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1. Utility corridor (hydro & telecommunications) shall be 0.6m wide.
2. Utility corridor to have a minimum cover of 0.9m.
3. Watermain to have minimum cover of 2.0m for 300mm and smaller diameter and 1.8m for 450mm diameter and larger.
4. Clear separation between watermain and sewers shall be as per MOE requirements.
5. Minimum separation between the sanitary and storm sewers shall not be less than 1.5m.
6. Joint use trenches shall be used by Hydro and Telecommunication.

7. The following is a minimum road base and will require a soils report verification to determine if additional thickness is required:
   - 40mm HL3
   - 60mm HL4 (100mm for bus routes)
   - 150mm granular "A"
   - 400mm granular "B"

8. Sub-grade shall be compacted to 100% of standard proctor density at max. dry density.
NOTES
1. UTILITY CORRIDOR (HYDRO & TELECOMMUNICATIONS) SHALL BE 0.6m WIDE.
2. UTILITY CORRIDOR TO HAVE A MINIMUM COVER OF 0.9m.
3. WATERMAIN TO HAVE MINIMUM COVER OF 2.0m FOR 300mm AND SMALLER DIAMETER AND 1.8m FOR 450mm DIAMETER AND LARGER.
4. CLEAR SEPARATION BETWEEN WATERMAIN AND SEWERS SHALL BE AS PER MOE REQUIREMENTS.
5. JOINT USE TRENCHES SHALL BE USED BY HYDRO AND TELECOMMUNICATION.
6. THE FOLLOWING IS A MINIMUM ROAD BASE AND WILL REQUIRE A SOILS REPORT VERIFICATION TO DETERMINE IF ADDITIONAL THICKNESS IS REQUIRED.
   - 40mm HL3
   - 60mm HL4
   - 150mm GRANULAR "A"
   - 450mm GRANULAR "G"
7. SUB-GRADE SHALL BE COMPACTED TO 100% OF STANDARD PROCTOR DENSITY AT MAX. DRY DENSITY.

20.0m MINOR COLLECTOR R.O.W.
NOTES

1. UTILITY CORRIDOR (HYDRO & TELECOMMUNICATIONS) SHALL BE 0.6m WIDE.
2. UTILITY CORRIDOR TO HAVE A MINIMUM COVER OF 0.9m.
3. WATERMAIN TO HAVE MINIMUM COVER OF 2.0m for 300mm AND SMALLER DIAMETER AND 1.8m FOR 450mm DIAMETER AND LARGER.
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   100mm HL4
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   450mm GRANULAR "B"

7. SUB-GRADE SHALL BE COMPACTED TO 100% OF STANDARD PROCTOR DENSITY AT MAX. DRY DENSITY.
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   40mm HL3
   100mm HL4
   150mm GRANULAR "A"
   450mm GRANULAR "B"
7. SUB-GRADE SHALL BE COMPACTED TO 100% OF STANDARD PROCTOR DENSITY AT MAX. DRY DENSITY.
8. REFER TO REGION OF WATERLOO STANDARD DRAWING 211 FOR BOULEVARD CONCRETE EDGE STRIP DETAILS.
RESIDENTIAL CUL-DE-SAC & STANDARD
UTILITY LOCATIONS
FOR 20m R.O.W. CUL-DE-SAC
### DRAINAGE

<table>
<thead>
<tr>
<th>Description</th>
<th>Over 50% Sand</th>
<th>Under 50% Sand</th>
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<tbody>
<tr>
<td>1. Water Table Between 600mm &amp; 1200mm</td>
<td>8</td>
<td>8</td>
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<tr>
<td>2. Water Table Below 1200mm—No Sewers</td>
<td>6</td>
<td>6</td>
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<tr>
<td>3. Water Table Below 1200mm—Sanitary Sewers</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>4. Water Table Below 1200mm—Storm Sewers</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>5. Water Table Below 1200mm—Storm &amp; San. Sewers</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

### FROST—SEE FROST VALUE CHART

### TRAFFIC

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Minimum Asphalt</th>
<th>Minimum Base 16mm Crushed Gravel</th>
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</thead>
<tbody>
<tr>
<td>1. Arterial Streets</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>—Route Longer Than 1.6km</td>
<td>18</td>
<td>100mm</td>
<td>150mm</td>
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<tr>
<td>—Route Shorter Than 1.6km</td>
<td>12</td>
<td>100mm</td>
<td>150mm</td>
</tr>
<tr>
<td>2. Residential Streets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>—Route Longer Than 0.8km</td>
<td>6</td>
<td>80mm</td>
<td>100mm</td>
</tr>
<tr>
<td>—Route Shorter Than 0.8km</td>
<td>3</td>
<td>80mm</td>
<td>100mm</td>
</tr>
</tbody>
</table>

