Chapter 29

Development Standards Ordinance

Town of Lyons
Walworth County, Wisconsin

Adopted by the Town of Lyons Town Board
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SECTION 29.1 GENEAL PROVISIONS

29.1.1 TITLE

This Ordinance shall be known as, referred to, or cited as the "DEVELOPMENT STANDARDS ORDINANCE, TOWN OF LYONS, WALWORTH COUNTY, WISCONSIN".

29.1.2 PURPOSE

The purpose of this Ordinance is to regulate and control the development of land within the limits of the Town of Lyons, Walworth County, Wisconsin, in order to promote the public health, safety, aesthetics, and general welfare of the Town and its environs. It is intended that these regulations shall facilitate the enforcement of the provisions and development standards contained in Building Codes, Town Land Use Plan, and the Land Division Ordinance of the Town of Lyons, Walworth County, Wisconsin.

29.1.3 JURISDICTION

A. Jurisdiction of these regulations shall apply to all public improvements, and to private improvements constructed for public benefit such as roadways, storm water drainage systems, erosion controls, and utility construction, located within the unincorporated lands within the Town of Lyons, Walworth County, Wisconsin. The subdivision plans, plats, site plans, proposed improvements to be installed, and all procedures relating thereto, shall in all respects be in full compliance with the regulations herein.

B. These standards have been prepared to insure that the design and construction of public improvements will meet the minimum requirements of the Town. These standards are also intended to provide uniform design criteria for facilities designed for or directly by the Town, as well as provide specifications for private development within the Town not under the jurisdiction of the Land Division Ordinance. The standards of this ordinance shall also apply to previously platted subdivisions where improvements have not yet been installed.

C. In addition to the Town, the review and approval of contract documents for certain types of improvements may also fall within the jurisdiction of other public agencies. These standards are not intended as a substitute for the requirements of other public agencies. It shall be the owner's responsibility to insure that the proposed contract documents meet the requirements of all other public agencies and that any and all permits and bonds required by such agencies are secured.

29.1.4 VARIANCES

Where, in the judgement of the Town Board, it would be inappropriate to apply literally the provisions of this Ordinance because exceptional or undue hardship would result, the Town Board, after review and recommendation by the Town Plan Commission, may waive or modify any requirement to the extent deemed just and proper. No variance to the

provisions of this Ordinance shall be granted unless the Town Board finds by the greater weight of the evidence that all the following facts and conditions exist and so indicates in the minutes of its proceedings:

A. Exception circumstances: There is exceptional, extraordinary, or unusual circumstances or conditions where a literal enforcement of the requirements of this Ordinance would result in severe hardship. (Such hardships should not apply generally to other properties or be of such a recurrent nature as to suggest that the Development Standards Ordinance should be changed).

B. Preservation of property rights: That such variance is necessary for the preservation and enjoyment of substantial property rights possessed by other properties in the same vicinity.

C. Absence of detriment: That the variance will not create substantial detriment to adjacent property and will not materially impair or be contrary to the purpose and spirit of this Ordinance or the public interest.

A simple majority vote of the entire membership of the Town Board shall be required to grant any modification of this Ordinance.

29.1.5 VIOLATIONS

It shall be unlawful to build upon, divide, convey, or construct improvements in violation of this Ordinance or the Wisconsin Statutes; and no person, firm or corporation shall be issued a building permit by the Town of Lyons authorizing the building on, or improvement of, any subdivision, minor land division or replat within the jurisdiction of this Ordinance not of record as of the effective date of this Ordinance until the provisions and requirements of this Ordinance have been fully met. The Town may institute appropriate action or proceedings to enjoin violations of this Ordinance or the applicable Wisconsin Statutes.

29.1.6 PENALTIES AND REMEDIES

Any person, firm or corporation who violates or fails to comply with the provision of this Ordinance shall, upon conviction thereof, forfeit not less than $100 nor more than $1,000 plus the costs of prosecution for each offense and the penalty for default of payment of such forfeiture and costs shall be imprisoned in the County Jail until payment thereof, but not exceeding six (6) months. Each day a violation exists or continues shall constitute a separate offense.

29.1.7 APPEALS

Any person aggrieved by an objection to a plan or plat or a failure to approve a plat may appeal such objection or failure to approve as provided in Sections 236.13(5) of the Wisconsin Statutes, within 30 days of notification of the rejection of the plat. Where failure to approve is based on an unsatisfied objection, the agency making the objection shall be made a party to the action. The court shall direct that the plat be approved if it finds that the action of the approving or objecting agency is arbitrary, unreasonable or discriminatory.

SECTION 29.2 DEFINITIONS

29.2.1 GENERAL DEFINITIONS

For the purposes of this Ordinance, the following definitions shall be used. Words used in the present tense include the future; the singular number includes the plural number; and the plural number includes the singular number. The word "shall" is mandatory and not directory.

29.2.2 SPECIFIC WORDS AND PHRASES

Alley
A special public way affording only secondary access to abutting properties.

Arterial Street
See Street Classification

Block
A tract of land bounded by streets or a combination of streets, public parks, cemeteries, railroad rights-of-way, shorelines of navigable waters, and municipal boundaries.

Building Line
A line parallel to a lot line and at a distance from the lot line to comply with the terms of this Ordinance.

Collector Street
See Street Classification

Comprehensive Plan
The extensively developed plan, also called a master plan, including detailed neighborhood plans, proposals for future land use, transportation, urban redevelopment and public facilities. Devices for the implementation of these plans, such as zoning, official map, land division, and building line ordinances and capital improvement programs shall also be considered a part of the comprehensive plan.

Conduit
A buried pipe for the installation of wires or cables or the conveyance of gas, water, storm water or sewage.

Contractor
An individual, company, firm or other party or organization who contracts to physically construct all or a portion of a project for either a Subdivider or the Town.

Cradle
Bedding placed under and around a conduit for proper support.

Crosswalk
A strip of land dedicated to public use, which is reserved across a block to provide pedestrian access to adjacent areas.

Cul-de-Sac
A local street with only one (1) outlet and having an appropriate turn-around for the safe and convenient reversal of traffic movement.

Design Engineer
The individual or firm retained by the Subdivider who is responsible for the design and preparation of construction documents for a project.

Easement
A grant by a property owner for the use of a strip or parcel of land by the general public, a corporation, or a certain person or persons for a specific purpose or purposes.

Field Inspector
An individual, company or firm appointed by the Town to observe construction for compliance with approved drawings and specifications.

Flood Protection Elevation
An elevation two (2) feet above the elevation of the 100-year recurrence interval flood.

Floodplains
Those lands, including the channels, floodways, and floodplain fringe of any given reach, which are subject to inundation by a flood with a given recurrence frequency. The 100-year recurrence interval flood (or that flood having a one percent probability of occurring in any given year) is generally used for zoning regulation. Other flood events used in this Ordinance are the 50-year recurrence interval flood (or that flood having a two percent probability of occurring in any give year) and the 10-year recurrence interval flood (or that flood having a ten percent probability of occurring in any given year).

Frontage Street
See Street Classification

High Groundwater Elevation
The highest elevation to which subsurface water may rise as defined by the Wisconsin Administrative Code. This may by evidenced by the actual presence of water during wet periods of the year, or by soil mottling during drier periods. "Mottling" is a mixture or variation of soil colors. In soils with restricted internal drainage, gray, yellow, red, and brown colors are intermingled giving a multi-colored effect.

Live Storage
That volume available in a reservoir for holding storm water in accordance with the requirements of the Design Standards.

Local Streets
See Street Classification

Lot
A parcel of land of at least sufficient size to meet minimum zoning requirements for use, width, and area as set forth in County Ordinances.

Municipality
An incorporated village, city, and within this ordinance, shall also mean Town or Township.

National Map Accuracy Standards
Standards governing the horizontal and vertical accuracy of topographic maps and specifying the means for testing and determining such accuracy, endorsed by all federal agencies having surveying and mapping functions and responsibilities. These standards have been fully reproduced in Appendix D of SEWRPC Technical Report No. 7, Horizontal and Vertical Survey Control in Southeastern Wisconsin.

Navigable Stream
Any stream capable of floating any boat, skiff, or canoe of the shallowest draft used for recreational purposes as determined by the Wisconsin Department of Natural Resources.

Outlot
A parcel of land, other than a lot or block, so designated on the plat, but not of standard lot size, which can be dedicated to the public, redivided into lots or combined with one (1) or more other adjacent outlots or lots in adjacent subdivisions or minor subdivisions in the future for the purpose of creating buildable lots.

Parkway
That area of a street right-of-way between the back of curb or pavement edge and the right-of-way line intended for use primarily by pedestrian traffic or roadside ditches and developed in a park-like character.

Private Street
See Street Classification

Public Way
Any public road, street, highway, walkway, drainageway, or part thereof.

Record Drawings
Design drawings checked in the field and which are revised to show as-constructed location, elevation, grading and specification of material for improvements and utilities.

Release Rate
The controlled rate at which storm water is released from a holding reservoir.

Single Purpose Road
Any road, driveway or way which primarily serves a single parcel of property and is determined by the State of Wisconsin Department of Transportation, to be in eligible for highway aids to the Town.

Soil Mapping Unit
Soil type, slope, and erosion factor boundaries as shown on the operational soil survey maps prepared by the U.S. Soil Conservation Service.

Standard Specifications
The most current edition of the "Standard Specifications For Road and Bridge Construction", State of Wisconsin, Department of Transportation, which may be used in conjunction with the specifications of the Town.

Storm Water Detention Basin
A reservoir for the temporary storage of storm water.

Street
An area of land which serves or is intended to serve as a vehicular and pedestrian access to abutting lands or to other streets.

Street Classification

A. Arterial Street: A street used, or intended to be used primarily for rapid, unimpeded, or heavy through traffic, primarily arranged on section lines.
B. Collector Street: A street used, or intended to be used, to carry traffic from minor streets to the system of arterial streets including the principal entrance streets to large residential developments, and act as main feeders or connector streets between arterial streets for heavy traffic flow between the various residential districts and areas in and surrounding the Town.
C. Local Street: An area of land which serves or is intended to serve as a vehicular and pedestrian access to abutting lands or to other streets primarily for use in low or medium density residential districts.
D. Frontage Street: A minor street auxiliary to and located on the side of any arterial street for control of access and for service to the abutting development.
E. Private Street: Any street designated for use by specific property owners and not dedicated for public use nor intended for access by the general public, serving more than 2 residences.

