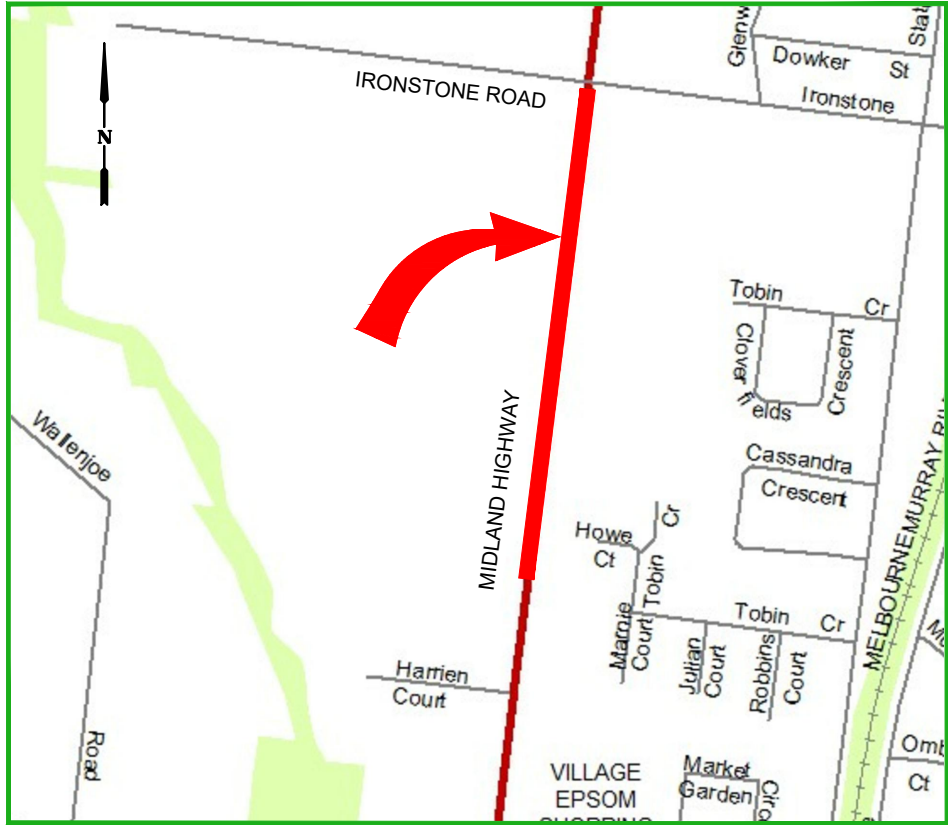


MIDLAND HIGHWAY, EPSOM

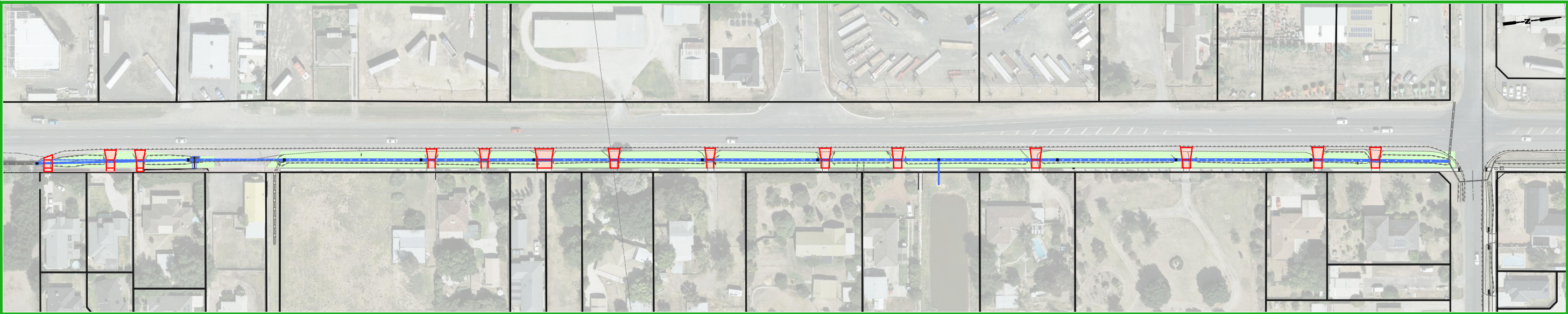
GB5073

DRAINAGE MAY 2023



LOCALITY MAP

DOCUMENT CONTROL				
SHEET No.	SHEET DESC.	18/05/23	xx/xx/xx	xx/xx/xx
		DRAFT	TENDER	CONSTRUCTION
		REVISION	REVISION	REVISION
1	COVER SHEET	A	-	-
2	GENERAL NOTES & TYPICAL SECTION	A	-	-
3	LAYOUT PLAN & LONGITUDINAL SECTION	A	-	-
4	LAYOUT PLAN & LONGITUDINAL SECTION	A	-	-
5	LAYOUT PLAN & LONGITUDINAL SECTION	A	-	-
6	LAYOUT PLAN & LONGITUDINAL SECTION	A	-	-
7	LAYOUT PLAN & LONGITUDINAL SECTION	A	-	-
8	LAYOUT PLAN & LONGITUDINAL SECTION	A	-	-
9	LAYOUT PLAN & LONGITUDINAL SECTION	A	-	-
10	CROSS SECTIONS	A	-	-
11	CROSS SECTIONS	A	-	-
12	CROSS SECTIONS	A	-	-
13	PIT SCHEDULE	A	-	-
14	SETOUT	-	-	-



PROJECT EXTENTS

AMENDMENTS			
Revision	Description	Approved by	Date
-	-	-	-

CITY OF GREATER BENDIGO

MIDLAND HIGHWAY
EPSOM
DRAINAGE
COVER SHEET

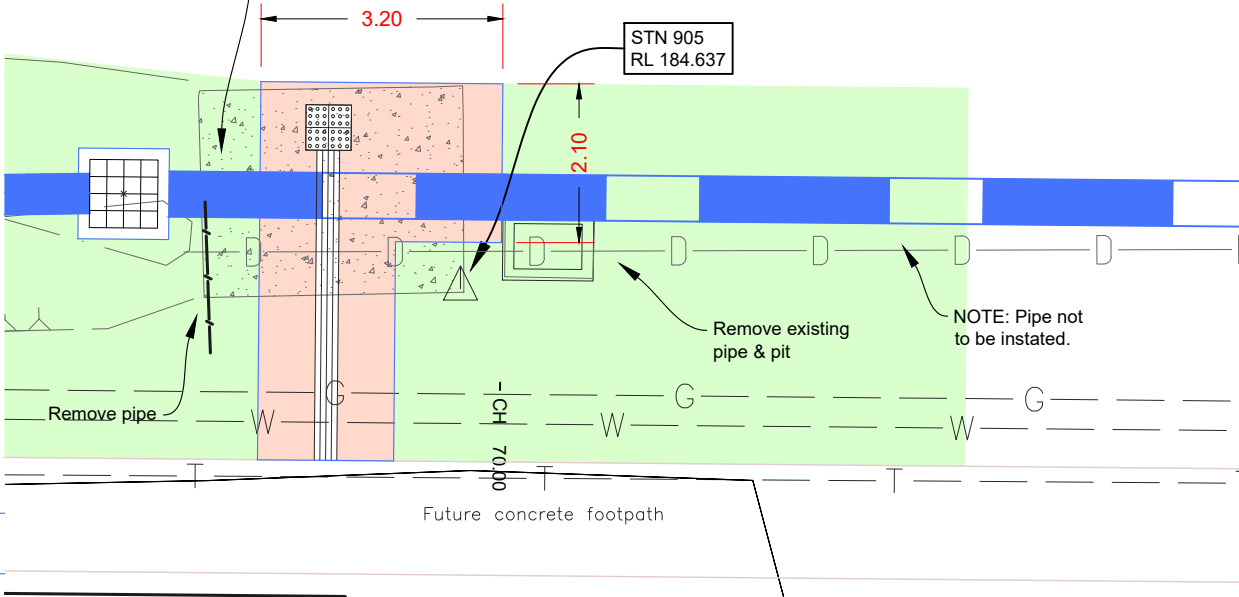
Survey	H. WHYTECK	Nov 2019
Design	I. FROST	Mar 2023
Checked	A. SMITH	xx/xx/xx
Approved by	N. SARTORI	xx/xx/xx
Scale:	Revision : A	
Original sheet size: A3	File : GB5073.dwg	
Sheet:	Reference:	GB5073
1 OF 14		

