

Sub-catchment										Inlet design										Total catchment										Design										Head Loss & Partial Flow										Remarks										Hydraulic check									
PIT	PI	RI	Time of conc.	Area	Intensity	Catchment Area	Overland Flow	Total gutter	Eff gutter	Width	depth	Velocity	Total inflow	Flow into Pit	Bypass	Bypass Pit	Time of conc.	Intensity	Sum C-A	Cumulative Flow	Design Flow	Num. Pipes	Pipe Class	Pipe Diam	Pipe Length	Pipe Grade	Manning's n	Roughness	Surcharge	K HGL grade (Backwater)	Q/A	K factor	Pipe vel (Colebrook & White)	Pipe depth (Colebrook & White)	Capacity (Colebrook & White)	Pipe vel (Manning's)	Pipe depth (Manning's)	D/S Overl't level	D/S HGL BW	Pipe loss	U/S Overl't level	Adopted U/S HGL BW	Pit loss	U/S HGL BW	Total loss	Gutter level (IN/S)																							
mm	m	mm	min	Ha	mm/hr	Ha	L/s	L/s	m	m	m/s	L/s	L/s	L/s	L/s	L/s	min	mm/hr	Ha	L/s	L/s			mm	m	%						m/s	m	L/s	m/s	m		m		m	m	m	m																										
PIT1	100	772	8.022	240	0.018	13	13	13	13	13	1.067	13	13	13	21			6.00	0.018	13	13	13	2	375	4.61	4.27	-	0.013	0.150	0.0	0.073	4.00	1.915	0.088	548	1.352	0.039	9.097	8.972	0.001	11.066	8.973	0.001	11.067	0.002	12.122																							
PIT2	100	8.62	0.225	240	0.018	104	104	83	1.942	84	1.555	104	83	21		PIT4	6.00	0.225	240	0.156	104	83	1	2	375	11.0	0.50	-	0.013	0.150	0.1	0.482	4.00	1.475	0.188	169	1.088	0.173	8.924	8.972	0.006	8.989	8.979	0.047	9.036	0.052	9.940																						
PIT3	100	6.00	0.025	273	0.021	16	16	16	0.767	45	1.092	16	16	0		PIT5	6.00	0.025	273	0.162	104	84	1	2	375	11.0	0.50	-	0.013	0.150	0.1	0.612	2.00	3.713	0.115	543	2.660	0.107	6.576	6.576	0.000	6.576	6.576	0.000	6.576	0.000	6.576																						
PIT4	100	9.57	0.238	231	0.036	27	27	27	1.057	55	1.197	27	27	0		PIT11	9.70	229	0.392	250	220	1	2	375	29.8	4.70	-	0.013	0.150	0.1	0.509	4.00	1.522	0.203	169	1.103	0.179	6.393	6.504	0.007	6.448	6.511	0.023	6.552	0.060	7.359																							
PIT5	100	6.00	0.045	234	0.233	139	169	156	2.319	116	0.873	169	156	13		PIT7	11.51	224	0.233	138	156	1	2	375	11.2	3.10	-	0.013	0.150	0.1	0.738	4.00	3.524	0.157	436	2.450	0.162	4.933	4.866	0.099	4.393	4.944	0.110	6.504	0.209	7.960																							
PIT6	100	6.00	0.026	273	0.021	6	29	29	0.000	0	0.000	0	29	0		PIT10	11.57	212	0.254	150	182	1	2	375	11.3	1.75	-	0.013	0.150	0.2	0.800	0.50	2.907	0.205	322	1.400	0.152	5.020	5.036	0.015	5.376	5.051	0.111	5.487	0.126	6.285																							
PIT7	100	6.00	0.000	273	0.000	0	0	0	0.000	0	0.000	0	0	0		PIT11	11.76	212	0.254	150	182	1	2	375	11.3	0.91	0.0	0.013	0.150	0.2	0.800	0.20	2.935	0.255	330	1.544	0.196	4.822	4.866	0.010	4.922	4.866	0.007	4.866	0.210	5.617																							
PIT8	100	6.00	0.000	273	0.000	0	0	0	0.000	0	0.000	0	0	0		PIT11	11.76	212	0.254	150	182	1	2	375	11.3	0.91	0.0	0.013	0.150	0.2	0.800	0.20	2.935	0.255	330	1.544	0.196	4.822	4.866	0.010	4.922	4.866	0.007	4.866	0.210	5.617																							
PIT9	100	6.00	0.000	273	0.000	0	0	0	0.000	0	0.000	0	0																																																								

