Appendix 1

Regional Roads within the City of Oshawa

TOWNSHIP OF SCUGOG

COATES RD

CPR

SIMCOE ST

RAGLAN RD

RITSON RD

GRANDVIEW ST

TOWNLINE RD

HOWDEN RD

TOWN OF WHITBY

MUNICIPALITY OF CLARINGTON

COLUMBUS RD

THORNTON RD

SIMCOE ST

RITSON RD

WILSON RD

HARMONY RD

TOWNLINE RD

WINCHESTER RD

CONLIN RD

STEVENSON RD

LEGEND

City Road

Regional Road

Provincial Highway #401

Unimproved Road

The City of Oshawa

Road Jurisdictions - North Half

1:30,000

NOTE: Information provided on this map should not be used as a substitute for legal, real estate, survey or City of Oshawa staff advice. The City of Oshawa assumes no liability for any damages or loss that may arise from the use or misuse of any of the information contained herein. All information that appears on this map is presented as is, without warranties of any kind, either expressed or implied.

N

March 2012

City of Oshawa
CORPORATE SERVICES DEPARTMENT

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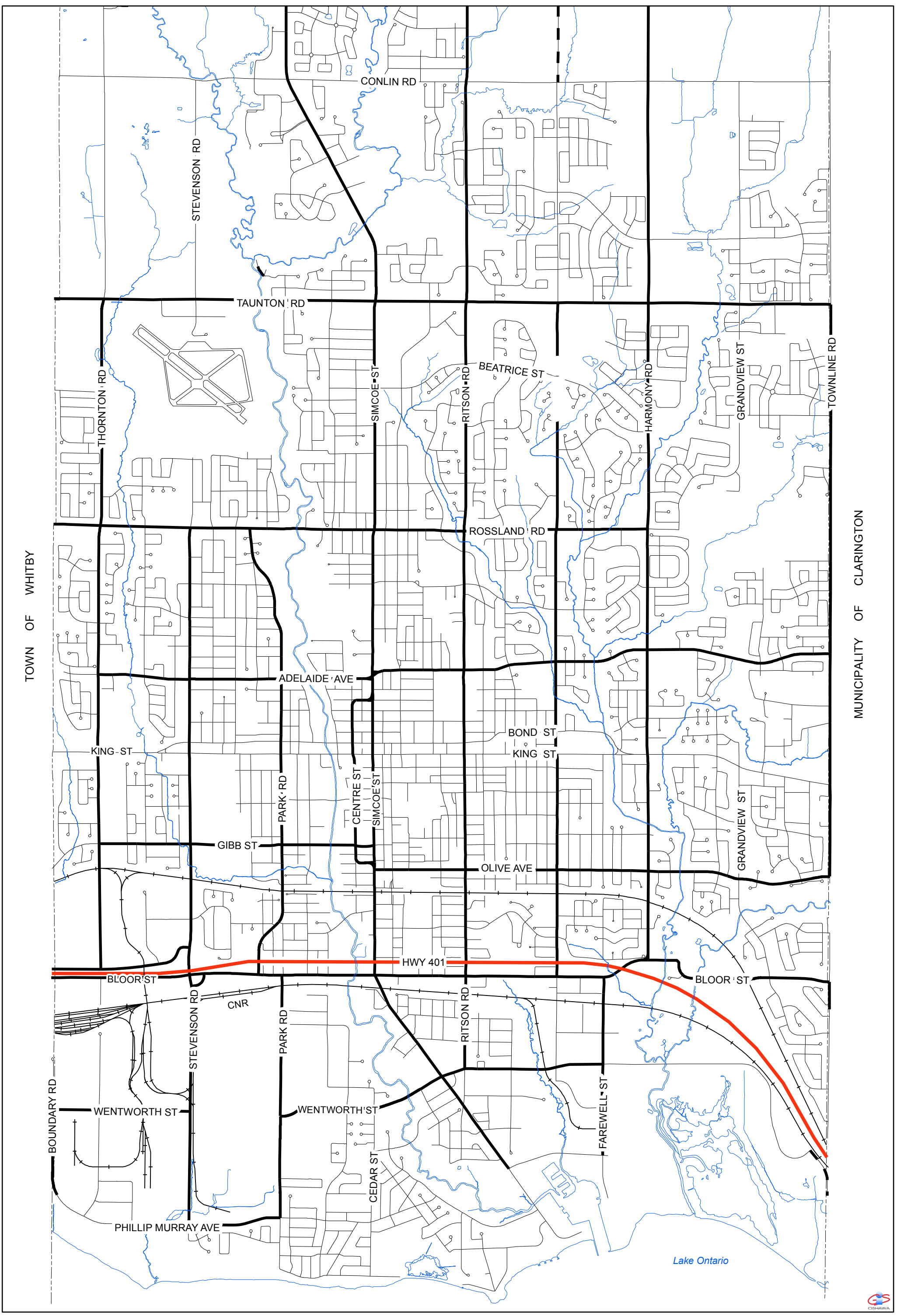

LEGEND

- City Road
- Regional Road
- Provincial Highway #401
- Unimproved Road

The City of Oshawa

Road Jurisdictions - South Half

1:30,000

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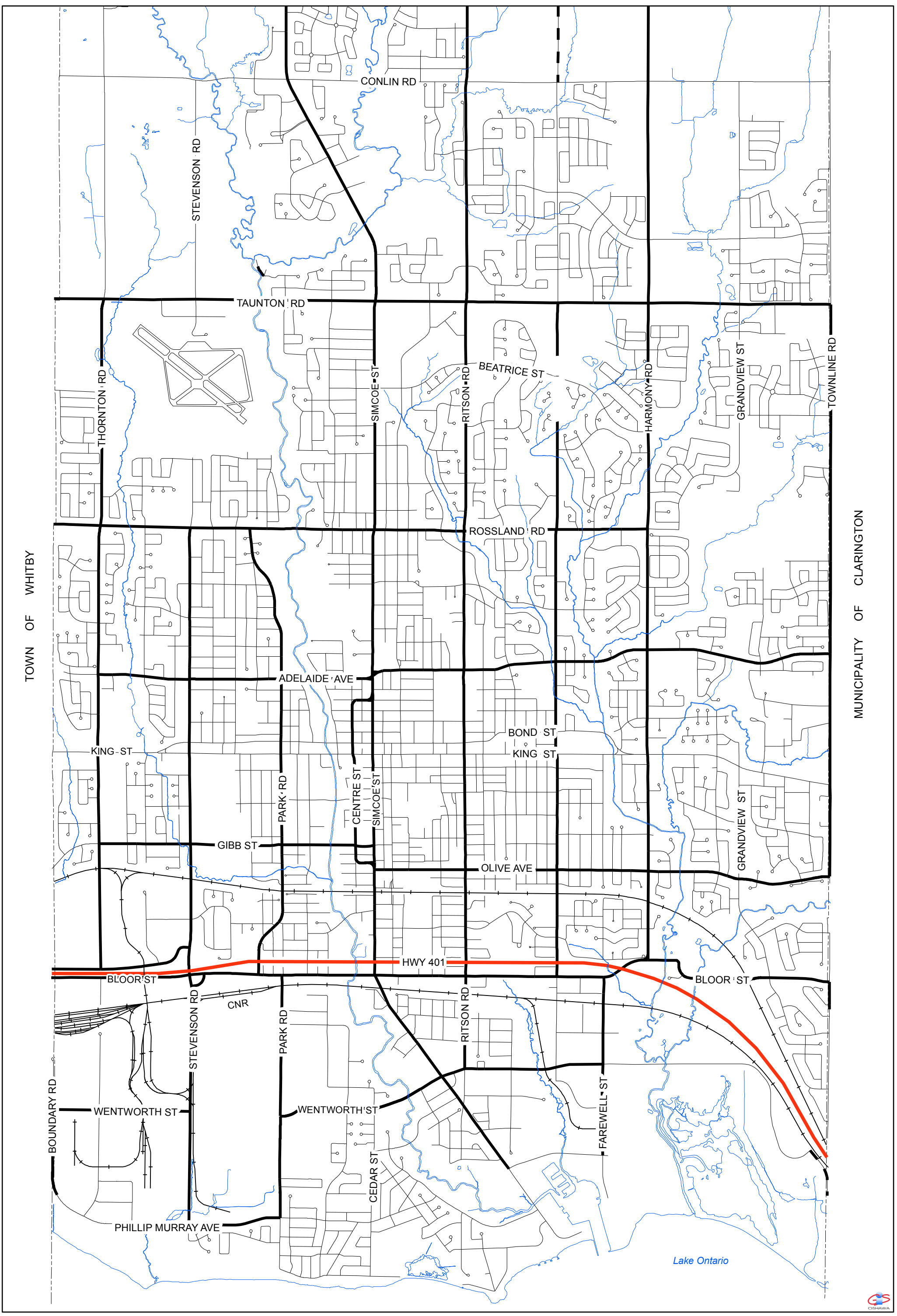

LEGEND

- City Road
- Regional Road
- Provincial Highway #401
- Unimproved Road

The City of Oshawa

Road Jurisdictions - South Half

1:30,000

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TOWNSHIP OF SCUGOG

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N

March 2012

City of Oshawa
CORPORATE SERVICES DEPARTMENT

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Appendix 2

Servicing Cost Estimate Sample

CONSULTANT'S ESTIMATED SERVICING COSTS

DEVELOPMENT: SUBD. FILE NO.:

CONSULTANT: ESTIMATE DATE:

REGIONAL FACILITIES: ESTIMATED CONSTRUCTION COST _____ (Incl 5% Contingencies)

CITY FACILITIES: ESTIMATED CONSTRUCTION COST

	Agreement Securable
STAGE I SERVICES	
STORMWATER MANAGEMENT POND	
STORM SEWER SYSTEM & CONNECTIONS	
** STORM CONNECTIONS ONLY **	
FOUNDATION DRAIN SYSTEM & CONNECTIONS	
ROADWORKS: FINE GRADING	
TEMP/EMERG ACCESS ROAD	
GRANULAR BASE FOR ROADS	
SUBDRAINS	
STAGE I BASE CURB	
ASPHALT BINDER PAVEMENT	
TRAFFIC CONTROL (SIGNS AND TEMPORARY PAVEMENT MARKINGS)	
MISCELLANEOUS ROADWORKS	
STREETLIGHTING	
Subtotal A	
+ 5% CONTRACT CONTINGENCIES	
+ 10% CONTRACT ENGINEERING	
STAGE I TOTAL	
STAGE II SERVICES	
ASPHALT SURFACE PAVING (INCLUDING FINAL PAVEMENT MARKINGS)	
STAGE II CURB AND GUTTER	
BOULEVARD GRADING AND SODDING	
CONCRETE SIDEWALK	
Subtotal B	
+ 5% CONTRACT CONTINGENCIES	
+ 10% CONTRACT ENGINEERING	
STAGE II TOTAL	

(Securable) ESTIMATED CITY FACILITIES DEPOSIT: _____

SILTATION CONTROL DEPOSIT:

ROADWAY DAMAGE DEPOSIT: _____

Appendix 3

City Council Policy Related to “Residential Development”

Appendix 3

POLICY & PROCEDURE No. 2.3.1-020

DEPARTMENT OF PUBLIC WORKS
DIVISION: ENGINEERING SERVICES
SECTION: ADMINISTRATIVE

PAGE NO: 1 OF 10

REVISION NO: 3
DATE: 1995 05 01

ESTABLISHED: 1986 03 03

TITLE: RESIDENTIAL DEVELOPMENT PHASE 1

PURPOSE

To outline the terms under which a Developer be allowed to engage his own contractor to construct required municipal services and to engage his own consultant to ensure such services are built to the City's standards.

