MANUAL OF PRACTICE

VILLAGE OF RANTOUL, ILLINOIS

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CHAPTER 1: ADMINISTRATIVE PROCEDURES

1.1 INTRODUCTION

A major portion of publicly owned improvements are initially designed and constructed by private interests. This Manual of Practice (this **"Manual"**), which is authorized by the Rantoul Code, Section 32-14, has been prepared to ensure that such improvements result in construction meeting the requirements of the Village. The Manual also intends to provide a uniform construction criteria for facilities designed for, or directly by, the Village.

1.2 DEFINITION OF TERMS

The words and terms, whenever they occur in this Manual, are defined herein. Definitions in the Subdivision Code shall also apply to this Manual.

AASHTO Geometric Design Book: The most recent edition of the book entitled "A Policy on Geometric Design of Highways and Streets," published by the American Association of State Highway and Transportation Officials.

Administrative Review Committee: The Zoning Administrator, the Director of Public Works and the Village Attorney, the persons charged with providing staff review of a proposed subdivision.

ANSI Standards: The most recent edition of the applicable standards published by the American National Standards Institute.

AWWA Standards: The most recent edition of the standards of requirements for materials, supplies, equipment and practices published by the American Water Works Association.

CCG&TP: The Design Guidelines of Champaign County Greenways & Trails Plan, most recent edition.

Corporate Authorities: The President and Board of Trustees of the Village.

Developer: The person, trust or other legal entity who or which develops subdivided land into residential, commercial, industrial, office or recreational development complete with required zoning and infrastructure systems.

Design Engineer: The engineer of record, responsible for the preparation of the project plans. The experience and credentials of the design engineer relative to the given project shall conform to the State of Illinois Professional Engineer's Act.

Director: The Director of Public Works or the Assistant Director of Public Works of the Village, including any employees who work in the Public Works Department that report to either the Director of Public Works or the Assistant Director of Public Works and are designated to perform the task or duty referred to in this Manual.

Erosion Control Plan: Plans and specifications prepared by the design engineer, which explain how erosion will be minimized during any soil disturbing process.

FEMA: Federal Emergency Management Agency.

Flood Routing: The area where water flows when in excess of the capacity in the storm drainage system.

GLUMRB: The Recommended Standards for Water Works and/or the Recommended Standards for Wastewater Facilities of the Great Lakes Upper Mississippi River Board, most recent edition.

Highway Standards: The "Highway Standards" published by IDOT, most recent edition.

IDOT: Illinois Department of Transportation.

IDOT Construction Manual: The "Construction Manual" published by IDOT, most recent edition.

IDOT Design Manual(s): The "Design Manual" published by IDOT, Bureau of Design, most recent edition. Refer to the Bureau of Design and Environment (BDE) and / or the Bureau of Local Roads (BLR) administration and design manuals as applicable.

IDOT Drainage Manual: The "Drainage Manual" published by IDOT, Bureau of Design, most recent edition.

Illinois Plat Act: The Plat Act (765 ILCS 205/0.01 et seq.), which regulates the division of land in the State, unless superseded by a local government.

Illinois Recommended Standards for Sewage Works: 35 Ill.Admin.Code 370.

Internal Circulation System: An internal system of streets or drives located in and designed to serve a development.

MUTCD: The "Manual of Uniform Traffic Control Devices" published by the U.S. Department of Transportation, Federal Highway Administration, including the Illinois Supplement, most recent edition.

Standard Specifications for Road and Bridge Construction: The "Standard Specifications for Road and Bridge Construction" published by IDOT, Bureau of Design, most recent edition.

Standard Specifications for Traffic Control Items: The "Standard Specifications for Traffic Control Items" published by IDOT, Bureau of Design, most recent edition.

Standard Specifications for Water and Sewer Main Construction in Illinois: The "Standard Specifications for Water and Sewer Main Construction in Illinois" published jointly by the Illinois Society of Professional Engineers, Consulting Engineers Council of Illinois, Illinois Chapter of the American Public Works Association, Illinois Municipal League and the Associated General Contractors of Illinois, most recent edition.

Subdivider: Any legal or beneficial owner of land or any other person having a sufficient proprietary interest in such land who seeks to subdivide or develop such land subject to the provisions of this Manual.

Subdivision Code: Provision or provisions contained in Chapter 32 of the Rantoul Code, as amended.

Traffic Control Plan: A plan prepared by an engineer which calculates the anticipated on- or off-site traffic impact of a particular development and determines what traffic regulatory improvements, if any, are required to mitigate these impacts.

Zoning Administrator: The person holding the position of Village Inspector of the Village or such other person as designated for such purpose from time to time by the Village President, including any employees who work in the Inspection Department or the applicable department of such other designated person that reports to the Village Inspector or such other designated person and is designated to perform the task or duty referred to in this Manual.

1.3 SCOPE

This Manual shall be reviewed from time to time by the Administrative Review Committee. Revisions shall be incorporated through the process for Administrative Rules as provided for in Section 32-14 of the Subdivision Code.

1.4 PRE-DESIGN CONFERENCE

It is recommended that prior to the preparation of detailed Engineering Plans and Specifications, the Design Engineer should meet with the Director to review the requirements of the Village for the proposed project. The Design Engineer is responsible for requesting this preliminary meeting, if desired.

1.5 DESIGN COMPUTATION REQUIREMENTS

The Design Engineer shall make design computations for all phases of the project when this Manual requires such computations or when requested by the Director. The Director may request design computations to ensure adequacy and stability of the work and conformance with appropriate standards. Such computations shall be

neat and legible and in a form required by this Manual. The computations shall be easily followed and prepared following formats of generally accepted practice. Such computations will include (but not necessarily be limited to) the following:

Submitted with Public Improvement Engineering Plans – Detailed Design Calculations for the following, if applicable:

A. Detention Basin Design

B. Storm Sewer System Design

C. Water Main and Sanitary Sewer Design

D. Flood Routing and Waterway Design

E. Bridge, Culvert or Drainage Way Design

F. Structural Design Data for Local, Secondary and Primary Street Pavements

1.6 OTHER PERMIT APPLICATIONS AND APPROVALS

Other State of Illinois agencies may review and approve all or certain parts of the work included in a project and may require a permit or application for a permit for such work. Such agencies may also require that such a permit or application for a permit be executed by the Village. When such a permit or permit application is required, it shall be prepared, ready for signatures and containing all required supporting documentation by the Design Engineer, with sufficient copies for the Village to retain one.

1.7 APPROVAL PERIOD

Approval of the Public Improvement Engineering Plans and Specifications by the Director shall be applicable for the period for which there is a valid final plat. Construction shall not begin until the Director has signed the cover sheet of the Engineering Plans as “Approved”. If construction is not commenced within such period, any approval will be void. Reactivation of such voided approvals will require a written request for extension and must include any new requirements that may be established by the Village in the interim.

1.8 REVISIONS TO APPROVED PUBLIC IMPROVEMENT ENGINEERING PLANS

Any deviations from approved plans or specifications affecting the size, type, quantity and/or location of any of the improvements shall be approved in writing by the Director before such changes are made. Minor changes not affecting of the size, type, quantity and/or location of the improvements will not require formal approval, but must be verbally approved by the Director and documented on the record drawings. If a change is verbally approved, then a memorandum of record must be sent to the Director by the Design Engineer within one week of the verbal approval. The memo of record shall briefly describe the change, when it was approved and by whom.

1.9 RECORD DRAWINGS

The Design Engineer shall submit to the Director, prior to the Village's acceptance for maintenance, record drawings of the entire set of Public Improvement Engineering Plans depicting the improvements as actually constructed. Final release of subdivision bonds will not be made until the Director has received the record drawings. Record drawings submitted shall consist of two sets of photo static prints and one set of digital computer aided drafting files.

1.10 PROJECT COMPLETION AND FINAL ACCEPTANCE

The Director, in cooperation with the Design Engineer, shall make a jointly attended final inspection of the completed work prior to accepting the project for maintenance. The Director shall prepare a final punch list, itemizing all items not meeting the requirements of the approved plans. The Developer, or Design Engineer, shall notify the Director of the completion of the punch list items. If the Director agrees that the items have been satisfactorily completed, the Director shall notify the developer or the Design Engineer, in writing, that the project has been accepted.

1.11 WAIVER OF MANUAL REQUIREMENTS

The Director and the Zoning Administrator, subject to Section 1.6 of this Manual, may administratively waive any of the requirements of this Manual. No waiver is available to a Developer as a matter of right. The burden of proving that a waiver is justified is on the Developer.

A. General Standard for Waiver Approval. A waiver shall not be approved unless the Director and the Zoning Administrator (as applicable) finds that the waiver is justified according to each of the following standards:

1. That there is substantial hardship in complying with these regulations provided that the spirit and intent of these regulations shall be substantially observed, and the public welfare and safety be assured.

2. That the granting of the waiver will not be detrimental to the public safety, health or welfare or injurious to other property located in the vicinity of the property in question.

3. That the cost or difficulty of complying with the requirements of these regulations is great compared to the gain such compliance provides to the public health, safety, and welfare.

B. Specific Considerations. In deciding whether to approve a waiver of these regulations, the following criteria may be considered:

1. Whether the condition upon which the request for a waiver is based is unique to the property, but not generally applicable to other properties.

2. Whether the property to be subdivided will be used only for low intensity uses.

3. Whether conditions may be imposed which mitigate the harm to the public caused by the failure to comply with these regulations.

1.12 ELECTRONIC DRAFTING FILE STANDARDS

A. Electronic Files: Electronic files are required when submitting final copies of:

1. Annexation Plats;
2. Preliminary Plats;
3. Final Plats;
4. Record Drawings of Public Improvement Engineering Plans; and
5. As Built Plans

B. Submittal Media: Industry standard electronic files may currently be submitted on flash drive, CD-ROM or via e-mail. Files may be zipped as long as they are self-extracting or the extraction utility is provided. All files and media are to be in AutoCAD compatible format.

C. Submittal Format: Files shall be submitted on AutoCAD Version 2011 or AutoCAD compatible. Unused blocks, layers, line styles, etc., shall be purged from AutoCAD files. Reference files used shall be in the same subdirectory as the active design file.

CHAPTER 2: PROTECTION AND RESTORATION

2.1 INTRODUCTION

Public improvements required in connection with a Subdivision or Development is often in or adjacent to areas with existing surface or underground improvements. The intent of this Chapter is to codify special Village requirements relative to the construction of proposed improvements and restoration of existing improvements affected by any construction or installation. Plans and specifications presented for Village approval shall provide for the implementation of the requirements of this Chapter.

2.2 SPECIFICATIONS AND SPECIAL PROVISIONS

All public improvement projects shall be completed in accordance with all applicable sections of the Standard Specifications for Road and Bridge Construction and the Standard Specifications for Water and Sewer Main Construction in Illinois.

A. Protection

1. Traffic Control - All work within the public right-of-way shall be completed in accordance with the MUTCD and the Highway Standards. The provisions of the MUTCD will be enforced whenever work is in progress within the existing roadway or adjacent to it or as required by the Director. Lane closures will be required whenever construction or installation is performed or vehicles are parked in a lane normally used for through traffic. Written permission for all lane closures must be obtained from the Director. On primary and secondary streets, one lane for each direction shall be maintained open to traffic except during the actual excavating and laying operations. No more than one-half the width of the street may be closed to traffic during the construction and curing of the permanent pavement patch. Required traffic control signing shall be in strict conformance with the MUTCD. No construction or installation shall commence until such time that all required signs and barricades have been erected. The contractor shall also be responsible for contacting all applicable police, fire and public transportation authorities.

2. Bracing and Sheeting - Open cut trenches shall be sheeted and braced as required by any applicable federal or state laws and municipal ordinances, and as may be necessary to protect life, property and the work.

3. Trench Side Slopes - The contractor may, where working conditions and right-of-way permit, excavate pipeline trenches with sloping sides above the top of the conduit only.

4. Tunneling – The contractor may utilize short tunnels to avoid obstructions such as trees, fire hydrants, sidewalks and curbs.

5. Stockpiling of Excavated Material - All excavated material shall be stockpiled such that it will not endanger the work and will avoid obstructing streets, sidewalks, driveways, watercourses, fire hydrants, valve pit covers, valve boxes, curb stops and other utility controls.