Street, Public
All streets which are shown on the subdivision plat and are to be dedicated for public use.

Street, Commercial and Industrial
Those street which serve commercial and industrial districts from and between arterial or collector streets, serving heavy vehicle and truck traffic regardless of volume.

Subdivider
Any person, firm or corporation, or any agent thereof, dividing or proposing to divide land resulting in a subdivision, Certified Survey Map, or replat, responsible for preparing and recording the plats of the subdivision and for complying with these requirements. The term "Developer" may be used interchangeably with Subdivider for the purpose of these standards.

Surety Bond
A bond guaranteeing performance of a contract or obligation through forfeiture of the bond if said contract or obligation is unfulfilled by the subdivider.

Swale
A ditch or surface drainage channel meeting certain specific criteria as established herein for the surface movement of storm water.

Town Engineer
The individual or firm appointed or contracted by the Town who is licensed to practice professional engineering in the State of Wisconsin and is responsible for reviewing subdivision plans on behalf of the Town, recommends changes from time to time to these Design Standards and performs other duties as directed by Town Ordinance.

Wetlands
Those lands which are partially or wholly covered by marshland flora and generally covered with shallow standing water or lands which are wet and spongy due to a high water table as determined by the US Army Corps of Engineers, Wisconsin Department of Natural Resources, or the Walworth County Zoning Department.

Wisconsin Administrative Code
The rules of administrative agencies having rule-making authority in Wisconsin, published in a loose-leaf, continual revision system as directed by Section 35.93 and Chapter 227 of the Wisconsin Statutes, including subsequent amendments to those rules.

SECTION 29.3 ENGINEERING AND ADMINISTRATIVE PROCEDURES

29.3.1 PRE-DESIGN CONFERENCE

It is recommended that after preliminary plat approval and prior to the development of detailed drawings, the Subdivider and the Design Engineer meet with the Town Engineer to review Town requirements and any other proposed projects or existing conditions that may affect the final project design. The request for this preliminary meeting, if desired, shall be initiated by the Subdivider or Design Engineer.

29.3.2 DRAWING PREPARATION REQUIREMENTS

All drawings submitted for approval shall bear the name of the Design Engineer, their signature, the imprint of the Wisconsin Professional Engineer seal, and their address and telephone number. Where feasible, drawings shall consist of 24-inch x 36-inch sheets. Drawings shall be clear and legible, and shall be drawn to a conventional, even scale which will permit all necessary information to be plainly shown. All elevations shall be referenced to National Geodetic Vertical Datum (mean sea level) datum where available and benchmarks shall be noted. All improvements proposed for use on the project shall be indicated on the drawings. All proposed improvements and all existing municipal and privately owned utilities shall be shown in both plan and profile.

29.3.3 SPECIFICATION REQUIREMENTS

A. Technical specifications shall be complete in themselves, except that appropriate specific sections of the most recent edition of the "Standard Specifications for Road and Bridge Construction", as published by the Department of Transportation, State of Wisconsin, (WDOT Standard Specifications) and the various standard published material specifications prepared by associations such as the "American Society for Testing and Materials" (ASTM) or the "Concrete Reinforcing Steel Institute" (CRSI), may be incorporated by reference.

B. The specifications shall include, but not be limited to, all information not shown on the drawings which is necessary to establish in detail the quality of materials and work required in the project, allowable parameters for testing the various parts of the project and instructions for testing material and equipment. Wherever there is conflict between the written specifications and the drawings, the more stringent requirements, as determined by the Town, shall apply.

C. The specifications shall include a clause that all work included shall be guaranteed by the Contractor to be free from defects in construction and materials and in conformance with the approved drawings and specifications. A statement of comprehensive liability insurance shall also be provided as required in Section 4.13.4 of the Land Division Ordinance.

29.3.4 DESIGN COMPUTATION REQUIREMENTS

A. Design computations shall be made by the Design Engineer for all phases of the project when such computations are required to facilitate review by the Town Engineer. Said computations shall be neat and legible and in a form considered acceptable by the Town Engineer. Said computations shall include, but not necessarily be limited to, the following:

1. Detention Reservoir Capacity Design
2. Compensatory Flood Plain Storage
3. Storm Sewer System Design Including Inlet Capacity
4. Structural Strength Design for Conduits more than 20 feet below finished grade.

29.3.5 OPINION OF PROBABLE COST

The Design Engineer shall prepare an itemized opinion of the probable cost of the work. The opinion shall be delineated public and private (onsite) improvements when applicable.

29.3.6 OTHER PERMIT APPLICATIONS AND APPROVALS

Other governmental agencies may review and approve for construction all or certain parts of the work included in a project and may require a permit for such work. They may also require that an application for a permit be executed by the Town. When such permit application is required, it shall be prepared by the Design Engineer. All required permits and necessary authorizations from other governmental agencies shall be secured by the subdivider.

29.3.7 REVISIONS TO APPROVED DRAWINGS AND SPECIFICATIONS

Any deviations from previously approved drawings or specifications affecting capacity, stability or operation of the system shall be approved in writing by the Town Engineer before such changes are made. Minor changes not affecting capacity, stability or operation of the system will not require formal approval, but must be approved in writing by the Field Inspector.

29.3.8 CONSTRUCTION SUPERVISION

Periodic visits to developments (including private developments) may be conducted by the Town Engineer and/or Field Inspector and may include spot checking of grades and improvements. Full-time inspection and performance certifications are the responsibility of the Design Engineer or other independent professional employed by the Subdivider. Confirmation of approved grades and utility installation and preparation of Record Drawings are likewise the responsibility of the Design Engineer or other independent professional employed by the Subdivider.

29.3.9 EXISTING FACILITIES

Drawings and specifications shall provide for the continuous operation of existing facilities without interruption during construction, unless otherwise specifically authorized by the Town Engineer.

29.3.10 RECORD DRAWINGS

Reproducible mylar record drawings signed and sealed by the Design Engineer or other independent professional employed by the Subdivider shall clearly show any and all changes from the approved drawings. Record drawings shall be submitted to the Town Engineer prior to the Subdivider's request for final inspection of the required improvements. The record drawings shall be based on actual measurements of both horizontal and vertical dimensions, made after the completion of the work.

29.3.11 WAIVER OF DESIGN STANDARDS

Where conditions so warrant, the Town Board of the Town of Lyons may consider waiving any of the requirements found in these standards upon appeal by the Subdivider.

SECTION 29.4 UTILITY EXCAVATIONS

29.4.1 GENERAL

Any construction, maintenance, or repair of utilities located within the Town of Lyons highway right of way shall not commence without the issuance of a construction permit from the Town of Lyons. The construction of all utilities and restoration of all disturbed areas shall be in accordance with this ordinance.

29.4.2 PERMIT REQUIREMENTS

Permits shall be issued no later than thirty (30) days from the receipt of an application. The Town Board may, at its discretion, direct the Town Engineer to review projects prior to approving an application. Any costs incurred by the Town for review and inspection of facilities or improvements shall be borne by the applicant. In addition, construction permits shall be issued only upon satisfaction of the following:

A. Completion of an application for a construction permit along with the submission of the applicable fee as established by the Town Board.

B. Posting with the Town Clerk, a bond or other surety in an amount not to exceed one hundred fifty percent (150%) of the actual cost of the construction, maintenance, or repair of facilities or improvements.

C. Approval of the construction permit application by the Town.

29.4.3 EXCEPTIONS

The Town Board may, at its discretion, waive permit requirements as necessary. Emergency repairs of facilities or improvements may be made as needed, provided a permit is obtained within 5 working days from the commencement of emergency repairs.

29.4.4 RETURN OF BOND

Upon completion of any project requiring a construction permit, the bond or surety posted with the Town Clerk shall be returned upon receipt of the following:

A. Notice to the Town Clerk from the permittee that the project has been completed.

B. Inspection by the duly authorized representative of the Town.

C. Approval of the Town Board.

29.4.5 DAMAGES AND LOSS OF BOND

Any damage, as determined by the Town Board, which is the result of construction, maintenance, or repair of utilities located within the Town of Lyons highway right of way shall be the responsibility of the applicant. The applicant shall pay the costs of repairing the damages, which amount may be forfeited from the bond.

A. All repairs, maintenance, or construction shall conform to Federal, State, County, and Town ordinances, specifications, and standards.

B. Any repairs not in conformity with the foregoing shall be repaired by the Town of Lyons with the costs for the same withdrawn from the bond.

29.4.6 PROCEDURE FOR BOND FORFEITURE

In the event the Town Board elects to repair damages and proceed against the bond of the permittee, the Town may do so only upon the following:

A. Notice in writing to the permittee from the Town Clerk which shall substantially contain the following:

1. The nature of the damage or non-conformity which has led to the Town's claim.
2. The amount claimed by the Town.
3. The permittee has the right to request in writing, a hearing before the Town Board to show cause, if any, why the Town should not forfeit any or all of the amount of the bond, which if requested, said hearing shall be within thirty (30) days from the date of receipt of the written request.

B. The Town shall not forfeit any part of a bond until and unless no hearing has been requested within thirty (30) days or after a hearing, the Town Board finds that the permittee has failed to properly show cause why their bond should not be forfeited.

SECTION 29.5 RESTORATION OF EXISTING IMPROVED SURFACES

29.5.1 GENERAL

The Contractor shall restore all permanent type pavements, sidewalks, driveways, curbs, gutters, trees, shrubbery, lawns, fences, poles and other property and surface structures removed or disturbed during or as a result of construction operations to a condition that existed before the work began. The surface of all improvements shall be constructed of the same material, thickness', widths, etc. and match in appearance the surface of the improvements which were removed.

29.5.2 SAW CUTTING

When necessary to remove sections of existing pavement, sidewalk, or curb and gutter, and prior to removal, the edges of the section to be removed shall be cleanly cut with a concrete saw.

29.5.3 REMOVAL OF ROADWAY PAVEMENTS, SIDEWALKS, DRIVEWAY AND CURB

Where concrete pavement, sidewalk, driveway or curbing is cut, the width of the cut shall exceed the actual width of the top of the trench at subgrade by twelve (12) inches on each side. Exposed surface of Portland Cement or asphaltic concrete shall be cut with a pavement saw to full depth before removal.

