

PROVISIONAL
PROJECT SPECIFICATION FOR AN INTEGRATED ELECTRONIC CONTROL CENTRE (IECC)
(EXCLUDING SIGNALLING INTERLOCKING AND INTERFACES
FOR SIGNALLING INTERLOCKING)

Director of S. & T. Engineering,
British Railways Board.

2101/1604E/1

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GLOSSARY OF TERMS

BOARD	British Railways Board.
ENGINEER	Director of Signal and Telecommunications Engineering, British Railways Board.
WORKING DAY	Taken to include Monday to Friday and exclude Saturday and Sunday.
EQUIPMENT ROOM	Taken to mean that building which houses predominantly solid state electronic equipment.
SDS	Signalman's Display System.
ARS	Automatic Route Setting.
ISM	IECC System Monitor.
SWS	Signalman's Workstation.
SITE	The geographical location of the Signalling Centre (Yoker or Waterloo as appropriate).
SSI	Solid State Interlocking.
TD	Train Describer.
ATR	Automatic Train Reporting System.
ISWS	Information System Workstation.

LIST OF DOCUMENTS REFERRED TO OR ASSOCIATED WITH THIS REPORT SPECIFICATION

Spec. BR 1628	Signalling Display System Development.
BR 1629	Automatic Route Setting Development.
BR 1630	IECC General Description.
BR 1631	IECC Internal Systems Communications Requirements.
BR 1632	IECC System Monitoring Requirements.
BR 1633	Communications Gateway Requirements.
BR 1634	Systems Specification for a SDS.
BR 1635	Communications Network Performance Requirements.
BR 1636	Signalmens and Information System Workstations Design.
BR 1652	ARS Requirements.
BR 1653	System Specification for ARS.
BR 1878A	The Use of VDU for Railway Signalling and Control Purposes.
BR 287	High Visibility Vests.
BR 800	Train Describers.
ScR 3	Data/Protocol Converters and Associated Equipment Requirements.

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SCHEDULE OF NON-COMPLIANCE

The Tenderer shall list below every clause of this specification, or associated specifications, with which he cannot comply. The alternative proposal shall be clearly stated, strongly supported by evidence of previous use in a similar environment having the same (or closely related) operating conditions as detailed in this specification.

Any drawings, diagrams, data sheets, calculations etc., required to describe the proposal adequately must be included with the tender.

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1. GENERAL SCOPE OF THE PROJECT

1.1 The R & D Division of British Railways has been designing a Railway Control Centre which will integrate the various electronic sub-systems that provide the facilities necessary for the operation of a modern railway network. This is known as an Integrated Control Centre (IECC).

1.2 The first phase of the project covered by this specification is to complete the design and development of the IECC. The facilities to be provided are as follows:-

1.2.1 Automatic route setting (ARS).

1.2.2 Signaller's display system (SDS).

1.2.3 Communications networks.

1.2.4 Gateway (data transfer).

1.2.5 IECC System Monitor (ISM).

1.2.6 Various data/protocol converters.

(Refer to BR Specification No. 1630).

Note that the signalling interlocking either exists already or will be supplied under a separate signalling contract. The interfaces between the signalling interlocking and the IECC are included in the signalling contract.

1.3 The second phase of the project is to supply, install and commission an IECC at Yoker, which is to the north of Glasgow, and also to supply, install and commission an ARS facility as part of the Waterloo area re-signalling scheme. The items of equipment to be supplied are given as Appendix 1 to this specification.

1.4 The installation phase at Yoker shall include the provision of:-

- (a) All cabling and connectors between the sub-systems of the IECC.
- (b) All cabling and connectors between the Signalling Network and the Interlockings Interfaces. Network interface equipment shall be mounted in a housing which matches the SSI housings.
- (c) An Interconnection Rack plus cabling and connectors between that Rack and the various Data/Protocol Converters.
- (d) Power Supply distribution (see Section 15).

1.5 The installation at Waterloo shall include the housing of the ARS system and System Monitor (to be negotiated with the Signalling Contractor) together with all necessary cabling and interconnections to form the Signalling Network. The Signalling Contractor will be responsible for cabling and connectors between the Signalling Network and the signalling equipment.

2. TIMESCALES

2.1 The dates to be met for this project are as follows:-

Completion of design work	November 1986
IECC system available for testing at the factory	January 1988
Completion of factory testing	October 1988
IECC installation at Yoker complete	November 1988
IECC commissioned at Yoker	December 1988
Waterloo ARS factory test	March 1988
Waterloo ARS installation complete	August 1988
Waterloo ARS commissioned	December 1988

2.2 The tender shall allow for changes to the software data in accordance with the following programme:-

Bell Grove	April 1989
Sunnyside	August 1989
Dumbarton	December 1989
Craigendoran	March 1990

(Refer to Section 11.2).

2.3 The tenderer shall assess the above timescales carefully and forward a plan with the tender showing how these can realistically be achieved. Areas of technical risk shall be highlighted within the plan and any alternative approaches will be considered.