**PRELIMINARY DESIGN
DRAFT 8**

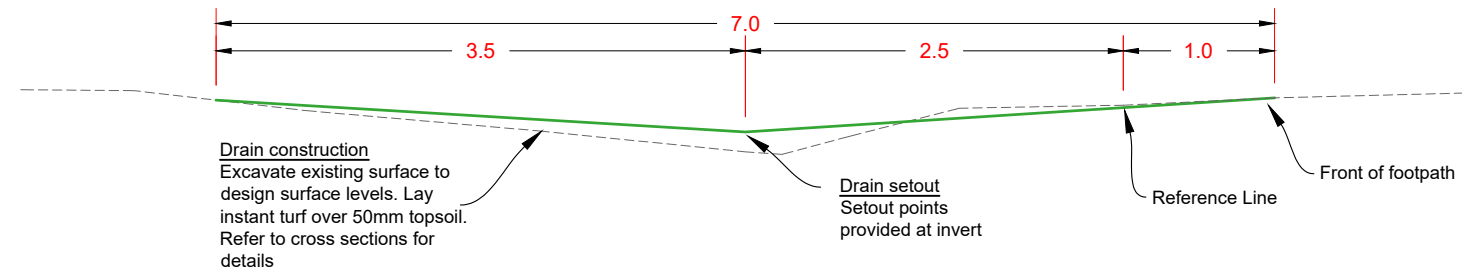
Plot Date: 18/05/2023
Plotted By: IAN FROST

Bus Stop slab (remove existing concrete including fence & reinstate to standard after pipe installation). Refer to PTV STD_S0065rD

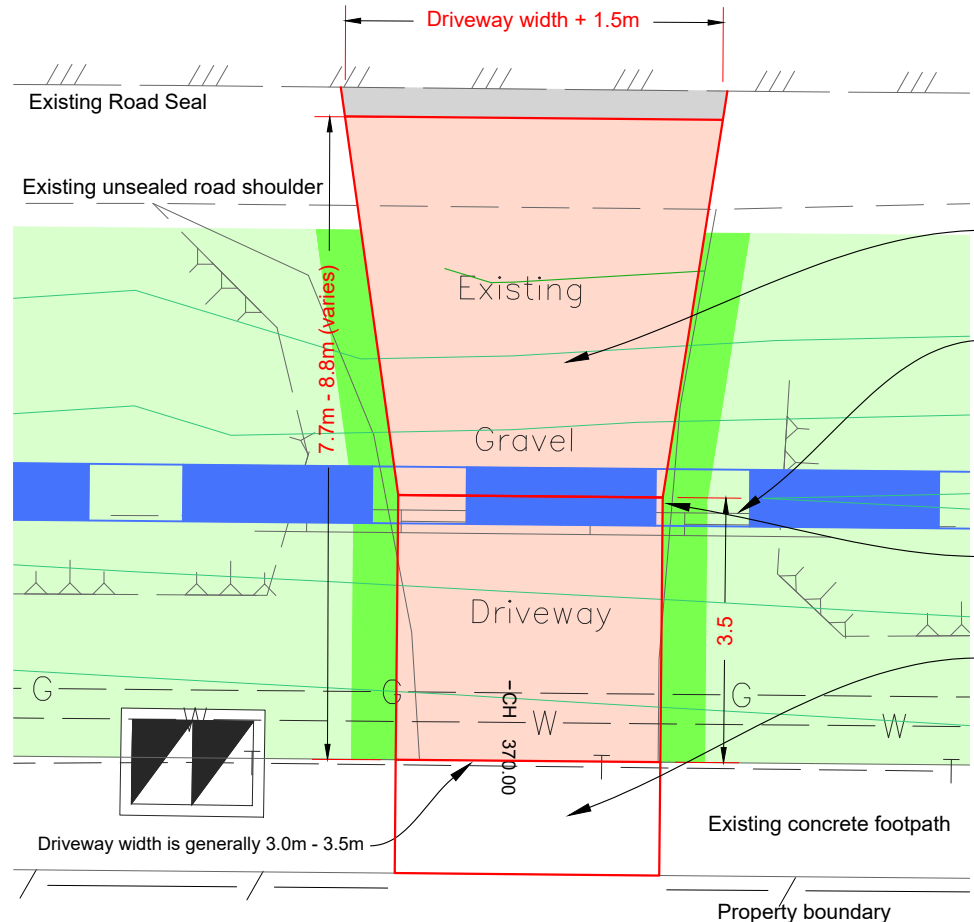
BUS STOP DETAILS



Typical Open Drain Section



Typical Driveway Plan



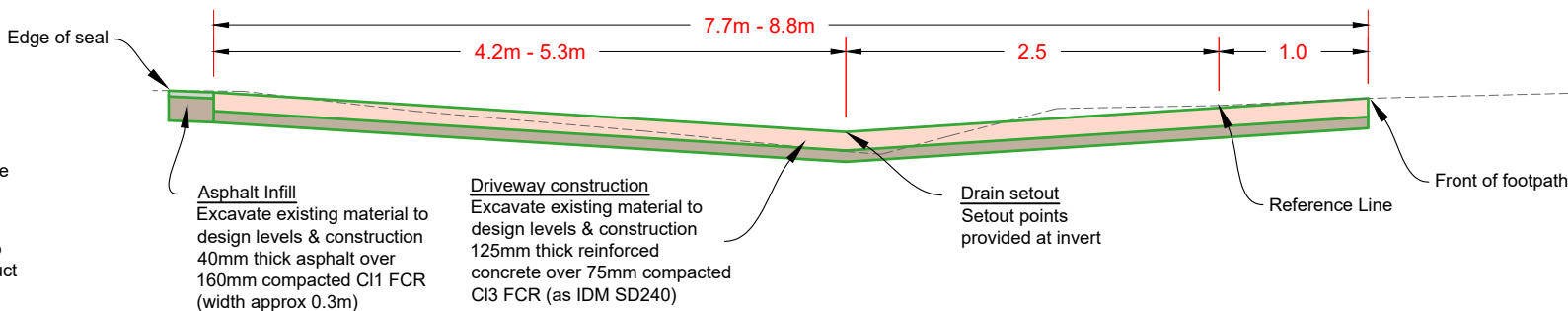
Concrete driveway
Lay 125mm thick SL72 reinforced concrete on 100mm compacted CI3 FCR as per IDM SD240