29.5.4 CONCRETE PAVEMENT SURFACE

Where the existing roadway pavement surface is Portland Cement concrete, the pavement replacement shall consist of six (6) inch P.C. concrete pavement or existing concrete depth, whichever is greater. Portland Cement concrete and construction methods for Portland Cement concrete pavement shall conform to the current requirements of the (WDOT) Standard Specifications. Pavement joints and reinforcing in the replacement pavement shall conform to and match that in the adjacent pavement area.

29.5.5 ASPHALTIC CONCRETE PAVEMENT SURFACE

A. Where the existing roadway pavement surface is asphaltic concrete, the pavement replacement shall consist of four (4) inches of asphaltic concrete pavement or existing asphaltic concrete pavement depth, whichever is greater, in a minimum of 2 lifts, and conforming to the requirements of the (WDOT) Standard Specifications.

B. Where the existing pavement surface is asphaltic concrete and the base consists of a rigid material such as brick or Portland Cement concrete, the base replacement shall consist of 8-inch Portland Cement concrete base course. Portland Cement concrete shall be as noted above.

29.5.6 SEAL COATED PAVEMENT

Where the existing pavement is comprised of seal coat material and the base consists of a flexible material such as gravel or crushed stone, the base replacement shall consist of a 9-inch compacted thickness of crushed aggregate base course conforming to the (WDOT)

Standard Specifications and special provisions thereof. The surface replacement shall be asphaltic concrete pavement as specified above.

29.5.7 CONCRETE SIDEWALKS, DRIVEWAYS, CURB, CURB AND GUTTER

A. Where necessary to remove and replace concrete sidewalk, driveways, curb and curb and gutter, replacements shall be made according to the Town Ordinance regulating the construction of driveways, approaches and sidewalks.

B. Curb or curb and gutter dimensions and cross sections shall conform, as nearly as practicable, with the existing installations except that at intersections with sidewalk that does not conform to State of Wisconsin handicap requirements, sufficient depressed curb and gutter along with sidewalk shall be replaced to meet said handicap specifications. 1/2-inch preformed expansion joints shall be placed at intervals not exceeding 50 feet and at the junction with existing work. Saw cut crack control contraction joints shall be made every 20 feet (minimum) and shall be a minimum of 1/2-inch in depth. Sidewalks shall be finished to match existing adjacent sidewalk surfaces.

29.5.8 CULTIVATED LAWNS

Provide topsoil, seeding, sodding, and care of grass during establishment period for a complete surface restoration of lawns, parkways, and other areas disturbed as a result of the construction.

A. Topsoil

1. Topsoil shall be furnished and properly placed, raked, and rolled to minimum depth of 4-inches. The topsoil furnished shall consist of loose, friable, loamy, non-acid soil, having at least 90 percent passing a No. 10 sieve, free of large roots, brush, sticks, weeds, stones larger than 1/4-inch in diameter, and any other debris.
2. Before topsoil is placed, the area to be covered shall be brought to the proper grade. If the existing surface has become hardened or crusted, it shall be raked or otherwise loosened to provide suitable bond with the topsoil.
3. Apply commercial grade fertilizer uniformly at a rate of 20 pounds per 1,000 square feet. Work fertilizer into soil prior to seeding or sodding.

B. Sodding

1. Provide sod in developed areas that were grassed prior to construction and as indicated on the drawings. Sodding shall also be used in ditches and drainage swales and on all embankment slopes steeper than 4 to 1 unless protection is provided against erosion of seeding. At the Contractor's option, sodding may be substituted for seeding.
2. The cut sod shall be not less than 2-inches thick. Sod which has been cut

more than 48 hours prior to installation shall not be used without the approval of the Town Engineer.

3. Sod shall be placed according to Section 631 of the (WDOT) Standard Specifications. Place sod with edges in close contact and alternate courses staggered. On slopes 2 to 1 or steeper, sod shall be staked with at least one stake for each piece of sod. Do not place sod when the ground surface is frozen or when air temperatures may exceed 90 degrees F.
4. New sod shall be watered daily at the rate specified in Section 631 of the (WDOT) Standard Specifications for a minimum of 10 days after the specified initial watering. Any defective, dead or dying sod shall be removed and replaced up to one year after completion of the sodding.
5. In ditches, the sod shall be placed with the longer dimension perpendicular to the flow of water in the ditch. On slopes, starting at the bottom of the slope, the sod shall be placed with the longer dimension parallel to the contours of the ground.

C. Seeding

1. Seed all grassed areas disturbed by construction operations and not receiving sod, in accordance with Section 630 of the (WDOT) Standard Specifications. Seed shall be sown between September 1 and November 1, or in spring from the time the ground can be worked until May 15. Do not seed in windy weather or when soil is very wet. Sow seed either mechanically or by broadcasting in two directions at right angles to each other to achieve an even distribution.
2. After seeding, rake seed lightly into ground and roll with a roller weighing between 100 and 200 pounds per foot of roller width.
3. Immediately after rolling seeded areas, apply vegetative mulch unless hydraulic seeding method is used. Apply mulch in accordance with Section 627 of the (WDOT) Standard Specifications. Place erosion control excelsior blanket or fiber mat on slopes steeper than 4 horizontal to 1 vertical. Unless otherwise indicated, also place erosion control material at sides and bottoms of ditches, swales, and all areas within 10 feet of catch basins in seeded areas.
4. Immediately after placing erosion control matting or mulch, water seeded areas thoroughly. Keep soil thoroughly moist until seeds have sprouted and achieved a growth of 1-inch.

29.5.9 ENFORCEMENT

The Town Board may authorize exceptions to any of these requirements and regulations set forth in Section 29.1 above, provided the granting of the exception will not be detrimental to the public welfare or injurious to other property in the vicinity of the subject project.

SECTION 29.6 UNDERGROUND IMPROVEMENTS

29.6.1 INTERRUPTION TO UTILITIES AND DAMAGE TO SURFACE IMPROVEMENTS

A. A minimum of 48 hours prior to commencement of work, the Town and Diggers Hotline (1-800-242-8511) must be notified for location of any existing utilities. All reasonable precautions shall be taken against damage to existing utilities.

B. In the event of a break in an existing gas main, sewer or underground cable, the Contractor shall immediately notify a responsible official from the organization operating the utility interrupted. The Contractor shall lend all possible assistance in restoring services and shall assume all costs, charges or claims connected with the interruption and repair of such services unless it is determined that the utility has not been properly located.

C. In the case of the Town utilities, the cost of such work will be billed to the Contractor.

29.6.2 TRAFFIC CONTROL

A. All work within public rights-of-way shall conform to the requirements of the latest edition of the (WDOT) Standard Specifications and the Manual on Uniform Traffic Control Devices. The provisions of these standards will be enforced:

1. When an opening is made into the existing pavement,
2. When construction takes place adjacent to the edge of the existing pavement,
3. When a utility crossing is made beneath the existing pavement, and
4. When it is necessary to close a lane of traffic due to construction operations.

B. Permission for land or road closure must be obtained from the Town Board Chairman prior to commencing construction. Signing will be required in strict conformance to the Manual on Uniform Traffic Control Devices. No construction operation is to commence until such time that all required signs and barricades have been erected.

29.6.3 PAVEMENT CROSSING

A. Unless otherwise specifically approved by the Town Engineer, all conduits crossing existing pavements shall be installed by tunneling, jacking or auguring. When the carrier pipe is a conduit intended to operate under internal pressure, a casing pipe of adequate strength for all applied loads shall be used. The nearest face of pits or other open excavations on each side of a traveled pavement shall be at least 10 feet from the edge of the pavement.

B. When open cutting is allowed or other pavement opening required, they shall be backfilled prior to the end of the working day unless otherwise authorized by the Town. All excavations shall be backfilled with AGGREGATE SLURRY BACKFILL MATERIAL and a temporary asphaltic patch of at least 2-inches in thickness shall be constructed. Provide AGGREGATE SLURRY MATERIAL, thoroughly mixed in a concrete mixer truck in accordance with Section 6.43.8 of the Standard Specifications for Sewer and Water Construction in Wisconsin. It is understood that such backfilling and patching is only temporary and that permanent pavement repair will be required as specified in Section 29.5 of this Ordinance.

29.6.4 UTILITY LOCATIONS WITHIN THE ROAD RIGHT-OF-WAY

A. Sanitary sewers in proposed street right-of-ways shall be located in the centerline of the right-of-way.

B. Storm sewers in proposed street right-of-ways shall be located in the parkway 5-feet behind the back of curb.

C. Water mains in proposed street right-of-ways shall be located in the parkway 8-feet behind the back of curb on the opposite side of the street from the storm sewer.

D. Gas lines and facilities shall be, where possible, installed parallel to and within 10 feet of the inside of the right-of-way.

E. Replacement or new installation of buried utility lines, conduits or cable for electric, telephone, cable television and other communication services within an existing road right-of-way shall be, where possible, installed parallel to and within 10 feet of the inside of the right-of-way.

F. All proposed utility lines, conduits or cable for electric, telephone, cable television and other communication services for new development shall be placed a minimum of 24 inches underground within rear yard easements for all projects within a sewered zoning district (or within 10 feet of the right-of-way line if approved by the Town). All transformer boxes shall be located so as not to be hazardous to the public.

29.6.5 TRENCHING

A. Trenches shall be excavated to the depths and grades necessary for pipelines including allowances for bedding material.

B. As determined by the Town Engineer, unsuitable soils found at or below the bottom of the trench shall be excavated to meet firm subsoil.

C. Comply with the following maximum trench widths at the top of pipelines:

Nominal Pipe Sizes (Inches)	Trench Widths (Inches)
12 or smaller	30
14-18	36
20-24	42
27-30	48
33 or larger	1-1/3 times pipe O.D.

D. If trench widths will exceed the maximum limitations above, higher strength pipe may be required or a concrete cradle may be used to achieve the necessary load factor.

29.6.6 BRACING AND SHEETING

Open-cut trenches shall be sheeted and braced as required by governing federal and state laws including all OSHA Safety and Health Standards (29CFR 1926/1910), and as may be necessary to protect life, property and the work.

29.6.7 BEDDING AND BACKFILL REQUIREMENTS

A. Bedding

Bedding shall be provided for all underground pipelines, except where concrete encasement, concrete cradles, boring or jacking are indicated. Bedding shall be a minimum thickness of 4-inches and consist of well graded, washed, mixture of 100 percent crushed gravel or crushed stone aggregate free of clay, loam, dirt, calcareous or other foreign matter conforming to the "Standard Specifications for Sewer and Water Construction in Wisconsin", and shall be properly compacted.