3. PROJECT MANAGEMENT

- 3.1 A Project Manager will be appointed by the Board.
- 3.2 The Contractor shall appoint a Project Engineer who shall be responsible for the co-ordination of all the Contractor's activities in respect of the contract, including those of any Sub-Contractor.
- 3.3 At the letting of the contract, the Contractor shall produce a PERT network and bar chart in consultation with the Project Manager, showing all the activities of the Contractor and the Board. The Contractor shall be responsible for the up-dating and publication of the PERT network and bar chart as directed by the Project Manager.
- 3.4 From the PERT chart, the Contractor shall identify significant milestones against which progress can be measured and which will be used as the basis for stage payments against the contract.
- 3.5 The following is a list of activities to be included in the PERT network. This is given only as an indication of the scope of the work involved and is not to be regarded as complete and definitive for the purposes of the contract:-
 - 3.5.1 Preparation of Contractor's functional specification (8 weeks from contract).
 - 3.5.2 Preparation of Contractor's system design specification.
 - 3.5.3 Preparation of engineering drawings.
 - 3.5.4 Approval of functional specification by the Engineer (6 weeks).
 - 3.5.5 Production of equipment.
 - 3.5.6 Development of software as necessary.
 - 3.5.7 Preparation of Contractor's test specification.
 - 3.5.8 Approval of test specification by the Engineer (6 weeks).
 - 3.5.9 Factory inspection by the Engineer.
 - 3.5.10 Pre-installation testing by the Contractor.
 - 3.5.11 Pre-installation testing by the Engineer.
 - 3.5.12 Preparation of software data.
 - 3.5.13 Installation of equipment.
 - 3.5.14 Site testing by the Contractor.
 - 3.5.15 Site testing by the Engineer.
 - 3.5.16 Commissioning of the system.

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- 3.5.17 Acceptance of the system by the Engineer.
- 3.5.18 Training for signalmen (2 weeks at Yoker, 4 weeks at Waterloo).
- 3.5.19 Preparation of handbooks.
- 3.5.20 Approval of handbooks by the Engineer (6 weeks).
- 3.5.21 Production of handbooks.
- 3.5.22 Training courses for technicians.
- 3.6 The Contractor shall nominate a Site Supervisor who, in addition to taking other duties, shall be responsible for maintaining the site of work in a clean and tidy condition until such time as the equipment is taken over by the Engineer.
- 3.7 All staff employed on site shall work an average time per week not exceeding:-
 - 3.7.1 39 hours basic work.
 - 3.7.2 4 hours overtime work (each weekday).
 - 3.7.3 An average of one Saturday or Sunday or Friday/Saturday or Saturday/Sunday or such other turn not exceeding 12 hours total duty for that weekend.

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4. CO-OPERATION BETWEEN CONTRACTORS

- 4.1 The IECC Contractor shall co-operate with the Contractors for the signalling contracts for Yoker and Waterloo to ensure that the equipment is delivered to required timescales. This co-operation shall be achieved through arrangements made by the Project Manager.
- 4.2 The IECC Contractor shall make allowance in the mechanical design of his equipment for the mounting of communications equipment and a level crossing CCTV Monitoring and control equipment which will be supplied by another Contractor.
- 4.3 During the pre-installation test phase for the IECC it will be necessary to have the use of equipment produced by the signalling Contractor. Full co-operation and liaison shall be maintained to ensure that the requirements at the interface are known, understood and met. In the event of dispute the IECC Contractor shall accept the arbitration and decision of the Engineer. For the pre-installation test phase of Waterloo ARS, the signalling Contractor will require the use of the ARS equipment System Monitor and Signalling Network to integrate with the Waterloo signalling system.
- 4.4 The IECC Contractor shall commission the IECC system on site and hand it over to the Engineer. The signalling system Contractor will then be responsible for the total commissioning of the signalling scheme of which the IECC forms a part. If there is any dispute over the performance at the interfaces between the IECC and the signalling equipment, the IECC Contractor shall accept the arbitration and decision of the Engineer.
- 4.5 The IECC Contractor shall commission the ARS at Waterloo and hand it over to the Engineer. The signalling system Contractor will then be responsible for the total commissioning of the signalling scheme of which the ARS forms a part. If there is any dispute over the performance at the interface between ARS and the signalling equipment, the IECC Contractor shall accept the arbitration and decision of the Engineer.

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5. PUBLICATIONS

- 5.1 The Contractor shall comply with all relevant British Standard Specifications and BR Specifications except where specifically modified by this specification and its associated specifications.
- 5.2 The Contractor shall ensure that all his staff engaged on or near the running lines are issued with the Board's booklet "Safety of Contractors' Staff on Railway Property" (BR 12323/3).

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6. ORDERS TO SUB-CONTRACTORS

6.1 Clause 5 of the General Conditions of Contract, BRB 9 shall be deemed to include the following paragraph:-

"Triplicated unpriced copies of all orders to Sub-Contractors named in the contract shall be sent to the Engineer.
Triplicated unpriced copies of orders to Sub-Contractors not so named shall not be unreasonably withheld".

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7. HEALTH AND SAFETY

- 7.1 In the interests of safety and accident prevention the Board's employees who are engaged on or near the running lines are issued with articles of High Visibility clothing, i.e. nylon Mini-Vests. It is a requirement of the Board that Contractors should supply their own staff, whilst engaged on track duties or working near running lines, with this type of clothing identical to that worn by the Board's employees and, in order that the Contractor can make arrangements to obtain the said garments, the following are the names and addresses of the Firms who supply the Board:-

Practical Uniform Company Limited,
Ora Works,
Oldridge Road,
London. SW12

Lawtex Clothing Limited,
Ashton Road,
Golborne,
Wigan. WA3 3UL

When indenting for clothing the following should be quoted:-

High Visibility Vests :
BR Specification 287
Small/Medium/Large/Extra Large

- 7.2 It is incumbent upon Contractors to ensure that their staff do not report for duty under the influence of intoxicating liquor or dangerous drugs or consume such whilst on duty.
- 7.3 Contractor staff will not be permitted to enter the Board's property unless they are in possession of an individual Walking Permit (BR 6533). The Contractor shall furnish the Engineer with a list of all persons requiring to attend on site (thus having need of a Walking Permit), giving details of their work function, e.g. installer, tester, cable jointer etc. All permits must be returned at the completion of site work.

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