Copyright Statement

The digital copy of this dissertation is protected by the Copyright Act 1994 (New Zealand).

This dissertation may be consulted by you, provided you comply with the provisions of the Act and the following conditions of use:

- you will use the copy only for the purposes of research or private study
- you will recognise the author's right to be identified as the author of the dissertation and due acknowledgement will be made to the author where appropriate
- you will obtain the author's permission before publishing any material from the dissertation.
SPECIFICATION AND COST ESTIMATE
FOR
SUBDIVISION AND LAND DEVELOPMENT
CHRISTS COLLEGE BLOCK
STYX MILL
WAIMAIRI COUNTY.

STYX MILL DEVELOPMENT PROPOSAL
MAJOR DESIGN PROJECT FOR
DIPLOMA IN LANDSCAPE ARCHITECTURE
G.H. DENSEM.
# TABLE OF CONTENTS

## SPECIFICATION

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. General Conditions of Contract</td>
<td>1</td>
</tr>
<tr>
<td>II. Outline of Specifications Required for Whole Work</td>
<td>33</td>
</tr>
<tr>
<td>III. Selected Specifications given in Full</td>
<td></td>
</tr>
<tr>
<td>A. Kerbing and Channelling</td>
<td>37</td>
</tr>
<tr>
<td>B. Concrete Footpaths</td>
<td>43</td>
</tr>
<tr>
<td>C. Grass Berms and Grassed Areas in Streets</td>
<td>47</td>
</tr>
</tbody>
</table>

## COST ESTIMATES

Schedule of Quantities for Detail Design Area  49
GENERAL CONDITIONS OF CONTRACT

Section I: Definitions and Interpretation

1.1 In the contract unless the context otherwise requires:

"Client" means the owners of the site on which the Works are taking place;

"Completion Certificate" means a certificate signed by the Supervisor certifying that the Works have been completed and stating the date on and from which the Maintenance Period commences;

"Contract Price" means the sum named in the tender subject to such variations thereto as many be made under the provisions hereinafter contained;

"Contractor" means the person whose tender has been accepted by the Landscape Architect and includes the executors, administrators, successors, and permitted assigns of the Contractor;

"Drawings" means the plans and drawings referred to or included in the contract documents and such other plans and drawings as may from time to time be furnished or approved in writing by the Supervisor and any modification of such plans and drawings approved in writing by the Supervisor;

"Landscape Architect" means the Landscape Architect appointed by the client to design, administer and oversee the contract;

"Maintenance Period" means the period so named in the Special Conditions;

"Materials" means all things including stores and equipment incorporated or to be incorporated in the permanent work as distinct from materials used for construction and not so incorporated but includes any boxing shown included as a separate item in the schedule of quantities;

"Month" means a calendar month;

"Person" includes a corporation sole and also a body of persons whether corporate or unincorporate;

"Plant" means all major appliances and machinery, permanent type boxing and scaffolding required for the execution, completion, or maintenance of the Works but does not include materials or other things intended to form or forming part of the permanent work;

"Site" means the lands or places on, over, under, in, or through which the Works are to be executed or carried out and any other lands or places provided by the Landscape Architect for the purposes of the contract;
"Special Conditions" means the Special Conditions included in the contract documents. The Special Conditions are to be read with these General Conditions and where there is conflict the Special Conditions shall prevail; "Supervisor" means the Architect, Engineer, or Housing Supervisor appointed from time to time by the Landscape Architect and notified in writing to the Contractor to supervise the carrying out of the contract. "Works" means all the works to be executed in accordance with the contract and includes any part thereof.

1.2 Where two or more persons tender or contract together for the Works the liability of such persons under the contract shall be joint and several.

Section II: Conditions of Tender - General Provisions

2.1 The tenderer shall submit his tender for a lump sum on the appropriate form.

2.2 The Contractor shall within 7 days of the acceptance of his tender pay to the Landscape Architect a deposit of 2 percent of the accepted Contract Price.

2.3 Failure of the Contractor to pay the deposit within the required time shall constitute a wilful breach of contract and shall entitle the Landscape Architect to exercise the powers contained in clause 21.1 of these conditions, but without prejudice to the right of the Landscape Architect to recover the amount of the deposit from the Contractor.

2.4 The deposit shall be returned by the Landscape Architect to the Contractor after he has signed the contract documents and as soon as the Supervisor is satisfied that the Contractor will continue to prosecute the Works with such diligence as to ensure that the Works will be satisfactorily completed in accordance with the contract.

Section III: Bonds and Sureties

3.1 This section shall apply only where the tendered price exceeds twenty thousand dollars (NZ$20,000).
3.2 The tenderer shall state in his tender the name of a bank, insurance company, or bonding company which he proposes as surety for the due performance of the contract.

3.3 The Contractor shall not proceed with the Works until the required bond has been executed and delivered as aforesaid.

3.4 No payment under the contract shall become due until the Contractor and his approved surety have executed the required bond and it has been delivered as aforesaid.

3.5 The obtaining of any bond shall be at the sole expense of the Contractor.

Section IV: Nature and Scope of Contract

4.1 The contract shall comprise everything for the execution, completion, and maintenance of the Works as set out or as reasonably to be inferred from the contract documents.

4.2 All work is to be executed by the Contractor in accordance with the drawing, specifications, and conditions of contract and in a workmanlike manner to the satisfaction by the Contractor at his work not so executed shall be replaced, rectified, or amended immediately by the Contractor at his own expense.

4.3 Any work which is necessary for or incidental to the workmanlike completion of any item in the schedule of quantities shall be carried out by the Contractor and is deemed to be included in the Contract Price.

4.4 None of the General or Special Conditions of Contract shall be varied, waived, discharged, or released either in law or in equity, unless by express consent in writing of the Landscape Architect.

Section V: Contract Documents

5.1 The several documents forming the contract shall be taken as mutually explanatory and if there are ambiguities, discrepancies, or omissions, these shall not invalidate the contract. They will be rectified by or on the authority of the Landscape Architect and the rectifications will be notified
to the Contractor in writing. If in the opinion of the Landscape Architect such rectification involves the Contractor in any expense or saving which he could not have reasonably foreseen, then the Contract Price shall be adjusted in terms of Section XV hereof. If the adjustment is not acceptable to the Contractor the matter shall be treated as a dispute and determined as hereinafter provided.

5.2 The Contractor shall be provided with a true copy of the contract documents. Further unsigned working sets or partial sets will be made available to the Contractor as reasonably required by him but the Contractor himself must compare any such further sets or partial sets with the true copy as no claim will be allowed for any errors in such further sets or partial sets.

5.3 Written dimensions on the Drawings shall be taken in all cases in preference to measurements by scale and anything contained in any of the contract documents shall be equally binding on the Contractor as if it were contained in all.

5.4 The Landscape Architect accepts no responsibility for any information or advice given by any officer or person prior to the acceptance of the tender unless such information or advice is confirmed in writing and expressly included in the contract documents.

5.5 The Contractor is required to satisfy himself as to the adequacy of the information contained in the contract documents.

5.6 The Supervisor may from time to time supply to the Contractor any instructions and drawings additional to those included in the contract documents, and the Contractor shall be bound by such additional instructions and drawings.

5.7 Should the Contractor require further drawings at any time he shall give adequate notice in writing of such requirement to the Supervisor, who shall supply such further drawings to the Contractor within a reasonable time after the receipt of notice from the Contractor.
5.8 All documents included in the contract documents and all drawings supplied in accordance with clauses 5.6 or 5.7 hereof shall if so required be returned to the Supervisor at the completion of the contract and shall at all times remain the property of the client.

Section VI: Supervisor's Representative

6.1 The Supervisor may from time to time by notice in writing to the Contractor, appoint a representative and any assistant to supervise the Works and to test and examine any Materials or Plant being used or workmanship employed in connection with the Works, but any person so appointed shall have no authority to relieve the Contractor of any of his duties or obligations under the contract, nor to order any extra work to be done, nor to approve any extra payment.

6.2 Any failure of the Supervisor's representative or any assistant to disapprove any work or Materials or Plant shall not prejudice the power of the Supervisor thereafter to disapprove such work or Materials or Plant and to order the pulling down, removal, or breaking up thereof.

6.3 If the Contractor shall be dissatisfied by reason of any decision of the Supervisor's representative or of any assistant he shall be entitled to refer the matter to the Supervisor who shall thereupon confirm or vary such decision.

Section VII: Assignment and Subletting

7.1.1 The Contractor shall not, without the prior consent of the Landscape Architect given in writing by him or under his authority, assign the contract or any part thereof, or any benefit or interest therein, otherwise than by a charge in favour of the Contractor's bankers of any moneys payable or to become payable under the contract.

7.1.2 No payment to the Contractor after notice of any assignment or purported assignment, and no payment to or for the benefit of any assignee shall be deemed to be a consent to or recognition of an assignment or shall be deemed to be a waiver of the right of the Landscape Architect hereinafter conferred
to direct a forfeiture.

7.2 Upon any assignment or purported assignment by the Contractor, whether legal or equitable and whether or not the Landscape Architect's consent thereto has been given, the Contractor shall thereafter be deemed the irrevocable agent of the assignee to receive and give good receipts and discharges for all moneys payable or to become payable under the contract, whether any such receipts or discharges purport to be given by the Contractor as agent or otherwise.

7.3 If the Contractor shall without the Landscape Architect's prior consent as aforesaid assign or purport to assign either by legal or equitable assignment all or any part of the moneys payable or to become payable under the contract, the Landscape Architect may direct that all moneys so assigned shall be forfeited, and neither the Contractor nor the assignee shall have any claim or right to the payment thereof, and such forfeiture shall not relieve the Contractor from any other liability to which he may be subject for breach of contract.

7.4.1 The Contractor shall not sublet the whole of the Works. The Contractor may be required by the Landscape Architect to submit a list of all the Contractor's proposed subcontractors before his tender is accepted and in that event the Contractor shall not sublet any part of the Works, to persons other than those listed, without the prior consent in writing of the Landscape Architect (which shall not be unreasonably withheld).