1. For sewer pipe 18 inches in diameter and smaller, use bedding material of 3/8-inch crushed stone chips with the following gradation:

Sieve Size	Percent Passing
1/2-inch	100%
3/8-inch	90-100%
No. 8	0-15%
No. 30	0-3%

2. For sewer pipe larger than 18-inches in diameter, use bedding material of 3/4-inch crushed stone chips with the following gradation:

Sieve Size	Percent Passing
1-inch	100%
3/4-inch	90-100%
3/8-inch	20-55%
No. 4	0-10%
No. 8	0-5%

3. Wherever two or more pipe or conduits are placed in the same trench or excavated area, backfill the trench with granular bedding material to support the uppermost pipe or conduit.

B. Backfill

For conduits not requiring SPECIAL GRANULAR BACKFILL, OR AGGREGATE SLURRY MATERIAL, backfill may be made with materials available from the trench excavation. The material shall be free from rocks and be carefully placed in 12-inch lifts. For conduits requiring excavation beneath or within 4 feet horizontally of existing driveways, or sidewalks or in other areas which, in the opinion of the Town Engineer, are or may be subject to vehicular traffic loading, SPECIAL GRANULAR BACKFILL shall be provided above the bottom of the trench and shall extend upward to the surface of the ground or pavement.

Provide either sand, pit run gravel, granular material, or excavated granular materials.

1. Sand: Well graded, free from organic matter, cohesionless, complying with the "Standard Specifications for Sewer and Water Construction in Wisconsin", with the following gradation:

Sieve Size	Percent Passing
1-inch	100%
No. 16	45-80%
Material finer than No. 200	2-10%

2. Pit run gravel: Free from organic matter, cohesionless granular material obtained from natural deposits of sand and gravel, passing 3/4-inch sieve, and not more than 15 percent passing the No. 200 sieve.

3. Granular material: Use 100 percent crushed stone or gravel complying with the "Standard Specifications for Sewer and Water Construction in Wisconsin", with the following gradation:

Sieve Size	Percent Passing
1-inch	100%
3/4-inch	90-100%
3/8-inch	20-55%
No. 4	0-10%
No. 8	0-5%

4. Excavated granular materials: A mixture of sand and gravel, free from organic matter, clay, loam, dirt, and other foreign material, passing the 1-1/2-inch sieve, with not more than 15 percent passing the No. 200 sieve.

5. Crushed stone: Clean, hard, tough, durable, angular material crushed from bedrock limestone, dolomite, or granite.

   a. Gradation requirements:

Sieve Size	Percent Passing
3-inch	100%
2-1/2-inch	90-100%
2-inch	35-70%
1-1/2-inch	0-15%
3/4-inch	0-5%

6. For conduits requiring excavation beneath or within 4 feet horizontally of existing pavements, or in other areas at the direction of the Town Engineer, AGGREGATE SLURRY MATERIALS shall be provided above the bottom of the trench and shall extend upward to the surface of the pavement.

   Provide AGGREGATE SLURRY MATERIAL, thoroughly mixed in a concrete mixer truck in accordance with Section 6.43.8 of the Standard Specifications for Sewer and Water Construction in Wisconsin.

SECTION 29.7 EROSION CONTROL

29.7.1 INTRODUCTION

Project construction required in connection with a development often occurs in or adjacent to areas with existing surface or underground improvements. The intent of this Section is to specify Town requirements relative to construction affecting existing and future improvements. Drawings and specifications presented for Town approval shall provide for the implementation of the requirements of this Section and the requirements of the Erosion Control Ordinance for Walworth County.

29.7.2 EROSION CONTROL

A. Erosion and sediment control due to run-off, equipment leaving and entering a construction site, wind, etc., are required for all construction, including individual single family lots, in the Town of Lyons. Site engineering or grading plan for projects shall either contain specific provisions for erosion control or a separate erosion control plan. The provisions or plan will follow accepted techniques and details as required by the Walworth County Land Conservation Department, as found in the "Wisconsin Construction Site Best Management Practice Handbook", Natural Resources Conservation Service Standards and Specifications, design guidance and technical standards developed by the Wisconsin Department of Natural Resources, or as directed by the Town Engineer.

B. The stripping of topsoil and grading work for all developments shall be completed such that no more than 15 acres of area is unvegetated at any one time and as required by the Town Engineer.

C. Steep slopes (exceeding 4:1) are to be avoided whenever possible. Development within the County's Shoreland Ordinance jurisdiction shall meet the buffer requirements of the Shoreland Ordinance. A minimum 25-foot buffer area of natural vegetation should be retained adjacent to storm water detention basins, and a minimum 50-foot buffer area retained for creeks, or other natural water sources. For designated outstanding resource waters, exceptional resource waters, and lakes, the minimum buffer area of natural vegetation should be 75 feet. For concentrated flow drainageways with a drainage area greater than 130 acres, the minimum buffer area shall be 10 feet on either side of the drainageway.

D. The erosion control plan should indicate the location of soil stockpiles that are to remain onsite longer than four weeks.

E. Erosion control measures should be used which include but are not limited to sediment traps, sediment basins, diversion channels, haul roads at all construction entrances and pavement cleaning operations, silt fences, straw bales, and any other measures necessary or as directed by the Town Engineer.

F. Best management practices, by design, shall reduce the average annual sediment load carried in runoff by 80 percent, as compared to no sediment or erosion controls throughout the duration of the construction project. The Wisconsin Department of Natural Resources provides guidance on how to meet this performance standard. If best management practices cannot be designed to reduce the average annual sediment load by 80 percent, then a written and site-specific explanation shall be submitted to the Town Engineer for approval.

29.7.3 DESIGN REQUIREMENTS

A. On-site sediment control measures, as specified by the following criteria and those of the Walworth County Land Conservation Department, shall be constructed and functional prior to initiating clearing, grading, stripping, excavating or fill activities on the site.

1. For disturbed areas draining less than one (1) acre, filter barriers (including filter fences, straw bales, or equivalent control measures) shall be constructed to control all off-site runoff as specified in referenced handbooks. Vegetated filter strips, with a minimum width of 25 feet, may be used as an alternative only where runoff in sheet flow is expected. Silt filter fences and straw bales shall be inspected weekly and after rainfall events for repair or replacement. Straw bales shall be replaced as a minimum, every three months.
2. For disturbed areas draining more than one (1) but less than five (5) acres, a sediment trap or equivalent control measure shall be constructed at the downslope point of the disturbed area.
3. For disturbed areas draining more than five (5) acres, a sediment basin or equivalent control measure shall be constructed at the downslope point of the disturbed area.
4. Sediment basin design shall provide for both detention storage and sediment storage. The detention storage shall be sized for the 2-year, 24-hour runoff from the site under maximum runoff conditions during construction with a release rate to achieve minimum detention times of at least 10 hours. Sediment storage shall be designed such that sediment removal from the basin is only required once a year.
5. Disturbed areas shall be stabilized within seven (7) days with any of the temporary or permanent measures defined in this section.
6. Any required disturbance of stream channels shall be restabilized within 48 hours of disturbance.

29.7.4 MAINTENANCE OF CONTROL MEASURES

A. All soil erosion and sediment control measures necessary to meet the requirements of this ordinance shall be maintained periodically by the applicant or subsequent land owner during the period of land disturbance and development of the site in a satisfactory manner to ensure adequate performance. All soil erosion and sediment control measures shall be inspected by the landowner after each rain of

0.5 inches or more to determine if these control measures are functioning properly. Any substandard control measures shall be corrected to ensure adequate performance.

B. At the completion of any project, the storm sewers, culverts, gutters, etc., will be inspected by the Town Engineer to determine any cleaning or flushing of trapped sediment which may be required.

29.7.5 INSPECTION

A. The Town may make periodic inspections and shall either approve that portion of the work completed or shall notify the permittee wherein the work fails to comply with erosion and sedimentation control plan as approved. Plans for grading, stripping, excavating, and filling work approved by the Town shall be maintained at the site during progress of the work. Inspections can take place during any or all of the following:

1. Upon completion of installation of sediment and runoff control measures (including perimeter controls and diversions), prior to proceeding with any other earth disturbance or grading;
2. After stripping and clearing;
3. After rough grading;
4. After final grading;
5. After seeding and landscaping deadlines; and
6. After final stabilization and landscaping, prior to removal of sediment controls.

29.7.6 SPECIAL PRECAUTIONS

A. If at any stage of the grading of any development site the Town determines by inspection that the nature of the site is such that further work authorized by an existing permit is likely to imperil any property, public way, stream, lake, wetland, or drainage structure, the Town may require, as a condition of allowing the work to be done, that such reasonable special precautions to be taken as is considered advisable to avoid the likelihood of such peril. "Special precautions" may include, but shall not be limited to, a more level exposed slope, construction of additional drainage facilities, berms, terracing, compaction, or cribbing, installation of plant materials for erosion control, and recommendations of a soils engineer which may be made requirements for further work.

B. Where it appears that storm damage may result because the grading on any development site is not complete, work may be stopped and the permittee required to install temporary structures or take such other measures as may be required to protect adjoining property or the public safety. In large developments or where unusual site conditions prevail, the Town may specify the time of starting of grading and time of completion or may require that the operations be conducted in specific stages so as to insure completion of protective measures or devices prior to the

advent of seasonal rains.

29.7.7 ENFORCEMENT

A. The Town Board may authorize exceptions to any of these requirements and regulations set forth in this Section, provided the granting of the exception will not be detrimental to the public welfare or injurious to other property in the vicinity of the subject property.

29.7.8 PROTECTION OF PROPERTY AND SURFACE STRUCTURES

A. Trees, shrubbery, fences, poles and all other property and surface structures shall be protected during construction operations. Any fences, poles or other man made surface improvements which are moved or disturbed shall be restored to their original condition, after construction is completed. A tree preservation plan may be required for all areas of a project that will be affected by the development activity. The plan shall show the location and trunk diameter of all trees of a diameter breast height of 10-inches and larger. The plan shall be taken to the extent practicable to preserve healthy trees over 10-inches in diameter. Any trees, shrubbery or other vegetation which are approved for removal shall be removed completely, including stumps and roots.

