City of Langley



SCHEDULE "C" STANDARD DRAWINGS

Prepared by: Engineering Department March, 2008

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STANDARD DRAWINGS

The City of Langley Standard Drawings are primarily concerned with clarifying the Design Criteria Manual. Construction details and practices are specified in the Standard Detail Drawings in the Gold Edition, 2000, of the Master Municipal Construction Documents (MMCD). The City of Langley Standard Drawings are supplemental to the Standard Detail Drawings in the MMCD, and takes precedence over the MMCD documents in the event of a conflict.

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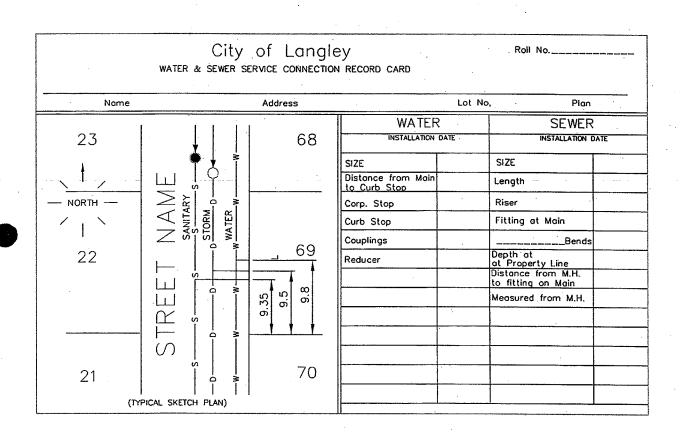
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Street Tree and Boulevard Planting

SDT 1 Tree Planting Detail

High Precision Survey Monuments

SVR -1 HPN Locations



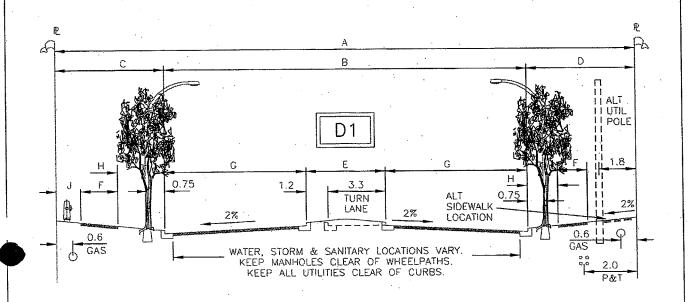
SAMPLE SERVICE RECORD CARD



CITY OF LANGLEY

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SDG 1



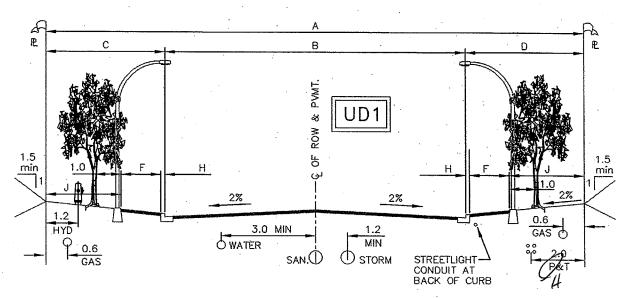
NOTES : REFER TO MTP FOR ADDITIONAL PAVEMENT WIDTH REQUIREMENTS FOR DEDICATED BICYCLE LANES .

TYPICAL ZONING LAND USE	ROAD TYPE	CURB TYPE	No. OF S/W			BLVD -S/W C		Median E	S/W F	W/DIV PVMT G	CURB toS/W H	P/L toS/W J	OPERATIONAL CHARACTERISTICS
Arterial 4lane divided (min)	D1 – A	8	2	24	15.0	4.5	4.5	4.5	1.8	7.5	1.35	1.35	4 mvg pk hr/2 mvg+2pkg base
Arterial 4lane divided (Itb)	D1-B	8	2	28	19.5	4.25	4.25	4.5	1.8	7.5	1.35	1.35	4 mvg pk hr/2 mvg+2pkg base
Arterial Glane divided (Itb)	D1-C	В	2	35	27	4.0	4.0	4.5	1.8	11.3	1.35	1.35	6 mvg pk hr/4 mvg+2pkg base

DIVIDED ROADS

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	APPROVED:



WATER, STORM & SANITARY LOCATIONS VARY. KEEP MANHOLES CLEAR OF WHEELPATHS. KEEP ALL UTILITIES CLEAR OF CURBS.

NOTES: REFER TO MTP FOR ADDITIONAL PAVEMENT WIDTH REQUIREMENTS FOR DEDICATED BICYCLE LANES

TYPICAL ZONING & STREET CLASS	ROAD TYPE	CURB TYPE	No. OF S/W's		PVMT B	BLVD C+D	S/W WIDTH F	Curb to St Lts H	P/L to S/W J/K	OPERATIONAL CHARACTERISTICS
Residential — sf local (limited)	U1-A	R	1	18	8.6	9.4	1.5	Varies	Varies	Cul-de-sacs only
Residential - sf (local)	U1-8	R	2	20	8.6	11.4	1.5	Varies	Varies	1 mvg lane, pkg.
Residential-local (mf)	U1-C	В	2	20	12.2	7.8	1.5	Varies	Varies	2 mvg, 2 pkg.
Collector	U1-D	R	2	20	12.2	7.8	1.5	0.6	Varies	2 mvg, 2 pkg.
Industrial	U1-E	В	1	20	12.2	7.8	1.5	0.6	Varies	Rig parking, wide turns, 2 mvg
Commercial	U2-A	В	2	20	14	6.0	1,8	0.6	Varies	3.5 mvg lanes, pkg.
Arterial 4 lane undivided	U2-C	В	2	24	15	9.0	1.8	0.6	Varies	4 myg pk hr/2 myg+2 pkg base