7.4.2 Such consent if given shall not relieve the Contractor from any liability or obligation under the contract and he shall be responsible for the acts, defaults, and neglects of any subcontractor, his agents, servants, or workmen as fully as if they were the acts, defaults, and neglects of the Contractor, his agents, or workmen.

7.5 If the Contractor shall sublet any part of the Works (hereinafter referred to as a "subcontract") without the consent where required of the Commissioner under clause 7.4.1 hereof, every such subcontract shall be void and of no effect and shall be deemed to be a wilful breach of the contract;
provided however that the Landscape Architect at his discretion (and notwithstanding the exercise by him of all or any of the powers conferred on him by the contract) may pay to any employee of the Contractor or to any subcontractor (which term for the purposes of this clause shall include any person to whom is due any sum mentioned in item (c) of clause 19.10 hereof) the whole or any part of the moneys which may appear to be due to such employee or subcontractor as if such employee or subcontractor were a lawful assignee of the Contractor. Such payment may be made out of moneys then due or that may subsequently become due to the Contractor, and where any moneys are so paid the Landscape Architect shall have no further liability to the Contractor in respect of any such amounts. The powers conferred upon the Landscape Architect by this clause may be exercised by him from time to time upon such evidence as he deems sufficient and upon such terms and conditions as he thinks fit.

Section VIII: Site

8.1 The Contractor shall be deemed to have inspected and examined the Site and its surroundings and to have satisfied himself before submitting his tender as to the nature of the ground and subsoil, the form and nature of the Site and all physical conditions of the Site and of the land adjoining the Site, and as to the means of access to the Site and as to the accommodation he may require, and in general shall himself obtain all necessary information as to risks, contingencies, and other circumstances which may affect his tender.

8.2 The Contractor shall bear all expenses and charges for any special or temporary wayleaves required by him in connection with access to the Site. The Contractor shall also provide at his own cost any additional accommodation outside the Site required by him for the purpose of the Works.

8.3 Occupancy of the Site is permitted solely for the purpose of executing the Works and no tenancy either express or implied is conferred on the Contractor.
8.4 The giving by the Landscape Architect of possession of the Site or of any portion thereof shall not confer exclusive possession thereof on the Contractor but only such limited possession as will enable the Contractor to execute the Works, and the Landscape Architect and any persons authorised by him may enter upon and make use of any portion of the Site for any purpose whatsoever. The Contractor shall in accordance with the requirements of the Supervisor afford such persons all reasonable opportunities and facilities for the execution of any other works on the Site including the use of all access-ways, provided that in the opinion of the Supervisor such entry or occupancy will not prevent the execution of the Works by the Contractor in accordance with the contract.

8.5 Except where the contract otherwise provides the Contractor shall not remove or interfere with any tree, building, structure, fence, gate, or thing on the Site without the consent of the Supervisor.

8.6 During the Maintenance Period the Contractor shall be allowed only such access to or use of the Works and the Site as the Supervisor considers reasonable and necessary for the purposes of executing the work described in clause 14.2 hereof.

8.7 All fossils, articles of value, precious stones, gold and other minerals, Maori antiquities, and other objects of antiquarian value, structures and other remains or things of geological or archaeological interest discovered on the Site shall as between the Landscape Architect and the Contractor be deemed to be the property of the client, and the Contractor shall take reasonable precautions to prevent his workmen or other persons from removing or damaging any such article or thing and shall immediately upon discovery thereof and before removal notify the Supervisor of such discovery and carry out at the expense of the Client the Supervisor's orders as to the disposal of the same.

8.8 The Contractor shall not store or keep on the Site anything not required for or in connection with the execution of the Works, without the permission of the Landscape Architect.
Section IX: General Obligations of Contractor

9.1 The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the Works and of the rates and prices stated in the priced schedule of quantities (if any), and those rates and prices shall except in so far as it is hereinafter otherwise provided cover all his obligations under the contract and all matters and things necessary for the proper completion and maintenance of the Works.

9.2 The Contractor shall give all notices, obtain all necessary permits and licences, and bear and pay all fees and other charges payable to any local, public, or other authority, and in the case of default by the Contractor in making any payment the Landscape Architect may make such payment and deduct the amount thereof from payments due or becoming due under the contract.

9.3 The Contractor shall at all times during the progress of the Works when he is not personally present and superintending the Works have stationed on the Works a responsible agent acceptable to the Supervisor to represent the Contractor for all the purposes of the contract other than to receive payments, and the Contractor shall notify the Supervisor in writing of the person who is such agent. Should the agent cease to be acceptable to the Supervisor, the Contractor shall remove such agent within 24 hours of being required by the Supervisor so to do and shall replace him with an agent acceptable to the Supervisor.

9.4 The Contractor shall except where the contract otherwise provides supply at his own cost all Materials, Plant, and labour and everything necessary for the proper execution, completion, and maintenance of the Works.

9.5 The Contractor shall set out the Works accurately at his own expense and in conformity with the contract documents and shall be responsible for the accuracy thereof notwithstanding that the Supervisor or his representative or assistant may have assisted in or checked such setting out.
9.6 The Contractor shall be responsible for the preservation of all benchmarks, pegs, or other marks or things used in setting out the Works and shall at his own cost accurately replace any such marks, pegs, or things that may have been disturbed or removed.

9.7 From the commencement to the completion of the Works the Contractor shall take full responsibility for the care and protection thereof and of all temporary works and shall at his own cost repair and make good any damage, loss, or injury that shall happen to the Works or to any part thereof or to any materials or temporary works from any cause whatsoever (save and except the excepted risks as defined in clause 9.15 hereof) so that at completion the Works shall be in good order and condition and in conformity in every respect with the requirements of the contract and the instructions of the Supervisor. In the event of any such damage, loss, or injury happening from any of the excepted risks the Contractor shall if and to the extent required by the Supervisor repair and make good the same as aforesaid at the cost of the Landscape Architect.

9.8 The Contractor shall provide and maintain at his own cost all lighting, fencing, guards, watchmen, notices, vehicular crossings, temporary roads and accessways, and any other thing which may be necessary for the safety or convenience of the public or for the protection of any property or which may be required by any local or public authority or other person having authority or by the Supervisor.

9.9 The Contractor shall conform to and be subject to and comply with all Acts and regulations relating to the protection of life and property, the prevention of accidents and other matters which are applicable to the Works, and any temporary works and if the Contractor permits work to be carried on or to continue contrary to any provisions of any such Act or regulation after notice of any such contravention has been given to him by the Supervisor or by any local or public authority or other person having authority to do so, any failure or neglect by the Contractor to comply with such notice may in the discretion of the Landscape Architect be deemed a wilful
breach of contract.

9.10 All operations necessary for the execution of the Works and for the construction of any temporary works shall so far as compliance with the requirements of the contract permits be carried on so as not to interfere unnecessarily or improperly with the convenience of the public or with the access to or use of public or private roads, streets, and footpaths, or with property whether in the possession of the Client or any other person, and the Contractor shall make good at his own cost all damage or injury arising out of his operations under the contract to all public utilities and services including roads, streets, footpaths, bridges, pipes, and cables on, under, or over the ground and shall save harmless and indemnify the Client from and against all actions, claims, demands, proceedings, damages, costs, charges, and expenses whatsoever arising out of or in relation to any such matters in so far as the Contractor is responsible therefor.

9.11 The Contractor shall save harmless and indemnify the Landscape Architect from and against all actions, claims, demands, proceedings, damages, costs, charges, and expenses for or on account of infringement of any patent rights, designs, trade marks or names or other protected rights in respect of any Plant, Materials, process, or work used for or in connection with the Works.

9.12 The Contractor shall employ on the Works only persons who are careful, skilled, and experienced in their several trades and callings and the Supervisor may require the Contractor to remove any person employed by the Contractor who in the opinion of the Supervisor misconducts himself or is incompetent or negligent in the performance of his duties, and any such persons shall not be again employed on the Works without the permission of the Supervisor.

9.13 If the Contractor refuses or fails to perform any work or fulfil any obligation within the time required by the contract or within such extended times as the Supervisor may allow without prejudice to any other action or remedy under the contract the Supervisor may, after giving notice in writing to the Contractor of his intention so to do, at the
cost and expense of the Contractor perform such work or
arrange for such work to be performed or for such obligation
to be fulfilled in such manner as he thinks fit and the Super-
visor may for that purpose use any Materials or Plant then on
or near the Site.

9.14 On the completion of the Works the Contractor
shall clear away and remove from the Site all Plant, surplus
material, rubbish, and temporary works of every kind and shall
leave the whole of the Site and Works clean, and in workman-
like and tidy condition to the satisfaction of the Supervisor,
and the Works shall not be deemed to be completed until the
Contractor has carried out his obligations under this clause.

9.15 The excepted risks are riot (in so far as it is
uninsurable), war, invasion, act of foreign enemies, hostilities
(whether war be declared or not), civil war, rebellion, revolu-
tion, insurrection of military or usurped power, and use or
occupation by the Landscape Architect of any portion of the
Works in respect of which a certificate of completion has been
issued.

Section X: Notices

10.1 Any instrument or notice to be given to the Con-
tractor in writing shall be served by sending the same by post
to or by leaving the same at the Contractor's usual or last
known place of abode or business or by delivering the same to
the Contractor or his agent on the Works.

10.2 Any notice to be given to the Supervisor in writing
shall be delivering the same to the Supervisor or by sending
the same by post to or leaving the same, addressed to the Super-
visor, at the office of the Landscape Architect to which the
Supervisor is attached.

Section XI: Insurance and Indemnity

11.1.1 The Contractor shall effect and maintain the
period of the contract but excluding the Maintenance Period
an insurance against loss or damage by fire with some reputable
insurance office or company approved by the Supervisor. The insurance shall be effected by means of a policy or policies in terms approved by the Supervisor in the name of and for the benefit of the client on all buildings and structures being erected under the contract or occupied by the Contractor under the contract, and on all Materials and Plant of an insurable nature as soon as the same is brought upon the Site, for the full insurable value thereof from time to time as the Works progress.

