

## *Appendix 1*

### STANDARD NOTES

#### **A SEWERS**

##### **1 Sanitary and Storm Sewers**

- a) Construction of sanitary & storm sewers & private drains shall be in accordance with City standards & specifications (latest edition) and Ministry of Environment (MOE) Guidelines (latest edition).
- b) Cover and bedding material for concrete pipe shall be Granular 'A' material as per OPSD 802.030 or 802.033, Class 'B' bedding.
- c) Cover and bedding material for PVC pipe shall be Granular 'A' material as per OPSD 802.010 or 802.013.
- d) PVC pipe will require special construction procedures as per City specifications.
- e) All sewers to be flushed prior to video inspection.
- f) Manhole frames and covers shall be as per OPSD 401.010 (Storm-open, Sanitary-closed).
- g) Sanitary sewer (200mm to 375mm dia) shall be PVC pipe, CSA B182.2, SDR-35.
- h) Storm sewer (300mm to 600mm dia.) shall be PVC pipe, CSA B182.2, SDR-35.
- i) Storm sewer > 600mm dia. shall be concrete pipe, CSA A257.2 (as specified)
- j) PVC (sanitary and storm) sewers are to be tested for deflection (mandrel passage) after installation. Sanitary sewers shall also be tested for leakage (low air pressure). Prior to assumption by the City, pipe deflection testing shall be repeated.
- k) Alternate materials may be acceptable provided approval has first been obtained from the City/Engineer.

##### **2 Private Drains**

- a) 'S' denotes single sanitary private drain connection. 'D' denotes dual private drain connection (sanitary & storm).
- b) To be located 1.5m on right side of centerline of lot or as detailed and extended 1.0m beyond the street line. The storm service shall be installed to the north or east of the sanitary service.
- c) Private drains to be 150mm dia. PVC pipe, CSA B182.1 M-1983, SDR 28 as per Form 500. Storm pipe shall be white and sanitary shall be any colour other than white. Wood marking at end of sanitary private drain shall be painted red.
- d) Cover and bedding material for private drains shall be Granular 'A' installed as per OPSD 802.010 or 802.013.
- e) Minimum fall for private drains to be 2.0%.
- f) Top of sanitary private drains at street line to be 2.2m (min.) below centerline road elevation at that point or as detailed.
- g) Top of storm private drains at street line to be 1.2m (min.) below centerline road elevation at that point or as detailed.
- h) Building rainwater leaders shall not be connected to the storm private drain but shall discharge onto the ground surface via splash pads.
- i) Sump pumps with check valves shall be installed in each dwelling to pump the building weeping tiles to the storm private drains. The sump outlet pipe shall

extend a minimum of 150mm above the proposed grade at the dwelling (basement ceiling) prior to discharging to the storm private drain.

## **B. WATERMAINS AND WATER SERVICES**

### **1 Watermains**

- a) Construction of watermains & private services shall be in accordance with City standards & specifications (latest edition) and Ministry of Environment (MOE) Guidelines (latest edition).
- b) To be installed to a minimum depth of 1.80m below proposed centerline road grade on all roads except on (*name of road*) where the minimum depth is 1.6m.
- c) PVC pipe in sizes 100mm through 300mm shall be Class 150 DR18 conforming to AWWA C900. For 400mm, see Section 7: Special Notes.
- d) Tracer wire shall be installed with PVC pipe in accordance with Form 400. It shall be 12 gauge TW75, TWU75 or RW90XLPE coated copper and shall be positioned along the top of the pipe and fastened at 6 metre intervals. The wire is to be installed between each valve and/or the end of the new PVC watermain. Joints in the wire between valves are not permitted. At each gate valve a loop wire is to be brought up inside the valve box to the cap. The tracer wire shall be brought to the surface at the secondary valve on all fire hydrants. The tracer wire shall also be connected to the cathodic protection system as required.
- e) Molded PVC fittings for pipe sizes 100mm to 300mm shall conform to AWWA C900 and certified to CSA B137.2.
- f) Fabricated fittings 250mm and 300mm shall be manufactured from segments of AWWA C900, Class 150 (DR18) PVC pipe, bonded together and over-wrapped with fibreglass-reinforced polyester to meet the requirements of CSA B137.3.
- g) Where metal fittings are to be used on PVC mains sufficient cathodic protection must be provided as per the following requirements:
  - i. minimum of one 11kg zinc anode shall be installed for every 1000m of tracer wire;
  - ii. one 11kg zinc anode shall be installed for each copper water service connection;
  - iii. one 11kg zinc anode shall be installed on every valve, hydrant, bend, tee, sleeve, reducer, plug, cap, joint restraint, coupling, etc., connected to the PVC pipe.
- h) Bedding and backfill as per WM-200.01 and WM-200.02 Granular 'A' material for mains and services greater than 50mm.
- i) Watermain deflection for PVC pipe:
  - i. maximum allowable deflection of 1.5 degrees per joint up to 250mm diameter (160mm per 6.1m pipe length) and 1.2 degrees for 300mm diameter (128mm per 6.1m pipe length) shall not be exceeded.
  - ii. all joints shall be deflected an equal amount.

### **2 Flushing, swabbing and testing**

- a) All new watermains are to be swabbed in accordance with City specifications.
- b) A reduced pressure zone Backflow Preventer (WATTS SERIES 909 or approved equal) is required on the temporary supply lines used for filling and flushing or swabbing of watermains.
- c) Upon completion of installation, the Contractor shall perform a pressure test on

the watermains as per FORM 400. Watermain is to be tested prior to connection to existing watermains using temporary caps or plugs. Pipe closures, where required, are to be supplied by the Contractor. The Contractor will also supply and install all adaptor pieces in order to connect to existing watermains.

### **3 Water services**

- a) 'W' denotes water service connection (20mm dia. Type 'K' soft copper) as per WM-207.01 or as detailed.
- b) To be located 1.0m on left side of center line of lot opposite sanitary private drain or as detailed, with curb stop adjacent to the street line.
- c) Granular bedding as per WM-200.01 and WM-200.02 to be Granular 'D' as per Form 600.

### **4 Valves & valve boxes**

- a) All valve boxes to be set to proposed grades.
- b) 100mm to 300mm gate valve & valve boxes as per WM-202.

### **5 Anchor blocks**

- a) For 100mm to 300mm watermains standard concrete anchor blocks as per WM-204.01.

### **6 Hydrants**

- a) To be installed with secondary valves as per WM-203.01 or WM-203.02 as detailed. They shall open counter-clockwise (left) and have a 'L' painted on the barrel section. The 100mm pumper 'Storz' connection shall face the roadway and be painted black.
- b) All fire hydrants shall conform to the City of Hamilton (municipality) Fire Department's requirements and shall be of same manufacture.

### **7 SPECIAL NOTES – for 400mm dia. Watermain**

- a) To be D.I. Class 52, cement-lined with cement-lined fittings or concrete pressure pipe as per AWWA C-301 or C-303.
- b) Bedding as per WM-200.01 or WM-200.02. (Gran. 'A', Form 600).
- c) Standard concrete anchor blocks as per WM-204.02 for 11¼ ° and 22½ ° bends, WM-204.03 for 45° bends, WM-204.07 for tees and WM-204.09 for plugs.
- d) For D.I. pipe use 400 x 150mm hydrant tee and anchor block as per WM-204.01
- e) For concrete pressure pipe, at hydrants use concentric plain-end branch and anchor block as per WM-204.01.
- f) Watermain deflection per pipe length.
  - i) Ductile Iron - maximum allowable deflection of 2.5° shall not be exceeded (266mm per 6.1m pipe length).
  - ii) Concrete - maximum allowable deflections of 1.6° shall not be exceeded (170mm per 6.1m pipe length).All joints shall be deflected an equal amount.
- g) Watermain to be tested prior to connection to existing watermains using temporary caps or plugs. Pipe closures, where required, to be supplied by

contractor. Contractor to supply and install all adapter pieces as required in order to connect to the existing watermain.

## **C. ROADWORKS**

### **1 General**

- a) Construction of roadways & related works shall be in accordance with City standards and specifications (latest edition).
- b) Following the installation of sewers, all roadways shall be rough graded to subgrade for the installation of watermains & utilities.

### **2 Preliminary roads**

- a) No preliminary roads to be installed.

### **3 Catch basins**

- a) Catch basin connections to be 250mm dia. PVC pipe CSA B182.2, SDR-35 unless otherwise noted.
- b) Single/double street catch basins as per OPSD 705.010/705.020 respectively with goss traps as per SEW-304.
- c) Private rear yard catch basins as per OPSD 705.010 (no goss traps).
- d) Street CB grates as per OPSD 400.020 (flat) and rear yard CB grates to be Beehive type grate and cover.