31 DE-HAVILLAND CRES. BALLINA NSW 2478	P.O. BOX 20 Ph. 02 6686 3280 Fax 02 6686 7920 e-mail: daa@turboweb.net.au	DWG. No. C.21	JOB No. 88/1087/3
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TITLE:
DRAINAGE CALCULATIONS
ARI 100 YEAR

CLIENT:		
R. and J. PIDCOCK		
Date	SEPT. '99	
Datum	A.H.D.	
Sheet	of	Sheet

Design	T.J.C.
Drawn	T.J.C.
Checked	<i>[Signature]</i>
Approved	<i>[Signature]</i> LGE MIE Aust
Scale	NTS

No.	Date	Amendment

- NOTES:

1. MANHOLES AND DROPS TO BE CONSTRUCTED IN ACCORDANCE
WITH BALLINA SHIRE COUNCIL'S STANDARD SEWER DETAILS
(REFER DWG C.22)

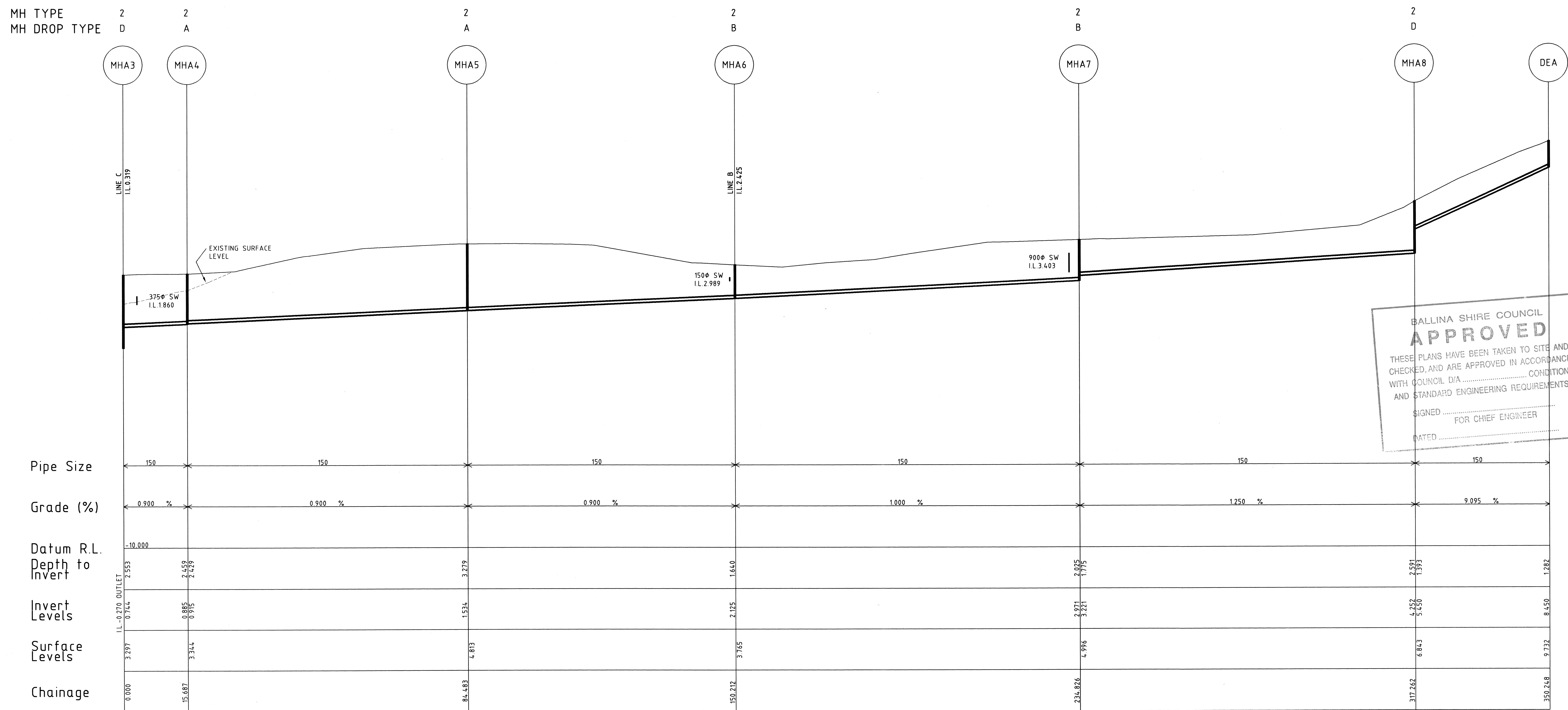
2. MANHOLE COVERS TO CONFORM TO BALLINA SHIRE COUNCIL'S
STANDARD SEWER DETAILS (TYPE 'L', U.N.O.) - REFER DWG C.22.

