

Lot 32 DP 7589
Current Subdivision for
626 East Maddsons Road
Not constructed yet

Kim Sanders Consulting
for Civil Engineering &
Construction Services
30 Clark Street, Sumner - 0272342285
kimsanders@xtra.co.nz

RUFUS STREET
Existing 150mm Sewer

Existing Manhole 1
Expected Invert 40.67
SSMH on Rufus Street
mE - 372017.02
mN - 796936.18
LL - 42.170m
Outlet IL - 40.63
SSMH on Rufus Street
mE - 372017.02
mN - 796936.18
LL - 42.170m
Outlet IL - 40.63

Proposed Manhole 2
Invert 40.79m/40.77out

- NOTES :
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 2. ALL PLANS ARE TO BE READ AND DISTRIBUTED AS A COMPLETE SET. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION.
 3. CARRIAGEWAY AND FOOTPATH ACCEPTANCE TESTING IN ACCORDANCE WITH CCC CSS PART 6 AND CCC IDS WITH SPECIAL NOTE TO THE FOLLOWING:
 - 3.1. KERB & CHANNEL BASECOURSE TESTING BY NUCLEAR DENSOMETER - MINIMUM DRY DENSITY OF 2100kg/m³ WITH 75% EQUAL OR EXCEEDING 2150kg/m³.
 - 3.2. CUTDOWNS AT THE TWO GOULDS ROAD ENTRANCE & EXIT TO HAVE 280mm OF CONCRETE WITH REINFORCEMENT AS PER SD611.
 - 3.3. METAL DEPTHS TO BE CONFIRMED OR INCREASED PRIOR TO COMMENCEMENT OF WORK FOLLOWING THE CHECKING OF SUBGRADE CBR ON SITE. THE SUBGRADE IS EXPECTED TO BE PRE-ROLLED AFTER EXCAVATION AND PRIOR TO INSPECTION.
 - 3.4. CARPARK BASECOURSE TESTING INCLUDING GOULDS ROAD ENTRANCES - MAXIMUM BENKELMAN BEAM DEFLECTION OF 2.00mm WITH 95% BELOW 1.5mm FOR ALL ASPHALT PAVED AREAS (AVERAGE 1.6mm).
 - 3.5. ALL CARPARK AND FOOTPATH AREAS TO BE SURFACED USING ASPHALTIC CONCRETE. FOOTPATHS TO BE CONSTRUCTED IN ACCORDANCE WITH SDC REQUIREMENTS WITH 20mm DEPTH AC. WHILE CARPARK PAVEMENTS TO BE PAVER LAID 30mm AC10 (WITH CHIP SEAL WATERPROOFING MEMBRANE). A PRE-SEAL INSPECTION IS REQUIRED FOLLOWING BENKELMAN BEAM TEST. ALL PAVEMENT CROSSFALLS ARE GENERALLY 2%. IF DESIGN CROSSFALLS ARE IN DOUBT CONTACT THE ENGINEER.
 - 3.6. ALL ANGGLED CARPARKS ARE 60 DEGREES.
 4. ALL BERMS TO BE AND COVERED WITH A MINIMUM OF 150mm GRADE 1 TOPSOIL AND GRASSED WITH COUNCIL BERM MIX.
 5. ELECTRICITY & TELECOM SERVICES NOT SHOWN. REFER TO ELECTRICAL & COMMUNICATION PLANS FOR DUCT LOCATIONS.
 6. FOOTPATH BASECOURSE TESTING (IF COUNCIL AGREE TO RECONSTRUCT GOULDS ROAD) MINIMUM CLEGG HAMMER VALUE OF 25 REQUIRED FOR FOOTPATHS & RESIDENTIAL CROSSINGS. MINIMUM CLEGG HAMMER VALUE OF 35 REQUIRED FOR COMMERCIAL CROSSINGS.

CORNERSTONE CHURCH
999 GOULDS ROAD, ROLLESTON

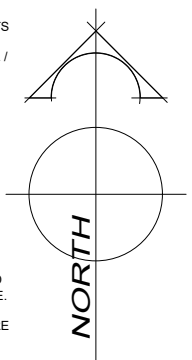
SEWER, CARPARK DIMENSION
TOPOGRAPHICAL SURVEY &
EARTHWORKS PLAN

- LEGEND
- FENCELINE
 - EDGE OF FOOTPATH
 - EDGE OF SEAL
 - CHANNEL
 - TOP OF KERB
 - TELECOMMUNICATIONS
 - SANITARY SEWER
 - STORMWATER
 - WATER
 - PRIMARY BOUNDARIES
 - ADJACENT BOUNDARIES
 - POWER POLE
 - SS MANHOLE
 - MAJOR CONTOUR
 - FIRE HYDRANT
 - VALVE
 - "M" Mobility Carpark
 - Secondary Flow Path
 - Direction of Slope for Pavement or Kerbs
 - K42.77 PROPOSED KERB TOP
 - S42.67 PROPOSED SEAL LEVEL

