



**Plan and Zoning Commission
6:00 p.m. Tuesday March 4, 2025
Village of Mahomet - Administrative Office**

AGENDA

- 1. CALL TO ORDER**
- 2. ROLL CALL**
- 3. PUBLIC COMMENT:** The Commission welcomes your input on any matter not on the agenda during the public comment portion of the meeting. If you wish to participate in the public comment portion of the meeting, you must attend in person at the Village Administration Building, sign the attendance/oath sheet, and state your legal name for the public record. Public comment is accepted for a maximum of 30 minutes at each meeting. There is a five (5) minute time limit for your remarks. The Chairperson reserves the right to shorten the five-minute limit for any reason to progress through the agenda, or if there are several individuals wishing to speak. Please be aware that the Public Body is not required to respond to your remarks during their meeting.
- 4. MINUTES:** February 4, 2025
- 5. RESOLUTION(S) and MOTION(S) (TO BE ACTED UPON):**
AR2025-01: INFRASTRUCTURE DESIGN MANUAL (2025 REVISIONS)
A RESOLUTION CONCERNING AR2025-01 INFRASTRUCTURE DESIGN MANUAL (2025 REVISIONS) FOR THE VILLAGE OF MAHOMET
- 6. COMMISSIONER / STAFF COMMENTS:**

NEXT PZC MEETING – Tuesday April 1, 2025
- 7. ADJOURN**



Village of Mahomet

503 E. Main Street - P.O. Box 259 - Mahomet, IL 61853-0259
phone (217) 586-4456 fax (217) 586-5696

Staff Report to and Action by Administrative Rules Committee

Subject: Infrastructure Design Manual – 2025 Revisions (AR2025-01)
Standard Detail Sheets – 2025 Revisions (AR2025-02)

Meeting Date: February 18, 2025

Proposed Effective Date: March 6, 2025

Municipal Code Chapter 154 (154.058 and 154.059):

The Administrative Rules Committee shall prepare and adopt an Infrastructure Design Manual (IDM) which governs the design and construction of public and quasi-public infrastructure pertaining to the Village of Mahomet Municipal Code – Chapter 154 – Subdivisions.

The IDM and Standard Detail Sheets are provided for use in the planning, approval, and construction of subdivisions under the jurisdiction of the Village of Mahomet, Champaign County, Illinois

Municipal Code Chapter 154 – updates shall be issued as “Infrastructure Design Manual 2025 Revisions” and “Standard Detail Sheets” with a file date of 02/06/2025 (38 pages with 1 title sheet – 39 pages total).

Summary of Changes/Updates:

- An Errata is attached which provides a summary of changes to the IDM.
- This 2025 update of the IDM incorporates previously approved Administrative Rules and other updates. The IDM was originally adopted by the Board of Trustees as Resolution 16-01-06. The Standard Detail Sheets have been updated to support the IDM. The proposed Standard Detail Sheets would replace the currently used detail sheets.
- IDM update includes clarifications of terms and resources quoted in the document.
- The table of Street and Right-of-way dimensions has been updated to be consistent with the Standard Detail Sheets. Typical road categories got expanded and defined to meet a multitude of needs. In the revised Street and Right-of-way Dimensions Table each category is referenced directly to the Standard Detail Sheets that are an attachment to the IDM and updated as needed.
- Some updates are very minor such as adding footers for ease of use of the manual, adding definitions for clarification, making references and abbreviations consistent throughout, some rewording for clarity, and correction of typos and minor errors.
- A requirement for a pre-construction meeting for staff, developers, engineers and utilities to review construction requirements has been added.

- Added ability to require video inspection of sanitary sewer, storm drains and tile lines.
- Added verbiage to allow Engineer to require Controlled Low Strength Material (CLSM) in certain backfill situations.
- Made some updates to pavement specifications: Made the thickness requirements for concrete and hot-mix asphalt pavement more equal. (7" concrete = 10" asphalt (was 9")); added cold weather concrete specifications referring to IDOT specs; also added reference to IDOT specs regarding longitudinal joint sealing and stray cracking remedies.
- Curbs and castings have varied greatly throughout Mahomet developments and cause many complaints and problems. Through a contractor who has recently built many of our new streets, we were recommended a new design that we will adopt with this manual. It is already in use, and you can see it for yourself along the Hunter's Ridge streets. Finally, there will be no need to cut down curbs for typical residential roads and driveway approaches.
- Updated details for sanitary sewer and water main.
- Added specs for directional boring of water and sewer services.
- Added restoration requirements.
- The procedure for project completion and final acceptance is reference back to Ordinance 154.045.

What is not included?: With a Village watermain project currently out for bid, we are considering the use of PVC pipe – C900 – for watermain. Currently the IDM and standard details only allow the use of ductile iron. This material change would need to be addressed in a future Administrative Rule. Specifications for pressure sanitary sewer systems are not included in this revision. These can be proposed as future administrative rules as the need arises

Attachments:

1. Infrastructure Design Manual – 2025 Revisions
2. IDM Errata
3. Standard Detail Sheets – file date 02/06/2025 (39 pages)

This Infrastructure Design Manual and Standard Detail Sheets Update is issued in accordance with the requirements of Chapter 154 – Subdivisions of the Village of Mahomet Municipal Code.

Approved:



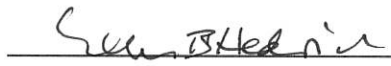
President of the Board of Trustees

2.18.25
Date



Village Administrator

2/18/2025
Date



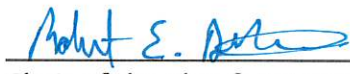
Village Engineer

2/18/25
Date



Village Planner

02/18/2025
Date



Chair of the Plan & Zoning Commission

2/18/2025
Date

Effective Date: march 6, 2025

Village of Mahomet Infrastructure Design Manual

The Infrastructure Design Manual was adopted by the Village as Resolution 16-01-06

The following Errata outlines the changes and corrections which will be approved as Admin Rule 2025-01 and is incorporated into the 2nd edition of the IDM, made effective March 6, 2025.

Formatting items will be completed after content approval:

Adding page numbers to index on sheets 5-6; plan to expand that index for easier use.

In general added "2025 REVISION" in right bottom footer of each page, for double sided book.

added section reference in the left bottom footer of each page for easy reference

made references to other specifications consistent throughout the document.

<u>Section</u>	<u>Change, Addition, or Revision</u>
1.2	added definition for Americans with Disabilities Act (ADA).
1.2	added definition for Driveway
1.2	added definition for IDOT. Use abbreviation extensively throughout the text.
1.2	added IDOT to definition for Standard Specifications for Road and Bridge Construction
1.2	included the Supplemental Specifications and Recurring Special Provisions with the definition for IDOT
1.2	Standard Specifications for Road and Bridge Construction
1.2	added IDOT to definition for Standard Specifications for Traffic Control Items
1.4 (A)	deleted last sentence and moved that information to (B)
(B)	added "shall include, but are not limited to, " in place of "for"
(5) (8)	added criteria items: Floodplain determination and base flood elevation, traffic impact analysis, and
(9)	water supply design
1.9	referenced Ordinance 154.045 which covers construction approval and acceptance
1.11	replaced section with text from Administrative Rule 2018-03 made effective on May 18, 2018
2.3 (K)	added text to the end: "The latest electronic files are available upon request."
3.1 (A)	added pre-construction conference requirement
4.1 (A) (5)	Gave authority to create private streets to BOT. Private and public street construction standards are both governed by this manual.
(C) (1)	Replaced Table A - Street and Right-of-Way Dimensions

Category	* Ref	Minimum ROW Width (1)	Minimum Pavement Width (2)	Minimum Return Radius (3)	Minimum Design Speed	Minimum Curve R (6)	Sidewalk Width (4)(5)
Arterial - 3 Lane		90 ft.	52 ft.	WB-65	40 mph	AASHTO	5 ft. / 10 ft.
Arterial - 4 Lane		80 ft.	40 ft.	WB-65	40 mph	AASHTO	5 ft. / 10 ft.
Collector - Industrial	3	70 ft.	37 ft.	WB-65	35 mph	450 ft.	5 ft.
Collector - Commercial	3	70 ft.	37 ft.	WB-50	35 mph	450 ft.	5 ft.
Collector - Residential	1	66 ft.	34 ft.	35 ft.	35 mph	250 ft.	5 ft.
Collector - Rural	4	70 ft.	24 ft.	SU	50 mph	450 ft.	5 ft.
Sub Collector - Residential	5	65 ft.	32 ft.	SU	30 mph	250 ft.	5 ft.
Sub Collector - Residential - Low Impact		75 ft.	28 ft.	SU	30 mph	250 ft.	5 ft.
Local - Industrial		66 ft.	34 ft.	WB-50	35 mph	450 ft.	5 ft.
Local - Commercial	2	66 ft.	34 ft.	35 ft.	35 mph	450 ft.	5 ft.
Local - Residential	6	60 ft.	28 ft.	25 ft.	30 mph	250 ft.	5 ft.
Local - Residential Boulevard	7	varies	21 ft.	25 ft.	30 mph	450 ft.	(5)
Local - Residential - Low Impact		70 ft.	24 ft.	25 ft.	30 mph	250 ft.	5 ft.
Local - Rural		70 ft.	28 ft.	25 ft.	30 mph	450 ft.	5 ft.
Cul-de-sac bulb		110 ft. dia.	80 ft. dia.	25 ft.	N/A	450 ft.	5 ft.
Alley - Residential		20 ft.	18 ft.	25 ft.	20 mph	450 ft.	N/A
Alley - Commercial/Industrial		24 ft.	24 ft.	25 ft.	20 mph	450 ft.	N/A