SOURCE

City Council, 1986 03 03

City Council, 1986 05 20 (amendments and additions)

City Council, 1995 05 01 (amendment)

POLICY

City Council, 1986 03 03

That effective for any subdivision agreement which the City enters into subsequent to the date of Council's adoption of this motion, the subdivider shall be required to engage a contractor to construct the various public services within the plan of subdivision subject to the following conditions:

POLICY (Cont'd)

1. The subdivider shall retain a professional engineer approved by the Commissioner of Public Works Services to carry out all the necessary engineering, including design, contract administration and full time resident supervision of the work required for the development of the subdivision as required by the Commissioner of Public Works Services and in accordance with the policies, standards and specifications of the City.

2. Any contractor to be employed by the subdivider to construct the public services shall be subject to approval by the Commissioner of Public Works Services.

3. The subdivider shall prepare all required schedules and reports as may be required by the City relating to the construction of all public services and submit the same to, and obtain the approval of, the Commissioner of Public Works Services.

City Council, 1995 05 01

4. In order to ensure the performance by the subdivider of the installation, maintenance and repairs of the various public services and other matters to be performed by the subdivider, the subdivider shall deposit with the City a Letter of Credit in the amount of 100% of the estimated cost of the installation of the public services and other matters for which it is responsible. The City will from time to time reduce the Letter of Credit as work progresses on a contract to a maximum of 80% of the estimated cost of the services upon which the Letter of Credit was based. The balance of the Letter of Credit (20%) will be retained by the City to insure performance under the guarantee and maintenance requirements of this Appendix.

5. No building permit shall be issued until:

   (a) the highway in front of the lot for which a building permit is being applied for, and any other highways required to give access to such lot, have been completed to the stage of construction of full depths of Granular "B" gravel and Granular "A" gravel and is, in the opinion of the Commissioner of Public Works Services of the City, in proper traffic condition for vehicular traffic;

POLICY (Cont'd)

(b) the sanitary sewer and water facilities required to service the lot have been completed on the street upon which the lot fronts and are connected to the Region's water and sewer system so as to provide an adequate sewer and water system to the lot;

(c) the storm sewer facilities required to service the lot and to drain the highways required to be completed in (a) above have been completed.

City Council, 1986 05 20

Notwithstanding the provisions set out above, building permits will be issued to permit the erection of model homes on lots in a location acceptable to the City to a maximum of 10% of the total number of lots being serviced in the plan.

6. No building within the plan of subdivision shall be occupied until:

(a) water and sanitary sewer service to the said building is in operation;

(b) hydro electric service to the building is in operation;

(c) the highway in front of such building and any other highways required to give access to such building has been graded, leveled and surfaced with binder course of asphalt. It is understood, however, that it may not be advisable, because of weather conditions, to complete the binder course of asphalt during the period of October 30th of any year to June 30th of the following year. It is agreed, therefore, that an application for an Occupancy Permit will not be refused during the period of October 30th of any year to June 30th of the following year, by reason of the lack of a binder course of asphalt, provided due diligence has been given to completing the binder course of asphalt by October 30th when possible.

7. If any dwellings become occupied adjacent to roads or parts thereof that do not have a binder course of asphalt pavement, the subdivider shall undertake winter control operations on such roads from such occupied dwellings to existing paved roads and shall provide refuse collection to such dwelling units.

POLICY (Cont'd)

City Council, 1986 03 03

8. Generally, the construction of surface course asphalt, curb and gutter and sidewalk, shall be undertaken as a second stage contract after 80 percent of the lots on a street have been built up. The subdivider shall obtain approval of the Commissioner of Public Works Services prior to proceeding with such construction.

9. The subdivider shall guarantee all the services from all defects in workmanship or material for a period of two years. During the two year maintenance period the subdivider shall maintain all services in good working order and in a good state of repair.

City Council, 1986 05 20

10. The City's contribution towards the increased capacity of collector roads be made to subdividers on a fixed basis following completion of their contracts.

Development and Planning

PROCEDURE

This procedure is established to guide the processing of subdivision developments where Subdividers will engage a Professional Engineer to prepare construction drawings, contract tender and the awarding and administering of the construction of municipal services.

1.1 (i) "Stage I Services" means the construction of storm sewers, sanitary sewers and watermains with connections, storm sewer connections including catch basins, utility duct road crossings, granular base road with a binder course of asphalt, graded boulevards, electrical plant and all appurtenances normally associated with the construction of such services and may also include, where good engineering practice dictates, culverts, walkways, fencing, watercourse alterations and curbs and gutters.

PROCEDURE (Cont'd)

(ii) "Stage II Services" means the completion of any service not included in the Stage I construction and the construction of the final course of asphalt pavement on roads, the construction of curbs and gutters, sidewalks, the sodding of boulevards, walkways, cul-de-sacs, the adjustment of all Stage I services to fit the Stage II construction, if necessary, the cleaning of sewers and any other necessary repair work to the Stage I services, driveway repair, and without limiting the generality of the foregoing, may also include the planting of trees on the boulevards and any other service which may be required by the subdivision agreement;

(iii) "Subdivider" means the Subdivider named in the subdivision agreement or anyone obtaining title to any land in the Plan from him directly or indirectly and includes a mortgagee in possession of any land or any contractor retained by the Subdivider to build services or any subcontractor employed under such contractor or any other developer or subcontractor or builder who obtains title to any land in the Plan as the context requires, but shall not extend to or include a homeowner or anyone obtaining title through or from a homeowner as defined in the subdivision agreement.

(iv) "Engineer" means a Professional Engineer who holds Certificates of Authorization as required by the Professional Engineers Act of the Province of Ontario and who has been engaged by the Subdivider to provide professional engineering services to carry out detailed designs and to undertake contract administration and to act as the Subdivider's representative in all matters pertaining to the development of the plan and the construction of services.

(v) "Tender" means the contract tender agreement which includes, but is not limited to, the form of tender, the instructions to contractors, the general conditions of the contract, the special conditions or provisions of the contract, the detailed specifications of the contract, the standard specifications of the contract and the contract drawings.

Design

1.1 Prior to the preparation of construction drawings, the Subdivider will advise the Engineering Services Manager in writing of the name of the Engineer proposed to be engaged to carry out the design and administration required to develop his plan of subdivision. The Engineering Services Manager will advise the Subdivider in writing within ten working days from receipt of the letter if the Engineer proposed to be engaged ***is*** ***not*** acceptable to the Commissioner of Public Works Services.

1.2 The Engineer shall prepare construction drawings for Stage I and Stage II services and such designs and soils investigations as may be required, all in accordance with the standards and design requirements of the City. Soils investigation and reports prepared by soils consultants when reviewed will be circulated to the Chief Materials Inspector for review and approval. Six sets of the completed drawings will be submitted by the Engineer to the Engineering Services Manager. These drawings upon receipt will be forwarded to the Road Design Division and the Water Resources Section for review in accordance with standard review procedures. The Design Divisions upon completion of their review will return the drawings with comments to the Engineering Services Manager who will co-ordinate a response for return with the drawings to the Engineer. Further submission of drawings will continue to be processed as above until the Design Divisions indicate their acceptance. The final submission of drawings for Stage I services must include all ducts required by utility companies for the provision of their plant.

1.3 The Engineer, following acceptance of the construction drawings, will provide the Engineering Services Manager with a detailed estimate of the cost of servicing the development. The estimate will be verified by the Engineering Services Manager and if accepted, used in the preparation of the engineering and inspection fees to be incorporated into the subdivision agreement.

1.4 The Engineering Services Manager will initiate the preparation of the subdivision agreement following acceptance of the construction drawings, easement drawings, final plans of subdivision and service cost estimates.

PROCEDURE (Cont'd)

1.5 The Engineer prior to calling of Tenders for the construction of Stage I or Stage II services, as the case may be, must submit the Tender documents together with a covering letter to the Engineering Services Manager advising that the Tender as prepared is in compliance with City of Oshawa requirements (Standards and Specifications) and/or setting out any deviations from the City's requirements contemplated in the Tender. The Tender upon receipt will be forwarded together with a copy of the covering letter to the Construction Engineer for his review and acceptance. The Construction Engineer will advise the Engineering Services Manager if the Tender is acceptable or alternatively of any changes which he may require. The Engineer will be advised accordingly by the Engineering Services Manager. It is noted that 45 days prior to tendering a contract for the Stage II services, the Engineer must contact the City and the Region to confirm that the storm sewers, foundation drain collector pipes and the sanitary sewers have been televised and/or to request the City and the Region to expedite the television inspection of their respective services. (Note: The Engineer is responsible for cleaning sewers prior to televising.) It is further noted that construction of the Stage II services shall not commence until Provisional Acceptance of Stage I services has been provided by the City, which will not be issued prior to receipt of Provisional Acceptance of Oshawa Public Utilities Commission, Provisional Acceptance from the Region, 80 percent of the buildings on a street are completed and one winter season has lapsed following completion of the underground services.

1.6 The Subdivider prior to signing any contract for the construction of either Stage I or Stage II services must obtain written approval of the Commissioner of Public Works Services or designate for any contractor or subcontractor to be employed to construct the services. The Engineer will be required to provide the Engineering Services Manager with the name of the contractor proposed to be employed to construct the services. The Engineering Services Manager will consult with the Construction Engineer on the acceptability of the contractor and will advise the Engineer within ten (10) working days of the acceptance or rejection of the contractor. In those instances where the contractor has not previously been employed within the City for the construction of services for or on behalf of the City, references with the name of contact persons must be provided.

If the contract includes the construction of any services for which the City has a financial contribution, except for the excess width of collector roads, the Engineer must in addition provide the City with a complete set of contract documents as tendered by the contractor for review by the City. The City will within ten (10) working days of receipt of the Tender advise of its acceptance or rejection of the Tender.

PROCEDURE (Cont'd)

Construction

2.1 Following acceptance of the contractor and if required the Tender, the Engineer must arrange with the City's Construction Engineer for a preconstruction meeting. The Construction Engineer will advise all affected staff of the time, date and location of the meeting.

The Engineer must prior to or at the meeting provide the City with the following:

- a contract construction schedule and dates of completion; (The Construction Engineer will provide the Traffic Co-ordinator with a copy of the schedule. The Traffic Co-ordinator, upon receipt of the schedule will order street signs in sufficient time to ensure they are available for erection upon the completion of construction of Stage I services.)

- two complete sets of contract documents, including prices, one set of which will be executed by the Subdivider and the contractor;

- verification that Subdivider's insurance liability endorsement has been lodged with the City Treasury Department. If the liability insurance endorsement excludes blasting, the Engineer must provide confirmation in writing to the Engineering Services Manager that blasting will not be permitted during the construction of services.

- verification that Letter of Credit to secure services has been lodged with the City;

- a resume of the full-time Resident Inspector to be employed by the Engineer to administer the contract;

- the name and telephone number of the consultant's contact person in the event of an emergency. (The Construction Engineer will provide this information to Public Works Services Maintenance Engineer.)

PROCEDURE (Cont'd)

2.2 The Engineer must provide the Construction Engineer with 48-hours notice prior to commencing construction. The subdivision agreement must be executed by the Subdivider and all monetary securities and insurance endorsements required under the agreement lodged with the City. During the course of construction of the services, the Engineer will liaise with the Construction Engineer or designate on all matters relating to the contract construction. The contract will be subject to the policies established by the Construction Division with respect to quality control and other matters.

2.3 During the course of construction, should any major problems relating to construction, performance or otherwise become evident, the Construction Engineer will bring such matters to the attention of the Engineering Services Manager for appropriate follow-up action.

2.4 The Engineer may apply to the City for reductions in the letter of credit deposited with the City to secure construction of the services or request payment for the City's share of the services as progress payments are made to the contractor. Request in this regard must be accompanied by:

(i) A copy of the progress payment certified as correct by the Engineer.

(ii) A comparison between the estimates in the subdivision agreement and the progress payment. The comparison must show items, quantities, unit prices and totals for both the estimate and the work completed as per the progress payment certificate including quantities and unit prices.

(iii) A letter from the contractor confirming receipt of the payment set out in the payment certificate.

