

DATED 30th April 1922

THE WELSH HIGHLAND RAILWAY (LIGHT
RAILWAY) COMPANY

and

SIR ROBERT McALPINE & SONS

A G R E E M E N T

for the

construction of a Railway between

Portmadoc and Dinas

THIS AGREEMENT made the thirtieth made (*sic*) of April One thousand nine hundred and twenty two B E T W E E N THE WELSH HIGHLAND RAILWAY (LIGHT RAILWAY) COMPANY whose registered office is at 7, Victoria Street, London, S.W.1. (hereinafter called the Company) of the one part and SIR ROBERT McALPINE Baronet, ROBERT McALPINE WILLIAM HEPBURN McALPINE SIR THOMAS MALCOLM McALPINE and ALFRED DAVID McALPINE trading as Sir Robert McAlpine and Sons of 50 Pall Mall London, Public Works Contractors (hereinafter called the Contractors) of the other part

W H E R E A S the Company are authorised under the Welsh Highland Railway (Light Railway) Order 1922 to construct and complete a railway from Dinas to Portmadoc in the County of Carnarvon in accordance with plans and specifications prepared by Sir Douglas Fox and Partners of 38 Bedford Place, London (hereinafter called the Engineers)

A N D WHEREAS the Contractors have tendered for the works detailed in the said plans and specifications and have undertaken to complete and maintain the said railway as hereinafter mentioned for the inclusive sum of Fifty nine thousand nine hundred and eighty five pounds

N O W THIS INDENTURE W I T N E S S E T H that in consideration of the premises

1. THE Contractors shall in accordance in all respects with the said plans and specifications attached hereto and signed by them (subject to any variations or modifications thereto approved by the Engineers) execute all the works described in such specifications and fully and finally complete the said railway so as to secure the sanction or approval of the Ministry of Transport to the opening thereof under section 39 of the Portmadoc Beddgelert and South Snowdon Railway (Light Railway) Order 1908 as extended by Section 16 (4) of

the Welsh Highland Railway (Light Railway) Order 1922 and maintain the same in accordance in all respects with and subject to the terms and conditions set out in the said specifications

2. SUBJECT to the provisions of the said Specifications the Company shall pay to the Contractors in respect of the complete construction and maintenance of the railway as aforesaid the lump sum of FIFTY NINE THOUSAND NINE HUNDRED and EIGHTY FIVE POUNDS It is a definite term of these presents that the Company shall be in no way responsible for any extras or additional liability of any kind in excess of the said sum of Fifty nine thousand nine hundred and eighty five pounds
3. THE Company will upon the Contractors executing and maintaining the several works and in all respects complying with the terms and conditions of the said specifications to the satisfaction of the Engineers pay to the Contractors such amounts as shall become due and payable in the proportions and at the times and subject to the conditions stated in the said specifications
4. THE said Specifications and the terms and conditions contained therein shall be read and construed as forming part of this Agreement and the parties hereto will respectively abide by and submit themselves to the conditions and stipulations and perform the agreements on their part respectively in the said specifications contained

I N WITNESS whereof the Company has caused its Common Seal to be hereunto affixed and the Contractors have hereunto set their respective hands the day and year first above written

THE COMMON SEAL of the Welsh)
Highland Railway (Light Rail-)
way) Company was hereto affixed)
in the presence of) (WHR seal)
(embossed)

John H. Stewart)
) Directors
Henry J. Jack)

W. R. Huson Secretary

Signed on behalf of Sir Robert)
McAlpine & Sons by) *Malcolm McAlpine*

a Partner in the presence of
J. Esam
50 Pall Mall, S.W.1.
Records Clerk.

Signed by Sir Robert McAlpine)
in the presence of) *Robert McAlpine*
J. Esam
50 Pall Mall S.W.1.
Records Clerk .

Signed by Robert McAlpine in)
the presence of) *Robert McAlpine*
J. Esam
50 Pall Mall S.W.1 .
Records Clerk

Signed by William Hepburn)
McAlpine in the presence of) *Wm. H. McAlpine*
J. R. Milne
50 Pall Mall
S.W.1 .
Secy

Signed by Sir Thomas Malcolm)
McAlpine in the presence of) *Malcom McAlpine*
J. Esam
50 Pall Mall, S.W.1.
Records Clerk

Signed by Alfred David)
McAlpine in the presence of) *Alfred D. McAlpine*
J. R. Milne
50 Pall Mall
S.W.1.
Secy.

(END OF AGREEMENT)

WELSH HIGHLAND RAILWAY (LIGHT RAILWAY)

C O N T R A C T
and
S P E C I F I C A T I O N
for
CONSTRUCTION OF RAILWAY

March 1922

Offices of the Company :
Dolgarrog, NORTH WALES

ENGINEERS: Sir Douglas Fox & Partners,
38 Bedford Place,
LONDON. W.C. 1.

WELSH HIGHLAND RAILWAY (LIGHT RAILWAY)

S P E C I F I C A T I O N

GENERAL CONDITIONS

<p><u>TERMS</u></p>	<p>1. The following interpretations of terms used in this specification are intended unless otherwise stated or clearly implied to the contrary.</p> <p>"Railway" means the railway to be constructed as defined in the specification.</p> <p>"Company" means the Welsh Highland Railway (Light Railway)</p> <p>"Contractors" means the person or firm whose tender for carrying out the construction of the railway is accepted by the Company</p> <p>"Engineers" means Sir Douglas Fox and Partners</p> <p>"Agent" means the representative of the Contractors on the railway</p> <p>"Resident Engineer" means the representative of the Engineers on the railway</p> <p>"Inspector" means any subordinate engineer or representative of the Engineers or Resident Engineer</p> <p>"Specification" means this specification and includes drawings as defined herein and any supplementary specifications issued by the Engineers.</p> <p>"Contract" means the works and services to be performed by the contractors in the construction of the railway.</p> <p>"Approved" means approved in writing.</p> <p><i>(END OF PAGE 1)</i></p>
<p><u>EXTENT OF CONTRACT.</u></p>	<p>2. The contract covers the repair and renewal of the existing railway known as the North Wales Narrow Gauge Railway from Dinas to South Snowdon, including the branch to Bryngwyn (about 12 miles) and the construction of a line of railway from South Snowdon to Portmadoc as defined in Clause 34 herein, complete in all respects with all accessories and contingencies ready for operation in public service but not including any rolling stock.</p> <p>From the junction with the Croesor tramway at about 8.7 <i>(initialled engrossed copy is overtyped – not corrected – and could read either 7.7. or 8.7 – it should read 8.7)</i> miles the new line follows the route of this tramway to Portmadoc.</p>
<p><u>DRAWINGS.</u></p>	<p>3. The work is to be executed in accordance with the following drawings :</p> <p>A.33395 - North Wales Narrow Gauge Rly. - Plan.</p> <p>A.33400 - New railway - plan & section - Mile 0 to 4.4</p> <p>A.33401 - do. do. Mile 4.4 to Croesor Tramway</p> <p>B.33402 – Existint <i>(sic)</i> Croesor tramway - Plan.</p> <p>A.33403 - Type 75 ft. span.</p> <p>A.33404 - Type culverts and small bridge</p> <p>A.33405 - Croesor bridge and trestle at mile 5.</p>

	<p>and such supplementary and explanatory drawings as may be issued by the engineers or resident engineer.</p> <p>Drawings are held to be included as part of the specification.</p>
<p><u>SATISFACTION OF ENGINEERS</u></p>	<p>4. The railway is to be completed in accordance with the specification to the satisfaction of the engineers. <i>(END OF PAGE 2)</i></p> <p>The instructions of the engineers as to the interpretation of the specification and in regard to any ambiguities and inconsistencies in the specification are to be accepted and the instructions of the engineers are to be carried out although they may involve a departure from the specification</p> <p>The instructions of the resident engineer and inspectors are to be carried out subject to the right of appeal to the engineers.</p> <p>The engineers, resident engineer and inspectors are to be given every facility at all times for inspection of any work or material under construction at any stage of manufacture and execution.</p> <p>Instructions or notices handed to the agent or deposited at his office are held to have been given to the contractors.</p>
<p><u>INSPECTION</u></p>	<p>5. The character of work executed and all materials employed are to be in accordance with the specification or of first class quality where no definite specification is given. Any doubt as to the quality of work or material required is to be referred to the engineers for their decision.</p> <p>All work and materials are to be subject to the inspection and approval of the engineers or the resident engineer and anything they reject shall be removed and made good to their satisfaction.</p> <p>No excavation intended to receive concrete or earth filling shall be filled in nor other work be concealed by the execution of further work until it has been inspected and passed in writing by the <i>(END OF PAGE 3)</i></p> <p>resident engineer. No work requiring inspection and subsequently to be covered shall be buried until it has been inspected by the resident engineer, but such inspection shall be carried out within two days of the time when the work is ready, provided the contractors have given notice at least two days beforehand that they require such inspection.</p> <p>A log book recording daily progress and the results of inspections of excavation and concrete in to be kept on the site and initialled from time to time by the resident engineer and the agent.</p>
<p><u>OFFICE.</u></p>	<p>6. The contractors shall provide near the route of the railway office accommodation for their agent and the resident engineer and their staffs, and shall also provide a motor car for their own use for access to the various parts of the railway and this car shall be at the disposal of the engineers and officers of the company to such reasonable extent as they may require in connection with the construction of the railway.</p>

