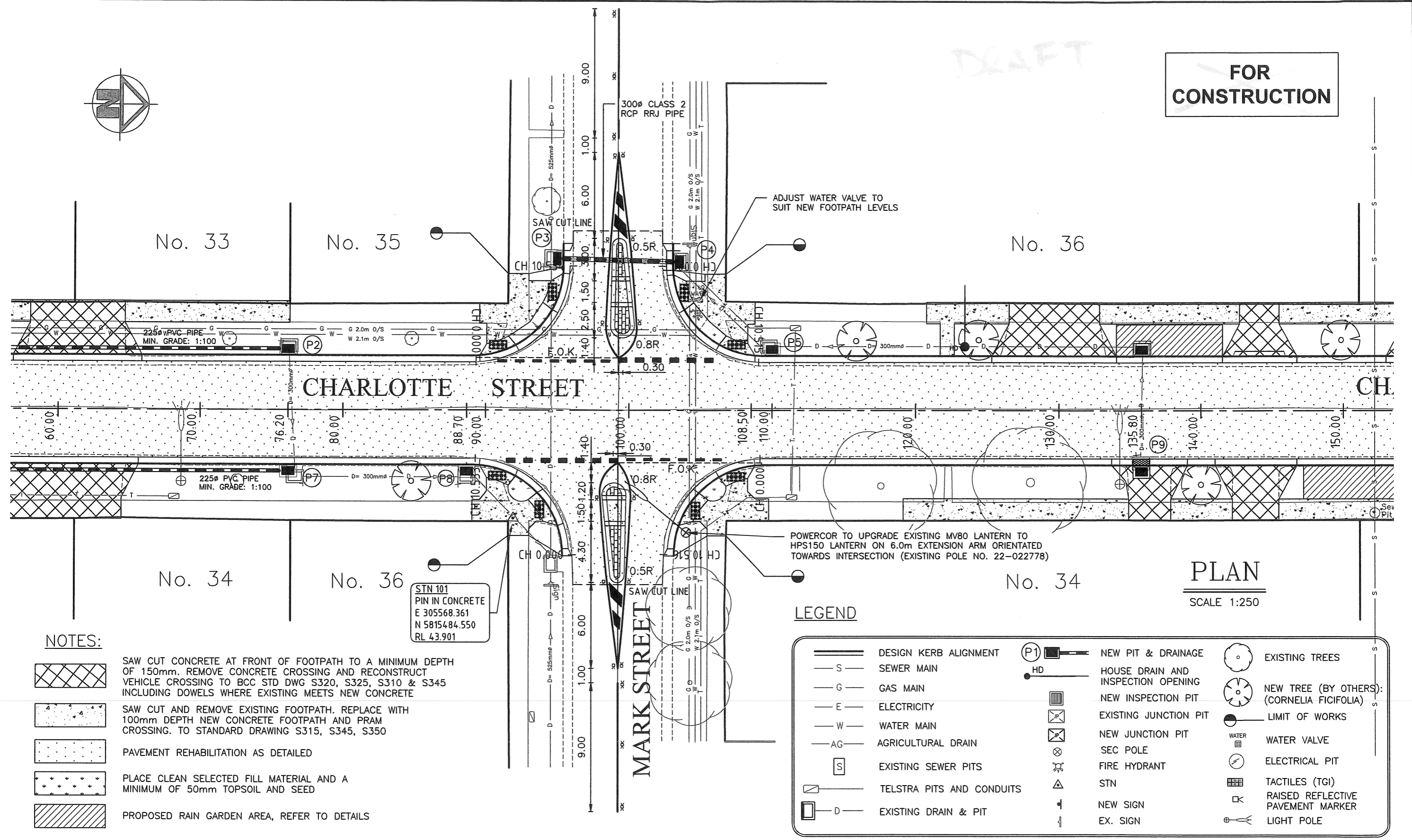


FOR CONSTRUCTION

DRAFT



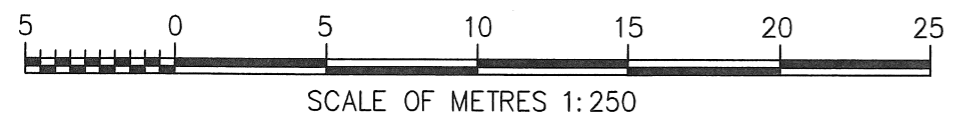
PLAN
SCALE 1:250

NOTES:

- SAW CUT CONCRETE AT FRONT OF FOOTPATH TO A MINIMUM DEPTH OF 150mm. REMOVE CONCRETE CROSSING AND RECONSTRUCT VEHICLE CROSSING TO BCC STD DWG S320, S325, S310 & S345 INCLUDING DOWELS WHERE EXISTING MEETS NEW CONCRETE
- SAW CUT AND REMOVE EXISTING FOOTPATH. REPLACE WITH 100mm DEPTH NEW CONCRETE FOOTPATH AND PRAM CROSSING. TO STANDARD DRAWING S315, S345, S350
- PAVEMENT REHABILITATION AS DETAILED
- PLACE CLEAN SELECTED FILL MATERIAL AND A MINIMUM OF 50mm TOPSOIL AND SEED
- PROPOSED RAIN GARDEN AREA, REFER TO DETAILS

LEGEND

- DESIGN KERB ALIGNMENT
- SEWER MAIN
- GAS MAIN
- ELECTRICITY
- WATER MAIN
- AGRICULTURAL DRAIN
- EXISTING SEWER PITS
- EXISTING DRAIN & PIT
- NEW PIT & DRAINAGE
- HOUSE DRAIN AND INSPECTION OPENING
- NEW INSPECTION PIT
- EXISTING JUNCTION PIT
- NEW JUNCTION PIT
- SEC POLE
- FIRE HYDRANT
- STN
- NEW SIGN
- EX. SIGN
- EXISTING TREES
- NEW TREE (BY OTHERS): (CORNELIA FICIFOLIA)
- LIMIT OF WORKS
- WATER VALVE
- ELECTRICAL PIT
- TACTILES (TGI)
- RAISED REFLECTIVE PAVEMENT MARKER
- LIGHT POLE