*Use Design Curve if Total Value is Within Limits*

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–7</td>
<td>8–14</td>
<td>15–22</td>
<td>23–31</td>
<td>32–41</td>
</tr>
</tbody>
</table>

*Add Values from Drainage, Frost and Traffic Tables*
EVALUATION OF SOIL WITH RESPECT TO FROST SUSCEPTIBILITY INDICATED BY LARGE NUMBERS
GENERAL NOTES:

1. IF THE DRIVEWAY IS CONCRETE, EXPANSION JOINT MATERIAL SHALL BE INSTALLED AT THE BACK OF THE SIDEWALK.

2. SAW CUTS SHALL BE PLACED AT THE CENTRELINE OF THE DRIVEWAY RAMP AND EXTENDED THROUGH THE SIDEWALK AND CURB.

3. EXCEPT IN NEW DEVELOPMENT, DRIVEWAY RAMPS MAY BE Poured MONOLITHICALLY WITH THE ADJACENT SIDEWALK, IN WHICH CASE TOOLED SAW CUT JOINTS SHALL BE PLACED ALONG THE FRONT EDGE OF THE SIDEWALK, ACROSS THE DRIVEWAY ENTRANCE, WHERE BOULEVARD IS LESS THAN 1.5m.

4. THE DISTANCE ALONG THE CURB FROM THE EXTENDED EDGE OF THE DRIVEWAY AT THE BACK OF THE SIDEWALK TO THE BOTTOM OF THE DEPRESSED CURB SHALL BE 1/4 OF THE DISTANCE FROM THE BACK OF CURB TO THE FRONT OF SIDEWALK TO A MAXIMUM OF 1000mm, BUT SHALL NOT BE LESS THAN 500mm. NEW DEVELOPMENT SHALL BE 0.3m.

5. SAW CUTS SHALL BE PLACED IN THE SIDEWALK WHERE THE DRIVEWAY RAMP TAPER INTERSECTS AND IN THE CURB AT THE BOTTOM OF GRADE TRANSITION.

6. TOOLED JOINTS IN THE DRIVEWAY PORTION OF THE SIDEWALK SHALL BE SPACED EQUALLY TO MATCH THE TYPICAL JOINTING OF SIDEWALK AS CLOSE AS POSSIBLE.

7. WHERE DRIVEWAY RAMP WIDTH EXCEEDS 3000mm, A LONGITUDINAL SAW CUT JOINT IS TO BE PROVIDED AT THE MID-POINT.

8. ALLOWABLE RAMP WIDTHS AT THE SIDEWALK ARE BETWEEN 3.65m AND 7.30m.

9. DEPRESSED CURB AND GUTTER AT DRIVEWAY ENTRANCES SHALL HAVE AN ADDITIONAL 50mm BENCH TO SUPPORT ADJACENT CONCRETE RAMPS, REFER TO OPSD 600.040.

10. REFER TO OPSD 350.010 FOR COMMERCIAL/INDUSTRIAL RAMP DESIGN.

11. REFER TO CITY OF KITCHENER STANDARD SPECIFICATIONS AND THE DEVELOPMENT MANUAL FOR FURTHER INFORMATION.

12. FOR NEW DEVELOPMENT, RAMP WIDTH AT FRONT OF SIDEWALK IS TO EQUAL THE WIDTH OF THE DRIVEWAY AT THE BACK OF SIDEWALK.
CONSTRUCTION DETAIL OF SIDEWALK, CURB & GUTTERS

NOTE:
CONCRETE STRENGTH 32MPa,
AIR ENTRAINMENT: 5% TO 8%
MIN. CEMENT CONTENT: 365kg/m³
COARSE AGGREGATE: 20mm/OMINAL MAX. SIZE
MAXIMUM WATER/CEMENTING MATERIALS RATIO 0.45
1.20m HIGH CHAIN LINK FENCE (REFER TO 507)

WALKWAY R.O.W. 6m(MIN.)

NOTES:
FOR CONCRETE SIDEWALK DETAILS
SEE CITY OF KITCHENER STANDARD SPECIFICATIONS.
CONC. SIDEWALK TO BE CENTRED IN R.O.W.
AREA NOT COVERED WITH CONC. S/W
TO BE SODDED WITH No.1 NURSERY
SOD INCLUDING A MINIMUM 0.15m OF TOPSOIL.
S.F.M TREE SADDLE

2400mm T-RAIL

PLANTING PIT TO BE BACKFILLED WITH TOPSOIL, ROOTS NOT TO BE DAMAGED.

T-RAIL SHALL EXTEND INTO UNDISTURBED SOIL 0.5m.

