

HALDIMAND COUNTY

DESIGN CRITERIA

SECTION D

ENGINEERING REVIEW FOR DEVELOPMENT INCLUDING NEW LOT CREATION - POST PLANNING APPROVAL AND SUPPORTING INFORMATION

Revised 2015

**D 1.00 SUBMISSION OF ENGINEERING DRAWINGS FOR PLANS OF SUBDIVISION
AND/OR CONDOMINIUM**

After approval of a planning application, the initial submission of engineering drawings for review by the County's Planning Division shall contain the following information:

- a) The approved draft plan;
- b) The proposed plan for registration showing all lot and block numbering and dimensioning ('M-Plan');
- c) A declaration from the Consulting Engineer indicating that he/she has been retained to design and supervise the construction of the work in the development according to the terms of the Pre-servicing and/or Subdivision Agreement(s);
- d) General Plan of Services;
- e) Lot Grading Plan;
- f) Area Rough Grading Plan ;
- g) Siltation Control Plan;
- h) Storm Drainage Plan;
- i) Storm sewer Design sheets;
- j) Storm Water Management Report;
- k) Sanitary Drainage Plan;
- l) Sanitary Design Sheets;
- m) Water Distribution Plan (including independent water pressure and flow testing of the existing system);
- n) Plan and profile drawings;
- o) Park Grading Plan, if required;
- p) Hydro Distribution System and Street/Site Lighting (including photometrics plan);
- q) Composite Utility Plan;
- r) Street Signage, Pavement Marking and Traffic Control Plan;
- s) All detail drawings other than the O.P.S. Detail Drawings;
- t) All drawings pertinent to the design;
- u) All other calculations necessary to check the design;
- v) A copy of a Geotechnical Investigation report prepared by a qualified Soils Consulting Engineer; and
- w) A copy of the Traffic Impact Study.

Number of copies of plans may vary from time to time, dependent upon type of development and changes in processes within the County itself. The Planner will confirm the number of information sets required at the time of application.

D 2.00 SUBMISSION OF ENGINEERING DRAWINGS FOR MULTIPLE LOT SEVERANCES

After approval of a planning application, the initial submission of engineering drawings for review by the County's Planning Division shall contain the following information:

- a) General Plan of Services;
- b) Lot Grading Plan;
- c) Storm Water Management Report

Number of copies of plans may vary from time to time, dependent upon type of development and changes in processes within the County itself. The Planner will confirm the number of information sets required at the time of application.

The above information in D 1.00 or D 2.00 will be reviewed by Haldimand County Departments such as Public Works and Planning and Economic Development (Planning and Development Division) and the Conservation Authority where applicable.

County comments forwarded to the Consulting Engineer shall be addressed in subsequent submissions and shall be supported with an itemized response letter to assist in scoping reviews.

A qualified Consulting Engineer shall complete the design of the hydro distribution system, and the Street Lighting system. This design shall be submitted to both Haldimand County Hydro Inc. and the Haldimand County Engineering Services Division concurrently.

All streetlighting components (poles, luminaries, lamps, etc.) shall be in accordance with Haldimand County standards. The location of the poles and transformers shall be shown on the General Plan of Services.

D 3.00 SUBSEQUENT SUBMISSIONS

Subsequent submissions of Items (d) through (o) in Section D 1.00 or Items (a) through (c) in Section D 2.00 inclusive shall be made until the engineering drawings and design are acceptable to the Manager of Engineering Services or designate. Responses from all of the Public Works Divisions will be coordinated through the Planning Division.

D 4.00 MINISTRY OF THE ENVIRONMENT APPLICATIONS

Once the engineering design and drawings are determined to be acceptable to the County, copies of the Ministry of Environment application forms for the sewer and water systems and one complete set of engineering drawings shall be submitted to the Planning Division to coordinate review and the signing of documents by the Manager of Engineering Services. This application shall be signed by Haldimand County and shall be returned to the Consulting Engineer. The Consulting Engineer shall then make application to the Ministry of the Environment.

