PROPOSED DEVELOPMENT
100 MOUNT ST, NORTH SYDNEY
STORMWATER DRAINAGE CONCEPT PLANS

LEGEND

CIVIL DRAINAGE SYMBOLS

STW	STORMWATER DRAINAGE PIPE
STWRM	STORMWATER RISING MAIN
→ → →	STORMWATER DRAINAGE CHANNEL
RW	RAINWATER
CO ○ SS	SUB SOIL DRAINAGE WITH CLEAN OUT
SSRM	SUB SOIL RISING MAIN
EB-LF	EARTH BANK LOW FLOW
EB-HF	EARTH BANK HIGH FLOW
EM	EXCAVATED MATERIAL
⇉	FLUME
DD	DIVERSION DRAIN
— > > >	DIVERSION DRAIN
OFP	OVERFLOW PATH
OFD	OVERFLOW DRAIN
CLD	CONCRETE LINED DRAIN
RLD	ROCK LINED DRAIN
TD	TABLE DRAIN
◁— ◁— ◁— ◁— ◁—	V DRAIN (L)
—▷ —▷ —▷ —▷ —▷	V DRAIN (R)
))))))))))))))))))))	SWALE or SPEED HUMP
⇨	OVERLAND FLOW DIRECTIONAL ARROW
➞	OVERLAND FLOW PATH
○ DP	DOWN PIPE
⦶	PAVED AREA DRAIN.
—◡	DROP TO OR RISE FROM
—○	RISE TO OR DROP FROM
—◡—	TEE DROP
—○—	TEE RISE
—○— VERT	VERTICAL RISER IN DRAINAGE
—►—	FLOW DIRECTIONAL ARROWS ON ALL PIPING SERVICES
—‖	PIPELINE TERMINATED WITH BLANK FLANGE
—]	PIPELINE PLUGGED OFF
—○— CO	CLEAROUT
F.P. ○—	FLUSHING POINT
⊢⊣	NEW PIPE

RISER
SERVICE
SIZE
DROPPER

NON-RETURN FLAP VALVE ON INSIDE FACE OF PIT AT ALL DOWN PIPES & SUB SOIL DRAINAGE LINES TO OSD SYSTEM

CIVIL ABBREVIATIONS

	DRAINAGE LEVELS
BWL	BOTTOM WATER LEVEL
IL	INVERT LEVEL
OL	OBVERT LEVEL
SL	SURFACE LEVEL
TWL	TOP WATER LEVEL
	GRATES & COVERS
LD	LIGHT DUTY CLASS 'B'
MD	MEDIUM DUTY CLASS 'C'
HD	HEAVY DUTY CLASS 'D'
EHD	EXTRA HEAVY DUTY CLASS 'E'
MP	MULTI PART COVER OR GRATE
	PITS
CDS	CDS TECHNOLOGIES, STORMWATER TRAPS
DCP	DISCHARGE CONTROL PIT
DGGP	DOUBLE GRATED GULLY PIT (CAST IRON)
GPT	GROSS POLUTANT TRAP
JP	JUNCTION PIT
KEP	KERB ENTRY PIT
KEU	KERB ENTRY UNIT
MPC	MULTI PART COVER
MPG	MULTI PART GRATE
RR	RAINWATER REUSE
SGGP	SINGLE GRATED GULLY PIT (GMS)
SWP	STORMWATER PIT
	DRAINAGE LINES
RW	RAIN WATER (REUSE)
SS	SUBSOIL DRAINAGE
STRM	STORMWATER RISING MAIN
STW	STORMWATER DRAIN
GD	GRATED DRAIN
OLD	OPEN LINED DRAIN
OUD	OPEN UNLINED DRAIN
	FEATURES
CO	CLEAROUT
DP	DOWN PIPE
FP	FLUSHING POINT
IO	INSPECTION OPENING
OF	GUTTER OVERFLOW PIPE
RO	RAINWATER OUTLET
DTU	DRAINAGE TURNUP
	OSD
OSD	ONSITE DETENTION
PSD	PERMISSIBLE SITE DISCHARGE
OFP	OVERFLOW PATH
SWMP	STORM WATER MANAGEMENT PLAN
ESCP	EROSION & SEDIMENT CONTROL PLAN

▨	OSD ABOVE GROUND
▭	KEP - KERB ENTRY PIT
▥▥	DOUBLE GRATED GULLY PIT
▢	JUNCTION PIT WITH COVER
▥	SURFACE INLET PIT (FLUSH/RAISED)
▣	SURFACE INLET PIT (DEPRESSED)
▥▥▥▥	GRATED TRENCH DRAIN

EROSION & SEDIMENTATION SYMBOLS

	FENCES
B	BARRIER FENCE
X	SEDIMENT FENCE
⊣ ⊢ ⊣ ⊢	SILT FENCE ON LEVEL
→ → →	SILT FENCE ON GRADE
W	WIND FENCE
	BANKS
→ → →	DIVERSION CHANNEL/BANK
⅂ ⅂ ⅂	LEVEL SPREADER
EB	EARTH BANK
EBLF	EARTH BANK LOW FLOW
EBHF	EARTH BANK HIGH FLOW
EM	EXCAVATED MATERIAL
	TRAPS
— 〉 —	GEOTEXTILE SEDIMENT TRAP
∿▷∿▷	CHECK DAMS (STRAW BALE OR ROCK)
⊓⊓⊓⊓⊓	CONCRETE ENERGY DISSIPATOR
▥	STABALISED CONSTRUCTION SITE VEHICLE ENTRY/EXIT GRID
☒	SEDIMENT TRAP
◡	GEOTEXTILE FILTER BAGS OR SOCK

