

CHAPTER THREE

General Clauses in Specifications

Most specifications for civil engineering work begin with a selection of 'general clauses' which relate to the contract as a whole and are not confined to any particular trade or works section. The nature and content of these clauses will vary from job to job. An attempt is made to classify and group the more commonly used general clauses on a functional basis and it is hoped that this approach will prove useful to the reader.

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To assist readers in the drafting of suitable general clauses for civil engineering work, a large range of typical general clauses follows, accompanied by explanatory notes.

GENERAL MATTERS

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General requirements

The works to be executed under this Contract are to be carried out in accordance with the Conditions of Contract, Specification, Bill of Quantities and Contract Drawings. If in construing the Contract there shall appear to be any inconsistency between the Specification and Conditions of Contract, the Conditions of Contract shall prevail.

This clause draws the Contractor's attention to the requirements of all the Contract Documents and emphasises that the Conditions of Contract have precedence over other contract documents.

General Conditions

The General Conditions of Contract, Forms of Tender, Agreement and Bond applicable to this Contract are those drawn up by the Institution of Civil Engineers jointly with the Association of Consulting Engineers and the Federation of Civil Engineering Contractors (dated January, 1955) and provision for compliance with the clauses in the Conditions of Contract must be made in the measured rates.

Alternatively, the General Conditions of Contract for Structural Engineering Works, issued by the Institution of Structural Engineers, could be operated for structural jobs.

Extent of contract

(a) *Railway bridge over canal.* The Works in this Contract consist of the driving of steel sheet piling alongside the canal; the excavation for and construction of two concrete piers; the fabrication and erection of two welded plate girders with welded diaphragms site welded to the main girders; the supply and placing on the plate girders of precast reinforced concrete trough units; the construction of bored piles in the existing railway embankment and the construction of reinforced concrete abutments; the supply of precast reinforced concrete longitudinal beams and erection as side spans between the abutments and piers and all ancillary works in connection therewith.

(b) *Extensions to sewage disposal works.* The Works in this Contract consist of the construction of a flow-dividing chamber; sedimentation tanks; dosing chambers; biological filters; humus tanks; sludge well and pumphouse; effluent sump and pumphouse, including

Descriptions will vary considerably according to the nature of the work. For this reason two typical clauses are given; one relating to a railway bridge and the other to sewage disposal works extensions.

The approach is rather different in each case, with a much more detailed description being supplied for the railway bridge with information on forms of construction. The sewage disposal works clause merely lists the major component parts of the works.

Basically, the function of this clause is to give the Contractor a general picture of the job before he begins reading the detailed clauses.

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pumping plant; sludge drying beds; sludge, top water and effluent pumping mains; feed, effluent and sludge pipes; distribution and collecting grips; man-holes; and alterations to existing works.

Drawings

The drawings referred to in the General Conditions of Contract are listed hereunder. Written dimensions should be taken in preference to scaling.

The purpose of this clause is to list the Contract Drawings with their numbers and titles. This permits the Contractor to check that he has all the Contract Drawings in his possession at the tendering stage.

Contract

<i>Drawing No.</i>	<i>Title</i>
1	Layout of site roads and surfaced areas
2	Site roads: cross sections, Sheet No. 1
3	Ditto: Sheet No. 2
4	Plan of road drainage
5	Road drainage: Longitudinal sections
6	Road drainage: gully and manhole details

Price variations

The Variation of Price (Labour and Materials) Clause, prepared by the Institution of Civil Engineers in conjunction with the Federation of Civil Engineering Contractors and the Association of Consulting Engineers, is to operate on this Contract.

Where this clause is to apply, it must be expressly incorporated in the Contract. Its use is particularly necessary on contracts which are uncertain in extent or of long duration.

