate capacity and shall be fitted with a device for indicating the quantity in the tank at any time. It shall be equipped with heaters capable of maintaining appropriate spraying temperatures and fitted with an accurate thermometer. The circulation system shall permit of pumping around the tank and around the spray bar without actually spraying. Spray bars

shall be available for spraying in varying width. The spray nozzles shall be arranged to give a uniform spray and the shut-off shall be quick acting with an antidrip device.

The distributor shall also be fitted with hand spraying equipment. Distributors shall be fitted with an accurate metering device. The truck shall be fitted with a gauge bar and chain clearly visible to the driver to enable him to follow the required edge. The spray bar shall be adjustable transversely so that the operator can follow the required edge independently.

- (ii) Brooms and blowers shall be of the power type, and shall be suitable for cleaning the surface to which the prime coat is to be applied.

(e) Method of Application

Immediately following completion of the preparation of the surface, the bituminous material shall be applied by means of the pressure distributor at the appropriate temperature for the type of bituminous material, the type of spraying nozzle and the rate of application.

The material shall be applied so that uniform distribution is obtained at all points of the surface. The distributor shall be equipped so as to obtain satisfactory results at the junction of previous and subsequent applications.

(f) Curing and Maintenance

Following the application of prime material, the surface shall be allowed to cure to evaporate the volatiles. In the case of the prime coat curing shall be not less than 48 hours without being disturbed, or for such additional period of time as may be necessary to allow the bitumen to penetrate.

The treated surface shall be maintained in satisfactory condition until the layer of pavement has been placed. During this interval, no traffic will be permitted on the treated areas and the Contractor shall protect the surface against damage and shall repair all defects.

506.3 Cleaning of Asphalt Pavement Surface

- (a) The existing surfaces shall be cleaned off every foreign substances or matter, including bitumen or bituminous or non-bituminous joint sealant material, rubber, oils, fuels, markings and loose particles. The Contractor is free to employ mechanical brooms, jet-water devices, sand-blasting or surfaces milling. The method employed must be suitable to prepare and achieve a surface ready for application of tack coat.

506.4 Removal of loose and/or Deteriorated Material on Existing Surfaces

- (a) Where the existing surfaces are loose or deteriorated partly or fully, milling of the loose or deteriorated part shall be carried out, subject to approval by the Project Manager. Such areas shall be inspected and repaired prior to preparing the area for overlay. The surface shall be reinstated by asphaltic concrete, under items for surface repairs.

506.5 Milling to Existing Surfaces in Adaptation Areas

- (a) For preparation of the asphalt overlay at end areas or to the sides of the road milling shall be carried out as shown on the drawings to allow laying of asphalt in the minimum thickness and flush to road shoulders. The milling method shall include preparation and achievement of the surface ready for application of the tack coat.

506.6 Mixture

The bituminous layers to be used are mixtures of dried hot aggregate and hot straight run bitumen.

506.7 Aggregate

Aggregates for premixed bituminous layers shall be obtained from approved sources and consist of hard, tough, heavy, compact, approved broken rock, screened, graded as specified hereafter and free of faulty, flaky, elongated, soft or decomposed pieces, excess of dust and any dirt, acids or other deleterious substances.

In addition to the general requirements, the aggregate shall have an Aggregate Crushing Value not exceeding 25 %, a Los Angeles Abrasion test value of not more than 30 % and a Sodium Sulphate Soundness loss of not greater than 12 % after 5 cycles. The Flakiness Index of the aggregate shall not be greater than 20 %. The bitumen affinity of the stone should be good and the bitumen retention shall be at least 75 % when tested for stripping.

The aggregates shall conform to German Standard DIN No. 52 101 to 52 103.

506.8 Filler

Filler is to be either Portland cement or limestone powder/dust.

506.9 Bitumen

Bitumen B 65 shall be used.

Bitumen is to be as specified in DIN 1995 from which the values below have been extracted:

Ser. No.	Property	Grade B 65	Testing in accordance with
1	Needle penetration 100 g, 5 s, 25°C, 0.1 mm	50 – 70	DIN 52 010
2	Softening point and ball °C	49.0 - 54.0	DIN 52 011
3	Breaking point according to Fraaß max. °C	- 8	DIN 52 012
4	Ash content max. %	0.50	DIN 52 005
5	Paraffin max. %	2.0	DIN 52 015
6	Density at 25 °C min. g/cm ³	1,000	DIN 52 004
7	Increase in softening point, ring and ball by thermic action max. °C	6.5	DIN 52 016 DIN 52 011
8	Deduction of needle penetration by thermic action max. %	40	DIN 52 016 DIN 52 010

506.10 Design of Mixtures

The Contractor is to design the mixtures in the limits laid down in the following schedules:

Bituminous Asphalt Concrete	Binder 0/22 mm	Surface Course 0/11 mm
Aggregates		
Crushed Stone		
Crushed Sand		
Natural Sand		
Fines		
Gradation		
Size < 0.09 mm Weight %	3 – 9	6 - 10
Size > 2 mm Weight %	65 – 80	50 - 60
Size > 8 mm Weight %	--	15 - 30
Size > 11.2 mm Weight %	--	≤ 10
Size > 16 mm Weight %	≥ 20	--
Size > 22.4 mm Weight %	≤ 10	--
Crushed Sand/Natural Sand	≥ 1 : 1	≥ 1 : 1
Bitumen Content Weight %	3.8 - 5.5	5.9 - 7.2

506.11 Job Mix

As soon as possible after commencement of aggregate production and well in advance of commencing bituminous work, the contractor shall carry out Marshall tests on trial mixes within the Specification limits and he shall submit the results to the Project Manager together with his proposals for the precise proportions of stone, bitumen and filler to be used. The Project Manager shall then either approve the proposals or adjust the quantities to be used.

The Contractor shall likewise propose and the Project Manager approve or adjust the temperatures of stone and bitumen for mixing. In the event of any difficulty arising in fulfilling the Specification requirements, the Project Manager shall have power to amend the aggregate grading limits. The precise proportions of bitumen and filler, and the aggregate grading, all approved or adjusted by the Project Manager, shall constitute the Job-Mix Formula.

The Project Manager's approval or adjustments on the Job-Mix Formula shall not relieve the Contractor of any responsibility to comply with the Specification requirements. The Project Manager's approval of both the mix and the finished work will depend on fulfilment of all Specification requirements as evidenced by tests carried out by both the Project Manager and the Contractor.

506.12 Mixing Plant

The mixing plant shall be designed, co-ordinated and operated so as to produce mixtures within the Job-Mix Formula, and shall have a capacity required to complete the works in the periods specified. The plant shall be a weigh-batch type or a volumetric-proportioning continuous-mixing type, provided the equipment has demonstrated that it is suitable for producing finished mixtures complying with the Job-Mix Formula specified above. Any plant used shall conform to all the requirements specified in paragraph A below, and, in addition, any batch mixing plants and continuous mixing plants shall conform to the special requirements specified in paragraphs B or C below, whichever is applicable.

(a) Requirements for all Plants

(i) Equipment for Preparation of Bitumen:

Tanks for storage of bitumen shall be capable of heating the material under effective and positive control at all times to the temperature requirements specified.

Heating shall be accomplished by steam-coils, electricity, or other means that will allow no direct flame to come in contact with the heating tank. The circulating system for the bitumen shall be of adequate size to ensure proper and continuous circulation between storage tank and mixer during the entire operating period. All pipelines and fittings shall be steam-jacketed or otherwise properly insulated to prevent heat loss. The storage tank capacity shall be sufficient for at least a 24 hours run.

(ii) Feeder for Dryer:

The plant shall be provided either with cold stone bins or with a reclaiming tunnel under the separate stockpiles for uniformly feeding the aggregate into the dryer so that uniform production and uniform temperature will be secured. Where bins are used they shall be at least three in number and of sufficient size to store the amount of aggregate required for continuous operation. Each bin, or each stockpile opening above the reclaiming tunnel, shall be provided with an adjustable mechanical feeder capable of delivering a uniform and continuous flow of the aggregate at the desired rate.

(iii) Dryer:

A rotary dryer of any satisfactory design for drying and heating the aggregate shall be provided. The dryer shall be capable of drying and heating the aggregate to the specified temperature requirements.

(iv) Screens:

Plant screens capable of screening all heated aggregates to the required sizes and proportions, and having normal capacities in excess of the full capacity of the mixer, shall be provided.

(v) Hot Bins:

The plant shall include at least three storage bins for heated aggregate of sufficient capacity to supply the mixer when it is operating at full capacity. The bins shall be arranged to ensure separate and adequate storage of appropriate fractions of the aggregates. Each bin shall be provided with an overflow pipe of such size and at such location as to prevent any backing up of the material into other bins. Adequate dry storage shall be provided for the filler and provision shall be made for accurately weighing or proportioning it to the mixtures.

(vi) Bitumen Control Unit:

Satisfactory means shall be provided to obtain the proper amount of bitumen in the mix within the tolerances specified by the Job-Mix Formula, either by weighing, metering or volumetric measurements. Suitable means shall be provided, either by steam-jacketing or other methods of insulation, for maintaining the specified temperature of the bitumen in the pipelines, meters, weigh-buckets, spray bars, and other containers or flow lines.

(vii) Thermometric Equipment:

An armoured thermometer with a range of 95°C to 210°C shall be fixed in the bitumen feed line at a suitable location near the discharge valve at the mixer unit. The plant shall be further equipped with an approved dial-scale mercury-actuated thermometer, an electric pyrometer or other approved thermometric instrument, so placed at the discharge chute of the dryer as to indicate the temperature of the heated aggregate.

(viii) Control of Mixing Time:

The plant shall be equipped with positive means to govern the time of mixing and to maintain it constant. The time of mixing refers to the interval between the time the bitumen is spread on the aggregate and the time the same aggregate leaves the mixing unit, for continuous mixing plants, and the total of dry and wet mixing time for batch plants.

(ix) Dust Collectors:

The plant shall be equipped with effective dust collectors. Provision shall be made to waste the material so collected or to return it uniformly to the mixture, as directed by the Project Manager.

(x) Safety Requirements:

Adequate and safe stairways to the mixer platform and sampling points should be provided and guarded ladders to other plant units shall be placed at all points where accessibility to plant is required. Accessibility to the top of truck bodies shall be provided by a suitable device to enable sampling to be undertaken. Means shall be provided to raise and lower scale calibration, sampling and other similar equipment between the ground and mixer platform. All gears, pulleys, chains, sprockets and other dangerous moving parts shall be thoroughly guarded. Ample and unobstructed passage shall be maintained at all times in and around the truck loading area. All equipment and exposed high temperature lines, so located as to endanger personnel or create a fire hazard, shall be properly guarded or suitable insulated.

(b) Special Requirements for Batch Mixing Plants

(i) Plant Scales:

Scales for any weigh-box or hopper shall be of standard make and design, either of the beam or springless dial type, sensitive to 0.5 % of the maximum load that may be required. When of the beam type, there shall be a separate beam for each size of aggregate with a single telltale actuated by each separate beam, and a tare beam for balancing the hopper. Standard test weights shall be provided for checking the accuracy of the plant scales.

(ii) Weigh-Box:

The equipment shall include means for accurately weighing each size of aggregate in a weigh-box suspended on scales, ample in size to hold a full batch without hand raking or running over. The weigh-box shall be supported on fulcrums and knife edges so constructed that they will not be easily thrown out of alignment or adjustment. The gates on both the bins and the weigh-box shall be so constructed as to prevent leakage of aggregate when closed.

(iii) Bitumen Bucket:

A bitumen bucket shall be used for weighing the bitumen. It shall have sufficient capacity to hold less than 15 % of the rated capacity of the mixer. It shall be steam-jacketed or equipped with properly insulated electric heating units, and shall be suspended on dial or beam scales equipped with a telltale so that the weight of the bucket will be shown for each weighting and the net weight of bitumen measured accurately to within 1 % above or below the weight required. The bucket shall be so arranged that the heated bitumen will be delivered in a thin, uniform sheet or in multiple streams over the full width of the mixer, except in the case of a mixer where the bitumen is sprayed.

An accurate flow meter may be substituted for a bitumen bucket subject to performance checks which satisfy the Project Manager.

(iv) Mixer Unit for Batch Method:

The plant shall include a batch mixer of an approved steam-jacket, twin-pugmill type and shall be capable of producing a completely uniform mixture. The batch capacity of the mixer shall not be less than 1 tonne. The mixer shall have an accurate time lock to control the operation of the complete mixing cycle by locking the weigh-box gate after charging the mixer, until the closing of the mixer gate at the completion of the cycle. The time lock shall lock the bitumen bucket throughout the dry-mixing period and shall lock the mixer gate throughout the dry and wet mixing periods. The dry-mixing period is defined as the interval of time between the opening of the weigh-box gate and the application of the bitumen; the wet-mixing period is the interval between the application of the bitumen and the opening of the mixer gate. The control of the timing shall be flexible and capable of being varied at intervals of not more than 5 seconds throughout cycles up to 3 minutes.

A mechanical batch counter shall be installed as part to register only the actuation of the bitumen bucket release and to preclude the register of any dry batches or the register of any material through the operation of pulling bins. If not enclosed, the mixer box shall be equipped with an adjustable hood to prevent loss of fine material by dispersion. The clearance of the blades from all fixed parts shall not exceed 20 mm.

(c) Special Requirements for Continuous Mixing Plants

(i) Gradation Control Unit:

The plant shall include a means for accurately proportioning each bin size of aggregate either by weighing or by volumetric measurement. When gradation control is by volume, the unit shall include a feeder mounted under the compartment bins. Each bin shall have an accurately controlled individual gate to an orifice for volumetrically measuring the material drawn from each respective bin compartment. The orifice shall be rectangular approximately 200 mm by 230 mm with one dimension made adjustable by positive mechanical means provided with a lock.

Indicators shall be provided on each gate to show the gate opening in millimetres.

(ii) Weight Calibration of Aggregate Feed:

The plant shall include a means for calibration of gate openings by means of weight test samples. The materials fed out of the bins through the individual orifices shall be by-passed to a suitable test box. Material from each compartment shall be confined to a separate box section. The plant shall be equipped to handle conveniently such test samples weighing up to 400 kg and to weigh them on accurate platform scales. Mechanical means shall be provided to accurately proportion the filler to the mixing unit.

(iii) Synchronisation of Aggregate and Bitumen Feed:

Satisfactory means shall be provided to afford positive interlocking control between the flow of aggregate from the bins and the flow of bitumen from the meter or other proportioning device in order to ensure the accurate and uniform proportioning of bitumen. This control shall be accomplished by interlocking mechanical means or any positive method subject to approval by the Project Manager.

(iv) Mixer Unit for Continuous Method:

The plant shall include a continuous-mixer of an approved, steam-jacketed, twin-pugmill type and shall be capable of producing a completely uniform mixture. The paddles shall be of a type adjustable for angular position on the shafts and reversible to retard the flow of the mix. The mixer shall carry a manufacturer's plate giving the net volumetric contents of the mixer at the several heights inscribed on a permanent gauge and also giving the rate of feed of aggregate per minute at plant operating speed. Unless otherwise required, mixing time shall be determined by the following formula:

$$\begin{array}{l} \text{Mixing time} \\ \text{in seconds} \end{array} = \frac{\text{Pugmill dead capacity in kg}}{\text{Pugmill output in kg per second}}$$

506.13 Equipment

All equipment, tools and machines used in the performance of the work covered by this section of the Specification shall be subject to the approval of the Project Manager, and shall be maintained in satisfactory working condition at all times.

- a) **Mechanical Spreaders & Finishers:** The spreaders and finishers shall be self-propelled, equipped with hopper, distributing screws and a heated adjustable screed on a frame supported at one end within the wheel-base or track length and arranged to reduce the effect of an uneven surface.

They shall be capable of adjusting and laying to the required width and profile without causing segregation, dragging, burning, irregularities or other surface defects, and of being operated at a speed consistent with a character of the mix and the thickness of the course being laid, so as to produce a surface having a uniform density and surface texture.

They shall be capable of using elevation guidance from laser beam and/or elevation wire, and shall be capable for setting the required transverse slope.

- b) **Power Rollers:** The roller to be used for commencing compaction shall be a 6 - 8 tonnes or 8 -10 tonnes tandem roller with a variable drive roll pressure and a multi-wheel pneumatic tyred roller with tyres capable of being inflated to a pressure of at least 0.7 n/mm². The roller to be used for completing compaction shall be a 10 - 12 tonnes tandem or three-wheel roller with a rear roller pressure variable up to at least 5 kg/mm of roller width.

Rollers shall be equipped with adjustable scrapers, water tanks, and sprinkling apparatus, which shall be used to keep the wheels wet for the purpose of preventing the bituminous mixture from sticking to the wheels. The roller shall be capable of reversing without backlash.

- c) **Power Blowers and Power Brooms:** Blowers and brooms shall be suitable for cleaning the surface to be paved.
- d) **Small Tools:** The small tools shall consist of rakes, shovels, tempers, pavement cutters, wood sandals and stilt sandals of standard type, and other small tools as may be required.

506.14 Weather Limitations

Bituminous pavement material shall not be mixed when the moisture content of the aggregate is such as to interfere with the uniformity of the mixing temperatures or with continuous plant operations. It shall not be laid when the underlying layer is damp, or when it has pools of water, or during rainfall or when the temperature of the underlying layer or ambient temperature is below 5°C.

506.15 Preparation of Surface

- a) Immediately before applying the surfacing the existing surface shall be in a condition in all ways complying with the requirements of the Specification and thoroughly, cleaned of all loose or foreign matter.

Where no asphalt grid is laid, the existing bituminous surface shall be tack-coated, just sufficiently in advance of the placement of the bituminous mixture so as to provide a thin adhesive film of bitumen to ensure a good-bond. The rate of spray of tack coat is 0.5 l/m² or as adjusted by the Project Manager. Should it be necessary to apply a tack-coat a second time because the previous surface has become dusty or has lost its freshness through delay in laying surfacing on it, or through negligence, than the re-application of tack-coat shall be at the expense of the Contractor.

506.16 Mixing

Bituminous material shall be produced in an approved plant as specified.

- a) Preparation of Aggregate: Aggregate shall be furnished in several sizes. Each size and/or type of aggregate as delivered shall be stockpiled separately. Where cold feeder bins are used each aggregate size shall be placed in a separate bin. Aggregates shall be handled and transported between the crushing and screening plant and the stockpiles or cold-feed bins of the dryer and mixer, and between stockpiles and the dryer, by plant and methods which shall ensure that segregation does not occur, and that moisture content variations are not large enough to affect the uniformity of the temperature of heated aggregate at entry to the mixer. Aggregates shall not be permitted to roll down the slopes of stockpiles in either placing or feeding to the dryer. Stockpile layers of aggregate with moisture contents differing sufficiently to affect the uniformity of the temperature shall not be worked simultaneously. The mechanical feeders shall be adjusted to provide delivery of the desired proportions to the dryer. The aggregate shall be heated and thoroughly dried before entering the hot bins. The temperature of the aggregate, determined as it enters the mixer, shall be such that the temperature of the finished mixture will be within the range specified. The heated and dried aggregates shall be screened and conveyed to separate bins ready for mixing with the bitumen, and shall be separated into at least three sizes as designated or approved by the Project Manager. Filler may be batched without heating.
- b) Preparation of Bituminous Mixtures: The aggregates without filler, prepared as specified above, shall be accurately weighed or measured, and conveyed into the mixer in the proportionate amounts of each aggregate size required to meet the Job-Mix Formula. The required amount of bitumen for each batch, or calibrated amount for continuous mixing, shall be introduced into the mixer. In batch mixing, the bitumen shall be added after the aggregates have been introduced into the mixer and mixed for 5 to 10 seconds. In both types of plant the filler shall be added after the bitumen, and mixing shall continue for at least a minute

after addition of the filler, and as much longer as may be required to obtain a homogeneous mixture.

The temperature of the aggregate and bitumen at entry into the mixing chamber shall be chosen within the above limits stated in ZTV Asphalt StB 94 and having regard to the prevailing air temperature and haulage distance to ensure that the temperature of the mix is between not lower than 130°C for the binder and 140°C for the surface layer when it is laid. Thermometers reading between 120°C and 200°C shall be provided in the bitumen heating tank and for use in the mixing chamber or at its discharge point. Thermometers for observing air and surface temperatures between 0°C and 80°C and for observing mix temperatures between 100°C and 200°C shall be provided at each laying point.

The volume of the aggregate and bitumen shall not be so great as to extend above the tips of the mixer blades when the blades are in a vertical position. All overheated and carbonised mixtures, or mixtures which foam or show indication of moisture, will be rejected. When moisture is detected in the finished mixture, all aggregates in the bins shall be removed and returned to the stockpiles.

506.17 Transportation

The bituminous materials shall be transported from the mixing plant to the spreader in trucks having tight, clean, smooth beds and sides which have been treated to prevent adhesion of the mixture to the truck bodies. A thin film of soapy water or lubricating oil may be used to prevent adhesion but gasoline, kerosene or other solvents shall not be used for this purpose. Deliveries shall be made so that spreading and rolling of all the mixtures prepared for a day's run can be completed during the shift and artificial light approved by the Project Manager shall be provided for night work. Any wet loads will be rejected. Hauling over freshly laid material will not be permitted.

506.18 Placing

Mixtures which have a temperature of less than 130°C for the binder and 140°C for the surface layer when dumped into the spreader will be rejected. The spreader shall be adjusted and the speed regulated so that the surface of the course will be smooth and of such depth that, when compacted, it will conform to the cross section shown on the drawings. Hand dressing or adjustment of the machine laid course will not be permitted without the express approval of the Project Manager. Laying width shall be proposed by the Contractor for approval by the Project Manager. The precise laying arrangements are to be submitted to and agreed by the Project Manager before work commences. When forming a hot longitudinal joint the 150 mm strip along the edge against which additional material is to be laid shall not be rolled until such additional material is placed, except when the work is to be discontinued. After the first lane has been placed and rolled, the adjacent lane shall be placed while the unrolled 150 mm strip is hot and in readily compactable condition. Where work is discontinued rolling shall be carried to the edge of the laying width and cold joints shall be formed on a vertical edge cut 100 mm in from the edge of the rolled mix and thinly coated with hot bitumen prior to re-commencement. Initial rolling of the adjacent lane shall begin along the joint. Placing of the surfacing shall be as continuous as possible.

Only in areas where the use of machine spreading is impractical may the mixture be spread by hand and carefully dressed with rakes. If satisfactory results are not achieved, the Project Manager may direct that the Job-Mix Formula be varied for these areas. The loads shall not be dumped any faster than can be properly handled by the shovellers and rakers. Contact surfaces of previous constructed concrete pavement, kerbs, manholes, and similar structures shall be painted with a thin coat of bitumen prior to placing the bituminous mixtures.

506.19 Compaction

The mix shall be rolled immediately after laying and before its temperature has fallen below 105°C by tandem and pneumatic rollers as specified and such rolling shall be continued only for so long as it is effective and does not have any detrimental effect. The above minimum rolling temperature may be lowered at the sole discretion of the Project Manager if this is necessary to ensure the best results in this initial rolling. Compaction of the mix shall, if necessary, be continued by heavier rollers and it shall be completed by a tandem roller or three-wheel roller imposing at least 5 kg/mm of roller width. This further and final compaction shall be carried out when the temperature of the mix is low enough to avoid any detrimental effect but still high for the rollers to work effectively and compact the mix to the density specified. Compaction of bituminous pavements shall include rolling by pneumatic tyred rollers with tyres inflated to 0.7 N/mm². This rolling shall be carried out when the mix is at a temperature low enough to avoid displacement of the mix or over-compaction, but high enough to permit compaction with the kneading action of the tyres.

Final rolling shall be carried out parallel to the lanes and shall start at the extreme sides of the lanes and proceed towards the centre of the surfacing, overlapping on successive trips by one-third of the width of the rear wheel of the three-wheel roller. On superelevated curves, rolling shall begin at the low side and progress towards the high side. Alternate trips of the roller shall be of slightly different lengths. Tests for conformity with the smoothness specified shall be made by the Contractor immediately after initial compaction, and any deviations in excess of the specified tolerances shall be corrected. The speed of the rollers shall not exceed 5 km per hour and shall at all times be slow enough to avoid displacement of the hot mixture. Any displacement of the mixture occurring as the result of reversing the direction of the roller, or from any other cause, shall be corrected. Rolling of the surfacing shall be continued until all roller marks are eliminated and a density of at least 98 % of the maximum density achieved during the Job-Mix Formula determination has been attained.

During rolling, the wheels of the rollers shall be moistened to prevent adhesion of the material to the wheels, but an excess of water will not be permitted. The rollers shall be operated by competent and experienced roller drivers. The minimum of rollers to be furnished by the Contractor shall be adequate to implement the optimum compaction procedures determined during trail pavement construction for each spreading machine in operation. In all places not accessible to the rollers the mixture shall be thoroughly compacted with vibrating plates, and operated vibrating rollers or with hot hand tampers weighing not less than 15 kg with a tamping face of not more than 0.03 m². Skin patching of an area that has been rolled will not be permitted. Any mixture that becomes mixed with foreign material, or is in any way defective, shall be removed and replaced with fresh, and compacted as specified.

The rollers shall not be permitted to stand on surfacing which has not been fully compacted. All necessary precautions shall be taken to prevent the dropping of oil, grease, gasoline, or other foreign matter on any bituminous course.

506.20 Joints

All joints shall present the same texture, density and smoothness as other areas of the surfacing. The joints between old and new lanes, or sections, shall be carefully made in such manner as to ensure a continuous bond between the old and new pavement. All trimmed contact surfaces shall be coated with a thin, uniform coat of hot bitumen before a fresh mixture is placed.

- a) Transverse: The roller shall pass over the unprotected end of the freshly laid mixture only when laying of the surfacing is to be discontinued for such length of time as to permit the mixture to become cold. The end of the previously laid section shall be trimmed to expose an even, vertical face for the full thickness of the course. The fresh mixture shall be raked uniformly against the joint and initial compaction secured with the tandem roller, followed by regular rolling.
- b) Longitudinal: When the edges of the longitudinal joints are irregular, honey-combed, or poorly compacted, all unsatisfactory sections of joint shall be trimmed to expose an even, vertical face for the full thickness of the course. Fresh mixture shall be raked uniformly against the joint, followed by rolling.

506.21 Inspection of Plant and Equipment

The Project Manager shall have access at all times to all parts of the mixing plant for checking the adequacy of the equipment in use, inspecting the operation of the plant, verifying weights, proportions, and character of materials and checking temperatures being maintained in each portion and of the completed mixture.

506.22 Sampling and Testing

The Contractor shall be responsible for carrying out the following tests during all times that mixing and laying work is in operation:

- a) The grading of the aggregate in each bin or at each stockpile extraction point and the grading of the combined aggregate shall be determined at intervals not exceeding two hours during mixing.
- b) The bitumen content, the particle size analysis and the Marshall stability, flow value and voids shall be determined at intervals not exceeding:
 - (i) two hours during mixing for:
 - the first 20 working days, or
 - for the first 10 working days after any change of material or mixing technique, or
 - for 2 working days after any unsatisfactory result, and
 - plus in all three cases such longer period as the Project Manager may require in the event uneven or unsatisfactory results being obtained during these periods, and
 - (ii) four hours after the above periods.

In addition, the Contractor shall submit to the Project Manager suitable sized samples of all aggregates and bitumen required for tests (1) and (2) above at least 20 days before laying is commenced, and of each day's production of aggregate, and of each batch delivery of bitumen.

The Contractor shall allow for the cost of complying with all the above in his rates for surfacing.

506.24 N/A**506.25 Standards**

All pavement works, material, equipment and sampling and testing are to be in accordance with the following German Standards:

- 1) All pertinent DIN Standards of the "Deutsches Institut für Normung", especially

DIN 1995	'Bituminous Binder'
DIN 1996	'Testing of Bituminous Constructions'
DIN 52 001 - 52 045	'Testing of Bituminous Binder'
DIN 55 946	'Bitumen'
DIN 66 100	'Gradation'

- 2) ZTV bit - Stb 84/90

Technische Vorschriften und Richtlinien für den Bau von Fahrbahndecken aus Asphalt Teil 3 (Technical Instructions and Standards for the Construction of Bituminous Roads Pavements, Part 3)

- 3) ZTVT Stb 95

Zusätzliche Technische Vertragsbedingungen und Richtlinien für den Bau von Tragschichten.

- 4) ZTV Asphalt StB 94

Technische Vorschriften und Richtlinien für den Bau von Fahrbahndecken, aus Asphalt (Technical Instructions and Standards for the Construction of Bituminous Roads Pavements)

- 5) TMin-StB Teil 4.3.1

- 6) M SNAR

506.26 Testing of Bituminous Layers

The construction control tests on bituminous layers shall consist of the determination, 150 mm diameter samples of the full depth of the layer, of density, percentage voids in mix, percentage voids filled with bitumen and bitumen content as a percentage by weight of the whole mix. These tests shall be carried out on samples taken at a frequency of one for every 6,000 m² laid.

600 Excavations , Demolition Works , Backfill**601 Excavations for Demolition Works , Foundations or Structures**

Excavations for Demolition Works and execution of foundations have to be carried out taking into account appropriate safety measures, as shaping of sides of excavation – pits or use of shoring – or supporting material in case of narrow or limited space. Excavations have to be executed to the depth as instructed by the Project Manager

For excavations of more than 1.75 m depth, the sides of excavation pits have to be shaped with an inclination of 1 : 1.5.

For excavations exceeding 5.00 m depth, berms of 4.00 m width have to be constructed, after reaching the depth of 5.00 m and then for every 7.50 m excavation – depth.

For excavations in limited or narrow space, exceeding a depth of 1.75 m appropriate shoring – or supporting equipment to the satisfaction of the Project Manager has to be used.

Should excavations be effected to a greater depth or width than is necessary, the Contractor shall backfill the excess excavation with approved materials, compacted to the density of the adjacent ground, to the correct levels and dimensions.

The Contractor shall carefully set aside the various suitable materials encountered so that they may be reused for backfilling. If excavated materials are unsuitable the Contractor shall dispose them in spoil areas.

Where, in the opinion of the Project Manager, the surface of the excavation has become soft or unsuitable due to the Contractor's method of working, the Contractor shall at his own expense remove and replace the unsuitable material with non-structural concrete or other material acceptable to the Project Manager.

Where ground conditions are such that a satisfactory foundation cannot be achieved the Contractor shall remove the unsuitable material either until a suitable material is encountered or to the depth and width agreed by the Project Manager. The Contractor shall backfill the resultant excavation with approved material to a dry density of 95 % MDD (AASHTO T180).

The final excavated surface in soft material on which structures are to be constructed shall be compacted to a dry density of at least 92 % MDD (AASHTO T180) to a depth of 150 mm.

602 Demolition works

Demolition works have to be carried out to the depths as directed by the Project Manager. All Material as instructed has to be removed from the excavation pits and transported to a spoil area within the vicinity of the project zone, as directed by the Project Manager.

The excavation area shall be cleared, smoothed and levelled after completion of demolition works, to enable either construction of structures or backfill of the excavation – pit.

Costs for transport and haulage of material shall be included in the Unit Rates.

603 Backfill of excavations and structures

Backfill for excavations outside the limits of the construction area shall be executed with suitable fill material to the density of the surrounding area.

Backfill for excavations and excavation – pits located under future permanent works, as roads or structures, shall be backfilled as prescribed in Chapter 300, Earthworks.

Backfill for structures shall be executed with selected backfill material, either suitable from the excavation or obtained from borrow pits. All backfill whether from excavated material or borrow pits shall have a CBR of at least 10 % measured after 4 day soak on laboratory specimens compacted to 95 % MDD (AASHTO T180), a Plasticity Index of less than 25 %, a maximum particle size of 20 mm and shall be compacted to a dry density of 95 % MDD (AASHTO T180). in layers not exceeding 200 mm thickness.

Backfill behind headwalls and wingwalls of bridges shall be executed with gravelithic, well graded material subject to the approval of the Project Manager, and as per GOST 1026 - 74

604 Base – layers under Foundations and Gabions

The bottom of the excavation shall be compacted to 95 % MDD (AASHTO T180) prior to the placement of granular layer and concrete foundation , (92% MDD under placing layer for Gabions)

Where ground conditions are such that a satisfactory foundation at final excavation-level cannot be achieved the Contractor shall remove the unsuitable material either until a suitable material is encountered or to the depth and width agreed by the Project Manager. The Contractor shall backfill the resultant excavation with approved material to a dry density of 95 % MDD (AASHTO T180).

A layer of crushed base – material shall be placed and compacted under foundations, in accordance with GOST 1026 – 74.

A layer of gravel – material of gradation 20/80 mm, thickness 200 mm, shall be placed, levelled und compacted to the satisfaction of the Project Manager under Gabions.

The Unit rates are deemed to include all related costs for extraction, haulage and placing.

605. N/A

606. N/A

607. N/A

608. N/A

609. N/A

610. Gabions

Gabions shall be 'Maccaferri' boxes and/or 'Reno' mattresses both with diaphragms at 1 metre centres, or similar approved. The maximum mesh size shall be 100 mm x 120 mm for boxes and 60 mm x 80 mm for mattresses. The wire used for the construction of gabions shall be either of appropriate hard plastic material or plastic coated and unless otherwise instructed by the Project Manager and comply with the requirements shown below

Wire for Gabion Construction

		Diameter (mm)	Galvanising (g/m ²)
Mesh	Box	3.4	275
	Mattress	2.7	260
Binder	Box	2.2	240
	Mattress	2.2	240
Selvedge	Box	3.9	290
	Mattress	3.4	275

The alignment of the gabion shall be correct within a tolerance of 100 mm of the instructed alignment and the level of any course of gabion shall be correct to within a tolerance of 50 mm of the instructed level. In addition adjacent gabions shall not vary by more than 25 mm in line and/or level from each other.

The pre-packed elements of gabions shall be of dimensions 2,00 x 1,00 x 0,50 m and 2,00 x 1,00 x 1,00 m and arranged as shown on the standard drawings.

The surface upon which gabions are to be laid shall consist of gravel material and be compacted to a minimum dry density of 90 % MDD (AASHTO T180) and trimmed to the instructed level or shape.

Joints in gabions shall be stitched together with 600 mm minimum lengths of binder wire, with at least one stitch per 50 mm, and each end of the wire shall be fixed with at least two turns upon itself.

Adjacent gabions shall be stitched together with binder wire along all touching edges.

Gabion boxes shall be laid with broken bond and throughout to avoid continuous joints both horizontally and vertically.

All wire shall be to BS 1052 having a tensile strength of not less than 40 kg/mm² and plastic coated or appropriate plastic material produced by a reputable manufacturer, subject to the approval of the Project Manager.

Galvanising shall comply with the requirements of BS 443.

Gabions shall be constructed to the shapes and dimensions as shown on the Drawings or given in the Special Specification or as directed by the Project Manager. Gabions, as constructed shall be within a tolerance of $\pm 5\%$ on the height or width instructed and $\pm 3\%$ on the length instructed.

Gabions shall be handpacked with broken rock of 150 mm minimum dimensions and 300 mm maximum dimension. The sides shall be packed first in the form of a wall, using the largest pieces, with the majority placed as headers with broken joints to present a neat outside face. The interior of the gabion shall be hand packed with smaller pieces and the top layers shall be finished off with larger pieces. The whole interior and top layers shall be packed tight and hammered into place.

At the back face and ends of completed gabion work or where shown on the Drawings or instructed by the Project Manager the existing soil shall be backfilled, thoroughly compacted against the sides of the gabions and finished flush with the top surface of the gabion.

611. N/A

612. Cleaning and Maintenance

The Contractor shall be responsible for maintaining all structures, channels and drains free of silt and extraneous material until the end of the Contract, including the Defects Liability Period or its equivalent and shall repair any damage to the Works caused by his failure to maintain the drainage system.

613. N/A

614. N/A

700 Bridges

Standards for Structural Repairs, Extension, Widening, or Replacement of Bridges

These specifications consist of

PART I Specifications, and
PART II Special Specifications

PART I Specifications

Preamble

- 1 The Specifications have been based on British Standard BS and German Standard DIN and such other national and/or international standard deemed appropriate.
- 2 The numbering of clauses in these Specifications is as much as possible related to the British Standard Specification which has been referred to in preparation of the Technical Specification and which has been edited for the particular purposes of this Contract but the Specification printed in this Document shall rule except where specified otherwise.
- 3 For convenience and in order to establish the minimum standard of quality, reference has been made to certain British, German, American and other International Standards in this Specification. Subject to the approval of the Project Manager any other national or international accepted Standard which maintains the standard of quality may be used.
- 4 Where trade names or manufacturers catalogue reference numbers are mentioned in the Specifications or Bill of Quantity, they are intended only to serve as a guide to the type of article or material required. The Contractor may use any article or material similar and equal to those specified subject to approval of the Project Manager and shall give where stated in the Bill of Quantity the manufacturer and type of offered material.
5. The Contractor shall elaborate, provide and submit Detailed Execution Drawings for structures, including all related and necessary calculations, for the approval of the Project Manager.
The Detailed Execution Drawings shall be based on the Standard Drawings, as issued by the Project Manager.
The costs for the calculation, elaboration, provision and eventual revision of the Detailed Drawings to the satisfaction of the Project Manager shall be included in the Unit Rates for Structural Items, as entered into the Bill of Quantities by the Contractor.
6. This Specification for Bridge Works includes the following chapters:
 - A Investigation for Bridge Foundations
 - 1400 Formwork and Surface Finish for Structures
 - 1300 Piling for Structures
 - 1500 Steel Reinforcement for Structures
 - 1600 Concrete for Structures
 - 2700 Testing of Materials and Workmanship

A Investigations for Bridge Foundations, (where applicable)

The contractor shall carry out all necessary soil investigations for the foundations of the bridges, wherever applicable for construction and where directed by the Project Manager, to get all information concerning subsoil conditions needed for the design and construction of the foundation. All investigation results have to be submitted to the Project Manager.

The investigations shall be done by drilling and static penetration tests. The contractor may in addition use different investigations methods, as he deems necessary. The minimum requirements for each bridge regarding number of investigation points, sampling and testing are listed below:

For each Abutment:

2 Boreholes

Core drilling, rotating with sampling, testing and recording according international standards to the required depth as described below.

2 Static (Dutch) Cone Penetration Tests

With device to continuously measure and record cone resistance and friction according international standards to the required depth.

For each Pier:

2 Boreholes

Core drilling, rotating with sampling, testing and recording according international standards to the required depth as described below.

1 Static (Dutch) Cone Penetration Tests

with device to continuously measure and record cone resistance and friction according international standards to the required depth.

Boreholes:

The Boreholes shall be executed by core drilling, rotating method with an internal diameter (core sample diameter) of at least 100 mm. It is required to recover the complete core over the full depth of the borehole showing all subsoil layers. During drilling a borehole log sheet according international standards (as German DIN 4022, Part 2 and Part 3 or similar) has to be filled for each borehole recording all relevant data regarding drilling tools, procedure, soil and ground water table. A copy of the borehole log has to be submitted to the Project Manager after completion of the borehole.

The cores have to be placed in wooden core boxes, adequately marked for inspection by the Project Manager and have to be stored at site (Laboratory Storage Room) until the end of the contract period.

Static Cone Penetration Tests:

The Tests have to be carried out with equipment capable of continuously recording the cone resistance and friction during the penetration process. The Testing Equipment should be capable to produce a static load of at least 200kN and reach the required depth. A copy of the test results has to be submitted to the Project Manager.

Sampling:

In addition to the complete cores, undisturbed samples have to be taken during the drilling works. From each type of soil, but at least each 2,5m depth an undisturbed sample (length around 30 cm, sample diameter 100mm) has to be taken according international standards. The samples have to be marked, sealed and send for testing to a laboratory accepted by the Project Manager.

Laboratory Testing:

The undisturbed samples should be tested to determine at least the following properties of the soils:

- Grading
- Density
- Natural moisture content
- Atterberg Limits (Plastic and Liquid Limit, PI)
- Shear Values (Internal angle of friction, cohesion)
- Elasticity Modulus (Compression test, Oedometer Test)

If rock is encountered at least the following tests on a core sample should be carried out:

- Description of the Petrography
- Unconfined Compression Test
- Point load Test

In-Borehole Testing:

Standard Penetration Tests (SPT acc. ASTM or similar) shall be carried out in the borehole starting at a depth of 3 m below existing ground in an interval of 3,0m. Below a depth of 15 m the SPT shall be carried out each 1,5m until the final depth of borehole is reached.

Depth of Boreholes and Penetration Tests

Boreholes and Static cone penetration tests have to go below the assumed level of the pile foot. For single piles, that are piles with no influence or interaction with neighboring piles, the investigation depth should be at least three times the pile diameter deeper than the pile foot. For a group of piles with a rectangular arrangement the investigation depth should be the length of the smaller side of the rectangle deeper than the deepest pile, but not less than 4 m.

If rock is encountered the boring should go at least 2,0 m into sound rock below the foot of the pile.

Pile load test:

For each bridge at least one pile load test has to be carried out. The pile(s) to be tested will be chosen by the Engineer.

The pile load Test shall be carried out in accordance with GOST 5686 - 78

In his proposed working – schedule, the contractor shall allow for at least 30 days for the elaboration of eventual design changes, following the result of the pile load test.

The above listed investigation, testing and sampling program is a minimum requirement. The contractor may carry out in addition different and supplementary investigations, as he deems necessary.

1300 Piling for Structures

1301 General

- 1 Piling shall conform in all respects with the principles contained in British Standard Code of Practice CP 2004: Foundation.
- 2 In addition to submitting the records required under Clause 1305, the Contractor shall report immediately to the Engineer any circumstance which indicates that the ground conditions differ from those expected by the Contractor from his interpretation of the soil survey so as to affect materially the bearing capacity of the pile.
- 3 Maximum permitted tolerances are:
 - Position 75 mm in either direction at cut-off level
 - Verticality 1 in 75 deviation from vertical
 - Rake 1 in 25 deviation from specified rake
- 4 Where piles have not been positioned within the limits described in the Contract, no method of forcible correction will be permitted.

1302 Precast Concrete Piles

General

- 1 The manufacture, storage, handling and lengthening of reinforced concrete and pre-stressed concrete piles shall comply in all respects with Series 1400-1700 of this Specification, with the following amplifications:
 - (i) Piles shall be supported, handled and pitched, as described in the Contract.
 - (ii) Where piles have to be stored, they shall be placed on sufficient supports on firm ground to avoid damage by excessive bending.
 - (iii) Each pile shall be marked indelibly to show its identification number, length and date of casting. Pre-stressed concrete piles shall be marked with the pre-stressed force applied.

Driving

- 2 Piles shall not be driven until at least 28 days after casting unless agreed by the Engineer. The Engineer shall be notified 24 hours before the commencement of driving. Piles shall be driven to the set or depth and in the sequence of driving approved by the Engineer. The set shall be taken in the presence of the Engineer or his Representative unless permission to the contrary has been obtained in writing.

Lengthening of Piles

- 3 Unless another method is approved by the Engineer, the main or splicing reinforcement shall be stripped of concrete for a distance of 40 times its diameter and additional reinforcement securely tied in position. Alternatively, subject to the Engineer's approval, the reinforcement may be exposed for a minimum distance of 300 mm and additional reinforcement butt welded in position.
- 4 Driving shall not be resumed until:

- (i) the cube strength of the concrete in the extension is at least equal to the specified 28 day cube strength of the concrete in the pile and
- (ii) the approval of the Engineer has been obtained.

Removal of Surplus Length

- 5 Any length of pile surplus to that required for incorporation in the substructure shall be cut off and removed.

Risen Piles

- 6 Piles which have risen as a result of driving adjacent piles shall be re-driven to the requirements of the Engineer.

1303 Cast-in-Place Piles

- 1 The Contractor shall arrange for his representative in charge of operations on the Site to be given written instructions including, as applicable, the method of boring, under-reaming or driving, length or set to be obtained, method of inspection, details of the concrete mix and the minimum time between the completion of one pile and the commencement of the next and the pattern of construction. A copy of these instructions shall be supplied to the Engineer and no piling shall begin until his approval has been given.

Inspection

- 2 Where practicable and unless otherwise agreed by the Engineer, all pile excavations or casings shall be inspected for their full length before concreting. The Contractor shall provide all the apparatus necessary for the inspection.

Reinforcement

- 3 Reinforcement shall be maintained in its correct position during concreting of the pile. Where it is made up into cages, they shall be sufficiently rigid to enable them to be handled without damage.