3. PROVIDE SLOPE JUNCTION AND BOLTED TRAP SCREW AT ALL DEAD ENDS TO ALLOW FOR RODDING.

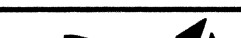
4. ALL SEWER MAINS SHALL BE CLASS 4 V.C. (SEWER GRADE).

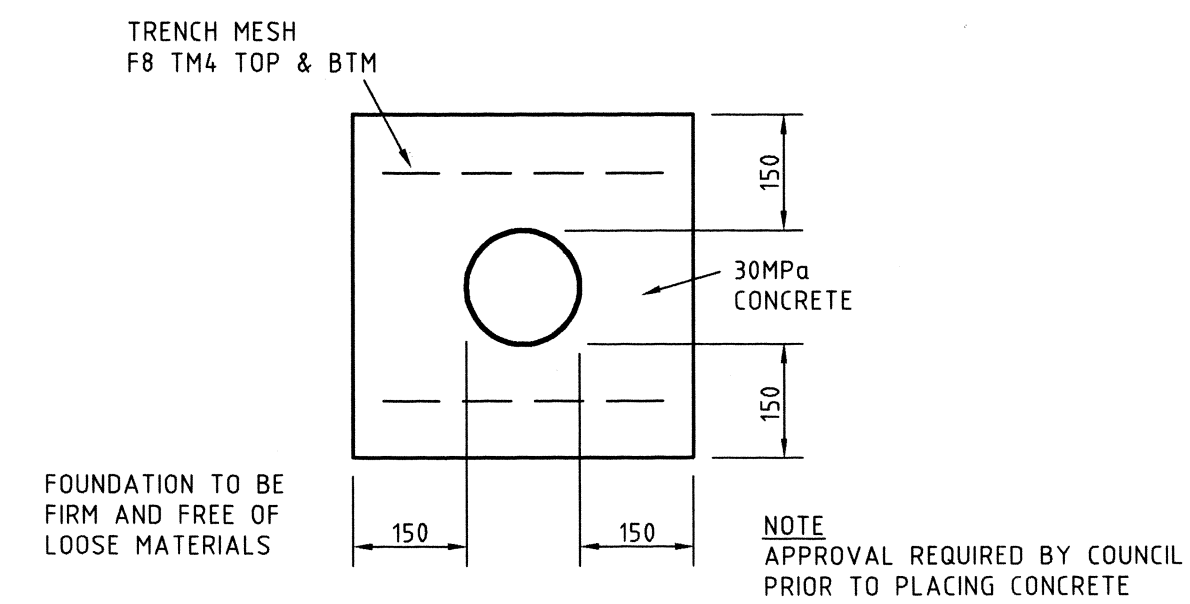
5. BEDDING OF SEWER MAINS SHALL BE IN ACCORDANCE WITH BALLINA SHIRE COUNCIL'S STANDARD SEWER BEDDING DETAILS.

6. TRENCH STOPS AND BULKHEAD PLACEMENT SHALL BE AS SPECIFIED IN BALLINA SHIRE COUNCIL'S STANDARD SEWER DETAILS (REFER DWG C.22).