Cancellation of contract if contractor shall offer any gift or reward

The Employer shall be entitled to cancel the Contract and to recover from the Contractor the amount of any loss

This clause or a similar one is usually incorporated in a civil engineering contract

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resulting from such cancellation, if the Contractor shall have offered or given or agreed to give to any person any gift or consideration of any kind, as an inducement or reward for doing or forbearing to do or for having done or forborne to do any action in relation to the obtaining or execution of the Contract, or any other Contract with the Employer or for showing or forbearing to show favour or disfavour to any person in relation to the Contract or any other Contract with the Employer, or if the like acts shall have been done by any person employed by him or acting on his behalf (whether with or without the knowledge of the Contractor) or if in relation to any Contract with the Employer the Contractor or any person employed by him or acting on his behalf shall have committed any offence under the Prevention of Corruption Acts 1889 to 1916, or shall have given any fee or reward the receipt of which is an offence under sub-section (2) of section 123 of the Local Government Act 1933.

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for a local authority with the object of preventing any bribery or corruption occurring on such a contract.

Sufficiency of tender

The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the Works and of the prices inserted in the Bill of Quantities (and Schedule of Rates, where applicable), which rates and prices shall cover all his obligations under the Contract and everything necessary for the proper completion of the works.

This clause operates as a reminder to the Contractor that his tender must include all the works (both permanent and temporary) and general obligations and liabilities involved in the completion of the Contract.

LEGAL PROVISIONS

Acts and regulations

The Contractor shall comply with all Acts of Parliament and Statutory Instruments applicable to the Contract Works and shall indemnify and keep indemnified the Employer against any failure on the part of the Contractor or his employees to comply with any such Acts of Parliament or Statutory Instruments and against any damages or other consequences arising out of such failure. In particular, the Contractor's attention is drawn to The Building (Safety, Health and Welfare) Regulations, 1948 (S.I. 1948 No. 1145), to the Factories Act, 1961, and to all subsequent amending legislation and relevant Statutory Instruments.

It is advisable to draw the Contractor's attention to his obligations resulting from Acts of Parliament and Statutory Instruments.

Port or River Authority regulations

The Contractor is to comply with the Port Authority Regulations insofar as they control and regulate any of the Works or the incidental movement of plant, equipment, labour, materials or craft conveying these in or about the Works or plying between the Works and the Contractor's supplying wharves. The Contractor shall obtain from the Port Authority such permissions as are required for carrying out the work or any necessary temporary works. He shall provide, maintain and remove, when required, such fenders, lights, fences, hoardings, guard rails, etc., as may be required by the Port Authority's regulations or on the direction of the

Where the Works adjoin a harbour or river, it is often necessary for the Contractor to comply with the regulations of the Port or River Authority. These regulations may have considerable influence on the Contractor in his execution of the Work and he will need to make allowance for this in his tender.

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Engineer. The tender will be deemed to include for the whole of the cost of these operations. On completion of the Works the Contractor shall remove all temporary works and leave the river bed free from any obstructions or deposits arising from the Works.

Working rule agreement

The Contractor shall allow in his Tender for all costs incurred in complying with the provisions of the Working Rule Agreement made by the Civil Engineering Construction Conciliation Board for Great Britain.

This clause emphasises the fact that no additional payments will be made to the Contractor in connection with the working rule agreement.

MATTERS AFFECTING COST

Labour expenses

Subject to the Price Variation Clause, the tender shall include for all expenses relating to labour and in particular the following: insurance of all kinds, selective employment tax, pensions, holidays with pay, overtime working, night work, double shifts, rotary shifts, tidework, tool allowances, servicing of plant, 'plus' rates and allowances and payment by result or bonus.

The Contractor must not merely build-up his billed rates from basic labour rates but must include for a wide range of indirect labour charges.

Safety precautions

The Contractor shall take all necessary precautions and shall comply with all regulations and the recommendations of Reports of the Committee of the Institution of Civil Engineers, dealing with shaft and tunnel works, and for

The wording of this clause will vary with the nature of the work in the Contract. For instance, a sewage works contract would make reference to the publication issued

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work carried out in compressed air, inside cofferdams, on or below water, and shall continually operate all safety measures made necessary by virtue of the method employed for the execution of the Contract.