NOTE:
SET-OUT JOB BEFORE REMOVING TBM'S

WARNING
BEWARE OF UNDERGROUND SERVICES
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HAND DIG AND
HAND COMPACT
NEAR SERVICES

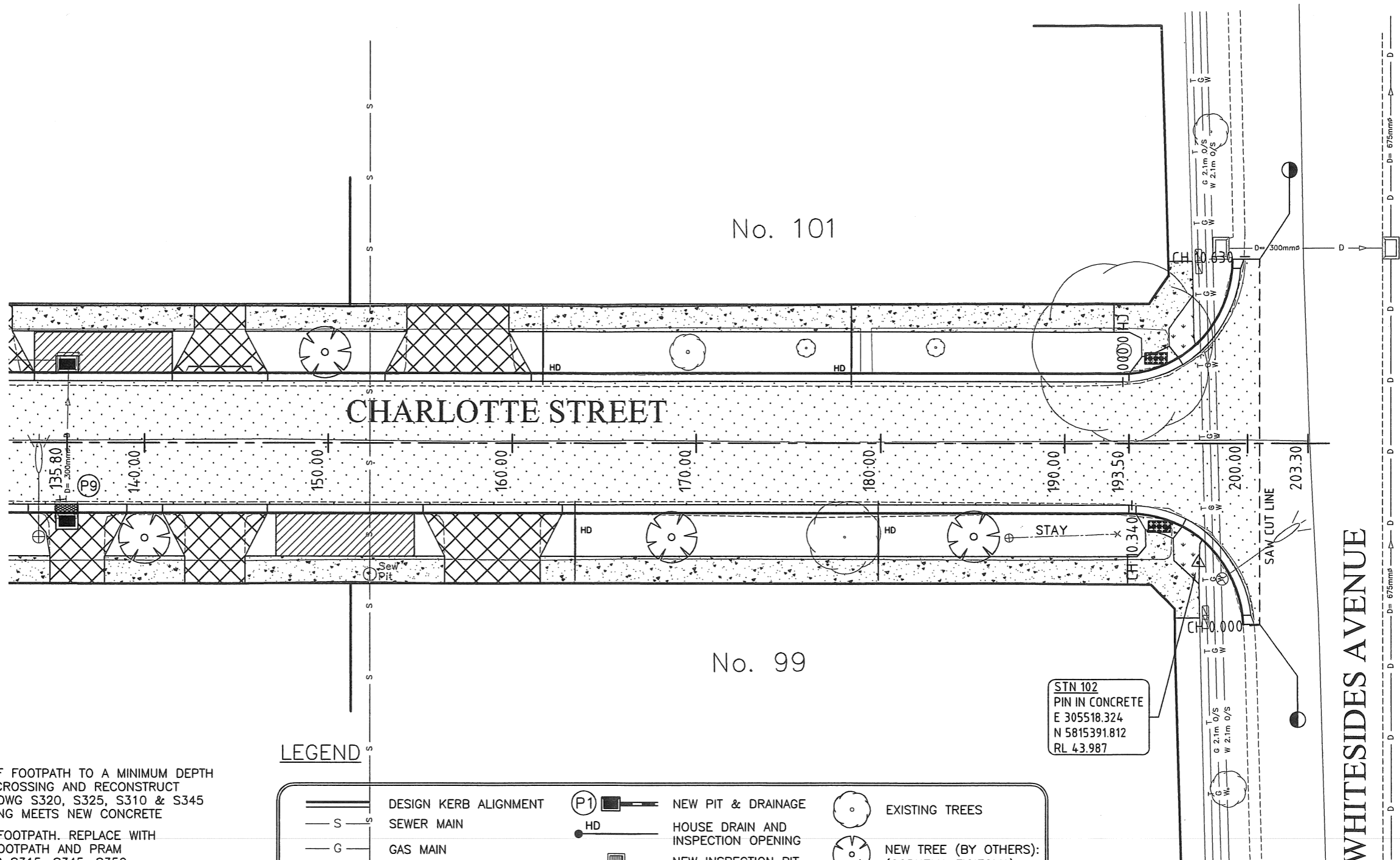
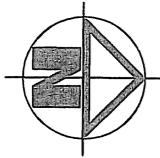


AMENDMENTS		
DATE	REVISION	INIT

DESIGNED: L.C.
DRAWN : L.C.
SURVEY : MOONLAND
CHECKED : SQ
SURVEY DATUM : AHD.
SCALE: AS SHOWN (A3)
DATE: MAY 2014

BRIMBANK CITY COUNCIL
CHARLOTTE ST
BETWEEN GLENGALA RD AND WHITESIDES
AV, SUNSHINE WEST
REHABILITATION WORKS
LAYOUT PLAN

APPROVED
PROJECT SERVICES COORDINATOR
DRAWING NO.
10834
SHEET 3 OF 15 REV.