ROOTS TO BE CENTRED IN PLANTING PIT, ROOTS TO BE SPREAD TO A NATURAL HABIT.
3.0m MIN. LENGTH x WIDTH OF SIDEWALK, 450mm MIN. DEPTH OF EXCAVATION.
CU-STRUCTURAL SOIL® TO REPLACE STANDARD GRANULAR 'A' BASE COURSE AT ALL TREE PLANTING LOCATIONS AS SHOWN CENTERED ON TREE LOCATION

CONCRETE SIDEWALK AS PER CITY OF KITCHENER STANDARDS

BOULEVARD TREE PLANTING LOCATION AS PER STREET TREE PLANTING PLAN

CONCRETE CURB & GUTTER

PLAN

CONCRETE SIDEWALK AS PER CITY OF KITCHENER STANDARDS

50mm MAX. GRANULAR 'A' LEVELING COURSE IF NECESSARY (NOT REQUIRED WITH CU-STRUCTURAL SOIL®)

450mm MIN. DEPTH OF EXCAVATION, BASE MATERIAL TO BE STRUCTURAL SOIL® AS SUPPLIED BY LICENSED PRODUCER MEETING SPECIFICATIONS PROVIDED BY AMEREQ INC.
PH: 1-800-832-8788

450mm MIN. DEPTH OF TOPSOIL AS PER CITY OF KITCHENER STANDARDS FOR QUALITY

SECTION

COMPACTED SUBGRADE

NOTE: ALL DETAILS FOR ROAD, SIDEWALK AND BOULEVARD AS PER CITY OF KITCHENER STANDARDS
NOTES

1. STANDARD PARKS GATE REQUIRED AT EACH END OF THE EMERGENCY ACCESS. REFER TO STANDARD DRAWING 508.

2. CONCRETE WALKWAY TO BE 125mm THICK AND CONSTRUCTED IN ACCORDANCE WITH THE CITY OF KITCHENER STANDARD SPECIFICATION FOR CONCRETE CURB, SIDEWALK, AND DRIVEWAY RAMPS.


PLAN VIEW
NOTE

1. Road Construction To Be As Per City Road Standard.
2. Concrete curb and walk may be

Substituted with asphalt.

R.O.W. Variable

1.5m

Variable

6.75m

Concrete curb

CONCRETE CURB

NOTE 2

Variable

Variable
NOTES:

1. SIDEWALK RAMP DETAIL TO BE INCORPORATED AT ALL INTERSECTIONS WHERE NEW RAMP CONSTRUCTION IS PROPOSED. MODIFICATIONS ARE SUBJECT TO APPROVAL BY THE ENGINEERING SERVICES DIVISION.

2. BOTTOM OF DEPRESSED CURB SHOULD LINE UP WITH BACK EDGE OF SIDEWALK.

3. THE SLOPE TRANSITION ZONE IS INTENDED TO ALLOW CONNECTION TO THE SIDEWALK AT ITS STANDARD ELEVATION USING A GRADIENT OF MIN. 0.5% AND MAX. 8% ALONG THE SIDEWALK.

4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE CITY OF KITCHENER STANDARD SPECIFICATION

5. ALL MATERIALS SUPPLIED SHALL COMPLY WITH THE REQUIREMENTS OF THE APPROPRIATE CITY OF KITCHENER STANDARD SPECIFICATIONS.

6. TEXTURED SURFACE IS A COARSE BROOM FINISH WITH DEPTH VARIATIONS TO, BUT NOT EXCEEDING 6mm.

7. TRUNCATED DOME DETECTABLE WARNING PLATES AS PER REGIONAL MUNICIPALITY OF WATERLOO STANDARD DRAWING 224.
NOTES:

1. SIDEWALK RAMP DETAIL TO BE INCORPORATED AT ALL INTERSECTIONS WHERE NEW RAMP CONSTRUCTION IS PROPOSED. MODIFICATIONS ARE SUBJECT TO APPROVAL BY THE ENGINEERING SERVICES DIVISION.

2. THE SLOPE TRANSITION ZONE IS INTENDED TO ALLOW CONNECTION TO THE SIDEWALK AT ITS STANDARD ELEVATION USING A GRADIENT OF MIN. 0.5% AND MAX. 8% ALONG THE SIDEWALK.

3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE CITY OF KITCHENER STANDARD SPECIFICATION FOR CONCRETE CURB, SIDEWALK, AND DRIVEWAY RAMPS.

4. ALL MATERIALS SUPPLIED SHALL COMPLY WITH THE REQUIREMENTS OF THE APPROPRIATE CITY OF KITCHENER STANDARD SPECIFICATIONS.