Sequence of works

The works are to be carried out in accordance with a programme and in a sequence to be approved by the Engineer in relation to other works to be executed on the site under other Contracts.

The Engineer may from time to time, by order in writing without in any way vitiating the Contract, require the Contractor to proceed with the execution of the Work at such time or times as may be deemed desirable, and the Contractor shall not proceed with any work ordered to be suspended until he receives a written order to do so from the Engineer.

Electricity supply

The Employer will make available from points on the site as shown on the Site Plan:

- (1) a supply of electrical energy of stated kVA at 415 volts, three-phase, for supplying power for heavy erection plant and welding;
- (2) a supply of electrical energy at 110 volts, single-phase or three-phase, with centre points earthed, for supplying power to portable tools and for fixed lighting and handlamp transformers.

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by the Institution of Civil Engineers, *Safety in Sewers and at Sewage Works*.

This clause sometimes includes a detailed schedule giving the dates by which specific sections of the Works are to be completed. On occasions, the Contractor is required to make allowance in his tender for possible delays resulting from programme changes introduced by the Engineer: this is an unreasonable request on account of the uncertainties involved.

This clause gives details of the electricity supply available on the site and lists the requirements relating to the Contractor's electrical installation.

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The Contractor will be responsible for providing and maintaining the whole of the installation on the load side of the points of supply. All necessary safety precautions must be taken and the Contractor's electrical installation must be to the satisfaction of the Engineer, and must comply with all appropriate statutory requirements including the current Regulations for the Electrical Equipment of Buildings issued by the Institution of Electrical Engineers.

Water supply

The Contractor will be supplied free of charge at a fixed point on the site with the necessary water for constructional purposes. The Contractor shall distribute at his own expense to all other points on the site where water is required, and he will be held responsible for any unnecessary wastage of water and shall be charged for such wastage at current rates.

The Contractor will be held responsible for compliance with the requirements of the local water undertaking.

Alternatively, the Contractor may be required to obtain the necessary supply of water and to pay the water authority's charges. These charges may be calculated as a percentage of the contract sum, although this procedure offers no incentive to the Contractor to prevent the misuse of water.

Contractor to visit site

The Contractor is requested to visit the site of the proposed works before tendering and will be deemed to have satisfied himself as to local conditions, the nature and degree of accessibility of the site, the nature and extent of the operations, the supply of and conditions affecting labour and materials and the execution of the Works generally. No claim will be entertained in respect of

This clause serves to emphasise the need for the Contractor to make a thorough examination of the site prior to submitting his tender, and to make allowance in his price for any factors which will affect working conditions on the site.

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any of these matters, neither will lack of knowledge nor ignorance of conditions be accepted as substantiating a claim.

Access to site

Access to the site is obtained from Road X. The Contractor shall provide and maintain such temporary roads as he may require for the purpose of carrying out the work in the most expeditious and efficient manner, and shall remove the temporary roads on completion. Temporary roads shall be constructed of hardcore, engine ash, timber sleepers or other suitable material. The Contractor shall comply with all police and highway authority requirements.

This covers access to the site and the construction, maintenance and subsequent removal of temporary roads on the site, and compliance with all public authority requirements.

Subsoil investigations

Borings have been taken on the site and the results are shown on Drawing X, but there is no guarantee that the conditions found in the borings are truly representative of conditions generally on the site. The Contractor is therefore advised to make his own independent enquiries and observations as to the character of the soil.

All levels on the Contract Drawings are related to Ordnance Datum (Newlyn). Details of subsoil water levels in the ground are also recorded on Drawing X.

The results of trial borings should always be made available to Contractors tendering for a job.

In the case of work to be carried out beside the sea or tidal waters, a number of water levels should be supplied, such as highest recorded water level; mean high water spring tide; mean low water spring tide; and lowest low water.