6. Protection of Property and Structures - Any existing or new property or structures disturbed or damaged during construction or installation shall be replaced or repaired to the satisfaction of the owner, at the contractor's expense.

7. Utilities - The Village and any other applicable utility companies shall be notified of a proposed project and the plans should indicate the general location of the utility main lines. It shall be the contractor's responsibility before beginning any construction or installation to obtain from the utilities the exact locations of all underground facilities in the area of construction or installation, whether shown on the plans or not. Any facilities disturbed by the contractor shall be repaired at the contractor's expense. Residents and businesses shall be notified a minimum of 24 hours in advance of impending service outages, and no residence shall be without service overnight.

8. Work Place Safety – Nothing in this Manual is intended or shall be construed to reduce the responsibility of the contractor, a subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, from full and complete supervision and achievement of work place safety. Any inspection of the work conducted by the Director, or his/her designated representatives, whether notice of the results thereof is provided to anyone or not, shall neither establish any duty on the part of the Director or the Village nor create any expectation of any duty to anyone, including but not limited to third parties, regarding work place safety.

B. Restoration of Public Facilities

The contractor shall restore all pavements, sidewalks, driveways, curbs, gutters, trees, shrubs, lawns, fences, poles and other structures and property removed or disturbed during or as a result of construction or installation operations to a condition which is equal in appearance and quality to the condition that existed before the work began.

1. Removal of Pavements, Sidewalks, Curbs, Gutters, and Driveways - All removal shall be completed in accordance with all applicable provisions of the Standard Specifications for Road and Bridge Construction and any special provisions contained herein. When removal is required for the installation of a conduit, the width of the removal shall exceed the actual trench width by one (1) foot on each side. Removal of any portland cement concrete sidewalk, pavement, driveways, curb and gutter shall be to the nearest joint unless otherwise directed by the Director.

2. Replacement of Pavements, Sidewalks, Curbs, Gutters, and Driveways - All replacements shall be completed in accordance with all applicable provisions of the Standard Specifications for Road and Bridge Construction. For all portland cement concrete replacements, concrete meeting the requirements of the Standard Specifications for Road and Bridge Construction shall be used.

a. Pavement Removal and Replacement Type A, B, C and D - Pavement shall be removed and replaced according to the following standards.

Types of Patching; The type of patching required shall depend upon the existing pavement:

Type A patches shall apply to pavements that have existing aggregate base and bituminous surface.

Type B patches shall apply to pavements that have existing concrete base and bituminous surface, brick base and bituminous surface or bituminous base and bituminous surface.

Type C patches shall apply to existing pavements that have existing brick surface or concrete surface. Reinforcement will be required where the existing pavement is presently reinforced.

Type D patches shall apply to existing pavements that have existing brick surface that the Village has designated to be preserved.

b. Driveway replacement - the type of replacement required shall depend on the existing pavement:

Type A - Existing concrete driveway shall be replaced with a new 6 inches portland cement concrete surface.

Type B - Existing bituminous surface driveway shall be replaced with a new 8 inches thick aggregate base and 2 inches thick bituminous concrete surface.

Type C - Existing crushed stone driveway shall be replaced with a new 8 inches thick crushed aggregate surface with the top 4 inches being the same material as the existing.

c. Sidewalk replacement - Sidewalk shall be replaced to the same depth and width as the existing unless otherwise directed by the Director. One-half (½) inch thick preformed expansion joints shall be placed at locations abutting existing work and at 100 feet intervals in the new walk.

d. Curb and Gutter replacement - curb and gutter shall be replaced to the dimensions and cross-section as the existing curb and gutter. A ½ inch thick preformed expansion joints shall be placed at the junction of existing work and at all points of curvature.

Removal Limits: The limits of the pavement repair shall be saw cut in a rectangular pattern to a depth of not less than 3 inches. Type A patches shall be a minimum of 3 feet in width. Type B and Type C patches shall be a minimum of 5 feet in width. For Type B and Type C patches the new pavement shall be shouldered one-foot minimum on either side of the trench on undisturbed ground.

Whenever a series of Type A or Type B patches are made in such a manner so as to leave less than 5 feet of undisturbed bituminous surface between adjacent patches, it shall be required that the bituminous surface between the patches be removed and the entire area resurfaced. Portland cement concrete pavements not in good condition shall be repaired in accordance with typical detail shown for Type C patching. Whenever a pavement patch is less than 5 feet from the pavement edge, contraction joint, crack, etc., the pavement patch shall be enlarged to meet the edge, joint or crack and the entire excavated area paved as one patch. The limits of pavement removal on Type D patching shall be in such a manner that whole bricks

will be used in the replacement and that the replaced brick course extends beyond the limits of the concrete base course.

Trench Backfill All utility trenches on local streets shall be backfilled with trench backfill. Material for trench backfill shall comply with the latest edition of the Standard Specifications for Road and Bridge Construction except that the maximum aggregate size shall be 3 inches. Approved compacted granular material shall be required in all trenches extending two feet either side of all sidewalks, curbs, gutters, driveways and pavements. Trench backfill shall be compacted by mechanical means in 1 foot lifts.

Jetting of Trenches (on local streets) All utility trenches shall be compacted by jetting and allowed to dry before the permanent base and surface course are constructed.

Controlled Low Strength Material All utility trenches on primary and secondary streets shall be back filled with controlled density fill from 1 ft. above pipe to bottom of sub grade. Controlled density fill shall meet the requirements of the Standard Specifications for Road and Bridge Construction.

Temporary Asphalt Surface After completing the backfilling of an excavation, a temporary asphalt surface shall be placed as soon as possible or as directed by the Director with a minimum thickness of 2 inches. The excavation contractor shall maintain this surface until the permanent patch is constructed.

Steel plates may be used for Type B patches to bridge the utility trench patch during the curing period for the portland cement concrete base course in order to open the traffic lane to traffic during this period.

3. Field/Drain Tile – All existing drain tile lines which cross the trench of a proposed sanitary sewer, storm sewer, water main and services shall be accurately recorded and marked in the field by the contractor. Upon completion of the installation of the underground utilities, the contractor shall furnish a copy of all drain tile locations to the Director. All existing drain tile lines flowing toward a new storm sewer shall be intercepted and connected to such new storm sewer. All existing drain tile lines crossing the proposed street rights-of-way shall be removed from a point six feet beyond the right-of-way on each side.

All drain tile lines reconstructed or connected to the storm sewer system shall be constructed of either PVC water main with slip-on joints up to 12 inches or reinforced concrete storm sewer pipe of Class 2 or Class 4 as required by depth in accordance with the Standard Specifications for Road and Bridge Construction. Drain tiles not reconnected shall be plugged in an approved manner as directed by the Director. Drain tiles to be reconnected shall be repaired so that their carrying capacity shall not be impaired. Drain tile shall be repaired with PVD SDR 26 pipe, a minimum of two (2) inches larger diameter than the severed tile. The length of the PVC pipe shall bear a minimum of two (2) feet on undisturbed soil on each side of the trench, with each field tile to plastic pipe junction encased in concrete. All repairs shall be inspected and approved by the Director prior to backfilling.

Compacted granular backfill shall be required if under a street or sidewalk. The PVC pipe to drain tile junction shall be wrapped with burlap or other material approved by the Director prior to encasement to prevent concrete from entering the flow line of the pipe. For drain tile under streets, ductile iron or vitrified clay pipe is required.

4. Restoration of Vegetative Areas - All vegetative areas disturbed during construction or installation shall be restored by furnishing and placing topsoil to a minimum depth of four (4) inches (100 mm.) and seeding of the area in accordance with the Standard Specifications for Road and Bridge Construction or as directed by the Director. Restoration of vegetative areas shall consist of preparing the seed bed, furnishing, transporting and placing the seed, fertilizer and mulch as required in the seeding operations on all disturbed areas in accordance with the Standard Specifications for Road and Bridge Construction. The areas for restoration shall be any area disturbed beyond the existing condition.

Seed bed preparation shall be in accordance with the Standard Specifications for Road and Bridge Construction, except, all stones, boulders, gravel, crushed stone, debris, trash, weeds, clods, roots, sticks and deleterious material shall be removed from the areas to be seeded prior to seeding and mulching operations. The area to be seeded shall be worked to a minimum depth of 3 inches with a disk tiller or other equipment approved by the Director, reducing all soil particles to a size not larger than ½ inch in the largest dimension.

5. Cleanup – Before acceptance of underground conduit construction, all pipes, manholes, catch basins, fire hydrants and other appurtenances shall be cleaned of all debris and foreign material.

C. Special Provisions Modifying Standard Specifications for Water and Sewer Main Construction in Illinois

20-2.18 CONSTRUCTION IN EASEMENTS

Add the following: The top six (6) inches of any ground disturbed due to construction on private property in an inhabited area shall be replaced with topsoil and restored to its original condition at no additional cost to the owner.

Add the following section:

20-2.18 A. AGRICULTURAL SURFACE RESTORATION

At locations as shown on the plans or designated by the Director, the contractor shall restore any and all agricultural areas. Prior to the installation of the proposed pipes, the contractor shall remove all topsoil from the construction area and stockpile it along the edge of the working limits. Upon the completion of the installation of the pipes and placing of the subsoil backfill, the contractor shall replace the original topsoil over the top of the disturbed area so that the finished surface shall be level and smooth and contain all of the original topsoil at approximately the same depth as prior to construction.

Add the following section:

20-2.18 B. REMOVAL OF SOIL FROM AGRICULTURAL AREAS

No soil will be removed from the areas designated for agricultural surface restoration unless the owner or his representative gives written consent.

CHAPTER 3: CERTAIN DESIGN COMPUTATIONS

Boundaries of the subdivision shall be drawn to meet or exceed the following standards:

1. Error of closure of boundary lines survey shall not exceed 5,000 (1:5000),

2. Angular error shall not exceed +/- 20 seconds,

3. Lot line dimensions shall be shown in feet and hundredths; and

4. Angles occurring in any lot line between lot corners shall be shown in degrees, minutes, and seconds.

CHAPTER 4: DESIGN AND CONSTRUCTION STANDARDS FOR STREETS

4.1 INTRODUCTION

All lots in any subdivision, regardless of size, shall front on a street. When necessary, streets shall be included as part of the subdivision and shall be designed and constructed in accordance with this Chapter.

4.2 DESIGN OF STREETS

A. General

All streets proposed within the confines of a new subdivision shall be located in dedicated public or private right-of-way as required by this Section. All streets are considered public unless located in a planned unit development or a mobile home park and specifically designated as private on the preliminary and final plats.

a. *Classification and location*. The classification and location of all streets shall conform to the comprehensive plan, the Subdivision Code and these regulations.

b. *Public and private streets*. Each buildable lot within a new subdivision shall be adjacent to a public street. Private streets may be permitted only in a planned unit development or a mobile home park and are to be maintained by the subdivider or other declarant entity.

c. *Integration with existing system*. All streets shall be properly integrated with the existing and proposed system of streets and thoroughfares as established in the Comprehensive Plan.

B. Arrangement

1. Streets shall be related appropriately to topography. Local streets in residential areas shall be curved whenever practical and reasonable to avoid unnecessary conformity of lot appearance. All streets shall be arranged so as to obtain as many of the building sites as possible at or above the grades of such streets.

2. Where a subdivision borders on or contains an existing or proposed primary street, access to such primary streets shall be limited in one or more of the following ways:

    a. The subdivision of lots so as to back onto the primary and front onto a parallel local or secondary street; no access shall be provided from the primary.

b. A series of cul-de-sacs, looped streets or short loops entered from and designed generally at right angles to such a parallel primary street, with rear lines of their terminal lots backing onto the primary street.

c. A marginal access street service road (separated from the primary by a planting or grass strip and having access points thereto at suitable points).

3. Street intersection jogs with centerline offsets of less than one hundred twenty-five (125) feet measured from street centerline to centerline shall be avoided except where in the opinion of the Director a lesser centerline offset is acceptable.

4. Whenever possible streets shall be designed to intersect at a ninety (90) degree angle. No two (2) streets shall intersect at an angle of less than eighty (80) degrees or more than one hundred (100) degrees.

5. Horizontal curves shall be gradual having a centerline radius of at least two hundred fifty (250) feet except where a lesser radius is, in the opinion of the Director, deemed safe and adequate for anticipated conditions.