*Reference to Standard Cross Section drawings in Mahomet details, issued with this Manual

<u>Section</u>	<u>Change, Addition, or Revision</u>
4.1 (C) (1)	Table note (1): removed first sentence; covered by * above and second sentence is a note by itself Existing Table Note (5) conflicts with standard drawing and note (2) Replaced Table Note (5) with "May include 8' bikepath in boulevard in lieu of sidewalks on either side of road." Note (8)(g) added definition of Local Street (vs. sub-collector) in terms of ADT
(D) (1)	added to end "Champaign County standards where they apply, and the authorities of the Village Planner."
(E) (4)	replaced "consistence" with "consistent" (not all grammatical changes are listed)
(14)	added criteria for longitudinal slope of pavement coming out of a cul-de-sac.
(21)	Flattened allowed grades at intersections. Was 50' and 5%. Changed to 100' and 2%.
(I) (4)(a)	reworded: 2nd paragraph, 2nd sentence: Treated and stabilized subgrade will require DCP testing to a minimum depth of 18 inches with additional material removal as required by the Village.
(G)	Changed section to not allow alleys without BOT approval
(K) (1) - (3)	Kept (1), deleted (2) except moved table to (1), deleted (3) & (4)
(2)-(8)	renumbered the remainder of (K) (2) thru (5)
(K) (2)	changed thickness of HMA for collector street from 9 to 10 inches
(L) (9)	1st sentence, replaced "reveling" with "raveling"
(9) (a)	inserted information from Admin Rule 2017-01 regarding saw cut times; made effective June 16, 2017
(9) (b)	saw joints full depth
(9) (c)	If stray cracking occurs, Standard Specifications Art. 420.05(c)(1) a-e apply.
(19)	added: Pavement may be poured after November 1 with the permission of the Village Engineer. Cold weather protection as per IDOT Standard Specifications Art. 1020.13(c) and linseed oil protective coat as per Art. 420.18 shall be required. Linseed oil is required if roadway will be open to traffic in winter.
(M) (9)	Added requirement for Longitudinal joint sealant as per IDOT Standard Specs
(N) (5)	included the option of curb and gutter constructed separate or monolithic with pavement
(7)	added that 18" smooth dowel bars shall be 1 1/2" diameter
(8)	added to end: For construction joint requirements see 4.1(L)(5)
(10)	added requirement for curb marking of water and sewer services
(O) (2)(a)	4% was changed to "up to 4%"
(2)(b)	deleted section; removing all references to 5 year maintenance bond; see ©
(2)(c)	changed 8% to 4% as highest level of deficiency before requiring replacement
(4)	removed all references to 5 yr maintenance bond
(6)	changed reasons for deficiency to pavement strength and thickness only and removed choices; (a) is now part of (6) and (b) and (c) are removed. Removal and replacement is only choice.
(P) (5)	Street Name sign: noted that signs have a 1/2 "silver (white) border" (updated on the CAD detail sheet 8 drawing also)
(P) (6)	typo or wrong word corrected - Mix should be Dip (hot dip galvanized)
(Q)	replaced section with text from Administrative Rule 2018-05 made effective on May 18, 2018
4.2 (A) (8)	replaced section with text from Administrative Rule 2018-01 made effective on May 18, 2018
(A) (19)	inserted information from Admin Rule 2017-07 regarding runoff coefficients; made effective June 16, 2017
(B) (2)(b)2.	changed stormwater detention basins to stormwater management basins
(C) (4)	clarified how far gutter flow can extend into the pavement; was 8'; changed to 8' for local streets and 4' for collector streets and higher
(13)(b)	reworded the beginning of (b): "Granular trench backfill under and within 2 feet of pavements shall be compacted by ramming and tamping tools and ..." changed "not less than 100 foot intervals" to "maximum 100 foot intervals" added to the end of the section: Compaction shall be tested for every trench beneath a pavement "and test results shall be provided to the Village." added text from Admin Rule 2017-04 (adopted June 16, 2016) regarding use of vibratory plate compactors
(13)(c)	re-worded section: Controlled Low Strength Material (CLSM), or flowable fill, may be required by the Village Engineer in lieu of compacted granular backfill. Construction of ..."
(14)(d)	added note to explain a misunderstood unit: (pii=(lbs./in/in))
(14)(f)	added a type of polyethylene pipe as per Admin Rule 2017-03, made effective June 16, 2017
(14)(g)	added a type of polypropylene pipe
(16)	added Portland cement concrete in front of end sections
(17)	Removed reference to 1% slope and referred to Mahomet Standard Detail for lot grading.

Section

Change, Addition, or Revision

- 4.2 (C) (18) Changed minimum topsoil requirement to 4" (was 8").
- (19) inserted Admin Rule 2017-07 regarding runoff coefficients; made effective June 16, 2017
- (D) (2) at end, changed "an area larger than 20 acres." to "an area larger than or equal to 20 acres."
- (D) (5) took out the words "not less than"; was redundant of "or flatter"
- (E) (2) replaced table; updates to table adopted by Admin Rule 2017-12, made effective June 16, 2017: also expanded the table

Casting Location	application		Neenah Casting number	EastJordan Casting number	Notes
	new constr.	retro fit existing			
Barrier Curb	✓		R-3278 AL	7220	vane grate, good
Barrier Curb	✓		R-3278 AR	7310	vane grate, good
Barrier Curb (for low point)	✓		R-3278 A		deleted by Admin Rule, accidental
Mountable Curb		✓	R-3502 B	7236	deleted R-3270, odd and low inlet
Mountable Curb	✓		R-3501 N	7490	goes with new curb design, used in Hunter's Ridge 7, for example
Driveway Conflict		✓	R-3508 A2	7300	avoid driveway conflicts wherever possible
Driveway Conflict		✓	R-3237 A/B	7060	was on list for mountable curb, but only acceptable for driveways
Backyard or Area Drains	✓	✓	R-4340 B	6527	
Ditch Grates	✓	✓	R-4342	6489 N	
Storm Manhole / Inlets	✓	✓	R-2502 C	1020	changed to bike safe lid w/ more inlet capacity / shorter casting
Sanitary Sewer	✓	✓	R-1772	1022	

- 4.3 (A) (7) replaced section with text from Administrative Rule 2018-01 made effective on May 18, 2018
 - (12) Removed reference to 1% slope and referred to Mahomet Standard Detail for lot grading.
 - (13) referenced 4.2 A (20) for information from Admin Rule 2017-07 regarding runoff coefficients; made effective June 16, 2017
 - (C) (10) referenced 4.2 C (14) for allowed materials, updated by Admin Rule 2017-03 made effective June 16, 2017
 - 4.4 (A) (5) referenced 4.2 A (20) for information from Admin Rule 2017-07 regarding runoff coefficients; made effective June 16, 2017
 - (F) (1) corrected "above 40 ac" to "above 5 ac" as per Admin Rule 2017-08 made effective June 16, 2017
 - (H) replaced text "small developments" with "small developments with a total watershed area of less than 5 acres"
 - (J) (6) added text from Administrative Rule 2018-01 made effective on May 18, 2018
 - 4.5 (A) (18) Removed unnecessary word "Specification" after "ASTM"; does not change meaning
 - (18)(e) added a specification for PVC watermain quality pipe
 - (20) added casting numbers
 - (25) added a specification concerning wyes
 - (30)-(33) added sanitary manhole specifications
 - (B) (27)(b) reworded the beginning of (b): "Granular backfill under pavements shall be compacted by ramming and..."
- added to the end of the section: Compaction shall be tested for every trench beneath a pavement "and test results shall be provided to the Village."
- added text from Admin Rule 2017-04 (adopted June 16, 2016) regarding use of vibratory plate compactors
- (27)(c) re-worded section: Controlled Low Strength Material (CLSM), or flowable fill, may be required by the Village Engineer in lieu of compacted granular backfill. Construction of ..."
 - (C) (2) rewrote specification
 - (E) (6) added requirement for record drawings