11.1.2 All moneys received under such policy or policies shall upon the certificate of the Supervisor be applied in or towards the rebuilding, reinstatement, or replacement of the Works destroyed or damaged in accordance with the terms of the contract as though the Works destroyed or damaged had not been executed, except that the Contractor shall have such extension of time as the Supervisor may certify and except that the Contractor shall be paid the moneys received under such policy or policies and no more in respect of the Works destroyed or damaged.

11.2 The Contractor shall be solely liable for and shall save harmless and indemnify the Landscape Architect from and against any actions, claims, demands, proceedings, damages, costs, charges, and expenses whatsoever in respect of injuries or damage to any property and in respect of personal injury to or the death of any person whomsoever arising out of or in the course of or caused by the execution or maintenance of the Works by the Contractor or by any subcontractor.

11.3 The Contractor shall effect and maintain during the period of the contract including the Maintenance Period an insurance against any liability, loss, claim, or proceedings in respect of which he is required by clause 11.2 hereof to indemnify the Landscape Architect with some reputable insurance office or company approved by the Supervisor, by means of a policy or policies in terms approved by the Supervisor for at least $50,000 for any one claim or series of claims arising out of the same occurrence.

11.4 Whenever the Contractor is required under the contract to effect and maintain any insurance the following
provisions shall apply to all insurance required under this Section:

(a) The Contractor shall whenever required by the Supervisor so to do produce to the Supervisor the policy or policies for the said insurance and the receipts for payment of the current premiums;

(b) If the Contractor fails or neglects duly and faithfully to effect and maintain any such insurance as aforesaid (whereof the failure to produce to the Supervisor the policy and the receipt for the current premium shall be deemed to be sufficient proof) it shall be lawful for but not obligatory on the Landscape Architect at any time thereafter to effect or keep on foot any such insurance or pay any premium, and all moneys expended by the Landscape Architect in so doing shall be deemed to be a debt due and owing by the Contractor to the Landscape Architect;

(c) In addition to and irrespective of the powers and remedies of the Landscape Architect under the last preceding paragraph, the Landscape Architect may, in the event of the Contractor being guilty of any failure or neglect therein mentioned, treat such failure or neglect as a wilful breach of contract.

Section XII: Work Materials and Plant

12.1 Save in so far as it is legally or physically impossible the Contractor shall execute, complete and maintain the Works in strict accordance with the contract to the satisfaction of the Supervisor and shall comply with and adhere strictly to the Supervisor's instructions and directions on any matter (whether mentioned in the contract or not). The Contractor shall take instructions and directions only from the Supervisor or (subject to any limitations referred to in Section VI hereof) from the Supervisor's representative. It shall be lawful for but not obligatory on the Supervisor to direct the Contractor to carry out the Works in such order and in such manner as the Supervisor thinks fit in the interests of safety or for any other justifiable cause.

12.2 The Contractor shall execute the Works in accordance with the contract documents, and all Materials, Plant, and workmanship shall be the best of their respective kinds and to the satisfaction of the Supervisor. Any work not so
executed shall be replaced, rectified, or amended immediately at the cost of the Contractor.

12.3 The Supervisor and any person authorised by him shall at all times have access to the Works and to the Site and to all workshops and places where work is being prepared in connection with the contract. The Contractor shall afford every facility for and every assistance in obtaining the right of access by the Supervisor or any person authorised by him to places where Materials, manufactured articles, and Plant are being obtained or prepared for the Works.

12.4 The Contractor shall afford full opportunity and facilities for the Supervisor to examine and measure any work which is about to be covered up or put out of view and to examine foundations or excavations before permanent work is placed thereon. The Contractor shall give such notice as the Supervisor requires whenever any such work, foundations, or excavations are ready for examination and the Supervisor shall forthwith arrange for such examination to be made without delay.

12.5 The Contractor shall provide access to an uncover or open up any part of the Works at the direction of the Supervisor, and shall make good such part to the satisfaction of the Supervisor. If any such part has been covered up or put out of view after compliance with the requirements of clause 12.4 hereof and is found to be executed in accordance with the contract the cost of uncovering, opening up and making good shall be paid as an extra to the contract but otherwise all costs shall be borne by the Contractor.

12.6.1 The Supervisor shall during the progress of the Works have power from time to time to order in writing at the cost of the Contractor:

(a) The removal from the Site within such time or times as may be specified in the order of any Materials which in the opinion of the Supervisor are not in accordance with the contract;

(b) The substitution of proper and suitable Materials for Materials so removed;

(c) The removal and proper re-execution of any work
which in respect of Materials or workmanship
is not in the opinion of the Supervisor in
accordance with the contract, notwithstanding
any previous test thereof or interim payment
therefor.

12.6.2 In the event of default by the Contractor in
carrying out any such order as aforesaid the Landscape Archi-
tect shall be entitled to employ other persons to carry out
the work, and all moneys expended by the Landscape Architect
in so doing shall be deemed to be a debt due and owing by the
Contractor to the Landscape Architect.

12.7 The Contractor shall remove from the Site without
delay any Materials or Plant no longer required for the Works,
provided that any such Materials or Plant in respect of which
any advance has been made to the Contractor shall not be removed
except with the authority in writing of the Supervisor.

12.8 Notwithstanding anything to the contrary in the
contract, neither the Contractor nor any subcontractor shall
bring or place any Materials, Plant, or prepared work on or in
such relationship to the Works or the Site as to hinder or pre-
vent the convenient completion of the Works.

12.9 Should the Contractor supply any Materials or
execute any work which in the opinion of the Supervisor is not
in accordance with the contract but which the Supervisor elects
not to have replaced, rebuilt, or made good, the Supervisor
shall fix the price or rate of payment to the Contractor for
such Materials or work.

12.10 If the Contractor is unable to procure Materials
specified in the contract the Supervisor may supply those
Materials or approve such substitutes as he thinks fit and the
Contractor shall use such Materials or substitutes. In any
such case the Supervisor shall fix the price or rate of payment
for such Materials or substitutes.

Section XIII: Commencement, Extension of Time, and Completion

13.1 The Contractor shall on acceptance of the tender
and subject to compliance by him with the provisions relating
to bonds and deposit, proceed with the execution of the Works
with due expedition and without delay, except as may be ex-
pressly sanctioned or ordered by the Supervisor.

13.2 Save in so far as the contract documents may pre-
scribe the extent of portions of the Site of which the Con-
tractor is to be given possession from time to time and the
order in which such portions shall be made available to the
Contractor, the Landscape Architect will give to the Contractor
possession of the Site within 30 days after the acceptance of
the tender.

13.3 If any delay shall take place in giving to the
Contractor possession of the Site or of any part thereof or of
any property or buildings in accordance with the terms of the
contract, such delay shall not be deemed to be a breach of the
contract and shall not give the Contractor any claim for com-
pensation, but should the Contractor suffer delay or incur any
loss or expense from the failure of the Landscape Architect to
give possession in accordance with the terms of the contract
the Supervisor shall grant an extension of time for the comple-
tion of the Works and certify such sum as he considers fair
to cover the loss or expense incurred by the Contractor as a
direct result of such delay in giving possession.

13.4 Should the amount of extra or additional work or
other special circumstances clearly outside the control of the
Contractor be such as fairly and reasonably to entitle the
Contractor to an extension of time for the completion of the
Works, the supervisor shall determine the extensions which
may be granted either prospectively or retrospectively during
the progress or after the completion of the Works, and the time
prescribed in the Special Conditions for the completion of the
Works shall be extended accordingly; provided that the Super-
visor shall not be bound to take into account any substitutions,
deviations, additions, or omissions from the Works or other
special circumstances unless the Contractor has, within 14 days
after any such special circumstance has arisen or as soon
thereafter as is practicable, delivered to the Supervisor
particulars in writing of any claim for extension of time to
which he may consider himself entitled in order that such claim
may be investigated forthwith.
13.5 Whatever extension of time is granted by the Supervisor under clause 13.4 hereof shall, except where otherwise provided in the contract be in full compensation and satisfaction for and in respect of all loss, damage, and injury which has been or might be suffered by the Contractor as a consequence of all matters on account of which such extension of time has been granted.

13.6 Should the rate of progress of the Works or of any part thereof at any time be too slow in the opinion of the Supervisor to ensure completion of the Works within the specified time or any extended time for completion, the Supervisor may so notify the Contractor in writing, and the Contractor shall thereupon take such steps as he may think necessary and as the Supervisor may approve in order to expedite progress so that the Works may be completed within the specified time or any extended time.

13.7 As soon as in the opinion of the Supervisor the Works have been completed and have satisfactorily passed any final test that may be prescribed, the Supervisor shall, upon the written application of the Contractor issue a Completion Certificate and the Maintenance Period shall commence on and from the date stated in such certificate.

13.8 The Supervisor may issue a Completion Certificate in respect of any part of the Works before the completion of the whole of the Works and as from the date stated in such certificate the Landscape Architect or any persons authorised by him shall have the full, free, and unrestricted use and possession of that part.

13.9 When a Completion Certificate is given in respect of a part of the Works such part shall be considered as completed and the Maintenance Period of such part shall commence on and from the date stated in such certificate, but a Completion Certificate given in accordance with the foregoing provisions in respect of any part of the Works shall not be deemed to certify completion of any ground or surfaces requiring re-instatement, unless such certificate shall expressly so state.
13.10 If the Contractor shall fail to complete the Works within the specified time or any extended time for completion, the Contractor shall pay to the Landscape Architect as ascertained liquidated damages and not as a penalty the sum specified in the Special Conditions for such default for every day which shall elapse between such specified or extended time and the date of completion of the Works, and the Landscape Architect may, without prejudice to any other method of recovery, deduct the amount of such damages so calculated from any moneys in his hands or which may become due to the Contractor. The payment or deduction of such damages shall not relieve the Contractor from his obligation to complete the Works or from any of his obligations and liabilities under the contract.

Section XIV: Maintenance and Defects

14.1 The Contractor shall ensure that on the expiration of the Maintenance Period the Works shall in all respects comply with the requirements of the contract (fair wear and tear excepted).