D 5.00 OTHER APPROVALS

The Consulting Engineer shall be required to make all submissions and representations necessary to obtain approval from all other affected authorities (Ministry of Natural Resources, Ministry of Transportation, applicable Conservation Authority, Fire Chief, Building Division, etc.). Haldimand County's Planning and Economic Development Department (Planning and Development Division) shall be kept informed of the progress of these submissions by copies of all correspondence.

D 6.00 ORIGINAL DRAWINGS AND ENGINEERING DRAWING REQUIREMENTS

Haldimand County has adopted the Ontario Provincial Standards and Specifications as the minimum standard for all infrastructure. The resolution from Haldimand County Council which was passed on February 19, 2001 is as follows:

... the minimum standard for infrastructure related products and materials be the Ontario Provincial Standards and Specifications, Ministry of Transportation Specifications, or the Ministry of the Environment Specifications, for infrastructure construction and repair, where applicable;

The latest revision of the Ontario Provincial Standard Drawings and Specifications must be used. The standards shall be referenced on all drawings with a statement from the Consulting Engineer that all plans have been designed in accordance with the latest revision of the Ontario Provincial Standards and Specifications.

The Consulting Engineer shall be responsible to check the suitability of the details provided on these standard drawings for the proposed application. Individual details shall be provided by the Consulting Engineer for all special features not covered by the Ontario Provincial Standards.

These special details shall be drawn on standard sized sheets and shall be included as part of the engineering drawings. The minimum scale to be used for any manhole or sewer detail shall be 1:50.

Upon receipt of all approvals from all affected agencies, the original drawings shall be submitted to Haldimand County Planning Division. These originals shall be processed by the Planning Division and prepared for signing by the Manager of Engineering Services or designate indicating the approval of Haldimand County, and returned to the Consulting Engineer. No changes or revisions may be made to the drawings after the signature of the Manager of Engineering Services or designate has been affixed thereto. The County Planning Division will require three copies after the drawings have been signed.

If, after one year from the date of the original approval of the engineering drawings by the Manager of Engineering Services or designate, the Developer fails to enter into a Pre-servicing and /or Subdivision Agreement with Haldimand County, or the work has not been initiated, the Manager of Engineering reserves the right to revoke all approvals related to the engineering drawings.

D 7.00 ENGINEERING DRAWING REQUIREMENTS

All engineering drawings shall be prepared in a neat and legible fashion. The design information presented on these drawings shall be completed in metric format and in ink. Cover / title sheet should be provided for all projects containing five (5) sheets or more. Cover / title sheet usually includes: project name, owners/developer name, street names, drawing locations (mapping/schedule), consultant name, draft plan approval number, list of drawings, development site data (total area, sewers and street length, etc.).

All final engineering drawings shall be prepared on standard white print. As-constructed drawings shall also be submitted in electronic format compatible with County's current version of AutoCAD.

All General Plans, Lot Grading Plans, Area Rough Grading Plans, Plan and Profile Drawings and Detail Drawings shall be prepared on standard A1 size sheets.

The lot numbering and block identification on all engineering drawings shall be the same as shown on the Draft Plan for the area.

All elevations shown on the engineering drawings are to be of Geodetic origin (NAD 83). A minimum of 2 benchmarks of geodetic origin are to be shown on the plans.

All plan and profile drawings are to be prepared so that each street can be filed separately. The street names shall be identified on the plan portion of the drawings.

When streets are of a length that requires more than one drawing, match lines are to be used with no overlapping of information.

The reference drawing numbers for all intersecting streets and match lines shall be shown on all plan and profile drawings.

A north arrow, key plan and bar scale shall be referenced on all drawings.

Two (2) means of access and egress are required prior to building construction.

All engineering drawings shall be stamped/signed by a professional engineer.

D 8.00 GENERAL PLAN OF SERVICES

A General Plan of Services drawing shall be prepared for all developments at a metric scale of 1:1,000.

When more than one General Plan of Services drawing is required for any development, the division of drawings shall reflect the limits of the draft plan as closely as possible to ensure that the lot numbers match between the engineering drawings and the plan to be registered.

The reference Geodetic Bench Mark and the Site Bench Marks to be used for construction shall be identified on the General Plan of Services. Iron property bars are not acceptable construction bench marks.

A Key Plan at a scale of 1:10,000 shall be shown on all General Plan of Services drawings and the area covered by the drawing shall be clearly identified.