PLAN
SCALE 1:250

NOTE:
SET-OUT JOB BEFORE REMOVING TBM'S

NOTES:

- SAW CUT CONCRETE AT FRONT OF FOOTPATH TO A MINIMUM DEPTH OF 150mm. REMOVE CONCRETE CROSSING AND RECONSTRUCT VEHICLE CROSSING TO BCC STD DWG S320, S325, S310 & S345 INCLUDING DOWELS WHERE EXISTING MEETS NEW CONCRETE
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- PAVEMENT REHABILITATION AS DETAILED
- PLACE CLEAN SELECTED FILL MATERIAL AND A MINIMUM OF 50mm TOPSOIL AND SEED
- PROPOSED RAIN GARDEN AREA, REFER TO DETAILS

SCALE OF METRES 1:250

LEGEND

DESIGN KERB ALIGNMENT	NEW PIT & DRAINAGE	EXISTING TREES
SEWER MAIN	HOUSE DRAIN AND INSPECTION OPENING	NEW TREE (BY OTHERS): (CORNELIA FICIFOLIA)
GAS MAIN	NEW INSPECTION PIT	LIMIT OF WORKS
ELECTRICITY	EXISTING JUNCTION PIT	WATER VALVE
WATER MAIN	NEW JUNCTION PIT	ELECTRICAL PIT
AGRICULTURAL DRAIN	SEC POLE	TACTILES (TGI)
EXISTING SEWER PITS	FIRE HYDRANT	RAISED REFLECTIVE PAVEMENT MARKER
TELSTRA PITS AND CONDUITS	STN	LIGHT POLE
EXISTING DRAIN & PIT	NEW SIGN	
	EX. SIGN	

STN 102
PIN IN CONCRETE
E 305518.324
N 5815391.812
RL 43.987

FOR CONSTRUCTION

WARNING
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HAND DIG AND
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BRIMBANK CITY COUNCIL
CHARLOTTE ST
BETWEEN GLENGALA RD AND WHITESIDES
AV, SUNSHINE WEST
REHABILITATION WORKS
LAYOUT PLAN

APPROVED
PROJECT SERVICES COORDINATOR
DRAWING NO. 10834
SHEET 4 OF 15 REV.

WSUD RAINGARDEN SPECIFICATION :

THIS TECHNICAL SPECIFICATION PROVIDES INFORMATION FOR THE CONSTRUCTION OF RAINGARDENS AS SHOWN ON DRAWINGS.

1. RAINGARDEN CONSTRUCTION

1.1 RAINGARDEN SCOPE

THE WORK TO BE EXECUTED UNDER THIS WORK SECTION COMPRISES: EXCAVATION, SHAPING, SUPPLY AND INSTALLATION OF THE MULCH LAYER, FILTER LAYERS, TRANSITION LAYER, DRAINAGE LAYERS, DRAINAGE PIPE, LINERS, CONNECTION TO PITS, PLANTING, AND ANY OTHER SPECIFIED MATERIALS AS SHOWN ON THE DRAWINGS.

1.2 MULCH LAYER

THE TOP LAYER OF THE FILTER MEDIA SHALL BE COVERED WITH LAYER OF WASHED (NO FINES OR DUST) STONE AGGREGATE MULCH. 100% OF THE PARTICLES SHOULD BE IN THE SIZE RANGE 10-20MM. MULCH SHALL BE RAKED EVEN AND KEPT CLEAR OF PLANT STEMS TO AVOID COLLAR ROT. THE FINISHED LEVEL IS CRITICAL FOR EXTENDED DETENTION STORAGE VOLUME.

A SAMPLE OF MULCH IS TO BE PROVIDED TO THE SUPERINTENDENT FOR APPROVAL PRIOR TO INSTALLATION AND SHALL NOT BE SEDIMENTARY IN ORIGIN.

1.3 FILTER LAYER

THE FILTER MATERIAL SHALL PREFERABLY BE A "WASHED SAND" OF SILICEOUS OR CALCAREOUS ORIGIN, ONE THAT HAS BEEN MINED AND PROCESSED. NATURAL SOILS OR TOPSOILS ARE NOT USUALLY SUITABLE. USE BURDETTES TURF 200 OR DAISY'S GARDEN SUPPLIES BIO-DRAIN OR SIMILAR AND AMEND TO SUIT THE FOLLOWING PROPERTIES:

- a) SATURATED HYDRAULIC CONDUCTIVITY (HC) - FILTER MEDIA SHALL HAVE A HC IN THE RANGE OF 200 - 300MM/H. THIS CRITICAL ELEMENT IS TO BE DEMONSTRATED THROUGH LAB TESTING USING ASTM F1815-06 AT THE CONTRACTOR'S COST;
- b) PARTICLE SIZE DISTRIBUTION (PSD) - COMPOSITION (W/W) REQUIREMENTS:

DESCRIPTION	PROPORTION	GRADING
CLAY & SILT	<2%	<0.05mm
VERY FINE SAND	5-30%	0.05-0.15mm
FINE SAND	10-30%	0.15-0.25mm
MEDIUM TO COARSE SAND	40-60%	0.25-1.0mm
COARSE SAND	7-10%	1.0-2.0mm
FINE GRAVEL	<3%	2.0-3.4mm

- c) TOTAL NITROGEN (TN) CONTENT - < 1000MG/KG;
- d) ORTHOPHOSPHATE CONTENT - < 80MG/KG;
- e) ORGANIC MATTER - AT LEAST 3% (W/W);
- f) PH - FILTER MEDIA IS TO HAVE A PH 5.5 -7.5 BEFORE DELIVERY TO SITE, ADD DOLOMITE AS REQUIRED;
- g) ELECTRICAL CONDUCTIVITY (EC) - FILTER MEDIA EC TO BE <1.2 DS/M.

1.4 PLANTING

PLANTING REQUIREMENTS OF THE RAINGARDENS ARE AS PER THE DRAWINGS AND TECHNICAL SPECIFICATION.

