TOWN OF WINDSOR HIGHWAYCONSTRUCTION STANDARDS
(Revised March 2007)

Section 100.0 General Requirements

Section 101.0 Intent

Section 101.1 It is the intent of these standards to establish minimum general requirements for the design and construction of public improvements within the Town of Windsor. These standards should be used as a guide to sound engineering judgment for the solution of the particular problems within the Town of Windsor.

Section 101.2 Preliminary Layouts and Final Subdivision Plats submitted to the Planning Board for approval shall incorporate the requirements of these standards unless waived specifically by the Town Board.

Section 101.3 Street and storm drainage, will not be accepted for maintenance by the Town Board unless they comply with the requirements of these standards and the resolution of the Planning Board approving the Final Subdivision Plat, and are approved by the Town Highway Superintendent upon completion.

Section 101.4 There shall be no open cutting of Town Highways during the period of November 1 to April 1, except for permitted emergencies.

Section 101.5 A 48-hour notification to the Highway Superintendent is required before commencing any work on Town Highways.

Section 102.0 Materials and Workmanship: All materials utilized in the work shall be new and of the best grade on the market in their respective classes. Seconds or rejects will not be accepted. All work shall be executed in a thorough, substantial and workmanlike manner by a sufficient number of competent mechanics skilled in their respective trades. The standards shall be interpreted to require first-class work and materials. Alternate equivalent materials or methods will be accepted only if approved in writing by the Town Engineer.

Section 103.0 Compliance with Laws and Ordinances: All work shall be so conducted as to comply with all Local, State and Federal ordinances, laws and regulations. A written permit shall be obtained from the Superintendent of Highways before working on any Town Street or Highway that has been accepted for maintenance by the Town or in any case where required by the "Ordinance Covering Excavations in Town Streets and Highways," or any other Town Ordinance or local law.

Section 104.0 Maintenance: The developer will be responsible for repairs and maintenance of all work necessitated by defective materials and workmanship, including those necessitated by settlement of embankments or back-filled trenches; for which the Town gives notice to the developer within one year from the date of acceptance of the Town. A maintenance bond or cash deposit equal in amount to five percent of the cost of the improvements shall be furnished to the Town to guarantee such maintenance and repairs.

Section 105.0 Definitions: Words not defined herein shall have the meaning given to them by the Town of Windsor Subdivision Regulations unless another meaning is obvious from the context.

Section 105.1 and Arterial Streets - Are those streets or highways which are designed constructed primarily to carry large volumes of traffic through and between communities.

Section 105.2 Collector Streets - Are those streets or roads which are designed and constructed primarily to carry traffic from the service streets to the major arterial highway.

Section 105.3 Service Streets - Are those streets which are designed and constructed to be used primarily for access to the abutting properties.

Section 105.4 Town Engineer - That engineer duly appointed by the Town of Windsor or his authorized representative.

Section 105.5 Developer - Shall mean the owner, sub-divider or contractor who will develop, subdivide and/or make public improvements, or any authorized agent of the owner, sub-divider or contractor.

Section 106.0 Standard Specifications: Materials, equipment and workmanship specified by reference to a standard specification shall comply with the requirements of the latest revision thereof. The standards referred to, except as modified herein. shall have full force and effect as though printed in these Construction Standards. The Town Clerk will furnish upon request, information as to how copies of the standard specifications referred to may be obtained. Reference to materials, equipment, type of construction, or by product name, make or catalog number shall be interpreted as establishing a standard of quality and shall not be construed as limiting completion.

Section 107.0 Review of Construction

Section 107.1 All improvements and utilities will be reviewed by the Town Engineer to ensure satisfactory compliance and completion.

Section 107.2 The Town Engineer shall be notified three (3) days before each of the following phases of work has been started so that he or his representatives may review the work:
(a) Utilities.
(b) Storm Drainage.
(c) Curb and Gutter forms.
(d) Base Gravel.
(e) Road Paving (including prime & seal coats)

Section 107.3 A final review by the Town Highway Superintendent or his agent of all improvements & utilities will be made top determine whether the work is satisfactory and in substantial agreement with the approved plat drawings.