A drawing index shall be shown on all General Plans of Services to identify the Plan and Profile Drawing number for each street or easement shown.

All road allowances, lots, blocks, easements and reserves are to be shown and identified in the same manner as the Draft Plan.

All existing services, utilities and abutting properties are to be shown in grey scale/low intensity ink on baseplate. Future services and utilities are to be shown in broken line format.

All services to be constructed are to be shown on the General Plan of Services in solid lines.

All storm and sanitary sewers are to be shown, identifying length, size, sewer material and grade on the General Plan of Services.

All manholes will be shown and are to be numbered in accordance with the design drawings, and shall include OPSD numbers.

All catchbasins are to be shown and are to be numbered in accordance with the design drawings, and shall include OPSD numbers.

All watermains, valves, and hydrants are to be shown. Watermains are to be identified only by sizing and material.

All curbs and sidewalks are to be shown.

All fencing to be indicated by height and type of fence.

All streetlighting poles and transformers are to be shown.

Dimensioning of utilities and roadways is not required on the General Plan of Services.

Registered Plan number must be shown on the As-Constructed General Plan of Services.

All sites for parks, schools, churches, commercial and industrial development must be shown.

If a subdivision encroaches on an existing floodplain, the approved fill lines restrictions must be shown, as specified by the local conservation authority.

D 9.00 PLAN AND PROFILE DRAWINGS

All plan and profile drawings shall be prepared at a scale of 1:500 horizontally and 1:50 vertically.

Plan and Profile drawings are required for all roadways, blocks and easements within the development, all outfalls beyond the development to the permanent outlet, all boundary roadways abutting the development and other areas where utilities are being installed below grade.

All existing services, utilities and abutting properties are to be shown in grey scale/low intensity ink on baseplate. Future services and utilities are to be shown in broken line format.

All services to be constructed are to be shown in solid lines.

The profile portion of the drawing shall be a vertical projection of the plan portion whenever possible.

All road allowances, lots, blocks, easements and reserves are to be shown and identified in the same manner as the Draft Plan. Lot and block frontages are to be shown.

All curb and gutter and sidewalks shall be shown and dimensioned on the plan.

All sewers shall be shown and dimensioned on the plan and shall also be plotted on the profile of the drawings. The sewers shall have a complete description on the plan and profile portion of the drawing including length, grade, material, class of pipe, usage and bedding requirements. The size of the pipe shall be plotted to full scale on the profile.

All sewer manholes shall be shown on the plan and on the profile portion of the drawing. The manholes shall be identified by chainage, number on the plan and on the profile and shall also be referred to the

applicable OPSD or to a special detail on the profile portion of the drawing. All invert elevations shall be shown on the profile with each having reference to the north arrow.

All catchbasins and catchbasin connections shall be shown. Catchbasins are to be numbered for easy reference.

All sewer manholes which have safety platforms are to be noted.

All drop connections are to be noted and referred to the applicable O.P.S. drawing or specification. All drop structures will be on the outside of the structure.

All top of grate/cover and invert elevations for rear lot catchbasins and manholes are to be shown.

Storm and Sanitary sewer manhole benching details are to be shown at a scale of 1:50 (benched to obvert).

All watermains, hydrants, valves, blow-offs, etc. shall be shown, described and dimensioned as per the requirements of this criteria. In addition, the watermain shall be plotted to full scale size on the profile portion of the drawing.

The location of all storm, water and sanitary service connections shall be shown on the plan portion of the drawing using different symbols for each service. The connections to all blocks in the development shall be fully described and dimensioned (size, length, grade, invert elevations, materials, class of pipe, bedding, etc.). As-constructed drawings shall indicate chainages, ties and elevations of the services.

The centreline of construction, with the 20 metre stations noted by a small cross, shall be shown on the plan portion of the drawing.

The original ground at centreline and the proposed centreline road alignment shall be plotted on the profile. The proposed centreline road alignments shall be fully described (length, grade, P.I. elevations, vertical curve data, high point chainages, etc.).

Details of the gutter grades around all 90 degree crescents and cul-de-sacs shall be provided on the plan portion of the drawing as a separate detail at a scale of 1:100.