LINE A

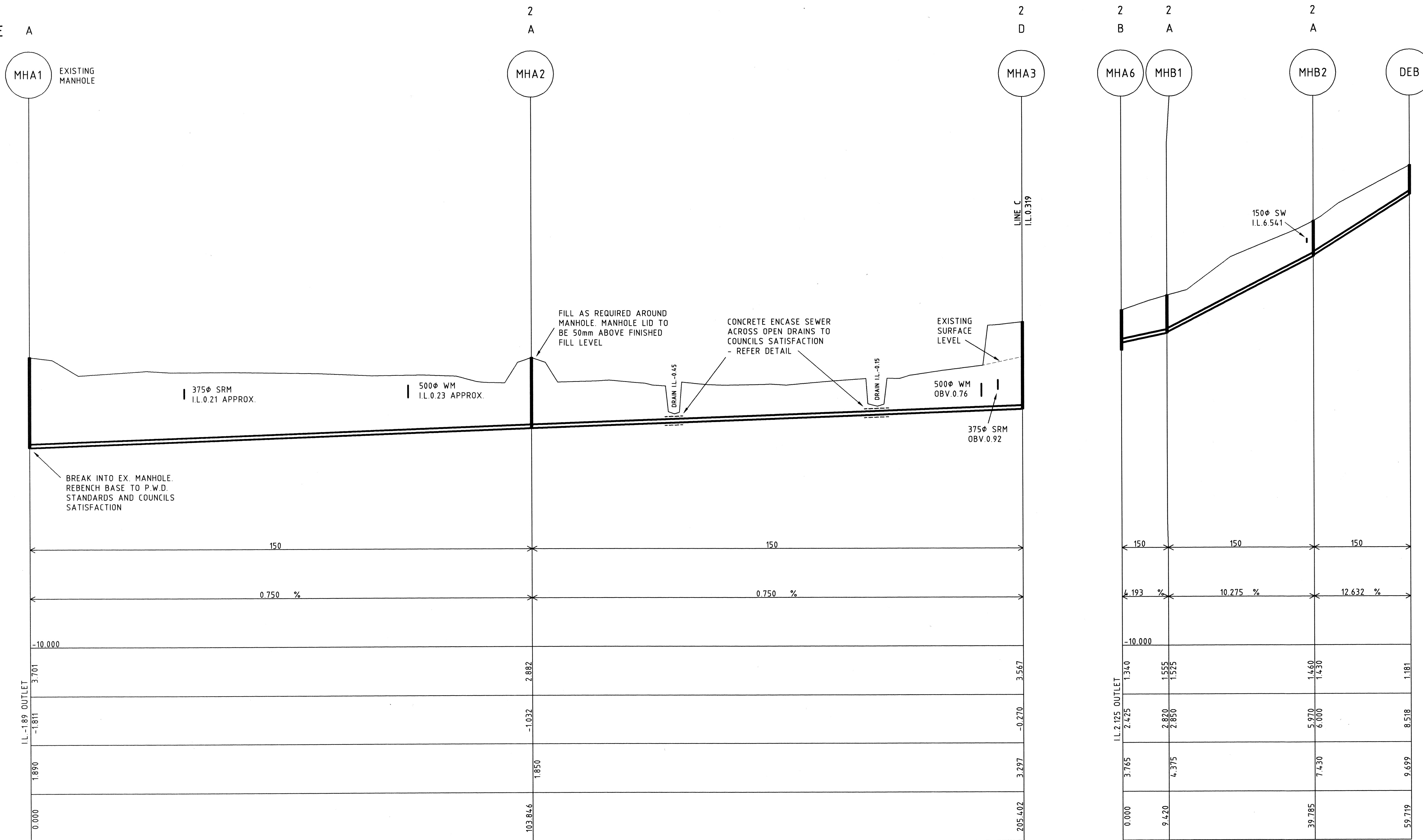
			Design T.J.C.	CLIENT: R. and J. PIDCOCK		PROJECT: PACIFIC PINES ESTATE STAGES 3a & 3b LENNOX HEAD	APPROVED Sewer Plans Checked and Approved Signed  Engineer Dated 25/11/99	TITLE: SEWER LONG. SECTIONS SHEET 1	DAVID ARDILL & ASSOCIATES PTY. LIMITED CONSULTING CIVIL AND STRUCTURAL ENGINEERS PROJECT MANAGERS AND TOWN PLANNERS			
			Drawn T.J.C.									
			Checked 	Date SEPT. '99	Dwg Filename 1087-3-S1							
			Approved 	Datum A.H.D.	Disk Name							
A	9-11-99	NOTES REVISED							31 DE-HAVILLAND CRES. BALLINA NSW 2478 A.C.N. 002 400 526	P.O. BOX 20 Ph. 02 6686 3280 Fax 02 6686 7920 e-mail: daa@turboweb.net.au	DWG. No. C.14 A	JOB No. 88/1087/3
No.	Date	Amendment	Scale 1:500 H: 1:100 V	Sheet of Sheets								



CONCRETE ENCASEMENT DETAIL

NOTE: PROVIDE FLEXIBLE JOINT (12mm COMPRESSIBLE MEMBRANE) AT EACH PIPE JOINT. STOP REINFORCEMENT EACH SIDE.