5. TEXTURED SURFACE IS A COARSE BROOM FINISH WITH DEPTH VARIATIONS TO, BUT NOT EXCEEDING 6mm.

6. ONLY SAW CUT JOINTS ARE PERMITTED IN THE DOWNTOWN (NO TOOLED JOINTING).

7. AT INTERSECTIONS WITH REGIONAL ROADS A MINIMUM OF 200mm THICK CONCRETE SHALL BE USED FOR WHEEL CHAIR RAMPS AND SIDEWALKS.

8. TRUNCATED DOME DETECTABLE WARNING PLATES AS PER REGIONAL MUNICIPALITY OF WATERLOO STANDARD DRAWING 224.
NOTES:
1. Contraction joint through sidewalk is required when curb and gutter is poured integral with sidewalk.
2. Adjust joints to coincide with centre of utility, with minimum slab length of 1m.
3. Expansion joint material shall be placed around Utility appurtenance flush with concrete surface.
4. Parallel contraction joint through curb and gutter to be offset 300mm.
5. Parallel expansion joint through curb at the edge of the catchbasin frame.
6. Expansion joint material shall be placed a minimum of 100mm from the pole.
A. For expansion joint detail, see OPSD 310.010.
B. All dimensions are in millimetres unless otherwise shown.
NOTES
1. ALL MATERIAL PLACED AROUND CHAMBER TO BE PROPERLY COMPACTED.
2. 1830mm MIN. FROM BOTTOM OF CHAMBER TO UNDERSIDE OF PRECAST CAP.
3. PRECAST CAP TO BE REMOVABLE.
4. PRECAST CONCRETE TO COMPLY WITH CURRENT CSA SPECIFICATIONS.
5. UNLESS NOTED ALL DIMENSIONS IN MILLIMETRES.
6. A/R--AS REQUIRED BY LOAD AND SITE CONDITIONS.
NOTES –

1. ALL CONCRETE TO BE 20 MPa.

2. MIN. 25mm THICK CASTING PLATE ON CHAMBERS LOCATED IN TRAVELLED PORTION OF ROAD.

3. ALL MATERIAL PLACED AROUND CHAMBER TO BE PROPERLY COMPACTED.

4. A/R – AS REQUIRED BY LOAD AND SITE CONDITIONS.
DELETED

NOTES – 1. ALL CONCRETE TO BE 20 MPa.
2. MIN. 25mm THICK CASTING PLATE ON CHAMBER LOCATED IN TRAVELLED PORTION OF ROAD.
3. ALL MATERIAL PLACED AROUND CHAMBER TO BE PROPERLY COMPACTED.
4. A/R – AS REQUIRED BY LOAD AND SITE CONDITIONS.
STORZ CONNECTION

ATTACH TRACING WIRE TO FLANGE BOLT
BY APPROVED MECHANICAL C-CLAMP
CONNECTION OR APPROVED EQUIVALENT

TAPE ONLY "B" SIDE OF TRACER LOOP

Copper Tracer Wire
CRAN: "A" OR APPROVED NATIVE MATERIAL FILL COMPACTED TO 95% SPD ON UNDISTURBED SOIL
CADWELD TRACER WIRE TO TOP OF BOOT BY APPROVED METHODS
MIN. OF 1 CUBIC Meter OF 19mm CLEAR STONE SURROUNDED WITH FILTER CLOTH

PLAN VIEW OF HYDRANT BRANCH
(SEE NOTES 11&12 BELOW)

NOTES:
1. HYDRANT TO BE SET PLUMB WITHSTEM EXTENSIONS TO SUIT DEPTH OF BRANCH. BRANCH TO BE SET LEVEL. EXTENSIONS TO BE INSTALLED BETWEEN UPPER AND LOWER BARREL SECTION. ONLY ONE EXTENSION (MAX. 1.0m LONG) PER HYDRANT IF MORE HEIGHT IS REQUIRED, THEN A LONGER BARREL SHALL BE USED.
2. ALL BLOCKING TO BE AGAINST UNDISTURBED TRENCH WALL
3. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
4. BOND BREAKER TO BE USED BETWEEN CONCRETE AND FITTINGS.
5. CORROSION PROTECTION SHALL BE APPLIED AS PER STANDARD SPECIFICATIONS FOR WATERMAIN CONSTRUCTION.
6. NO BENDS ON HYDRANT LEADS UNLESS APPROVED.
7. ALL JOINTS TO BE FULLY RESTRAINED FROM HYDRANT BOOT TO TEE (THREADED RODS SHALL NOT BE USED).
8. PLUG DRAIN HOLE IN HIGH WATER TAPER.
9. HYDRANTS SHALL BE CLEAR OF OBSTRUCTIONS FOR A DISTANCE OF 0.6m REAR, 2.0m ON SIDES AND CLEAR TO CURB IN FRONT.
10. TRACER WIRE NOT REQUIRED FOR METALLIC WATERMAIN.
11. "A" SIDE OF TRACER WIRE LOOP TO BE CADWELDED TO:
   a) ANCHOR TEE
   b) HYDRANT VALVE
   c) HYDRANT BARREL
12. "B" SIDE OF TRACER WIRE LOOP TO BE TAPE ONLY TO:
   a) HYDRANT BARREL
   b) HYDRANT LEAD
   c) WATERMAIN