6. Vertical alignment shall be smooth with gradual changes, consistent with the character of the terrain. Short vertical curves of less than one hundred (100) feet in length shall not be used unless approach grades and other design factors show a lesser vertical curve to be acceptable by the Director.

7. A rigid grid street pattern need not necessarily be adhered to, and the use of curvilinear streets, cul-de-sac streets or looped streets shall be encouraged where such use will result in a more desirable layout.

8. Proposed streets shall be extended and stubbed to the boundary lines of the area to be subdivided, unless topography or other physical conditions prevent it, or unless in the opinion of the Plan Commission and the Corporate Authorities such extension is not necessary or desirable for the coordination of the subdivision's street system with the existing or future subdivision of adjacent areas. Such temporary stub streets in excess of two hundred and fifty (250) feet in length shall be provided with a temporary Tee turnaround or a temporary cul-de-sac. The Director shall approve the type of construction.

9. No residential local street shall be located less than two hundred and sixty (260) feet nor more than one thousand three hundred and twenty (1,320) feet from any parallel street, measured from the centerlines of the streets subject to the requirements of subsection (c)(3) of this Section, provided that the length, width and shape of blocks shall be determined with due regard to the need for convenient access, circulation, control and safety of pedestrian and vehicular traffic.

10. Half streets or streets less than the full width as required in this Manual shall not be permitted.

C. *Cul-de-sac streets*

1. When an existing stub street is adjacent to or within the boundary of a new subdivision and is to be a permanent dead-end street, the street shall be designated a cul-de-sac street and be designed with a permanent turn around meeting the requirements of this Manual. The design of a stub street as a cul-de-sac street shall meet the minimum design requirements as contained in this Manual or shall be continued as a through street of another class.

2. In single-family residential zoning districts, a cul-de-sac street shall have a maximum length of one thousand (1,000) feet or have no more than twenty-five (25) single-family dwellings or lots fronting thereon, whichever is more restrictive. In duplex residential zoning districts, a cul-de-sac street shall have a maximum length of one thousand (1,000) feet or have no more than twenty (20) duplex structures or lots fronting on the street, whichever is more restrictive.

3. In the case of a cul-de-sac street serving any multiple-family, industrial or commercial subdivision, the subdivider shall be required to present data prior to approval to show that the length of the cul-de-sac shall be such that it would not generate more than two hundred and fifty (250) vehicles per day. The maximum length shall not exceed one thousand (1,000) feet. Radius, pavement and right-of-way dimensions of the street and turn-around shall be adequate to assure safe access given the type and volume of traffic which may be anticipated when the subdivision is complete.

4. The length of a cul-de-sac street shall be measured from the centerline of the nearest intersection street to the center of the turnaround.

5. Cul-de-sac turnarounds shall be designed with a minimum street right-of-way of one hundred (100) feet in diameter and the turn-around pavement shall not be less than eighty (80) feet in diameter measured to the back of curb.

6. Other alternative cul-de-sac street and turn-around designs may be approved by the Plan Commission and Corporate Authorities upon the recommendations of the Zoning Administrator and the Director.

D. The minimum standards for all new streets shall be as set forth in the Table below:

Table A

Category	ROW Width (1)	Pavement Width (2)	Return Radius (3)	Design Speed	Minimum Curve R
5 lane Primary	100’	64’	WB-65	45 mph	AASHTO
4 lane Primary	90’	52’	WB-65	45 mph	AASHTO
Interim Two-Lane Primary Roadway	90’	40’	WB-65	45 mph	AASHTO
Minor Primary	74’	46’	WB-65	35 mph	450’
Major Secondary	74’	46’	WB-65	35 mph	450’
Secondary – Industrial	66’	35’	WB-65	35 mph	450’
Secondary – Industrial Alternative 1	66’	37’	WB-65	35 mph	450’
Secondary – Industrial Alternative 2	66’	30’	WB-65	35 mph	450’
Secondary – Commercial	66’	35’	WB-60	35 mph	450’
Secondary – Commercial Alternative 1	66’	37’	WB-60	35 mph	450’
Secondary – Commercial Alternative 2	66’	30’	WB-60	35 mph	450’
Secondary – Residential	66’	34’	WB-50	35 mph	450’
Secondary Residential Alternative	66’	28’	WB-50	35 mph	450’
Commercial Boulevard (4)	66’ + Median	2 @ 19’	35’	35 mph	450’
Commercial Boulevard Alternative	83’ + Median	2 @ 25’	35’	35 mph	450’
Industrial Boulevard	83’ + Median	2 @ 25’	WB-65	35 mph	450’
Industrial Boulevard Alternative	83’ + Median	2 @ 25’	WB-65	35 mph	450’
Local – Residential	60’	28’	35’	30 mph	300’
Residential Boulevard (4)	66’ + Median	2 @ 19’	25’	30 mph	300’
Residential Boulevard Alternative (4)	72’ + Median + Carriage Walks	2 @ 19’	25’	30 mph	300’
Cul-de-sac bulb	100’ dia.	80’ dia.	25’	N/A	N/A

Notes:

(1) Additional reservation of ROW may be required where design or pre-established standards dictate.
(2) Pavement width is measured from back of curb to back of curb.
(3) Return radius is measured from face of curb. Shall accommodate the vehicle type listed.
(4) Median may vary. Minimum for green median is 8'. All green (landscaped) medians shall have a maintenance agreement.

E. Pavement Structure

Structural strength shall be based on street classification. The expected traffic volume and design shall be in accordance with current:

1. IDOT Design Manual
2. IDOT Highway Standards
3. IDOT Standard Specifications for Road and Bridge Construction

Local streets shall be constructed with a minimum of ten (10) inches of compacted crushed aggregate and three (3) inches of bituminous concrete surface, or six (6) inches portland cement concrete, installed in accordance with the Standard Specifications For Road And Bridge Construction and in accordance with the following design and construction standards and specifications.

F. Vertical Gradients

Differing connecting street gradients shall be connected with vertical curves. The IDOT Design Manuals shall govern all vertical curve computations, except when the algebraic difference of the gradient is less than one (1) percent a fifty (50) foot vertical curve length shall be utilized. Desirable street gradients shall not be less than a minimum of 0.50% (five tenths of one percent). In no case shall the street gradient be less than 0.40%.

G. Curb and Gutter

1. Curb and gutter shall be Type B-6.18 (B15.45) in accordance with the IDOT Highway Standards and installed in accordance with the Standard Specifications of Road and Bridge Construction.
2. All curb and gutter shall be designed so as to facilitate persons using wheelchairs to travel freely and without assistance by providing at each crosswalk a ramp with non-slip surface so that the sidewalk and street blend to be common level. Such ramp shall be designed and constructed in accordance with the IDOT Highway Standards.

H. Trench Backfill

Any excavation in an existing or proposed street shall be backfilled with trench backfill or controlled low strength material.

4.3 SPECIFICATIONS AND SPECIAL PROVISIONS

All streets and curb and gutter shall be constructed in accordance with all applicable sections of the Standard Specifications for Road and Bridge Constructions as supplemented and amended by this Manual and as set forth below:

A. Portland cement concrete pavement shall conform to the Standard Specifications for Road and Bridge Construction, with the following exceptions:

1. The maximum slump of portland cement concrete shall be three (3) inches.

2. Portland cement concrete shall contain a minimum of six (6) sacks of cement per cubic yard.

3. Alternative mix designs for portland cement concrete may be approved by the Director, if requested in writing prior to construction.

4. Beams or cylinders shall be taken at a minimum rate of two (2) per two hundred and fifty (250) feet per lane, or two (2) per day whichever is greater. A modulus of rupture of not less than six hundred and fifty (650) pounds per square inch or compressive strength or not less than three thousand five hundred (3,500) pounds per square inch shall be required after fourteen (14) days.

5. The contractor shall protect the pavement against all traffic, including employees or other workers on the site, until test specimens have attained a flexural strength of six hundred and fifty (650) pounds per square inch or compressive strength of three thousand five hundred (3,500) pounds per square inch when tested in accordance with the Standard Specifications for Road and Bridge Construction.

6. Portland cement concrete pavement shall be constructed to a thickness greater than or equal to six (6) inches unreinforced for local streets or seven (7) inches unreinforced for secondary streets. Primary street pavement shall be designed in accordance with the IDOT Design Manual.

7. If pavement strength or thickness is deficient, the developer or his agent shall take remedial action using one of the following actions:

   a. Removal and replacement of the deficient pavement section(s) to the planned thickness and strength. Pavement deficiencies in thickness and/or strength in excess of ten (10) per cent shall be removed and replaced to planned thickness and strength.

   b. Class I bituminous concrete binder and surface course overlay of the pavement in lengths not less than one block or five hundred (500) feet, whichever is less. Overlay thickness shall be specified by the Director.

8. If initial modulus of rupture or compressive strength tests do not meet the minimum requirements set forth in this Chapter, then pavement cores shall be taken at the rate of one per two hundred and fifty (250) feet per lane at locations designated by the Director. The developer shall furnish the results of compressive strength tests of pavement cores.

9. Joints in all local and secondary streets shall be constructed in accordance with the Highway Standards, with the following exceptions:

   a. Sawed longitudinal joints shall be constructed with No. 4 deformed bars two (2) feet six (6) inches long at two (2) feet six (6) inch centers.

   b. Integral curb details at sidewalks and mid-block sidewalks shall conform to the sidewalk requirements set forth in this Chapter.

   c. Expansion joints shall be constructed in accordance with the Standard Specifications for Road and Bridge Construction using three-fourths (3/4) inch dowel bars, eighteen (18) inches long at twelve (12) inch centers, coated with heavy grease, pinch stop with one inch minimum taper.

   d. Deviations from the Highway Standard No. 10 joint configurations or construction details may be allowed with approval of the Director.

10. All joints in portland cement concrete pavements shall be filled in accordance with the Standard Specifications for Road and Bridge Construction.

11. Uncontrolled cracking which appears in portland cement concrete pavement prior to approval by the Director shall be cleaned and filled in accordance with the Standard Specifications for Road and Bridge Construction.

B. Bituminous pavement shall be constructed in accordance with the Standard Specifications for Road and Bridge Construction.

1. Minimum bituminous pavement thickness for all local residential streets shall be as follows:

Bituminous Surface Course	**Base Course**
Two (2) inch Class I bituminous surface material	Five (5) inch bituminous aggregate mixture

Materials which according to the "Manual For Structural Design of Flexible Pavement of Projects Involving MFT, FAS, and FAU Funds" are of equal strength to those listed above may be used, if approved by the Director.

2. Minimum bituminous pavement thickness for primary and secondary streets, and any commercial and industrial streets, shall be as follows:

Bituminous Surface Course	**Base Course**
Two and one-half (2 1/2) inch Class I (1" surface, 1 1/2" binder)	Six (6) inch bituminous aggregate mixture

Materials which according to the “Manual for Structural Design of Flexible Pavement on Projects Involving MFT, FAS, and FAU Funds” are of equal strength to those listed above may be used, if approved by the Director.

3. Base which has not been compacted will not be permitted.

4. Tests of the surface and base courses shall meet the requirements set forth in the Standard Specifications for Road and Bridge Construction, except that tests shall be taken at a rate of one per two hundred and fifty (250) feet per lane at locations designated by the Director.

5. Cores may be taken at locations specified by the Director at a rate of one per two hundred and fifty (250) feet per lane. At the request of the Director, the contractor shall cause marshall stability density tests to be performed on the cores and shall furnish the results of such tests to the Director.

6. Bituminous pavement shall be constructed to a strength and thickness greater than or equal to that required by this Chapter and approved in the engineering plans and specifications. If pavement strength or thickness is deficient, the contractor shall take remedial action using one of the following options:

   a. Removal and replacement of the deficient pavement section(s) to the planned thickness and strength.

   b. Class I overlay of the pavement to a thickness to be approved by the Director. Pavement deficiencies in thickness and/or strength in excess of ten (10) per cent shall be removed and replaced to planned thickness and/or strength.

7. Cracks shall be cleaned and sealed in accordance with the Standard Specifications for Road and Bridge Construction.

C. Curbs are required on both sides of a street in accordance with the Specifications for Road and Bridge Construction.

Street Special Provisions

Curb marking of Water and Sewer Services: At the time the curb and gutter is poured, the contractor shall mark the top of the curb with an "S" or "W" for sewer and water services respectively.