Concreting

- 4 Immediately after the excavation has been completed, the Engineer's approval to the commencement of concreting shall be sought and, when this has been obtained, concreting shall start forthwith and continue without interruption. All concrete for cast-in-place piles shall be compacted to produce a dense homogeneous mass by a method agreed by the Engineer. In a pile excavation which contains water the concrete shall be placed by means of a tremie tube.
- 5 The top of the pile shall be brought above the required finished level and any defective concrete removed to ensure satisfactory bonding of the pile head to the structure.

Withdrawal of Casings and Linings

- 6 When casings and linings are withdrawn as concreting proceeds, a sufficient head of concrete shall be maintained to prevent the entry of ground water or reduction of cross section of the pile excavation.

Driven Cast-in-Place Piles

- 7 When piles are formed within a tube which is subsequently withdrawn, the sequence of driving shall be such as to avoid damage to any unfilled pile excavation or completed pile. Precast concrete sections or steel tubes in which concrete is to be placed shall be free from damage before being installed.

Bored Cast-in-Place Piles

- 8 When required by the Engineer, the Contractor shall take from the pile excavation undisturbed soil samples in accordance with British Standard Code of Practice CP 2001: Site Investigations. Such samples shall be tested in an approved laboratory.
- 9 Excavations shall not be exposed to the atmosphere longer than is necessary and shall be adequately covered at all times when work is not in progress. The Contractor shall take all the precautions necessary to prevent the ingress of surface water or foreign matter. Lining tubes shall be provided for sufficient depth to ensure the stability of the pile excavation during boring and concreting operations.

1304 Steel Bearing Piles and Permanent Steel Sheet Piles**General**

- 1 The manufacture, storage, handling and lengthening of steel bearing piles and sheet piles shall comply with the relevant Specification with the following additions:
 - (i) Piles shall be supported, handled and pitched as approved by the Engineer.
 - (ii) Where piles have to be stored, they shall be placed on sufficient supports on firm ground to avoid damage by excessive bending.
 - (iii) Each pile shall be marked indelibly to show its identification number, grade of steel and length.
 - (iv) Before despatch from the manufacturer's works, the piles shall be protected by an appropriate method as approved by the Engineer.
- 2 H piles of steel shall not be used.

Driving

- 3 The Engineer shall be notified 24 hours before the commencement of driving. Piles shall be driven to the set or depth and in the sequence of driving approved by the Engineer. The set shall be taken in the presence of the Engineer unless permission to the contrary has been obtained in writing.

Lengthening of Piles

- 4 Full penetration butt welds shall be used for all pile lengthening. Sections to be joined shall be maintained in true alignment and position. After welding, the affected area shall be thoroughly cleaned and protected in the same way as adjacent surfaces.

Surplus Length of Piles

- 5 Any length of pile surplus to that required for incorporation in the substructure shall be cut off and removed.

Risen Piles

- 6 Piles which have risen as a result of driving adjacent piles shall be re-driven to the requirements of the Engineer.

1305 Piles Records

- 1 A record of all piles driven or installed shall be kept by the Contractor and a copy of the record of the work done each day shall be given to the Engineer within 24 hours.
- 2 The record shall consist of the information listed in Table 13/1.

Table 13/1 Piling Records

Cast-in-Place				
All Piles	Precast	All types	Bored	Driven, Steel
Date	Dimensions	Nominal diameter	Diameter of any under-ream	As for pre-cast
Identification	Depth driven	Length of finished pile excluding any enlarged base	Details of strata penetrated	
Level of the ground at the commencement of operations	Sequence of driving in groups	Time interval between boring or driving and concreting of any pile not completed in the working day		
	Final set for the last 10 blows			
Details of any circumstance previously notified to the Engineer under Clause 1301	Type and weight of hammer used	Volume of concrete placed in the pile and enlarged base		
	Type and condition of the packing on the pile head and the dolly on the helmet			
Any other information required by the Engineer	For a single-acting hammer, the final drop			
	For a double-acting hammer the final frequency of blows			
	Details of any interruption in driving			
	Details of re-driving			

- 3 On completion of the piling, the Contractor shall deliver to the Engineer a drawing recording the final depths of all piles relative to Ordnance Datum.

1400 FORMWORK AND SURFACE FINISH FOR STRUCTURES

1401 Construction

- 1 Formwork shall include all temporary or permanent forms required for forming the concrete, together with all temporary construction required for their support.
- 2 All formwork shall be so constructed that there shall be no loss of material from the concrete. After hardening the concrete shall be in the position and of the shape, dimensions and surface finish described in the Contract.
- 3 Where internal metal ties are permitted, they or their removable parts shall be extracted without damage to the concrete and the remaining holes filled with mortar. Unless otherwise specified permanently embedded metal part shall have less than 40 mm cover to the finished concrete surface or the specified cover to the reinforcement whichever is the greater.

1403 Preparation of Formwork before Concreting

- 1 The inside surfaces of forms shall, except for permanent formwork, or unless otherwise agreed by the Project Manager, be coated with a release agent approved by the Project Manager. Release agents shall be applied strictly in accordance with the manufacturer's instructions and shall not come into contact with the reinforcement or anchorages. Different release agents shall not be used in formwork to concrete which will be visible in the finished Works.
- 2 Immediately before concreting, all forms shall be thoroughly cleaned out.

1404 Removal of Formwork

- 1,2,3 See paragraph 3.11.4 of Special Specifications
- 3 Formwork shall be constructed so that the side forms of members can be removed without disturbing the surface forms and, if props are to be left in place when the surface-forms are removed, these props shall not be disturbed during the striking.
- 4 All formwork shall be removed without damage to the concrete.
- 5 Where it is intended to re-use formwork, it shall be thoroughly cleaned and made good to the satisfaction of the Project Manager.

1405 Remedial Treatment of Surfaces

- 1 Any remedial treatment to surfaces shall be agreed with the Project Manager following inspection immediately after removing the formwork and shall be carried out without delay.
- 2 Any concrete, the surface of which has been treated before being inspected by the Project Manager, shall be liable to rejection.

1406 Protective Coating of Concrete Surfaces

The protective coating of concrete surfaces against backfill, or below ground level shall be effected with two layers of hot or cold bituminous material. The bituminous material used shall be the locally available material for such purposes.

1500 STEEL REINFORCEMENT FOR STRUCTURES

1501 General

- 1 Steel reinforcement shall be stored in clean conditions. It shall be clean and free from loose rust and loose mill scale at the time of fixing in position and subsequent concreting.

1502 Bending of Reinforcement

- 1 Reinforcement shall be bent to the dimensions given in the Bar Schedules.
- 2 All reinforcement shall be bent at temperatures in the range of 5 degrees Celsius to 100 degrees Celsius.
- 3 Cold worked bars and hot rolled high yield bars shall not be straightened or bent again once having been bent. Where it is necessary to bend mild steel reinforcement projecting from the concrete, the internal radius of bend shall be not less than twice the diameter of the bar.

1503 Placing of Reinforcement

- 1 Reinforcement shall be placed and maintained in the position shown in the Contract. Unless otherwise permitted by the Project Manager, all bar intersections shall be tied together and the ends of the tying wire shall be turned into the main body of the concrete. 1.2 mm diameter stainless steel wire shall be used for in situ members having exposed surfaces, 1.6 mm diameter soft annealed iron wire shall be used elsewhere.
- 2 No splices shall be made in the reinforcement except where described in the Contract or where approved by the Project Manager.

1504 Cover Blocks

- 1 Concrete cover blocks required for ensuring that the reinforcement is correctly positioned, shall be as small as possible consistent with their purpose of a shape acceptable to the Project Manager, and designed so that they will not overturn when the concrete is placed. They shall be made of concrete with 10 mm maximum aggregate size and the mix proportions shall comply to produce the same strength as the adjacent concrete. Tying wire shall be cast in the block for the purpose of tying it to the reinforcement. Spacers made of PVC may be used subject to the approval by the Project Manager.

1505 Welding of Reinforcement

- 1 Reinforcement in structures shall not be welded except where permitted by the Project Manager. All welding procedures shall be subject to the prior approval of the Project Manager in writing.

1600 CONCRETE FOR STRUCTURES

1601 Concrete Mix Design

- 1 Mixes for the grades of concrete shown in Table 16/1 shall be designed by the Contractor. The class of concrete is denoted by the minimum 28 day works cube strength and the maximum size of aggregate.
- 2 The cement content in any mix shall not exceed 550 kg/ m³ of concrete. The quantity of water used shall not exceed that required to produce a concrete with sufficient workability to be placed and compacted in the required location.

Table 16/1 Grades of Concrete

Grade	Characteristic strength N/mm ²
7.5	7.5
10	10.0
15	15.0
20	20.0
25	25.0
30	30.0
40	40.0
50	50.0
60	60.0

For prescribed mixes refer to BS 5400, Part 7, Table 2.

1602 Concrete for Ancillary Purposes (Class E)

- 1 Class E concrete shall be composed of ordinary Portland cement and aggregates complying with BS 882, including all-in aggregate within the grading limits of Table 3 of the British Standard.
- 2 The ratio of the combined or all-in aggregate to the cement shall not be more than 8:1 by volume or 10:1 by mass. No account need be taken of bulking.
- 3 The concrete shall be mixed by machine or by hand to a uniform colour and consistency before placing. The quantity of water used shall not exceed that required to produce a concrete with sufficient workability to be placed and compacted in the required location.
- 4 The concrete shall be compacted by hand or by mechanical vibration.

1603 Trial Mixes

- 1 No structural concrete shall be placed in the Works until the relevant mix has been approved by the Project Manager.
- 2 When the Contractor designs the mix, he shall, at least 35 days before the commencement of concreting, have trial mixes prepared in a laboratory to be approved by

the Project Manager. The concrete from each mix shall be tested in accordance with BS 2710 and must satisfy the strength requirements of Table 16/1.

- 3 When the mix has been approved, no variations shall be made in the proportions, the original source of the cement and aggregates, or in the type, size and grading zone of the latter without the consent of the Project Manager who may require further tests to be made.
- 4 The Project Manager may also require practical tests to be made on the Site by filling trial moulds to confirm the suitability of the mix for the Works. In these tests, the type of plant used for mixing, the method of compaction used, and the formwork face to the mould shall be similar in all respects to those intended for use in the Works.
- 5 When the Contractor intends to purchase factory-made pre-cast concrete units, the Project Manager may dispense with trial mixes and laboratory tests, provided that evidence is given which satisfies him that the factory regularly produces concrete which complies with the Specification. The evidence shall include details of mix proportions, water: cement ratio, workability and strengths obtained at 7 and 28 days.

1604 Admixtures, see paragraph 3.3.4 of Special Specifications

1605 Delivery and Storage of Materials

- 1 Cement shall be stored in a dry weather-proof shed with a raised wooden floor or in a silo and shall be delivered in quantities sufficient to ensure that there is no suspension or interruption of the work of concreting at any time. If stored in sheds, each consignment shall be kept separate and distinct.
- 2 Coarse aggregate, unless otherwise approved by the Project Manager, shall be delivered to the Site in separate sizes (2 sizes when the maximum size is 20 mm and 3 sizes when the maximum size is 37.5 mm or more).
- 3 All aggregates brought on to the Site shall be kept free from contact with deleterious matter and in the case of aggregates passing a 5 mm sieve they shall be deposited on the site of mixing for not less than 8 hours before use. Aggregates of different sizes shall be stored in different hoppers, or different stockpiles which shall be separated from each other.

1606 Mixing Concrete

- 1 The weighing and water-dispensing mechanisms shall be maintained in good condition. Their accuracy shall be maintained within the tolerances described in BS 1305 and checked against accurate weights and volumes when required by the Project Manager.
- 2 The mass of cement and each size of aggregate indicated by the mechanisms employed shall be within a tolerance of 2 percent of the respective mass per batch approved by the Project Manager. The mass of the fine and coarse aggregates shall be adjusted to allow for the free water contained in them. The water to be added to the mix shall be reduced by the quantity of free water contained in the fine and coarse aggregates, which shall be determined by the Contractor by a method approved by the Project Manager immediately before mixing begins and further as the Project Manager requires.
- 3 Unless otherwise approved by the Project Manager, concrete shall be mixed in a batch type mixer manufactured in accordance with BS 1305 or in a batch type mixer, a specimen of which has been tested in accordance with BS 3963 and having a mixing

performance within the limits of Table 6 of BS 1305. Where appropriate the batch capacity, method of loading, mixing time and drum speed shall conform to the details furnished in accordance with the requirements of BS 3963 for the mix which corresponds most closely to the mix proportions being used. The mixing blades of pan mixers shall be maintained within the tolerances specified by the manufacturer of the mixer and the blades shall be replaced when it is no longer possible to maintain the tolerances by adjustment.

- 4 Mixers which have been out of use for more than 30 minutes shall be thoroughly cleaned before any fresh concrete is mixed. Unless otherwise approved by the Project Manager, the first batch of concrete through the mixer shall contain only two-thirds of the normal quantity of coarse aggregate. Mixing plant shall be thoroughly cleaned before changing from one type of cement to another.
- 5 The temperature of water and cement when added to the mix, shall not exceed 80 degrees C and 65 degrees C respectively. If the temperature of the water exceeds 60 degrees C it shall be mixed with the aggregates before the cement is added.
- 6 During hot weather the Contractor shall ensure that the constituent materials of the concrete are sufficiently cool to prevent the concrete from stiffening in the interval between its discharge from the mixer and compaction in its final position.

1608 Sampling Concrete

- 1 Sampling shall be in accordance with the requirements given in BS 1881: Part 1. A single batch sampling procedure shall be adopted and the number, frequency and location of batches to be sampled shall be decided by the Project Manager.

1609 Transport and Placing

- 1 The method of transporting and placing concrete shall be to the approval of the Project Manager. Concrete shall be transported and placed that contamination, segregation or loss of the constituent materials does not occur.
- 2 All formwork and reinforcement contained in it shall be clean and free from standing water, immediately before the placing of the concrete.
- 3 Concrete shall not be placed in any part of the structure until the Project Manager's approval has been given.
- 4 If concreting is not started within 24 hours of approval being given, approval shall again be obtained from the Project Manager. Concreting shall then proceed continuously over the area between construction joints. Fresh concrete shall not be placed against in situ concrete which has been in position for more than 30 minutes unless a construction joint is formed in accordance with Clause 1611. When in situ concrete has been in place for 4 hours, or less as directed by the Project Manager depending upon the mix, type of cement and weather conditions, no further concrete shall be placed against it for a further 20 hours.
- 5 Concrete, when deposited, shall have a temperature of not more than 32 degrees Celsius. It shall be compacted in its final position within 30 minutes of discharge from the mixer unless carried in purpose-made agitators, operating continuously, when the time shall be within 2 hours of the introduction of cement to the mix and within 30 minutes of discharge from the agitator.

- 6 Except where otherwise approved by the Project Manager, concrete shall be deposited in horizontal layers to a compacted depth not exceeding 450 mm, where internal vibrators are used or 300 mm in all other cases.
- 7 Unless otherwise approved by the Project Manager, concrete shall not be dropped into place from a height exceeding 2 metres. When trunking or chutes are used they shall be kept clean and used in such a way as to avoid segregation.
- 8 No concrete shall be placed in flowing water. Underwater concrete shall be placed in position by tremie tube, or by pipeline from the mixer. Full details of the method proposed shall be submitted in advance to the Project Manager and his approval obtained before placing begins. Where the concrete is placed by a tremie tube, its size and method of operation shall be in accordance with British Standard Code of Practice, CP 2004: "Foundations". During and after concreting under water, pumping or de-watering operations in the immediate vicinity shall be suspended until the Project Manager permits them to be continued.

1610 Compaction of Concrete

- 1 All concrete shall be compacted to produce a dense homogeneous mass. Unless otherwise approved by the Project Manager, it shall be compacted with the assistance of vibrators. Sufficient vibrators in serviceable condition shall be on site so that spare equipment is always available in the event of breakdowns.
- 2 Vibration shall not be applied by way of the reinforcement. Where vibrators of the immersion type are used, contact with reinforcement and all inserts shall be avoided, so far as is practicable.
- 3 Concrete shall not be subjected to vibration between 4 and 24 hours after compaction.

1611 Construction Joints

- 1 The position and detail of any construction joints not described in the Contract shall be subject to the approval by the Project Manager and shall be so arranged as to minimise the possibility of the occurrence of shrinkage cracks.
- 2 The upper surface of lifts of concrete walls and columns shall be horizontal unless otherwise described in the Contract and if the formwork extends above the joint on the exposed face it shall be cleaned of adhering concrete before the next lift is placed.
- 3 Where a construction joint contains a formed surface, that surface shall be roughened to expose the aggregate without damaging the aggregate and the joint. The roughened surface shall then be washed with clean water to remove loose particles.
- 4 Where sections of the work are carried out in lifts, the reinforcement projecting above the lift being cast shall be adequately supported so as to prevent movement of the bars during the casting and setting of the concrete.
- 5 Wherever possible all loose material shall be removed while the concrete is still hardening and no further roughening shall then be required. Where this is not possible, it shall be removed by mechanical means provided the concrete has been in position for more than 24 hours. The roughened surface shall then be washed with clean water.

1612 Curing of Concrete

- 1 Immediately after compaction and for 7 days thereafter, concrete shall be protected against harmful effects of weather, including rain, and from drying out. The methods of protection used shall be subject to the approval of the Project Manager.
- 2 The method of curing used shall minimise the loss of moisture from the concrete. On concrete surfaces which are to be water-proofed, curing membranes shall not be used. Details of all curing methods to be used shall be subject to the approval of the Project Manager.

1613 Early Loading

- 1 Except for where otherwise described, concrete shall at no time be subjected to loading, including its own mass, which will induce a comprehensive stress in it exceeding 0.33 of its compressive strength at the time of loading or of the specified 28 day strength.
- 2 For the purpose of this Clause, the assessment of the strength of the concrete and the stresses produced by the loads shall be subject to the approval of the Project Manager.

1614 Storage of Precast Reinforced Units

- 1 When members are stored, they shall be firmly supported at such bearing positions as will ensure that the stresses induced in them are always less than the permissible design stresses.

1615 Handling and Placing of Precast Reinforced Units

- 1 Members shall be lifted or supported only at points described in the Contract and shall be handled and placed without impact.

1616 Manufacture of Precast Concrete Units off the Site

- 1 The Project Manager's approval to the method of manufacture shall be obtained before work is started. When the method has been approved, no changes shall be made without the consent of the Project Manager.
- 2 The Contractor shall inform the Project Manager in advance of the date of commencement of manufacture and casting of each type of member.
- 3 A copy of all 28 day cube test results relating to the work shall be submitted to the Project Manager as soon as they become available.
- 4 Where the Project Manager requires tests to be carried out, no precast items to which the tests relate shall be dispatched to the Site until the tests have been satisfactorily completed.

2700 TESTING OF MATERIALS AND WORKMANSHIP

2701 Testing by the Contractor

The Contractor shall provide, use and maintain on the Site throughout the period of execution of the Works a suitable laboratory and adequate equipment operated by competent staff for carrying out tests required for the selection and control of the quality of materials and for the control of workmanship in accordance with the Specification. The Contractor shall assume that tests will be required on all materials used in the Works and on all finished work.

The laboratory shall be in a waterproof and heat isolated building and shall be air conditioned to such a degree that the temperature within the building does not exceed 23 °C throughout the year.

The Contractor shall submit with his tender details and specifications for his proposed laboratory.

The laboratory shall be connected to the water and electricity supplies and shall be provided with all necessary furniture and equipment, stationery, proformas etc.

The laboratory shall have sufficient storage room for all samples and records which shall be preserved as long as the Engineer may require.

Not later than 20 days from the date of the notification of award of the contract the Contractor shall submit the name of the manufacturers and a list of laboratory equipment which he intends to provide for the approval of the Engineer.

The Contractor shall at all times maintain a sufficient stock of all laboratory glassware, plasticware, rubberware etc., to allow for breakages and deterioration. In the event of any of the equipment becoming unusable through any cause the Contractor shall order replacements.

On completion of the Contract the laboratory, equipment and air conditioners shall remain the property of the Contractor.

In addition to the general laboratory equipment for measurement, sampling and preparation of samples for test, specialised equipment for routine testing shall be provided by the Contractor and maintained in good order and adjustment throughout the period of performance of the Contract. The main testing requirements are listed but other tests may be requested by the Engineer's Representative if he considers necessary.

- **Soils**

- Grain Size Analysis
- Atterberg Limits (LL, PL)
- Moisture Content
- Linear Shrinkage
- Specific gravity
- Compaction (Moisture-density relationship)
- California Bearing Ratio (Unsoaked and soaked)
- Field density
- Sulphate content

- Aggregate and Concrete

- Particle size distribution
- Shape characteristics (Elongation and Flakiness)
- Specific gravity
- Bulk density
- Voids
- Absorption
- Organic impurities
- Aggregate Crushing Value
- Consistency of concrete
- Compressive strength (Cement and concrete)
- Initial and final setting times (cement)

- Bituminous Materials

- Depot tray test
- Field tray test
- Immersion tray test
- Viscosity of Cutback bitumen
- Bitumen penetration value

The Contractor shall provide at all times during the continuance of the Contract all such assistants, workmen, pegs, tools etc., and transport therefore as the Engineer's Representative may require for the carrying out of his duties in connection with the Contract.

The Contractor shall carry out all necessary tests and shall report to the Engineer the results of such tests before submitting materials and finished work to the Engineer for approval. When appropriate:

- (a) The Contractor shall grant access to the laboratory so that the Engineer may independently monitor both the testing equipment and the testing methods, to confirm their veracity and that the Engineer may use the laboratory facilities to carry out his own testing.
- (b) Tests may be carried out at the place of manufacture or at an independent laboratory acceptable to the Engineer.

Samples of all materials proposed to be used shall be submitted to the Engineer.

The frequency at which the Contractor shall undertake construction control tests on the earthwork layers, pavement layers and backfill to drainage works and structures shall be as follows:

- (i) Original ground

For each material encountered, and at intervals of at least once per 2000 m² on compacted ground but at a maximum interval of 200 m along the alignment. Field dry density shall be determined once every 1000 m².

- (ii) Bulk earthworks

For each new material encountered, and at intervals of at least once per 1500 m³ of compacted material placed. The field dry density shall be determined at least once per 250 m³ of compacted material placed or at least three tests per section, whichever is the more frequent.

(iii) Upper 300 mm of earthworks

For each new material encountered, and at intervals of at least once per 500 m² of each layer of compacted subgrade. The field dry density shall be determined at least once per 250 m² of each layer of compacted subgrade but with a minimum of three tests per section. The soaked CBR of material in the upper 300 mm of earthworks shall be determined at least once per 2000 m² of each layer.

(iv) Backfill/fill to culverts and structures (including excavated surface to receive culvert or structure)

The field dry density shall be determined at least twice per 10 m³ of material placed and compacted but with a minimum of two tests per section.

(v) Natural materials in sub-base and base

For each new source of material used and at intervals of at least once per 1500 m² of each layer of compacted sub-base or base course laid. The field dry density shall be determined at least once per 350 m² of compacted layer but with a minimum of three tests per section. The soaked CBR and Plasticity Index of material shall be determined on opening up each new source of material and at least once per 75 m³ of compacted material taken from that source. The ACV, LAA and 10 % Fines of a material used shall be determined on opening up each new source of material and whenever the Engineer considers that its quality may have altered. The grading and Plasticity Modulus shall be determined at least as often as the CBR.

(vi) Crushed stone sub-base and base

The MDD and the Specific Gravity of the graded crushed stone shall be determined at least once per 2000 m² of each compacted layer. The field dry density shall be determined at least once per 350 m² of each compacted layer. The LAA, ACV, SSS, 10 % Fines and CR shall be determined on opening up and crushing material from each new source and whenever the Engineer considers that the material has altered.

The grading, PI and FI of crushed materials shall be determined at least once per 300 m³ of material produced.

(vii) Cement or lime treated materials in subgrade, sub-base and base.

The AASHTO T180 MDD and OMC shall be determined for each new treated material used for subgrade and at intervals of at least once per 1500 m² of each layer of compacted subgrade.

The AASHTO T180 MDD and OMC shall be determined for each new treated material used for sub-base or base and at intervals of at least once per 1500 m² of each layer of compacted treated sub-base or base layer.

The field dry density shall be determined at least once per 350 m² of each layer of compacted treated subgrade, sub-base or base course, but with a minimum of three tests per section.

The following properties shall be determined on opening up of each new source, and when, in the opinion of the Engineer, the nature of the material has changed and once per 300 m² of sub-base or base laid and compacted:

Grading
Atterberg Limits
CBR or UCS.

(viii) Bituminous surface treatments and surface dressing

(a) Aggregates, sand, gravel

The properties listed below, as appropriate to the type of surface treatment specified, shall be determined on opening up of each new source and when the Engineer considers that the properties may have altered but also at least once every two weeks:

FI
LAA
ACV
SSS
PI
Sand Equivalent
ALD
% Fines

The properties listed below, as appropriate to the type of surface treatment specified, shall be determined twice daily when surface dressing work is in progress:

FI
Grading
Angularity
Cleanliness
PI
Deleterious Matter
Spread Rate (Tray Test or other means)
Sand Equivalent

(b) Binder (Prime coat or tack coat)

Compliance with the Specification shall be determined once per 20,000 litres delivered to Site, or as otherwise directed by the Engineer. Binder spray rate shall be determined once a day or every 3,000 m² during spraying operations to check calculations based on dipping of spray truck.

(ix) Bituminous mixes

(a) Aggregates

The aggregate properties listed below, as appropriate to the type of mix specified, shall be determined on opening up of each new source of aggregate, also every second week and whenever the Engineer considers that the aggregate properties may have altered:

Grading
LAA
ACV
SSS
FI

Sand Equivalent
Soluble Salts and Deleterious Matter
Real and apparent Specific Gravity and Absorption in the mixed aggregate
Voids
10% Fines

The grading of cold feed mixed aggregates shall be determined at least once per day during mixing.

(b) Mineral filler

The grading and bulk density in toluene shall be determined once per 100 tonnes of filler used, and when the source of filler is changed.

(c) Bituminous mixture (from the mixing plant)

The properties of the bituminous mixture, as appropriate to the type of mix specified shall be determined every 4 hours or part thereof of mixing time on samples taken from the mixing plant:

Bitumen Content
Grading
Marshall Stability
Flow
Voids
Absorbed Water

(d) Bituminous mixture (from the compacted layer)

The properties of the bituminous mixture, as appropriate to the type of mix specified, shall be determined from samples cut from the compacted layer:

- at least one 100 mm diameter core twin sample for each 800 m² of mix laid and additional twin samples at joints as directed by the Engineer
 - Density
 - Thickness

The mean value of the twin sample will be considered as representative for the area. The mean value for the density of asphalt concrete samples taken at joints shall not be less than 95 % of the Marshall Density.

- one 300 mm x 300 mm x layer thickness sample for each 500 t of laid asphalt concrete, at least one sample for each day of production
 - Bitumen Content
 - Grading
 - Voids

(x) Pile Loading Test

Not later than 30 days from the date of the letter of acceptance the Contractor shall submit to the Engineer for approval details of his method and equipment for the pile loading test

PART II Special Specification

Construction of Bridges

1. Preamble

This part of the Technical Specification specifies requirements for materials and workmanship for the construction of concrete, reinforced and prestressed concrete bridges cast in-situ and precast.

The Specification is based on BS 5400 Part 7 and Part 8, 1978 (attached at the end of these Specifications) for Steel, Concrete and Composite Bridges.

BS 5400 was based on CP 110 Part 1 1972 in the English language only. This CP has now been superseded and references to CP 110 Part 1 should be read BS 8110 Parts 1 and 2.

The Clauses of this Special Specification for Bridge Works (SSB) hereunder shall amend or be added to the on BS 5400 Part 7. Where references appear in the text of SSB to specific Clauses in the BS 5400 (Part 7) then both Clauses must be read together but the amendments in the SSB shall take precedence over the BS 5400 (Part 7). The numbering of the Clauses of the SSB may not be continuous as it corresponds to the numbering of the Clauses of the BS 5400 (Part 7). Where these SSB do not stipulate otherwise, the BS 5400 (Part 7) referred to above remains fully applicable.

This Special Specification for Bridge Works includes the following chapters:

1. Preamble
2. References
3. Concrete
4. Reinforcement
5. N/A
6. Corrosion Protection of Steel Work
7. Miscellaneous

2. References

All references to other Standards and Codes of Practice shall be understood as being in addition to BS 5400.

3. Concrete

3.2.3 Water

ADD new paragraph:

Sea water or brackish water shall not be used.

3.3.4 Admixtures

3.3.4.1 General

ADD new paragraph:

- (e) documentary evidence that the proposed admixtures has previously been used successfully in major concrete projects

ADD new paragraph

Each consignment of admixture shall be supplied in sealed waterproof containers. A certificate showing that the consignment complies in all respects with this specification shall be forwarded to the Project Manager with each consignment. The Project Manager reserves the right to subject the deliveries to independent tests, and to reject without question such admixtures which fail to comply with the specification, or is not compatible with any of the other ingredients of the concrete as shown by preliminary tests with the proposed concrete mixes. All prices for concrete shall include the admixtures of the types and quantities as specified thereafter.

ADD new Sub-Clauses :

3.3.4.3 Air Entraining Admixtures

If requested by the Project Manager, an air entraining admixture, complying with the requirements of ASTM C260 shall be used in concrete. The quantity of air entraining admixture to be used for entraining the required volume of air shall be determined by preliminary laboratory tests and adjusted in the field to meet the specification requirements. The actual volume of entrained air shall be continuously controlled on site. If the air entraining admixture is to be used together with another admixture, it shall be proven by preliminary tests that both admixtures are compatible and the concrete has no undesirable properties. Laboratory and field procedures shall be subject to approval by the Project Manager.

The air entraining admixture shall be added in the mixer to each batch together with the water.

3.3.4.4 Water Reducing, Set Retarding Admixture

All mass concrete and concrete in such structures or parts thereof, as will be determined by the Project Manager, will include an approved retarding densifier complying with BS 5075 thoroughly tested in conjunction with the particular brand of cement used in the given structure and added to each batch together with the water.

The purpose of this additive is to prevent premature setting of concrete under warm weather conditions, prevent formation of cold joints, facilitate consolidation of concrete, and reduce heat of hydration.

The quantities of the retarding densifier used will depend on the composition of concrete, prevailing temperature and desired setting time. The proportions and the method of admixture of the retarding densifier shall be in accordance with the prescriptions of the manufacturer and as approved by the Project Manager.

3.5.2 Minimum Cement Content

DELETE Clause 3.5.2 and SUBSTITUTE:

The minimum cement content shall comply with requirements of Table 3 of BS 5400 Part 8. The actual quantity of cement needed for each type of concrete in the various parts of the structures shall be determined by the tests as specified hereinafter, taking into consideration actual site conditions.

No change in the unit rates submitted for concrete will be allowed, if the actual quantity of cement used to obtain a specified concrete characteristic strength (grade) is greater than the minimum cement content specified in the above mentioned Table 3.

The following symbols will be used for exposure grades:

E = very severe
F = severe
G = moderate

3.6 Requirements for Design Mixes

ADD new Clauses:

3.6.5 Test Results

The Contractor shall adjust the grading of the aggregate and proportions of the mix, on condition that he can prove in advance testing that they are suitable, comply with all the requirements of this specification, such as strength, density, impermeability, durability, etc. and that they are workable and can be transported, placed and compacted by the methods and equipment used on the site, without segregation, without the use of excessive water content and that they can be readily compacted into a dense impervious mass. He shall submit to the Project Manager, at least 21 days before the commencement of casting, results of trial mixes for each class and grade of concrete, for each maximum nominal size of aggregates and each consistency required.

Three separate batches of concrete shall be made using materials likely to be typical of the proposed supply and preferably under full scale production conditions. If circumstances make this inconvenient, the batches may be mixed in an approved laboratory. Sampling and testing shall be in accordance with BS 1881.

The test results shall include at least the details of

- (a) Cement content
- (b) Tests of the Quality of the aggregates, their grading, and the quality of cement and admixtures used.
- (c) The proposed mix proportions including cement, admixture and water, expressed in kg/m³ of fresh compacted concrete, based on saturated surface dry aggregates.
- (d) The consistency of the fresh concrete, as measured by the slump test.
- (e) The compressive strength of at least 18 standard concrete cubes in compression made from 3 batches of which 9 shall be tested at 7 days and 9 tested at 28 days.

3.6.6 Approval of Mix Proportions

Prior to the use in the permanent Works, the Project Manager's approval of the proposed mix shall be obtained. Approval shall be based on the test results as described in Clause 3.6.5 and on further documentation which the Contractor shall submit to the Project Manager stating that:

- (a) The used materials comply with the specified requirements for quality including aggregates sizes and grading.
- (b) Cement content complies with requirements of Table 3 of BS 5400 Part 8.
- (c) The consistency of the fresh concrete is suitable for the conditions of transport, placing and compaction in the forms as required in the specifications and in accordance with the equipment and systems of work which the Contractor will use.
- (d) The average compressive strength of 9 standard cured cubes at 28 days is equal to or greater than the average strength required for preliminary tests specified in clause 3.6.3.
- (e) The concrete is impermeable to water for those parts of the structure which will be exposed to running water or water under pressure (exposure class E and F).

3.7 Requirements for Prescribed Mixes

ADD to Table 2:

Concrete Grade	Nominal max. Size of aggregate (mm)	40		20	
		Workability	Medium	High	Medium
10	Cement (kg)	210	230	240	260
	Total aggregate (kg)	1900	1850	1850	1800
	Fine aggregate (%)	30-45	30-45	35-50	35-50

3.7.2 Prescribed Mixes for Special Structural Concrete

ADD new paragraph:

With the prior approval of the Project Manager on less important structures or elements, nominal mixes without preliminary trial mixes for ordinary structural concrete of Class G exposure may be used under the following requirements:

- (a) The material shall comply with the requirements of Clause 3.2., and the nature and source of the materials used shall be as approved by the Project Manager. No change shall be made without the prior approval of the Project Manager.
- (b) No admixtures shall be used.
- (c) The mixes shall comply with the requirements of Clause 3.5.

- (d) Evidence shall be provided to the satisfaction of the Project Manager that with the materials and workmanship available concrete of the required standard can be produced.

3.8.2 Cement

DELETE the entire Clause 3.8.2 and SUBSTITUTE:

3.8.2 Cement

3.8.2.1 Quality

The Contractor shall submit, test certificates of the cement for use in the Works. Each certificate shall indicate results of tests and analysis by an approved laboratory and shall state that the cement complies in all respects with the requirements of the appropriate specification for the particular type of cement.

For the production of all structural concrete, sulphate –resistant cement shall be used. The Project Manager shall have the right to reject such cement that fails to comply with the Specification or fails to produce concrete of the quality or of the rate of compressive strength specified. All such rejected cement shall be removed from the Site.

3.8.2.2 Supply

The supply of cement to the Site shall be made in whole and original bags, marked with the trade mark of an approved manufacturer or in special closed bulk containers manufactured expressly for this purpose. Cement from defective bags or cement which had been exposed to weather influences shall not be used.

The Contractor shall inform the Project Manager in writing at least 30 days prior to the first shipments concerning the manufacturer from which the cement will be purchased and the purchase order number, contract number, or other designation that will identify the cement to be used by the Contractor.

3.8.2.3 Storage

In order that cement may not become unusable or aged after delivery, the Contractor shall use cement in the chronological order in which it was delivered to the Site.

Each shipment shall be stored so that it may readily be distinguished from other shipments. The cement shall be free of lumps and shall be otherwise undamaged when used in concrete.

Cement in bags shall be stored in a watertight and weatherproof shed on a floor raised at least 0.2m from the ground. Storing cement bags to a height exceeding ten layers will not be permitted. Any cement damaged by water or otherwise defective and damaged bags of cement will be rejected and shall be removed from the Site.

Bulk cement shall be stored in weatherproof bins or silos to be approved by the Project Manager. The bins shall be emptied and cleaned at reasonable intervals as directed by the Project Manager.

The use of cement in bags which has been stored for more than three months after delivery will not be permitted, except when it is proven by tests, to the satisfaction of the Project Manager that it complies with the requirements of the Specification.

3.8.2.4 Contractor's Responsibility

A suitable quantity of approved and certified cement shall always be available on site in order to ensure continuity in case of rejection of a consignment by the Project Manager.

If the Contractor has used cement for which no certificate of compliance with the standards was submitted as required above or, where the Project Manager has ordered independent tests, before obtaining results of such tests and the cement is later found defective in quality the Project Manager shall have the right to reject that portion of the structure constructed with this cement and the Contractor shall be obliged to dismantle such structure and reconstruct it at his own expense and with a cement complying with the requirements.

3.8.3 Aggregates

DELETE the entire Sub-Clause 3.8.3 and SUBSTITUTE:

3.8.3 Aggregates

3.8.3.1 General

Aggregates for concrete shall be from approved sources. The approval of any sources by the Project Manager shall not be construed as constituting the approval of all materials taken from these sources and the Contractor will be held responsible for the specified quality of all such materials used in the Works. Specimen samples of aggregates for concrete shall be submitted to the Project Manager for approval before any order is placed. Such approval will not relieve the Contractor of the responsibility of satisfying himself before placing an order that the aggregates will conform to BS 882. All aggregates as delivered to the batching plant, shall have a uniform and stable moisture content.

The Contractor shall test all aggregates for approval by the Project Manager, and shall provide such facilities as may be necessary for such sampling and testing. The Contractor shall prepare, for preliminary tests and approval, a representative sample of fine aggregate and of each size of coarse aggregate proposed for use in the Works.

During construction, the sizes of the coarse aggregates and the grading of the fine aggregates shall be determined at least once for every 100 tonnes supplied, and at least once a week a check shall be made on supplies to ensure that the required grading is being maintained. If any aggregate or sand when so tested does not meet the requirements of the relevant British Standard, the Contractor shall forthwith cease to use that aggregate or sand.

If aggregates are brought to the Site in separate loads containing aggregate of one size, they shall be stored in such a way as will prevent aggregates of different sizes being mixed together. Aggregates mixed either in transport or on site will be rejected. Unloading shall be done in such a way as to prevent excess segregation.

All aggregates, sand, and stone intended for use in the Works shall be stored on a concrete floor or on a screed and well drained surface to the approval of the Project Manager to prevent contamination by contact with ground.

A stock of aggregates permitting concreting operations for at least 5 days shall be available on the Site.

All sand and coarse aggregate, if required by BS 882, shall be washed in clean fresh water.

3.8.3.2 Marine Aggregates

Marine aggregates shall not be used for prestressed concrete. They may be used for reinforced concrete subject to the following conditions:

- (a) That the sodium chloride content for the fine and coarse aggregate does not exceed 0.10 % and 0.03 % respectively by mass of dry aggregate.
- (b) If the sodium chloride content exceeds the above limits, the material may still be considered acceptable, provided that the total sodium chloride concentration derived from the aggregate is not greater than 0.32 % by mass of the cement in the mix.
- (c) hollow shells or shells of unsuitable shape in quantities which may in the opinion of the Project Manager adversely affect the quality of or cause permeability in the concrete, shall not be permitted.

3.8.3.3 Fine Aggregates

Fine aggregates shall consist of hard, dense, durable, clean, uncoated fragments of natural sand, crushed stone, or other suitable materials approved by the Project Manager for use with the concrete specified and shall be free from clay, organic material or other deleterious substances.

The grading of the fine aggregate shall be within one of the grading zones shown in Table 2 of BS 882.

For reinforced concrete the grading of the fine aggregates shall be within either grading zones 1, 2 or 3.

3.8.3.4 Coarse Aggregates

Coarse aggregates shall be natural gravel or crushed stone or a mixture of natural gravel and crushed stone and shall consist of hard, dense, durable, clean, uncoated fragments.

The grading of coarse aggregate, for reinforced and plain concrete, if analysed in accordance with BS 812 shall be within the limits given in Table 1 of BS 882.

The nominal maximum sizes of the coarse aggregates are 40 mm or 20 mm. The maximum size of coarse aggregate shall be, in general, as large as possible but in no case larger than:

- (a) One quarter of the minimum thickness of the member, or
- (b) 6 mm less than the distance between reinforcement bars or than the concrete cover over the reinforcement, provided that the concrete can be placed without difficulty so as to surround all reinforcements thoroughly and to fill the corners of the formwork. If the different sizes of coarse aggregates will be supplied separately, then the grading of the coarse aggregates shall be controlled by obtaining the coarse aggregate in two sizes for aggregate of 20 mm nominal maximum size and in three sizes for aggregate of 40 mm nominal maximum size.

3.8.4 Batching and Mixing

DELETE entire Clause and SUBSTITUTE:

3.8.4 Batching and Mixing

3.8.4.1 Batching

The quantities of cement, fine aggregate and the various sizes of coarse aggregate shall be measured by weight unless otherwise authorised by the Project Manager.

A separate weighing machine shall be provided for weighing the cement. Alternatively the cement may be measured by using a whole number of bags in each batch.

The accuracy of measurement of materials shall fall within the limits of $\pm 3\%$.

The Contractor shall make adjustments, repairs, or replacements as may be necessary to meet the specified requirements for accuracy of measurement. The operating mechanism in the water measuring device shall be such that leakage will not occur when the valves are closed. Water tanks on portable mixers shall be constructed so that the indicating device will register, within the specified limits of accuracy, the quantity of water discharged, regardless of the inclination of the mixer setting.

Where the batching plant involves the use of storage bins and weighing hoppers, each weighing unit shall include a visible springless dial which will register the scale load at any stage of the weighing operations from zero to full capacity or shall include an over and under indicator which will show the scale in balance with no load or when loaded at any desired beam setting. The weighing hoppers shall be constructed so as to permit the convenient removal of overweight material in excess of the prescribed tolerances.

Each dial or over and under indicator and each water measuring device shall be in full view of the operator.

3.8.4.2 Mixing

The mixer shall comply with the requirements of BS 1305 or BS 4251 where applicable. The mixing time shall be not less than that recommended by the manufacturer, subject to the Project Manager's approval of the trial mixes.

Mixers that have been out of use for more than 30 minutes shall be thoroughly cleaned before any fresh concrete is mixed. Unless otherwise agreed by the Project Manager, the first batch of concrete through the mixer shall then contain only two-thirds of the normal quantity of coarse aggregate. Mixing plant shall be thoroughly cleaned before changing from one type of cement to another.

The mixing shall continue until there is a uniform distribution of the materials and the mass is uniform in colour and consistency, but in no case shall the mixing time be less than 1 minute for batches of up to 0.5 m³ and 1.5 minutes for larger batches after all the ingredients, including the full amount of water, are in the mixer.

The Project Manager may permit, subject to preliminary tests, to reduce the above mixing times for high-spread pan type mixers by half of a minute.

The Project Manager shall have the right to increase the above minimum mixing time when the charging and mixing operations fail to produce a concrete batch throughout which the ingredients are uniformly distributed and the consistency is uniform. The concrete shall also be uniform from batch to batch, except where changes in composition and consistency are required.

Water shall be added prior to, during and following the mixer-charging operations. Excessive overmixing requiring the addition of water to preserve the required concrete consistency will not be permitted.

No dry materials shall be introduced into the mixer until all material from the previous batch has been removed.

Incrustations of concrete or mortar shall not be allowed to accumulate on the interior surface of the mixing drum. Remixing of concrete, or addition of water in an attempt to improve the consistency of a mixture which has already begun to set or which is otherwise unsuitable for casting, shall not be permitted and such concrete shall be spoiled.

Where small quantities (not exceeding 3 m³) are involved, the Project Manager may in exceptional cases permit hand mixing of lean and other non-reinforced concrete. No hand mixing shall be done unless authorised in writing by the Project Manager. The batches in hand mixing shall not exceed 0.5 m³. Hand mixed concrete shall not be used until the mixing of the whole batch has been completed and the concrete is of uniform colour and consistency. Hand mixing shall be done twice on dry aggregate, and at least twice wet, on a clean and even surface, which will prevent the loss of water during mixing. The water added shall be measured in order to prevent the use of an excessive quantity of water.

When mixing by hand, the minimum quantity of cement shall be increased by 10 %, above that specified in Table 3 of BS 5400 Part 8.

3.8.6 Ready-Mixed Concrete

DELETE entire Clause and SUBSTITUTE:

Ready-mixed concrete shall be used only with Project Manager's approval in writing and shall comply with the requirements of this specification and BS 5328 and the following special requirements.

The concrete shall be brought to the Site from an off site central batching plant using truck mixers. Truck mixer units and their mixing and discharge performance shall conform to the requirements of BS 4251.

The discharge of the concrete shall be completed within one (1) hour after the admixture of the water to the mix (aggregate and cement) unless otherwise agreed by the Project Manager. The time of such admixture shall be recorded on the Delivery Note together with at least the following additional information:

- (a) Concrete designation
- (b) Nominal maximum size of coarse aggregate, slump and cement content.
- (c) Chemical admixtures.