14.2 The Contractor shall execute all work of repair, amendment, reconstruction, rectification and making good of defects, imperfection, shrinkages, or other faults which shall be required of the Contractor in writing by the Supervisor during the Maintenance Period, or within 14 days after its expiration if required as a result of an inspection made by or on behalf of the Supervisor prior to the expiration of the Maintenance Period.

Section XV: Variations

15.1 The Supervisor shall make any variations in the form, quality, or quantity of the Works or any part thereof that may in his opinion be necessary, and for that purpose or if for any reasons it shall in his opinion be desirable he shall have power to order in writing the Contractor to do, and thereupon the Contractor shall do, all or any of the following:
(a) Increase or decrease the quantity of any work included in the contract;
(b) Omit any such work;
(c) Change the character or quality or kind of any Materials or work;
(d) Change the levels, lines, positions, or dimensions of any part of the Works;
(e) Execute additional work of any kind necessary for the completion of or compatible with the Works.

No such variations shall in any way invalidate the contract but the value (if any) of all variations shall be taken into account in ascertaining the amount of the Contract Price.

15.2 No variation shall be made by the Contractor without an order in writing by the Supervisor.

15.3 For the purpose of adjusting the Contract Price all variations shall be priced by the Supervisor as follows:

(a) The Supervisor shall determine the amount (if any) to be added to or deducted from the Contract Price in respect of any extra or additional work done or work omitted by his order;
(b) All such work shall be valued at the rates set out in the priced schedule of quantities lodged by the contractor if in the opinion of the Supervisor the same shall be applicable but if in the opinion of the Supervisor the contract does not contain any rates applicable to the extra or additional work done or the work omitted then reasonable rates based as far as possible on the priced schedule of quantities shall be fixed by the Supervisor, provided however that any such rates shall be adjusted to allow for any change in the Contractor's on cost as determined by the Supervisor in respect of those items in the priced schedule of quantities which are directly affected by the variation;

15.4 Except as provided in clause 15.3 hereof the Contractor shall have no claim for loss, damage, or compensation on account of any variation of the contract.

15.5 Wherever possible all variations shall be priced by the Supervisor before the work commences, but any failure to do so shall not invalidate any order for variation given by the Supervisor in writing to the Contractor.
Section XVI: Ownership of Materials and Plant

16.1 All Materials, Plant, prepared work, temporary buildings, and services brought or constructed upon the Site for the purpose of being used in or upon the Works shall immediately become the property of the clients and the Contractor shall not remove any of the same or any part thereof otherwise than for the purpose of being used in or upon the Works without the written authority of the Supervisor, and the same shall continue to be the property of the client notwithstanding its removal without such written authority.

16.2 Subject to the discharge by the Contractor of his obligations under the contract and to the recovery by the Landscape Architect of all advances made in respect thereof all unused Plant, Materials, temporary buildings, and services shall upon completion of the Works cease to be the property of the clients, and shall revert to the ownership of the Contractor, who shall remove the same from the site forthwith.

16.3 The Landscape Architect shall not at any time be liable for the loss of or damage to any Materials, Plant, prepared works, temporary buildings, and services which have become the property of the clients under clause 16.1 hereof.

Section XVII: Measurement

17.1 Unless otherwise provided in the contract documents the contract is for a lump sum, and the Works shall not be measured for the purposes of payment except in respect of variations.

17.2 Where measurement of the Works is required, the Works shall notwithstanding any general or local custom be measured net except when otherwise provided in the contract documents.

17.3 When the Supervisor requires any part or parts of the Works to be measured he shall give reasonable notice to the Contractor, and the Contractor shall attend or send a qualified agent to assist the Supervisor or the Supervisor's
representative in making such measurement and shall furnish all particulars required by the Supervisor or his representative. The failure of the Contractor or his agent to attend when the measurement is made shall not of itself affect the validity of such measurement.

Section XVIII: Provisional and Prime Cost Sums

18.1.1 Any provisional sum provided for in the contract documents is included to cover the cost of work which is not specified in detail when the contract is entered into or which is to be executed by a selected subcontractor.

18.1.2 Any work for which a provisional sum is provided shall be executed and any provisional sum shall be expended only if and as the Supervisor shall in writing direct.

18.1.3 The Supervisor will in all cases decide whether any work in respect of which a provisional sum is provided shall be executed by the Contractor or by a selected subcontractor.

18.2 In respect of each provisional sum set forth in the contract documents the Contractor shall in the space provided in the schedule of quantities show the amount he requires for supervising and attending on a selected subcontractor.

18.3 Every provisional sum, together with any sum for charges and profits, which the Contractor shall have added to such sum, shall be deducted from the Contract Price and in lieu thereof there shall be added to the Contract Price:

(a) Where work to which the provisional sum relates has been ordered by the Supervisor and executed by the Contractor, the price for the work so executed as determined under the provisions of clause 15.3 of these conditions;

(b) Where work to which the provisional sum relates has been ordered by the Supervisor and executed by a selected subcontractor (which term shall include the Contractor where he is also the subcontractor), the sum or sums actually paid with the approval of the Supervisor by the Contractor to such subcontractor and (if the Contractor and (if the Contractor shall have added to the provisional sum to which the work relates any sum for charges and profit) a sum in the same proportion to the sum actually paid as the said sum for charges and profits bears to the provisional sum.
18.4 Notwithstanding the foregoing provisions of Section XVIII hereof the Landscape Architect may with his own forces carry out any work covered by a provisional sum. All work so carried out shall be deleted from the contract and the amount allowed therefor in the provisional sum together with any amount provided for under clause 18.2 hereof shall be deducted from the Contract Price.

18.5 All sums which are stated in the contract to be provisional including prime cost sums or sums for contingencies shall be used only at the direction and discretion of the Supervisor and the amount of any such sums not used either wholly or in part shall be deducted from the Contract Price.

Section XIX: Certificates and Payments

19.1 If required by the Supervisor the Contractor shall submit to the Supervisor at the end of each month an itemised statement showing the estimated contract value of the work executed up to the end of the month and his estimate of the payment due to him in terms of the contract.

19.2 Progress payments will be made monthly or as near thereto as possible on the certificate in writing of the Supervisor but no sum shall be due and owing to the Contractor until the expiration of 21 days after the date of the certificate. If any such payment is not made to the Contractor within the said period of 21 days such failure to pay shall not be deemed to be a breach of contract on the part of the Landscape Architect but the Contractor shall be entitled to interest at the rate of 5 percent per annum on the amount of the payment due for such time as the failure to pay shall continue after the expiration of the said period of 21 days.

19.3 The amount of each progress payment to the Contractor shall be the total value assessed by the Supervisor in accordance with the provisions of the contract of the work properly executed in terms of the contract up to a date not more than 7 days before the date of the certificate, less the amount to be retained by the Landscape Architect in accordance with clause 19.4 hereof and less the total of all previous progress payments.
19.4.1 The amount to be retained by the Landscape Architect from progress payments shall be those percentages of the total value of the work executed, as assessed under clause 19.3 hereof, stated hereunder:

(a) Ten percent of the first two hundred thousand dollars or part thereof;
(b) Five percent of the next eight hundred thousand dollars or part thereof;
(c) Two and one-half percent of the next one million dollars or part thereof.

The total of the amounts so retained shall be called the "retention money".

19.4.2 Should any maximum amount for the retention moneys be fixed in the Special Conditions then if and for as long as the total of the retention moneys equals that maximum amount progress payments shall not be subject to deductions of further amounts as retention moneys.

19.5 Advances not exceeding 75 percent of the value of Materials and prepared work stored or stacked on the Site will be made to the Contractor in like manner to progress payments under clause 19.2 hereof provided that the Supervisor has approved such Materials and prepared work as fit and necessary for the Works.

19.6.1 Advances not exceeding 50 percent of the value of Plant, temporary buildings, and services installed or brought upon the Site for the purposes of the contract and ownership of which is intended to revert to the Contractor on completion of the contract may at the discretion of the Supervisor be made to the Contractor in like manner to progress payments under clause 19.2 hereof, provided however that advances made under this clause shall not at any time exceed 20 percent of the value of the work remaining to be done under the contract.

19.6.2 From subsequent payments proportional deductions of advances on Plant, temporary buildings, and services may be made by the Supervisor in terms of arrangements made at the time of such advances, and if no such arrangements have been made the Supervisor may make such deductions as he thinks fit.
19.7 Any sum included in any advance to the Contractor and not thereafter repaid by deduction from progress payments shall be deducted from the moneys due to the Contractor on completion of the contract.

19.8 One-half of the "retention money" less any deductions in terms of the contract shall be paid to the Contractor after the expiration of 31 days from the date stated in the Completion Certificate and the other half of the retention moneys less any deductions in terms of the contract shall be paid to the Contractor upon the expiration of the Maintenance Period after the Supervisor has certified in writing that the Works have been satisfactorily completed and maintained and that payment is due to the Contractor. For the purpose of this clause the expression "expiration of the Maintenance Period" means where different Maintenance Periods are applicable to different parts of the Works the expiration of the last of such periods.

19.9 As a condition of final payment of all moneys due under the contract, the Landscape Architect may require the Contractor to execute a release under seal to the clients that all claims and demands whatsoever under or arising out of the contract have been finally settled and discharged.

19.10 The Supervisor shall not be bound to certify that any payment is due to the Contractor until the Contractor has satisfied him that payment has been duly made of all sums due and payable by the Contractor in respect of:

(a) Wages to persons employed on the Works;
(b) Progress payments or other sums due to subcontractors;
(c) Sums due to any person for services supplied or for Materials, Plant, or prepared work (or cartage thereof) incorporated in the Works or used in connection therewith or brought upon the Site or placed on or near thereto for the purpose of being used in or upon the Works;
(d) Premiums in respect of policies of insurance of any nature required in terms of the contract.

19.11 The Landscape Architect may at his discretion and notwithstanding the exercise by him of all or any of the other powers conferred on him by the contract pay to any employee
of the Contractor or to any subcontractor, supplier, or other person to whom any moneys as specified in the last preceding clause are due the whole or any part of such moneys as if such person were a lawful assignee of the Contractor in respect of such moneys. Any such payment may be made out of moneys then due or accruing due to the Contractor and the Landscape Architect shall have no further liability to the Contractor in respect of any amount so paid. The powers conferred upon the Landscape Architect by this clause may be exercised by him from time to time upon such evidence as he deems sufficient and upon such terms and conditions as he thinks fit.

