

COMMONWEALTH RAILWAYS

PORT AUGUSTA RED HILL RAILWAY.

CONTRACT

FOR CONSTRUCTION OF

EXTENSION FROM NEAR PORT AUGUSTA TO NEAR
PORT PIRIE, STATE OF SOUTH AUSTRALIA.

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COMMONWEALTH RAILWAYS.

PORT AUGUSTA-RED HILL RAILWAY.

Extension from near Port Augusta to near
Port Pirie, State of South Australia.

TENDER FOR WORKS.

To the Commonwealth Railways Commissioner, 623 Collins-street, Melbourne.

Under and subject to the Conditions of Tendering hereunto attached, and to the General Conditions relating to the Contract therein referred to, the undersigned, do hereby tender to provide the Material for and to execute the various Works required in constructing a Railway from a point near Port Augusta to a point near Port Pirie, commencing 4 miles 20 chains (local mileage from Port Augusta) to 54 miles 50 chains (local mileage, near Port Pirie), being in length about 50 miles 30 chains, agreeably to the Plans, Sections, Drawings, General Conditions, and Specification. The work is to be paid for according to the quantity actually executed, at the rates stated in the Schedule of Quantities and Prices hereunto attached (subject to adjustment as provided for in Clause 6 of the Conditions of Tendering), at which prices hereby undertake to execute the several descriptions of work required to complete the line of Railway in accordance with the Plans, Sections, Drawings, General Conditions, and Specification within months from the date of acceptance of this Tender.

enclose herewith a deposit receipt [or marked cheque] for the sum of £ , being 1 per cent. on the total amount of this Tender, as required by Clause No. 5 of the Conditions of Tendering.

And if this Tender is accepted hereby agree to observe the further provisions of Clause 5 of the said Conditions, and to execute the Contract Deed as required by Clause 7 thereof within the times respectively mentioned in that behalf.

The total amount of this Tender calculated according to the said Schedule of Quantities and Prices is the sum of pounds shillings pence. £

AS WITNESS hand, this day of 19.

Signature.

Address.

Witness to Signature of Tenderer—

If a firm, the names of the individual members of firm to be stated.

The Commissioner shall retain such fixed deposit receipt or receipts and/or marked cheque or cheques as security until he has received the certificate of the Engineer that the Contractor has plant and materials on the site of the works, his own property, free from any encumbrance or claim of any third party, the value of which, together with the sums which, under Clause 30 (b) of the General Conditions, the Commissioner is authorized to retain, amounts to a sum of 5 per cent. of the total amount of the Tender.

Upon receiving such certificate the Commissioner shall deliver such fixed deposit receipt or receipts and/or marked cheque or cheques to the Contractor.

The Contractor is entitled to receive any interest that may be payable upon the fixed deposit of the money, if the money be placed in a bank at fixed deposit, as such interest becomes payable, but the Commissioner is not to be held liable or answerable in any way for any loss on the money so deposited or for any loss of interest from the fixed deposit not being renewed.

6. Should it be found that any arithmetical error has been made in arriving at the total amount of the accepted Tender the amount of the error and its proportion to the total amount of the Tender shall be ascertained, and the Engineer shall adjust the discrepancy by adding to or deducting from the amount of each progress certificate, or of the final certificate, a percentage equal to the proportion between the amount of the error and the total amount of the Tender in manner following, that is to say :— When the total amount, as correctly estimated, is in *excess* of the total amount of the Tender, the percentage shall be *deducted* from the amount of the certificates or certificate ; when the total amount, so estimated, is *less* than the total amount of the Tender, the percentage shall be *added* to the amount of the certificates or certificate.

7. The Contractor shall not proceed with any of the works until he has executed the Contract Deed in the form in the Second Schedule to the General Conditions, and has delivered to the Commissioner the fixed deposit receipt or the marked cheque in Clause 5 hereof mentioned.

If within fourteen days after notice has been given that his Tender has been accepted he fails so to do, the Commissioner may declare such acceptance void, and in such case shall retain the amount deposited with the Tender as and by way of ascertained and liquidated damages for such failure.

And it is hereby declared and agreed that the Contractor shall not have any right of action or claim against the Commissioner for any work done or materials or labour provided by the Contractor before the execution by him of the Contract Deed.

8. Every notice to a Tenderer may be posted to the Tenderer's address stated in the Tender, and such posting shall be deemed to be good service of such notice.

The time mentioned in these Conditions for doing any act after notice shall be reckoned from the time of posting such notice.

9. Intending Tenderers, on payment of Ten pounds (£10) will be supplied by the Commissioner with not more than three copies of the bound sets of Form of Tender, Conditions of Tendering, General Conditions, Specification, Schedule of Quantities and Prices, and Contract Deed and one set of all necessary drawings.

10. In these Conditions the term "Tenderer" means and includes an individual, a corporation, and all and each of the partners of a firm (if any) making a Tender, and unless the context otherwise requires all the terms used have the meanings respectively assigned to them by the General Conditions.

COMMONWEALTH RAILWAYS.

PORT AUGUSTA-RED HILL RAILWAY.

Extension from near Port Augusta to near Port Pirie,
State of South Australia.

General Conditions and Specification of Works to be executed under Contract in Constructing Railway Extension from near Port Augusta to near Port Pirie, with all specified Station Approaches, Works and Conveniences connected therewith, or such of them, or such part or parts thereof as the Commissioner may hereafter determine to have executed.

GENERAL CONDITIONS.

1. (a) In these Conditions, and in the Specification annexed hereto, and in the Contract Deed, Interpretation. unless the context otherwise indicates, the following terms shall have the meanings set against them respectively, that is to say:—

- "The Contract."—The accepted tender, the contract deed, the conditions of tendering, the general and special conditions, all drawings, and specifications, and the schedule of quantities and prices.
- "Drawings."—All plans, sections and drawings referring to the works and explanatory of, or supplementary to, the Specification, and Schedule to Specification.
- "Specified."—Specified, described, delineated, indicated, shown, mentioned, or referred to in, or necessarily to be inferred from, the Contract, or any part thereof.
- "Commissioner" shall mean and include the Commonwealth Railways Commissioner for the time being, or the Acting or Deputy Commonwealth Railways Commissioner for the time being.
- "Engineer."—The Chief Engineer of Way and Works of the Commonwealth Railways for the time being, or his duly appointed representative.
- "Superintending Officer."—The Officer from time to time acting under the Engineer in the supervision of works.
- "Contractor."—All and each of the partners of a firm (if any) entering into a Contract with the Commissioner, or any corporation or individual entering into such contract, or its successors or their or his personal representative, or its, their, or his permitted assigns.
- "Sub-contractor" shall mean any person or persons authorized by the Commissioner, in terms of Clause 43 (b) of these conditions, to carry out a portion of the works on behalf of the Contractor and under the supervision of the Engineer.
- "Schedule of Prices" shall mean the rates at which the Contractor has offered or agreed to execute this Contract where the same is based on a Schedule of Prices, and be the basis on which the value of any extra works or of any deductions shall be calculated, whether the contract be one of a Schedule of Prices or a bulk sum.
- "Plant."—Horses, drays, wagons, trollies, motor vehicles, tractors, and other vehicles, tools, and implements of every sort, scaffolding, timbering, frames, engines, machinery, and all other appliances and things requisite and proper for the construction and execution of the works.
- "Work," or "works," means the work to be performed by the Contractor, and includes the goods, materials, and labour, and every matter and operation specified, set out, and described in the Contract, or implied in or by the same, for the purpose of constructing and delivering the works.

Words importing the singular number shall include the plural and the plural the singular.

(b) The accepted tender, the contract deed, the conditions of tendering, the general and special conditions, the drawings, the specification, and the schedule of quantities and prices shall be read and construed together as one document.

Contractor
to execute
works.

2. (a) The Contractor shall, to the satisfaction of the Engineer, in a workmanlike, substantial and durable manner, construct and execute all the works, whether temporary or permanent, mentioned and specified in the Contract, or implied in or by the same, including all contingent and incidental works as delineated on the drawings, and in the manner and according to the directions and provisions hereinafter specified, or as specified in or by or delineated on any detailed or modified specifications or instructions (written or verbal), or drawings, which may from time to time be given to the Contractor by the Engineer or Superintending Officer, and such detailed or modified specifications, instructions (written or verbal), or drawings as aforesaid, shall be deemed to be part of the Contract, the object of the Contract being that the Contractor shall at the time fixed for completion hand over to the Commissioner the works fully completed to the satisfaction of the Engineer, to be signified by a Certificate of Completion in writing under the hand of the Engineer.

(b) Save in so far as the Engineer in the mode herein described orders variations from the works, the Contractor shall execute the works strictly in accordance with the Contract, and such further detail or other drawings as the Engineer shall think necessary for the due and proper completion of the works, and any deviation from the works so ordered, and in the execution of the works the Contractor shall perform, fulfil, obey, and abide by all the directions, provisions, terms, and conditions to be performed, fulfilled, obeyed, and observed by him or on his part which are contained in the Contract or implied in or by the same, or in any such detailed or modified specifications, instructions (written or verbal), or drawings as aforesaid, and shall in case of his default be subject to the several liabilities and obligations herein mentioned in that behalf, it being the intention of these presents that the Contractor shall do, execute and provide, in accordance with the Contract, everything requisite or proper for the complete performance of the said works, and the Contractor shall obey all directions given to him by the Engineer for the protection of the public or the works, but obedience to such directions on his part shall not relieve him from liability under Clauses Nos. 12 and 13 of the General Conditions.

Price.

(c) The prices in the Schedule of Quantities and Prices annexed hereto shall be deemed to cover and include all the payments to which the Contractor shall be entitled in respect of any contingent, temporary, subsidiary, or incidental works, whether they are mentioned or referred to in the said Schedule or not. No such contingent, temporary, subsidiary, or incidental works shall be deemed or taken to be extra work within the meaning of the Contract.

Contractor to
supply all
materials,
plant, &c.

3. (a) In and for the execution of the works the Contractor shall, at his own cost (unless where otherwise mentioned) provide and supply all labour, horses, plant, and temporary fencing, and all materials, articles, and things of every description which are requisite or proper for the due execution of the works, and of all the kinds, descriptions, and qualities specified in the Contract or any detailed or modified specifications, drawings, plans, sections, instructions, or orders, as in the last preceding clause mentioned, and of the best kinds, descriptions, and qualities, to the satisfaction of the Engineer.

Use of plant.

(b) The construction of all plant and the mode of its use shall be at all times subject to the approval of the Engineer; but such approval shall not relieve the Contractor from full responsibility should any accident occur.

Not to sell
material.

(c) The Contractor shall not sell, or otherwise dispose of or remove, except for the purpose of the Contract, or as herein mentioned, any timber, mineral, stone, clay, gravel, sand, earth, or other material of any kind or description whatsoever which may be obtained from the site of the works, or from any land of the Commissioner.

Instructions
given to
agents, &c.,
binding on
Contractor.

4. All instructions and orders, whether oral or in writing, given by the Engineer or Superintending Officer during the progress of any portion of the works, to any agent, sub-contractor, overseer, or foreman of works of, or person acting for the Contractor in the execution of such portion of the works, shall be as binding upon the Contractor as if such instructions and orders were given personally to the Contractor.

If instructions
not obeyed
Engineer may
delay
certificate.

5. If the Contractor or any agent, sub-contractor, overseer, or foreman of works, or person acting for the Contractor fails or neglects to obey any of the instructions or orders of the Engineer or Superintending Officer with reference to the works, the Engineer may delay the granting of one or more of the progress certificates hereinafter mentioned until the Contractor has obeyed such instructions or orders to the satisfaction of the Engineer.

Plant, &c.,
not to be
removed.

6. (a) All materials and plant which are brought or deposited by or for the Contractor upon the site of the works, or upon any land resumed, appropriated, or acquired for or used in connexion with the works, or any land adjacent thereto, and which have been used or are intended to be used for the purposes of the works shall immediately become the property of the Commissioner, and shall not, before the entire execution and completion of the works, be removed or taken away from the site of the works or from such land without the permission, in writing, of the Engineer.

Recovery, if
removed.

(b) The Commissioner may demand, and recover possession of all such materials and plant so removed or taken away without such permission.

Branding
plant, &c.

(c) For the purposes of this clause the Engineer may require that the name of the Contractor shall be legibly painted or branded on all such materials and plant to the satisfaction of the Engineer.

Restoring of
plant, &c.

(d) After the Engineer has granted his final certificate any materials and plant on the site of the works, or on such land and not incorporated with the works shall again become the property of the Contractor and may be removed and taken away by him.

Possession
of ground.

7. (a) The Commissioner will make reasonable efforts to give the Contractor possession of the land, but shall not be responsible for any delay therein, nor shall the Contractor be entitled to make any claim or commence any action for damages in respect of such delay, but shall be allowed such an extension of the contract time as the Engineer may consider adequate.

(b) In giving the Contractor possession of the site, it shall not be deemed that he is to have the exclusive possession, but only a limited possession—that is to say, such possession as will enable him to perform the works comprised in this Contract. The Commissioner may at any time take possession of any portion of the ground or intended site of works for the purpose of carrying on any other works or for any

purpose whatsoever, and such action by the Commissioner shall not give the Contractor any right to compensation or to a claim for damages on account of any loss he may deem himself to have suffered thereby.

(c) The Contractor must procure for himself all other land which he may deem requisite for any temporary purposes or for his own convenience.

(d) In the event of the Contractor constructing any work on land not the property of the Commissioner, he may, before any payments are made on this Contract, be called upon to execute a lease of such land to the Commissioner covering the whole period required for constructing such work.

(e) The Contractor shall have access to the site of the works, other than by public roads, over such lands only as the Engineer or Superintending Officer may select or point out. Access to Works.

The Commissioner, or any person authorized by him, shall have free and uninterrupted access at all times to the works, and during working hours to any workshop or premises not on the site of the works where materials may be in preparation or stored for the purpose of this Contract. The Contractor shall give the Commissioner all particulars as to the mode and place of manufacture of any of the materials proposed to be used in connexion with this Contract, and shall facilitate in every way the inspection of such materials.

8. (a) The Contractor shall commence the execution of the works immediately after he has executed the Contract Deed, or so soon thereafter as the Commissioner has delivered to the Contractor possession of sufficient lands for the commencement of the works. Contractor to begin work at once.

(b) The Engineer shall have full power to decide and direct in what order in point of time the various parts of the work or works comprised under this Contract shall be carried out, and the Contractor shall comply with the Engineer's direction, and shall commence, carry on, and complete all or any of the works in such order of time as the Engineer may direct, and the Contractor shall have no claim for any loss, or damage he may consider himself to have suffered in consequence of such decision or direction. Order of construction of Works.

(c) The Contractor shall proceed with and execute the works with due diligence and despatch in the order and course prescribed by the Engineer, and shall fully complete the works to the satisfaction of the Engineer within the time stated in Tender. Time of completion.

(d) If, from any cause not attributable to the default of the Commissioner, the completion of the works, or any part thereof, is delayed beyond the said date of completion stated in the Contract, or such other date as may have been duly appointed hereunder in that behalf, the Contractor shall forfeit and pay to the Commissioner as and by way of ascertained and liquidated damages, and not as in the nature of a penalty, the sum of £250 for every week or part of a week that elapses after such date until the time of the completion and delivery of the works in all respects to the satisfaction of the Engineer; and such sum or sums shall be deducted from any moneys which may be or become due from the Commissioner to the Contractor, or from any moneys that may be held by the Commissioner by way of deposit. The payment of such sums shall not relieve the Contractor from his obligation to complete the works, or from his other obligations and liabilities under the Contract.

(e) The like liability also shall hold good as to the obligation of the Contractor in the event of any advance being made to him on material on the ground and not in the work.

9. The Contractor shall, at his own cost, during the progress of each part of the works, until such works are taken out of his hands, or until the Engineer has certified in writing that he has taken over the same, maintain and keep such works in good and complete condition and working order and repair, and shall at his own cost reinstate and make good all defects, injuries, and damages thereto from whatever cause arising. Contractor to maintain and keep works during progress.

10. (a) The Contractor shall, at his own cost, during the progress of the works, construct such temporary road diversions, bridges, and crossings as the Engineer considers necessary, and shall, at his own cost, maintain the same in good order and sufficient for the convenience of the public or of the owners and occupiers of lands through which the railway passes so long as the Engineer requires. Temporary road diversions, &c.

(b) The prices in the Schedule of Quantities and Prices annexed hereto shall be deemed to cover and include the cost of all works requisite for the construction, drainage, metalling (where the Engineer so orders), and maintenance of such diversions, bridges, and crossings. Prices.

11. (a) The Contractor shall, at his own cost, provide and erect all such temporary fences as the Engineer considers necessary for the proper protection of the owners and occupiers of the lands through which the railway passes, or in which any operations are carried on in connexion with the works, and also at all road crossings and diversions, and shall, at his own cost, maintain the same in good order so long as the Engineer requires. Temporary fences.

(b) During the progress of the works the Contractor shall also, at his own cost, cause lights to be kept burning, between sunset and sunrise, at all such places where temporary fences are erected as the Engineer directs, and if he fails so to do shall be solely liable for any injury or damage which thereby results to any person. Lights.

(c) The prices in the Schedule of Quantities and Prices annexed hereto shall be deemed to cover and include the cost of the erection and maintenance of such temporary fences and the maintenance of such lights. Prices.

12. The Contractor shall assume all liability for and shall indemnify and keep indemnified the Commissioner against all actions or suits directly or indirectly arising out of or in connexion with the carrying out of the works, whether such actions are brought by members of the public or neighbouring owners and the Contractor shall in the performance of the works conform to the statutory and other legal enactments applicable to the works and give all notices and pay all fees in respect thereof. Indemnity.

13. The Contractor shall not commit any act of trespass, or keep dogs on the works or areas in his temporary possession, and shall effectually protect all adjoining properties and owners thereof against any loss, damage, or injury that may occur through the carrying on of the works, whether to buildings, goods, property of any kind, live stock, or to persons, and in case any such trespass be committed, or any such loss, damage, or injury occur, the Contractor shall make full compensation, and shall make good all or any Contractor liable for injury to adjoining owners, &c.

such loss, damage or injury; and if any such compensation for trespass, or any such loss, damage or injury be recovered against the Commissioner in the first instance, it may, together with all costs which the Commissioner may have been ordered to pay, and all costs reasonably incurred in contesting the claim for such compensation, be deducted from any money due or coming due to the Contractor under this Contract, or may be recoverable from the Contractor as liquidated damages in that respect incurred. If instructed by the Engineer, or Superintending Officer, the Contractor shall dismiss any employee offending against the provisions of this clause. In like manner the Contractor shall indemnify and recoup the Commissioner in respect of claims by all other members of the public for injury to property or person in the course of the work.

Sanitary
arrangements.

14. The Contractor shall, at his own cost, carry out such sanitary arrangements in any camp in connexion with this Contract as are necessary for the preservation of the public health, and which are considered sufficient for the purpose by the Health Authorities.

Plans
generally.

15. (a) The plans, sections, and drawings furnished by the Engineer represent generally the form and dimensions of the several works.

(b) Where any discrepancy exists between the measurements by scale on the drawings and the figured or written dimensions, the figured or written dimensions shall be taken as correct, and drawings made to larger scales and those showing particular parts of any work shall be taken as more correct than those made to smaller scales and for more general purposes, and the Contractor shall not be entitled to make any claim or demand for compensation or damage on account of any such discrepancy.

(c) Where any discrepancy exists between the dimensions, or the form of construction, or the materials indicated by the drawings and the dimensions or form of construction or materials specified in the specifications, then those specified in the specifications shall be adopted.

(d) All minor parts not mentioned in the specifications or conditions nor delineated in the drawings, the intention to include which parts is nevertheless clearly to be inferred, and which parts are, in the opinion of the Engineer or Superintending Officer necessary for the completion and stability of the work, shall be made and executed by the Contractor to the satisfaction of the Engineer or Superintending Officer, and without extra charge.

(e) Anything contained in the Drawings, and not in the Specification, or Schedule to Specification, or anything contained in the Specification or Schedule to Specification, and not shown in the Drawings, shall be equally binding as if it were contained in each or any of them, and the Contractor shall have no claim for extras or for compensation or damage on account of such discrepancy, defective description or ambiguity, unless the Engineer shall certify and allow for the same as an extra under these Conditions.

(f) All works described in, or implied by, the Specification, or Schedule to Specification, or shown on any of the Drawings, or set forth in any lists or tables thereon, or attached thereto, as well as those expressly provided for, are to be made and executed in every detail conformably to the several Drawings already prepared or which may be prepared hereafter for the purpose of this Contract, in strict accordance with the provisions of the Specification, Schedule to Specification, and Conditions, and to the entire satisfaction of the Engineer.

Contractor to
satisfy himself
as to form of
surface, &c.

Departmental
information.

16. (a) It shall be the duty of the Contractor to satisfy himself as to the form of the surface, the nature of the soil, and all other matters and things necessary to be known to enable him to correctly estimate the nature and cost of the work to be done by him.

(b) The fact that the Contractor has obtained any information from the Commissioner, the Engineer, Superintending Officer, or any officer of the Commissioner shall not relieve the Contractor from the risk or consequences of any unexpected or unforeseen difficulty in the execution of the works or from the sole risk of any unforeseen addition to the cost of any work which arises by reason of such information being erroneous or insufficient, or relieve him from the obligation to completely perform and fulfil the Contract, or from the execution, at his own cost, of any contingent, subsidiary, or incidental works not expressly specified, but which from the nature of the works included in the Contract are required, whether they are temporary or permanent.

Supervision.

Superintending
officer.

Alteration of
works.

Alterations
not to affect
contract.

No
compensation.

17. (a) The whole of the works shall be executed under the control, direction, and supervision of, and shall be executed to the satisfaction of the Engineer.

(b) The Superintending Officer shall have the general charge and supervision of the works under the direction of the Engineer.

(c) The Engineer may add to, omit, alter, modify, enlarge, or diminish any part of the works specified, and alter the line and levels of the railway as he thinks fit.

(d) The fact of any such addition, omission, alteration, modification, enlargement, or diminution shall not in any way annul or affect the validity of the Contract.

(e) No compensation for damage, injury, loss of profit or otherwise shall be allowed to the Contractor for or on account of any such addition, omission, alteration, modification, enlargement, or diminution of the works; but all additions, enlargements, or altered or modified work, shall be measured, certified to, and paid for, entirely in accordance with the rates specified for such works in the Schedule of Quantities and Prices annexed hereto; in the case of omissions or diminutions, no payment shall be made for the works omitted or for the part by which the works are diminished, as the case may be.

Extra work.

18. (a) If—

(i) The Contractor is lawfully required or necessarily obliged to execute, provide, or supply any work, material, or labour which is not of a contingent, temporary, subsidiary, or incidental character, and which is not specified; and

(ii) Such work, material, or labour has been executed, provided, or supplied upon the written authority of the Engineer,

the same shall be deemed to be extra work under the Contract, and the price to be paid by the Commissioner for such work shall be determined by agreement between the Engineer and the Contractor, or in the case of disagreement, shall be determined in manner hereinafter contained.

(b) Before the Contractor commences to execute, provide, or supply any work, material, or labour, which he considers to be extra work, within the meaning of this clause and for which he intends to claim to be paid, he shall give notice in writing to the Engineer through the Superintending Officer that he considers the work, material, or labour to be extra work, and intends to claim to be paid therefor. Notice to be given.

(c) No payment shall be made by the Commissioner for such work, material, or labour, if executed, provided, or supplied, unless the Contractor before he commences to execute, provide, or supply such work, material, or labour, gave such notice in writing, nor unless such work, material, or labour, has been executed, provided, or supplied upon the written authority of the Engineer, obtained by the Contractor before he commenced to execute, provide, or supply the same. Otherwise no payment.

(d) The Contractor shall include in the priced statements, hereinafter required to be furnished by him during the progress of the works to the Engineer, all claims in respect of work, material, or labour, by him executed, provided, or supplied, or alleged to have been executed, provided, or supplied, under the provisions of this clause. Claims when to be made.

(e) If the Contractor does not make such claim in respect of any work, material, or labour, within four weeks after he received the written authority of the Engineer to execute, provide, or supply the same the Engineer shall not afterwards recognize, allow, or certify to the validity of such claim or any payment in respect thereof, and the right of the Contractor to recover any payment from the Commissioner in respect thereof shall be absolutely barred. When claim barred.

19. (a) A copy of each Drawing, Specification, and Schedule to Specification required by the Contractor for carrying on the works will be provided by the Commissioner, but must be returned if demanded before a final certificate for the work will be given. Any additional copies which may be required and are supplied by the Commissioner shall be paid for by the Contractor at a rate to be fixed by the Engineer. The Contractor must himself compare the same with the originals, as no claim will be allowed for any errors therein or omissions therefrom. Copies of plans, &c.

(b) The Contractor shall be responsible for the correct setting out of the works. Contractor responsible for setting out.

(c) The Contractor shall, at his own cost, provide and supply all labour and materials required in the setting out of the works from time to time during their progress, and shall also, at his own cost by himself or his agents, sub-contractors, overseers, foremen of works, or workmen, provide the Engineer and Superintending Officer with all personal assistance required by them for setting out or checking the setting out of the works. At his own cost.