Section 107.4 Upon a satisfactory final report from the Town Engineer, recommendation of acceptance by the Highway Superintendent, and submittal of performance guarantee covering such improvements and utilities, the Highway superintendent will then make recommendation of acceptance to the Town Board.

Section 107.5 A signed report must be submitted to the Town Engineer for each inspection with copies forwarded to the Highway Superintendent, road builder and his engineer.

Section 200.0 Street Improvement Construction Standards

The following minimum standards shall be required for all arterial, collector and service streets constructed in the Town of Windsor.

Section 201.0 Right - of - Way

Section 201.1 Arterial Streets shall have a minimum right-of-way of 70 feet.

Section 201.2 Collector Streets will have a minimum right-of-way of 60 feet.

Section 201.3 Service Streets shall have a minimum right-of-way of 50 feet.

Section 201.4 Dead End Streets shall terminate in a teardrop shape with a minimum 120 foot blacktop diameter perpendicular to the entrance of the cul-de-sac and a minimum 145 foot blacktop diameter from the start of the teardrop to its farthest point.

Section 201.5 Rights-of way for sewers, water mains, storm drains and pedestrian walks shall have a minimum width of 30 feet and be so noted in the deed.

Section 202.0 Alignment

Section 202.1 Grades

(a) Service Streets shall have a maximum grade of 10 percent, except that grades up to 15 percent may be approved on short runs at the discretion of the Planning Board. Arterial and Collector Streets shall have a maximum grade of 8 percent.

(b) Within 40 feet of an intersection, the maximum grade on all streets shall be limited to 1-1/2 percent.

(c) All streets without curbs & gutters shall have a minimum grade of 1 percent. All streets with combined curbs and gutters shall have a minimum grade of 0.5 percent.

Section 202.2 Vertical Curves: Vertical curves on service streets shall have a minimum length of 100 feet but not less than 20 feet for each 1 percent algebraic difference in grade.

Section 202.3 Horizontal Curves:

(a) In general, street lines with a block deflecting from each other at any one point more than 10 degrees shall be connected with a curve, the radius of which for the inner street boundary line shall not be less than 400 feet on Arterial Streets, 300 feet on Collector Streets, and 150 feet on Service Streets. The outer street boundary lines in each case shall be parallel to such inner street boundary lines.

(b) The corners at all edge of pavements intersections shall be rounded by curves having a minimum radius of 20 feet.

Section 202.4 Sight Distance shall be at Least:

(a) 1000 feet for Arterial Streets.

(b) 500 feet for Collector Streets.

(c) 300 feet for Service Streets.

(d) Visibility for traffic safety shall be provided, by excavation if necessary, within the triangles formed by the outside boundaries of intersection right-of-way lines and a diagonal line connecting points in each right-of-way, line said points being 60 feet from the intersection of the outside boundaries of the right-of-way lines. No obstacles, including, but not limited to, fences, walls, hedges or other landscaping, shall be permitted to obstruct such visibility.

Section 203.0 Width of Pavements and Sidewalks:

Section 203.1 Arterial and Collector Streets with combined curbs and gutters shall have a minimum distance between faces of curb of 36 feet. Service streets with combine curbs and gutters shall have a minimum distance between faces of curb of 32 feet.

Section 203.2 Arterial and Collector Streets without curbs shall have a minimum width of pavement of 24 feet and shall leave two 6 foot shoulders. Service Streets without curbs shall have a minimum width of pavement of 20 feet and shall have two 6 foot shoulders.

Section 203.3 Turn a rounds on dead-end streets shall be paved 145 feet in the direction of travel and 120 feet in width, measured from face to face of curb or from edge of pavement to edge of pavement.

Section 203.4 The minimum width of sidewalks shall be 4 feet in residential areas and 5 feet in commercial and industrial areas.

Section 204.0 Cross Section

Section 204.1 Pavements shall be centered in the right-of-way and sloped from the centerline towards the curb and gutter or shoulder at 3/8's inch per foot.

Section 204.2 The finish grade shall slope up from the tops of the curb to the limit of the right-of-way of 1/2 inch per foot. Where curbs are not installed, the finish grade will slope down from the edges of the pavement at a rate of 3/4's inch per foot to form a shoulder with a minimum width of 6 feet. Ditches shall be install between the outside edge of the shoulder & the right-of-way line where curbs & gutters are not installed.