Water shall be added under supervision either at the Site or at the central batching plant as agreed by the Project Manager, but in no circumstances shall water be added in transit.

3.9.2 Strength

3.9.2.2 Testing Plan A

DELETE the second paragraph and SUBSTITUTE:

At least four (4) samples shall be taken from four (4) randomly selected batches of concrete each representing not more than 10 m³ of concrete (Rate 1).

ADD new paragraph:

The Project Manager in his discretion may reduce the frequency of sampling and the number of test cubes which are to be tested in this way, if the concrete produced is generally satisfactory and consistent test results are obtained.

Besides the compression tests described above, "Drilling Examination, Measurement and Testing of Cores from Concrete", in accordance with BS 1881, of any concrete may be ordered by the Project Manager if he should be of the opinion that such tests are required.

3.10 Surface finish of concrete

3.10.4 Surface Finishes for Concrete

ADD new paragraph:

Type 'F' finish. For this finish timber, as for "Type 'A' finish", shall be used; but where the concrete surfaces are to receive plaster or cement mortar finishes, the forms shall be constructed of materials which shall leave the concrete surfaces sufficiently rough or with a keyed indentation for a proper bond.

ADD new Sub-Clause:

3.10.6 Unformed Concrete Surfaces

All unformed exposed concrete surfaces shall be given a floated finish, unless a trowelled finish as described below is required. Floated finish shall consist of levelling and screeding to even and uniform surfaces, followed by floating without the addition of any topping, as soon as the screeded surface has stiffened sufficiently. Floating shall be done to the minimum required to produce a surface that is free from screed marks and is uniform in texture. The finish shall be given a initial floating. Irregularities on such surfaces, as measured against a 3 m straight-edge or template shall not exceed 6 mm.

A trowel finish shall be applied to tops of parapets, walls prominently exposed to view and elsewhere as shown on the Drawings or ordered by the Project Manager. When the surface screeded and floated as described above, has hardened sufficiently to prevent excess of fine material to be drawn to the surface, steel trowelling shall be started. Steel trowelling shall be performed with firm pressure, such as will flatten the sandy texture of the floated surface and produce a dense uniform surface, free from blemishes and trowel marks.

3.11.2 Formwork

3.11.2.1 Design and Construction

ADD new paragraphs:

The formwork for successive vertical lifts must make such perfect contact with concrete in the preceding lift that there shall be no irregularities, tears and other external signs of faulty junction.

The formwork must be constructed in such a manner that there shall be no leakage of mortar or concrete. Where formwork is unavoidably exposed to the hot air for periods of time, and shrinkage of the planking and opening of the joint may occur, the Contractor shall prevent leakage of any kind through open joints by means of suitable fillers or otherwise.

The continued use of forms will be at the discretion of the Project Manager, who will require the forms to be reconditioned or surfaced from time to time. After repeated use, the Project Manager will require the Contractor to scrap the forms and to provide new ones.

All exposed concrete shall have the external corners chamfered 25 x 25 mm or, as indicated on the drawings, by means of moulding strips fixed to the formwork.

Interior angles on such surfaces and edges at formed joints will not require bevelling unless requirement for bevelling is indicated on the Drawings.

Openings sufficient in size and number and properly spaced shall be provided in forms to permit convenient access to and thorough inspection of the work behind the forms.

The height of all formwork erected at any one time shall be subject to the approval of the Project Manager.

3.11.2.2 Form Lining

DELETE entire Sub-Clause and SUBSTITUTE:

3.11.2.2 Form Lining

The type and conditions of the form lining shall be such that the formed surfaces, after being finished, shall be appropriate to the surface finish required (see Clause 3.10.4)

The Contractor shall be permitted to use plywood, hardboard of approved manufacture, steel plate or timber boarding planed on both sides to equal thickness.

Where timber boarding is used, it shall be properly seasoned. Particular care shall be taken to ensure that forms are adequately backed and stiffened, to prevent any distortion resulting in bulges and irregularities when subjected to the pressure of the wet concrete whilst it is being placed and vibrated. Particular care shall also be taken to avoid untidy irregularities at junctions between lifts, and the Project Manager may request any special measures, such as the use of temporary gauging strips, recesses or the like, to avoid such irregularities.

Full size plywood and hardboard sheets shall be used, except where otherwise required or where similar pieces will cover the entire area.

ADD new Sub-Clause:**3.11.2.5 Core Holes etc.**

Where necessary, parallel sided or tapered holes for receiving holding-down bolts as well as core holes, pockets, etc. for the reception of metal work, pipes, ladders and other fittings shall be formed in the concrete with wooden core boxes, fabricated in such a manner that they can be completely withdrawn or broken up and removed after the concrete has set. All such core boxes shall be installed with great accuracy with the aid of templates and securely fixed to prevent displacement during concreting.

3.11.3 Transporting, Placing and Compacting of Concrete

(NOTE: this Clause shall be subdivided into three (3) parts)

In front of first paragraph ADD:

- (a) Transporting of Concrete

After first paragraph ADD:

- (b) Placing of Concrete

After fourth paragraph ADD:

Concrete shall be deposited in all cases as nearly as practicable directly in its final position and shall not be caused to flow in a manner to permit or cause segregation.

Excessive separation of coarse aggregate from the concrete caused by allowing the concrete to fall freely from unreasonable height or at an angle from the vertical or to strike the forms or reinforcement steel will not be permitted. Where such separation would otherwise occur, the Contractor shall provide suitable drop chutes and baffles to confine and control the falling concrete. Except as intersected by joints all formed concrete shall be placed in continuous approximately horizontal layers, the depths of which shall be from 300 to 600 mm.

The Contractor shall make arrangements and shall time his operations in such a manner that no layer of concrete will begin setting before the next layer is placed on top of it. In no case will the delay between the placing of any two successive layers be such that the vibrating unit will not readily penetrate of its own weight the concrete placed before the delay.

Concreting should be carried out continuously between and up to joints, the position and arrangement of which shall be predetermined. The surface of all concrete during placement shall be maintained reasonably levelled between planes of stoppage formed by vertical stopping-off boards or other vertical faces.

In the event of unavoidable stoppage in positions not predetermined, the concrete shall be terminated on horizontal planes and against vertical surfaces in the manner afore described. Where it becomes necessary or desirable, to allow concrete to stand so long that it may set before the work is continued, straight joints shall be formed in the surfaces as shown on the drawings or as directed by the Project Manager.

Reliquifying of concrete will not be permitted. Any concrete which has become so stiff that proper placing cannot be assured shall not be used.

Where the concrete abuts against earth or any other material liable to become loose, the greatest possible care shall be taken by cutting away or otherwise removing, the

timber shoring (if any) in small depths and lengths at a time, and otherwise, to avoid falls or runs of such or other materials upon the surface of the concrete. If any such falls or runs occur, the surface of the work contaminated thereby shall be removed until a new and clean surface is encountered. All spaces left of such falls or runs beyond the prescribed width of the work, or caused by the negligence of or for the convenience of the Contractor, shall be built up with concrete at the discretion of the Project Manager. The quantities so increased shall be at the Contractor's expense.

Special precautions approved by the Project Manager shall be provided to protect the fresh concrete immediately after casting from quick drying and plastic shrinkage cracking and from being washed due to rain.

No concrete, except for piles (as specified below), shall be placed in water. In all cases where concrete is to be placed below water level, the level is to be lowered by pumping in such a way that the sub-base shall not be disturbed. The method of lowering the water table shall be subject to approval by the Project Manager. The lowering of the water table shall continue after the placing of the concrete, and permission to stop pumping must be obtained from the Project Manager. During the whole period, standby pumping equipment shall be kept on site. The concrete shall be placed only after the Project Manager has approved the arrangements which have been made for the pumping equipment.

Concrete to be cast under water level shall be placed by means of tremie pipes. The pipe shall always be filled with concrete, and its end shall be at least 600mm within the concrete. The mix shall be specially designed to enable the concrete cast first in contact with water to rise to the top. The first concrete rising to the top shall be removed immediately.

All concrete placed below the water shall contain additional cement at a rate of 10 % above the cement as defined in Table 3 of BS 5400 for Class 'E' exposure.

(c) Compacting of Concrete

At the end of Sub-Clause 3.11.3 ADD new paragraphs:

The use of suitable and approved tamping vibrators in lieu of or supplemental to the immersion type vibrators may be required on horizontal slabs. Where ordered, the vibration shall be supplemental by hand spading.

Only skilled and experienced operators will be permitted to carry out compaction of concrete by vibration. The vibrators shall be inserted into the concrete at intervals not exceeding 600 mm and shall be allowed to penetrate and revibrate the concrete in the upper portion of the underlying layer. The vibrators shall be applied for a short time in each position and shall be withdrawn as soon as water appears on the surface. Systematic spacing of insertions of the vibrators in the concrete shall be established to ensure that no concrete remains unvibrated. Care shall be taken to avoid contact of the vibrating heads with the surface of the forms and the reinforcing bars or other embedded material.

Vibration shall not be used to cause concrete to flow in a lateral direction, as this will lead to segregation.

The whole procedure for vibrating concrete shall be approved by the Project Manager, who may at any time issue additional instructions.

3.11.4 Stripping of Formwork

3.11.4.1 General

ADD new paragraph:

Forms shall not be removed until the strength of the concrete is such that form removal will not result in perceptible cracking, spalling or breaking of surfaces, or other damages to the concrete.

3.11.4.2 Stripping Period

DELETE entire Sub-Clause and SUBSTITUTE:

3.11.4.2 Stripping Period

No forms shall be removed without the approval of the Project Manager, but the Contractor shall, nevertheless, accept sole responsibility for the removal and consequences thereof.

In no case shall forms to essential building parts be struck until test cubes from the actual concrete concerned have proven the 7 days strengths specified. As a guideline, and subject to the foregoing, the following formwork stripping times are recommended for forms:

Types of Structures Time

- Sides of foundations, slabs etc.	24 hours
- Sides of beams in suspended work, side of walls and columns	48 hours
- Sides of retaining walls	36 hours
- Beams and slabs in suspended works (spans up to 3 metres)	10 days
- Beams and slabs in suspended work (span 3 to 6 metres)	12 days
- Beams supporting loads over 6 metres span to be propped in mid span	21 days

3.11.5 Curing of Concrete

3.11.5.1 Curing Methods

ADD new paragraphs:

Curing shall be either water curing in accordance with Sub-clause 3.11.5.3 or membrane curing in accordance with Sub-clause 3.11.5.4. Membrane curing shall be preferably used on large exposed unformed surfaces such as deck slabs. Membrane curing shall not be used on surfaces upon or against which concrete is to be cast or which are to be plastered or painted.

The unformed top surfaces of walls shall be kept humid by covering with watersaturated material or by other effective means, such as covering with white polyethylene sheets that will prevent evaporation of water, as soon as the concrete has hardened sufficiently to prevent damage by water. These surfaces and steeply sloping or vertical formed surfaces shall be kept completely and continuously humid prior to and during form removal, by water applied on the unformed top surfaces allowing to pass down between the forms and the formed concrete faces. This procedure shall be followed by the specified water curing or membrane curing.

Even after the specified minimum curing period, care shall be taken to prevent the concrete from excessive drying and to restrict the range of temperature changes to which it is exposed.

ADD new Sub-Clauses:

3.11.5.3 Water Curing

Concrete cured with water shall be kept wet for at least 7 days for exposure grade 'G' and 10 days for exposure grade 'E' and 'F', immediately following placement of the concrete or until covered with earth or fresh concrete, by ponding or covering with water-saturated materials or by a system of perforated pipes, mechanical sprinklers, or porous hose, or by any other approved method which will keep all surfaces to be cured constantly wet. Water used for curing shall meet the requirements of Sub-Clause 3.2.3. The unformed top surfaces of walls, roofs and slabs shall be protected, immediately after finishing operations have been completed, against the detrimental action of sun, wind or rain, as approved by the Project Manager.

3.11.5.4 Membrane Curing

Membrane curing shall be by application of sealing compound which forms a water-retaining membrane on the surfaces of the concrete. The sealing compound shall be white-pigmented and shall conform to Standard Specification for Liquid membrane forming Compound for Curing Concrete, ASTM Designation C309 latest edition, or to another approved standard.

Sealing compound shall be applied to the concrete surface by spraying in one coat to provide a continuous, uniform white membrane over all areas. Coverage shall not exceed 3.5 square metres per litre and on rough surfaces coverage shall be decreased as necessary to obtain the required continuous membrane. Spraying equipment shall be of the pressure tank type, which provides for continual agitation of sealing compound during coating operations.

The use of ordinary orchard-type hand sprays will not be permitted.

In order to ensure thorough and complete coverage of the concrete surfaces, approximately one half of the required thickness of coating shall be applied by moving the spray gun back and forth in one direction with the remainder of the coating applied immediately thereafter by moving the gun at right angles to the direction of the first application. The repair of surface imperfections shall not be made before application of sealing compound.

When sealing compound is used on unformed surfaces, application of the compound shall commence immediately after finishing operations are completed. When sealing compound is to be used on formed surfaces, the surfaces shall be moistened with a light spray of water immediately after the forms are removed and shall be kept wet until the surfaces will not absorb more moisture. As soon as the surface fill of moisture disappears, but while the surface still has a damp appearance, the sealing compound shall be applied. Special care shall be taken to ensure ample coverage with the compound at edges, corners and rough spots of formed surfaces.

In the event that application of sealing compound is delayed, the concrete surfaces shall be kept continuously moist until the sealing compound is applied. After application of the sealing compound has been completed and the coating is dry to touch, any required patching of concrete shall be performed. Each patch, after being finished, shall be moistened and coated with sealing compound in accordance with the foregoing re-

quirements. Traffic and other operations by the Contractor shall be such as to avoid damage to coatings of sealing compound for a period of not less than 28 days. Where it is impossible because of construction operations to avoid traffic over surfaces with sealing compound, the membrane shall be protected by a covering of sand or earth not less than 30 mm in thickness or by other effective means. The protective covering shall not be placed until the sealing membrane is completely dry. Before final acceptance of the work, the Contractor shall remove all sand or earth covering in a manner acceptable to the Project Manager.

Any damage to the sealing membrane within 14 days after application shall be repaired without delay and in a manner acceptable to the Project Manager. Sealing compound shall be made available for sampling 30 days prior to use, and no sealing compound shall be used until it has been tested and approved by the Project Manager. The Contractor shall provide facilities and assistance as required for procuring representative test samples. A sample of 1 litre shall be taken from each batch.

3.12.2 Materials

ADD to second paragraph:

Admixtures containing chlorides or nitrates shall not be used.

3.13 Concrete Tolerances

Unless otherwise shown on the Drawings, the tolerances listed in the following Table 5 shall apply to concrete structures:

TABLE 5: Concrete Tolerances

Description	Section	Maximum allowable Values
-------------	---------	--------------------------

(a) All Structures

Variation of the constructed linear outline from established position in plan.	In 6m	12 mm
	In 12 m	20 mm
Variation of dimensions of individual specified items, or from the curved surfaces of all structures, including the lines and surface of walls, columns, piers, abutments, arch sections, vertical joint grooves, and visible arises.	In 3 m or more	10 mm
	In 6 m	20 mm
	In 12 m or more	30 mm
	In buried construction	twice the above values
Variation from the level or from the grades indicated on the drawings in slabs, beams, horizontal joint grooves and visible arises.	In 3 m	5 mm
	In 10 m or more	10 mm
	In buried construction	twice the above values
Variation in cross-sectional dimensions of columns, beams, buttresses, piers and similar members.		Minus 5 mm Plus 10 mm
		Minus 10 mm Plus 10 mm

(b) Footings for Columns, Piers, Walls, Buttresses, and Similar Members

Variation of dimensions in plan.		Minus 10 mm Plus 50 mm
Misplacement of eccentricity		2% of footing width in the direction of misplacement but not exceeding 50mm
Reduction in thickness.		5% of specified thickness

(c) Tolerances for Placing Reinforcement Steel

Variation of protective covering	With 50 mm cover	5 mm
	With 75 mm cover	10 mm
Variation from indicated spacing		25 mm, but not more than 10% of the specified spacing.

4. Reinforcement

4.1 Material

ADD new Sub-Clause:

4.1.6 Test Certificate

The Contractor shall submit to the Project Manager a certificate from the manufacturer of the steel, showing that it has complied under test with the appropriate Standard Specifications stating the process of manufacture and if required the chemical analysis. Such test sheets shall be forwarded to the Project Manager at least two (2) weeks prior the shipment of any delivery of steel.

4.4 Fixing

ADD new paragraphs:

The Contractor shall not pour any concrete before the Project Manager has inspected and approved the placed and fixed reinforcement. Any bars found on erection not fulfilling their function shall be replaced on the Contractor's expense.

The Project Manager's approval of the fixed reinforcement shall not in any way relieve nor be deemed to relieve the Contractor of his responsibility for the correctness of the reinforcement in accordance with the drawings, schedules, specifications and instructions given by the Project Manager.

4.6 Overlaps and Joints

ADD new paragraph:

Overlapping of Bars: Bar laps at splices where not shown on the Drawings shall be at least 40 times the bar diameter for hooked bars and at least 60 times the bar diameter for bars without hooks. Laps of adjacent parallel reinforcement bars shall be staggered. All laps of bars are to be tied tightly with six laps of 1.5 mm annealed iron wire at intervals of ten diameters of the bars. All crossings of steel are to be secured with three laps of wire.

ADD new Clause:

4.8 Cover to Reinforcement

Unless otherwise shown on the Drawings or directed by the Project Manager, the concrete cover over reinforcement bars shall be according to Clause 6.8.2 of BS 5400 Part 4.

5. N/A

6. Corrosion Protection of Steelworks

6.1 General

This section deals with the protection against corrosion of steelworks, including driven steel piles, bridge joists, bridge parapets, guard rails, etc.

The following systems shall be applied to the various steel work elements:

- Driven steel piles - two coats of bituminous cold-applied paint.
- Bridge joists - chlorinated-rubber based primer and paint.
- Bridge parapets, guard rails - galvanised coating.

All corrosion protection work shall be carried out generally in accordance with BS 5493 "Code of Practice for Protective Coating of iron and Steel against Corrosion" and with the requirements of this Section.

6.2 Protective Systems

6.2.1 N/A

6.2.2 N/A

6.2.3 Bridge Parapets, Guard Rails

Galvanised coating in accordance with BS 729. The coating for posts shall have a minimum thickness of 80 μm and for beams, rails, fittings etc. minimum 60 μm .

6.2.4 Protection of Joints

- (a) *Welded Joints:* Welds and surfaces which have been affected by welding shall receive the protective system which is applied to the parent surfaces, except that where the parent surfaces are galvanised, field joints shall be coated as specified below for repair of damaged surfaces.
- (b) *Treatment adjacent to Joints:* Metal spray shall be kept at least 15 mm clear of areas to be welded and these areas shall be masked off during spraying. Where paints other than blast primers are to be applied to the parent surfaces before the making of a joint they shall be stepped back at 30 mm intervals commencing at 80 mm from welded joints and at 10 mm from the perimeter of all other joints.
- (c) *Surface Preparation and Painting of Completed Joints:* Within 14 days of the joints having been made and accepted by the Project Manager, the parent and joint material, weld and weld affected areas shall be prepared and painted.

6.3 Surface Preparation

6.3.1 Blast Cleaning

Blast Cleaning where required shall be carried out in accordance with BS 4232 to the surface finish required for the paint system as specified in Clause 6.2.

Abrasives used for blast cleaning shall be free from harmful contamination and any recovered material shall be cleaned to the satisfaction to the Project Manager before re-use. The maximum amplitude (peak to trough) of the blast cleaned surface shall not exceed 0.100 mm. A sample blast cleaned steel panel measuring not less than 150 mm x 150 mm x 6 mm adequately protected by a sealed transparent wrapping shall be submitted to the Project Manager for approval before commencement of any work. The approved sample shall then be retained by the Project Manager for comparison with the prepared steelworks.

6.3.2 Mechanical Cleaning

Mechanical cleaning shall be carried out by power-driven tools such as carborundum grinding discs, chipping hammers and needle guns, followed by steel wire brushing and dusting to remove all loosened material. Excessive burnishing of the metal through prolonged application of rotary wire brushes shall be avoided. Visible peaks and ridges produced by the use of mechanical cleaning tools shall be removed.

6.3.3 General Cleaning

Weld spatter shall be cleaned of all surfaces, and paint films shall be free of embedded foreign metallic particles. Deposits of concrete or other adherent matter shall be washed or cleaned off immediately they occur and if necessary the surface made good to the satisfaction of the Project Manager. Areas contaminated by oil or grease shall be cleaned with white spirit.

Unless otherwise instructed by the Project Manager, before final coating, the surfaces shall be cleaned at Site by washing with a solution of an approved liquid detergent, using scrubbing brushes where necessary, followed by rinsing with clean fresh water and allowed to dry thoroughly before coating. Immediately prior to the application of paint all loose particles, dust and debris shall be removed.

A protective coating shall not be applied to surfaces bearing atmospheric corrosion products, other chemicals, metallic dust, particles of grit which may be harmful to the coating or succeeding coatings. These contaminants, which include any remains after surface preparation as specified in Sub-Clause 6.3.1 and as produced by welding, shall be cleaned off to an extent agreed by the Project Manager to be compatible with the specified protective system.

6.4 Storage of Paint

Paint shall be stored in sealed containers in a lock-up store where it is not exposed to temperature above 35 degrees Celsius or above the maximum according to the manufacturer's instruction whichever is less. Any special age conditions recommended by the manufacturer shall be observed.

Paint which has not been used within the usage period specified on the containers or within 18 months of the date of manufacture, whichever is the lesser, shall be replaced.

At the end of each working period two component primers, epoxy-polyurethane and paints with a limited mixing-time shall be discharged. Other types of paint from painter containers shall be returned to store and kept in sealed containers.

6.5 Application of Paint

The Contractor shall obtain the Project Manager's approval of the paints he intends to use and the paint application procedure he intends to employ.

Where called for by the Project Manager the Contractor shall carry out paint application procedure trials either at the manufacturer's place or at Site as appropriate, with the equipment and labour be used in the Works. The Contractor shall supply suitable blast cleaned steel and sufficient paint for the trials and must demonstrate his ability to apply each coat of paint of a designated paint system in accordance with the specification and the paint manufacturer's data sheet. No painting of the steelworks will be permitted until the trials have been completed to the satisfaction of the Project Manager. Any adjustment to the manufacturer's standard paint composition which may be required after the first stage of trials, other than an increase in the amount of thinners, must be approved by the Project Manager. Any modification shall be made at the paint manufacturer's place before the final stage of a paint procedure trial and before delivery of the first batch of paint to the Site.

The Contractor shall ensure that the paint manufacturer's data sheets cover the conditions on Site, including temperature and humidity, under which the paints are to be applied.

Paint shall be supplied from the Contractor's paint store to the painters ready for application, the only adjustment of formulation being as provided for in the paragraphs above. Any addition of thinners must be made in the store under the supervision of the Project Manager and in accordance with the manufacturer's data sheet.

All painting shall be carried out by skilled and experienced painters under constant supervision by competent qualified staff.

Paint shall be applied only to surfaces which have been prepared and cleaned in accordance with Sub-Clause 6.3.

Paint shall not be applied under the following conditions:

- (i) When the relative humidity rises above 90 percent.
- (ii) During rain, fog or mist.
- (iii) Where the amount of moisture on the surface or that likely to be caused by subsequent condensation may have a harmful effect.

As soon as the first undercoat has dried, an extra stripe coat of paint shall be applied by brush to edges, corners, crevices, exposed parts of bolts, rivet heads and welds, using a similar undercoat but in contrasting shade. Successive coats shall have different shades for identification.

The Contractor shall ensure that the proposed coverage rates will enable the required average dry film thickness of each coat as approved by the Project Manager to be attained.

Wet film thickness gauges shall be used to check the rate of paint application.

All shop painting shall be carried out in a fully enclosed work shop unless otherwise agreed by the Project Manager.

Two pack or any similar chemically cured type paint shall not be used after the expiration of the 'pot-life' stipulated by the manufacturer and such paints shall not be mixed with fresh paint.

Unless otherwise described in the Contract, a coat of the paint system shall be applied by one of the following methods:

- Brush
- Roller, for shop painting only, supplemented by brush where necessary
- Air pressure spraying
- Airless spraying.

Each coat of paint of a specified paint system shall be generally free from surface defects, particularly cratering, pinholing, rivelling, sagging, bittiness, dry spray and cissing. The finished system shall have an even and uniform appearance.

Each coat of paint of a specified system shall have satisfactory adhesion as demonstrated by one of the currently accepted adhesion tests specified by the Project Manager.

6.6 Storage of Steel and Fabricated Steelworks

Fabricated steelworks which is stored, awaiting delivery to site or erection, shall be kept clear of the ground and shall be laid out or stacked so as to prevent water or dirt accumulation on or against any of the surfaces. Suitable packings shall be placed between layers of stacked steelworks. Where cover is provided it shall be ventilated sufficiently to keep condensation to a minimum.

Unless otherwise described in the Contract, exposure times for blast cleaned or coated surfaces other than at joints shall not be longer than those in the Table 6. 'Outside' refers to any area outside a fully enclosed workshop. The exposure times tabulated in the table refer to any part of the surface being cleaned in accordance with Clause 6.3 or painted.

For surface condition 'e' where blast primed steelworks is exposed outside, the minimum dry paint film thickness over the peaks of the blast cleaned steel shall not be less than 0.013 mm. No steelworks shall be loaded for transport until the paint has been approved by the Project Manager as being sufficiently dry for handling.

Table 6: Exposure Times

Surface	Enclosed Workshop	Outside
(a) Blast cleaned	4 hours	Nil
(b) Mechanically cleaned	48 hours	Nil
(c) Blast primer on 'a'	Maximum exposure of 8 weeks with up to 2 weeks of this time outside.	
(d) Primer on 'c'	48 hours	
(e) 1 st Undercoat on 'c' or 'd'	48 hours	Nil
(f) Subsequent undercoats	As agreed by the Project Manager	

6.7 Repairs to Damaged Surfaces

Areas of paint which have been damaged shall be cleaned to bare metal or to underlying not damaged metal coating and the edges of the undamaged paint shall be bevelled with sandpaper.

Where a metal coating has been damaged the affected area shall be rubbed down to remove excessive roughness, cleaned and made good by the application of at least two (2) coats of an approved zinc-rich primer to a minimum dry film thickness of 100 µm. The full specified painting system, excepting blast or etch primers which may be omitted at the recommendation of the paint manufacturer, shall then be applied in such a manner that the new paint overlaps the existing paint by at least 50 mm all round the affected part.

6.8 Surfaces with Concrete cast against them

Unless otherwise described in the Contract, surfaces which will have concrete cast against them shall be left uncoated and shall be clean and free from loose rust and scale at the time of concreting.

7. Miscellaneous

7.1 Bridge Bearings

Subject to the provisions of the Specification, the Contractor may propose other, equivalent elastomeric bridge bearings than shown on the drawings for the approval of the Engineer. The following shall apply to bridge bearings of whatsoever make:

- (a) All elastomeric bearings shall be of the laminated type. The minimum cover to all exposed edges shall be 4.5 mm and 2 mm to all contact surfaces.
- (b) The installation of the bearings shall be as approved by the Engineer. Bearings shall be maintained in their correct position during the placing of the bridge deck beams.
- (c) Mating surfaces of bearing shall be kept free from contamination and, after the deck has been completed, each bearing and the area around it shall be left clean.
- (d) All bearings shall be indelibly marked with the appropriate type numbers and shall be accompanied by authenticated test certificates showing that they meet the specifications.
- (e) Concrete seating surfaces shall be trowelled to a smooth and accurate finish to the exact levels shown on the Drawings.
- (f) Contact adhesive shall be applied to all concrete/neoprene bearing surfaces in accordance with manufacturer's instructions prior to placing the bearings and beams in their final position in the structure.

7.2 Expansion Joint

7.2.1 General

The expansion joints are provided between abutment and bridge deck. The joint structures for carriageway and walkway are identical.

The joint structures are to be watertight. The surfaces shall be of the carpet type with an even surface. V-shaped expansion profiles shall not be installed. Joint fillers of whatever brand are not permitted.

7.2.2 Materials

The materials of the joint structure shall meet the following requirements:

- expansion profile
 - elastomere (polymere SBR/BR) 58 ± 5 SHE
 - shore hardness A min. 14 N/mm²
 - tensile strength min 400 %
 - elongation at break (7 days at 70°C)
 - ageing resistance + 8 SHE
 - hardness ± 15 %
 - tensile strength ± 25 %
 - elongation
 - ozone resistance "0", no visible cracks
 - 0.5 pphm/48 h
 - compression deformation max. 20 %
 - 72 h/20°C max. 25 %
 - 22 h/70°C

- steel elements
 - clamping profile f_y = 360 N/mm²
 - bolts high tensile
 - anchors to concrete f_y = 460 N/mm²

7.2.3 Installation

The joint structure shall be installed at recesses in the deck slab and backwall. The anchors (loops) of the joint structure are to be connected with the reinforcement of the structure by stirrups or hooks and longitudinal bars passing through the loops of the anchors. The gap between both sides of the joint structure is to be fixed dependent on the actual temperature of the superstructure in accordance with the manufacturer's instructions. The recesses have to be filled with well compacted concrete after alignment.

7.3 Insulation

The bridge deck shall receive a waterproof insulation consisting of

- cleaning of concrete surface including removal of all loose material by sandblasting, closing of all voids in the concrete surface (e. g. pockets)
- application of an epoxy primer
- 2 layers of bituminous felt reinforced by glass fibre mattresses, total thickness 4 mm per layer, the layers shall be glued to the concrete or first layer in total width

7.4 Strengthening of Bituminous Insulation

Strengthening of bituminous insulation in area of joint sidewalk – carriageway, by application of one layer special heavy-duty bituminous sheets, stainless steel covered, width: approximately 300 mm.

7.5 Sealing Protection Layer in Sidewalk Area

Sealing protection of the surface under the joint sidewalk – carriageway by application of one layer glass – fibre bituminous felt, width approximately 300mm.

7.6 Connection – Joint Surface Course / Sidewalk

Execution of the vertical connection – joint between asphalt surface course and sidewalk, by means of cleaning joint / gap, priming with Prime Coat Material, application of professional Compression Profile and sealing the upper part with Bituminous Joint Compound, as shown in Detailed Drawings.

800 Road Furniture

This section covers the supply and installation of items of road furniture including such things as road signs, road markings, various posts, guard rail, kerbs, crash barriers

801. Edge Marker Posts

Edge marker posts shall be constructed and erected in accordance with the Drawings. They shall be set out at the outer edge of the shoulder with their tops at a constant height above the edge of the carriageway at such locations as the Project Manager instructs. Culvert marker posts shall be erected in accordance with the Drawings at the outer edge of the shoulder on one side of the carriageway for each culvert.

Markers shall be erected and painted with two coats of an approved white paint before the road is opened to traffic and shall be kept clean until completion.

802. Permanent Road Signs

Road signs shall be obtained from a manufacturer approved by the Project Manager and before placing any order for the manufacture of the road signs, the Contractor shall submit to the Project Manager two copies of the following information:

- (a) Name of the firm from which he proposes to obtain the signs together with place of manufacture or fabrication.
- (b) A description of the items to be supplied with manufacturer's specification together with a description of quality, grade, weight and strength.
- (c) Manufacturer's 'type' test certificates, or recent test results carried out on similar terms.
- (d) A sample sign, post and fittings which samples shall be stored on site for the Project Manager.

All colours on the pavement road signs, with the exception of black and grey, shall be reflectorised, unless otherwise specified or instructed by the Project Manager. The reflective sheeting shall comply with the requirements and shall be applied by mechanical vacuum-heat application method to the approval of the Project Manager. The sign plate shall be covered by clear lacquer of a make recommended by the manufacturer of the reflective material.

Permanent road signs shall comply with the requirements of the Turkmen Standard in respect of quality including the pre-treatment, preparation and protective coatings for the frame, posts and fittings. Unless directed otherwise posts, frames, fittings and the backs of signs shall be painted with a finish coat of grey. Bolts and nuts shall be spot welded after erection to prevent theft, and a grey epoxy paint shall be applied to all areas so treated.

The Contractor shall excavate in any material for the foundation of the road signs, provide and place concrete Class 15/20, embedded all round and under the posts and backfill the remaining excavation all as shown on the Drawings or directed by the Project Manager. Foundations for signs of areas over 5 m² shall not be covered up until they have been approved by the Project Manager.

All signs shall be maintained in a clear and legible condition and shall be washed down when necessary.

803. Reflective Materials on Road Signs

Unless otherwise shown, signs are to be fully reflectorised.

804. Road Marking Paint**(a) General Requirements**

The paints to be used for road surface marking shall comply with BS 6044. It shall be suitable for applying by brush, low pressure spraying equipment and high pressure spraying equipment. The paint shall be reflectorised unless otherwise specified.

The paint shall be of a type approved by the Project Manager, and if not on the current approved list, samples shall be submitted to the Project Manager at least 6 months prior to its proposed use.

(b) Colour**(i) White**

The colour of white markings shall be BS Colour No. 00E55 of BS 4800. The pigment used for white materials shall be titanium dioxide Type A (Anatase) or Type R (Rutile) complying with BS 1851.

(ii) Yellow

The colour of yellow markings shall be to BS Colour No. 08E51 of BS 4800.

(c) Drying time

the drying time allowed shall be specified by the manufacturer, subject to the touch dry condition being reached in a maximum of 15 minutes.

(d) Reflectorisation**(i) Non-reflectorised**

Paint specified to be non-reflectorised shall have minimum reflective brightness values, as compared to magnesium oxide (MgO) of for white 80 % and for yellow (using a yellow filter of 5800 A) 65 %.

(ii) Internal reflectorisation

Internally reflectorised paint shall be specifically manufactured for this purpose and shall contain ballotini beads to BS 6088. The ballotini shall be reasonably spherical and free from flaws, and of a size suitable for this method of reflectorisation, subject to a maximum size of 0.5 mm.

(iii) Surface reflectorisation

Surface reflectorisation of the paint shall be by application of ballotini beads to BS 6088 to the wet paint film. The ballotini shall be reasonably spherical and free from flaws and of a size suitable for this method of reflectorisation, subject to a maximum nominal size of 0.8 mm.

(e) Application

Prior to application of paints, the road surface to be marked shall be thoroughly cleaned of all loose material and shall be completely dry.

The application of paint shall be done by a purpose-made machine, unless brushing is specifically permitted by the Special Specification. All application instructions issued by the paint manufacturer shall be strictly adhered to.

The spraying rate for cold paint will vary with the roughness of the surface, but shall be such as to give continuous coverage and a minimum dry film thickness of 0.125 mm.

(f) Traffic Control

Warning signs shall be erected when painting is in progress and traffic shall not be allowed to pass over wet paint. Any painting disfigured by traffic, or any painting not complying with the Specification shall be effaced and repainted.

805. Guardrails

Dimensions and erection details for guardrails are shown on the Drawings.

(a) Materials

(i) Posts

Posts shall be constructed of steel, as shown on the Drawings.

(b) Erection

Guardrail shall be erected in accordance with the manufacturer's published instructions and the Drawings. Where there is any conflict, the Drawings shall take precedence.

The Contractor shall provide the guardrail with all posts, blocks, nuts, washers and shall repair galvanising, backfill around the posts and remove any surplus material to spoil.

When erection is complete and the section has been approved by the Project Manager the nuts shall be spot welded to the guard-rail or to the bolt to stop their removal.

Galvanised coating damaged by spot welding or cutting shall be renovated either by the use of low melting point zinc alloy repairs rods or powders made specifically for this purpose, or by the use of at least two coats of zinc-rich paint to BS 4652.

(c) Tolerances

Guardrails shall be erected at the instructed or detailed offsets and levels from the pavement centreline and shall be correct within a tolerance of ± 20 mm in line and level. In addition adjacent plates shall not vary in line or grade by more than 5 mm measured from a line extended from one plate to the end of the ad-

adjacent plate; where the guard-rail is on a horizontal or vertical curve the calculated deflection shall be added to this tolerance.

806. Kerbs

Where shown on the Drawings or directed by the Project Manager the Contractor shall excavate in any materials, provide and place concrete for the haunch, backfill, remove surplus material to spoil, provide, lay and joint precast concrete kerbs, edgings and quadrants.

Precast concrete kerbs, edgings and quadrants shall comply with the requirements of BS 340, and shall be laid in accordance with the Drawings.

The concrete for the haunch shall be concrete Class 15/40 which shall comply with the requirements of Section 17 of this Specification.

For radii of 12 m or less, kerbs of appropriate radius shall be used.

Any 1.0 m length of kerb, edging or quadrant deviating more than 3 mm from line and level at either end shall be made good at the Contractor's expense by lifting and relaying.

807. Kilometre Marker Posts

Where shown on the Drawings or directed by the Project Manager the Contractor shall excavate in any material, provide and place kilometre marker posts as detailed.

Concrete for backfill to kilometre marker posts shall be Class 15/20

808. Crash Barriers

Crash Barriers shall be provided and installed in the road-shoulders directly adjacent to the bridges, providing protection to the access to bridges.

In addition, crash barriers shall be provided and installed in the road-shoulders along road-alignments on which the embankment height is surpassing 3,00 meters.

Crash barriers shall be of type ESP, material for crash barriers shall be galvanised steel type Ust 37-2, according to DIN 17100, the driven poles for crash barriers shall be steel poles type IPE 100 or SIGMA 100.

The specifications referred to herein, are the German

- RPS Richtlinien für Schutzeinrichtungen an Strassen
- TL SP 72 Technische Lieferbedingungen für Stahlschutzplanken

APPENDIX I

1. Housing and Office Accommodation for Engineer's Representative and Staff.

1.01 The types of buildings to be constructed are designated as follows:

Three bedroom house	type 3BR
Two bedroom house	type 2BR
Engineer's Representative's Office	type ERO

1.02 The sites for the buildings and the site layouts shall be agreed with the Engineer's Representative and shall be subject to approval by the Engineer.

1.03 The Contractor shall prepare detailed working drawings showing the site layout, fencing, access roads, water, telephone and electrical services, surface water, soil and waste drainage, septic tanks and full details of each type of building. The drawings shall comply with the requirements of the Building Regulation currently in force.

1.04 The Contractor shall submit these drawings for the approval of the Engineer.

1.05 Construction shall conform with the requirements of the General Specification for Building Works (1959 Revised Edition) issued by the Public Works Division, Ministry of Works and Housing,

1.06 Drawings of the buildings and a schedule of finishes, fittings and furniture are included in these documents as a guide to the general standard required. The Contractor may use the drawings provided as the basis for preparing his working drawings. Should the Contractor wish to submit designs which are substantially different in either layout or construction, such alternative design shall comply with the following requirements.

1.06.1 The space provided, the Standard of construction and finishes, and the provision of fittings and furniture shall not be inferior to those set out in the schedule.

1.06.2 The housing and office accommodation may be of either permanent or temporary construction, the latter being on acceptable standards equivalent to those described.

1.06.3 The office and houses types 3BR and 2BR shall be provided with air-conditioning, but all office and housing accommodation shall be so arranged as to ensure maximum natural cross-ventilation.

1.06.4 The designs shall tackle full account of the topography, natural drainage, foundation conditions and climate at the site.

APPENDIX I, 2/12

2. Approximate Internal Floor Areas

2.01 3 Bedroom House (3BR) and 2 Bedroom House (2BR)

<u>Room No.</u>	<u>Description</u>	<u>Area m²</u>	
		<u>3BR</u>	<u>2BR</u>
1	Kitchen Store	2.7	2.7
2	Carport	16.3	16.3
3	Kitchen	7.8	7.8
4	Living-Dining Room	41.2	34.2
5	Front Stoep	7.8	7.8
6	Bathroom	6.4	6.4
7	Passage	12.4	8.5
8	Toilet	2.4	2.4
9	Bedroom	17.4	17.4
10	Bedroom	16.0	-
12	<u>Stoep</u>	<u>4.0</u>	<u>4.0</u>
	Total	152.5	125.6

2.02 Engineer's Representative Office (ERO)

<u>Room No.</u>	<u>Description</u>	<u>Area m²</u>
51	Conference Room and Senior Resident Engineer's Office	36.7
52	Resident Engineer's Office	11.9
53	Resident Engineer's Office	11.9
54	Resident Engineer's Office	11.9
55	Secretary's Office	11.9
56	Drawing Office	11.9
57	Technician's Office	11.9
58	Technician's Office	11.9
59	Pantry	5.1
60	Store	2.4
61	Printing Room	7.8
62	Toilet/Shower	11.9
63	<u>Toilet/Shower</u>	<u>11.9</u>
	Total	159.1

Finishes

2.03 Floor Finishes

2.03.1 Concrete Slab Trowelled Smooth

3BR and 2BR: Room 2

2.03.2 Granolithic Screed

3BR and 2BR: Rooms 5 and 12

ERO: Rooms 59 – 63

2.03.3 Thermoplastic Tiles on Screed

3BR and 2BR: Rooms 1, 3, 6 and 8.

ERO: Rooms 51 – 58

2.03.4 Wood Mosaic Tiles on Screed

3BR and 2BR: Rooms 4, 7, 9 and 11.

2.04 Wall Finishes

2.04.1 Cement-sand render

On all blockwork faces.

2.04.2 Prime coat plus 2 coats washable emulsion paint.

On all untiled rendered surfaces.

2.04.3 Ceramic Tiles

3BR and 2BR: to a height of 1.50 m in Rooms 3, 6 and 8.

2.04.4 Metal Mosquito Mesh in Full-height timber frames.

APPENDIX I, 4/12

3BR and 2BR: Rooms 5 and 12.

2.04.5 All Timber Surfaces

Aluminium primer, undercoat plus 2 coat acrylic gloss paint.

2.05 Ceiling Finishes

2.05.1 Softboard on Timber Battens.

3BR and 2BR: All Rooms except Room ERO: All rooms.

2.06 Doors and Windows.

2.06.1 Doors.

2.06.11 Lipped Flush door, 2040 x 726 x 35 hung on 1 pair 100 mm solid brass butt hinges.

All doors except those noted below.

2.06.12 Screen door, metal mosquito mesh on timber frame with door closer, hung on 1 pair 100 mm solid brass butt hinges.

3BR and 2BR External door to Room 5.

2.06.13 Timber framed and Pannelled External Door, 2000 x 807 x 40 hung on 1 1/2 pairs 100 mm solid brass butt hinges.

3BR and 2BR: External doors to Rooms 3, 4 and 12. Provide rubber door stops for all doors.

2.06.2 Door locks and Furniture

2.06.21 Night Latch.

3BR and 2BR: Rooms 3 and 4.

2.06.22 Locking latchset with lever furniture

APPENDIX I, 5/12

3BR and 2BR: Rooms 6 and 8
ERTO: All doors to Rooms 62 and 63.

2.06.3 Window.

2.06.31 8 x 150 blade adjustable louvres, aluminium frames.

3BR and 2BR: Rooms 3, 4, 7, 9, 10, 11 and 6/7
ERO: Rooms 51 – 59 and 61.

2.06.32 4 x 150 blade adjustable louvres, aluminium frames.

3BR and 2BR: Rooms 1, 2, 8 and 6/5.
ERO: Rooms 62 and 63.

2.06.33 Timer Jalousies, side hung in timber frames, with 75 mm solid brass butt hinges and barrel bolts top and bottom.

2.06.34 Metal (aluminium or galvanised steel) Mosquito proofing.

3BR, 2BR, ERO: All external windows.

2.07 Electrical Fittings

Wiring shall be PVC insulated, PVC sheathed, suitably earthed. Drops to wall switches shall be run in conduit concealed in the render.

2.07.1 Intake

2.07.11 Earth leakage circuit breaker in lieu of main switch.

3BR, 2BR, ERO (if not wired from adjacent house)

2.07.12 Distribution Board with miniature circuit breakers.

3BR, 2BR ERO (if not wired from adjacent house).

APPENDIX I, 6/122.07.2 13 Amp Power Point

3BR and 2BR:	Rooms 2, 5 and	- 1 No. each
	Room 3	- 5 No.
	Rooms 4	- 6 No.
	Rooms 9, 10 and 11	- 3 No. each.
	Rooms 52-69 and 61	- 2 No. each.

2.07.3 Pendant Light Fittings with Wall Switch (including bulb)

3BR and 3BR	Rooms 1, 5, 6, 8, 9	
	10, 11 and 12	- 1 No. each
	Room 7	- 2 No. each
	Room 4	- 3 No. each
ERO	Room 51	- 4 No. each.