<u>SERVICES COVERED BY CONTRACT</u>	7. The contract covers the provision and transport of all material necessary for constructing the railway, supply and transport of all supervision and labour, plant, tools and other equipment and services required for executing the work and all other specific obligations and services to be rendered by the contractors as defined herein.
<u>SETTING OUT</u>	8. The contractors shall set out or check and in any case shall be responsible for the accuracy of <i>(END OF PAGE 4)</i> setting out the works. Deviations from the route shewn in the engineers' plans may be made by contractors but must be approved by the engineers.
<u>SUB-CONTRACTS.</u>	8. <i>(sic)</i> The contractors shall not sublet any part of the contract or place any contract for permanent materials without the approval previously obtained of the engineers or resident engineer, but such approval shall not be unreasonably withheld. The approval of such sub-contract or order shall not exonerate the contractors from full responsibility.
<u>EXECUTION OF WORK</u>	9. The contractors shall decide upon and adopt such methods for the execution of the work as they think fit and shall keep the engineers informed of their intentions. No method of <i>(sic)</i> procedure of which the engineers disapprove is to be adopted.
<u>RISKS.</u>	<i>(sic – un-numbered)</i> The contractors shall take all risks of flood, storm and fire during the execution of the works.
<u>BYE-LAWS.</u>	10. The contractors must execute as a part of the contract all temporary or permanent work necessary for conforming to Acts of Parliament, Order of the Light Railway Commissioners, Board of Trade and Ministry of Transport, Bye-laws or regulations of any local authority.
<u>SAFETY OF PUBLIC.</u>	<i>(sic – un-numbered)</i> The contractors shall take all necessary steps to ensure the safety of the public and shall provide any watching and lighting required. <i>(END OF PAGE 5)</i>
<u>RIGHTS OF WAY</u>	<i>(sic – un-numbered)</i> The Contractors shall be responsible for maintaining uninjured and/or restoring to the satisfaction of the responsible authorities any rights of way, water mains, gas mains, cables or similar property of public utility affected by the execution of the works.
<u>PRIVATE PROPERTY.</u>	<i>(sic – un-numbered)</i> The contractors shall be responsible for avoiding injuries to private paths, fences or other property and to cattle or other animals and shall make good all such injuries. The contractors shall indemnify the company against all claims in respect of disturbance or injuries or <i>(sic)</i> persons, property and animals arising from or as a result of their acts or omissions in the execution of the works.
<u>PLANT AND TEMPORARY WORKS</u>	<i>(sic – un-numbered)</i> The contractors' plant shall be subject, if required, to the approval of the engineers, who shall be at liberty to satisfy themselves that it is adequate for the execution of the works in accordance with the specification and in the time stated. All temporary works shall similarly be subject to the approval of the engineers. No such approval shall exonerate the contractors from their responsibility.
<u>REMOVAL OF</u>	<i>(sic – un-numbered)</i> All materials and plant brought on the works

<u>PLANT AND MATERIAL.</u>	<p>shall be considered to be the property of the company until the engineers have issued instructions in writing authorising the contractors to remove any such plant or materials.</p> <p><i>(END OF PAGE 6)</i></p>
<u>WORK ALREADY EXECUTED.</u>	<p>12. The route of the railway is intended to follow the route of a railway already partly constructed.</p> <p>The contractors may take any advantage practicable of work already executed and may use for the purposes of the contract any material lying along the route of the railway.</p>
<u>DELIVERY OF MATERIAL AND ACCESS.</u>	<p>13. Material may be delivered by rail at the north end of the railway at South Snowdon station and at the south end at Portmadoc.</p> <p>The contractors must commence work on the repair of the existing North Wales Narrow Gauge Railway from Dinas to Snowdon as quickly as possible so that this section is completed by May 21st, 1922. Subject to this, work is to proceed simultaneously throughout the line so as to give opportunities for employment over the whole length of the route.</p> <p>The provision of roads necessary for delivery of materials, labour and plant to the site of the works is included in the contract. The contractors must state, as soon as they are instructed to commence work, the approximate route of any temporary roads or railways they propose to construct. They must provide proper fences and gates where required for protection of private property or maintenance of public or private rights of way.</p> <p>The contractors will obtain all necessary land or wayleaves for all permanent work other than those already secured by the company except the land of Major Bowler Jones but the company will give the</p> <p><i>(END OF PAGE 7)</i></p> <p>contractors every assistance in their power in obtaining the same.</p> <p>The extent of further land required is shewn in plans hereto attached. The contractors shall also obtain all wayleaves for temporary roads for which they shall be responsible.</p> <p>All lands acquired by the contractors for the purpose of the railway shall be conveyed to the company, that is the contractors shall acquire the lands at their own expense for and on behalf of the company and shall, if necessary, join with the vendors in any conveyance thereof to the company.</p> <p>On completion of the works, roads are to be left only if required by the company and alternatively the original ground surface must be made good.</p>
<u>TRANSPORT OVER EXISTING RAILWAY.</u>	<p>14. During the repair of the existing North Wales Narrow Gauge including the Bryngwyn branch, and of the Croesor tramway, the contractors must not unduly delay the slate traffic carried on these lines and in no case must the traffic be stopped for a period exceeding three days.</p> <p>The company will transport over the existing line from Dinas to South Snowdon all goods required by the contractors for construction at three fourths the current rates applicable to ordinary traffic.</p> <p>The contractors may make use of the existing Croesor tramway to such extent as they may require in connection with the execution of the works but shall, if required by the company, transport all traffic</p>

	<p><i>(END OF PAGE 8)</i></p> <p>arising on the railway at charges equal to the present haulage rates. So soon as this section of the railway is complete the company will resume operation of the traffic and the contractors will thereafter pay the company three fourths of the rates usually charged.</p>
<u>DAMAGE TO ROADS.</u>	<p>15. The contractors shall make good any damage to existing public or private roads resulting from the execution of the works and shall indemnify the company against all claims for damage due to any extraordinary traffic resulting from the carrying out of the works.</p>
<u>ROAD OR RIVER DIVERSIONS.</u>	<p>16. The contractors must carry out as a part of the contract any diversions of roads or rivers required for the construction of the railway to the satisfaction of any local authority concerned.</p>
<u>RECORDS.</u>	<p>17. The contractors must keep at their office on the railway a record of progress defining procedure with the various principal features and details of the railway under construction and lists of plant and labour employed and these records must at regular intervals be submitted to and approved by the resident engineer in writing.</p>
<u>MAINTENANCE.</u>	<p>18. For a period of three months after the railway has been passed by the Ministry of Transport (or other competent authority) for opening for public traffic the contractors shall maintain the railway and shall be responsible for maintaining the alignment and gauge of the permanent way including the supply of any necessary ballast.</p> <p><i>(END OF PAGE 9 – there is no page 10 in the original – text of clause 18 continues as page 11)</i></p> <p>The contractors shall be responsible for making good any defective work or any faults or injuries resulting from defective work which may become revealed or are observed within a period of 12 months after the issue of the engineers' certificate of completion and in this connection "defective work" shall be held to include slips in cuttings, settlement of material of banks or of banks into the sub-soil below, slides of scree, falls of rock in cuttings or tunnels as well as any other faults or defects in material construction or erection of permanent way structures or accessories executed under the contract, or in or resulting from work already executed which is made use of for the purpose of completing the railway.</p> <p>Maintenance of permanent way and of the construction work of the railway is to be carried out to the satisfaction of the engineers and if the contractors fail to execute these works the company shall be entitled to execute these works by employing other contractors or by employing the company's own labour and purchasing the necessary materials and plant and the company shall be entitled to apply the balance of the retention fund for meeting the expenses incurred and if this balance is insufficient the contractor shall be liable to pay the company the extra expenses incurred by the company.</p>