UNDIVIDED ROADS



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- If only one sidewalk and/or one row of streetlights are required, place them on the side opposite to the Power & Telephone corridor.
- 2.) Streetlights are required on both sides where pavement width is greater than 11 metres.
- 3.) Place streetlights at lot lines where practical. Alternate the streetlights with P & T boxes. Fire hydrants and catch basins to be located within 1.0m of lot lines whenever possible
- 3 Phase wiring may require a wider P & T corridor. Consult B.C. Hydro for corridor requirements.
- 5.) Where a road serves properties with different zonings, the higher zoning standard will determine the road standard.
- 6.) Lawn Catchbasins or French drains shall be provided behind curbs in all wet areas.
- 7.) All permanent works on private property shall be protected by a registered right of way.
- 8.) Arterial road boulevard designs,including sidewalk widths may be varied by the Director of Engineering, to suit adjacent land uses, frontage widths, landscaping, utility poles, retaining walls, or other structures.
- 9.) Where there is temporarily no alternative access serving a development adjacent to a divided arterial road, the planned curbed median may be temporarily replaced by a 5 metre wide 2—way left turn lane or median openings. Installation of the permanent curbed median shall be at the discretion of the Director of Engineering, depending on traffic volumes and other safety considerations.
- 10.) Storm sewers are required in all areas of the City.
- 11.) Road drains under a half road shall be designed to include the flow from the future half of the road.
- 12.) The ultimate right of way width for a half road, when fully built, shall be a minimum of 20 metres. The Director of Engineering may specify a different pavement width for the unfinished portion.
- 13.) All dimensions are in metres unless otherwise indicated.
- 14.) Where a dedicated bicycle lanes are to be provided in accordance with the City's Bicycle Network Plan, as amended from time to time, refer to the Master Transportation Plan for additional pavement width requirements. Pavement markings shall conform to Transportation Association of Canada (TAC) guidelines.

TYPICAL NOTES FOR ROADWORKS

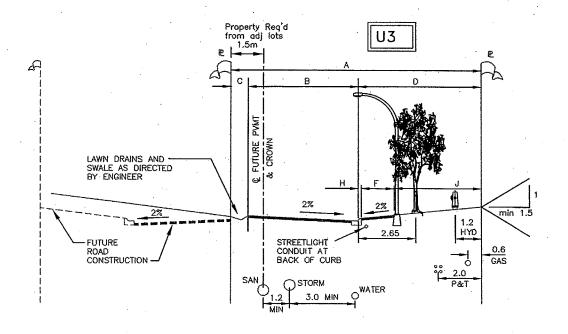


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S.C.B. # SCBE0009



NOTES:

REFER TO TYPICAL NOTES ON DRAWING SDR 1

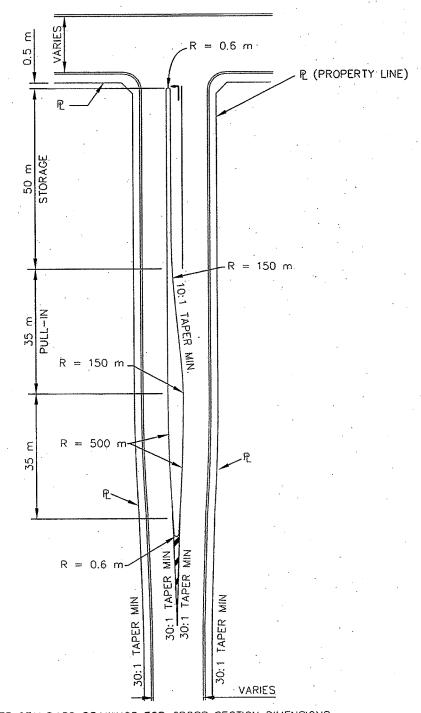
TYPICAL ZONING LAND USE	ROAD TYPE	CURB TYPE	No. OF S/W	ROW A	PVMT B		BLVD w/P&T D		CURB -S/W H	PL to S/W J	OPERATIONAL CHARACTERISTICS
Urban Half Road	U3	R	1	1125	8	8.0	5.7	1.5	0.15	4.05	Interim; no parking
				12.5	1/2						

HALF ROADS



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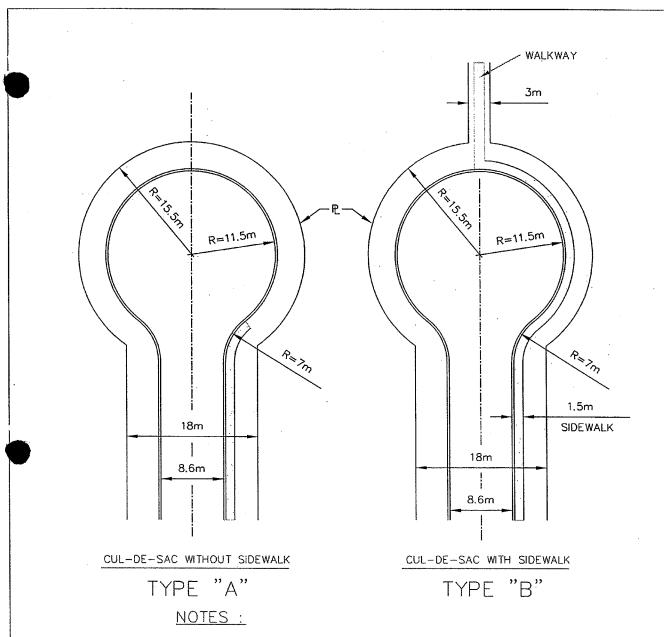
NOTE: SEE STANDARD DRAWINGS FOR CROSS SECTION DIMENSIONS.