### **4 Final roadways**

- a) Cross-fall to be 2.0%.
- b) Standard deep strength pavement (40mm HM 3, 80mm HL 8 on 150mm Granular 'A' & 300mm Granular 'B', Type II 100% crushed aggregate) for typical urban residential streets.
- c) For major collector roads (*name of roads*) typical pavement profile shall be 40mm HM 3(HD), 100mm HL 8(HS) on 150mm Granular 'A' & 300mm Granular 'B', Type II 100% crushed aggregate.
- d) Manholes and catch basins shall be installed flush with the base course asphalt (HL 8).
- e) Manholes to be adjusted to match final lift of asphalt.
- f) For manhole and catch basin top adjustments, all permanent adjustments are to be poured in place.
- g) Final asphalt course (HM 3) shall be placed a min. of one year after the installation of the asphalt binder course.

### **5 Sidewalks and curbs & gutters**

- a) Concrete curb and gutter as per OPSD 600.040 – (barrier type), min. 30 MPa strength. A 50mm key is required for all locations.
- b) Curb depression at driveways as per OPSD 600.040 and OPSD 310-050.
- c) 1.5m wide concrete sidewalk as per OPSD 310.010 (125mm thickness, min. 30 MPa strength with Granular 'A' base as required to provide a leveling course for the concrete. At driveways, concrete depth to be min. 175mm.

- d) Wheelchair ramps required at all intersections as per OPSD 310.030.
- e) Asphalt ramping shall be placed to suit the wheelchair ramps if surface course asphalt is not installed at the same time. These ramps are to be removed just prior to placement of surface course asphalt.

**6 Road subdrains**

- a) 100mm filter wrapped corrugated subdrains to be installed continuously below the curb and gutter and connected to the CBs.

**D. COMPACTION REQUIREMENTS**

- a) All bedding and backfill material, road sub-grades and generally all material used for lot grading and fill sections, etc., shall be compacted to min. 95% SPD (unless otherwise recommended by the geotechnical engineer). All material shall be placed in layers not exceeding 300mm lifts.
- b) All granular road base materials shall be compacted to 95% SPD.
- c) For all sewers and watermains in fill sections, the compaction shall be certified by a geotechnical engineer prior to laying of pipe.

**E. SILTATION AND EROSION CONTROL**

- a) Siltation control barriers shall be placed as detailed.
- b) All siltation control measures shall be cleaned and maintained after each rainfall as directed and to the satisfaction of the City of Hamilton.
- c) Additional silt control locations may be required as determined by the City of Hamilton.

## *Appendix 2*

### Lot Grading Notes

#### **General Grading Notes**

1. Along adjoining properties grade to meet existing or proposed elevations with sodded slopes (min. 3H to 1V) and/or retaining walls as specified
2. All retaining walls, walkways, curbs, etc., shall be placed a min. of 0.45m off the property line. All walls 1.0m or higher shall be designed by a P.Eng.
3. Should a retaining wall be required, the top of wall elevations shall be set 150mm above the proposed side yard swales
4. Retaining walls 0.6m in height or greater require construction of a fence or guard rail at the top of the rear of the wall. Guards for retaining walls shall be designed and constructed in accordance with the requirements of exterior guards as contained in the Ontario Building Code
5. Slopes of swales for both "back to front" and "split" drainage shall be no less than 2.0% grade and no greater than 33% grade (3:1 slopes)
6. When matching to existing properties where a 2.0% grade cannot be achieved, a 1.5% grade is permitted provided a 150mm sub-drain is installed below the bottom of the swale and drained to a suitable outlet, (with a minimum 0.3m cover over the sub-drain), or other mitigation measures
7. Minimum grade for a wrap-around swale in the backyard shall be 1.0%
8. Unless otherwise noted, the ground between proposed elevations on side lots shall be graded as a straight line
9. Top of foundation walls for buildings shall be 150mm (min) above finished grade
10. Driveway slopes shall not be less than 2% and not more than 7.0%. Reversed sloped driveways in new developments are not permitted
11. Garage floor elev. to be set minimum 0.3m higher than back of walk, unless otherwise specified
12. All fill placed on lots shall be compacted to a minimum 95% SPD (unless otherwise recommended by the geotechnical engineer). All material shall be placed in layers not exceeding 300mm lifts
13. For delineation of tree protection zones, buffers, removals and protection schematics, etc., refer to Tree Protection Plan
14. Lot grading for all lots in the subdivision shall conform strictly with this plan. Any changes, unless approved prior to construction by the City, shall result in non acceptance of the subdivision by the City
15. If grading is required on lands adjacent to the development which are not owned by the developer, then the developer must obtain written permission from the adjacent property owner to allow the developer to grade on the adjacent lands, otherwise retaining walls must be used
16. The written permission required from the adjacent landowner shall be obtained prior to entering the lands. Should permission not be obtained or is withdrawn prior to commencing the work, then the developer shall limit his activities to the limits of the development site
17. Driveway and driveway approaches shall be located such that hydro vaults and other street furniture are a min. of 1.2m from the projections of the outside garage walls

### ***Backyard Grading Notes***

- a. Definition: "Required back yard" shall mean the lesser of the distance regulated by the zoning by-law or 6m
- b. The maximum slope in the back yard adjacent to the building for a distance equal to the required back yard shall be 5%, except as set out in items below
- c. The 5% restriction shall not apply to the sides of a swale along the sides or back of the lot, providing the total width of the swale shall not exceed one (1) metre on each lot
- d. Where the 5% restriction on the backyard grades results in elevation differences between different properties, retaining walls shall be constructed along the sides and the back of the lot. Slopes with a maximum of three horizontal to one vertical may replace the walls where the difference in elevation is less than 0.3m
- e. Generally, slopes shall be placed on the lower lot, whereas retaining walls shall be placed on the higher lands
- f. The 5% restriction does not preclude retaining walls in the required backyards providing the terraces are maintained to the 5% grade as set out in Item b) above. The intention of this provision is to provide for flexibility of house construction
- g. There is no control on the steepness of the slopes in side yards, front yards and back yards, outside the area defined in a) above, providing the slopes are stable for the soils of the area (minimum 3H:1V)

### ***Roofwater leaders***

All roofwater leaders shall discharge onto splash pads and then to grassed or landscaped areas a min. of 0.6m from the building face

### ***Sump Pumps***

Sump pumps with check valves are to be installed in each dwelling to pump the weeping tiles to the storm private drain. The sump outlet shall extend a minimum of 150mm above the proposed grade at the dwelling (basement ceiling) prior to discharging to the storm private drain