<p><u>LABOUR.</u></p>	<p>19. The contractors shall not pay the labour employed higher rates than are approved by the Ministry of Labour for a government assisted contract intended (END OF PAGE 11)</p> <p>to relieve unemployment, nor higher than are approved by the company and shall pay wages at such time and in such manner as may be approved by the resident engineer. The contractors shall, in this respect, conform with the provisions of clause 7 of the Heads of Agreement contained in the 2nd schedule to the Welsh Highland Railway (Light Railway) Order 1922.</p> <p>Proper shelters and latrine accommodation on the site are to be provided for the workmen in position approved by the resident engineer. All refuse and rubbish is to be collected and destroyed or effectively buried from time to time and the site is to be kept clean and in good order in all respects.</p> <p>The contractors shall be responsible for keeping order amongst their employees and shall take all necessary steps to prevent a disturbance of the peace by them.</p> <p>The contractors shall dismiss any of their employees who may be considered by the company or the engineers to be incompetent, negligent or otherwise detrimental to the efficient execution of the works.</p>
<p><u>INSURANCE.</u></p>	<p>20. Any damage arising from accidents or carelessness of workmen or otherwise to the said works hereby contracted for whether occasioned by frost, inclement weather, fire or otherwise or to the materials, plant and implements therein used or to the property of third parties shall be borne and made good by the contractors at their own cost. And the contractors shall also be liable for and will satisfy all damages and claims the result of (END OF PAGE 12)</p> <p>any accident causing either loss of life or injury which may happen to any workmen, employee or other person engaged upon or any persons not engaged upon the said works, whether such accident is due to the carelessness or otherwise of the contractors, their workmen or employees or any other person and the contractor hereby agrees to indemnify the company for all such claims accordingly.</p>
<p><u>LAND AND WAYLEAVES.</u></p>	<p>21. All necessary property, wayleaves or other rights temporarily required in the opinion of the engineers, for the construction of the railway and the execution of works on land lying between the route of the railway and the main roads will be obtained for the contractors at their own expense but the company shall give them all reasonable assistance in the matter.</p>
<p><u>COMPLETENESS OF INFORMATION.</u></p>	<p>22. The contractors when tendering are held to have inspected the route of the railway and to be satisfied that the specification completely and sufficiently describes the contract.</p>
<p><u>PROGRESS.</u></p>	<p>23. If the engineers are not satisfied with the contractors' equipment or plant, provision of labour or in respect of any other condition pertaining to the proper completion of the work within the time stated they shall give the contractors notice of the matter in which they are dissatisfied and unless within a period of two weeks after that date the contractors have satisfied the engineers that they have taken measures approved by them to rectify</p>

	<p><i>(END OF PAGE 13)</i></p> <p>the deficiency the engineers may forthwith give one month's notice to the contractors determining the agreement to construct the railway and the company shall then be at liberty to complete the works by employing other contractors on any terms approved by the engineers or by embodying labour direct and on completion of the railway shall be entitled to recover from the contractors any extra expense incurred by this procedure over and above the amount which would have been due to them had they completed the contract. If any balance remains in the hands of the company the contractors shall be entitled to receive only such sum as, when added to any sums already paid to them, shall be certified by the engineers as being the nett cost of the work as executed at the date of the notice as defined in this clause but with no addition for profit.</p>
<u>BANKRUPTCY.</u>	<p><i>(sic – un-numbered)</i> If the contractors shall go into liquidation or if a receiving order in bankruptcy shall be made against them the company may forth <i>(sic)</i> take over the work without notice and proceed with its completion as stated hereinbefore.</p>
<u>TIME OF COMPLETION.</u>	<p>24. On receiving an acceptance of their tender the contractors shall take steps to put the work in hand and shall carry it out regularly without loss of time, working if necessary by night and on Sundays so that the works are substantially completed fit for use within the time stated herein, or such extension thereof as may be authorised in writing by the <i>(END OF PAGE 14)</i> engineers, but such period shall not necessarily include minor contingencies such as clearing away of plant, temporary works, etc.</p> <p>The contractors shall use their best endeavours to complete the section from Dinas to Beddgelert station (including the station) ready for public traffic by July 22nd, 1922, and shall likewise make every effort to complete the section from Portmadoc to Nant-mor halt (including the halt) by the same date.</p> <p>The contractors shall complete the whole railway ready for public traffic by March 31st, 1923. Completion by this date is an essential feature of the contract.</p> <p>If the contractors are delayed in completing the works by default on the part of the company, force majeure, strikes or other causes beyond their control, the engineers shall, subject to the approval of the Ministry of Transport so as to comply with clause 1 of the Heads of Agreement in the 2nd Schedule to the Welsh Highland Railway (Light Railway) Order 1922, grant an extension of time corresponding to the time lost but provided always that the contractors have made, within one week of the date of its occurrence, a claim for extension of time for every event which causes them delay.</p>
<u>SCHEDULE OF PRICES.</u>	<p>25. Payment on account for work executed by the contractors will be made by the company upon the certificate of the engineers in accordance with the <i>(END OF PAGE 15)</i> schedule of quantities and prices hereto attached.</p> <p>All measurements shall be nett measurements of the actual quantity of work executed any custom to the contrary notwithstanding and the mode of making measurements approved</p>

	<p>by the engineers shall be adopted.</p> <p>All earthwork and excavation will be measured in excavation. Excavation for foundation, piers and similar work will be measured as the nett minimum excavation necessary for the execution of the work by methods customarily employed.</p> <p>All payment on account shall be regarded as provisional and approximate and subject to adjustment at any time until the issue of the final certificate.</p> <p>Quantities for tendering are approximate only. Each item includes all accessories and contingencies.</p>
<u>CERTIFICATES.</u>	<p>26. On or about two months after the contractors have received an order from the company or the engineers to commence work and provided the total amount due to the contractors is about £10,000, the contractors shall prepare a statement of the quantities of material delivered and work executed in the form of the schedule of prices (or alternatively the resident engineer and agent shall prepare the statement in co-operation) and within one week the engineers shall issue a certificate stating the value of the work executed by the contractors and the amount to be deducted therefrom in respect of retention fund or other obligations or liabilities</p> <p><i>(END OF PAGE 16)</i></p> <p>of the contractors as defined herein.</p> <p>At regular intervals of one month and provided the amount of each certificate will amount to about £5,000, or more, the engineers shall issue further certificates stating the value of work executed less deductions as defined above.</p> <p>On substantial completion to the satisfaction of the engineers of all principal features of the railway so that it is ready for operation but not necessarily minor matters such as removal of plant, clearing up and unimportant accessories but provided that the Ministry of Transport have issued a certificate that the railway is in fit condition for operation, the engineers shall, without avoidable delay, issue a certificate of completion stating the total amount due to the contractors inclusive of any adjustments in regard to provisional payments or otherwise as defined in this specification.</p>
<u>PAYMENT.</u>	<p>27. Within twenty-one days of the issue to the contractors or <i>(sic)</i> engineers certificates for provisional payments stating value of work executed the company shall pay the contractors the amount certified as due to them.</p> <p>All amounts certified or paid prior to the issue of the final certificate shall be regarded as payments on account and are subject to correction and adjustment.</p> <p><i>(END OF PAGE 17)</i></p> <p>On final completion of the period of maintenance and the services defined herein the engineers shall issue a final certificate and the company shall within one month of the date thereof pay to the contractors the balance of the retention fund less any deductions as provided in this specification.</p>
<u>RETENTION FUND.</u>	<p>28. From the total amount certified by the engineers from time to time as the value of work executed in accordance with the specification and calculated on the schedule of prices the company shall be entitled to retain ten per cent. to form a retention fund until the amount of this fund is £5,000. The retention fund shall</p>

	<p>be invested in the Debentures of the company and the contractors shall take the loss or benefit arising from fluctuations in the market price of such securities and shall receive any interest or dividend paid.</p> <p>Within one month of the date of the engineers' certificate of completion the company shall refund to the contractors one half of the retention fund less any deductions in respect of obligations imposed on the contractors as defined in this specification and provided that the contractors shall have duly proceeded to the satisfaction of the engineers with the execution of minor matters necessary to the termination of the contract which were incomplete at the date of the certificate of completion.</p> <p><i>(END OF PAGE 18)</i></p>
<u>VARIATIONS.</u>	<p>29. The contractors shall be entitled to deviate the route of the railway or extend or diminish the quantity of work to be carried out provided the general character of the work is maintained in accordance with this specification to the entire satisfaction of the engineers.</p>
<u>ARBITRATION.</u>	<p>30. If at any time any doubt or difference shall arise between the parties hereto as to the true intent or meaning of this contract, or of the specification and drawings, or as to the amount to be paid or retained for alterations or deviations, or extra work or omissions, or as to the mode of carrying this contract into effect, or as to any other matter whatsoever, in relation to the works, the same shall be determined by an arbitrator mutually agreed upon by the company and the contractors or failing agreement by an arbitrator appointed by the President of the Institution of Civil Engineers, who shall be deemed to be a single arbitrator appointed by the parties after differences have arisen within the meaning of the Arbitration Act, 1889, and the decision of such arbitrator shall be final and conclusive and binding on both parties.</p> <p><i>(END OF PAGE 19 – there is no paragraph 31 in the original)</i></p>
<p><u>SPECIFICATION OF WORKS.</u></p>	
<u>DINAS – S. SNOWDON.</u>	<p>32. The existing railway from Dinas to South Snowdon and including the branch to Bryngwyn is to be put into good running order and the work to be executed is set out fully in the schedule of prices.</p> <p>The gradients and curves of the section of the railway are not intended to be altered but any minor irregularities of track resulting from lack of efficient maintenance during recent years are to be made good.</p>
<u>S. SNOWDON – PORTMADOC.</u>	<p>33. The railway from South Snowdon to Portmadoc is to be completed along the route (generally) of a railway already partly constructed but with the deviations shewn on the contract plans and such other deviations or adjustments as are required in order to conform to this specification, especially in regard to ruling gradients and curves. Accurate conformity with the specification to these respects will be insisted upon.</p> <p>Any existing materials including fencing rails, sleepers, ballast or stone and any existing works along the route may be employed for the permanent construction provided these materials or works conform with this specification or are repaired or made good so that they are approved by the engineers as serviceable and</p>