USE OF SITE

Working area

The area available for the storage of materials and assembly of components is indicated on Drawing X.

This provision is particularly important when working space is restricted.

Use of site

The Contractor shall, except when authorised by the Engineer, confine his men, materials and plant within the site of which he is given possession. The Contractor shall not use any part of the site for any purposes not connected with the Works unless the prior written consent of the Engineer has been obtained.

The purpose of this clause is to confine the Contractor's activities to the Site of the Works, and to prevent its use for improper purposes. Reference may also be made to the erection of fences and hoardings around the site.

Storage

The Contractor shall provide at his own expense suitable offices and adequate storage accommodation for plant and materials. In particular, adequate waterproof storage sheds shall be provided for materials requiring protection against weather, humidity or damage. No materials or plant shall be stored on the public highway.

It is important that the Contractor should be required to provide adequate and suitable storage accommodation to prevent damage or deterioration to materials and plant.

Advertising

The Contractor shall treat the Contract and everything within it as private and confidential. In particular, the Contractor shall not publish any information, drawing or photograph relating to the Works and shall not use the site for advertising purposes, except with

This requires the Contractor to obtain the Engineer's consent before he can use anything connected with the Contract or even its site for advertising purposes.

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the written consent of the Engineer and subject to such conditions as he may prescribe.

TEMPORARY WORKS

Diversion of services

Where it becomes necessary permanently to divert any cable, sewer, drain, main, etc., the Contractor will be permitted to recover the cost of this work unless, in the opinion of the Engineer, it was due to the Contractor's negligence, bad workmanship, faulty materials or lack of reasonable foresight. The Contractor is required to make all necessary arrangements with the appropriate authorities for the diversion of their services.

The Contractor is assured of payment for the unavoidable diversion of services, but is responsible for making the necessary arrangements with the authorities concerned.

Traffic control

The Contractor shall provide all necessary traffic control signs and signals that may be required by the Highway Authority or the Police, and shall operate and maintain them efficiently and to the satisfaction of the authorities mentioned. The contract rates for pipelaying shall be deemed to include all expenses of traffic control, watching and lighting.

This provision is particularly appropriate on sewer and pipeline contracts, where work is to be carried out along public highways.

Temporary works

The Contractor shall be solely responsible for the sufficiency, stability and safety of all temporary works and their care in accordance with clause 20 of the

This clause gives added emphasis to clause 20 of the I.C.E. Conditions and provides for the supply to the

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I.C.E. Conditions. He shall at his own expense supply detailed drawings and calculations of stability of such temporary works as the Engineer may direct, but no approval given or implied by the Engineer shall relieve the Contractor of his responsibilities in connection with temporary works.

Dealing with flow in existing pipelines

The Contractor shall at his own expense deal with, pump, maintain or divert the flows in existing pipelines as may be necessary during the execution of the works.

Existing services

The Contractor shall avoid all damage to operative gas or water mains or service pipes, sewers, drains, cables, wires, overhead telephone or telegraph lines, telegraph poles, etc., which he encounters in carrying out the Works and he must provide for supporting them to the satisfaction of the Engineer and the responsible authorities. The Contractor must give all notices, pay any charges made and make good at his own expense any damage done. The Contractor must satisfy himself by his own enquiries and observations as to the precise position of all existing services and must take full responsibility in connection with them and shall hold the Employer indemnified against any claims that may arise from any damage caused to such services by his operations.

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Engineer of drawings and calculations relating to temporary works.

This provision may be necessary when the Contract Works involve alterations to existing operative sewers and pipelines.

This is an important clause, as costly damage is often caused to electricity cables and other services by plant engaged on excavating work. It is essential that the Contractor takes full responsibility for all damage to and works of support required in connection with existing services, otherwise the Employer could be liable for the cost of work resulting from the negligence of the Contractor.

The Engineer normally gives an indication of the extent of existing services so far as they are known to him, but as a guide only since their true whereabouts can only be determined by the Contractor.