Section 204.3 Sidewalks shall be constructed within the right-of-way with the outside edge of walk placed on the outside edge of the right-of-way line. Walks shall be sloped toward the top of the curb at a rate of 1/4 inch per foot, when required.

Section 204.4 Side slopes of embankments adjacent to the right-of-way shall not exceed 2 horizontal to 1 vertical. If slopes in excess of this are required in order to avoid the right-of-way lines, then retaining walls shall be installed.

Section 205.0 Pavement Construction

Section 205.1 Type of Pavement: The minimum pavement for all streets shall consist of a 2 inch penetrated macadam wearing course over a base course placed on a properly prepared sub-grade as set forth hereafter.

Section 205.2 Preparation of Sub-grade:

(1) Sub-grade.

(a) The entire right-of-way will be cleared of brush and trees except those which will be an asset to subdivision landscaping.

(b) All boulders, organic material, soft clay, spongy clay and other objectionable material shall be removed and replaced with suitable material.

(c) The sub-grade shall be suitably stabilized, shaped and uniformly compacted to conform to lines and sub-grades & typical cross sections of this specification and the final plat profile drawings. If needed, use fabric as approved by the Engineer. The process of shaping and required repeated until no depressions develop. filling shall be

(d) After the sub-grade has been complete, all rutting displacement or soft spots shall be properly repaired with material, re-graded and compacted. new

(e) When existing materials in the road are to be used for road base material, that material shall be removed from the surface of the sub-grade so that the sub-grade may be properly prepared before the base is constructed.

(f) Cuts and fills shall have a maximum slope of one (1) vertical to two (2) horizontal [one (1) on two (2)] from the edge of the right-of-way except when specifically waived by the Planning Board for the purpose of saving trees or some other particular terrain feature at the given place.

Section 205.3 Crushed Stone Base Course: The sub-grade shall be graded to an elevation 8 inches below finish grade. A 6 inch course of #3 crushed stone shall be placed on the prepared sub-grade and rolled. The rolling shall begin at the sides and proceed toward the center and shall continue until there is no movement of the course ahead of the roller. The base course shall be primed with cutback asphalt (MC 30) at a minimum rate of 1/3 gallon per square yard.

Section 205.4 Run-of-Bank Gravel Base Course: An 8 inch run-of bank or creek gravel base course and 4 inch of Item 4 may be substituted for the 6 inch crushed stone base course. The preparation of the sub-grade, rolling and priming of the gravel shall be as required for the crushed stone base course.

Section 205.5 Penetrated Macadam Wearing Course: A course of #2 stone shall be spread on the primed base course and rolled to a minimum thickness of 2 inches. Cutback asphalt (RC 800) shall then be applied at a minimum rate of 1 gallon per square yard. Immediately after the application of the cutback asphalt, #1A stone shall be applied in such quantity as to chink all surface voids. The wearing course shall then be thoroughly rolled and broomed an more #1A stone added where needed.

Section 205.6 Shoulders: Shoulders shall be constructed in accordance with the requirements for run-of-bank gravel base courses with 4 inches of Item #4 and dust oil. The sub-grade shall be properly prepared and the prime coat eliminated.

Section 205.7 Commercial/Industrial will require special Asphalt Concrete paving design.

Section 205.8 Materials and Equipment:

(a) All asphalt cutbacks shall be applied hot using a pressure distributor approved by the Town Engineer.

(b) All stone shall be approved crushed stone, properly graded and washed free from injurious amounts of clay, loam or dirt.

(c) Run-of-bank gravel shall consist of hard durable particles or fragments of stone or gravel and a filler of sand or other finely divided mineral matter. Run-on-bank gravel shall be free from organic matter and lumps or balls of clay. All material in run-of-bank gravel shall pass a 2-inch sieve and not more than 10 percent shall pass a No. 200 sieve. All materials shall be from sources approved by the Town Engineer.

Section 205.9 Prior to Road Acceptance:

(a) The Owner must furnish the Town with a legal Survey and Description and Warranty Deed.