Special notes necessary to detail construction procedures or requirements are to be shown.

The proposed pavement design shall be noted on the plan portion of the drawing as a typical cross-section.

The basement elevation of all existing dwellings on the streets where sewers are to be constructed shall be noted.

All of the proposed services, utilities and features are to be shown on the plan portion of the drawing. Those services and utilities below grade that are critical to the new construction shall also be shown in the profile. Test holes may be required to determine actual elevation of existing services and utilities.

The curb radius at all intersections shall be shown on the Plan portion of the Drawing.

Profiles of roadways shall be produced sufficiently beyond the limits of the proposed roads, to confirm the feasibility of possible future extensions.

The location of all luminaires, poles and transformers shall be clearly shown on the Plan portion of the drawings.

All sewer and road grades are to be calculated to three decimal places for design purposes and shown to two decimal places on the drawings.

D 10.00 OTHER DRAWINGS

LOT GRADING PLANS AND AREA ROUGH GRADING PLANS

All lot grading plans and area rough grading plans shall be prepared in accordance with the criteria given in Section “L” and/or “M”.

STORM DRAINAGE PLANS

All storm drainage plans shall be prepared (at scale) in accordance with the criteria given in Sections “H” and “I” of this document.

LANDSCAPING PLANS

All landscaping plans shall be prepared in accordance with the criteria given in Sections “O” and “P” of this booklet and in accordance with the Ontario Landscape Contractors Standard.

D 11.00 SUPPORTING INFORMATION FOR AGREEMENTS

SUBDIVISIONS AND/OR CONDOMINIUMS – PRIOR TO COMMENCEMENT OF PREPARATION OF PRESERVICING AND/OR SUBDIVISION AGREEMENT

The general agreement process is set out in Section F. Please contact the Planner of the Planning and Economic Development Department (Planning and Development Division) for agreement matters.

When more than one General Plan of Services drawing is required for any development, the division of drawings shall reflect the limits of the Draft Plans as closely as possible to ensure a match between the engineering drawings and the plan to be registered.

NOTE: After approval of the items in Section D 1.00 and prior to the commencement of preparation of the Pre-servicing and/or Subdivision Agreement, or construction (which may occur should the developer elect to enter into a pre-servicing agreement,) in addition to the items listed in Section D 1.00 the Developer’s Engineer shall provide Haldimand County with the following:

To the Planner - Planning and Economic Development Department
(Planning and Development Division):

- a) The name of the person and/or company and mortgagee where applicable with whom the Subdivision Agreement will be executed;
- b) Written descriptions in a schedule form of:
 - i. the property (legal description including PIN number);
 - ii. all required easements;
 - iii. all lands to be conveyed to the County; and,
 - iv. all 0.3 metre reserves where applicable;
- c) Proposed phasing, if applicable;
- d) Certificate of insurance for \$5,000,000 indemnifying the County and Haldimand County Hydro Inc.;
- e) Ministry of Environment approvals for County services to be constructed for the proposed subdivision;
- f) One copy of the approved General Plan of Services;
- g) One copy of the approved Grading Control Plan;
- h) One copy of a detailed cost estimate prepared by a professional engineer for services to be constructed for the subdivision itemized on a per unit basis. The cost estimate shall be signed and sealed by the professional engineer. This cost estimate will be used as a basis for calculation of the security deposit;
- i) Copies of a Schedule identifying lands and easements to be deeded to the County;

To the Manager of Engineering Services or Designate

- a) Two field copies (i.e. Tender Document). The draft copy of the specifications shall be submitted to the Manager of Engineering Services or designate for approval prior to preparation of the above noted copies.

To Haldimand County Hydro:

- a) Three (3) complete sets of engineering plans and cost estimates for hydro servicing requirements;
- b) One (1) copy of the executed contract documents and two field copies (i.e. Tender Document). The draft copy of the specifications shall be submitted to Haldimand County Hydro for approval.

MULTIPLE LOT SEVERANCES OR DEVELOPMENT ON EXISTING LOTS – PRIOR TO COMMENCEMENT OF PREPARATION OF AGREEMENT

In addition to the general agreement process set out in Section F, the draft of the Agreement, as prepared by Haldimand County will be completed and forwarded to the Developer for review and signing after internal circulation of the agreement to various County Departments and agencies by the Planner.