B. Where trees which are to remain, proper care should be taken during excavation operations. Do not machine excavate in the "root protection zone" defined as a circle around the tree with a radius equal to one foot for every inch of tree diameter. Roots encountered outside this zone which are over 2-inch diameter shall not be cut unless approved by the Town Engineer. Tree tunneling, where necessary, shall be determined by the Town Engineer. Shrub and tree limbs shall be tied back to prevent loss or damage. Any damaged limbs and branches shall be pruned and sealed. Spoil banks shall be removed by hand from around trees to prevent damage to trunks by construction machinery.

C. Trees and shrubs which cannot be protected or are damaged during construction shall be replaced in kind or replace 4-inch diameter and larger trees with one 4-inch diameter size tree for each 6-inch of original tree diameter or fraction thereof. Replacement species shall be approved by the Town.

D. Trees which do not survive (in good condition) for a period of 18 months after planting shall be removed and replaced.

SECTION 29.8 STORM WATER DRAINAGE

29.8.1 INTRODUCTION

All developments, regardless of size within limits or under the control of the Town, shall include provisions for the construction of storm water drainage facilities design in accordance with this Section. The design of all storm water drainage facilities proposed for construction as independent projects under the control of the Town shall also meet the technical requirements of this Section. All developments may also be required to meet with the approval requirements of the Walworth County Land Conservation Department.

29.8.2 GENERAL PROJECT REQUIREMENTS

A. Surface Flow

Surface swales/ditches described below shall be encouraged for use as designed in accordance with the requirements of this Section. Natural swales and depressional storage areas shall be incorporated into storm water facilities design wherever practicable. Swales and ditches, together with any underground storm sewer system, shall provide an adequate outfall for runoff from the 100-year frequency 24-hour duration rainstorm. In areas where swales/ditches can not be provided, the underground storm sewer system shall be designed for the 100-year storm condition.

B. Storm Sewer

Where required by the Town Engineer, storm sewers may be constructed to drain the development and any contiguous drainage areas. The Subdivider shall submit to the Town Engineer two (2) copies of the storm drainage computations.

C. Storm Water Detention

Storm detention may be required as determined by the Town Engineer. Storm water detention, where required is subject to the review of the Town Engineer. In concept, a detention pond shall have high-water level, with one (1) foot of freeboard, based on a 100-year design storm and shall have an outlet which allows runoff no greater than that for the land in its natural state prior to development. Detention to be provided shall be for the entire site evaluated in its natural state and shall be constructed prior to all other improvements, including mass earthwork grading. Existing wetlands may not be used to provide the required storm water detention unless authorized by the Walworth County Land Conservation Department, the Wisconsin Department of Natural Resources, the US Army Corps of Engineers, and the Town Engineer.

D. Total Suspended Solids

Best management practices shall be designed, installed or applied, and maintained to control total suspended solids carried in runoff from the post-construction site as follows:

1. Except as provided in paragraph (3), for new development, by design, reduce the average annual total suspended solids load by 80 percent, as

compared to no runoff management controls. The Wisconsin Department of Natural Resources provided guidance in designing best management practices to meet this performance standard.

2. Except as provided in paragraph (3), for redevelopment, by design, reduce the average annual total suspended solids load by 40 percent, as compared to no runoff management controls.
3. If the design does not achieve the applicable total suspended solids reduction specified above, then a written and site-specific explanation shall be submitted to the Town Engineer for approval.

E. Infiltration

1. Except as provided in paragraphs (4) to (7), best management practices shall be installed and maintained with the design capability to infiltrate runoff, to the maximum extent practicable, in accordance with one of the following Wisconsin Department of Natural Resources methods:
   a. By design, the inches of runoff to be infiltrated, per storm event, shall be equal to or greater than the values given in the table below. An equivalent volume of runoff in cubic feet to be infiltrated is calculated using values from this table divided by 12 and multiplied by the total area in square feet of the post-construction site.

Hydrologic Soil Group	1 & 2 Family Residential Land Use	Land Uses Other Than 1 & 2 Family Residential
A	0.26	0.40
B	0.23	0.30
C	0.12	0.14

   b. By design, the inches of runoff to be infiltrated, per storm event, shall be equal to or greater than the values calculated using the following equation: I = CI x F. "I" is the inches of runoff to be infiltrated. "CI", expressed as a decimal, is the percent of connected imperviousness across the post-construction site and "F" is a factor. The volume of runoff in cubic feet to be infiltrated is calculated by dividing "I" by 12 and then multiplying by the total area in square feet of the post-construction site. The following conditions shall apply:
      i. For one and two family residential land use, "F" shall have a value of 0.62 for Type A soils, 0.55 for Type B soils, and 0.28 for Type C soils.
      ii. For land use other than one and two family residential, "F" shall be have value of 0.44 for Type A soils, 0.33 for Type B soils, and 0.15 for Type C soils.
   c. By design, infiltrate sufficient runoff volume so that the post-development average annual infiltration volume shall be at least 90 percent of the pre-development annual infiltration volume for one and two family residential development and 70 percent for all other land uses.

2. The infiltration of no more than 0.5 inches of runoff, per storm event, from any particular drainage area within the post-construction site shall count toward meeting the infiltration design standard of paragraph (1).
3. Before infiltrating runoff, pretreatment shall be required from commercial and industrial parking lots and access roads within the post-construction site.
4. No person may use best management practices to implement this infiltration standard in any of the following:
    a. Areas associated with Tier 1 industrial facilities identified in s. NR 216.21(2)(a), Wis. Adm. Code, including storage, loading, rooftop and parking.
    b. Storage and loading areas of Tier 2 industrial facilities identified in s. NR 216.21(2)(b), Wis. Adm. Code.
    c. Fueling and vehicle maintenance areas.
    d. Areas within 1,000 feet upgradient or within 100 feet downgradient of karst features.
    e. Areas with less than 5 feet separation distance from groundwater or bedrock.
    f. Areas within 400 feet of a municipal well or within 100 feet of a private well.
    g. Areas where infiltration would be occurring through contaminants of concern present in the soil as defined in s. NR 720.03(2), Wis. Adm. Code.
    h. Areas where the soils are less than 10 percent fines. "Percent fines" means the percentage of a given sample of soil, which passes through a #200 sieve, in accordance with ASTM C-117.
    i. Runoff from commercial and industrial areas that contains chloride deicers. A pass-through or diversion mechanism may be installed so that the 1-year, 24-hour storm flows away from or directly through an infiltration device during the months of December through March, or over a longer period of time as necessary, until the level of chlorides within runoff is below the chlorides preventive action limit in Ch. NR 140, Wis. Adm. Code. If chloride de-icers are not used in these areas, then this exclusion does not apply.
5. The following are not required to meet this infiltration standard:
    a. Areas composed of hydrologic soil group D.
    b. Parking areas and access roads less than 5,000 square feet for commercial and industrial development.
    c. Redevelopment post-construction sites.
    d. In-fill development areas less than 5 acres.
    e. Infiltration areas during periods when the soil on the site is frozen.
6. Where alternate uses of runoff are employed, such as for toilet flushing, laundry or irrigation, such alternative use shall be given equal credit toward the infiltration volume required by this subsection.
7. Infiltration systems designed in accordance with this subsection shall, to the extent technically and economically feasible, minimize the level of pollutants infiltrating to groundwater and maintain compliance with the preventive

action limit at a point of standards application in accordance with Chapter NR 140 of the Wisconsin Administrative Code. However, if site-specific information indicates that compliance with a preventive action limit is not achievable, then the infiltration BMP may not be installed or shall be modified to prevent infiltration to the maximum extent practicable. Discharge from pretreatment BMPs shall remain below the enforcement standard at the point of standards application.

D. Drainage Basin Divides

The design of storm water drainage systems shall not result in the interbasin transfer of drainage, unless no reasonable alternative exists and there is no legal restraint prevent such transfer.

E. Lot Grading

The proposed finished yard grade, the location and top of foundation elevation for all proposed structures shall be shown on the engineering drawings. Generally, the top of foundation of any structure must be constructed at least 8 inches above the proposed finished yard grade and approximately 18 inches above the centerline (or back of curbs) of the abutting street. Where foundations are lower than the street centerline, or in the case of depressed driveways, alternate means of surface drainage diversion must be shown to avoid structure flooding. Sufficient finished grade elevations must be shown on the drawings to ensure positive drainage away from each structure. Lot grading shall be completed so as to prevent drainage problems on adjacent lots and prevent impact to the storm water drainage system of the area.

29.8.3 DESIGN CRITERIA FOR STORM WATER DETENTION

A. Release Rates

The allowable release rates for the two (2) year, ten (10) year, and one hundred (100) year frequency, 24-hour duration rainstorms shall be no greater than that for the land in its natural state prior to development.

B. Design Calculations

1. The design of storm water detention facilities shall be based on runoff hydrographs from the two (2) year, ten (10) year and one hundred (100) year frequency, 24-hour duration rainstorms.
2. Storm water detention facilities shall be designed using Soil Conservation Service Technical Release 55 (TR-55) or an equivalent methodology as determined by the Town Engineer. The modified rational formula shall not be used for development of hydrographs.
3. All design rainfall events shall be based on the Point Rainfall Intensity-Duration-Frequency Relationships for Milwaukee, Wisconsin, as prepared by Southeastern Wisconsin Regional Planning Commission.
4. Pre-development conditions shall assume "good hydrologic conditions" for

land covers identified in TR-55. However, when pre-development land cover is cropland, the following runoff curve numbers shall be used:

Hydrologic Soil Group	Runoff Curve Number
A	55
B	68
C	77
D	80

5. Storm water runoff from areas tributary to the site shall be considered in the equations for the design of the project site's drainage system.

C. Basin Design

1. The use of wet-bottom retention basins shall be encouraged and designed to be safe, aesthetically pleasing, and available for recreational use. Wet-bottom basins shall be at least three feet (3') deep, excluding near-shore banks and safety ledges. If fish habitat is provided, at least 25 percent of the basin bottom shall be a minimum of ten feet (10') deep. Wet-bottom basins shall be designed to remove storm water pollutants and sediments and designed in such a manner to reduce nuisance problems such as embankment erosion and algae. Embankments above normal water levels shall be either terraced or sloped at a maximum of 4:1. A safety ledge is required no greater than 2'-6" below the normal water level. Such ledges shall be no less than 6 feet wide and shall back pitch toward the basin embankment.
2. Wet-bottom retention basins shall include a 25-foot buffer area around the basin perimeter maintained in native grasses and plantings. This area shall remain in a natural state with only annual or semi-annual mowing to extend the life of the retention basin, prevent erosion, and assure good water quality.
3. Dry-bottom detention basins shall be designed to be safe, aesthetically pleasing and available for multiple uses. Dry-bottom detention basins shall be designed and sized such that a minimum of 80 percent of the bottom area shall have standing water no longer than 72 hours for the 100-year frequency storm. The basin shall have a minimum slope of one (1) percent, and a maximum embankment slope of twenty (20) percent.