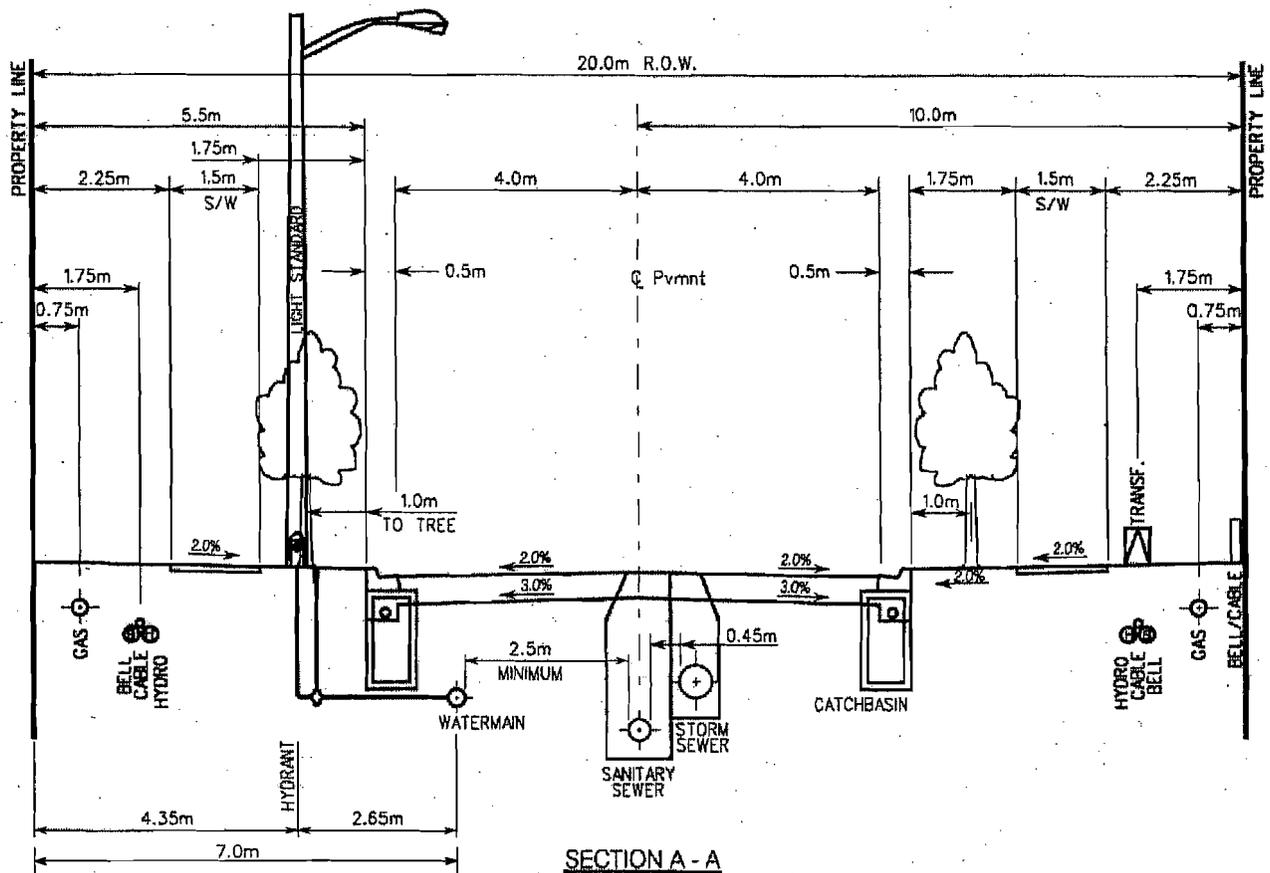


*Appendix 4b*

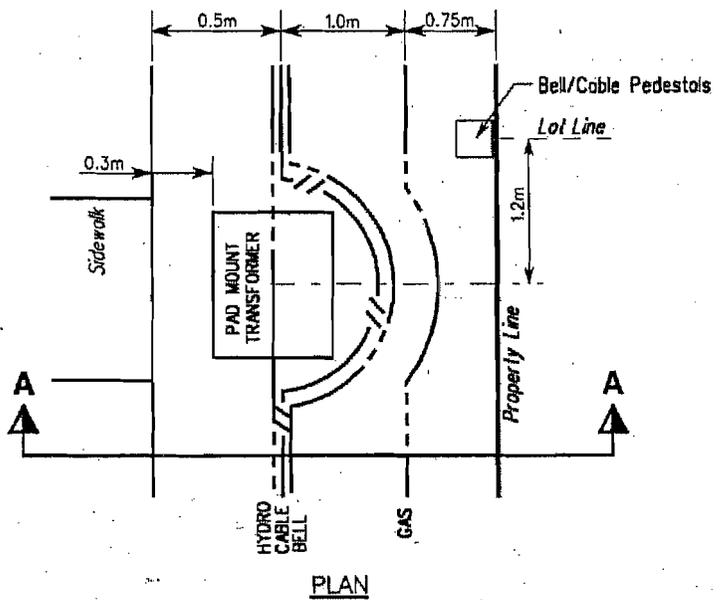
Storm Sewer Design Tables  
City of Hamilton

$\alpha Ci$  v/s time

| Percent of Impervious Surface |           | 20   |             | 30   |             | 40   |             | 50   |             | 60   |             | 70   |             | 80   |             | 90   |             | 100  |             |
|-------------------------------|-----------|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|
| T (min)                       | i (mm/hr) | C    | $\alpha Ci$ |
| 5                             | 310       | .100 | 87          | .150 | 129         | .200 | 172         | .250 | 215         | .300 | 259         | .350 | 301         | .400 | 344         | .450 | 388         | .500 | 431         |
| 10                            | 184       | .115 | 59          | .167 | 86          | .218 | 111         | .269 | 138         | .320 | 164         | .371 | 190         | .423 | 217         | .474 | 242         | .525 | 269         |
| 15                            | 136       | .134 | 51          | .186 | 70          | .239 | 91          | .292 | 111         | .345 | 131         | .398 | 152         | .450 | 171         | .503 | 191         | .556 | 211         |
| 20                            | 110       | .161 | 49          | .216 | 66          | .271 | 82          | .326 | 99          | .382 | 116         | .437 | 133         | .492 | 150         | .547 | 166         | .602 | 183         |
| 25                            | 93        | .192 | 50          | .249 | 64          | .306 | 79          | .364 | 94          | .421 | 109         | .478 | 123         | .535 | 138         | .593 | 153         | .650 | 169         |
| 30                            | 81        | .221 | 50          | .280 | 64          | .339 | 76          | .398 | 90          | .456 | 103         | .515 | 117         | .574 | 130         | .632 | 143         | .691 | 156         |
| 35                            | 72        | .248 | 50          | .307 | 62          | .366 | 73          | .425 | 86          | .484 | 97          | .543 | 109         | .602 | 121         | .661 | 133         | .720 | 144         |
| 40                            | 65        | .274 | 49          | .332 | 59          | .391 | 71          | .450 | 81          | .508 | 91          | .566 | 102         | .625 | 112         | .684 | 122         | .742 | 133         |
| 45                            | 60        | .298 | 50          | .356 | 59          | .414 | 69          | .472 | 79          | .529 | 88          | .587 | 97          | .645 | 108         | .702 | 117         | .760 | 127         |
| 50                            | 55        | .323 | 50          | .379 | 58          | .436 | 67          | .493 | 75          | .550 | 84          | .607 | 92          | .663 | 101         | .720 | 110         | .777 | 118         |
| 55                            | 51        | .346 | 49          | .402 | 57          | .457 | 66          | .513 | 74          | .569 | 82          | .624 | 89          | .680 | 97          | .735 | 105         | .791 | 113         |
| 60                            | 48        | .369 | 49          | .423 | 57          | .478 | 65          | .532 | 71          | .581 | 79          | .641 | 86          | .695 | 94          | .750 | 100         | .804 | 108         |



| MINIMUM DEPTH OF COVER |         |
|------------------------|---------|
| SANITARY SEWER         | - 2.75m |
| STORM SEWER            | - 1.2m  |
| WATERMAIN              | - 1.6m  |
| HYDRO                  | - 0.9m  |
| CABLE                  | - 0.9m  |
| BELL                   | - 0.9m  |
| GAS                    | - 0.6m  |