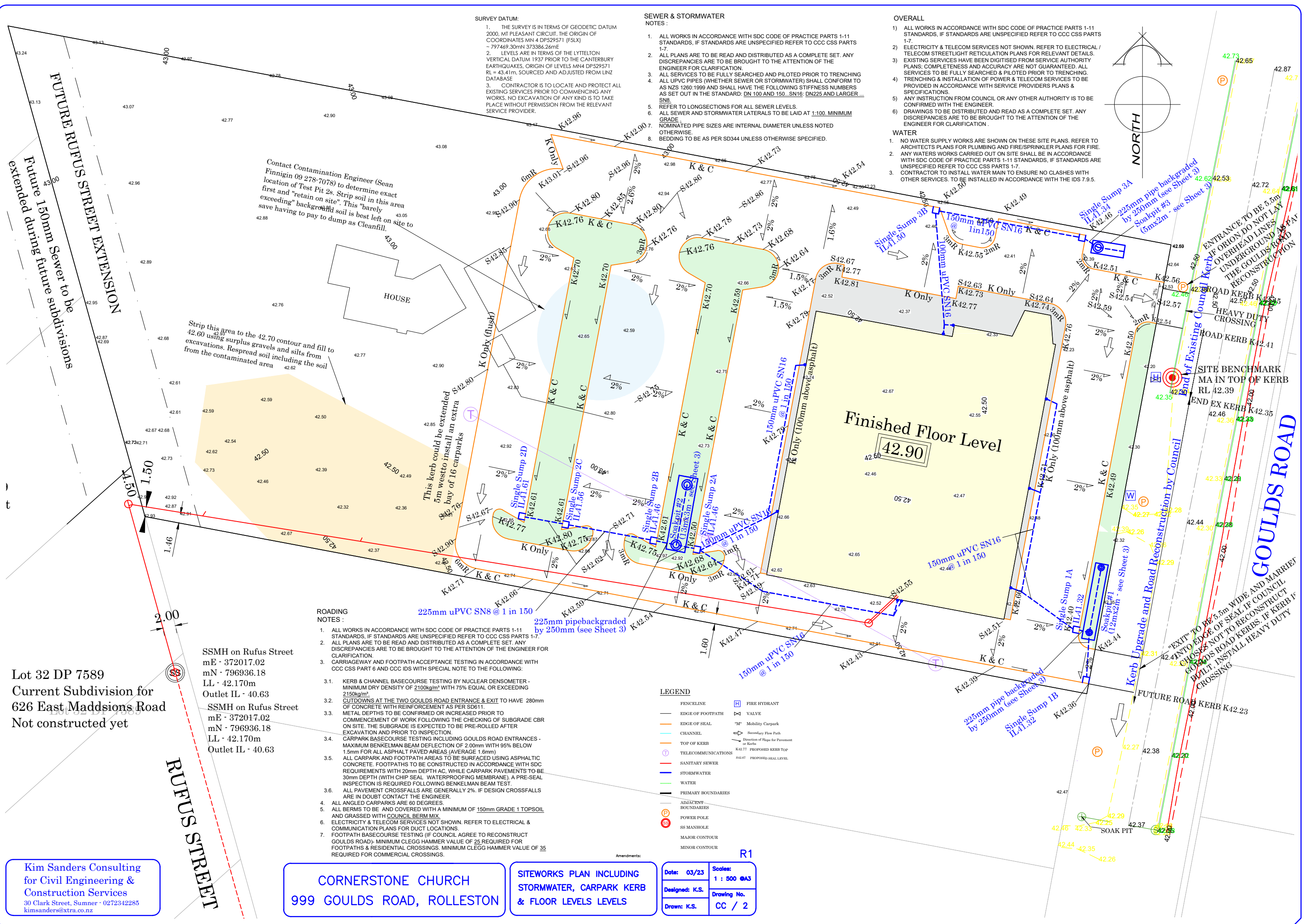
Amendments:
R1
Date: 03/23
Designed: K.S.
Drawn: K.S.
Scale: 1 : 500
Drawing No. CC / 1

Proposed Manhole 3
Invert 41.38out
1.10m deep
Two 100mm laterals
@lin80, Invert 41.46
@building. Refer to Architects
plans for drainage under slab.

- OVERALL
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 - 3) EXISTING SERVICES HAVE BEEN DIGITISED FROM SERVICE AUTHORITY PLANS. COMPLETENESS AND ACCURACY ARE NOT GUARANTEED. ALL SERVICES TO BE FULLY SEARCHED & PILOTED PRIOR TO TRENCHING.
 - 4) TRENCHING & INSTALLATION OF POWER & TELECOM SERVICES TO BE PROVIDED IN ACCORDANCE WITH SERVICE PROVIDERS PLANS & SPECIFICATIONS.
 - 5) ANY INSTRUCTION FROM COUNCIL OR ANY OTHER AUTHORITY IS TO BE CONFIRMED WITH THE ENGINEER.
 - 6) DRAWINGS TO BE DISTRIBUTED AND READ AS A COMPLETE SET. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION.
- WATER
1. NO WATER SUPPLY WORKS ARE SHOWN ON THESE SITE PLANS. REFER TO ARCHITECTS PLANS FOR PLUMBING AND FIRE/SPRINKLER PLANS FOR FIRE.
 2. ANY WATERS WORKS CARRIED OUT ON SITE SHALL BE IN ACCORDANCE WITH SDC CODE OF PRACTICE PARTS 1-11 STANDARDS, IF STANDARDS ARE UNSPECIFIED REFER TO CCC CSS PARTS 1-7.
 3. CONTRACTOR TO INSTALL WATER MAIN TO ENSURE NO CLASHES WITH OTHER SERVICES. TO BE INSTALLED IN ACCORDANCE WITH THE IDS 7.9.5.