(b) The Town will get recommendations from:

1. Planning Board

2. Highway Superintendent

3. Engineer

(c) The Town will consider acceptance after the above items are complete.

Section 206.0 Sidewalks and Combined Curbs and Gutters

Section 206.1 General:

(a) Sidewalks and combined curbs and gutters shall be constructed of Portland Cement concrete. All work shall be constructed to the line and grade indicated on the approved drawings.

(b) Run-on-bank gravel, or other porous material approved by the Town Engineer shall be used to replace unsuitable sub-grade material or to raise the level of the sub-grade. All fill shall be thoroughly compacted.

(c) Non-extruding pre-molded expansion joints, extending completely through the joint, shall be placed at intervals not greater than 50 feet in sidewalks and combined curbs and gutters, and in joints where other walks and drives join sidewalks or curbs.

(d) Contraction joints, extending 1/3 of the way through from the top, shall be placed at 5 foot intervals in sidewalks and combined curbs and gutters. Contraction joints may be sawn.

Section 206.2 Concrete Materials: Sand and gravel shall be screened, graded and washed free of injurious amounts of clay, loam, and dirt. Sand shall be sharp, coarse natural sand. Gravel shall be crushed gravel of broken stone having a maximum size of 1 inch. All aggregates shall comply with ASTM C33. Cement shall be type IA or IIA air-entraining Portland Cement complying with ASTM C175. Ready mix concrete may incorporate Type I or Type II entraining admixture complying with ASTM 260. Mixing water shall be suitable to drink.

Section 300.0 Storm Water Drainage Systems Construction Standards.

The following minimum standard shall be required for all storm drainage works constructed in the Town of Windsor.

Section 301.0 Capacity

Section 301.1 Storm water drainage shall be designed to intercept and carry the maximum runoff from the tributary watershed during a ten-year frequency storm. For design purposes a ten-year frequency storm shall be considered to have the following Minimum Intensity-Saturation Relationships:

1. Maximum 5 minute intensity equal to 6.2 inches/hour.
2. Maximum 10 minute intensity equal to 4.6 inches/hour.
3. Maximum 15 minute intensity equal to 3.9 inches/hour.
4. Maximum 20 minute intensity equal to 3.4 inches/hour.
5. Maximum 25 minute intensity equal to 3.0 inches/hour.
6. Maximum 30 minute intensity equal to 2.7 inches/hour.
7. Maximum 60 minute intensity equal to 1.7 inches/hour.

Section 301.2 Runoff Computations shall result in flows equal to those computed on a rational or SEC basis, using a time of concentration and runoff factor in keeping with the local topography.

Section 301.3 The storm water drainage system shall provide for carrying the runoff to the nearest natural watercourse or storm sewer, in a manner approved by the Town Engineer.

Section 301.4 Easements for storm water drainage systems shall be 30 feet wide.

Such easements shall be reserved for the Town access and so noted in the deed.

TOWN OF WINDSOR HIGHWAY CONSTRUCTION STANDARDS

Section 302.0 Culverts

Section 302.1 Culverts under streets shall extend from the edge of the shoulder to the edge of shoulder and shall be set with a minimum of 1 foot of cover over the top of the pipe.

Section 302.2 Culverts shall have a minimum diameter of 15 inches.

Section 302.3 (Amended 3-7-07)

The requirements of this regulation shall apply to all new driveways accessing Town roads in the Town of Windsor. Driveways proposed onto State or County highways require approval from the State Department of Transportation (DOT) or the Broome County Department of Public Works (DPW), respectively.

A. Design Standards

1. Access:
   a. The angle of all driveways with Town roads shall be between eighty(80) and ninety(90) degrees for a distance of twenty(20) feet from the edge of the Town roads driving surface.

   b. The return radius between the edge of the driveway and the edge of the existing town road's driving surface shall be a minimum of fifteen (15) feet on each side of the driveway.

   c. Driveways shall have an adequate sight distance in each direction, measured twenty (20) feet back from the edge of the town road's pavement at a forty two (42) -inch eye height.

   d. Sight easements shall be provided across all driveway corners. No obstructions to vision such as shrubbery, brush, trees, earth, fencing or structure shall be permitted at the road intersections within the triangle formed by the intersection of the road center lines and a line drawn between points along such lines thirty (30) feet distance from their point of intersection and ten (10) feet back from the edge of the pavement of the road. This restriction does not apply to U.S. Postal Service mailboxes.