(iv) A letter from the Subdivider or Engineer confirming that the payment set out under the payment certificate has been made to the contractor. (Note: Samples of the letters acceptable to the City for items (c) & (d) above are available from the Engineering Services Manager. Letters submitted must be on the Subdivider's or the Engineer's letterhead.)

PROCEDURE (Cont'd)

(v) A statutory declaration from the subdivider declaring that the Construction Lien Act S.O. 1983, Chapter 6 as amended, has been complied with.

It is noted that in those instances where the City has a share of the work in the progress or final payment certificate or for the excess width of collector roads and the Engineer is requesting payment to reimburse the Subdivider, payment to the Subdivider shall not be made until or unless the street upon which the work was completed is dedicated as a public highway.

2.5 The Subdivider shall not be entitled to building permits until the services on the streets within a plan of subdivision have been constructed and the full depths of Granular "B" gravel and Granular "A" gravel have been placed. The subdivider is, however, entitled to permits for model homes as provided for under Paragraph 13 of Appendix I to the subdivision agreement. The Construction Engineer will advise the Engineering Services Manager upon the completion of Granular "A" and Granular "B" gravel. In addition the Subdivider or his Engineer will be required to provide evidence that an agreement has been executed with the Oshawa Public Utilities Commission for installation of their electrical plant. The Engineering Services Manager upon receipt of the above will advise the Building Division of the Department of Development and Planning Services that subject to the terms of the subdivision agreement the Department of Public Works Services would have no objection to the issuance of building permits. Normally foundation drains will connect to the storm sewer, however, the notification provided to the Building Branch must advise when the foundation drains are connected to the sanitary sewer and request that the Chief Plumbing Inspector be advised accordingly.

2.6 The Subdivider shall normally not be entitled to permit occupancy until binder asphalt has been completed within the subdivision. The City will with the completion of binder asphalt, assume the responsibility of snow plowing, winter control of the roads, the installation of traffic control signing, and street name signs. In order to advise and/or initiate these works, the Construction Engineer will by memorandum advise the Engineering Services Manager, the Maintenance Engineer and the Traffic Co-ordinator, following completion of the binder asphalt pavement. Each Division or Section notified will initiate the appropriate action within that Division or Section.

POST CONSTRUCTION

2.7 The Construction Engineer following completion of construction and rectification of all deficiencies of City services and upon receipt of certification from the Engineer that the works have been constructed in accordance with the approved plans will issue to the Subdivider a letter of Provisional Acceptance (completion acceptances) of the services constructed. The letter will provide the date to be taken as the commencement date of the maintenance guarantee period. The Provisional Acceptance and guarantee maintenance period may be coincidental with the acceptance and maintenance period dates issued by the Region. However, in no instance will the City issue its Provisional Acceptance until the Region has advised the City of its Provisional Acceptance of its services. It shall be the Subdividers responsibility to ensure that the Region and Oshawa Public Utilities Commission provide the City with these required letters of acceptance. The Construction Engineer will provide copies of his correspondence in this regard to the Engineering Services Manager, Financial Supervisor and the Maintenance Engineer.

3.1 The Subdivider following Provisional Acceptance of the services shall be entitled to payment from the City for its share of Stage I or Stage II construction of any collector roads within the plan, and up to an 80 percent reduction in the letters of credit lodged to secure completion of the constructed services. To qualify for the collector road payment and the 80 percent reduction, the following information must be submitted to the Engineering Services Manager.

(i) Confirmation that the requirements of the Construction Lien Act have been complied with to the satisfaction of the City.

(ii) The appropriate final payment certificates must have been submitted to the City in the manner set out in clause 2.4 above.

(iii) A declaration from the Subdivider that all accounts relative to the installation of the completed services have been paid.

3.2 The Engineering Services Manager shall, following the review and acceptance of the information provided under Item 3.1 above, issue instructions to the Financial Analyst, Capital Accounting, for the payment to be made to the Subdivider and/or reductions in the Subdivider's letter of credit, as the case may be.

POST CONSTRUCTION (Cont'd)

3.3 The Subdivider or his Engineer, not less than sixty days prior to the expiration of the guaranteed maintenance period of Stage I or Stage II Services, as the case may be, shall contact the Construction Engineer to arrange for a joint inspection of the services. It is noted that in the case of Stage I Services, they shall be guaranteed and maintained for two years or until a Certificate of Provisional Acceptance of the Stage II Services is issued, whichever event shall last occur. The Commissioner of Operations will issue a Certificate of Final Acceptance of the Stage I or Stage II Services as the case may be. (Copies will be forwarded to Engineering Services Manager, the Maintenance Engineer, the Capital Programs Manager, and the Traffic Co-ordinator.) The issuance of the final acceptance will be subject to the following:

(i) Written confirmation from the Region in the form of their Completion Acceptance or Final Acceptance Certificate, as the case may be, advising that all defects to their services have been corrected and the services have been accepted; (Note: The Region may not require that deficiencies to curb stops and other minor items be rectified before issuing their Provisional Acceptance.)

(ii) Written confirmation from the Engineering Services Manager that:

- the Engineer has provided the original engineering drawings to the City showing, as constructed, information in accordance with the City's standards, together with the as-constructed crownline elevations of the surface asphalt at intervals of 25 metres, the elevation at the centre line of all intersecting streets, and the crownline elevation at the limit of streets within the subdivision. This information is to be provided in a table showing the station, the design elevation and the as-constructed elevation; the Subdivider has provided a statutory declaration to the City stating that all accounts relating to the construction of the completed services have been paid and that the Construction Lien Act S.O. 1983, Chapter 6 as amended, has been complied with;

- the Subdivider, in the case of Stage II Services, has provided the City with a certificate from an Ontario Land Surveyor certifying that all standard iron bars shown on the registered plan marking the main points of the limit of the highways and any other blocks on the plan which have been dedicated or conveyed to the City or the Region are installed in their correct location; and,

POST CONSTRUCTION (Cont'd)

- Prior to the City providing final acceptance of the Stage II services, the Engineer must provide the City with written verification that all sanitary sewer connections have been tested and none are connected to the storm sewer or foundation drain collector pipe. This verification shall apply to all lots on which buildings have been constructed and connections to the sewer systems completed. The verification shall further note those lots which have not been built upon.

Following the issuance of a certificate for Final Acceptance for Stage I and/or Stage II services, the Subdivider shall be entitled to receive the final 20 percent reduction in his letter of credit.

The issuance of the final acceptance of the Stage II Services shall be considered by the City as assumption of the streets and the services constructed by the Subdivider on behalf of the City.

Appendix 4

City Council Policy Related to “Types of Securities”

Appendix 4

POLICY & PROCEDURE No. 2.3.1-016

DEPARTMENT OF PUBLIC WORKS
DIVISION: ENGINEERING SERVICES
SECTION: ADMINISTRATIVE

PAGE NO: 1 OF 4

REVISION NO: 2
DATE: 1988 02 05

ESTABLISHED: 1968 11 19
APPROVED BY:
DATE:

TITLE: TYPES OF SECURITIES ACCEPTABLE FOR SUBDIVISION DEPOSITS

PURPOSE

To define alternative forms of securities for subdivision deposits.

SOURCE

City Council, 1968 11 19
City Council, 1971 05 03
Memorandum from Treasurer & Director of Finance, 1988 02 05
(For Information Purposes)

POLICY

City Council, 1968 11 19

Procedure for Security of Subdivision Deposits

On July 15, 1968, the Board of Control approved in principle that a Subdivider may be allowed the choice of any one or a combination of the following alternate forms of securities for subdivision deposits:

1. Cash or Certified Cheque
2. Letter of Credit of Chartered Bank
3. Marketable Government Bonds, (Municipal, Provincial and/or Federal)
4. Negotiable Investment Certificates of Trust Companies

The following administrative procedures relating to the above forms of securities are recommended for deposits as required under Paragraph 7(i) of the Subdivision Agreement: (now Paragraph 7 of Appendix 'I").

Cash or Certified Cheque

The Corporation will accept cash or certified cheque, to be held in trust by the City Treasurer until a contract for subdivision services is signed, then sufficient money will be transferred from the trust into the City's general account to cover the estimated total cost of the services to be constructed under the contract.

The City Treasurer will pay interest on such trust deposits at the going rate of interest he obtains in the money market.

Letter of Credit of Chartered Bank

The Subdivider may give a letter of credit of a Chartered Bank in favour of the City with the following terms:

1. That the bank shall pay to the City Treasurer, such sums of money as he may request from time to time up to a maximum limit of the credit without recourse.

2. That the Letter of Credit shall be valid for at least one year from the date of issue and subject to extension when the subdivision services have not be completed.

The Letter of Credit cannot be revoked unless authorized by the City Treasurer and it cannot be transferred to any other contract of the Subdivider.

Marketable Government Bonds and/or Negotiable Investment Certificates of Trust Companies

The City may accept Canadian Municipal, Provincial or Federal Government bonds and negotiable investment certificates of Trust Companies as security for payment of deposits specified under the subdivision agreement provided the bonds and/or certificates are of a type acceptable to the City Treasurer at his discretion. Procedures to be followed are:

1. The bonds and/or certificates shall be deposited with the City's bankers, the Canadian Imperial Bank of Commerce, in negotiable form, to their satisfaction.

2. Interest on the securities when collected will be paid to the Subdivider by the bank.

3. The market value of bonds and/or certificates shall be maintained equal to full value of the deposit at all times.

4. On or before the City accepts a tender for any part of subdivision services, the Subdivider will exchange the bonds and/or certificates for cash equal to the amount of the services included in the contract. If the exchange is not made, the City Treasurer shall sell such securities as necessary at market value without recourse

City Council 1971 05 03

That the Council policy of November 19, 1968 re alternative forms of subdivision deposit securities, be so interpreted to permit the Subdivider to lodge with the City Treasurer, a letter of credit to cover the full amount of the subdivision agreement with the understanding that a draw will be initiated immediately against the letter of credit for the amount of fixed costs.

Memorandum from Treasurer and Director of Finance, 1988 02 05 (For Information Purposes)

Letters of Credit; Acceptance by City

This will advise that letters of credit will be accepted only if issued by a bank holding a charter issued by the Federal Government of Canada (a Federally-chartered bank). Furthermore, such letter(s) of credit will be accepted, without reservation, only if:

(a) issued by one of the following Schedule "A" banks:

- The Royal Bank of Canada;
- The Canadian Imperial Bank of Commerce;
- The Bank of Nova Scotia;
- The Toronto-Dominion Bank;
- The Bank of Montreal;

and,

(b) the content of such letter of credit is fully consistent with the City's requirements, as exemplified in the attached "sample" letter of credit.

Letters of credit issued by Schedule "A" banks other than those listed above, and by Schedule "B" banks may be acceptable to the City, subject to review by Treasury staff. In that such review may require this Department to obtain information and documentation not readily at hand, a period of up to fifteen (15) working days will be required prior to this Department issuing a notification of acceptance, or otherwise, of a submitted letter of credit.

Letters of credit issued by Provincially-chartered banks, trust companies, or any other financial institutions will not be accepted by the City, for administrative purposes.

The above policy is effective as of the date of this memorandum. Please advise appropriate members of your staff accordingly.

Questions, or further clarification, if required, should be directed to C.W. Keil (650), or A.P. Geboers (655).

IRREVOCABLE COMMERCIAL LETTER OF CREDIT - Sample Copy-

NO.

(Name of Bank)

19

(Branch) (Date)

TO: The Corporation of the City of Oshawa
50 Centre Street South
Oshawa, Ontario L1H 3Z7

WE HEREBY AUTHORIZE YOU TO DRAW ON

FOR ACCOUNT OF

UP TO AN AGGREGATE AMOUNT OF

AVAILABLE BE DRAFTS AT SIGHT FOR 100% OF INVOICE VALUE OF STANDING CREDIT
GUARANTEE AS FOLLOWS:

Pursuant to the request of our customer,
we, hereby establish and
give to you an Irrevocable Letter of Credit in your favour in the total amount of $ which may be drawn on by you at any time and from time to time upon written demand for payment made upon us by you, which demand we shall honour without enquiring whether you have a right as between yourself and our said customer, to make such demand and without recognizing any claim of our said customer, PROVIDED however, that you deliver to the
at such time as a written demand for payment is made upon us a certificate signed by the City Treasurer agreeing and/or confirming that monies drawn pursuant to obligations incurred or to be incurred by you in connection with contractor's agreement covering cost of servicing to be provided pursuant to the Agreement between the City and Customer.