1.5 UPPER FILTER MEDIA (SOIL AMENDMENTS)

UPPER 100MM OF FILTER MEDIA LAYER SHALL BE ASSESSED BY AN APPROPRIATELY EXPERIENCED HORTICULTURIST TO DEFINE ADDITIVES NECESSARY FOR PLANT ESTABLISHMENT. GIVE CONSIDERATION FOR MAINTAINING HYDRAULIC CONDUCTIVITY AND SPECIFIC PLANT REQUIREMENTS. IN THE ABSENCE OF THIS INFORMATION, THE UPPER FILTER LAYER SHALL BE MIXED WITH THE FOLLOWING TO SUPPORT PLANT GROWTH:

- a) GRANULATED POULTRY MANURE FINES 50KG/100M2 FILTER AREA
- b) SUPERPHOSPHATE AT 2KG/100M2 FILTER AREA
- c) MAGNESIUM SULPHATE AT 3KG/100M2 FILTER AREA
- d) POTASSIUM SULPHATE AT 2KG/100M2 FILTER AREA
- e) TRACE ELEMENT MIX (MICROMAX OR EQUIVALENT APPROVED) 1KG/100M2 FILTER AREA
- f) FERTILIZER NPK (16.4.14) AT 4KG/100M2 FILTER AREA
- g) LIME AT 20KG/100M2 FILTER AREA

1.6 TESTING REQUIREMENTS

THE FOLLOWING TESTS ARE TO BE UNDERTAKEN ON ALL FILTER MEDIA PRIOR TO ITS DELIVERY AT THE CONTRACTOR'S COST:

- a) SATURATED HYDRAULIC CONDUCTIVITY (HC) IN ACCORDANCE WITH ASTM F1815-06;
- b) PARTICLE SIZE DISTRIBUTION (PSD) IN ACCORDANCE WITH AS1141.11;
- c) CONCENTRATIONS OF TOTAL NITROGEN, ORTHOPHOSPHATE, ORGANIC MATTER, PH AND ELECTRICAL CONDUCTIVITY PRIOR TO AMELIORATION.

1.7 TRANSITION LAYER

TO PREVENT THE FILTER MEDIA FROM WASHING THROUGH, A TRANSITION LAYER IS REQUIRED WHEN THE DRAINAGE LAYER IS FINE GRAVEL. THE TRANSITION LAYER SHOULD BE A CLEAN, WELL GRADED SAND/COARSE SAND MATERIAL CONTAINING <2% FINES, GENERALLY APPLIED IN A 100MM LAYER. A SUITABLE PRODUCT IS WASHED A3 FILTER SAND (VIC ROADS) WITH 90% PARTICLES RETAINED ABOVE 0.25MM.

TO AVOID MIGRATION OF THE FILTER MEDIA INTO THE TRANSITION LAYER, THE PARTICLE SIZE DISTRIBUTION OF THE SAND SHALL BE ASSESSED TO ENSURE IT MEETS THE FOLLOWING CRITERIA:

D15 (TRANSITION LAYER) TO BE LESS THAN OR EQUAL TO 5 X D85 (FILTER MEDIA)

WHERE D15 (TRANSITION LAYER) IS THE 15TH PERCENTILE PARTICLE SIZE IN THE TRANSITION LAYER MATERIAL AND D85 (FILTER MEDIA) IS THE 85TH PERCENTILE PARTICLE SIZE IN THE FILTER MEDIA

THE SUPERINTENDENT MAY REQUIRE THE TRANSITION LAYER TO BE TESTED TO DETERMINE ITS HYDRAULIC CONDUCTIVITY AND PARTICLE SIZE DISTRIBUTION.

1.8 DRAINAGE LAYER

THE DRAINAGE LAYER IS NORMALLY BETWEEN 100 - 150MM THICK. SUITABLE MATERIALS INCLUDE A WASHED COARSE SAND (COARSER THAN TRANSITION LAYER) OR WASHED FINE GRAVEL IN THE RANGE 2MM - 7MM. SCORIA IS NOT AN ACCEPTABLE MATERIAL FOR THIS APPLICATION.

ACCEPTABLE PARTICLE SIZE DISTRIBUTION:

PARTICLE SIZE (MM)	% RETAINED
GREATER THAN 7.0	0
4.0 - 7.0	GREATER THAN 70
2.0 - 4.0	LESS THAN 20
LESS THAN 2.0	0

TO AVOID MIGRATION OF THE TRANSITION LAYER INTO THE DRAINAGE LAYER, THE PARTICLE SIZE DISTRIBUTION OF THE SAND SHALL BE ASSESSED TO ENSURE IT MEETS THE FOLLOWING CRITERIA:

D15 (DRAINAGE LAYER) LESS THAN OR EQUAL TO 5 X D85 (TRANSITION LAYER)

WHERE D15 (DRAINAGE LAYER) IS THE 15TH PERCENTILE PARTICLE SIZE IN THE DRAINAGE LAYER MATERIAL AND D85 (TRANSITION LAYER) IS THE 85TH PERCENTILE PARTICLE SIZE IN THE TRANSITION LAYER

THE SUPERINTENDENT MAY REQUIRE THE DRAINAGE LAYER TO BE TESTED TO DETERMINE ITS HYDRAULIC CONDUCTIVITY AND PARTICLE SIZE DISTRIBUTION.

2. PIPE WORK - UNDER DRAINAGE

SECTIONS OF DN100 SLOTTED PVC PIPE SHALL BE LAID WITH THE DRAINAGE AGGREGATE UNDER THE RAINGARDENS. THE SLOTTED PVC PIPES SHALL BE GRADED TOWARD THE ADJACENT PITS WITH A MINIMUM FALL. EACH PIPE SHALL BE CONNECTED TO THE ADJACENT PIT VIA A 150 MM CORED HOLE AND EPOXY MORTARED IN PLACE.