2.07.4 Fluorescent Light Fittings with Wall Switch (including tube)

3BR and 2BR	Room 2	- 1 No.
	Room 3	- 2 No.
	Externally	- 4 No.
ERO	Rooms 55 – 58	- 2 No. each.

2.07.5 Electrical Water Heater, 75 litre, 2.0 kw Mounted in Roof Space with Access through Trapdoor in Ceiling equivalent Roof Mounted Solar Water Heater.

3BR and 2BR	1 No. each.
ERO	1 No.

2.07.6 Shaver Socket

3BR and 2BR	Room 6	- 1 No. each
-------------	--------	--------------

2.07.7 Air-conditioning

3BR and 2BR	Room 4	- 2 No. each
3BR and 2BR	Room 9, 10, 11	- 1 No. each
ERO	Rooms 51 – 58 and 61	fully air-conditioned throughout.

Air-conditioner shall be without chlorofluorocarbon.

APPENDIX I, 7/12

2.07.8 Telephone

3BR and 2BR	Room 4
ERO	PBX in room 55 with receivers in rooms 51 – 54

2.07.9 Ceiling Fans

3BR and 2BR	Rooms 4, 9, 10, 11	- 1 No. each
ERO	Rooms 51 – 58	- 1 No. each

2.08 Plumbing Fittings

2.08.1 EBR and 2BR.

Room 3

Stainless steel Double drainer sink with hot and cold water supply.

Room 6

Pressed steel bath with hot and cold water supply. Shower over, with thermostatic control tap. Wash/hand basin with hot and cold water supply. Water closed with plastic seat and low level cistern.

Room 8

Wash/hand basin with hot and cold water supply. Water closet with plastic seat and low level cistern.

Externally.

Stand pipes with taps and hosepipe to cover full area of garden.

In roof space.

1500 litre cold water storage tank accessible through trapdoor in ceiling.

2.08.2 ERO

APPENDIX I, 8/12

Rooms 62 and 63

- 1 Wash/hand basin with hot and cold water supply.
- 2 water closets with plastic seats and low level cisterns
- 1 shower tray and shower with hot and cold water supply and thermostatic control tap.

Room 59

- 1 Stainless steel double drainer sink with hot and cold water supply.

Externally

- 1 standpipe with tap and hosepipe.

In roof space.

- 1500 litre cold water storage tank accessible through trapdoor in ceiling.

2.09 Built-in Fittings.

2.09.1 3BR and 2BR

Room 1

- 2 levels of timber shelving.

Room 2

- Work bench. Lockable ventilated cupboards for garden tools and 2 gas bottles.

Room 3

- Floor mounted kitchen fittings with cupboard, drawers and timber worktop over. Total length 3.6 m.

Room 6

- 1 Wall cabinet with mirror, glass shelf, glass holder and tooth brush rack.
- 1 Soap tray
- 2 Towels Rails
- 1 Toilet Roll Holder

APPENDIX I, 9/12

- 1 Curtain Rail with plastic shower curtain
- 3 Clothes hooks

Room 8

- 1 Toilet roll holder
- 1 Towel Rail
- 1 Wall cabinet with mirror.

Rooms 9, 10 and 11

Built-in cupboard approx. 2.4 x 0.6 m with hanging rail, drawers, shoe rack, full length mirror, high level cupboard over.

Externally

- 2 Steel footscrapers
- 1 Washing line with supports.

2.09.2 ERO

Rooms 62 and 63

- Wall mounted mirror above wash/hand basin.
- Soap tray in shower compartment.
- Towel rail in shower compartment and adjacent to wash/hand basin.
- Toilet roll holder for each WC
- 4 Clothes hooks.

Rooms 51 – 58

2.44 x 1.22 m sheet softboard, braced, framed and fixed to wall as pin board 2 m Wooden shelving fixed to wall. 2 Coat hooks, Ceiling fan.

Externally.

- 2 Steel footscrapers.

2.10 Furniture etc.

The ownership of all furniture shall revert to the Contractor on completion of the Contract.

APPENDIX I, 10/12

2.10.1 3BR and 2BR.

Room 2:

2 No. gas bottles.

1 regulator

Hose to connect to cooker in kitchen.

Room 3

4-ring gas cooker with grill and oven. 180 litres refrigerator, and 200 litres deep freezer (German Standard DIN 8946/Classification ST or equivalent) with a minimum thickness of the isolation of 50 mm and 75 mm respectively of approved brand and without chorofluorocarbon.

A modern type of washing machine, providing a washing temperature of up to 95°C and a spinning of min. 800 revolutions per minute.

1 Water filter

Kitchen table and chair

1 Ironing board

1 Small plastic refuse bin Doormat.

Room 4:

3-seater settee plus 4 easy chairs, complete with cushions and covers.

1 Centre table and 4 occasional tables

1 Card table

1 Dining Table plus 4 chairs

1 Writing desk plus chair

1 Bookcase

1 Standing fan

1 Sideboard/room divider

1 standing lamp.

Room 5 & 12

1 Veranda table and 6 cane chairs.

APPENDIX I. 11/12

Room 6

- 1 Stool
- 1 Timber floor grating
- 1 Laundry basket,
- 1 Lavatory brush set.

Room 8:

- 1 Lavatory brush set

Rooms 9, 10, 11:

- 2 Beds complete with spring mattresses, mattress covers, pillows
- 2 Beside tables
- 2 Dressing table with mirror and stool
- 2 Bedside samps
- 1 Waste paper basket.

Externally

- 1 Large plastic refuse bin

2.10.2 ERO

- 8 Tables 1.5 m x 0.9 m
- 10 Desks 1.5 m x 0.9 m, with lockable drawers.
- 1 Occasional table
- 3 Plan Chests, 4 drawers, A2 size
- 3 Drawing boards on adjustable stands with sliding straight edge
- 6 lockable cupboards
- 1 Lockable filling cabine, 4 drawers
- 24 Upright chairs, upholstered seats
- 1 Typist's adjustable swivelling chair
- 4 Arm chairs
- 3 Draughtsman's stools
- 1 Refrigerator 0.2 cu. m
- 1 Chilled drinking water dispenser
- 1 Office Safe
- 8 Wastepaper baskets
- 8 Letter trays.

APPENDIX I, 12/12

2.11 External Works

Within each house plot, strip vegetation, grade ground surface to suitable falls, spread top soil if necessary, plant grass, plant Milkpush hedge on all boundaries and/or erect chainlink fence as directed, construct entrance drive and carpark, erect gate posts and install gate to entrance drive, construct septic tank and soakaway (if not shared by several buildings), construct walkways paved with 600 x 600 x 50 mm concrete paving slabs, construct surface water drains to outfalls.

2.12 Portable Fire Extinguishers

Portable fire extinguishers shall be provided and maintained in serviceable order at selected locations.

APPENDIX II, 1/2

Instruments and equipment to be provided for the sole use of the Engineer's Representative and Staff.

2.01 The ownership of all items listed in this Appendix shall revert to the Contractor on completion of the Contract.

2.02 Office Equipment

- 1 Office Typewriter, non-electric, Olympia SG 3L with 620 mm carriage, or similar
- 1 Photocopier *
- 1 Duplicator, Gestetner 410, or similar
- 1 Combi Punch/Binder
- 1 Micro Computer PC **
- 1 Programmable calculator with printer and cassette recorder
- 2 Calculators

* for paper sizes A 3 and A 4 equipped for reduction up to 71 % and enlargement up to 141 %

** including colour screen, laser printer and word processing software 'Microsoft Word for Windows' (latest version).

2.03 Drawing Office Equipment

- 4 Set-square
- 10 Scales, metric, triangular
- 2 Sets Rapidograph Variant pens
- 2 Sets Rapidograph Varioscript pens
- 2 Sets Rapidograph Stencils
- 1 Set Railway curves
- 2 Sets drawing instruments (compass, dividers, etc.)
- 1 1500 mm rustless steel straightedge
- 1 Planimeter, sliding bar, mag tracer metric
- 1 Plan printer
- 1 Full Set of all British Standards, British Standard Codes of Practice and all other publications referred to in the Contract Documents.

APPENDIX II, 2/2

2.04 Field Equipment

- 10 Pairs Waterproof boots
- 10 Safety helmets
 - 1 Theodolites (Zeiss or similar) complete with centering tripod and standard accessories
 - 1 Electronic Distance Measurer complete with 4 target prisms equipped with their poles
 - 2 Automatic Engineer's levels (Zeiss or similar) complete with tripod
 - 4 Levelling slaves folding type, 4 m long, graduated in metres and hundredths, suitable for use with above levels, including rod level
 - 5 Best quality steel tapes 30 m x 13 mm in case
- 10 Best quality steel pocket tapes 3 m x 13 mm
 - 1 Steel tape repair kit, complete
 - 2 Tape thermometers, centigrade
 - 3 Fibreglass tapes 30 m x 13 mm in case
 - 2 Surveyors umbrellas
- 12 Ranging pole 2 m
 - 1 4 m long aluminium straight edge with wedges

APPENDIX III, 1/3

Soils and Materials Laboratory Facilities

- 3.01 The Contractor shall provide suitable premises, transportation, equipment and staff to ensure the continuing availability of adequate testing facilities throughout the period of performance of the Contract in order to implement the Standards of quality of materials and workmanship required under the terms of the Contract.
- 3.02 The provision of Laboratory facilities to the satisfaction of the Engineer's Representative shall be a pre-requisite for the commencement of construction operations.

3.1 Premises

- 3.1.1 Laboratory premises shall consist of a main base laboratory with separate sections for soils, aggregates and concrete and bituminous materials, together with a suitable store for the orderly storage of samples in sufficient number corresponding to the period for which the Engineer's Representative shall require the preservation of samples.

The size of the laboratory shall be sufficient for the execution of all testing at the frequencies specified herein, and shall provide adequate accommodation for both the Engineer's testing requirements and those of the Contractor. The laboratory shall be adequately furnished with work surfaces, benches, sinks, cupboards and storage and equipped for the execution of all testing specified herein. The Contractor shall submit to the Engineer for approval the names of the manufacturers and a list of the laboratory equipment.

The Contractor shall at all times maintain a sufficient stock of all laboratory glassware, plasticware, rubberware etc., to allow for breakages and deterioration. In the event of any of the equipment becoming unusable through any cause the Contractor will, if required to do so by the Engineer's Representative, order replacements to be made.

- 3.1.2 The facilities served by the main laboratory shall be supplemented by site laboratories which may consist of temporary premises capable of easy dismantling and reerection, or mobile laboratories. The location of such subsidiary site laboratories shall be agreed with the Engineer's Representative with the view of providing ease of access to construction operations.
- 3.1.3 The bituminous materials section of the main laboratory or site laboratory shall include an air-conditioned room with thermostatic control for maintaining the necessary range of temperature as specified for the relevant test procedures.

APPENDIX III, 2/3

3.2 Transportation

3.2.1 The Contractor shall make provision for the necessary transportation of laboratory personnel, equipment and samples. Any delays to construction operations, or disapproval by the Engineer's Representative arising from the non-execution of prescribed tests due to the Contractor's default in this connection shall be the responsibility of the Contractor.

3.3 Equipment

3.3.1 In addition to the general laboratory equipment for measurement, sampling and preparation of samples for test, specialised equipment for routine testing shall be provided by the Contractor and maintained in good order and adjustment throughout the period of performance of the Contract. The main testing requirements are listed but other tests may be requested by the Engineer's Representative if he so considers necessary.

3.3.2 Soils

Classification
Linear Shrinkage
Specific gravity
Compaction (Moisture-density relationship)
California Bearing Ratio (Unsoaked and soaked)
Field density
Sulphate content

3.3.3 Aggregate and Concrete

Particle size distribution
Shape characteristics (Elongation and Flakiness)
Specific gravity
Bulk density
Voids
Absorption
Organic impurities
Aggregate Crushing Value
Consistency of concrete
Compressive strength (Cement and concrete)
Initial and final setting times (cement)

3.3.4 Bituminous Materials

Depot tray test
Field tray test
Immersion tray test
Viscosity of Cutback bitumen
Bitumen penetration value

APPENDIX III, 3/3

3.4 Staff

3.4.1 The staff required for Quality Monitoring will be provided by the Engineer, the Contractor shall employ suitably trained and experienced technical assistants assisted by a sufficient number of semi-skilled labourers to carry out the testing requirements of the works, under the supervision of a professionally qualified and experienced Materials Engineer.

The Contractor shall be responsible in respect of wages, salaries, insurance, provident fund and all other costs or charges incurred for watchmen, chainmen, cleaners, recruited by the Engineer's Representative or the Contractor and employed on the Works, in the office and in the laboratory.

SYMBOLS AND ABBREVIATIONS

1. SYMBOLS

Symbols for units of measurement conform to the SI system as set out in BS 5775 (ISO 31/1.). Examples are given below:

μ	Micron = $m \times 10^{-6}$
mm	Millimetre
m	Metre
km	Kilometre
mm ²	Square millimetre
m ²	Square metre
km ²	Square kilometre
ha	Hectare
m ³	Cubic metre
l	Litre
rad	Radian
°C	Degrees celsius
kg	Kilogram
g	Gram = $kg \times 10^{-3}$
mg	Milligram = $kg \times 10^{-6}$
mg/l	Milligrams per litre
t	Tonne = $kg \times 10^3$
kg/m ³	Kilogram per cubic metre
N	Newton
N/m ²	Newton per square metre

2. ABBREVIATIONS

ACV	Aggregate Crushing Value
AIV	Aggregate Impact Value
ALD	Average Least Dimension
BA	Bitumen Affinity
CBR	California Bearing Ratio
FI	Flakiness Index
LAA	Los Angeles Abrasion Value
LL	Liquid Limit
SL	Linear Shrinkage
MC	Moisture Content
MDD	Maximum Dry Density
OMC	Optimum Moisture Content
PI	Plasticity Index
PL	Plastic Limit
PM	Plasticity Modulus (PI x % passing 0.425 mm sieve)
SE	Sand Equivalent
SG	Specific Gravity
SI	International Standard Units of Measurements
SSS	Sodium Sulphate Soundness Test, loss on 5 cycles
STV	Standard Tar Viscosity
TS	Tensile Strength
UC	Uniformity Coefficient
UCS	Unconfined Compressive Strength
VIM	Voids in Mix
VMA	Voids in Mineral Aggregates
OPC	Ordinary Portland Cement
w/c	Water cement (ratio)
wt	Weight
dia	Diameter
hr or h	Hour
min	Minute
sec	Second

VOLUME 4

BILLS OF QUANTITIES

I. PREAMBLE

The Tenderers shall price separately each Item in the Bills of Quantities (B/Q) and shall follow the instructions regarding transfer of alternative totals of the summary given in the B/Q.

The B/Q must be read with all the other Contract Documents and the Contractor shall be deemed to have thoroughly acquainted himself with the detailed descriptions of the works to be done and the way in which they are to be carried out. The whole of the works is to be executed to their true intent and meaning and to the entire satisfaction of the Project Manager.

1.1. Quantity of Items

The quantities set forth against the Items in each Bill are an estimate of the quantity of each kind of the work likely to be carried out under the Contract and are given for the convenience of forming a common basis for bids. There is no guarantee to the Contractor that he will be required to carry out the quantities of work indicated under any one particular item in the B/Q or that the quantities will not differ in magnitude from those stated in the Bills.

When pricing items, reference should be made to the Conditions of Contract, the Specifications and relevant Drawings for directions and descriptions of work and materials involved.

The quantities given in the B/Q are provisional, as estimated on the basis of the Plans for Approval, which have been taken as a basis for the present Tender Documents and are given to provide a common basis for Bidding. The Tenderers shall consider carefully all things included in the Tender Documentation.

Comments, if any, concerning the quantities shall be made in the form of an attachment, following the system of itemisation, quoting the codes and brief descriptions, as in the present documents, including the rates and prices.

Except where specifically and expressly otherwise stated in the Technical Specifications or in the B/Q, the Permanent Works only shall be measured. The works shall be measured net to the dimensions shown on the Drawings or ordered in writing by the Project Manager, except where otherwise specifically described or prescribed in the Contract.

In adjusting extras or variations on the Contract, the work shall be measured on the same basis as that for which the quantities have been prepared and all works not specifically mentioned in the bill will be taken as included in the prices of various items.

Where in the opinion of the Project Manager extra works cannot be properly measured or valued, the Contractor, if so directed by the Project Manager, shall carry out the work at daywork rates which shall be the rates shown in the Schedule of Daywork. All completed Daywork Sheets must be signed by the Project Manager on or before the end of the week in which the work is executed.

No allowance will be made for loss of materials or volume thereof during transport or compaction.

1.2. Units of Measurement

The calculation units used are the same as specified and allowed in the System International (SI) and used in the Technical Documentation herein. No other, but the units used in the Technical Documentation shall be used in measurements, pricing, detail drawings etc. (Any units not used in the Technical Documentation shall also be expressed in terms of the SI)

Abbreviations used in the B/Q shall be interpreted as follows:

mm	shall mean	millimetre
m	shall mean	metre
mm ²	shall mean	square millimetre
m ²	shall mean	square metre
m ³	shall mean	cubic metre
kg	shall mean	kilogram
to	shall mean	tonne (1000 kg)
pcs	shall mean	pieces
h	shall mean	hour
L.s.	shall mean	lump sum
km	shall mean	kilometre
l	shall mean	litre
%	shall mean	per cent
DN	shall mean	nominal diameter
m/m	shall mean	man-month
m/d	shall mean	man-day

II. TERMS IN CONNECTION WITH PAYMENTS

The method of measurement of complete work for payment shall be in accordance with Clause X of the Special Conditions (net measurement) unless otherwise specified in Section II, "Description of the Items of the Bill of Quantities".

The provisional Sums included and so designated in the B/Q shall be expended in whole or in part at the discretion of the Project Manager.

Each item in the B/Q for which payment is to be made in a lump sum, and for which no payment schedule is provided, shall be paid after the work covered by the lump sum has been completed to the full satisfaction of the Project Manager.

III. PRICING

The prices and rates inserted in the B/Q are to be the full inclusive values of the works described under the items, including all costs and expenses which may be required in and for the construction of the Works described together with any temporary works and installations which may be necessary and all general risks, liabilities and obligations set forth or implied in the documents on which the Bid is based. It will be assumed that establishment charges, profit and allowances for all obligations are spread evenly over all the unit rates.

The rates and prices tendered in the priced B/Q shall be quoted at the rates current prior to the date of submission.

Rates and prices shall be entered against each item in the B/Q. The rates shall cover all tax, duty or other liabilities, which are not stated separately in the B/Q and the Tender.

IV. TAXES

To be indicated

V. COMPLETING THE BILLS OF QUANTITIES

In the B/Q, the rates and prices shall be entered in the appropriate columns. All rates and prices shall be quoted in EURO or in national currency.

Errors will be corrected by the Contracting Authority for any arithmetical errors in computation or summation as follows:

- a) where there is a discrepancy between amounts in figures and in words, the amount in words will govern, and
- b) where there is a discrepancy between the unit rate and the total amount derived from the multiplication of the unit price and the quantity, the unit rate as quoted will govern.

VI. DESCRIPTION OF UNIT PRICES

The tables that follow give the description of the rates (or unit prices) by using the relevant clauses of Volume 3 (Technical specifications).

Construction of the Gasan Su Cay and Shemkir Bridges

BILL OF QUANTITIES

Grand Summary

Bill No.	Description	Total Amount EURO
100	General Items	
200	Shemkir Bridge	
300	Gasan Su Cay Bridge	
400	Approach Road to Shemkir Bridge	
500	Approach Road to Gasan Su Cay Bridge	
600	Miscellaneous	
700	Dayworks	
SUB TOTAL		
Provisional Sum / Contingencies (5 % of the above)		
TENDER TOTAL		
TENDER TOTAL in words (EURO)		

Item	Description	Unit	Technical Specifications	Quantity	Rate Euro	Amount Euro
100	General Items					
101	Performance bond/guarantee	l.s	GCoC 13.1	1		
102	Insurance of the works	l.s	GCoC 11.1.2 14.1.ff SCoC 11.1.2 14.1.ff	1		
103	Insurance of constructional plant	l.s.		1		
104	Third party insurance	l.s.	GCoC 14.1.ff	1		
105	Safety measures and precautions concerning works under traffic	l.s.	119	1		
106	Mobilisation of contractor's machinery, equipment, tools, shelters, facilities	l.s.	111	1		
107	Contractor's site installation and temporary works for carrying out the works	l.s.	111, 125	1		
108	Testing laboratory	l.s.	127	1		
109	Maintenance of site installation during the construction period	l.s.	106 - 120	1		
110	Costs for the Engineer	l.s.	121 -123	1		
111	Removal of contractor's site installation, equipment, shelters, facilities and clearing of the area used on completion	l.s.	111.1	1		
Total bill no. 100 carried to summary						

Item	Description	Unit	Technical Specifications	Quantity	Rate Euro	Amount Euro
200	Shemkir Bridge (Bridge no. 32)					
	<u>Preliminaries</u>					
201	Traffic diversion and signals to divert traffic around the bridge construction site.	l.s.	402 - 405	1		
	<u>Demolition work.</u>					
202	Demolish and remove existing elements of the suspended bridge structure, including deposit of demolition material as aproved and all ancillary works:					
	- Excavation for demolishing of existing foundations	m3	601	11,070.00		
	- Demolition of reinforced concrete elements and foundations	m3	602	790.00		
203	Provide, place and compact backfill for the demolition pit.	m3	603	10,285.00		
	<u>Earthworks for new construction</u>					
203	Excavation for foundation, dimensions shown in drawings incl disposal of material	m3	601	14,465.00		
204	Levelling and compaction of bottom of foundation pits	m2	604	415.00		
205	Provide, place and compact crushed stone layer under foundations as shown on drawings	m3	604	85.00		
206	Provide, place and compact backfill for the construction pit	m3	603	13,300.00		
207	Provide, place and compact gravel backfill material behind head- and wingwalls	m3	603	4,700.00		
Carried forward						

Item	Description	Unit	Technical Specifications	Quantity	Rate Euro	Amount Euro
Brought forward						
	<u>Bed and slope protection</u>					
208	River bed excavation, shaping and compaction as required	m3	600	660.00		
209	Provide, lay and compact gravel layer, thickness approx. 200 mm in the river bed. Material size 20/80 or similar, as placing layer for gabions	m2	604	4,880.00		
210	Construct gabions for the river bed and slope protection. Provision of adequate wire-mesh and filling with stone material as specified. Dimensions of gabions to be placed, approx. 2.00 x 1.00 x 0.50 m and 2.00 x 1.00 x 1.00 m	m3	610	3,900.00		
	<u>Pier construction</u>					
211	Construct in-situ reinforced concrete foundations with reinforcement content approx. 111 kg/m3, concrete class 25/30	m3	700 / I , 700/II Section A	425.00		
212	Construct in-situ reinforced concrete piers with reinforcement content approx. 111 kg/m3, concrete class 25/30	m3	700 / I , 700/II Section A	270.00		
213	Construct in-situ reinforced concrete pier caps with reinforcement content approx. 111 kg/m3, concrete class 25/30	m3	700 / I , 700/II Section A	35.00		
214	Construct in-situ reinforced concrete girders with reinforcement content approx. 111 kg/m3, concrete class 25/30	m3	700 / I , 700/II Section A	70.00		
215	Construction of reinforced concrete paraseismic structures as shown on detailed drawing	no.	700 / I , 700/II Section A	12		
Carried forward						

Item	Description	Unit	Technical Specifications	Quantity	Rate Euro	Amount Euro
Brought forward						
	<u>Abutment construction</u>					
216	Construct in-situ reinforced concrete foundations with reinforcement content approx. 111 kg/m ³ , concrete class 25/30	m ³	700 / I , 700/II Section A	425.00		
217	Construct in-situ reinforced concrete piers with reinforcement content approx. 111 kg/m ³ , concrete class 25/30	m ³	700 / I , 700/II Section A	270.00		
218	Construct in-situ reinforced concrete girders with reinforcement content approx. 111 kg/m ³ , concrete class 25/30	m ³	700 / I , 700/II Section A	67.00		
219	Construct in-situ reinforced concrete headwalls with reinforcement content approx. 111 kg/m ³ , concrete class 25/30	m ³	700 / I , 700/II Section A	24.00		
220	Construct in-situ reinforced concrete wingwalls with reinforcement content approx. 111 kg/m ³ , concrete class 25/30	m ³	700 / I , 700/II Section A	17.00		
221	Provide, lay and compact lean concrete layer under approach slabs, concrete class 15/30 as shown on drawing	m ³	700 / I	20.00		
222	Construct reinforced concrete approach slabs, concrete class 25/30, reinforcement content approx. 111 kg/m ³	m ³	700 / I	52.00		
	<u>Span and deckslab construction</u>					
223	Provide and install prestressed reinforced concrete spans, including all ancillary works	m ³	700 / I , 700/II Section A	340.00		
224	Construct in-situ reinforced concrete deckslab with reinforcement content approx. 111 kg/m ³ , concrete class 30/30	m ³	700 / I , 700/II Section A	155.00		
225	Construct in-situ reinforced concrete sidewalks with reinforcement content approx. 111 kg/m ³ , concrete class 25/20	m ³	700 / I , 700/II Section A	51.00		
Carried forward						

Item	Description	Unit	Technical Specifications	Quantity	Rate Euro	Amount Euro
Brought forward						
226	Provide, place and anchor precast crash barriers as shown on detail drawing	m	700 / I , 700/II Section A	148.00		
227	Extra over for facing concrete: wing walls and cornice of the sidewalks.	m2	700/II,Section A, 3.10	215.00		
	<u>Sealing</u>					
228	Sealing consisting of welded bitumen sheets (2 waterproofing layers) incl. preparation of the surface and epoxy coat, all as specified.	m2	700/II,Section A, 7.3	1,045.00		
229	Strengthening layer of the bitumen-welded sheets in kerbstone-area, as shown on detail drawing	m2	700/II,Section A, 7.4	45.00		
230	Sealing protection layer in the sidewalk area. Bituminous felt as shown on detail drawing.	m2	700/II,Section A, 7.5	25.00		
231	Provide and place bituminous surface course on deckslab (total thickness 70 mm) as shown on detail drawing and as specified.	m2	506	766.00		
232	Construct the connection joint between surface course and sidewalks, as shown on detail drawing.	m	700/II,Section A, 7.6	148.00		
	<u>Bridge bearings</u>					
233	Provide and install elastomer bearings as shown on detailed drawing including all ancillary works	no.	700/II,Section A, 7.1	60		
234	Provide reinforced concrete bearing pads as shown on detailed drawing, reinforcement content approx. 111 kg/m3	no.	700 / I , 700/II Section A	60		
Carried forward						

Item	Description	Unit	Technical Specifications	Quantity	Rate Euro	Amount Euro
Brought forward						
	<u>Miscellaneous</u>					
235	Provision and installation of guard rails of galvanised steel railing as shown on the drawings incl. corrosion protection system as specified.	m	805	148.00		
236	Expansion joints as waterproof joint construction, system MAURER, or similar as shown on drawing	m	700/II, SectionA 7.2	30.00		
237	Bituminous protective coating on the earth side of the headwalls, wingwalls approach slabs, and other elements under groundlevel, as specified	m2	700 / I 1406	1,705.00		
Total bill no. 200 carried to summary						
300	Gasau Su Bridge (Bridge no. 44)					
	<u>Preliminaries</u>					
301	Traffic diversion and signals to divert traffic around the bridge construction site.	l.s.	402 - 405	1		
	<u>Demolition work.</u>					
302	Removal of metal pipe piles, including deposit of demolition material as approved and all ancillary works, metal weight approx. 11 t.	m	602	75.00		
303	Demolish and remove reinforced concrete cross beams and wingwalls of the abutments, including deposit of demolition material as approved and all ancillary works	m3	602	93.00		
Carried forward						

Item	Description	Unit	Technical Specifications	Quantity	Rate Euro	Amount Euro
Brought forward						
	<u>Earthworks for new construction</u>					
304	Excavation for foundation, dimensions shown in drawings incl disposal of material	m3	601	74.00		
305	Levelling and compaction of bottom of foundation pits	m2	604	180.00		
306	Provide, place and compact crushed stone layer under foundations as shown on drawings	m3	604	18.00		
307	Provide, place and compact gravel backfill material behind head- and wingwalls	m3	603	475.00		
	<u>Bed and slope protection</u>					
308	River bed excavation, shaping and compaction as required	m3	600	1,600.00		
309	Provide, lay and compact gravel layer, thickness approx. 200 mm in the river bed. Material size 20/80 or similar, as placing layer for gabions	m2	604	4,480.00		
310	Construct gabions for the river bed and slope protection. Provision of adequate wire-mesh and filling with stone material as specified. Dimensions of gabions to be placed, approx. 2.00 x 1.00 x 0.50 m	m3	610	1,380.00		
	<u>Pier construction</u>					
311	Construct in-situ reinforced concrete foundations with reinforcement content approx. 111 kg/m3, concrete class 25/30	m3	700 / I , 700/II Section A	87.00		
312	Construct in-situ reinforced concrete piers with reinforcement content approx. 111 kg/m3, concrete class 25/30	m3	700 / I , 700/II Section A	86.00		
Carried forward						

Item	Description	Unit	Technical Specifications	Quantity	Rate Euro	Amount Euro
Brought forward						
313	Construct in-situ reinforced concrete girders with reinforcement content approx. 111 kg/m ³ , concrete class 25/30	m ³	700 / I , 700/II Section A	66.00		
314	Construction of reinforced concrete paraseismic structures as shown on detailed drawing	no.	700 / I , 700/II Section A	12		
<u>Abutment construction</u>						
315	Cutting of top of existing reinforced piles, including preparatory and joining work for construction of girders	m ³	700 / I , 700/II Section A	6.00		
316	Construct in-situ reinforced concrete girders with reinforcement content approx. 111 kg/m ³ , concrete class 25/30	m ³	700 / I , 700/II Section A	66.00		
317	Construct in-situ reinforced concrete headwalls with reinforcement content approx. 111 kg/m ³ , concrete class 25/30	m ³	700 / I , 700/II Section A	25.00		
318	Construct in-situ reinforced concrete wingwalls with reinforcement content approx. 111 kg/m ³ , concrete class 25/30	m ³	700 / I , 700/II Section A	17.00		
319	Provide, lay and compact lean concrete layer under approach slabs, concrete class 15/30 as shown on drawing	m ³	700 / I	11.00		
320	Construct reinforced concrete approach slabs, concrete class 25/30, reinforcement content approx. 111 kg/m ³	m ³	700 / I	26.00		
<u>Span and deckslab construction</u>						
321	Provide and install prestressed reinforced concrete spans, including all ancillary works	m ³	700 / I , 700/II Section A	222.00		
322	Construct in-situ reinforced concrete deckslab with reinforcement content approx. 111 kg/m ³ , concrete class 30/30	m ³	700 / I , 700/II Section A	122.00		
Carried forward						

Item	Description	Unit	Technical Specifications	Quantity	Rate Euro	Amount Euro
Brought forward						
323	Construct in-situ reinforced concrete sidewalks with reinforcement content approx. 111 kg/m3, concrete class 25/20	m3	700 / I , 700/II Section A	42.00		
324	Provide, place and anchor precast crash barriers as shown on detail drawing	m	700 / I , 700/II Section A	100.00		
325	Extra over for facing concrete: wing walls and cornice of the sidewalks.	m2	700/II,Section A, 3.10	130.00		
<u>Sealing</u>						
326	Sealing consisting of welded bitumen sheets (2 waterproofing layers) incl. preparation of the surface and epoxy coat, all as specified.	m2	700/II,Section A, 7.3	632.00		
327	Strengthening layer of the bitumen-welded sheets in kerbstone-area, as shown on detail drawing	m2	700/II,Section A, 7.4	30.00		
328	Sealing protection layer in the sidewalk area. Bituminous felt as shown on detail drawing.	m2	700/II,Section A, 7.5	15.00		
329	Provide and place bituminous surface course on deckslab (total thickness 70 mm) as shown on detail drawing and as specified.	m2	506	490.00		
330	Construct the connection joint between surface course and sidewalks, as shown on detail drawing.	m	700/II,Section A, 7.6	100.00		
<u>Bridge bearings</u>						
331	Provide and install elastomer bearings as shown on detailed drawing including all ancillary works	no.	700/II,Section A, 7.1	60		
332	Provide reinforced concrete bearing pads as shown on detailed drawing, reinforcement content approx. 111 kg/m3	no.	700 / I , 700/II Section A	60		
Carried forward						

Item	Description	Unit	Technical Specifications	Quantity	Rate Euro	Amount Euro
Brought forward						
	<u>Miscellaneous</u>					
333	Provision and installation of guard rails of galvanised steel railing as shown on the drawings incl. corrosion protection system as specified.	m	805	100.00		
334	Expansion joints as waterproof joint construction, system MAURER, or similar as shown on drawing	m	700/II, Section A 7.2	30.00		
335	Bituminous protective coating on the earth side of the headwalls, wingwalls approach slabs, and other elements under groundlevel, as specified	m2	700 / I 1406	210.00		
Total bill no. 300 carried to summary						
400	Approach Road to Shemkir Bridge					
	<u>Earthwork for road construction</u>					
401	General site clearing and removal of objects in right-of-way	ha	201	1.00		
402	Stipping of topsoil (0 - 150 mm) and stockpile for reuse	m2	202	1,100.00		
403	Excavation of existing asphalt in connecting areas, incl. disposal of material, as directed	m3	300	100.00		
404	Excavate material to any depth in cut, deposit, spread and compact in embankments, incl. benching of embankment slope for widen the existing road	m3	300	3,400.00		
405	P.I.: Excavate unsuitable material to any depth, deposit and spread as directed	m3	300	250.00		
406	Provide, place and compact fill to embankment at OMC as specified, incl. benching of embankment slope for widen the existing road	m3	300	2,390.00		
Carried forward						

Item	Description	Unit	Technical Specifications	Quantity	Rate Euro	Amount Euro
Brought forward						
407	Shape, form and compact subgrade at formation level	m2	300	8,700.00		
408	Loading of stockpiled topsoil, and spread on road sides in build-up areas in layers of 100 mm thickness, as directed	m2	310	1,100.00		
	<u>Pavement</u>					
409	Provide material for capping layer, fill and compact at OMC to line and level in layers not exseding 200 mm	m3	502	1,400.00		
410	Provide granular subbase material, fill and compact at OMC to line and level (225 mm compacted thickness)	m3	502	1,500.00		
411	Prime coat RC 30 at 0.8 l/m ²	m2	506.1	4,230.00		
412	Alteration rate for adjustment in application rate of each 0.1 l	rate only	N/A	--		
413	Provide and place bituminous course consists of binder course 0/22, 175 mm thick, placed in 2 layers, suggested bitumen content 4,8 %	m2	506	4,230.00		
414	Alteration rate for adjustment in bitumen contents for each 0,1%	rate only	N/A	--		
415	Tack coat at 0.5 l/m2	m2	506	8,460.00		
416	Alteration rate for adjustment in tack coat application for each 0.1 l/m2	rate only	N/A	--		
417	Provide and place bituminous surface course 0/11, - 50 mm thick. Suggested bitumen content 6,5 %	m2	506	4,500.00		
418	Alteration rate for adjustment in bitumen content for each 0,1%	rate only	N/A	--		
419	Provide subbase material and built in at OMC to line and levels to shoulders	m3	502	745.00		
Carried forward						

Item	Description	Unit	Technical Specifications	Quantity	Rate Euro	Amount Euro
Brought forward						
	<u>Road furniture and marking</u>					
420	Road marking - Line passed through, width 0.1 m	m	804	1,100.00		
421	Road marking - Broken line, width 0.1 m, ratio 3:9	m	804	550.00		
422	Small road signs	no.	802	8.00		
423	Roadside marking post	no.	807	22.00		
424	Provide and install crash barriers, type ESP or similar, as specified, including poles, earthworks, fittings and all ancillary works	m	808	400.00		
Total bill no. 400 carried to summary						
500	Approach Road to Gasan Su Cay Bridge					
	<u>Earthwork for road construction</u>					
501	General site clearing and removal of objects in right-of-way	ha	201	1.00		
502	Stipping of topsoil (0 - 150 mm) and stockpile for reuse	m2	202	1,100.00		
503	Excavation of existing asphalt in connecting areas, incl. disposal of material, as directed	m3	300	100.00		
504	Excavate material to any depth in cut, deposit, spread and compact in embankments, incl. benching of embankment slope for widen the existing road	m3	300	650.00		
505	Remove surplus material, and dispose as directed	m3	300	11,600.00		
506	Shape, form and compact subgrade at formation level	m2	300	8,525.00		
Carried forward						

Item	Description	Unit	Technical Specifications	Quantity	Rate Euro	Amount Euro
Brought forward						
507	Loading of stockpiled topsoil, and spread on road sides in build-up areas in layers of 100 mm thickness, as directed	m2	310	1,100.00		
	<u>Pavement</u>					
508	Provide material for capping layer, fill and compact at OMC to line and level (200 mm compacted thickness)	m3	502	1,400.00		
509	Provide granular subbase material, fill and compact at OMC to line and level (225 mm compacted thickness)	m3	502	1,500.00		
510	Prime coat RC 30 at 0.8 l/m ²	m2	506.1	4,535.00		
511	Alteration rate for adjustment in application rate of each 0.1 l	rate only	N/A	--		
512	Provide and place bituminous course consists of binder course 0/22, 150 mm thick, placed in 2 layers, suggested bitumen content 4,8 %	m2	506	4,535.00		
513	Alteration rate for adjustment in bitumen contents for each 0,1%	rate only	N/A	--		
514	Tack coat at 0.5 l/m2	m2	506	9,070.00		
515	Alteration rate for adjustment in tack coat application for each 0.1 l/m2	rate only	N/A	--		
516	Provide and place bituminous surface course 0/11, - 50 mm thick. Suggested bitumen content 6,5 %	m2	506	4,500.00		
517	Alteration rate for adjustment in bitumen content for each 0,1%	rate only	N/A	--		
518	Provide subbase material and built in at OMC to line and levels to shoulders	m3	502	590.00		
Carried forward						

Item	Description	Unit	Technical Specifications	Quantity	Rate Euro	Amount Euro
Brought forward						
	<u>Road furniture and marking</u>					
519	Road marking - Line passed through, width 0.1 m	m	804	1,060.00		
520	Road marking - Broken line, width 0.1 m, ratio 3:9	m	804	530.00		
521	Small road signs	no.	802	8.00		
522	Roadside marking post	no.	807	20.00		
523	Provide and install crash barriers, type ESP or similar, as specified, including poles, earthworks, fittings and all ancillary works	m	808	400.00		
Total bill no. 500 carried to summary						
600	<u>Miscellaneous</u>					
601	P.I. Relocation of supply lines	P.S.	116	1		
601.1	Allow contractor's overheads.....per cent					
601.2	and contractor's profitper cent					
Total bill no. 600 carried to summary						

Item	Description	Unit	Technical Specifications	Quantity	Rate Euro	Amount Euro
700	<u>Dayworks, Provisional Items (P.I.)</u>		Vol.III, i			
	<u>Dayworks – Labour</u>					
701	P.I.: Unskilled labour	h	Vol.III, i	200.00		
702	P.I.: Skilled labour	h	Vol.III, i	200.00		
703	P.I.: Foreman	h	Vol.III, i	50.00		
	Subtotal Dayworks – Labour					
	Allow for per cent of subtotal for Contractor's overhead and profit					
Total to Dayworks Summary						
	<u>Dayworks – Materials</u>					
704	P.I.: Sand	m3	Vol.III, i	100.00		
705	P.I.: Sulphate resisting Portland cement	t	Vol.III, i	25.00		
706	P.I.: Crushed sand	t	Vol.III, i	100.00		
707	P.I.: Crushed course aggregate	m3	Vol.III, i	100.00		
708	P.I.: Crushed fine aggregate	m3	Vol.III, i	100.00		
	Subtotal Dayworks Materials					
	Allow for per cent of subtotal for Contractor's overhead and profit					
Total to Dayworks Summary						

Item	Description	Unit	Technical Specifications	Quantity	Rate Euro	Amount Euro
	<u>Equipment</u>					
709	P.I.: Wheel loader	h	Vol.III, i	15.00		
710	P.I.: Bulldozer	h	Vol.III, i	15.00		
711	P.I.: Grader 140 hp	h	Vol.III, i	15.00		
712	P.I.: Dumper truck 8 m ³	h	Vol.III, i	15.00		
713	P.I.: Wheel tractor over 50 hp	h	Vol.III, i	10.00		
714	P.I.: Water tanker over 6 m ³	h	Vol.III, i	15.00		
715	P.I.: Rubber tyre roller	h	Vol.III, i	15.00		
716	P.I.: Steel roller	h	Vol.III, i	15.00		
717	P.I.: Vibrating roller	h	Vol.III, i	15.00		
718	P.I.: Air compressor incl. hoses, hammers, chisels (7 m ³ /min)	h	Vol.III, i	25.00		
719	P.I.: Concrete mixer	h	Vol.III, i	15.00		
720	P.I.: Pick up	h	Vol.III, i	25.00		
721	P.I.: Crane lifting capacity 10 t	h	Vol.III, i	15.00		
722	P.I.: Crane lifting capacity over 10 t	h	Vol.III, i	15.00		
	Subtotal Dayworks Equipment Allow for per cent of subtotal for Contractor's overhead and profit					
Total to Dayworks Summary						

Item	Description	Unit	Technical Specifications	Quantity	Rate Euro	Amount Euro
	Total for daywork labour Total for daywork materials Total for daywork equipment					
Total Bill 700 carried to summary						

VOLUME 5

DESIGN DOCUMENTS INCLUDING DRAWINGS

Section 5.1

List of Drawings Attached

No.	Name	Drawing N°	Design N°
1.	Project Location Map. Shemkir Bridge	A 1	
2.	Project Location Map. Gasan Su Cay Bridge	A 2	
3.	Typical Cross Section. Approach road Shemkir Bridge	B 1	
4.	Typical Cross Section. Approach road Gasan Su Cay Bridge	B 2	
5.	Plan and Profile. Approach road Shemkir Bridge	C 1	
6.	Plan and Profile. Approach road Gasan Su Cay Bridge	C 2	
7.	Detailed Plan. Shemkir Bridge	D 1	
8.	Detailed Plan. Gasan Su Cay Bridge	D 2	
9.	Standard Cross Section. Approach road Shemkir Bridge	E 1	
10.	Standard Cross Section. Approach road Gasan Su Cay Bridge	E 2	
11.	Standard Drawings. Guard Rail	F 1	
12.	Standard Drawings. Road Signs, Marker Posts	F 2	
13.	Legend	G 1	
Shemkir Bridge			
14.	Bridge no. 32, Longitudinal section C-C, Left side	H 32-01-01	
15.	Bridge no. 32, Longitudinal section C-C, Right side	H 32-01-02	
16.	Bridge no. 32, Plan	H 32-01-03	

No.	Name	Drawing N°	Design N°
17.	Bridge no. 32, Transverse section A-A, B-B	H 32-01-04	
18.	Bridge no. 32, Plan of the regulation structures	H 32-01-05	
19.	Bridge no. 32, Standard Drawings.	H 32-01-06	
20.	Bridge no. 32, Standard Drawings.	H 32-01-07	
Gasau Su Cay Bridge			
21.	Bridge no. 44, Longitudinal section B-B	H 44-01-01	
22.	Bridge no. 44, Plan	H 44-01-02	
23.	Bridge no. 44, Standard Drawings.	H 44-01-03	
24.	Bridge no. 44, Plan of the regulation structures	H 44-01-04	
25.	Bridge no. 44, Standard Drawings.	H 44-01-05	
26.	Bridge no. 44, Standard Drawings.	H 44-01-06	

Section 5.2

List of Design Documents Available

No.	Designer	Design No.	Design Name	Date
1.				