<u>Section</u>	<u>Change, Addition, or Revision</u>
4.6	Section header is indexed as 4.6.1, which is inconsistent with the rest of the IDM. Remove the ".1"
(B) (16)	Reorganized and added language regarding placement of curb stops.
(C) (2)	Updated manufacturer and added requirement for mechanical joint
(4)	Updated gate valve material specification; add sentence at end
(5)	Replaced section
(6)	added sentence at end
(7)	added sentence at end
(9)	Deleted section about stainless steel items; replace by (16)
(17)(a-j)	added sections concerning Insertion Valves and Wet Tapping Tees, as per Admin Rule 2017-10 made effective June 16, 2017
(D) (6)	Updated manufacturer and added requirement for mechanical joint
(13)	added section on PE encasement
(14)	added precautions again contamination of materials
(15)(b)	reworded the beginning of (b): "Granular backfill under and within 2 feet of pavements shall be compacted by ramming and tamping tools and ..." added to the end of the section: Compaction shall be tested for every trench beneath a pavement "and test results shall be provided to the Village." added text from Admin Rule 2017-04 (adopted June 16, 2016) regarding use of vibratory plate compactors
(15)(c)	re-worded section: Controlled Low Strength Material (CLSM), or flowable fill, may be required by the Village Engineer in lieu of compacted granular backfill. Construction of ..."
(17)	referred to section 4.6 (C)(17)(a) through (j)
4.7 (A) (2)	Changed the word variance to different; giving some authority to Village Engineer and Planner; deleted last sentence which allowed sidewalk on cul-de-sacs to be within 4' of curb
(3)	Changed language to mid-block sidewalks instead of public crosswalks
(4)	added to end: "Ramp construction shall be as per the most current ADA standards."
(5)	Reworded for clarity; did not change intent
(B) (1)	deleted the words "for collector and arterial streets." Applies to all types of streets.
(2)	changed minimum from 10 to 8 foot
(4)	cleaned up wording from "6 inches in thickness" to 6 inch thick"
(4)	changed "thickness" to "thick"
(10)	reworded "(10)Sidewalks and pathways shall be constructed to the latest accessibility standards of the to the handicapped per the American Disabilities Act (ADA)."
(D)	added (4) All public sidewalks require testing and certification from the developer's engineer.
4.11 (C)	removed reference after Illinois Urban Manual; this got added to the definitions in 1.2
(F)	Inserted text from Admin Rule 2017-06 made effective June 16, 2017
4.12	Added reference to Chapter 94 for Tree Ordinance. Admin Rule 2017-05 made effective on June 16, 2017 updated text for the Tree Ordinance, but this belongs in Village Code Chapter 94 instead of this IDM.
4.13 (E)	added section regarding lane closures
4.14	Inserted section on Traffic Impact Study; Admin Rule 2018-02 made effective May 18, 2018
4.15	renumbered section 4.14 from previous manual



Infrastructure Design Manual

2025 Revisions

Village of Mahomet, Champaign County, Illinois

www.mahomet.govoffice.com

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General Provisions

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- 1.2 Definition of Terms
- 1.3 Scope
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- 1.5 Other Permit Applications and Approvals
- 1.6 Approval Period
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- 1.8 Record Drawings
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- 2.2 Construction Plans Set – Format
- 2.3 Construction Plans Set – Required Sheets and Content

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- 3.1 Construction
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Design Guidelines

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- 4.2 Public Storm Drainage System
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- 4.8 Specific Standards for Electrical Service and Utility Services
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- 4.11 Erosion Control Requirements
- 4.12 Street Trees
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- 4.14 Traffic Impact Analysis Requirements
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Validity, Violations, Enforcement, Amendment, Effective Date

- 5.1 Administrative Fine
- 5.2 Stop Work Order
- 5.3 Amendment
- 5.4 Administrative Rules
- 5.5 Construction Detail Sheets

INFRASTRUCTURE DESIGN MANUAL UPDATE HISTORY

January 2016 Adoption by the Board of Trustees

February / March 2025 - Amended IDM approved by Administrative Rules Committee, with previously approved Administrative Rules incorporated.

GENERAL PROVISIONS

1.1 INTRODUCTION.

A major portion of publicly owned improvements are initially designed and constructed by private interests during the subdivision and development process. This Manual has been prepared to assure that such improvements result in construction meeting Village requirements.

This Manual explains the design requirements and construction procedures required by the Village of Mahomet. The Manual includes the various documents required prior to, during and after construction to accomplish these purposes. The Manual also intends to provide uniform design criteria for facilities designed. The Manual also includes standard details governing the construction of public and quasi-public improvements.

1.2 DEFINITION OF TERMS.

The words and terms, whenever they occur in this Manual, are defined herein. Definitions in the Subdivision Regulations and the Stormwater Management Ordinance shall also apply to the Manual. Words not defined shall be interpreted in accordance with the definitions contained in Webster's New Collegiate Dictionary. Additional definitions can be found in various Village of Mahomet Ordinances.

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.

AMERICANS WITH DISABILITIES ACT (ADA). A Civil Rights Law adopted in 1990 by the Federal Government that prohibits discrimination against individuals with disabilities.

AMERICAN NATIONAL STANDARD PRACTICE FOR ROADWAY LIGHTING. The "American National Standard Practice for Roadway Lighting" prepared by the American National Standards Institute, published by the Illuminating Engineering Society, most recent edition.

CAPACITY OF A STORMWATER DRAINAGE FACILITY. This is the maximum flow at atmospheric pressure that can be conveyed by the facility without causing damage to the public or encroachment upon private property. The capacity of a stormwater drainage facility is determined utilizing "Manning's Equation" or similar approved formula.

CAPACITY OF A STORMWATER DETENTION FACILITY. This is the maximum volume that can be stored by a stormwater detention facility without causing damage to the public or encroachment upon private property. The capacity of a stormwater detention facility is generally determined utilizing average end area or similar volume calculation methods.

CHANNEL. A natural or artificial watercourse of perceptible extent which periodically or continuously contains moving water, or which forms a connecting line between two (2) bodies of water. It has a definite bed and banks which serve to confine the water.

CONTROL STRUCTURE. A facility constructed to regulate the volume and rate of stormwater that is released during a specific length of time.

CULVERT. A closed conduit for the passage of surface drainage water under a roadway, railroad, or other surface impediment.

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.

DETENTION STORAGE. Temporary detention or storage of stormwater in storage basins, on rooftops, in parking lots, school yards, parks, open space, lakes, ponds, or other areas under predetermined and controlled conditions, with the rate of drainage therefrom regulated by appropriately installed devices.

DEVELOPER. The person, trust or corporation who develops subdivided land into residential, commercial, industrial, office or recreational development complete with required zoning and infrastructure systems.

DEVELOPMENT. Any man-made change to improved or unimproved real estate, including, but not limited to, construction of or substantial improvements to buildings or other structures, the placement of mobile homes, paving, mining, filling, or other similar activities.

DISCHARGE. The rate of outflow of water from a stormwater drainage or stormwater detention facility.

DIVERSION. The deflection of storm or stream waters in such a way that those waters flow into a watercourse to which they are not naturally tributary or that the point of discharge of these waters within a natural watershed is changed.

DRAINAGE AREA. Authorization by a property owner allowing use of a designated portion of his / her property by others for drainage purposes.

DRIVEWAY. A privately maintained pavement located within a public right-of-way providing access for vehicles between a public street and private property.

DRY BOTTOM STORMWATER DETENTION BASIN. A facility that is designed to be normally dry and which accumulates stormwater runoff only during periods when the restricted stormwater runoff release rate is less than the stormwater inflow rate.

DRY WEATHER WATER OUTLET. A dry weather water outlet is an outlet from a sump pump, footing tile, field tile, or other source which may discharge at times other than during periods of rainfall and pursuant to direct surface runoff.

EASEMENT. Authorization by a property owner allowing use of a designated portion of his / her property by others for drainage or utility purposes.

EROSION CONTROL PLAN. Plans and specifications prepared by the design engineer, which explain how erosion will be minimized during any soil disturbing process.

EXCESS STORMWATER RUNOFF. That portion of stormwater runoff which exceeds the transportation capacity of storm sewers, swales, ditches, or natural drainage channels serving a specific watershed.

EXCESS STORMWATER PASSAGEWAY. A channel formed on the surface of the soil to carry excess stormwater runoff through a specific area from dominant to servient land areas

FEMA. Federal Emergency Management Agency.

FLOOD ELEVATION. The elevation of all locations delineating the maximum level of high waters for a flood of a given return period.

FLOODPLAIN. The special flood hazard lands adjoining a watercourse or channel, the surface elevation of which is lower than the flood elevation and which are subject to period inundation during floods.

FLOOD ROUTING. The area where water flows when in excess of the capacity in the storm drainage system.

FLOODWAY. A channel of a watercourse and those portions of the adjoining floodplain which are reasonable required to carry and discharge the design flood.

GRADE. The inclination or slope of a channel, canal, conduit, etc., or natural ground surface, usually expressing in terms of percentage of the vertical rise (or fall) bears to the corresponding horizontal distance.

HIGHWAYS STANDARDS. The “Highway Standards” published by IDOT, most recent edition.

IDOT. The 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 Bureau of Design (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. Act 205 of Chapter 765 of the Illinois Compiled Statutes, which regulates the division of land in the State, unless superseded by a local government.

ILLINOIS URBAN MANUAL. This term shall mean “A Technical Manual designed for Urban Ecosystem Protection and Enhancement”, published by the United States Department of Agriculture, Natural Resources Conservation Service, latest edition thereof.

IMPERMEABLE. A term applied to material through which water cannot pass.