	<p>reliable. Surplus material is to be disposed of by the contractors. <i>(END OF PAGE 20)</i></p> <p>From the junction with the existing Croesor tramway to Portmadoc the new railway is to be laid along the route of the tramway and the curves and gradients of this tramway are to be improved (where necessary) so as to conform with this specification.</p>																
<p><u>CURVE AND GRADIENT.</u></p>	<p>34. The following ruling curves and gradients are to be adopted:</p> <p>Minimum curve - 198 feet radius</p> <p>Tangents - Reverse curves are to be separated by a tangent of not less than 33 feet.</p> <p>Transition curves - Curves of 10 chains radius and under are to be connected to tangents by transition curves having a total length of 33 feet and the shift in feet shall be 200. Similar transition curves are to be introduced where one curve runs into another of different radius.</p> <p>Gradient - No gradient is to be steeper than 1 in 40 and all gradients are to be compensated for curvature as stated below.</p> <p>Compensation for curvature - The compensation for curvature shall be .015 per cent per degree of curve.</p> <p>Vertical curves - All changes in gradient are to be connected by vertical curves having tangents of 33 feet.</p> <p>Gauge - The gauge on tangents and curves above 330 ft. radius is to be 1 ft. 11½ in. On curves of 330 ft. radius and less the gauge is to be increased to 1 ft. 11¾ in.</p> <p><i>(END OF PAGE 21)</i></p> <p>Superelevation – Superelevation is to be provided on curves of 10 chains radius or less as follows :-</p> <table border="0"> <tr> <td>curve</td> <td>10</td> <td>8</td> <td>6</td> <td>5</td> <td>4</td> <td>3</td> <td>chains</td> </tr> <tr> <td>superelevation</td> <td>.6</td> <td>.75</td> <td>1.0</td> <td>1.2</td> <td>1.5</td> <td>2.0</td> <td>inches</td> </tr> </table>	curve	10	8	6	5	4	3	chains	superelevation	.6	.75	1.0	1.2	1.5	2.0	inches
curve	10	8	6	5	4	3	chains										
superelevation	.6	.75	1.0	1.2	1.5	2.0	inches										
<p><u>PERMANENT WAY MATERIALS.</u></p>	<p>35. Rails, fishplates, bolts and spikes shall conform to the British Standard specifications for quality and dimensions, where such specifications apply and otherwise to specifications issued by the engineers. Rails are to weigh 40 lbs. per lineal yard. Spikes are to be 9/16 in. square and 5 in. long from point to base of head.</p> <p>Second-hand or rejected imperfect material will be accepted provided the engineers are satisfied with the quality of rails proposed. For material other than new the exact weight of rail will not be insisted upon.</p> <p>Rails are to be in 33 ft. lengths unless otherwise approved.</p> <p>Sleepers are to be of first quality fir or other approved timber free from all defects and treated with creosote by a process approved by the engineers.</p> <p>Sleepers to be 9 in. x 4½ in. x 4 ft. 0 in. long. The lower side must have the full breadth of 9 in. fully maintained throughout. The top side must have a flat sawn breadth it no point less than 7 in.</p> <p>Sleepers to be spaced 12 to the rail length, the sleepers at joints being 2 ft. apart centre to centre.</p> <p><i>(END OF PAGE 22 – there is no paragraph 36 in the original)</i></p>																

<p><u>LEVEL CROSSINGS.</u></p>	<p>37. Where the line crosses farm roads or public roads on grade two 15 ft. long inside guard rails and two 15 ft. outside longitudinal timbers 9 in. x 4½. in. spiked to sleepers are to be provided. The ballast to be brought up to rail level.</p>
<p><u>TELEPHONE.</u></p>	<p>38. A complete telephone (<i>sic</i>) is to be supplied and constructed between S. Snowdon and Portmadoc, connected at these points with the existing telephone lines and with instruments at S. Snowdon (<i>sic – no comma is shown here but presumably there should be one – c.f. last para. below</i>) Halt at 2½ miles, Beddgelert, Nant-mor, Croesor Bridge, Portmadoc.</p> <p>Posts for line between S. Snowdon and Beddgelert are to be creosoted fir about 7 in. diameter at 5 ft. from butt, 25 feet long and set 4 ft. in ground at intervals not exceeding 60 yards. Between Beddgelert and Portmadoc the telephone wires may be fixed to the poles of the North Wales Power and Traction Company and the Company undertakes to obtain the necessary consent.</p> <p>The contractors must provide any connecting lines between the route of the transmission lines and the points on the railway where instruments are required.</p> <p>Wires are to be of copper. Instruments are to be of the selective type and of a type approved by the engineers.</p> <p>The instruments are to be placed in offices at S.Snowdon, Beddgelert and Portmadoc and in lock-up boxes in shelters at 2½ mile Halt, Nant-mor and Croesor Bridge.</p> <p><i>(END OF PAGE 23)</i></p>
<p><u>SIGNALS.</u></p>	<p>39. Any signals necessary in order to conform with the requirements of the Ministry of Transport or of the engineers are to be supplied and constructed by the contractors.</p>
<p><u>EARTHWORKS.</u></p>	<p>40. Cuttings are to have a bottom width of 11 ft. except where they occur on curves of less than 6 chains radius where the width is to be increased to 12 ft.</p> <p>Side slopes of cuttings are to be 1 to 1 in ordinary good soil but are to be flatter if so ordered by the engineers when the cutting is excavated. In rock the face may be left perpendicular.</p> <p>Cuttings are to be roughly finished, large boulders or rock outcrops which disturb the normal surface plane need not be removed provided they are not nearer to the centre of the track than 6 ft.</p> <p>Spoil for banks if required may be excavated at any place where it is found in a suitable condition for handling and provided that the company can acquire the land at reasonable cost.</p> <p>The upper side of cuttings is to be drained above the slope, if ordered by the resident engineer by a ditch of 1 ft. 6 in. width and 1 ft. depth or such larger dimensions as he may approve.</p> <p>The bottom of the cutting is to be drained on either or both sides at the foot of the slope, where ordered by the resident engineer, by ditches of the dimensions he may decide .</p> <p>All such ditches are to be carried down to some existing water course or otherwise terminated as the resident engineer may decide.</p> <p><i>(END OF PAGE 24)</i></p> <p>The bottom of cuttings is to be neatly formed and finished to the correct line and level of formation and is to have a camber to</p>

	<p>the centre of about 4 in.</p> <p><u>Banks.</u> Banks are to be formed of any approved material excavated from cuttings or borrow pits. Peat is not to be used for banks and top soil and vegetation is to be excluded.</p> <p>Before banks are tipped weak peat or surface soil and vegetation is to be removed, except over boggy ground. All growing trees are to be cut and roots to be grubbed up. Over bog the existing surface is not to be disturbed.</p> <p>The side slopes of banks are to be as ordered by the resident engineer according to the material available. For ordinary good material the slopes shall be 1 to 1 for heights up to 6 ft. and above this 1½ to 1. The surface of banks is to be neatly finished and covered with 4 in. soil or roughly pitched with stone taken from the material excavated. Allowance must be made for settlement of about 2 in. per foot of height or such other amount as may be ordered by the resident engineer.</p> <p>Banks are to be end-tipped or otherwise constructed so that all the material used is consolidated by the process of construction.</p> <p>The top of the banks is to be neatly formed and finished to correct line and levels and is to have a camber of about 4 in. The top width of banks is to be 10 ft.</p> <p><i>(END OF PAGE 25)</i></p>
<u>BALLAST.</u>	<p>41. Bottom ballast having a thickness of about 4 in. and consisting of sound local stones not exceeding 4 in. thickness and about one fourth sq. ft. area is to be roughly laid on foundation and is to be covered with top ballast as specified below or at the option of the contractor 10 in. thickness of top ballast only need be laid. In rock cuttings and on top of rock banks the thickness of ballast may be reduced provided it is nowhere less than 2 in. thick below the sleepers.</p> <p>Top ballast is to consist of approved local stone broken to pass a 1½ in. screen and well packed under and against sleepers, the upper surface of ballast finishing level with tops of sleepers.</p> <p>Ballasting is to be deferred as long as possible over new earthwork so that formation may consolidate before ballast is laid.</p> <p>Ballast must be deposited so that the line is finished to the correct grades and curves shown on the drawings. Any further settlement after ballasting is carried out until the completion of the period of maintenance must be made up with top ballast.</p> <p>All stone lying along the route may be used for ballast.</p>
<u>PLATELAYING.</u>	<p>42. Track intended for the permanent railway may be used for construction but any rails or joints that are crippled or otherwise injured must be made good to the satisfaction of the resident engineer.</p> <p><i>(END OF PAGE 26)</i></p> <p>Sleepers are to be laid with broad side down, 12 per rail length, the two sleepers at joints being 2 feet apart centre to centre.</p> <p>Rails are to be secured with 4 dog spikes to each sleeper, the two spikes for each rail being staggered.</p> <p>Rail joints are to be opposite one another except on curves of 5 chs. and less and must not be over sleepers.</p> <p>Rails on curves are to be formed with approved appliances so that the rail is uniformly curved throughout. The</p>