MANUFACTURED ITEMS LIST
1. REGULAR 150mm DIA. BARREL USE EXTENSION IF REQUIRED.
2. MINIMUM DIA. PIPE FOR HYDRANT LEADS TO BE 150mm DIA.
3. MINIMUM SIZE M.J. GATE VALVE TO BE 150mm DIA.
4. VALVE BOX
5. USE ANCHOR TEE UP TO AND INCLUDING 450mm DIA.
6. FOR TEES LARGER THAN 450mm DIA. USE MECHANICAL RESTRAINTS.
NOTES—

1. CHAINAGE TO BE WATERMAIN CHAINAGE
   NOT Q. OF ROAD.

2. A MIN. OF 2 TIES AT RIGHT ANGLES
   OR LESS ARE REQUIRED FOR VALVES
   AND FITTINGS OTHER THAN CURB STOPS

3. MEASUREMENTS BETWEEN CURB STOPS
   ON CURBES ARE TO BE CHORD
   MEASUREMENTS.
NOTES—1. CHAINAGE TO BE WATERMAIN CHAINAGE
   NOT Q. OF THE ROAD.

2. A MIN. OF 2 TIES AT RIGHT ANGLES OR LESS
   ARE REQUIRED FOR VALVES AND FITTINGS OTHER
   THAN CURB STOPS.

3. MEASUREMENTS BETWEEN CURB STOPS ON
   CURVES ARE TO BE CHORD MEASUREMENTS.
NOTE:

1. CHAINAGE TO BE WATERMAIN CHAINAGE NOT C. OF ROAD.

2. A MIN. OF TIES AT RIGHT ANGLES OR LESS ARE REQUIRED FOR VALVES AND FITTINGS.

3. MEASUREMENTS BETWEEN CURB STOPS ON CURVES ARE TO BE CHORD MEASUREMENTS.
<table>
<thead>
<tr>
<th>LOCATION</th>
<th>FROM M.H.</th>
<th>TO M.H.</th>
<th>DEPTH OF TRENCH (top of pipe)</th>
<th>WIDTH OF TRENCH</th>
<th>BACKFILL MATERIAL TYPE</th>
<th>WEIGHT (kg/m)</th>
<th>STATIC LOAD (kg/m)</th>
<th>SUPERIMPOSED LOAD (kg/m)</th>
<th>TOTAL LOAD (kg/m)</th>
<th>SAFETY FACTOR</th>
<th>DESIGN LOAD (kg/m)</th>
<th>BEDDING TYPE</th>
<th>FACTOR</th>
<th>PIPE STRENGTH REQ'D (kg/m)</th>
<th>PIPE SECTION DIA.</th>
<th>TYPE</th>
<th>CLASS</th>
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<tbody>
<tr>
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PIECE STRENGTH AND BEDDING DESIGN CHART

The Corporation Of The
CITY OF
KITCHENER

SCALE: N.T.S.
DATE: Jul-10
STANDARD NO.: 301
NOTES
1. CONCRETE TO BE 20MPa COMPRESSIVE STRENGTH AT 28 DAYS.
2. M.H. FRAMES & COVERS TO BE CITY OF KITCHENER STANDARD.
   FRAMES TO BE SET FIRMLY IN MORTAR ON THE ADJUSTERS.
3. MANHOLES TO HAVE MIN. 3 COURSES AND MAX. 5 COURSES MODULOC OR APPROVED EQUAL AND PARCELED ON THE OUTSIDE ONLY WITH 15mm OF CEMENT MORTAR BETWEEN TOP OF CONCRETE AND FRAME.
4. BENCHING SHALL EXTEND TO THE SPRINGLINE OF THE LARGEST PIPE IN THE MANHOLE AND HAVE A SLOPE OF 8.5%.
5. SAFETY GRATING SHALL BE INSTALLED AT THE HALF-WAY POINT ON MANHOLES 5m OR OVER.
6. CONSTRUCTION JOINTS TO BE PROVIDED WITH 50mmx100mm KEY FOR THE ENTIRE LENGTH OF THE JOINTS BETWEEN SUCCESSIVE CONCRETE POURS.
7. UNLESS NOTED ALL DIMENSIONS AND SIZES IN MILLIMETRES.
8. MAX. DISTANCE FROM TOP OF CASTING TO FIRST STEP--450mm.