Adjustment of Frame of Grate: Final grade for all manhole castings will be determined after the curb and gutter has been poured and the sub-grade and/or base have been constructed. Final adjustment of the frame and grate shall be made in the following manner: After the curb and gutter has been poured and the base constructed the final elevation will be determined by the Director.
The frame and grate will be adjusted to this elevation in accordance with the Standard Specifications for Road and Bridge Construction. Any material disturbed while adjusting the frame and grate will be disposed of and all fill shall be made with lean concrete. A maximum of eight (8) inches of adjusting rings shall be allowed.

Coarse Aggregate: Shall comply with IDOT specifications.

Combination Concrete Curb and Gutter: Concrete curb and gutter shall be sawed or scored at intervals coinciding with the joint intervals of the adjoining pavement. The minimum joint depth for the gutter shall be two (2) inches and one (1) inch for the curb. The curb and gutter may be jointed instead of sawed provided the stated joint depths are obtained. If the curb and gutter is adjacent to bituminous pavement it shall be jointed at fifteen (15) foot intervals. The sawing of the curb and gutter shall commence within four (4) hours of the start of the pour unless otherwise directed by the Design Engineer. Sawing shall continue until all joints are completed. Asphaltic type expansion joints one (1) inch thick shall be placed at all P.C.'s, P.T.'s and R.P.C.'s and at maximum 500-foot intervals.

Test Rolling of Sub-grade and Base Course: The contractor will provide at its own expense a loaded truck and test roll the compacted earth sub-grade in the presence of the Design Engineer or his designee before any sub-base, base, or surface is placed. The truck shall be loaded as follows: 27,000 pounds on two axles and 45,000 pounds on three axles, plus or minus ten percent. The truck shall make one pass over the entire length of each traffic lane to be constructed. Areas that show rutting, cracking or rolling will not be accepted. The contractor will re-compact and/or reconstruct the sections that fail and test roll again for acceptance. When bituminous or concrete surface courses are to be placed over an aggregate base, the base shall be test rolled prior to placement of the surface course.

Portland Cement Concrete Pavement: Sawed transverse joints shall be not greater than fifteen (15) feet apart and shall conform to the details in the plans. All equipment and labor required to perform the necessary jointing operation shall be available to begin sawing no later than four (4) hours after the paving operation begins, unless excess raveling occurs. The contractor shall provide the necessary equipment and labor needed to complete the sawing at the same rate per longitudinal foot as the paving operation. The contractor shall stop the paving operation at 4:30 P.M. unless approved otherwise by the Director. Sawing shall continue at the same rate as stated above until the sawing is complete or the pavement has set. Trucks and mixer trucks will be allowed to operate on the sub-grade; however, should the subgrade show any signs of distress, all operations will cease until these items are corrected to the satisfaction of the Director. Curb and gutter is to be formed in a separate operation from the pavement. Monolithic curb is permitted. Final finish shall be Type B, as described in the Standard Specifications for Road and Bridge Construction.

Portland Cement Concrete Driveway Pavement: Pavement shall be a minimum of six (6) inches (150 mm.) in depth. Sawed transverse and longitudinal joints shall conform to the following table:

Driveway Width at Widest Point	No. of Longitudinal Saw Cuts
0' - 12'	0
12' - 24'	1
24' - 36'	2

Maximum Driveway Length	Number of Transverse Saw Cuts
0' - 12'	0
12' - 24'	1
24' - 36'	2

The sawed joints shall be spaced evenly throughout the driveway. The joints shall be 1/8 inch wide with a minimum depth of T/4 and the depth of the pavement and sealed with the same material and in the same manner as Portland Cement Concrete Pavement. 3/4" thick expansion joints shall be placed between driveway pavement and sidewalks and between driveway pavement and curb and gutter.

4.4 DESIGN OF PRIVATE ALLEYS

a. *May be required*. Private alleys may be required to serve multifamily residential, commercial and industrial uses if necessary for safe pedestrian and vehicular traffic.

b. *Extensions and turn arounds*. All private alleys shall be extended to connect with streets, except that for reasons of traffic and pedestrian safety, alleys that might otherwise be interconnected with commercial or industrial primary or secondary streets may be required to be terminated with a permanent turn-around as recommended by the Zoning Administrator and Director.

c. *No public alleys*. No public alleys shall be permitted.

d. *Construction standards*. All private alleys shall be constructed in accordance with the minimum construction standards for streets set forth in this Manual.

CHAPTER 5: DESIGN AND CONSTRUCTION STANDARDS FOR SIDEWALKS AND PEDESTRIAN WAYS AND TRAILS

5.1 INTRODUCTION

Sidewalks shall be installed in all subdivisions regardless of size, unless a waiver is granted by the Corporate Authorities at the time of submission of a preliminary plat. Sidewalks shall be designed and constructed in accordance with the requirements set forth in this Chapter.

Trails may be installed in subdivisions in locations and alignments according to the comprehensive plan and may be installed in additional locations that compliment the trail system of the Village.

5.2 DESIGN STANDARDS

A. *Sidewalks and mid-block walks.*

1. Sidewalks shall be provided on both sides of each street in residential subdivisions, except when the Administrative Review Committee defers this requirement in accordance with Section 24(b)(3)b. of the Subdivision Code in connection with a minor subdivision.

2. Sidewalks shall be required on both sides of each street in commercial subdivisions, except when the Administrative Review Committee defers this requirement in accordance with Section 24(b)(3)b. of the Subdivision Code in connection with a minor subdivision.

3. Sidewalks shall be required on one side of each street within industrial subdivisions, except when the Administrative Review Committee defers this requirement in accordance with Section 24(b)(3)b. of the Subdivision Code in connection with a minor subdivision.

4. All sidewalks shall be located within dedicated street rights-of-way and shall be roughly parallel to the adjacent street except for sidewalks considered as part of a planned unit development or a mobile home park.

5. Where the street design and parallel sidewalk arrangement does not provide reasonable direct access to and from school sites, park sites, neighborhood commercial centers and other pedestrian traffic generators, mid-block sidewalks may be required in accordance with a recommendation of the Plan Commission to permit more direct pedestrian access to and from such sites. When required, such mid-block sidewalks shall be placed approximately equidistant between the two (2) parallel streets and shall run the depth of the block to interconnect with other

sidewalks. Such mid-block sidewalks shall be located within an easement of not less than ten (10) feet in width.

B. Sidewalks shall be not less than five (5) feet in width; except adjacent to primary and secondary streets and in the CB, Central Business District, where sidewalks shall not be less than six (6) feet in width.

C. All sidewalks shall conform to all current standards of the Americans With Disabilities Act and the CCG&TP.

D. Trails shall be designed in accordance with the current AASHTO Geometric Design Book and the CCG&TP. Trail pavement widths shall be 10-12 feet (3m or 3.6m).

E. Transverse slope on sidewalks should not be less than 2% nor greater than 4%.

5.3 RIGHT-OF-WAY DEDICATION

All sidewalks shall be installed in dedicated public right-of-way or public easements. Such dedication or easement shall extend not less than one foot on each side of the sidewalk or pedestrian way surface. The back of the sidewalk shall be located six (6) inches off of the right-of-way line unless otherwise directed by the Director.

All trails shall be installed in dedicated public right-of-way or public easements a minimum of 26-feet in width.

5.4 SCHEDULE OF INSTALLATION

The schedule for installation of sidewalks shall be set forth as of the time of final platting or as otherwise provided in Section 24 of the Subdivision Code. The schedule shall be such that sidewalks shall be installed adjacent to individual lots before occupancy is granted for the structure on such lot.

5.5 SPECIFICATIONS AND SPECIAL PROVISIONS

All sidewalks and trails shall use materials and be installed in a manner meeting or exceeding the requirements, standards and specifications contained in the Standard Specifications for Road and Bridge Construction, the CCG&TP and all special provisions as follows:

1. Sidewalk Thickness--All sidewalks shall be a minimum six (6) inches thick in areas zoned commercial or industrial.

2. Transverse Expansion Joints: Asphaltic transverse expansion joints, ½ inch thick, shall be placed in the sidewalk at intervals not to exceed 100 feet. No additional compensation will be allowed for wire mesh and expansion joints.

3. Wheelchair Ramps: Wheelchair ramps shall be constructed in accordance with the Standard Specifications for Road and Bridge Construction.

4. Trail Pavement Thickness: All trail pavement shall be a minimum four (4) inches of bituminous asphalt surface course on six (6) inches aggregate base course. Where appropriate

and approved by the Director, a six (6) inch thick portland cement concrete pavement may be installed. When portland cement concrete pavement is used, all contraction joints shall be sawed in accordance with the provisions of this Manual in connection with portland cement concrete driveway pavement.

CHAPTER 6: DESIGN AND CONSTRUCTION STANDARDS FOR STORM SEWERS, DRAINAGE WAYS AND STORM WATER DETENTION FACILITIES

6.1 INTRODUCTION

All subdivisions, regardless of size within the corporate limits or under the control of the Village, shall include a storm water drainage system designed in such a way as to meet the requirements of this Chapter.

6.2 APPLICABILITY

This Chapter applies to all land altering projects, including all construction activity. Any land alteration within the jurisdiction of this Manual must be accomplished in conformity with the stormwater requirements set forth herein. "Land alteration" shall generally refer to any on site or offsite action taken relative to land which either:

A. Changes the contour;

B. Increases the runoff rate;

C. Changes the elevation;

D. Decreases the rate at which water is absorbed;

E. Changes the drainage pattern

F. Creates or changes a stormwater facility;

G. Involves construction, enlargement, location or relocation of any building on a permanent foundation;

H. Increases the delivery of point or non-point pollution to streams;

I. Relocates, encloses, or alters a stream or open channel stormwater conveyance;

J. Creates an impoundment.

6.3 STORMWATER MANAGEMENT; STORM SEWERS AND OTHER DRAINAGE FACILITIES

A. **Storm sewers**. All new streets shall be constructed with inlets and underground drainage facilities with sufficient design capacity to transport surface water falling or draining onto the streets in a minimum ten-year storm reoccurrence period under the projected final stage of development. Sufficient inlets shall be provided so that water will not drain across the

crown of any street or flow in the gutter for more than three hundred (300) feet. The Design Engineer shall submit calculations showing compliance with these regulations.

1. The Director may approve alternate drainage systems if a detailed engineering study performed by an Illinois registered professional engineer demonstrates that the alternate drainage system provides a level of service equal to the standard required without increasing maintenance and operating costs to the Village.
2. Storm sewer service connections shall be provided for each lot for all developments.
3. The Developer shall maintain temporary drainage courses and structures that are not in the public right-of-way and/or are not part of the proposed plat which are necessary to protect the public from flood risk until they are replaced with permanent facilities. Maintenance of such facilities shall be assigned according to Section 6-3C of this Chapter.
4. When an existing drainage course in the area of the proposed development abuts an existing closed conduit system, the Developer shall extend the existing conduit system in full compliance with this Chapter.
5. No plat of any development shall be approved unless the Developer provides for, and guarantees the construction of, a storm sewer system adequate to serve the needs of the area when it is fully developed as proposed in the area general plan or if no area general plan is required the area covered by the development plat. The Director shall approve the location and design of the storm sewer system.

   Stormwater management facilities shall be designed to facilitate the effective and efficient operation of stormwater facilities of adjacent areas of the same watershed and to minimize operation and maintenance costs.

B. **Stormwater management plan**. No development shall be approved unless the Director approves a stormwater management plan which attenuates the acceleration of runoff due to development. For the purposes of this Section, a stormwater management plan means a report, plans and documents which identify the water which naturally flows to, from and through the development, the means of controlling the stormwater runoff release from the development, and the storage potential provisions for the anticipated excess stormwater runoff.

1. A stormwater management plan is required for all developments which meet the following criteria:
   a. Residential developments of five (5) or more acres gross aggregate land area, including roads, utility rights-of-way, and any other dedicated lands. Residential developments of less than five (5) acres if the amount of impervious surface is greater than fifty (50) per cent of the area of development.
   b. Nonresidential developments of two (2) or more acres gross aggregate land area including roads, utility rights-of-way, and any other dedicated lands. Nonresidential developments of less than

two (2) acres if the amount of impervious surface is greater than fifty (50) per cent of the area of development.

c. Developments of less than two (2) acres located in the CB Central Business Zoning District shall be exempt from these regulations.