TYPICAL LEFT TURN LANE



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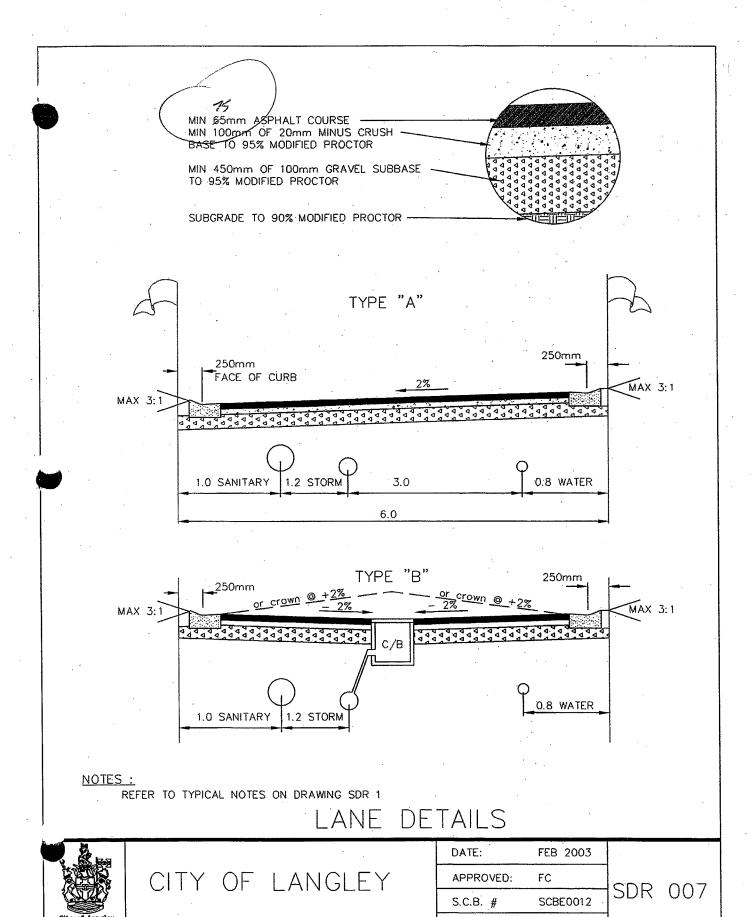
- PAVEMENT STRUCTURE OF CUL-DE-SAC SHALL BE SAME AS SPECIFIED FOR ROAD
- 2. USE A MINIMUM CROSSFALL OF 2 % FOR CUL-DE-SAC
- 3. FOR TYPE "A" EXTEND SIDEWALK TO NEAREST PROPERTY LINE WITHIN THE BULB.
- 4. WALKWAY DETAILS ARE SHOWN ON DRAWING SDR 15.

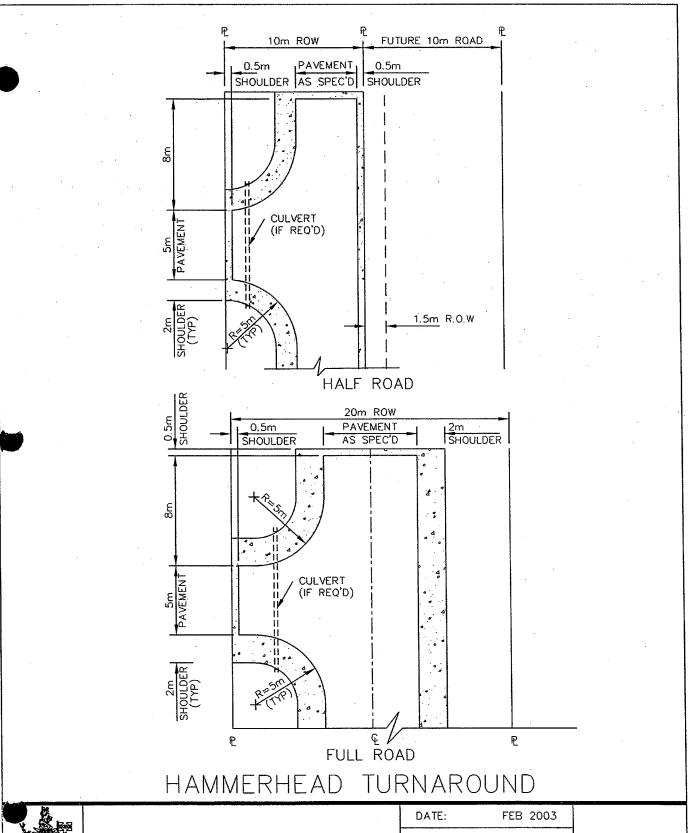
CUL-DE-SACS



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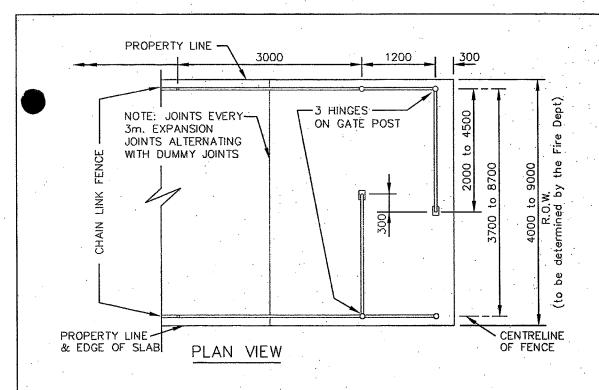