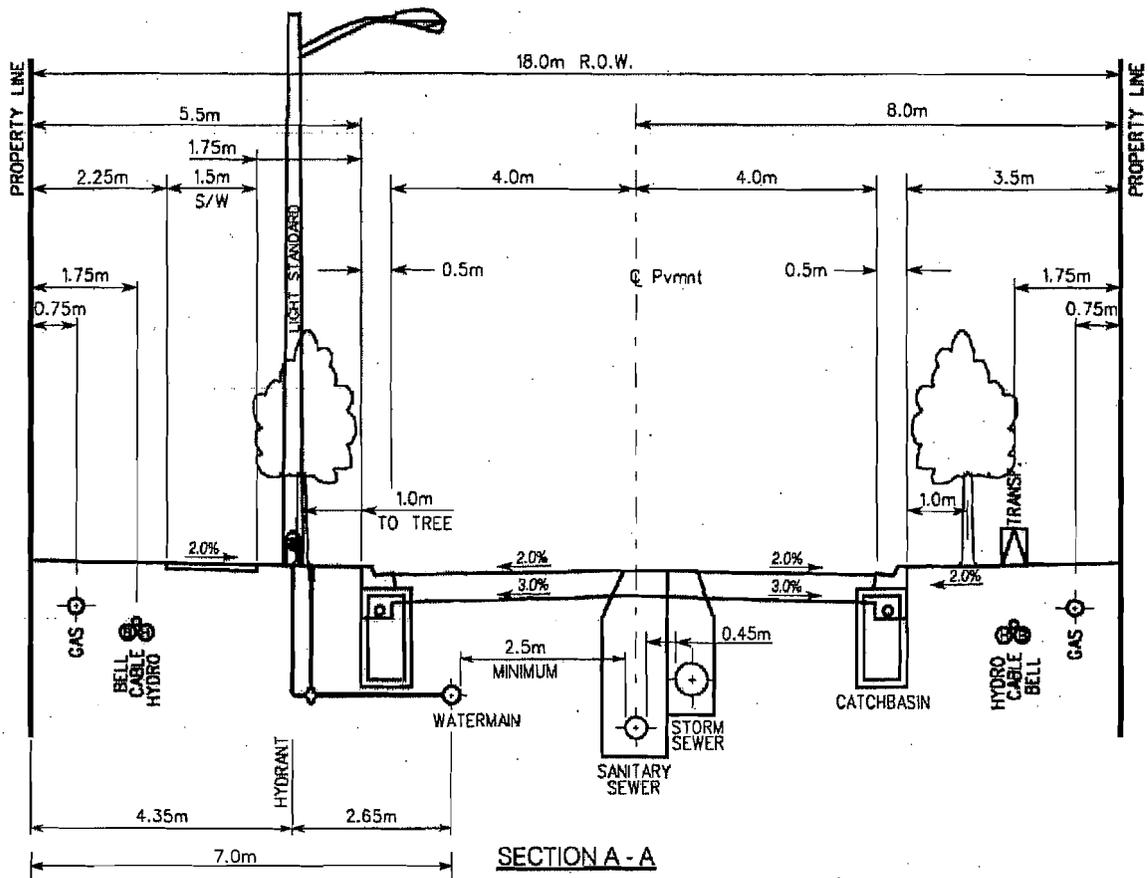


**City of Hamilton  
Planning and Economic Development Department**

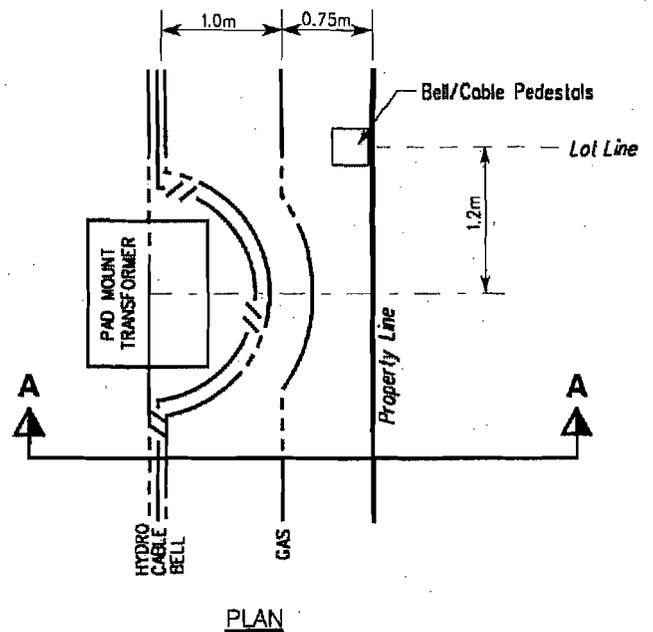
MANAGER OF DEVELOPMENT ENGINEERING

**LOCAL URBAN RESIDENTIAL - 20.0m R.O.W.**

|                    |        |                        |                                       |
|--------------------|--------|------------------------|---------------------------------------|
| DATE<br>June, 2006 | REV No | O.P.S.D. No (modified) | HAMILTON STD No<br><b>PED- 100.01</b> |
|--------------------|--------|------------------------|---------------------------------------|



| <b>MINIMUM DEPTH OF COVER</b> |         |
|-------------------------------|---------|
| SANITARY SEWER                | - 2.75m |
| STORM SEWER                   | - 1.2m  |
| WATERMAIN                     | - 1.6m  |
| HYDRO                         | - 0.9m  |
| CABLE                         | - 0.9m  |
| BELL                          | - 0.9m  |
| GAS                           | - 0.6m  |



**NOTE:**  
Transformers are to be located on the side opposite to the sidewalk.

**City of Hamilton  
Planning and Economic Development Department**

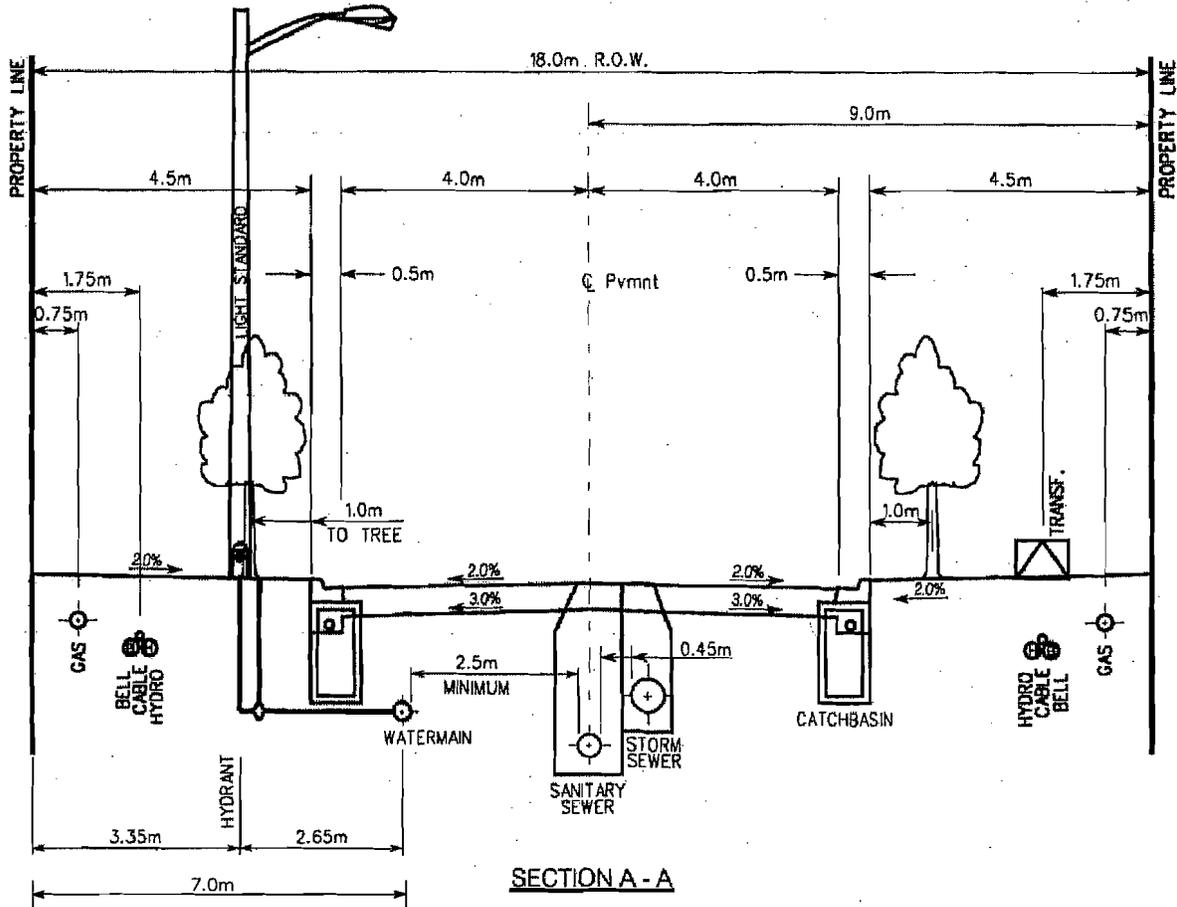
MANAGER OF DEVELOPMENT ENGINEERING

**LOCAL URBAN RESIDENTIAL - 18.0m R.O.W.**

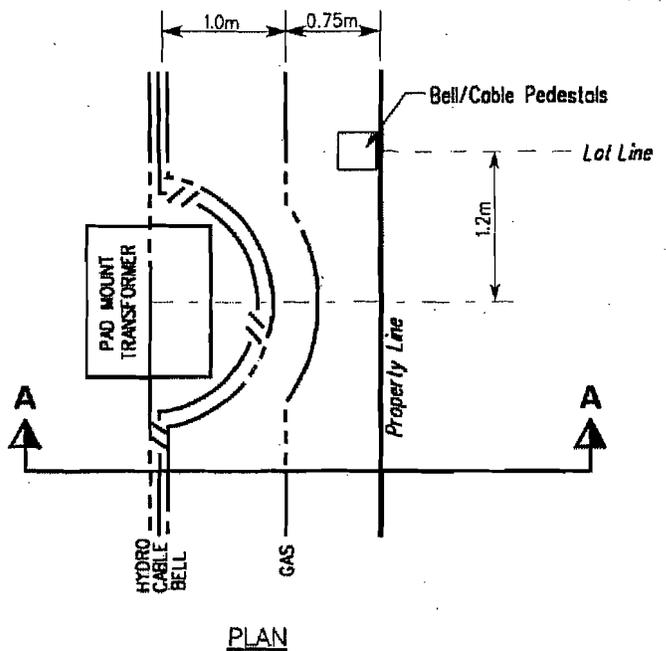
DATE  
June, 2006

REV No O.P.S.D. No (modified)

HAMILTON STD No **PED- 100.02**



| <b>MINIMUM DEPTH OF COVER</b> |         |
|-------------------------------|---------|
| SANITARY SEWER                | - 2.75m |
| STORM SEWER                   | - 1.2m  |
| WATERMAIN                     | - 1.6m  |
| HYDRO                         | - 0.9m  |
| CABLE                         | - 0.9m  |
| BELL                          | - 0.9m  |
| GAS                           | - 0.6m  |