IMPERVIOUS. A term applied to material which water cannot pass, or through which water passes with great difficulty or at a very slow rate. For purposes of this Manual, any surface which would typically be assigned a Rational Method “C” value of 0.60 or greater shall be considered impervious.

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.

NATURAL DRAINAGE. Water flow by gravity in channels formed by the true surface topography of the earth prior to changes made by the efforts of man.

NATURAL DRAINAGE CONDITION. The situation whereby water flows by gravity in channels formed by the true surface topography of the earth prior to changes made by the efforts of man or as defined by the Illinois Compiled Statutes.

NATURAL SAFE STORMWATER DRAINAGE CAPACITY. The quantity of stormwater runoff that can be transported by means of a channel, passage, conduit, tube, duct, or combination thereof, in such a manner that the elevation of the water does not rise significantly above the level of the adjacent soil surface, and cause damage or encroachment upon public or private property. For the purposes of this Manual, it is presumed that the maximum natural safe stormwater drainage capacity for downstream stormwater drainage systems is the capacity required to carry the rate of stormwater runoff from a five (5) year return period storm prior to January 1, 1972.

OWNER. The record title holder or a beneficiary of a land trust which is the record title holder, and includes singular or plural; if the owner is other than an individual, the term includes beneficiaries, agents, shareholders, officers and directors, partnerships, associations, firms, trusts, clubs, companies, or corporations.

PEAK FLOW. The maximum rate of flow of water at a given point in a channel or conduit resulting from a predetermined storm or flood.

PERSON. An individual, public or private corporation, unit of government, partnership, or unincorporated association.

POSITIVE GRAVITY OUTLET. A term used to describe the drainage of an area in a manner that will ensure complete removal of all surface water by means of gravity.

POT HOLE. The method to expose buried utilities by pressure washing and vacuum.

PUNCHLIST. A list of generally minor items that must be completed before final acceptance of a project.

RECOGNIZED AGENCY. A governmental unit or agency which has statistically and consistently examined local, climatic, and geologic conditions and maintained records as they apply to stormwater runoff, e.g. National Weather Service, University of Illinois Engineering Experiment Station, and the Illinois State Water Survey.

RETENTION BASIN. A structure or feature design to retain stormwater over a period of time, with its release being positively controlled over a longer period of time than a typical stormwater “detention” storage facility.

RETURN PERIOD. The average interval of time within which a given rainfall event will be equaled or exceeded once. Example: A flood having a return period of 50 years has a 2% probability of being equaled or exceeded in any one (1) year.

RUNOFF COEFFICIENT. A decimal fraction relating the amount of rain which appears as runoff and reaches the storm sewer system to the total amount of rain falling. For example, a coefficient of 0.50 implies that 50% of the rain falling on a given surface appears as stormwater runoff.

STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. The “Standard Specifications for Road and Bridge Construction” published by Illinois Department of Transportation, most recent edition, along with the current edition of the Supplemental Specifications and Recurring Special Provisions (published annually by IDOT).

STANDARD SPECIFICATIONS FOR TRAFFIC CONTROL ITEMS. The “Standard Specifications for Traffic Control Items” published by Illinois Department of Transportation, 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.

STORM DRAIN. A closed conduit for conveying collected stormwater runoff.

STORMWATER DRAINAGE SYSTEM. All means, natural or man-made, used for conducting stormwater to, through or from a drainage area to the point of final outlet, including but not limited to any of the following: conduits, storm sewers, swales, canals, channels, ditches, streams, culverts, streets and pumping stations.

STORMWATER DETENTION FACILITY. A stormwater storage area or structure designated and constructed to temporarily store excess stormwater runoff from developed areas under predetermined and controlled conditions, with the rate of discharge there from regulated by appropriately installed devices.

STORMWATER RUNOFF. The water that results from precipitation which is not absorbed by soil or plant material, which does not evaporate, and which flows over the surface of the ground or is collected in channels, conduits, or ponds.

STORMWATER RUNOFF RELEASE RATE. The rate at which stormwater runoff is released from dominant to servient land.

STORMWATER STORAGE AREA / FACILITY. An area or structure designated to temporarily accumulate excess stormwater under predetermined and controlled conditions, with a managed rate of drainage discharge there from.

STRUCTURE. Anything which is constructed or erected with a fixed location on the ground or attached to something having a fixed location on the ground. Among other things, structures include buildings, fences, signs, mobile homes, swimming pools, and walls.

SUBDIVISION REGULATIONS. Provision or provisions contained in the Mahomet Municipal Code, as amended pertaining to the subdivision and development of land.

TIME OF CONCENTRATION. The time required for stormwater runoff from the remotest part of the drainage basin to reach the point being considered.

TRADITIONAL AGRICULTURAL USES. Uses commonly classified as agricultural or horticultural, including forestry, crop farming, truck gardening, wholesale nursery operations, animal husbandry, the operation of any machinery or vehicles incidental to said uses, and the construction of a single-family dwelling and other farm structures incidental to and typically associated with said uses. The terms does not include commercial feed lots, commercial grain storage / processing facilities or other similar agriculturally related commercial and industrial land uses.

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.

TRIBUTARY WATERSHED. The entire catchment area that contributes stormwater runoff to a given point.

VILLAGE. The Village of Mahomet, Champaign County, Illinois

WATERCOURSE. Any stream, creek, brook, branch, natural or artificial depression, slough, gulch, reservoir, lake, pond or natural or man-made drainage way in or into which stormwater runoff and flood waters flow either regularly or intermittently.

WET BOTTOM STORMWATER STORAGE AREA. A facility that contains a body of water and which accumulates excess stormwater during periods when the restricted stormwater runoff release rate is less than the stormwater inflow rate

1.3 SCOPE.

The review and approval of plans, specifications and contract documents for certain types of improvements is also the legal responsibility of various other public agencies in addition to the Village. This Manual is not intended as a substitute for the requirements of such other public agencies. It shall be the Design Engineer's responsibility to ensure that the proposed Plans, Specifications, and Contract Documents meet the legal requirements of all other public agencies and that any permits and bonds required by such agencies are secured.

1.4 DESIGN COMPUTATION REQUIREMENTS.

(A) The Design Engineer shall make design computations for all phases of the project when this Manual requires such computations to ensure adequacy and stability of the work and conformance with appropriate standards. Said computations shall be neat and legible and in a form required by this Manual. The computation shall be easily followed and prepared following formats of generally accepted practice.

(B) Submitted with Public Improvement Engineering Plans – detailed design calculations shall include, but are not limited to, the following:

- (1) Stormwater detention facility design
- (2) Storm drain system design

- (3) Sanitary sewer design
- (4) Flood routing and waterway design
- (5) Floodplain determination and Base Flood Elevation
- (6) Bridge, culvert or drainage way design
- (7) Structural design data for arterial and collector street pavements
- (8) Traffic Impact Analysis
- (9) Water supply design

1.5 OTHER PERMIT APPLICATIONS AND APPROVALS.

Other governmental 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. They 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.

1.6 APPROVAL PERIOD.

Construction shall not begin until the Village has signed the cover sheet of the Construction Plans and Specifications as "Approved" and the Village Board of Trustees has adopted a resolution approving the Construction Plans and Specifications. If construction is not commenced within a two (2) year period, the 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.

1.7 REVISIONS TO APPROVED PUBLIC IMPROVEMENT ENGINEERING PLANS.

Any deviations from approved Plans or Specifications affecting capacity, stability or operation of improvements shall be approved in writing by the Village before such changes are made. Minor changes not affecting capacity, stability or operation of the improvements will not require formal approval, but must be verbally approved, then a memorandum of record must be sent to the Village by the Design Engineer within one (1) week of the verbal approval. The memo of record shall briefly describe the change, when it was approved, and by whom.

1.8 RECORD DRAWINGS.

The Design Engineer shall submit to the Village, prior to the Village's acceptance of ownership, record drawings of the entire set of Public Improvement Engineering Plans, as a markup version of the approved set of plans with changes readily identifiable, depicting the improvements as actually constructed. Final release of subdivision bonds will not be made until the Village has received acceptable record drawings including any updated sheets due to warranty repairs or changes. Record drawings submitted shall consist of two (2) sets of prints and one (1) set of digital computer aided drafting files with as-built information

denoted in the color red. All sheets shall be submitted. Record Drawings can also be also referred to as As-Built Drawings.

1.9 PROJECT COMPLETION AND FINAL ACCEPTANCE.

The developer’s Engineer shall make a preliminary inspection of the project site and prepare a “punch list” itemizing all items not meeting the requirements of the approved plans. The developer’s engineer shall notify the Village when all identified items have been addressed. The Village Engineer, in cooperation with the developer’s Engineer, shall make a jointly attended semi-final inspection of the completed work prior to accepting the project for maintenance. The Village shall prepare a final punch list, itemizing all items not meeting the requirements of the approved Plans. The developer, or developer’s Engineer, shall notify the Village of the completion of the punch list items. After a pre-acceptance inspection, if Village staff agrees that the items have been satisfactorily completed, staff shall notify the Village Board of Trustees that the subdivision public infrastructure improvements are ready for acceptance. See Ordinance 154.045

1.10 WAIVER OF MANUAL REQUIREMENTS.

Village staff may administratively waive any of the requirements of this Manual. No waiver is available to a subdivider as a matter of right. The burden of proving that a waiver is justified is on the subdivider.