	<p>outer rail on curves up to 264 feet radius is to be supported by oak cleats about 6 in. x 4 in. x 2 in. thick spiked to the sleeper with two $\frac{3}{8}$ in. square spikes and resting firmly against the web of the rail.</p> <p>$\frac{1}{4}$ in. is to be allowed for expansion at each joint at 60° Fahr.</p> <p>After ballast is laid the track is to be brought up to correct grade, line and superelevation as specified and shewn in drawing and maintained in this condition until the end of the period of maintenance.</p>
<u>TUNNEL.</u>	<p>43. The partly completed tunnels near Beddgelert are to be enlarged where necessary and trimmed to the correct cross section as shown in the drawings, the Aberglaslyn pass tunnel is to be excavated through to the upper end. Work on this tunnel is to proceed from both ends so long as water is not encountered in sufficient quantities to need pumping.</p> <p><i>(END OF PAGE 27)</i></p> <p>The tunnel is to be completed as rapidly as possible.</p> <p>No lining is required unless ordered by the engineers and as far as can be judged from the excavation already made none will be ordered.</p> <p>All loose or weak rock on interior surface is to be removed.</p>
<u>CEMENT.</u>	<p>44. All cement shall be slow or medium setting quality in accordance with. the British Standard specification (1920) and supplied by an approved manufacturer in bags bearing his name or brand.</p> <p>Proper precautions shall be taken to keep all cement free from water and dampness and no cement that has become injured shall be used on the contract.</p>
<u>SAND.</u>	<p>45. Sand for mortar and concrete shall be clean coarse sand from beds or quarries approved 'by the resident engineer and free from clay, peat or other impurities.</p>
<u>STONE.</u>	<p>46. Stone for concrete shall be hard clean stone broken to the sizes specified and containing all the fine material except that about 1/16 inch and less which may be used as sand, provided it does not contain a large proportion of dust or very fine particles.</p> <p>Care is to be taken to keep broken stone evenly graded.</p>
<u>MORTAR.</u>	<p>47. Mortar for brickwork or masonry is to consist of 4 parts sand and 1 cement thoroughly mixed with clean water and used at once. Mortar</p> <p><i>(END OF PAGE 28)</i></p> <p>must be mixed in small lots so that it is used within half an hour of the time of mixing. Any mortar not used is to be destroyed and must not be worked up again or be blended with fresh mortar. If any stale mortar is used the resident engineer shall order all work completed in the structure to be removed whether or not it appears satisfactory, and any workman, foreman or engineer who uses or allows the use of stale mortar shall, at the request of the resident engineer, be dismissed from the works.</p> <p>Lime mortar consisting of 2 parts sand and 1 part hydraulic lime of quality approved by the engineers may be used for culvert walls and abutments over 1 ft. 6 in. thickness, to such extent and in such situations only as may be approved by the resident engineer. Girder beds and copings must be in cement</p>

	concrete or cement jointed masonry.
<u>CONCRETE.</u>	<p>48. Concrete for heavy walls (1 ft. 6 in. or more) and foundations shall consist of 300 lb. cement per cubic yard of finished concrete. The aggregate is to be broken to pass a 2 in. screen.</p> <p>Concrete for girder beds, flat tops of culverts and thin walls shall consist of 400 lb. cement per cubic yard. of finished concrete. The aggregate is to be broken to pass a 1½ in. screen.</p> <p>Concrete for fine reinforced work shall consist of 600 lb. cement per cubic yard of finished concrete. The aggregate is to be broken to pass a 1 in. screen.</p> <p><i>(END OF PAGE 29)</i></p> <p>All aggregate is to be carefully blended with similar particles and sand so that the finished concrete is compact</p> <p>Concrete is to be thoroughly mixed by machine or by hand under conditions which ensure that the mixed concrete is clean and until the ingredients are thoroughly incorporated. and of uniform colour throughout.</p> <p>The conditions above, in clause 47, regarding the use of mortar apply also to concrete.</p> <p>Concrete is to be mixed with a minimum of water and is to be thoroughly rammed in position so that the mass is consolidated.</p> <p>It is to be deposited in layers not exceeding 2 ft. in thickness and the top of each layer when work stops is to be left rough. When work is resumed the surface is to be cleaned and covered with one to two inches of mortar.</p> <p>Forms for concrete are to be strong enough to support the concrete when rammed hard without bending or spreading to an extent which would weaken the concrete or disturb its external appearance.</p> <p>Finished concrete is to have a clean smooth surface and well formed angles. No rendering after completion is required.</p>
<u>BRICKWORK.</u>	<p>49. Bricks are to be hard, well burnt bricks of a quality approved by the resident engineer and are to be thoroughly soaked before they are used.</p> <p><i>(END OF PAGE 30)</i></p> <p>Mortar is to be as specified in clause 44 and bricks must be laid so as to bond and all joints are to be entirely filled with mortar. Courses are to be uniform and horizontal unless specifically ordered otherwise and external surfaces are to be neatly finished. Exterior joints are to be neatly finished and weathered as the work proceeds and no subsequent pointing is required.</p>
<u>MASONRY.</u>	<p>50. Masonry may be rough rubble of any available sound clean local stone, laid on its natural bed. Stones of any size may be used but must be laid in mortar and thoroughly bedded so that all cavities are filled with stone or mortar and adjacent stones are separated by mortar as specified in clause 47 at least half an inch thick.</p> <p>Walls may be built of an exterior face of rubble and concrete inside. In this case courses must not exceed 12 in. in thickness and the exterior faces must be about 9 in. average thickness and of sufficient strength to withstand pressure and ramming of the interior concrete without disturbance.</p>

	<p>The finished surface must be neat and uniform, but unnecessary trimming of stones is not required and excrescences of two to three inches from the general surface will be permitted.</p> <p>Joints are to be finished and weathered as the work proceeds. No subsequent pointing is required.</p> <p><i>(END OF PAGE 31)</i></p>
<u>FOUNDATIONS.</u>	<p>51. Foundations are to be carried down to rock or hard ground approved by the resident engineer.</p> <p>If hard soil cannot be found at a reasonable depth foundations are to be piled or other methods of construction adopted in accordance with the instructions of the resident engineer.</p> <p>Excavations are to be cut clean and square into the corners and are to be kept dry while concrete is deposited.</p> <p>Any spaces between concrete and earth may be filled with 12 to 1 concrete or sound material well rammed. Excavation price must include this work and material. All timber is to be removed.</p>
<u>FINISHING EXISTING STRUCTURES.</u>	<p>52. Existing structures are to be finished or altered in accordance with the instructions of the resident engineer.</p>
<u>CULVERTS.</u>	<p>53. Culverts of 3 feet or less with flat tops are to have covering of sound slate or other approved stone slabs of the thickness shewn in drawings.</p> <p>Culverts of greater breadth are to have flat reinforced concrete tops built or (<i>sic</i>) timber forms or on slate slabs of sufficient strength to carry the concrete during construction, joints between slabs are to be covered with thin slates before concrete is deposited. The thickness of slab is not included in thickness of concrete.</p> <p><i>(END OF PAGE 32)</i></p>
<u>BACKING OF WALLS.</u>	<p>54. All culverts and walls are to have a backing of good dry stone about 1 ft. thick at top and with a slope of ¼ to 1 placed before earthwork is brought up to the walls.</p>
<u>PITCHING.</u>	<p>55. Pitching where required for protection of slopes or inverts is to consist of selected hand packed stone not less than 12 in thick.</p>
<u>STEELWORK.</u>	<p>56. All steel is to conform to British Standard specification No.15 – 1912.</p> <p>All workmanship is to be in accordance with detail specifications approved by the engineers.</p> <p>Three coats of first class paint, one before and two after erection on all exposed steelwork is required.</p> <p>Buried steelwork and reinforcing rods are to be cleaned and covered with fresh cement or lime wash before concrete is deposited.</p>
<u>STONEWARE PIPES.</u>	<p>57. To be spigot and socket first quality stoneware straight and true and from a manufacturer approved by the engineers. Joints to be made in cement mortar 2 to 1.</p>
<u>BRIDGES AND CULVERTS</u>	<p>58. The attached list gives particulars of all bridges and culverts on the railway with particulars of the construction to be adopted and the present condition of the work. The engineers may alter the number or extent of work represented by the items of this list to any extent they think right before work on such section of the railway commences.</p>