2. Finished Grade

   a. All access grades within twenty (20) feet of the town road's driving surface shall be horizontal. Any grade beyond this twenty (20)-foot point shall not exceed 20 per cent.

b. Access grades shall be constructed to slope downward from the edge of the highway pavement to the existing drainage ditch line at a rate of three-quarter (3/4) inch per foot.

c. Ditching will be adequate along driveway to accommodate runoff and not affect adjoining properties or highways.

B Construction Specifications:

1. Culvert pipe(s) shall be new and supplied by the property owner. Prior to construction, applicants shall contact the Town Highway Superintendent for specifications of the size of pipe and materials. The Highway Department shall be responsible for the proper installation of all culvert pipes.

2. Minimum length of culvert pipe shall be thirty (30) feet with a maximum length of forty (40) feet. All culvert pipe shall have a minimum diameter of fifteen (15) inches.

3. For any driveway, the Town Highway Superintendent reserves the right to review the site and advise BMPs (Best Management Practices) that shall be set in place before and during construction.

C. Maintenance

1. Driveways must be kept in good driving condition.

2. Privately owned ditches must be maintained in a manner that prevents storm runoff from private drives from entering onto a Town Road. The Town may hold individual property owner(s) financially responsible for any damage to Town roads relating from private drive runoff (i.e. washouts, debris, ditch maintenance, etc.).

D. Driveway Building Permits for Existing Lots

1. Application for a Driveway Building Permit shall be filed with the Town Code Enforcement Officer through the Town's general building permit. A Driveway Permit Application inspection fee, as determined by the Town Board, will be required if the applicant has not secured a building permit.

2. Prior to construction, applicants shall arrange a time for the Town Highway Superintendent to conduct an initial inspection to review the location of the proposed driveway. Before a Driveway Building Permit can be approved, a final inspection will be necessary to verify the specifications of this regulations have been met to the satisfaction of the Highway Superintendent.

3. No Building Permit Application for on-site construction shall be considered by the Code Enforcement Officer until an initial driveway inspection has been performed and an acceptable location has been sited. In order for the Code Enforcement

Officer to perform necessary inspections, a passable driveway also must be constructed in the sited location prior to the issuance of any Building Permit Application for additional on-site construction.

4. No Certificate of Occupancy shall be issued by the Code Enforcement Officer until after the driveway is completed, inspected and approved by the Highway Superintendent.

E. Access for Proposed New Lots

1. An applicant proposing a subdivision shall not receive final approval without first

meeting with the Town Highway Superintendent regarding the accessibility of each lot. The applicant shall provide the Code Enforcement Officer with a signed letter from the Highway Superintendent on his letterhead verifying that he has inspected the site and has determined that each new lot can be adequately accessed from a Town road.

F. Variances

1. All variance applications should be directed to the Town of Windsor Zoning Board of Appeals in accordance with their procedures.

.G. Violations

1. No debris shall be left in the Town Road at the end of each workday..

2. Any violation hereof shall be considered as a violation of the Town Code, Town of Windsor, and punishable by a fine of not less than $100.00, but not more than $500.00 for each violation.

Town of Windsor
DRIVEWAY BUILDING PERMIT APPLICATION
(To be filed in triplicate)

Permit # _____

Property Owner _____ Phone #_____

Mailing address _____

City _____ State _____ Zip._____

Location of Property _____

Proposed Dimensions: Length of driveway _____ Width of driveway _____

Driveway Classification. **Check all that apply:**
[ ] Residential [ ] Commercial [ ] Logging [ ] Pre-existing [ ] New Driveway

Distance from nearest abutting driveways along the road: _____

Describe exactly how to get to your proposed driveway. Attach a sketch showing your property, any existing buildings and drives on your lot and/or neighboring lots, and the location of the proposed driveway to the town road. You must stake or flag your driveway location so that our inspector can find it. The Town will not inspect your drive unless it is staked and/or flagged. Return this information to the Town Hall and the Town Highway Superintendent will contact you to arrange a time for an inspection.