NOTE: THE PERFORATIONS IN THE UNDER DRAIN PIPES SHALL BE SMALL ENOUGH TO PREVENT AGGREGATE FROM THE DRAINAGE LAYER ENTERING THE PIPES. A USEFUL GUIDE IS TO CHECK THAT D85 (DRAINAGE LAYER) IS GREATER THAN THE PIPE PERFORATION DIAMETER. SLOTTING OF PIPES SHALL BE AT 3, 6 AND 9 O'CLOCK. PIPE IS TO BE PURCHASED PRE-SLOTTED BY THE MANUFACTURER.

WARNING

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HAND DIG AND
HAND COMPACT
NEAR SERVICES



AMENDMENTS		
DATE	REVISION	INIT

DESIGNED: RUSSELL CADMAN
DRAWN : RUSSELL CADMAN
SURVEY : MOONLAND PL
CHECKED : SQ
SURVEY DATUM : AHD
SCALE: AS SHOWN (A3)
DATE: MAY 2014

BRIMBANK CITY COUNCIL
CHARLOTTE ST, SUNSHINE WEST
RAIN GARDEN CONSTRUCTION
BETWEEN GLENGALA RD AND WHITESIDES AV
WSUD RAINGARDEN SPECIFICATION

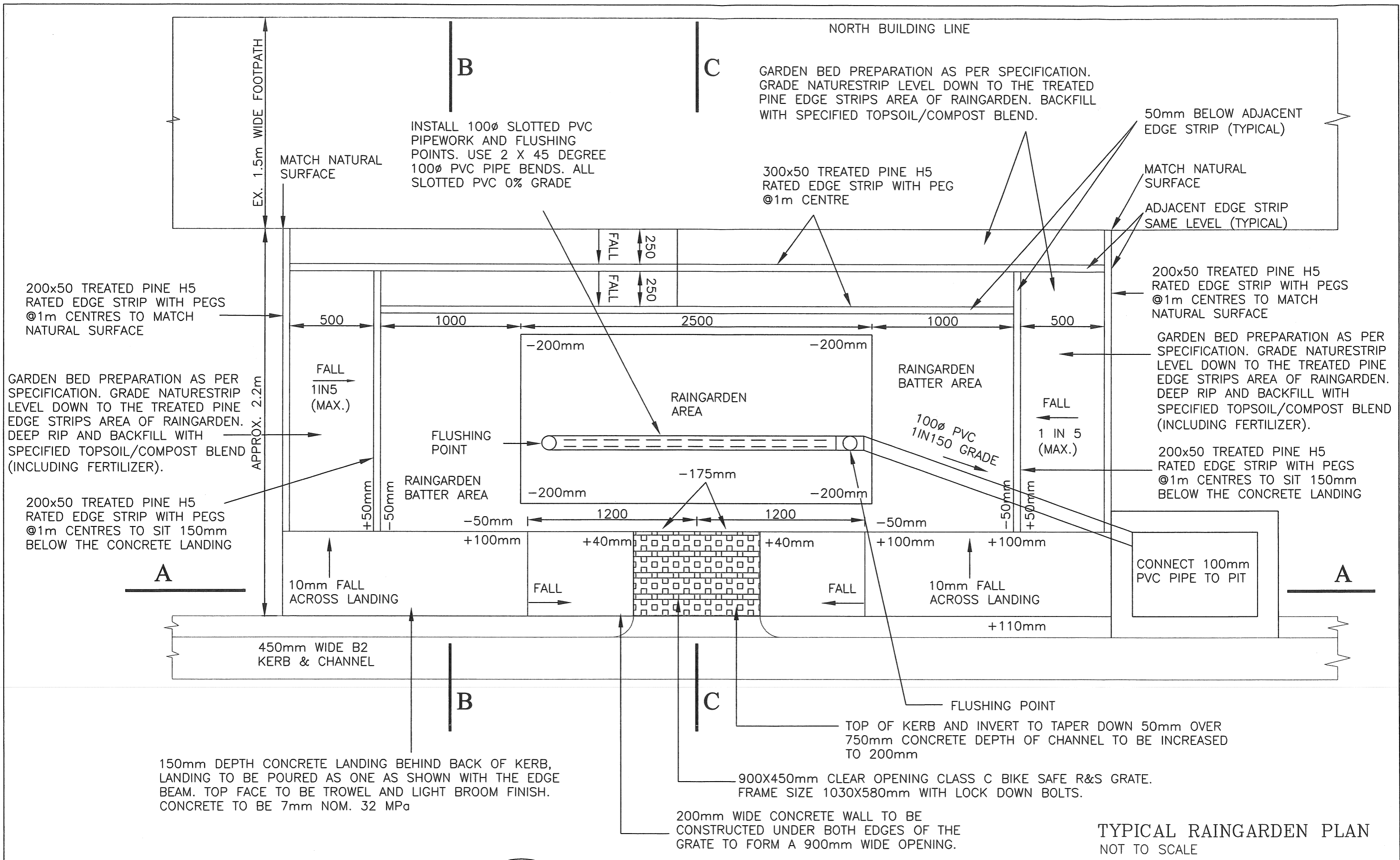
APPROVED

PROJECT SERVICES COORDINATOR

DRAWING NO.

10834

SHEET 1 OF 4



TYPICAL RAINGARDEN PLAN
NOT TO SCALE

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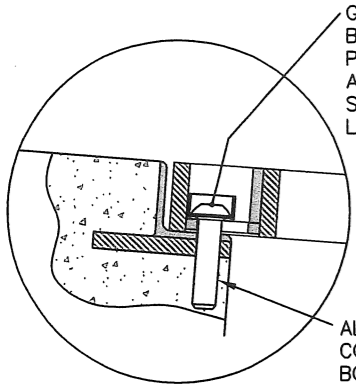
BRIMBANK CITY COUNCIL
CHARLOTTE ST, SUNSHINE WEST
RAIN GARDEN CONSTRUCTION
BETWEEN GLENGALA RD AND WHITESIDES AV
 TYPICAL RAINGARDEN PLAN

APPROVED

PROJECT SERVICES COORDINATOR

DRAWING NO.
10834

SHEET 2 OF 4



GRATE TO BE FITTED WITH A M10 BOLT MINIMUM 50mm IN LENGTH PENETRATING INTO CONCRETE. ALLOW FOR COUNCIL BOLT HEAD SLEEVE OF 25mmØ TO BE FITTED LATER ON BY COUNCIL.