ROAD LANE MARKING SYMBOLS

- - - - -	C1 CONTINUITY LINE 1m, 3m, w0.200
———	E1 EDGE LINE 35m, 1m, w0.120
— — —	L1 LANE LINE 3m, 9m, w0.080
— — —	S1 SEPARATION LINE 3m, 9m, w0.100
—— —— ——	S2 SEPARATION LINE 6m, 6m, w0.100
— — — —	S3 SEPARATION LINE 3m, 3m, w0.100
--------	T1 TURN LINE 0.6m, 0.6m, w0.100
- - - - - -	TB GIVEWAY LINE 0.6m, 0.6m, w0.200
□ □	PAVEMENT MARKERS SQ, 1m CTS

LEGEND

SURVEY & MAPPING SYMBOLS

—○—○—○—	PROPERTY BOUNDARY
------	EASEMENT
—/——/——/—	FENCE OFF BOUNDARY
_/__/__/_	FENCE ALONG BOUNDARY
. / . / . / . /	FENCE ON BOUNDARY
+	STATE BOUNDARY
X	COUNTY BOUNDARY
.	PARISH BOUNDARY
+++	SHIRE/MUNICIPLE BOUNDARY
P	NATIONAL PARK BOUNDARY
R	STATE RECREATION BOUNDARY
:	STATE FOREST BOUNDARY
*	TELSTRA EXCHANGE BOUNDARY

GENERAL ABBREVIATIONS

CTS	CENTERS
℄	CENTRE LINE
DIA	DIAMETER
DMR	DEPARTMENT OF MAIN ROADS
DWG	DRAWING
EX.	EXISTING
GALV	GALVANIZED
HD GALV	HOT DIPED GALVANIZED
ID	INTERNAL DIAMETER
L.O.C.	LIMIT OF CONTRACT
MAX	MAXIMUM
MIN	MINIMUM
NB	NOMINAL BORE
N.I.C.	NOT IN CONTRACT
No.	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
OD	OUTSIDE DIAMETER
REV	REVISION
RTA	ROADS AND TRAFFIC AUTHORITY
SQ	SQUARE
SRA	STATE RAIL AUTHORITY
STD	STANDARD
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL

LEVELS ABBREVIATIONS

CL	CEILING LEVEL
FFL	FINISHED FLOOR LEVEL
FGL	FINISHED GROUND LEVEL
GL	EXISTING GROUND LEVEL
HL	HIGH LEVEL
HP	HIGH POINT
LL	LOW LEVEL
ML	MID LEVEL
NS	NATURAL SURFACE LEVEL
PL	PLATFORM LEVEL
RL	REDUCED LEVEL
US	UNDER SIDE
USFL	UNDERSIDE FLOOR

ROAD PAVEMENT ABBREVIATIONS

AC	ASPHALTIC CONCRETE
CBR	CALIFORNIA BEARING RATIO
DGB	DENSELY GRADED BASE COURSE
DGS	DENSELY GRADED SUB BASE
DSL	DESIGN SUBGRADE LEVEL
F.C.R.	FINE CRUSHED ROCK
O.T.R.	OTHER THEN ROCK
RC	REINFORCED CONCRETE
SF	STRIP FOOTING
?	RECYCLED CONCRETE
	JOINTS
BJ	BUTT JOINT
CIJ	CRACK INDUCED JOINT
CJ	CONSTRUCTION JOINT
CJ	CONTRACTION JOINT
CJ	CONTROL JOINT
DJ	DOWELLED JOINT
DKJ	DOWELLED KEY JOINT
EJ	EXPANSION JOINT
IJ	ISOLATION JOINT
KJ	KEYED JOINT
SC	SAW CUT
TJ	TOOL JOINT
TKJ	TOBY KEYED JOINT
	FEATURES
JK	NEW JERSEY KERB BARRIER
LP	LIGHT POLE
NKL	NOMINAL KERB LINE
PP	POWER POLE
SL	STREET LIGHT
TL	TRAFFIC LIGHT

SURVEY ABBREVIATIONS

AHD	AUSTRALIAN HEIGHT DATUM
BK	BOTTOM OF KERB
BM	BENCH MARK
CL	CENTRE LINE
D.E.	DRAINAGE EASEMENT
DH&W	DRILL HOLE & WING
FD	FOUND
INV	INVERT
K & G	KERB & GUTTER
R.O.W.	RIGHT OF CARRIAGEWAY
SSM	STATE SURVEY MARK
TK	TOP OF KERB
⊕ RL 165.40	PROPOSED SURFACE LEVEL

SERVICES & UTILITIES SYMBOLS

A	AIR
C	CABLES
D	DRAINS
E	ELECTRICAL
LV	LOW VOLTAGE
HV	HIGH VOLTAGE
V	TRANSMISSION POWER LINES
EFF	COMMON EFFLUENT
ERM	EFFLUENT RISING MAIN
F	FUEL
G	GAS
G(HP)	GAS HIGH PRESSURE
G(MP)	GAS MEDIUM PRESSURE
G(LP)	GAS LOW PRESSURE
GAS	GAS
NG	NATURAL GAS
H	HYDRAULIC POWER
I	IRRIGATION
RTA	RTA ROADS & TRAFFIC AUTHORITY
SRA	SRA STATE RAIL SERVICE
S	SEWER
SRM	SEWER RISING MAIN
T	TELECOMMUNICATIONS TELSTRA
OF	OPTICAL FIBRE OF
SMOF	OPTICAL FIBRE CABLE SMOF
OP	OPTUS
OCC	OVERHEAD COMMUNICATION CABLE
W	WATER
WRM	WATER RISING MAIN
MS	MISCELLANEOUS SERVICE
X	X
Y	Y
Z	Z
▬▭▬▭▬	DRAINAGE CULVERTS & PIPE SIZES GREATER THAN & INCLUDING 450 DIA TO BE SHOWN IN FULL WIDTH

NOTE:-
'e' ON SERVICE LINE REPRESENTS EXISTING SERVICE OR THE USE OF LOWER CASE LETTER.