(d) The fact that the Engineer or Superintending Officer or any officer of the Commissioner has at any time set out any works or assisted the Contractor to set them out shall not in any way relieve the Contractor from his sole responsibility under this clause, or be taken as any excuse for the improper performance of any work or be made the subject of any claim against the Commissioner. Departmental assistance.

(e) The prices in the Schedule of Quantities and Prices annexed hereto shall be deemed to cover and include the cost of all labour and materials in setting out and checking the setting out of the works. Prices.

20. (a) The Contractor shall be responsible for the preservation of the bench-marks and centre and other pegs, used in marking out the line of the railway, and shall not remove any pegs without fixing such marks as will enable him to replace such pegs accurately in their original positions. Contractor responsible for preservation of marks.

(b) The Contractor shall, at his own cost, replace all pegs so removed by him, and in default of his so doing the Engineer shall replace such pegs, and any cost so incurred may be deducted and retained by the Commissioner or may be recovered by him in manner hereinafter provided. To replace pegs.

(c) The Contractor shall, at his own cost, before commencing any part of the works, provide and place, at intervals of 5 chains, approved pegs with the chainage distinctly painted or branded thereon to the satisfaction of the Engineer. To provide chainage pegs.

21. (a) The Contractor shall not absent himself from the works without leaving a fully authorized and competent agent to act in his stead. Contractor to be represented.

(b) The Contractor shall, at all times during the progress of the works, employ and keep such and so many competent foremen to superintend the execution of the works as the Engineer directs and approves. To employ foremen.

22. None of the works shall be deemed to be completed until the Engineer has granted the final certificate to the Contractor, notwithstanding that the Superintending Officer may have at any time passed or approved of any works, materials, or workmanship. Acceptance of works.

23. The Commissioner will, in manner hereinafter mentioned, pay to the Contractor for the work done under the Contract such prices and such sums of money as are hereinafter provided. Commissioner to pay as follows.

24. In all cases the Contractor will be paid for all work done by him according to net measurement only, notwithstanding any trade or other custom or usage to the contrary. Payments according to net measurements.

25. Should any day work be ordered, the Contractor will be reimbursed the actual amount of wages at award rates paid by him with 10 per cent. added, which additional sum shall cover cost of providing all tools and plant whatsoever, and shall include repair and wear and tear of same. Any day labour executed shall be returned in the usual four-weekly progress certificate. Day labour.

26. (a) Progress measurements of the works as they proceed will be made by the Superintending Officer once at least in each four weeks at such times as he appoints. Final measurements will be made by him as soon as practicable after the execution of the several parts of the works. Due notice of the time appointed for all measurements will be given by the Superintending Officer to the Contractor or to his agent. The Contractor or his agent shall be present at the making of all measurements, and shall without charge render to the Superintending Officer such assistance as he requires. Measurements of works executed.

Disputes as to measurements.

(b) If any dispute or question arises between the Contractor and the Superintending Officer as to the quantity of, or the accuracy of or method of taking the measurements of, any work, and if the Contractor within seven days from the date when such dispute or question first arose refers the dispute or question in writing to the Engineer, then the Engineer will decide the matter of such dispute or question, and his decision thereon shall be final and binding on the Commissioner and the Contractor, and shall not be questioned in any proceeding whatsoever. But if the Contractor does not, within the time herein limited, refer such dispute or question to the Engineer in writing, then the decision of the Superintending Officer as to such measurements shall be final and binding on the Contractor, and shall not be questioned by him in any proceeding whatsoever.

Failure of Contractor to be present at measurements.

(c) If the Contractor or his agent fails (without excuse satisfactory to the Engineer) after notice in that behalf to be present at the time appointed for the making of any measurements, then such measurements may be made by the Superintending Officer alone, and when so made shall be final and binding on the Contractor, and shall not be questioned by him in any proceeding whatsoever.

Statement of work done from Contractor.

27. (a) The Contractor shall, within seven days before being granted a certificate, furnish to the Engineer through the Superintending Officer a priced statement of all work, materials, and labour done, provided, and supplied up to the date of such statement.

Granting of certificate.

(b) Such statement shall be made out in the form prescribed in the First Schedule to these Conditions, and in accordance with the Schedule of Quantities and Prices annexed thereto, and the Engineer will thereupon consider and decide all claims, questions, and matters referred to or made in such statement, and will grant to the Contractor a certificate of the amount which he decides to be due in respect of the work done and claimed for in such statement, subject to any adjustment as provided in Clause 6 of the Conditions of Tendering.

Delay for inquiry.

(c) But if the Engineer considers that further inquiry is necessary or desirable before the granting of any certificate, he may delay the granting of such certificate until such inquiry has been made, and the Contractor shall make no claim of any kind by reason of such delay.

Day labour claims.

(d) No claim for day labour done before the date to which any statement is made up, other than the amount claimed in such statement and allowed by the Engineer and certified to by his certificate granted thereupon, will afterwards be recognized or allowed or certified to by the Engineer, and the right, if any, of the Contractor to be paid for such day labour shall thereafter be absolutely barred.

How far certificate final.

28. With respect to all claims, questions, and matters which by the Contract may and are to be finally decided by the Engineer, the certificate of the Engineer, whether progress or final, wherein any such claim, question, or matter is decided, shall be final and binding on the Commissioner and the Contractor, and shall not be questioned in any proceeding whatsoever.

No progress certificate after expiration of contract time.

29. Except with the consent in writing of the Commissioner no certificate will be given after the expiration of the time herein limited for the completion of the works, or after the expiration of any extended time granted by the Engineer for such completion, until the whole of the works have been duly and properly completed to the satisfaction of the Engineer.

Payments to Contractor.

30. (a) The payments to be made to the Contractor by the Commissioner in respect of work done will, except as herein otherwise provided, be made four-weekly, and the amount of such payments will depend upon and be determined by the progress certificate to be given as provided in Clause 27 (b).

Subject to retention.

(b) The Contractor shall after the granting of every progress certificate, be entitled to receive from the Commissioner 90 per cent. of the sum certified to be due to him by such certificate, and the Commissioner shall retain the remaining 10 per cent.

When sums retained to be paid over.

(c) The sums so retained by the Commissioner shall be held as security for the due performance of the Contract, and will be paid over to the Contractor by the Commissioner as soon as practicable after the Engineer has granted his final certificate.

Provided that if at any time after the sums so certified to be due to the Contractor amount in the aggregate to one-half the total amount of the Tender the Engineer recommends to the Commissioner that one-half of the sums theretofore retained under this Clause should be paid to the Contractor, the Commissioner may pay to the Contractor one-half of the sum so retained accordingly.

No interest.

(d) No claim by the Contractor by way of interest or otherwise for or on account of any sums of money which the Commissioner has retained under the authority of this Clause will be recognized, allowed, or certified to under any circumstances whatsoever.

Payments not to operate as an admission of works being properly executed.

31. The payment by the Commissioner of any sums whatsoever under the Contract shall not affect any dispute or question which arises in connexion with the final settlement of the accounts in respect of the Contract, or be taken as any proof or admission that any particular works have been executed or completed, or of the value thereof, or that any works have been properly executed or completed, but shall only be taken as a payment on account.

Medical attendance.

32. The Contractor or sub-contractor shall at his own cost provide, to the satisfaction of the Engineer, for use in all cases of sickness or accident all necessary legally qualified medical and surgical attendance and medicines to the workmen and employees engaged upon the works by the Contractor or sub-contractor. But the Contractor or sub-contractor may enter into an agreement with any of his workmen and employees that he shall be at liberty to deduct from the wages of such workmen and employees a reasonable sum of money in consideration of the Contractor or sub-contractor providing such attendance and medicines.

Rates of wages to be paid.

33. (a) The Contractor and every authorized sub-contractor shall pay all workmen and employees employed by him or them in or in connexion with the performance of the works at not less than the standard minimum rates of wages and observe the standard conditions of employment prescribed by Award No. 109 of 1932 of the Commonwealth Court of Conciliation and Arbitration as varied to date. Copy of this Award may be obtained upon application to the Commissioner.

(b) A schedule setting forth the rates of wages to be paid and conditions of labour to be observed under the contract shall be posted conspicuously in such places at the works as the Engineer shall from time to time direct.

(c) Should the Commissioner consider that the Contractor or any authorized sub-contractor has failed to comply with the provisions of sub-clause (a) of this clause, he may, by notice in writing, require the Contractor to show cause in writing within a time specified in the notice why this Condition should not be deemed to have been infringed.

(d) After any such notice has been given, and the time specified therein for reply has expired, whether or not the Contractor has replied in writing thereto, if, in the opinion of the Commissioner, the Contractor or any authorized sub-contractor has failed to comply with the said provisions, the Commissioner may order that a sum not exceeding Fifty pounds in respect of any one infringement be forfeited by the Contractor and such sum shall be payable by the Contractor to the Commissioner as liquidated damages and may be recovered under the Contract.

(e) The decision of the Commissioner as to whether a failure to comply with the said provisions has occurred and as to all other matters arising under this Condition shall be final and conclusive, and binding on the Contractor.

(f) The Contractor shall have no claim for damage, injury, loss of profit or otherwise on account of any industrial dispute, strike, or lockout from whatever cause arising in the execution of the works under the Contract. No claim for loss on account of strikes.

(g) The prices set out in the Schedule of Quantities and Prices are to be taken to have been based on the rates of wages prescribed in sub-clause (a) of this clause. Adjustment of prices.

Such prices shall be subject to adjustments from time to time as follows, that is to say:—

- (i) If the rates of wages paid by the Contractor and any authorized sub-contractor to his or their employees engaged between Port Augusta and Port Pirie in the execution of the works shall by reason of any Award or Order of any Court or other competent authority of the Commonwealth or any Industrial Agreement duly recorded with any such Court or Authority and approved by the Commissioner be greater or less than the rates of wages prescribed in sub-clause (a) of this clause the amount of the increase or deduction thereby occasioned in the prices stated in the Schedule of Quantities and Prices shall be added thereto or deducted therefrom as the case may be.
- (ii) As often as any increase or decrease shall be made as aforesaid in any of the rates of wages upon which the prices set out in the Schedule of Quantities and Prices are taken to have been based the Contractor shall thereupon notify the same to the Commissioner.
- (iii) The amount of all additions and deductions to be made or allowed to or by the Contractor under sub-clause (i) hereof shall be determined by agreement between a person appointed by the Commissioner and a person appointed by the Contractor and in default of such agreement by the Commissioner.

34. (a) In the engagement of workmen, the Contractor shall employ not less than 80 per cent. of the unskilled labour required in the execution of the works from persons who have been resident in the State of South Australia for a period of not less than six months and who are capable of effectively performing the duties required. Preference to returned soldiers and sailors and others.

In the engagement of workmen generally (having regard to the provisions of the preceding paragraph of this clause) the Contractor shall give preference to returned soldiers and sailors who are capable of effectively performing the duties required as against any other person offering his services at the same time. No person who is not either a natural born or naturalized British subject shall be employed by the Contractor or any Sub-contractor on or in connexion with the performance of the works unless British subjects are not available for employment.

by the sub-contractor at his prices and under the contract. If the Contractor failing to make any such payments, then the Contractor shall be liable to make the same.

35. (a) Before the payment of any money to the Contractor the Commissioner may require the Contractor to satisfy him that all the workmen and employees then and theretofore engaged upon the works, whether by the Contractor or by any sub-contractor, have been paid their wages and other lawful claims of every kind in full (subject to any deduction as in clause 32 hereof mentioned), in lawful money and to the latest date at which such wages and claims are due. The Commissioner may withhold the payment of any moneys due or that from time to time become due to the Contractor until he is satisfied that such wages and claims have been duly paid. Commissioner may withhold payments until wages paid.

(b) If the Contractor fails or omits to pay to any workman or employee engaged upon the works whether by the Contractor or by any sub-contractor, his wages and other lawful claims of every kind in full (subject to any deduction as mentioned in Clause 32 hereof) in cash once at least in every two weeks the Commissioner may, as often as the same shall happen, upon complaint of such failure or omission made, and upon evidence thereof, satisfactory to the Commissioner, pay to such workmen or employees the amount shown to his satisfaction to be due to them, and recover the amount so paid from the Contractor in manner hereinafter provided. Commissioner may pay workmen's wages.

36. The Engineer may by a notice in writing under his hand given to the Contractor, order the dismissal or removal of any agent, overseer, foreman of works, workman, or employee employed by the Contractor upon the works, and if such agent, overseer, foreman of works, workman, or employee is retained by the Contractor upon or in connexion with, any part of the works after such order has been given, then the Engineer may delay the granting of any progress certificate until his order has been obeyed. Dismissal of agent or workmen.

(c) Should the Commissioner consider that the Contractor or any authorized sub-contractor has failed to comply with the provisions of sub-clause (a) of this clause, he may, by notice in writing, require the Contractor to show cause in writing within a time specified in the notice why this Condition should not be deemed to have been infringed.

(d) After any such notice has been given, and the time specified therein for reply has expired, whether or not the Contractor has replied in writing thereto, if, in the opinion of the Commissioner, the Contractor or any authorized sub-contractor has failed to comply with the said provisions, the Commissioner may order that a sum not exceeding Fifty pounds in respect of any one infringement be forfeited by the Contractor and such sum shall be payable by the Contractor to the Commissioner as liquidated damages and may be recovered under the Contract.

(e) The decision of the Commissioner as to whether a failure to comply with the said provisions has occurred and as to all other matters arising under this Condition shall be final and conclusive, and binding on the Contractor.

(f) The Contractor shall have no claim for damage, injury, loss of profit or otherwise on account of any industrial dispute, strike, or lockout from whatever cause arising in the execution of the works under the Contract. No claim for loss on account of strikes.

(g) The prices set out in the Schedule of Quantities and Prices are to be taken to have been based on the rates of wages prescribed in sub-clause (a) of this clause. Adjustment of prices.

Such prices shall be subject to adjustments from time to time as follows, that is to say :—

(i) If the rates of wages paid by the Contractor and any authorized sub-contractor to his or their employees engaged between Port Augusta and Port Pirie in the execution of the works shall by reason of any Award or Order of any Court or other competent authority of the Commonwealth or any Industrial Agreement duly recorded with any such Court or Authority and approved by the Commissioner be greater or less than the rates of wages prescribed in sub-clause (a) of this clause the amount of the increase or deduction thereby occasioned in the prices stated in the Schedule of Quantities and Prices shall be added thereto or deducted therefrom as the case may be.

(ii) As often as any increase or decrease shall be made as aforesaid in any of the rates of wages upon which the prices set out in the Schedule of Quantities and Prices are taken to have been based the Contractor shall thereupon notify the same to the Commissioner.

(iii) The amount of all additions and deductions to be made or allowed to or by the Contractor under sub-clause (i) hereof shall be determined by agreement between a person appointed by the Commissioner and a person appointed by the Contractor and in default of such agreement by the Commissioner.

(iv) So much of piece-work rates as consists of wages shall be deemed to have increased or decreased in proportion to the increases or decreases in wages for the class of work in question.

34. (a) In the engagement of workmen, the Contractor shall give preference to returned soldiers and sailors who are capable of effectively performing the duties required as against any other person offering his services at the same time. No person who is not either a natural born or naturalized British subject shall be employed by the Contractor or any Sub-contractor on or in connexion with the performance of the works unless British subjects are not available for employment. Returned soldiers and sailors.

(b) All workmen engaged upon the works by the Contractor shall be paid their full wages at least once in every two weeks. Payment of wages to workmen.

Such payments shall be made in some building or place convenient to the site of the works, but in no case shall they be made at a public-house or other place where liquors or refreshments are sold.

(c) The Contractor shall not sell or dispose of, or be in any way interested in the sale or disposal of alcoholic liquors or other articles of consumption, to any workman or employee engaged upon the works. Contractor not to sell liquor, &c.

(d) If the Contractor sublets any portion of the works all workmen engaged thereon shall be paid by the sub-contractor at the times and under the conditions herein specified; but in the event of the sub-contractor failing to make any such payments, then the Contractor shall be liable to make the same. Payment under sub-contract.

35. (a) Before the payment of any money to the Contractor the Commissioner may require the Contractor to satisfy him that all the workmen and employees then and theretofore engaged upon the works, whether by the Contractor or by any sub-contractor, have been paid their wages and other lawful claims of every kind in full (subject to any deduction as in clause 32 hereof mentioned), in lawful money and to the latest date at which such wages and claims are due. The Commissioner may withhold the payment of any moneys due or that from time to time become due to the Contractor until he is satisfied that such wages and claims have been duly paid. Commissioner may withhold payments until wages paid.

(b) If the Contractor fails or omits to pay to any workman or employee engaged upon the works whether by the Contractor or by any sub-contractor, his wages and other lawful claims of every kind in full (subject to any deduction as mentioned in Clause 32 hereof) in cash once at least in every two weeks the Commissioner may, as often as the same shall happen, upon complaint of such failure or omission made, and upon evidence thereof, satisfactory to the Commissioner, pay to such workmen or employees the amount shown to his satisfaction to be due to them, and recover the amount so paid from the Contractor in manner hereinafter provided. Commissioner may pay workmen's wages.

36. The Engineer may by a notice in writing under his hand given to the Contractor, order the dismissal or removal of any agent, overseer, foreman of works, workman, or employee employed by the Contractor upon the works, and if such agent, overseer, foreman of works, workman, or employee is retained by the Contractor upon or in connexion with, any part of the works after such order has been given, then the Engineer may delay the granting of any progress certificate until his order has been obeyed. Dismissal of agent or workmen.

Sunday work. 37 (a) None of the works under the Contract shall on any account be carried on on Sunday, unless such work is necessary for the protection of life or of property liable to be destroyed or injured by fire, storm, or flood.

Night work. (b) None of the works under the Contract shall be carried on between sunset and sunrise unless by special permission in writing previously given by the Engineer.

Commissioner to provide rails, &c. 38. (a) All materials which under the specifications annexed hereto the Commissioner undertakes to supply will be delivered free, but all expenses connected with the unloading, stacking, and removal of the materials from the place of delivery and their distribution over the works shall be borne solely by the Contractor.

Contractor to pay freight. (b) (i) Freight on material and plant supplied by the Contractor for the purpose of the contract, and carried over the Commissioner's lines (with the exception of the items specified in sub-clause (b) (ii) hereof), will be charged at the rate of 1½d. per ton per mile when consigned in full loads of not less than 6 tons per 4-wheeled truck, and 20 tons per 8-wheeled truck, with a minimum charge of 2s. 6d. per ton. Smaller quantities than those specified above will be charged at the ordinary classification rates published in the Commonwealth Railways Goods and Livestock Rates Book, subject to such charges not exceeding the charge at full truck load rates as specified above.

(ii) Freight on such items as motor vehicles, tractors, explosives, motor spirit, kerosene, oils, goods of a dangerous nature, tools, medicine, waste, stationery, horses, fodder, food, furniture, and domestic requirements (such as groceries and household equipment) will be charged in accordance with the ordinary classification rates published in the Commonwealth Railways Goods and Livestock Rates Book.

(iii) Material and plant, as defined in sub-clauses (b), (i) and (ii) hereof, if conveyed by rail from South Australian Railway Stations and delivered to the Commissioner at Quorn, in the same railway trucks as the consignment was loaded in at the originating station (or transfer station if transferred at break of gauge station en route to Quorn), will be conveyed over the Commissioner's lines at the rates, and subject to the conditions with regard to truck loads, specified above.

(c) When rails or other materials are delivered to the Contractor on trucks he may convey the trucks to the head of the road, or elsewhere along the line, and there discharge such materials at his own cost, but wherever unloaded he shall return the trucks to the point of delivery within twenty-four hours after delivery has been made to him, otherwise he shall be charged demurrage in accordance with the rates as published in the Commonwealth Railways Goods and Live Stock Rates Book, and the Commissioner may deduct and retain or may recover the amount of such demurrage from the Contractor in the manner hereinafter provided.

Receipts to be given. (d) The Contractor shall give to the Engineer through the Superintending Officer receipts for all materials supplied by the Commissioner, and shall be responsible for, and shall make good, to the satisfaction of the Engineer, all loss or damage of or to the same after such materials have been supplied to him, and the Commissioner may deduct and retain or may recover the amount of such loss or damage in manner hereinafter provided.

Material to be stacked. (e) All materials supplied by the Commissioner, or which have been purchased by the Commissioner from the Contractor, and which upon the completion of the works are upon the site of the works, or upon any land of the Commissioner, or other land adjacent thereto, shall, at the cost of the Contractor, be stacked in such place or places along the line as the Superintending Officer directs.

Free passes, &c. 39. (a) No free passes on any of the Commonwealth or State Railways will be granted either to the Contractor or his agents, nor will any material or articles of any description be conveyed free of charge.

(b) The free travel to which workmen and employees of the Contractor or any authorized Sub-contractor and the wives and families of such workmen and employees are entitled in accordance with the provisions of Award 109 of 1932 of the Commonwealth Court of Conciliation and Arbitration shall be at the expense of the Contractor or authorized Sub-contractor.

(c) For the purposes of this contract the words "free passes" in Award 109 of 1932 shall mean ordinary second class tickets.

Patent rights. 40. Unless otherwise specified, the Contractor is to include in his tender the amount of all patent rights and royalties which may be claimed by any patentee or patentees for the manufacture and use on any portion of the work under this Contract, and the Contractor must liquidate the same when required to do so, and upon complaint of his failure so to do the Commissioner shall have the power to suspend one or more of the progress payments or the final payment hereinafter mentioned until such claim has been liquidated or withdrawn.

Commissioner will supply certain locomotive engines and other vehicles. 41. (a) The Commissioner will supply to the Contractor, at his request, the undermentioned locomotive engines and other vehicles in consideration of the hire rates, and running or haulage charges for engines and haulage charges for other vehicles to the point of delivery to the Contractor at the commencing point of the Contract (4 miles 20 chains), and similar charges for the return of engines and other vehicles to the original station from which the engines were run or hauled, and the vehicles hauled, that is to say:—

Description.	Number Available to Contractor.	Rate of Hire Each.	Running or Haulage Charge Each.
<i>Ballast Plough</i>		<i>£1 Per week</i>	
Locomotives	3	£30 per week each ..	Dead.—5s. per mile; minimum £2 10s. each In steam.—3s. 6d. per mile; minimum £1 15s. each, but engines when proceeding to delivery point may be utilized by the Commissioner at his option for the haulage of goods without any abatement of charges
*4-wheeled ballast wagons Type B.S.	50	30s. per week each ..	6d. per mile; minimum 15s. each
4-wheeled water gins " T.S.B.	8	40s. per week each ..	6d. per mile; minimum 15s. each
4-wheeled brake vans " Y.S.	2	15s. per week each ..	6d. per mile; minimum 15s. each
*8-wheeled rail wagons " R.A.	5	40s. per week each ..	1s. per mile; minimum 30s. each
*8-wheeled rail wagons " B.	7	40s. per week each ..	1s. per mile; minimum 30s. each
*4-wheeled goods wagons " B.S.	20	25s. per week each ..	6d. per mile; minimum 15s. each

* These vehicles when proceeding to delivery point may be utilized by the Commissioner at his option for the conveyance of goods without any abatement of charges.

Contractor to supply additional rolling stock.

The Contractor shall provide all additional rolling stock which he may require for the purposes of this Contract, and such rolling stock shall comply with the requirements of Clause 42 (a).

Comm's minute
No. 2252 ..

(b) The Contractor shall, while an engine is under hire to him, employ and pay the wages of all engine-men, firemen, cleaners, fitters and helpers, provide fuel, water and necessary stores, execute at his own cost all running repairs to engines and other vehicles, make good any damage done to such engines and other vehicles, fair wear and tear excepted, and the Commissioner may deduct and retain or may recover the amount of such damage in manner provided. Contractor to pay wages, &c.

(c) The Contractor shall furnish the Superintending Officer each four weeks with a statement showing the mileage run by each engine whilst under hire to him. Return of engine mileage.

(d) All engine-men and firemen shall hold recognized certificates of competency, and all fitters who execute repairs to rolling stock hired from the Commissioner shall be competent tradesmen. Engine-men, &c., to be competent.

All guards engaged in the running of Contractor's trains shall hold certificates of railway safe working issued by the Commonwealth or a State Railway Department.

(e) The Contractor shall satisfy himself, before taking delivery of any engine or other vehicle so supplied, that it is in good order and condition and is reasonably efficient for the work for which it is required, and shall not be entitled to claim from the Commissioner any compensation or extension of the time herein limited for the completion of the works by reason of any defect in condition or want of efficiency subsequently discovered or that afterwards arises, and no such claim shall be recognized, allowed, or certified to under any circumstances whatsoever. Contractor not to claim for defects.

(f) The period for which any engine or other vehicle is so hired shall be computed from the date upon which it is delivered to the Contractor to the date upon which it is returned to the Commissioner in good order and condition. Should any engine or vehicle under hire be returned by the Contractor other than in good order and condition, any repairs or replacements necessary to recondition such engine or vehicle shall be done at the Contractor's cost and the hire charges shall continue for such time as is necessary to effect such repairs or replacements. Terms of hiring.

(g) The Contractor shall, upon the delivery to him by the Commissioner of every engine and other vehicle, give to the Engineer, through the Superintending Officer, a receipt for the same. Receipt.