The amount of this Letter of Credit shall be reduced from time to time as advised by notice in writing given to us from time to time by the City Treasurer.

Partial drawings are permitted.

The Letter of Credit shall be valid for one year from date of issue and subject to extension when the subdivision services have not been completed.

This Letter of Credit cannot be revoked unless authorized by the City Treasurer and it cannot be transferred to any other contract of the subdivider.

The Drafts drawn under this credit are to be endorsed hereon and shall state on their face that they are drawn under
Letter of Credit No.

Accountant Manager

Appendix 5

Sample Letter from Contractor Confirming Receipt of Payment

Appendix 5

Date:_____

City of Oshawa
Engineering Services
50 Centre Street South
Oshawa, ON L1H 3Z7

SUBDIVISION_____

CITY OF OSHAWA FILE NO.:_____

CONTRACT NO.:_____

PAYMENT NO.:_____

A progress payment was received from _____ in the amount of $_____ on _____.

All accounts relative to the installation of the completed services represented by the progress payment have been paid.

_____
Company Official

Appendix 6

Sample Letter from Subdivider or Engineer Confirming Payment to Contractor

Appendix 6

Date:_____

City of Oshawa
Engineering Services
50 Centre Street South
Oshawa, ON L1H 3Z7

SUBDIVISION_____

CITY OF OSHAWA FILE NO.:_____

CONTRACT NO.:_____

PAYMENT NO.:_____

A progress payment was made to _____ in the amount of $_____ on _____.

Attached is a copy of the progress payment certificate signed by the consultant, and a service charge estimate comparison.

_____
Company Official

Appendix 7

Sample of Engineer's Certificate of Completion of Services

Appendix 7

Date:_____

City of Oshawa
Engineering Services
50 Centre Street South
Oshawa, ON L1H 3Z7

SUBDIVISION_____

_____ have been retained as consulting engineers for the above project. We hereby declare that all pertinent services have been completed in accordance with the Subdivision Agreement and to t he specifications and standards of the regulating authorities.

The services in concern were installed under our supervision and successfully completed using good engineering and construction practices.

Should you require further information or clarification, please contact the undersigned at your convenience.

_____
Company Official

Appendix 8

Storm Sewer Design Sheet

CITY OF OSHAWA | **STORM SEWER DESIGN SHEET (METRIC)** | **__ YEAR STORM CURVE**

PROJECT:	DETAIL:	CRITERIA:
DESIGN BY:	DATE:	CHECKED BY:
NOTES :		

MANNING'S FORMULA
N=0.013

PARK LAND I = 0.20
SINGLE I = 0.50-0.60
SEMI I = 0.60

TOWN HOUSE I = 0.65
APARTMENTS I = 0.65
COMMERCIAL I = 0.90
INDUSTRIAL I = 0.90

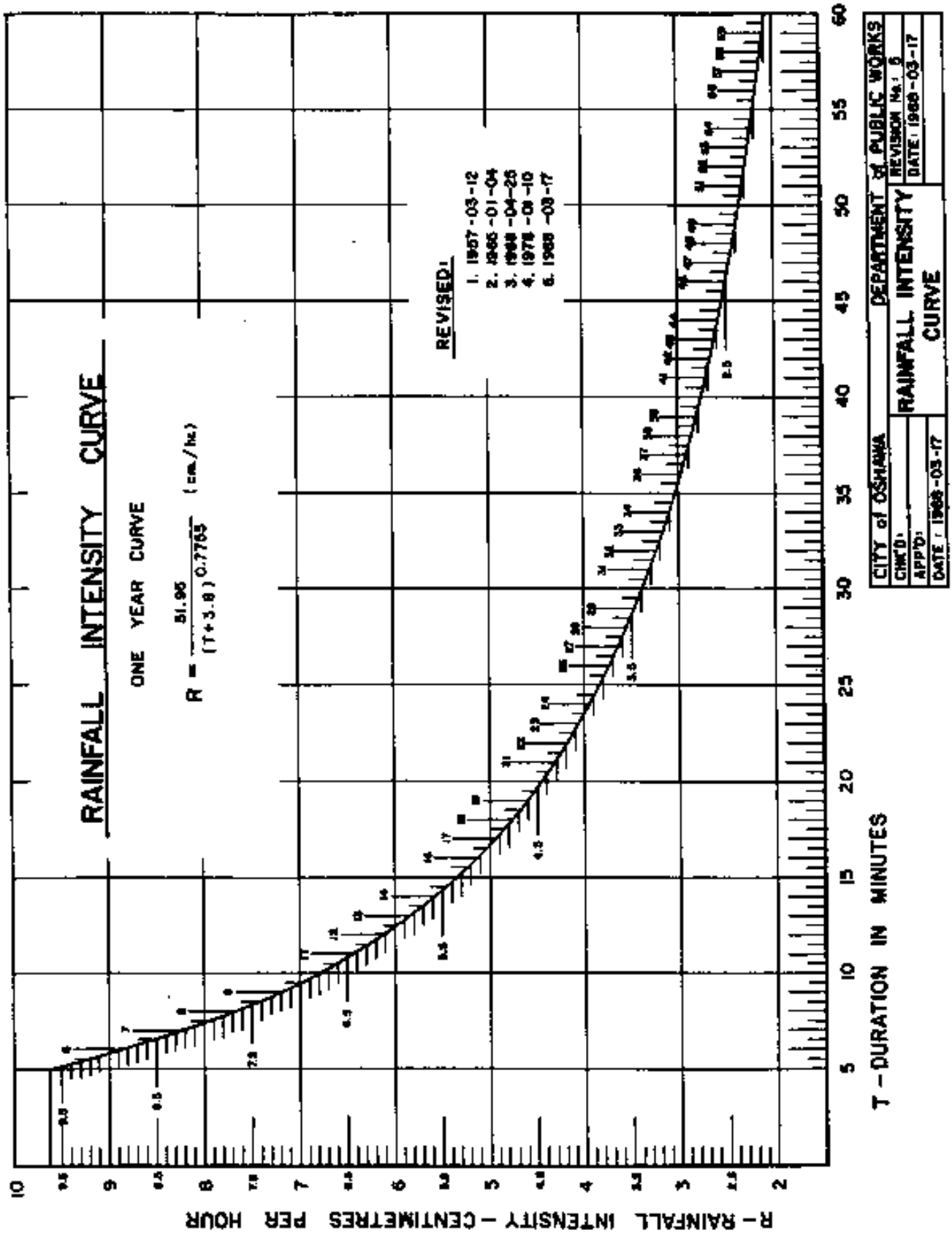
LOCATION		DRAINAGE AREA				RUNOFF			PIPE SELECTION								COMMENTS
FR	TO	A	I	A*I	Cum A*I	Cum T.C.	R	Q DESIGN Q = CiA / 0.036	PIPE L	PIPE SIZE	GRADE	CAP.	VEL.	TIME OF FLOW	TOTAL TIME	% LOAD	
No	No	(ha)				(min)	(cm/h)	(L/s)	(m)	(m)	(%)	(L/s)	(m/s)	(min)	(min)		

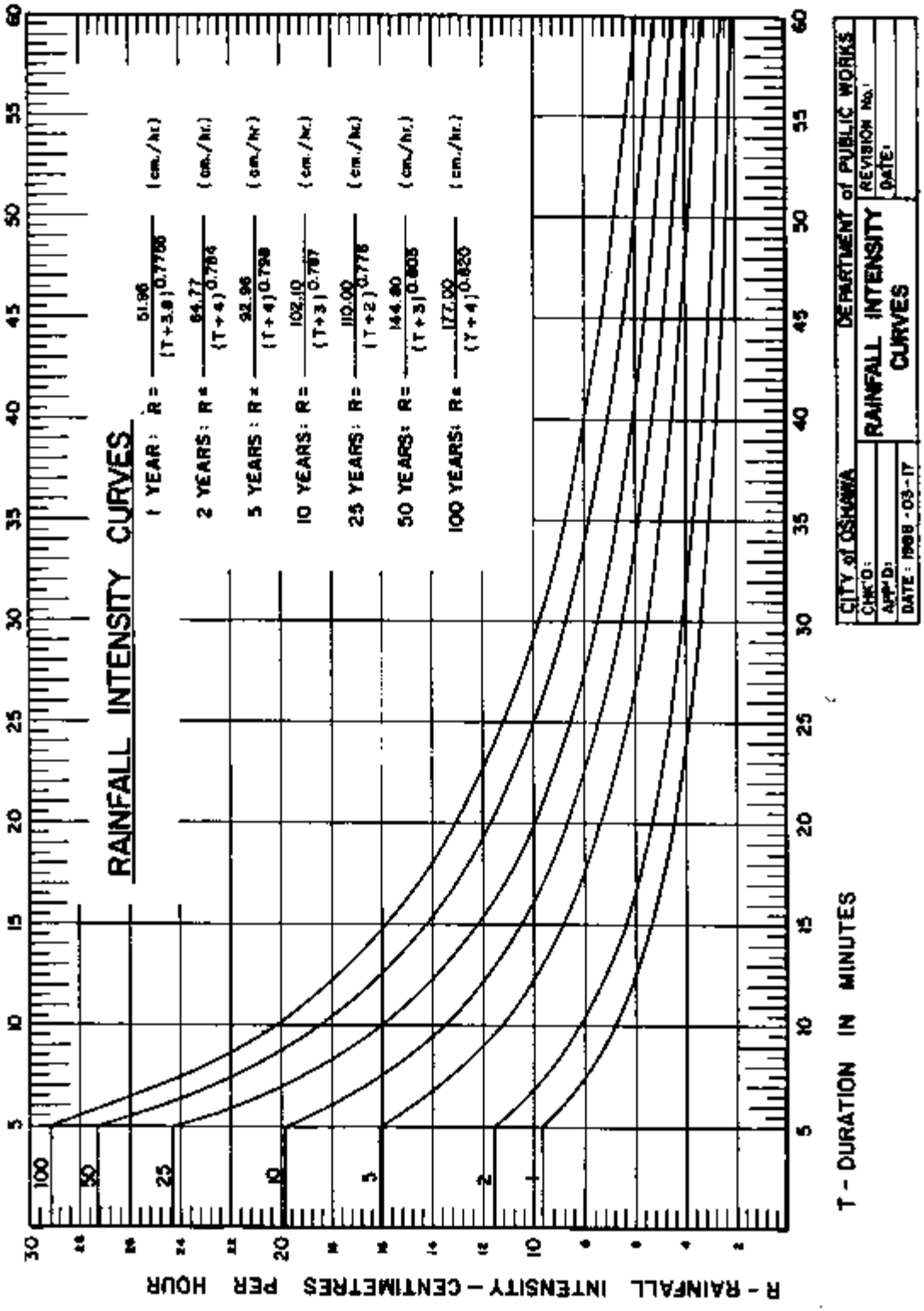
CALCULATE T.C.