19.12 The Contractor shall have no claim whatsoever against the Landscape Architect for any further payment under the contract after the Supervisor has certified that the Works have been satisfactorily completed and maintained and the final payment has been made to the Contractor by the Landscape Architect unless notice in writing of such claim is given to the Supervisor not later than 30 days after the date of the final payment and unless full details of such claim are given in writing to the Supervisor not later than 90 days after the day on which notice of the claim was given to the Supervisor.

19.13 Any moneys due and owing by the Contractor to the Landscape Architect shall be a debt due and owing to the clients and may be recovered by action irrespective of any other mode of recovery.

Section XX: Suspension of Works

20.1 The Contractor shall on the order in writing of the Supervisor suspend the progress of the Works or any part thereof for such time or times and in such manner as the Supervisor may direct and shall during such suspension properly protect and secure the Works so far as is necessary in the opinion of the Supervisor.

20.2 Where the Works or any part thereof have been suspended as aforesaid the Contractor shall be entitled to recover any extra cost or the amount of any loss which he has
incurred by reason of such suspension provided that such sus-
pension is not:

(a) Otherwise provided for in the contract;
(b) Necessary for the proper execution of the Works;
(c) Necessitated by reason of weather or physical
    conditions affecting the safety or quality of the
    Works or by reason of some default on the part of
    the Contractor; or
(d) Necessary for the safety of the Works or any part
    thereof;

and provided further that the Contractor shall not be entitled
to recover any such extra cost or loss unless he gives notice
in writing of his intention to claim within 30 days after the
Supervisor's order. The Landscape Architect shall settle
and determine the extra payment to be made to the Contractor
in respect of such claim at whatever amount the Supervisor
shall consider fair and reasonable.

20.3 No suspension of the progress of the Works under
clause 20.1 hereof shall in any way vitiate the contract but
a commensurate extension of time for the completion of the
Works shall be granted to the Contractor, such extension of
time to be at the discretion of and to be decided by the Super-
visor.

Section XXI: Powers and Remedies

21.1 If the Supervisor shall certify in writing to the
Landscape Architect that in his opinion the Contractor has:

(a) Failed or refused to commence the Works at the time
    or in the manner required by the contract or by
    the Supervisor;
(b) Failed to proceed with the Works with due diligence
    or has otherwise failed to employ sufficient work-
    men, Plant, or Materials, or has otherwise failed
    to make such progress with the Works as to ensure
    completion of the Works within the time specified
    in the contract or any extended time granted by
    the Supervisor;
(c) Used or employed bad or insufficient Materials or
    Plant or executed any work in a manner which is
    imperfect or not in accordance with the contract
    or has persistently, flagrantly, or wilfully
    neglected to carry out his obligations under the
    contract;
(d) Failed to remove Materials from the Site or to pull down or replace work for 14 days after receiving from the Supervisor notice in writing that the said Materials or work have been condemned and rejected by the Supervisor under these conditions;

(e) Sublet the whole of the Works or sublet any part of the contract to the detriment of good workmanship or without the prior consent in writing of the Landscape Architect, where such consent is required to be obtained in terms of the contract or assigned the whole or any part of the contract without such consent where so required;

(f) Without the permission or order in writing of the Supervisor removed or attempted to remove from the Works or the Site any Materials, Plant, prepared work, temporary buildings, or services;

(g) Failed or refused to complete the Works to the satisfaction of the Supervisor within the time specified in the contract or any extended time granted by the Supervisor;

(h) Failed or refused during the Maintenance Period to maintain the Works in good and sufficient repair to the satisfaction of the Supervisor and to do all things necessary in the opinion of the Supervisor for that purpose;

(i) Abandoned the contract; or

(j) Committed a wilful breach of the contract;

then in any such case it shall be lawful for the Landscape Architect on giving notice in writing to the Contractor to do at the option of the Landscape Architect any of the following things:

(A) The Landscape Architect may forthwith or at any time:
   (i) Cause additional workmen, Materials, and Plant to be employed on the Works and the cost of so doing shall be borne by the Contractor and may be deducted from any moneys payable to him under the contract;
   (ii) Use all or any of the Materials, Plant, or temporary works which may be in or upon the Works or Site without payment of compensation to the Contractor for the use of or on account of any loss or injury to or diminution or wear and tear of such Materials, Plant, or temporary works;

(B) The Landscape Architect may forthwith or any time take the Works out of the Contractor's hands and himself complete the Works or carry them on under the direction of the Supervisor, or employ any other contractor either after calling tenders or without doing so to complete
the Works, and the Landscape Architect or any such other contractor may use for such completion all or any of the Materials, Plant, and temporary works in or upon the Works or Site; and the Landscape Architect may sell, hire, or otherwise dispose of any of the said Materials, Plant, and temporary works and apply the proceeds of sale, hire, or disposal in or towards the satisfaction of any sums due or which may become due to the Landscape Architect from the Contractor under the contract;

(B) The Landscape Architect may forthwith or at any time absolutely determine the contract without any further process of law, and upon delivery of a notice as aforesaid notifying the contractor that the contract is determined it shall be absolutely determined, and on such determination the money which shall have been previously paid to the Contractor under the contract shall if the Landscape Architect in his discretion thinks fit be deemed to be the full value of the work executed and shall be taken and accepted by the Contractor in full payment and satisfaction of all claims and demands under the contract; and the deposits and retention moneys and also all Materials, Plant, and temporary works then in or upon the Works or the Site shall remain the absolute property of the clients.

21.2 If the Landscape Architect shall exercise the powers vested in him under paragraph (B) of clause 21.1 hereof the following provisions shall apply:

(i) All rights and privileges which the Contractor may have had under the contract shall upon delivery of the notice notifying him of the exercise of the said powers as aforesaid cease and determine except as hereinafter provided;

(ii) Upon completion of the Works the Supervisor may grant authority to the Contractor to remove all surplus Materials, Plant, and temporary works from the Site but without prejudice to the rights of the Landscape Architect to sell, hire, or otherwise dispose of the same or any part thereof, and should any Materials, Plant, or temporary works be so returned to the Contractor then the Landscape Architect shall not be in any way liable for any loss, diminution,
wear and tear, or injury sustained by the same while under the control of the Landscape Architect.

21.3 If the Landscape Architect shall exercise the powers vested in him under paragraph (B) of clause 21.1 hereof he shall not be liable to pay to the Contractor any money on account of the contract until the expiration of the Maintenance Period or until the costs of completion and maintenance damages incurred by non-completion of the Works within the contract time, and all other expenses incurred by the Landscape Architect including departmental overhead costs have been ascertained and the amount thereof certified by the Supervisor, whichever is the later. The Contractor shall then be entitled to receive only such sum or sums as the Supervisor certifies would have been due to him upon due completion after deducting the amount of the said costs, damages, and expenses, but if such amount shall exceed the sum which would have been payable to the Contractor on due completion by him then the Contractor shall pay to the Landscape Architect the amount of such excess, which may be recovered as a debt due to the Landscape Architects.

21.4.1 If before the completion of the contract the Contractor shall die or become a mentally disordered person within the meaning of the Mental Health Act 1969, or shall become bankrupt or make a composition or arrangement with or for the benefit of his creditors or shall in any way take the benefit of or be brought under the operation of the Bankruptcy Act 1908, the Insolvency Act 1967, or other Act with a view to his estate being administered for the benefit of his creditors, or (being a company) shall go into liquidation, or if a receiver or manager shall be appointed or possession taken by or on behalf of the holder or holders of any debenture, then it shall be lawful for the Landscape Architect without any notice or process of law to take possession of the Works and take them out of the hands of the Contractor and at his option to carry them on under the power provided in paragraph (B) of clause 21.1 hereof in which event the provisions of clauses 21.2 and 21.3 hereof shall apply or to determine the contract absolutely under the powers provided in paragraph (C) of clause 21.1 hereof in which event the provisions of that paragraph
shall apply.

21.4.2 If the contract shall be continued by the assignee of the Contractor or by the Official Assignee on his behalf or by the executors or administrators of a deceased Contractor or by the assignee, trustee, or committee of the estate of the Contractor or by the liquidator or receiver of the Contractor the powers conferred by subclause 21.4.1 hereof shall continue to be exercisable by the Landscape Architect until and unless expressly waived by the Landscape Architect by notice in writing.

21.4.3 If either before or after such waiver as aforesaid the contract is continued by any of the persons mentioned in subclause 21.4.2 hereof then for the purpose of that subclause and subclause 21.4.1 hereof and for the purposes of paragraph (B) of clause 21.1 hereof the term "Contractor" shall include the person or persons by whom the contract is continued.

21.4.4 Where two or more persons are included in the term "Contractor" as so extended the powers conferred by subclauses 21.4.1, 21.4.2, and 21.4.3 hereof shall in the discretion of the Landscape Architect be exercisable if any of the circumstances set out in subclause 21.4.1 hereof shall apply to either or any one of such persons.

21.5 If the Contractor shall commit any breach of or fail to comply with any of the obligations or conditions herein contained and on the part of the Contractor to be performed or observed it shall be lawful for the Landscape Architect either to pursue the remedy if any provided in these conditions for such breach or any other lawful remedy, or to assess in writing the damage and loss that shall have arisen or occurred or shall be likely to arise or occur from or out of such breach or failure and the amount so assessed may be deducted from any moneys due under the contract.

21.6 The exercise by the Landscape Architect, Supervisor, or any representative or assistant of the Supervisor of any of their respective powers under the contract shall not relieve the Contractor from any liability to which he may be
subject for any breach of contract.

Section XXII: Determination of Disputes.

22.1 If at any time or in any way any dispute shall arise between the Landscape Architect and the Contractor out of the contract or out of the execution of the Works or out of any matter relating thereto the matter in dispute shall in the first instance be referred by the Contractor in writing to the Supervisor who shall within a reasonable time give his decision in writing on the matter in dispute to the Contractor, and except as hereinafter provided such decision shall be final and binding on the Contractor.