(A) General Standard for Waiver Approval. The waiver shall not be approved unless the Village Engineer, the Village Planner, Village Administrator, and the Mayor find that the waiver is justified according to each of the following standards. All four (4) individuals must approve a requested waiver in order for it to be granted.

(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 of 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.

1.11 ELECTRONIC DRAFTING STANDARDS.

- A. Electronic files are required when submitting final copies of:
 - 1. Final Plats: To minimally include a geographical information drawing showing property and tract boundaries and adjacent right-of-ways.
 - 2. Record Drawings of Public Improvement Construction Plans.
- B. Submittal Media:
 - 1. Industry standard electronic files shall be submitted in a format approved by Village staff. Use of thumb drives and DVD discs are acceptable.
- C. Submittal Format:
 - 1. Files shall be MicroStation compatible. Unused levels, styles, etc. shall be purged from AutoCAD files before submittal.
 - 2. All shape files and fonts used within the drawings shall be included as part of the submittal.
 - 3. All images, pdfs, or other non-MicroStation files referenced in the drawings shall be included as part of the submittal.
 - 4. Reference files shall be bound to the drawing file with all layers set as per the drawing (sheet) layout.
 - 5. All level names shall be easily recognizable and understandable; and / or a legend shall be provided for all layers contained in the submittal.
 - 6. A single pdf file shall be submitted to the Village which shall contain all drawings for the proposed subdivision.
- D. Units and Coordinates:
 - 1. The base unit of digital submission of plats and plans shall be the U.S. Survey Foot. While the use of geometric ground coordinates is acceptable, the coordinates shall be Illinois State Plane East Zone (ISPEZ) coordinates [NAD-83 (2011)] derived from the ISPEZ coordinate location of a known survey control point. The vertical datum utilized shall be NAVD-88.
- E. Standards
 - 1. All submitted DGN files need to follow a standard level name template.
 - 2. Coordinates at monument locations shall be displayed on the drawings at a precision of one (1) decimal point.

3. Distances shall be displayed on the map at a precision of one (1) decimal point.
4. Each level must only contain its elements.
5. All data must be contained in submitted DGN files. Unbound external references are not acceptable.

F. Ties to Control Points and Establishing New Control Points

1. Unless specific projects explicitly call for different requirements, each set of drawings should have a least three (3) State Plane Coordinate control points established within the project site. These control points should be included as separate objects stored in their designated layer as point features and annotated with the actual x, y, coordinates in U.S. survey feet. These coordinates should be provided in the ISPEZ coordinate system.
2. The control points shall correspond to a physically placed monument. In the absence of existing physical monuments, new monuments shall be required to meet the requirements described herein.
3. Monuments shall be constructed to be permanent, stable, and identifiable. Monuments should be constructed of materials that can be expected to last for at least 50 years and be placed in a location that is not expected to be in the way of construction or maintenance equipment.
4. The marker cap must include an inscription (a cast or machine-imprinted legend or logo) of the establishing agency and space for the survey station (benchmark or corner) designation (name) to be stamped on the marker. For each monument set, a tie sheet shall be completed and submitted to the Village.

CONSTRUCTION PLANS AND SPECIFICATIONS

2.1 PROCEDURE AND REQUIREMENTS.

(A) Developer's Obligation. The developer shall cause Engineering Construction Plans and Specifications to be prepared for all improvements required. Said improvements shall be designed to meet or exceed the minimum standards set forth in this Manual. Improvements shall also conform to the minimum standards and requirements of other local, state and federal authorities, which have jurisdiction over the subdivision. Construction Plans and Specifications shall be prepared under the supervision of a licensed Professional Engineer pursuant to the laws of the State of Illinois and shall bear the developer's engineer's seal, license number and signature.

(B) Required Submittal. The developer's engineer shall submit Construction Plans and Specifications to the Village for review and written approval, prior to the commencement of construction of any improvements required or regulated by this Manual.

(C) Village Responsibility. Village staff shall review Engineering Construction Plans and Specifications for conformance to this Manual and generally accepted good engineering practice. Village staff shall forward a recommendation for approval or disapproval of the Construction Plans to the Board of Trustees.

(D) Approval. Construction of improvements, required or regulated by this Manual, shall not commence until the Village Board of Trustees has approved, in writing, Engineering Construction Plans and Specifications for the improvements.

(E) Field Modifications. If in the course of construction the developer wishes to modify the size, type, quality, quantity or location of improvements required or regulated by this Manual as shown on the approved Construction Plans, the developer's engineer shall contact the Village for approval prior to proceeding with installation of the modified improvement. Said approval may be verbal or written. In any case, the developer's engineer shall submit within one (1) week a brief written memorandum of understanding concerning the modifications approved.

2.2 CONSTRUCTION PLANS SET – FORMAT.

(A) Sheet size. Plan set shall be 22 inch by 34 inch. Variations in dimensions may be approved by the Village, if requested prior to submission of Plans.

(B) Plan scale. Shall be at a minimum of 1 inch = 40 feet.

(C) Precision. All distances shall be shown to the nearest 0.01 foot and elevations shall be shown to the nearest 0.1 foot for ground surfaces and 0.01 feet for hard surfaces.

2.3 CONSTRUCTION PLANS SET – REQUIRED SHEETS AND CONTENT.

(A) Cover Sheet.

(1) Vicinity map shall be included with the overall size of at least one-fourth Section, indicating adjacent arterial streets, and adjacent subdivisions.

(2) Title indicating Village, County, and State, with Section, Township, and Range.

(3) A list of benchmark locations and elevations. Benchmarks shall be of a type and elevation as generally accepted by legal standards and Professional Land Surveying standards in the State of Illinois. Plans shall state benchmark datum being referenced and shall describe vertical and horizontal adjustments relative to adjacent tracts with datum equation. Not less than three (3) benchmarks shall be provided.

(4) An Index of Sheets.

(5) Signature and Seal of the Design Engineer.

(6) Village approval signature block.

(7) Horizontal control points. Not less than three (3) horizontal control points shall be provided. Illinois State Plane Coordinates shall be utilized.

(B) General Notes Sheets.

(1) Legend – list definitions for all line types and symbols shown in the Construction Plans .

(2) Project Specifications.

(C) Summary of Quantities or Bill of Material. This table shall provide an outline and inventory of the infrastructure being constructed, in the form of a spreadsheet type template. Quantities of public infrastructure shall be submitted. If quantities change during construction, the Infrastructure Inventory Sheet shall be revised and submitted with the “As-Built” Plans.

(D) Grading Plan and Erosion Control Plan. These activities shall be shown as separate Sheets. The Grading Plan shall be drawn at a maximum contour interval of 1 foot showing proposed and existing elevations with discrete elevations shown at lot corners, mid lot lines and for minimum building pad elevations. Discrete elevations shall also be shown on pavement surfaces sufficient to show that all pavement has a minimum drainage slope of 0.4%. Adjacent topography shall be shown to the extent that it impacts the drainage of the current construction area. The Erosion Control Plan shall indicate the locations and extent of various measures to be undertaken during construction in an effort to minimize discharge of eroded soil from the site.

(E) Utility and Pavement Plan Sheets.

(1) Utility Plan Sheets shall be included and show type, size, length and location for storm sewer and underdrain systems, sanitary sewer systems, water mains and other public or private utility

systems. Determine the type, size, and location of all proposed utility systems. Stationing shall be shown. It is preferred that these Utility Plan Sheets be separate sheets. All planned private utilities shall be shown and indicated as such.

(2) Pavement Plan Sheets shall be included to show all Plan dimensions and Stations for streets necessary for construction layout.

(3) Profile Sheets for proposed and adjacent / existing streets, storm drains and sanitary sewers, and water mains showing distances, elevations and slopes as required (inverts shall be shown with direction clearing indicated for each). Influent and effluent pipe elevations shall be shown on the Plans. Distance between manholes shall be center-to-center.

(F) Intersection Detail Sheets. Show intersection jointing patterns, radius / curve information and discrete elevations. Typical discrete elevations are as follows:

- (1) Edge of pavements
- (2) Center line
- (3) High and low points
- (4) Inlet – rim [low point of water entry]
- (5) Top of curb elevations

(G) Pavement Cross Section Sheets. These sheets shall show right-of-way cross sections for all sheets at intervals not exceeding 200 feet.

(H) Pavement Detail Sheets. These Sheets shall show details for all standard pavements including typical sections and jointing patterns.

(I) Storm Drain and Sanitary Sewer Detail Sheets. These Sheets shall show manhole and backfill details for storm drain and sanitary sewer systems.

(J) Water main Detail Sheets. These sheets shall show fire hydrants, valves, and backfill details for water main systems.

(K) Village Standard Detail Sheets. Use of the Village Standard Detail Sheets included as an Appendix to this Manual by Administrative Rule is encouraged. The latest electronic files are available upon request.