**City of Hamilton  
Planning and Economic Development Department**

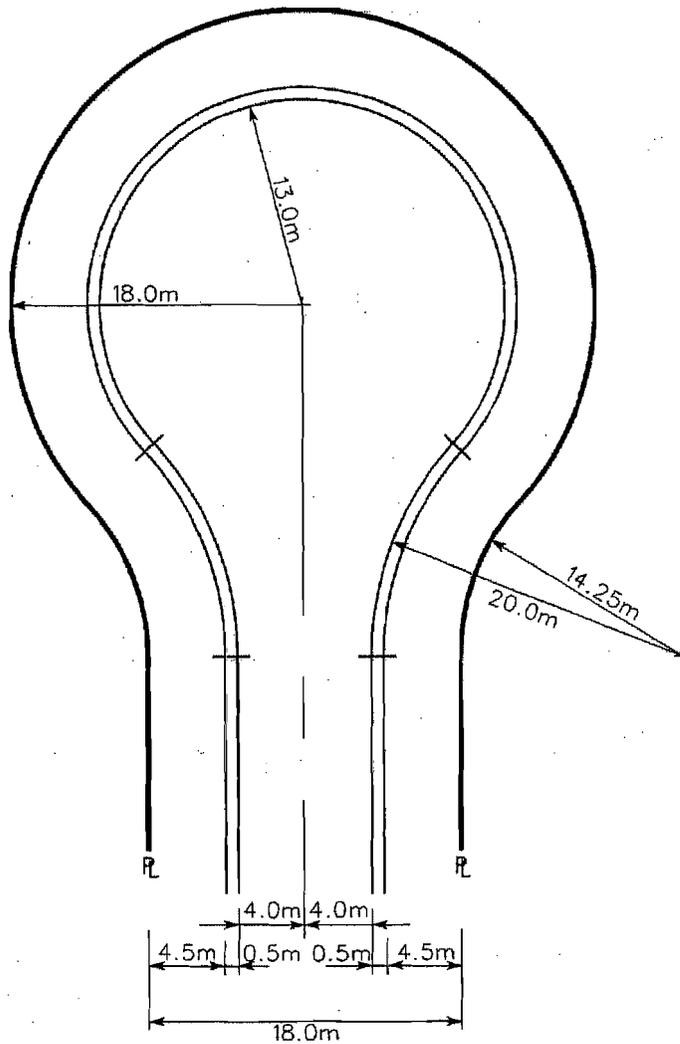
MANAGER OF DEVELOPMENT ENGINEER

**LOCAL URBAN RESIDENTIAL - 18.0m R.O.W.  
WITHOUT SIDEWALK & FOR CUL-DE-SACs**

DATE  
June, 2006

REV No O.P.S.D. No (modified)

HAMILTON STD No **PED- 100.03**



**18.0m R.O.W.  
(NO SIDEWALK)**

**NOTES:**

1. MINIMUM GUTTER SLOPE SHALL BE 0.5%
2. DETAIL FOR GRADING OF BULB AREAS SHALL BE SHOWN ON PLAN & PROFILE DRAWINGS
3. MINIMUM 3.5m BOULEVARD IN BULB WHEN BULB IS OFFSET TO ALLOW FOR ONE SIDEWALK.

**City of Hamilton  
Planning and Economic Development Department**

MANAGER OF DEVELOPMENT ENGINEERING

**PERMANENT CUL-DE-SAC  
FOR LOCAL RESIDENTIAL STREETS  
(18.0m R.O.W.)**

DATE  
June, 2006

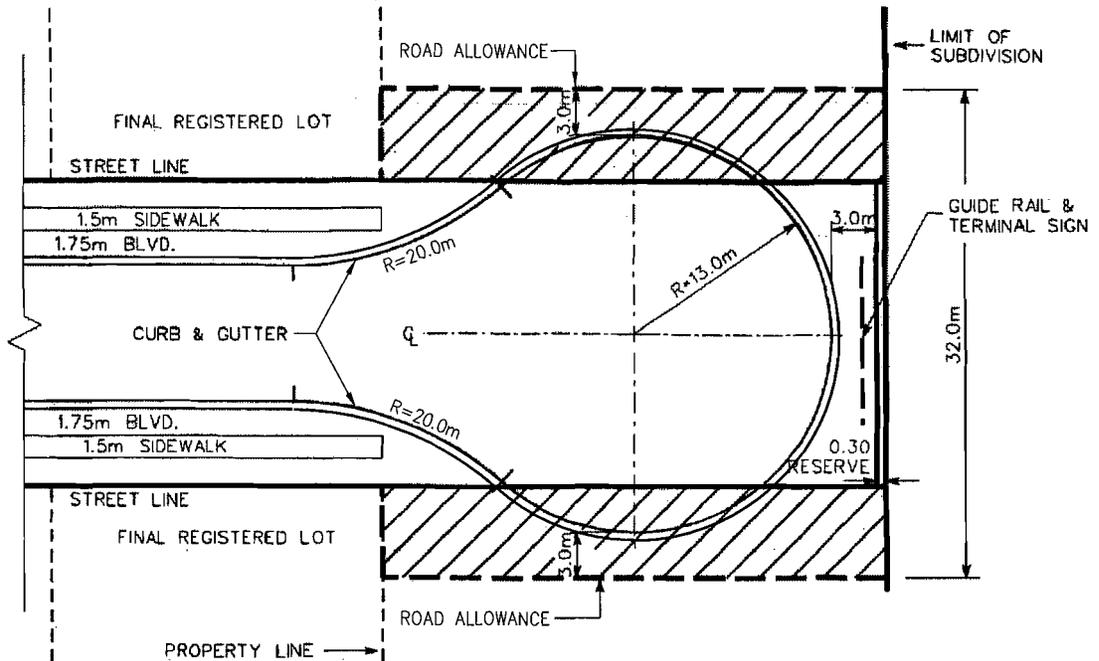
REV No

O.P.S.D. No (modified)

HAMILTON STD No

**PED- 110.01**

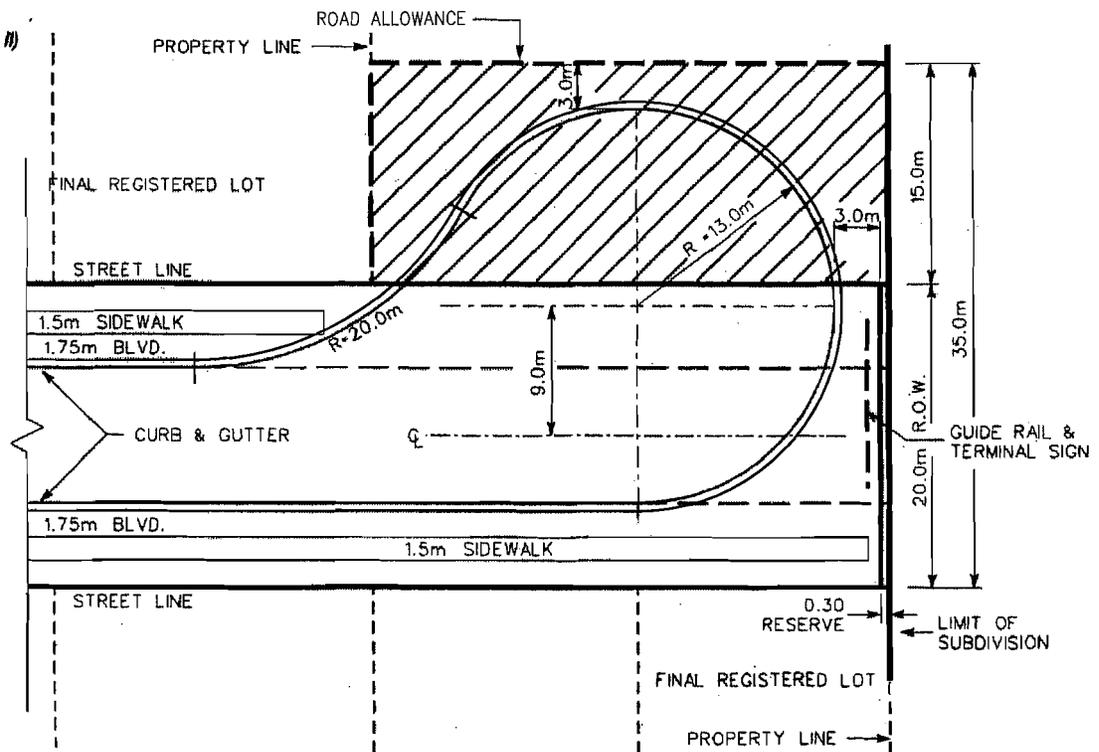
**TYPE 1**



**PAVEMENT DESIGN:**

- 40 MM-3
- 80 HL-8
- 150 GRANULAR 'A'
- 300 GRANULAR 'B' (TYPE II)