2. The following definitions shall apply to the stormwater management plan:

Detention facility means any structure which is designed to collect and store surface water for subsequent gradual discharge.

Drainage facility means any or all components of a drainage system.

Dry *bottom reservoir* means an earthen detention basin constructed so that it drains completely after the rainstorm and associated flows subside.

Excess stormwater runoff means that portion of stormwater runoff resulting from the proposed land use and which exceeds the runoff from the existing land use for a storm with a five-year average recurrence interval.

Protected channel means a channel which receives stormwater discharge and is constructed of pavement, rip-rap or manmade materials to reduce the potential for erosion.

Safe storm drainage capacity means that capacity of the collection system which keeps the hydraulic gradient below the points of stormwater collection on abutting land served.

Stormwater channel means a natural or manmade open watercourse with definite bed and banks which periodically or continuously contains moving water, or forms a connecting link between two (2) bodies of water.

Stormwater runoff means that fraction of the water resulting from precipitation which flows from the served land during and immediately after the rainfall.

Stormwater runoff release rate means the rate at which stormwater runoff is released from dominant to servient land or, in the case of detention, the discharge rate from the detention facility.

One hundred-year rainfall means a precipitation event having a one (1.0) per cent chance of occurring in any one calendar year.

Fifty-year rainfall means a precipitation event having a two (2.0) per cent chance of occurring in any one calendar year.

Twenty-five-year rainfall means a precipitation event having a four (4.0) per cent chance of occurring in any one calendar year.

Ten-year rainfall means a precipitation event having a ten (10) per cent chance of occurring in any one calendar year.

Two-year rainfall means a precipitation event having a fifty (50.0) per cent chance of occurring in any one calendar year.

Wet bottom reservoir means an earthen detention facility designed to have a permanent pool of water after the precipitation and associated flows have subsided.

3. Preparation of stormwater management plan. All computations, plans and specifications related to the implementation of this Chapter must be prepared and sealed by a professional engineer registered in the State of Illinois.

4. Plan requirements. Unless the Director excludes specific items, the stormwater management plan shall include, but not be limited to, the following information:

    a. A topographic map of the project site, and a drainage basin limits map and other pertinent data necessary to define flows entering the development from adjacent land. Maps shall be of suitable scale and contour interval, and include the extent of floodplains, calculated high water elevations, the shoreline of existing lakes, ponds, swamps and detention basins as well as their inflow and outflow structures, if any. Maps shall also include the fifty (50) and one hundred (100) year floodplain elevations for any streams for which detailed flood studies have been prepared by the Illinois Division of Water Resources or federal agencies. Floodway limits should also be shown as defined by available studies.

    b. The locations and invert elevation of all existing sanitary and storm sewers in the development area or in adjacent areas.

    c. Detailed calculations of runoff anticipated for the developed site which indicate design volumes and existing and proposed runoff rates for each portion of the watershed tributary to the storm drainage system. The Design Engineer shall submit the calculations used to determine such runoff volumes and rates as well as a restatement of the criteria used throughout the calculations. Calculations are to be provided for a five-year storm, fifty-year storm and a one hundred-year storm event.

    d. A site plan of the proposed storm water management system including the location and size of all drainage structures, storm sewers, channels and channel sections, detention basins, outlet lines, and analyses of the effect of said improvement on the receiving outlet pipe, the associated channel and high water elevations.

    e. The slope, type, and size of all existing and proposed storm sewers and other waterways.

    f. A plot or tabulation of storage volumes with corresponding water surface elevations and of the basin outflow rates for five-year, fifty-year and one hundred-year water surface elevations for all detention basins. If development work is to be performed in

phases, such tabulations should be performed independently for each phase.

g. Design hydrographs of inflow and corresponding outflow for both the fifty-year and one hundred-year design runoff events for the site's projected final stage of development and the calculated five-year, fifty-year, and one hundred-year peak inflows from the development under natural, existing conditions and under the projected final stage of development for all detention basins.

h. A profile and one or more cross sections of all existing and proposed channels or other open drainage facilities, showing existing conditions and the proposed changes thereto. In addition, the Design Engineer shall provide high water elevations expected from stormwater runoff under the controlled conditions called for by these regulations and the relationship of structures, streets, and other utilities to such channels.

i. An engineering cost estimate detailing and explaining all construction costs associated with the stormwater management plan.

5. Design criteria for the stormwater management plan:

a. Methods of determining stormwater runoff rate and volume. Drainage and storage facilities shall be designed using one of the methods of calculating of runoff discharge rate and total volume given below. The Director may approve other calculation methods.

TR-20

Modified Rational Method

TR-55

Quick TR-55

Pond-2

b. Release rate. The controlled release rate of stormwater runoff from developments subject to this Section shall not exceed the subject property's rate of runoff from the natural undeveloped rate for a two (2) storm with a maximum run-off coefficient of C=0.15. The design rate at which stormwater runoff is delivered to a designated stormwater storage area shall be based on a hundred-year storm after full development. The storm sewers, however, shall be designed to deliver a runoff resulting from a ten-year storm, flowing under gravity conditions. The balance of runoff is to be delivered by overland flow or in the storm sewers under surcharge conditions.

In the event the natural downstream channel or storm sewer system is inadequate to accommodate the required release rate, the allowable release rate shall be reduced to that rate permitted by the capacity of the downstream channel or storm sewer system without overflowing its banks or surcharging of sewers.

c. Development design. Streets, blocks, lots, parks, and other public grounds shall be located and designed to give a continuous surface relief path avoiding the flooding of buildings and structures, and to preserve and utilize existing and planned streams, channels, and detention basins. Whenever possible, streams and floodplains shall be located within parks and other public grounds.

d. No drainage facility for the purpose of the detention or retention of water shall be constructed within a distance of ten (10) feet plus one-and-one-half (1 1/2) times the depth of any drainage facility adjacent to the right-of-way of any public street without the written permission of the Director or other authority having jurisdiction over the public street. No earthen berm such that the toe of a berm will be nearer than ten (10) feet to the right-of-way of any public street without the written permission of the Director or other authority having jurisdiction over the public street.

6. Detention facilities. The increased stormwater runoff resulting from a proposed development may be stored in appropriate detention facilities including wet bottom reservoirs, dry bottom reservoirs and parking lots. The following standards shall govern the design of such detention facilities:

a. Storage volume. The volume of storage capacity provided in detention facilities shall be sufficient to control the excess stormwater runoff, resulting from a hundred-year rainfall as published by the Illinois State Water Survey in Technical Letter 13.

b. Release rate. At no time shall the stormwater runoff release rate exceed the allowable release rate required in Section 6.3.B.5.b of this Chapter.

c. Release velocity. Detention facilities shall release storm water at a non-erosive velocity. Protected channels receiving detention discharge shall incorporate features to reduce velocity to non-erosive levels where such discharge enters the unprotected channel.

d. Spillway. An emergency spillway shall be provided to permit the safe passage of runoff generated from a one hundred-year storm or greater under developed conditions.

e. Freeboard. Wet and dry bottom reservoirs shall have adequate capacity to contain the storage volume of tributary stormwater runoff in a hundred-year storm with at least one foot of freeboard above the water surface.

f. Physical aspects of wet and dry bottom reservoirs. To ensure public safety, the protection of the facility, the ease of facility maintenance, facility durability and aesthetics, the following shall be considerations in detention facility design:

(1) The water depth near the perimeter of a storage pool shall be limited. Access restrictions (fence, walls, etc.) may be required if land availability dictates greater water depth.

(2) The amount and geometric shape of available land sites and location of the detention facility will influence depth and side slopes specifications and other design factors.

(3) To facilitate maintenance and reduce safety hazards the side slopes for grassed areas should not be steeper than 1 to 4.

(4) To promote surface drainage for grass mowing and multiple purpose use, grass bottoms in detention basins should be designed with minimum slopes of one per cent.

(5) Provisions should be made to protect the facility from soil erosion under all probable flow conditions imposed by the design storm.

(6) Control devices should be adequately protected from theft and vandalism.

(7) The facility's landscaping should harmonize with the surrounding area.

(8) The design shall facilitate control and removal of debris both in the storage structure and in all inlet or outlet devices.

(9) Inflow and outflow structures, pumping stations, and other structures should be protected and designed to minimize safety hazards.

(10) To promote the facility's durability, longevity and physical appearance construction specifications should require quality materials and workmanship.

(11) The outflow structure shall have an orifice, weir plate or similar control device to contain the basin's outflow at the same release rate specified in Section 6.3.B.5.b of this Chapter.

(12) To minimize debris a debris catcher chamber shall be installed at the inlet end of reservoirs greater than ten (10) acre-feet. For ponds smaller than ten (10) acre-feet a manhole constructed two (2) feet deeper than the inlet and outlet pipes may serve as a debris catcher.

g. Dry bottom reservoir construction detail. A dry bottom reservoir should be designed to drain within twenty-four (24) hours after a twenty-five-year rain event, and after associated flows have

ceased. Further, the following construction details shall apply to the design and construction of a dry bottom reservoir.

(1) Grass and other vegetation used to line the bottom and sides of the reservoir shall be able to sustain a minimum thirty-hour period of inundation.

(2) Whenever possible, the dry-bottom reservoir should be considered for other land uses during dry periods. Appropriate secondary land uses include: baseball fields, tennis courts, playgrounds and parks.

(3) To expedite drainage, french drains shall be included in any dry bottom reservoir having multiple land uses. Each tile line shall have a clean-out and/or manhole at each end to allow maintenance.

h. Wet bottom reservoir construction details. Wet bottom reservoirs shall be constructed with a permanent pool that is not considered a part of the storage capacity of the reservoir. Only the volume above the permanent pool of water may be included in the drainage calculations.

Considerations to be utilized in design and construction of a wet bottom reservoir are:

(1) When possible facilities should be provided that completely drain the full reservoir, if needed.

(2) The minimum permanent pool depth shall be four (4) feet, except when stocked with fish, in which case, a minimum of twenty-five (25) per cent of the reservoir shall have a normal permanent pool depth of at least eight (8) feet. The desirable edge slope for safety shall be 1 to 8 with a maximum of 1 to 4.

(3) If fishing, boating and other recreational activities are to be allowed, supplementary facilities for these activities should be designed and constructed in accordance with appropriate codes and ordinances.

(4) The design shall minimize problems of erosion due to ice, wind or wave action.

(5) The design shall prevent pollution of the reservoir. The operation and maintenance plan shall require the responsible party to test the reservoir's water quality twice yearly in accordance with Illinois Environmental Protection Agency (IEPA) requirements. Whenever pollutant levels are found to exceed IEPA standards the plan shall require corrective actions to lower levels in compliance with IEPA standards.

i. Parking lot detention. Paved parking lots may be utilized for stormwater detention with the following restrictions:

(1) There should be no more than seven (7) inches of water depth in remote areas of the parking lot or four (4) inches in heavy traffic areas under design storm conditions.

(2) The parking lot may not violate appropriate provisions of other ordinances governing their design and operation.

j. Other detention facilities. Upon approval by the Director, other types of detention facilities may be provided to satisfy a part or all of the detention requirements. Alternative facilities will be evaluated on a case-by-case basis.

C. **Construction of drainage facilities**.

1. Construction timing. Detention facilities in a particular basin shall be constructed in the early stages of development to minimize excess flow during construction, and to collect sediment, top soil and other construction related materials which could flow into the drainage system during development.

Upon the completion of the land development, the detention facilities are to be restored to the original cross section illustrated on the development plans which the Director previously approved. The Director shall approve the manner and disposition of any deposits removed from the facility. The bond for development will not be released until the Director has certified that the detention facility has been restored to its original design cross section.

If parking lots or other detention facilities are not available at the initiation of construction, the developer shall provide alternatives to minimize flooding and degradation of water quality until the permanent detention facilities are constructed.

2. Performance standards.

a. Stormwater channel location. In only a few special occasions will stormwater be allowed to be transported in aboveground channels within a development. For example, these channels may be centered on lot lines or entirely within the rear yards of a single row of lots or parcels.