SELWYN DISTRICT



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CORNERSTONE CHURCH
999 GOULDS ROAD, ROLLESTON

SITWORKS PLAN INCLUDING
STORMWATER, CARPARK KERB
& FLOOR LEVELS

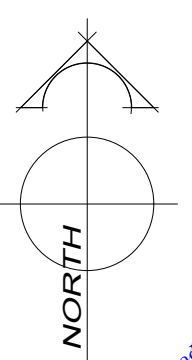
Date:	03/23	Scales:	1 : 500 @A3
Designed:	K.S.	Drawing No.	CC / 2
Drawn:	K.S.		

SURVEY DATUM:
1. THE SURVEY IS IN TERMS OF GEODETIC DATUM 2000, MT PLEASANT CIRCUIT. THE ORIGIN OF COORDINATES MN 4 DP529571 (FSLX) ~ 797469.30mN 373386.26mE
2. LEVELS ARE IN TERMS OF THE LYTTELTON VERTICAL DATUM 1937 PRIOR TO THE CANTERBURY EARTHQUAKES. ORIGIN OF LEVELS MN4 DP529571 RL = 43.41m. SOURCED AND ADJUSTED FROM LINZ DATABASE
3. CONTRACTOR IS TO LOCATE AND PROTECT ALL EXISTING SERVICES PRIOR TO COMMENCING ANY WORKS. NO EXCAVATION OF ANY KIND IS TO TAKE PLACE WITHOUT PERMISSION FROM THE RELEVANT SERVICE PROVIDER.

SEWER & STORMWATER NOTES:
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3. ALL SERVICES TO BE FULLY SEARCHED AND PILOTTED PRIOR TO TRENCHING
4. ALL UPVC PIPES (WHETHER SEWER OR STORMWATER) SHALL CONFORM TO AS NZS 1260:1999 AND SHALL HAVE THE FOLLOWING STIFFNESS NUMBERS AS SET OUT IN THE STANDARD: DN 100 AND 150: SN16: DN225 AND LARGER: SN8.
5. REFER TO LONGSECTIONS FOR ALL SEWER LEVELS.
6. ALL SEWER AND STORMWATER LATERALS TO BE LAID AT 1:100, MINIMUM GRADE.
7. NOMINATED PIPE SIZES ARE INTERNAL DIAMETER UNLESS NOTED OTHERWISE.
8. BEDDING TO BE AS PER SD344 UNLESS OTHERWISE SPECIFIED.

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ROADING NOTES:
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LEGEND	
	FENCELINE
	EDGE OF FOOTPATH
	EDGE OF SEAL
	CHANNEL
	TOP OF KERB
	TELECOMMUNICATIONS
	SANITARY SEWER
	STORMWATER
	WATER
	PRIMARY BOUNDARIES
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	POWER POLE
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	MAJOR CONTOUR
	MINOR CONTOUR
	FIRE HYDRANT
	VALVE
	"M" Mobility Carpark
	Secondary Flow Path
	Direction of Slope for Pavement or Kerbs
	K42.77 PROPOSED KERB TOP
	S42.67 PROPOSED SEAL LEVEL

R1

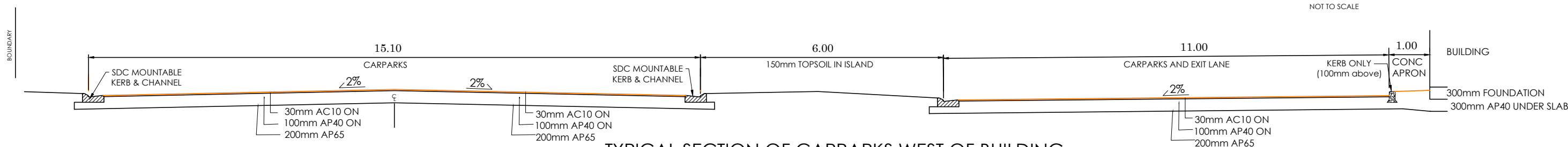
The sewer downstream of SS2 is being laid by the adjacent developer as per SDC approval

DATUM R.L.	40.00							
CUT/ FILLGRADE & PIPE DATA	211	150Ø uPVC SN16						
		@ 1 in 200						
INVERT LEVEL	40.77 40.79							
FINISHED KERB LEVEL						K42.83		
EX GROUND LEVEL	42.90	42.7	42.4	42.4		42.60	K42.83	
METERAGE	0.00					52		