D. Outlet

1. All concentrated storm water discharges leaving a site must be directed into a well-defined receiving channel or pipe with adequate capacity for safe conveyance of flows from all design events.
2. Single pipe outlets shall have a minimum inside diameter of 12-inches. If design release rates call for smaller outlets, structures such as perforated risers, flow control orifices, etc., shall be used.

29.8.4 DESIGN CRITERIA FOR INFILTRATION SYSTEMS

Infiltration systems shall meet the design criteria and technical standards published by the Wisconsin Department of Natural Resources.

29.8.5 DESIGN CRITERIA FOR SURFACE SWALES AND STORM SEWERS

A. Storm Sewer

1. When storm sewer construction is required, storm sewers shall be designed to flow full, using Manning's Formula with an appropriate roughness coefficient based on pipe material. If a storm sewer is designed with a constantly submerged outfall, the sewer shall be designed using the "hydraulic gradient" with the maximum allowable water level an elevation one foot (1') below centerline of pavement.
2. The rational method shall be employed when computing storm runoff. The storm system shall be designed with "positive street and swale drainage" such that storm water runoff will be directed overland to the storm water detention area in a manner to minimize property damage due to flooding.
3. Storm sewers shall be designed for a minimum 10-year storm event flowing full and have a maximum velocity not to exceed ten feet (10') per second.
4. In areas where curb and gutter and storm sewers are required, inlets shall be installed so that the drainage reach for each inlet shall not exceed four hundred feet (400'). Where the inlet is located at a low point, additional inlets may be required by the Town Engineer. No more than two (2) inlets shall be interconnected. Inlets shall be so located that storm water runoff will not "pond" greater than the top of the street curbs. Depressed street crowns to facilitate drainage will not be permitted.
5. Rear lot drainage should not drain along the side yard and over the curb. Rear yard inlets shall be placed where approved or as required by the Town Engineer.
6. The minimum size storm sewer or inlet connection shall be twelve inches (12") in diameter.
7. Unless otherwise approved by the Town Engineer, storm sewers shall be reinforced concrete pipe conforming to ASTM C76 minimum Class III with O-ring joints conforming to ASTM C443. All inlet connections shall be concrete sewer pipe, ASTM C14 for extra strength pipe. Additional strength pipe may be required as approved by the Town Engineer.
8. Minimum cover shall be generally three feet (3') for all storm sewers unless special precautions are taken to protect the pipe, as approved by the Town Engineer.
9. All manholes, inlet manholes, inlets and catch basins, and headwalls shall be designed in accordance with the standard details of the Town.
10. Connections to sanitary sewers or existing agricultural drainage systems (tiles) will not be permitted for any new developments. All developments will utilize separate drainage systems to avoid disruption or overloading of the

existing agricultural tile drainage system. Any field tile systems cut during the process of land development must be reconnected. Connection of existing agricultural drain tiles to new storm water management systems may be approved if proper allowance for flows from said tiles is incorporated in the new design system.

B. Driveway Culverts

Driveway culverts shall be sized for each lot along rural streets and placed on the grading plan. Culverts shall meet the following minimum standards:

1. Minimum pipe diameter of fifteen inches (15").
2. Corrugated metal pipe (CMP) shall be hot-dipped galvanized steel or aluminum steel conforming to AASTO M36. Provide 16 gauge CMP for pipe diameter twenty-one inches (21") and smaller. Provide 12 gauge CMP for pipe diameters twenty-four inches (24") and larger.
3. Reinforced concrete pipe (RCP) shall conform to ASTM C76, minimum Class III.
4. Culvert slope and invert elevations shall match the ditch slope and invert elevations.
5. Minimum cover at driveways shall be (6) inches.

C. Road Culverts

Road culverts shall meet the following minimum standards:

1. Minimum pipe diameter of fifteen inches (15").
2. Reinforced concrete pipe (RCP) conforming to ASTM C76, minimum Class III.
3. Culvert slope and invert elevations shall match the ditch slope and invert elevations.
4. Minimum cover at roadways shall be (12) inches.

D. Swales and Ditches

Manmade swales and ditches shall meet the following minimum design standards:

1. Minimum grade of one percent (1.0%).
2. Maximum grade of ten (10%).
3. Minimum depth of twenty four inches (24") below the shoulder of the street. At high points in the roadway, a depth of eighteen inches (18") is allowable.
4. Maximum bank slope of 4:1 under normal conditions.
5. The bottom and banks of ditches with grades of less than two percent (2%) shall be seeded and mulched or sodded and as required by the "Best Management Practices Handbook."
6. The bottom and banks of ditches with grades between two (2) and four (4) percent shall be sodded or else seeded in combination with mulch and

erosion blanket and as required by the "Best Management Practices Handbook."

7. The bottom and banks of ditches with grades between four (4) and eight (8) percent shall be sodded and equipped with permanent riprap ditch checks and as required by the "Best Management Practices Handbook."
8. The bottom and banks of ditches with grades between eight (8) and ten (10) percent shall be riprapped, paved, or otherwise stabilized as approved by the Town Engineer.
9. Whenever practicable, all areas of the property must be provided an overland flow path that will pass the 100-year flow at a stage at least 1 foot below foundation grades in the vicinity of the flow path. Overland flow paths designed for flows in excess of the minor drainage system capacity shall be provided in drainage easements. Street ponding and flow depths shall not exceed curb heights.

SECTION 29.9 ROADWAY CONSTRUCTION

29.9.1 INTRODUCTION

A. All developments, regardless of size within the Town limits shall include provisions for the construction of roadways and appurtenant construction to serve each parcel of property within the development. Where more than one building, other than an accessory building is located or planned on one parcel of property, the proposed construction shall also include access roadways as required to serve each such building.

B. The design of all roadways proposed for construction or as independent projects under the control of the Town, shall meet the technical requirements of this Section and the (WDOT) "Standard Specifications".

29.9.2 STREET CLASSIFICATION

A. Certain variables in geometric and structural design discussed in this Section are dependent on the functional classification of the street in question. For the purposes of these standards, all streets will be classified as shown in Figures 1, 2 and 3 appended to this section.

B. In developments where more than one building is located or planned on one parcel of property and a roadway is provided to serve such buildings, that roadway shall be classified as a local street unless otherwise established by the Town Engineer.

29.9.3 GEOMETRICS

Roadway geometrics shall be as set out in Figures 2 and 3.

29.9.4 ROADWAY EXCAVATION

A. Topsoil shall be striped from all proposed roadway areas. The roads shall then be constructed to the lines and grades as shown on the drawings.

B. No construction required by this Section shall be permitted between November 1st and April 15th without written authorization of the Town Engineer.

29.9.5 SUBGRADE

A. The roadway shall be constructed to within +/-0.10 feet of the proposed subgrade elevation with the average subgrade within +/-0.02 feet of the proposed subgrade elevation.

B. Roadways shall be proofrolled prior to construction of the basecourse. A minimum 50,000 lb. tandem-axle truck shall be provided to drive slowly over the area to be

inspected. Areas which show deflections greater than 1 1/2-inches shall be repaired and pass proofrolling tests before construction may proceed. The Town Engineer shall be present for and should be notified 24 hours prior to proofrolling.

29.9.6 SUB-BASECOURSE

A. Sub-basecourse construction required under this section shall be crushed stone or crushed gravel complying with the applicable provisions of the (WDOT) "Standard Specifications", Gradation No. 1.

B. Geotextile fabrics, where allowed by the Town Engineer for subgrade stabilization, shall conform to (WDOT) "Standard Specifications", Type SR.

29.9.7 BASECOURSE

Basecourse construction required under this Section may be either asphaltic basecourse or crushed stone or crushed gravel in accordance with Figures 1 and 2. Materials shall comply the applicable provision of the (WDOT) "Standard Specifications", Gradation No. 1. Roadways shall be proofrolled prior to construction of the binder course or pavement section. A minimum 50,000 lb. tandem-axle truck shall be provided to drive slowly over the area to be inspected. Areas which show deflections greater than 1-inch shall be repaired and pass proofrolling tests before construction may proceed. The Town Engineer shall be present for and should be notified 24 hours prior to proofrolling.

29.9.8 PAVEMENT AND SURFACE COURSES

A. Pavement construction required under this Section may be either asphaltic pavement or concrete pavement in accordance with Figure 1. Materials shall comply with the (WDOT) "Standard Specifications". Gradation No.1 shall be used for asphaltic binder course and Gradation No. 3 shall be used for asphaltic surface course. For priming asphaltic and other stabilized surfaces, comply with the applicable provisions of the (WDOT) "Standard Specifications".

B. In new construction, the final surface course shall be placed no later than 3 years and no earlier than 1 year from the time in which the base is placed, without written authorization by the Town Engineer.

C. Each lift of asphaltic pavement shall not exceed 2 inches.

29.9.9 COMBINATION CONCRETE CURB AND GUTTER

Curb and gutter construction where applicable, shall comply with the (WDOT) "Standard Specifications", and conform to a 36-inch Type D or Type L (See Figure 2) concrete curb and gutter, shown in the (WDOT) Standard Details. The sawing of the curb head to facilitate a driveway opening is prohibited.

29.9.10 STANDARD DESIGN METHOD FOR PAVEMENTS

When, in the opinion of the Town Engineer, the volume and composition of the traffic anticipated to be carried by the pavement can be estimated within reasonable limits and, in all cases, where the roadway is designed as a four or more lane facility, the structural design for pavements shall be based on the latest revision of the (WDOT) Facilities Development Manual. However, in no case shall the design result in a pavement of lesser strength than those shown in Figure 1.

29.9.11 SPECIAL REQUIREMENTS FOR UNDERGROUND UTILITIES

A. Structure Adjustment

1. Where finished grade or alignment for existing underground structures, such as inlet basins, catch basins, manholes or valve vaults is affected by proposed work, the project drawings shall provide for the adjustment of such structures as required.
2. Where a project is to be constructed under two or more construction contracts, one or more of which includes the construction of pavement, the contract documents for those contracts including paving work should provide for the adjustment of underground structures that may be constructed under other contracts as may be required to fit the proposed pavement.