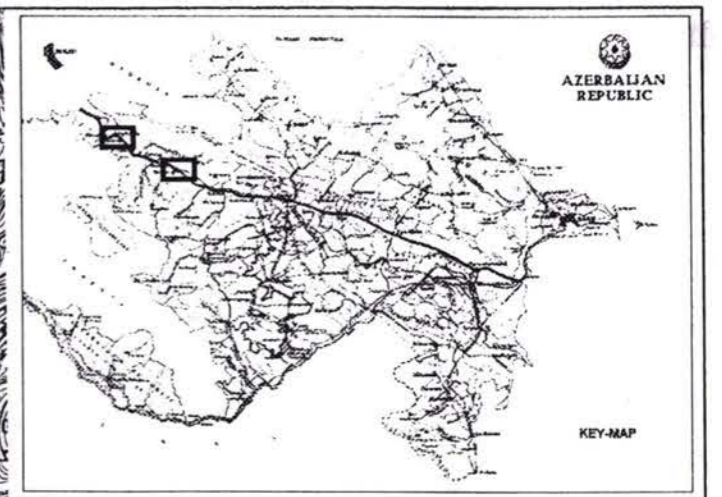
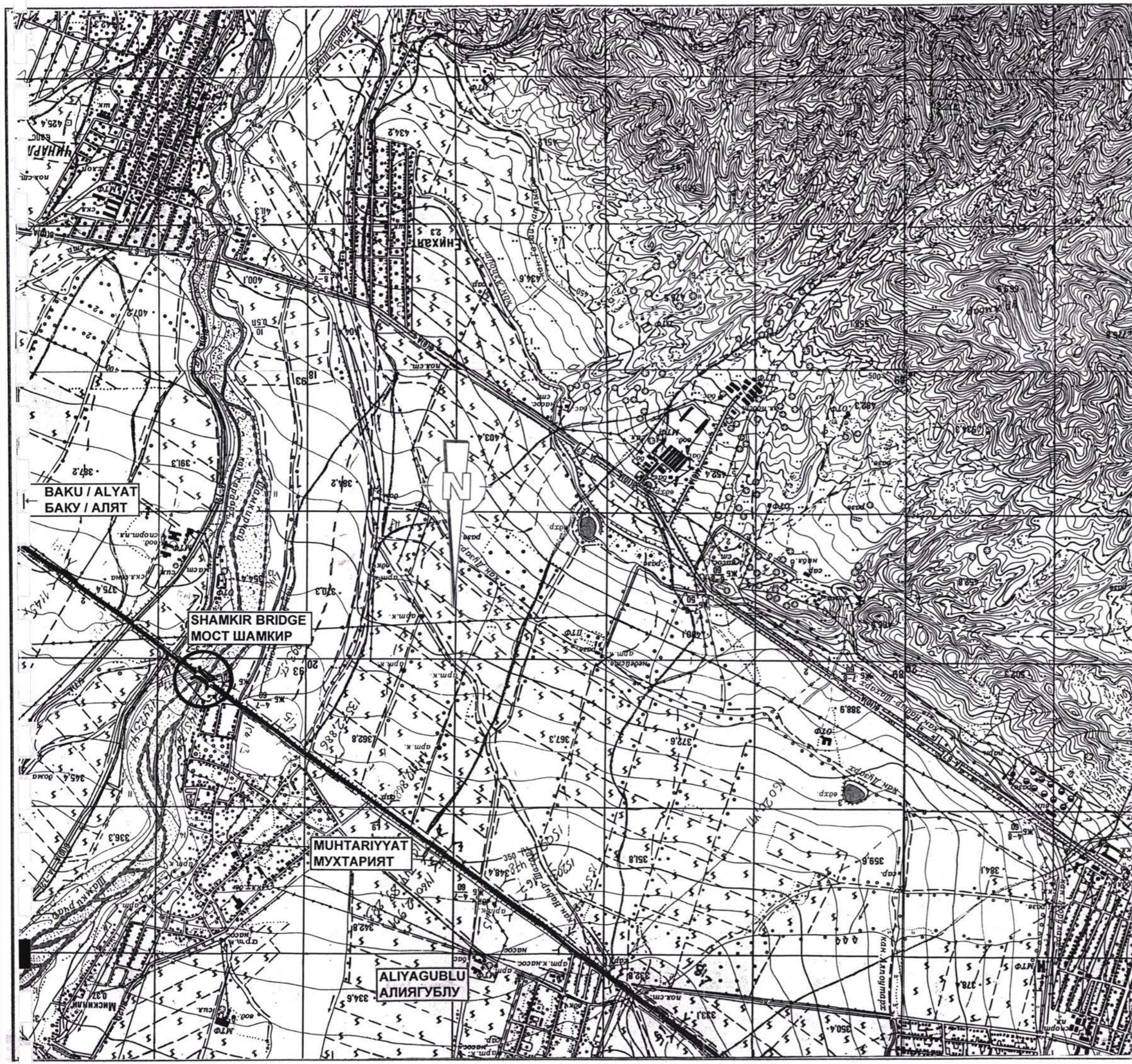
Drawings are available for inspection from [date] at the following address:

Consulting Project Manager:
Responsible person: Mr Yusif Novruzov, President Azeravtoyol
Tel. No.: +994 12 – 93 80 93 / 93 01 30 / 98 55 86
Fax No.: +994 12 98 55 86
E-mail:

Signature

(a person or persons authorised to sign on behalf of the Tenderer)

Date}



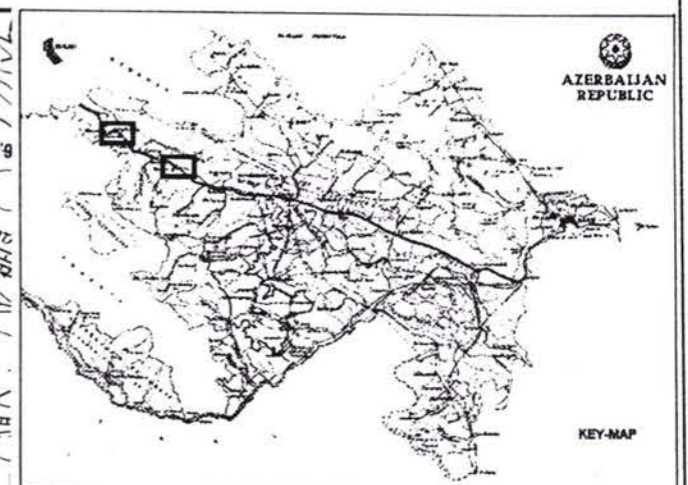
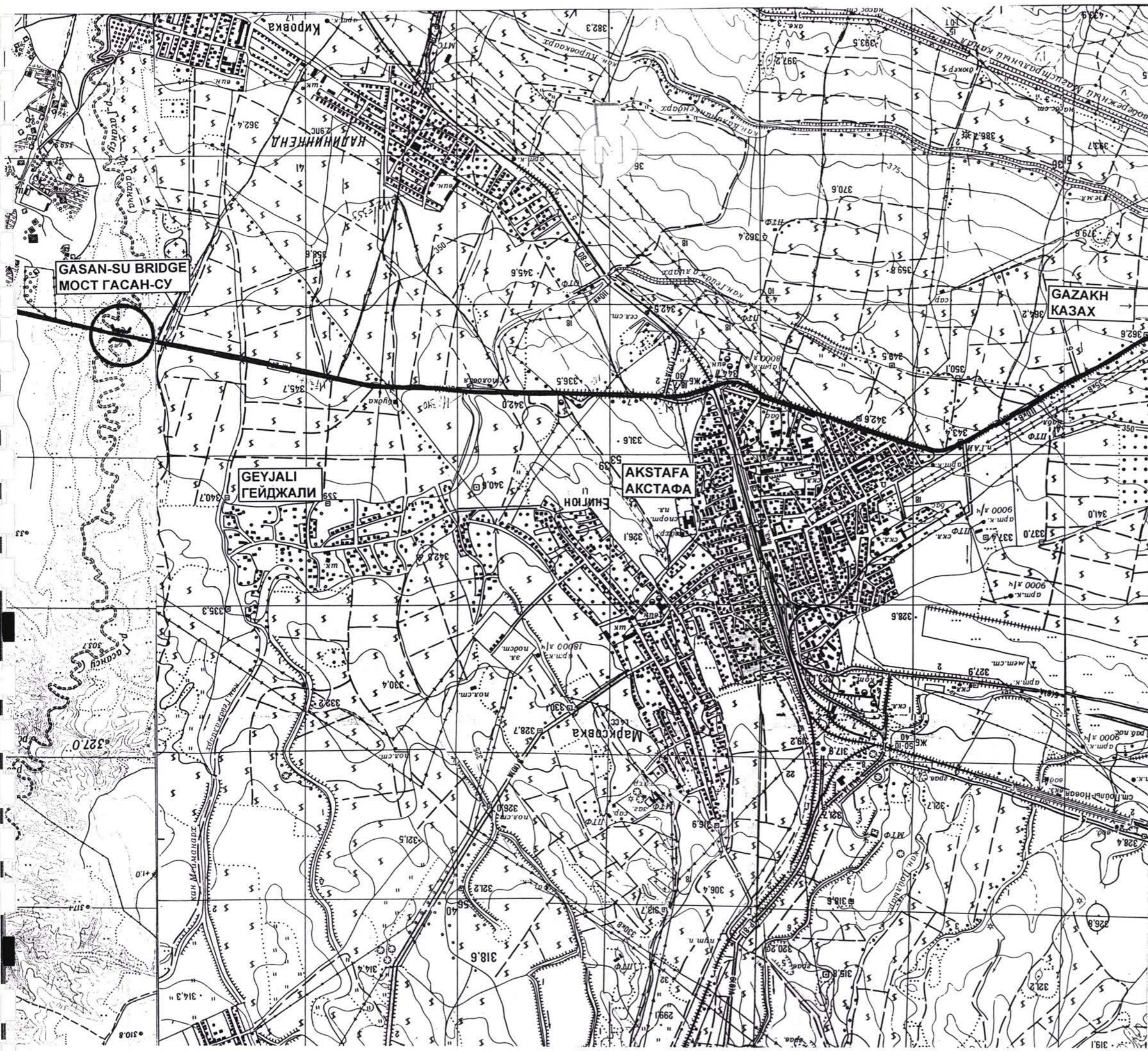
No	№	Amendments	Изменения	Name	Название	Date	Дата

REPUBLIC OF AZERBAIJAN **РЕСПУБЛИКА АЗЕРБАЙДЖАН**

AZERAVTOYOL SC **ГК АЗЕРАВТОЙОЛ**

KOCKS CONSULT GMBH **KOCKS ingenieur**

Designed Проектировал		CONSTRUCTION OF THE GASAN SU CAY AND SHEMKIR BRIDGES	
Drawn Чертил		СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР	
Checked Проверил		Shemkir bridge Мост Шемкир	
Approved Одобрен		Description Описание	
Date Дата		Project Location Map	
Azaravtoyol Азербайтојол		Carta расположения проекта	
		Scale Масштаб 1 : 25000	
		Date Дата July 2001	
		Drawing no. № чертежа A1	



No №	Amendments	Изменения	Name	Название	Date	Дата

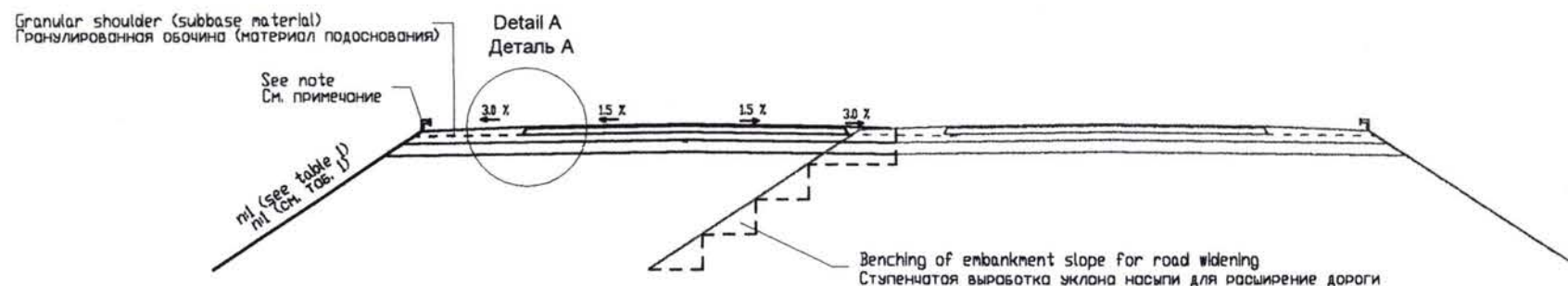
REPUBLIC OF AZERBAIJAN **РЕСПУБЛИКА АЗЕРБАЙДЖАН**

AZERAVTOYOL SC **ГК АЗЕРАВТОЙОЛ**

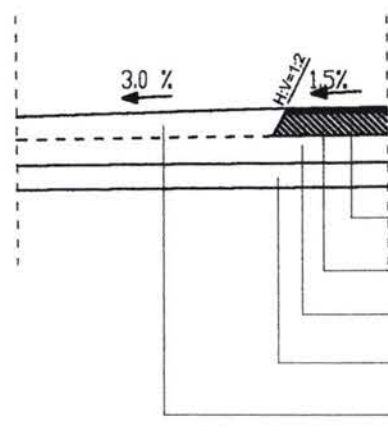
KOCKS CONSULT GMBH **KOCKS ingenieure**

Designed Проектировал Drawn Чертил Checked Проверил Approved Одобрен		CONSTRUCTION OF THE GASAN SU CAY AND SHEMKIR BRIDGES СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР	
Section: Shemkir Bridge Участок: Мост Шемкир		Scale Масштаб: 1 : 25000	
Description Описание Project Location Map		Date Дата: July 2001 Drawing no. № чертежа: A2	
Date Дата:		Карта расположения проекта	

CROSS SECTION OF APPROACH ROAD
ПОПЕРЕЧНЫЙ ПРОФИЛЬ ПОДХОДА К МОСТУ



Detail A
Деталь А
Not to scale
Без масштаба



New pavement structure according to the TRL RN 31
Структура нового покрытия в соответствии с TRL RN 31

- 50 mm Flexible bituminous surface according to the German asphalt specifications
- 50 mm Нежесткий битумный слой в соответствии с Немецкими спецификациями по а/б
- 175 mm Bituminous road base according to the German asphalt specifications
- 175 mm Основание обработанное битумом в соответствии с Немецкими спецификациями по а/б
- 225 mm Granular sub-base
- 225 mm Гранулированное подоснование
- 350 mm Granular capping layer or selected subgrade fill
- 350 mm Гранулированный покрывающий слой или выбранный заполнитель грунтового основания
- 225 mm Granular shoulder (subbase material)
- 225 mm Гранулированная обочина (материал подоснования)

Notes:
Примечания

Guardrails shall be installed when height of embankment exceeds 3 m.

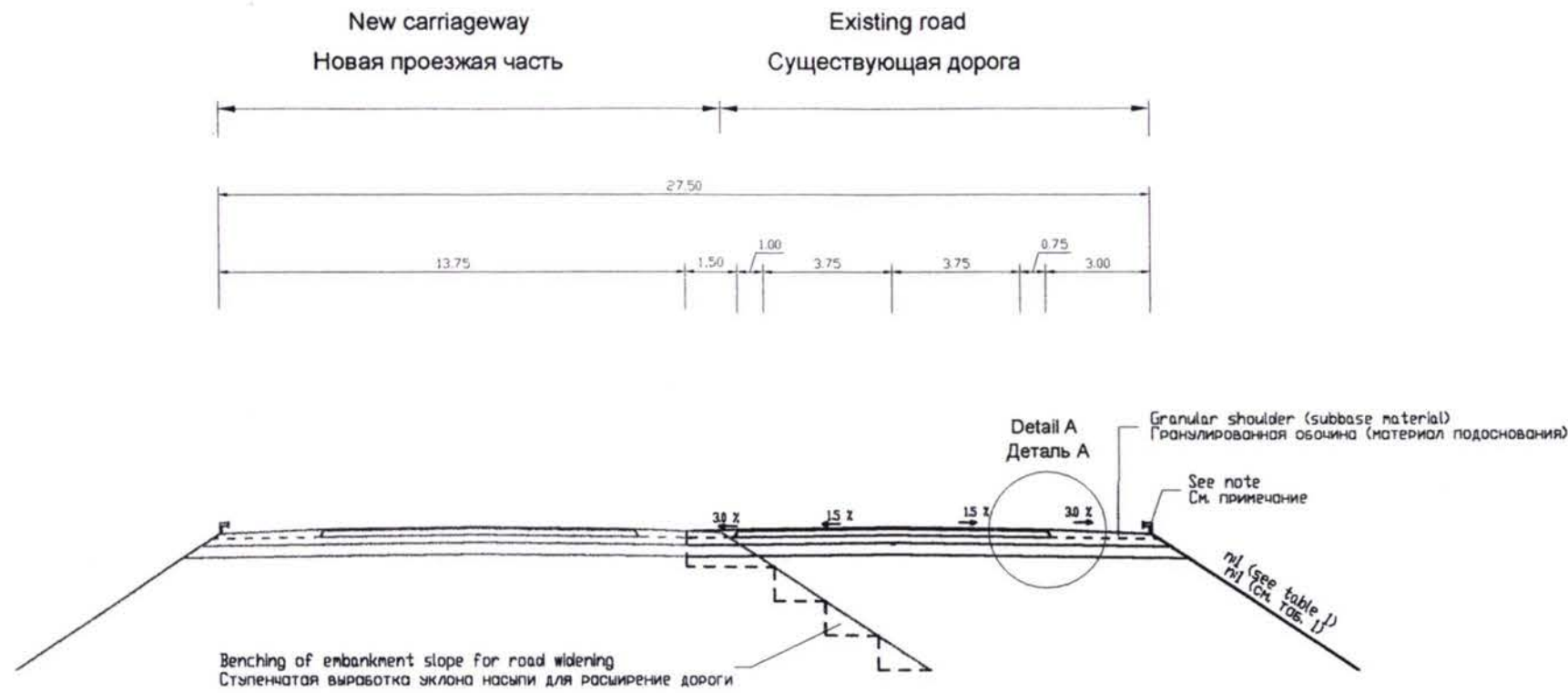
Ограждения устанавливаются при высоте насыпи более 3 м.

TABLE 1: EMBANKMENT SLOPES
Таб 1: УКЛОИ НАСЫПИ

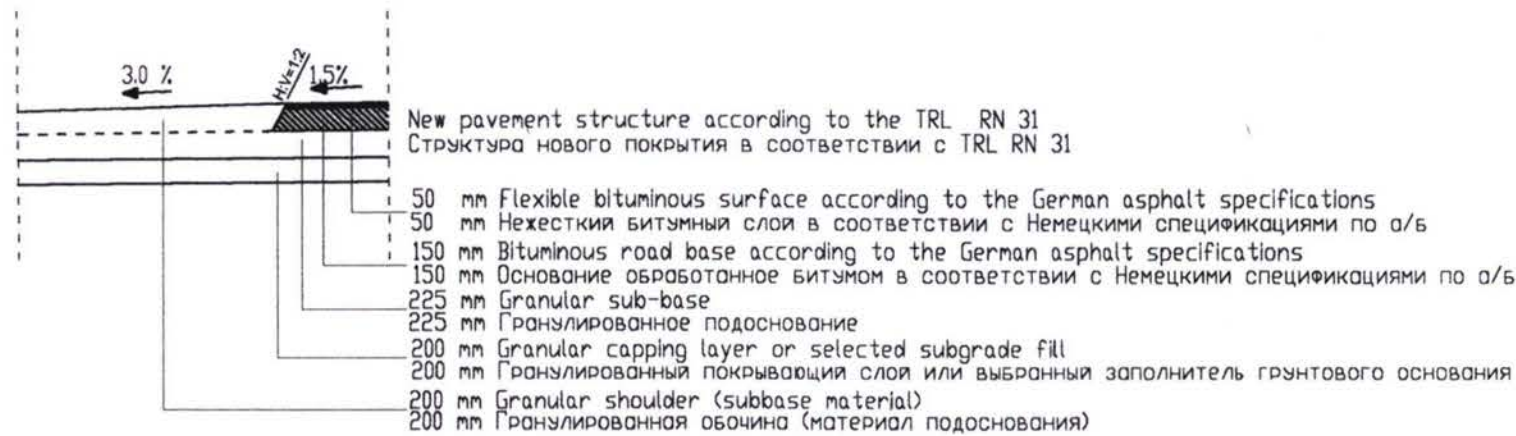
HEIGHT OF FILL ВЫСОТА НАСЫПИ (METERS) (H)	EMBANKMENT SLOPE УКЛОИ НАСЫПИ (HORIZONTAL : VERTICAL) (ГОРИЗОНТАЛЬНЫЙ : ВЕРТИКАЛЬНЫЙ) (m:1)
H < 3.00	4 : 1
3.00 < H < 6.00	1.5 : 1
6.00 < H	1.5 : 1 UP TO 6.00m FROM TOP OF EMBANKMENT 1.5 : 1 ДО 6.00m ОТ ВЕРХНИ НАСЫПИ 1.75 : 1 6.00 m BELOW LEVEL OF NATURAL GROUND 1.75 : 1 6.00 m НИЖЕ УРОВНЯ ЗЕМЛИ

No	№	Amendments	Изменения	Name	Название	Date	Дата
				REPUBLIC OF AZERBAIJAN		РЕСПУБЛИКА АЗЕРБАЙДЖАН	
				AZERAVTOYOL SC		ГК АЗЕРАВТОЙОЛ	
				KOCKS CONSULT GMBH		KOCKS ingenteure	
				CONSTRUCTION OF THE GASAN SU CAY AND SHEMKIR BRIDGES СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР			
Designed / Проектировал				Shemkir bridge / Мост Шемкир			
Drawn / Чертил				Description / Описание			
Checked / Проверил				Scale / Масштаб		1:200	
Approved / Сдобрен				Date / Дата		July 2001	
Date / Дата				Drawing no. / № чертежа		B 1	

CROSS SECTION OF APPROACH ROAD
ПОПЕРЕЧНЫЙ ПРОФИЛЬ ПОДХОДА К МОСТУ



Detail A
Деталь А
Not to scale
Без масштаба



Notes:
Примечания

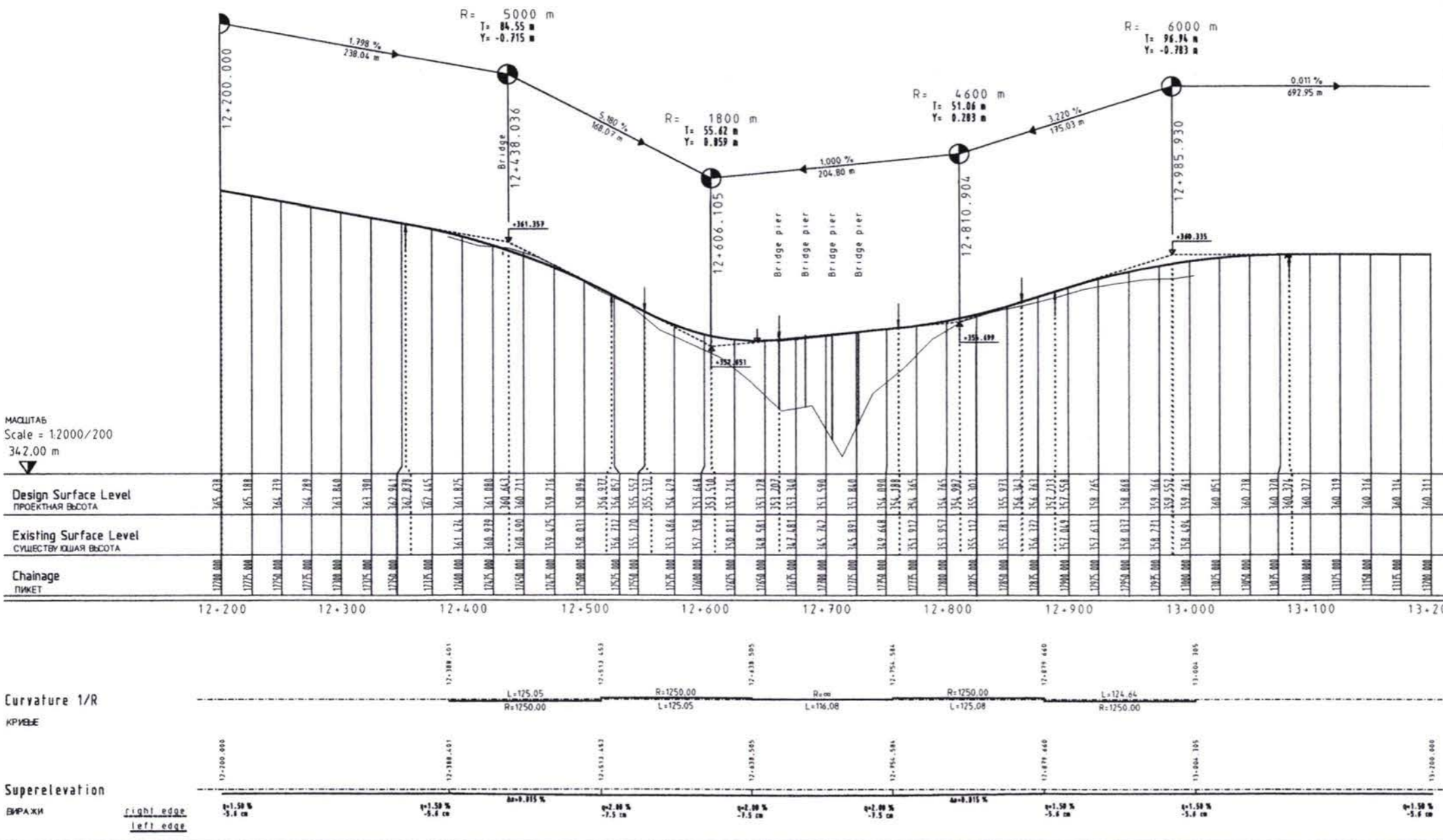
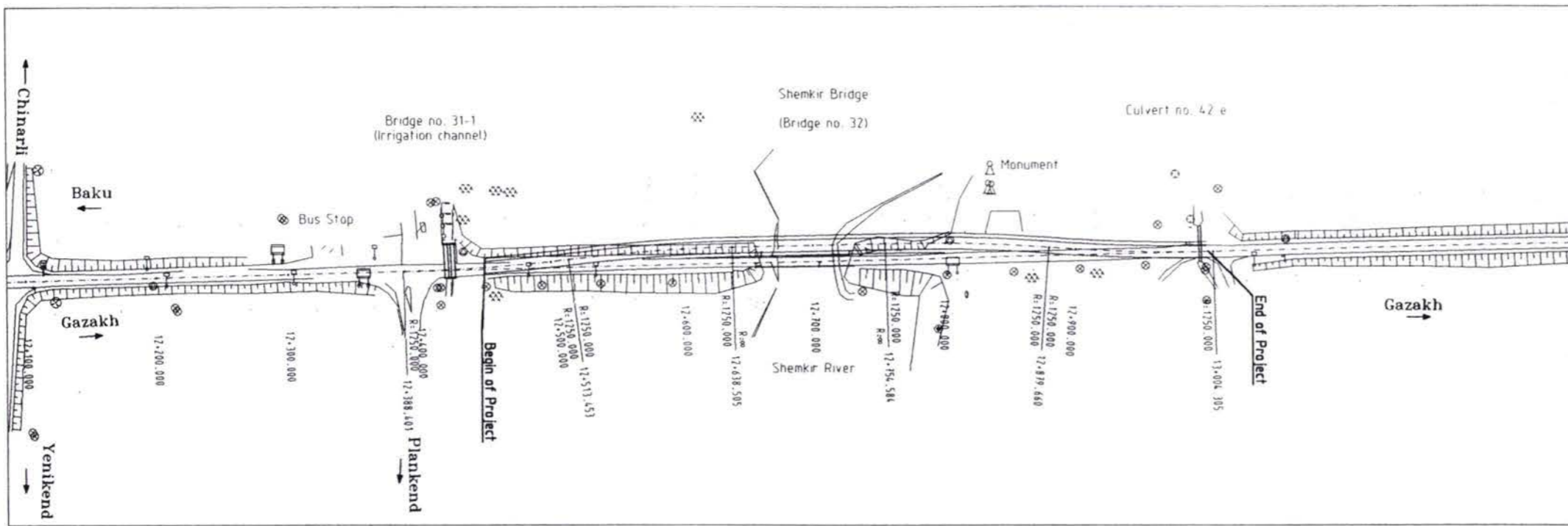
Guardrails shall be installed when height of embankment exceeds 3 m.

Ограждения устанавливаются при высоте насыпи более 3 м.

TABLE 1: EMBANKMENT SLOPES
Таб. 1: УКЛОН НАСЫПИ

HEIGHT OF FILL ВЫСОТА НАСЫПИ (METERS) (м)	EMBANKMENT SLOPE УКЛОН НАСЫПИ (HORIZONTAL : VERTICAL) (ГОРИЗОНТАЛЬНЫЙ : ВЕРТИКАЛЬНЫЙ) (m)
H < 3.00	4 : 1
3.00 < H < 6.00	1.5 : 1
6.00 < H	1.5 : 1 UP TO 6.00m FROM TOP OF EMBANKMENT 1.5 : 1 ДО 6.00m ОТ ВЕРШИНЫ НАСЫПИ 1.75 : 1 6.00 m BELOW LEVEL OF NATURAL GROUND 1.75 : 1 6.00 м НИЖЕ УРОВНЯ ЗЕМЛИ

No	Amendments	Изменения	Name	Название	Date	Дата
REPUBLIC OF AZERBAIJAN РЕСПУБЛИКА АЗЕРБАЙДЖАН						
AZERAVTOYOL SC ГК АЗЕРАВТОЙОЛ						
KOCKS CONSULT GMBH KOCKS ingenieure						
CONSTRUCTION OF THE GASAN SU CAY AND SHEMKIR BRIDGES СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР						
Designed Проектировал			Gasan su cay bridge Мост Гасан су чай			
Drawn Чертил			Description Описание			
Checked Проверил			Scale Масштаб 1:200			
Approved Сдобрен			Date July 2001			
Date Azərbaycan			Drawing no. B 2			



МАСШТАБ
Scale = 1:2000/200
342.00 m

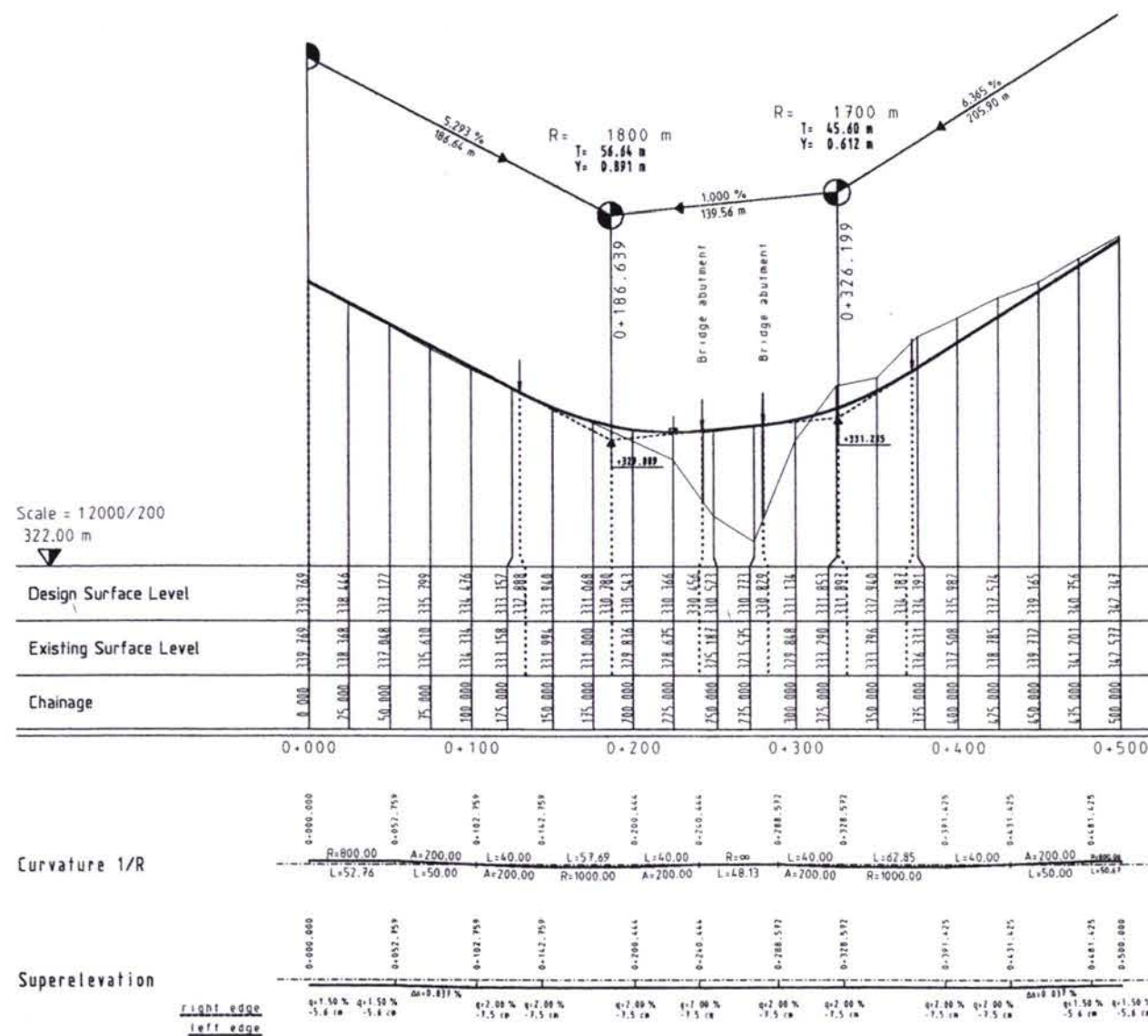
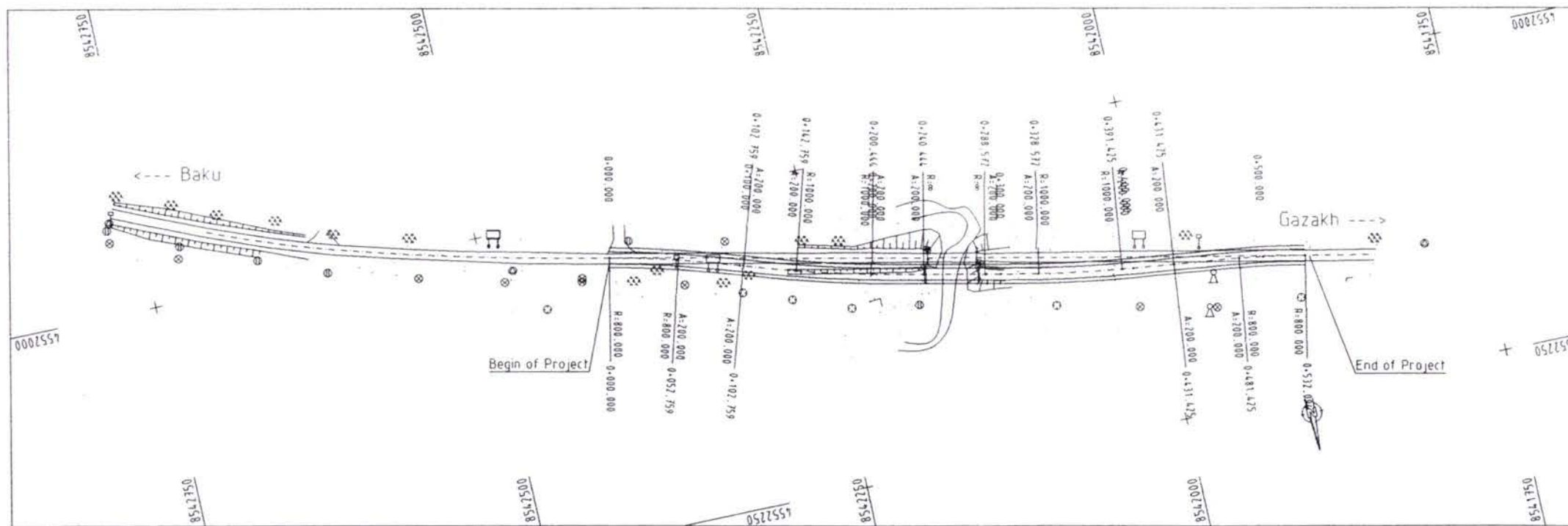
No.	Amendments	ИЗМЕНЕНИЯ	Name	НАЗВАНИЕ	Date	ДАТА

REPUBLIC OF AZERBAIJAN РЕСПУБЛИКА АЗЕРБАЙДЖАН

AZERAVTOYOL SC ГК АЗЕРАВТОЙОЛ

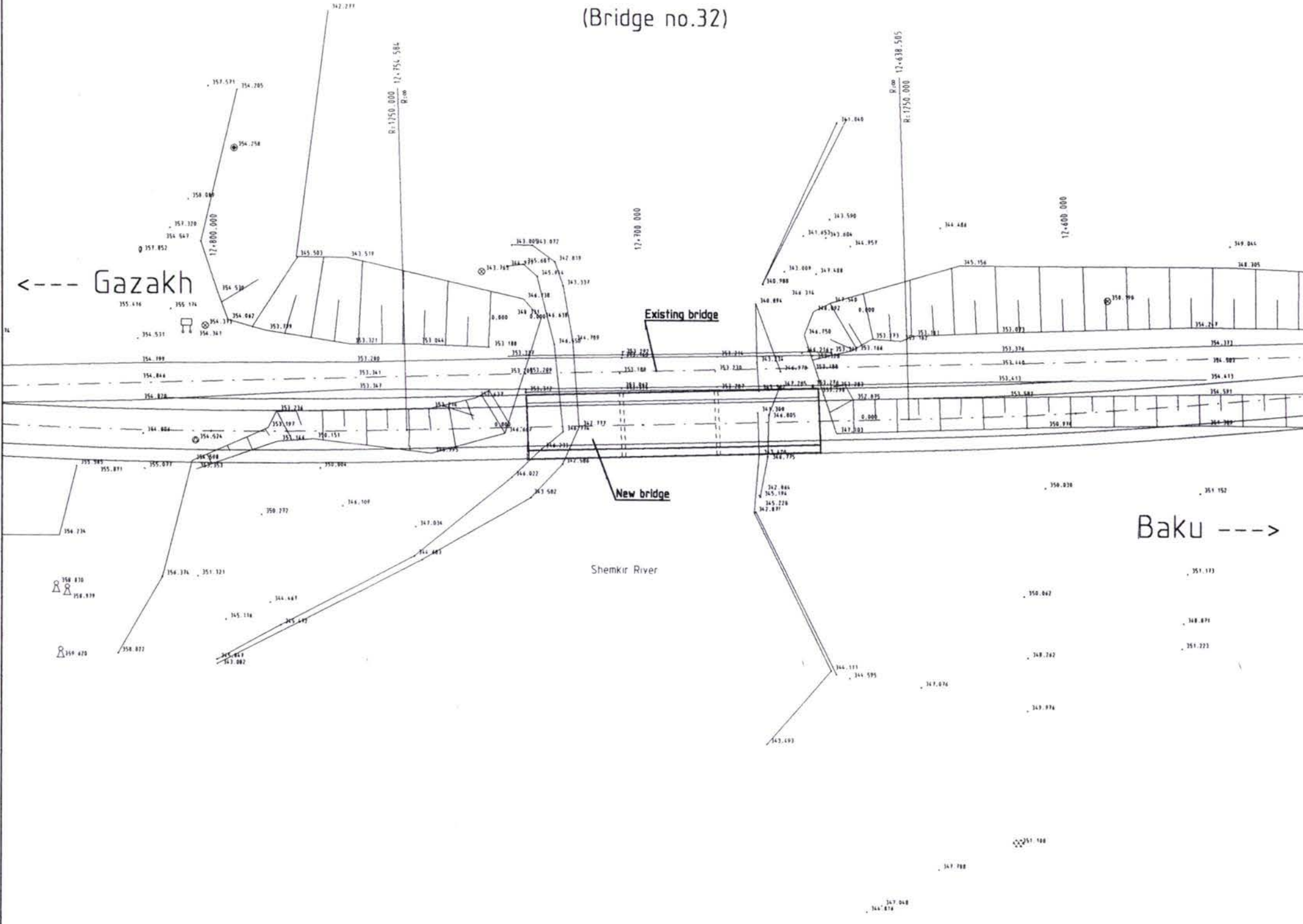
KOCKS CONSULT GMBH KOCKS INGENIEURE

Designed ПРОЕКТИРОВАЛ Griese		Construction of Gasan Su Cay and Shemkir bridges	
Drawn ЧЕРТИЛ Griese		СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР	
Checked ПРОВЕРИЛ Walter / Griese		Shemkir bridge МОСТ ШЕМКИР	
Approved ОДОБРИЛ		Description ОПИСАНИЕ	
Date	Azeravtoyol АЗЕРАВТОЙОЛ	Plan and Profile ПЛАН И ПРОФИЛЬ	Scale: Horizontal 1:2000, Vertical 1:200
Date		Date	July 2001
		Drawing no. No.ЧЕРТЕЖА	C 1



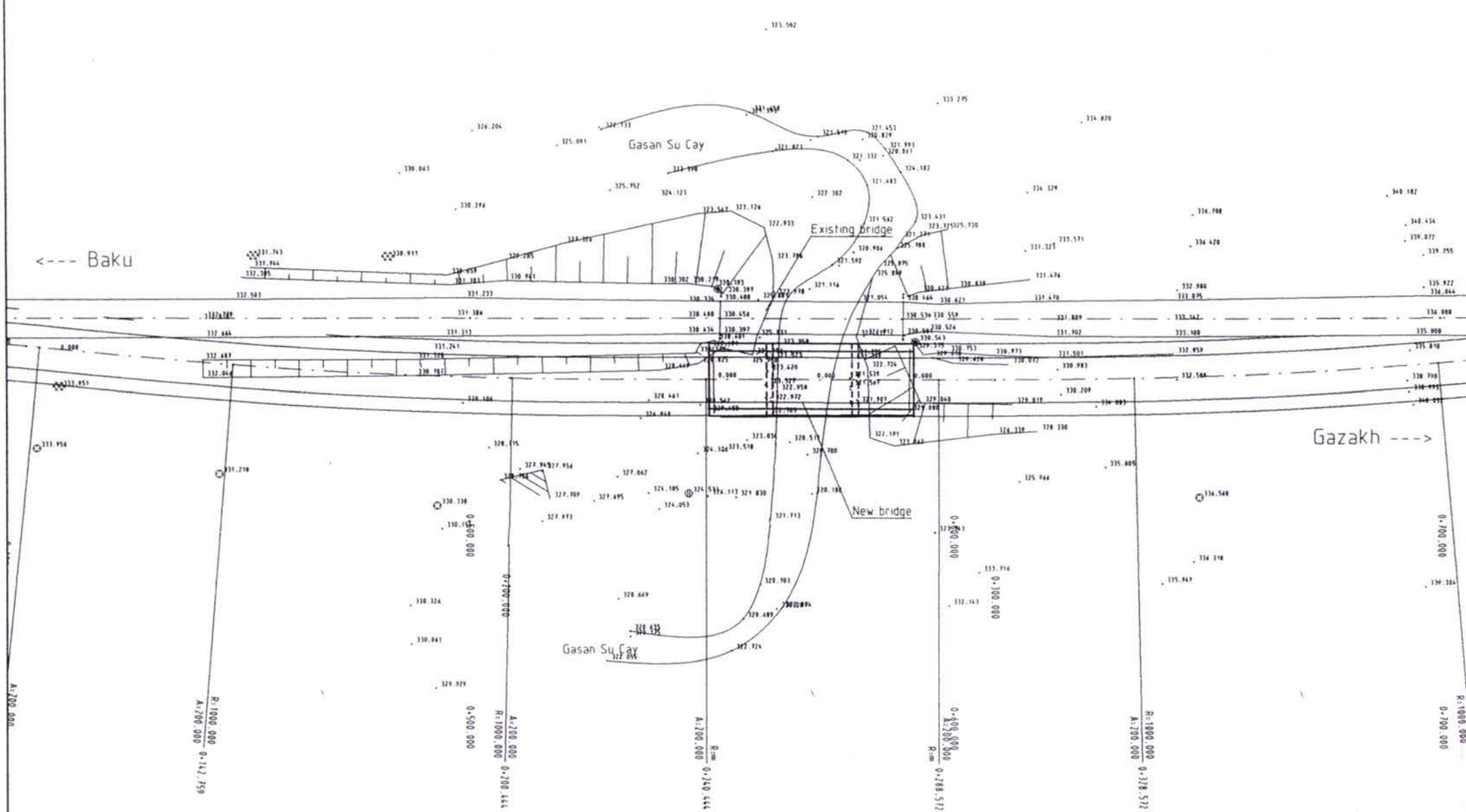
No.	Amendments	ИЗМЕНЕНИЯ	Name	НАЗВАНИЕ	Date	ДАТА
REPUBLIC OF AZERBAIJAN РЕСПУБЛИКА АЗЕРБАЙДЖАН						
AZERAVTOYOL SC ГК АЗЕРАВТОЙОЛ						
KOCKS CONSULT GMBH KOCKS INGENIEUR						
Construction of Gasan Su Cay and Shemkir bridges СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ И ШЕМКИР						
Designed ПРОЕКТИРОВАЛ Griese			Gasan Su Cay bridge МОСТ ГАСАН СУ ЧАЙ			
Drawn ЧЕРТИЛ Griese			Description ОПИСАНИЕ			
Checked ПРОВЕРИЛ Weber / Griese			Scale Horizontal 1:2000 Вертикаль 1:200			
Approved ОДОБРИЛ			Plan and Profile ПЛАН И ПРОФИЛ		Date July 2001 ДАТА	
Date	Azeravtoyol АЗЕРАВТОЙОЛ		Drawing no. № ЧЕРТЕЖА		C 2	