CONSTRUCTION REQUIREMENTS**3.1 CONSTRUCTION.**

(A) General. Improvements required or regulated by this Manual shall be constructed in accordance with approved Engineering Construction Plans and Specifications, the requirements of this Manual, Village regulations, and any applicable regulations of outside agencies. A pre-construction meeting between staff, developer, engineer, and utilities is required prior to commencement of construction activities.

(B) Plan Modification. To modify the size, type, quality, quantity or location of improvements required or regulated by these regulations as shown on the approved Construction Plans, the developer's engineer shall contact the Village for approval prior to proceeding with installation of the modified improvement. Said approval may be verbal or written. In any case, the developer's Engineer shall submit, within one (1) week, a brief written memorandum of understanding that describes the modification and approval.

(C) Notice of Work. The developer shall notify the Village at least two (2) business days prior to the beginning of any regulated work. If the developer fails to comply with this requirement, the Village may take any steps necessary to assure that the work performed without the knowledge of the Village complies with approved Engineering Construction Plans and Specifications, these regulations and other applicable Ordinances of the Village. Those steps may require the developer to pothole buried utility lines at developer's expense to confirm the proper construction procedures were followed.

(D) Commencement of Construction. Construction of subdivision improvements required or regulated by this Manual shall not commence until the Village Board of Trustees has approved, in writing, Engineering Construction Plans and Specifications for said improvements, together with all permits that require approval of the Village.

(E) Time Period for Construction. The developer shall complete construction of all subdivision improvements in accordance with Plans and Specifications approved by the Village within two (2) years of the date that Village approves the Construction Plans of the subdivision. At the developer's request, the Village Planner and Village Engineer may extend the time period to complete the construction for up to one (1) additional year.

3.2 INSPECTION AND TESTING OF IMPROVEMENTS.

(A) Observer Requirements. An experienced construction observer, who is approved by the Village, shall observe construction of all public improvements. The developer or developer's engineer shall submit resumes of any construction observer for review and approval by the Village. This observer shall be under the direction of the developer's engineer. The Village reserves the right to reject construction observers as submitted by a developer or developer's engineer. The observer shall be present 100% of the time during all required testing and during construction of major infrastructure items, including but not limited to:

(1) All street pavements, sidewalks, storm drains, sump drain lines, tile lines, sanitary sewers, water mains, stormwater detention basin inlet and outlet control structures.

- (2) Any bridge or culvert.
- (3) Any traffic signal or street light system.
- (4) Any buried utility line being installed by the developer.
- (5) During all required testing.

(B) Testing Requirements. Tests required by this Manual shall be performed solely by an IDOT qualified independent testing laboratories or the developer's engineer, and shall be performed at the developer's expense. The developer shall notify the Village of failing tests immediately. The developer shall direct that the results of required tests be mailed or delivered to the Village within two (2) weeks of completion of the test. No test results shall be withheld from the Village, i.e., all failing tests shall be reported including corrective action taken and follow up passing tests. All test results shall be delivered to the Village together with the certification of the completion of public improvements.

(C) Required Test Data for Subdivision Certification and Acceptance. (see individual Chapters for testing requirements)

- (1) Sanitary sewer infiltration / exfiltration tests are required by the IEPA including ground water elevation as necessary.
- (2) Manhole leakage test results as required by IEPA.
- (3) Video, lamping and mandrel test results for sanitary sewers.
- (4) Video, lamping and mandrel test results for storm drains and tile lines.
- (5) Water main leakage test results.
- (6) Water main pressure test results.
- (7) Water main disinfection test results.
- (8) Pavement subgrade moisture – density with proctor results and stability – dynamic cone penetrometer (DCP) tests listing all location results. Failing subgrade tests shall be included, noting the remedial action and subsequent passing test results.
- (9) Pavement subbase density tests.
- (10) Concrete and / or asphalt mix design information together with a packet that includes copies of all material delivery tickets.
- (11) Concrete slump and air content test results per IDOT.
- (12) Concrete cylinder compressive strengths test results per IDOT.
- (13) Asphalt mix temperature, lift thickness and density tests per IDOT.

(14) Pavement core thickness results.

(15) Compacted trench backfill moisture – density test results with corresponding proctor test.

(16) All test data shall include name of individual performing tests together with location, date, time and any other notable environmental conditions.

(17) All test results shall be initialed as approved by the resident observer, printed on letterhead, dated and signed as “Checked by Illinois Professional Engineer Number _____”.

DESIGN GUIDELINES

4.1 LOCATION, GEOMETRY AND DESIGN OF STREETS.

(A) General.

(1) The classification and location of all streets shall conform to the Village Comprehensive Plan, including the Transportation System Master Plan, and this section and shall be planned in relation to existing and proposed streets, topographical conditions, public safety and convenience, and anticipated land use.

(2) Each lot or parcel of ground within a new subdivision shall be adjacent to a public street.

(3) The street system in each new subdivision shall continue and extend existing, connecting streets in adjoining subdivisions, except that local access streets shall not be required to cross arterial streets unless such continuation and crossing is deemed necessary to promote pedestrian and / or vehicular circulation and safety.

(4) The street system in each new subdivision shall be extended and dedicated to any property adjacent to the subdivision, except in those instances in which the adjacent property is not and cannot be subdivided in the future. The Village may require a turnaround feature at the boundary of the subdivision.

(5) Private streets shall only be permitted with Board of Trustee approval. All streets shall be streets constructed in accordance with these provisions.

(6) When a subdivision borders on and has lots fronting on or contiguous to a present or proposed arterial or collector street, as depicted or described in the Comprehensive Plan and / or Transportation System Master Plan, necessary traffic service to lots of the subdivision bordering said street shall be provided by a marginal access street, local, or collector street, unless otherwise approved by the Village.

(7) Access to an arterial street from a marginal access street, local street, or collector street shall be taken at approximately one-fourth mile intervals, unless subdivision frontage is less than one-fourth mile, in which case the subdivision shall have no more than one (1) access point to the arterial street, at a location to be approved by the Village Board of Trustees.

(8) No street shall be located less than 200 feet from the edge of any parallel street, measured from the straight line portion of the right-of-way for each street.

(9) All permits required must be obtained by the subdivider (i.e. IDOT access permits). Permit applications shall be reviewed and approved by the Village before being submitted to the Illinois Department of Transportation.

(B) Right-of-Way Dedications.

(1) Subdividers shall dedicate right-of-way for streets and alleys in all new subdivisions whether or not immediate construction is planned.

(2) When the subdivider owns the land on both sides of the proposed street, the entire right-of-way for the street shall be dedicated by the subdivider.

(3) When the subdivider owns the land on only one (1) side of an existing street, the existing right-of-way of which is narrower than that required by this Chapter or the Comprehensive Plan / Transportation System Master Plan, the subdivider shall dedicate right-of-way which lies between the centerline of the existing right-of-way and the outside edge of the additional right-of-way equal to at least one-half of the required right-of-way width.

(C) Street and Right-of-Way Dimensions.

(1) Required right-of-way dedication and street geometry is as shown in the following Table A.

Table A – Street and Right of Way Dimensions

Category	* Ref	Minimum ROW Width (1)	Minimum Pavement Width (2)	Minimum Return Radius (3)	Minimum Design Speed	Minimum Curve R (7)	Sidewalk Width (4) (6)
Arterial – 4 lane		90 ft.	52 ft.	WB-65	40 mph	AASHTO	5 ft. / 10 ft.
Arterial – 3 lane		80 ft.	40 ft.	WB-65	40 mph	AASHTO	5 ft. / 10 ft.
Collector - Industrial	3	70 ft.	37 ft.	WB-65	35 mph	450 ft.	5 ft.
Collector – Commercial	3	70 ft.	37 ft.	WB-50	35 mph	450 ft.	5 ft.
Collector – Residential	1	66 ft.	34 ft.	35 ft.	35 mph	250 ft.	5 ft.
Collector – Rural	4	70 ft.	24 ft.	SU	50 mph	450 ft.	5 ft.
Sub Collector - Residential	5	65 ft.	32 ft.	SU	30 mph	250 ft.	5 ft.
Local – Industrial		66 ft.	34 ft.	WB-50	35 mph	450 ft.	5 ft.
Local - Commercial	2	66 ft.	34 ft.	35 ft.	35 mph	450 ft.	5 ft.
Local - Residential	6	60 ft.	28 ft.	25 ft.	30 mph	250 ft.	5 ft.
Local – Residential Boulevard	7	varies	21 ft.	25 ft.	30 mph	450 ft.	(5)
Local – Rural		70 ft.	28 ft.	25 ft.	30 mph	200 ft.	5 ft.
Cul-de-sac bulb		110 ft. dia.	80 ft. dia.	25 ft.	N/A	N/A	5 ft.
Alley – Residential		20 ft.	18 ft.	25 ft.	20 mph	N/A	N/A
Alley – Commercial / Industrial		24 ft.	20 ft.	25 ft.	20 mph	90 ft.	N/A

*Reference to Standard Cross Section drawings in Mahomet details, attachment to this Manual

Table Notes:

- (1) - Additional right-of-way 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 to the edge of pavement and shall accommodate the AASHTO design vehicle type listed.
- (4) Ten (10) foot walk on one (1) side of arterial and collector streets may be required for bikepath / walk as determined by the Village.
- (5) May include 8’ bikepath in boulevard in lieu of sidewalks on either side of road.