22.2 If the Contractor is dissatisfied with the Supervisor's decision under the clause 22.1 hereof, the dispute will be passed on first to the Landscape Architect, and then if necessary to outside arbitration.
II OUTLINE OF ALL SPECIFICATIONS TO COVER WHOLE WORK

1. **Particular Specifications for Contract**
   - Location, area, access, likely effect on other works
   - Scope of the contract
   - Legal survey pegs
   - Existing services
   - Swamps, soils etc.
   - Site clearance
   - Earthwork quantities

2. **General Specifications for Waimairi County**
   - Co-operation with power, phone, drainage, water supply authorities before surfacing undertaken
   - Safety on site
   - Basecourse standards
   - Construction of streets up to County standards

3. **Earthworks**
   - Surveying from legal pegs
   - Setting out
   - Site clearance
   - Topsoil stripping
   - Earthworks - standards of compaction
     - testing
     - stability
   - Control of water
   - Respreading topsoil
   - Roading - subgrades
     - metalling
   - Grassing
   - Restoring of surfaces
   - Noxious weeds
4. Stormwater and Sanitary Sewers

General
Materials
Order of work
Excavation and backfilling
Concrete work
Bedding of pipes
Laying and jointing pipes
Concrete protection for sewers
Flexible joints near manholes
Cast iron and steel pipes
Manholes
House connections
Brickwork
Cesspits
Explosives
Testing sewers and manholes
Leaks and cleaning
Traffic lighting, etc.
Restoration and maintenance of roads and private property
Connection to existing sewers
Sewers in fill areas
Pipe crossings
Safety requirements

5. Service Ducts

Setting out
Excavation
Boxing
Concrete
Backfilling
Disposal of excess spoil
Drains
Manholes
Fittings
House connections
Co-operation with service authorities
6. **Reticulation Water Mains**
   Pipes and fittings
   Valves, hydrants and covers
   Other materials (concrete, mortar, etc.)
   General construction
   Excavation, trenching, explosives
   Pipe laying, jointing
   Anchor blocks
   Connection to existing mains
   Service connection
   Rider mains
   Testing and sterilisation of mains
   Backfilling

7. **Kerbing and Channelling**
   See detail specification

8. **Concreting**
   Aggregate
   Placing
   Protection
   Workmanship
   Grades of concrete

9. **Sub-Basecourse**
   Aggregate
   Quality control
   Grading
   Spreading and compaction

10. **Basecourse Aggregate**
    Aggregate
    Quality control
    Grading
    Source of supply
11. **Basecourse Construction**
   - Depth and width
   - Testing
   - Spreading and compaction
   - Binding
   - Remedying of defects

12. **First Coat Sealing**
   - Explanation
   - Sealing period
   - Preparation
     - Materials application, temperatures
     - Quality and payment
     - Mineral aggregate
     - Precoating and spreading
     - Rolling
     - Traffic control during operations
     - Protection and maintenance
     - Removal of surplus material

13. **Concrete Footpaths**
    - See detail specifications

14. **Berms and Grassed Areas**
    - See detail specification

15. **Restoration of Surfaces**
    - Excavations and backfilling in subgrade
    - Excavations and backfilling in carriageways
    - Excavations and backfilling in footpaths
    - Excavations and backfilling on berms.
III SELECTED SPECIFICATIONS GIVEN IN FULL

A: SPECIFICATION FOR KERBING AND CHANNELLING

GENERAL

1. Scope of Specification

This specification covers various types of construction namely:

(1) Concrete kerbing only cast-in-situ.
(2) Concrete kerbing and channelling cast-in-situ.
(3) Cast-in-situ dish channels.

The type of construction adopted in this particular contract will be in accordance with the details shown in the drawings and with the requirements of the Waimairi County Council.

2. Setting Out

The line of kerbing shall be carefully set out by the Contractor from the road centre line pegs to give the required widths of path and carriageway as shown on the typical cross-section, and checked by measuring from the survey section pegs. The line of the kerb shall be perfectly straight between tangent points, and on curves shall sweep round without kinks, flats or angles in a true arc to the radius shown or directed.

The levels shown on the plan shall be strictly adhered to except at intersections with existing streets where adjustments shall be made if necessary to conform with the grades of such streets.

The level pegs shown on the plan shall not be disturbed until the Contractor has driven pegs spaced not more than one chain apart, at the required kerb level. He shall check the grades and levels by "boning" through from point to point. The Contractor shall not commence any section of the kerbing and channelling until the Supervisor has checked the accuracy of his pegs. All kerbing and channelling shall be "boned in" true to grade and level, and no depressions which may hold water
will be permitted. No channelling will be laid to a flatter gradient than one in three hundred, and kerb and channel at over and under vertical curves shall, where necessary, be "summitted" or given extra dishing to maintain this minimum gradient.

3. Workmanship

Only workmen expert in the construction of the particular type of works adopted shall be employed by the Contractor.

MATERIALS

4. Inspection, Testing and Approval

The Contractor shall in all cases provide adequate labour for the unloading and also for the inspection and examination by the Overseer of all materials, and for the safe storage, stacking and distribution of the materials as may be required by the overseer.

The Contractor shall in all cases provide the means and equipment necessary to carry out all tests required by the Supervisor.

Notwithstanding any test or inspection made, the Supervisor may condemn any materials at the time if they are found not to comply with this specification, or are not the best of their respective kinds, or are damaged.

All materials are to be approved by the Supervisor immediately before use. Methods of testing will be as specified in N.Z.S.S. 192 and N.Z.S.S. 1051.

5. Materials to be Used

(a) Sand shall be fresh-water sand, clean, sharp and free from all vegetable or foreign matter.

(b) Metal shall be clean shingle or other approved hard metal free from loam or earthy matter and of size to pass a 1" mesh.

(c) Aggregate for No. 1 concrete shall be composed of metal of 4" maximum size with sufficient sand added to make good dense concrete to the approval
of the Supervisor, and be as specified in the Detail Specification for No. 1 concrete.

(d) Cement shall comply with the requirements of N.Z.S.S. 1844 for ordinary Portland Cement. It shall be stored in a damp-proof shed. Any cement that is lumpy or affected by moisture must be removed forthwith from the job.

(e) Water used for mixing with concrete or mortar shall be fresh, clean, free from oil and alkali, organic or other injurious substances.

(f) Mortar shall consist of one part of cement to two parts of sand, thoroughly mixed with water, to form a thick paste. None but freshly made mortar shall be used.

(g) No. 1 concrete (which is also known as "Ordinary Grade Concrete") shall attain a compressive strength of not less than 2,500 lbs per square inch in 28 days and comply with the Detail Specification for No. 1 concrete.

(h) Reinforcing Rods to be of clean, plain, round mild steel, free from paint, grease, loose rust, or dirt, complying with N.Z.S.S. 197 to be bent and placed according to standard practice, and to the approval of the Supervisor.

(i) Gauge Boxes - The Contractor shall provide and maintain proper and approved gauge boxes to the satisfaction of the Supervisor for the apportioning of material for concrete or mortar.

EXECUTION OF THE WORK

6. Foundations

Tile-in-gravel subgrade drainage shall be provided below channels where shown on the plans or otherwise instructed by the Supervisor, such drainage being in accordance with the detail drawing and specification.
The bedding for the kerb and channel shall be brought to the required grade and dimensions and properly compacted so as to provide a solid foundation.

7. **Mixing of Concrete**

Unless otherwise authorised by the Supervisor, the mixing of concrete shall be done in a power driven mixer of an approved type which will ensure the uniform distribution of the materials throughout the mass. The volume of the mixed material per batch shall not exceed the manufacturer's rated capacity of the mixer. The mixing time, measured from the time when all materials are in the mixer drum shall be one and a half minutes for mixers of one cubic yard or less with an additional fifteen seconds for each cubic yard or fraction thereof.

When hand mixing is permitted, the concrete shall contain 10% more cement than is specified above, the materials shall then be laid out on grout-tight mixing board, at least 12' x 14' and turned over twice dry and twice while water is being gradually applied.

The smallest quantity of water practicable shall be used to give a 3 inch maximum slump in the standard test.

8. **Placing Concrete**

The concrete shall be worked with suitable tools when placed in the boxing, to ensure maximum density, and a smooth surface, without form marks. Any honeycomb or defects appearing on the surface shall be floated over immediately the boxing is removed. No concrete or mortar shall be retempered and used again. The concrete shall not be placed in water or mud, nor shall dirt be allowed to get into the concrete.

9. **Boxing**

Timber for boxing, where supporting exposed surfaces, shall be thicknessed and dressed smooth on one surface and both edges and the boxing, when built shall be close jointed and grout-tight. It shall be securely stayed to prevent displacement and appreciable deflection. It shall be designed to be easily removable without jarring the green concrete.
Before being used all boxing shall be thoroughly cleaned and treated with soft soap or a similar approved substance to prevent the concrete adhering. The boxing for curved kerbs, cast in situ shall be brought to a true curve by springing the timber and shall be fixed without kinks, flats or angles. All boxing and pegs remain the property of the Contractor.

10. Protection of Concrete

The boxing supporting vertical faces shall not be removed for at least 36 hours after the concrete is placed.

The green concrete shall be protected by a covering of damp sacks for at least a week after the concrete is placed.

11. Reinforcement

Where directed by the Supervisor for strengthening kerb and channelling on filling, \( \frac{3}{4} \) inch diameter reinforcing rods, or such other size as may be specified, shall be built into the kerb and channel as shown in the drawings the rods being placed 1\( \frac{1}{2} \)-inches from the bottom of kerbs and channelling and secured in position while the concrete is being placed. The ends of all rods shall overlap 40 diameters at all laps.

12. Finish

The exposed surfaces of all concrete work, whether cast in situ or precast, shall present a smooth clean appearance, the top of the kerb and the channelling before the concrete has finally set shall be floated over with a tool to give a true, smooth surface. Unless the exposed surface of the kerbing present smooth surfaces when the boxing is removed, they shall be plastered and given a steel tool finish. The outside edges of the kerbing and the channelling shall be given a uniform chamfer of \( \frac{3}{4} \)" or as shown in the detail drawings.