Setting out

The Contractor shall be entirely responsible for accurately setting out all the work, and he shall at his own expense make good any defects arising from errors in the lines or levels. He shall also provide for the use by the Resident Engineer throughout the contract, a modern and accurate theodolite and precision level, both of approved type and make, complete with all ancillary equipment, steel and linen tapes, poles, pegs, stagings, templates, profiles, etc., necessary for setting out and measurement of the work, and the services of an experienced chainman. The Contractor shall also provide such rubber boots, oilskins and protective clothing as may be required by the Engineer's staff on the site.

Office for Resident Engineer

The Contractor shall provide and erect in a position approved by the Engineer, and maintain, clean, heat and light throughout the Contract, one suitable and substantial office measuring not less than 4.5 m × 3.75 m (15 ft × 12 ft) internally, with a close-boarded floor and adequate windows, for the sole use of the Resident Engineer and his staff. The office shall contain one locked cupboard, one table 2.5 m (8 ft) long with two locked drawers and three double elephant plan drawers, one office desk, one typewriter, two chairs, two stools, one double elephant drawing board and T-square, and washing facilities, and it shall be provided with a

Although the Contractor is responsible for setting out the work the Engineer or his representative normally carries out checks and needs a supply of instruments, equipment and a chainman for this purpose.

The office requirements will vary from job to job according to the size of a contract and the number of engineer's staff employed on the site. It is necessary to give detailed particulars of the office and its contents in order that the contractor can make a realistic assessment of their probable cost at the time of tendering.

Site offices often have to be large enough to accommodate site meetings.

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lock and four keys. There shall be no spare keys in the possession of any person other than the Engineer or his representative.

The Contractor shall provide such labour as is reasonably necessary to attend to the office requirements, clean instruments and assist in measuring, supervising, checking or testing the work at any time.

Telephone

The Contractor shall arrange for the installation of a Post Office telephone in the Resident Engineer's office, which is to be kept directly connected to the public telephone exchange, and the Contractor shall pay all charges for installation, rent, calls and eventual disconnection. The Employer will reimburse to the Contractor the sums paid to the Post Office in this connection. The Contractor will not be permitted to have any other telephone on the same line or as an extension from it.

The Engineer's representative normally requires the sole use of a telephone on the site, and a provisional sum is generally included in the bill of quantities to cover the costs involved, since the Contractor cannot be reasonably expected to estimate the probable cost of telephone calls to be made from the Engineer's office.

Sanitary conveniences

The Contractor shall provide and maintain at his own expense proper and adequate sanitary conveniences for the use of persons on the site throughout the Contract, and shall remove same on completion. Where water closets cannot be provided, the Contractor shall provide suitable chemical closets which shall receive regular attention. All sanitary accommodation shall be to the approval of the Engineer and the local Public Health Authority.

This clause supplements the requirements of the Safety, Health and Welfare Regulations.

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Use of public highways

The Contractor shall take all reasonable precautions to prevent the deposit of mud, filth or rubbish on the highway and shall from time to time, or as instructed by the Engineer or the Highway Authority, remove from the highway at his own expense any mud, filth or rubbish which may have been deposited on it.

This clause gives added emphasis to the Contractor's responsibility to keep public highways free from mud, etc., from the site. Failure of the Contractor to keep roads clean can cause considerable inconvenience and annoyance to the public.

Damage to adjoining properties

The Contractor shall not trespass on properties adjoining the site of the Works. The Contractor will be held responsible for any damage to adjoining properties caused through the carrying out of work contained in this Contract. The Contractor shall repair and make good any such damage at his own expense to the satisfaction of the Owners.

It is important that the Employer should be indemnified against any claims submitted by adjoining owners.

MATERIALS REQUIREMENTS

Plant, etc.

The Contractor is to provide all labour, materials, plant, tools, tackle, etc., necessary for the satisfactory completion of the Works. All mechanical plant used by the Contractor in the execution of the Works shall be of such type and size and subject to such method of working as the Engineer may approve.