ALLOW VOID IN CONCRETE FOR M10 BOLT PENETRATION

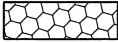
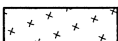

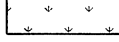
LOCK DOWN BOLT DETAIL

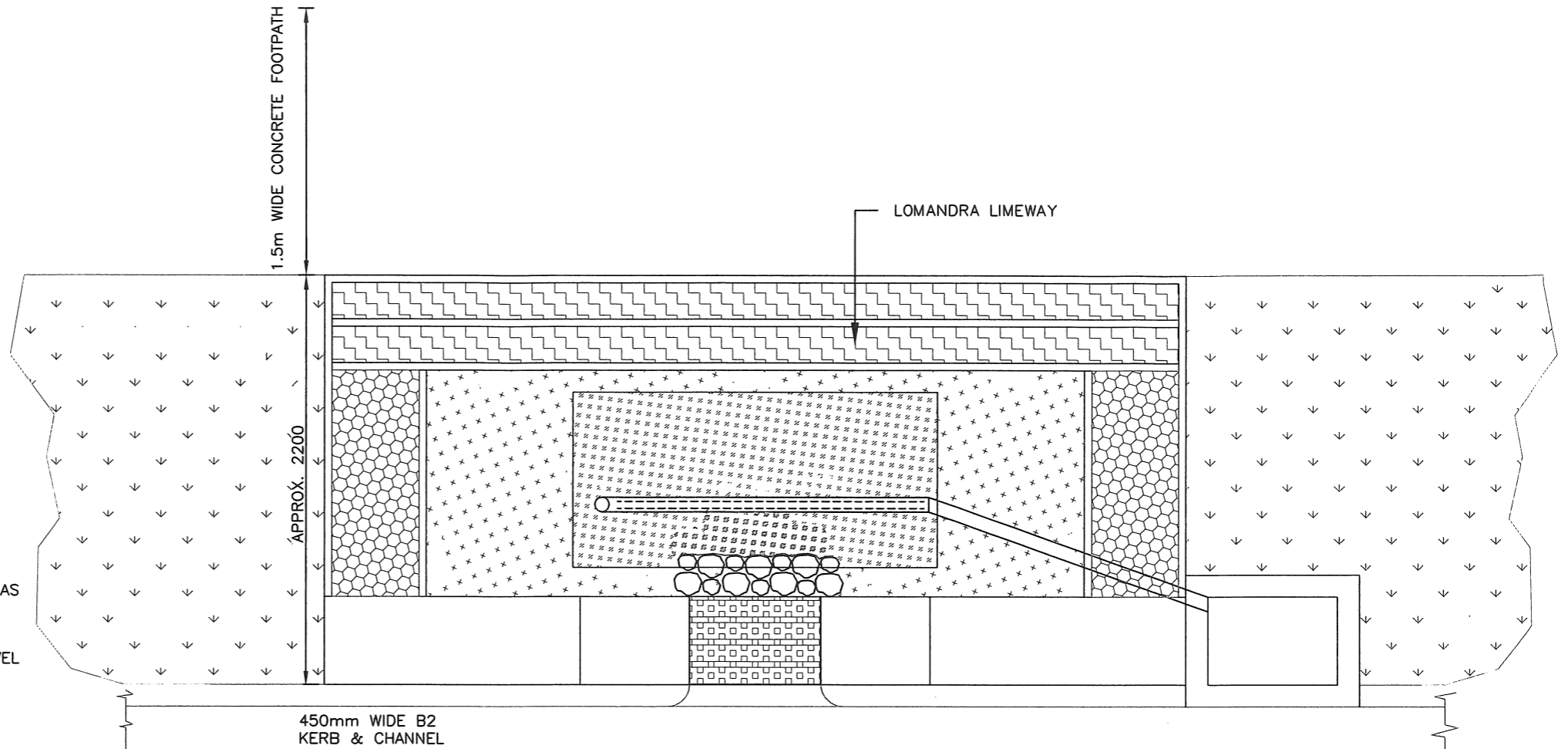
NOTES:

1. DIMENSIONS ARE IN mm U.N.O.

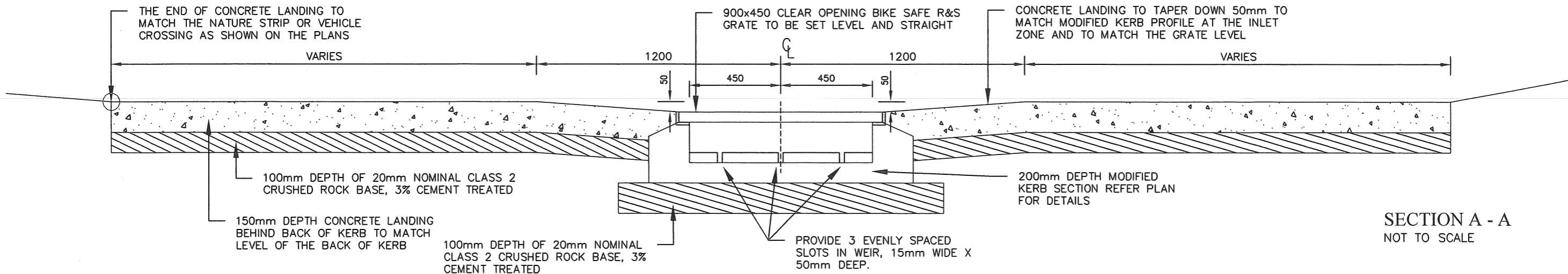
2. ALL RAINGARDEN AND GARDEN BED AREAS TO BE PLANTED OUT AT 8 PLANTS PER SQUARE METRE