Old Dwy pipes
Remove old driveway pipes (& endwalls) from site

Invert
Low point in driveway is directly over centre of pipe & in line with open invert

Footpath area
In areas where there is no concrete footpath, construct concrete with 2.5% slope

Typical Driveway Section



Asphalt Infill
Excavate existing material to design levels & construction 40mm thick asphalt over 160mm compacted CI1 FCR (width approx 0.3m)

Driveway construction
Excavate existing material to design levels & construction 125mm thick reinforced concrete over 75mm compacted CI3 FCR (as IDM SD240)

Survey	H. WHYTOCK	Nov 2019
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PRELIMINARY DESIGN DRAFT 8

Plot Date: 18/05/2023
Plotted By: IAN FROST



IMPORTANT!
The location of underground services have been derived from available information, however accuracy cannot be guaranteed. All existing service information should therefore be treated as indicative only, and service locations must be arranged prior to commencement of any excavation. The contractor will be held responsible for any damage caused to underground services.

FILL NOTES

- All earthworks and compaction are to be in accordance with VicRoad's Specification Section 204.
- All fill materials are to be approved by the Superintendent's Representative prior to being imported onto the site, and unless noted otherwise, shall be a clean clay based material free of vegetation matter or contaminants.
- All filling is to comply with AS3798-1996 Appendix B, level 1 (or 2) as specified
- The Contractor is responsible for ensuring that all imported fill material, including topsoil, satisfies the description for clean fill material in EPA bulletin publication No. 448 (Sep 95) and subsequent revisions. The Contractor shall provide verification including test certificates to the Superintendent's Representative.

ROADSIDE MANAGEMENT NOTES

Unless otherwise directed by the Superintendent's Representative, the following roadside management conditions will apply:

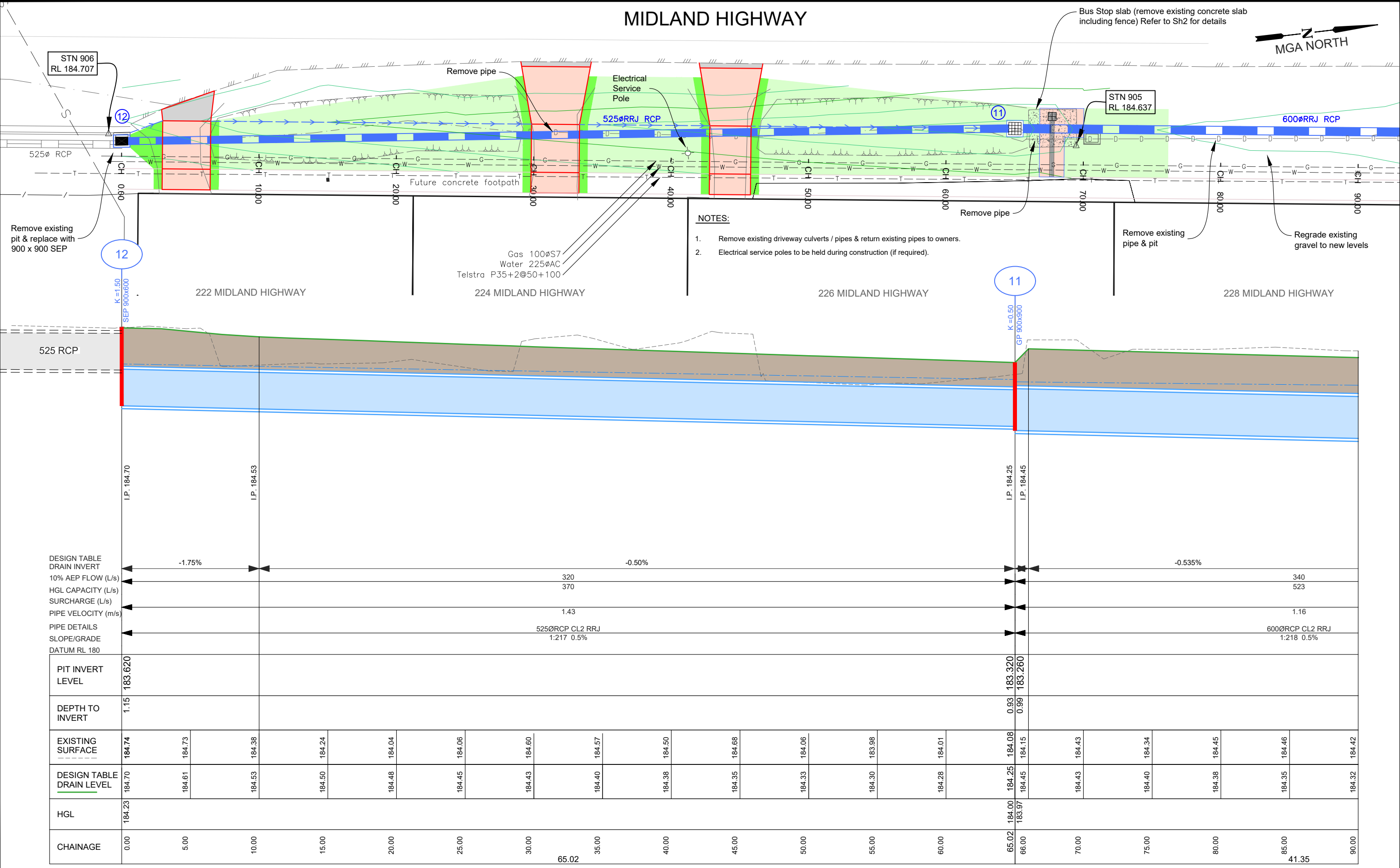
- Confine machinery operations to the existing road formation or a designated construction zone. Identify machinery turn around point in areas that will not result in disturbance to the existing vegetation.
- Clearly mark the construction zone prior to the commencement of works. The construction zone is the area where all construction activities take place. (See CoGB 'Roadside Handbook'). The roadside is any area outside the construction zone.
- Plant and equipment must not be parked on the roadside in this zone.
- Avoid removal of native vegetation when locating drain cut off points.
- Spoil from grading and drain construction must not be placed or spread on the roadside. It is to be removed to a recognised dump site or tip, unless approved as fill material for incorporation in the works. Do not spread spoil onto the roadways.
- Remove any topsoil (where necessary) prior to works and store in a designated area. Re-use as soon as practical.
- Incorporate hygienic procedures to minimise spread of weed. After working in weedy or disease affected areas, clean vehicles and machinery of all soil and plant debris prior working on High or Medium conservation value sites or weed free sites.

GENERAL CONSTRUCTION NOTES

- All kerb, footpath and pram crossing constructions shall have bedding/boxing inspected by the Superintendent's Representative prior to pouring of concrete.
- If property stormwater outlets (not already identified on plan) are located during construction, it is the Contractors responsibility to connect them into council underground drainage or back of kerb (As per IDM SD 510 & IDM SD 505) to the approval of the Superintendent's Representative.
- Renewal of gas and water property service conduits to be 100mmØPVC (sewer grade).
- All sewer man-hole covers within the footpath alignment (wholly or partly) are to be renewed & adjusted to design finished levels unless noted otherwise or directed by the Superintendent's Representative.
- All redundant footpath, kerb and road seal to be saw cut and removed from site.
- All service pits are to be renewed and matched into design surface unless noted otherwise noted or directed by the Superintendent's Representative.
- All TGSIs are to be Black Fibre Reinforced Resin Polymer type manufactured by ESP Aust. Or approved equivalent. TGSIs to be cast in place on new concrete works and installed in accordance with AS1428, unless noted otherwise or directed by the Superintendent's Representative.