TYPE ‘C’ MANHOLE
POURED CONCRETE MANHOLE
MAX. 6.10m DEPTH
NOTES

1. REINFORCED CONCRETE PIPE MANUFACTURED TO CSA SPECIFICATION.

2. MANHOLE RISER MANUFACTURED TO CSA SPECIFICATION.

3. PRECAST MANHOLE RISER MAY BE SPIGOT OR BELL END UP, DEPENDING ON SUPPLIER.

4. MANHOLE RISER SECTION REINFORCING WELDED TO PIPE REINFORCING, JOINT GROUTED WITH NON-SHRINK MORTAR.

5. REFER TO OPSD FOR DETAILS OF FRAME AND COVER AND ADJUSTMENT.

6. RUNGS SHALL BE INSTALLED ON LEFT SIDE, LOOKING AT SPIGOT END OF PIPE.

7. RUNGS TO BE GALVANIZED AS PER OPSD & INSTALLED ON 300mm CENTRES TO SPRINGLINE.
NOTES
1. CONCRETE TO BE 30MPa AT 28 DAYS.

2. ALL JOINTS AND LIFTING HOLES TO BE COMPLETELY FILLED WITH A 1:3 MORTAR MIX AND POINTED BEFORE BACKFILLING.

3. WHERE INLET IS PLACED ACROSS DITCH AND IS ACCESSIBLE TO VEHICULAR TRAFFIC, GRATE SLOPE IS TO BE 6:1 OR FLATTER.

4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH OP30-403-01 FOR GRATE AND ANCHOR BOLT DETAILS.

5. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH M.T. FORMS 407 AND 1351.
NOTES
1. FIELD TILES TO BE LOCATED BY FIELD ENGINEER.
   ALL EXPOSED EDGES TO HAVE 25mm CHAMBER.

2. ENERGY DISSIPATORS (CHUTE BLOCKS) MAY BE USED
   ON THE APRON AT THE DISCRETION OF THE ENGINEER.

3. ALL CONCRETE TO BE 20MPa COMPRESSION STRENGTH
   AT 28 DAYS & CONTAINING 5% TO 8% ENTRAINED AIR.

4. CONSTRUCTION JOINTS TO BE APPROVED BY THE
   ENGINEER.

5. REINFORCING BARS TO HAVE 50mm COVER.

6. FOOTINGS AND WALLS TO BE BACKFILLED WITH
   COMPACTED GRANULAR ‘B’

7. GRATING FOR CONCRETE ENDWALL REFER TO OPSD

ENDWALL DIMENSIONS

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<tr>
<th>PIPE DIAMETER IN MILLIMETRES</th>
<th>600</th>
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<th>750</th>
<th>825</th>
<th>900</th>
<th>975</th>
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CONCRETE APRON FOR STORM
SEWER OUTLET

The Corporation Of The
CITY OF KITCHENER

KITCHENER

No. REV. DATE Std. No.: 305 2010 305
SECTION B–B
SEE HINGE DETAIL
SEE LOCK DETAIL
19mm BARS WELDED TO ROLLED BAR (INTERMEDIATE GRADE STEEL)
13mmx51mm ROLLED BAR (INTERMEDIATE GRADE STEEL)

NOTE: BARS SPACED 150mm C.C. AND CENTRE BAR PRODUCED THROUGH ROLLED BAR BY 40mm

SECTION A–A
PIPE REINFORCED WITH NO. 1 GAUGE (17.11mm) CORRUGATED SHEET; 3 FULL CORRUGATIONS BY 200mm AND BOLTED TO PIPE BY 2 BOLTS IN EACH OF THREE CONSECUTIVE DIPS.

VARIABLE DEPENDING ON PITCH
U–BOLT TO BE WELDED TO 13mmx51mm LONG ROLLED BAR
8mm DIAL
13mmx51mm ROLLED BAR INTERMEDIATE GRADE STEEL
13mmx51mmx57mm LONG, ROLLED BAR

HINGE DETAIL

<table>
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<th>PTICH OF CORR. METAL PIPE</th>
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<tbody>
<tr>
<td>68</td>
<td>203X57 a 5.22kg/0.3m</td>
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<tr>
<td>76</td>
<td>229X64 a 6.08kg/0.3m</td>
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<tr>
<td>152</td>
<td>152X51 a 5.90kg/0.3m</td>
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NOTES
1. CORRUGATED SHEET TO BE NO.1 GAUGE (7.11mm) AND BOLTED TO PIP BY 2 BOLTS IN EACH OF 3 CONSECUTIVE DIPS.
2. FOR PIPE 2400mm AND OVER GRATE BARS INCREASED TO 25mm. THREE VERTICAL 25mm BARS TO SPAN THE THREE CENTRAL HORIZ. BARS AT 600mm INTERVALS.
3. UNLESS NOTED ALL DIMENSIONS IN MILLIMETRES.
1. Sanitary and water connections shall be placed in a common trench and be installed to the center of a single family lot. Vertical/horizontal spacing of services as per M.O.E. and O.B.C. For a semi-detached lot the connections shall be installed to the quarter points of the lot.