3. ALL EDGE STRIPS SHALL BE TREATED PINE H5 RATED WITH PEGS AT 1.0m CENTRES

-  GARDEN BED – CONVULVULUS CNEORUM PREPARATION AS PER SPECIFICATION. GRADE NATURESTRIP LEVEL DOWN TO THE TREATED PINE EDGE STRIP OF RAINGARDEN. DEEP RIP AND BACKFILL WITH MIN. 150mm TOPSOIL/COMPOST BLEND AS PER SPECIFICATION (INCLUDING FERTILIZER).
-  RAINGARDEN AREA + BATTERS– LOMANDRA LONGIFOLIA CAREX APPRESSA FICINIA NODOSA (RAINGARDEN FINISHED SURFACE LEVEL TO BE 200mm BELOW THE LIP OF CHANNEL)
-  DIETES BICOLOR – REFER TO GARDEN BED PREPARATION AS NOTED ABOVE
-  EXISTING GRASS AREA



TYPICAL RAINGARDEN PLAN
NOT TO SCALE



SECTION A - A
NOT TO SCALE

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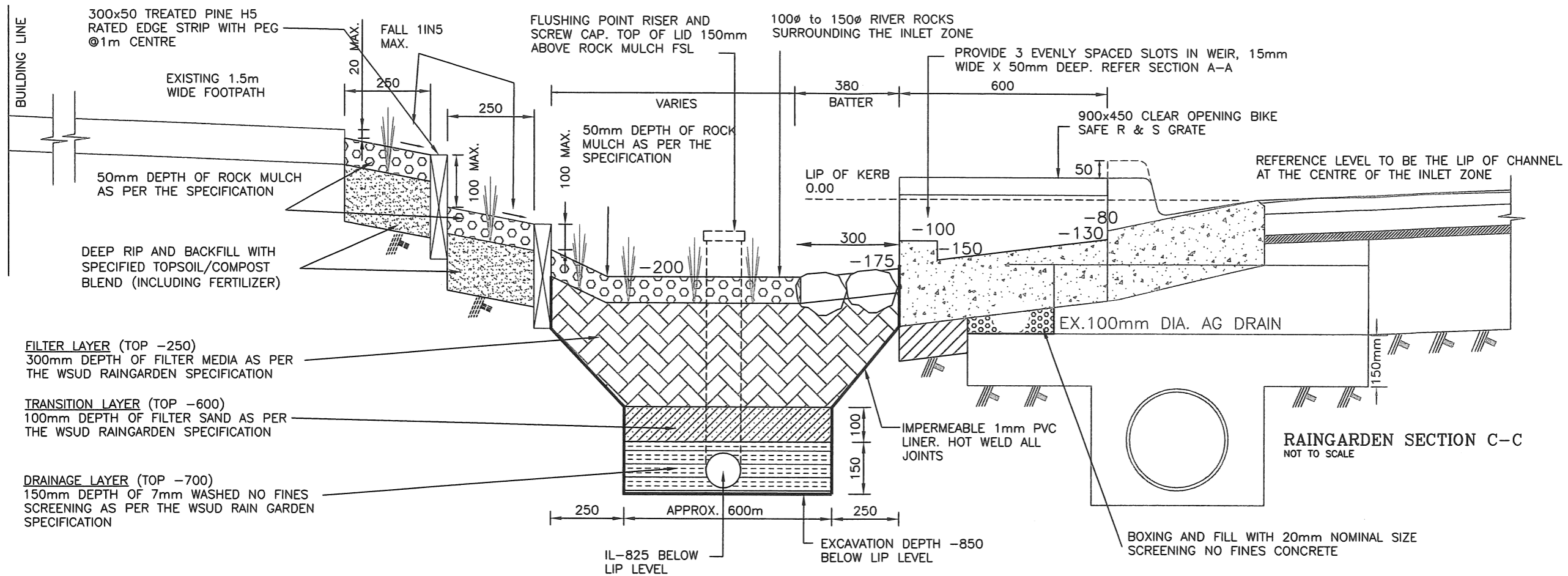
HAND DIG AND
HAND COMPACT
NEAR SERVICES



AMENDMENTS			DESIGNED: RUSSELL CADMAN
DATE	REVISION	INIT	DRAWN : RUSSELL CADMAN
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BRIMBANK CITY COUNCIL
CHARLOTTE ST, SUNSHINE WEST
RAIN GARDEN CONSTRUCTION
BETWEEN GLENGALA RD AND WHITESIDES AV
TYPICAL RAINGARDEN LANDSCAPE DETAILS