DRAINAGE CONSTRUCTION NOTES

- The Superintendent's Representative and Design Engineer must be notified if any modifications to drainage design are required due to unforeseen circumstances identified during works onsite.
- Any property storm water pipes located during Works are to be plumbed to the nearest pit. Where this is not practical, seek approval from the Superintendent's Representative to connect stormwater into kerb or into the nearest storm water pipe.
- All drainage pits are to be constructed as per the noted Standard Drawing.
- Invert fall through pits is to be a min. of 30mm unless noted otherwise.
- Concrete pit walls are to be sponge finished and floors are to be shaped for best hydraulic efficiency unless noted otherwise.
- Pit lids are to be installed flush with the surrounding surface unless noted otherwise.
- Where concrete box culverts (CBC) or Crown Units are specified, they are to be compliant to AS1597.
- Pipe extensions are to be constructed by removing the remaining stub of the existing pipe to be extended, and then connecting the new pipe at the socket.
- All pipe backfill is to be constructed as per the noted Standard Drawing.
- The location of any saw cuts in asphalt are to be kept the minimum required trench width until after the pipe is laid and backfilled up to 300mm from surface. At this point, a further 150mm wide, 300mm deep section of asphalt/pavement is to be sawcut and excavated so as to provide a longitudinal pavement joint over the drainage trench. This also should ensure a straight edge for re-asphalting. The top 300m depth of backfill should then be constructed accordingly.
- At the completion of the Works, pipes are to be visually inspected via inspection pits to check for construction debris, including crushed rock, soil and concrete over spill. Should a volume of debris be present enough to impede flows, pipe cleaning shall be undertaken at the contractors expense.
- Gas and water property services are generally not located during the design phase and therefore have not been shown on plans. It is therefore the Contractors responsibility to consider these services when excavating and adjust or realign accordingly whilst causing minimal disruption to property owners.
- Gas and Water property services encountered during construction are to be altered and reconnected to the appropriate standard and to the satisfaction of the Superintendents Representative.



LEGEND

	Landscape: Instant Turf		Existing pipe to remain		CoGB SD390 TRENCH BACKFILL (BEHIND KERB)
	Landscape: Soil & Seed		Design Pipe / Pit		CoGB SD391 TRENCH BACKFILL (UNDER NEW ROAD)
					CoGB SD392 TRENCH BACKFILL (UNDER EXISTING ROAD)

AMENDMENTS

Revision	Description	Approved by	Date
-	-	-	-

CITY OF GREATER BENDIGO

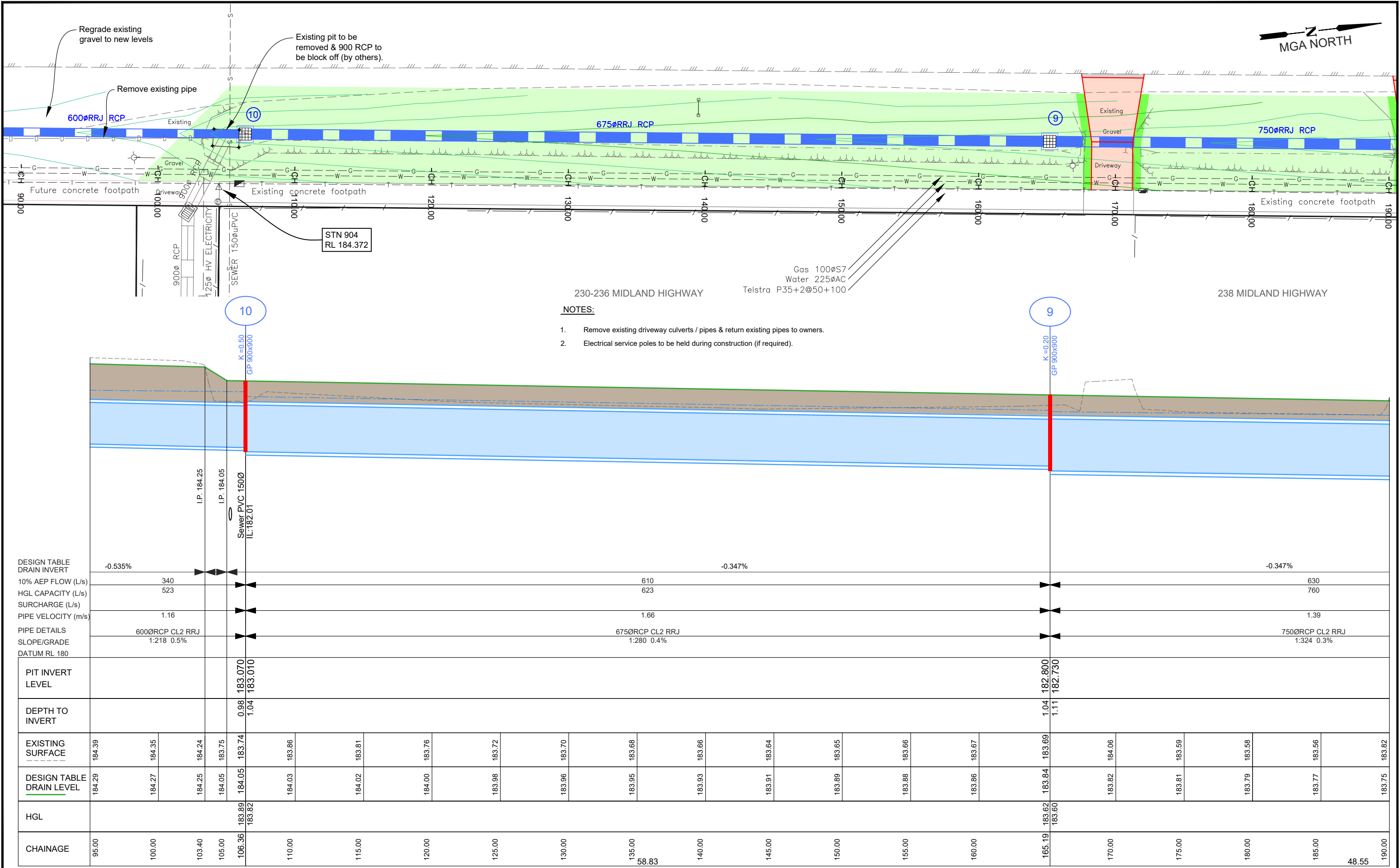
MIDLAND HIGHWAY EPSOM DRAINAGE

LAYOUT PLAN & LONGITUDINAL SECTION

Survey	H. WHYTOK	Nov 2019
Design	I. FROST	Mar 2023
Checked	A. SMITH	xx/xx/xx
Approved by	N. SARTORI	xx/xx/xx
Scale: H: 1:250, V: 1:50	Revision: A	
Original sheet size: A3	File: GB5073.dwg	
Sheet: 3 OF 14	Reference: GB5073	