**TYPE 2**



**City of Hamilton  
Planning and Economic Development Department**

MANAGER OF DEVELOPMENT ENGINEERING

**TEMPORARY TURNING CIRCLE  
(20.0m R.O.W.)**

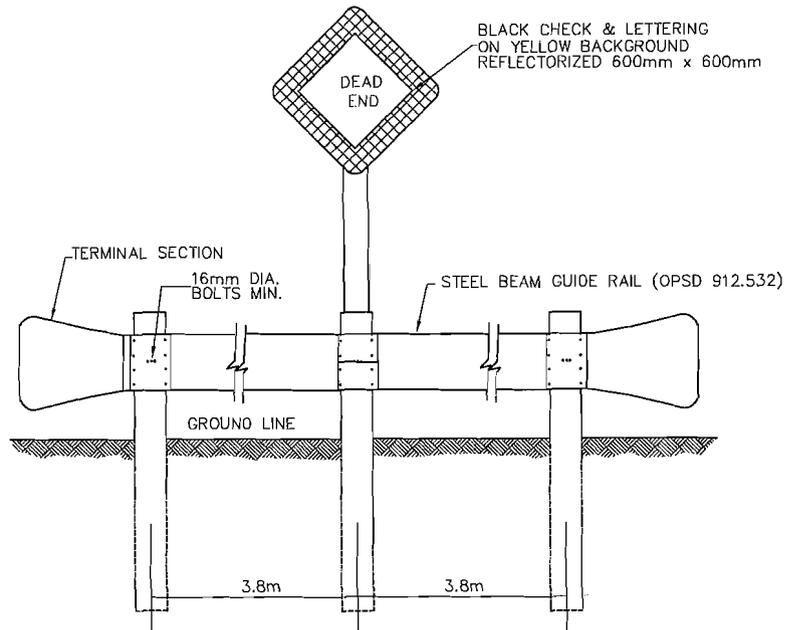
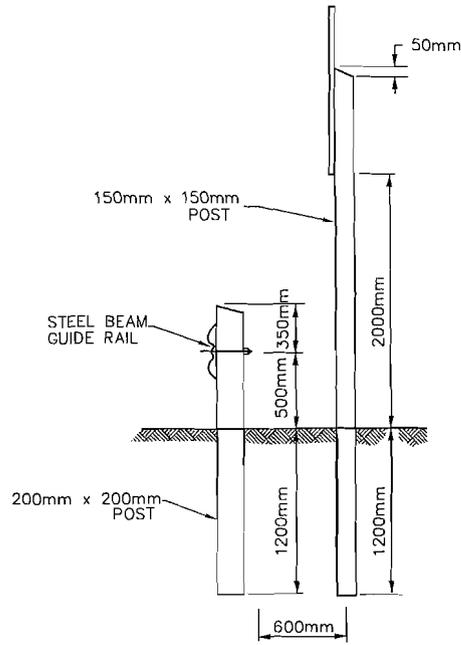
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REV No  
**1**

O.P.S.D. No (modified)

HAMILTON STD No

**PED- 110.02**



NOTES:

1. POST TO BE CEDAR, TRIMMED AND CREOSOTED BELOW GROUND LEVEL
2. GUIDE RAIL AND POSTS ABOVE GROUND TO BE GIVEN TWO COATS OF HIGHWAY YELLOW PAINT OVER APPROVED PRIMER

**City of Hamilton  
Planning and Economic Development Department**

MANAGER OF DEVELOPMENT ENGINEERING

**TYPICAL DEAD END BARRICADE**

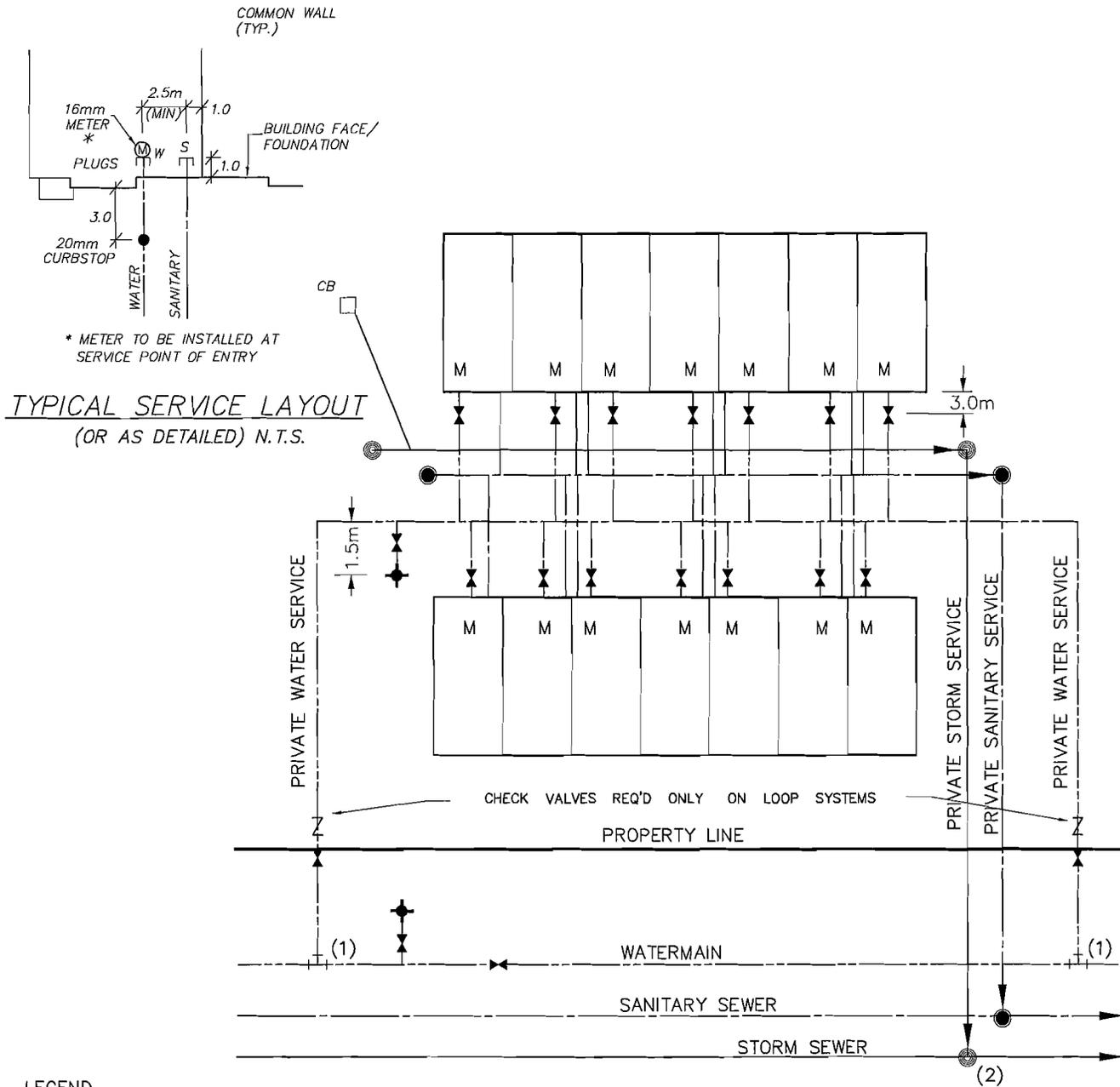
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O.P.S.D. No (modified)

HAMILTON STD No

**PED- 120.01**



**LEGEND**

- ▶ VALVE & BOX
- ⊥ DIRECT BURIED CHECK VALVE & BOX
- ◆ FIRE HYDRANT C/W SEC. VALVE & BOX
- SANITARY MANHOLE
- ⊙ STORM MANHOLE
- ⊕ TAPPING VALVE & SLEEVE C/W BOX/CHAMBER
- ⊥ TEE
- M METER

**NOTES**

1. May substitute tee with a tapping valve and sleeve c/w box/chamber. Chamber required on mains 400mm or greater.
2. Manhole to be constructed at main sewer for private drains 300mm or greater.
3. Location and number of storm building sewers to be sized individually.

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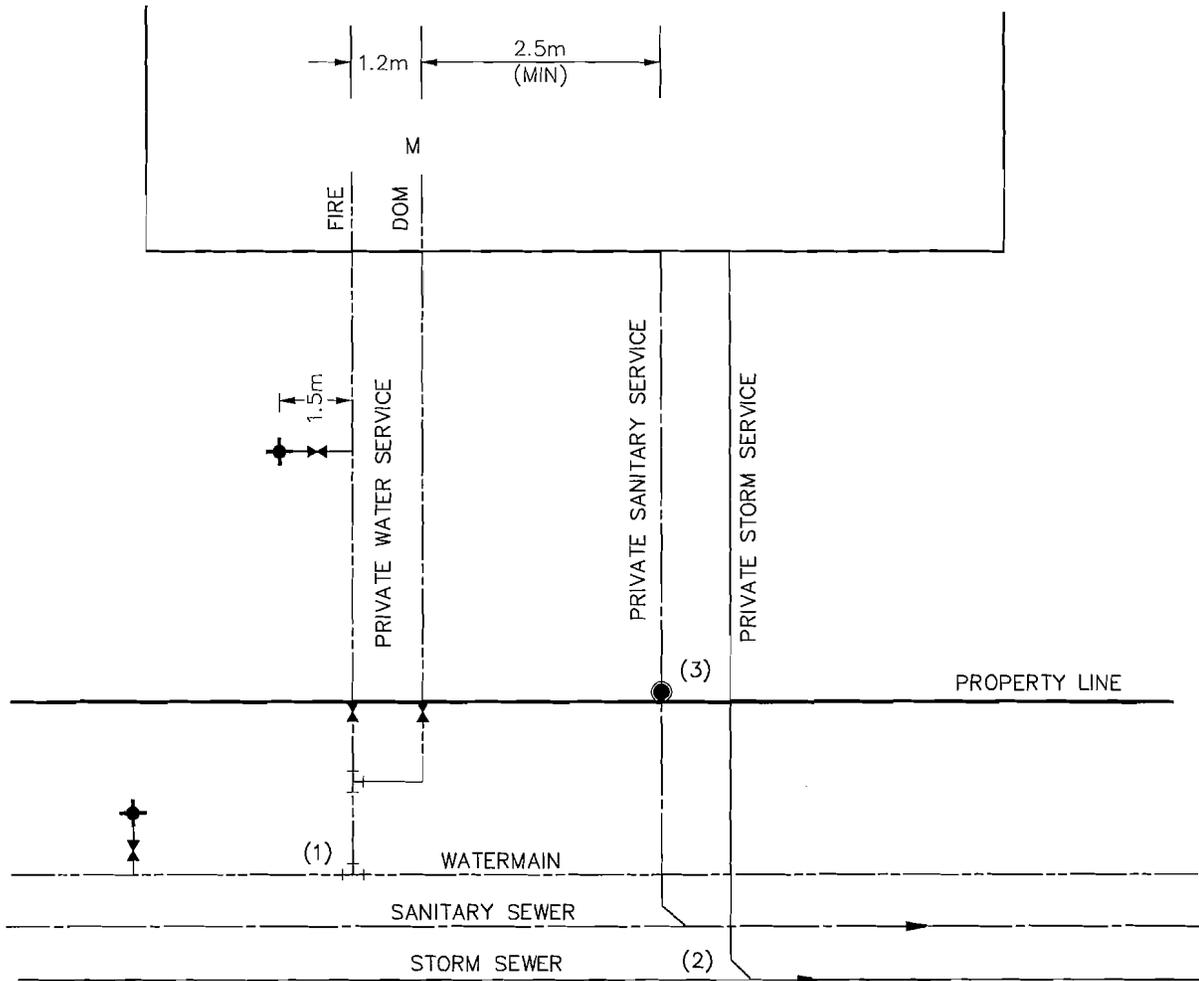
MANAGER OF DEVELOPMENT ENGINEERING