- (6) An eight (8) foot walk on one side of any street may be required as determined by the Village.
- (7) Minimum curve radius may be adjusted to fit local conditions as determined by the Village.
- (8) Additional Notes:
 - (a.) Type of arterial and collector street to be determined by the Comprehensive Plan or the Transportation System Master Plan or study.
 - (b.) Maximum longitudinal grade is 6 %, minimum longitudinal grade is 0.4%.
 - (c.) Curves shall be designed to not require super-elevation except on arterials or collectors as determined by the Village.
 - (d.) All curbs shall be IDOT type B-6.18 or M-4.18, except in cul-de-sac bulbs.
 - (e.) 2-way intersections (90 degree corners) shall have a 75 foot centerline radius (allowed only on local streets).
 - (f.) Village may authorize minor changes from these standards.
 - (g.) Sub Collector Residential streets have an estimated average daily traffic of 750 or more.
 - (h.) Additional right-of-way may be required at collector and arterial street intersections.

(D) Street Names and Addresses.

(1) Proposed streets which are obviously in alignment with or a continuation of existing streets already named shall bear the name of such existing streets. In no case shall the name for proposed streets duplicate existing street names that are not continuous with it, irrespective of the use of the suffix street, avenue, road, boulevard, drive, place, or court or an abbreviation thereof, or minor variations in spelling. Street names may be subject to the review of the Mahomet Postmaster and the Champaign County Emergency Management Agency. Street names shall also be subject to any street naming standards adopted by the Village Board of Trustees, Champaign County standards where they apply, and the authorities of the Village Planner.

(2) The house numbering system plan shall be provided by the Village Planner. The house numbering system shall be in accordance with the plan adopted by the Village Board, the Mahomet Postmaster, and the Champaign County Emergency Management Agency.

(3) Street name signs shall be purchased and erected by the subdivider at each street intersection within the subdivision, in accordance with the attached details. Street name signs shall be erected before pavements are opened for traffic use at the expense of the developer.

(E) Design of Streets.

(1) All subdividers are required to construct the minimum pavement width for the street type shown for local access and sub-collector streets unless the project property line is the centerline of a dedicated street right-of-way, in which case the subdivider shall construct one half of the required pavement width. If there is an existing street pavement within the existing right-of-way, the Village may cooperate with the subdivider to upgrade the existing street pavement instead of constructing one half street improvements. The subdivider's contribution toward upgrade of the existing street pavement shall not be less than the costs incurred to construct at least a 16 foot width of pavement.

(2) If additional pavement width beyond that shown in the design table for local access or minor-collector streets and / or additional thickness is required, the Village will participate in the additional cost in accordance with the pavement oversizing policy as adopted from time to time by the Board of Trustees.

(3) Streets shall be designed to intersect as close to a 90 degree angle as possible, and no two streets shall intersect at an angle of less than 80 degrees.

(4) Cul-de-sacs shall be provided when a street in a new subdivision is a permanent dead end street and cannot or will not be continued to another street due to topography, land ownership, consistent with the Comprehensive Plan or Transportation System Master Plan.

(5) Horizontal curves shall be gradual, having a radius of that set forth in Table A at the centerline, except where a lesser radius is, in the opinion of the Village, reasonably safe and adequate for anticipated traffic conditions. Super-elevation is not allowed on local streets. Special design criteria may apply for traffic calming systems and will require case-by-case review. When necessary to provide continuity between perpendicular streets in a confined area, 90 degree corners may be permitted by the Village with a standard centerline radius of 75 feet.

(6) Pavement cross sections shall be as depicted on the details contained in the Appendix. All pavements shall be constructed in accordance with the requirements of the IDOT Standard Specifications for Road and Bridge Construction.

(7) Pavements for streets shall be either Portland Cement Concrete pavement or Hot Mix Asphalt pavement in accordance with these standards.

(8) All pavements shall be constructed with Portland Cement concrete curb and gutter or an improved shoulder as authorized by the Village. The shape of the curb and gutter shall conform to the Village standard curb and gutter Type B (Barrier) or Type M (Mountable). See the standard Village details for more information.

(9) Pavement grades shall be:

Minimum	0.40%
Maximum	6.00%
Minimum Crown	3 inch to 4 inch crown in all pavements
Cross-slope	3/16 inch per foot minimum

(10) Vertical curves shall not be used when the local tangent slope of the curve is less than 0.3% for a length of 20 feet or more. This is an issue of concern when the incoming tangent gradient and outgoing tangent gradient are of opposite signs, and can be avoided in all cases when absolute value difference between the gradients is 3% or greater. When vertical curves are not used, the intersection of the two straight line longitudinal slopes shall be “warped” together over a distance of 15 to 20 feet.

(11) All circular cul-de-sacs shall have a minimum pavement radius of 40 feet (measured to back of curb) where the entire circle is paved. If a hole is proposed in the center of the cul-de-sac pavement, the minimum outside pavement radius shall be 45 feet (measured to the back of curb) and the minimum street right-of-way bulb width shall also increase proportionately. Other cul-de-sac shapes shall be as approved by the Village. See the standard Village details for more information.

(12) Street jogs with centerline offsets of less than 125 feet shall not be permitted if the same can be avoided and as approved by the Village. New intersections along an existing street shall, when practical, coincide with existing intersections on the opposite side of the street.

(13) Provisions shall be made to grant access for future development of unplatted adjacent land at intervals of not more than one-quarter mile.

(14) Cul-de-sacs shall have a maximum length of 600 feet measured from the centerline of the intersecting street to the center of the turn-around. And the 1st 80' of the pavement outside of the cul-de-sac shall not exceed 1.5% longitudinal slope.

(15) Adequate sight lines shall be provided for all street intersections, particularly those involving collector and arterial streets.

(16) All local streets shall be bicycle compatible, accommodating the shared use of the roadway by bicycles and motor vehicles, without designation of on-pavement bicycle lanes.

(17) Where an existing street is adjacent to the subdivision, the subdivider shall improve half of the adjacent street to conform to these standards, except where the existing street is a county highway or state highway the Plan and Zoning Commission may waive the requirements for street improvements subject to concurrence by the entity having jurisdiction over the roadway.

(18) All streets shall be designed for a minimum 30 year life, utilizing the methods and procedures set forth in the IDOT Bureau of Design and Environment Manual.

(19) The design California Bearing Ratio (CBR) for street pavement subgrades shall be 3%, and the CBR shall be at least 6% at the time of construction.

(20) Minimum tangent length between reverse curves shall be 100 feet.

(21) Maximum grade within 100 feet of an intersection shall be 2.0%.

(22) Sight triangles shall be provided via vehicular access control at all intersections of local streets with collector or arterial streets. Vehicular access control shall not be less than 50 feet along the local or minor-collector streets at an intersection with an arterial street, and not less than 40 feet along the local or minor-collector street at an intersection with a collector street. Vehicular access control shall be provided for not less than 100 feet along the arterial street at intersections with other streets and not less than 75 feet along the collector street at intersections with other streets.

(23) Vehicular access control shall be provided to the maximum extent possible along state and federal highways. Marginal access streets shall be provided adjacent to arterial streets wherever possible.

(24) Mid-block speed humps shall be installed along any street whose block length exceeds 1,000 feet as approved by the Village.

(25) Street designs utilizing round-about intersections shall be considered for use whenever conditions suggest that such an intersection may be warranted.

(F) Dead End Streets.

(1) Permanent Turnaround. When a street in a new subdivision is intended to be a permanent dead end street, the street shall be designed with a permanent turnaround cul-de-sac bulb, the right-of-way of which shall have a radius not be less than 55 feet.

(2) Temporary Dead Ends. The Village Planner and Village Engineer may agree to allow installation of a temporary dead end street under certain conditions. When permitted, the following temporary construction requirements shall apply:

(a) If the dead end street is not planned to be extended within 1 calendar year, then a temporary turnaround shall be constructed within the existing right-of-way or within a temporary easement. A minimum of four (4) end-of-roadway markers shall be installed marking the back of the turnaround. All end-of-roadway markers shall be manufactured and installed in accordance with MUTCD. As per the MUTCD, the minimum mounting height shall be 4 feet and appropriate advance warning signs shall be provided.

(b) Design of temporary dead-end pavements in residential neighborhoods shall consist of not less than a two (2) inch thickness hot mix asphalt over 8 inches of CA-6 subbase having a diameter not less than 60 feet.

(c) Design of temporary pavements in commercial and industrial neighborhoods shall consist of not less than 3 inches of Hot-Mix Asphalt over 8 inches of CA-6 subbase having a diameter not less than 70 feet.

(d) Design for the temporary cul-de-sac pavement shall be presented to the Village for review and approval. When circumstances warrant, the Village may require that stronger temporary pavements be installed than those set forth above.