If required, engineering cost estimates will need to be submitted by the Developer's Engineer to the Planner who will then coordinate review of the estimates by the appropriate parties. If acceptable, the Planner will include the cost estimates in the applicable Schedules to the Agreement.

The engineering drawings must be approved by the Manager of Engineering Services or designate prior to the finalization of the Agreement Schedules.

When more than one General Plan of Services drawing is required for any development then the division of drawings shall reflect the limits of the subject lands.

NOTE: After approval of the items in Section D 2.00 and prior to the commencement of preparation of the Agreement, in addition to the items listed in Section D 2.00 the Developer's Engineer shall provide Haldimand County with the following:

To the Planner:

- a) The name of the person and/or company and mortgagee where applicable with whom the Agreement will be executed;
- b) Written descriptions in a schedule form of:
 - i. the property (legal description including PIN number);
 - ii. all required easements;
 - iii. all lands to be conveyed to the County; and,
 - iv. all 0.3 metre reserves where applicable;
- c) Engineering cost estimates if required;
- d) Proposed phasing, if applicable;
- e) Certificate of Insurance;
- f) Ministry of Environment approvals for County services to be constructed;
- g) One (1) copy of the General Plan of Services;
- h) One copy of the approved Grading Control Plan;

To the Manager of Engineering Services or Designate

- a) Two field copies (i.e. Tender Document). The draft copy of the specifications shall be submitted to the Manager of Engineering or designate for approval prior to preparation of the above noted copies.

To Haldimand County Hydro:

- a) Three (3) complete sets of engineering plans and cost estimates for Hydro servicing requirements;
- b) One (1) copy of the executed contract documents and two field copies (i.e. Tender Document). The draft copy of the specifications shall be submitted to Haldimand County Hydro for approval.

AFTER APPROVAL OF THE ENGINEERING DRAWINGS

SUBDIVISIONS AND/OR CONDOMINIUMS

After Approval of the Engineering Drawings by the County's Public Works Department, the Developer's Engineer will provide:

To the Planner:

- a) Ten (10) white paper prints and four (4) mylar prints including a signing block for the General Manager, Planning and Economic Development of the proposed final plan for registration completed with the street names, lot numbers, surveyor's certificate, owner's certificate and all other pertinent information required by the Registry Office. An electronic format compatible with County's current version of AutoCAD is also required.
- b) One (1) legal size copy of the proposed final plan for attachment to the agreement;
- c) One (1) full size and six (6) legal size copies of the Reference Plans for any easement to be granted by the County;
- d) Eleven (11) white paper copies of the General Plan of Services as approved by the Manager of Engineering Services and applicable Conservation Authority;
- e) Eleven (11) white paper copies of the grading control plan approved by the Manager of Engineering Services and applicable Conservation Authority (one white paper copy is provided to the registry office);
- f) Copies of a Schedule identifying lands and easements to be deeded to the County. A draft copy of the Schedule shall be submitted to the Planner for coordination of approval prior to preparation of the above noted copies;
- g) Confirmation from Haldimand County Hydro Inc. that all their requirements for design, supply and installation of an underground electrical distribution system have been satisfied.
- h) Consulting Engineer's request for acceptance of services;

- i) Letter of Credit for the required financial securities; and
- j) Any other requirements to fulfil the conditions of draft approval.

MULTIPLE LOT SEVERANCES OR DEVELOPMENT ON EXISTING LOTS

After Approval of the Engineering Drawings by the County's Public Works Department, the Developer's Engineer will provide:

To the Planner:

- a) Where applicable, three (3) full size copies of the Reference Plans for any easement to be granted by the County;
- b) Eleven (11) white paper copies of the General Plan of Services as approved by the Public Works Department and applicable Conservation Authority;
- c) Eleven (11) white paper copies of the grading control plan approved by the Public Works Department and applicable Conservation Authority;
- d) If applicable, four (4) copies of a Schedule identifying lands and easements to be deeded to the County. A draft copy of the Schedule shall be submitted to the Planner for coordination of approval prior to preparation of the above noted copies;
- e) Where required, Letter of Credit for the required financial securities; and
- f) Any other requirements to fulfil the conditions of approval or site plan approval where applicable.