B. Utility Crossing Protection

1. For new construction or when required by the Town Building Inspector, all concrete sidewalk, curb, gutter and driveways over excavated areas or utility trenches shall be reinforced with a minimum of two No. 4 bars, 12-inches on center for a length of 20 feet.

29.9.12 SIDEWALKS

All sidewalks shall be a minimum of 4-inches thick. Sidewalks shall be continuous through residential driveways with a minimum thickness of 6-inches through the driveway section. Sidewalk in non-residential areas shall be a minimum of 8-inches thick through non-residential driveways. Sidewalk width shall be 4 feet or as determined by the Town Board when a greater width is justified on the basis of anticipated traffic. All public walks should be constructed approximately on both sides of the street and 1 foot outside the property line, and meet the State of Wisconsin Handicapped Access Requirements.

SECTION 29.10.0 ADOPTION AND EFFECTIVE DATE

29.10.1 PLAN COMMISSION RECOMMENDATION

The Town Plan Commission recommended to the Town Board the adoption of this Land Division Ordinance at a meeting held on March 6, 2002.

29.10.2 PUBLIC HEARINGS

The Town Board of the Town of Lyons held a public hearing on this proposed Development Standards Ordinance on February 4, 2002, and April 1, 2002.

29.10.3 TOWN BOARD APPROVAL

The Town Board the Town of Lyons proceeded to adopt the Development Standards Ordinance at a meeting held on the April 8, 2002.

29.10.4 EFFECTIVE DATE

This Land Division Ordinance shall take effect upon passage and adoption by the Town Board and the filing of proof of posting or publication in the Office of the Town Clerk.

Date of Posting or Publication: May 2, 2002

Effective Date: May 2, 2002

Town Chairman _____
William R. Mangold

ATTESTED:
_____
Town Clerk

STREET CLASSIFICATION	MINIMUM PAVEMENT REQUIREMENTS
Major Commercial	6" crushed stone or crushed gravel sub-base 7" P.C. concrete with wire fabric -or- 6" crushed stone or crushed gravel sub-base 7" asphaltic base course 1 1/2" binder course 1 1/2" surface course
Industrial	6" crushed stone or crushed gravel sub-base 8" P.C. concrete with wire fabric -or- 6" crushed stone or crushed gravel sub-base 8" asphaltic base course 1 1/2" binder course 1 1/2" surface course
Collector and Minor Commercial	6" crushed stone or crushed gravel sub-base 6" P.C. concrete -or- 8" crushed stone or crushed gravel sub-base 4" binder course 2" surface course
Local Street	9" crushed stone or crushed gravel basecourse 2" binder course 1 1/2" surface course

FIGURE 1

URBAN STREET GEOMETRIC CRITERIA

ROADWAY CLASSIFICATION	MAJOR COMMERCIAL	INDUSTRIAL	MINOR COMMERCIAL COLLECTOR	LOCAL
Right-of-way width	80 ft.	66 ft.	66 ft.	66 ft.
Roadway width [1]	45 ft.	39 ft.	33 ft.	31 ft.
Sidewalk width [6] [7]	6 ft.	N/A	4 ft.	4 ft.
Curb type [2]	30"-TYPE D	30"-TYPE D	30"-TYPE D	30"-TYPE L
Number of traffic lanes [8]	4	2	2	2
Lane width	12 ft.	12 ft.	15 ft.	10 ft.
Parking	Both sides	N/A	N/A	One side
Minimum cul-de-sac pavement radius [3]	55 ft.	55 ft.	N/A	45 ft.
Maximum cul-de-sac length [4]	1000 ft.	1000 ft.	N/A	750 ft.
Minimum sight distance	200 ft.	200 ft.	200 ft.	100 ft.
Maximum grade	6%	6%	8%	10%
Minimum grade	0.5%	0.5%	0.5%	0.5%
Design speed	30 mph	30 mph	40 mph	30 mph
Minimum center line radius [5]	300 ft.	300 ft.	300 ft.	100 ft.
Return radius	30 ft.	40 ft.	30 ft.	25 ft.
Crown	1.5%	1.5%	1.5%	1.5%

(1) Dimensions are measured back to back of curb.
(2) Minimum gutter flag depth shall be 8 inches.
(3) Cul-de-sac R.O.W. radius shall be 75 feet for commercial and industrial streets and 60 ft. for all others.(See Detail Exhibit D.)
(4) The combined length of the street and diameter of the cul-de-sac.
(5) To be introduced when the centerline deflects at any one point by more than 5 degrees. A tangent of at least 100 ft. shall be introduced between reverse curves on major and secondary streets.
(6) Sidewalk shall be placed on both sides of the street and within the public right-of-way, 1-foot from the property line unless otherwise approved by the Town.
(7) Sidewalk designated as bike path shall be a minimum width of 8 feet.
(8) Four (4) lanes required for traffic volumes over 15,000 ADT.

FIGURE 2

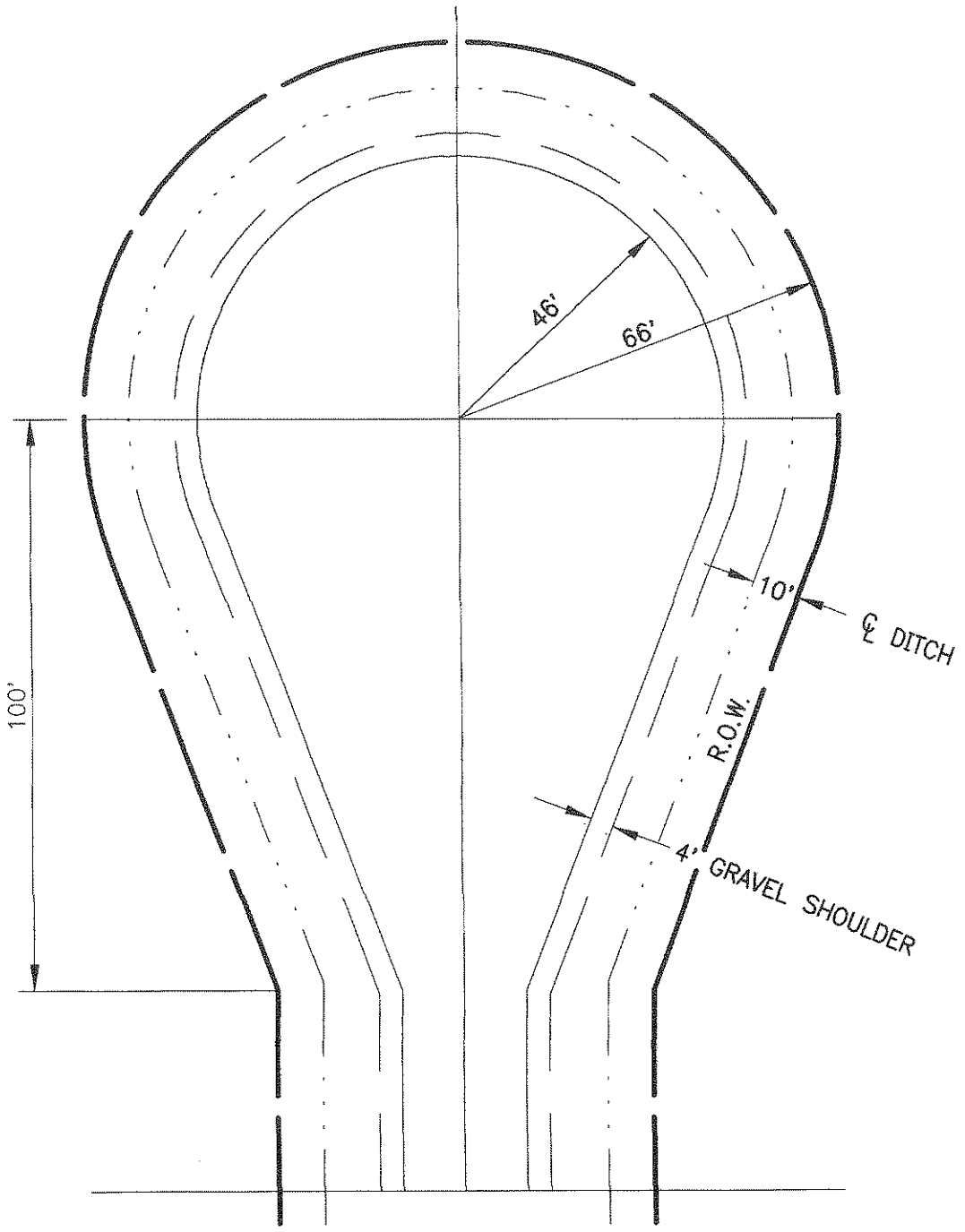
RURAL STREET GEOMETRIC CRITERIA

ROADWAY CLASSIFICATION	MAJOR COMMERCIAL	INDUSTRIAL	MINOR COMMERCIAL COLLECTOR	LOCAL
Right-of-way width	80 ft.	66 ft.	66 ft.	66 ft.
Roadway width [1]	48 ft.	30 ft.	26 ft.	22 ft.
Shoulder width	6 ft.	6 ft.	4 ft.	4 ft.
Minimum ditch depth [2]	2.5 ft.	2.5 ft.	2.5 ft.	2.5 ft.
Number of traffic lanes [8]	4	2	2	2
Minimum cul-de-sac pavement radius [3]	N/A	55 ft.	N/A	45 ft.
Maximum cul-de-sac length [4]	N/A	1000 ft.	N/A	750 ft.
Minimum sight distance	200 ft.	200 ft.	200 ft.	100 ft.
Maximum grade	6%	6%	8%	10%
Minimum centerline grade	0.5%	0.5%	0.5%	0.5%
Minimum ditch grade	1.0%	1.0%	1.0%	1.0%
Design speed	30 mph	30 mph	40 mph	30 mph
Minimum center line radius [5]	300 ft.	300 ft.	300 ft.	100 ft.
Return radius	30 ft.	40 ft.	30 ft.	25 ft.
Crown	2.0%	2.0%	2.0%	2.0%
Shoulder Slope	4.0%	4.0%	4.0%	4.0%

(1) Dimensions are measured edge of pavement to edge of pavement.
(2) As measured from centerline elevation.
(3) Cul-de-sac R.O.W. radius shall be 75 feet for minor commercial and industrial streets and 65 ft. for all others. (See Detail Exhibit E.)
(4) The combined length of the street and diameter of the cul-de-sac.
(5) To be introduced when the centerline deflects at any one point by more than 5 degrees. A tangent of at least 100 ft. shall be introduced between reverse curves on major and secondary streets.
(6) Four (4) lanes required for traffic volumes over 15,000 ADT.