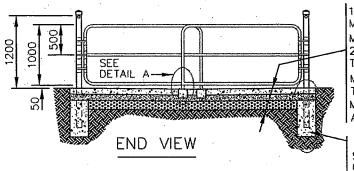




CITY OF LANGLEY

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100mm 28MPa CONCRETE
MEDIUM BROOM FINISH
MIN. 100mm OF
20mm MINUS CRUSHED GRAVEL
TO 95% MODIFIED PROCTOR
MIN. 200mm OF 100mm GRAVEL
TO 95% MODIFIED PROCTOR
MUST SUPPORT WEIGHT OF FIRE
APPARATUS AND HYDRAULIC OUTRIGGERS

SEE DETAIL ON MMCD DRAWING C12

NOTES: 1.JOINTS TO BE WELDED AND GROUND SMOOTH
2.GATES TO BE GALVANIZED AFTER FABRICATION
3.SWALE AND CATCH BASINS TO BE PROVIDED
FOR DRAINAGE
4.1% MIN. LONGITUDINAL GRADE

5.ALL DIMENSIONS ARE IN MILLIMETRES

DRILL 16mm HOLE

IN STEEL ROD - FOR
PADLOCK BY LANGLEY

GATE TO BE DRILLED
TO ACCEPT STEEL ROD

19mm DIA x 610
BENT STEEL ROD
CAST INTO CONCRETE

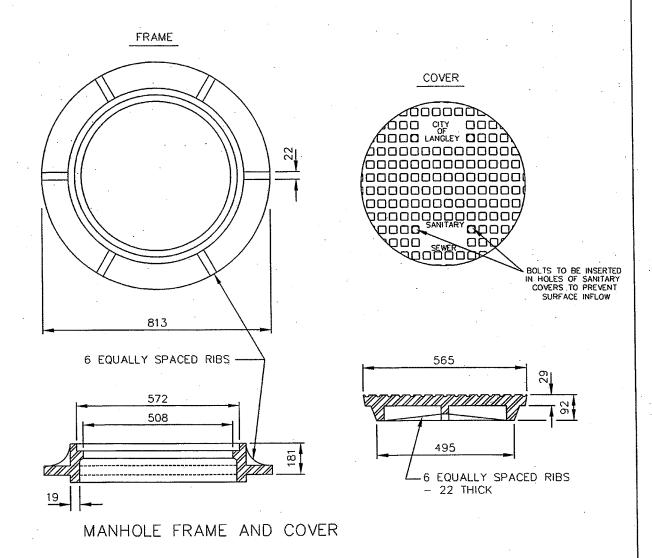
DETAIL A

EMERGENCY ACCESS



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NOTES:

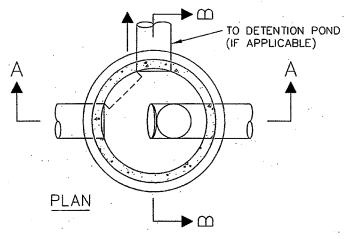
- 1.) LETTERING SHALL BE 25mm FLATTENED FACE GOTHIC LETTERING WITH FACE OF LETTERS AT THE SAME LEVEL AS THE TOP OF THE PATTERNS.
- 2.) SERVICE IDENTIFICATION TO BE "STORM SEWER", "SANITARY SEWER" OR "WATER" AS APPROPRIATE.
- 3.) BOTH FRAME AND COVER SHALL BE MACHINED FOR A NONROCKING FIT IN ALL POSITIONS.
- 4.) FRAME AND COVER TO BE APPROVED BY THE DIRECTOR OF ENGINEERING.

MANHOLE FRAME AND COVER

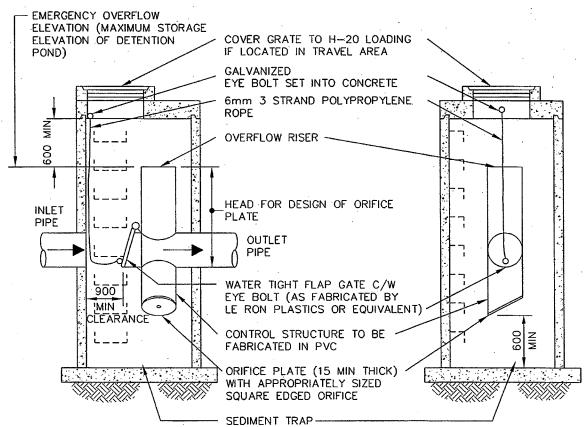


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FOR REFERENCE ONLY DESIGN BY PROFESSIONAL ENGINEER IS REQUIRED



NOTE:

ALL DIMENSIONS SHOWN IN MILLIMETRES

UNLESS OTHERWISE STATED

STANDARD 1800Ø MANHOLE

SECTION A-A

STORM FLOW CONTROL MANHOLE

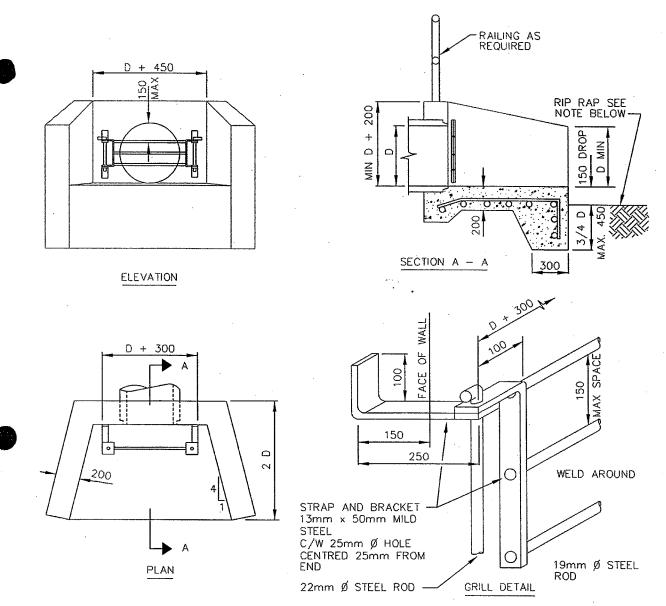


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STANDARD 1800Ø MANHOLE

SECTION B-B



- NOTES: 1. RIP RAP SUITABLY SIZED OR GABIONS C/W FILTER BED SHALL BE PLACED ON BOTTOM AND SIDES TO DESIGN WATER LEVEL AND DOWNSTREAM DISTANCE OF 1.5 TIMES THE DESIGN WATER VELOCITY (MINIMUM 1m).
 - 2. PIPE SIZES LARGER THAN 1200mm Ø, WATER VELOCITIES GREATER THAN 2.13m / sec OR WALLS HIGHER THAN 2m SHALL REQUIRE A SPECIAL DESIGN FOR THE STRUCTURE.
 - 3. 10M REBAR AT 200mm. BOTH WAYS AND CENTRED PLUS ONE 10M AROUND PIPE.
 - 4. REBARS TO HAVE MINIMUM 50mm COVER. 5. CONCRETE TO BE 21 MPo AT 28 DAYS.

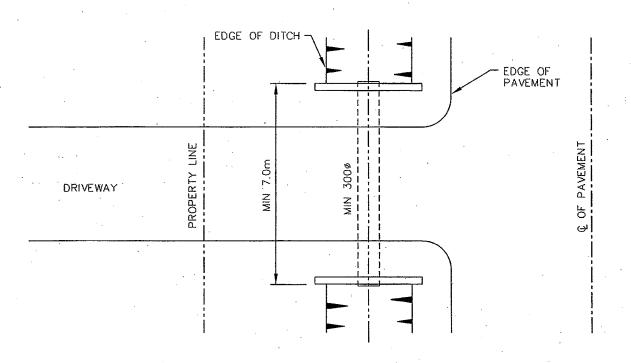
 - 6. CHAMFER ALL EXPOSED CORNERS 25mm.
 - 7. PLACE GRANULAR BACKFILL BEHIND WALL FOR DRAINAGE .
 - 8. GRILLAGE NOT REQUIRED ON PIPE LESS THAN 450mm Ø.
 - 9. ALL GRILLAGE MATERIALS TO BE GALVANIZED.

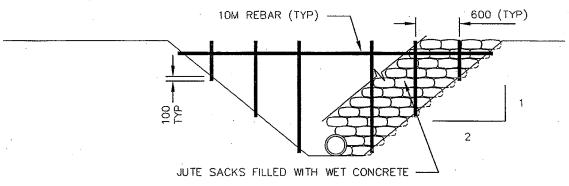
STRUCTURE



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NOTES:

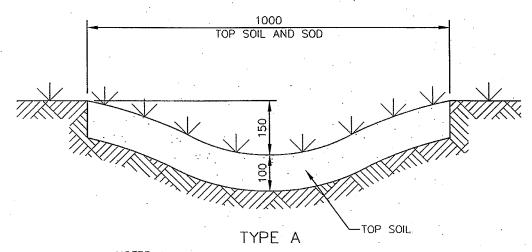
- 1) FOR TEMPORARY USE ONLY.
- 2) SPIGOT END OF CULVERT TO FACE DOWNSTREAM.
- 3) CULVERT DIAMETER AS SPECIFIED, MINIMUM 300mm. 4) CONCRETE USED TO BE 21 MPa AT 28 DAYS.
- 5) REINFORCING BARS TO HAVE MINIMUM 50mm COVER ON ALL SIDES AND ENDS.
- 6) MAXIMUM HEADWALL HEIGHT 1.2m.
- 7) FILL BETWEEN HEADWALLS TO BE 100mm GRAVEL EXCEPT TOP 100mm WHICH SHALL BE 20mm CRUSH GRAVEL.
- 8) SEE STANDARD DRAWING S15 FOR CONCRETE BLOCK HEADWALLS.
- 9) THIS TYPE OF HEADWALL NOT ALLOWED IN AREAS OF SENSITIVE DITCHES.