PRELIMINARY DESIGN DRAFT 8

Plot Date: 18/05/2023
Plotted By: IAN FROST



LEGEND

Landscape:
Instant Turf

Landscape:
Soil & Seed

Existing pipe to remain

Design Pipe / Pit

CoGB SD390 TRENCH BACKFILL (BEHIND KERB)

CoGB SD391 TRENCH BACKFILL (UNDER NEW ROAD)

CoGB SD392 TRENCH BACKFILL (UNDER EXISTING ROAD)

AMENDMENTS			
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CITY OF GREATER BENDIGO



MIDLAND HIGHWAY
EPSOM
DRAINAGE

LAYOUT PLAN & LONGITUDINAL SECTION

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Sheet:	4 OF 14	Reference: GB5073

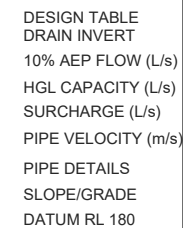
PRELIMINARY DESIGN
DRAFT 8

Plot Date: 18/05/2023
Plotted By: IAN FROST

Z
MGA NORTH



- 6

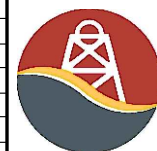
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Design	I. FROST	Mar 2023
Checked	A. SMITH	xx/xx/xx
Approved by	N. SARTORI	xx/xx/xx
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Original sheet size:	A3	File : GB5073.dwg
Sheet:	Reference:	
6 OF 14	GB5073	

Plot Date:	18/05/2023
Plotted By:	IAN FROST



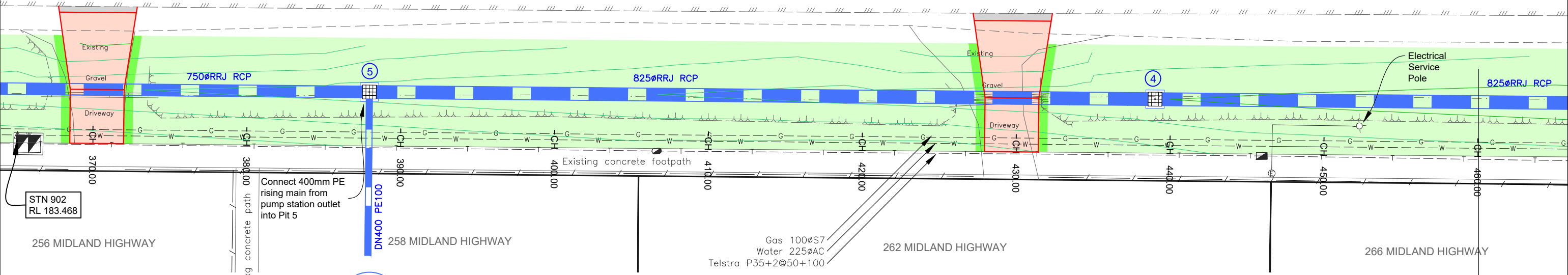
Revision	Description	Approved by	Date
-	-	-	-



MIDLAND HIGHWAY
EPSOM
DRAINAGE

LAYOUT PLAN & LONGITUDINAL SECTION

MIDLAND HIGHWAY



NOTES:

1. Remove existing driveway culverts / pipes & return existing pipes to owners.
2. Electrical service poles to be held during construction (if required).

DESIGN TABLE
DRAIN INVERT
10% AEP FLOW (L/s)
HGL CAPACITY (L/s)
SURCHARGE (L/s)
PIPE VELOCITY (m/s)
PIPE DETAILS
SLOPE/GRADE
DATUM RL 180

PIT INVERT LEVEL		182.010	182.000	181.840	181.830
DEPTH TO INVERT		1.15	1.16	1.16	1.17
EXISTING SURFACE	183.50	183.02	182.99	182.97	182.95
DESIGN TABLE DRAIN LEVEL	183.20	183.18	183.17	183.16	182.95
HGL	183.03	182.99	183.15	183.14	182.97
CHAINAGE	370.00	375.00	380.00	385.00	390.00

-0.30%		-0.20%	
670	758	1000	1020
1.48	1.81	1.85	
750ØRCP CL2 RRJ	825ØRCP CL2 RRJ	825ØRCP CL2 RRJ	
1:325 0.3%	1:319 0.3%	1:340 0.3%	

LEGEND

- Landscape: Instant Turf
- Landscape: Soil & Seed
- Existing pipe to remain
- Design Pipe / Pit
- CoGB SD390 TRENCH BACKFILL (BEHIND KERB)
- CoGB SD391 TRENCH BACKFILL (UNDER NEW ROAD)
- CoGB SD392 TRENCH BACKFILL (UNDER EXISTING ROAD)