'x' ON SERVICE LINE REPRESENTS SERVICE TO BE ABANDONED.

DRAFTING SYMBOLS

SCALE BARS

△D AMENDMENT No.

2 0 4 8 12m

SCALE 1:200

2000 0 4000 8000 12000mm

SCALE 1:200

SECTION SYMBOL

A SECTION No.
C-03 REFERENCE DRAWING

22 PIT No.
33 LINE No.

WATER & SEWER ABBREVIATIONS

AC	ACCESS CHAMBER
BT	BOUNDARY TRAP
GM	GRAVITY MAIN
HYD	HYDRANT
IO	INSPECTION OUTLET
LH	LAMP HOLE
MH	MAN HOLE
PS	PUMP STATION
RM	RISING MAIN
SV	STOP VALVE
SWW	SYDNEY WATER WATERMAIN
WM	WATER METER

WATER & SEWER SYNBOLS

s ●	PROPOSED SYDNEY WATER SEWER
s ●	FUTURE SYDNEY WATER SEWER
s	EXISTING SYDNEY WATER SEWER
e s e	EXISTING SYDNEY WATER SEWER
x s x	EXISTING SYDNEY WATER SEWER TO BE DISUSED.

MATERIALS

Br	BRASS
CI	CAST IRON
CICL	CAST IRON CEMENT LINED
CONC	CONCRETE
CP	CHROMIUM PLATED
Cu	COPPER
DICL	DUCTILE IRON CEMENT LINED
FRC	FIBRE REINFORCED CEMENT GALVANISED
GMS	MILD STEEL
MS	MILD STEEL
NY	NYLON
PE	POLYETHYLENE
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RHS	RECTANGULAR HOLLOW SECTION
SS	STAINLESS STEEL

CATCHMENT SYMBOLS

X	PIT CATCHMENT
XX	LINE CATCHMENT
XXX	MAJOR CATCHMENT
— — — —	SUB CATCHMENT
———	LIMIT OF CATCHMENT

CATCHMENT ABBREVIATIONS

P( )	PAVED CATCHMENT AREA
R( )	ROOFED CATCHMENT AREA
A( )	LANDSCAPE CATCHMENT AREA
T( )	TERRACE CATCHMENT AREA
ARI	AVERAGE RECURRENCE INTERVAL
CA	CATCHMENT AREA
Ha	HECTARE
L/s	LITRES PER SECOND (VELOCITY)
m/s	METRES PER SECOND (VELOCITY)
CUMECS	CUBIC METRES PER SECOND
Q	QUANTITY OF FLOW

DRAWING LIST

C-01	**TITLE, DRAWING LIST, LEGEND, ABBREVIATIONS & NOTES**
C-02	**SPECIFICATION AND NOTES**
C-03	**EXISTING SITE SURVEY**
C-04	**STORMWATER DRAINAGE PLAN SHEET 1 OF 3**
C-05	**STORMWATER DRAINAGE PLAN SHEET 2 OF 3**
C-06	**STORMWATER DRAINAGE PLAN SHEET 3 OF 3**

REFERENCE DRAWING LIST

ARCHITECT

RICE DAUBNEY PTY LTD
REF:- PROJECT No. 08001

SURVEY
BY PSN
PLAN SHOWING REQUESTED
FEATURES AROUND WALKER ST &
MOUNT ST PLAZA, NORTH SYDNEY

JOB REFERENCE: 4151

Xrefs: 3425_A1WspTitleSheet
Plot Date: 15.05.2009@09:04:47 Login Name: amclennan Cad File: T:\3425\Cad\Civil\3425_C-01.dwg

CLIENT

LAING O'ROURKE
LEVEL 4, 100 ARTHUR STREET
NORTH SYDNEY, NSW 2060
P: 02 9903 0300
F: 02 9903 0333
W: www.laingorourke.com.au

Delmege commercial
the property, the people, the vision
LEVEL 5, 90 MOUNT STREET
NORTH SYDNEY, NSW 2060
P: 02 9922 7722
F: 02 9922 3900
W: www.delmege.com.au

PROJECT MANAGER

ARCHITECT

RICE DAUBNEY
ANALYSING CREATING AND
IMPLEMENTING ARCHITECTURE
110 WALKER STREET | NORTH SYDNEY 2060
T: 02 9956 2666 | F: 02 9959 3015
rd@ricedaubney.com.au | www.ricedaubney.com.au
the rice daubney group (nsw) pty ltd - abn: 77 001 350 769
rice daubney trading trust - abn: 56 880 304 993

Warren Smith & Partners Pty Ltd
A 1st Floor, 123 Clarence Street, Sydney 2000 NSW Australia
T 02 9299 1312 F 02 9290 1295 E wsp@warrensmith.com.au
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PART 3A APPLICATION

TITLE.
TITLE, DRAWING LIST, LEGEND,
ABBREVIATIONS AND NOTES

DATE.	DRAWN BY.	APPROVED BY.
MAY 2009	C.J.N. / J.M.	L.P.

JOB No.	DRAWING No.	ISSUE.
3425	C-01	A

Plot Date: Friday, May 15, 2009 9:04:42 AM

NOTES

GENERAL

G1. DESIGN HEREIN HAS BEEN PREPARED BY WARREN SMITH AND PARTNERS PTY LTD
CONSULTING CIVIL ENGINEERS,
LEVEL 1, 123 CLARENCE ST, SYDNEY NSW 2000.
TEL:- (02) 9299 1312, FAX:- (02) 9290 1295.