	<i>(END OF PAGE 33)</i>
<u>STATIONS.</u>	<p>59. The following halts, passing places and stations are required :-</p> <ol style="list-style-type: none"> 1. About 3 miles - Halt with spur 40 ft. clear long for goods truck. Shelter about 12 ft. x 6 ft. 2. Beddgelert - Passing loop 300 ft. length. Siding 180 ft. length Spurs to goods and loco shed. Waiting room about 40 ft. x 12 ft. with one end partitioned off to form office. Goods shed about 30 ft. x 20 ft. Loco. shed about 40 ft. x 15 ft. Water tank and pipe connections. 3. Nant-mor - Halt with spur 40 ft. long for goods truck Shelter about 12 ft. x 6 ft. 4. About 8 miles - Passing loop 300 ft. length and 40ft spur (Junction with Croesor Tramway) 5. About 10 miles - 40 ft. spur and waiting room about 15 ft. x 10 ft. (Croesor Bridge) 6. At Portmadoc - Passing loop 300 ft. length and waiting room about 30 ft. x 12 ft. with one end to form office. Water tank and pipe connections. <p>Waiting rooms and sheds may be second-hand army huts or similar buildings but must be in sound condition and are to be carefully re-erected.</p> <p><i>(END OF PAGE 34)</i></p> <p>All timber, unless otherwise approved by the resident engineer, is to be saturated with creosote or similar preservative and all timber sills and framing are to be built on concrete platforms or walls so that they are raised 6 in. at least above ground level and to an extent sufficient to prevent water or dampness affecting the timber.</p> <p>The floors of waiting rooms are to be of concrete with surface rendered.</p> <p>The halts and stations are to have approach roads about 10 ft wide connecting to existing highways, except Beddgelert where the road is to be 16 ft. wide.</p> <p>Alongside the track at stations and halts a strip of ground is to be levelled and covered. with 6 inches stone ballast or gravel rolled down. At Beddgelert this strip is to be 300 feet x 15 feet and elsewhere 150 feet x 10 feet.</p> <p><i>(END OF PAGE 35 AND END OF SPECIFICATION)</i></p>

(START OF PAGE 34 – note that pagination does **not** continue from Contract and Specification)

SCHEDULE OF PRICES & QUANTITIES FOR PAYMENT ON ACCOUNT

WELSH HIGHLAND RAILWAY

Repairs of existing North Wales Narrow Gauge Railway
Dinas to South Snowdon and branch to Bryngwyn
(see drawing No. A 33395 for route)

Item	Description	Unit	Qty.	Rate	Amount
1.	Clean and weed formation width about 10 ft.	mile	12	£50	600.0.0
2.	Provide and lay new sleepers in place of existing faulty sleepers as instructed by resident engineer including removal and stacking of old sleepers at existing terminal stations. Include additional spikes required	No.	5000	6/8	1666.13.4
3.	Loosen existing ballast, provide 3 in. top ballast for breadth of 6ft. lift road and pack and clean off edges of ballast over whole length of line including all existing crossings, passing loops and sidings at existing stations. Include supply of new ballast about 300 cu.yd per mile.	Mile	13	£270	3510.0.0
4.	From side drains about 2ft x 1ft	lin.yds	500	2/-	50.0.0
5.	Clean and weed side drains on Bryngwyn branch	do.	1400	6 ^d .	35.0.0
6.	Lay 12 in. S.W.pipe with cement in trenches 3ft. deep including digging and refilling.	do.	50	16/6	41.5.0
7.	Provide and fix new 12 in. x 6 in. longitudinal timber on bridges including fixing of track and stacking all timbers at terminus.	lin.ft.	400	3/6	70.0.0

8.	Provide and fix check rails in bridges (if ordered)	do.	500	4/6	112.10.0
9.	Provide and fix 3in. timber planking.	sq.ft.	800	1/9	70.0.0
CARRIED FORWARD					6155.8.4
<i>(END OF PAGE 34 / START OF PAGE 35)</i>					
BROUGHT FORWARD					6155.8.4
10.	Remove and lay 1 in 12 crossings and points with all necessary operating gear, including crossing sleepers and all materials At Dinas Station At Bryngwyn Station	No. "	1 5	£20 £20	20.0.0 100.0.0
11.	Remove and lay new diamond crossings at Dinas including all material.	allow sum of			50.0.0
12.	Provide and lay with lead joints 2½ inch dia. C.I. pipe in trench 2ft. deep and connect to tank at Dinas including digging and refilling.	lin.yds.	170	7/6	63.15.0
13.	Provide tank 10ft x 6ft x 4ft (or equivalent size) and fix on existing masonry pier making all necessary connections including 6ft. length of leather hose.	allow sum of			40.0.0
14.	Intake chamber 3ft. x 3ft. x 2ft. inside dimensions of brickwork or concrete including excavation and cast iron cover.	allow sum of			5.0.0
15.	Clean and paint steelwork of 3 – 50ft. span bridges and 1 – 100 ft span bridge and all smaller bridges along the line	allow sum of			250.0.0
16.	Build masonry pier of rough rubble 6ft. x 4ft. x 8ft. for tank at Quellyn Lake Stn.	allow sum of			14.0.0
17.	Provide and fix new tank as item 13	allow sum of			40.0.0

18.	Construct new culvert 3ft. x 3ft x 30ft. long at mile 3-½ including excavation in existing bank and making good.	allow sum of	60.0.0
CARRIED FORWARD			6798.3.4
<i>(END OF PAGE 35 / START OF PAGE 36)</i>			
BROUGHT FORWARD			6798.3.4
19.	Re-build 6ft. span masonry culvert 5ft. high at mile 7-¼ including excavation in existing bank and new superstructure.	allow sum of	150.0.0
20.	Re-build at Mile ¼ on Bryngwyn branch 4ft. span culvert as a double 3ft. x 3ft. span length about 30ft. include excavation in existing bank and making good	allow sum of	100.0.0
21.	Construct new culvert 3ft. x 3ft. at mile 2 on Bryngwyn branch including excavation in existing bank and making good	allow sum of	30.0.0
22.	Incidental repairs and renewals	allow sum of	200.0.0
23.	Repairs of rolling stock	allow sum of	1000.0.0
24.	Fencing	allow sum of	<u>1000.0.0</u>
			<u>£9278.3.4</u>
<i>(END OF PAGE 36 / START OF PAGE 37)</i>			

WELSH HIGHLAND RAILWAY

SCHEDULE OF QUANTITIES

Item	Description	Unit	Qty.	Rate	Amount
	<u>Earthworks</u>				
1.	S.Snowdon to 5150 ft. * Banks exceed cuts in this section by about 80 cu.yds Excess will be found by enlarging existing cuttings. Principally earth with boulders. <i>(* see Foreword for explanation of these measurements in feet)</i>	cu.yd.	340	5/6	93.10.0

2.	5150 ft. to 10,800 ft. Banks exceed cuts by about 1500 yds. Excess will be obtained chiefly by enlarging existing cuttings. Principally earth with boulders.	do.	3700	4/-	740.0.0
3.	10,800 ft. to 16,200 ft. Banks exceed cuts by about 2300 cu. yds. Excess can be obtained from existing bank on original route of railway at distance 13,000 feet. Principally earth with boulders. Cutting at 14,200 to 14,800 may need rock.	do.	8340	4/-	1668.0.0
4.	Extra price for any rock cutting (prov. qty.)	do.	500	7/-	175.0.0
5.	16,200 ft. to 20,150. Cuts exceed banks by 2700 cu. yds. A large proportion of cutting at 18,400 to 19,000 is expected to be rock. Surplus to be used for item 11.	do.	4500	4/6	1012.10.0
6.	Extra price of rock Cutting (provisional quantity).	do.	3000	6/-	900.0.0
CARRIED FORWARD					4589.0.0
<i>(END OF PAGE 37 / START OF PAGE 38)</i>					
BROUGHT FORWARD					4589.0.0
7.	20,150 to 25,350 Cuts exceed banks by 13400 cu. yds. 3000 cu. yds, cutting <i>(sic)</i> are required to level site of Beddgelert station. A large proportion of cuttings at 213,000 <i>(sic - should read 21,300)</i> to 22,000 and 24,950 to 25,250 are probably rock. Surplus to be used for item 11.	cu. yd.	22800	4/-	4560.0.0
8.	Extra price for rock cutting. (provisional quantity).	do.	10,000	6/-	3000.0.0