In each case, a drainage easement with sufficient width to facilitate maintenance and design flow shall be provided and illustrated on the plat. The plat shall also include restriction on use of the easements so that the channel is free and clear of all permanent and temporary structures, trees, bushes and other vegetation.

b. Storm sewer outfall. The storm sewer outfall shall be designed to adequately protect against erosion and scouring by means of energy dissipaters, gabions, rip-rap, falls, or any approved alternatives by the Director.

c. Manholes. All utility manholes, except storm sewer manholes constructed in an area designed for the storage or passage of storm water, shall be provided with a water-tight manhole cover.

3. Cooperative drainage structures. Whenever possible, developers are encouraged to construct storage facilities which serve more than one development. In cases where this is deemed beneficial, the Village may consider and determine the terms and conditions of a recapture agreement to establish financing and contractual repayment arrangements for the construction of a detention/retention facility designed to serve the subject development and adjoining properties. Any such agreement is subject to the approval of the Corporate Authorities. If the development is outside the corporate limits of the Village, such reimbursement shall be made when the entire development is annexed or in compliance with other terms and conditions approved by the Corporate Authorities.

D. **Easements and access**. If the Village has agreed to assume ownership, maintenance and operation of detention facilities, permanent easements for the detention and conveyance of storm water, including easements of access to structures and facilities, shall be dedicated to the Village.

If another public body, i.e. Park District, Drainage District, etc. has agreed to assume ownership, maintenance and operation of any such detention facilities, or any part thereof, and the Corporate Authorities has approved an agreement, as described in E below, providing for said ownership, maintenance and operation, then permanent ownership and/or easements shall be granted to the responsible public body. If a private corporation, e.g. developer, maintenance corporation, homeowners associations, etc. is to provide ownership, maintenance and operation of said detention facilities or any portion thereof, and the Corporate Authorities has approved an agreement for such ownership, maintenance and operation, then the property shall be properly deeded to such private corporation.

The Village, in all cases, will be granted perpetual access to all sites.

E. **Bonds and maintenance assurances**.

1. Upon approval of the stormwater management plan, but before the issuance of a building permit or recording of the subdivision plat, the Director shall require the applicant to post a bond in accordance with Section 37 of the Subdivision Code.

2. Maintenance agreement. The developer shall provide for permanent maintenance and operation of the detention facilities, piping and appurtenances in the following manner and subject to the approval of the Corporate Authorities. The stormwater management plan shall describe the facilities completely, with a complete set of plans and specifications, and shall

include in the operations and maintenance section the minimum activities listed below:

a. Maintenance of storm water facilities such as pipes, channels, outflow control structures, and pumps;

b. The frequency, responsible party and source of funds for dredging operations of channels and basins to remove sediment accumulation;

c. Debris removal from channels and dry and wet basins;

d. "Housekeeping" maintenance, such as grass cutting, weed removal, and fence repair;

e. Mosquito control, e.g., spraying, fish stocking, and vegetation control;

f. Periodic inspection of facilities to check for needed maintenance items.

The management plan shall designate a public or private organization which will assume ownership, maintenance and operation of the detention facilities and will be responsible for performing all activities needed for proper operation. The Village may consider assuming ownership of the facility if the following criteria are met:

(1) The development is located within the Village limits.

(2) The facility is accessible through public rights-of-way or easements.

(3) The facilities are located and sized to minimize the number of facilities or to serve several subwater-sheds if necessary.

(4) The facility is compatible with the surrounding land use.

In any case, public agencies shall reserve the right to refuse responsibility for detention facilities. In such cases a private organization shall be designated. Such private organization shall be established in accordance with Section 22.(a)(10) of the Subdivision Code.

The maintenance plan shall include a signed agreement with the public or private organization which provides for perpetual operation and maintenance of the facilities, and shall provide for access to said facilities, in accordance with this subsection.

Construction of the detention facilities and related appurtenances may not begin until the Director has approved the stormwater management plan, and shall be performed prior to construction of other facilities in the basin, unless approved otherwise, in accordance with this subsection.

F. **Recapture agreements**.

1. When runoff from other areas outside the development necessitates construction of storm sewers of a larger size or greater depth than is required by this Chapter, the Village, with the developer and/or adjacent benefitting property owners, may consider and determine the terms and conditions, and the enactment of a recapture agreement to set forth the financing and contractual repayment arrangements for the installation of any oversized storm sewers. Such recapture agreements require the approval of the Corporate Authorities. If the development is outside the Village limits, such reimbursement shall be made when the entire development is annexed or in compliance with other terms and conditions approved by the Corporate Authorities.
2. The developer will pay the cost of constructing and installing all elements of the drainage facility required to manage the existing stormwater runoff being accepted on site. The Director shall approve the location, and sizing of the drainage facility elements in accordance with generally accepted engineering and drainage solutions.
3. Secondary drainage facilities shall be required when primary drainage facilities (storm sewers) are not adjacent to the lot to provide for individual storm sewer service connections as required under part C above. The Director shall determine the need for the installation of the facilities and, when required, the developer shall install the facilities in accordance with Section 6.5N.

G. **Obstruction of drainage**. Disposal of grass clippings, trash, debris, obstructions or unwanted materials into the storm sewers, storage basins, or within or along stormwater channels or in adjacent floodplain areas which may wash into sewers and channels is prohibited.

6.4 MINIMUM REQUIREMENT IN FLOOD-PRONE AREAS

The Village Inspector or the Director shall review all developments pursuant to Article XIV of Chapter 10 of the Rantoul Code to assure that proposals are consistent with the need to minimize or eliminate flood damage. Utilities such as sewer, gas, electric and water shall be located so as to minimize or eliminate flood damage. The developer's engineer shall show such special treatment to utilities on a utilities plan when any part of a proposed development lies within a flood hazard area pursuant to Article XIV of Chapter 10 of the Rantoul Code.

6.5 STORM SEWER AND SECONDARY DRAINAGE FACILITIES

A. Storm sewer systems shall be constructed in accordance with the Standard Specifications for Road and Bridge Construction.

B. Storm sewer pipe material shall be of the type, class and strength given in the Standard Specifications for Road and Bridge Construction and specifically approved by the Director.

C. Pipe shall be laid in a straight line and grade between structures except in unusual situations as specifically approved by the Director.

D. Minimum size of pipe between inlets in gutter and main sewer lines shall be twelve (12) inches.

E. Manholes shall be provided at all junctions of storm sewers and at locations where there is a change in grade.

F. The maximum distance between storm sewer manholes shall be as follows:

Pipe Diameter	**Distance between Manholes (Center to Center)**
Twelve (12) inch to twenty-four (24) inch	350 feet
Twenty-seven (27) inch to fifty-four (54) inch	450 feet
Sixty (60) inch and over	600 feet

G. Manholes shall be leak-tight and may be constructed of precast concrete units, concrete masonry units or cast-in-place concrete. Manholes which are greater than five (5) feet in depth, as measured from the invert of the manhole to the top of the masonry shall be Type A manhole, constructed in accordance with the details shown on the Highway Standards. Manholes which are less than five (5) feet in height shall be constructed without the use of a cone in the top section. The top shall be a precast reinforced slab six (6) inches in thickness with a twenty-four-inch centered opening offset to the inside wall of the manhole. Steps shall be provided in all manholes.

H. Frames and lids for manholes shall be Type 1 in accordance with the "Highway Standards."

I. The minimum diameter of manholes shall be as follows:

Outlet Pipe Diameter	**Manhole Diameter (Inside)**
Eighteen (18) inches and under	Forty-eight (48) inch
Twenty-one (21) inches to forty-two (42) inches	Sixty (60) inch
Forty-eight (48) inches and over	Actual diameter of outlet pipe plus eighteen (18) inches or a reinforced concrete pipe tee manhole as approved by the Director.

J. Manhole and inlet bottoms shall be channeled to conform accurately to the sewer grade and shape and shall be brought together smoothly with well rounded junctions.

K. Inlets shall be Type A in accordance with the Highway Standards.

L. The invert of temporary surface outlets, when permitted, shall be at least six (6) inches above the flow line of the adjacent ditch. Erosion protection shall be required at the outlet and shall be approved by the Director. Temporary pumping stations, when required, shall be approved by the Director.

M. No water from footing tiles or other source shall be pumped or discharged if such water may reasonably be expected to drain onto the surface of the street. Where possible, such water discharge pipes may be connected to discharge directly into the installed underground drainage facilities.

CHAPTER 7: DESIGN AND CONSTRUCTION STANDARDS FOR SANITARY SEWERS

7.1 INTRODUCTION

All subdivisions and developments, regardless of size within the corporate limits or under the control of the Village, shall include provisions for the construction of sanitary sewage facilities designed and constructed in accordance with this Chapter.

7.2 GENERAL REQUIREMENTS

All subdivisions shall be designed so the proposed sanitary sewer system accomplishes the following:

A. Extends interceptor sanitary sewers through the proposed subdivision to serve upstream abutting properties in the natural drainage area;

B. Provides sanitary sewer services with separate service connections terminating not less than two feet inside the property or easement line of each proposed lot of record;

C. Has adequate capacity to drain the portions of the subdivision proposed to be served by the sanitary sewer and any property upstream thereof which drains into or may drain into that sanitary sewer, based on the effluent discharge reasonably expected from development of the type and to the maximum density permitted by the then-existing zoning ordinance of the Village for property within the corporate limits of the Village and the land use element of the comprehensive plan for property outside the corporate limits of the Village;

D. Maintains separation from public water supply system. Wherever possible, sanitary sewer systems along streets shall be located on the opposite side of the street from water mains;

E. Discourages the use of sewage pumping facilities;

F. Permits the use of private sewage disposal systems only in accordance with Section 40-173 of the Rantoul Code;

G. Designed to prevent installation of sanitary sewers in rear or side yard easements; and

H. Meet requirement for pump stations, if required.

7.3 DESIGN STANDARDS

A. All sanitary sewer construction shall be performed in accordance with the Standard Specifications for Water and Sewer Main Construction in Illinois, the rules and regulations of the Illinois Environmental Protection Agency and the GLUMRB.

B. No sanitary sewer main shall be less than eight (8) inches in diameter.

C. In general, sanitary sewers shall be sufficiently deep so as to receive sewage from basements (if any) and to prevent freezing.

D. All sanitary sewers shall be so designed and constructed to give average velocities, when flowing full, of not less than two (2) feet per second. Mean velocities greater than fifteen (15) feet per second are not allowed except under extreme circumstances and special provision shall be made to protect against displacement by erosion and shock.

E. Sanitary sewer pipe material shall conform to the Standard Specifications for Water and Sewer Main Construction in Illinois or as otherwise specifically approved by the Director.

F. Manholes shall be installed at the end of each line; and at all changes in grade, size, or alignment of sewer mains.

G. The maximum distance between sanitary sewer manholes shall be three hundred fifty (350) feet for sewers with diameters of fifteen (15) inches or greater.

H. The minimum diameter of manholes shall be forty-eight (48) inches.

I. Manholes shall be leak-tight and may be constructed of pre- cast concrete units, concrete masonry units or cast-in-place concrete. Such manholes shall be Type A as specified in the Highway Standards with steps provided in all manholes.

J. The invert of any service connection made at manholes must enter the manhole between the top and centerline of the main sewer line and be channeled down to the center of the main sewer line.

K. Manhole bottoms shall be channeled to conform accurately to the sewer grade and shape and shall be brought together smoothly with well rounded junctions.

L. The openings through which pipes enter the manhole structure shall be completely and firmly filled with jointing materials consisting of mortar and/or non-shrinking grout so as to prevent leakage along the outer surfaces.

M. Manhole castings shall be watertight with concealed Type F pick hole lids to prevent intrusion of storm water runoff into the sanitary sewer system. The top of the casting shall be set two (2) inches above the finished ground or flush with the paved surface.

N. Manholes shall be constructed within the dedicated rights-of- way where existing back lot line sanitary sewers cross proposed streets.

O. Each lot within the development must be provided with a minimum six-inch service sewer connection into the main line. The connection into the main shall be made with a six-inch wye fitting of the same materials and size of the main sanitary sewer line. For residential developments, the wye shall normally be placed within the lower fifty (50) per cent of the lot frontage of the sewer flow direction.

P. The service sewer pipe shall be extended from the main sewer line to the property line at a point no closer than five (5) feet to any lot corner. All service connection end locations shall be staked with a wood leader at least one inch by two (2) inches extending from the service sewer to a point at least one foot above the finished ground line.