(h) The amount due by the Contractor in respect of the hire of engines or other vehicles shall be paid four-weekly to the Commissioner, in accordance with a statement of hire to be made and returned by the Superintending Officer. If such amount is not paid, the Commissioner may deduct and retain or may recover the same in manner provided. Rent—when to be paid.

(i) When an engine or other vehicles are under hire to the Contractor he will not be permitted, under any circumstances whatsoever, to return such engine or other vehicles to the Commissioner for a period of less than one week. Such notice as may be required by the Superintending Officer shall be given by the Contractor for the supply of engines and other vehicles to the Contractor.

A week shall be deemed to comprise six working days, but should it be necessary for the Contractor to use any engine or other vehicle on Sunday, he shall be charged one-sixth of the weekly rate therefor, in the statement of hire. Rent for every engine and vehicle shall be charged for every working day or part thereof during which the same remains in his possession, notwithstanding that he shall not use the same on such day.

42. (a) If the Contractor provides his own rolling-stock it shall be of a type approved by the Engineer. Rolling-stock to be approved.

(b) The Commissioner will, at the Contractor's risk, run or haul locomotive engines and will haul other vehicles provided by the Contractor at the same running or haulage charges as are set out in Clause No. 41 (a).

(c) The Contractor shall cease running an engine immediately on receipt of an order in writing from the Superintending Officer requiring him so to do; and if he neglects or refuses to obey such order he shall pay to the Commissioner as and by way of liquidated damages the sum of £10 for each day or part of a day during which he is guilty of such neglect or refusal, and the Commissioner may deduct and retain or may recover the same in manner hereinafter provided.

(d) The Contractor may use the line of railway for the conveyance of such plant or materials as are required for the purposes of the works. Conveyance of material.

(e) The Contractor shall, with all reasonable despatch, if ordered so to do, convey material of any description, other than materials provided for in sub-clause (d) hereof, over the line or any part thereof, at the same rates as he is charged for the conveyance of his own materials over the opened lines. Such rates shall be in accordance with the approved rates and conditions for the carriage of construction plant and material as provided for in Clause No. 38 (b) of the General Conditions. Contractor to convey material if ordered. Freight on construction plant and material.

Demurrage, incurred through any fault or neglect of the Contractor, shall be paid by him.

Any refusal or neglect to convey the aforesaid material shall be dealt with in the manner provided in Clause No. 5 of the General Conditions.

(f) If any accident arises from any cause whatsoever, whether from negligence or otherwise, or any injury is done to the permanent way or works, the Contractor shall be responsible for, and shall pay for or make good all loss or damage arising or resulting therefrom, and the Commissioner may deduct and retain or may recover the amount of such loss or damage in manner hereinafter provided. Injury to railway.

43. (a) The Contractor shall not assign this Contract, or assign, mortgage, charge, or encumber all or any of the moneys payable or to become payable under this Contract, or any other benefit whatsoever arising, or which may arise, under this Contract, to any person, without the consent in writing of the Commissioner being first obtained. Assignment of moneys—Subletting works.

(b) If the Contractor desires to sublet any part or parts of the works, he shall send to the Engineer a written notice to that effect, and shall state in such notice the nature and extent of the works proposed to be sublet, the name of the person proposed as sub-contractor, and the price at which the said work is to be performed. The Commissioner on receipt of such notice may approve of such sub-contract as proposed being made, and unless and until such approval is given by the Commissioner, the Contractor shall not sublet any part of the works to be executed under this Contract.

(c) Any permission to assign moneys or benefits or to sublet works shall not discharge the Contractor from any liability under this Contract, and shall extend only to the particular matters in respect of which

it is given, and shall not prevent any proceedings for other or subsequent breaches of this condition. The Contractor for each and every breach of this condition shall be liable to pay to the Commissioner the sum of £50 as and for liquidated damages, and the sum or sums payable as such damages may be deducted from any sum or sums due to the Contractor under this or any other Contract with the Commissioner.

Facilities
to station
Contractors.

44. (a) The Contractor shall afford every reasonable facility to any other persons who are Contractors for station works or buildings, and free access in such portion of the line of the railway or land used in connexion therewith or adjacent thereto, as the Engineer thinks necessary to enable such Contractors to execute and maintain the works embraced under their several contracts.

No claim
therefor.

(b) No loss, delay, or inconvenience resulting to the Contractor by reason of his affording such facilities or access shall entitle him to claim from the Commissioner any compensation or extension of the time herein limited for the completion of the works, and no such claim shall be recognized, allowed, or certified to under any circumstances whatsoever.

Material not
to be used for
temporary
purposes.

45. The Contractor shall not under any circumstances, without the permission in writing of the Engineer, use merely for temporary purposes any of the rails or other materials supplied by the Commissioner for the purposes of the works.

Insolvency,
&c., of
Contractor.

46. (a) If the Contractor—

- (i) From any cause not attributable to default on the part of the Commissioner, neglects or refuses to proceed with and complete, or is prevented from or materially delayed in proceeding with and completing the works in accordance with the Contract, or is otherwise not proceeding with any part of the works to the satisfaction of the Engineer; or
- (ii) Has not completed the whole of the works at the date herein specified for such completion; or
- (iii) After notice in that behalf given to him by the Engineer fails or omits to pay all workmen and employees engaged upon the works their wages and other lawful claims of every kind in full, in lawful money and to the latest date at which such wages and claims are due; or
- (iv) Becomes insolvent, or institutes proceedings for liquidation of his affairs by arrangement or composition with his creditors, or has a receiving order made against him, or assigns his property to a trustee for the benefit of his creditors, or has an execution levied on his goods, or becomes an insane person; or
- (v) Assigns this Contract, or sublets any of the works, without such consent as hereinbefore mentioned; or
- (vi) In the opinion of the Engineer abandons or commits a wilful breach of this Contract—

the Commissioner shall be entitled, without previous notice to the Contractor or the trustee of his estate or person appointed to administer his estate, to take the works out of the hands of the Contractor or such person aforesaid, and to complete the same, and for that purpose to enter upon and take possession of the works and expel the Contractor therefrom.

(b) For the purpose of this clause, the word "Contractor" includes the Contractor's successors, administrators, or executors or the assignee, sub-lessee, sub-contractor, receiver, trustee, curator in insanity, or committee of his estate, as the case may require.

(c) The Engineer's certificate under this clause shall be conclusive proof as between the Contractor and the Commissioner of the statements contained in it.

Completion of
works where
Contractor
makes default.

(d) For the purposes of this clause, the Commissioner may contract with and employ any person other than the Contractor to further execute and complete the works, and to provide all such plant and materials in addition to the plant and materials then upon the site of the works, or on any land of the Commissioner, or on any land adjacent thereto, as are required for such further execution and completion and may pay for such work, plant, and materials such amount as may be agreed upon by and between the Commissioner and such person and may use and employ all plant and materials provided or supplied by the Contractor and then upon the site of the works or any such land as aforesaid.

How payments
to be met.

(e) All such sums of money as are required to be paid, and are in fact paid by the Commissioner, and are certified by the Engineer to be payable (whose certificate shall be final and binding upon the Contractor and the Commissioner), for or in relation to the further execution and completion of the said works, and also such sum as has been agreed upon by and between the Commissioner and the Contractor, or in case of dispute has been determined in the manner hereinafter provided, to be reasonable compensation to the Commissioner for any loss or delay occasioned to him by the default of the Contractor, may be deducted and retained by the Commissioner out of any moneys remaining in his hands under the Contract, or out of the proceeds of any plant or material provided or supplied by the Contractor and remaining upon the site of the works upon completion thereof and not incorporated therewith, or on any land of the Commissioner or any land adjacent thereto.

How balance
disposed of.

(f) If the moneys so remaining, together with such proceeds (if any), are insufficient for such purpose then the amount of deficiency, as the case may be, shall be paid by the Contractor to the Commissioner on demand; but, if, on the other hand, after the Commissioner has made all deductions and retentions there remains in his hands any balance due to the Contractor under the Contract, such balance shall be paid to the Contractor.

Disposal of
plant, &c.

(g) Upon the final completion of the works, if the moneys remaining in the hands of the Commissioner under the provisions of the Contract are sufficient to satisfy the amount authorized by this clause to be deducted or retained by the Commissioner, then the plant and surplus of the material (if any) provided or supplied by the Contractor for the works shall be delivered to the Contractor. But if the moneys so remaining in the hands of the Commissioner are insufficient to satisfy the amount so authorized to be deducted and retained, then such plant and material, or a sufficient part thereof, may be sold by the Commissioner, and the proceeds, or a sufficient part thereof, applied in satisfaction of the deficiency, and the balance of the plant and material or proceeds, as the case may be, shall be delivered or paid to the Contractor by the Commissioner. The Commissioner shall not in either case be held liable for any damage, loss, wear, tear, or diminution that the plant or material has sustained during the time such plant and material have been upon the site of the works or on such land as aforesaid.

47. (a) If the Contractor fails, after notice in writing from the Engineer to proceed with the execution of the works to the satisfaction of the Engineer, the Commissioner may, instead of proceeding in manner provided by the preceding clause, cancel the Contract, so far as it relates to the works remaining to be executed, and, after notice, in writing, that he under the authority of this clause, has cancelled the Contract, has been served upon the Contractor, the Contract shall be cancelled as from the date of such notice. In such case the moneys which have been previously paid to the Contractor upon the certificates of the Engineer shall be deemed to be in full satisfaction of all claims of the Contractor of any kind or description whatsoever under the Contract.

Cancellation of contract.

(b) All sums of money which, after the cancellation of the Contract, remain in the hands of the Commissioner in respect of the Contract, together with all plant and materials provided and supplied by the Contractor then upon the site of the works or upon any lands of the Commissioner, or any land adjacent thereto, shall be vested and become the absolute property of the Commissioner.

Consequences of cancellation.

(c) All sums of money held by the Commissioner as security for the due fulfilment of the Contract or named herein as damages for the non-fulfilment of the Contract within the time herein limited shall also be forfeited and shall be retained by or become payable to the Commissioner, as the case may be and, with the value of the said plant and materials, shall be considered as ascertained and liquidated damages for breach of contract.

48. (a) In case the Engineer or Superintending Officer is of opinion at any time, before the final completion and acceptance of delivery of the works, that any part of the said works has been or is being executed unsoundly or imperfectly or not with the proper plant or materials, or in any respect not in accordance with the specifications, drawings, or instructions given by the Engineer or Superintending Officer to the Contractor, the Engineer or Superintending Officer may give notice in writing to the Contractor requiring the Contractor to cause such part of the said works to be taken down and removed, to be re-executed properly and with suitable materials according to the specifications, drawings, or instructions as aforesaid.

Imperfect work or improper plant.

(b) The Contractor shall forthwith comply with such notice and do the several matters and things thereby required of the Contractor to the satisfaction of the Engineer or Superintending Officer without any extra charge, and without any extension of time for the completion of the said works in respect thereof, notwithstanding that before the giving of such notice any payment may have been made by the Commissioner on account of such works so objected to, or any certificate may have been given by the Engineer for the due execution thereof, or notwithstanding that such works so objected to may have been passed by the Superintending Officer.

(c) And in case the Contractor shall not forthwith duly comply with such notice by commencing and diligently proceeding to execute the orders therein contained, the Engineer or Superintending Officer may do the said several matters and things, and the Engineer shall have power to delay the granting of any certificate by him until such orders have been obeyed, and for that purpose the Engineer or Superintending Officer may expend such sum of money as the Engineer may consider reasonable and proper, and may recover the money so expended from the Contractor in manner provided by Clause 50.

(d) But if the Contractor considers that the Superintending Officer has, in the exercise of the powers conferred upon him under this clause, unnecessarily or unjustly condemned and rejected any plant, materials, or work, or if any dispute or question arises between the Contractor and Superintending Officer relating to the mode of executing the works, or any part thereof, or the nature and quality of the plant and materials used, or the workmanship in connexion with the said works, the Contractor shall be at liberty within seven days after such plant, materials, or work has or have been condemned or rejected, or such dispute or question has arisen, to refer the same to the Engineer for his decision, and the Engineer's decision thereon shall be binding and conclusive.

(e) Provided, however, that the Contractor shall not proceed contrary to the directions or instructions of the Superintending Officer, or continue to execute any work so condemned or to use any materials so rejected, pending the decision of the Engineer upon the question referred to him by the Contractor.

49. (a) The Contractor shall insure the works and plant against loss or damage by fire, in an office to be approved by the Commissioner. Such insurance is to be effected in the name of the Commissioner, and is to be for the amount of the full value of the work and plant as determined by the Engineer. The Contractor shall lodge with the Commissioner the policies and receipts for the premiums for such insurance and shall maintain such policies in force until the possession of the works is given up to the Commissioner.

Insurance.

(b) If the Contractor fails to comply with the terms of this condition the Commissioner may insure the works and plant and may deduct the amount of the premiums paid from any moneys that may be or become payable to the Contractor, or may, at his option, refuse payment of any certificate to the Contractor, until the Contractor shall have complied with the terms of this Condition.

(c) Such insurance, whether effected by the Commissioner or the Contractor, is to be no limit or bar to the liability and obligation of the Contractor to deliver up the works to the Commissioner, completed in all respects according to this Contract. In case of loss or damage by fire the moneys payable under any such insurance shall be received and may be retained by the Commissioner until the works are finally completed, and shall then be credited to the Contractor in the final settlement of accounts in the event of the Contract not having been previously cancelled under these Conditions.

50. In every case in which by the Contract provision is made either—

- (a) for the payment of money by the Contractor to the Commissioner; or
- (b) for the payment of money or for the incurring of expenses by the Commissioner which are to be repaid by or recovered from the Contractor—

Moneys payable by Contractor may be deducted from contract moneys.

the Commissioner may—

- (i) deduct and retain out of any money which is then due or at any time thereafter becomes due to the Contractor from the Commissioner, the amount of such money or the amount certified by the Engineer to be due in respect of any money paid or expenses incurred or loss or damage suffered by the Commissioner; or

- (ii) may sue for and recover the same or the balance thereof (after giving credit for any moneys then due or thereafter accruing due to the Contractor by the Commissioner and deducted and retained as aforesaid), as a debt due from the Contractor to the Commissioner; or
- (iii) may sell the plant or materials provided or supplied by the Contractor and remaining upon the site of the works at the completion thereof or upon any lands of the Commissioner or upon any lands adjacent thereto, or a sufficient part of such plant and materials, and may apply the proceeds or a sufficient part thereof in satisfaction of the deficiency; and
- (iv) may adopt all or any of these methods of recovering payment.

The balance (if any) remaining in the hands of the Commissioner shall be paid to the Contractor.

Removal of
buildings and
clearing-up.

51. (a) Upon completion of the Contract, the Contractor must remove all buildings, offices, stables, sanitary conveniences, or workshops which he may have erected for his convenience while carrying on the works, as well as all his plant and old materials; and he shall remove all surplus earth, as well as all rubbish that may accumulate in executing the Contract, and leave the whole in a clean and tidy condition, fit for immediate use and occupation.

(b) If the Contractor does not duly fulfil the requirements of the foregoing sub-clause, the Engineer may cause any such plant, material, rubbish, or obstruction to be removed, and may for that purpose expend such sum of money as the Engineer considers reasonable and proper, and the Commissioner may deduct and retain or may recover the money so expended from the Contractor in manner hereinbefore provided.

Restoring
buildings,
walls, fences,
&c.

52. All buildings, walls, fences, and works of any description met with on the site of the works that it is found necessary to remove temporarily, or that may be disturbed, are to be replaced or repaired by the Contractor, and left, at the time the works are taken over from the Contractor, in the same order and condition as they were at the commencement of the Contract, and to the satisfaction of the Engineer.

Day to be
appointed for
consideration
of final
certificate.

53. (a) Before the preparation of the final certificate the Engineer shall appoint a day and place for hearing and deciding all matters which by the Contract are left to his decision, and which have not been already decided by him, and shall give to the Contractor not less than fourteen days' notice of the date thereof.

If Contractor
fails to
attend.

(b) If the Contractor or his agents fail to attend at the place and time appointed by the Engineer, without any further consent than is hereby given on the part of the Contractor, and to open the same for public traffic. And it is expressly declared that if the Commissioner shall take possession of any one or more of the said portions of the said line, and open the same for public traffic, the Contractor shall not on that account, or by reason of any delay, inconvenience, or loss which he may thereby sustain, or be put to, in carrying out and completing the portion or portions of the work remaining to be done under this Contract, or for any cause connected with or arising out of the Commissioner so taking possession of and opening for public traffic the said portions of the said line of railway, have any claim or demand upon the Commissioner for any loss, damages or expenses thereby occasioned, or any right to claim an extension of the time for the completion of the portions of the said line of railway then remaining to be completed. And the Commissioner taking possession of any one or more of the said portions of the said line, under the power in that behalf hereby given, shall not entitle the Contractor to a refund of, or release him from any penalty or forfeiture to which he shall then have become liable by previous default, or release or in any way abridge the right of the Commissioner to claim penalties under this Contract in respect of any future breaches thereof.

Provision for
public traffic.

54. (a) The Commissioner shall have the right, at any time as portions of the work under this Contract are completed to any proposed station, to take possession of the same as each is completed, without any further consent than is hereby given on the part of the Contractor, and to open the same for public traffic. And it is expressly declared that if the Commissioner shall take possession of any one or more of the said portions of the said line, and open the same for public traffic, the Contractor shall not on that account, or by reason of any delay, inconvenience, or loss which he may thereby sustain, or be put to, in carrying out and completing the portion or portions of the work remaining to be done under this Contract, or for any cause connected with or arising out of the Commissioner so taking possession of and opening for public traffic the said portions of the said line of railway, have any claim or demand upon the Commissioner for any loss, damages or expenses thereby occasioned, or any right to claim an extension of the time for the completion of the portions of the said line of railway then remaining to be completed. And the Commissioner taking possession of any one or more of the said portions of the said line, under the power in that behalf hereby given, shall not entitle the Contractor to a refund of, or release him from any penalty or forfeiture to which he shall then have become liable by previous default, or release or in any way abridge the right of the Commissioner to claim penalties under this Contract in respect of any future breaches thereof.

By Contractor.

(b) The Contractor shall not at any time make use of the line for purposes of public traffic in conveyance of goods, live stock, or passengers, free or otherwise, unless by the express written authority of the Commissioner, and then only on such conditions as the Commissioner thinks fit to impose.

Contractor's
ballast trains
on opened
portions of
line.

(c) The Contractor may make use, for the purpose of running ballast or work trains as may be necessary for the purposes of the Contract, of such portions of the line opened by the Commissioner for public traffic, but the running of all locomotive engines and other vehicles on the same shall be subject to the control of the Commissioner.

Extension of
time, &c., if
works delayed.

55. (a) If the Contractor is prevented from or materially delayed in proceeding with the execution of the works, or any of them, by reason of any act or omission on the part of the Engineer, such prevention or delay shall not annul or affect the validity of the Contract, or in any way affect the same. But the Contractor may at any time, not exceeding one calendar month from the time when such impediment commenced, make an application in writing, addressed to the Engineer, for an extension of the time herein limited for the completion of the works by reason of such prevention or delay, and for compensation for any loss or extra expense occasioned to him thereby.

Dispute how
settled.

(b) If the Engineer refuses or neglects upon any such application to grant any such extension of time, or refuses or neglects to offer such compensation, or if the Contractor is not satisfied with the extension of time granted by the Engineer or the compensation offered, the question whether any, and if any, what extension of time or compensation should be granted in respect of such prevention or delay shall be determined in manner hereinafter provided.

Claim when
barred.

(c) If the Contractor fails to make such application in writing within the time herein limited his claim to any extension of time or compensation shall be absolutely barred.

56. (a) In addition to the claims, matters, questions, and disputes which are hereinbefore expressly made subject to the decision of the Engineer, or are left to be wholly governed by his certificate, the decision of the Engineer upon all claims, matters, questions, and disputes under the Contract with respect to—

- (i) the quality, condition, and soundness of the works or the mode of execution of the works; and
- (ii) the type, nature, quality, condition, soundness, description, and efficiency of the materials used, or the nature, quality, soundness, and efficiency of the workmanship in connexion with the works; and
- (iii) the progress of the works; and
- (iv) the number and efficiency of the foremen, overseers or workmen employed on the works; and
- (v) the compliance or non-compliance of the Contractor with the orders, directions, and instructions of the Engineer or Superintending Officer; and
- (vi) the meaning and effect of the specification, and of any instructions, orders, drawings, plans, and sections given or furnished in connexion with the works, including extra work, if any, and the compliance or non-compliance of the Contractor with such specification, instructions, orders, drawings, plans, or sections; and
- (vii) whether any work is of a contingent, temporary, subsidiary, or incidental character, or whether any work, material, or labour is specified,

shall be final and binding upon the Commissioner and the Contractor, and shall not be questioned in any proceeding whatsoever.

(b) The Engineer shall declare and award all his decisions in writing, and shall forthwith deliver a copy thereof under his hand to the Contractor. The Contractor shall not be entitled to commence or maintain any action or other proceeding whatsoever in respect of any claim, matter, question, or dispute which under the Contract is expressly made subject to the decision of the Engineer, or is left to be wholly governed by his certificate, until such claim, matter, question, or dispute has been so referred to and determined by the Engineer, and then only for the amount of money or other relief declared and awarded to the Contractor by the decision or certificate of the Engineer.

57. None of the conditions of this Contract shall be varied, waived, discharged, or released, either in law or in equity, unless by the express consent of the Commissioner.

58. All notices required or authorized to be given to the Contractor under the provisions of the Contract shall be in writing, signed by the Engineer or Superintending Officer, and all notices, directions, instructions, and orders if in writing shall be deemed to have been sufficiently given and served if either left at or sent by post to the Contractor at any place of business or office of the Contractor upon or near the site of the works, or if delivered to the agent or the principal foreman of the Contractor for the time being employed at or upon the works.

The time of service of any writing sent by post shall be deemed to be at the expiration of the ordinary course of post between the place where it is posted and the place to which it is addressed.

59. The Contractor shall execute a Contract Deed in the form prescribed in the Second Schedule hereto, and the cost of such Deed will be borne by the Commissioner.

60. Subject always to the provisions of the Contract which declare the decision or certificate of the Engineer in certain cases to be final and binding, and with respect only to matters which are not covered by any such provisions, and in respect of which a claim, demand, or application is not barred by the failure of the Contractor to comply with the conditions of the Contract, as to the time of making the same, if any claim, dispute, or question arises under the Contract relating to, or concerning—

- (i) the price to be paid by the Commissioner for extra work; or
- (ii) any hindrance, delay, impediment, prevention, or obstruction on the part of the Commissioner to or in the execution of the works, or any portion thereof; or
- (iii) any suspension of the works or any portion thereof by the Commissioner, or any direct pecuniary loss sustained by the Contractor by reason of such suspension; or
- (iv) any other matter or thing with respect to which the decision or certificate of the Engineer is not by the Contract declared to be final or binding,

every such claim, dispute, or question, if the same has not been satisfactorily settled between the parties before the expiration of two calendar months after the making or arising thereof may, within fourteen days after the expiration of the two calendar months aforesaid, be referred by the Contractor for decision to three arbitrators to be appointed as hereinafter provided, and who, in arriving at a decision, notwithstanding the provisions of any Arbitration Act, whether Commonwealth or State, shall not be bound to adopt any formal mode of procedure but shall inform themselves as to the relevant facts in whatever manner they think best suited to the requirements of the case submitted.

Should the Contractor desire to refer any such claim, dispute or question to the arbitrators, he shall, within fourteen days as hereinbefore mentioned, give to the Commissioner notice in writing to this effect and shall with such notice furnish in writing full detailed particulars of each such claim, dispute, or question under distinct and separate heads and specifying the amount, if any, claimed by him under each such head. He shall also forthwith pay to the Commissioner the sum of £500, which sum shall be retained by the Commissioner as security for the costs of arbitration should the decision of the arbitrators be against the Contractor, which sum shall be returned to the Contractor when the decision of the arbitrators has been given, less any costs to which under the decision and as hereinafter mentioned the Commissioner is entitled.

Should the Contractor fail to give the necessary notice in writing, furnish the necessary particulars in writing and forward the sum of £500 as security within fourteen days as aforesaid his right to refer the matter to the arbitrators shall, thereafter, be absolutely barred and the Commissioner's decision with regard to such claim, dispute, or question shall be final and binding on the Contractor.

In the event of notice of intention to refer the claim, dispute, or question to the arbitrators having been duly served on the Commissioner in the manner provided, one arbitrator shall be appointed by the Contractor and one by the Commissioner by instrument in writing signed by the person or persons appointing such arbitrator, which instrument shall set out all the matters specified in the particulars furnished with such notice, which, under the Contract the arbitrators have power and authority to hear and determine and no other matters. The third arbitrator shall be appointed in writing under the hands of the two arbitrators so appointed before the claim, dispute, or question referred for decision is proceeded with.

The Contractor shall not appoint as an arbitrator any person who is directly or indirectly interested in the Contract either as a principal or as any servant or agent of the Contractor, or in any other way whatsoever, nor shall the Commissioner appoint the Engineer or any other person then in his service and it shall be an instruction to the arbitrators appointed by either party that in appointing the third arbitrator any person directly or indirectly interested in the Contract or any servant or agent of either of the parties is not eligible and shall not be so appointed by them.