9.	Alternative price for tunnel in rock, same section as existing tunnels, length not exceeding 100 yds.	do.	1000	30/-	(sic - no figure shown here)
10.	Trimming existing Tunnel 25,350 to 25,500, 110 cu. yds. of filling required. along bottom of tunnel.	do.	110	40/-	220.0.0
11.	25,500 to 31,050 33,400 cu. yds. less 16,100 from items 5 and 7. Only 900 cu. yds. is available from cuttings in section. Balance of 16,400 cu.yds. must be got from borrow pits. Contractors must state where they propose to obtain this: (space was left in the proforma but not completed by the tenderers)	do.	17,300	5/-	4325.0.0
12.	Alternative price for steel trestle instead of highest portion of bank. See type drawing A33405. Price per bay of 33 ft.		Sum of	£170	(sic - no figure shown here)
13.	Trimming existing tunnels at 30,400 - 30,500 and 30,650 - 30,700.	cu. yds.	80	40/-	160.0.0
14.	Extras for rock cutting at 30,700 to 30,150 (sic - presumably should have read 31,150)	do.	140	7/-	49.0.0
CARRIED FORWARD					£16,903.0.0
<i>(END OF PAGE 387 / START OF PAGE 39)</i>					
BROUGHT FORWARD					£16,903.0.0
15.	31,050 - 31,450 Excavation and trimming of Aberglaslyn tunnel. Rock.	cu.yds.	2100	30/-	3150.0.0
16.	31,450 - 36,800 7000 cu. yds. less 2100 from item 15. Only 2800 cu. yds. is available from cuttings in section. The balance must be obtained from pits and next section. 2000 is available from item 19.	do.	4900	5/-	1225.0.0
17.	Extra for rock cuttings.	do.	2500	6/-	750.0.0

18.	36,800 to 45,800. Cuttings exceed banks by 700 cu. yds.	do.	1900	5/6	522.10.0
	<u>Note:-</u> Items 4-6-8- 14-17 are rates extra to normal rates covering earth and boulders. Both rates will be paid for all rock excavation. All rates include trimming and forming against culverts and abutments.				
19.	At 34,300. Excavate and lower public road to pass under railway. Road to be re- graded and grades not exceeding 1 in 20.	do.	2000	5/-	500.0.0
20.	Extra for rock cutting.	do.	1500	7/-	525.0.0
21.	Extra on above for re- metalling and steam rolling road.	lin.yds.	100	£1	100.0.0
22.	Side ditches not exceeding 1ft. 6in. depth and 2ft. top width in earth and boulders. (provisional quantity).	lin.yds.	8000	1/9	<u>700.0.0</u>
CARRIED FORWARD				£24,375.10.0	
<i>(END OF PAGE 39 / START OF PAGE 40)</i>					
BROUGHT FORWARD				£24,375.10.0	
23.	Side ditches not exceeding 1ft. depth and 1ft. 6in. width in rock. (provisional quantity)	lin. yd.	1000	3/-	150.0.0
24.	Excavation for bridge and culvert foundation to depth below average surface level of 6ft.	cu. yds.	850	7/6	318.15.0
25.	Do. from depth of 6ft. to depth of 12ft.	cu. yds.	60	12/-	36.0.0
26.	Do. from depth of 12ft. to depth of 18ft.	cu. yds.	40	20/-	40.0.0
27.	Concrete or rubble masonry in foundations and heavy walls.	cu. yds.	1200	40/-	2,400.0.0
28.	Concrete in girder beds & flat tops of culverts &c.	cu. yds.	500	60/-	1,500.0.0
29.	Pitching for slope protection.	sq. yds.	500	4/-	100.0.0

30.	Steel in lattice girder bridges erected complete	ton	60	£30	1,800.0.0
31.	Steel in steel joist bridges erected complete	ton	10	£22	220.0.0
32.	Timber deck on bridges including sleepers 9in. x 4½in x 4ft. 6in. about 9in. apart and longitudinal timbers 6in. x 6in. extending 5ft. beyond abutments including all fastenings and fixing.	lin. ft.	500	10/6	262.10.0
33.	Extra for supplying and fixing guard rails on both sides of track inside running rails.	do.	500	10/-	250.0.0
34.	Ballast laid complete including not more than 4in. bottom ballast as specified, thickness 10in., width 5ft. 6in. quantity per mile 953 cu. yds.	mile	9.0	£300	2,700.0.0
CARRIED FORWARD				£34,152.15.0	
<i>(END OF PAGE 40 / START OF PAGE 41)</i>					
BROUGHT FORWARD				£34,152.15.0	
35.	Sleepers 9in. x 4½ x 4ft 6in. delivered on railway: provisional payment on account.	No.	17,000	4/9	4,037.10.0
36.	Rails, fishplates, fishbolts and dog spikes delivered on site in proper proportions ready for laying in track: provisional payment on acc.	tons	600	£8.10.0	5,100.0.0
	<u>Note:-</u> Above items 32, 35 & 36 will be measured through entire length of main line, loops and sidings from end to end and point to point.				
37.	Points and crossings including all special sleepers, fixing and laying	Set	12	£20	240.0.0
38.	Catch points on spurs of main line including laying and fixing	No.	6	£8	48.0.0

39.	Level crossings including guard rails and timbers including fixing and laying.	No.	50	£10	500.0.0
40.	Oak cleats on curves as specified including fixing.	No.	1200	4 ^d .	20.0.0
41.	Laying track complete.	mile	9.0	£176	1,584.0.0
42.	Final lifting, packing and adjustment of track including supply of any additional ballast required for which no other payment will be made.	"	9.0	£90	810.0.0
43.	Telephone complete.	"	8.7	Allow sum of	1,000.0.0
CARRIED FORWARD					£47,492.5.0
<i>(END OF PAGE 41 / START OF PAGE 42)</i>					
BROUGHT FORWARD					£47,492.5.0
44.	Supply and erection of station buildings, water tanks, water supply, fencing, gates etc., as may be required. The contractor to carry out this work at actual invoiced cash price plus 10 per cent as part of the contract. Provisional sum.				1,500.0.0
	The contractor is to quote for the following. Small quantities only may be required:				
a)	Stoneware pipes laid and jointed complete including trench not exceeding 3ft. deep and filling in 12 in. dia.	lin. yds		16/6	
b)	Do. do. 18 in. " "	"		35/-	
c)	Do. do. 24 in. " "	"		63/-	
d)	Brickwork in cement mortar, 9in., 14in., and 18in. walls.	cu. yds.		100/-	
45.	Fencing.	allow sum of			2,500.0.0
46.	Additional land.	allow sum of			<u>1,000.0.0</u>
TOTAL					<u>£52,492.5.0</u>
<i>(END OF PAGE 42 / START OF PAGE 43)</i>					

CROESOR TRAMWAY

Repairs to existing Croesor tramway from
junction of new line to Portmadoc

Item	Description	Unit	Qty.	Rate	Amount
	(A) From junction to <u>Beddgelert Siding</u>				
1.	Clean and weed formation width about 10 feet.	mile	2.9	£40	116.0.0
.	Provide and lay new track complete with all fastenings, sleepers and ballast. On main line: 180 l.ft. On sidings: At Junction: 300 " ". Spur at Pond <i>(sic - should read Pont)</i> Croesor 40 " ".	lin. yds.	274	20/-	274.0.0
3.	Loosen existing ballast and provide 2in top ballast for breadth of 6ft., lift road and pack and clean off edges of ballast including supply of new ballast about 200 c.y. per mile	mile	2.9	220/-	638.0.0
4.	Provide and lay new sleepers in place of existing faulty sleepers as instructed by resident engineer including removal and stacking of old sleepers at existing terminal stations.	No.	500	6/8	166.13.4
5.	Points and Crossings Provide and lay including crossing sleepers and all materials. At passing loop and spur at junction 1 in 12 At Spur at Pond <i>(sic - should read Pont)</i> Croesor 1 in 12 crossing.	Sets	3	£20	60.0.0
		Sets	1	£20	20.0.0
6.	Reconstruction of culverts and new culverts as shewn in bridge list.	allow sum of			500.0.0
	CARRIED FORWARD				£1774.13.4
<i>(END OF PAGE 43 / START OF PAGE 44)</i>					