The Contractor must provide everything necessary for the job and it is desirable that the Engineer should have some control over the type of plant and how it is used.

Materials and workmanship

All materials and components shall be of good quality, appropriate to the class of work involved, and be in full accordance with the Contract requirements. Where an applicable specification issued by the British Standards Institution is currently operating, the materials and components used in the execution of the Works shall comply with that specification, unless otherwise specified or ordered by the Engineer.

Workmanship shall be of a high standard and shall conform to the detailed requirements of the specification and the appropriate sections of any applicable current Codes of Practice issued by the British Standards Institution.

Samples, tests and certificates

When required by the Engineer, the Contractor shall at his own expense submit to the Engineer, for approval, samples of any of the materials and components to be used. The quality of materials and components subsequently used in the Works shall not be inferior to the approved samples.

The cost of testing is to be borne by the Contractor, who shall give not less than 7 days notice of all tests in order that the Engineer or his representative may be present. Two copies of all test certificates shall be supplied to the Engineer or his representative.

All material which is specified to be tested at the Manufacturer's Works must satisfactorily pass the tests before being painted or otherwise covered.

It is unsatisfactory to require all materials and components to be of the best quality, as this is rarely always the case. It is good and sound practice to make wide use of British Standards and Codes of Practice.

To assist the Contractor and to clarify the testing procedure, it is the practice of some Engineers to detail the number of certificates required for the principal materials and components. For instance, one test certificate may be required for each delivery of cement, and each type of pipe, one for each sluice valve, one for each 10,000 kg (10 tons) of bar reinforcement of each diameter, one for each make of brick, etc.

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Test certificates shall be supplied to the Engineer or his representative before the materials or components are used in the Works, unless the Engineer directs otherwise.

Work prepared off the site

The Contractor shall give the Engineer written notice of the preparation or manufacture at a place off the site of any material or component to be used on the Works, stating the place and time of preparation or manufacture, so that the Engineer may make inspections at all stages of the production process. Failure to give such notice may result in the rejection of the material or component, if the Engineer considers that his inspection was necessary during the production process.

The Engineer needs the facility to inspect the preparation or manufacture of materials and components away from the site.

GENERAL WORKING REQUIREMENTS

Suspension of works during bad weather

The Contractor shall, without compensation, delay or suspend the progress of the Works, or any part thereof, during frost or bad weather for such periods as may be required by the Engineer. The Engineer shall determine what extension of time (if any) shall be allowed to the Contractor for such suspensions.

This clause empowers the Engineer to order the suspension of any part of the Works during exceptionally bad weather, without incurring the Employer in additional expenditure.

Facilities for other contractors

The Contractor shall afford all reasonable facilities to other Contractors employed by the Employer, or to any

On some civil engineering contracts, notably those for power stations, it is necessary

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local or other authority, to execute work on the site. The Contractor will not be held responsible for injury to such other work or workmen employed on it, unless the injury is caused by the Contractor's operations or by persons in his employ.

Co-ordination with other contractors

The Contractor shall co-ordinate his work with that of the other contractors, so as to cause the minimum practical interference with their work. The other contractors will likewise be required to enter into reciprocal arrangements. The Contractor shall bear all reasonable costs or charges that, in the opinion of the Engineer, are caused by the Contractor's lack of reasonable co-operation.

Accommodation for employees

The Contractor shall allow in his tender for providing all necessary canteen and first-aid facilities and other accommodation and services for his employees, and shall provide for maintaining them in a clean and tidy condition throughout the construction period, and for clearing away and reinstating the site on completion, all to the satisfaction of the Engineer and other appropriate authorities.

Keep site tidy

The Contractor shall throughout the constructional period maintain the whole of the site and all plant and

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for several main contractors to be engaged on the site at the same time, e.g. civil, mechanical and electrical contractors. It is not then possible for a single contractor to have exclusive possession of the site.