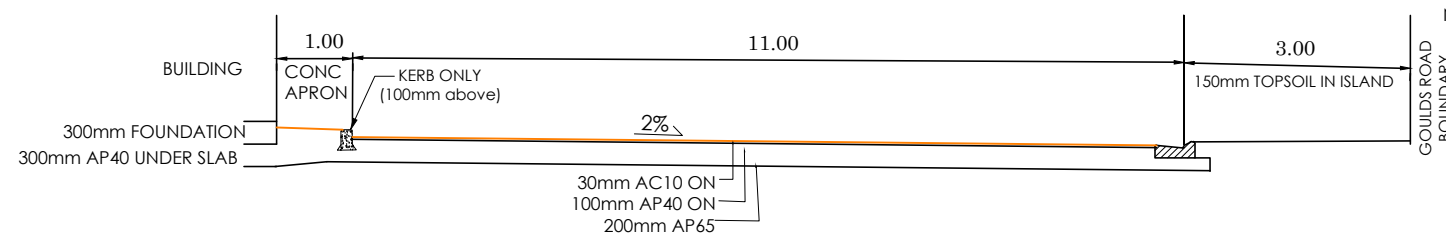
SS2

SS3

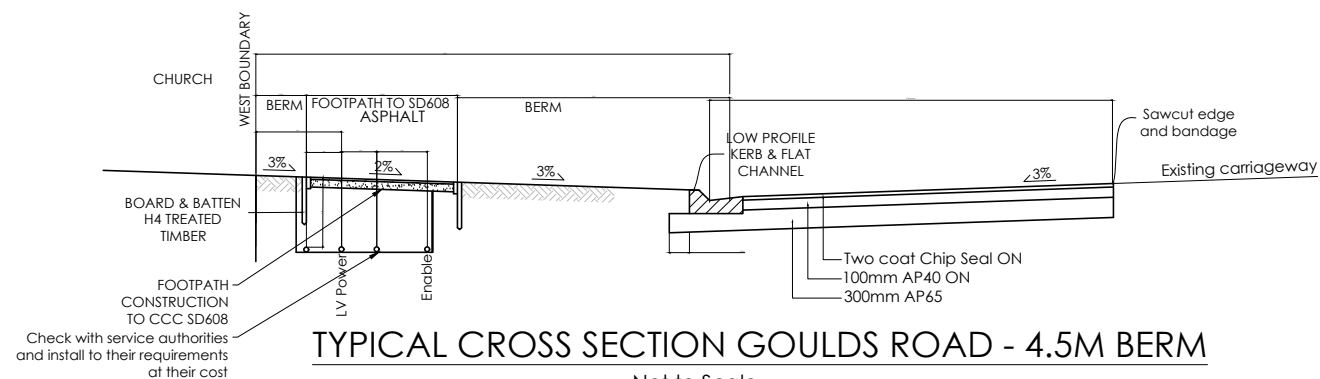
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1:75 Vert @A4