G2. THE DRAWINGS HEREIN SHALL BE READ AS REQUIRED IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS BY
RICE DAUBNEY PTY LTD
TEL:- (02) 9956 2666 FAX:- (02) 9959 3015

G3. ALL DIMENSIONS IN MILLIMETRES UNO.
REDUCED LEVELS AND CHAINAGES ARE IN METRES.
DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS.

G4. THE PROPOSED WORKS DETAILED HEREIN SHALL BE CONSTRUCTED TO THE REQUIREMENTS OF COUNCIL GENERALLY AS DETAILED HEREUNDER.

G5. ALL EXISTING SERVICES SHALL BE VERIFIED FOR DEPTH AND HORIZONTAL POSITION BY PHYSICAL MEANS PRIOR TO EXCAVATION. ANY DISCREPANCIES SHALL BE BROUGHT FORTHWITH TO THE PROJECT MANAGER'S ATTENTION.

STORMWATER & SUB-SOIL DRAINAGE

MATERIALS:

STW1. PIPES AND FITTINGS FOR STORMWATER DRAINAGE SHALL BE AS FOLLOWS UNO ON THE DRAWINGS:

A. POLYVINYL CHLORIDE (PVC) WITH SOLVENT WELDED JOINTS FOR BELOW GROUND DRAINAGE UP TO 225mm.

B. FIBRE REINFORCED CEMENT WITH RUBBER RINGS FOR PIPE DIA'S GREATER THAN 225mm. UNO.

C. REINFORCED CONCRETE WHERE REQUIRED BY AS 3500 FOR EXCESSIVE DEPTH.

D. INSTALL IN ACCORDANCE WITH AUSTRALIAN STANDARD AS3500 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

STW2. PIPES & FITTINGS FOR SUBSOIL DRAINAGE SHALL BE SLOTTED POLYVINYL CHLORIDE (PVC) WITH SOLVENT WELDED JOINTS, MIN. 150mm DIAMETER.

STW3. IN GROUND DRAINAGE PIPEWORK SERVING DP's SHALL BE MINIMUM 150mm DIA. UNO.

STW4. GRATED DRAINS SHALL BE 150mm NOM.
A. 150mm NOM. WIDTH IN NON TRAFFICABLE AREAS.
B. 225mm NOM. WIDTH IN TRAFFICABLE AREAS.

STW5. STORMWATER PITS ARE AS SHOWN & SPECIFIED ON THE PLANS . PRECAST TYPE ACCEPTABLE WITH STEP IRONS FOR DEPTH GREATER THAN 1000.
BENCH ALL PITS MIN. 50mm & FORM SMOOTH TRANSITION FROM INLET TO OUTLET

STW6. SELECT FILL SHALL BE MATERIAL OBTAINED FROM EXCAVATION OF THE PIPE TRENCH OR IMPORTED WITH A PARTICLE SIZE FOR ROCK NOT GREATER THAN 75mm OR FOR OTHER THAN ROCK NOT GREATER THAN 150mm.

STW7. IMPORTED FILL SHALL BE EITHER, AND GENERALLY CONSIST OF SINGLE SIZED AGGREGATE WITH PARTICLE SIZE NOT GREATER THAN 5mm WRAPPED ALL ROUND WITH GEOTEXTILE FILTER FABRIC OR APPROVED HIGH COMPACTION SAND OR APPROVED CRUSHED ROAD GRAVEL CONFORMING TO RTA FORM 3051 OR SIMILAR.

STW8. STORMWATER PITS AND GRATES TO CONFORM WITH STANDARD COUNCIL REQUIREMENTS, WHERE ON PUBLIC LAND. GRATES TO BE SUPPLIED IN CLASS SHOWN ON THE DRAWINGS.

INSTALLATION REQUIREMENTS:

STW9. PIPES SHALL BE TRUE TO GRADES SHOWN AND ALIGNED SO THAT THE CENTRES OF THE INLET PIPES INTERSECT WITH THE CENTRE OF THE OUTLET PIPE AT THE DOWNSTREAM FACE OF THE PIT.

STW10. MINIMUM GRADES FOR GRAVITY STORMWATER DRAINAGE SHALL CONFORM TO AS3500 PART3 AS FOLLOWS, UNO:
1% FOR 100 AND 150 mm DIA.
0.5% FOR 225 mm DIA
0.4% FOR 300 mm DIA
0.35% FOR 375 mm DIA

STW11. MINIMUM DEPTH OF COVER SHALL BE :-
- 300mm IN PRIVATE PROPERTY (NON VEHICULAR TRAFFIC).
- 450mm IN PUBLIC AREAS.
- 600mm IN VEHICULAR TRAFFICABLE AREAS (FOOTWAY/ROADWAY).

STW12. BED ALL PIPES FIRMLY AND EVENLY ONTO IMPORTED BEDDING FILL MATERIAL.

STW13. LAY AND JOINT ALL PIPES IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND
AS 3725-1989 LOADS ON BURIED CONCRETE PIPES
AS 2566-1998 BURIED FLEXIBLE PIPELINES
AS 1597.2-1996 PRECAST REINFORCED CONCRETE BOX CULVERTS.
AS 3500-1990 NATIONAL PLUMBING & DRAINAGE CODE.
PART 2, SANITARY PLUMBING AND SANITARY DRAINAGE.
SYDNEY WATER REQUIREMENTS.

STW14. ALLOW TO TEST ALL PIPES AND PITS TO MANUFACTURERS REQUIREMENTS.

CONCRETE WORKS

C1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600, THE STANDARDS ASSOCIATION AUSTRALIA, STANDARDS CITED IN AS3600, THE DRAWINGS AND THE SPECIFICATION.

C2. ALL CONCRETE SHALL BE 80mm MOMINAL SLUMP, 20mm MAXIMUM AGGREGATE WITH NO ADMIXTURES OR FLY ASH, UNLESS OTHERWISE APPROVED.