WET CONCRETE BAG HEADWALL



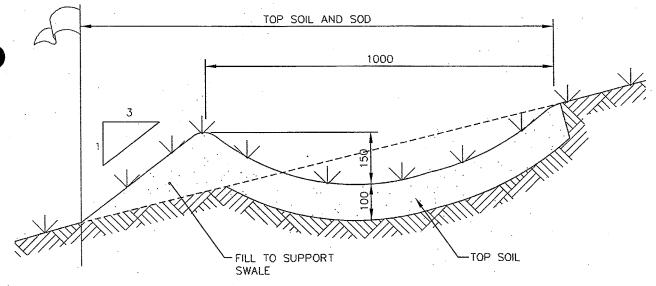
CITY OF LANGLEY

DATE:	FEB 2003	
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S.C.B. #	SCBE0024	



NOTES:

1. SWALE TYPICALLY CENTRED ON EASEMENT



NOTES:

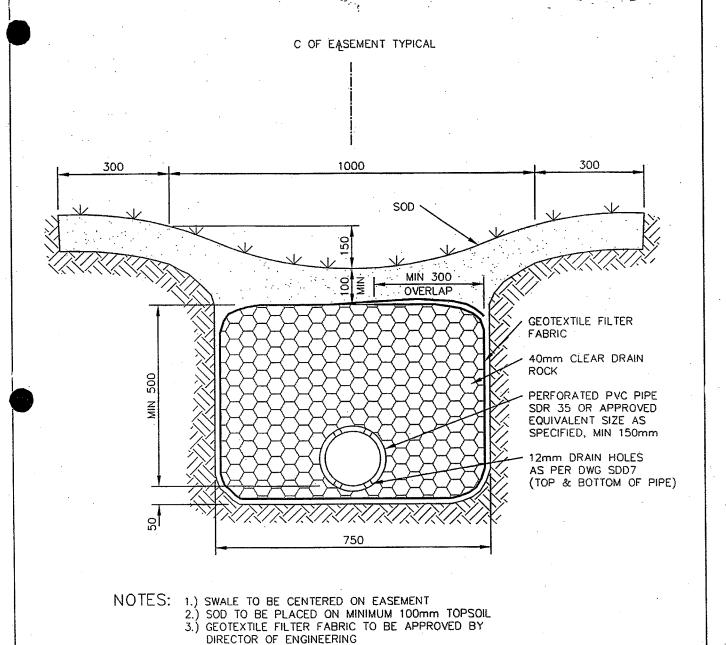
1. EASEMENT WIDTH AS REQUIRED TO SUPPORT PROPOSED SWALE

TYPE B
SWALE



CITY OF LANGLEY

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FC
SCBE0025

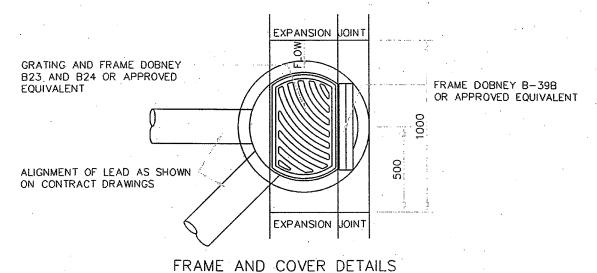


FRENCH DRAIN



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DATE:	FEB 2003	
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GRATING AND FRAME DOBNEY FRAME DOBNEY B-39B B23 AND B24 OR APPROVED OR APPROVED EQUIVALENT EQUIVALENT BRICK OR CONCRETE RISER RINGS SET IN MORTAR 430 GROUT ---300 SUR-TRAP STAIN-LESS STEEL MAX 200 DIA PVC DR 35 TRAPPING HOOD APPROVED GEO-TEXTILE (AMOCO & 1198 OR EQUIV-75 LANT) 25mm DRAIN ROCK 900 GRANULAR PIPE BEDDING COMPACTED TO 95% MODIFIED PROCTOR DENSITY

NOTE: 1.) DETAILS ARE DRAWN FOR PRECAST RISERS ON CAST-IN PLACE BASES. PRECAST UNITS C/W BASE, APPROVED BY ENGINEER, ARE ACCEPTABLE.

CATCHBASIN

2.) REFER TO CONTRACT DRAWINGS FOR DETAILED SPECIFICATIONS.