		BROUGHT FORWARD			£1774.13.4
7.	Reconstruction of Croesor bridge as shewn on drawing No. A 33405.	allow sum of			1000.0.0
8.	Level crossings. Provide and lay inside guard rails 15ft. long outside longitudinal sleepers 15ft. long and bring ballast up and formation.	No.	6	£10	60.0.0
Beddgelert Siding to <u>Portmadoc</u>					
9.	Provide and lay new track complete with all fastenings, include for 50% new sleepers and 50% new ballast. On Beddgelert sidings main line 2000ft. passing loop 460ft.	lin. yds.	820	15/-	615.0.0
10.	Relay slate sidings with light section rails provide all additional fixings, ballast and sleepers required.	do.	400	(sic - no rate quoted)	300.0.0
11.	Provide and lay new track complete from crossing of Cambrian railway to High Street Portmadoc, include 50% new sleepers and 50% new ballast. Allow for repairs of road surfaces disturbed.	do.	870	16/-	696.0.0
12.	Points and Crossings Provide and lay including crossing sleepers and all materials and operating gear. 1 in 12 crossings complete on turn outs at Beddgelert sidings. 1 in 12 crossings complete on turn outs and passing loops between Beddgelert sidings and Portmadoc.	No.	4	£20	80.0.0
		No	6	£20	120.0.0
	<u>Note:-</u> Allow for keeping tramway open for slate traffic during period of repair. Allow for taking up existing light rails and defective sleepers and				

	stacking same at Beddgelert sidings or at Portmadoc terminus of Festiniog railway						<u>100.0</u>
							<u>£4745.13.4</u>
<i>(END OF PAGE 44./ START OF ADDITIONAL UN-NUMBERED SHEET)</i>							
<u>WELSH HIGHLAND RAILWAY</u>							
<u>SUMMARY</u>							
	Repairs to North Wales Narrow Gauge Railway						£ 9278
	Construction from S. Snowdon to Croesor Tramway						£52,492
	Repair to Croesor Tramway						<u>£ 4,745</u>
							<u>£66,515</u>
							say £66,500

<i>(END OF ADDITIONAL UN-NUMBERED SHEET – ORIGINAL PAGES 45 AND 46 STRUCK OUT – DOCUMENT CONTINUES AT PAGE 47)</i>							

(START OF PAGE 47)

WELSH HIGHLAND RAILWAY

LIST OF BRIDGES AND CULVERTS

South Snowdon to Croesor Tramway Junction

Ref. No.	Mile	Distance from Snowdon	Type	Dimensions	Height of Bank. Feet	Length of Culvert Feet	Work to be done.
B1.	0	750	Opening	2'0" x 1'6"	-	12	new
2.	to	1150	Culvert	2'6" x 2'0"	4	20	constructed
3.	1	1750	do.	3'6" x 2'6"	4	24	to be cleaned
4.		2050	do.	2'0" x 2'0"	6	30	constructed
5.		2100	do.	2'0" x 2'0"	6	34	to be rebuilt

6.		2450	do.	1'6" x 1'6"	4	20	to be cleaned
7.		2650	do.	3'6" x 3'0"	7	30	constructed
8.		2750	do.	3'6" x 2'6"	4	27	constructed
9.		2950	sheep creep	3'0" x 3'6"	4	27	constructed
10.		3100	bridge	5'0" span	-		ballast, walls, capping & deck required
11.		3400	opening	3/ 2'0" x 1'6"	-	12	New
12.		3800	open channel				constructed
13.		3890	Arch bridge	11'0" span			constructed
14.		4000	Over "	18'6" "			abutments complete - steel and deck reqd.
B15.	1	5700	culvert	2'0" x 2'6"	5	20	constructed
16.	to 2	5800	bridge	5'0" span	-	-	ballast, walls, coping and deck reqd.
17.		6500	opening	2'0" x 1'6"	6	12	new
<i>(END OF PAGE 47 / START OF PAGE 48)</i>							
B18.		6750	S.W. pipe	12 ins.	6	28	constructed
19.		6800	culvert	3'6" x 3'0"	9	46	to be cleaned
20.		7300	S.W. pipe	12 ins.	6	44	do.
21.		7600	culvert	2'6" x 1'6"	10	42	do.
22.		7950	S.W. pipe	24 ins.	8	37	constructed
23.		8200	do.	12 ins.	6	35	to be cleaned
24.		8500	culvert	3'6" x 2'0"	7	39	constructed
25.		8900	do.	3'0" x 3'0"	6	28	new
26.		9150	do.	10 ft.	12	30	new
27.		9600	do.	2'6" x 2'0"	-	22	to be cleaned & extended 12ft.
28.		9650	culvert	10 ft.	12	30	new
29.		9900	S.W. pipe	24 ins.		30	to be cleaned & extended 12ft.
30.		10050	do.	do.		25	do. 6ft.
31.		10150	culvert	3'0" x 3'0"	6	28	new
32.		10350	S.W. pipe	18 ins.		30	to be cleaned
33.		10450	do.	do.		28	do. & extended 9ft.
B34.	2	11000	Opening	2'0" x 1'6"		12	new
35.	to 3	11150	S.W. pipe	24 ins.		15	to be cleaned
36.		11350	Opening	2'0" x 1'6"		12	new
37.		11650	Culvert	2/ 3'0" x 3'0"	3	16	" Stream bed lowered
38.		11750	Opening	2'0" x 1'6"		12	new
39.		12150	do.	2/ 2'0" x 1'6"	3	12	".
40.		12300	do.	2/ do.	3	12	"

41.		13200	culvert	3'0" x 3'0"	16	50	"
42.		13500	do.	2/ 3'0" x 3'0"	3	12	" Stream bed lowered
B43.		14600	Opening	2'0" x 1'6"		12	Pitched or concrete channel on slopes
44.		15000	culvert	3'0" x 3'0"	14	45	new
45.		15400	opening	2'0" x 1'6"		12	"
46.		15750	culvert	3'0" x 3'0"		12	" Stream bed lowered
<i>(END OF PAGE 48 / START OF PAGE 49)</i>							
B47.	3	16300	culvert	10 ft.	13		new
48.	to	17100	opening	2'0" x 1'6"		12	new
49.	4	17300	culvert	3'0" x 3'0"	3	12	" Stream bed lowered
50.		18000	opening	2/ 2'0" x 1'6"		12	new
51.		18400	do.	2/ do.		12	"
52.		18950	culvert	10 ft.	5		"
53.		20000	do.	3'0" x 3'0"	10	35	"
54.		20650	opening	2'0" x 1'6"		12	"
55.		20800	culvert	10 ft.	8		"
B56.	4	22300	culvert	2'0" x 1'6"	20	70	new
57.	to	23100	do.	10 ft.	4		". girder span
58.	5	24000	brick arch	10 ft. span	15		Constructed formation to be lowered & longitudinal sleepers provided if reqd.
59.		24050	culvert	2'0" x 2'0"	63		constructed
60.		24100	brick arch	13 ft. span	23		"
61.		24400	bridge	14 ft. span	11		abutments complete, superstructure reqd.
<i>(END OF PAGE 49 / START OF PAGE 50)</i>							
B62.		25100	Over bridge	11 ft. span	15		new
63.		25300	Aqueduct	2'6" x 2'0"	19	56	repair existing aqueduct over cutting.
64.		25750	Brick arch	20 ft. span	24		formation raised 3ft. Reconstruct parapet walls.
65.		26150	culvert	3'0" x 3'0"	24	82	new
B66.	5	26500	do.	3'0" x 3'0"	8	34	new
67.	to	27100	do.	do.	10	40	"
68.	6	27900	Bridge	75 ft. span			". over Afon Glaslyn
69.		28250	Culvert	3'0" x 3'0"	5	25	".
70.		29200	do.	do.			constructed
71.		29400	do.	do.			"

B72.	6 to	32150	Brick arch				constructed
73.	7	32250	Culvert				"
74.		33000	do.				"
75.		33700	do.				"
76.		34500	Under bridge	12 ft. span	12		new
77.		34670	Culvert		13	46	constructed
78.		35000	do.		12	40	"
79.		35350	do.		4	16	"
80.		35550	Sheep creep	2'6" x 2'0"	2'6"	12	" copings and rail bearers required.
81.		35600	culvert				constructed
82.		36000	do.				do.
83.		36550	opening	2'0" x 1'6"		12	new
<i>(END OF PAGE 50 / START OF PAGE 51)</i>							
B84.	7	37000	Culvert				Constructed
85.	to	37100	do.				do.
86.	8	37550	Opening	2'0" x 1'6"		12	New
87.		37700	Culvert	3'0" x 3'0"		12	"
88.		38200	Opening	2'0" x 1'6"		12	"
89.		38650	do.	do.		12	"
90.		38800	Culvert	8 ft.	4		"
91.		39050	Opening	2'0" x 1'6"		12	"
92.		39650	do.	do.		12	"
93.		40100	Opening	2'0" x 1'6"		12	"
94.		40750	do.	do.		12	"
95.		40950	Bridge	75 ft. span	6		" Afon Nant-y-Mor
96.		41350	Culvert	3'0" x 3'0"	5	25	New
97.		41800	do.	do.	5	25	"
B98.	8	42300	Culvert	3'0" x 3'0"	5	25	New
99.	to	43050	Bridge	75 ft. span	6		"Afon Dylif
100.	C.T. Junct.	43200	Culvert	2/ 3'0" x 3'0"		25	"
101.		43850	do.	2/ do.		25	"
102.		44400	do.	2/ do..		25	"
103.		45700	do.	6 ft.	4	12	"

(END OF PAGE 51 / START OF PAGE 52)