ALL CONCRETE WORK IN CONTACT WITH SEWER TO HAVE TYPE SL PORTLAND CEMENT, OTHERWISE TYPE A CEMENT

FOR BRIDGE WORKS, A MAXIMUM 56 DAYS SHRINKAGE OF 600 MICROSTRAIN, A MINIMUM CEMENT CONTENT 350kg/m3 AND MAXIMUM WATER:CEMENT RATIO OF 0.40

C3. STRENGTH GRADE OF CONCRETE SHALL BE :
25 MPa (KERBS, EDGE STRIPS & CONCRETE ENCASEMENT)
AND 32 MPa ELSEWHERE.

C4. CONSTRUCTION JOINTS SHALL BE PROPERLY FORMED AND USED ONLY WHERE SHOWN OR APPROVED.
GENERALLY FOR HAND PLACED KERB & GUTTER 6mm THICK APPROVED BITUMINOUS MASTIC JOINTING MATERIAL SHALL BE PROVIDED AT INTERVALS NOT EXCEEDING 6m. FOR MACHINE PLACED KERB & GUTTER 6mm THICK APPROVED BITUMINOUS MASTIC JOINTING MATERIAL SHALL BE PROVIDED AT INTERVALS NOT EXCEEDING 12m & GUILLOTINED DUMMY GROOVED JOINTS, 25mm IN DEPTH, SHALL BE FORMED EVERY 3m OF GUTTER. JOINTS ARE ALSO REQUIRED AT EACH END OF GUTTER CROSSING AND GULLY PITS. JOINTS SHALL BE SET VERTICAL AND SQUARE TO THE KERB.

C5. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.

C6. WELDING OR SPLICES IN REINFORCEMENT SHALL BE USED ONLY IN POSITIONS APPROVED BY THE ENGINEER.

C7. CONCRETE CURING SHALL BE IN ACCORDANCE WITH AS3600. CURING SHALL BE COMMENCED WITHIN TWO HOURS OF FINISHING OPERATIONS AND SHALL BE CONTINUED FOR A MINIMUM OF SEVEN DAYS BY AN APPROVED PROPRIETARY COMPOUND OR BY KEEPING CONTINUOUSLY WET.

C8. FORMWORK SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH AS3610. FORMWORK SHALL NOT BE STRIPPED NOR PROPS REMOVED WITHOUT APPROVAL.

C9. FABRIC LAP DETAILS SHALL BE IN ACCORDANCE WITH FIG.13.2.4 OF AS3600.

C10. HOOKS, LAPS AND BENDS SHALL BE IN ACCORDANCE WITH AS3600 UNO.

C11. ALL CHEMICAL ANCHORS SHALL BE EITHER 'CHEMSET' BY "RAMSET" WITH THE GLASS CAPSULE SYSTEM INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS
OR
HILTI HVU ADHESIVE ANCHOR WITH FOIL CAPSULE SYSTEM INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS INSTRUCTION. ALL CHEMICAL ANCHORS SHALL BE HOT DIPPED GALVANIZED AND BE MIN M16 DIA. U.N.O.

GENERAL EARTHWORKS, SITEWORKS & FILLING:

FILLING:

SGE1. THESE CLAUSES SHALL BE READ IN CONJUNCTION WITH THE GEOTECHNICAL REPORT.

SGE2. THE RECOMENDATIONS CONTAINED IN THE GEOTECH REPORT SHALL OVERRIDE THE CLAUSES PRESENTED HEREIN.

SGE3. STRIP ALL TOPSOIL AND UNDERLYING FILL AND STOCKPILE TOPSOIL FOR LATER REUSE FOR LANDSCAPING PURPOSES.

SGE4. NEW FILL REQUIRED TO REINSTATE CUT LEVELS TO PROPOSED BENCHING LEVELS SHALL BE SOURCED FROM OTHER PARTS OF THE EXCAVATION AS SELECT FILL OR IMPORTED FILL AS SPECIFIED BELOW IN SGE 4 AND SGE 5.

SGE5. SELECT FILL SHALL CONSIST OF LOCALLY DERIVED OR CUT NATURAL CLAYS.

SGE6. IMPORTED FILL SHALL CONSIST OF RIPPED SANDSTONE OR SHALE OR SIMILAR MATERIAL WITH MAXIMUM PARTICLE SIZE NOT GREATER THAN 120mm AND A MOISTURE CONTENT WITHIN 2-3% OF STANDARD OPTIMUM.

SGE7. ALL FILL (COHESIVE SOIL) SHALL BE PLACED IN LAYERS OF 200mm MAXIMUM THICKNESS, COMPACTED BY MACHINE ROLLING TO ACHIEVE A DRY DENSITY RATIO OF NOT LESS THAN 98% STANDARD MAXIMUM AT A CORRESPONDING MOISTURE CONTENT WITHIN 2-3% OF STANDARD OPTIMUM.

SGE8. IN AREAS WHERE HIGH IMPACT ROLLING IS USED TEST EACH FINAL LAYER OF NOT GREATER THAN 300mm TO 400mm TO ACHIEVE A DRY DENSITY RATIO OF NOT LESS THAN 98% STANDARD MAXIMUM AT A CORRESPONDING MOISTURE CONTENT WITHIN 2-3% OF STANDARD OPTIMUM.

EXCAVATION BATTERS:

SGE8. ALL TEMPORARY BATTERS CUT IN CLAY SUBSTRATE SHALL BE 1 HORIZ : 1 VERT.
ALL LONG TERM EXPOSED BATTERS CUT IN CLAY SUBSTRATE SHALL BE 2 HORIZ : 1 VERT.
ALL DETENTION BASIN BATTERS IN CLAY SUBSTRATE SHALL BE 3 HORIZ : 1 VERT.
ALL DETENTION BASIN BATTERS IN ROCK SUBSTRATE SHALL BE NEAR VERTICAL.