TYPICAL SIDE INLET CATCHBASIN



CITY OF LANGLEY

DATE:	FEB 2003
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WATERMAIN FITTING		SOIL BEARING CAPACITY AND MINIMUM THRUST BLOCK AREAS				< AREAS		
			SOFT CLAY	SAND	SAND & GRAVEL	SAND & GRAVEL WITH CLAY	SAND & GRAVEL CEMENTED WITH CLAY	HARDPAN
Diam.	TYPE	THRUST	23.94 Kpa	47.88 Kpa	71.82 Kpa	95.76 Kpa	191.52 Kpa	239.40 Kpa
100mm	Cap, Tee or Wye	11 kN	0.5 m2	0.3 m2	0.2 m2	0.2 m2	0.1 m2	0.1 m2
	11 1/4 Bend	3 kN	0.1 m2	0.1 m2	0.1 m2	0.1 m2	0.1 m2	0.1 m2
	22 1/2 Bend	5 kN	0.2 m2	0.1 m2	0.1 m2	0.1 m2	0.1 m2	0.1 m2
	45 Bend	9 kN	0.4 m2	0.2 m2	0.2 m2	0.1 m2	0.1 m2	0.1 m2
	90 Bend	16 kN	0.7 m2	0.4 m2	0.3 m2	0.2 m2	0.1 m2	0.1 m2
150mm	Cap, Tee or Wye	1.1 kN	1.1 m2	0.6 m2	0.4 m2	0.3 m2	0.2 m2	0.2 m2
	11 1/4 Bend	5 kN	0.1 m2	0.1 m2	0.1 m2	0.1 m2	0.1 m2	0.1 m2
	22 1/2 Bend	10 kN	0.2 m2	0.2 m2	0.2 m2	0.1 m2	0.1 m2	0.1 m2
	45 Bend	19 kN	0.8 m2	0.4 m2	0.3 m2	0.2 m2	0.1 m2	0.1 m2
	90 Bend	35 kN	1.5 m2	0.8 m2	0.5 m2	0.4 m2	0.2 m2	0.2 m2
200mm	Cap. Tee or Wye	44 kN	1.9 m2	1.0 m2	0.7 m2	0.5 m2	0.3 m2	0.2 m2
	11 1/4 Bend	9 kN	0.4 m2	0.2 m2	0.2 m2	0.1 m2	0.1 m2	0.1 m2
	22 1/2 Bend	17 kN	0.8 m2	0.4 m2	0.3 m2	0.2 m2	0.1 m2	0.1 m2
	45 Bend	34 kN	1.4 m2	0.7 m2	0.5 m2	0.4 m2	0.2 m2	0.2 m2
	90 Bend	62 kN	2.6 m2	1.3 m2	0.9 m2	1.1 m2	0.4 m2	0.3 m2
250mm	Cap, Tee or Wye	68 kN	2.9 m2	1.5 m2	1.0 m2	0.8 m2	0.4 m2	0.3 m2
	11 1/4 Bend	14 kN	0.6 m2	0.3 m2	0.2 m2	0.2 m2	0.1 m2	0.1 m2
	22 1/2 Bend	27 kN	1.2 m2	0.6 m2	0.4 m2	0.3 m2	0.2 m2	0.2 m2
	45 Bend	52 kN	2.2 m2	1.1 m2	0.8 m2	0.6 m2	0.3 m2	0.3 m2
	90 Bend	96 kN	4.1 m2	2.1 m2	1.4 m2	1.1 m2	0.6 m2	0.5 m2
300mm	Cap, Tee or Wye	98 kN	4.1 m2	2.1 m2	1.4 m2	1.1 m2	0.6 m2	0.5 m2
	11 1/4 Bend	20 kN	0.8 m2	0.4 m2	0.3 m2	0.2 m2	0.1 m2	0.1 m2
	22 1/2 Bend	39 kN	1.6 m2	0.8 m2	0.6 m2	0.4 m2	0.2 m2	0.2 m2
	45 Bend	75 kN	3.2 m2	1.6 m2	1.1 m2	0.8 m2	0.4 m2	0.4 m2
	90 Bend	138 kN	5.8 m2	2.9 m2	2.0 m2	1.5 m2	0.8 m2	0.6 m2
350mm	Cap, Tee or Wye	133 kN	5.6 m2	2.8 m2	1.9 m2	1.4 m2	0.7 m2	0.6 m2
	11 1/4 Bend	27 kN	1.1 m2	0.6 m2	0.4 m2	0.3 m2	0.2 m2	0.2 m2
	22 1/2 Bend	52 kN	2.2 m2	1.1 m2	0.8 m2	0.6 m2	0.3 m2	0.3 m2
	45 Bend	102 kN	4.3 m2	2.2 m2	1.5 m2	1.1 m2	0.6 m2	0.5 m2
	90 Bend	188 kN	7.9 m2	4.0 m2	2.7 m2	2.0 m2	1.0 m2	0.8 m2
400mm	1 Cap, Tee or Wye	174 kN	7.3 m2	3.7 m2	2.5 m2	1.9 m2	1.0 m2	0.8 m2
	11 1/4 Bend	34 kN	1.5 m2	0.8 m2	0.5 m2	0.4 m2	0.2 m2	0.2 m2
	22 1/2 Bend	68 kN	2.9 m2	1.5 m2	1.0 m2	0.8 m2	0.4 m2	0.3 m2
	45 Bend	133 kN	5.6 m2	2.8 m2	1.9 m2	1.4 m2	0.7 m2	0.6 m2
	90 Bend	246 kN	10.3 m2	5.2 m2	3.5 m2	2.6 m2	1.3 m2	1.1 m2

Note: 1) SOIL BEARING STRENGTHS ARE APPROXIMATE ONLY AND SHALL BE VERIFIED BY FIELD INVESTIGATIONS

2) THRUST AND BEARING AREAS ARE BASED ON A TEST PRESSURE OF 1380 KPG (200 PSI)

3) "INFORMATION ON THIS SHEET IS FOR INFORMATION ONLY THE ACTUAL THRUST BLOCK SIZES MUST BE SHOWN ON THE ENGINEERED" DRAWINGS.

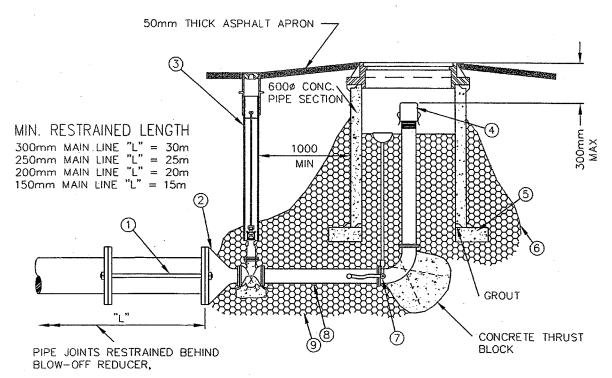
WATERMAIN FITTING MINIMUM THRUST BLOCK AREA



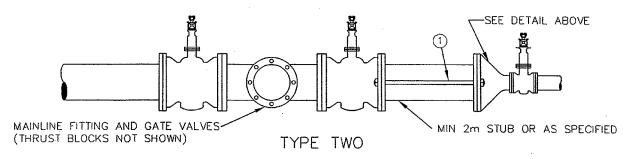
CITY OF LANGLEY

DATE:	FEB 2003	
APPROVED:	FC	ĺ
S.C.B. #	SCBE0055	

SDW 1



TYPE ONE (DEAD END)