NOT TO SCALE

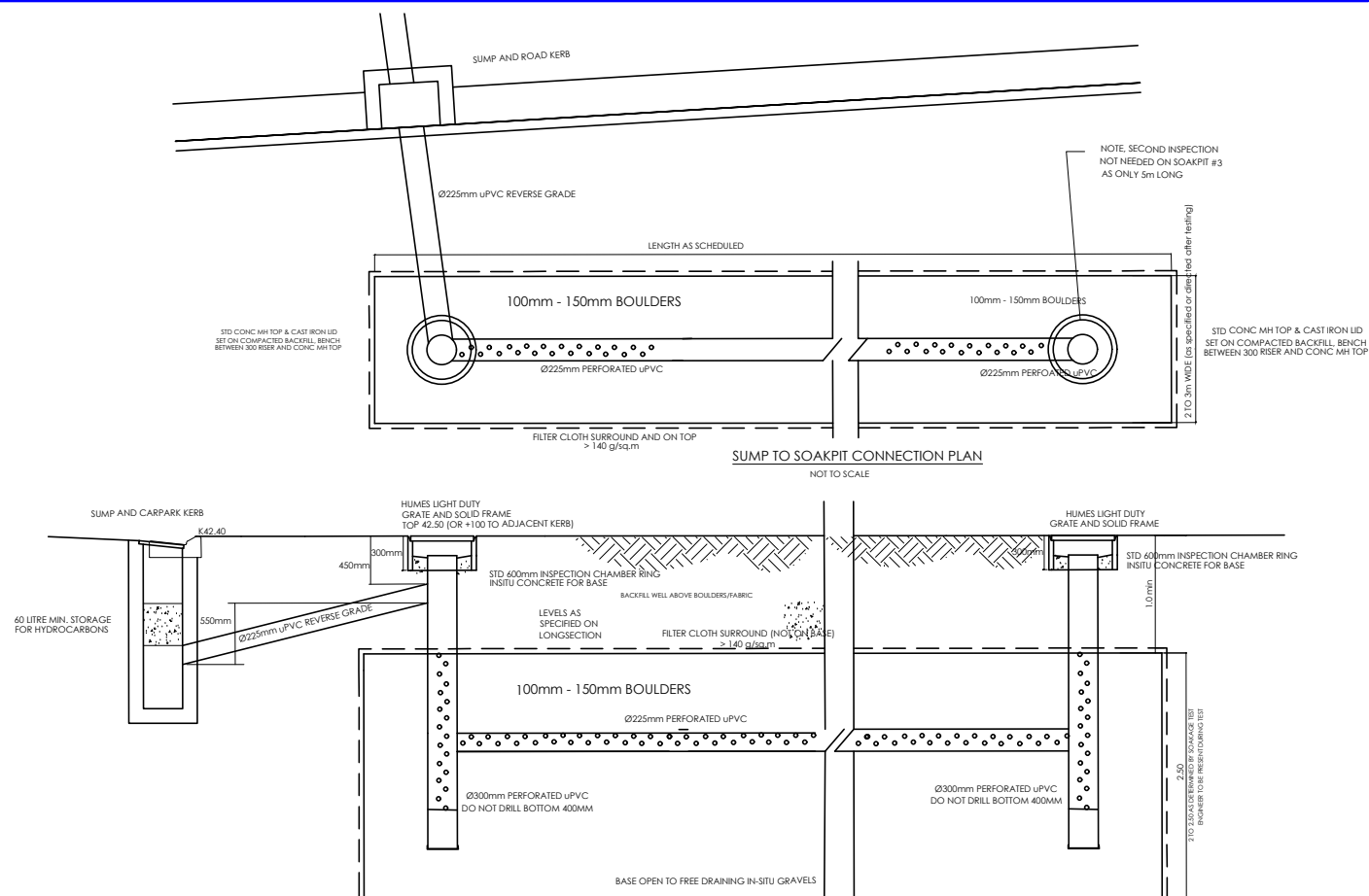


NOT TO SCALE



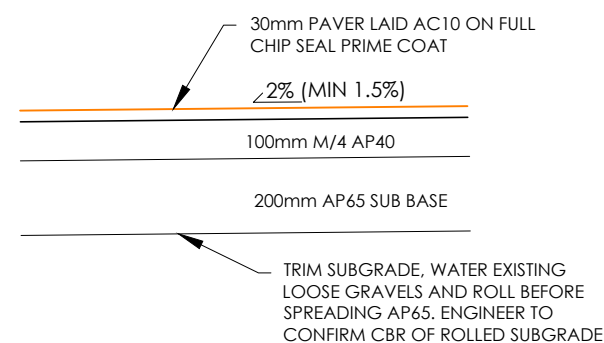
Not to Scale

This work only to be done if Council agree to paying their 100% share.

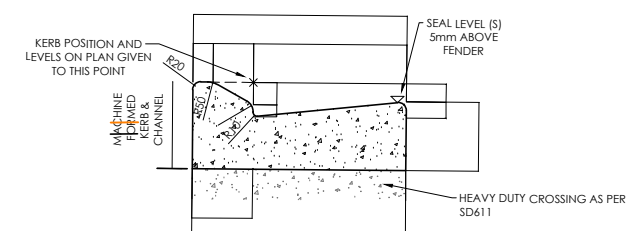


SOAKPITS #1, 2 & 3

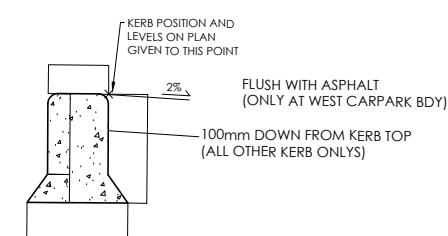
NOT TO SCALE



R1



SCALE 1:10@A1
1:20@A3



SCALES 1:10@A1
1:20@A3

CORNERSTONE CHURCH
999 GOULDS ROAD, ROLLESTON

SEWER LONGITUDINAL SECTION SOAKPIT #1, 2 &3 DETAILS & CARPARK TYPICAL SECTIONS

Date: 03/23	Scales: 1 : 500
Designed: K.S.	Drawing No.
Drawn: K.S.	CC / 3

CORNERSTONE CHURCH

999 GOULDS ROAD, ROLLESTON

CIVIL SITEWORKS SPECIFICATION

SECTION 1 – THE SITE

The site is approximately 1.2ha of residential & land at the east end of Rolleston. The project is to build a Church and this specification is for servicing it for sewer and stormwater, and to construct the adjacent pavements for access and carparking.

SECTION 2 – CONDITIONS OF TENDER

105.1 Tenders close at the offices of???. Tenders will be assessed on a **price & performance basis**. The lowest nor any tender may not necessarily be accepted. Prior to acceptance the contractor will be required to show how he plans to carry out the work so that we can to assess whether he is the best suited for the site.

The tender includes all works including some off-site drainage works.

105.2 Information required with the tender is:

The Tender Summary, complete with nominated timeframe & subcontractors.
The Schedule of Quantities.

Any correspondence recording adjustments to drawings, specification & schedule of quantities prior to the closing of tenders.

SECTION 3 – GENERAL CONDITIONS OF CONTRACT

The General Conditions of Contract are NZS 3910:2013, except where otherwise altered, modified or varied by this specification. Refer to Items 6.2.1 & 7.4.1 for clarification on responsibility issues for this contract.

SECTION 4 – SPECIAL CONDITIONS OF CONTRACT

The Special Conditions of Contract are:
(Clause numbers refer to the General Conditions of Contract NZS 3910:2013).

DEFINITIONS:

1.2 The Principal is CORNERSTONE ROLLESTON TRUST, of P O Box ??, Rolleston.

THE CONTRACT

2.1.1 This Contract is a UNIT RATE Contract.

2.2 All on-site works which are encountered so as to complete the specified works, will be included in the Unit Rate price. Any cost of establishment onto the site shall be included in the rates. If there is any doubt as to the meaning of any item in the Schedule of Quantities, the Tenderer must obtain clarification from the Construction Engineer. If any item is not included in the schedule, it will be understood that the Tenderer has made an allowance for it in the other associated rates.

BONDS

- 3.1.1 A Contractor's bond is not required.
- 3.2.1 A Principal's bond will not be provided.

ENGINEERS POWER & RESPONSIBILITIES

- 6.2.1 The Civil Siteworks Engineer to the contract is **Kim Sanders** hereafter called the Siteworks Engineer or his representative who manages the contract. For definition purposes, the Surveyor is Woods Consulting Limited, the Council Engineer is the Selwyn District Council's Development Control Engineer, and the Geotechnical Engineer is Liam Stewart (who is also one of the Siteworks Engineer's representatives when he is on site).