SGE9. GEOTECHNICAL TESTING IS TO BE UNDERTAKEN TO AT LEAST LEVEL 1 CONTROL OF FILL COMPACTION STANDARD, AS DEFINED IN AS. 3738 AS FOLLOWS

- FOR GENERAL FILL OR CUT AREAS OVER THE AREA PROVIDE ONE (1) TEST PER 200mm LAYER, OVER AN AREA NOT GREATER THAN 500 m².
- FOR GENERAL FILL AREAS IN CONCENTRATED AREAS ADJACENT TO AND BEHIND THE STRUCTURE AND ADJACENT TO AND BEHIND RETAINING WALLS PROVIDE ONE (1) TEST PER 200mm LAYER, OVER AN AREA NOT GREATER THAN 50m².

SGE10. SUBMIT ALL GEOTECHNICAL TEST RESULTS TO WARREN SMITH & PARTNERS FOR REVIEW PRIOR TO CONTINUATION WITH SUBSEQUENT SECTION OF WORK.

EARTH WORKS FOR SERVICES

E1. EXCAVATE TRENCHES AND STOCKPILE ALL MATERIAL FOR INSPECTION WITH REGARD TO RE-USE FOR TRENCH BACKFILL. REMAINING MATERIAL TO BE REMOVED FROM SITE.

E2. BEDDING MATERIAL SHALL CONSIST OF IMPORTED FILL ONLY. THICKNESS OF BEDDING LAYER SHALL BE 75mm IN O.T.R. AND 200mm IN ROCK.

E3. EMBED ALL PIPES WITH IMPORTED FILL. PROVIDE 200mm SIDE SUPPORT AND 150mm OVERLAY ABOVE PIPE CROWN.

E4. TRENCH FILL ABOVE THE EMBEDMENT ZONE TO THE UNDERSIDE OF THE ROAD PAVEMENT OR FOOTWAY FILL MATERIAL SHALL BE AS FOLLOWS :

UNDER ROADWAY
TRENCH FILL MATERIAL SHALL CONSIST OF IMPORTED FILL AS SPECIFIED HEREIN OF EITHER HIGH GRADE COMPACTION SAND OR APPROVED CRUSHED ROAD GRAVEL CONFORMING TO RTA FORM 3051 OR SIMILAR.

OTHER THAN ROADWAY
TRENCH FILL MATERIAL EXCAVATED SHALL CONSIST OF SELECT FILL AS SPECIFIED HEREIN AND SHALL NOT CONTAIN MORE THAN 20% OF STONES OF SIZE BETWEEN 75mm & 150mm AND NONE LARGER THAN 150mm.
PRIOR TO THE USE OF THE EXCAVATED MATERIAL IT SHALL BE INSPECTED AND APPROVED BY THE CONSULTANT.

E5. COMPACT BEDDING, EMBEDMENT AND TRENCH FILL MATERIALS AS FOLLOWS:

EMBEDMENT:-
FOR GRANULAR FILL MATERIAL (NON-COHESIVE SOILS) EG. COARSE AGGREGATE FILL, HIGH GRADE COMPACTION SAND, THE DENSITY INDEX (ID) SHALL BE NOT LESS THAN 70%.

TRENCH FILL:-
FOR GRANULAR MATERIAL (NON-COHESIVE SOILS), THE DENSITY INDEX (ID) SHALL BE NOT LESS THAN 70%.

FOR NON-GRANULAR FILL MATERIAL (COHESIVE SOILS), THE DRY DENSITY RATIO (RD) SHALL BE NOT LESS THAN 95%.

E6. MEASURE OF COMPACTION:-
THE DEGREE OF COMPACTION SHALL BE MEASURED BY ONE OF THE FOLLOWING PARAMETERS :-

GRANULAR FILL (NON-COHESIVE SOILS). THE DENSITY INDEX (ID) DETERMINED IN ACCORDANCE WITH AS 1289.E6.1 BASED ON THE MAXIMUM AND MINIMUM DRY DENSITIES IN ACCORDANCE WITH AS 1289.E5.1 AND THE FIELD DRY DENSITY IN ACCORDANCE WITH AS 1289.5.3.2, AS 1289.E3.5 OR AS 1289.E8.1.

NON-GRANULAR FILL (COHESIVE SOILS). THE DRY DENSITY RATION (RD) DETERMINED IN ACCORDANCE WITH AS 1289.5.4.1 BASED ON THE FIELD DRY DENSITY IN ACCORDANCE WITH AS 1289.5.3.2 AND THE MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289.5.1.1

E7. GEOTECHNICAL TESTING IS TO BE UNDERTAKEN TO AT LEAST LEVEL 1 CONTROL OF FILL COMPACTION STANDARD, AS DEFINED IN AS. 3738 AS FOLLOWS

- TEST EACH 300mm LAYER ABOVE PIPE CROWN.
- TEST BASE & SUB-BASE LAYERS WHERE APPLICABLE.
- TESTS SHALL BE REQUIRED AT EACH 50m CENTRES WHERE THE LENGTH OF TRENCH IS WITHIN THE 50m REQUIREMENT.

E8. SUBMIT ALL GEOTECHNICAL TEST RESULTS TO WARREN SMITH & PARTNERS FOR REVIEW PRIOR TO CONTINUATION WITH SUBSEQUENT SECTION OF WORK.

RESTORATION:

RES1. RESTORE ALL TRAFFIC AREAS TO PRE EXISTING CONDITION.

RES2. FOR ALL SURFACES OTHER THAN IN TRAFFIC AREAS RESTORE DISTURBED SURFACES TO PRE-EXISTING CONDITIONS AND COMPACT AS SPECIFIED.