This provision is frequently necessary on civil engineering contracts, when the Employer also enters into separate contracts for such work as piling and installation of machinery.

The Contractor has to allow in his price for all canteen, first-aid and other welfare facilities needed for his employees on the site.

This clause provides for keeping the site in a tidy condition and for cleaning

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materials placed on it in a clean, tidy and safe condition to the satisfaction of the Engineer. The Contractor shall clear away all rubbish from time to time as directed and at completion.

The Contractor shall clean down the surfaces of all concrete, cladding and other work from time to time, and wash pavings and flush drains and gullies. He shall allow for cleaning down the whole of the Works at completion and leaving them in a clean and perfect condition to the satisfaction of the Engineer.

Measurement of work

The Contractor shall provide a suitably qualified agent and chainmen to assist the Engineer/Quantity Surveyor who will be responsible for measurements, interim valuations and measurements for the final account. The measurements and the form in which the accounts are submitted by the Contractor shall be in accordance with the reasonable demands of the Engineer/Quantity Surveyor.

Whenever the Contractor shall carry out any work or provide any material for which he may propose to claim an extra, he shall first obtain a written order from the Engineer and then make arrangements for its joint measurement, although this will in no way commit the Engineer to recognition of the claim. The Engineer/Quantity Surveyor shall at all reasonable times have access to the Contractor's time-book.

Photographs

A provisional sum of £150 (One hundred and fifty pounds) is included

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down walls and pavings, flushing out drains, etc.

Measurement of work on a civil engineering contract is normally carried out by the Engineer's representative in conjunction with the Contractor's agent. On occasions a quantity surveyor performs the Engineer's measuring functions.

This clause emphasises the need for joint measurement, and outlines the procedure for dealing with 'extra work'.

Photographs are often required on civil engineering

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in the Bill of Quantities for Progress Photographs. This sum is to be expended in whole or in part as directed by the Engineer, or deducted if not required.

Protection of work

The Contractor shall, at his own expense, cover up and protect all materials and work liable to be stained or injured from any cause, and shall make good any such damage to the entire satisfaction of the Engineer. The Contractor shall adequately protect from frost all concrete, brickwork, masonry, rendering and other work requiring the use of cement, and shall not execute such work when the temperature of the atmosphere or materials is below 2°C (36°F), except with the Engineer's consent and subject to any additional precautions that he may prescribe. Adequate protection shall also be provided against hot sun or rain.

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jobs to provide a permanent pictorial record at various stages of the job. These often assist in assessing the extent of delays and sometimes help in settling disputes when measuring work. As the Contractor cannot possibly estimate the number of photographs that will be required, the only satisfactory way of dealing with this in the Bill is by means of a provisional sum.

The Contractor is made responsible for protecting all constructional work from damage from any cause, including the effects of extreme weather conditions.

RECORDS

Programme and progress record

The programme which the Contractor is required to provide under clause 14 of the I.C.E. Conditions shall be in a

It is essential that proper provision is made for satisfactory programming and

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form approved by the Engineer. The Contractor shall from time to time modify the programme if required to do so by the Engineer. The Contractor shall at all times during the progress of the Works endeavour to adhere to the approved programme.

The Contractor shall supply to the Engineer weekly during the progress of the Works such written particulars and information as will enable the Engineer to maintain a progress record for the Works in the same form as the approved programme.

Records

The Contractor shall maintain accurate records, plans and charts showing the dates and progress of all main operations, and the Engineer shall have access to this information at all reasonable times. Records of tests made shall be handed to the Engineer's representative at the end of each day.

The Contractor shall also maintain records and charts of all strata and materials encountered in shaft sinking and tunnel driving, together with records of working conditions under compressed air. The Engineer shall be supplied with a copy of these records as and when required.

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progressing. This requires the submission of adequate information weekly by the Contractor to the Engineer.

The Contractor is normally required to maintain records of progress made, tests performed, strata encountered and details of working conditions, and to submit this information to the Engineer as it becomes available.