D 12.00 REQUIREMENTS PRIOR TO COMMENCING CONSTRUCTION

Prior to commencement of construction, the Developer's Consulting Engineer shall arrange/provide the following to the Supervisor of Development Services (Planning Division):

- a) A pre-construction meeting shall be held at least one week prior to the start of construction with Planning, Engineering Services, Consulting Engineer, and Contractor;

- b) One (1) copy of the construction specifications and four (4) sets of all approved engineering drawings, landscaping and electrical drawings;
- c) The name of the proposed contractor and contact numbers for key personnel;
- d) Proposed schedule of construction;
- e) Copy of the signed Contract between Contractor and Owner;
- f) All other information specified in the Pre-servicing and Subdivision Agreement as a requirement prior to commencement of construction or other information required by the Manager of Engineering or designate (i.e. Securities, certificate of insurance, etc). The Developer's Engineer will provide these items to the Planner.

D 13.00 REQUIREMENTS DURING CONSTRUCTION

- a) Site meetings will be held at least every two weeks with the same parties present.
- b) Testing results will be kept on the site for review from time to time by the Supervisor Engineering Projects (Engineering Services Division).
- c) The work may be stopped at any time if it is not satisfactory to the County.

D 14.00 ACCEPTANCE

The term **Preliminary Acceptance** shall be used to describe the date when the services are complete and acceptable to Haldimand County subject to the maintenance requirements of the Subdivision Agreement (generally at least a two-year warranty period).

Final Acceptance shall be the terminology used to describe the date when the Developer's maintenance requirements have been fulfilled and the services are acceptable to Haldimand County. Dates for underground and above ground maintenance may not necessarily coincide. **Formal Assumption** of the subdivision's services shall be the date on which the Council of Haldimand County agrees by By-law

that all the conditions of the Subdivision Agreement have been fulfilled and all maintenance requirements have been completed.

The dates for Preliminary Acceptance and for Final Acceptance for the sewers and watermains installed in all new developments shall be established by the Engineering Services Division and through a formal letter issued by the Supervisor Development Services (Planning & Development Division). Preliminary Acceptance and Final Acceptance must be requested in writing by the Consulting Engineer. All applicable documentation should be submitted with the request.

Preliminary Acceptance must be given prior to the release of building permits. Model home units may be permitted prior to Preliminary Acceptance in accordance with current Haldimand County By-laws. When the underground services are completed and cleaned to the satisfaction of the Consulting Engineer, he/she shall advise the Supervisor Development Services (Planning & Development Division), in writing, that the work is completed and shall request an inspection by Haldimand County. A video of all sewers will also be submitted to the attention of Engineering Services Division at this time. Haldimand County shall carry out their inspection and shall advise the Consulting Engineer of any items of work requiring further rectification.

When all deficiencies have been corrected to the satisfaction of the County and upon receipt of:

- (i) A certificate from the Consulting Engineer that the services included in the agreement have been constructed and installed in accordance with the approved design drawings, the specifications, standards and requirements; and
- (ii) An affidavit certifying that all accounts have been paid,

the Supervisor of Development Services will issue to the Owner a certificate stating that such services and works in such stage have been constructed and installed according to the specifications and that all grades and levels have been established to the satisfaction of the County and are beginning the "Maintenance Period".

Near the end of the maintenance period, the services shall be re-inspected by the Consulting Engineer and all deficiencies found shall be corrected. When the Consulting Engineer is satisfied that the work is complete and acceptable, he/she shall so advise the Supervisor of Development Services in writing and shall request a final inspection by Haldimand County

Preliminary Acceptance cannot be given until the second stage of road construction is complete and the roadway is fully completed to the design cross-section and As-Constructed drawings have been submitted.

Final Acceptance of the roadways, curb and gutter, sidewalks, boulevards and driveway approaches cannot occur until at least one year has elapsed from the date of the Preliminary Acceptance for these works.