2. Front yard infiltration facilities should be shared between two houses on the opposite side of the paired driveways.

3. The front yard infiltration facility shall have minimum 2.44m separation with the water service.

4. Sewer and water service connections shall not be installed within 1.5m of the center of a submersible transformer vault or within 0.9m of a proposed electrical service stub.

5. Fire hydrants shall not be installed within 3.0m of a proposed light pole or hydro pole standard.

6. Storm and sanitary connections shall be extended 1.5m inside the property line or to the extent of any easements.
NOTES:

1. Extruded Polystyrene Insulation to be 50mm thick Multi-purpose STYROFOAM Brand SM Insulation with shiplap edge treatment or approved equivalent.
2. Trench width dimensions to conform to Region of Waterloo Standard Drawing SSMS E1-01.
3. Granular 'A' bedding to extend to a minimum of 1500mm below finished grade.
4. Insulation along trench side slope to extend all the way to the bottom of the bedding.
5. Minimum bedding depth to conform to Region of Waterloo Standard Drawing SSMS E1-01.
6. When the spring line of the pipe is below 1.5m insulation is not required.

A. All dimensions are in millimetres unless otherwise shown.
From curb to street line Min: 20% Optimum: 4% Max: 8%.

1. All streets to be Min 20% with Min 120mm a perforated subbase (grass). (For all grading types)

2. All streets to be Min 0.15% and Max 0.20% according to site topography.

3. Difference between building line elevation and side yard slope elevation is


5. Difference between Sidewalk and grade line to allow .40 40.

6. Difference between house and building line Elevation to

7. Min of 6m of the rear lot area from the back of the house shall be

8. Min 1.4m

9. Observe Curb.

Authorization of the rear lot line to be a Min of 12m in width.

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The Corporation of the City of Kitchener

URBAN LOT GRADING TYPE G-SPLIT

DRAINAGE WITH WALKOUT
GENERAL NOTES

1. MIN 0.9' WIDE

2. ALL SMALLS TO BE MIN 2.2' WITH MIN. 4"CUBED SUCTION SUBBHEM (PASS)

3. DIFFERENCE BETWEEN BUILDING LINE ELEVATION AND SIDE WARD SWALE ELEVATION (FOR ALL GRADE TIPS)

4. SLIDES WITHIN LOT ARE TO HAVE A MAX GRADE OF 3:1. STRUCTURAL retaining WALLS WILL BE REQUIRED WHERE MAX. SLOPE IS EXCEEDED.

5. DIFFERENCE BETWEEN SIDE DOOR SLT AND GROUND ELEVATION TO BE MAX 0.4' H.

6. DIFFERENCE BETWEEN TOP OF FOUNDATION WALL AND BUILDING LINE ELEVATION TO 6".

7. A MIN OF 6' OF THE REAR LOT AREA FROM THE BACK OF THE HOUSE SHALL BE BE MIN 0.7'W.

8. TYPE "A" AND "C" LOTS WITH THROUGH DRAINAGE FROM OTHER TYPE LOTS.

9. DRAINAGE CRESSENT ZIP TO A MAX 6'.

10. DRAINAGE BETWEEN LOT LINE TO BE A MIN OF 12' IN WIDTH.

11. ATTACHING THE REAR LOT LINE ACHE TO BE A MIN OF 12' IN WIDTH.

FROM CURB TO STREET LINE MIN 2.0' OPTIMUM 4.0', MAX 8.0'.
NOTE:

OPTIMUM SIDE SLOPE: 1 VERTICAL TO 6 HORIZONTAL
MAXIMUM SIDE SLOPE: 1 VERTICAL TO 3 HORIZONTAL
MINIMUM GRADIENT: 2%
MAXIMUM GRADIENT: 8%
GRADE TRANSITIONS SHALL BE SMOOTH TO FACILITATE THE MOWING OPERATION
MINIMUM SWALES DEPTH 150 mm
MAXIMUM SWALES DEPTH 300 mm
NOTE:
CONSULT SPECIFICATION CK-135 REGARDING FENCE AND FOOTING REQUIREMENTS.
TOP OF ASPHALT TO BE 10mm ABOVE ADJACENT SURFACE

HAND TAMP EDGES TO 45° ANGLE WHERE ASPHALT MEETS ADJACENT SURFACE. TEMPORARILY REMOVE ANY OBSTRUCTIONS INTERFERING WITH HAND TAMING OPERATIONS. RESTORE EDGE UPON COMPLETION.