The decision of any two of the arbitrators shall be final and binding on the Commissioner and the Contractor and shall not be questioned in any proceeding whatever.

Costs.

The costs of any claim, dispute, or question which may be decided by arbitration shall be paid by the party against whom the decision is given in the same proportion as the amount or value of relief awarded is to the amount or value of relief claimed by the party making such claim.

No action
except on
award of
arbitration.

61. The Commissioner or the Contractor shall not be entitled to commence or maintain any action or other proceeding whatsoever in respect of any claim, dispute, or question which under the Contract may be referred to arbitration until such claim, dispute, or question has been so referred and determined by the arbitrators and then only for the amount of money or other relief awarded by the arbitrators.

REF.
No.

1

and su
arising

COMMONWEALTH RAILWAYS.

PORT AUGUSTA-RED HILL RAILWAY.

Extension from near Port Augusta to near Port Pirie,
State of South Australia.

FIRST SCHEDULE

(to the General Conditions).

FORM of FOUR-WEEKLY STATEMENT of ACCOUNT to be
furnished by Contractor according to Clause No. 27
of General Conditions.

*N.B.—It is agreed that no claims will hereafter be recognized by the Commissioner other than those inserted
in this Statement.*

THE COMMONWEALTH RAILWAYS COMMISSIONER,

Dr. to

Contractor.

FOR WORK DONE TO 193.....

REF. No.	DESCRIPTION OF WORK.	QUANTITIES.		RATE.	AMOUNT.			TOTAL AMOUNT.		
					£	s.	d.	£	s.	d.
1	FENCING, GATES, CATTLE GRIDS, DOG AND CATTLE PITS, ETC.									
	Fencing, No. 1 (6 wires with droppers), complete		lin. chs.							
	[Here insert the several works executed, in the same order as in Schedule of Quantities and Prices.]									
	DAY LABOUR.									
	CLAIMS.									
	[In terms of Clauses 17, 18, and 27 of General Conditions.]									

I hereby declare that the foregoing is a complete account for work executed and materials and labour provided and supplied according to progress measurements as agreed upon with the Superintending Officer, and of all claims arising to date.

Dated at

this

day of

, 19 .

Contractor.

COMMONWEALTH RAILWAYS.

PORT AUGUSTA-RED HILL RAILWAY.

Extension from near Port Augusta to near Port Pirie,
State of South Australia.

From 4 miles 20 chains to 54 miles 50 chains
(plan mileage).

In length 50 miles 30 chains.

SPECIFICATION OF WORKS.

GENERAL.

1. In this Specification, unless the context otherwise requires, the terms used have the meanings interpretation respectively assigned to them by the General Conditions hereto annexed, in addition to which—

“Approved” means approved by the Engineer.

“Ordered” or “directed” means required, directed or ordered by the Engineer.

2. The Contract is for the construction of the Railway Extension from near Port Augusta to near Port Pirie commencing at a point 4 miles 20 chains from Port Augusta and terminating at a point near Port Pirie at 54 miles 50 chains, plan mileage, being in length 50 miles 30 chains or thereabouts, entirely in accordance with the provisions of the contract. Extent of work included in Contract.

In addition there will be constructed an extension of approximately another 2 miles with sidings at terminal station near Port Pirie. The General Conditions of Contract, Specification and Schedule of Quantities and Prices of this Contract, shall be deemed to cover all work necessary in the construction of such extension and sidings and the construction of such extension and sidings shall be deemed to be portion of the Contract.

3. The quantities furnished in the accompanying schedule, although carefully taken out, must be understood as being approximate only. The Contractor is to satisfy himself as to their correctness, as the quantities paid for will be the actual measurements of the works ordered and satisfactorily executed. The quantities furnished are liable to be modified after further acquaintance with the nature and resources of the district, and the Engineer shall have full power to make whatever alterations in the quantities he may think necessary, and the Contractor shall have no claim for extra payment on account of any such alterations. Measured quantities in balance of works.

4. Drawing No. M108 shows the plan of the line drawn to a scale of 8 chains to an inch and the working section of the line to a horizontal scale of 8 chains to an inch and vertical scale of 80 feet to an inch. Drawings.

5. The main line is to be laid to a mixed gauge of 3 ft. 6 in. and 4 ft. 8½ in. from 4 miles 20 chains, the commencing point of the Contract to about 5 miles 27 chains, thence to the end of the Contract to a gauge of 4 ft. 8½ in. In Stirling Station Yard sidings of 3 ft. 6 in., 4 ft. 8½ in., and mixed gauge of 3 ft. 6 in. and 4 ft. 8½ in., are to be laid as delineated on Drawing S.1092. All other station sidings are to be laid to 4 ft. 8½ in. gauge.

6. The middle line on plan represents the line of pegs which are placed at intervals of 1 chain on the surveyed centre line of railway; the working section represents the surface of the ground along the surveyed centre line of railway shown on plan. The grade line on section represents the level of the bottom of ballasting, i.e., formation line to be adopted along the centre line of the 4 ft. 8½ in. gauge road, and is at the centre line of cuttings and embankments on the straight and under the lower rail on curves. The boundaries of the railway line are shown on either side of the centre line, the distance from centre line being shown at angles in such boundaries. Drawings.

CLEARING AND GRUBBING.

7. Before earthworks in cuttings and embankments are commenced the line throughout shall be cleared only for such widths as are necessary for the various works, including telegraph line, and to obtain a clear view. The widths on each side of the surveyed and pegged centre line that clearing shall be done will be ordered by the Superintending Officer from time to time.

Removal of
obstructions.

8. The area of land so ordered to be cleared shall be cleared of all trees, logs, undergrowth, noxious weeds, old fences, buildings, and all obstructions and rubbish of every description. The trees and undergrowth shall be cut off as close as practicable to the ground.

Ornamental
trees and
shrubs.

9. During the clearing of the line should the Superintending Officer desire to preserve from destruction any trees or shrubs growing within the clearing widths ordered which he considers are desirable he will mark or otherwise indicate such trees or shrubs and the Contractor shall see that they are properly preserved accordingly.

Felling
dangerous
trees.

10. Any standing timber outside the boundaries of the clearing as specified above which may, in the opinion of the Superintending Officer, endanger the works of the line, shall be felled.

11. On Crown lands, except in the vicinity of station yards and level crossings, all timber and undergrowth felled inside the boundaries of the clearing, also logs, may be hauled outside the clearing widths or burned within the boundaries of same at the option of the Contractor, but no fallen timber must in any case be left nearer than 6 feet to the clearing widths. At station yards and level crossings all fallen timber shall be burnt.

12. Road diversions where required shall be cleared to such widths as may be directed.

Grubbing
main line.

13. At the seat of embankment under 3 feet in depth or in surface forming or side slopes of cutting, all stumps or large roots shall be carefully grubbed out or cut off at least 12 inches under the surface of the ground, cleared away and the holes filled in.

Grubbing in
station yards
and road
diversions.

14. At road diversions, station yards or elsewhere as directed all stumps shall be grubbed out or burnt off to a depth of at least 12 inches below surface of ground and the holes filled in and well rammed.

15. All timber and other material which is suitable for construction purposes is to be saved and if directed by the Superintending Officer shall be used in the construction of the line.

Prices.

16. Clearing and grubbing main line, in road diversions, level crossings and station yards, will not be paid for as separate items, but the cost of the whole of the clearing and grubbing as specified above shall be included in the schedule prices for "Fencing, &c.," "Earthworks," "Road Diversions and Level Crossings," "Station Works and Water Supply," and "Telegraph Line" respectively.

17. During the progress of works all noxious weeds are to be destroyed at specified times as may be directed and on the completion of the contract, the whole of the land inside the clearing boundaries of the railway, including land resumed for road approaches, road diversions, and station yards is to be left completely cleared of all new growths of timber and noxious weeds. The cost of this work is to be included in the schedule prices for "Fencing, &c.," "Earthworks," "Road Diversions and Level Crossings," "Station Works and Water Supply," and "Telegraph Line" respectively.

FENCING, GATES, CATTLE GRIDS, AND DOG AND CATTLE PITS.

Types of fences.

18. The following types of fencing are to be erected, where ordered, to details shown on drawings:—

No. 1.—Six-wire droppered fence, with steel rail posts, in 54-ft. panels (one barbed and five plain wires), with two intermediate corkscrew steel fence posts and six galvanized wire "Flexo" droppers.

No. 2.—Rabbit-proof fencing, with steel rail posts, in 54-ft. panels (one barbed and three plain wires and galvanized wire-netting), with two intermediate corkscrew steel fence posts and six galvanized wire "Flexo" droppers.

No. 3.—Wing fences at open level crossings with cattle grids.

No. 4.—Wing fences at open level crossings with dog and cattle pits.

No. 5.—Galvanized chain wire fencing.

Erection.

19. Fence posts shall be set in a true line between angles and uniform and upright, and the earth shall be well rammed in around them.

20. The fencing shall be erected to a true line on top, and is not to follow the lesser irregularities of the ground.

21. The position of posts in wire fencing shall be adjusted to suit the irregularities of the ground and additional posts inserted where necessary.

Removing and
re-erecting
existing fences.

22. Portions of existing fences may have to be removed and re-erected in other positions. All deficiencies are to be made good with new materials. The rate stated in the Schedule of Quantities and Prices is to cover all cost incurred in removing existing fences and re-erecting them on new sites, and providing all new material that may be required.

Rail fence
posts.

23. Rails in various lengths for use as fence posts will be supplied to the Contractor if desired on trucks at commencing point of Contract at a fixed price of £7 per ton. The Contractor shall unload the trucks at his own cost within 24 hours after trucks have been delivered to him, otherwise demurrage charges on trucks, in accordance with clause 38 (c) of the General Conditions of Contract will be charged.

24. The rails shall be cut by the Contractor into lengths as necessary for the various description of posts desired, the cutting to be done by sawing through the rails. In no case will nicking and breaking of the rails be allowed.

25. The necessary holes for wires or for other purposes shall be drilled, as shown on drawings.

Bolts, nuts,
and washers.

26. Bolts, nuts, and washers shall be manufactured from mild steel, in accordance with Australian Standard Specification A. 1—1928. They shall be strictly in accordance with the drawings.

27. Heads and nuts shall be well forged and screwed to Whitworth's standard, the nut being a hand-tight fit on the bolt. The nut shall be capable of being screwed on bolt for the full distance shown threaded, on drawings.

28. Corkscrew steel fencing posts shall be manufactured from sections rolled in Australia of mild steel, in accordance with Australian Standard Specification No. A. 1—1928, and in accordance with drawings. Corkscrew fence posts.

The posts shall be thoroughly coated by Dr. Angus Smith's process, and the coating shall be allowed to dry and harden before posts are packed for transport.

29. All wire shall be of the best quality drawn steel of English Imperial legal standard gauge, ductile, cylindrical in section, true to gauge, galvanized, and conforming to the undermentioned tests and requirements. Galvanized fencing wire.

Barbed wire shall be four-point, two-ply strands of No. 12 gauge, evenly twisted with barbs set at not more than $3\frac{1}{2}$ inches apart. Each strand to have a breaking strain of not less than 750 lb. or more than 900 lb. weight.

No. 8 plain wire to be of not less than 540 lineal yards per cwt., with a breaking strain of not less than 2,000 lb. weight before fracture or elongation of more than $2\frac{1}{2}$ per cent.

No. 10 plain wire to be of not less than 850 lineal yards per cwt., with a breaking strain of not less than 1,250 lb. weight before fracture or elongation of more than $2\frac{1}{2}$ per cent.

Both barbed and plain wire shall be sufficiently tough to enable it to be coiled round itself in a tight spiral, the eye being not more in internal diameter than the diameter of the wire, and adjacent spirals shall be in contact with each other and with the straight portion of the wire thus:—



There shall be no sign of fracture in the wire or galvanizing under the foregoing test. All wire shall be well galvanized with zinc spelter. The galvanizing shall be tested by taking samples from any coil or coils and plunging them into a saturated solution of copper sulphate at 60 degrees Fahr., and allowing them to remain for one minute, when they are to be withdrawn and wiped clean. The galvanizing shall be such as admits of this process being performed four times without there being any sign of a reddish deposit of metallic copper.

30. Wire-netting fence shall be erected where shown or as ordered. The wires shall be spaced as shown on drawings, drawn through the holes in the posts, well tightened, and fastened to each straining post as shown. Galvanized wire-netting shall be of first-grade quality, weighing not less than 36 cwt. per mile, of approved brand, 48 inches wide and $1\frac{1}{4}$ inch mesh, No. 17 gauge, securely fixed to the fence throughout its length. The netting shall be sunk 6 inches vertically into the ground and turned at right angles away from the fence for 6 inches, as shown on drawings, the trench in which the netting is sunk being kept open until it has been examined by the Superintending Officer, after which it shall be filled with earth and be well rammed. After each length of netting has been laced together with No. 16 gauge galvanized binding wire, the netting shall be carefully strained, without distorting or breaking the mesh, and be fastened to each of the three plain wires by means of special galvanized clips as shown on drawings at about 2 feet intervals horizontally. Wire-netting fence.

30A. Galvanized chain wire fence shall be erected where shown or as ordered. The No. 8 gauge galvanized wires shall be spaced as shown on drawing, fastened through the holes in the posts, well tightened, and fastened to straining posts as shown on drawings. Chain wire fencing.

Chain wire shall be of No. 12 gauge, 4 feet wide, and of first grade quality of an approved brand, and, after being carefully strained, shall be securely fixed to the wires throughout its length by means of clips as shown on drawings. Ends of chain wire may be joined together by lacing with No. 16 gauge galvanized binding wire, such jointing to be done before wire is strained.

31. All wires, after being well tightened, shall be fastened to straining posts, as shown on drawings. Wiring.

All plain wires shall be drawn through holes bored in both rail and corkscrew steel fence posts, but the top barbed wire is to be fastened on top of intermediate posts, as shown on drawings, by three turns of No. 16 gauge galvanized binding wire passing over the wire and through the hole near the top of posts, excepting that it shall pass through and be fastened to straining posts, as shown on drawings.

32. Adequate provision is to be made to render fences effective where watercourses or drains are crossed. Crossing of gullies.

33. At all intersections with existing fences a separate strainer post with strut is to be provided, bored to suit the number and spacing of wires in such fences and fence connected to same, but not with the railway fence. Intersection of fences.

34. Strainer posts with strut, as shown on drawings, shall be provided at all angles and terminals and at all gates, and shall be spaced in fence lines at intervals of not more than 270 feet. Strainer posts.

35. Where the line is fenced and gates are required, they shall be as shown on drawings, with gate posts made from old steel rails. The gates shall be hung so as to swing truly and engage accurately in the catches. Steel rail stop blocks provided with cast-steel catches shall be provided, and set in the ground in such position as to secure the gates when open. All gates shall be painted as specified in Clauses 256 to 263 inclusive. Gates.

Where concrete is shown to be used it shall be Class "C," as specified in Clauses 134 to 152 inclusive.

All gates shall be hung to open towards the centre line of Railway.

36. Each gate is to be supplied complete with posts and all fittings, as shown on drawings, and be erected complete, inclusive of all labour and material, excavation, and refilling and ramming, and concrete where specified or ordered, for the rate stated in the Schedule of Quantities and Prices.

37. Cattle grids shall be provided where marked on plan or as ordered, and shall be built in accordance with drawings. Cattle grids.

All material used and all workmanship done shall be as specified for steel bridgework,

Round posts and rails are to be included in the schedule price for grids. Round posts shall have the sapwood carefully and uniformly dressed off.

All timber below ground shall be tarred, as specified in Clauses 256 to 263 inclusive. Posts and rails, grid bars and aris pieces, and the ends of transoms shall be painted, as specified in Clauses 256 to 263 inclusive.

Concrete shall be Class "C," as specified in Clauses 134 to 152 inclusive.

The Schedule Price shall be for one Cattle Grid complete, and shall include the necessary excavation as shown on drawings.

Any work or material necessitated by extra depth of foundations ordered below the depth shown on drawings shall be considered as extra, and shall be measured and included under headings and prices for similar classes of work.

Dog and cattle pits.

38. Dog and Cattle Pits, if ordered, shall be built in accordance with drawings. The concrete, metalwork, timberwork, tarring, and painting to be as specified for Cattle Grids, Clause 37. Galvanized iron shall be best quality 20-gauge cut and fixed as shown in drawings.

Wire netting shall be as specified for fencing, Clause 30.

The Schedule Price shall be for one Dog and Cattle Pit complete, including excavation for foundations and concrete to the extent shown on drawings. Any additional depth of foundations ordered below the depth shown on drawings shall be considered as extra, and shall be measured and included under headings and prices for similar classes of work.

Prices.

38A. The whole of the work specified in the foregoing clauses shall be covered by and included in the Schedule Prices.

EARTHWORKS.

Formation width.

39. The formation width of cutting, embankment and surface formation shall be as shown on drawings, and shall provide for 4 ft. 8½ in. gauge from commencement of Contract, excepting 3 ft. 6 in. gauge sidings in Stirling Station Yard.

Excavation in cuttings.

40. The excavation in cuttings shall be carried forward the full specified width and with side slopes as shown on drawings, or with such other side slopes as may be ordered by the Superintending Officer during the progress of the work, and no payment beyond the Schedule Rate for excavation from cutting will be made should it be found necessary to alter the side slopes of cuttings and retrim same. The side slopes shall be uniformly trimmed and dressed to the inclinations ordered.

41. The bottom of cuttings shall be trimmed to the levels shown on the working section and in accordance with the drawings.

42. If any portion of a cutting is excavated deeper than the formation level as shown on drawings, such additional excavation shall be filled with broken stone to the levels, as mentioned in Clause 41, without charge.

Cross-sections.

43. Cross-sections will be taken where deemed necessary by the Superintending Officer, and should the Contractor not take exception to the accuracy of such cross-sections before the work in the cuttings to which they refer has been commenced, it will be taken as an acknowledgement on his part that same are correct and that he will be satisfied to have the quantities for which payment is to be made computed from the cross-sections furnished by the Engineer, provided the works cannot be otherwise satisfactorily measured and the quantities accurately ascertained. Should the Contractor prefer to take cross-sections for himself, no measurements taken from them will be admitted as the correct quantities unless the accuracy of such cross-sections has been confirmed by the Engineer.

44. Excavation for cuttings is to be kept free from water at all times, and be so conducted as to afford the utmost facilities for the escape of water by means of ditches or by pumping if necessary.

45. The material from the cuttings shall be deposited in the embankments, in road diversions, approaches to stations, bridges or level crossings, or elsewhere, according to the disposal shown on the section, or as may be ordered during the progress of the works, with a lead not exceeding 40 chains.

Ballasting material from cuttings.

46. Any stone, gravel or other material that may be found in the cuttings suitable for metalling, ballasting or earth packing may be laid aside by the Contractor, at his own expense, instead of being taken to embankment; but any deficiency in the embankments caused by such appropriation of material from the cuttings shall be supplied entirely at the expense of the Contractor, either from side cutting or by increasing the width of the cuttings to such extent only as may be determined by the Superintending Officer.

Excavation run to spoil.

47. Unless shown on working section no excavation is to be run to spoil unless the approval of the Superintending Officer has been previously obtained, and then only in such manner and in such positions as he shall direct. All spoil banks shall be trimmed as ordered without extra charge, and the toes of the batters of any spoil banks shall not be nearer than 6 feet to the edge of the batter of any cutting or side drain.

Slips in cuttings.

48. Any slips from the slopes that may occur in any of the cuttings either during the progress of the works or at any time before the line has been completely taken over and which, in the opinion of the Engineer, are not attributable to carelessness or negligence on the part of the Contractor, are to be removed by the Contractor to such distance as may be directed (not exceeding a lead of 40 chains) at the Schedule Rate for excavation in cuttings. In every other case the cost of this work shall be borne by the Contractor.

Side cuttings.

49. When excavation from cuttings, foundations, or inlets and outlets is insufficient to form the embankments to the specified width after allowance for subsidence, then the additional material (hereinafter termed "side cutting") shall be obtained either by widening the cutting or from such other place or places adjacent to the line with a "lead" not exceeding 5 chains as are convenient and approved of by the Superintending Officer.

50. In cases where the cuttings are widened, the slope shall be trimmed to the same batter as that of the cutting, and where side cutting is obtained elsewhere the excavation shall be left in a neat and workmanlike manner, with side slopes not steeper than 1 to 1 and the bottom evenly trimmed.

51. In forming embankments from cuttings and side cuttings all large lumps of earth, more especially in the case of black soil, shall be broken down so as to avoid leaving hollow spaces which might afterwards cause unequal settlement in the embankment. On no account shall side cutting be taken out within station yard boundaries without special authority of the Engineer.

52. Side cutting where excavated alongside embankments shall be taken out to such depth (not exceeding 4 feet, unless by special authority of the Engineer, nor less than 1 foot) as may be necessary and the width shall be varied, according to the quantity of material required, by offsets on the outside, the top of the slope of the side cutting paddock nearest the embankment being kept at a uniform distance of not less than 9 feet from the foot of the slope of the embankment and the bottom shall have a fall towards the outer edge, the top of slope of outside of paddock being kept not less than 5 feet from the boundary fence line as shown on drawing of the cross-section of the railway.

53. When the railway is situated on ground the surface of which has a continuous fall in the direction of the line, solid blocks shall be left in the side cutting at the low side of each drain and bridge so as to divert the water through such drain or bridge. Blocks shall also be left in the side cutting where ordered by the Superintending Officer so as to divert water away from the line.

54. Side cutting shall not be taken out on any public road or at any occupation crossing nor opposite any bridge intended as a means of access from one side of the line to the other.

55. In all cases where excavation for side cutting is made it shall be done in such a manner as to provide proper drainage and shall be connected with the side ditches if so required.

56. Where "Surface Formation" is marked on the section, the work shall be paid for at per lineal chain, the formation being trimmed to the width shown on drawing or to such other width as may be ordered. Surface formation.

Any material required in making up "Surface Formation" to the proper level shall be provided, and any surplus shall be removed to any embankments not exceeding a lead of 40 chains, or to "spoil." Should the material not be required for banks, such "spoil" is to be neatly cast out upon side convenient for picking up by ballast train.

Extra widths of formation as may be ordered shall be paid for at proportionate rates for schedule price.

57. The embankments shall be formed so that they shall, when completed and consolidated, be to the full dimensions as shown on drawings, and shall conform to the formation levels shown on the section, or to such other levels as are ordered, due allowance both in height and width being made for subsidence and shrinkage. Embankments.

58. Where embankments are shown to be made up from cuttings, and the Contractor should run to spoil any material from these cuttings, and find that the embankments have subsided and require more material, then he is to provide such material at his own expense.

59. In forming the embankments the head shall be carried forward the full width or such width as may be ordered together with the slopes as shown on the drawings or as ordered, and banks shall be trimmed to prevent the lodgment of water.

If so directed by the Superintending Officer the Contractor shall tip the embankment in two or more layers, without extra charge.

60. The cesses between ends of sleepers, or toe of ballast and edge of banks, are to be made up if low, or trimmed down if high, and, if necessary, the slopes are to be retrimmed, without charge, before the works are handed over. Cesses.

61. Any excess in height of embankments except such as may be ordered to be allowed for subsidence shall be trimmed off before the ballast is laid, and any deficiency made good with approved material without charge.

62. As the embankments approach any bridge, culvert, or other structure, the earth shall be brought up equally on both sides of such work, and in the cases of arches, for at least 1 foot above the crown, and carefully punned in layers not exceeding 12 inches in depth, so as to avoid any injury or derangement arising to the structure.

In doing so, if any injury or derangement arises to the structure, the Contractor must make good such damage at his own cost.

63. When embankments have to be made on steep side-lying ground, benchings are to be cut so as to prevent the bank from slipping, and such benchings shall be properly drained and done to the satisfaction of the Superintending Officer. The excavation for these benchings shall be executed at the schedule rate for this work, whatever the nature of the material, which rate is to include cost of removal of excavated materials, if required. Benchings on side-lying ground.

64. Where ordered the slopes of embankments at bridge ends shall be protected by pitching as stone pitching, described in Clause 254 of this Specification.

65. Where shown on section or as ordered embankments shall be formed with stone filling and stone banks, pitched with hand packed stone to the form and dimensions shown on drawing. Stone filling shall consist of approved hard stone, and stone pitching shall be composed of hard stones at least 9 inches thick, 6 inches wide, and 12 inches long laid dry, close jointed and with a fair face level or battered as may be ordered.

66. Where stone banks are over 2 feet high stone pitched aprons 9 inches thick on down stream side shall be constructed as shown on drawing. Stone pitched aprons.

67. Stone banks will be paid for at per cubic yard and the schedule rate shall include stone filling and stone pitching as specified. Stone pitched aprons, including excavation therefor, will be paid for at per super. yard at schedule rate. Measurement.

68. Where ordered and with such material as is approved embankments shall be sheathed with selected material. The thickness of the sheathing shall be as directed, but on completion of such sheathing the embankments shall conform to the requirements of Clause 57. Sheathing banks.