FIGURE 3

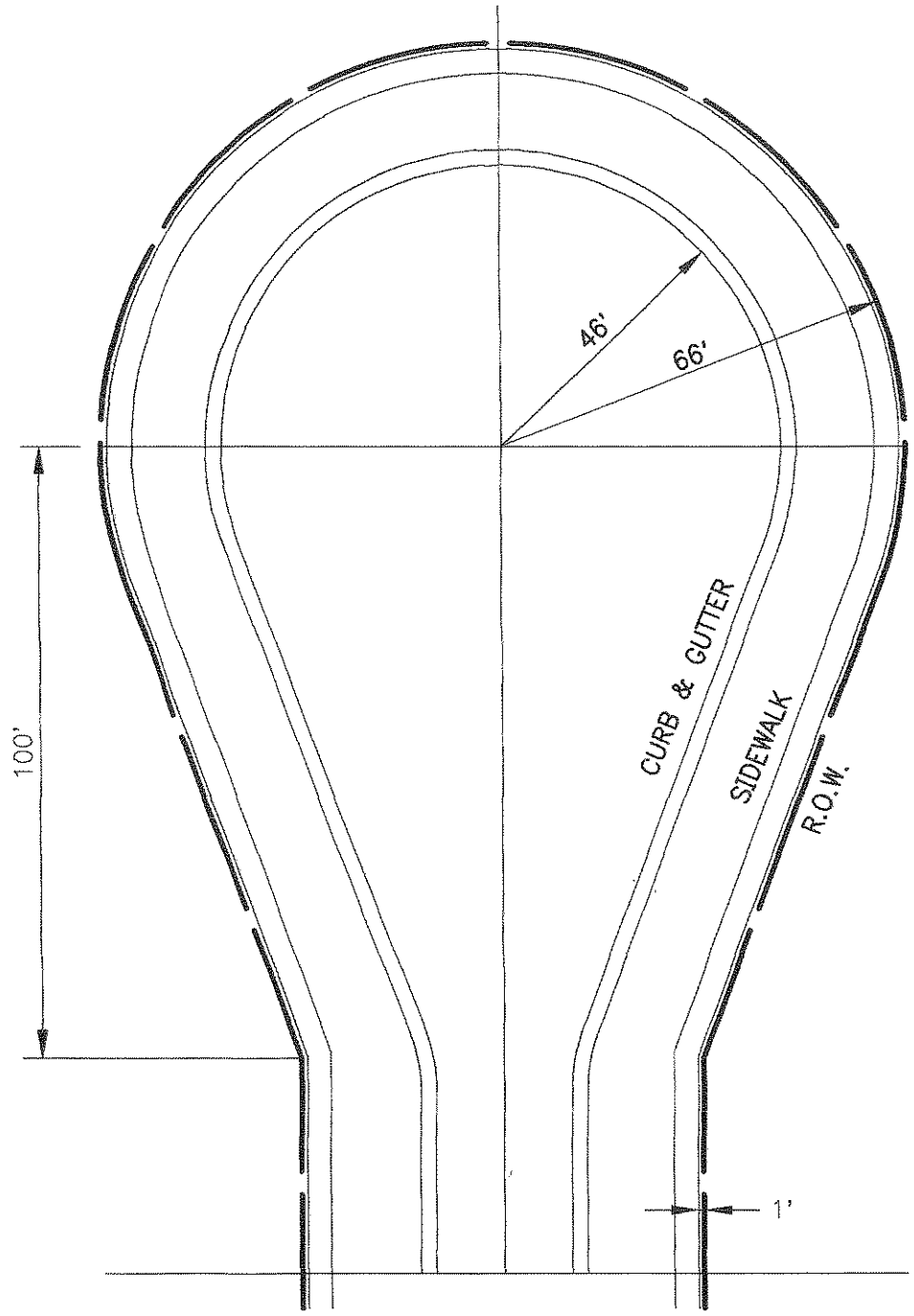
TYPICAL RURAL CUL-DE-SAC RESIDENTIAL STREETS



NO SCALE

EXHIBIT A

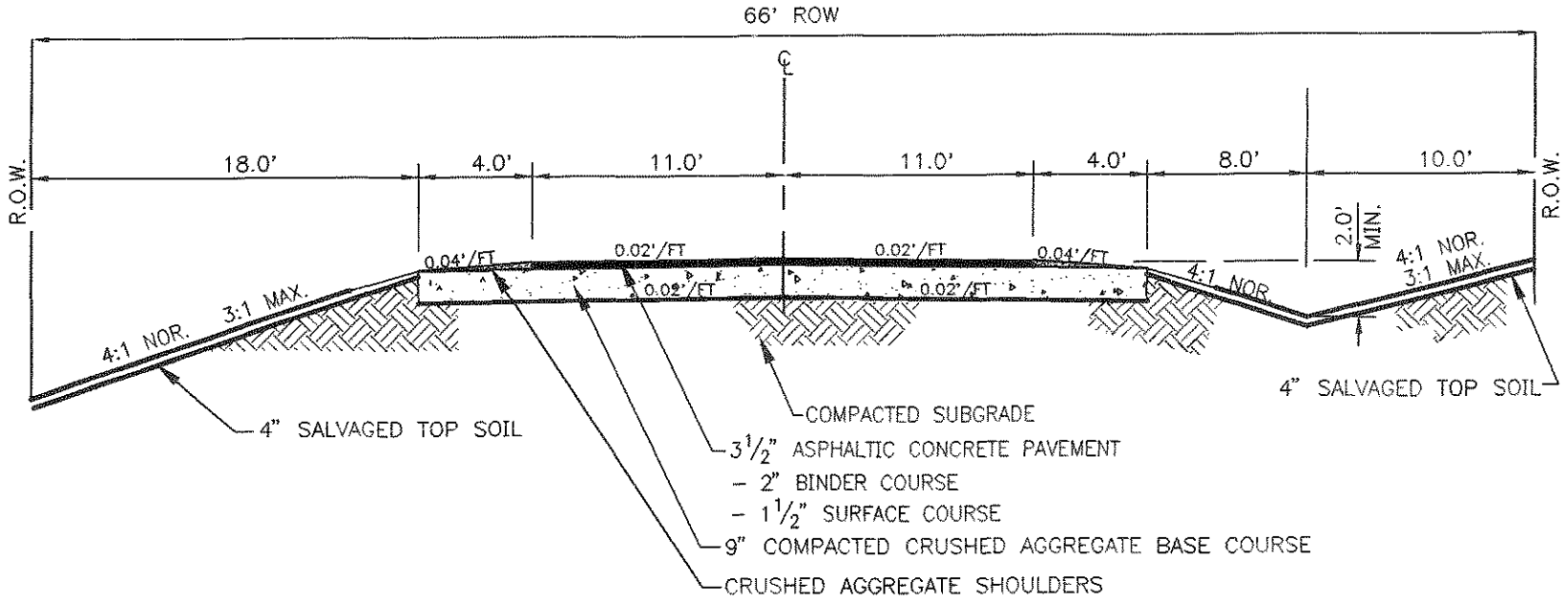
TYPICAL URBAN CUL-DE-SAC RESIDENTIAL STREETS



NO SCALE

EXHIBIT B

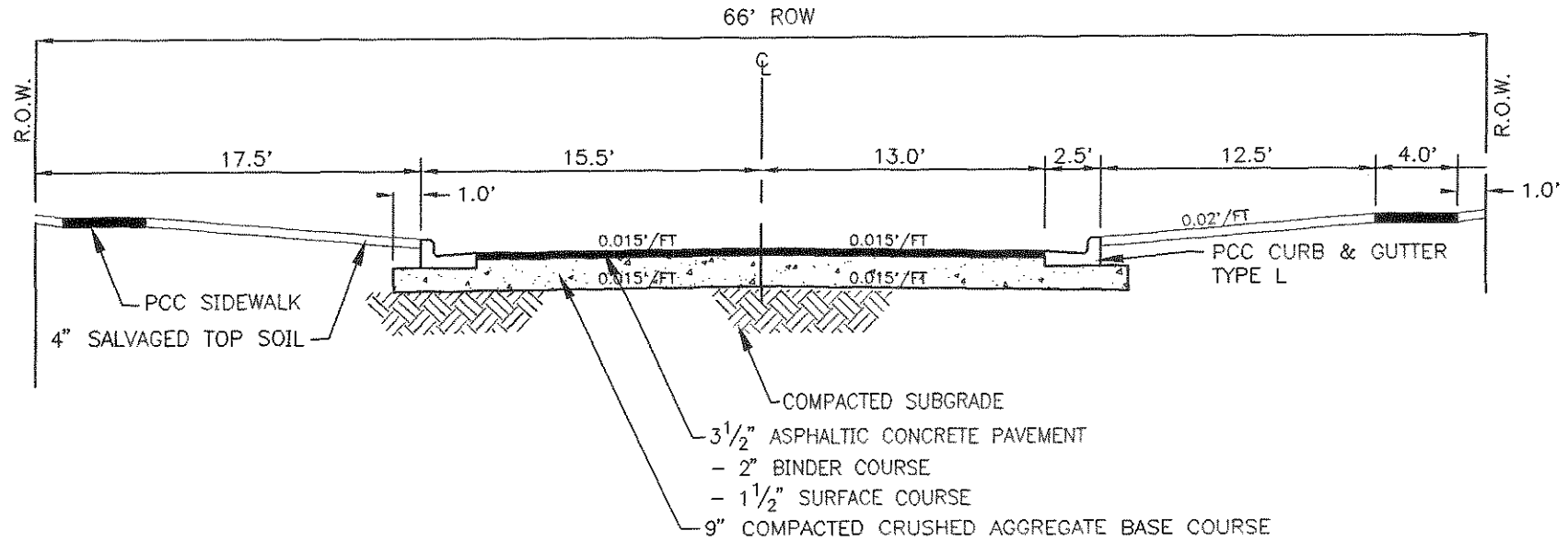
EXHIBIT C



TYPICAL RURAL SECTION
RESIDENTIAL STREETS

NO SCALE

EXHIBIT D



TYPICAL URBAN SECTION
RESIDENTIAL STREETS

NO SCALE