MEET PROPOSED / EXISTING GRADES
2% CROSS SLOPE OR CROWN

EDGE TREATMENT
(SEE ABOVE DETAIL)

REPAIR EDGE WITH TOPSOIL AND SEED

40mm COMPACTED HL3 ASPHALT
50mm COMPACTED HL4 ASPHALT

300mm GRANULAR 'A'
COMPACTED TO 98% S.P.D.

SUB-GRADÉ COMPACTED TO 98% S.P.D.

NOTE: EXCAVATE TO MINIMUM DEPTH OF 15" [390mm] OR END OF TOPSOIL LAYER TO A MAXIMUM DEPTH OF 33" [840mm]. FILL ADDITIONAL EXCAVATED TOP SOIL WITH COMPACTED GRANULAR 'B' BASE TO A MAXIMUM DEPTH OF 18" [450mm]
NOTE: EXCAVATE TO MINIMUM DEPTH OF 16" [400mm] OR END OF TOPSOIL LAYER TO A MAXIMUM DEPTH OF 34" [850mm]. FILL ADDITIONAL EXCAVATED TOP SOIL WITH COMPACTED GRANULAR 'B' BASE TO A MAXIMUM DEPTH OF 18" [450mm]
WASHED GRAVEL WRAPPED IN GEOTEXTILE FABRIC – TERRAFIX 270R OR APPROVED SUBSTITUTE MIN. 1000mm OVERLAP

50mm TALL GRAVEL BORDER

200–250mm RIVER STONE

100mm STONEDUST SURFACE COMPACTED AND GRADED SMOOTH

200mm MIN., 15mm Ø CLEAR WASHED GRAVEL

MAX. 25mm TOPSOIL/DUFF LAYER REMOVAL

SECTION
1. Refer to City of Kitchener Standards for Concrete, Jointing, and Walkway Block Details.

2. For use where walkway block terminations at Parkland.

Note:
NOTES:

1. ALL FENCING AND FASTENERS TO BE GALVANIZED PRIOR TO FABRICATION.
2. EXTRUDED BLACK VINYL COATING MAY BE APPLIED PROVIDED ALL FENCING MATERIALS ARE GALVANIZED PRIOR TO COATING. WHERE VINYL COATING APPLIED, ALL FENCING ELEMENTS TO BE COATED.
3. MID-BRACING RAILS REQUIRED WHERE FENCE HEIGHT IS GREATER THAN THAT SHOWN ON THE DETAIL. MID-BRACE TO BE 43mm Ø RAIL ON TERMINAL, CORNER, STRAINING OR GATE POSTS.
4. WIRE MESH SHALL BE MEASURED AT 9 GAUGE PRIOR TO GALVANIZING AND/OR ADDITIONAL COATING.
5. CONCRETE FOOTINGS TO BE 20Mpa STRENGTH AT 28 DAYS
6. ALL PIPE TO BE SCHEDULE 40.
7. WIRE MESH SHALL BE INSTALLED ON THE CITY PROPERTY SIDE OF FENCE.
3" Ø STEEL PLATE WELDED TO 3" PIPE
LOCKING MECHANISM, SEE BELOW
2 3/8" Ø STEEL PIPE
2 1/2" Ø STEEL ELBOWS, 90° BUTT WELD
1824 [6']

REDUCER - 2 1/2" TO 1 1/4"
1 1/4" Ø STEEL PIPE
250 Ø CYLINDRICAL FORM
2 3/8" Ø STEEL PIPE
250mm Ø CONCRETE FOOTING
150 [6"] x 12 [5"] Ø ROD OR REBAR WELDED TO PIPE
250 [9 3/4”]

BELL BOTTOM OF EXCAVATION

NOTES:
1. ALL CONNECTIONS ARE WELDED WITH COMPLETE SOLID WELD
2. ALL STEEL ON GATES TO BE HOT DIPPED GALVANIZED AFTER FABRICATION
NOTES:
1. MINIMUM DISTANCE BETWEEN ALL CONTROL OBJECTS 1800mm.
2. PLACE ARMOURSTONE AS REQUIRED BY SITE CONDITIONS TO MEET CONTROL STANDARDS. SIGN POSTS MAY BE CONSIDERED AS CONTROL OBJECTS.
3. ON-ROAD PAVEMENT AND WIDTH REQUIREMENTS SUBJECT TO REVIEW BY CITY OF KITCHENER TRAFFIC DEPARTMENT, MEETING OTM BOOK 18 REQUIREMENTS.
4. DIRECTIONAL AND WAYFINDING MAY BE REQUIRED BY THE CITY OF KITCHENER SUBJECT TO REVIEW OF LOCAL CONDITIONS AND DESTINATION POINTS.