**SERVICING FOR TOWNHOUSE COMPLEX**

DATE  
June, 2006

REV No O.P.S.D. No (modified)

HAMILTON STD No **PED- 200.01**



**LEGEND**

- ✕ VALVE & BOX
- ⊥ DIRECT BURIED CHECK VALVE & BOX
- ⊥ FIRE HYDRANT C/W SEC. VALVE & BOX
- SANITARY MANHOLE
- ⊥ TAPPING VALVE & SLEEVE C/W BOX/CHAMBER
- ⊥ TEE
- M METER

**NOTES**

1. May substitute tee with a tapping valve and sleeve c/w box/chamber. Chamber required on mains 400mm or greater.
2. Manhole to be constructed at main sewer for private drains 300mm or greater.
3. Manhole to be constructed at or near the property line for sampling purposes.
4. Location and number of storm building sewers to be sized individually.

**City of Hamilton  
Planning and Economic Development Department**

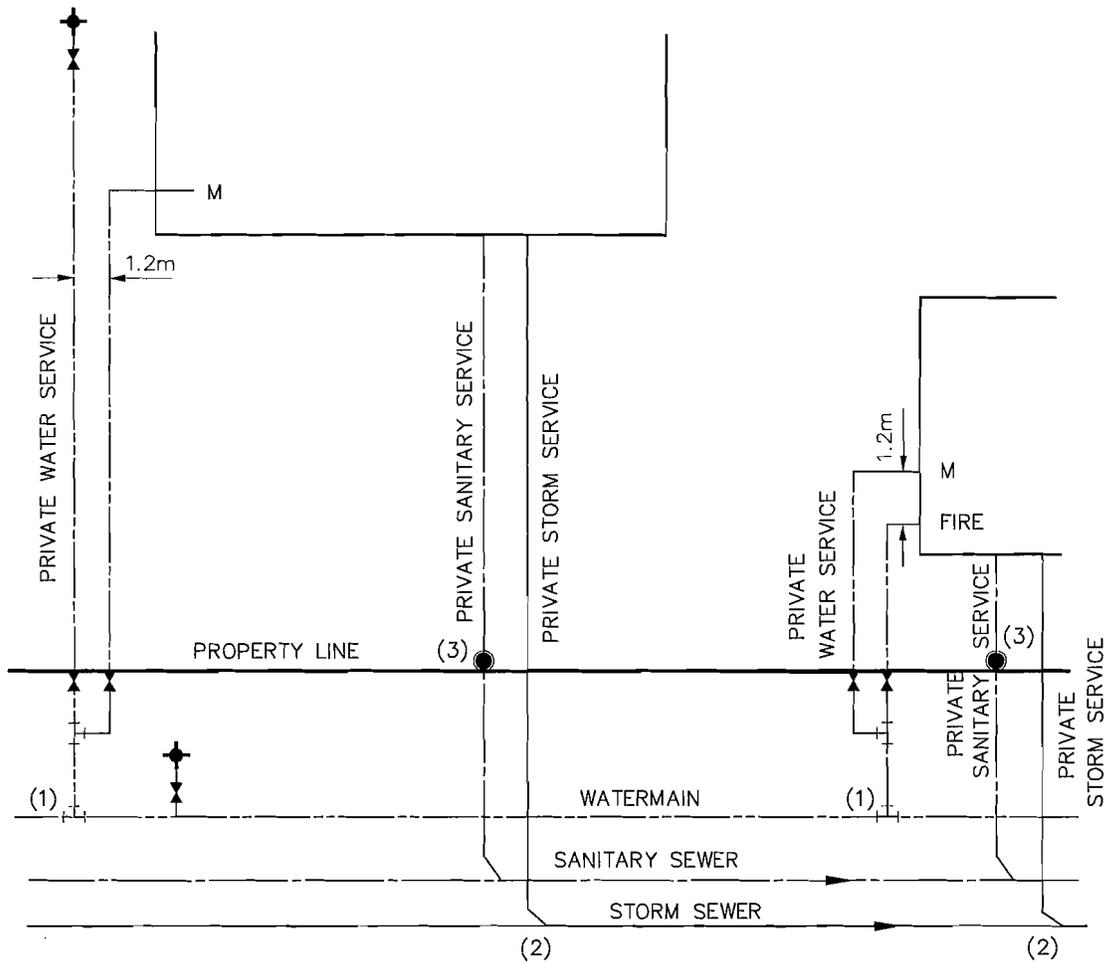
MANAGER OF DEVELOPMENT ENGINEERING

**SERVICING FOR INSTITUTIONAL  
COMMERCIAL AND INDUSTRIAL SITES**

DATE  
June, 2006

REV No O.P.S.D. No (modified)

HAMILTON STD No **PED- 200.02**



**LEGEND**

- ✕ VALVE & BOX
- ⊥ DIRECT BURIED CHECK VALVE & BOX
- ◆ FIRE HYDRANT C/W SEC. VALVE & BOX
- SANITARY MANHOLE
- ⊕ TAPPING VALVE & SLEEVE C/W BOX/CHAMBER
- ⊕ TEE
- M METER

**NOTES**

1. May substitute tee with a tapping valve and sleeve c/w box/chamber. Chamber required on mains 400mm or greater.
2. Manhole to be constructed at main sewer for private drains 300mm or greater.
3. Manhole to be constructed at or near the property line for sampling purposes.
4. Location and number of storm building sewers to be sized individually.