Selected material.	68A. Selected material for sheathing embankments shall consist of earthy material containing no sand and of such a nature that it will not powder to dust when dry, nor run when wet. All selected material shall be approved by the Superintending Officer before being placed in the works.
Measurement.	69. The quantities of selected material used for sheathing embankments when run out by train from spoil banks will be paid for by truck measurement. The trucks shall be filled level with the top of the sides and no greater quantity will be allowed. When obtained from side cutting or cutting widening the actual measurement of side cutting paddocks or cutting widening only will be paid for.
Side ditches.	70. Side ditches in the form and dimensions shown in drawings shall be excavated, where directed by the Superintending Officer, and to the positions shown in drawings or as may be otherwise ordered to ensure a free flow of water. The bonds shall be laid out with an easy curve. The material from side ditches shall be formed into a mound on the lower side of the ditch, as shown on drawing. In no case shall material be removed from a side ditch mound without the sanction of the Superintending Officer. The side ditches shall be led into the natural watercourses, or into ditches already existing for the drainage of the adjoining lands.
Mitre drains.	71. Mitre drains shall be cut where necessary, for leading the water from the foot of the slopes of embankments and ends of the outtings into the side ditches and shall be paid for at the schedule rate for side ditches.
Excavation for foundations.	72. The excavation for culverts, bridges and other structures is to be carried down to the depths shown on the drawings, or to such other depths as the Superintending Officer may direct as the excavation proceeds, depending on the nature of the material. The sides of excavations are in all cases to be properly secured to prevent the ground caving in, and the excavation is to be kept free from water during the construction of every portion of the works. The excavations are to be carried down in such a way as shall avoid all risk of damage to the surface adjacent to the work, and the Contractor shall make good all damage to the same at his own cost. 73. The rate stated for excavation is to include all expenses incurred in the carrying out of the above instructions, as also those of filling in and thoroughly punning in 9-inch layers round piles, and concrete to such an extent as may be ordered, and removing all surplus material to such places as the Superintending Officer may direct, not exceeding a lead of 5 chains.
Measurement of foundations.	74. Where concrete foundations are shown on the drawing, or are ordered to be made, the excavation is to be taken out to the size of the concrete required, carried up and measured vertically to the surface of the ground. The quantities thus resulting will be considered as the net measurement to be paid for.
Concreting not to be commenced till ordered.	75. Concreting shall not be commenced without an order from the Superintending Officer, and when any excavation is ready to receive concrete, the Contractor must give sufficient notice to the Superintending Officer to that effect, so that the foundations may be approved before the work proceeds.
Diversions, inlets and outlets.	76. The diversions of all creeks or watercourses, and inlets and outlets to culverts and minor waterways shall be formed with such slopes and to such width and inclination as will be directed. The old watercourses must in all cases be filled up between the points of diversion. The excavation from these diversions and inlets and outlets shall be used in filling up the old watercourses, or disposed of in the adjoining embankments, or levelling up of cesses as ordered, within a lead not exceeding 5 chains.
Prices.	77. The whole of the work specified in the foregoing clauses shall be covered by and included in the schedule prices.

STEEL BRIDGES.

SUBSTRUCTURE.

General.	78. The Contractor shall found and erect the necessary piers and abutments, and shall provide, fabricate, and erect the necessary steel superstructure, in accordance with the drawings and this Specification.
Foundation excavations.	79. It is to be clearly understood that the depths of foundations shown on the contract drawings are approximate only, and the Contractor shall take out the foundations to a greater or less depth than shown, if ordered by the Engineer, without charge beyond the schedule rate for work executed. 80. When the surface of rock at bottom of foundation is irregular or sloping, the rock shall be levelled over the whole area of the foundation or benched as directed, without any charge beyond the schedule rate for excavation. The Contractor shall in no case proceed with the concrete filling until the surface exposed has been inspected and approved by the Superintending Officer.
Testing foundation.	81. If required by the Superintending Officer, the Contractor shall without charge, test the formation below any pier or abutment by means of drilling or boring to a depth not exceeding 15 feet below the level at which it is proposed to found same.
Prices.	82. Prices shall be stated at per cubic yard for excavation in foundations of piers and abutments irrespective of the nature of the material to be excavated; and shall include all cost of unwatering, timbering and any other work found necessary, as set out in clauses 79, 80, and 81, and to secure a satisfactory foundation at such levels as may be determined by the Superintending Officer, and the removal of material to such places as may be determined by the Superintending Officer with a lead not exceeding 10 chains. All appliances necessary shall be provided by the Contractor at his own expense.
Concrete in piers and abutments.	83. The concrete for piers and abutments shall be of class "B" concrete and class "C" concrete as shown on drawings and shall be similar to that specified in clauses 134 to 156. Old rails shall be built into the concrete where shown or directed.

84. Rails and steelwork before being embedded in concrete shall have all paint, oil, or loose rust carefully removed, shall be washed clean with fresh water, and when dry painted with a strong cement wash before being built into the concrete, and drilled if required.

85. The bed plates shall be bedded in their correct position and at correct level at least 7 days before steel spans are laid upon them.

86. Concrete shall be used fresh and the top of piers and abutments shall be of class "B" concrete for a depth of 2 feet below under side of bedplate.

87. Timber moulds shall not be removed from sides or ends of concrete piers, abutments or walls in less than 24 hours after concrete has been placed, nor before the concrete has set hard. Removal of moulds.

88. The whole of the concrete work out of the ground shall be treated as specified in Clause 146. Any floating required shall be done as soon as possible after the framing has been removed, whilst the concrete is still green. Floating.

89. In constructing piers and abutments the work of concreting shall not be carried up at a greater rate than 6 feet vertical in 24 hours. The tops, if required, shall be floated with a coating of one part of sand and one of cement, finished at proper height with steel trowel to give smooth, hard surface. Constructing piers and abutments.

90. Weepholes shall be provided in abutments and wing walls where directed, and shall be included in the price for concrete. Weepholes.

91. The schedule rate for the respective concretes shall cover all timbering, floating, bedding and building in of bolts, pins and rails. Rates for concrete.

STEEL SUPERSTRUCTURE.

92. The Contractor shall provide the whole of the material required for all the bridges and flood openings and shall fabricate and erect the superstructure complete at sites as shown on plan and section, and in accordance with the drawings supplied. General.

93. As far as possible material of Australian manufacture shall be used, such to be in every respect in accordance with the Australian Standard Specification for Structural Steel for Bridges, No. A. 1—1928. Where material required is not obtainable of Australian manufacture and requires to be imported from overseas, all such steel shall have the qualities specified and be subject to the test prescribed in British Standard Specification No. 15, as revised May, 1930. Materials.

94. The whole of the steelwork is to be fabricated in Australia. Fabrication.

95. Material of Australian production will be inspected and tested at the mills or at the place of manufacture at the option of the Contractor. The cost of such tests shall be borne by the Contractor. Inspection.

96. Material to be imported shall be of British manufacture and will be inspected by the Commonwealth High Commissioner, resident in London, or by such other person as the High Commissioner may from time to time appoint; and the Contractor is to give the High Commissioner information as to the mode and place of manufacture when the same will be inspected at the mills, tested, and branded before shipment. The cost of such tests shall be borne by the Contractor. Imported materials.

97. Should at any time defects be discovered in the material supplied, the Engineer shall have full power to have further tests made, and may reject such material in whole or in part as seems to him to be necessary, and the Contractor shall replace such defective material with approved material at his own cost. Defects in materials.

98. Plates and bars shall be so placed in the work that the fibres shall run in the direction of the greatest stress. Workmanship.

99. All plates, bars and sections shall be carefully levelled and straightened where necessary by a steady pressure and not by blows, before they are drilled or sub-punched and reamed. They may be straightened cold or at a red heat, and if straightened hot, they shall be carefully annealed.

100. All plates shall have rolled edges or shall have their edges planed dead true and square. No sheared edges will be permitted anywhere throughout the work. All ends of plates, bars and sections in contact shall be planed dead true, or where planing is impossible they shall be dressed off fair with hammer, chisel, and file.

101. No rough edges will be permitted anywhere throughout the work, and any uneven outer edges shall be dressed off, or planed to a true line.

102. Each packing plate or liner shall be of such shape and thickness as will fill up exactly the space to be occupied.

103. Any defect in workmanship, whenever discovered, shall be made good at the cost of the Contractor.

104. Any damage arising directly or indirectly from defective workmanship or the mode of executing the works, shall be paid for by the Contractor.

105. Bolt and rivet holes shall be true to line and pitch, of the full diameter required, perfectly fair and at right angles to the plates, bars, or sections. They may be drilled out of the solid or may be sub-punched and reamed. Full punched holes will not be permitted anywhere throughout the work. Drilling.

106. Where holes are drilled out of the solid the various parts shall be assembled in the positions they will occupy in the completed structure, the rivet holes after being accurately laid out shall be drilled through the several thicknesses of steel, which must be firmly bolted together in position to prevent movement or any drillings getting between the various parts.

Sub-punching
and reaming.

107. Where holes are sub-punched and reamed, the holes shall be punched one-eighth of an inch smaller than the nominal diameter of the rivet. Any burr or arris left by the punch shall be removed. The parts shall then be assembled accurately in the positions they will occupy in the completed structure. The holes shall match to one-sixteenth of an inch. After the parts have been properly assembled and firmly bolted in position to prevent movement or any runnings getting between the various parts, the holes shall be reamed out in position through the various thicknesses of steel, at one operation, to a diameter one-sixteenth of an inch larger than the nominal diameter of the rivet. Outside burrs shall then be removed and the hole slightly countersunk next the rivet head.

Irregularities
in rivet holes.

108. Irregularities in rivet holes shall not on any account be allowed, and if the rivet holes exceed their proper size by more than one-sixteenth of an inch, correspondingly larger rivets shall be used, but no greater margin than this will be permitted. No drifting will be allowed in any part of the work.

Rivets.

109. Rivets shall be uniformly heated to a cherry red before driving. Electrically heated rivets are preferred. They shall completely fill the holes and shall be driven till black. Rivets with cracked, ill-shaped, or otherwise defective heads or deformed shanks shall be rejected.

110. Rivets shall be driven by pneumatic or hydraulic pressure machines. Where it is not possible to use pressure machines the pneumatic hammer may be resorted to, and mechanical holding-up used wherever practicable.

111. Rivets shall be cut out where required for the examination of the work, whenever the Engineer or his Superintending Officer so orders.

112. All riveting shall be done by machines of approved types, and hand riveting shall not be used without the permission, in writing, of the Engineer.

Welding.

113. All welding shall be done by electric arc, using covered mild steel electrodes of the best quality and of an approved brand. The method of welding and of building up welds shall be that approved by the manufacturers of the electrodes approved to be used and the welder employed for the work shall be a workman of proved skill, capacity, and reliability.

All slag shall be removed from welds before painting.

Bolts and nuts.

114. All bolts and nuts are to be well forged, with threads perfectly screwed to Whitworth's standard, the nuts to be square or hexagonal as required and of the dimensions shown or directed. The bolts shall fit the nuts perfectly without play, the nuts being in perfect contact with their bearings.

Oiling bolts and
nuts.

114A. The bolts and nuts when inspected shall be heated and immersed, while hot, in boiled linseed oil before oxidation takes place.

Temporary
erection by
contractor.

115. Each span of the superstructure shall be temporarily erected on unyielding supports in the manufacturer's yard. All joints and connexions shall be marked so as to facilitate erection at bridge sites.

Painting
steelwork.

116. All Steel intended for use in this Contract shall, immediately after testing and inspection, and before leaving the maker's yard, receive one coat of Badie's anti-corrosive composition, or boiled linseed oil, upon a thoroughly cleaned surface; all portions showing rust having been previously cleaned and coated with a coat of the best double-boiled linseed oil.

117. The steel shall not be exposed to the weather, or loaded for shipment until, in the opinion of the Inspecting Officer, the paint is sufficiently dry, and every care shall be taken in storing, handling and loading to avoid injury to the preservative coating. All damaged surfaces shall be repainted, as required, at the Contractor's expense.

Shop painting.

118. When steel is being put together, all surfaces inaccessible after riveting shall be thoroughly cleaned from dirt, scale and rust by the use of a scraper, chisels, and wire brushes, and painted with one coat of approved redlead before being brought into contact.

119. After the steel has been assembled in the manufacturer's yard, the whole exposed surfaces of the various pieces shall be carefully scraped and cleaned with wire brushes and clean water, and shall receive one coat of red lead paint. All rusty spots shall be oiled before being painted.

Quality of
paint and oil.

120. All pigments and oil shall be of the best quality and subject to such tests as the Superintending Officer may consider necessary. The cost of all tests will be borne by the Commissioner. All material to be tested shall be submitted by the Contractor to the Superintending Officer so as to allow of a reasonable period for testing.

Workmanship.

121. No painting shall be done until the Superintending Officer has approved of the surface and the time at which the paint is to be applied. All surfaces to be painted shall at the time be dry and clean. At least two days must elapse between each coat, and in no case shall a coat be applied until the previous one is entirely dry.

Painting after
erection.

122. Painting shall in all cases be done in a thorough manner and finished fair, even, and free from brush marks.

123. All paint shall be mixed to the proper consistency, and kept well stirred, to the satisfaction of the Superintending Officer.

124. After erection at site, the exposed surfaces shall be carefully inspected, and, after all rusty and bare spots have been scraped, cleaned, and repainted with red lead, shall receive two coats of approved paint. Particular care must be taken in painting the edges of the various sections and heads of rivets and bolts.

125. No paint shall be applied during or immediately after wet or frosty weather, or while the surface of the metalwork is wet or damp; and an interval of at least 48 hours must elapse between each application; each coat must be quite dry before the next is commenced.

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126. All imported rolled steel joist girders shall be thoroughly scraped, cleaned, and painted with one coat of red lead before putting on two coats as above.

127. The paint, except for priming coat as specified above, shall consist of red oxide or such other paint as may be approved by the Engineer.

128. All drilling, riveting, or other operations required at site of bridge shall be carried out in the Field workmanship manner prescribed in preceding clauses.

129. For the purposes of payment, all finished steelwork provided by the Contractor shall, unless otherwise specified, be weighed in the presence of an officer appointed by the Engineer upon a previously tested and approved weighing machine. The weights thus found shall be recorded in a book kept for that special purpose, and shall be the weights to be paid for. No excess of weight, however, due to material being larger than that specified or shown in the drawings will be paid for.

130. All timber in transoms and footplanks shall be either Ironbark (*E. paniculata*, *E. crebra*, or *E. siderophloia*), Blue Gum (*E. globulus*), Grey Gum (*E. propinqua* or *E. punctata*), Red Gum (*E. rostrata*) Grey Box (*E. hemiphloia*), Wandoo (*E. redunca*), or Jarrah (*E. marginata*) of first-class quality, sound, straight, free from sapwood, large or loose knots, wanes, shakes, large gum veins, grub holes, cores or other defects which affect the strength of the timber and shall be well seasoned before being used in the works.

Timber in footplanks shall be sawn and in transoms may be either sawn or hewn. Whether sawn or hewn due allowance shall be made for shrinkage so that the timber shall be the full specified dimensions when seasoned.

Any transom over one inch longer and any shorter than the specified length shall be rejected.

All timber shall be cut die square and out of wind on all sides, shall have clean, sharp arrises, and shall be absolutely free from heart timber. No timber cut on the quarter will be accepted.

All fitting shall be of the best workmanship and the ends of transoms after fixing shall be lined with a chalk line and cut off die square so that the ends shall be in a line parallel with the centre line of the railway throughout the length of the bridge, flood opening or cattle grid as the case may be.

All transoms shall be passed and branded before being placed in the works.

All timber shall be laid heart down.

130A. Beds of transoms on girders and of footplanks on transoms shall receive two coats of red and white lead mixed in equal proportions. Ends of transoms and top and end surfaces of footplanks shall be painted white, as specified in Clause 257.

131. The whole of the staging, scaffolding, and timber of all kinds used by the Contractor in erection of bridges shall be entirely removed from the neighbourhood of all bridges after they have been completed. If any piles are driven they shall be drawn, or cut off below the surface of the ground or the bed of the river or creek as the case may be.

132. Before taking over the bridges from the Contractor, the Engineer may subject them to tests by running one or more locomotives, with or without loaded trucks, over them at various speeds, or by any other tests he may consider necessary and if any defects are disclosed in the work carried out under this Contract, such defects to be made good by the Contractor at his own expense.

133. Traffic will not be allowed over any bridge or flood opening until the concrete in piers, abutments and in setting of bedplates has been in place at least 21 days.

133A. The whole of the work specified in the foregoing clauses shall be covered by and included in the Schedule prices.

CONCRETE—PLAIN AND REINFORCED.

134. Before any work is commenced test certificates of the cement and samples of the sand, stone, gravel and water proposed to be used in the work shall be submitted for the Engineer's approval.

135. The cement shall be the best Portland cement of Australian manufacture, and shall conform to the requirements of Australian Standard Specification and Tests for Portland cement, No. A. 2—1926.

136. The sand (fine aggregate) shall be clean, sharp sand, free from clay and all other impurities.

137. When any of the stone, sand or gravel is dirty it shall be washed with approved water until all impurities are removed.

138. The water used for mixing concrete shall be clean, free from oil, acid, salt, injurious amounts of alkalis and vegetable matter.

139. Concrete for the various classes of work shall be proportioned to give the necessary workability without exceeding the following ratios of water to cement :—

Class of Concrete.	Water per Cubic Foot (94 Lb.) of Cement.
"A"	5 gallons
"B"	5½ gallons
"C"	6½ gallons

The above-mentioned water-cement ratios are the maximum permissible. The mixes shall be proportioned for somewhat lower ratios so that with the normal fluctuations which may be expected from batch to batch these ratios will not be exceeded.

Water or moisture contained in the aggregate shall be included in computing the water-cement ratios.

140. The proportions of aggregate to cement for concrete of the water cement ratios specified shall be such as to produce concrete that can be puddled readily into the corners and angles of the moulds and around reinforcement without excessive spading and without undue accumulation of water or laitance on the surface.

141. In no case shall concrete be placed which shows a slump exceeding the following limits :—

Class of Work.	Maximum Slump.
Abutments and piers complete, culverts and retaining walls	2 inches
Concrete box drains, open shoots and reinforced concrete	7 inches

The slump test shall be made as often as directed with a standard metal cone form 4 inches top diameter 8 inches bottom diameter and 12 inches high. The slump is the amount of settlement in inches obtained after filling a standard form with concrete and then removing the form.

Proportioning
aggregate.

142. The proportions of coarse and fine aggregate shall be such that the ratios of coarse to fine shall be within the following limits :—

Size of Coarse Aggregate, Inches.	Ratio of Coarse to Fine on Basis of Dry Compact Volumes.					
	minimum.			maximum.		
$\frac{1}{4}$	0.4	..	..	0.8
$\frac{3}{8}$	0.6	..	..	1.5
2	1	..	..	2

Mixing
concrete.

143. Concrete may be mixed by an approved machine of the batch type, or the materials, having been correctly gauged in approved gauge boxes, may be mixed on a close-jointed board (24 feet long by 12 feet wide for single gauging and 24 feet long by 20 feet wide for double gaugings), shall be turned over three times (or a sufficient number of times to thoroughly incorporate the materials) in a dry state, then wetted with the specified quantity of approved water through a rose and turned over three times in a wet state, then quickly placed in position.

Placing
concrete.

144. No concrete having been mixed and remaining unused for twenty minutes shall be allowed to go into the work. Every portion of the concrete shall be thoroughly packed and consolidated in layers. The thickness of layers in plain concrete shall be 9 inches, and in reinforced concrete and reinforced concrete piles the layers shall be of an approved uniform thickness. No concrete shall be laid in water except by special permission of the Engineer. Concrete shall not be dropped from a greater height than 5 feet, and then it shall be remixed if the stones have separated from the mass.

Moulds.

145. Rigid timber moulds of close-fitting timbers, properly braced, shall be provided. Timber in contact with surfaces which will be exposed shall be planed to ensure a reasonably smooth surface on the concrete.

Finishing.

146. The surfaces of concrete exposed to view, where uneven or honeycombed shall be made smooth and true with two-to-one cement mortar.

Seasoning.

147. During the progress of all concrete work all exposed surfaces of concrete shall be protected from the sun with wet sacking, and from dirt and injury. Care shall be taken to keep all concrete moist and cool by covering it with wet sacking for at least seven days after the concrete has been placed. When completed any work that is underground or that has to be buried shall be covered up at once. Concrete pipes and shoots shall be kept moist and be protected from the sun for a continuous period of not less than 28 days immediately after manufacture.

Concreting
during frosts.

148. Concreting shall not be executed during hard frosts. When night frosts are prevalent the work done during the day shall be covered up at nightfall.

Prices.

149. The schedule rates for the respective classes of concrete shall cover all charges connected with the work.

PLAIN CONCRETE.

Stone.

150. The stone (coarse aggregate) may be either broken stone or gravel. It shall be clean, hard sound stone of approved quality, gauged to pass in every direction through a 2-in. ring.

Gravel.

151. When gravel is used it shall be screened so as to separate stone from sand, which portions shall afterwards be gauged back to correct proportions. The material down to $\frac{1}{4}$ inch shall be considered as stone (coarse aggregate) and the residue sifted through $\frac{1}{2}$ -in. screen to obtain sand.

When work is
intermittent.

152. When concreting is intermittent, and the concrete has set, the top of the old work shall be picked up or "scabbled" with a pick, swept clean, all loose stone or portions removed, and washed with neat cement and approved water before any addition is made.

REINFORCED CONCRETE.

Stone.

153. The stone (coarse aggregate) may be either broken stone or gravel. It shall be clean, hard, sound stone of approved quality gauged to pass through a $\frac{3}{4}$ -in. screen and retained on $\frac{1}{8}$ -in. screen.

Gravel.

154. When gravel is used it shall be screened so as to separate stone from sand, and afterwards gauged back in proper proportions. The material down to $\frac{1}{4}$ inch shall be considered as stone (coarse aggregate) and the residue passed through $\frac{1}{2}$ -in. sieve to obtain sand (fine aggregate).

Placing
concrete.

155. Concrete shall be compacted by working with a straight shovel or slicing tool until all the ingredients are consolidated. Care shall be taken that the concrete thoroughly surrounds the reinforcement and that all air bubbles and voids have been excluded. Steel reinforcement shall be placed in the correct positions and special care shall be taken to prevent displacement.

When
concreting is
intermittent.

156. Before placing new concrete on or against concrete which has set, the surface of the latter shall be roughened, thoroughly cleansed of foreign material, drenched and slushed with a mortar consisting of one part of Portland cement and one part of sand, and while this is still soft the regular mixture shall be laid on. On no account shall a top coat less than 2 inches thick be put on set concrete.

Reinforcement.

157. All reinforcement shall be of mild steel in accordance with the Australian Standard Specification for Structural Steel, No. A. 1-1928 free from oil or greasy matter, paint, tar, loose scale, and loose rust. Rods less than $\frac{3}{4}$ inch diameter may be bent cold, but larger bars shall be heated before they are bent. On no account shall bars be welded without special permission from the Engineer. Lap slices shall be in accordance with the length of overlap specified on the drawings.

MINOR WATERWAYS.

OPEN SHOOTS.

158. "Reinforced Concrete Open Shoots" shall be provided where directed, in place in the road. Open shoots.
159. Cement concrete in shoots shall be Class "A" concrete as specified in Clauses 134 to 157 Class of concrete. of this Specification properly reinforced as shown on drawings.
160. The schedule price for Open Shoots in place shall be for each shoot complete in accordance with Prices. the drawings, including reinforcement, all excavation, placing in position and other necessary work.

PIPE DRAINS.

161. Concrete pipes where ordered shall be placed in road in accordance with drawings. Reinforced concrete pipes.
- All concrete pipes of 60 inches diameter will be supplied by the Commissioner to the Contractor in 4-ft. lengths on trucks at the commencing point of contract at a cost of 40s. per foot, which shall be paid by the Contractor, and he shall receive them and give a written acknowledgment of their delivery. The schedule rate for pipe drains of this size shall include the unloading and carriage of pipes from the place of delivery to the location at which they are to be used in the work, and the Contractor shall repair or replace at his own expense any damage or loss after delivery by the Commissioner.
- Concrete pipes of all sizes other than of 60 inches diameter shall be supplied by the Contractor and the cost of same be covered by and included in the schedule rates. No unsound or damaged pipes shall be used in the works.

161A. Concrete pipes shall be made of "A" class concrete as specified in Clauses 134 to 157 as shown on drawings, made at least one month and cured as specified in Clause 147 before being used in the works.

162. The concrete pipes, which are made without flanges, shall be carefully bedded in concrete foundations as shown on drawing. Concrete in foundations shall be Class "C" concrete as specified in Clauses 134 to 157. Pipes shall be bedded in all cases at least to a depth of their central axis. Concrete in foundations.

163. Pipes shall be jointed with wire netting and cement mortar formed of one part of cement and two parts of sand as shown on the drawings. Jointing pipes.

164. In no circumstances shall a concrete pipe have less than 24 inches of bank over it. Laying pipes.

165. After being laid the concrete pipes shall be covered over with soft material for a depth of not less than 2 feet, well rammed. Pipes laid under embankments shall be thoroughly covered over, and weighted before the embankment is tipped over them.