INDEMNITY & INSURANCE

- 7.2 The Contractor shall hold Contract Works Insurance covering damage to the work totalling \$200,000.00.
- 7.4.1 The Contractor shall hold for the term of the contract current insurance policies to indemnify the principal against Loss or Public Liability totalling \$2,000,000.00. This will include covering any Resource Management issue which arises so as to comply with all consents required for this project. Note, NZS3910 specifically defers any site responsibilities to the contractor and/or developer. For the avoidance of doubt, the consulting engineer and any other consultant working on the project will be responsible for the correctness of their design, but will not be responsible for measures put in place to mitigate consent issues as they arise.

TIME FOR COMPLETION

- 9.3.1 Timing - The contractor will be expected to be available to start as soon as the contract is confirmed. The Project Manager will give two weeks notice as to when works can commence.

The contractor will complete all works within **twelve (12) months of commencement**, as the project allows. The contractor will be required to work continuously on site, as weather permits, with suitable plant until work is complete. The contractor will be expected to fit in with all time frames of the other trades.

- 9.5.1 ~~Liquidated damages shall be applied in respect of the Contract Works at the rate of ??? per week from the finish date nominated & agreed on prior to acceptance. If, in the Engineer's opinion, the work is falling behind the programme, the contractor will be required to submit a revised work programme and provide extra plant & staff to ensure work is completed in accordance with the Engineer's time frame. If the work is obviously not going to be completed by the completion date the Principal may call in other subcontractors to help complete the work. Assessment of any amount to be paid to the original contractor shall be determined by the Construction Engineer.~~

MAINTENANCE

- 10.1.1 The maintenance period shall be twelve months from the acceptance of the work by the Siteworks Engineer.

PAYMENTS & RETENTIONS

- 11.3 Progress payments of 90% of the value of the work completed will be paid monthly, with a further 5% being paid after the acceptance of the work into maintenance by the Council Engineer. The final payment of the remaining 5% retentions will be made 10 days after the issue of the Satisfactory Maintenance Certificate by the Council Engineer.
- 11.8.2 Cost fluctuations shall not be paid.

SECTION 5 – CONTRACT AGREEMENT

The Contract Agreement is the Second Schedule in NZS 3910:2013.

SECTION 6 – SPECIFICATION

6.1 PRELIMINARY & GENERAL

This specification together with the “Approved by SDC Silverstone Engineering Plans & SDC Conditions”; “Conditions of Contract for Building and Civil Engineering Construction (N.Z.S. 3910, 2013)”, “Code of Practice for Earth Fill Residential Development - N.Z.S 4431:1989”, the Selwyn District Councils Code of Practice 2012 (and all subsequent amendments), the Christchurch City Council's “Civil Engineering Construction Standard Specification Part 2 Roadings and Part 3 Drainage:2017”, and the Health & Safety in Employment Act 2015, comprise the specification for the work.

The contractor shall familiarise himself with any further conditions / standards that the Selwyn District Council impose, and comply with them at all times.

The quality of all workmanship & materials is expected to be of the **highest standard**. “Highest” shall be taken to mean that there is not a better class of workmanship or better quality material available to finish any of the works.

Allow to co-operate with the Principal’s other contractors, all building subcontractors. Plant hire rates will be negotiated if any works are required to assist other subcontractors where directed by the Construction Engineer. The Contractor shall ensure that prior to any excavation in existing roads, he has obtained all underground services plans, and shall take the necessary precautions to locate such services so as to avoid damage or to avoid creating a safety hazard on the site.

Care shall be taken at all times to protect the adjacent kerbs and manholes from damage from machinery etc.

6.2 DRAWINGS

The drawings which show the character and extent of the work to be carried out are as follows:
CC Sheets 1, 2 &3. Always check you have a Council approved set of plans.
SDC Standard Drawings as shown in their standard specifications.

6.3 HEALTH & SAFETY, and TRAFFIC MANAGEMENT

The contractor is expected to take all sufficient precautions for the safety of the public, traffic & workmen employed on or near the works and shall comply in all respects with the Health & Safety in Employment Act 2015. The contractor will be entirely responsible for Health & Safety on the site and shall submit a certificate prior to commencing any works stating that he has an adequate Health & Safety Management Plan, and how he plans to regularly monitor any hazards or potential hazards on the site.

The contractor shall submit a Traffic Management Plan to the Selwyn District Council for approval.

6.3 EROSION & SEDIMENT CONTROL AND CONSENT COMPLIANCE

The contractor is expected to have a set of all consents and Erosion and Sediment Control Plans on site at all times. Regular weekly or fortnightly site meetings must address sediment control plans and any specific environmental requirement set down in the consents. It is suggested that site staff be encouraged to give input on how to avoid or mitigate potential issues, in advance.

6.5 DUST & NOISE CONTROL

The contractor shall control the work so that the development of the subdivision shall not cause a dust nuisance to nearby properties. If directed by the Engineer, or Council Officer, the Contractor shall immediately supply watering systems to dampen down any area causing a dust nuisance, and shall continue to keep the areas damp until such time as weather or other conditions make it no longer necessary.

6.6 SETTING OUT

The Surveyor & Engineer shall provide the Contractor with electronic information and survey control so that he can set-out all work.