SHEMKIR BRIDGE
(Bridge no.32)



No.	Amendments	ИЗМЕНЕНИЯ	Name	НАЗВАНИЕ	Date	ДАТА
<p>REPUBLIC OF AZERBAIJAN РЕСПУБЛИКА АЗЕРБАЙДЖАН</p> <p>AZERAVTOYOL SC ГК АЗЕРАВТОЙОЛ</p> <p>KOCKS CONSULT GMBH KOCKS INGENIEURE</p>						
<p>Construction of Gasan Su Cay and Shemkir bridges СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР</p>						
<p>Designed ПРОЕКТИРОВАЛ Griese Drawn ЧЕРТИЛ Griese Checked ПРОВЕРИЛ Weiler / Griese</p>			<p>Shemkir bridge МОСТ ШЕМКИР</p>		<p>Scale 1500 МАШТАБ</p>	
<p>Approved ОДБРЕН</p>			<p>Description ОПИСАНИЕ</p>		<p>Date July 2001 ДАТА</p>	
<p>Date Azerbaijan ДАТА АЗЕРАВТОЙОЛ</p>			<p>Detailed Plan ПЛАН</p>		<p>Drawing no. 1 № ЧЕРТЕЖА</p>	

Gasan Su Cay Bridge
(Bridge no. 44)



No.	Amendments	ИЗМЕНЕНИЯ	Name	НАЗВАНИЕ	Date	ДАТА

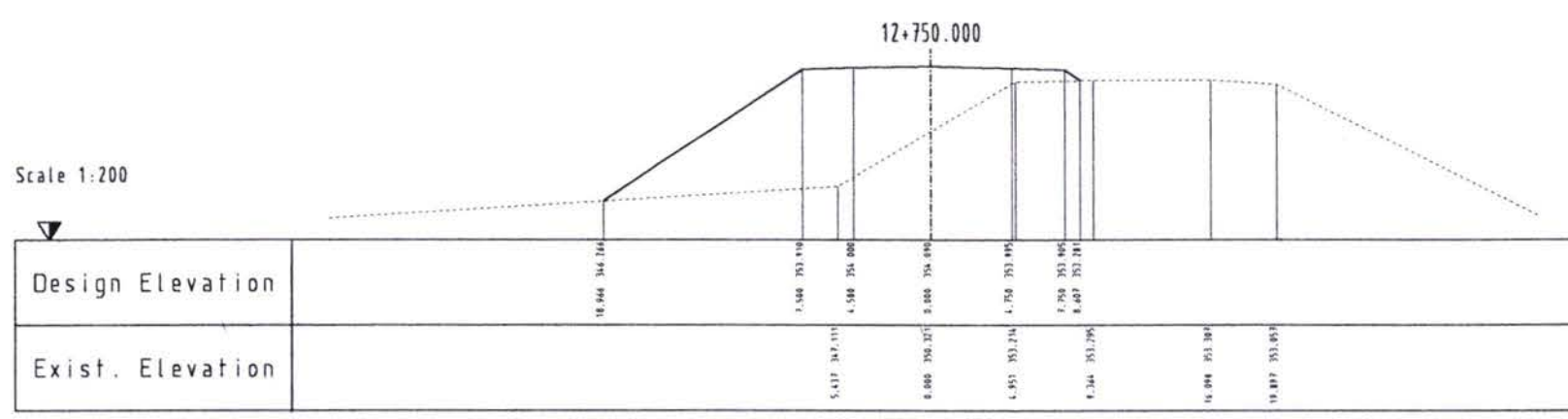
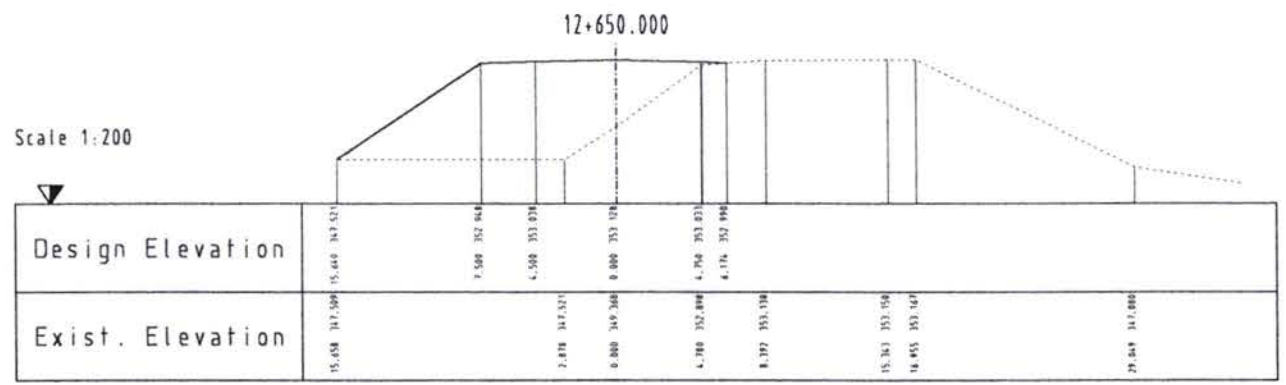
REPUBLIC OF AZERBAIJAN РЕСПУБЛИКА АЗЕРБАЙДЖАН

AZERAVTOYOL SC ГК АЗЕРАВТОЙОЛ

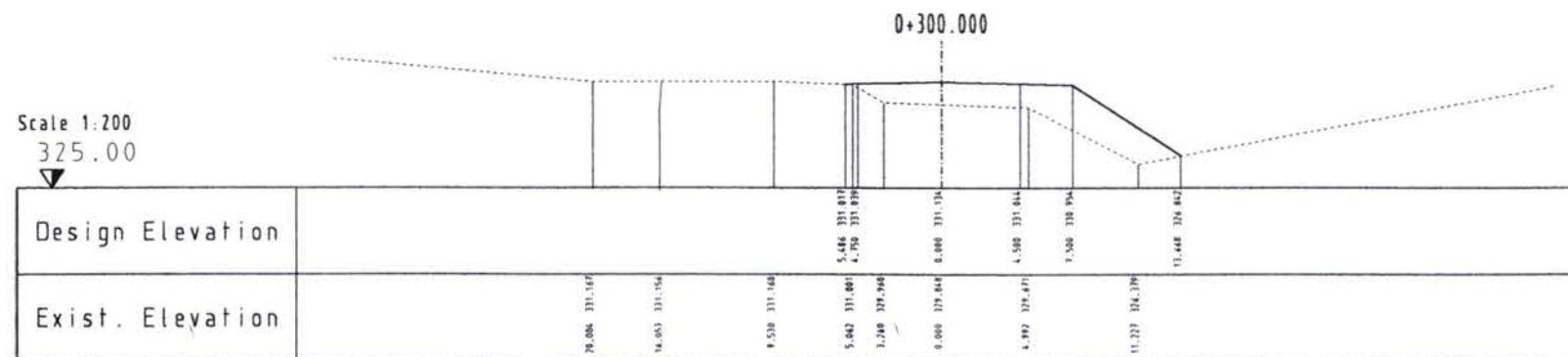
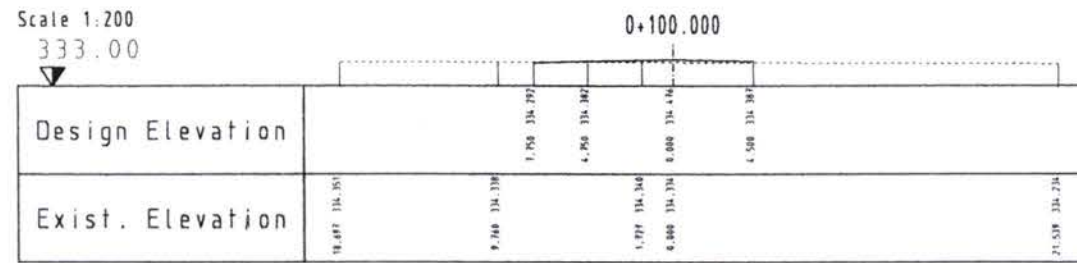
KOCKS CONSULT GMBH **KOCKS**
INGENIEUR

Construction of Gasan Su Cay and Shemkir bridges
СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ И ШЕМКИР

Designed ПРОЕКТИРОВАЛ	Griese	Gasan Su Cay bridge	МОСТ ГАСАН СУ ЧАЙ
Drawn ЧЕРТИЛ	Griese		
Checked ПРОВЕРИЛ	Weiler / Griese		
Approved ОДБОРЕН		Description ОПИСАНИЕ	Scale МАСШТАБ
Date	Azeravtoyol АЗЕРАВТОЙОЛ	Detailed Plan ПЛАН	1:500
			Date ДАТА
			July 2001
			Drawing no. № ЧЕРТЕЖА
			D 2



No.	Amendments	ИЗМЕНЕНИЯ	Name	НАЗВАНИЕ	Date	ДАТА
REPUBLIC OF AZERBAIJAN РЕСПУБЛИКА АЗЕРБАЙДЖАН						
AZERAVTOYOL SC ГК АЗЕРАВТОЙОЛ						
KOCKS CONSULT GMBH KOCKS INGENIEURE						
Construction of Gasan Su Cay and Shemkir bridges СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР						
Designed ПРОЕКТИРОВАЛ Giese						
Drawn ЧЕРТИЛ Giese						
Checked ПРОВЕРИЛ Weller / Giese						
Approved ОДБОРЕН						
Shemkir bridge			МОСТ ШЕМКИР			
Description ОПИСАНИЕ			Standard Cross Section		Scale МАСШТАБ 1:200	
Date ДАТА			ПОПЕРЕЧНЫЕ ПРОФИЛИ		Date ДАТА July 2001	
Azeravtoyol АЗЕРАВТОЙОЛ			Drawing no. No ЧЕРТЕЖА		E 1	



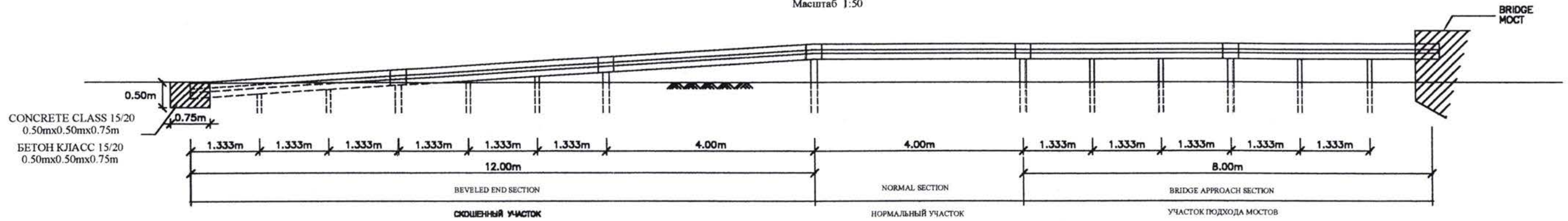
No.	Amendments	ИЗМЕНЕНИЯ	Name	НАЗВАНИЕ	Date	ДАТА
		REPUBLIC OF AZERBAIJAN		РЕСПУБЛИКА АЗЕРБАЙДЖАН		
		AZERAVTOYOL SC		ГК АЗЕРАВТОЙОЛ		
		KOCKS CONSULT GMBH		KOCKS INGENIEURE		
		Construction of Gasan Su Cay and Shemkir bridges СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ И ШЕМКИР				
		Gasan Su Cay bridge		МОСТ ГАСАН СУ ЧАЙ		
Designed ПРОЕКТИРОВАЛ Grese		Description ОПИСАНИЕ		Scale ШКАЛА 1:200		
Drawn ЧЕРТИЛ Grese		Standard Cross Section		Date ДАТА July 2001		
Checked ПРОВЕРИЛ Weiler / Grese		ПОПЕРЕЧНЫЕ ПРОФИЛИ		Drawing no. No ЧЕРТЕЖА E 2		
Approved ОДОБРЕН		Date ДАТА		Azeravtoyol АЗЕРАВТОЙОЛ		

GUARD RAIL

Scale 1:50

ПЕРИЛА

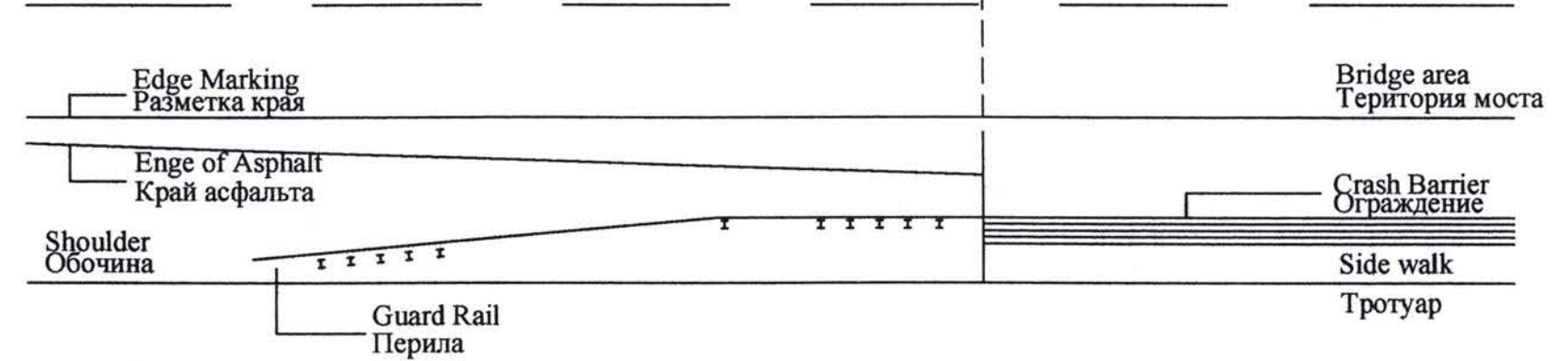
Масштаб 1:50



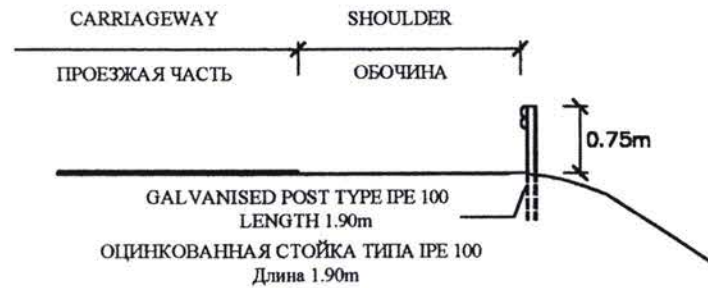
Top view of Guard Rail at Bridge Approach
Scale 1:200

План перил в подходах
Масштаб 1:200

Direction of Traffic
Направление движения

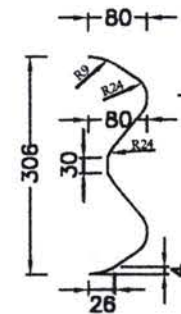
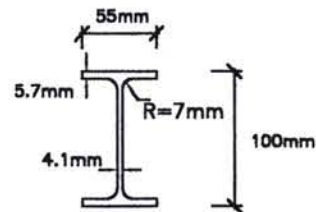


SECTION
СЕЧЕНИЕ



Cross section of rail element
Поперечное сечение перила

CROSS SECTION OF POST TYPE IPE 100
ПОПЕРЕЧНОЕ СЕЧЕНИЕ СТОЙКИ ТИПА IPE 100



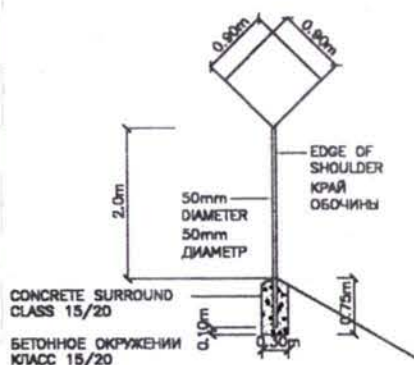
No	№	Amendments	Изменения	Name	Название	Date	Дата
REPUBLIC OF AZERBAIJAN		РЕСПУБЛИКА АЗЕРБАЙДЖАН					
AZERAVTOYOL SC		ГК АЗЕРАВТОЙОЛ					
KOCKS CONSULT GMBH		KOCKS ingenieure					
				CONSTRUCTION OF THE GASAN SU CAY AND SHEMKIR BRIDGES			
				СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР			
Designed		Проектирован		Description		Описание	
Drawn		Чертил		STANDARD DRAWINGS		Стандартный чертеж	
Checked		Проверил		Guard Rail		Перила	
Approved		Одобрен		Scale		Масштаб	
Date		Дата		Date		Дата	
Azeravtoyol		Азербайджан		July 2001		July 2001	
				Drawing no.		№ чертежа	
				F 1		F 1	

PLACING OF TRAFFIC SIGNS

SCALE 1:100

УСТАНОВКА ДОРОЖНЫХ ЗНАКОВ

МАСШТАБ 1:100

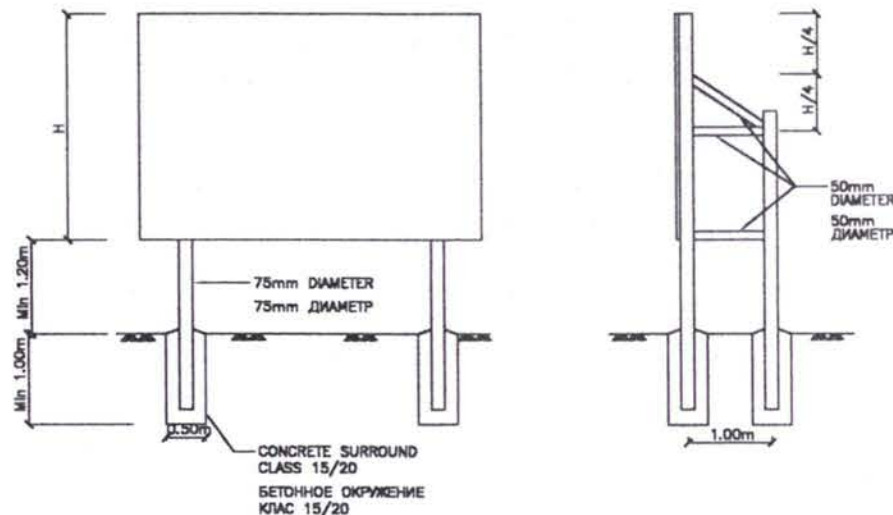


PLACING OF INFORMATIVE SIGNS

NOT TO SCALE

УСТАНОВКА ИНФОРМАЦИОННЫХ ЗНАКОВ

БЕЗ МАСШТАБА



ROAD SIDE DELINATOR WITH REFLECTORS ON BOTH SIDES

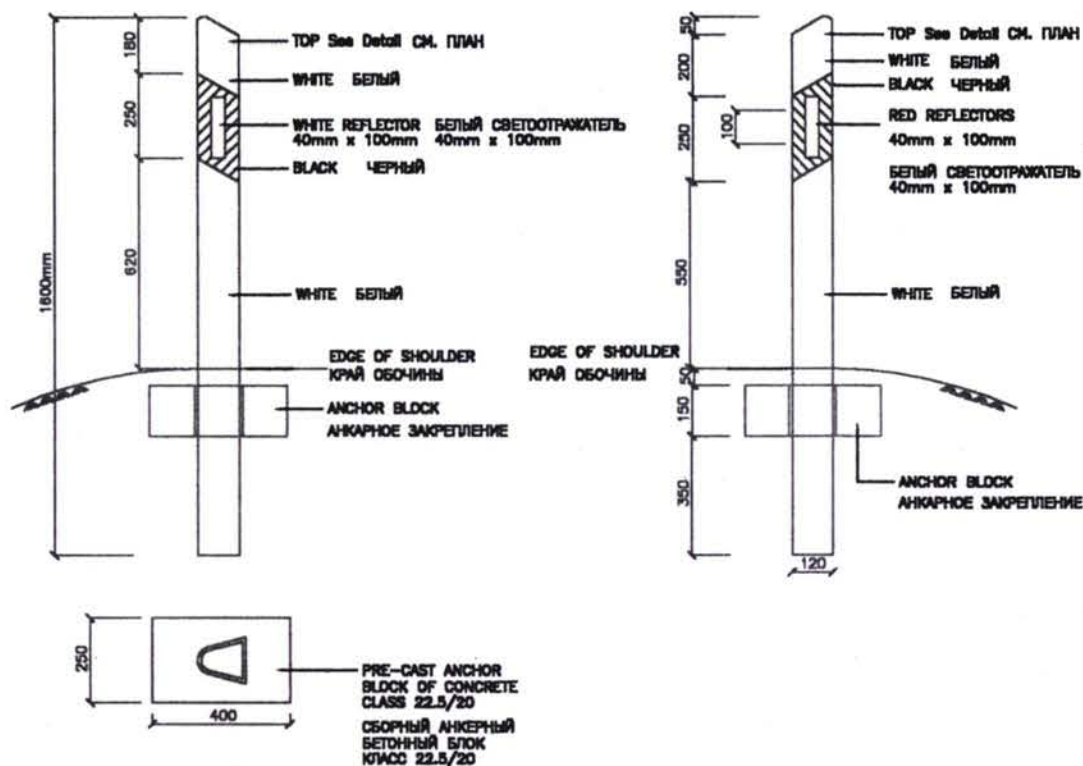
NOT TO SCALE

ДОРОЖНЫЕ СИГНАЛЬНЫЕ СВЕТООТРАЖАЮЩИЕ СТОЛБИКИ НА ОБОИХ СТОРОНАХ

БЕЗ МАСШТАБА

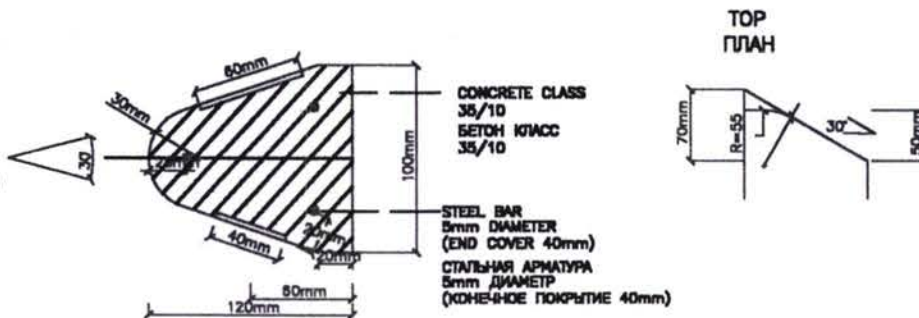
**LEFT EDGE OF ROAD
ЛЕВЫЙ КРАЙ ДОРОГИ**

**RIGHT EDGE OF ROAD
ПРАВЫЙ КРАЙ ДОРОГИ**

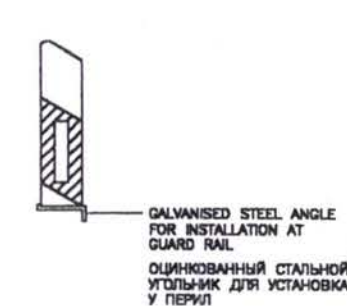


**DETAILS FOR CONCRETE DELINATOR
ДЕТАЛИ БЕТОННЫХ СИГНАЛЬНЫХ СТОЛБИКОВ**

**CROSS SECTION
ПОПЕРЕЧНОЕ СЕЧЕНИЕ**

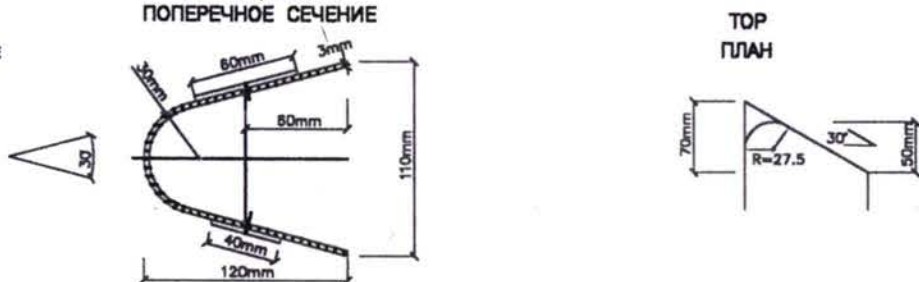


**DELINATOR AT GUARD RAIL
СИГНАЛЬНЫЕ СТОЛБИКИ У ПЕРИЛ**



**DETAILS FOR STEEL DELINATOR
ДЕТАЛИ СТАЛЬНЫХ СИГНАЛЬНЫХ СТОЛБИКОВ**

**CROSS SECTION
ПОПЕРЕЧНОЕ СЕЧЕНИЕ**



No №	Amendments	Изменения	Name	Название	Date Дата

**REPUBLIC OF
AZERBAIJAN**

**РЕСПУБЛИКА
АЗЕРБАЙДЖАН**

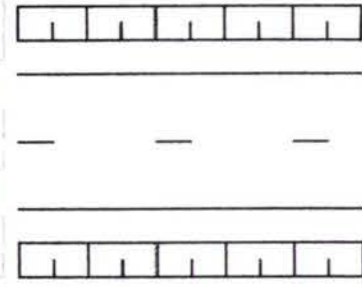
AZERAVTOYOL SC ГК АЗЕРАВТОЙОЛ

**KOCKS CONSULT GMBH KOCKS
ingenieure**

CONSTRUCTION OF THE GASAN SU CAY AND SHEMKIR BRIDGES СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР		Scale Масштаб
Designed Проектирован	Description Описание STANDARD SIGNAGE Road Signs, Marker Posts СТАНДАРТНЫЙ ЧЕРТЕЖ Дорожные знаки - Сигнальные столбики	Date Дата July 2001
Checked Проверен		Drawing no. № чертежа F 2
Approved Одобрен	Date Дата Azeravtoyol Азербайджан	

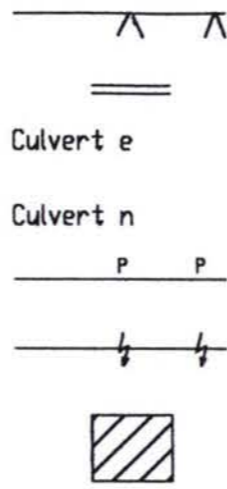
PLAN

ПЛАН



FILL Shoulder
Carriageway
Shoulder Cut

Откос насыпи
Обочина
Проезжая часть
Обочина
Выемка



Fence
Culvert e
Culvert n
Pipeline
Overhead powerline
Building

Ограждение
Труба
Существующая труба
Новая труба
Трубопровод
Электролиния
Здание

△ Trig. point
○ Traverse point
◊ Intermediate point
• Ground point
✕ Water valve
⊕ Gas valve
□ Gully
⊕ Hydrant
○ Manhole
⌚ Lamp
⊗ Mast (wooden)
⊗ Mast (steel lattice)
⊕ Mast (steel tubing)
⊕ Mast (concrete)
⌚ Road sign
⌚ Guide sign
1 Kilometer post
⌚ Guide sign bridge
⌚ Traffic light
⌚ Switchbox

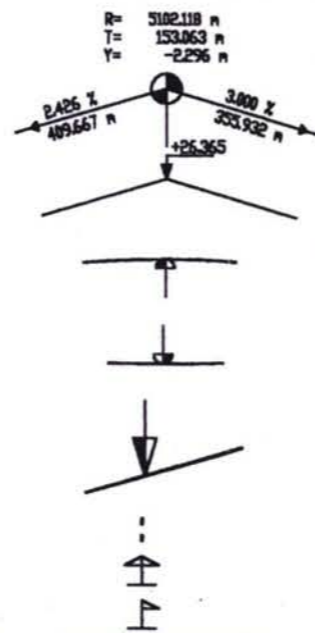
Треугольный указатель пикетажа
Транверсная точка
Промежуточная точка
Отметка уровня земли
Водяной вентиль
Газовый вентиль
Решетка
Гидрант
Люк
Светильник
Деревянный столб
Металлическая опора
Квадратный металлический столб
ЪБ столб
Дорожный знак
Указательный знак
Километровый знак
Подвесной дорожный знак
Светофор
Электрический щит

♫ Flagpole
⊕ Monument
⌚ Barrier post
⊕ Bush
⊗ Tree
⊕ Hedges (group)
⌚ Trees (group)
⌚ Pipe post
⊕ Well
⌚ Promotion sign
⌚ Transformer

Флагшток
Монумент
Ограждающий знак
Куст
Дерево
Живая изгородь
Группа деревьев
Указательный знак трубопровода
Колодец
Предупреждающий знак
Трансформатор

LONGITUDINAL SECTION

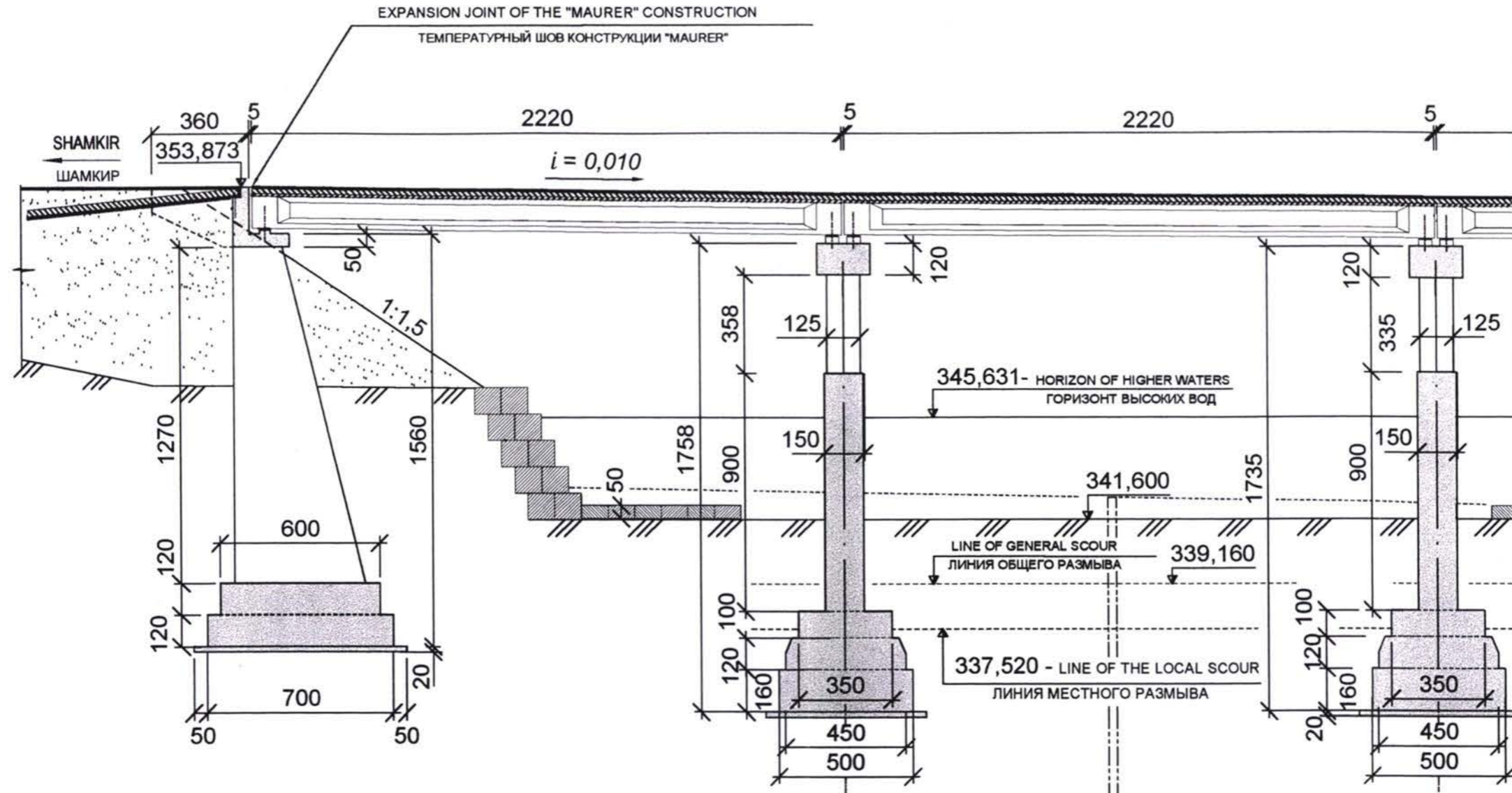
ПРОДОЛЬНОЕ ПРОФИЛЬ



Point of vertical intersection (PVI)
Highest point of vertical curve
Lowest point of vertical curve
Beginning/End of vertical curve
Bridge
Junction
T-junction

Наивысшая точка вертикальной кривой
Низкая точка вертикальной кривой
Начало/конец вертикальной кривой
Мост
Пересечение
Примыкание

No	№	Amendments	Изменения	Name	Название	Date	Дата
REPUBLIC OF AZERBAIJAN		РЕСПУБЛИКА АЗЕРБАЙДЖАН					
AZERAVTOYOL SC		ГК АЗЕРАВТОЙОЛ					
KOCKS CONSULT GMBH		KOCKS Ingenieure					
CONSTRUCTION OF THE GASAN SU CAY AND SHEMKIR BRIDGES				СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР			
Designed Проектировал		Чертит		Scale Масштаб		Date Дата	
Checked Проверил		Одобрен		Description Описание		Drawing no. № чертежа	
Approved		Date		LEGEND СИМВОЛЫ		July 2001	
Azeravtoyol		Azeravtoyol				G 1	



GRAVEL - PEBBLE SOILS WITH SANDY FILLER
 ГРАВИЙНО - ГАЛЕЧНЫЕ ГРУНТЫ С ПЕСЧАНЫМ ЗАПОЛНЕНИЕМ

$R^{\circ} = 5 \text{ kg/cm}^2$ $\varphi = 42^{\circ}$ $\rho = 1,95 \text{ g/cm}^3$

LONGITUDINAL SECTION C-C
 LEFT SIDE
 ПРОДОЛЬНЫЙ РАЗРЕЗ С-С
 ЛЕВАЯ СТОРОНА

20.00

BRIDGE 32 - 382+690 km
 МОСТ 32 - 382+690 км

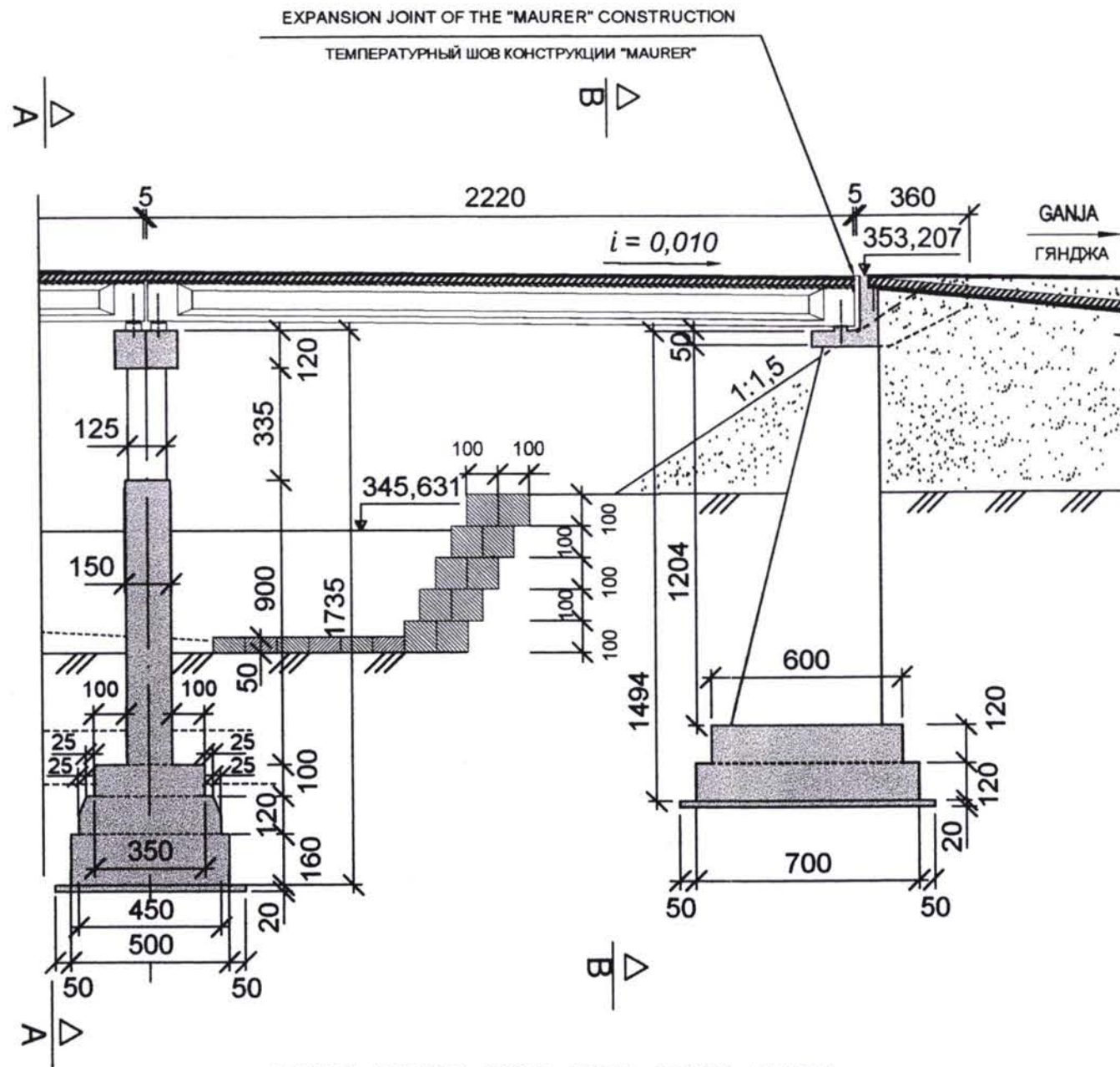
No. №	Amendments	Изменения	Name	Название	Date	Дата

REPUBLIC OF AZERBAIJAN РЕСПУБЛИКА АЗЕРБАЙДЖАН

AZERAVTOYOL SC ГК АЗЕРАВТОЙОЛ

KOCKS CONSULT GMBH KOCKS ingenieure

CONSTRUCTION OF THE GASAN SU CAY AND SHEMKIR BRIDGES СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР	
Designed Проектировал	Shemkir Bridge Мост Шемкир
Drawn Чертил	
Checked Проверил	
Approved Одобрен	
Date Дата	
Azeravtoyol Азербайтојол	
Description Описание	Scale 1:200
Bridge across river Shemkir km 382+690	Mасштаб
Мост через реку Шемкир 382+690 км	Date July 2001
	Дата
	Drawing no. H-32-01-01
	№ чертежа



GRAVEL - PEBBLE SOILS WITH SANDY FILLER
 ГРАВИЙНО - ГАЛЕЧНЫЕ ГРУНТЫ С ПЕСЧАНЫМ ЗАПОЛНЕНИЕМ

$$R^{\circ} = 5 \text{ kg/cm}^2 \quad \varphi = 42^{\circ} \quad \rho = 1,95 \text{ g/cm}^3$$

LONGITUDINAL SECTION C-C
 RIGHT SIDE

ПРОДОЛЬНЫЙ РАЗРЕЗ C-C
 ПРАВАЯ СТОРОНА

BRIDGE 32 - 382+690 km
 МОСТ 32 - 382+690 км

No. №	Amendments	Измещения	Name	Название	Date	Дата

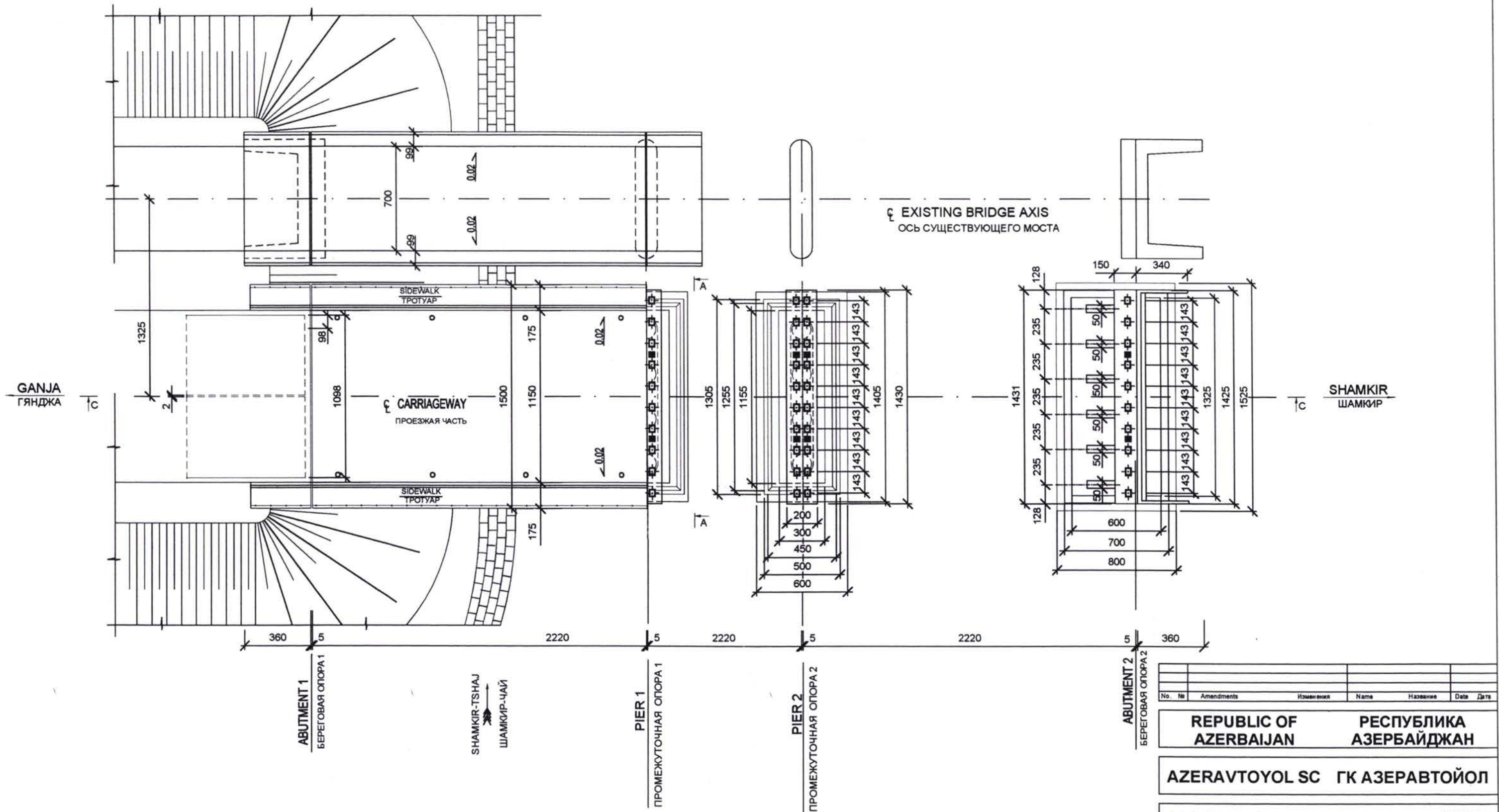
REPUBLIC OF AZERBAIJAN РЕСПУБЛИКА АЗЕРБАЙДЖАН

AZERAVTOYOL SC ГК АЗЕРАВТОЙОЛ

KOCKS CONSULT GMBH KOCKS ingenieure

		CONSTRUCTION OF THE GASAN SU CAY AND SHEMKIR BRIDGES	
		СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР	
Designed Проектировал		Shemkir Bridge Мост Шемкир	Scale Масштаб
Drawn Чертил			
Checked Проверил		Description Описание Bridge across river Shemkir km 382+690 Мост через реку Шемкир 382+690 км	Scale Масштаб
Approved Одобрено			Date Дата
Date Дата	Azeravtoyol Азербайджан		Date Дата