AMENDMENTS

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CITY OF GREATER BENDIGO



MIDLAND HIGHWAY
EPSOM
DRAINAGE

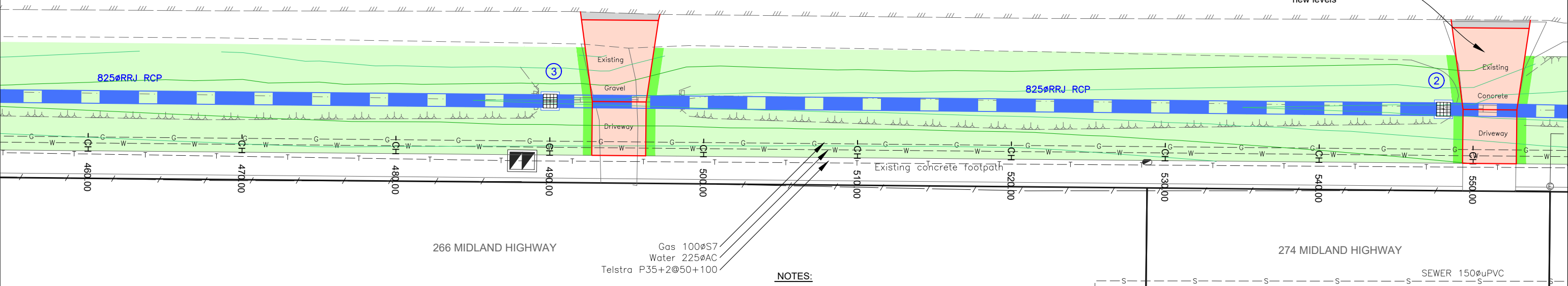
LAYOUT PLAN & LONGITUDINAL SECTION

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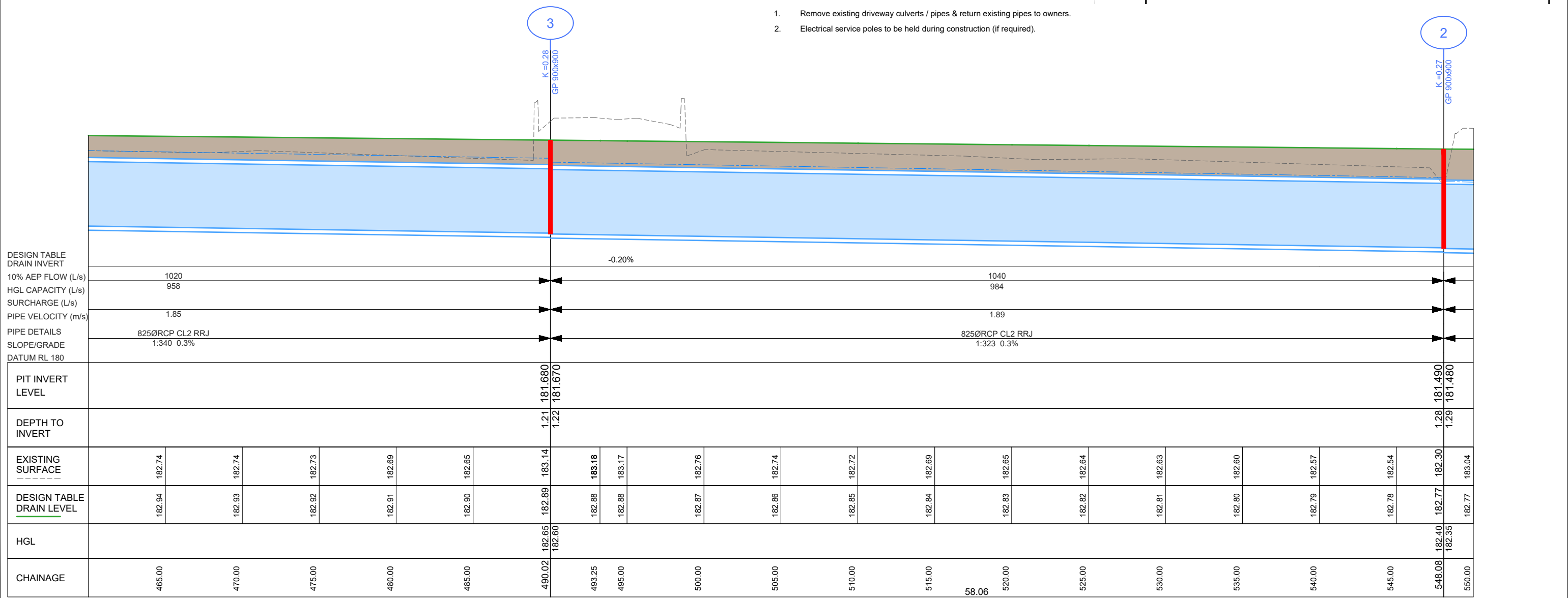
**PRELIMINARY DESIGN
DRAFT 8**

Plot Date: 18/05/2023
Plotted By: IAN FROST

MIDLAND HIGHWAY



- NOTES:
- 1. Remove existing driveway culverts / pipes & return existing pipes to owners.
 - 2. Electrical service poles to be held during construction (if required).



LEGEND

Landscape:
Instant Turf

Landscape:
Soil & Seed

Existing pipe to remain

Design Pipe / Pit

CoGB SD390 TRENCH BACKFILL (BEHIND KERB)

CoGB SD391 TRENCH BACKFILL (UNDER NEW ROAD)

CoGB SD392 TRENCH BACKFILL (UNDER EXISTING ROAD)

AMENDMENTS			
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-	-	-	-

CITY OF GREATER BENDIGO

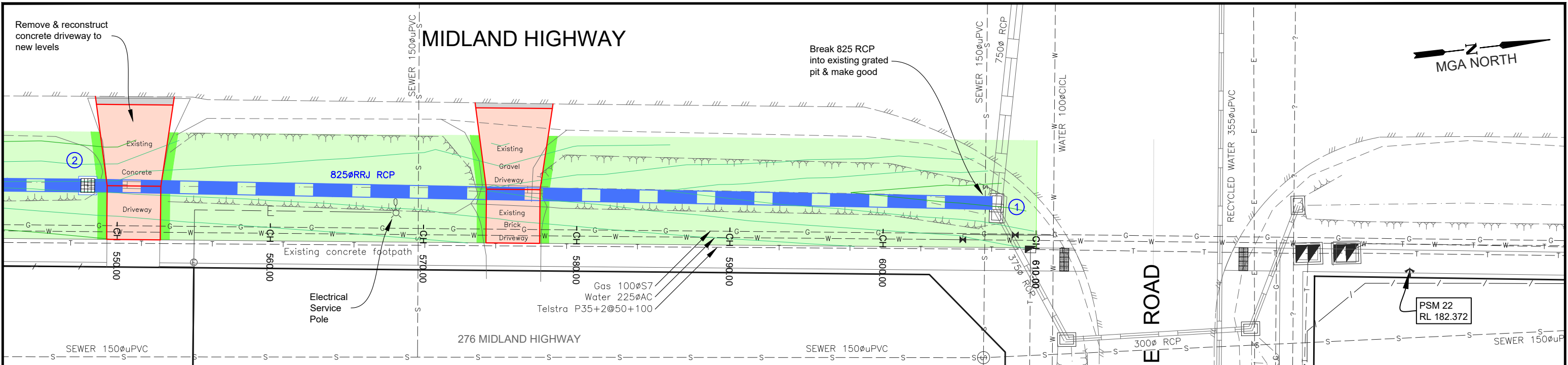
MIDLAND HIGHWAY
EPSOM
DRAINAGE

LAYOUT PLAN & LONGITUDINAL SECTION

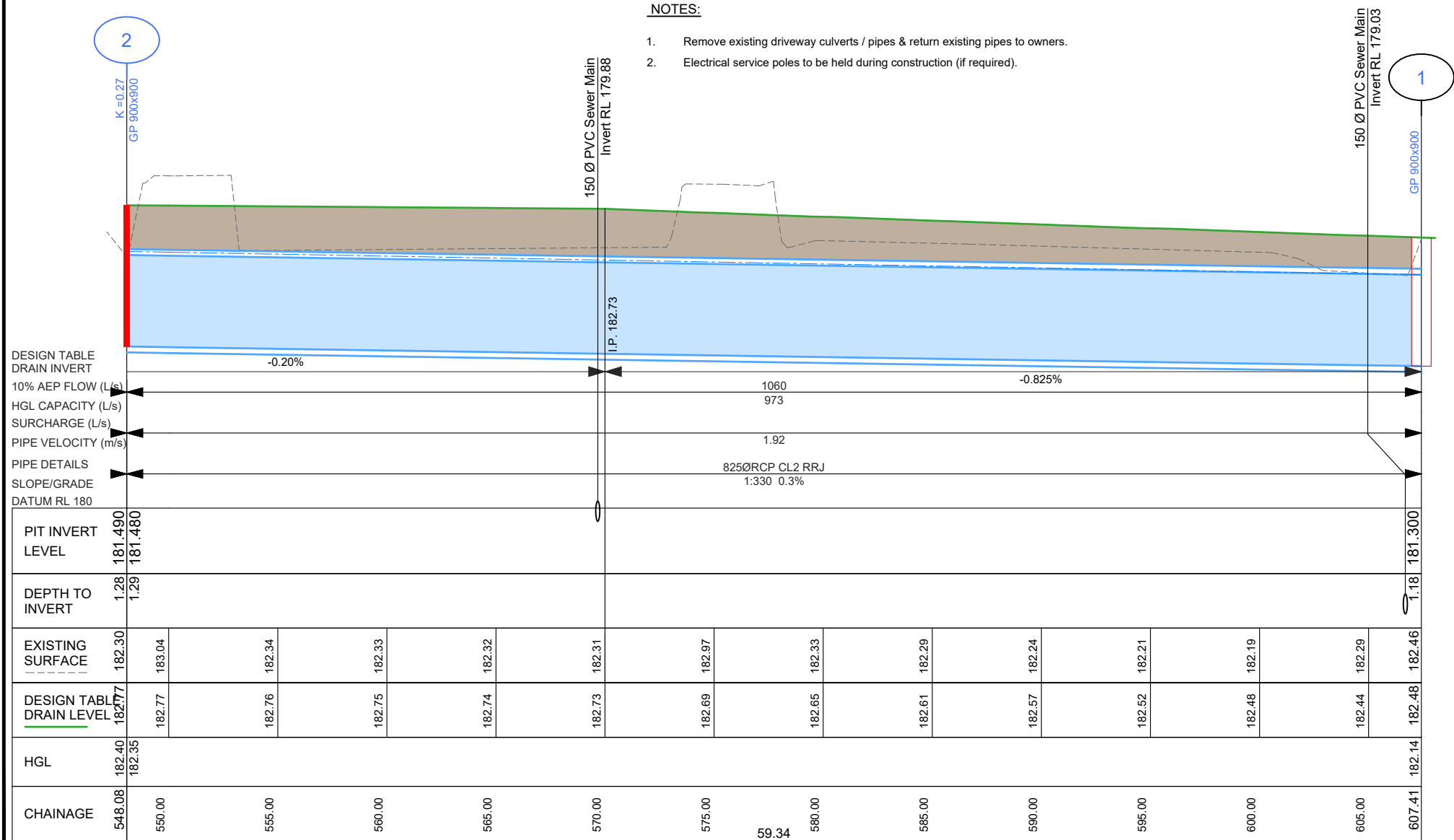
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Sheet:	8 OF 14	Reference: GB5073