6.6 EXTENT OF THE WORKS

The attached Plans and Details show the work included in this Contract and to which this Specification applies and shall consist of the supply of all labour, plant and materials for the construction of the following:

- a. Earthworks
- b. Drainage Works (On site sewer & stormwater)
- c. ~~Water Supply & Services~~
- d. Access and Carpark kerbing, metal course and asphalt.
- e. Gould Road Reconstruction, if directed
- f. Grass berms and topsoil sowing

6.7 EARTHWORKS

6.7.1 GROUND CONDITIONS

Generally the topsoils are 200 to 250mm deep and the subsoils consist of minimal silts over rounded gravels. Test pits and scala penetrometers have been carried out and are available for perusal upon request. They give a good idea of the underlying sub-soils on the block. Whilst the top gravels do not have a particularly high bearing pressure, they will be suitable for paving over once the subgrade is watered and rolled.

6.7.2 EXTENT OF THE EARTHWORKS

The earthworks can be broken down into (see attached earthworks plan).

- A. Site Clearance and a minimal amount of contaminated soil removal (in accordance with the DSI by Sean Finnigan).
- B. The stripping of soil from access roads & carparks (it is expected the building will be done at same time).
- C. The cut and fill of access roads and carparparks.
- D. The respreading of soil onto the balance land.
- E. The sale or respreading of remaining excess soils. Disposal of surplus silts/gravel.

6.7.3 CONSTRUCTION METHODS

The contractor will be required to mitigate any downstream effects to drains caused by the construction methods.

All volumes shown in the schedule of quantities are SOLID VOLUME. Imported quantities (if any) shall be measured by truck volume using an accepted bulking factor, and checked by site volume measurement. Daily tallies shall be submitted to the Project Manager or his representative for acceptance. Periodic weigh-bridge checks on truck volumes may be required.

The correct type of equipment will be required to be used so as to avoid heaving of the existing ground during soil stripping & filling operations.

All balance land to be stripped shall be designated as "engineered fill" and Liam Stewart shall be required to inspect and certify.

All work shall be carried out in accordance with this specification, "Code of Practice for Earth Fill Residential Development - N.Z.S 4431:1989", and to the satisfaction of the Engineers. If filling over 300mm is necessary it shall be certified by a registered engineer in accordance with N.Z.S. 4431. The Contractor shall liaise with the Geotechnical Engineer to ensure regular testing and inspections can be carried out at critical stages. 24 hours notice shall be given for testing inspections.

The fill material shall be compacted to 92% of its maximum dry density (as specified in NZS 4431:1978 Clause 7.4.3.2.(b)), in layers so as to achieve a uniform density. Compaction of sand shall be given by vibrating roller weighing 5 tonne per metre width or similar so as to achieve the standard required. To meet optimum moisture content during compaction, the use of a water cart may be required. The appropriate type of compaction for other materials (silts & gravels) may be determined by on-site trials provided the required standards are achieved.

The work shall consist of all clearing, grubbing, removal of soft wet or organic matter, preparation of the land to be cut or filled, cutting and filling of the land including any specified selection of material for special filling, spreading, compaction, controls to avoid damage to adjoining land and property, temporary drainage and subsoil drainage and all subsidiary work necessary to complete and maintain the re-grading of the developed areas to conform with the lines, levels and grades shown on the plans.

Topsoil shall include all surface materials including soil/gravel mixes. It is envisaged top soil will be stockpiled in several areas. Any sandy soils shall be spread on the bottom of respread layers. There are separate rates for soil stripping & resspreading. These rates should reflect the savings the Contractor makes when doubling handling of the soil does not occur (ie direct strip to respread).

The Contractor shall ensure the road subgrade is trimmed to the required accuracy for kerbing works.

6.7.5 TESTING

All areas to be filled shall be inspected by the geotechnical engineer after stripping of soil & prior to placing of any fill material.

The testing of fill shall be carried out and passed by the geotechnical engineer prior to the resspreading of soil.

6.8 DRAINAGE WORKS

All drainage work shall be carried out in accordance with this specification and the Christchurch City Council's standard "C.S.S. Part 3 – Drainage 2017".

6.8.1. Pipes

The rates supplied for pipe work shall include all excavations, supply, laying, backfill, compaction etc. so as to complete the work to the Council's satisfaction.

The pipes to be used in this contract are indicated on the drawings and shall be as follows:

- i. 100mm SN16, 150mm SN16 inside diameter u.P.V.C. sewer pipes.
- ii. 100mm & 150mm uPVC SN16, and 225mm u.P.V.C SN8 inside diameter (I.D.) stormwater pipes.

6.8.2. Excavations

Any silts or sand excavations shall be separated from existing gravels (which will be used for backfilling) and stockpiled along with excess sand / silts on site as directed by the Construction Engineer.

6.8.3. Backfilling

Further to C.S.S. Part 3 2002 clause 13. All trenches shall be mechanically compacted to achieve at least 90% British Standard compaction. During compaction no sudden or excessive loading shall be transmitted to the pipeline. Trenches shall be watered in where necessary and tested.

All trenches in road reserves shall be backfilled with existing trench gravels up to 0.70m below subgrade and then imported Pitrun gravel up to subgrade. Where there is insufficient trench gravels to backfill up to 0.70m below subgrade the engineer will direct extra imported pitrun which shall be paid on a per cubic metre basis.