Scale 1 : 200
 Date July 2001
 Drawing no. 14-33-01-02
 № чертежа

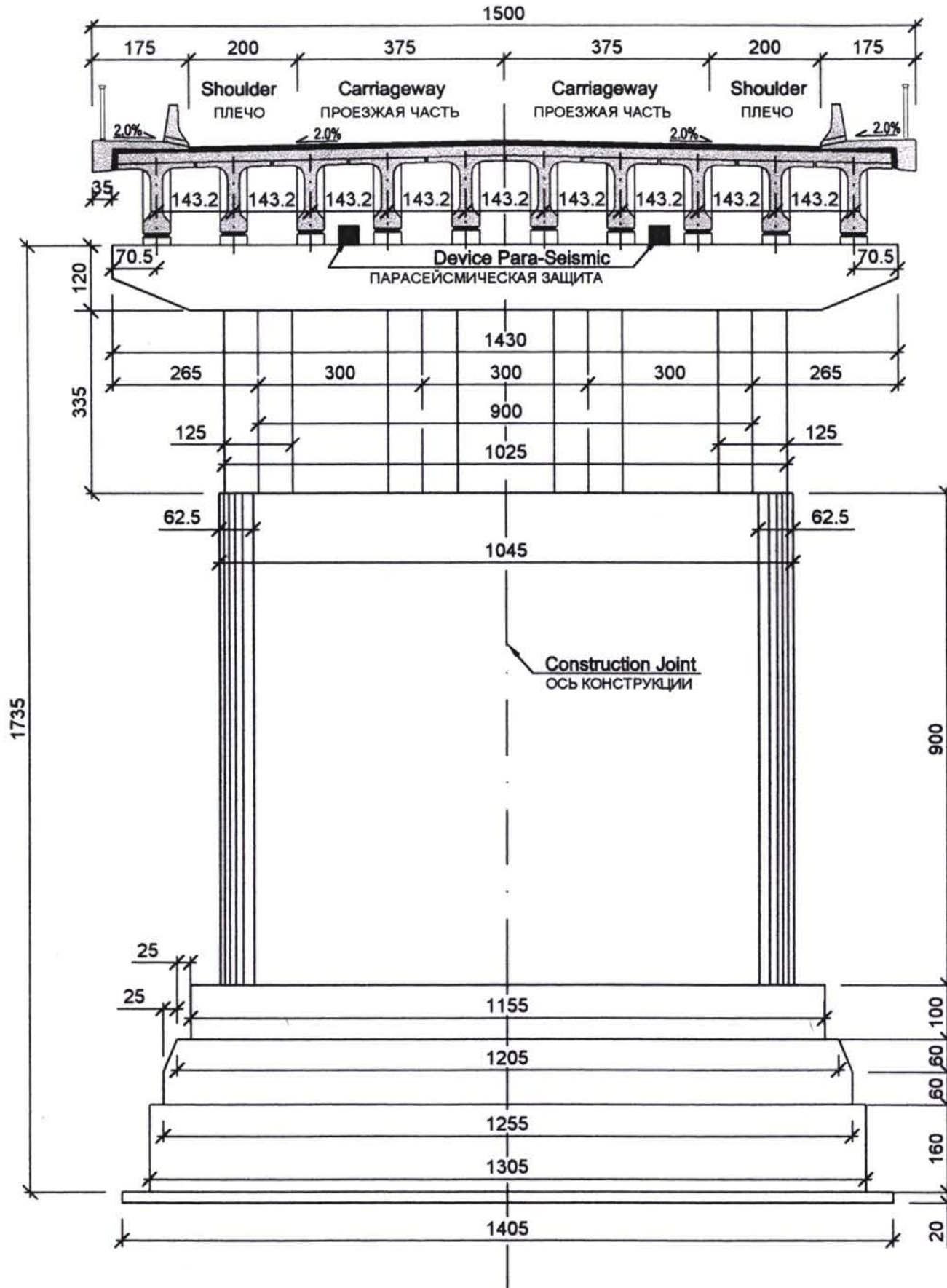


**PLAN
ПЛАН**

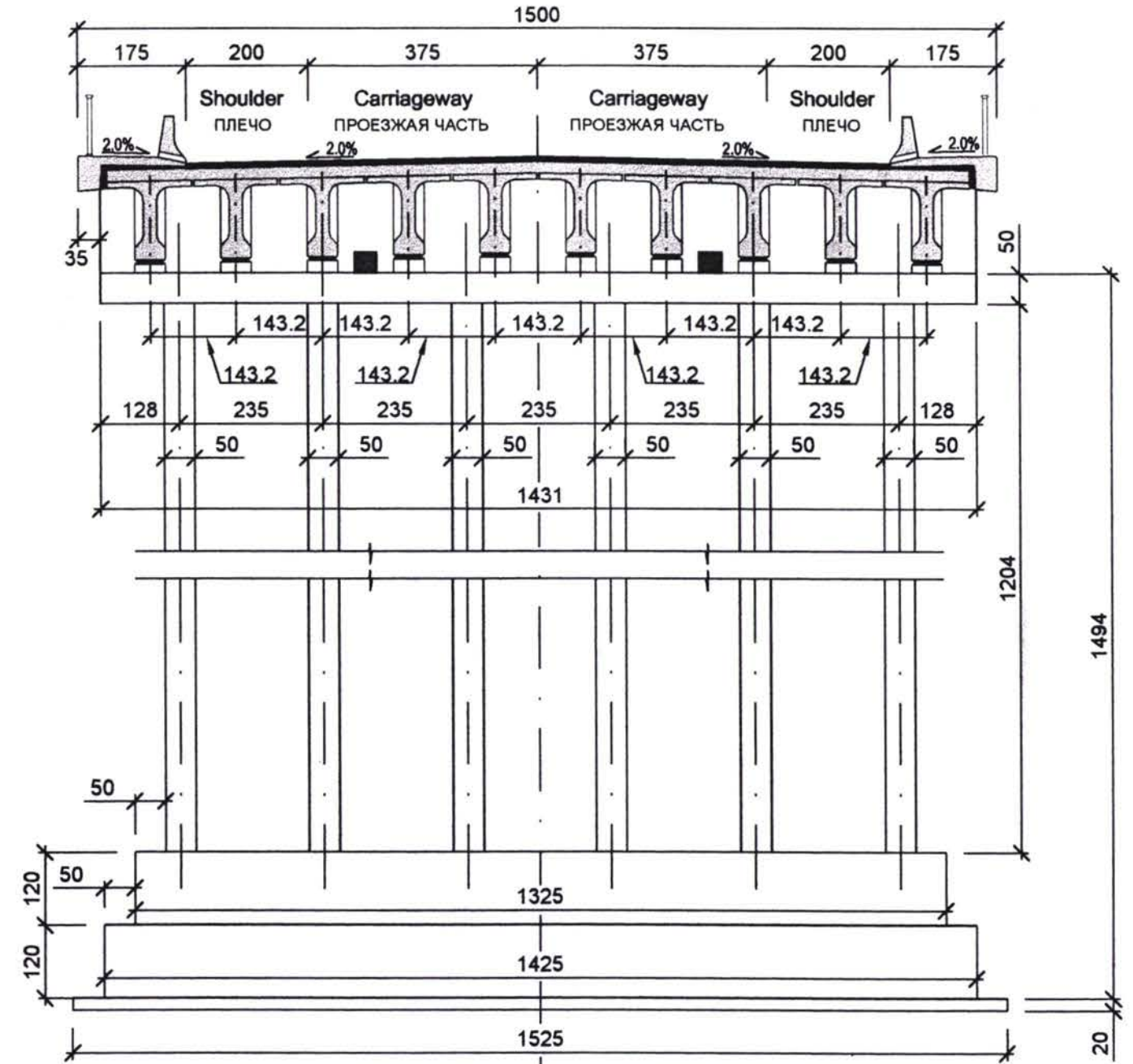
**BRIDGE 32 - 382+690 km
МОСТ 32 - 382+690 км**

No. №	Amendments	Изменения	Name	Название	Date	Дата
REPUBLIC OF AZERBAIJAN РЕСПУБЛИКА АЗЕРБАЙДЖАН						
AZERAVTOYOL SC ГК АЗЕРАВТОЙОЛ						
KOCKS CONSULT GMBH KOCKS ingenieur						
			CONSTRUCTION OF THE GASAN SU CAY AND SHEMKIR BRIDGES			
			СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР			
Designed	Проектировал	Shemkir Bridge		Мост Шемкир		
Drawn	Чертил					
Checked	Проверил					
Approved	Одобрен					
Date	Дата	Azeravtoyol	Description	Описание	Scale	1 : 100
		Azeravtoyol	Bridge across river Shemkir	Мост через реку Шемкир	Масштаб	
		Azeravtoyol	km 382+690	Мост через реку Шемкир 382+690 км	Date	July 2001
		Azeravtoyol			Drawing no.	H-32-01-03
		Azeravtoyol			№ чертежа	

TRANSVERSE SECTION A-A
ПОПЕРЕЧНОЕ СЕЧЕНИЕ А-А

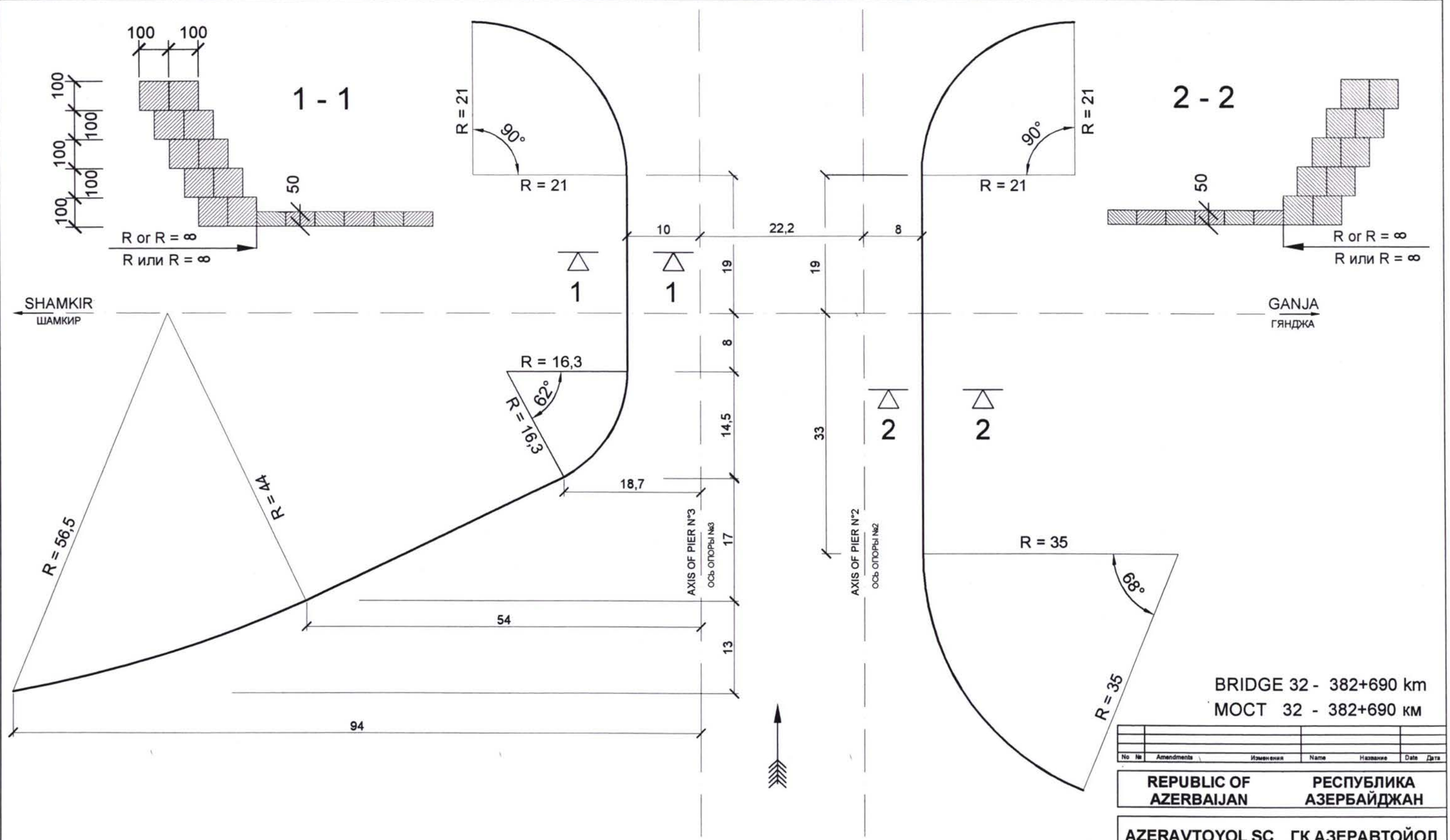


TRANSVERSE SECTION B-B
ПОПЕРЕЧНОЕ СЕЧЕНИЕ В-В



BRIDGE 32 - 382+690 km
МОСТ 32 - 382+690 км

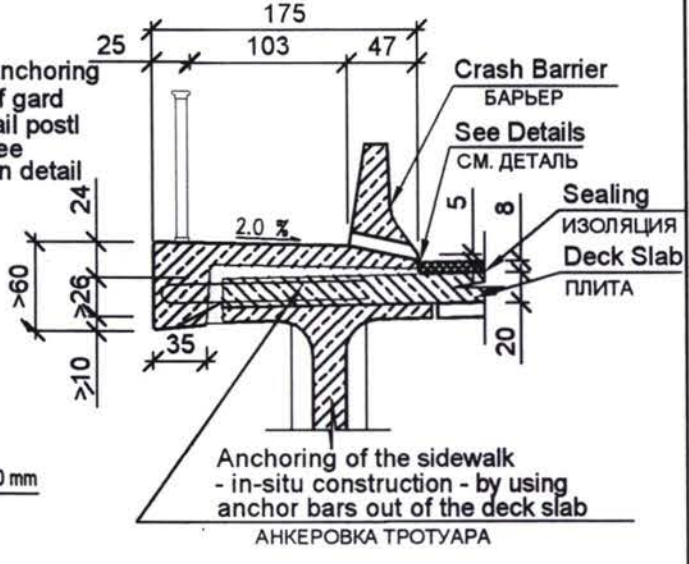
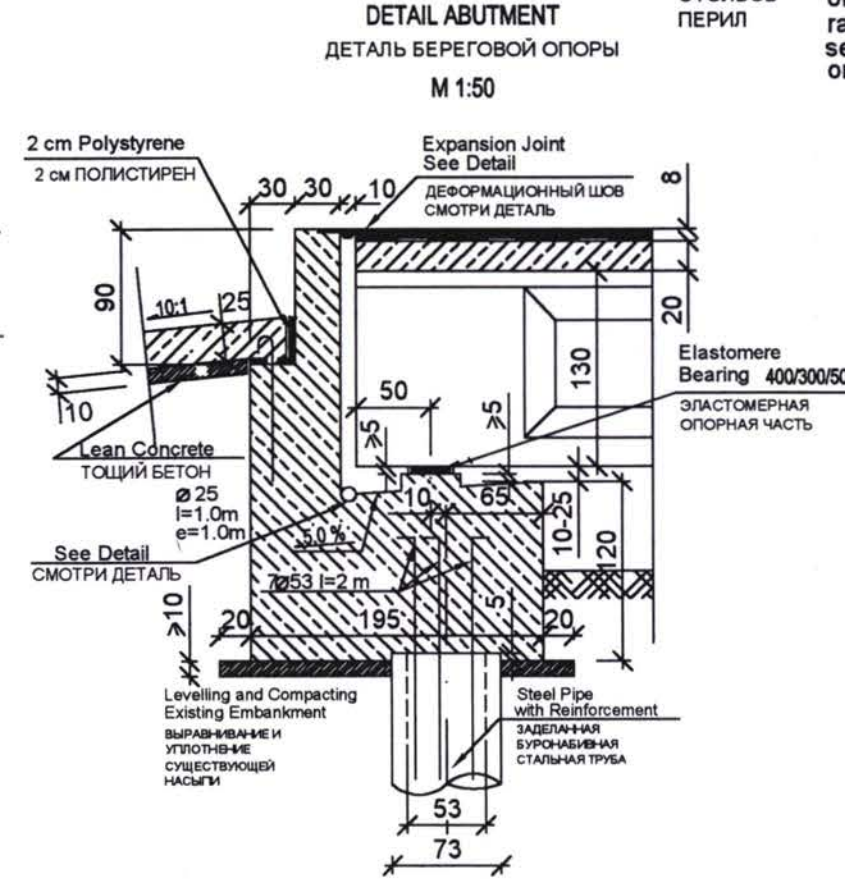
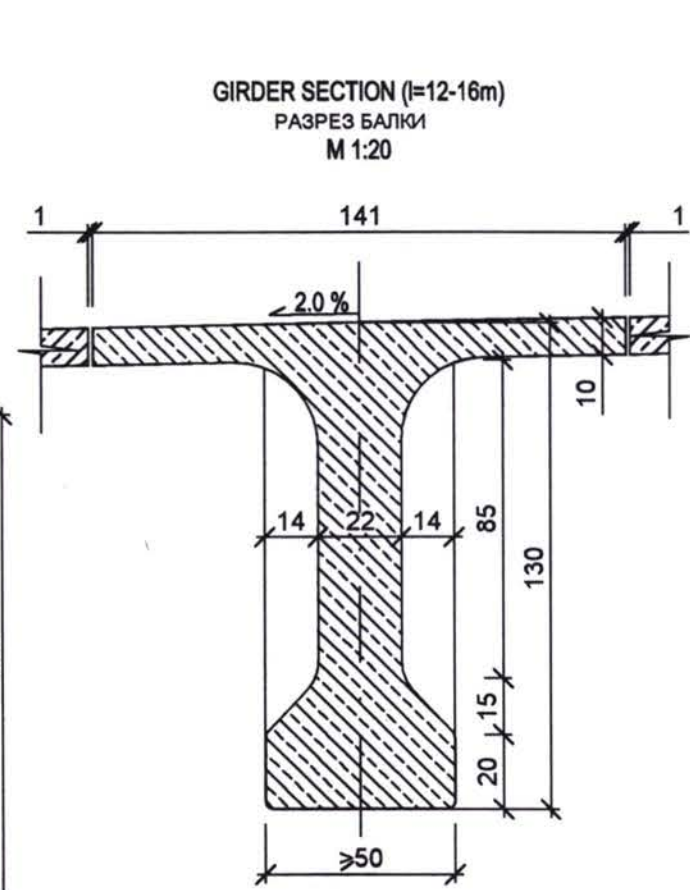
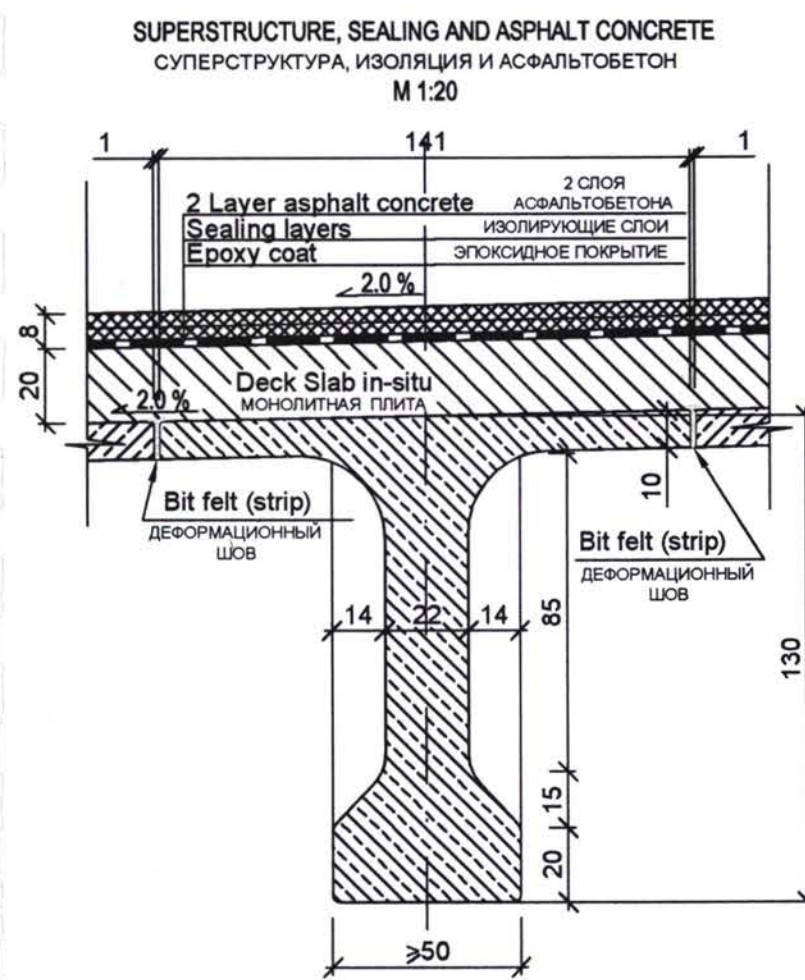
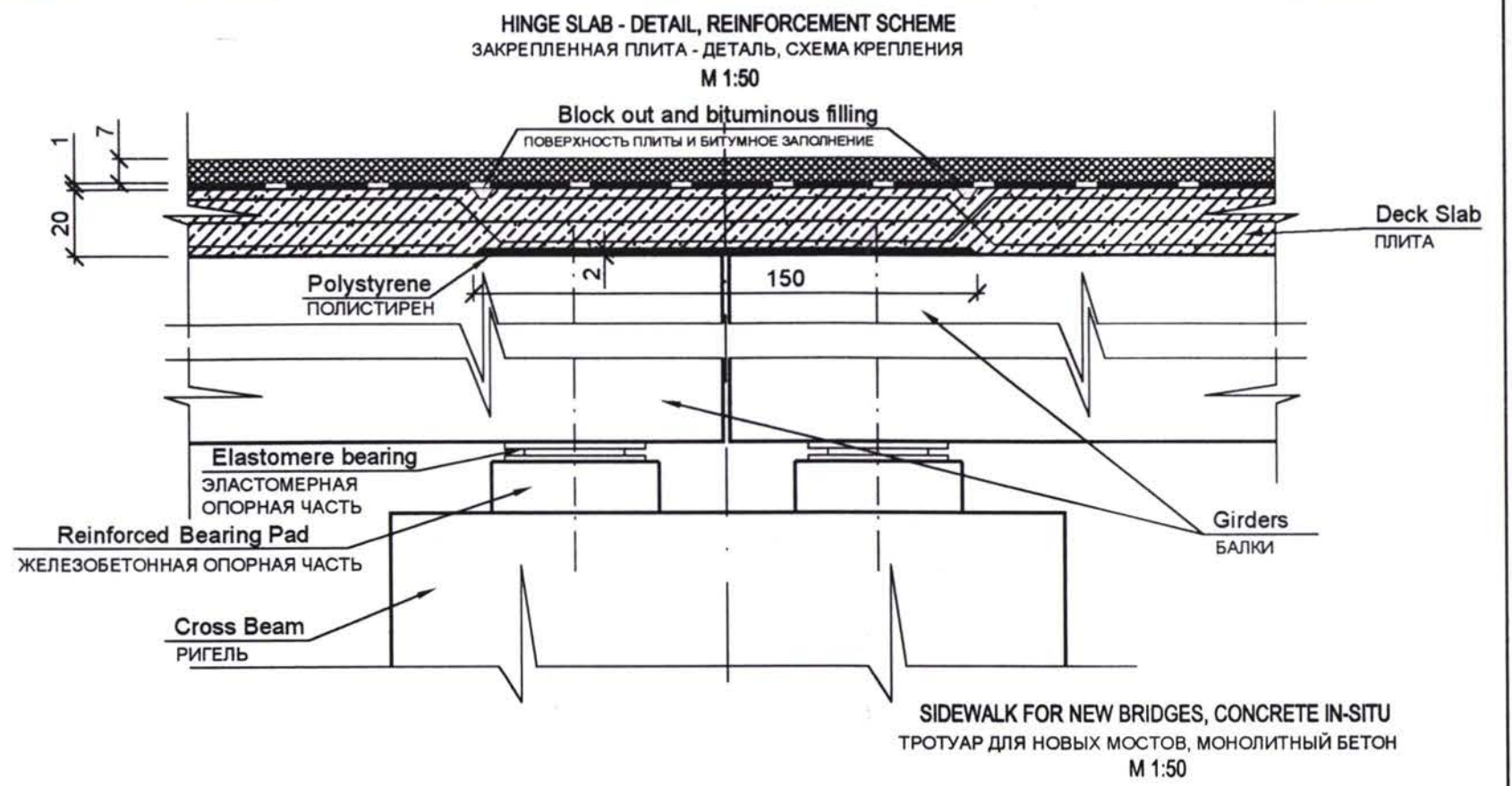
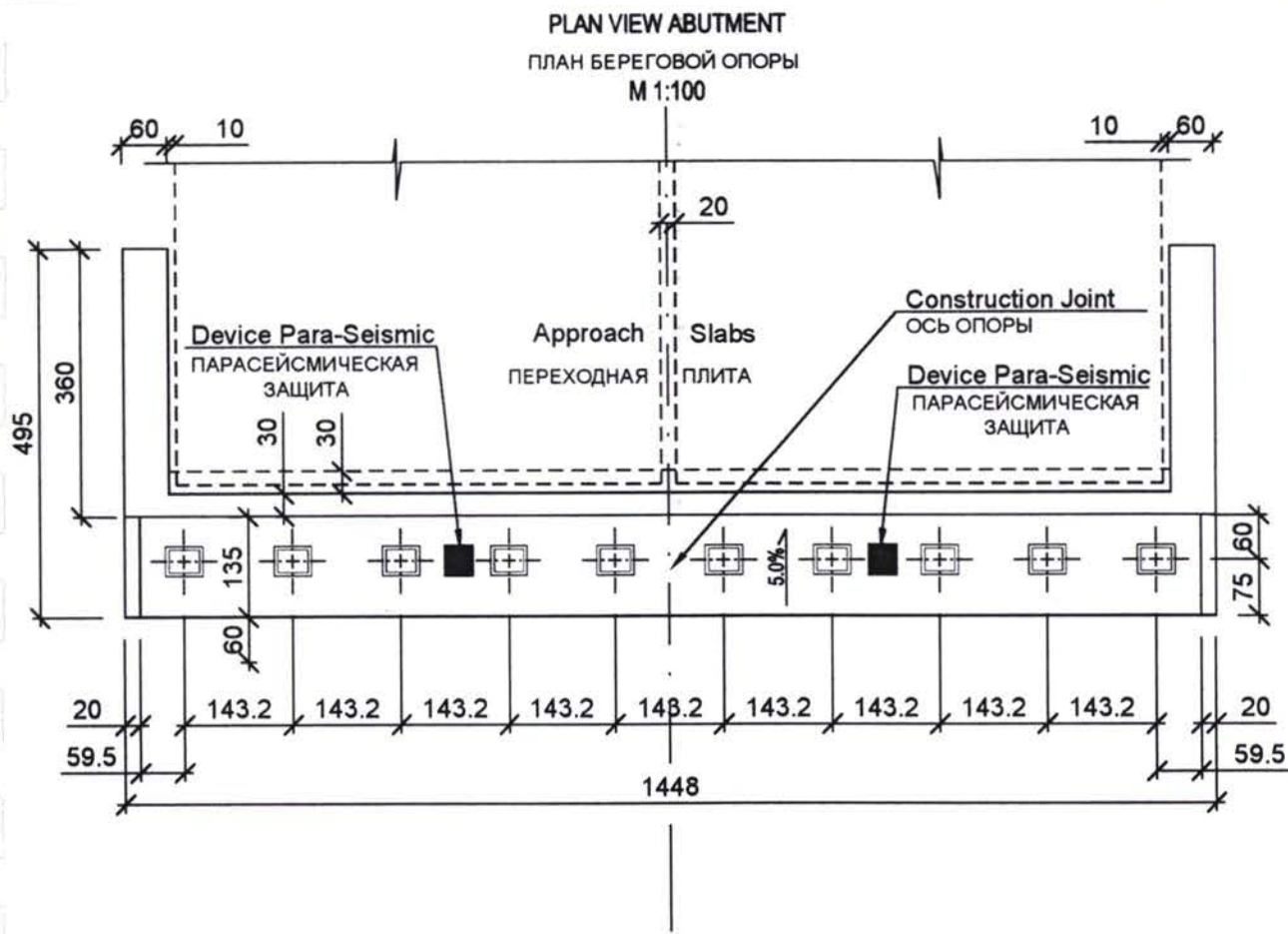
No	№	Amendments	Изменения	Name	Название	Date	Дата
				REPUBLIC OF AZERBAIJAN		РЕСПУБЛИКА АЗЕРБАЙДЖАН	
				AZERAVTOYOL SC		ГК АЗЕРАВТОЙОЛ	
				KOCKS CONSULT GMBH		KOCKS ingenieure	
				CONSTRUCTION OF THE GASAN SU CAY AND SHEMKIR BRIDGES			
				СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР			
Designed		Проектировал		Shemkir Bridge		Мост Шемкир	
Drawn		Чертил		Description		Scale 1:100	
Checked		Проверил		Bridge across river Shemkir km 382+690		Date July 2001	
Approved		Одобрен		Mост через реку Шемкир 382+690 км		Drawing no. H-33-01-04	
Date		Дата		Azeravtoyol Azerbaijan		№ чертежа	



PLAN OF THE REGULATION STRUCTURES
ПЛАН РЕГУЛЯЦИОННЫХ СООРУЖЕНИЙ

BRIDGE 32 - 382+690 km
 МОСТ 32 - 382+690 км

No	№	Amendments	Изменения	Name	Название	Date	Дата
REPUBLIC OF AZERBAIJAN РЕСПУБЛИКА АЗЕРБАЙДЖАН							
AZERAVTOYOL SC ГК АЗЕРАВТОЙОЛ							
KOCKS CONSULT GMBH KOCKS ingenieure							
CONSTRUCTION OF THE GASAN SU CAY AND SHEMKIR BRIDGES СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР							
Designed Проектировал				Shemkir Bridge Мост Шемкир			
Drawn Чертил				Description Описание			
Checked Проверил				Bridge across river Shemkir			
Approved Одобрен				km 382+690			
Date Дата				Scale Масштаб			
Azərbaycan Azərbaycan				1:500			
				Date July 2001			
				Drawing no. H-32-01-06			
				№ чертёжа			



BRIDGE 32 - km 382+690
МОСТ 32 - 382+690 КМ

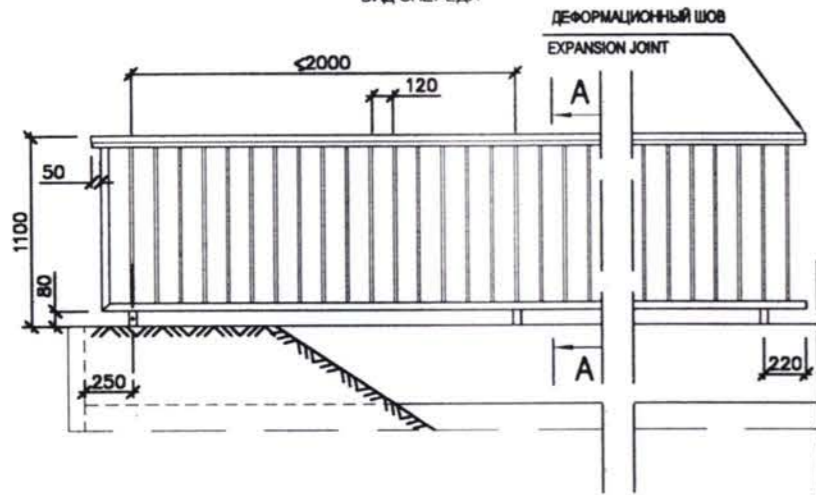
No. №	Amendments	Изменения	Name	Название
		REPUBLIC OF AZERBAIJAN / РЕСПУБЛИКА АЗЕРБАЙДЖАН		
		AZERAVTOYOL SC / ГК АЗЕРАВТОЙОЛ		
		KOCKS CONSULT GMBH / KOCKS ingenieur		
CONSTRUCTION OF THE GASAN SU CAY AND SHEMKIR BRIDGES СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР				
Designed	Проектировал	Shemkir Bridge / Мост Шемкир		
Drawn	Чертил			
Checked	Проверил			
Approved	Одобрен			
Date	Дата	Azeravtoyol / Азербайтојол	Bridge across river Shemkir km 382+690 / Мост через реку Шемкир км 382+690	Scale / Масштаб: July 2001 / Дата
				Drawing no. / № чертёжа: H-32-01-08

DETAIL 1. RAILING

ДЕТАЛЬ 1. ПЕРИЛЬНОЕ ОГРАЖДЕНИЕ

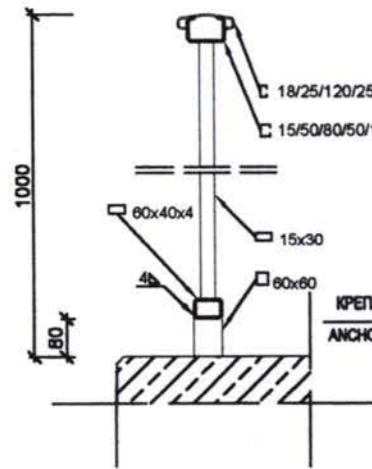
ELEVATION

ВИД СПЕРЕДИ



SECTION A-A

РАЗРЕЗ A-A



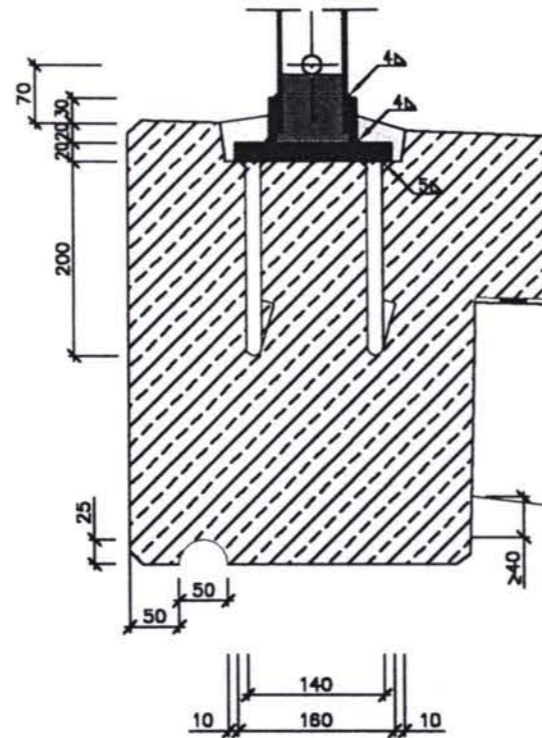
АНТИКОРРОЗИОННАЯ ЗАЩИТА (ПО СТАНДАР. ZTY-K)
CORROSION PROTECTION SYSTEM (acc. ZTY-K)

1. ЦИНКОВАНИЕ ГОРЯЧИМ СПОСОБОМ
1. HOT DIP GALVANIZING
2. ПОКРЫТИЕ ПОЛИВИНИЛХЛОРИДОМ (ТОЛЩИНА 80 МИКРОН)
2. FINAL COAT PVC (thickness 80 microns)
3. ПОКРЫТИЕ ПОЛИВИНИЛХЛОРИДО-АЛКИДНОЙ СМОЛОЙ (ТОЛЩИНА 80 МИКРОН)
3. FINAL COAT PVC-AC (thickness 80 micron)

КРЕПЛЕНИЕ СОГЛАСНО В ДЕТАЛИ 2
ANCHORAGE ACCORDING TO DETAIL 2

DETAIL 2. ANCHORAGE OF THE RAILING

ДЕТАЛЬ 2. КРЕПЛЕНИЕ ПЕРИЛЬНОГО ОГРАЖДЕНИЯ



СТОЙКА
RAILING POST

ОТВЕРСТИЕ $\varnothing 20$ мм ДЛЯ ЗАЛИВКИ РАСТВОРА И ВОДООТВОДА ИЗ СТОЙКИ
DRILL HOLE $\varnothing 20$ mm FOR GROUTING AND DRAINAGE OF THE POST

ПОДОШВА СТОЙКИ
POST SHOE 70x70x4 mm

ЗАЛИВКА МОРОЗОСТОЙКИМ ХОДЯКИМ РАСТВОРОМ
GROUTING WITH FROST RESISTANT FLOWING MORTAR

ЭПОКСИДНЫЙ БЕЗУСАДОЧНЫЙ, ВОДОСТОЙКИЙ И СТОЙКИЙ К ВОЗДЕЙСТВИЮ ПРОТИВОГОЛОЛЕДНЫХ СОЛЕЙ РАСТВОР
POLYMER MORTAR, FREE OF SHRINKAGE; WATERPROOF; AND DEICING SALT RESISTANT

СТОЕЧНАЯ ПРОКЛАДКА С 180x180x10 мм
FOOT PLATE 180x180x10mm WITH

АНКЕРА $\varnothing 16$ мм; СТАЛЬ КЛАССА 37-2
4 ANCHORS $\varnothing 16$ mm; St 37-2

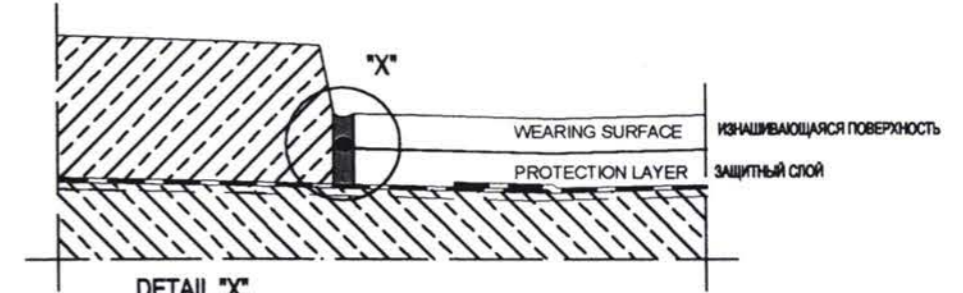
ПРОЦЕДУРА УСТАНОВКИ

ERECTION SEQUENCE:

1. УСТАНОВКА СТОЕЧНОЙ ПРОКЛАДКИ
1. PLACING OF THE FOOTING PLATE
2. ВЫРАВНИВАНИЕ ПЕРИЛЬНОГО ОГРАЖДЕНИЯ
2. ALIGNMENT OF THE RAILING
3. ПРИВАРИВАНИЕ ПОДОШВ СТОЙКИ
3. WELDING OF THE POST SHOES
4. РЕГУЛИРОВКА ВЫСОТЫ ПЕРИЛЬНОГО ОГРАЖДЕНИЯ
4. ADJUSTMENT OF THE HEIGHT OF THE RAILING
5. ПРИВАРИВАНИЕ СТОЕК К ПОДОШВАМ СТОЕК
5. WELDING OF THE POSTS WITH POST SHOES
6. РЕМОНТ ПОВРЕЖДЕННЫХ ГАЛЬВАНИЗИРОВАННЫХ ПОВЕРХНОСТЕЙ
6. REPAIRING OF ZINC DAMAGES
7. ЗАЛИВКА ЭПОКСИДНОГО РАСТВОРА
7. PLACING OF THE POLYMER MORTAR
8. ЗАПОЛНЕНИЕ СТОЕК РАСТВОРОМ ДО УРОВНЯ ОТВЕРСТИЯ
8. FILLING POSTS WITH MORTAR UP TO DRILL HOLE LEVEL

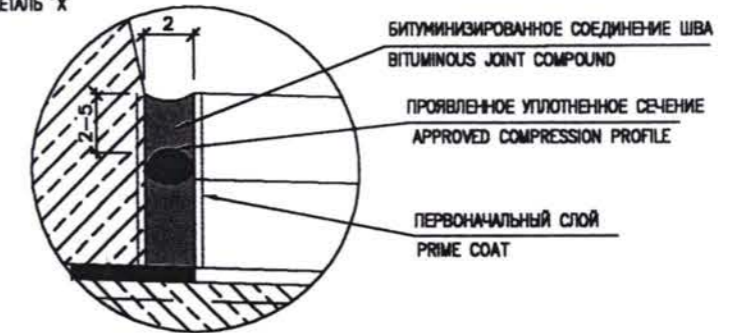
DETAIL 6. JOINT BETWEEN CARRIAGEWAY AND KERB

ДЕТАЛЬ 6. ШОВ МЕЖДУ ПРОЕЗЖЕЙ ЧАСТЬЮ И БОРДДОРОМ



DETAIL "X"

ДЕТАЛЬ "X"

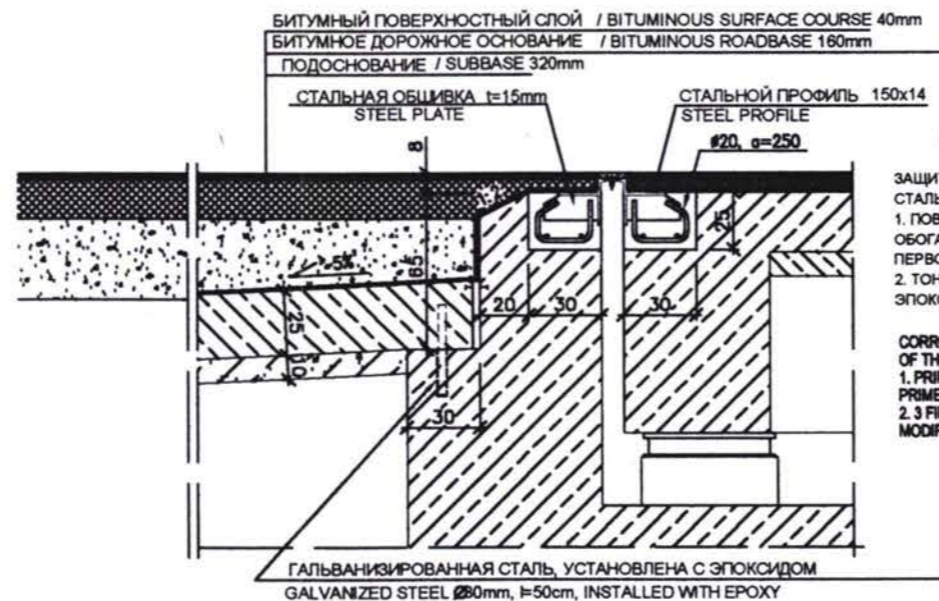
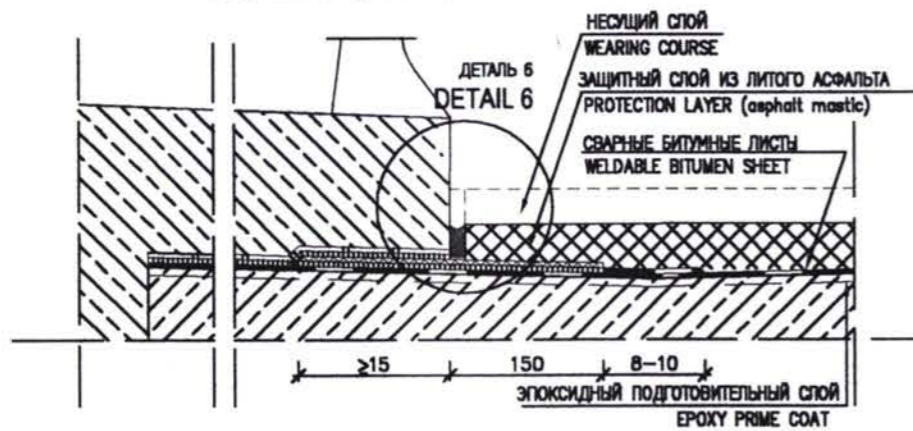


DETAIL 12. EXPANSION JOINT AND TRANSITION SLAB WITH CHAMBER WALL

ДЕТАЛЬ 12. ТЕМПЕРАТУРНЫЙ ШОВ И ПЕРЕХОДНАЯ ПЛИТА С РАЗДЕЛИТЕЛЬНОЙ СТЕНОЙ

CONNECTION WITH THE SEALING IN THE AREA OF THE CARRIAGEWAY

СОЕДИНЕНИЕ С ГИДРОИЗОЛЯЦИЕЙ ПРОЕЗЖЕЙ ЧАСТИ



ЗАЩИТА ОТ КОРРОЗИИ СТАЛЬНЫХ ЧАСТЕЙ
1. ПОВЕРХНОСТНЫЙ СЛОЙ - ОБОГАЩЕННЫЙ ЦИНКОМ ПЕРВОНАЧАЛЬНЫЙ 70 μ m
2. ТОНКИЙ СЛОЙ - ЭПОКСИДНЫЙ 120 μ m