MH TYPE
MH DROP TYPE A



LINE A (continued)

LINE B

BALLINA SHIRE COUNCIL
APPROVED
THESE PLANS HAVE BEEN TAKEN TO SITE AND CHECKED, AND ARE APPROVED IN ACCORDANCE WITH COUNCIL D/A CONDITIONS AND STANDARD ENGINEERING REQUIREMENTS.
SIGNED
FOR CHIEF ENGINEER
DATED

A	10-11-99	MHA2 & ENCASEMENT REVISED, DRAIN INVERTS ADDED	Design T.J.C.	CLIENT: R. and J. PIDCOCK		PROJECT: PACIFIC PINES ESTATE STAGES 3a & 3b LENNOX HEAD	BALLINA SHIRE COUNCIL APPROVED Sewer Plans Checked and Approved Signed 25/11/99	TITLE: SEWER LONG. SECTIONS SHEET 2	DAVID ARDILL & ASSOCIATES PTY. LIMITED CONSULTING CIVIL AND STRUCTURAL ENGINEERS PROJECT MANAGERS AND TOWN PLANNERS 31 DE-HAVILLAND CRES. BALLINA NSW 2478 A.C.N. 002 400 526 P.O. BOX 20 Ph. 02 6686 3280 Fax 02 6686 7920 e-mail: daa@turboweb.net.au		
			Drawn T.J.C.								
No.	Date	Amendment	Scale 1:500 H, 1:100 V	Sheet of Sheets	Dwg Filename 1087-3-S2	Disk Name			DWG. No. C.15 A	JOB No. 88/1087/3	

MH TYPE
MH DROP TYPE

2
D

2
A

2
B

3
A

2
D

3
A

2
D

3
A

MHA3

MHC1

MHC2

MHC3

MHC4

MHC5

MHC6

MHC7

LINE E
I.L. 1.908

STUB
I.L. 2.539

LINE D
I.L. 5.946

EXISTING SURFACE
LEVEL

MAINTAIN MIN. 600mm
COVER OVER SEWER
DURING STAGE 3a
CONSTRUCTION

525 ϕ SW
I.L. 1.336

450 ϕ SW
I.L. 2.652

375 ϕ SW
I.L. 4.556

Pipe Size

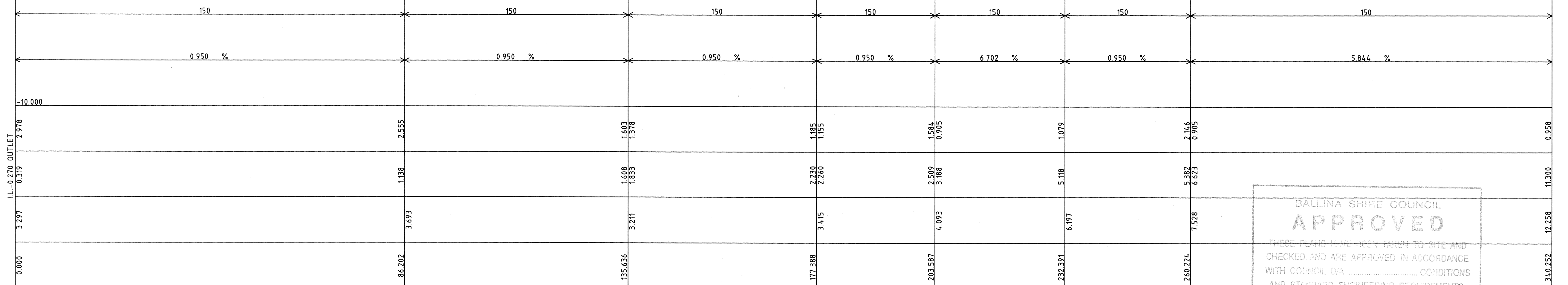
Grade (%)

Datum R.L.
Depth to
Invert

Invert
Levels

Surface
Levels

Chainage



LINE C

BALLINA SHIRE COUNCIL
APPROVED

THESE PLANS HAVE BEEN TAKEN TO SITE AND
CHECKED, AND ARE APPROVED IN ACCORDANCE
WITH COUNCIL D/A CONDITIONS
AND STANDARD ENGINEERING REQUIREMENTS

SIGNED
FOR CHIEF ENGINEER
DATED

No.	Date	Amendment	Design T.J.C.	CLIENT: R. and J. PIDCOCK	PROJECT: PACIFIC PINES ESTATE STAGES 3a & 3b LENNOX HEAD	APPROVED Sewer Plans Checked and Approved Signed Dated 25.11.97	TITLE: SEWER LONG. SECTIONS SHEET 3	DAVID ARDILL & ASSOCIATES PTY. LIMITED CONSULTING CIVIL AND STRUCTURAL ENGINEERS PROJECT MANAGERS AND TOWN PLANNERS		
			Drawn T.J.C.					Date SEPT. '99	Dwg Filename 1087-3-S3	31 DE-HAVILLAND CRES. BALLINA NSW 2478 A.C.N. 002 400 526
			Checked Approved Scale 1:500 H; 1:100 V	Datum A.H.D.	Disk Name					