PRELIMINARY DESIGN
DRAFT 8

Plot Date: 18/05/2023
Plotted By: IAN FROST



- NOTES:
- 1. Remove existing driveway culverts / pipes & return existing pipes to owners.
 - 2. Electrical service poles to be held during construction (if required).



Landscape: Instant Turf

Landscape: Soil & Seed

Existing pipe to remain

Design Pipe / Pit

CoGB SD390 TRENCH BACKFILL (BEHIND KERB)

CoGB SD391 TRENCH BACKFILL (UNDER NEW ROAD)

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-	-	-	-

CITY OF GREATER BENDIGO

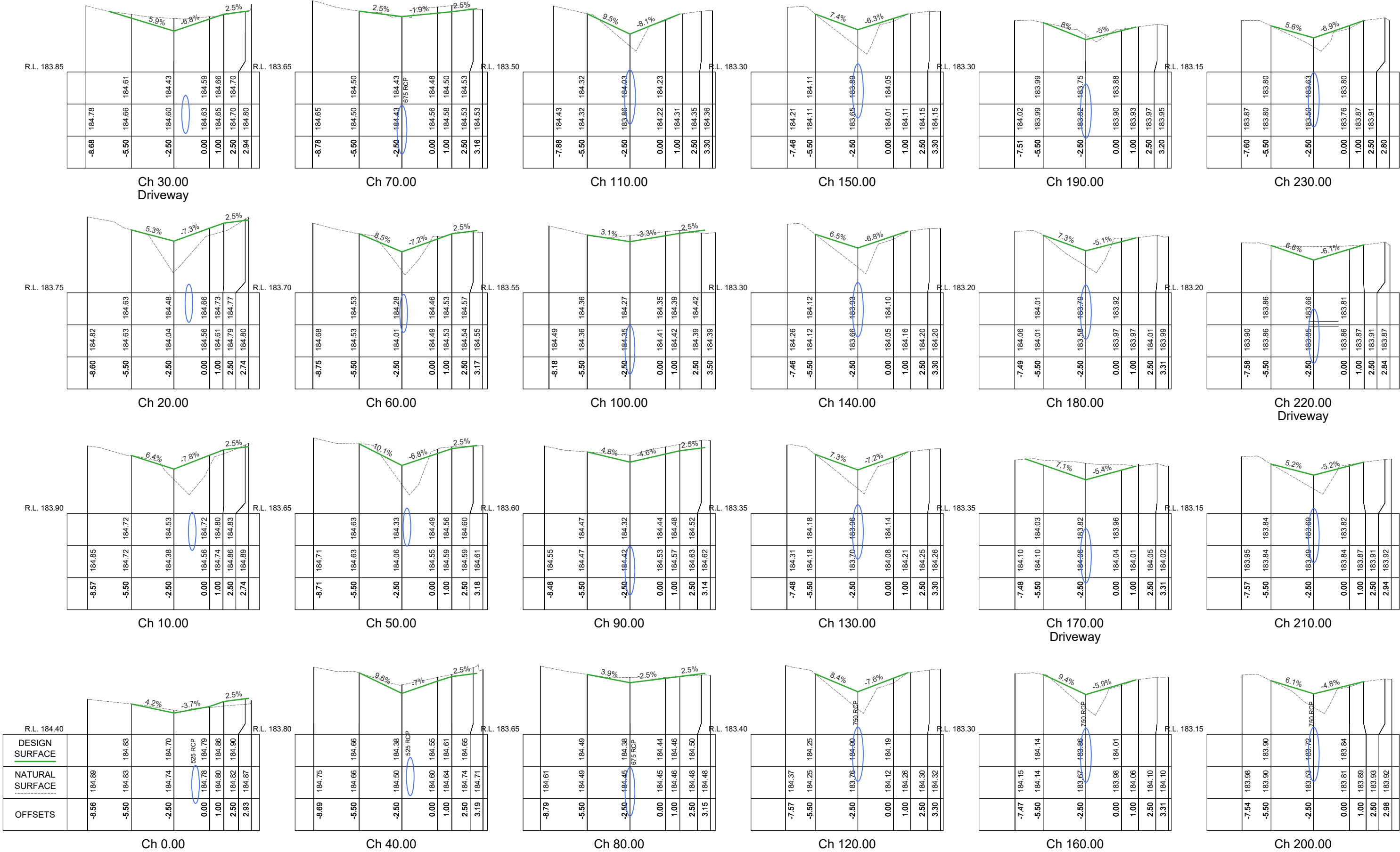
MIDLAND HIGHWAY EPSOM DRAINAGE

LAYOUT PLAN & LONGITUDINAL SECTION

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PRELIMINARY DESIGN DRAFT 8

Plot Date: 18/05/2023
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AMENDMENTS			
Revision	Description	Approved by	Date
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CITY OF GREATER BENDIGO