13. Expansion Joints

Where the kerbing and channelling is cast in situ the Contractor shall provide about every 12-feet, expansion joints, formed in an approved manner.
14. Crossings

The Contractor shall construct where shown on the contract drawing or where directed vehicle and/or pram crossings of the type shown in the drawings.

15. Drainage Outlets

If required, house stormwater drainage from face of kerb to beyond the road boundary shall be constructed as shown in the detail drawings and provision shall be made in all kerbing for the insertion of these drains, were direct junctions to the stormwater system have not been provided.
B: DETAIL SPECIFICATION FOR CONCRETE FOOTPATHS

This specification covers the construction of cast-in-situ footpaths of No. 1 Concrete (which is also known as "Ordinary Grade Concrete").

LINE AND LEVELS

The line of the footpath shall be carefully set out by the contractor from road boundary pegs or from such other marks as the Supervisor may decide and shall be perfectly straight between tangent points, and on curves shall sweep around without kinks, flats, or angles, in a true arc to the radius shown or as directed.

The levels shown on the typical cross-sections shall be strictly adhered to except at inter-sections with existing streets where adjustments shall be made if necessary to conform to the grades of such streets.

FOUNDATIONS

The foundations of the path shall be brought to proper width, line, grade and crossfall and thoroughly consolidated by rolling. Half-inch gravel shall be rolled into the foundations to a consolidated depth of 1". All foundations shall be approved by the Supervisor before concrete is placed.

AGGREGATE

The aggregate shall consist of natural sands and gravels, crushed stone, or other suitable material in the approximate proportion of one part of sand to two of stone. It shall be hard, strong, durable and shall be clean and free from vegetable matter, clay film and other adherent coatings.

The proportions of sand and aggregate shall be separately determined before mixing and a representative sample of the aggregate when thoroughly dried shall comply with the following analysis:-
Passing 1" sieve 100%
" ¼" " 90% - 100%
" ⅛" " 55% - 70%
" No. 7 mesh 30% - 35%
" 14 " 20% - 30%
" 52 " 4% - 10%

A tallyman's receipt for the quantity of metal delivered will not be an acceptance that the metal conforms to the required specification. Metal will be tested during delivery or as soon as possible thereafter as the Supervisor may deem necessary. Any metal that does not conform to the required specification will be rejected and shall be replaced by the supplier or contractor at his own expense.

CEMENT

Shall comply with the requirements of N.Z.S.S. 1844 for ordinary Portland Cement. It shall be stored in a damp-proof shed and any cement that is lumpy or affected by moisture must be removed forthwith from the job.

WATER

Water used for mixing with concrete or mortar shall be fresh, clean, free from oil and alkali, organic or other injurious substances.

CONCRETE

Concrete shall be composed of cement (540 lbs) to one cubic yard of mixed concrete and shall attain a compressive strength of not less than 2500 lbs per square inch in 28 days. The slump measured by the standard slump test shall not exceed three inches. Methods of test will be as specified in N.Z.S.S. 192 and N.Z.S.S. 1051.
BOXING

Timber for boxing shall be securely stayed to prevent displacement and appreciable deflection. It shall be designed to be easily removable without jarring the green concrete. Before being used again all boxing shall be thoroughly cleaned and treated to prevent concrete adhering. The boxing for curved paths shall be brought to a true curve by springing the timber and shall be fixed without kinks, flats or angles.

Steel forms of approved manufacture may also be used provided that the steel is suitably curved where necessary to avoid any kinks, flats, or angles in the vertical or horizontal alignment.

PLACING CONCRETE

The concrete shall be worked with suitable tools when placed in the boxing to ensure maximum density and screeded so as to form an even surface true to grade and crossfall. No concrete shall be retempered and used again.

The Contractor shall provide expansion joints every six feet by inserting $\frac{1}{4}" \times 2"$ bitumenised felt strips for the full width of the path. These strips shall be left $\frac{1}{4}"$ below the finished level of the surface and all edges on the path shall be neatly chamfered. The concrete work between joints shall be completed in one operation and without interruption.

As an alternative to bitumenised felt strips, the contractor may use cut joints filled with an approved rubberised bitumen filler.

The whole of the surface shall be finished with a wooden float, taking care not to trowel the surface to such an extent that water and an excess of fine material are brought to the surface.

After the path has had its initial set it shall be carefully broomed to present a non-skid surface.
PROTECTION OF CONCRETE

The finished work shall be protected and kept moist by a covering of wet sacks, wet sand or by ponding for at least a week after the concrete is placed, and the boxing supporting the vertical faces shall not be removed for at least 36 hours after the concrete is placed.

WORKMANSHIP

Only workmen expert in the construction of this work shall be employed by the contractor, and the whole of the work is to be finished and maintained to the satisfaction of the Supervisor.

VEHICULAR CROSSINGS

Vehicular crossings to the standard specified or as shown in the detail drawings shall be constructed where shown on the contract drawings or elsewhere as directed by the Supervisor.

Construction joints shall be provided in the vehicular crossings so that no concrete surface area is more than 150 square feet.

CROSSFALLS

The footpaths shall be graded to the longitudinal sections shown in the contract drawings, or as otherwise specified or directed. The footpath shall have a crossfall of $\frac{3}{8}$" per foot or otherwise as directed.
C: DETAIL SPECIFICATION FOR GRASS BERMS
AND GRASSED AREAS IN STREETS

1. General

The grass berms and other grassed areas in streets, pedestrian streets or accessways or utility reserves shall be constructed as shown on the drawings and in the positions indicated. The surface shall be levelled true to grade, crossfall, cleared of all stones and debris, and neatly dressed with a layer of good topsoil, as shown on the drawings.

Care shall be taken that trenches of all cross connection pipes and other excavations are completely compacted at least to the density of the natural ground, or to such higher standards as may be specified elsewhere, to prevent unsightly depressions developing.

2. Cultivation

Before sowing, the whole area shall be broken out and thoroughly cultivated to an even depth of 4" by any of the following implements.

(a) Rotary hoe
(b) Cultivator
(c) Garden fork or spade

All weeds and other debris are to be removed.

3. Consolidation

After cultivation the area is to be consolidated by rolling and finished off with a fine even surface at a level of 1/2" above the road kerb and flush with the path.

4. Seed Mixture and Sowing Rate

The seed mixture and proportions of each variety to be used is as under:

2 lbs of Chewings Fescue
1 lb of Brown Top
1 lb of Crested Dogstail
9 lbs of Perennial Rye Grass

To be sown at the rate of 1 lb to 20 sq. yards. At the
time of sowing, a mixture of 1 part superphosphate and 1 part sulphate of ammonia is to be applied at the rate of 1 oz per square yard surface area.

5. **Time of Sowing**

Sowing shall normally only be done from 1 April to 31 May, or from 1 September to 30 November, but sowing outside these limits may be permitted subject to such conditions as the Supervisor may direct.

6. **Seed Surface and Sowing**

The surface area shall be again broken out to an even depth of 1" and 25 per cent of the total seed quantity sown before the surface is raked to a good even seed tilth. The remaining 75 per cent of the total seed quantity shall then be sown and thoroughly raked in and the berm area finished off by light rolling.

7. **Removal of Debris**

The contractor shall be required to remove from the road reservation any debris or surplus soil at the conclusion of the work and shall leave the footpaths and road channels in a clean and tidy condition. Such spoil or debris shall be completely removed from the works and shall not be spread or disposed of on adjacent building sections except with the direct approval of the Supervisor.

8. **Maintenance**

The contractor shall be required to maintain the surface of all berms covered by this contract, and to cut the grass at intervals throughout the period of the contract, including the maintenance period. A final cut shall be made just prior to the expiration of the maintenance period, and the completed grass surfaces shall in all respects be brought to a condition acceptable to the Waimairi County Council in whose area the works are located.
## SCHEDULE OF QUANTITIES FOR DETAIL DESIGN AREA

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Est. Qty</th>
<th>Rate</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Clear site as specified</td>
<td>Item</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Strip topsoil from development areas and stockpile</td>
<td>Cu.yds</td>
<td>Solid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Excavate unstable material below topsoil level from fill areas before placing filling, and spread or stockpile as directed (Provisional Item).</td>
<td>Cu.yds</td>
<td>Solid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Respread topsoil to 9&quot; depth, including chain harrowing on areas of reserve and school.</td>
<td>Cu.yds</td>
<td>Solid</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Street Formation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Strip topsoil from street reserve, and stockpile where directed.</td>
<td>Cu.yds</td>
<td>Solid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Excavate unstable material in fill areas and spread or stockpile as directed. (Provisional Item)</td>
<td>Cu.yds</td>
<td>Solid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Excavate carriageway to formation (subgrade) level being 9 1/2&quot; below finished surface level in feeder streets, 11 1/2&quot; below finished level in central street, and all berms and footpaths to their subgrade level being a depth of approx. 4&quot; below finished level; compact material in street fills, or in fillings replacing undercutting or in site development areas</td>
<td>Cu.yds</td>
<td>Solid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
<td>Unit</td>
<td>Est. Qty</td>
<td>Rate</td>
<td>Amount</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>------</td>
<td>----------</td>
<td>------</td>
<td>--------</td>
</tr>
<tr>
<td>8</td>
<td>Excavate from carriageway below 12½&quot; from finished level in feeder streets, and below 15½&quot; from finished level in central street any unstable or weak ground and spread or stockpile or compact in thin layers in filling, as directed.</td>
<td>Cu.yds, Solid, Meas.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Compaction in-situ of subgrade in cuttings</td>
<td>S.yds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Supply, place and compact hard filling (Provisional Items)</td>
<td></td>
<td>Cu.yds, Lorry, Meas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Run of Pit</td>
<td>Cu.yds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. 3&quot; all in</td>
<td>Lorry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. 2&quot;-½&quot; Drainage</td>
<td>Meas.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Respread topsoil on street batters to 9&quot; minimum depth; prepare surface and sow grass</td>
<td>Cu.yds, Solid, Meas.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Carried forward to Summary:

**Metalling**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Est. Qty</th>
<th>Rate</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Supply, spread and compact sub-basecourse material</td>
<td>Cu.yds, Solid, Meas.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Supply, spread and compact basecourse aggregate</td>
<td>Cu.yds, Solid, Meas.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Dilute slow-breaking bituminous emulsion added to basecourse as compaction water. Volume of emulsion measured at 55% bitumen content (Provisional Item)</td>
<td>Gals</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Carried forward to Summary:
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Est. Qty</th>
<th>Rate $</th>
<th>Amount $</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Excavate trench in all materials met, supply, lay and test reinforced concrete rubber ring jointed pipe Class S, complete with concrete bedding and haunching and including all Y junctions shown or implied in the drawings, backfill and compact trenches, except that pipes 21&quot; diameter and larger shall be on No. 2 concrete bedding only, and be flush jointed.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.</td>
<td>4&quot; dia. AC or RC or Ceramic other than Ramp L.ft Risers (Provisional Item)</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>6&quot; dia.</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>9&quot; dia. (including 532 ft of CP connections)</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>12&quot; dia. Class S</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td>15&quot; dia. Class S</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f.</td>
<td>18&quot; dia. Class S</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>g.</td>
<td>21&quot; dia. Class S (Flush joint)</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h.</td>
<td>24&quot; dia. Class S (Flush joint)</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Excavate trench in all materials met; supply, lay and test reinforced concrete pipe Class X, including all Y junctions and saddles shown or implied in the drawings; backfill and compact trench. (Pipes to be on no. 2 concrete bedding)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.</td>
<td>21&quot; dia. (Flush joint)</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>24&quot; dia. &quot; &quot;</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
<td>Unit</td>
<td>Est. Qty</td>
<td>Rate $</td>
<td>Amount $</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------</td>
<td>----------</td>
<td>--------</td>
<td>----------</td>
</tr>
<tr>
<td>17</td>
<td>Construct standard manholes complete with all connections shown or implied on the drawings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>4&quot; dia. AC, RC or GEW pipes from batter drains to cesspits (Provisional Item)</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Field tile drains complete 12&quot; wide x up to 30&quot; deep, other than under kerb and channelling (Provisional Item)</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. 4&quot; dia.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. 6&quot; dia.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Stormwater drainage outlets in 3&quot; dia. galvanised pipe from catchpit or kerb face to back of path</td>
<td>Each</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Construct catchpits complete</td>
<td>Each</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Single 27&quot;x18&quot; type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Double 27&quot;x18&quot; type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>a. Excavate unstable material below bedding level in trenches, stockpile or spread as directed</td>
<td>Cu.yds</td>
<td>Solid Meas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Supply, place and compact approved hard filling in trenches as directed</td>
<td>Cu.yds</td>
<td>Solid Meas.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Carried forward to Summary:
Sanitary Sewers (~/24):

23 Excavate trench in all materials met; supply, lay and test AC or ceramic rubber ring jointed pipe on no. 2 concrete bedding and haunching, including shown or implied in the drawings; backfill and compact trench
   a. 6" dia. L.ft
   b. 4" dia. (other than ramped risers) (Provisional Item) L.ft

24 Construct standard circular manholes complete with all junctions shown or implied in the drawings
   a. Depth to invert up to 5' Each
   b. Depth to invert over 5' and up to 10' Each
   c. Depth to invert over 10' Each

25 Construct standard drop manholes complete with all junctions shown or implied in the drawings. Depth to invert up to 12', drop up to 6'. Each

26 Break into existing manhole on Main North Rd. make new connection, and renew haunching, seal wall and make good Item

27 Excavate unstable material below normal bedding level in trenches, stockpile or respread as directed (Provisional Item) Cu.yds Solid Meas.
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Est. Qty</th>
<th>Rate $</th>
<th>Amount $</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>Supply, place and compact approved hard filling in trenches as directed. (Provisional Item)</td>
<td>C.yds Solid</td>
<td>Meas.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Carried forward to Summary:

Service Ducts

29   | Excavate trench in all materials met. 5' wide and up to 6'6" deep.                        |              |          |        |          |

30   | Excavate and lay field tile drains complete 12" wide.                                      |              |          |        |          |

31   | Construct standard ducts complete with manholes, sumps and fittings. No. 1 concrete.       |              |          |        |          |

32   | Fix pipes for Sanitary sewer and water reticulation including breaking through walls for connections to outside lines. |              |          |        |          |

33   | Break through walls and roof as directed, and fit and seal house connection tubes, reseal walls and roof and make good. |              |          |        |          |

34   | Connect field tile drains into sumps.                                                     |              |          |        |          |

35   | Backfill around ducts to normal ground level, including 9" topsoil at surface.             |              |          |        |          |

36   | Carry surplus material to stockpiles mounding near Main North Rd.                          |              |          |        |          |

Carried forward to Summary:
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Est. Qty</th>
<th>Rate</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td><strong>Kerb and Channel (-/25)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complete construction in No. 1 concrete of pre-cast kerb and cast-in-situ channel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. 3½&quot; high mountable kerb and 12&quot; channel</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. 8&quot;x3&quot; concrete edging</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>4&quot; dia. tile and gravel drains complete as detailed 18&quot; deep laid under street channel</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Carried forward to Summary:

**Water Reticulation (-/26)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Est. Qty</th>
<th>Rate</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>Normal excavation of trenches, supply, lay and test watermains complete with valves, tees, hydrants, extension spindles, surface boxes, ½&quot;dia. or 1&quot; dia. house connection tappings, markers, anchor blocks and all other fittings shown or implied on the drawings including connections to existing mains</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. 4&quot; dia. AC Class C</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. 1½&quot; dia. rigid PVC pipe Class D</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. 1½&quot; dia. galvanised steel pipe (Provisional Item)</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>d. ½&quot; dia. rigid PVC pipe Class D</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>e. ¼&quot; dia. galvanised steel pipe (Provisional Item)</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Carried forward to Summary:
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Est. Qty</th>
<th>Rate $</th>
<th>Amount $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Footpaths and Berms (-/27)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Construct footpaths 2½&quot; thick No. 1 concrete on 1&quot; compacted thickness of gravel bedding</td>
<td>S.yds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Construct vehicle crossings 4½&quot; thick No. 1 concrete on 1&quot; compacted thickness of gravel bedding, between channel and property line</td>
<td>S.yds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>Respread topsoil to 4&quot; minimum depth on berms, prepare surface, spread fertiliser and sow grass</td>
<td>S.yds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Carried forward to Summary:

Sealing (-/28)
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Est. Qty</th>
<th>Rate $</th>
<th>Amount $</th>
</tr>
</thead>
<tbody>
<tr>
<td>43</td>
<td>Preparation of basecourse surface</td>
<td>S.yds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>Supply and spray medium curing liquid asphalt (MC-800 or MC 3000) for first coat seal at approximate rate of 0.30 gals/sq yd measured at 60°F</td>
<td>Gals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>Anti-stripping additive if directed, 1% by weight of bitumen (Duomeen T, Stearine Amine ML)</td>
<td>Lbs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>Supply, spread, roll and broom ⅜&quot; precoated chips (Grade 4) for first coat seal spread at approximate rate of one cu.yd lorry measure to 70 sq. yds</td>
<td>S.yds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Carried forward to Summary:
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Est Qty</th>
<th>Rate $</th>
<th>Amount $</th>
</tr>
</thead>
<tbody>
<tr>
<td>47</td>
<td>Miscellaneous (-/29)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Benkelman Beam testing of carriageway, including truck hire and laboratory costs (see Specification General Clauses)</td>
<td>Set of Tests</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>Density tests of compacted basecourse, including laboratory costs (see Specification General Clauses)</td>
<td>Each Test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Provisional Item)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>Extra concrete in trenches or elsewhere as directed (Provisional Items)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. No. 1 Concrete</td>
<td>C.yds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. No. 2 Concrete</td>
<td>C.yds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>No. 1 Concrete capping of sewers or stormwater pipes as shown on drawings or as directed (Provisional Items)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. 9&quot; dia. pipe</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. 6&quot; dia. pipe</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. 4&quot; dia. pipe</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>Supply and place straight steel reinforcing in bedding or elsewhere as directed up to ½&quot; dia. (other than in manhole roofs) (Provisional Item)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Provisional Item)</td>
<td>Cwt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>Extra junctions at manholes or on pipes as directed (Provisional Items)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. 9&quot; dia. pipe connection</td>
<td>Each</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. 6&quot; dia. pipe connection</td>
<td>Each</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. 4&quot; dia. pipe connection</td>
<td>Each</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
<td>Unit</td>
<td>Est Qty</td>
<td>Rate</td>
<td>Amount</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>------</td>
<td>--------</td>
<td>------</td>
<td>--------</td>
</tr>
<tr>
<td>53</td>
<td>Power Cable Ducts: Trenching and laying of 4&quot; dia. PVC duct supplied by the Power Board to provide a minimum 2'0&quot; cover to finished level (Provisional Item)</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>Telephone Cable Ducts: Trenching and laying of 3&quot; dia. PVC duct supplied by the Contractor to provide a minimum of 2'0&quot; cover to finished level (Provisional Item)</td>
<td>L.ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>Cast survey plaques into concrete channel, supplied on site by the Supervisor where directed</td>
<td>Each</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>Additional cost of complying with any or all of the General Conditions of Contract, Special Conditions or Contract, the Specifications, Special Note to Contractors, or the Drawings not covered by the rates for the specified classes of work as set out in the Schedule of Quantities</td>
<td>Item</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>Restoring to original condition all street, road, path, berm and other surfaces and all services, fences, and any other property whatsoever that may be disturbed or damaged during the progress of the contract</td>
<td>Item</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Carried forward to Summary:
SUMMARY OF SCHEDULE

Clear and Prepare Site
Street Formation
Metalling
Stormwater Drainage
Sanitary Sewers
Service Ducts
Kerb and Channelling
Water Reticulation
Footpaths and Berms
Sealing
Miscellaneous

TOTAL $