A rate shall be included in the schedule of quantities to cover this extra imported gravel (over & above the 0.70m depth specified in the pipe rates) on a per cubic metre basis. For the reverse

situation where there is an excess of trench gravels a discount rate shall be applied on a per cubic metre basis if the contractor does not have to import gravel for the 0.7m depth.

6.8.5. Sumps

Sump gratings shall be standard single (SD 321)

6.8.6 Soakpits

The excavation of the soakpits shall be in accordance with Item 6.7 earthworks. Testing shall be carried out to ensure a soil infiltration rate of 50mm per hour is achieved. If testing proves that the silt subsoils (which overlay underlying gravels) is not permeable enough, then a 200mm layer of filter sand (2A Council blend) shall be spread under the soil layer. The soil shall be sandy free draining soil. If existing soil is not free draining it shall be mixed with one part 2A filter sand to approx two parts existing soil (in accordance with site testing).

Soakage rate tests shall be carried out by the contractor to determine the hydraulic conductivity of the underlying gravels. The size of the boulder pits shall be calculated from the soakage rate. The two soakage chambers shall be generally located in the north east corner of the pond to suit the adjacent existing trees. The boulder pit, drilled pipe and sedimentation tank shall be installed as per the typical detail.

6.8.7. Subgrade Drainage

Where required field drains are to be uPVC smooth bore uPVC where shown on the plan. They shall be drilled to TNZ specifications. Generally these are to be in the swales and retention basin but the engineer may direct further field drains in the road centre-lines to have adjacent to the sewer or in the same trench as the stormwater pipes.

All direction changes are to be gradual unless shown otherwise. Piping is to be laid to the manufacturer's specifications as per the typical detail. Piping is not to be laid flatter than a grade of 1 in 600.

6.10 ACCESS ROADING AND CARPARK CONSTRUCTION

6.10.1. Kerbs

Kerbs shall be low profile on both access roads and carparks (as per plans and details). They shall be laid in accordance with the Selwyn District Council's "Standard Specification for Kerbs & Channels". The kerbs adjacent to the building shall be Kerb Only (100mm above asphalt level) and all other kerbs shall be "SDC mountable kerb & channel" (see sheet 3).

The rate for kerbs shall include all kerb base metals as per the typical detail.

6.10.2. Metalcourse

Minor trimming of subgrade may be necessary. The carriageways shall be metalled with 100mm (compacted depth) of TNZ M/4 AP40 laid in accordance with Christchurch City Council "Standard Specification for Crushed Basecourse Aggregate" on 200mm of C.C.C. AP65 in accordance with "Standard Specification for Sub-base Metalcourses".

If the subgrade CBR is less than 8.5 the engineer may increase the basecourse depth accordingly.

The contractor shall ensure that all trenches are thoroughly compacted and shall satisfy himself that there shall be no problem with settlement of trenches.

The contractor shall liaise fully with the Principal building contractor (whether they be their own subcontractor or the Principal's subcontractor).

6.10.3. Benkleman Beam Test

Prior to sealing, an approved person will carry out Benkleman tests over the carriageway area and the results must comply as follows:

- a. Maximum deflection of 2.00mm
- b. The 95%-ile is to be less than 1.50mm
- c. Average reading to be less than 1.60mm

The contractor shall supply an 8 Tonne single axle truck for the Construction Engineer to carry out this test.

6.10.4. Asphaltic Concrete Paving

The finished topcourse surface shall be thoroughly swept and free from dust, grit and any loose material.

A prime coat chip seal of bitumen emulsion complying with N.R.B M/1 1987 shall be applied at a uniform rate of 1 litre per square metre and grade 6 chip.

An asphaltic concrete complying with "N.R.B. Specification for Asphaltic Concrete M10" shall be mechanically laid in accordance with "N.R.B. Specification P/9" to a compacted depth of 30 mm on roads and 25mm on rights of way.

An extremely high standard of workmanship will be required as presentation is very important. All machine joints shall be carefully matched and promptly repaired wherever necessary.

6.10.7. Footpaths

The paved area of the footpaths shall be constructed in accordance with the Christchurch City "Standard Specification for Construction of Asphaltic Concrete Paths"

The work shall consist of minor trimming of sand subgrade, the laying of 75mm nominal depth metalcourse, and seal with 20mm asphaltic concrete. If directed the footpath against the kerb shall be cobblestoned with holland pavers in accordance with the typical roading detail. Council Engineer shall be notified if / when this change is made.

6.10.8. Grass Berms

The berms shall be "soiled" with a 150mm depth of top soil ex site stockpile, sown in accordance with the Christchurch City "Standard Specification for Grassed Berms" using an approved seed mixture. Where specified, the berms shall be "ready lawned". The rate shall include a full soil bed preparation, supply and laying of the ready lawn (which shall be "fine turf fescue & browntop"), and regular watering to keep the turf wet at all times for at least two weeks with further watering as required.

Sections shall be sown by a professional who shall grade, cultivate, prepare and sow with perennial ryegrass.

6.11 NOTIFICATION OF WORK

The contractor shall notify the Development Control Engineer of Selwyn District Council (Phone # 3248080) giving 24 hours notice before the commencement of the following work:

- a. Earthworks
- b. Drainage
- c. Kerbing
- d. Watermains
- e. Basecourse metalling of carriageways
- f. Topcourse metalling of carriageways
- g. Sealing or paving of carriageways
- h. Benkleman Beam Test
- i. Metalling of footpath
- j. Sealing of footpath
- k. Soiling and Sowing of Berms