MIDLAND HIGHWAY

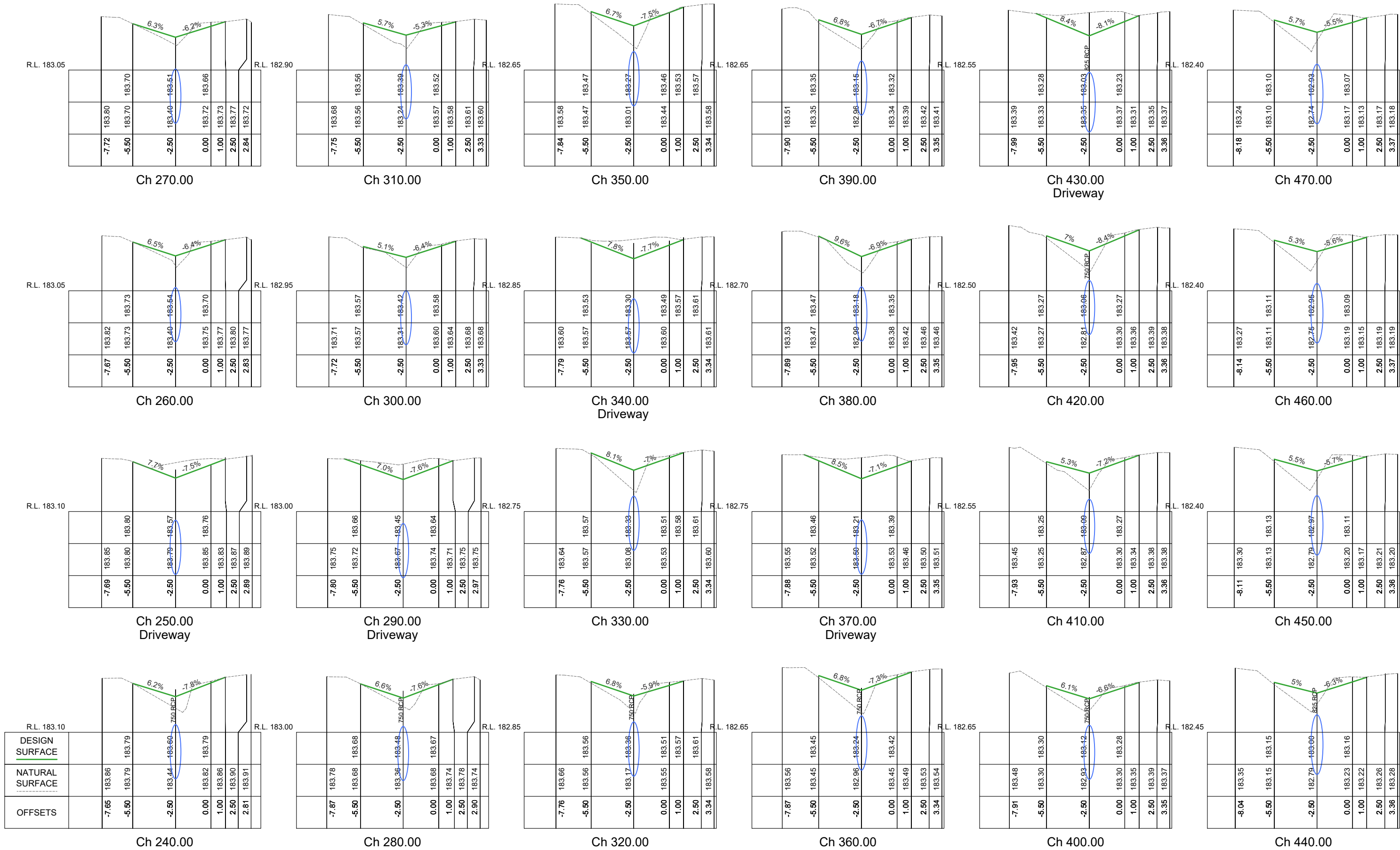
EPSOM DRAINAGE

CROSS SECTIONS

Survey	H. WHYTECK	Nov 2019
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PRELIMINARY DESIGN
DRAFT 8

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AMENDMENTS			
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-	-	-	-



CITY OF GREATER BENDIGO

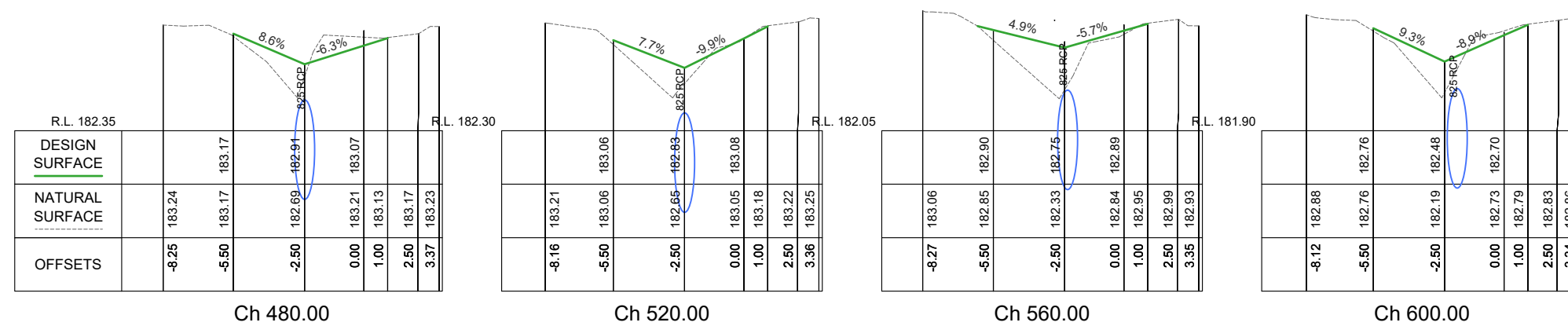
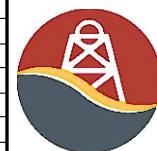
MIDLAND HIGHWAY
EPSOM
DRAINAGE

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PRELIMINARY DESIGN
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CITY OF GREATER BENDIGO	
	MIDLAND HIGHWAY EPSOM DRAINAGE
	CROSS SECTIONS

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**PRELIMINARY DESIGN
DRAFT 8**

Plot Date:	18/05/2023
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Pit Schedule											
Pit No.	Pit Type	Standard Drawing	Pit Width	Pit Length	Outlet Diameter	Outlet Invert RL	Inlet Diameter	Inlet Invert RL	Pit Depth	Pit Lid Level	Comment
			(mm)	(mm)	(mm)	(m)	(mm)	(m)	(m)	(m)	
1	End Entry Pit	-	(900)	(1200)	(750)	(181.25)	825	181.300	1.178	182.478	Break 825 RCP into existing end entry pit
2	Grated Pit	CoGB SD590A-D-L-U	900	900	825	181.480	825	181.490	1.294	182.774	
3	Grated Pit	CoGB SD590A-D-L-U	900	900	825	181.670	825	181.680	1.220	182.890	
4	Grated Pit	CoGB SD590A-D-L-U	900	900	825	181.830	750	181.840	1.170	183.000	
5	Grated Pit	CoGB SD590A-D-L-U	900	900	750	182.000	750	182.010	1.160	183.160	
6	Grated Pit	CoGB SD590A-D-L-U	900	900	750	182.170	750	182.180	1.140	183.310	
7	Grated Pit	CoGB SD590A-D-L-U	900	900	750	182.330	750	182.340	1.130	183.460	
8	Grated Pit	CoGB SD590A-D-L-U	900	900	750	182.570	750	182.580	1.109	183.679	
9	Grated Pit	CoGB SD590A-D-L-U	900	900	750	182.730	675	182.800	1.111	183.841	
10	Grated Pit	CoGB SD590A-D-L-U	900	900	675	183.010	600	183.070	1.035	184.045	
11	Grated Pit	CoGB SD590A-D-L-U	900	900	600	183.260	525	183.320	0.990	184.250	
12	Side Entry Pit	CoGB SD590A-D-G-R	600	900	525	183.620	(525)	(184.14)	1.148	184.768	Reconstruct existing SE pit

AMENDMENTS			
Revision	Description	Approved by	Date
-	-	-	-

CITY OF GREATER BENDIGO



MIDLAND HIGHWAY
EPSOM
DRAINAGE
PIT SCHEDULE

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PRELIMINARY DESIGN
DRAFT 8

Plot Date: 18/05/2023
Plotted By: IAN FROST