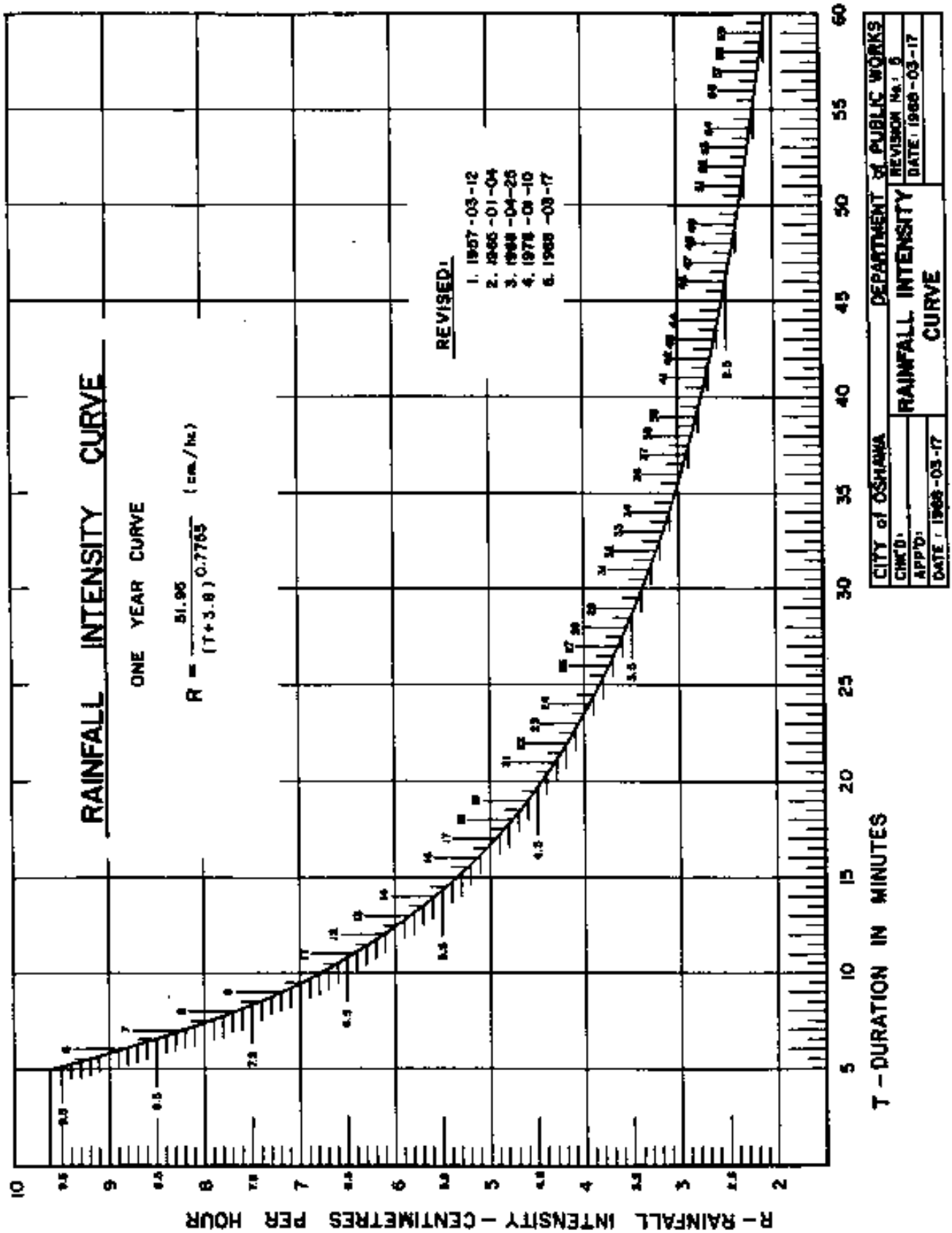
SHEET _ of _

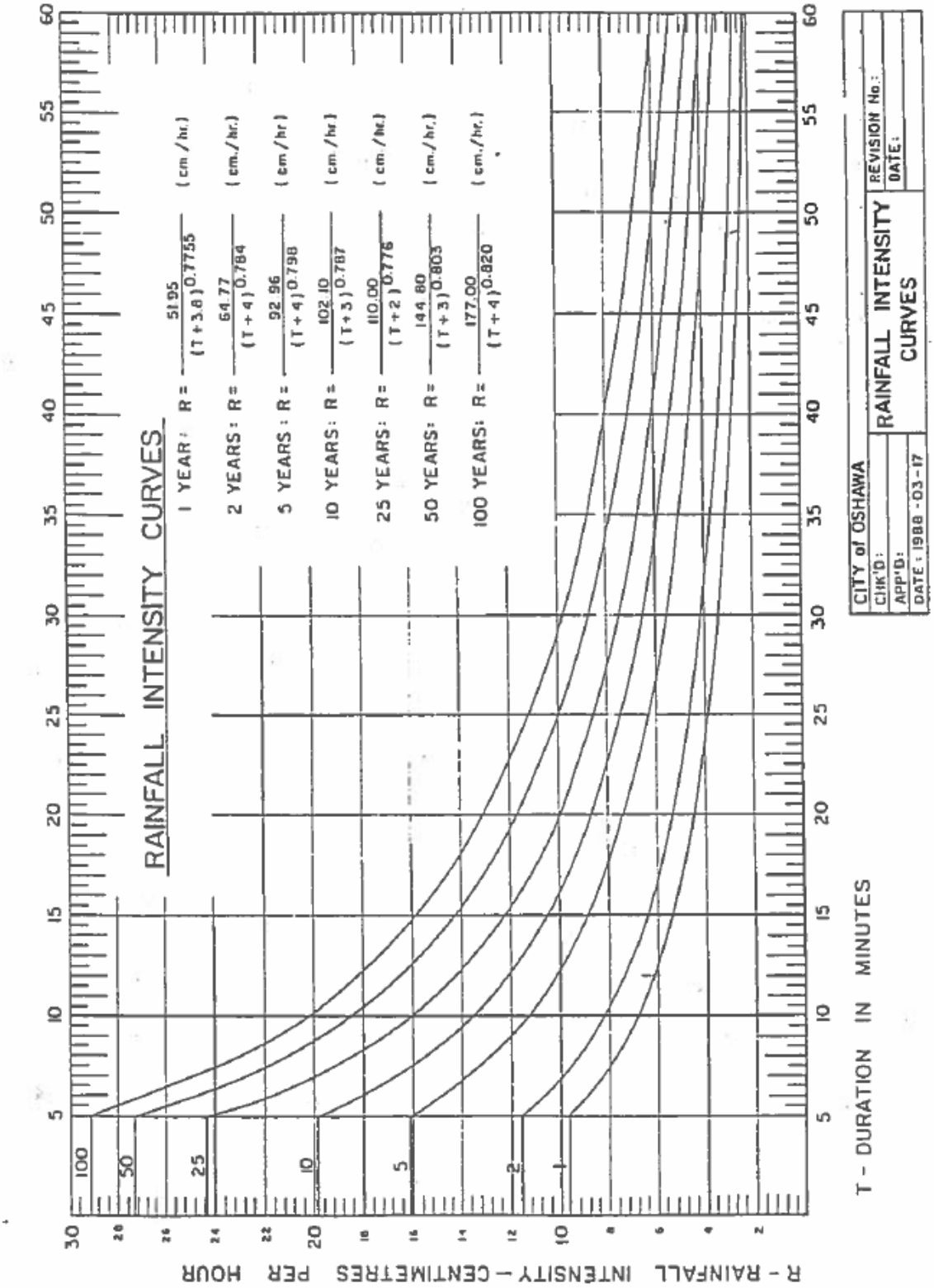
Appendix 9

Storm Design – Intensity – Duration – Frequency Rainfall Curves


RAINFALL INTENSITY CURVE
ONE YEAR CURVE
R = 51.95 / (T+3.8)^0.7769 (cm/hr)
REVISED:
1. 1957-03-12
2. 1965-01-04
3. 1968-04-25
4. 1975-08-10
5. 1988-03-17
R - RAINFALL INTENSITY - CENTIMETRES PER HOUR
T - DURATION IN MINUTES
CITY of OSHAWA
DEPARTMENT of PUBLIC WORKS
CHK'D:
APP'D:
DATE: 1988-03-17
REVISION No. 5
DATE: 1988-03-17
RAINFALL INTENSITY CURVE


RAINFALL INTENSITY CURVES
1 YEAR: R = 51.96 / (T+3.8)^0.7788 (cm./hr.)
2 YEARS: R = 84.27 / (T+4)^0.784 (cm./hr.)
5 YEARS: R = 92.96 / (T+4)^0.799 (cm./hr.)
10 YEARS: R = 102.10 / (T+3)^0.787 (cm./hr.)
25 YEARS: R = 110.00 / (T+2)^0.778 (cm./hr.)
50 YEARS: R = 144.80 / (T+3)^0.805 (cm./hr.)
100 YEARS: R = 177.00 / (T+4)^0.820 (cm./hr.)
R - RAINFALL INTENSITY - CENTIMETERS PER HOUR
T - DURATION IN MINUTES
CITY of OSHAWA
DEPARTMENT of PUBLIC WORKS
CHK'D:
APP'D:
DATE: 1988-03-17
RAINFALL INTENSITY CURVES
REVISION No.:
DATE:


RAINFALL INTENSITY CURVE
ONE YEAR CURVE
R = 51.95 / (T+3.8)^0.7769 (cm/hr)
REVISED:
1. 1957-03-12
2. 1965-01-04
3. 1968-04-25
4. 1975-08-10
5. 1988-03-17
R - RAINFALL INTENSITY - CENTIMETRES PER HOUR
T - DURATION IN MINUTES
CITY of OSHAWA
DEPARTMENT of PUBLIC WORKS
CHK'D:
APP'D:
DATE: 1988-03-17
REVISION No. 5
DATE: 1988-03-17
RAINFALL INTENSITY CURVE


RAINFALL INTENSITY CURVES
1 YEAR: R = 51.95 / (T+3.8)^0.7755 (cm/hr.)
2 YEARS: R = 64.77 / (T+4)^0.784 (cm./hr.)
5 YEARS: R = 92.96 / (T+4)^0.798 (cm/hr)
10 YEARS: R = 102.10 / (T+3)^0.787 (cm/hr)
25 YEARS: R = 110.00 / (T+2)^0.776 (cm/hr.)
50 YEARS: R = 144.80 / (T+3)^0.803 (cm./hr.)
100 YEARS: R = 177.00 / (T+4)^0.820 (cm./hr.)
R - RAINFALL INTENSITY - CENTIMETRES PER HOUR
T - DURATION IN MINUTES
100
50
25
10
5
2
1
CITY of OSHAWA
CHK'D:
APP'D:
DATE: 1988-03-17
RAINFALL INTENSITY CURVES
REVISION No.:
DATE:

Appendix 10

Storm Design – Time of Concentration for Overland Flow – Plate “A”

Time of Concentration For Overland Flow
Calculating Variables

The variables needed to compute the time of concentration for a catchment area are its length, slope and surface retardance of flow. All these variables can be computed from the survey field notes normally taken for designing.

The length, L, is the distance from the extremity of the catchment area in a direction parallel to the slope until a defined channel is reached. The units of L are in feet. It is considered that overland flow will become channel flow within 1,200 feet in all cases and less in most cases. If channelized flow occurs in a catchment area, the time of concentration will be the time of overland flow plus the time within the channel.