**City of Hamilton  
Planning and Economic Development Department**

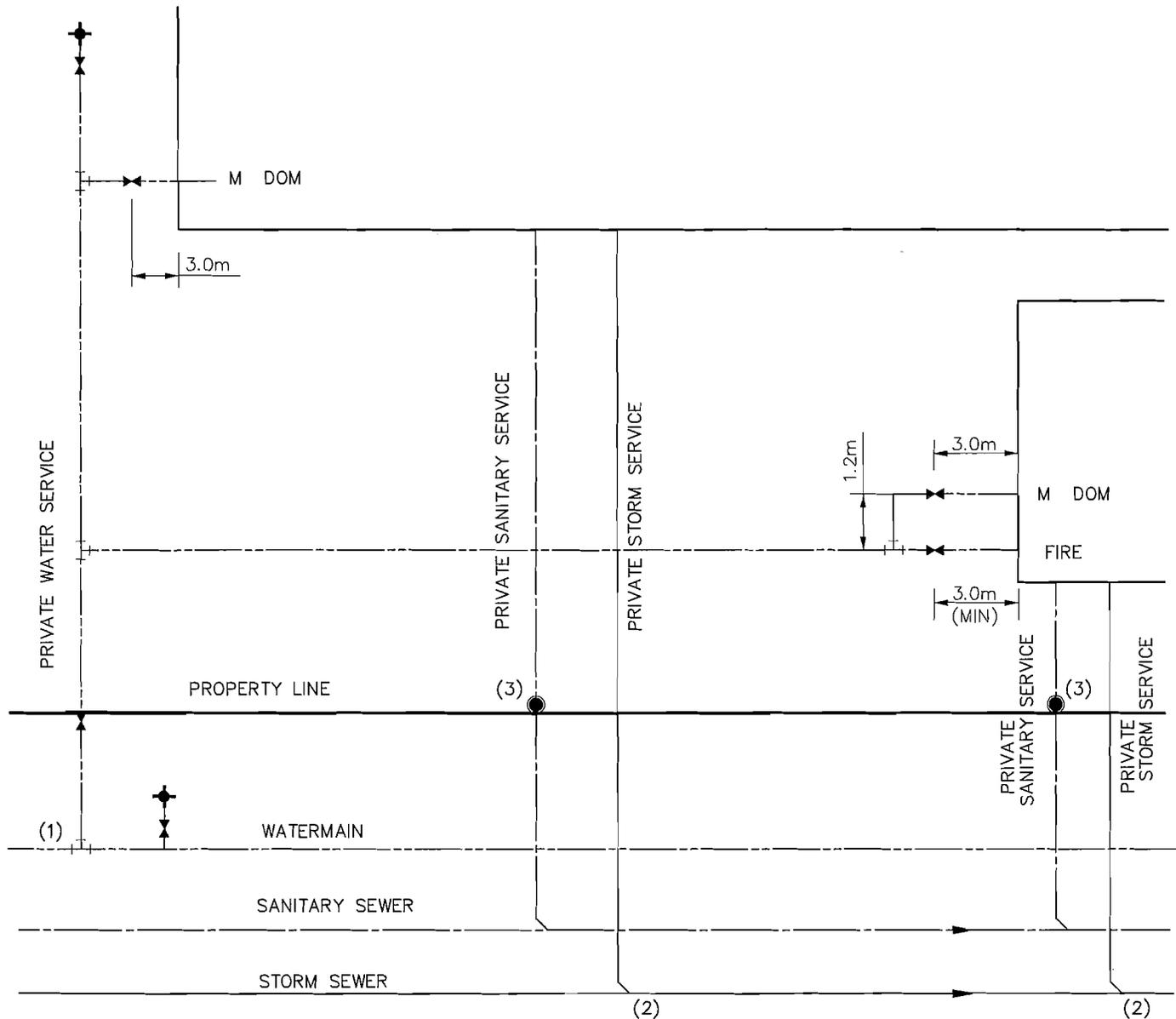
MANAGER OF DEVELOPMENT ENGINEERING

**SERVICING FOR MULTIPLE BUILDING INSTITUTIONAL,  
COMMERCIAL AND INDUSTRIAL SITES  
(SEPARATE FRONTAGES)**

DATE  
June, 2006

REV No      O.P.S.D. No (modified)

HAMILTON STD No      **PED- 200.03**



**LEGEND**

- ▶ VALVE & BOX
- ▬ DIRECT BURIED CHECK VALVE & BOX
- ⦿ FIRE HYDRANT C/W SEC. VALVE & BOX
- SANITARY MANHOLE
- ⊕ TAPPING VALVE & SLEEVE C/W BOX/CHAMBER
- ⊕ TEE
- M METER

**NOTES**

1. May substitute tee with a tapping valve and sleeve c/w box/chamber. Chamber required on mains 400mm or greater.
2. Manhole to be constructed at main sewer for private drains 300mm or greater.
3. Manhole to be constructed at or near the property line for sampling purposes.
4. Location and number of storm building sewers to be sized individually.

**City of Hamilton  
Planning and Economic Development Department**

MANAGER OF DEVELOPMENT ENGINEERING

**SERVICING FOR MULTIPLE BUILDING COMMERCIAL  
AND INDUSTRIAL SITES (PARTIAL FRONTAGES)**

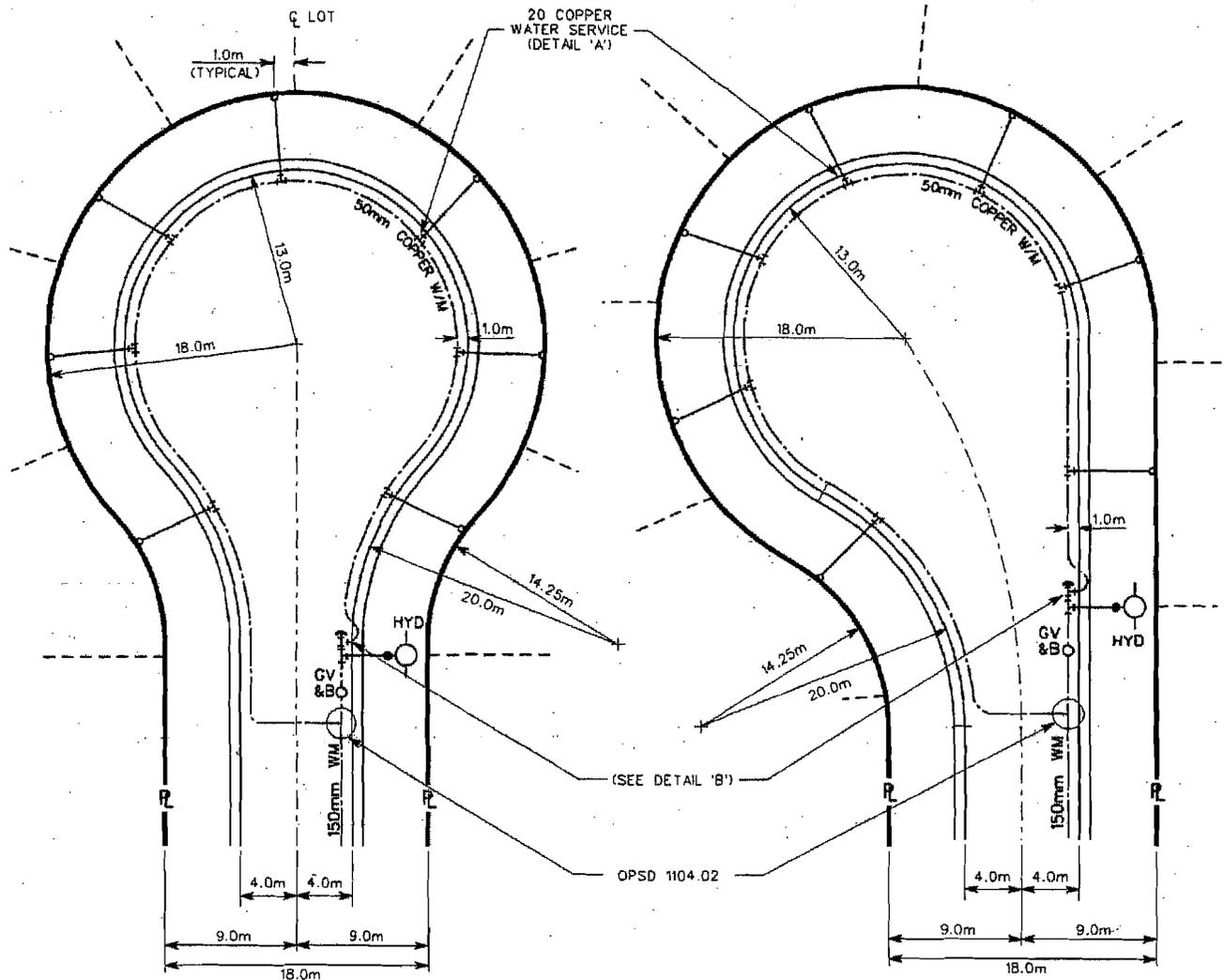
DATE  
June, 2006

REV No

O.P.S.D. No (modified)

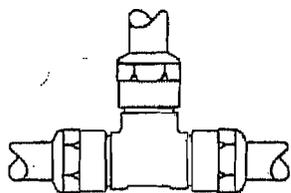
HAMILTON STD No

**PED- 200.04**



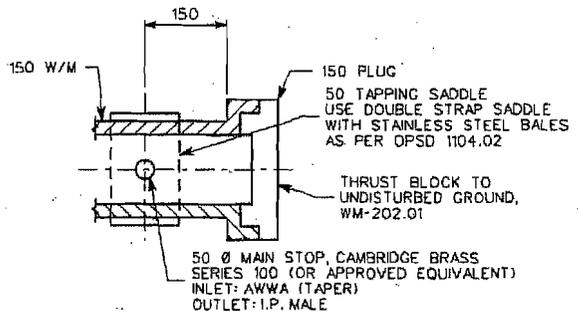
**18.0m R.O.W.  
SYMMETRICAL**

**18.0m R.O.W.  
OFFSET LEFT**



BRASS SERVICE TEE SUCCESSOR  
EMCO / CAMBRIDGE BRASS  
OR MUELLER H12941 110  
COMPRESSION ALL AROUND

**DETAIL 'A'**



**DETAIL 'B'**

**NOTES:**

1. MINIMUM GUTTER SLOPE SHALL BE 1.0%
2. DETAIL FOR GRADING OF BULB AREAS SHALL BE SHOWN ON PLAN & PROFILE DRAWINGS

**City of Hamilton  
Planning and Economic Development Department**

**50mm WATERMAIN  
LOOPING IN CUL-DE-SACS  
(18.0m R.O.W.)**

MANAGER OF DEVELOPMENT ENGINEERING

DATE  
June, 2006

REV No

O.P.S.D. No (modified)

HAMILTON STD No

**PED- 310.01**