RES3. RESTORE ALL AUTHORITY OWNED AREAS TO COUNCIL STANDARDS

ROAD WORKS, DRIVEWAYS & CARPARKS

R1. ALLOW FOR LEVEL 2 TESTING AND SUB-GRADE CONDITIONS & PAVEMENT THICKNESS TO BE VERIFIED BY GEOTECHNICAL CONSULTANT AFTER INSPECTION OF PRELIMINARY BOXING.

R2. ALLOW FOR ANY SUB-GRADE REPLACEMENT WORK TO BE DETERMINED AS REQUIRED BY GEOTECHNICAL CONSULTANT AT THE TIME OF PAVEMENT CONSTRUCTION.

R3. MINIMUM DRY DENSITY RATIOS (AS 1289 3.4.1-1993) TO BE:

BASECOURSE	98% MODIFIED
SUB-BASE	95% MODIFIED
SUB-GRADE	100% STANDARD
SUB-GRADE REPLACEMENT	100% STANDARD

R4. PAVEMENT MATERIALS TO COMPLY WITH RTA SPECIFICATION No. 3051 OR SIMILAR AS APPROVED BY GEOTECHNICAL CONSULTANT.

R5. PROVIDE (1) TEST FOR EACH LAYER NOT EXCEEDING 250mm THICK BEING BASECOURSE, SUB-BASE & SUB-GRADE OVER AN AREA NOT GREATER THAN 500m²

R6. SUBMIT ALL GEOTECHNICAL TEST RESULTS TO WARREN SMITH & PARTNERS FOR REVIEW PRIOR TO CONTINUATION WITH SUBSEQUENT SECTION OF WORK.

APPROVALS

A1. THE AS CONSTRUCTED WORKS SHALL BE INSPECTED BY DESIGN CONSULTANT. MINIMUM 48 HOURS NOTICE SHALL APPLY TO ALL INSPECTIONS.

A2. THE DESIGN PLANS HEREIN ARE SUBJECT TO COUNCIL APPROVAL PRIOR TO CONSTRUCTION. OBTAIN EXPRESS (WRITTEN) ADVICE TO PROCEED FROM PROJECT MANAGER PRIOR TO COMMENCEMENT.

A3. SUBMIT WORK-AS-EXECUTED DRAWINGS IN CIVILCAD OR DXF DIGITAL FORMAT AND HARD COPY FORMAT. VERIFY ALL CONSTRUCTION WORKS SHOWN HEREON.

A4. CERTIFY THAT THE AS CONSTRUCTED SYSTEM HAS BEEN BUILT IN ACCORDANCE WITH THE APPROVED PLANS ISSUED FOR CONSTRUCTION.

SERVICES UNDER ROAD SURFACES

S1. ALL OTHER SERVICES INCLUDING BUT NOT LIMITED TO WATER, HYDRANT, GAS, SEWER, ELECTRICAL AND COMMUNICATIONS CONDUITS OR CABLES SHALL BE LAID WITH MINIMUM 600mm U.N.O.
COVER BELOW PROPOSED ROAD SURFACE OR APPROVED OTHER MEANS TO PROTECT DURING CONSTRUCTION.

ROAD SIGNS & LINE MARKING

RS1. ALL SIGNS AND LINEMARKING SHALL BE TO ROADS & TRAFFIC AUTHORITY STANDARDS AND SPECIFICATIONS AND AS.1742, MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES

RS2. ALL LINEMARKING SHALL BE AUGMENTED BY RETROREFLECTIVE RAISED PAVEMENT MARKERS (RRPMs) AND ALL SHALL BE TO AS 1742.2 - 1994 AND AS 1742.2 /AMDT 1/1997-10-05

RS3. ALL ROAD SIGNS AND POSTS SHALL BE TO AS 1742.2 - 1994 AND AS 1742.2 /AMDT 1/1997-10-05

HYDRAULIC SERVICES

H1. ALL WORKS CARRIED OUT SHALL COMPLY WITH AS-3500, SYDNEY WATER & COUNCIL REQUIREMENTS. OBTAIN NECESSARY AUTHORITIES APPROVALS PRIOR TO COMMENCING WORKS.

H2. PRIOR TO COMMENCING WORKS SURVEY & INSPECT SITE & CONFIRM LOCATION & LEVELS OF ALL HYDRAULIC SERVICES PIPEWORK.
NO CLAIMS FOR ADDITIONAL COSTS RESULTING FROM THE LACK OF KNOWLEDGE OF SITE CONDITIONS RELATING TO WORKS TO BE DONE OR LOCATIONS AND LEVELS OF EXISTING AND NEW SERVICES WILL BE ACCEPTED.

H3. PRIOR TO CAPPING OFF & REMOVAL OF REDUNDANT SERVICES CONFIRM ON SITE THAT SERVICE IS NOT SUPPLYING EXISTING BUILDINGS OR AMENITIES.

H4. COLD WATER PIPEWORK SHALL CONSIST OF COPPER TUBE & FITTINGS IN ACCORDANCE WITH AS 1432 TYPE B. PIPES AND FITTINGS SHALL BE JOINTED WITH 15% SILVER SOLDER.

H5. ALL NEW UNDERGROUND METAL PIPEWORK SHALL BE INSTALLED WITH POLYETHYLENE SLEEVING OBTAINED FROM "TYCO WATER AUST" AND INSTALLED TO MANUFACTURE'S REQUIREMENTS.

H6. LANDSCAPE IRRIGATION WATERING PIPEWORK SHALL CONSIST OF MEDIUM DENSITY POLYETHYLENE PIPE CLASS PN16 WITH ELECTRO FUSION JOINTS OR EQUAL TO EXISTING PIPEWORK.