166. Faces of pipes shall be formed of class "C" concrete as specified in Clauses 134 to 157, and, if Faces. so ordered, shall be built on the skew.

167. The schedule rate for concrete pipe drains shall be per lineal foot of pipe drain complete with Prices. concrete foundations and jointed, and shall cover the cost of concrete faces, and the excavation up to 5 feet in depth. Where any additional excavation over 5 feet in depth is ordered it shall be paid for at schedule rate as excavation for foundations for concrete box drains, &c.

REINFORCED CONCRETE BOX DRAINS.

168. Reinforced concrete box drains shall be built to the form and dimensions as shown on the Concrete box drains. drawings and placed in the road where shown in working section or as may be directed by the Superintending Officer.

169. The concrete shall be Class "B" concrete as specified in Clauses 134 to 156. Sloping joints will not be permitted anywhere in the work.

170. The reinforcement whether in the form of wire or rod shall be supplied by the Contractor and Reinforcement. shall conform to the requirements of Clause 157.

171. Timber moulds shall not be removed in less than seven days after placing concrete. Removal of moulds.

172. Traffic will not be allowed over concrete box drains until the concrete has been placed at least Traffic over box drains. 21 days.

173. Payment will be on the basis of per cubic yard of concrete, including reinforcement. Prices.

CONCRETE CULVERTS.

174. The culverts shall be constructed of Class "C" concrete in accordance with Clauses 134 to 157. Class of concrete.

175. The invert and footings shall be formed by filling the trenches with concrete, level with the springings of the side walls, the invert being worked in with a screed between moulds formed to the proper shape. Description.

The side walls shall be built against strongly framed and boarded mouldings up to the level of the springing of the arch.

176. The arch shall be built on properly constructed close boarded centerings in suitable lengths. Concrete shall be carried up equally on both sides from the springings the full thickness of the arch, proper screed boards being provided to ensure straight vertical joints. The concrete near the springing shall be held in place by a retaining board. Sloping joints will not be permitted either in side walls or arch.

177. The centering of the arches shall not be struck until at least 48 hours after the completion of Removal of centering. a length, nor shall the embankment be tipped on culverts under 21 days from the completion thereof.

178. The wing walls shall be built at the same time as the face and not separately. Wing walls.

179. Where considered necessary by the Superintending Officer weepholes shall be made in concrete culverts and the cost shall be included in the schedule rates for concrete culverts.

179A. The whole of the work specified in the foregoing clauses shall be covered by and included in Prices. the schedule prices.

ROAD OVERBRIDGES.

- General.** 180. The Contractor shall provide all the materials required to fabricate and erect overbridges complete at sites as shown on plan and section and in accordance with the drawings and this Specification.
- Excavation.** 181. The excavation for abutments and column footings shall conform to the requirements of Clauses 79 to 82.
- Concrete.** 182. The concrete in overbridges shall be "B" Class and "C" Class as shown on drawings, and shall be as specified in Clauses 134 to 156.
Steel reinforcement shall be as specified in Clause 157.
Steelwork before being embedded in concrete shall be treated as specified in Clause 84.
Concreting of column footings and abutments shall be carried out as specified for bridges, Clauses 84 to 91 and 143 to 148.
Concreting of columns and headstock shall be carried out without stoppage in any one pier.
Concreting of floor beams and floor shall be carried out without stoppage in any one span.
- Moulds.** 183. Moulds shall not be removed from columns and headstocks or from floor beams and floor for at least seven days after concreting of each unit has been completed.
- Bitumen macadam.** 184. Bitumen macadam shall consist of the following materials:—Coarse aggregate shall consist of hard, tough, sound, clean, crushed stone, and shall pass a screen having 2½-in. circular openings, and be retained on a screen having 1½-in. circular openings. Intermediate aggregate shall consist of crushed stone of the same quality as coarse aggregate, and shall pass a screen having 1½-in. circular openings, and be retained on a screen having ¾-in. circular openings. Screenings shall be the product of stone of the same quality as coarse aggregate, and shall pass a screen having ¾-in. circular openings, and be retained on a screen having ¼-in. circular openings. They shall be free from dust, except where used in base course, when the product of the crusher, including dust passing a screen having ¾-in. circular openings, shall be used.
- Bitumen.** 185. Bitumen shall be the product of a crushed asphalt petroleum and conform to the following specification:—
Penetration.—60/70 first coat and 80/100 second coat.
Volatility.—Loss on heating at 325° F. for five hours shall not exceed 2 per cent. Penetration of residue after heating shall be not less than 60 per cent. of the original.
Solubility.—Bitumen shall be soluble in C.S.₂ to the extent of at least 99 per cent. Of the portion so soluble not less than 99.5 per cent. shall be soluble in C.Cl.₄.
Flash Point.—Not less than 400° F.
- Laying macadam.** 186. The macadam shall be laid in courses as follows:—The base course shall consist of coarse aggregate spread over prepared formations or floor of bridge to such depth that after it has been consolidated it shall be 4 inches in thickness at centre of roadway. The surface of the base course when consolidated shall be parallel to and 2½ inches below the finished surface level. After spreading, the coarse aggregate shall be rolled until thoroughly locked. Successive applications of screenings shall then be made and swept into the voids and rolled, such to continue until voids have apparently been filled. The entire surface shall then be watered until the stone is thoroughly wet, but care must be taken that the water so added is only sufficient for this purpose and not sufficient to saturate the formation underneath. Rolling and sweeping shall then be resumed, and screenings shall be added as voids develop until the surface is completely filled and the base course is firm and unyielding. The surface shall then be swept to remove all surplus screenings to a depth of approximately ½ inch below the surface of the compacted base course aggregate. During the process of rolling any irregularities in the surface shall be corrected by loosening the partially compacted stone and adding or removing the amount of coarse aggregate necessary to provide a uniform surface. The surface level shall be checked with a straight-edge and template not less than 10 feet in length, and any deviation greater than ¼ inch from a straight line and cross-section shall be corrected.
187. All rolling shall be done with a three-wheel power roller weighing no less than 10 tons. The rolling shall begin at the sides and overlap the shoulders one half the width of the outside rear wheel progressing towards the centre of the roadway uniformly overlapping each preceding track and covering thoroughly the entire surface with the rear wheels, making as many passages over the surface as is necessary to secure consolidation of the coarse aggregate.
188. The top course shall consist of coarse aggregate spread over the base course uniformly, and without segregation of sizes to such depth that after rolling the surface thereof shall be the required surface level of roadway. The aggregate shall then be rolled in the same manner and with the same roller as specified for the base course until the stone is interlocked and compacted to a firm and even condition. It shall be true to grade and cross-section, and shall not deviate more than ¼ inch from a true surface when checked with a straight-edge and template 10 feet in length.
189. No traffic except the bitumen distributing tank shall be allowed on the top course until the first application of bitumen has been spread and covered with aggregate as hereinafter specified.
190. After the coarse aggregate has been consolidated as specified, and whilst clean and dry and having a temperature of not less than 50° F. bitumen heated to not less than 300° F. or more than 400° F., shall be applied at the rate of not less than 1 gallon nor more than 1½ gallons per square yard. No bitumen shall be applied whilst air temperature is under 50° F. The Contractor shall provide all necessary facilities for determining temperature of air, stone, and bitumen.
191. Immediately after the first application of hot bitumen to the top course a thin layer of intermediate aggregate shall be uniformly broadcast over the surface, the quantity spread being such as will permit of rolling without bitumen adhering to the roller wheels.

192. After the spreading of the intermediate aggregate the entire surface shall be immediately rolled and broomed, and all lumps be broken up and distributed. The rolling shall continue with applications of screenings and brooming as required until the surface is thoroughly compacted and bonded. The bitumen-treated surface must never be allowed to become chilled or stand overnight before rolling.

193. The roller shall proceed at a rate not to exceed 100 square yards per hour or a less amount in proportion to the loss of time caused by delays. During the rolling intermediate aggregate or screenings shall be added, as required by the Superintending Officer, to produce a uniform surface. Intermediate aggregate or screenings shall not be dumped on the rolled roadway, but may be spread from approved mechanical spreaders if the surface is not disturbed by such devices.

194. After the rolling of the intermediate aggregate has been satisfactorily completed all excess screenings shall be removed and the road surface swept clean. Thereupon a second application of hot bitumen shall be spread under the same conditions and in the same manner as hereinbefore specified for intermediate aggregate, except that the quantity of hot bitumen to be applied shall be not less than $\frac{1}{4}$ gallon nor more than $\frac{1}{2}$ gallon per square yard of surface. After the bitumen has been sufficiently absorbed and before it has become chilled screenings shall be broadcast over the surface and rolled. The surface shall then be alternately rolled and screenings added as required until all bitumen has been covered and the surface presents a uniform appearance. The finished surface shall be free from ruts and irregularities, and must not vary more than $\frac{1}{4}$ inch from the true surface level when tested with a straight-edge and template 10 feet in length.

195. After the completion of the work specified above the road shall be thrown open to traffic as directed by the Superintending Officer, but such use shall not be construed as acceptance of the work or relief from completing the shoulders and placing the work in acceptable condition. If the bitumen flushes to the surface under traffic in such quantity as to become in the least sticky, the Contractor shall add fresh screenings in sufficient quantities to prevent injury to the road surface. Opening of roadway.

196. The whole of the work specified in Clauses 184 to 195 shall be deemed to be covered and included in the schedule price for bitumen macadam. Price of bitumen macadam.

ROAD DIVERSIONS AND LEVEL CROSSINGS.

197. The excavations or embankments required for the several road diversions and road approaches to stations, sidings, and level crossings shall be formed to the levels and widths as may be directed, but in all other respects shall be constructed as specified for earthworks (Clauses 39 to 77). Earthworks.

When ordered the formation shall be carefully trimmed to receive the metalling and blinding.

198. When the road follows the surface of the ground, water-tables shall be formed on either side and the earth deposited in the centre so as to give the requisite rounding as shown on the cross-section.

199. Metalling shall consist of hard lime stone, granite or other hard stone or material of approved quality, broken so as to pass through a 2½-in. ring in any direction, and spread to such width and depth as shown on the drawings or as may be directed. Metalling and blinding.

After being laid, the metalling shall be blinded on top with 2 inches of fine gravel or other approved material.

200. The ruts shall be filled up from time to time and the surface kept uniform and free from water until the completion of the whole of the works, and the line taken over from the Contractor.

201. The metalling shall be measured in the heap before being spread or by truck measurement when run to site by train.

The blinding shall be put on afterwards, but shall not be measured, as the cost shall be included in the price for metalling and blinding.

202. The whole of the work specified in the preceding clauses shall be covered by and included in the schedule prices. Prices.

203. The Contractor, if directed, shall provide where required public level crossings in accordance with drawing. Public level crossings.

204. Price in schedule shall be given for formation in road approaches and for metalling and blinding. Prices.

205. Warning boards and whistle boards shall be made by the Contractor in accordance with drawing, and these shall be erected at each public level crossing, in the positions indicated by the Superintending Officer. Warning and whistle boards.

206. Whistle boards, if ordered, are to be provided by the Contractor and erected in positions indicated by the Superintending Officer. They shall be of the sizes and dimensions shown on drawings.

207. Timber for warning and whistle boards shall conform to the requirements of Clause 130 and ironwork to the requirements of Clauses 92 to 105 and 114 to 129.

Reflectors in triangle affixed to warning boards shall consist of a cylindrical glass lens approximately $\frac{7}{8}$ inches in diameter and 1 inch long, with a hemispherical end at the front and a metal reflecting cap 1 inch in diameter and $\frac{1}{2}$ inch long cemented to its rear, the overall length of lens and cap being 1½ inches.

The reflectors shall be fitted into $\frac{7}{8}$ inch holes bored through the timber forming the triangle, and recessed 1 inch from the back so that the whole of the hemispherical end projects from the front. The reflectors shall then be cemented in position and the group covered at the back with a 3 inch by $\frac{1}{2}$ inch timber strip.

208. Posts below ground shall be tarred and above ground together with warning or whistle board shall be painted white with black letters, the triangle on warning board being painted signal red. Painting and tarring shall be as specified (Clauses 256 to 263).

209. The schedule price shall include the supply and erection of posts and making and fixing warning boards or whistle boards thereto, including all lettering, tarring and painting. Prices.

PERMANENT WAY.

Material to be
supplied by
Contractor.

210. All ballast and crossing timbers required for the works under this Contract are to be provided by the Contractor.

Material to be
supplied by the
Commissioner.

211. All rails, fishplates, fishbolts and nuts, washers, spikes, crossings, switches, connecting rods, switch levers, choke blocks, locking bars and all other similar material required for the Permanent Way will be and sleepers may be supplied by the Commissioner to the Contractor on trucks at the commencing point of the Contract at 4 miles 20 chains free of cost, and he shall receive them and give a written acknowledgment of their delivery.

The Contractor shall unload and stack all such material and return the trucks within 24 hours after the loaded trucks have been delivered to him, otherwise demurrage on trucks will be charged in accordance with Clause 38 (c) of the General Conditions of Contract.

The cost of unloading and/or stacking all material delivered free to the Contractor shall be borne by the Contractor and the Schedule rates for rail laying, laying points and crossings, fixing choke blocks or such other works as the material is used in shall include and cover the cost of unloading and/or stacking such material in depot, and also all charges incidental to the carriage of same from the point of delivery to where it is to be used in the works.

The Contractor shall at his own cost repair or replace any damage or loss which occurs whilst he is in possession of such material.

Rails.

212. Steel rails (80 lb. per lineal yard) and fastenings for same to be supplied by the Commissioner will include old pattern rails and fishplates sufficient to lay approximately 11 miles of track, the rails being of the following approximate lengths and quantities:—

- 27 feet rails equivalent to approximately $2\frac{1}{2}$ miles of track.
- 30 feet rails equivalent to approximately $\frac{3}{4}$ mile of track.
- 32 ft. 6 in. rails equivalent to approximately $\frac{1}{4}$ mile of track.
- 33 feet rails equivalent to approximately $4\frac{1}{2}$ miles of track.
- 40 feet rails equivalent to approximately 3 miles of track.

The rails under 40 feet in length shall be used in sidings only, and the 40-ft. rails only used in main line. These shall be laid in a face from the commencing point of the Contract (4 miles 20 chains) unless otherwise directed by the Engineer.

The balance of the rails and fishplates and all points and crossings to be supplied will be of Australian Standard section "80A" as shown on drawings except where single 3-ft. 6-in. gauge track is laid where 60-lb. rails will be used.

The 80A rails supplied will be in 40-ft. lengths with a proportion of 35-ft. lengths not exceeding 5 per cent. of the total quantity supplied.

The 60-lb. rails supplied will be in 40-ft. lengths.

Sleepers.

213. Timber sleepers may be supplied by the Commissioner at his option or the Contractor may be called upon to supply same. The Contractor will be advised definitely upon this point when he is notified that his tender has been accepted.

Sleepers shall be of approved hardwoods of the following dimensions, and shall be hewn:—

- For use in track to gauge of 3 ft. 6 in.—length 6 ft. 6 in., breadth 8 inches, depth $4\frac{1}{2}$ inches.
- For use in track to gauge of 4 ft. 8 $\frac{1}{2}$ in. and for mixed gauge of 3 ft. 6 in. and 4 ft. 8 $\frac{1}{2}$ in.—length 8 feet, breadth 9 inches, depth $4\frac{1}{2}$ inches.

Approved hardwood timbers are Ironbark (*E. paniculata*), *E. siderophloia*, *E. crebra*, Red Gum (*E. rostrata*), Grey Gum (*E. propinqua*, *E. punctata*), Woollybutt (*E. longifolia*), Tallowwood (*E. microcorys*), Wandoo (*E. redunca*), Jarrah (*E. marginata*), White Mahogany (*E. acuminoides*), and Grey Box (*E. hemiphloia*).

All sleepers shall be straight, square, and out of winding and shall be hewn from sound, straight, well-matured trees of large growth, due allowance being made for shrinkage. They shall be free from wane, heart timber, sapwood, large knots and shakes, large gum veins, and any other imperfections.

Any sleeper cut on the quarter will be rejected. In cutting, an allowance of one quarter of an inch in width and one eighth of an inch in thickness shall be made on the specified dimensions to allow for shrinkage. No sleeper shall vary in length more than one inch either under or over the specified length.

Passing and
branding
sleepers.

214. All sleepers must be passed and branded by the Superintending Officer before being placed in the works. The Contractor shall find all labour for handling sleepers during inspection, and no inspection for the purpose of passing sleepers will be made unless a sufficient number of men be provided by the Contractor for properly handling them.

Sleepers, if
supplied by
Commissioner.

215. Sleepers if supplied by the Commissioner will be of timber and of the following dimensions:—

- For use in 3-ft. 6-in. gauge track 6 ft. 6 in. x 8 in. x $4\frac{1}{2}$ in.
- For use in mixed 3-ft. 6-in. and 4-ft. 8 $\frac{1}{2}$ -in. gauge and for 4-ft. 8 $\frac{1}{2}$ -in. gauge track 8 ft. x 9 in. x $4\frac{1}{2}$ in.

All sleepers will be supplied unborred.

Boring and
adzing.

216. The beds for rails on sleepers shall where necessary be trimmed by hand adzing or by approved machine to a template, provided by the Contractor and approved by the Superintending Officer, to give a true and level bed on sleepers for each rail.

Holes of the proper dimensions to take the dogspikes shall be bored right through the sleeper. When round dogspikes are used such holes shall be $\frac{1}{16}$ inch less diameter than that of the dogspikes used, and when square dogspikes are used the holes shall be of the same diameter as the size of dogspikes used.

All boring of sleepers shall be done by hand. Sleepers may be bored by hand in depot before being sent out on the works, provided that proper templates, to be supplied by the Contractor and approved by the Superintending Officer, are used for the purpose.

In adzing and/or in boring sleepers the leading end shall be marked and that leading end shall be kept on the side of the leading rail when rail laying.

217. The Schedule price for sleepers if supplied by the Contractor shall cover only the cost of delivery on trucks at 4 miles 20 chains plus the cost of handling for inspection. The cost of unloading and stacking in depot, carriage and delivery to head of road and all other charges incidental thereto, placing in road, adzing and boring, and all other charges shall be included in and be covered by the Schedule price for rail laying, whether sleepers be supplied by the Commissioner or the Contractor.

218. Crossing timbers shall be 9 inches wide, $4\frac{1}{2}$ inches deep, and of the several lengths shown on drawings. Any crossing timber which varies more than 1 inch in the specified length will be rejected.

Crossing timbers will be accepted of any of the following approved hardwood timbers:—Ironbark (*E. paniculata*), *E. siderophloia*, *E. crebra*, Red Gum (*B. rostrata*), Grey Gum (*E. propinqua*, *E. punctata*), White Mahogany (*E. acmenioides*), Grey Box (*E. hemiphloia*), Wandoo (*E. redunca*), Jarrah (*E. marginata*), Woollybutt (*E. longifolia*), Tallowwood (*E. microcorys*). Crossing timbers must be straight, square, and out of winding, free from sapwood, heartwood, large knots, large gumveins, core shakes, and other imperfections. No wane shall exceed one inch, an allowance of $\frac{1}{4}$ inch in breadth, and $\frac{1}{4}$ inch in depth, must be made in cutting to allow for shrinkage so that when seasoned the timber will be of the full specified dimensions. Crossing timbers may be either sawn or hewn and must be cut from matured trees. Any crossing timbers cut on the quarter will be rejected.

219. All crossing timbers must be passed and branded by the Supervising Officer before being placed in the works. The Contractor shall find all labour for handling crossing timbers during inspection, and no inspection for the purpose of passing crossing timbers will be made unless a sufficient number of men be provided by the Contractor for properly handling them.

220. The beds for rails or points and crossings on crossing timbers shall where necessary be adzed to give a true and level bed for same. Holes of the proper dimensions to take the dog or other spikes, shall be bored as specified for boring sleepers (Clause 216).

221. All costs in connexion with the handling and carriage of crossing timbers up to the point at which they are to be used in the works shall be deemed to be included in and covered by the Schedule price for crossing timbers, and the cost of placing in the road, adzing and boring shall be deemed to be included in and covered by the Schedule price for fixing points and crossings, or crossovers as the case may be.

222. Ballast shall consist of clean, hard, broken stone of approved class and quality not larger than will pass in every direction through a ring $2\frac{1}{2}$ inches in diameter, nor smaller than will be retained on a screen with circular holes $\frac{3}{4}$ inch in diameter, and shall be free from dirt and dust.

Any crushing plant used for the purpose of crushing stone for ballast shall be fitted with suitable screens for the purpose of cleaning the crushed stone from dirt, dust, and stone up to $\frac{3}{4}$ inch in size from the ballast before same is delivered into trucks for distribution.

223. No ballast shall be laid in cuttings or on embankments until the formation has been properly trimmed and approved.

224. Ballast on main line and sidings will be paid for at per cubic yard, but no quantity in excess of that shown on the Standard Permanent Way Drawing will be paid for unless ordered in writing by the Engineer.

225. The proper quantity of ballast as shown on Contract Drawings shall be present everywhere when the line is handed over by the Contractor, and no allowance will be made for any loss by subsidence in embankments or otherwise.

226. The schedule prices for ballast shall cover the provision of ballast, running from depot and distribution on the road.

227. The line shall be lifted and packed at the heights shown, the rails being brought to the correct level in two stages, the first lift being of 4 inches, and the ballast finally trimmed and finished in accordance with drawing.

228. The road may be laid on the formation and afterwards lifted to the proper level, but the length of road so laid as well as the speed and mode of working the trains shall be at the discretion and subject to the approval of the Engineer.

229. When lifting the road each sleeper shall be well and uniformly shovel-packed with ballast so as to raise the rails to the proper grade, as shown upon the section, and leave under the sleepers the full depth of ballast as shown by the drawing of the cross-section of permanent way. In shovel-packing the rails shall be lifted to such additional height above sectional rail level as will allow for the road, after settlement under weight of train, to be not lower than its proper rail level.

230. Both rails shall be laid perfectly level when the line is straight, and on curves the outer rails shall be raised to such additional elevation above the inner rail as is shown in Clause 241 or as may be ordered. The full specified super-elevation on curves shall be maintained between the tangent points, gradually reducing on the tangents at the rate of 1 inch in 50 feet.

231. During maintenance beater-packing shall be resorted to for taking out nips and short slacks, but long slacks arising from settlement of banks or other causes shall be fettled with the shovel until such settlement has ceased, when the road shall then be beater-packed, and relifted, if necessary. The whole of the line, however, shall be thoroughly beater-packed before being taken over from the Contractor.

Running over
road in wet
weather.

232. The Contractor shall use his discretion as to running his engine over the road in wet weather or before it has been carefully and properly packed and the rails brought to a uniform top with ballast, and he shall in all cases make good at his own expense all losses, of whatever kind, of stone or gravel ballast and damage to permanent-way materials, which may occur through settlement of banks or whatever the circumstances may be.

Laying
permanent way.

233. The permanent way is to be laid in exact conformity with the drawings, unless otherwise ordered by the Engineer.

No linking-in shall be proceeded with until proper centre pegs have been put in, nor shall ballasting or lifting be permitted until correct rail level pegs are fixed and approved.

Marking
tangent points.

The Contractor shall further mark with white paint on the web of the rails all tangent points of curves.

Gauge.

234. The rails, unless otherwise ordered, shall be laid throughout on main line to a gauge of 4 ft. 8½ in.

In station yard at commencement of contract certain sidings as shown on station yard drawings will be of 3-ft. 6-in. gauge, and such shall be laid with 60-lb. rails. All mixed gauge roads shall, unless otherwise ordered, be laid with 80-lb. rails.

In gauging the road, every ganger shall be provided with a proper rail gauge, which must be used at every sleeper when spiking.

Spikes.

235. The 80-lb. rails shall be fastened to the sleepers with Australian Standard dogspeaks ¾ inch square, and the 60-lb. rails with dogspeaks ½ inch square, both being 4½ inches long under the head.

All dogspeaks shall be driven square to the rail and care shall be taken in driving so that the heads of the dogspeaks clip the flange of the rail closely without bending the dogspike. At joints, dogspeaks shall be driven in the slots provided in the fishplates except on bridges, flood openings, and cattle grids where the dogspeaks shall be driven close to the flange of the fishplate outside the slots.

Fishplates
and bolts.

236. The joints of the rails shall be secured by fishplates and bolts as shown on drawings. Australian standard spring washers shall be used with fishbolts.

Curving rails.

237. On straight portions of the line the rails shall be laid straight, but where the line or siding is curved both rails shall be curved if necessary to true curve by an approved machine provided by the Contractor, and no hammering will be allowed.

Leading rail.

238. A leading rail shall be adopted, and upon curves the high or outside rail shall at all times be the leading rail. The leading rail will consequently change over from side to side to suit the direction of the various curves.

Expansion.

239. The clearance between ends of rails at joints shall be determined in accordance with the following table, or as may be ordered by the Engineer.

Length of Rail.		During Summer Months.		During Winter Months.	
30 feet and under	..	¾ inch and ¼ inch	..	½ inch and ¼ inch	..
Over 30 feet and up to 40 feet	..	¾ inch and ½ inch	..	½ inch and ¾ inch	..