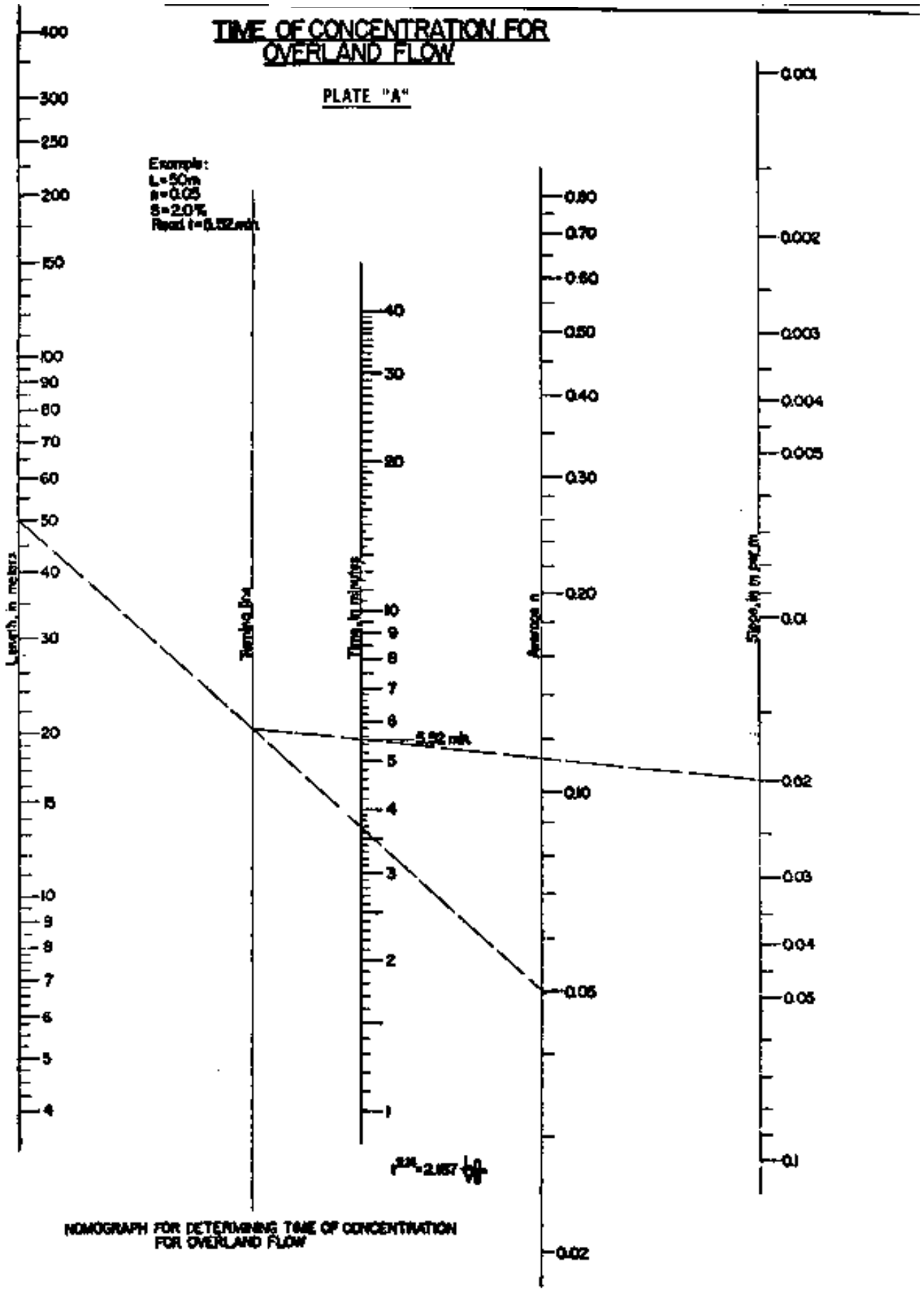
The slope S is the difference in elevation between the extreme edge of the catchment area and the point in question, divided by the horizontal distance between the two points. The units are in feet per foot.

Type of Surface	Value
Smooth impervious surface	0.02
Smooth bare packed soil	0.10
Poor grass, cultivated row crops or moderately rough bare surface	0.20
Pasture or average grass	0.40
Deciduous timberland	0.60
Conifer timberland, deciduous timberland with deep forest litter or dense grass	0.80

As stated by Mr. Hathaway, "The Rate of overland flow…is a function of the product of nL; hence, any combination of n and L values that gives the same product will result in the same rate of discharge." And "The discharge rate…is also a function of the quotient $\frac{S0.25.}{L0.50}$ ".

In utilizing these factors, it is found that

$$L''=\frac{Ln}{4\sqrt{S}}$$



NOMOGRAPH FOR DETERMINING TIME OF CONCENTRATION FOR OVERLAND FLOW

Appendix 11

Storm Design – Velocity for Gutter Flow Chart – Plate “B”

Appendix 11

VELOCITY FOR GUTTER FLOW

PLATE "B"

V = 0.5163 * square root of 'S'

S, Road Grade (%)	V, Velocity (m/sec.)
0.50	0.37
0.60	0.40
0.70	0.43
0.80	0.46
0.90	0.49
1.00	0.52
1.20	0.57
1.40	0.61
1.60	0.65
1.80	0.69
2.00	0.73
2.20	0.77
2.40	0.80
2.60	0.83
2.80	0.86
3.00	0.89
3.20	0.92
3.40	0.95
3.60	0.98
3.80	1.00
4.00	1.03
4.20	1.06
4.40	1.08
4.60	1.11
4.80	1.13
5.00	1.15
5.50	1.21
6.00	1.26
6.50	1.32
7.00	1.37

Appendix 12

Storm Design – Capacity and Velocity – MANNING'S FORMULA

Appendix 12

Capacity & Velocity of Circular Concrete Pipes by Manning's Formula

V = 1.0/N*R^2/3*S^1/2

Q = V*A (m3/sec) = V*A*10^3 (L/sec)

Where;

V = velocity in m/sec

Q = capacity in L/sec

A = cross sectional area in m2

R = hydraulic radius D/4 with D in m

S = slope of hydraulic grade line m/m

N = roughness coefficient = 0.013

V and Q are based on actual diameter

Appendix 13

City Council Policy Related to Mud Control on Streets

DEPARTMENT OF DEVELOPMENT SERVICES

POLICY & PROCEDURE No. 3.2.2-009

DIVISION:	**ENGINEERING SERVICES**	DATE: April 30, 2001
SECTION:	**INSPECTION**	ESTABLISHED: April 17, 2001
PAGE NO.:	**1 OF 2**	APPROVED BY:
REVISION NO.:		DATE:

TITLE: MUD CONTROL POLICY

PURPOSE

To establish a policy and procedure for the cleaning of streets required as a result of the deposition of mud and dust due to development activities.

Definitions

1) 'Clean' means to sweep and/ or flush streets with a mechanical street-cleaning piece of equipment.
2) 'Improved Street' means any street fully maintained by and under the jurisdiction of the City of Oshawa and the Region of Durham.
3) 'Inspector' means an employee of the City of Oshawa.
4) 'Scrape' means to remove mud and dirt from the road by either hand operation or a machine using a bucket or blade.
5) 'Stage 1 Subdivision Street' means any subdivision street having first stage curb and gutter and base asphalt only.
6) 'Stage 2 Subdivision Street' means any subdivision street having second stage curb and gutter and final asphalt.
7) 'Subdivision Street' means any street, the construction of which is included in a development agreement with the City of Oshawa, and has not yet been assumed by the City.

SOURCE

City Council, April 17, 2001.

POLICY

Where land disturbance as a result of building or construction creates mud or dust on streets, the developer of the lands shall ensure their builder(s), contractor(s) or themselves clean the streets in accordance with the following minimum levels of service:

Improved Street and Stage 2 Subdivision Street

Where required:

- Shall be scraped at least once per day, but with a higher frequency as required.
- Shall be cleaned at least once per week on Friday, but with a higher frequency as required.

Stage 1 Subdivision Street

Where required:

- Shall be scraped at least once per day once house occupancies commence.
- Shall be cleaned (swept) once per week on Friday once occupancies on the street are 25% or more.

Use of calcium as a dust control measure may be considered on asphalt surfaces provided that application rates do not create a slippery surface.

PROCEDURE

It is intended that the above minimum levels of service shall be initiated by the developer and their builders or contractors without formal request from the City.

1. Inspection of improved streets will be carried out by the City on a regular basis to ensure the minimum level of service is provided.

2. Inspection of subdivision streets will be initiated upon receipt of a complaint or in an area with a history of complaints. Follow-up action with the developer, builder or contractor will occur where the above minimum levels of service are not consistently met.

3. The developer, builder or contractor shall carry out scraping requested by the City inspector within 24 hours.

4. Cleaning requested by the City inspector shall be carried out within 24 hours.

5. Where a developer, builder or contractor does not have a regular program established to maintain the minimum levels of service and does not react to the City inspector's request within the required time frames, the City will perform the work at the developer's cost. The developer will be invoiced for all City costs including administration. Where any invoice is unpaid after 45 days, the developer's letter of credit will be drawn down to cover any unpaid amount.

Appendix 14

City Council Policy Related to Decorative Street Lighting and Signage

Appendix 14

Procedure

1. Locational Criteria for Decorative Street Lighting and Street Name Signs

General locational criteria for the use of decorative street lighting and decorative street name signs and assemblies will be applied against the individual merits of the plan of subdivision or development area. Where the general locational criteria will permit the use of decorative street lights, decorative street name signs and assemblies will also be permitted.

Where prepared, Urban Design Guidelines will address the use of decorative street lights and street name signs.

The goal is to permit the use of decorative street lighting and signs, where appropriate, to enhance the streetscape in City subdivisions. In general, decorative street lighting and street name signs cannot be used in a haphazard or unplanned manner.

The following criteria shall be met in order for the decorative lighting and signage to be approved:

- It must have a logical beginning and end on both sides of a road; natural features such as creek valleys, open spaces, conservation areas or wood lots that are contained in or abutting the subject development and planned features such as parks may help define the limits of lighting treatment;

- The area must be well defined or be territorially defined with such features as an upscale landscape treatment including entranceway features that set it apart from other areas of development;

- If the defined area extends across more than one Developers' lands, then the agreement of all Developers will be required in order for decorative lighting and signage to be permitted.

- If a Developer elects to use decorative lighting and/or signage, in the first phase of development, then this standard must be utilized in subsequent phases until the above locational criteria allows a change in the street lighting and/or signage style.

It is important to note that the locational criteria are only a guideline and each individual development will have to be assessed on its own merits. Final determination of the areas for the proposed use of decorative lighting and signage will be administered by the Department of Development Services.

2. Processing of Street Lighting and Street Name Sign Designs in Subdivisions

During the draft plan approval stage for subdivision development, the Developer will be advised that there is an opportunity to utilize decorative street lighting and street name

signs and assemblies subject to the satisfaction of certain criteria later in the development process.

Prior to the first submission of engineering drawings to the Department of Development Services, the Subdivider must indicate his intent to use decorative street lighting and street name signs to the Department of Development Services.

Following receipt of the Developer's intention to use decorative street lighting, the Department of Development Services, in consultation with the Developer's engineering consultant will establish, if appropriate, acceptable areas for installation of decorative lighting. The Developer's engineering consultant will undertake the preliminary lighting design.

The Subdivider will submit engineering plans for the subdivision and reflect the decorative street lighting, as approved on a preliminary basis by the City, on plans that also show the manner in which other utilities, street furniture and street trees are intended to be accommodated.

Once this process has been completed and a street furniture plan accepted by the City, the Developer may seek a contractor for the supply and installation of street lighting. The Developer will be required to reimburse the City for any costs associated with engineering design approvals and inspection of the contractor's work.

Similarly, following receipt of the Developer's request to incorporate decorative signage, the Department of Development Services will establish acceptable areas for installation of decorative signage. The Transportation & Parking Services Branch of the Department of Operational Services shall be advised of any decorative signing proposals.

The Department of Development Services, in co-operation with the Department of Operational Services, will prepare a proposed street name sign design, including the proposed community name and unique community graphic utilizing the standard sign shape established by the City (ROSCO style).

All decorative street name sign designs shall conform to the standard shape and specifications established and will be subject to approval of the Transportation and Parking Services Branch to ensure functionality.

Once this process has been completed and a design finalized, the Developer will arrange for manufacturing and installation of street name signs and hardware.

Decorative signing shall consist only of street name signs and the associated support assemblies. The Developer shall install all other required traffic control signage in the development in accordance with its regular standards.

Policy and Procedure

Decorative Street Lighting and Signage in New Residential Subdivisions

Policy (1999)

1. That the Developer be financially responsible for all decorative street lighting on local and collector roads associated with their residential plans of subdivision or development, in accordance with the City's design standards.