PROTECTION OF FLORA - REFER SPECIFICATION

1. ANY TRENCHES WITHIN 3m OF TREES SHALL BE HAND DUG TO AVOID DAMAGE TO TREE ROOTS.

2. THE SEWERAGE WORKS HAVE BEEN LOCATED TO MINIMISE CLEARING AND DAMAGE TO THE EXISTING FLORA ENVIRONMENT. NO TREES ARE PERMITTED TO BE REMOVED OR DAMAGED UNO. CONSTRUCTION OF THE SEWER GRAVITY OR RISING MAIN IN THE VICINITY OF EXISTING TREES SHALL BE HAND EXCAVATED ONLY, ENSURING IRREVERSIBLE DAMAGE OF THE ROOT SYSTEM DOES NOT OCCUR.

3. IF IT IS CONSIDERED NECESSARY TO PERFORM ANY WORK ON TREES, INCLUDING TRIMMING, LOPPING, ROOT CUTTING, REPAIR AND REMOVAL, APPLICATION IN WRITING SHALL BE MADE BY THE CONTRACTOR TO THE SUPERINTENDENT.
ANY WORK PERMITTED TO BE DONE ON TREES TO BE RETAINED SHALL BE PERFORMED BY AN APPROVED TREE SURGEON.

4. NO MATURE TREES OR SHRUBS ARE TO BE REMOVED FOR THE PURPOSES OF THE WORKS WITHOUT PRIOR APPROVAL OF NORTH SYDNEY COUNCIL.

COUNCIL STANDARDS

LGA 1. THE DRAWINGS HEREIN SHALL BE READ IN CONJUNCTION WITH COUNCIL'S STANDARDS & SPECIFICATIONS WHICH SHALL OVERRIDE SPECIAL DETAILS SHOWN ON THE DRAWINGS.

TRAFFIC NOTE:

1. A TRAFFIC CONTROL PLAN IS TO BE PREPARED BY AN ACCREDITED RTA TRAFFIC CONTROLLER AND SUBMITTED TO COUNCIL. THIS TRAFFIC PLAN IS TO BE CERTIFIED BY AND IMPLEMENTED TO THE SATISFACTION OF AN ACCREDITED RTA TRAFFIC CONTROLLER PRIOR TO COMMENCEMENT OF WORK

2. ALL TRAFFIC CONTROL WORKS SHALL ONLY BE CARRIED OUT BY ACCREDITED RTA TRAFFIC CONTROLLERS.

CLOSED CIRCUIT COLOUR TV (CCTV)

CCTV 1. UNDERTAKE A CCTV INSPECTION OF ALL THE COMPLETED DRAINAGE IN ACCORDANCE WITH THE GUIDELINES OF THE AUSTRALIAN CONDUIT CONDITION EVALUATION MANUAL (ACCEM)

CCTV 2. APPLY THE FOLLOWING REQUIREMENTS TO THE CCTV INSPECTION:-

A. USE DATA CAPTURE SOFTWARE APPROVED BY SYDNEY WATER

B. USE CERTIFIED CCTV OPERATORS

C. THE CCTV VIDEOTAPE SHALL BE OF QUALITY TO ALLOW ACCURATE ASSESSMENT OF THE INTERNAL CONDITION OF THE PIPE.

CCTV 3. FURNISH TO THE DESIGN CONSULTANT:-

A. TWO (2) VIDEO TAPES

B. ONE SET OF SURVEY DATA ON 3 1/2 DISKETTE

C. ONE HARD COPY PRINTOUT OF THE SURVEY DATA.

AUSTRALIAN HEIGHT DATUM

PART 3A APPLICATION

DO NOT SCALE FROM DRAWINGS, CHECK & VERIFY ALL DIMENSIONS & LEVELS BEFORE COMMENCEMENT OF ANY WORK.

THIS DRAWING IS NOT TO BE COPIED IN PART OR WHOLE WITHOUT WRITTEN PERMISSION FROM WARREN SMITH AND PARTNERS.

NORTH POINT

NOTES

ISSUE	AMENDMENT	DATE	ISSUE	AMENDMENT	DATE
A	PART 3A APPLICATION	15.05.09			

CLIENT

LAING O'ROURKE
LEVEL 4, 100 ARTHUR STREET
NORTH SYDNEY, NSW 2060
P: 02 9903 0300
F: 02 9903 0333
W: www.laingorourke.com.au

Delmege commercial
the property, the people, the vision
LEVEL 5, 90 MOUNT STREET
NORTH SYDNEY, NSW 2060
P: 02 9922 7722
F: 02 9922 3900
W: www.delmege.com.au

PROJECT
DEVELOPMENT
100 MOUNT STREET
NORTH SYDNEY

Warren Smith & Partners Pty Ltd
A 1st Floor, 123 Clarence Street, Sydney 2000 NSW Australia
T 02 9299 1312 F 02 9290 1295 E wsp@warrensmith.com.au
ABN 36 300 430 126

QUALITY ASSURED COMPANY ISO 9001
Lic:QAC/R61/0771

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Consulting Engineers
Hydraulic Services I Civil Engineering I Fire Protection I
Sydney Water Accredited • Water Servicing Co-ordinator
• Design and Project Management

TITLE
SPECIFICATION AND NOTES

SCALE	DRAWN	DESIGNED	CHECKED	APPROVED
NTS	C.J.N.	A.M.	L.P.	

DATE	DRAWING No.	ISSUE
MAY 2009	C-02	A

JOB No.
3425

Plot Date: Friday, May 15, 2009 9:05:22 AM

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

SHEET SIZE: A1

Xrefs: 3425_A1H
Plot Date: 15.05.2009@09:05:22
Login Name: amclennan
Cad File: T:\3425\Cad\Civil\3425_C-02.dwg