Expansion
pieces to be
used.

Expansion pieces of different thickness shall be used according to temperature as directed by the Superintending Officer.

240. Expansion pieces shall not be taken out until the morning following the day upon which the track was laid. At the end of each day's work, and with the expansion pieces still in the joints, the road shall be pulled into its proper line, and all hanging sleepers earth-packed and short slacks lifted out before a train is allowed to pass over.

Super-elevation.

241. The elevation of the outer rail on curves shall be as in table hereunder :—

Radius in Chains.	60	80	100	200
Super-elevation in inches ..	3	2½	2	1

For radii not stated in the table the super-elevation will be as directed by the Engineer.

Gauges.

242. A standard gauge will be provided by the Engineer, to which standard all Contractor's gauges shall be made. These shall be submitted to the Superintending Officer for approval, and shall be branded by him before being used on the works.

Clip gauges only shall be used throughout; no other gauge will be permitted on the works.

Joints to be
staggered.

243. The rails in the main line shall be laid with staggered joints, as shown on Drawing starting with a joint at the centre of the opposite rail. When any joint has attained a lead of 5 feet, a 35-ft. rail shall be put in to bring the joint back to its correct position.

Position of
brands.

Ends of rails shall be square to one another when joining on to stock rails, where such are adopted. All brands on rails shall be kept on the gauge side of the rails.

Cutting rails.

244. Where it may be necessary to shorten rails, the ends shall be sawn off. No cutting with hammer and set will be permitted.

Cut rails shall be not less than 10 feet in length, and no shorter length shall be placed in the road.

245. The permanent way is to be laid on all bridges, openings and ashpits at the rate stated in the Schedule of Quantities and Prices for "Rail-laying over Bridges, Flood Openings, and Ashpits, &c." and this price is to include all trimming of transoms, longitudinal or other timbers that may be necessary to bring the rails to the proper levels, both on curves and straights, and all expenses whatever that may be incurred in producing a good running top. Laying permanent way on bridges, &c.

246. The sleepers shall be laid heart down and as nearly as practicable at right angles to the centre line of railway. Laying sleepers.

247. The price for rail-laying for ordinary track shall cover straightening and curving of rails, cutting of rails, sculling fishbolts, running rails, fastenings and sleepers to head of road, laying down sleepers in road and boring and adzing sleepers, linking-in and fastening, lifting, packing, trimming ballast and all other work found necessary (exclusive of points and crossings and choke blocks), and including cost of maintenance during construction. Prices, plate laying.

248. The rate stated in the Schedule of Quantities and Prices for laying points and crossings will apply to all turnout and crossover roads. The measurement in the case of turnouts shall be taken from the point of the switch to the end of the crossing timbers, and in the case of crossover roads, from point to point of switches. Laying points and crossings.

249. Laying of points and crossings will be paid for at per set of points and crossings and the rate stated in the Schedule of Quantities and Prices shall include running all material to site, unloading and laying rails, points and crossings, switch levers, rods, locking bars and crossings timbers, and shall cover straightening, curving cutting and boring rails, including stock rails, sculling fishbolts, linking-in, boring, adzing and fastening, lifting, packing, trimming ballast and all other necessary work, including the cost of maintenance during construction. Prices for laying points and crossings.

250. Laying of choke blocks complete will be paid for at per choke block, which rate shall include the laying of the additional sleepers for choke blocks and fixing choke blocks thereto. Laying choke blocks.

251. Any sleeper or crossing timber that is split by driving the dogspikes, or from any other cause, shall be taken out and replaced by a sound one; any timber which has been marked or branded as condemned, either in the stack or in the road, shall at once be removed outside the side widths by the Contractor. Split or condemned sleepers.

252. Joints shall not be placed nearer than 10 feet from the end of any bridge on embankment, nor closer than 6 feet to any cattle grid or rabbit stop, nor less than 6 feet on bridge from end of same. Joints at bridges.

253. Where ordered filling consisting of approved selected material shall be placed between roads in station yards. Filling shall be thoroughly consolidated and finished off level with the tops of sleepers. Selected material shall consist of gravel, broken stone, or earthy material containing not less than 50 per cent. of stone of specified dimensions, e.g., creek gravel, hill side gravel, limestone rubble or material from rock cuttings broken to specified size. Stone in all cases shall be no larger than will pass through a 2½-in. ring in any direction. Earth filling between roads.

The quantities of earth filling placed between road as specified will be paid for by computed measurement, i.e., at the rate of 5.71 cubic yards per lineal chain of double track at 13 feet centres or its equivalent. Measurement.

PITCHING AND RETAINING WALLS.

254. Where ordered, on embankments, at inlets and outlets to waterways, aprons to stone banks and elsewhere, stone pitching shall be executed. This shall consist of approved hard stone, laid dry, close jointed with a fair face, level or battered as may be directed. Stone pitching on embankments and elsewhere ordered shall be not less than 12 inches thick, and no stone shall be less than 1 cubic foot in volume. At inlets and outlets to waterways, aprons to stone banks and elsewhere ordered stone pitching shall be 9 inches thick and no stone shall be less than ½ cubic foot in volume. The work, including excavation, will be paid for at per super yard as stated in the Schedule of Quantities and Prices. Stone pitching.

255. Hand-packed rubble and dry stone backing behind abutments and retaining walls and elsewhere ordered shall be built to the form and dimensions shown on the drawings, or as directed. No stone shall be less than ½ cubic foot in volume. Hand packed rubble.

PAINTING AND TARRING.

256. Samples of all paint and oils proposed to be used in this Contract are to be submitted for analysis and for approval of the Engineer. The oil is to be pure linseed oil, raw for timber work, boiled for steel work. Analysis of material.

257. Where painting is specified (except in regard to steel bridge superstructure) it shall consist of three coats of approved paint in oil. The first coat shall consist of red and white lead in equal proportions mixed with raw linseed oil; the other two coats shall consist of white lead and white zinc in equal proportions mixed with raw linseed oil and such pigments as may be directed and are approved by the Superintending Officer. Each coat of paint shall be thoroughly dry before the next is applied, and the work to be thoroughly clean before paint is applied. Two coats shall be put on as the work is finished; the third coat shall be applied just before the completion of the Contract, unless the work is to be covered up, when the third coat shall be applied before the work is covered up. Timber work.

258. All surfaces of metalwork in Contract, which will be finally inaccessible to the brush, shall be scraped and cleaned and then receive one coat of red lead or other approved paint before fixing. All surfaces of metalwork which will be inaccessible for painting when assembled shall receive after cleaning a priming coat and two additional coats of approved paint before being placed in position. The whole of the metalwork shall be thoroughly cleaned, brushed, and washed clean with fresh water to the satisfaction of the Superintending Officer before any paint is applied. Metal work.

All places where rust spots show shall be chipped and rubbed and shall then receive a coat of thin red lead before the application of the last two coats over the whole surface.

259. All surfaces, beds, ends, and joints of timberwork not in contact with concrete and which will be underground shall have one coat of tar laid on before the work is put together and fixed in position, and a second coat immediately after the carpenters have finished and the surfaces then covered up.

Tarring.

260. Where tarring is specified it shall consist of either "coal tar" or "coal tar mixture" as shall be stated. "Coal tar" shall be good clean coal tar free from adulteration, laid on hot on clean surfaces. "Coal tar mixture" shall be good clean coal tar free from adulteration; and mixed with resin prepared as follows:—After 5 gallons of tar have been thoroughly heated in a suitable receptacle until all the water is evaporated, it shall then be removed from the fire, and 3½ lb. of resin, melted in a separate vessel, poured in and stirred till thoroughly incorporated in the mixture, and then laid on hot, on clean surfaces.

261. Where "Coal tar mixture" is specified it shall be understood that the first two coats are to be "coal tar" and the last coat only to be "coal tar mixture."

Workmanship.

262. No paint or tar is to be applied during or immediately after wet, damp, or frosty weather or while the surface to be covered is wet or damp, and an interval of at least 48 hours must elapse between each application; each coat must be quite dry before the next is commenced.

Painting shall in all cases be done in a thorough workmanlike manner, and finished fair, even and free from brush marks.

Prices.

263. Painting and tarring will not be paid for as separate items but in all cases are to be included in the schedule price for work painted or tarred.

STATION WORKS AND WATER SUPPLY.

Ashpits.

264. Concrete in ashpits shall be "C" Class as specified in Clauses 134 to 152.

Mild steel in bolts and nuts and gratings shall be as specified in Clauses 92 to 105 and 114 to 129.

Timber longitudinalis shall be as specified in Clause 130.

Prices.

Glazed earthenware pipe drains of best quality are to be provided and laid complete with sump pit as shown on drawings.

The Schedule Price for ashpits shall cover the supply and fixing complete of all materials, and shall include the cost of the necessary excavation in foundations, drainage, and sump pit as shown on drawings.

Cast-iron pipes and fittings.

265. Cast-iron pipes and fittings to be supplied by the Contractor shall be of the best tough grey, close-grained, remelted cast iron, and shall be sound, clean, smooth, even, and free from all defects, equal sided, in 9-ft. lengths for 3-in. or 4-in. pipes, or 12-ft. lengths for 9-in. pipes. They shall have a uniform thickness throughout, be accurately moulded, and true in section.

266. The pipes and fittings proposed to be used in the works shall comply with the standard dimensions and tests specified by the Water Supply Department of the State in which they are manufactured, and when tendering the Contractor shall state where pipes included in Schedule Prices for supplying, laying, and jointing pipes will be obtained.

All pipes and fittings before leaving the manufacturer's yard and before oxidation can take place shall be coated internally and externally with a coal pitch and gas oil mixture according to Dr. Angus Smith's patent process. The surface of the coating on pipes shall be quite black, and retain a smooth glossy appearance resembling japanned work. The coating shall adhere firmly to the pipes all over, and shall be incapable of being mechanically separated therefrom.

Laying pipes.

267. Cast-iron pipes shall be laid in trenches cut to receive them, and shall be connected to piping included in Schedule Price for tank and stand, and to water column or reticulation main as may be necessary and as directed by the Superintending Officer.

The trenches to receive pipes shall be excavated in such line and to such level as may be directed by the Superintending Officer, shall be not less than 18 inches and not more than 3 feet deep, except where specially ordered, and shall be taken out uniformly along the bottom, so that pipes may have a solid bearing throughout their entire length.

268. The joints shall be carefully fitted and run in with lead so as to be perfectly watertight. They shall be tested to the satisfaction of the Superintending Officer, and afterwards the trenches shall be filled in and the earth well rammed.

269. When the pipe track exceeds 3 feet in depth, the extra depth beyond 3 feet shall be paid for at the Schedule rate for excavation, for foundations, for concrete box drains, culverts, &c.

Prices.

270. The Schedule Price for pipe laying shall include the supply and fixing of all materials required to complete the pipe line and the necessary excavation and refilling of trench.

The Schedule Price for fittings shall include the supply and fixing of bends, tees, and valves, and the necessary excavation and refilling of excavation after fixing.

Water columns.

Water columns will be supplied by the Commissioner free of charge, subject to clause 38 of the General Conditions of Contract.

271. Water columns shall be erected in accordance with drawings and in positions as directed by the Superintending Officer. Concrete in base and sump shall be "C" class as specified in clauses 134 to 152.

Glazed earthenware drain pipes of best quality, 4 inches in diameter, and mild steel sump grating shall be provided for drainage from sump to ashpit as shown on drawings.

When erected complete the water column shall be cleaned and painted with one coat of red lead and two coats of approved white paint in accordance with clauses 120 to 126.

272. The Schedule price for erection of water columns shall include painting of column and the supply and erection of the concrete base, sump and drainage, and the necessary excavation therefor as shown on drawings. Any additional excavation will be paid for at the Schedule rate for "excavation for foundations for drains, &c." and additional concrete at the Schedule rate for "Concrete—Class C" in piers and abutments." Price of water columns.

273. The whole of the materials required for the erection of Cattle Yards in accordance with the drawings shall be supplied by the Contractor.

274. The part-worn 41 lb. steel rails required may be obtained from the Commissioner at a fixed price of £7 per ton delivered on trucks at commencing point of Contract. The Contractor shall unload the trucks at his own cost within 24 hours after trucks have been delivered to him, otherwise demurrage charges on trucks in accordance with clause 38 (c) of the General Conditions of Contract will be charged.

Fishplates to fit the above rails may be obtained from the Commissioner under similar conditions to those applying to rails at a fixed rate of £3 10s. per ton.

275. Concrete in platform face to loading ramp and in water trough shall be "B" class as specified in clauses 134 to 156, and mild steel reinforcement as specified in clause 157.

276. Earth filling in loading ramp and platform shall consist of good dry material, which shall be deposited in layers not exceeding 12 inches thick, each layer being well rammed before the succeeding layer is placed.

277. The whole area of the yards and race shall be metalled as shown on drawings, and as specified for Road Diversions and Level Crossings, clauses 199 to 202.

278. Mild steel in gate fittings, bolts, clips, &c., shall be as specified for bridges, clauses 92 to 105 and 114 to 129.

279. Gates shall be made of approved sawn hardwood as specified in clause 130, approved timbers being Ironbark, Spotted Gum, Bluegum, Redgum, Tallow-wood, or Jarrah, which shall be dressed smooth and even. Upon completion timber work shall be painted white, and the iron work in hinges, straps, tie-bars, &c., be painted black, as specified for painting, clauses 256 to 263.

All rail posts and rails and other steel work in yards shall be tarred above and below ground with two coats of coal tar mixture, as specified in clauses 260 to 263.

280. The schedule price for Cattle Yards shall include supply and fixing complete of all materials in accordance with drawings, including water trough, all necessary excavation, painting, tarring, and metalling and blinding, but not including wing fences. The additional platform face, fencing, gates, filling to platform and metalling and blinding required over and above that provided for in Drawing S.D.85 and in accordance with Drawing M.162 have been scheduled separately and will be paid for at such schedule rates which shall be deemed to cover the supply and erection of all necessary materials including excavation, painting, and tarring. Prices.

281. The whole of the materials required for the erection of Cattle, Sheep, and Pig Yards in accordance with the drawings shall be supplied by the Contractor. Cattle, sheep, and pig yards.

The work shall be carried out as specified for Cattle Yards, clauses 274 to 279, with the addition that timber work other than in gates shall be as specified in clause 130, and shall receive three (3) coats of coal-tar mixture as specified in clauses 260 to 263.

282. The Schedule price for Cattle, Sheep, and Pig Yards shall include the supply and erection of all materials in accordance with the drawings, including all necessary excavation, painting, tarring, and metalling and blinding. Prices.

283. The whole of the materials required for the erection of Cattle Transfer Ramp in accordance with the drawings shall be supplied by the Contractor. Cattle transfer ramp.

Mild Steel in bolts, nuts, washers, straps, &c., shall be as specified in clauses 92 to 105, and 114 to 129.

Timber shall be approved hardwood as specified in clause 130, and where used in gates shall be dressed.

Timber work in gates shall be painted white, and iron work be painted black, as specified in clauses 256 to 263.

Timber work other than in gates shall receive three coats of coal-tar mixture as specified in clauses 260 to 263.

284. The Schedule price for Cattle Transfer Ramp shall include the supply and erection of all materials in accordance with drawings, including all necessary excavation, painting, and tarring. Prices.

285. The whole of the materials required for the erection of Goods Transfer Platform in accordance with the drawings shall be provided by the Contractor. Goods transfer platform.

286. Concrete in piers, Class "C," shall be as specified in clauses 134 to 156.

287. Mild steel in bolts and nuts, washers, straps, &c., shall be as specified for bridges, clauses 92 to 105 and 114 to 129.

288. Timber work shall be of approved hardwood, as specified in Clause 130, and the whole shall be tarred with coal tar mixture, as specified in clauses 260 to 263.

289. The Schedule price for goods transfer platform shall include the supply and erection complete of all materials, including necessary excavation and painting or tarring, where specified.

290. Concrete, mild steel, and timber work shall be as specified for goods transfer platform, clauses 286 to 288; and Schedule price shall include supply and erection of all materials in accordance with the drawings, including necessary excavation, painting and tarring. Truck cleaning platforms.

TELEGRAPH AND TELEPHONE LINE.

- General.** 291. All conducting wire, copper tape, binders, jointing sleeves, insulators, spindles, crossarms, crossarm bolts, line poles, footplates, "U" bolts, and other material required for the construction of the telegraph line shall be provided by the Contractor.
- Wire.** 292. Two wires will generally be required, which shall be of hard drawn copper 200-lb. per mile.
- Poles.** 293. Poles generally shall be not less than 20 feet in length. In station yards and at level crossings, and at such other places as may be directed by the Superintending Officer, 30-ft. poles shall be used. Poles shall be part worn 41-lb. rails generally 21 feet and 22 feet long, or where poles 30 feet long are required shall be part worn 50-lb. rails, all poles to be an unbroken rail. Part worn 41-lb. rails for use as telegraph poles may be purchased by the Contractor from the Commissioner for £7 per ton on trucks delivered at commencing point of Contract, subject to Clause 38 (c) of the General Conditions of Contract.
294. The position of the poles will be decided by the Superintending Officer. They will be, generally, not less than 40 feet from the centre line of the Railway.
- Spacing of poles.** 295. The poles shall be spaced not more than 4 chains apart. The depth in the ground for 20-ft. poles shall be 4 feet and for 30-ft. poles shall be 5 feet. For other lengths of poles the depth in the ground shall be as directed. The minimum height of wire when crossing railway lines shall be 22 feet above top of rail and 21 feet above the surface of the ground when crossing public or private roads.
- Tarring poles.** 296. All poles shall be tarred by the Contractor below ground and for 1 foot above the mound around the pole and footplates, and "U" bolts for same, shall be completely tarred with two coats of coal tar mixture, as specified in Clauses 260 to 263.
297. Pole holes must not be larger than is absolutely necessary, and except for terminal poles they shall be so dug that their length is in the direction of the wires so as to take advantage of the solid earth at each side. Holes for terminal poles shall be dug across the direction of the wires, so that the pull is against the solid ground. All pole holes should be stepped.
- Erecting poles.** 298. Poles must be erected in a vertical position, accurately ranged from one line angle to another, and well-rammed with earth, a small mound of filling to be formed around the pole when ramming is completed to allow for subsidence. The mound referred to shall be taken at least 9 inches above the surface of the ground and tapered off to act as a weathering. Angle poles shall have a slight rake against the strain, but such rake shall not exceed 9 inches in the length of the pole above ground, and shall be erected so that the cross-arm bisects the angle.
- Cross-arms.** 299. Cross-arms shall be of approved timbers, thoroughly seasoned, sound, straight grained, and free from large or loose knots, splits, sapwood, or other defects. They shall be straight and out of winding, and be smooth sawn with their adjacent sides at right angles, and shall be put through a scruffing machine to remove all splinters and saw marks. The edges shall be slightly chamfered on both sides and ends. They shall be finished true to dimensions shown on Drawings. Approved timbers for cross-arms are as follows:—
 Ironbark (*E. crebra* or *E. siderophloia*).
 Tallowwood (*E. microcorys*).
 Spotted Gum (*E. maculata*).
 Grey Gum (*E. punctata* or *E. propinqua*).
 Red or Blue Gum (*E. tereticornis* or *E. globulus*).
 Jarrah (*E. marginata*).
 Karri (*E. diversicolor*).
300. Holes in cross arms shall be true to line and pitch, of the precise diameter required, perfectly fair and at right angles to faces of cross-arm.
301. Immediately after leaving the saw the ends of each cross-arm shall receive two coats of a composition, consisting of seven parts of gas tar, three parts of stockholm tar, and three parts of fresh-slaked lime, the whole to be mixed together and applied hot.
- Cross-arm bolts and washers.** 302. Mild steel cross-arm bolts and washers shall be as specified in Clauses 93, 114 and 114A.
303. Bolts will be of the length shown in the drawing and nuts shall be screwed up tight with a spanner. Two spindles shall be fitted to each cross-arm, and shall be wired in positions shown in the drawing.
- Spindles.** 304. Wooden insulator spindles of approved timbers, similar to that specified for cross-arms shall be manufactured from timber which is thoroughly seasoned, sound, straight grained and free from knots, splits, sapwood or other defects. They shall be machined to the dimensions, and the screw-thread shall be cut smooth and clean to the pitch shown on drawings. The accuracy of the threads and the dimensions of the spindle shall be checked by means of a suitable gauge which has been approved by the Engineer. Holes through spindles shall be true to line and pitch, of the precise diameter required, and the centre line of the hole shall be on the diameter of the spindle.
305. Steel spindles, both straight and W type with nuts and washers, shall be of mild steel of Australian manufacture, in accordance with the Australian Standard Specification for Structural Steel for Bridges A.1.—1928, and to the form and dimensions shown in drawings. The head of each spindle shall be made of an alloy composed of ninety (90) per cent. lead and ten (10) per cent. antimony. It shall fit a pattern, to be provided by the Contractor at his own cost, and approved by the Engineer, without any play or rocking.

The spindles, nuts, and washers shall be well galvanized with zinc spelter, and be free from inequalities, flaws, and other defects. The washers shall be galvanized after being punched, and the spindles before the Whitworth threads are cut thereon. All semi-buttress threads shall be well galvanized.

The galvanized steel immediately under the soft metal head shall be efficiently "gagged" with not less than four chisel cuts at least one-sixteenth of an inch deep, or an approved equivalent, to prevent the head being pulled off.

306. Insulator spindles shall be properly and securely fitted into the holes of proper size, with the shoulders in firm contact with the timber of the cross-arms. Where steel spindles are used, they shall be fitted so that the shoulder is longwise along the arm, and the nuts shall be firmly screwed up. Steel spindles shall only be used on terminal and angle poles as directed. Should any wooden spindles supplied be too large they shall be carefully dressed down with a rasp until they fit as specified; and, in the case of steel spindles in wooden cross-arms, any holes which may have shrunk and are too small shall be enlarged by reaming in an approved manner. Any spindle which may be split or otherwise damaged or faulty shall not be used.

If, in the opinion of the Superintending Officer, any wooden spindle is likely to pull out, three turns of 60 lb. per mile galvanized iron wire shall be passed through the hole at the bottom of the spindle.

307. Insulators, Pattern "A," as shown on drawings, shall be manufactured of highly vitrified glazed porcelain. They shall be glazed over all parts, excepting the screw-thread and the head or the edge of the outer petticoat, which may be left unglazed.

Insulators shall be in accordance with the drawings, and the Inspecting Officer shall have the right to measure any number of insulators in any parcel.

The insulators and the glazing shall be free from cracks, blow-holes, nodules, excrescences, or other defects. They shall be uniform in texture throughout, non-porous, with smooth exterior and interior surfaces, and shall be finished in accordance with the best commercial practice.

The thread shall be in accordance with the drawings, well centred, smooth, of uniform pitch, and, such that a standard gauge to be supplied by the Contractor, at his own cost, and approved by the Engineer, can be easily screwed into the insulator up to the crown. When in position on the standard gauge the insulator shall not be noticeably loose, nor show a perceptible amount of play or rocking.

308. Insulators shall be sound and clean when fitted on the spindles. Insulators shall be carefully and securely fitted to the spindles and screwed on until they are firm and will not turn.

309. Copper wire, copper tapes, binders, binding wire and jointing sleeves shall be in accordance with drawings and shall conform in all respects to the requirements of Australian Standard Specification No. C 3-11-1932 of July, 1932, for "Overhead Line Wire Material for Telegraph and Telephone Purposes."

310. The copper wire is to be so stretched that the deflection or sag shall be in accordance with table of sags in copper wire hereunder. The greatest care must be used in handling the wire, so that it is not kinked, scratched, nicked, or in any other way injured. A careful watch must be kept when paying out the wire from the drum or barrow. The wire must be paid out under tension and must not under any circumstances whatever be taken off the coil in flakes, that is, without the wire being unwound by the revolution of the coil.

311. Before drawing the wire over cross-arms these must first be wrapped with bagging to prevent injury to the wire. The bagging shall be removed when the wire has been bound to the insulator.

312. Special wire grips shall be used when drawing the wire together for jointing or straining up.

TABLE OF SAGS IN COPPER WIRE.
200 LB. COPPER WIRE.

Temperature.	40 yard span.		60 yard span.		88 yard span.	
	Sag.	Tension.	Sag.	Tension.	Sag.	Tension.
Fahr.	in.	lb.	in.	lb.	in.	lb.
30	3.7	217	8.5	217	18.2	217
40	4.0	202	9.1	202	19.5	204
50	4.4	187	9.8	188	20.8	191
60	4.7	173	10.5	174	22.2	179
70	5.2	160	11.5	161	23.8	167
80	5.7	146	12.5	148	25.6	156
90	6.3	131	13.6	135	27.4	145
100	7.0	118	14.8	124	29.6	134
110	7.9	105	16.6	113	32.0	124

313. Copper wires shall be jointed by suitable copper jointing sleeves. The wires which are to be joined shall be first thoroughly cleaned for a distance from their ends exceeding the length of the sleeve by 2 inches; they must be inserted into the sleeve from opposite directions so that their cleaned ends protrude about $\frac{1}{2}$ inch on either side of the sleeve. The protruding ends must be bent up so as to prevent the wires coming out of the sleeve. The ends of the sleeve must be gripped with special pliers or clamping tools, and the sleeve given three and a half ($3\frac{1}{2}$) complete turns. On completion of the joint the ends of the wires must be cut off close to the sleeve.