- 1.) 19mm TIE-RODS (OR AS SPECIFIED)
- 2.) HUB x FLANGE REDUCER
- 3.) 100mm F x F GATE VALVE AND VALVE BOX
- 4.) 100mm CAM-LOCK CONNECTOR AND CAP
- 5.) PRECAST CONCRETE MANHOLE RISER RING
- 6.) 6 MIL POLY OVER DRAIN ROCK
- 19mm CURB STOP AND BURY BOX, CONNECT TO BLOW OFF WITH THREADED COMPRESSION COUPLING AND 19mm POLY TUBE.
- 8.) 100mm Ø GALVANIZED SCH. 40 STEEL PIPE (TYP)
- 9.) DRAIN ROCK 20mm TO 50mm BROKEN STONE

NOTE: 1.) INSTALLATION TO BE INSPECTED BY THE MUNICIPAL INSPECTOR PRIOR TO BACK FILLING 2.) SPECIAL DESIGN REQUIRED FOR MAIN LINE PIPE LARGER THAN 300mm Ø.

WATERMAIN BLOW-OFF



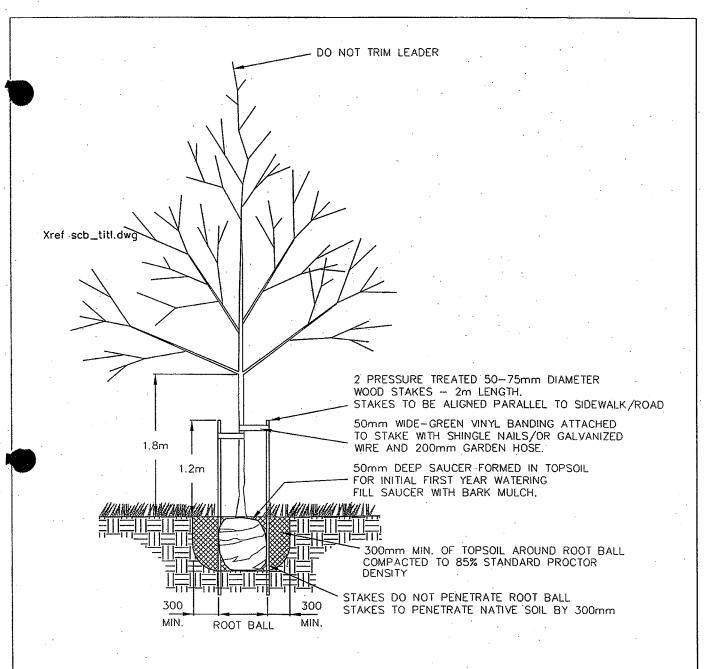
CITY OF LANGLEY

DATE: FEB 2003

APPROVED: FC

S.C.B. # SCBE0054

SDW 2



NOTES

- SACKING/BURLAP TO BE LOOSENED AND DROPPED TO THE BOTTOM OF THE PLANTING HOLE. ALL STRING, TWINE, ETC. TO BE REMOVED.
- ALL WRE BASKETS SHALL HAVE THE TOP 1/3 OF THE WIRE REMOVED PRIOR TO PLANTING.
- 3) ALL TREES SHALL BE SINGLE STEMMED.

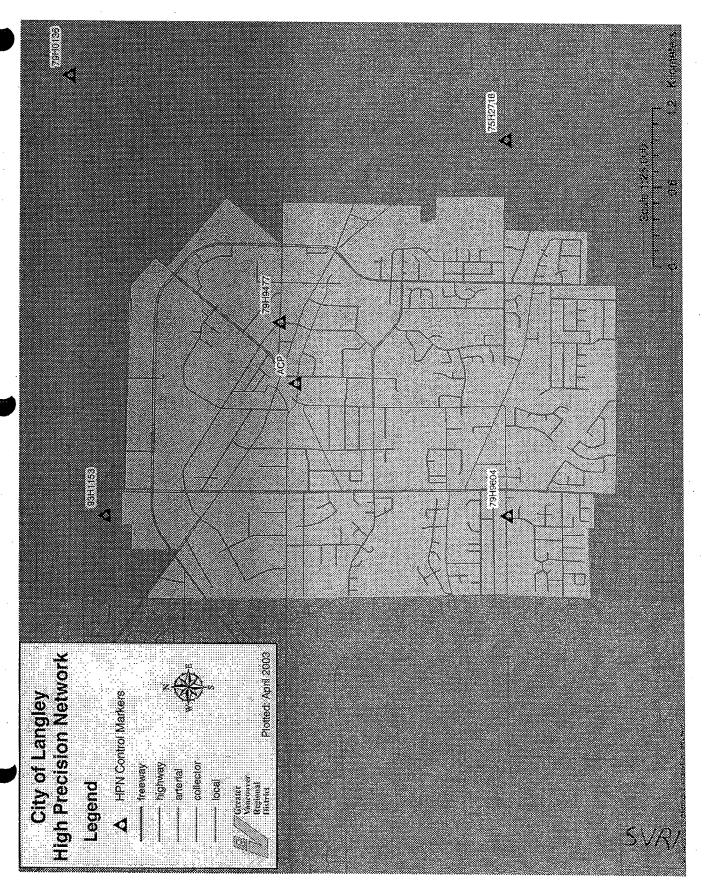
TREE PLANTING DETAIL



CITY OF LANGLEY

DATE:	FEB 2003
APPROVED:	FC
S.C.B. #	SCBE0033

SDT 1



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