Q. Any service wye which is ten (10) feet or more deep from the finished grade shall be equipped with a riser pipe to bring the service to within seven (7) feet of the finished grade. Any service wye with a riser pipe four (4) feet in length or longer shall have the wye encased in six (6) inches of portland cement concrete having a minimum strength of two thousand five hundred (2,500) pounds per square inch at twenty-eight (28) days.

R. Encasement of wyes is mandatory in all cases in which the invert of the main sewer line is more than ten (10) feet below the existing or proposed grade line. Care shall be taken to minimize excess concrete which would interfere with future repairs.

S. In the absence of a wye, connection to the sanitary sewer main or lateral shall be made by one of the methods indicated below:

1. Installation at a manhole.

2. Circular saw-cut of sanitary sewer main by proper tools (sewer-tap machine or similar), and proper installation of saddle connection in accordance with the manufacturer's recommendations which are to be filed with the Director prior to installation. Saddle connection is not permitted for eight-inch diameter or lesser diameter pipe.

3. Using pipe cutter only, neatly and accurately cut out desired length of pipe for insertion of proper fitting. Remove both hub and bell ends, or other compressions couplings from the wye branch fitting to allow the wye branch to be inserted with no more than a total of one- half (1/2) inch gap. Use "mission" couplings, or similar couplings, and shear rings and clamps to fasten the inserted fitting and hold it firmly in place. Work shall be encased in concrete having a minimum thickness of four (4) inches and extending eight (8) inches beyond the limits of the pipe removed.

If any other method is desired, the developer shall submit such method to the Director for review and approval before the connection is made. Indiscriminate breaking of the sanitary sewer main pipe is not allowed.

T. After the wye branch has been inserted and jointed by the methods in part S immediately above and before any additional fittings have been placed in the service line, the installation shall be approved by the Director. After approval is granted, the contractor shall encase the work area as specified herein.

U. All sanitary sewer lines shall be televised between manholes by the Design Engineer before acceptance by the Director. A copy of such televised inspection shall be provided to the Director.

V. Prior to any connection to a main sewer line, the Design Engineer shall file a certificate with the Director certifying that the required improvements were inspected by the Design Engineer during actual construction and that said improvements were constructed in substantial accordance with the approved engineering plans and specifications. Any such certificate shall include the following:

1. The difference between the top of the sewer line and the level of the ambient water table.

2. The infiltration, exfiltration, or one pound air pressure drop rates of each portion tested and the allowable rates as specified in the Standard Specifications for Water and Sewer Main Construction in Illinois.

3. A statement that all reaches between manholes shall be capable of passing leakage tests as required by this Chapter.

W. Backfill shall be placed in accordance with the Standard Specifications for Water and Sewer Main Construction in Illinois.

CHAPTER 8: DESIGN AND CONSTRUCTION STANDARDS FOR WATER DISTRIBUTION AND SUPPLY SYSTEM

8.1 GENERAL REQUIREMENTS

All developments shall be designed so the proposed water distribution and supply system is in accordance with the Water Distribution System Master Plan of the Village and accomplishes the following:

A. Extends water mains through the proposed development to serve otherwise un-served abutting properties.

B. Provides adequate capacity including maximum fire flows to serve all the lots proposed to be served by the line, plus any additional extensions to the main which might be made to develop property in the same pressure zone with the type of uses and to the maximum density permitted by the then-existing zoning ordinance of the Village with respect to the property within the corporate limits and the land use element of the comprehensive plan for proposals outside the corporate limits.

C. Permits potable water private wells only in the following instances:

1. Outside the corporate limits,

2. In complete conformance with Illinois Environmental Protection Agency and Illinois Department of Public Health standards.

3. If a public water supply is not reasonable available.

D. Maintains separation from public or private sewer or septic systems.

E. Loops water mains so as to avoid dead-end.

F. Private water supply systems, including but not limited to wells, holding tanks, and piping, which are no longer in active use shall be abandoned in accordance with all State, County, and Village regulations. The Owner of the property shall provide documentation to the Director that the system has been properly abandoned.

8.2 DESIGN STANDARDS

A. Provide water service and an individual shut-off valve and box located in the public right-of-way between the sidewalk and the back of curb for each lot. In developments with private streets a shutoff valve and box shall be located not more than 6 ½ feet from the back of curb or the water main, whichever is greater. A service line stub extended to a point + two (2) feet from the property line or easement line which, upon recording of the final plat, will become a

lot of record. A water service connection of type "K" copper must be provided for and centered on each lot of record in residential subdivisions. Size and location of service connections in commercial or industrial subdivisions is to be determined and installed only if a specific use is known beforehand and in accordance with the Illinois State Plumbing Code.

1. A water service line crossing multiple property boundaries shall have recorded easements on property deeds such that the water service line may only be used by one property, dwelling, or rental unit

2. Whatever means are necessary to ensure that a water line cannot be accessed by more than one property, dwelling, or rental unit must be taken. In order to be considered a service line by the Illinois Environmental Protection Agency (“Illinois EPA”), a water line must only be connected to one property, dwelling, or rental unit. If a service line is at any time connected to more than one property, dwelling, or rental unit, the Illinois EPA will consider the line to be a water main that must be permitted by the Illinois EPA and constructed in accordance with the Illinois Environmental Protection Act (Act), Board regulations and Illinois EPA regulations

B. Water mains shall be so designed so that looped water mains do not reconnect to the same source main unless there is no alternative whereupon the connections must be a minimum of 500 feet (150m) apart or have a valve located between the two connections.

C. Provide fire hydrants at each intersection of two or more streets or roadways, and provide additional steamer hydrants so that hydrants are spaced at intervals not exceeding four hundred (400) feet in areas zoned single family and two family residential, and not exceeding two hundred fifty (250) feet in areas otherwise zoned.

D. Hydrants located at other than street intersections are to be positioned adjacent to the side-yard lot line of two adjoining properties so as to achieve the nearest approximation of hydrant spacing interval required for a specific zoning designation. If pipe joints or other utility conflicts prevent locating at the nearest side-yard lot line, proceed to the next nearest lot line.

E. Hydrants are not to be located closer than ten (10) feet from any light standard, tree, signpost, or other permanent structure that would impede access to the hydrant or reduce its visibility.

F. All in-line valves shall be installed at intervals not to exceed six hundred (600) feet.

G. Valves shall be placed at each branch connection and an in-line valve shall be located near the branch upstream or downstream from each branch.

H. Provide water mains having an inside diameter with a minimum of eight (8) inches nominal pipe size. All pipes shall be DUCTILE IRON Class 52.

I. Water mains shall not be located closer than ten (10) feet horizontally, or eighteen (18) inches vertically when crossing any public or private sanitary, storm sewer, drain or manhole.

J. If a subdivision is constructed in phases creating a temporary dead-end water main, a valve and fire hydrant must be installed at each temporary terminus.

K. Whenever water mains must enter side yard easements, when the depth of pipe cover exceeds eight (8) feet, and where water mains must cross watercourses, railroads or interstate highways, a valve shall be provided at both ends of the easement or crossing.

L. There shall be no connection or potentially possible connection between the public water supply system and any pipes, pumps, hydrants or tanks from another system whereby unsafe water or other contaminating materials may be discharged or drawn into the public water supply.

M. No water main shall be in rear yard easements.

N. Ductile iron pipe, fittings, and valves shall be encased in polyethylene encasement sleeves that consist of linear low-density polyethylene, 8-mil thickness, Class C (black) conforming to the requirements of AWWA Standards C105/ANSI A21.5-99.

O. All water main materials shall meet or exceed AWWA Standards.

8.3 SPECIFICATIONS AND SPECIAL PROVISIONS

All water mains shall use materials and be installed in such manner meeting or exceeding the required standards and specifications contained in the Standard Specifications for Water and Sewer Main Construction in Illinois, as then modified, supplemented and amended by this Manual below, and the GLUMRB.

Special Provisions Modifying Standard Specifications for Water and Sewer Main Construction in Illinois

DIVISION IV - WATER DISTRIBUTION

Applicable sections of this Division also apply to force main construction.

WATER MAIN TESTING AND DISINFECTION

Leakage Test

When performing a hydrostatic pressure test, all water used must be potable and contain a chlorine residual of not less than 0.2 parts per million of free chlorine or 0.5 parts per million of combined chlorine. The hydrostatic pressure test will be made in accordance with ANSI/AWWA C-600. The hydrostatic pressure shall be 100 psi (690 kpa) for at least one-hour duration and not vary more than 5 psi (35 kpa). Before applying the specified test pressure, the air shall be expelled from the pipe. The allowable leakage shall be determined by the following formula:

$$L = \frac{SD\,P}{133200}$$

L = allowable leakage in gallons per hour
S = length of pipe in feet
D = nominal diameter of pipe in inches
P = average test pressure during test in psig

All visible leaks are to be repaired regardless of the amount of leakage. After the hydrostatic test has been successfully completed, the main shall be flushed attaining the minimum velocity of at least 2-1/2 feet per second (0.75 mps). Flushing must continue until all particulate matter and discoloration has been removed.

Flushing of New Mains

There will be no charge by the Village to the contractor for the water used to flush the mains, provided it is not necessary to flush the mains more than three times. If it is necessary to flush the mains more than three times, then the contractor will be charged by the Village for water used to flush the mains. The contractor shall provide and install any hose necessary to direct the water being flushed away from any area it might damage. The contractor shall take whatever precautions necessary during flushing to prevent ecological damage to any receiving stream, lake or other body of water.

Sampling and Chlorinating Taps

At the extreme ends of the proposed new water main or at locations as directed by the Director, sampling and chlorinating taps shall be installed by the contractor in accordance with the details as shown on the plans. After the chlorinating, the Director shall approve the sampling and testing, and the corporation stop shall be shut off and the piping removed from the corporation stop.

Disinfection of Mains

Disinfection following flushing must be accomplished by either the continuous feed method or slug method. The tablet method is not acceptable and is not to be used except with the express written permission of the Director. A chlorine residual of at least 50 parts per million must be attained initially and 25 parts per million residual present after 24 hours when the preferred continuous feed method is used. If the slug method is used, 300 parts per million must be retained for a minimum of 3 hours, or 500 parts per million retained for 30 minutes. The Director must verify attainment of initial and final chlorine residuals. Disinfecting chlorine doses shall not remain in the pipe for more than 24 hours. In order to provide proper conditions for disinfection following construction, installation option 'a' or 'b' as set forth below must be followed.

a. A minimum of three low density foam swabs shall be introduced into the first unit of pipe being installed and shall remain until the job is completed whereupon the swabs shall be propelled a minimum of three times, or until water is clear, in the direction of the extreme ends of the construction project during the initial filling and flushing process. When a dead-end main is involved the contractor may return the swabs to the point of origin by using another water source with sufficient volume and pressure to propel the swabs, or he may retrieve the swabs at the exit point and reintroduce the swabs at the origin repeating the process until exit water is clear. The process must be performed on every run of pipe from each branch of newly constructed water main. In cases where foam swabs are too large to be retrieved from a fire hydrant, an exit tee or wye and a means of directing the water away from the trench must be provided. All swabs that are used must be accounted for when cleaning is completed.

b. Each unit of pipe, fitting and valve shall be hand swabbed or otherwise mechanically cleaned with a prior approved method before installation, and a cap or plug

inserted in the pipe and retained until just prior to joining with the next unit of pipe. Two caps or plugs must be utilized, one inserted in the last unit of pipe laid and one to be used in the unit of pipe being prepared for installation. The plug or cap in the last unit of pipe installed shall not be removed until the next pipe unit is lowered into the trench and is ready to be inserted. At the end of each working day a watertight plug or cap shall reside in the last unit of pipe or fitting installed, until construction resumes. During installation workman's hands, gloves, rags, tools, or any other foreign object must not be introduced into the open ends of any previously cleaned pipe. If dirt or mud is kicked into or falls into the open ends of the pipe during handling or joining, re-cleaning of the pipe or fitting affected must be performed. Cleaning must be clear water containing a minimum of 10 ppm chlorine, and shall be changed whenever appropriate. Muddy or overly discolored cleaning solutions shall not be used at any time. In the event a project is constructed where a flushing velocity of two and a half feet per second (2-1/2 fps) (0.75 mps) cannot be attained the hand cleaning method must be employed. Where the hand cleaning method is employed, chlorine in the form of high test hypochlorite (HTH) may be introduced into each unit of pipe during construction to satisfy the disinfection requirements, providing a minimum of fifty parts per million (50 ppm) of chlorine is present in both ends of the new main following initial filling.