No joint shall be made within 1 foot of an insulator.

Binding
wires to
insulator.

314. Copper Wire.—The conductor wire at the insulator is first to be served with a sheaf of copper tape, or soft drawn rectangular copper wire 3-16th inch x 3-64th inch of a length indicated in table hereunder. The binding tape is then to be placed round the neck of the insulator, and the ends brought over the conducting wire on the left hand side and under it on the right; then closely wrapped around the served portion of the conducting wire upon each side of the insulator outwards, the winding being made as close as possible. The tape sheath is to project at each end, beyond the binder, from $\frac{1}{4}$ inch to 1 inch. The wrapping is to be done by hand, and then tightened by means of two pairs of suitably grooved pliers.

TABLE OF DIMENSIONS OF COPPER BINDING TAPE FOR BARE COPPER WIRE.

Weight of line wire per mile.	Weight of copper tape per mile.	Length of binder.	Length of sheath.
lb. 200	lb. 150	in. 17	in. 22

315. Insulators of pattern "A" as shown shall be used with copper wire.

Termination
of lines.

316. Copper Wire.—The wires shall be terminated on J spindles, P.M.G. pattern. The wire shall be brought twice round the insulator and six times round itself.

Crossing lines.

317. Where it is necessary for portion of the line wires to be diverted from the main line of poles across the railway lines and the poles are not high enough to allow for sufficient clearance for the wires above rail level, a 30-ft. pole shall be used. The through line wires must be maintained at a uniform height to avoid unsightly steps in the spans of wires.

The wires that are to be diverted from the main line of poles must be led through troughing to a cross-arm fixed to the top of the junction pole. No. 16 V.I.R. insulated copper wire 2,500-megohm grade to be used in troughing between cross-arms.

The wires shall terminate on J spindles on the poles at each side of the railway line, the intervening span to consist of 200 lb. copper wire.

318. The greatest care must be exercised when erecting poles, wires, and other material to avoid interruptions to existing working wires.

Leading-in
wires.

319. The poles in station yards must be placed as indicated by the Superintending Officer to suit leading-in arrangements which will be carried out by the Commissioner.

Prices.

320. The Schedule price for Telegraph Line shall cover the supply and erection of all materials in accordance with the drawings, including all necessary excavation and tarring.

MISCELLANEOUS.

Day labour.

321. Day labour may be ordered by the Engineer for the execution of any work other than those for which special prices are given in the Schedule of Quantities and Prices annexed. Payment will be made in accordance with Clause No. 25 of the General Conditions.

Office of the Chief Engineer of Way and Works,
623 Collins-street, Melbourne.

Dated 14th October, 1935.

JOHN F. F. STOKES,
Chief Engineer of Way and Works.

PORT AUGUSTA TO RED HILL RAILWAY.

EXTENSION FROM NEAR PORT AUGUSTA TO NEAR PORT PIRIE, STATE OF SOUTH AUSTRALIA.

Drawings, &c.

The following are the Plans, Sections, and Drawings referred to in this Specification, and in the General Conditions of Contract attached to this Contract:—

M108	..	Plan and section from 4 miles 20 chains to 54 miles 50 chains (local mileage)
S.D.81	..	Fencing, Gates, &c.
(2 sheets)		
S.D.64	..	Open Level Crossing with Cattle Grids
S.D.94	..	Dog and Cattle Stop
S.D.49	..	Earthworks and Permanent Way, 3-ft. 6-in. gauge
S.D.57	..	Earthworks and Permanent Way, 4-ft. 8½-in. gauge
(3 sheets)		
S.D.56	..	22-ft. span Bridges
S.D.76	..	Open Concrete Shoots
S.D.46	..	Concrete Pipe Drains
(2 sheets)		
S.D.69	..	Single Concrete Box Drains
(3 sheets)		
S.D.72	..	Double Concrete Box Drains
(3 sheets)		
S.D.54	..	Points and Crossings, 60-lb. Material
(4 sheets)		
S.D.58	..	Points and Crossings, 80-lb. Material
(4 sheets)		
S.D.65	..	Crossovers, 4-ft. 8½-in. gauge
S.D.55	..	Switch levers
S.D.75	..	Choke Blocks
S.D. 79	..	Locking Bars
M119	..	Telegraph Line
S.D.50	..	Telegraph Line
S.D.80	..	45-ft. Ashpit, 3-ft. 6-in. gauge
Dwg. No. 321	..	45-ft. Ashpit, 4-ft. 8½-in. gauge
Dwg. No. 383	..	Water Column
S.D.85	..	Cattle Yards
(3 sheets)		

Special Drawings.

M162	..	Cattle Yards at Stirling, and Cattle, Sheep, and Pig Yards
Dwg. No. 547	..	Sheep Yards
M164	..	Cattle Transfer, Goods Transfer, and Truck Cleaning Platforms
M163	..	Layout of Special Points and Crossings—Stirling Station Yard
M166	..	3-blade Switches, 80-lb. Material
M167	..	Special Crossings, 1 in 8 and 9½, and K Crossing 1 in 17
M168	..	Special Crossings 1 in 10 and 11½, and K Crossing 1 in 20½
M169	..	Special Crossing 1 in 13½ with 10-ft. and 13-ft. 4-in. guard rails
S.D.90	..	Fixed point with 12-ft. guard rail switch or guard rail
S/1092	..	Layout Stirling Station Yard
S/1097	..	Layout Winninowie, Nectar Brook, and Mambray Creek Station Yards
S/1098	..	Layout of Port Germein Station Yard

COMMONWEALTH RAILWAYS.

PORT AUGUSTA-RED HILL RAILWAY.

Extension from near Port Augusta to near Port Pirie,
State of South Australia.

From 4 miles 20 chains (local mileage from Port Augusta) to
54 miles 50 chains (local mileage near Port Pirie).

SCHEDULE OF QUANTITIES AND PRICES.

Should there be any particular item of work described or shown in the Specification or drawing to be performed, or material to be supplied for which no price is entered in the Schedule, such work or material shall be considered as covered by, and included in, the Schedule Price applicable to the general or particular class of work referred to in the Clause of the Specification.

N.B.—The quantities given here are not guaranteed as correct, but are supplied for the guidance of Tenderers, and are subject to omissions, extras, deductions, or alterations, as provided by the General Conditions of this Contract.

REF. NO.	DESCRIPTION OF WORK.	QUANTITIES.		RATE.	AMOUNT.			TOTAL AMOUNT.		
					£	s.	d.	£	s.	d.
	FENCING, GATES, CATTLE GRIDS, DOG AND CATTLE PITS.									
1	Fencing, No. 1 (6 wires with droppers complete)	7,294	lin. chs.							
2	Fencing, No. 2 (4 wires with droppers and wire-netting complete) ..	200	lin. chs.							
3	Fencing, No. 3 (wing fences at O.L.C. with Cattle Grids)	73	lin. chs.							
4	Fencing, No. 4 (wing fences at O.L.C. with Dog and Cattle Pits) ..	16	lin. chs.							
5	Fencing, wire, removed and re-erected	284	lin. chs.							
6	Fencing, wire and netting, removed and re-erected	95	lin. chs.							
7	Extra straining posts, complete with struts and heels at junction with existing fences, erected complete ..	362	No. (each)							
8	Extra straining posts, complete with struts and heels at back of gate posts, and elsewhere, erected complete ..	186	No. (each)							
	Carried forward .. .. .	..	..					

SCHEDULE OF QUANTITIES AND PRICES—continued.

REF. NO.	DESCRIPTION OF WORK.	QUANTITIES.		RATE.	AMOUNT.			TOTAL AMOUNT.		
					£	s.	d.	£	s.	d.
	Brought forward .. ..	..	..					
	FENCING, GATES, CATTLE GRIDS, DOG AND CATTLE PITS—continued.									
9	3-ft. tubular iron gates erected complete, including gate posts ..	2	No. (each)							
10	3 ft. 6 in. tubular iron gates erected complete, including gate posts ..	8	No. (each)							
11	10-ft. tubular iron gates erected complete, including gate posts ..	1	No. (each)							
12	15-ft. tubular iron gates (without netting) erected complete, including gate posts	48	No. (each)							
13	15-ft. tubular iron gates (with netting), including gate posts, rail sill, and wire netting, erected complete ..	30	No. (each)							
14	18-ft. tubular iron gates, erected complete, including gate posts ..	9	No. (each)							
15	Cattle Grids, complete	38	No. (each)							
16	Dog and Cattle Pits, complete ..	11	No. (each)							
	NOTE.—The above Schedule prices, Reference Nos. 1 to 16 inclusive, shall be deemed to cover and include the whole of the work described in this Specification.									
	EARTHWORKS.									
17	Excavation from cutting with a lead not exceeding 40 chains	21,125	c. yds.							
18	Excavation from side cutting with a lead not exceeding 10 chains ..	161,494	c. yds.							
	5									
19	Extra lead on side cutting for every 5 chains over 5 chains lead ..	1,500	c. yds.							
20	Surface forming 16 feet wide in cutting, 17 feet wide in bank ..	2,283	lin. chs.							
21	Excavation in benching for embankments	50	c. yds.							
22	Stone banks, complete	3,681	c. yds.							
23	Sheathing embankments with selected material	9,200	c. yds.							
24	Excavation of side ditches and mitre drains, and forming mound alongside ditch	28,497	c. yds.							
25	Excavation from inlet and outlet drains to minor waterways, and from diversions of watercourses ..	6,662	c. yds.							
	Carried forward .. ..	..	..					

SCHEDULE OF QUANTITIES AND PRICES—continued.

REF. NO.	DESCRIPTION OF WORK.	QUANTITIES.		RATE.	AMOUNT.			TOTAL AMOUNT.		
					£	s.	d.	£	s.	d.
	Brought forward .. ..	..	..					
	EARTHWORKS—continued.									
26	Excavation for piers and abutments of bridges and flood openings, with a lead not exceeding 5 chains ..	2,416	c. yds.							
27	Excavation for foundations for concrete box drains, culverts, pipe drains over 5 feet in depth, and other works, with a lead not exceeding 5 chains ..	722	c. yds.							
	NOTE.—The above Schedule prices, Reference Nos. 17 to 27 inclusive, shall be deemed to cover and include the whole of the work described in this Specification.									
	STEEL BRIDGES.									
	SUBSTRUCTURE.									
28	Dry stone backing behind abutments ..	99	c. yds.							
29	Mild steel reinforcement in abutments, including pins for bedplates ..	1.76	tons							
30	Part-worn steel rail reinforcement in piers and abutments	8.78	tons							
31	Concrete, Class "B," in piers and abutments	205	c. yds.							
32	Concrete, Class "C," in piers and abutments	2,058	c. yds.							
	SUPERSTRUCTURE.									
	22-FOOT SPANS.									
33	Rolled steel joists with angle cleats, complete	235.80	tons							
34	Mild steel bracing	151.80	cwt.							
35	Mild steel in bed plates	132.48	cwt.							
36	Mild steel set-screws, bolts, nuts, washers, locking pieces, and Lewis bolts	72.60	cwt.							
37	Mild steel transom, escape floors, and footboard spikes	16.50	cwt.							
38	Transoms, footboards, and escapes ..	3,317	cub. ft.							
	NOTE.—The above Schedule prices, Reference Nos. 28 to 38 inclusive, shall be deemed to cover and include the whole of the work described in this Specification.									
	Carried forward .. ..	..	..					

SCHEDULE OF QUANTITIES AND PRICES—continued.

REF. NO.	DESCRIPTION OF WORK.	QUANTITIES.		RATE.	AMOUNT.			TOTAL AMOUNT.		
					£	s.	d.	£	s.	d.
	Brought forward .. ..	..	..					
	MINOR WATERWAYS.									
39	Concrete open shoots, complete in road	275	No. (each)							
40	Concrete pipe drains, complete, 18 inches diameter	355	l. ft.							
41	Concrete pipe drains, complete, 30 inches diameter	1,852	l. ft.							
42	Concrete pipe drains, complete, 60 inches diameter	804	l. ft.							
43	Concrete box drains, complete ..	384	c. yds.							
	NOTE.—The above Schedule prices, Reference Nos. 39 to 43 inclusive, shall be deemed to cover and include the whole of the work described in this Specification.									
	ROAD DIVERSIONS AND LEVEL CROSSINGS.									
44	Surface formation in road approaches to level crossings and road diversions	139	sq. chs.							
45	Metalling and blinding approaches to level crossings and road diversions	10,069	c. yds.							
	NOTE.—The above Schedule prices, Reference Nos. 44 and 45 shall be deemed to cover and include the whole of the work described in this Specification.									
	PERMANENT WAY.									
46	Ballast, broken stone	70,211	c. yds.							
47	Sleepers, 8 feet x 9 inches x 4½ inches (see Clause 217 of Specification)	118,191	No. (each)							
48	Rail laying, main line, 4-ft. 8½-in. gauge, ballasted and lifted, complete	91,542	l. yd. of track							
49	Rail laying, main line, mixed 3-ft. 6-in. and 4-ft. 8½-in. gauge (three rails), ballasted and lifted, complete ..	1,914	l. yd. of track							
50	Rail laying over bridges, flood openings, and ashpits, complete, 4-ft. 8½-in. gauge	440	l. yd. of track							
	NOTE.—The above Schedule prices, Reference Nos. 46 to 50 inclusive, shall be deemed to cover and include the whole of the work described in this Specification.									
	Carried forward .. ..	..	..					

SCHEDULE OF QUANTITIES AND PRICES—continued.

REF. NO.	DESCRIPTION OF WORK.	QUANTITIES.		RATE.	AMOUNT.			TOTAL AMOUNT.		
					£	s.	d.	£	s.	d.
	Brought forward .. ..	..	..					
	STONE PITCHING.									
51	Stone pitching on embankments and elsewhere, as ordered, 12 inches thick	10,977	sq. yds.							
52	Stone pitching at inlets and outlets, aprons to stone banks and elsewhere, as ordered, 9 inches thick ..	2,454	sq. yds.							
	NOTE.—The above Schedule prices, Reference Nos. 51 and 52, shall be deemed to cover and include the whole of the work described in this Specification.									
	WARNING AND WHISTLE BOARDS.									
53	Warning boards, erected complete at level crossings, including painting ..	46	No. (each)							
54	Whistle boards, erected complete at level crossings, including painting ..	46	No. (each)							
	NOTE.—The above Schedule prices, Reference Nos. 53 and 54, shall be deemed to cover and include the whole of the work described in this Specification.									
	STATION ACCOMMODATION.									
55	Cutting	4,964	c. yds.							
56	Side cutting, led from outside station boundaries	6,126	c. yds.							
57	Surface formation, 16 feet wide in cutting, 17 feet wide in bank, or equivalent	190	l. chs.							
58	Sleepers, 6 ft. 6 in. x 8 inches x 4½ inches	2,416	No. (each)							
59	Sleepers, 8 feet x 9 inches x 4½ inches	7,694	No. (each)							
60	Crossing timbers	6,938	c. ft.							
61	Rail laying in sidings, complete, 3-ft. 6-in. gauge, 60-lb. rails ..	2,157	l. yd. of track							
62	Rail laying on ashpit, 3-ft. 6-in. gauge, 60-lb. rails	15	l. yd. of track							
63	Rail laying in sidings, complete, 4-ft. 8½-in. gauge, 80-lb. rails ..	4,457	l. yd. of track							
64	Rail laying on ashpits, 4-ft. 8½-in. gauge, 80-lb. rails	15	l. yd. of track							
	Carried forward .. ..	..	..					

SCHEDULE OF QUANTITIES AND PRICES—continued.

REF. NO.	DESCRIPTION OF WORK.	QUANTITIES.		RATE.	AMOUNT.			TOTAL AMOUNT.		
					£	s.	d.	£	s.	d.
	Brought forward .. ..	..	..					
	STATION ACCOMMODATION— continued.									
65	Rail laying in sidings, complete, mixed 3-ft. 6-in. and 4-ft. 8½-in. gauges, 80-lb. rails (3 rails)	2,283	1. yd. of track							
66	Laying points and crossings, complete, 60-lb. rails, 3-ft. 6-in. gauge, 1 in 8	6	No. (each)							
67	Laying points and crossings, complete, 80-lb. rails, 4-ft. 8½-in. gauge, 1 in 8	15	No. (each)							
68	Laying points and crossings, complete, 80-lb. rails, 4-ft. 8½-in. gauge, 1 in 10	4	No. (each)							
69	Laying points and crossings, complete, 80-lb. rails, 3 ft. 6 in. turn out off mixed gauge road of 3-ft. 6-in. and 4-ft. 8½-in. gauges, 1 in 8 ..	3	No. (each)							
70	Laying points and crossings, complete, 80-lb. rails, 3 ft. 6 in. turn out off mixed gauge road of 3-ft. 6-in. and 4-ft. 8½-in. gauges, 1 in 9¼-8, with 1 in 17 "K" crossing	1	No. (each)							
71	Laying points and crossings, complete, 80-lb. rails, 3 ft. 6 in. turn out off mixed gauge road of 3-ft. 6-in. and 4-ft. 8½-in. gauges, 1 in 13¾ ..	1	No. (each)							
72	Laying points and crossings, complete, 80-lb. rails, 4 ft. 8½ in. turn out off mixed gauge road of 3-ft. 6-in. and 4-ft. 8½-in. gauges, 1 in 9¼-8 ..	2	No. (each)							
73	Laying points and crossings, complete, 80-lb. rails, mixed gauge turn out off mixed gauge road, mixed gauge being 3-ft. 6-in. and 4-ft. 8½-in. gauges 1 in 9¼-8, with 1 in 17 "K" crossing	4	No. (each)							
74	Laying points and crossings, complete, 80-lb. rails, mixed gauge turn out off mixed gauge road, mixed gauge being 3-ft. 6-in. and 4-ft. 8½-in. gauges, 1 in 11¾-10, with 1 in 20 "K" crossing	3	No. (each)							
75	Laying crossovers, complete, 80-lb. rails, 4-ft. 8½-in. gauge, 1 in 10 ..	1	No. (each)							
76	Laying crossovers, complete, 80-lb. rails, mixed gauge of 3 ft. 6 in. and 4 ft. 8½ in., 1 in 9¼-8, with 1 in 17 "K" crossings	2	No. (each)							
77	Laying crossovers, complete, 80-lb. rails, mixed gauge of 3 ft. 6 in. and 4 ft. 8½ in., 1 in 11¾-10, with 1 in 20 "K" crossings	1	No. (each)							
78	Fixing choke blocks, 60-lb. track, 3-ft. 6-in. gauge	3	No. (each)							
	Carried forward							

SCHEDULE OF QUANTITIES AND PRICES—*continued.*

REF. NO.	DESCRIPTION OF WORK.	QUANTITIES.		RATE.	AMOUNT.			TOTAL AMOUNT.		
					£	s.	d.	£	s.	d.
	Brought forward .. ..	..	..					
	STATION ACCOMMODATION— <i>continued.</i>									
79	Fixing choke blocks, 80-lb. track, 4-ft. 8½-in. gauge	19	No. (each)							
80	Ballast, broken stone	7,935	c. yds.							
81	Filling between roads	2,391	c. yds.							
82	Surface forming in road approaches ..	21	sq. chs.							
83	Filling in platforms	1,080	c. yds.							
84	Metalling and blinding on road ap- proaches and platforms	2,429	c. yds.							
85	Ashpits, 45 feet long, with drainage complete, 3-ft. 6-in. gauge ..	1	No. (each)							
86	Ashpits, 45 feet long, with drainage complete, 4-ft. 8½-in. gauge ..	1	No. (each)							
87	9-in. cast-iron spigot and faucet pipes, laid complete, including excavation of pipe trench and jointing ..	1	lin. ch.							
88	9-in. cast-iron 90° bends, flanged one end, in place, complete	2	No. (each)							
89	9-in. cast-iron "T" piece, in place, complete	1	No. (each)							
90	9-in. gate valves, in place, complete ..	2	No. (each)							
91	3-in. cast-iron spigot and faucet pipes, laid complete, including excavation of pipe trench and jointing ..	50	lin. ch.							
92	3-in. cast-iron 90° bend, flanged one end, in place, complete	1	No. (each)							
93	3-in. gate valve, in place, complete ..	2	No. (each)							
94	Erection of 9-in. water column, com- plete, including concrete foundation, painting, sump, and drainage ..	2	No. (each)							
95	Cattle yards, Drawing SD85, erected complete without wing fences but including one additional double 8-ft. gate as shown, Drawing M162 ..	1	No. (each)							
96	Additional reinforced concrete plat- form face wall, including excavation, Drawing M162	185	l. ft.							
97	Additional filling to platform, Drawing M162	941	c. yds.							
98	Metalling and blinding platform and approach, Drawing M162	223	c. yds.							
	Carried forward .. ..	..	..					

SCHEDULE OF QUANTITIES AND PRICES—continued.

REF. NO.	DESCRIPTION OF WORK.	QUANTITIES.		RATE.	AMOUNT.			TOTAL AMOUNT.		
					£	s.	d.	£	s.	d.
	Brought forward .. .. .	..	..					
	STATION ACCOMMODATION— continued.									
99	Additional cattle-yard rail fencing, Drawings M162 and SD85, erected complete, single rail	469	l. ft. of fence							
100	Additional cattle-yard rail fencing, Drawings M162 and SD85, erected complete, double rail	52	l. ft. of fence							
101	Additional 8-ft. gates, Drawing SD85, including gate posts erected com- plete as shown, Drawing M162 ..	5	No. (each)							
102	Cattle, sheep, and pig yards, erected complete without wing fences ..	1	No. (each)							
103	Cattle transfer platform, erected com- plete	1	No. (each)							
104	Goods transfer platform, 200 ft. long, erected complete	1	No. (each)							
105	Truck-cleaning platforms, erected complete	800	l. ft.							
	NOTE.—The above Schedule prices, Refer- ence Nos. 55 to 105 inclusive, shall be deemed to cover and include the whole of the work described in this Specification.									
	TELEGRAPH LINE.									
106	Telegraph line, erected complete, with two copper wires in accordance with Specification	50.4	miles							
107	Additional 20-ft. poles, where ordered, in place with all necessary mountings for two wires	10	No. (each)							
108	Additional cost per pole when 30-ft. pole ordered to be erected in lieu of 20-ft. pole	60	No. (each)							
	NOTE.—The above Schedule prices, Refer- ence Nos. 106 to 108 inclusive, shall be deemed to cover and include the whole of the work described in this Specification.									
	MISCELLANEOUS:									
109	Allow for work carried out by day labour in accordance with Clause 25 of the General Conditions of Contract	..	..					1,500	0	0
	Total .. .. .	..	..					

COMMONWEALTH RAILWAYS.

PORT AUGUSTA-RED HILL RAILWAY.

Extension from near Port Augusta to near Port Pirie,
State of South Australia.

SECOND SCHEDULE

(to the General Conditions).

CONTRACT DEED.

CONSTRUCTION OF RAILWAY from 4 Miles 20 Chains (Local
Mileage from Port Augusta), to 54 Miles 50 Chains (Local
Mileage, near Port Pirie), being in Length about 50 Miles 30
Chains.

This Indenture made the.....day of.....
in the year of our Lord One thousand nine hundred and.....
BETWEEN.....

hereinafter and in the several annexures hereto called the "CONTRACTOR" (which expression shall be deemed to include the heirs, executors, and administrators of the said Contractor) of the first part, AND THE COMMONWEALTH RAILWAYS COMMISSIONER, hereinafter and in the documents annexed hereto called the "COMMISSIONER" (which expression shall be deemed to include the Acting or Deputy Commonwealth Railways Commissioner for the time being performing the duties of the said COMMISSIONER), acting herein for and on behalf of the Government of the Commonwealth of Australia, and not so as to incur or come under any personal liability in respect of this Contract, of the second part.

WITNESSETH that the CONTRACTOR hereby covenants with the COMMISSIONER to execute and perform the several provisions described and referred to in the Conditions of Contract, Specification, Plans, Schedule of Quantities and Prices, and copy of letter of acceptance of tender datedwhich are all hereto annexed, to be executed and performed by and on the part of the Contractor under and subject to the said Conditions of Contract, the said copy of letter of notification of acceptance of tender in conformity with the said Specification and Plans, and at the rates set out in the Schedule of Quantities and Prices. AND the CONTRACTOR hereby covenants with the COMMISSIONER, and the COMMISSIONER hereby covenants with the CONTRACTOR, to perform, fulfil, observe, and comply with and submit to all and singular the conditions, stipulations, and requisitions, and all matters and things contained, expressed, shown in, or reasonably to be inferred from the said Conditions of Contract, Specification, Plans, Letter, and Schedule of Quantities and Prices. AND IT IS HEREBY AGREED AND DECLARED between and by the said parties hereto that the said annexures shall be read as incorporated in and forming part and parcel of these presents in like manner as if the same had been herein written and set forth, and that the said annexures and these presents shall together be taken to be the Contract between the said parties.

SIGNED, SEALED, and DELIVERED by

in the presence of.....

Signed, sealed, and delivered by the COMMON-
WEALTH RAILWAYS COMMISSIONER in

the presence of.....