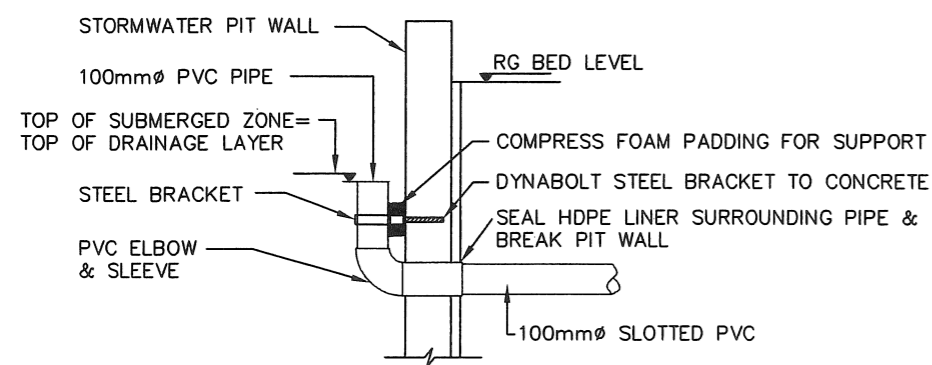
APPROVED
PROJECT SERVICES COORDINATOR
DRAWING NO.
10834
SHEET 3 OF 4



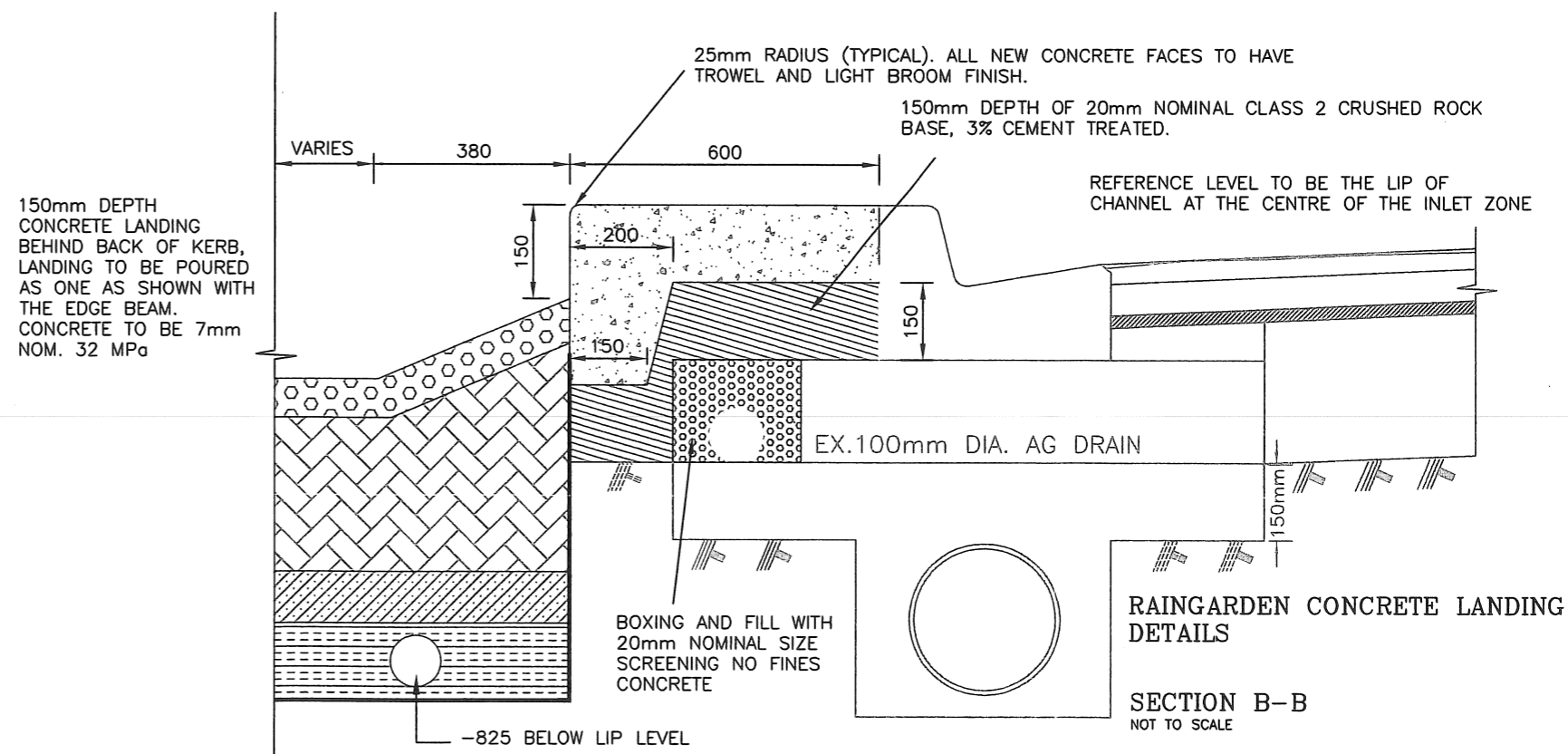
FILTER LAYER (TOP -250)
300mm DEPTH OF FILTER MEDIA AS PER THE WSUD RAINGARDEN SPECIFICATION

TRANSITION LAYER (TOP -600)
100mm DEPTH OF FILTER SAND AS PER THE WSUD RAINGARDEN SPECIFICATION

DRAINAGE LAYER (TOP -700)
150mm DEPTH OF 7mm WASHED NO FINES SCREENING AS PER THE WSUD RAIN GARDEN SPECIFICATION



INLET RISER FOR SUBMERGED ZONE
NOT TO SCALE



RAINGARDEN CONCRETE LANDING DETAILS
SECTION B-B
NOT TO SCALE

NOTES:

1. PRIOR TO BACKFILLING THE RAINGARDEN AREA, SECURE IMPERMEABLE LINER TO SIDES OF EXCAVATION TO THE SATISFACTION OF THE SUPERINTENDENT'S REPRESENTATIVE

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		SCALE : AS SHOWN (A3)
		DATE : MAY 2014

BRIMBANK CITY COUNCIL
CHARLOTTE ST, SUNSHINE WEST
RAIN GARDEN CONSTRUCTION
BETWEEN GLENGALA RD AND WHITESIDES AV
TYPICAL RAINGARDEN CROSS SECTION PLAN

APPROVED
PROJECT SERVICES COORDINATOR
DRAWING NO.
10834
SHEET 4 OF 4