Bacteriological Testing

After disinfection, bacteriological testing must be done to insure the public health of the main. All samples must be collected by a designated sample collector of the Public Works Department and tested at an IEPA approved laboratory. Water mains that fail the initial bacterial test shall be flushed again before additional sampling is commenced. If the second sample also fails the bacterial test, then disinfection shall be repeated and flushing prior to additional sampling shall be required. If the third sample fails the bacterial test, then the Director shall determine the next step.

8.4 SERVICE LINE REQUIREMENTS

1) The plastic piping must be Copper Tube Size (CTS) 200 lb SDR 9. No other sizing grade size or type is acceptable. CTS is compatible with the tools and fittings that the Village presently uses. Although CTS sized plastic piping has a smaller interior diameter than copper tubing it has similar flow characteristics because plastic tubing is smoother and there are less friction losses.

2) No barbed fittings are allowed. All fittings must be compression fittings with stiffeners. No exceptions.

3) Copper must be installed from the main to the curb stop. No exceptions.

4) All service lines must have a 10 gauge tracer wire secured to the interior plumbing of the residence and to the copper on the village side of the curb stop.

5) If plastic piping is used it must be buried at a minimum depth of 48” to keep the piping from freezing.

6) Residential Services will limited to 1” inch.

CHAPTER 9: DESIGN AND CONSTRUCTION STANDARDS FOR STREET LIGHTS

9.1 DESIGN STANDARDS

All developments shall be designed so that streetlights are provided in such locations and in such manner as to accomplish the following:

A. Provides a street light at every cross or tee intersection and at the end of every cul-de-sac.

B. Provide such additional streetlights as may be necessary so that streetlights are not more than two hundred fifty (250) feet apart.

C. Provide a full cutoff luminaire meeting the following height and illumination standards:

1. LED: An 9,500 lumen luminaire mounted at a 28-foot mounting height to only be utilized on local streets and frontage roads; a 16,400 lumen luminaire mounted at a 30-foot mounting height to only be utilized on primary and secondary streets.

D. In areas zoned for any residential use, street lights shall be affixed to ornamental concrete or aluminum poles.

E. In areas zoned for business or industrial uses, street lights shall be affixed to ornamental or aluminum poles.

F. In areas zoned for residential uses, all wiring shall be underground; in areas zoned for business or industrial uses, underground wiring shall be provided where all other electrical wiring is underground.

G. Private Street Lights – All private streetlights in a residential planned unit development shall meet Village standards of luminance.

9.2 RIGHT-OF-WAY AND EASEMENT DEDICATIONS

All streetlights shall be installed in public easements or dedicated public right-of-way. Such easements and rights-of-way shall be of sufficient width and the streetlights and required wiring shall be installed in such locations therein that will not reasonably interfere with other public utilities. Easements or rights-of-way shall have a minimum width of ten (10) feet.

9.3 SPECIFICATIONS AND SPECIAL PROVISIONS

A. The "American National Standard Practice for Roadway Lighting" as published by the Illuminating Engineering Society-American National Standards Institute as amended from time to time shall govern illumination standards.

B. Electrical work shall conform to the "National Electric Code."

C. Street lighting improvements shall consist of the complete installation of a high pressure sodium vapor lighting system including cut-off or semi-cut-off luminaries or approved alternate, direct burial cable or cable in conduit, controls with the ground rod and meters (supplied by the Village). The system shall be composed of a reasonable number of complete circuits.

D. All buried cable shall be Type U.S.E., G.E. Flamonal or a comparable cable in plastic conduit, as approved by the Director.

E. Conduit shall be two (2) inch inside diameter galvanized steel or schedule 40 polyvinylchloride pipe capped at both ends. It shall be installed two (2) feet below the pavement surface on two (2) legs of all intersections of public streets, six (6) inches toward the street pavement from the inside edge of the sidewalk or as the Director approves.

F. Each circuit in the street lighting system shall be equipped with a circuit breaker, a disconnect switch and a photoelectrical cell to automatically turn the lights on and off at dark and dawn respectively and shall be mounted in an Eagle EL 250 cabinet or approved equal cabinet as the Director approves.

CHAPTER 10: DESIGN AND CONSTRUCTION STANDARDS FOR BRIDGES AND CULVERTS

10.1 INTRODUCTION

Where streets or roadways in or adjacent to property in a subdivision crosses drainage ways, streams or creeks, or where bridges or culverts are otherwise proposed within the confines of a subdivision, or on the roadway adjacent thereto, they shall be designed and constructed in accordance with this Chapter.

10.2 RIGHT-OF-WAY DEDICATION

Bridges and culverts shall be located in dedicated public right-of-way of sufficient width to permit the construction, operation, maintenance and replacement of the improvement within the confines of the easement of dedicated right-of-way without relocation or other unreasonable interference with other public utilities located therein.

10.3 DESIGN STANDARDS

A. Bridges and culverts shall be of width comparable to the abutting street or roadway including sidewalks and trails.

B. In the case of culverts under bridges or bridges over waterways, such crossing shall be of sufficient size to permit the volume of water reasonably expected from a 30-year rain on the area in the natural drainage area flowing into the stream if that area were developed to the types of uses and to the maximum density permitted by the then-existing zoning ordinance with respect to property within the
corporate limits of the Village and the land use element of the Village's
comprehensive plan for the areas outside the corporate limits.

C. Bridges and culverts shall meet or exceed all applicable Village, IDOT, Illinois Department of Natural Resources, other local, state or federal regulatory authority or accepted industry standards, whichever impose the most demanding requirements with respect to the preservation and protection of the public health, safety and welfare.

10.4 SPECIFICATIONS AND SPECIAL PROVISIONS

All bridges and culverts shall be constructed in accordance with all applicable sections of the Standard Specifications for Road and Bridge Construction.

CHAPTER 11: DESIGN AND CONSTRUCTION STANDARDS FOR RAILROAD CROSSINGS

11.1 INTRODUCTION

Where streets or roadways in or adjacent to property in a subdivision crosses a railroad line, or where a railroad line is otherwise proposed within the confines of a subdivision, or on the roadway adjacent thereto, it shall be designed and constructed in accordance with this Chapter.

11.2 RIGHT-OF-WAY DEDICATION

Railroad crossings shall be located in dedicated public right-of-way of sufficient width to permit the construction, operation, maintenance and replacement of the improvement within the confines of the easement or dedicated right-of-way without relocation or other unreasonable interference with other public utilities located therein.

11.3 DESIGN STANDARDS

A. Railroad crossings shall be of width comparable to the abutting street or roadway including sidewalks and trails.

B. Railroad crossings shall meet or exceed all applicable Village, IDOT, Illinois Commerce Commission, other local, state or federal regulatory authority and accepted industry standards, whichever impose the most demanding requirements with respect to the preservation and protection of the public health, safety and welfare.

CHAPTER 12: DESIGN AND CONSTRUCTION STANDARDS FOR OTHER PUBLIC UTILITIES

12.1 INTRODUCTION

All public and quasi-public utilities, including without limitation gas lines, electrical lines, telephone lines and cable TV transmission lines shall be located underground.

12.2 EASEMENT AND RIGHT-OF-WAY DEDICATION

The Village is the utility provider for all electric lines within the Village and all gas lines on the former Chanute Air Force Base within the Village. The Village shall be responsible for the construction and installation of all such electric lines and gas lines. All other public and quasi-public utilities are provided by other entities. Except for individual building or property services, utility lines shall be located in public easements or dedicated public right-of-way. Such easements or rights-of-way shall be of sufficient width and the utilities shall be installed at such locations therein as to permit open cut installation, maintenance and repair within the confines of the easement or right-of-way without relocation or other unreasonable interference with other public or quasi-public utilities located therein, provided that no permanent structures shall be placed over the easements or rights-of-way dedicated to the Village. Vegetative material other than trees and shrubs may be placed on easements, but if it becomes necessary to repair or inspect the underlying utility, the vegetative material may be removed, damaged or destroyed at the expense of the property owner. Under no circumstances will the Village be responsible for the repair or replacement of anything placed upon an easement. The Village will make every possible effort to notify property owners that items placed upon an easement need to be relocated or removed, with one notable exception that is for emergency repairs.

12.3 SPECIFICATIONS AND SPECIAL PROVISIONS

All utility installation shall conform to the applicable Village, Illinois Commerce Commission regulatory authority or accepted industrial standards; whichever imposes the highest and most demanding requirements for the preservation and protection of the public health, safety and welfare. All Gas, Electric, Phone, and Cable TV lines shall be located (5 feet) away from water mains and sewer lines and (5 feet) away from water and sewer services.

CHAPTER 13: DESIGN AND CONSTRUCTION STANDARDS FOR SEDIMENT AND EROSION CONTROL

13.1 INTRODUCTION

The intent of this Chapter is to require erosion control and storm water practices that will reduce the amount of sediment and other pollutants on development sites, both during and after construction, and reduce the impact of development on erosion in receiving streams. It is also the intent of this Chapter to promote design and construction practices that 1) minimize ground disturbances during development; 2) maintain natural drainage and 3) provide storm water storage. Erosion, sediment, and storm water control measures are needed for the following reasons:

A. High rates of soil loss may occur from areas undergoing development for nonagricultural use including, but not limited to, the construction of dwelling units, commercial buildings, industrial plans, and public works.

B. The washing, blowing and falling of eroded soil across and upon roadways endangers the health and safety of users thereof by decreasing vision and reducing traction of road vehicles.

C. Soil erosion necessitates the costly repair of gullies, washouts, embankments, drainage structures, and stream banks.

D. Sediment from soil erosion can clog or reduce the flow and storage capacity of sewers, ponds, ditches, and streams.

E. Sediment and associated pollutants can pollute the waters of streams, ponds, lakes, and rivers, creating far-reaching biological impacts to aquatic life and species dependent upon aquatic life.

F. Sediment limits the use of water and waterways for beneficial uses, including water supply, navigation, recreation, fishery resources, drainage, and flood control.

G. Development, if not controlled, causes increases in peak storm water runoff rates which can lead to increased stream bed and stream bank erosion and flooding in receiving streams.

H. Erosion and stream bank instability caused by altered stream flow rates due to development can create unsafe conditions, adverse environmental impacts, and other conditions that require costly repairs or preventative measures to protect private and public structures and facilities.

13.2 APPLICABILITY

A. No land surface shall be disturbed unless an erosion control plan has first been submitted and approved for that activity, except as follows:

1. Land disturbing activities for which the disturbed area is less than 5,000 square feet; or

2. Current agricultural practices involving land tilling

3. Construction of one, single-family dwelling which is not constructed, as part of a residential subdivision.

B. The Director reserves the right to require any nonagricultural construction activity, regardless of land disturbance area or type of activity, to comply with this Chapter if it is determined to be the cause of, or a contributor to, an existing or potential adverse erosion, sediment, or storm water impact.

13.3 DESIGN STANDARDS

A. All temporary sediment control measures shall be designed to control sediment from leaving the development site for a five-year frequency storm event.

B. Design standards for erosion and sediment control measure shall comply with provisions of the Illinois Procedures and Standards for Urban Soil Erosion and Sediment Control, published by the Urban Committee of the Association of Illinois Soil and Water Conservation Districts, latest edition, unless otherwise stated by this Manual.

13.4 TEMPORARY STORM WATER CONTROL MEASURES

On-site sediment control measures shall be constructed and functional prior to initiating clearing, grading, stripping, and excavation or fill activities on the site.
Sediment control measures and temporary storm water control measures are to be maintained so they are operating effectively until permanent ground surface protection and permanent storm water control measures are established. The Director may require additional control measures as necessary after site inspection if sedimentation controls are not functioning properly.

13.5 TEMPORARY GROUND SURFACE

All lots not built within twenty-one (21) days of ground disturbance shall have ground surface seeded within seven (7) days.

13.6 PERMANENT GROUND SURFACE

Within seven (7) days after completion of construction and soil conditions are suitable, and before final inspection, the site must have permanent ground surface cover planted or installed. Public improvements will not be accepted until all public right-of-way and easements have permanent ground surface cover.