The undersigned applicant agrees to abide by the Town of Windsor Driveway Design regulations and all construction design recommendations of the Town Highway Superintendent

Applicant _____ Date _____

DRIVEWAY PERMIT IS $200.00

Date of Initial Inspection _____Final Inspection date _____

Sight Distance_____

Culvert pipe required? [ ]Yes [ ]No Length _____ Width _____

Highway Superintendent recommendations:

Initial Inspection Approval ____ Date _____

Final Inspection Approval ____ Date _____

Highway Superintendent's Signature _____

PERMIT VALID FOR 6 MONTHS FROM THE DATE OF APPROVAL

Section 302.4 All culverts shall have headwalls at each end of the culvert. Headwalls may be constructed of dry stone. Concrete headwalls shall be at least 12 inches thick and as wide as the top of the ditch, but not less than 3 pipe diameters wide. Pre-cast concrete end sections for reinforced concrete pipe and metal end sections for heavy steel culvert pipe may be used in lieu of headwalls where approved in writing by the Town Engineer.

Section 302.5 Culverts to be RCP. plastic or heavy steel (1/4" or heavier).

Section 303.0 Storm Water Sewers:

Section 303.1 Storm water sewers shall have a minimum diameter of 15 inches except that catchbasin and inlet connections may have a minimum diameter of 12 inches. Mains to be PVC SDR35 or RCP at the discretion of the Town Highway Superintendent.

Section 303.2 Storm sewer lines shall be designed and constructed to give mean velocities, when flowing full, of not less than 3 feet per second. When velocities exceed 12 feet per second, the pipe shall be anchored to prevent movement.

Section 303.3 Manholes shall be installed at the end of each line, at all changes in grade, size or alignment, at all intersections and at intervals not exceeding 400 feet.

Section 303.4 Catch-basins and inlets shall be installed at all intersections and at not more than 400 feet intervals.

Section 303.5 All connections to storm water sewers including catch-basin and inlet connections shall be made at a manhole.

Section 304.0 Ditches

Section 304.1 Longitudinal ditches shall be placed where necessary to intercept water entering the right-of-way.

Section 304.2 Unpaved ditch sections shall be designed to maintain maximum runoff velocities sufficiently low to prevent scouring and erosion. Ditches shall be paved or check dams shall be installed where necessary to maintain safe stream bed velocities. Protection shall be provided to prevent erosion at bends, beneath check dams and below culvert outlets.

Section 304.3 Ditches shall have a minimum bottom width of 12 inches and side slopes not steeper than 2 horizontal to 1 vertical.

Section 305.0 Storm Water Sewer and Culvert Pipe: Pipe used in storm water drainage shall be concrete, plastic, or heavy metal pipe.

Section 305.1 Concrete pipe shall conform to ASTM Designation C76. Concrete pipe beneath streets shall be a minimum of Class IV.

Section 305.2 Steel pipe shall be heavy steel 1/4" or heavier. PVC pipe, where permitted, shall be SDR35.

Section 306.0 Pipe Laying: Storm water drainage systems shall be installed to the line and grade indicated on the approved drawings.

Section 306.1 All pipe shall be laid on a 6 inch (minimum) bed of crushed stone or fine gravel properly prepared to furnish uniform bearing along the barrel of the pipe. The pipe shall be backfilled to a minimum depth of 12 inches over the top of the pipe with the crushed bedding material. All trenches to be backfilled with Item 4.

Section 307.0 Testing: All storm water sewer pipe and culverts shall be subjected to the following tests in the presence of the Town Engineer.

(a) A lamp light shall be clearly visible through the pipe between manholes or between culvert headwalls.

(b) A ball 2 inches smaller in diameter than the pipe shall roll freely of its own accord in the pipe, water may be used to assist the progress of the ball on grades less than 1.5 percent.

Section 308.0 Appurtenances: Appurtenances to storm water drainage systems shall be designed and constructed to afford maximum public safety, dependability and efficiency in operation and maintenance. Two copies of "as -built" drawings of these facilities, together with all manuals and descriptive data, shall be furnished the Town Clerk before the facilities will be accepted by the Town.