   That where the City is financially responsible for street lighting on arterial roads or parts thereof, its responsibility will extend to the cost of standard street lighting only.

   That where the locational criteria have been met and where approved, the decorative Victorian style coach lamp and polished black tapered octagonal concrete pole (see attachment #1) will be permitted as an alternative standard;

   That regardless of the lighting type, the illumination levels shall conform to the City's Street Lighting Design and Installation Standards.

2. That where the locational criteria have been met and where approved, decorative street name signs and assemblies (see attachment #2) will also be permitted. The increased cost to install decorative street name signs and assemblies will be the responsibility of the Developer.

   That all installations shall be in accordance with the City's Design Standards.

As Amended (2004)

1. That the City's standard for decorative street lighting be amended to permit the Trafalgar Telecommunications Pole as an alternative decorative lighting standard subject to the same conditions and restrictions currently applicable to the approved decorative lighting standard;

2. That the Mayor and Clerk be authorized to execute, from time to time, any agreement related to the installation of works within the Trafalgar Pole, which are in form acceptable to the Commissioner, Development Services Department and the Director, Legal Services;

3. That the City's decorative street name sign concept be refined to reflect the "ROSCO" style sign used in the downtown.

Policy and Procedure

Decorative Street Lighting and Signage in New Residential Subdivisions

Policy (1999)

1. That the Developer be financially responsible for all decorative street lighting on local and collector roads associated with their residential plans of subdivision or development, in accordance with the City's design standards.

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   That where the locational criteria have been met and where approved, the decorative Victorian style coach lamp and polished black tapered octagonal concrete pole (see attachment #1) will be permitted as an alternative standard;

   That regardless of the lighting type, the illumination levels shall conform to the City's Street Lighting Design and Installation Standards.

2. That where the locational criteria have been met and where approved, decorative street name signs and assemblies (see attachment #2) will also be permitted. The increased cost to install decorative street name signs and assemblies will be the responsibility of the Developer.

   That all installations shall be in accordance with the City's Design Standards.

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3. That the City's decorative street name sign concept be refined to reflect the "ROSCO" style sign used in the downtown.

Appendix 15

Sample of Form Letter from Engineer Confirming Actions Related to Subgrade Problems

Appendix 15

Date:

Development: _____

Location(s): _____

_____

_____

Consulting Engineer:_____

Geotechnical Engineer: _____

Attached is a copy of recommendations received from the above-noted Geotechnical Engineer resulting from proof rolling in the above development.

Ǝ We will be using the following course of action recommended by the Geotechnical Consultant:

_____

_____

_____

Ǝ We will be using an alternate course of action as explained below. (Include both action and reason for variance).

_____

_____

_____

_____

_____

_____

_____

Consulting Engineer's Representative

Appendix 16

Sample Foundation Control Certificate

Appendix 16

Sample Foundation Control Certificate

Date:

City of Oshawa
Engineering Services
50 Centre Street South
Oshawa, ON L1H 3Z7

This is to certify that I have checked the control elevation(s) on lot(s)_____, Registered Plan 40M-_____, City of Oshawa and confirm that the foundation control elevation(s) conforms to the elevation(s) shown on the site grading plan, submitted with the building permit application, and the foundation "as-constructed" will not impede the completion of the lot grading in accordance with the Master Lot Grading Plan and the Site Grading Plan and will permit the construction of the garage floor at an elevation to provide adequate drainage of the driveway considering the proposed elevation of the future sidewalk and/or curbs abutting the lot.

_____
Ontario Land Surveyor/Professional Engineer
Company Name

Appendix 17

Sample Lot Grading Certificate

Appendix 17

Sample Lot Grading Certificate

Date

City of Oshawa
Engineering Services
50 Centre Street South
Oshawa, ON L1H 3Z7

GRADING CERTIFICATION
LOTS _____
SUBDIVISION PHASE _____
STAGE _____

This is to certify that we have inspected the lot grading for lots _____ on Plan 40M-_____, City of Oshawa.

These lots have been graded according to the Site Grading Plan submitted with the building permit application and, the Master Lot Grading Plan, Drawing No. _____ prepared by _____.

The roof water leaders have been installed in accordance with the Site Grading Plan submitted with the building permit application.

No drainage problems were apparent at the time of inspection and it is not expected that any drainage problems will occur in the future

_____
Professional Engineer/Ontario Land Surveyor
Company Name

Appendix 18

Sample of Form Letter from Approved Alternate to Subdivider's Engineer related to Certification of Site Grading Plans

Appendix 18

Sample Letter for Certification of Site Grading Plan By Alternate to Subdivider's Engineer

Date:

City of Oshawa
Engineering Services
50 Centre Street South
Oshawa, ON L1H 3Z7

CERTIFICATION SERVICES FOR SITE GRADING PLANS

This is to advise that our firm has been retained by _____(name of builder)_____ to provide certification services for lot(s) _____, Registered Plan 40M-_____.

The City of Oshawa has previously approved our firm and the following individuals(s) _____(name(s))_____, who will be providing this service.

This shall confirm that we have a copy of the Master Lot Grading Plan dated _____ _____ for the aforementioned lots and that we have a copy of the City's current Lot Grading Criteria dated _____ to allow us to perform this service.

_____

Ontario Land Surveyor/Professional Engineer

Company Name

(Note: If the Certificate is not being signed by the Subdivider's Engineer, prior approval must be obtained from the City for the use of an alternate professional)

Appendix 19

Sample Retaining Wall Certificate

Appendix 19

Sample Retaining Wall Certificate

Date

City of Oshawa
Engineering Services
50 Centre Street South
Oshawa, ON L1H 3Z7

RETAINING WALL CERTIFICATION
LOT(S)/BLOCK(S)
PLAN 40M-
SUBDIVISION PHASE
STAGE

This is to certify that the retaining wall(s) on the above property(s) has been designed and constructed in accordance with sound engineering principals, to support the dead and live loads applied upon the structure, in accordance with all applicable City standards, regulations, and to “as-built” elevations in conformance with all certified building and grading plan previously reviewed by the City.

_____
Company Name

_____
Engineer’s Stamp and Signature

Appendix 20

Sample as Built Maintenance Hole and Sewer Information Sheet

AS CONSTRUCTED INFORMATION FOR STAGE 1 PROVISIONAL ACCEPTANCE **APPENDIX 20**
MANHOLE AND SEWER INFORMATION
CONSULTANTS NAME:
SUBDIVISION NAME:
DATE:

STREET NAME	FROM MH	TO MH	Upstream invert			Downstream invert			Length			Grade		
			Plan invert	As-Built invert	Diff.	Plan invert	As-Built invert	Diff.	Plan m	As-Built m	Diff. m	Plan %	As-Built %	Diff.

Appendix 21

Final Measurement Form for Sketches Showing FDC Sewer Service Connections

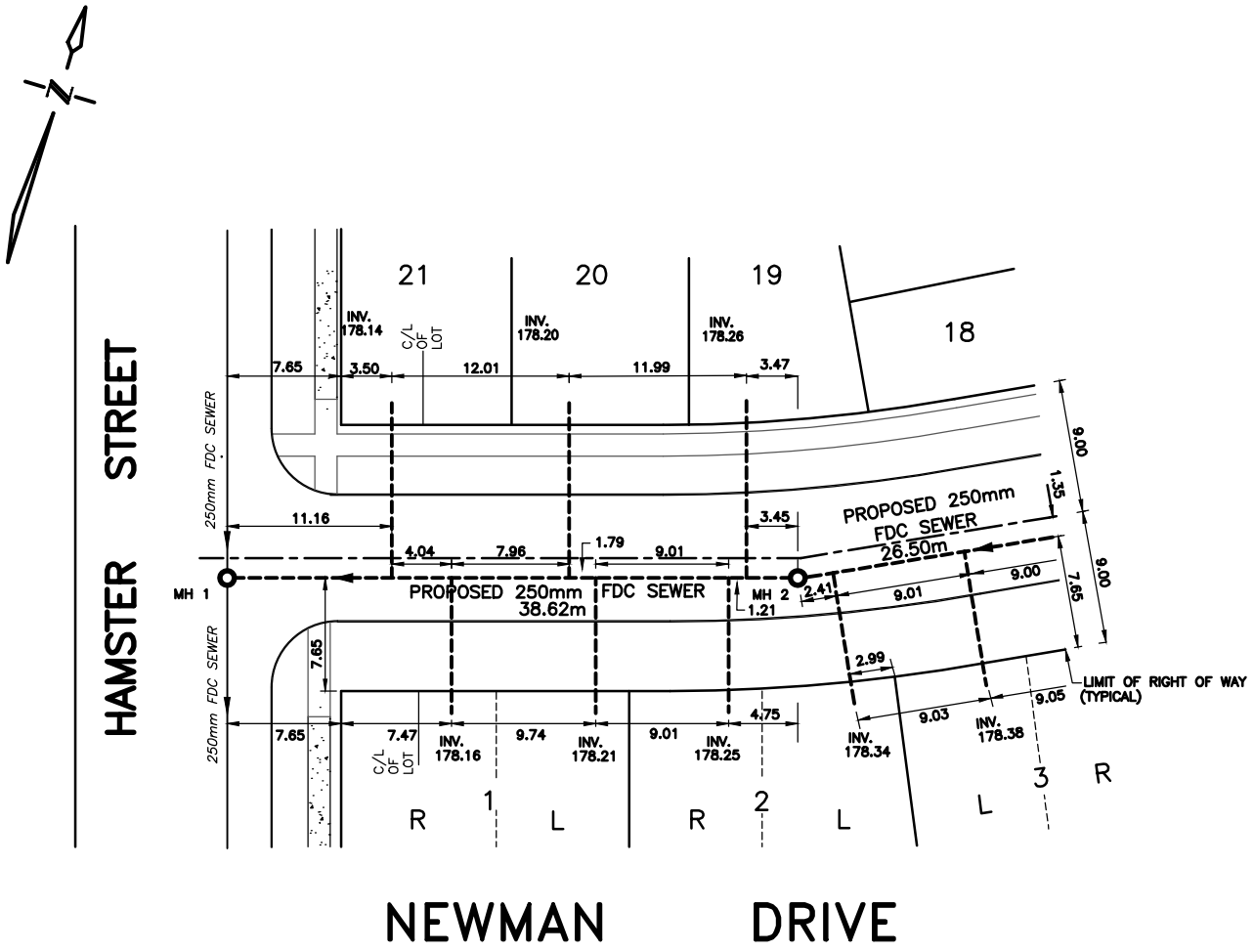
LOCATION _____ STREET _____

SD No. _____ R.P. 40M– _____ DRAWING No. _____

CONSULTANT _____ INSPECTOR'S NAME _____

DESCRIPTION _____ MAIN LINE ☐ or SERVICE CONNECTION ☐ FDC ☐

PIPE DIAMETER _____ CLASS OF PIPE _____ MATERIAL TYPE _____ DATE _____



NOTES :

1. INVERT ELEVATIONS SHOWN ON THIS SKETCH ARE "AS–BUILT", LOCATED 1.5m BEYOND THE LIMIT OF THE RIGHT OF WAY.
2. FDC CONNECTIONS MUST BE DIMENSIONED ALONG THE MAIN FROM "T" TO "T" AND ALONG THE LIMIT OF EACH RIGHT OF WAY FROM THE FDC MANHOLE TO MANHOLE, INCLUDING A TIE TO PROPERTY LIMIT AS SHOWN ABOVE.