CORROSION PROTECTION OF THE STEEL PARTS
1. PRIME COAT-ZINC RICH PRIMER 70 μ m
2. 3 FIL COAT-EPOXI MODIFIED; EACH 120 μ m

BRIDGE 32 - 382+690 km

МОСТ 32 - 382+690 км

No.	№	Amendments	Измещения	Name	Название	Date

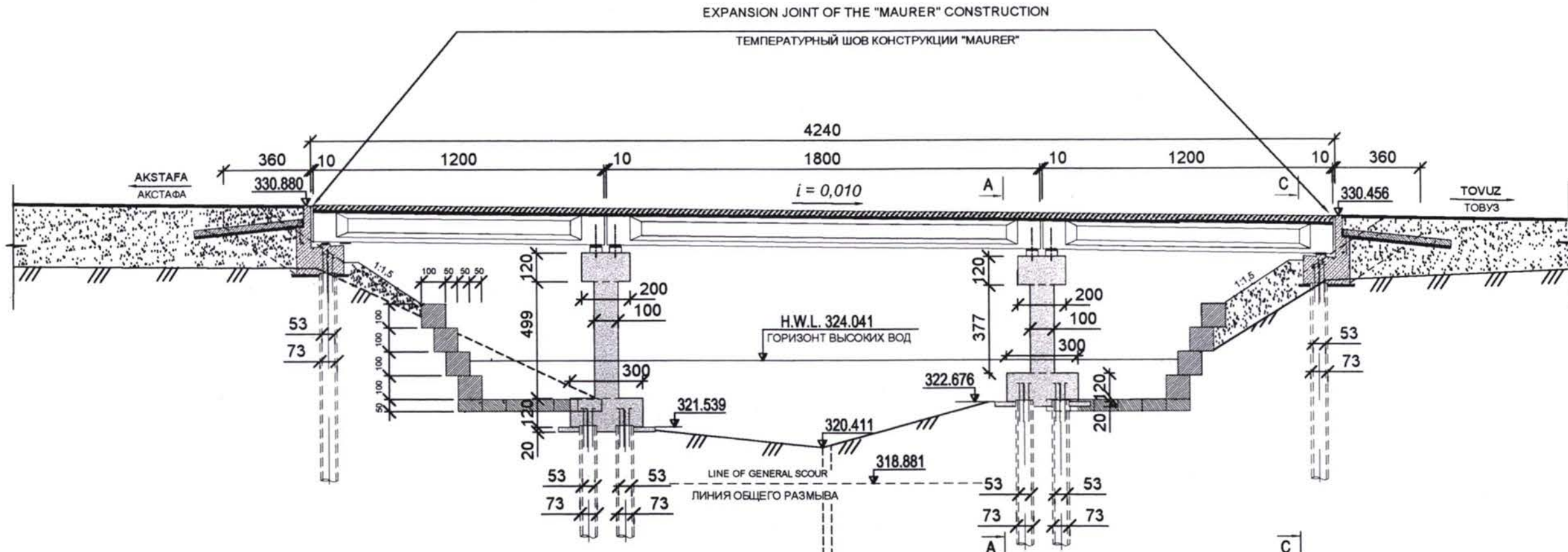
REPUBLIC OF AZERBAIJAN

РЕСПУБЛИКА АЗЕРБАЙДЖАН

AZERAVTOYOL SC ГК АЗЕРАВТОЙОЛ

KOCKS CONSULT GMBH KOCKS ingenieur

Designed Проектировал		Checked Проверил		Approved Одобрен		Date Дата
Description Описание				Scale Масштаб		Date Дата
Bridge across river Shemkir km 382+690				Mост Шемкир		July 2001
Mост через реку Шемкир 382+690 км				Mост Шемкир		Drawing no. 14-33-01-07
						№ чертежа



GRAVEL - PEBBLE SOILS WITH DUSTY SANDY LOAM FILLER
ГРАВЬИНО - ГАЛЕЧНЫЕ ГРУНТЫ С СУПЕСЧАНЫМ ПЫЛЕВАТЫМ ЗАПОЛНИТЕЛЕМ
 $R^2 = 6 \text{ kg/cm}^2$ $\phi = 42^\circ$ $\rho = 1,95 \text{ g/cm}^3$

LONGITUDINAL SECTION B-B
ПРОДОЛЬНЫЙ РАЗРЕЗ В-В

BRIDGE 44 - 447+650 km
МОСТ 44 - 447+650 км

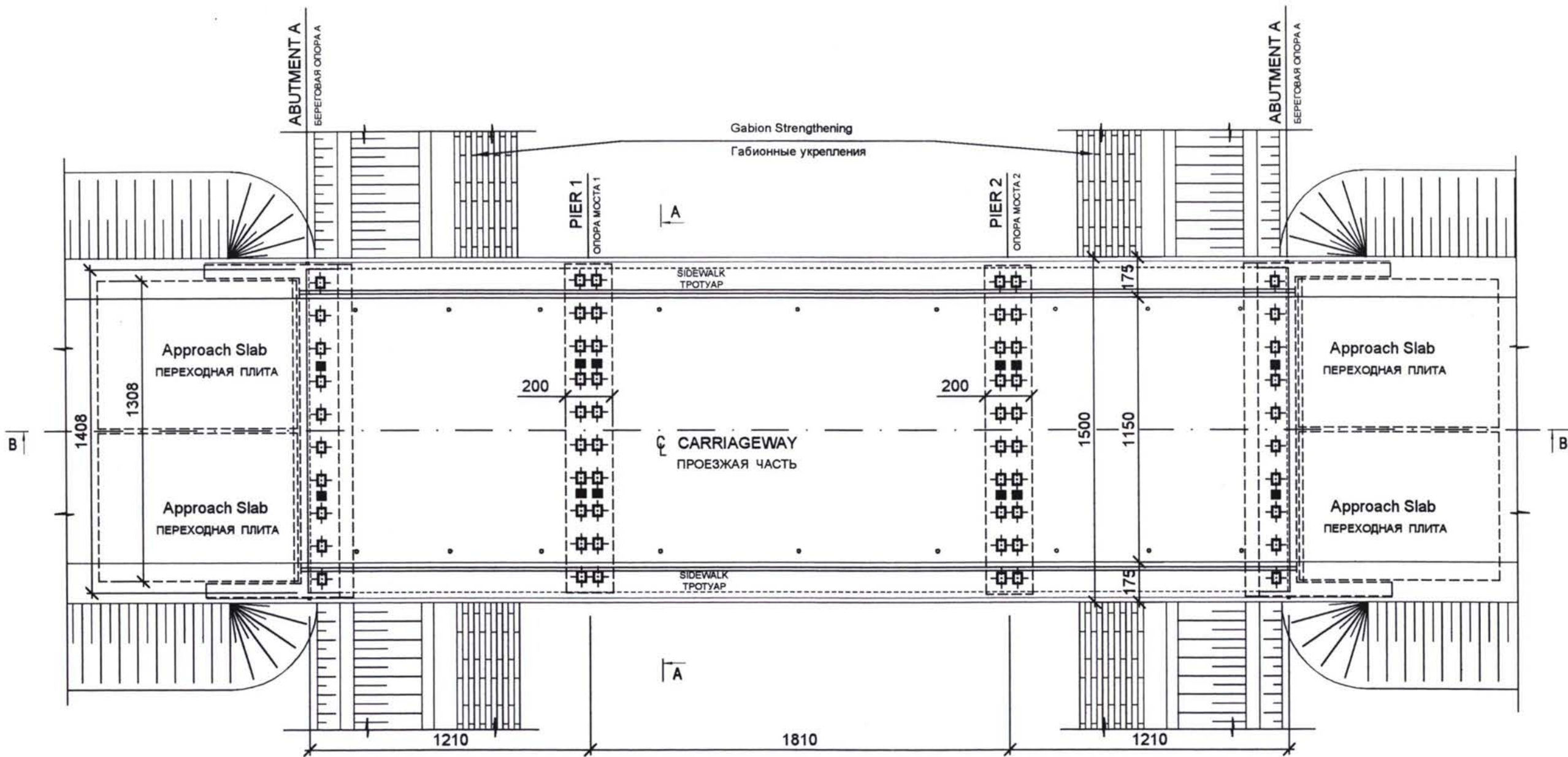
No. №	Amendments	Изменения	Name	Название	Date	Дата

REPUBLIC OF AZERBAIJAN РЕСПУБЛИКА АЗЕРБАЙДЖАН

AZERAVTOYOL SC ГК АЗЕРАВТОЙОЛ

KOCKS CONSULT GMBH KOCKS ingenieure

Designed Проектировал Drawn Чертил Checked Проверил Approved Одобрен		CONSTRUCTION OF THE GASAN SU CAY AND SHEMKIR BRIDGES СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР Gasan Su Cay Bridge Мост Гасан Су Чай	
Date	Azeravtoyol Азербайтојол	Description Описание Bridge across river Gasan Su Cay km 447+650 Мост через реку Гасан Су Чай 447+650 км	Scale Масштаб 1 : 200 Date Дата July 2001 Drawing no. № чертежа H-44-01-01



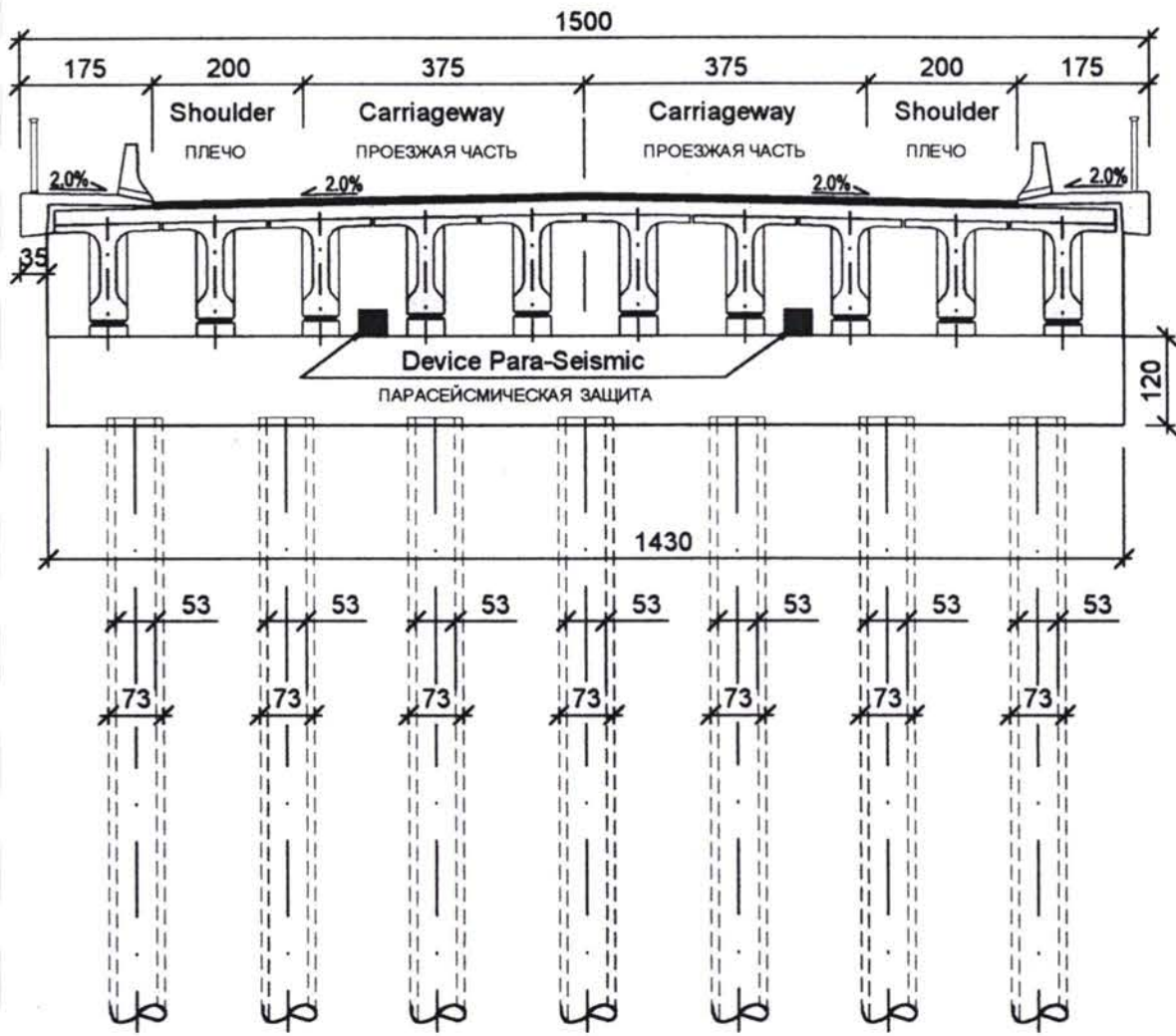
PLAN
ПЛАН

BRIDGE 44 - 447+650 km
МОСТ 44 - 447+650 км

No.	№	Amendments	Изменения	Name	Название
REPUBLIC OF AZERBAIJAN		РЕСПУБЛИКА АЗЕРБАЙДЖАН			
AZERAVTOYOL SC		ГК АЗЕРАВТОЙОЛ			
KOCKS CONSULT GMBH		KOCKS ingenieure			
CONSTRUCTION OF THE GASAN SU CAY AND SHEMKIR BRIDGES СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР					
Designed	Проектировал				
Drawn	Чертил				
Checked	Проверил				
Approved	Одобрен				
Date	Azeravtoyol	Gasan Su Cay Bridge			Мост Гасан Су Чай
Дата	Азербайджан	Description	Описание	Scale	1:200
		Bridge across river Gasan Su Cay km 447+650	Мост через реку Гасан Су Чай 447+650 км	Scale	Масштаб
				Date	July 2001
				Date	Дата
				Drawing no.	H-44-01-02
				№ чертежа	

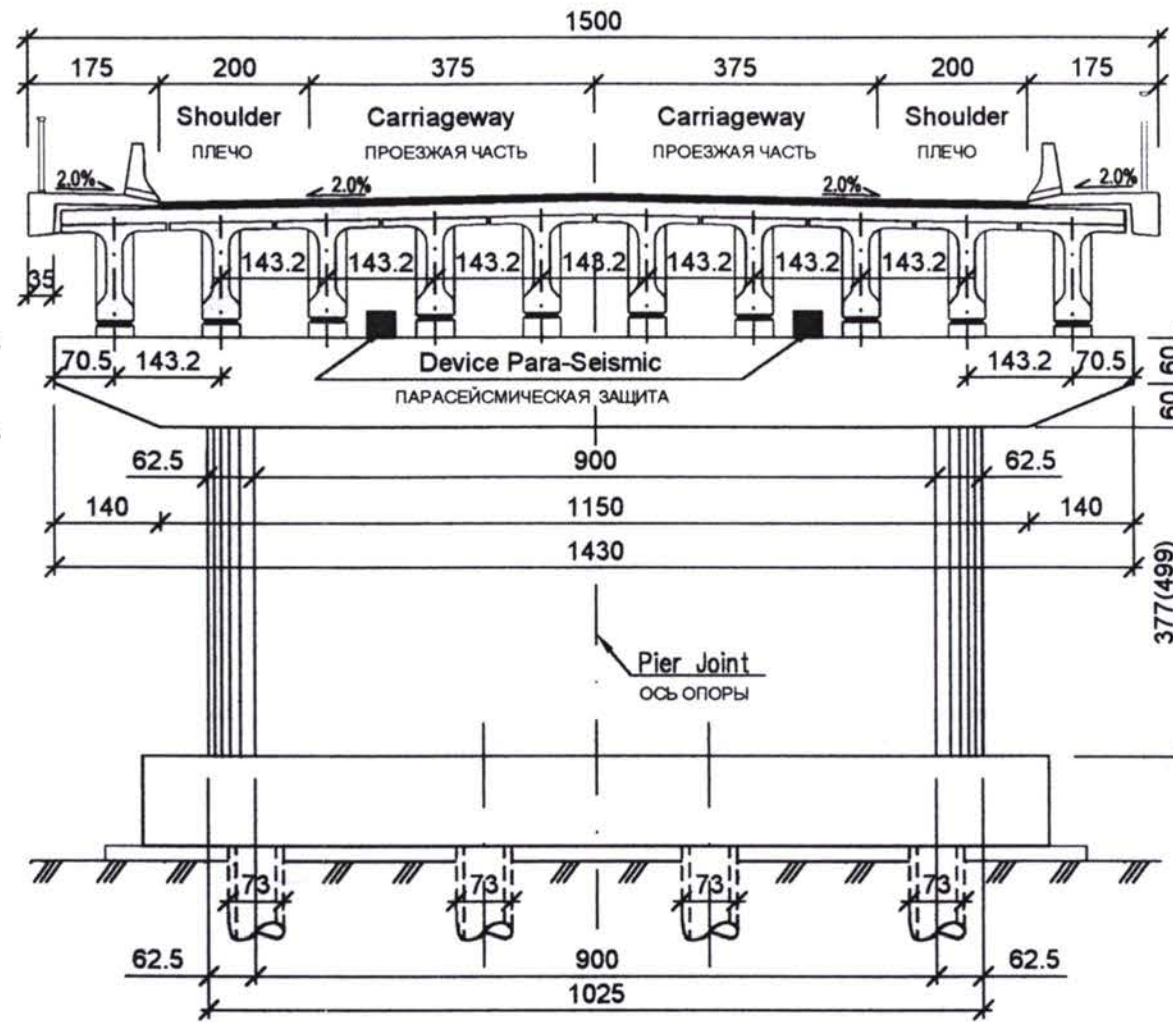
TRANSVERSE SECTION C-C

ПОПЕРЕЧНЫЙ РАЗРЕЗ С-С



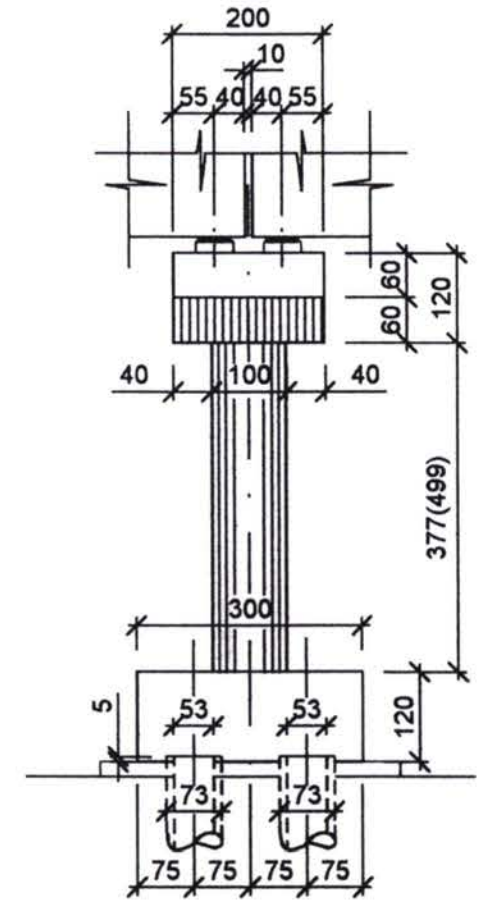
TRANSVERSE SECTION A-A

ПОПЕРЕЧНЫЙ РАЗРЕЗ А-А



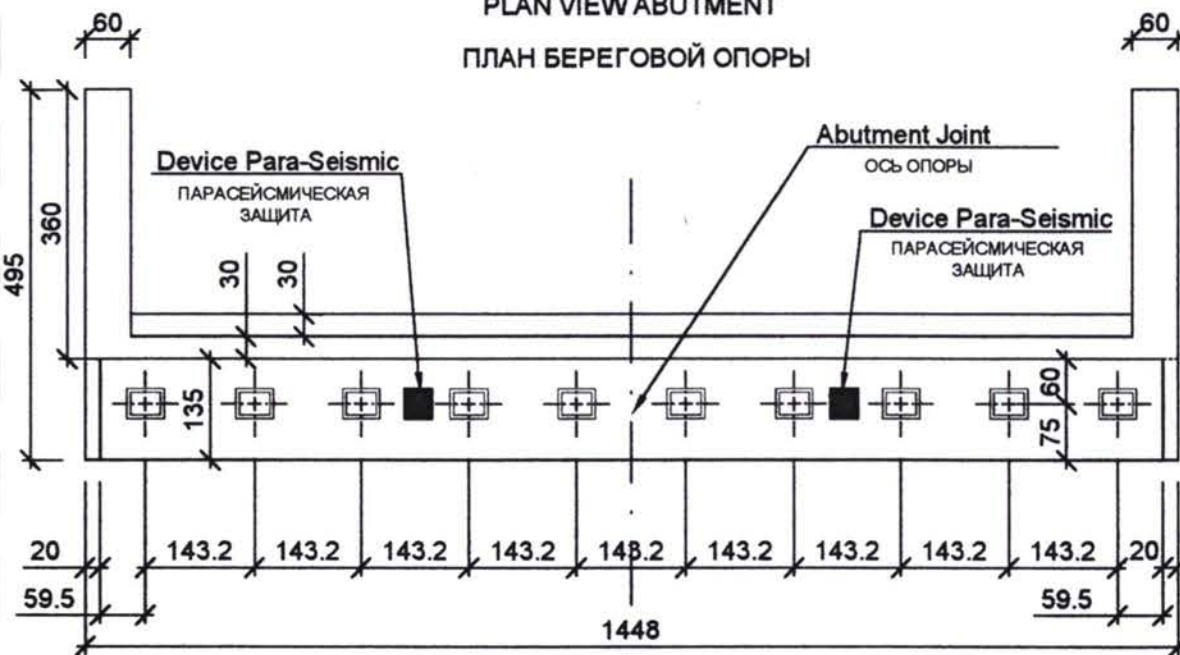
SIDE VIEW

ВИД СБОКУ



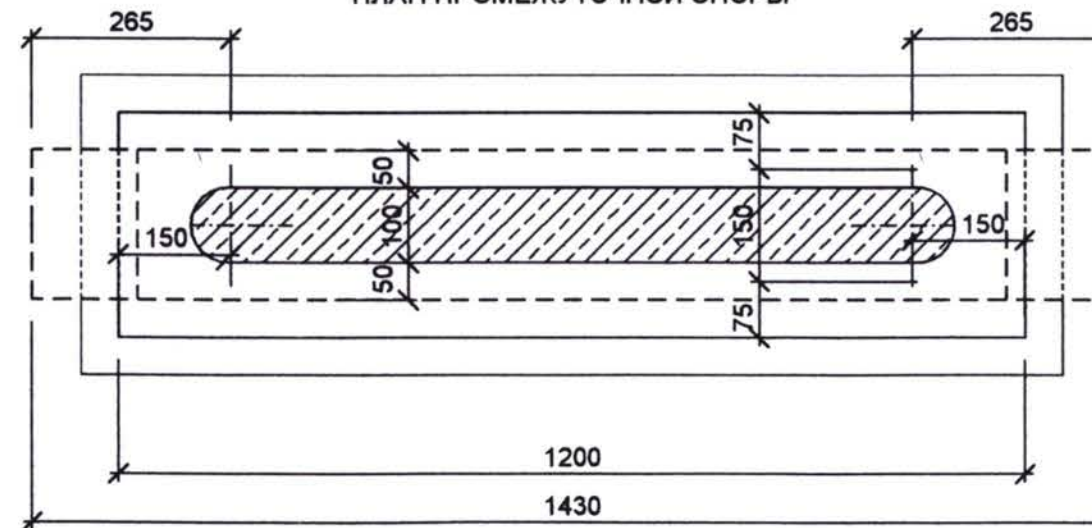
PLAN VIEW ABUTMENT

ПЛАН БЕРЕГОВОЙ ОПОРЫ



PLAN OF THE MIDDLE PIER

ПЛАН ПРОМЕЖУТОЧНОЙ ОПОРЫ



BRIDGE 44 - 447+650 km

МОСТ 44 - 447+650 км

No.	№	Amendments	Изменения	Name	Название	Date	Дата

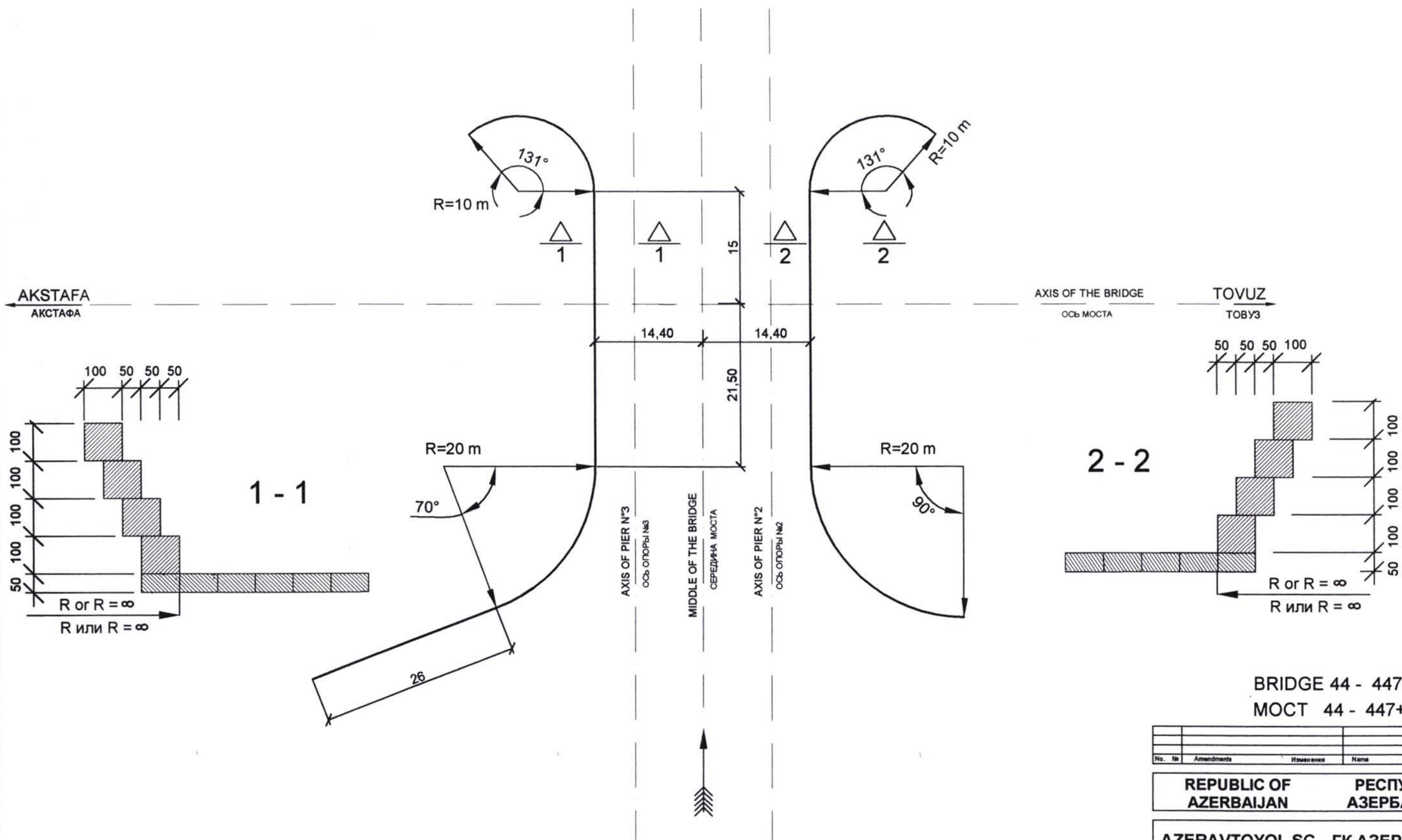
REPUBLIC OF AZERBAIJAN

РЕСПУБЛИКА АЗЕРБАЙДЖАН

AZERAVTOYOL SC ГК АЗЕРАВТОЙОЛ

KOCKS CONSULT GMBH KOCKS ingenieur

Designed Проектирован		Checked Проверен		Approved Одобрен		Date Дата
Description Описание				Scale Масштаб		
Bridge across river Gasan Su Cay km 447+650				1:100		
Мост через реку Гасан Су Чай 447+650 км						
				Date Дата		
				July 2001		
				Drawing no. № чертежа		
				H-44-01-03		



PLAN OF THE REGULATION STRUCTURES
ПЛАН РЕГУЛЯЦИОННЫХ СООРУЖЕНИЙ

BRIDGE 44 - 447+650 km
МОСТ 44 - 447+650 км

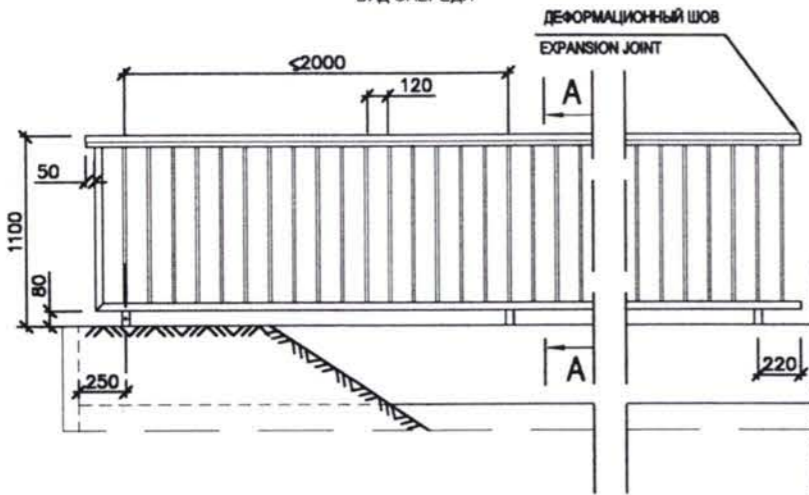
No.	№	Amendments	Изменения	Name	Название	Date	Дата
				REPUBLIC OF AZERBAIJAN		РЕСПУБЛИКА АЗЕРБАЙДЖАН	
				AZERAVTOYOL SC ГК АЗЕРАВТОЙОЛ			
				KOCKS CONSULT GMBH KOCKS Ingenieure			
				CONSTRUCTION OF THE GASAN SU CAY AND SHEMKIR BRIDGES СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР			
Designed		Проектировал		Gasan Su Cay Bridge		Мост Гасан Су Чай	
Drawn		Чертил					
Checked		Проверил					
Approved		Одобрен		Description		Scale	
				Bridge across river Gasan Su Cay km 447+650		1:500	
				Date		Date	
				July 2001		July 2001	
				Drawing no.		Drawing no.	
				H-44-01-04		H-44-01-04	
				№ чертежа		№ чертежа	

DETAIL 1. RAILING

ДЕТАЛЬ 1. ПЕРИЛЬНОЕ ОГРАЖДЕНИЕ

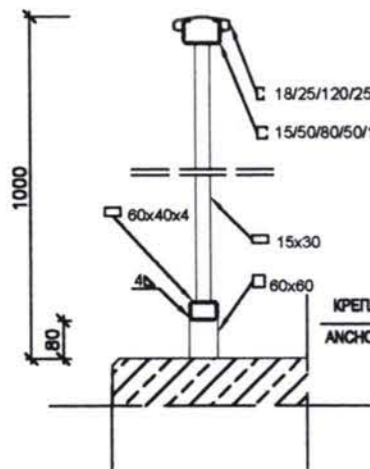
ELEVATION

ВИД СПЕРЕДИ



SECTION A-A

РАЗРЕЗ А-А



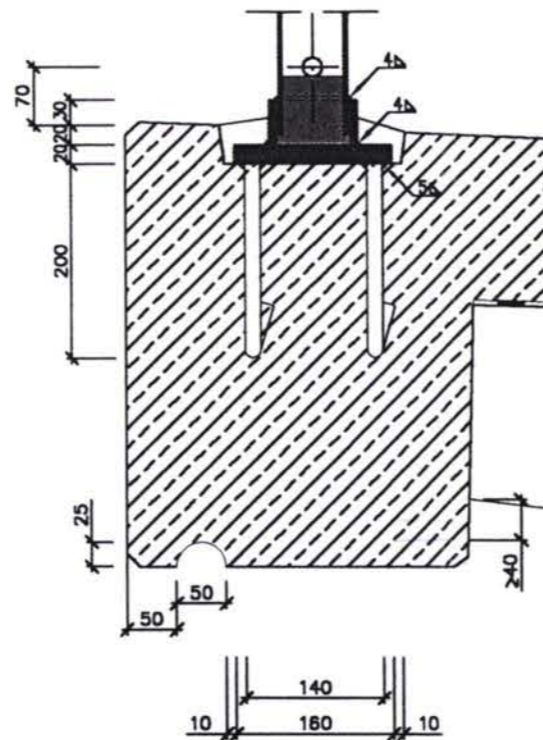
АНТИКОРРОЗИОННАЯ ЗАЩИТА (ПО СТАНДАР. ЗТУ-К)
CORROSION PROTECTION SYSTEM (acc. ЗТУ-К)

1. ЦИНКОВАНИЕ ГОРЯЧИМ СПОСОБОМ
1. HOT DIP GALVANIZING
2. ПОКРЫТИЕ ПОЛИВИНИЛХЛОРИДОМ (ТОЛЩИНА 80 МИКРОН)
2. FINAL COAT PVC (thickness 80 microns)
3. ПОКРЫТИЕ ПОЛИВИНИЛХЛОРИДО-АЛКИДНОЙ СМОЛОЙ (ТОЛЩИНА 80 МИКРОН)
3. FINAL COAT PVC-AK (thickness 80 micron)

КРЕПЛЕНИЕ СОГЛАСНО В ДЕТАЛИ 2
ANCHORAGE ACCORDING TO DETAIL 2

DETAIL 2. ANCHORAGE OF THE RAILING

ДЕТАЛЬ 2. КРЕПЛЕНИЕ ПЕРИЛЬНОГО ОГРАЖДЕНИЯ



ПРОЦЕДУРА УСТАНОВКИ

ERECTION SEQUENCE:

1. УСТАНОВКА СТОЕЧНОЙ ПРОКЛАДКИ
1. PLACING OF THE FOOTING PLATE
2. ВЫРАВНИВАНИЕ ПЕРИЛЬНОГО ОГРАЖДЕНИЯ
2. ALIGNMENT OF THE RAILING
3. ПРИВАРИВАНИЕ ПОДОШВ СТОЙКИ
3. WELDING OF THE POST SHOES
4. РЕГУЛИРОВКА ВЫСОТЫ ПЕРИЛЬНОГО ОГРАЖДЕНИЯ
4. ADJUSTMENT OF THE HEIGHT OF THE RAILING
5. ПРИВАРИВАНИЕ СТОЕК К ПОДОШВАМ СТОЕК
5. WELDING OF THE POSTS WITH POST SHOES
6. РЕМОНТ ПОВРЕЖДЕНИЙ ГАЛЬВАНИЗИРОВАННЫХ ПОВЕРХНОСТЕЙ
6. REPAIRING OF ZINC DAMAGES
7. ЗАЛИВКА ЭПОКСИДНОГО РАСТВОРА
7. PLACING OF THE POLYMER MORTAR
8. ЗАПОЛНЕНИЕ СТОЕК РАСТВОРОМ ДО УРОВНЯ ОТВЕРСТИЯ
8. FILLING POSTS WITH MORTAR UP TO DRILL HOLE LEVEL

СТОЙКА
RAILING POST

ОТВЕРСТИЕ $\varnothing 20$ мм ДЛЯ ЗАЛИВКИ РАСТВОРА И ВОДООТВОДА ИЗ СТОЙКИ
DRILL HOLE $\varnothing 20$ mm FOR GROUTING AND DRAINAGE OF THE POST

ПОДОШВА СТОЙКИ
POST SHOE 70x70x4 mm

ЗАЛИВКА МОРОЗОСТОЙКИМ ЖАДКОМ РАСТВОРОМ
GROUTING WITH FROST RESISTANT FLOWING MORTAR

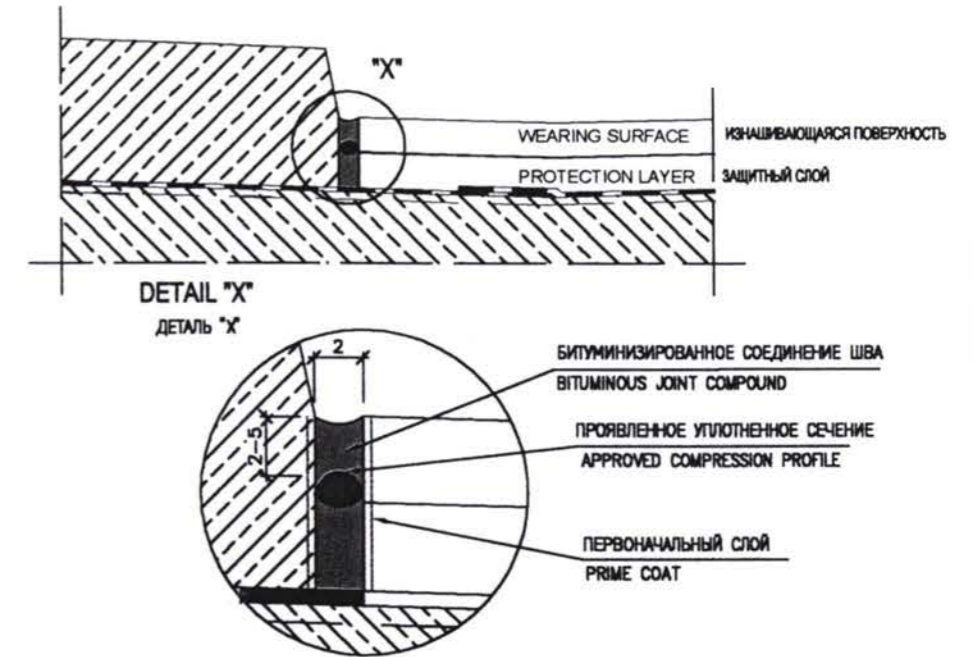
ЭПОКСИДНЫЙ БЕЗУСАДОЧНЫЙ, ВОДОСТОЙКИЙ И СТОЙКИЙ К ВОЗДЕЙСТВИЮ ПРОТИВОГОЛОЛЕДНЫХ СОЛЕЙ РАСТВОР
POLYMER MORTAR; FREE OF SHRINKAGE; WATERPROOF; AND DEICING SALT RESISTANT

СТОЕЧНАЯ ПРОКЛАДКА С 160x160x10 мм
FOOT PLATE 160x160x10mm WITH

АНКЕРА $\varnothing 16$ мм; СТАЛЬ КЛАССА 37-2
4 ANCHORS $\varnothing 16$ mm; St 37-2

DETAIL 6. JOINT BETWEEN CARRIAGEWAY AND KERB

ДЕТАЛЬ 6. ШОВ МЕЖДУ ПРОЕЗЖЕЙ ЧАСТЬЮ И БОРДЮРОМ



ДЕТАЛЬ "X"

ДЕТАЛЬ "X"

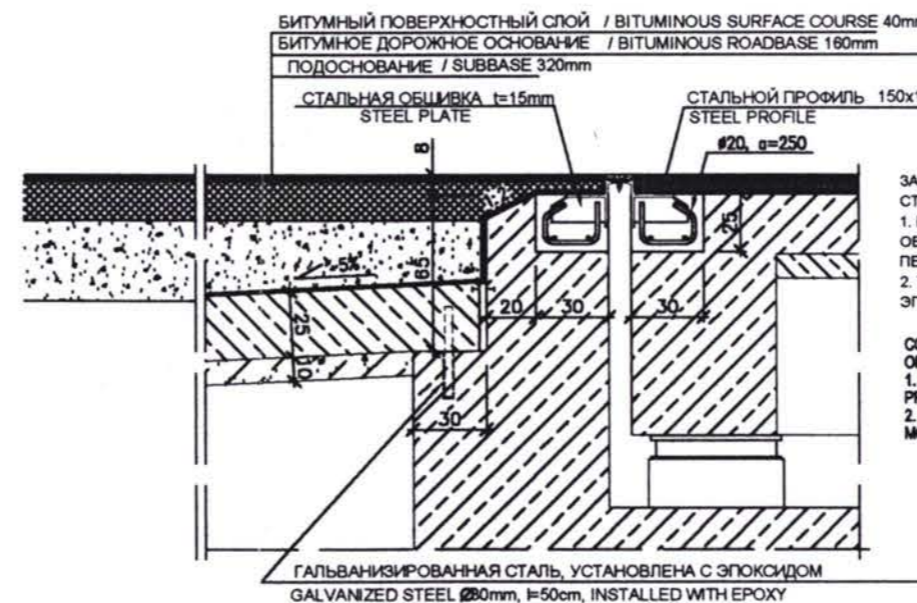
БИТУМИНИЗИРОВАННОЕ СОЕДИНЕНИЕ ШВА
BITUMINOUS JOINT COMPOUND

ПРОЯВЛЕННОЕ УПЛОТНЕННОЕ СЕЧЕНИЕ
APPROVED COMPRESSION PROFILE

ПЕРВОНАЧАЛЬНЫЙ СЛОЙ
PRIME COAT

DETAIL 12. EXPANSION JOINT AND TRANSITION SLAB WITH CHAMBER WALL

ДЕТАЛЬ 12. ТЕМПЕРАТУРНЫЙ ШОВ И ПЕРЕХОДНАЯ ПЛИТА С РАЗДЕЛИТЕЛЬНОЙ СТЕНОЙ



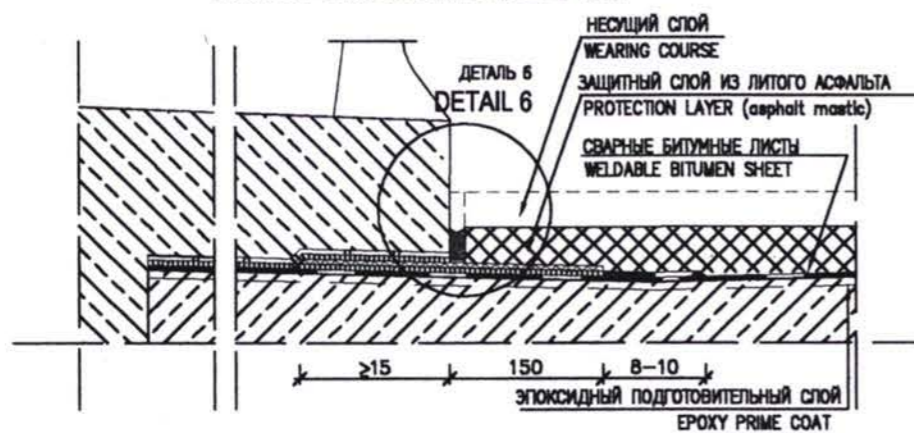
ЗАЩИТА ОТ КОРРОЗИИ СТАЛЬНЫХ ЧАСТЕЙ
1. ПОВЕРХНОСТНЫЙ СЛОЙ - ОБОГАЩЕННЫЙ ЦИНКОМ ПЕРВОНАЧАЛЬНЫЙ 70 μ m
2. ТОНКИЙ СЛОЙ - ЭПОКСИДНЫЙ 120 μ m

CORROSION PROTECTION OF THE STEEL PARTS
1. PRIME COAT-ZINC RICH PRIMER 70 μ m
2. 3 FL COAT-EPOXI MODIFIED; EACH 120 μ m

ГАЛЬВАНИЗИРОВАННАЯ СТАЛЬ, УСТАНОВЛЕНА С ЭПОКСИДОМ
GALVANIZED STEEL $\varnothing 80$ mm, l=50cm, INSTALLED WITH EPOXY

CONNECTION WITH THE SEALING IN THE AREA OF THE CARRIAGEWAY

СОЕДИНЕНИЕ С ГИДРОИЗОЛЯЦИЕЙ ПРОЕЗЖЕЙ ЧАСТИ



НЕСУЩИЙ СЛОЙ
WEARING COURSE

ДЕТАЛЬ 6
ЗАЩИТНЫЙ СЛОЙ ИЗ ЛИТОГО АСФАЛЬТА
PROTECTION LAYER (asphalt mastic)

СВАРНЫЕ БИТУМЕННЫЕ ЛИСТЫ
WELDABLE BITUMEN SHEET

ЭПОКСИДНЫЙ ПОДГОТОВИТЕЛЬНЫЙ СЛОЙ
EPOXY PRIME COAT

BRIDGE 44 - 447+650 km

МОСТ 44 - 447+650 км

No.	№	Amendments	Изменения	Name	Название	Date

REPUBLIC OF
AZERBAIJAN

РЕСПУБЛИКА
АЗЕРБАЙДЖАН

AZERAVTOYOL SC ГК АЗЕРАВТОЙОЛ

KOCKS CONSULT GMBH KOCKS
ingenieur

CONSTRUCTION OF THE GASAN SU CAY AND SHEMKIR BRIDGES		
СТРОИТЕЛЬСТВО МОСТОВ ГАСАН СУ ЧАЙ И ШЕМКИР		
Designed Проектирован	Gasan Su Cay Bridge Мост Гасан Су Чай	
Drawn Чертил		
Checked Проверил		
Approved Одобрен		
Date Дата	Azeravtoyol Azərbaycan	Scale Масштаб Date Дата July 2001 Drawing no. H-44-01-08 № чертежа