Following completion of all above ground work required by the Subdivision Agreement, the Supervisor of Development Services will issue to the Owner a certificate stating that such services and work have been constructed and installed according to the specifications, and that all grades and levels have been established to the satisfaction of the County subject to receipt of:

- (I) An affidavit certifying that all accounts have been paid;
- (II) A statement by a Licensed Ontario Land Surveyor that he/she has found or replaced all Iron Bars (all reference bars), as shown on the Registered Plan and has located or properly re-established all block corners, the beginning and ends of all curves other than corner roundings and all points of change in direction of streets;
- (III) Drawings in reproducible form showing the location and elevation of all streets and providing the location measurements required by Haldimand County for all buried services;
- (IV) A letter from the Owner's Consulting Engineer that the services included in this Agreement have been constructed and installed in accordance with the approved design drawings, specifications, standards and requirements.

Formal Assumption of the subdivision shall be the date on which the Council of Haldimand County agreed by By-law that all conditions of the Subdivision Agreement have been fulfilled and all maintenance requirements have been completed.

D 15.00 AS-CONSTRUCTED DRAWINGS

GENERAL

The As-Constructed drawings constitute the original engineering drawings which have been amended to incorporate the construction changes and variances in order to provide accurate information on the works as installed in the development. The Registered Plan Number must be clearly shown on all As-Constructed General Plan of Services drawing.

AS-CONSTRUCTED FIELD SURVEY

The As-Constructed revisions shall be based upon a final survey of all subdivision services and consulting firm's construction records. The final survey of the subdivision services shall include a field check of the following items:

- a) Location, invert elevations, slopes, size and materials of all sewer mains and manholes;
- b) Distances between all sewer manholes;
- c) Location, top of grate and invert elevations for all rear yard and lot catchbasins;
- d) Location of all sidewalks and curbs;
- e) Location and ties to all valve boxes and valve chambers located in sodded areas. Service sheets should be provided prior to the building permit stage. Location and ties to all blow-offs and other special watermain appurtenances;
- f) Location of all hydrants;
- g) Road centreline elevations at 20m intervals, 10m on vertical curves;

- h) Site benchmarks related to the NAD 83 datum and Geodetic Benchmarks from which they were derived;
- i) Location of all service connections to all lots and blocks and location of connection from nearest downstream manhole (i.e. 0+023);
- j) Location of all fencing constructed as part of the subdivision services;
- k) Locations of all driveways, boulevard tree planting, street light poles and transformers.

DRAWING REVISIONS

The original drawings shall be revised to incorporate all changes and variances found during the as-constructed field survey and to provide the ties and additional information to readily locate all underground services.

All sewer and road grades are to be recalculated to two decimal places.

All street line invert elevations of storm and sanitary house connections to each block shall be noted on the drawing.

All valves shall be identified on the drawing, complete with manufacturer's names and model numbers.

All street names, lot numbering and block identification shall be checked against the Registered Plan and corrected if required.

The Contractor, the date of commencement of construction and the date of completion shall be noted on the General Plan of Services drawing only.

The As-Constructed revision note shall be placed on all drawings in the revision block.

The Contract Number shall be added to the drawings, if applicable.

TOLERANCES

A maximum vertical plotting tolerance of 0.2 metres on the 1:50 vertical profile portion of the drawings and a maximum horizontal plotting tolerance of 2 metres on the 1:500 scale drawing shall be considered acceptable without re-plotting.

All sewer lengths are to be shown to the nearest 0.1 metres. The information shown on the As-Constructed drawings may be checked by Haldimand County at any time up to two years after final acceptance of the subdivision, and if discrepancies are found between the information shown on the drawings and the field conditions, then the drawings will be returned to the Consulting Engineer for rechecking and further revisions.

The Consulting Engineer shall be required to explain, in writing, any major difference between the design and the As-Constructed data and to provide verification that alteration does not adversely affect the design of the subdivision services.

SUBMISSIONS

Upon completion of all construction work and the As-Constructed revisions, the drawings shall be submitted to Haldimand County for their permanent records.

The submission of the As-Constructed drawings to Haldimand County must be completed, before Preliminary Acceptance of the above ground works, in an electronic format compatible with County's current version of AutoCAD and a PDF drawing that is stamped by a Professional Engineer who is licensed to practice in Ontario.