SCALE 1:500

CITY OF OSHAWA — DEVELOPMENT SERVICES DEPARTMENT

CHK'D: G.E.D.	FINAL MEASUREMENT FORM FOR SKETCHES SHOWING FDC SEWER SERVICE CONNECTIONS	REVISION No.
APP'D: A.A.		DATE:
DATE: FEB. 6, 2013		APPENDIX 21

Appendix 22

Final Measurement Form for Sketches Showing FDC and Storm Sewer Service Connections for Street Townhouses

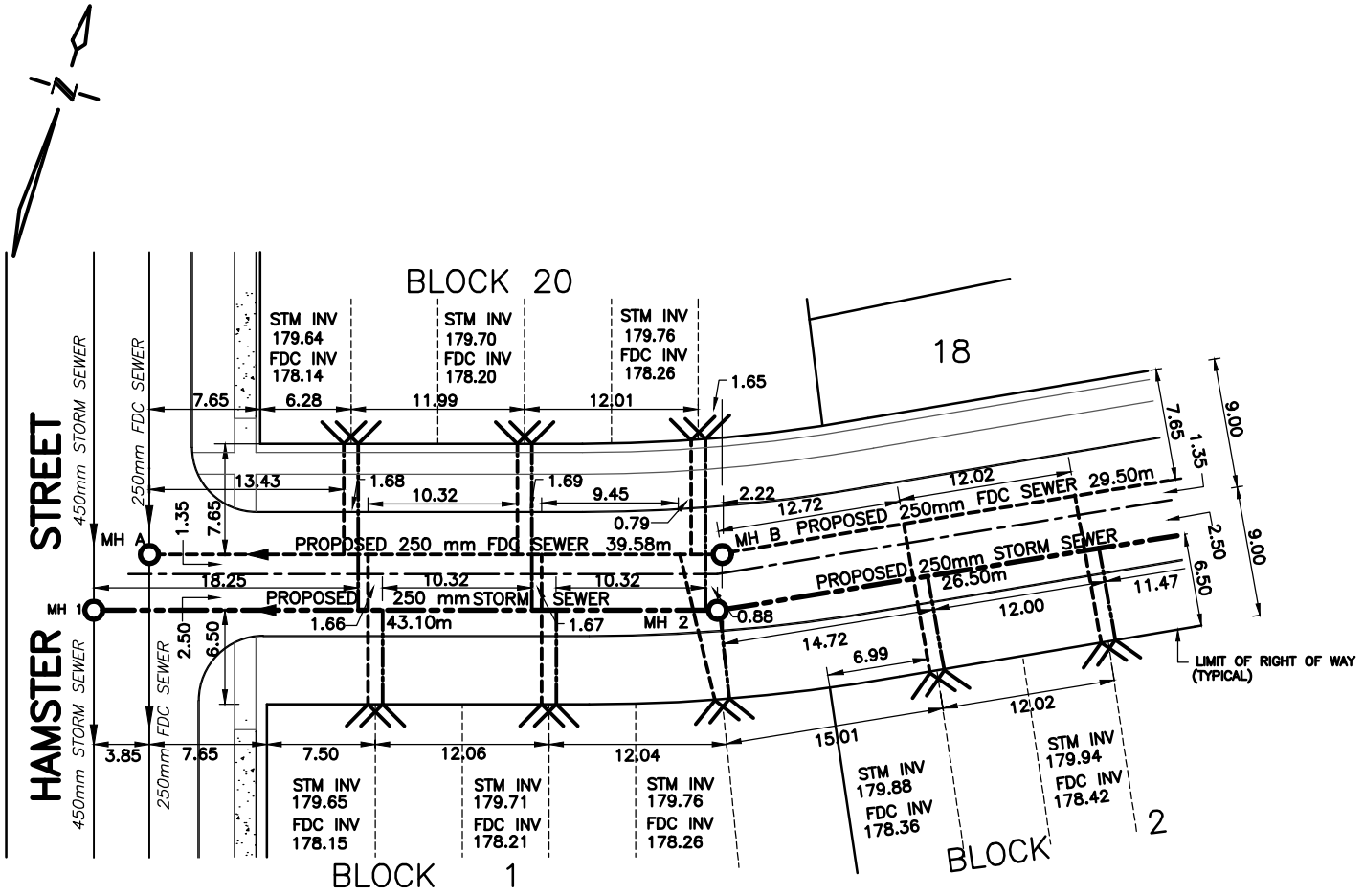
LOCATION _____ STREET _____

SD No. _____ R.P. 40M– _____ DRAWING No. _____

CONSULTANT _____ INSPECTOR'S NAME _____

DESCRIPTION _____ MAIN LINE ☐ or SERVICE CONNECTION ☐ STORM ☐ FDC ☐

PIPE DIAMETER _____ CLASS OF PIPE _____ MATERIAL TYPE _____ DATE _____



NEWMAN DRIVE

NOTES :

1. INVERT ELEVATIONS SHOWN ON THIS SKETCH ARE "AS–BUILT", LOCATED 1.5m BEYOND THE LIMIT OF THE RIGHT OF WAY.
2. REFER TO OS–1006 FOR TYPICAL SERVICE CONNECTION LAYOUT.
3. FDC AND STORM SEWER CONNECTIONS MUST BE DIMENSIONED ALONG THE MAIN FROM "T" TO "T" AND ALONG THE LIMIT OF EACH RIGHT OF WAY FROM THE RESPECTIVE MANHOLE TO MANHOLE, INCLUDING A TIE TO THE PROPERTY LIMIT AS SHOWN ABOVE.

SCALE 1:500

CITY OF OSHAWA — DEVELOPMENT SERVICES DEPARTMENT

CHK'D: G.E.D.	FINAL MEASUREMENT FORM FOR SKETCHES SHOWING FDC AND STORM SEWER SERVICE CONNECTIONS FOR STREET TOWNHOUSES	REVISION No.
APP'D: A.A.		DATE:
DATE: FEB. 6, 2013		APPENDIX 22

Appendix 23

Engineering Drawing Requirements

Appendix 23

Engineering Drawing Requirements

General Requirements

The following are general requirements for all drawings:

a) Engineering drawings are to be prepared on 594mm X 841mm (A1) size paper.
b) Scale:
    a. For Subdivisions the scale shall generally be 1:500. A scale of 1:250 may in some instances be required for multi-family areas to fully explain the necessary details.
    b. For Site Plans scales shall generally be 1:250, 1:300 or 1:400 depending on the size of the lot area.
c) North arrow.
d) Title block.
e) Key Plan.
f) City of Oshawa benchmark as published by Cosine.
g) Revision table.
h) All lot numbers, blocks and proposed easements shown and numbered in accordance with the proposed plan for registration.

Grading Plans

All applicable drawing requirements as referenced in OS-1001 and 1002 shall be adhered to with the additional following information:

(a) Existing contours shown at maximum 0.50m intervals extending a sufficient distance outside the limits of the proposed plan (minimum 15m or as required to indicate all significant features). Contours shall be based on up-to-date survey information.
(b) Topographic information including the location of existing natural and/or artificial features and applicable spot elevations of on-site and surrounding lands (trees, hydrants, utility poles, driveways, buildings, culverts, easements, railway lines, pipelines, etc.)
(c) Proposed road grades, lengths, and elevations at 20.0m or 25.0m intervals on all streets with symbols at grade changes indicating direction of slope.
(d) Existing and proposed elevations at all lot corners and intermediate points of grade change required to illustrate the lot grading concept and drainage pattern and existing spot elevations extending to a minimum of 15m beyond the proposed plan.
(e) All proposed rear lot catch basins and catch basin leads (preferable) with rim and pipe invert elevations.
(f) Elevations and grades along proposed swales at regular intervals.
(g) All proposed manholes, and catch basins.
(h) Any watercourse running through or abutting the proposed development including their respective Regulatory Floodplain Limits.
(i) Location and cross section of the overland outlet for the “Major” storm.
(j) Direction of surface water run-off by means of an arrow pointing in the direction of flow on lands both within and, as required, off the site.
(k) Terracing, including the use of retaining wall, shown with intermediate grades and cross-sections. Where required, further details may be added on the site grading plan.

(l) All proposed sidewalks. Detailed sidewalk design adjacent to all corner lots must be provided. All sidewalk ramp grades must also be illustrated. Alternatively, these details could be provided on the Engineering drawings.
(m) Cross-sectional details of storm sewers on easement, if any, (other than a rear lot catch basin lead) including footing elevations for the proposed building.
(n) Catch basin spacing to be minimum of 90m, ensure double catch basins at low points.
(o) Extent of ponding limits at major sag points and/or overland flow spill areas.
(p) Proposed elevations at the front and rear of the building envelope of the lot.
(q) Location of any acoustic fence or berm.
(r) Proposed type of lot grading for each residential lot.
(s) Other information that may be deemed necessary by the City in a specific situation in order to process the application
(t) Avoid low points in the sidewalks. Increase boulevard grades if possible and redirect the run-off to either the sidewalk ramp or a proposed driveway.
(u) Road length and grade as well as elevations at critical points is to be shown on the grading plans. (This facilitates checking of property line elevations without having to flip back and forth to the plan and profile drawings)
(v) Ensure boulevard grades are between 2% and 10%
(w) Ensure that sidewalk ramp crossfall does not exceed 4%
(x) Provide intersection detail drawings for all intersections, which shall include but are not limited to:
    - All sidewalk ramp grades
    - Curb grades and elevations (top and bottom)
    - Centerline road grades
    - CB locations and rim elevations.

Storm Sewer and Foundation Drainage Collector Drainage Plans

- Provide the storm sewer drainage information:
    - Drainage area, runoff co-efficient
    - Existing contours should only be shown to establish external contributing drainage boundary.
- Provide the FDC drainage information:
    - Cumulative - tributary flow (based on hydrogeological assessment – minimum 0.075 l/s) and number of units.
    - No existing contours to be shown.

Plan and Profile Drawings

In Plan View

- Make sure all alignments start with station 1+000 or if it is a continuation of a previous design to use the alignment chainage from that design. Chainage is to be west to east and south to north.
- Hatch pavement portion of road
- Hatch the proposed sidewalk
- Provide the Centerline of Construction information in the appropriate row (as per City of Oshawa template) including curve information on the face of the plan
- Provide the deflection angle and radius of each curb return.
- Provide lot dimensions at property lines

- Provide Gutter Data Table information as per City of Oshawa (Needs to be provide on first or second submission) and needs to include the Gutter Data Table numbering on the face of plan, numbering is to be west to east and south to north. No duplication of numbering, numbering is to be continuous.
- In Gutter Data Table provide the grade portion only where it differs from being 2% grade from the Centerline of Construction.
- Provide MH chainage (Location as per City Of Oshawa template)
- Provide MH offset from Centerline of Construction where it differs from the typical offset.
- Provide note indicating the distance between the final and interim pavement elevation.
- Gutter elevations to be calculated as follows (example for 4.25m pavement width):
    - 3.9m @2% (construction line to edge of pavement) = 0.078m + 0.03m (edge of pavement to gutter)
    - Therefore gutter elevations are 0.108m below crownline elevations for a 4.25m road.
- Catch basin final rim elevations are to be 0.01m below the gutter elevations.
- Catch basin proposed rim elevations are to be 50mm below final rim elevations
- Catch basin inverts to be a minimum of 1.24m below final rim elevations.
- Common gutter point descriptions as follows:
  PC – Point of curvature
  PCC – Point of common curvature
  PRC – Point of reverse curvature
  BHC – Beginning of horizontal curve
  EHC – End of horizontal curve
  VPI – Vertical PI (in the gutter)
  HPI – Horizontal PI (in the gutter)
  Low Points, High Points, E, N, W, S, Limits.

In Profile View

- Scale: Generally 1:500 horizontal and 1:50 vertical.
- Where the profile is along a horizontal curve, make sure that the road grade is such that the associated curb grade is a minimum of 0.5%. Avoid stacked minimums (i.e. minimum horizontal radius with a minimum “k” value)
- Profile grid is to be spaced 0.5m vertically
- Label the underground pipes with a different hatching
- Label the size of pipe and use. i.e. 250mm FDC sewer
- Indicate MH size. (OPSD #)
- Ensure all critical points are labeled in the profile. (i.e. VPI’s, BVC, EVC, High Points, Low Points) Length and grade from VPI to VPI.
- Ensure maintenance hole rim elevations are shown in the profile.
- Ensure that any subgrade transitions required are clearly indicated in the profile.