(3) In all cases when the adjacent tract is developed and the dead end street continued, the temporary dead end construction (including signage) shall be removed and a permanent pavement installed, and the area landscaped by the developer responsible for the continuation.

(G) Location and Design of alleys.

Alleys require approval by the Board of Trustees.

- (1) No dead end alleys will be permitted except under special conditions as approved by the Village.
- (2) The alley pavement shall be constructed in accordance with the minimum construction standards set for street pavement.

(H) Reference Standards. Design and construction standards for pavement shall comply with the requirements of the following standards:

- (1) IDOT, Bureau of Local Roads and Streets Manual, latest edition.
- (2) IDOT, Highway Standards Manual, latest edition.
- (3) IDOT, Standard Specifications for Road and Bridge Construction, latest edition.

(4) IDOT, Construction Manual, latest edition.

(I) Subgrade. The street subgrade shall be prepared in accordance with the IDOT Standard Specifications for Road and Bridge Construction and the IDOT Subgrade Stability Manual (latest edition), except as amended or expanded as follows:

(1) Soils Report. On all new or reconstructed arterial and collector class streets a Soils Report shall be prepared by an experienced, independent materials testing firm. The Soils Report should at a minimum include the following: location and designation section which identifies the project's location, length, existing conditions, existing and proposed pavement typical sections, stations of borings; a soil geology section which describes existing soil types and profiles and provides a sieve analysis of each soil boring with grain size distribution plots, liquid limits, plastic limit, % sand, % clay, % silt, and subgrade support rating; copies of actual boring logs; a soil profiles plot based on interpretation of boring logs; and a conclusion and recommendation section which includes recommendations for lime stabilization with recommended application rates of lime and water and any other subgrade stabilization alternatives.

(a)

The site soils shall be reviewed for the existence of hydric soils. The National Wetlands Inventory shall be reviewed for the existence of wetlands on the site. If the National Wetlands Inventory indicates that wetlands exist on the site or if hydric soils exist on site a Certified Wetland Scientist shall be consulted to confirm the existence and extent of any wetlands. Wetland impacts shall be accounted for in the design and construction of the subdivisions, planned unit developments, and mobile home parks.

(2) Existing topsoil shall be removed from the area of proposed street pavement plus 2 feet outside the proposed back of curb. Removal shall be to a depth necessary to remove all organic material.

(3) Testing. The following minimum subgrade tests shall be performed for all street pavements according to applicable testing standards:

(a) Compaction. Street subgrades shall be compacted to not less than 95% of the standard laboratory density in accordance with the applicable section of the IDOT Standard Specifications for Road and Bridge Construction. Moisture density requirements should apply to all embankment construction and to the upper 12 inches of cut sections. Testing should be performed at 200 foot intervals in each lane with tests alternating between lanes.

(b) Subgrade stability. The design CBR (California Bearing Ratio) for all streets is 3%. A CBR of 3% indicates a poor or weak subgrade strength condition. Subgrade strengths at the time of construction shall be not less than 6% (CBR = 6%) in the top 12 inches of the subgrade. For pavement design sections, a soil support rating of "poor" shall be used. Where appropriate an Illinois Bearing Ratio (IBR) of 2% shall be used for design.

(c) DCP. A DCP (Dynamic Cone Penetrometer) shall be used to estimate the in situ CBR of granular materials and fine-grained soils once final grade has been achieved. The DCP shall be used to determine that the required minimum subgrade CBR of 6% has been achieved in the top 12 inches of subgrade is obtained during construction. The DCP used for the testing shall comply with the most current ASTM standard. Testing shall be performed at 200 foot intervals in each lane with tests alternating between lanes. Tests shall not be taken until the subgrade is within one-tenth of a foot of final grade.

(d) The DCP test shall also be conducted to a depth of at least 2 feet below the finished grade of the subgrade to provide the subdivider's engineer with knowledge of the stability of the underlying soil.

(e) Prepared subgrades shall be retested after the winter, when significant ponding water has been present, when freeze / thaw has occurred after tests were taken, or when the subgrade is significantly saturated with moisture prior to placement of any paving materials. The Village may require additional testing prior to paving if there are any apparent changes in the subgrade.

(f) Proof Rolling. In addition to stability and density testing, the subgrade shall be "proof rolled" prior to approval of the subgrade and before placement of base materials. A Village representative shall be present. Trucks shall be loaded as follows: 27,000 lbs. on two axles and 45,000 lbs. on three axles with the tolerance not to exceed 10%. A loaded truck shall make a single pass along each lane of street or parking subgrade at distances as directed by the Village and not to exceed 10 feet apart. Any areas of the prepared and compacted subgrade which show rutting, cracking, or rolling upon test rolling will be marked as unsuitable and will not be accepted. The unsuitable areas shall be removed and reconstructed. Additional DCP tests may be required to better define the area of deficiency.

(4) Remediation. If subgrade and stability requirements cannot be met, then, with the approval of the Village, the following remediation methods shall be executed.

(a) Unsuitable Material. Unsuitable material in untreated or unstable subgrade shall be removed to a minimum depth of 12 inches, with additional material removal as required by the Village. The resultant void shall be backfilled with embankment material and compacted. The use of additional stability methods, such as coarse aggregate and geofabric installation, may be required by the Village.

Unsuitable materials in treated or stabilized subgrades shall be removed and replaced with coarse aggregate. Treated and stabilized subgrade will require DCP testing to a minimum depth of 18 inches with additional material removal as required by the Village. The resultant void will be backfilled with a minimum of 12 inches of coarse aggregate with a gradation of CA-1 and capped off with a minimum of 6 inches of coarse aggregate with a gradation of CA-6. The use of additional stability methods, such as geofabrics, may be required by the Village.

(b) Lime Stabilization. Lime stabilization may be utilized for remediation when existing roadbed soils are lime reactive. The lime shall be mixed to a minimum depth of 12 inches and shall follow IDOT's Standard Specification for Lime Stabilized Soil Mixture. Laboratory evaluation and design procedures for lime reactive soils shall follow all procedures and guidelines outline in the latest edition of the IDOT Geotechnical Manual. The design lime content is the amount used for construction and shall be 1% above the minimum lime content. The minimum lime content is the value which provides a compressive strength gain of 50 psi over that of the untreated soil, and provides a minimum average compressive strength of 100 psi for the treated soil. Soils that do not meet these minimum requirements will not be considered for lime stabilization.

(5) Trucks or heavy equipment shall not travel on any pavement subgrade after final testing and prior to pavement construction except for proof roll testing.

(6) Pavement subgrade material shall not be removed, placed or disturbed after pavement subgrade compaction and stability testing has been completed prior to pavement construction.

Additional testing is required if the pavement subgrade is disturbed and / or material is removed from or placed on the pavement subgrade after approved compaction and stability testing.

(J) Granular subbase. All street pavements shall be provided with not less than 4 inches of granular subbase materials. Granular subbase material shall be CA-6 or CA-10 and shall be installed in accordance with the applicable provisions of the IDOT Standard Specifications for Road and Bridge Construction. Recycled or crushed asphalt that has been processed, screened, and meets CA-6 gradation requirements may also be utilized for granular subbase material.

(K) Pavement thickness.

(1) Pavement thickness shall be determined by design analysis with the following minimum requirements:

<u>Street Type</u>	<u>Full Depth Hot Mix Asphalt (minimum thickness)</u>	<u>Portland Cement Concrete (minimum thickness)</u>
Arterial	12 inches	8 inches
Collector	10 inches	7 inches
Sub Collector	9 inches	6 ½ inches
Local	9 inches	6 ½ inches
Alley	8 inches	6 inches

(2) All Portland Cement Concrete street intersections shall be thickened by ½ inch. All Hot-Mix Asphalt street intersections shall be thickened by 1 inch.

(3) At the developer’s option, local pavements with less than minimum design thickness may be considered approved by the Village if a pavement structural design analysis indicates that a lesser pavement thickness can achieve minimum design requirements. Village approval will be required if less than minimum thicknesses are utilized.

(4) Pavement Design Analyses. Structural design for new pavements shall be in accordance with IDOT Bureau of Local Roads and Streets (BLRS) Manual. All pavement design calculations shall be submitted to the Village for review and approval.

(a) Rigid Pavements. Structural design of rigid pavements, including joints and joint placement, shall be in accordance with IDOT BLRS Manual except modified as follows:

1. Use subgrade support rating of “poor”.
2. Minimum design period is thirty (30) years.

(b) Flexible Pavements. Structural design of flexible pavements shall be in accordance with IDOT BLRS Manual except as modified as follows:

1. Use subgrade support rating of “poor”.
2. Full depth asphalt pavements shall be used exclusively.

3. Minimum design period is thirty (30) years.

(5) All pavement designs shall be approved by the Village. The subdivider's Engineer shall provide pavement design calculations to verify compliance with design thickness requirements.

(L) Portland Cement Concrete pavement.

(1) Materials for Portland Cement Concrete shall conform to the IDOT Standard Specifications for Road and Bridge Construction, except as amended or expanded as follows:

(a) The slump may exceed the approved value only with prior approval from the Village. The maximum slump for slip forming methods shall not exceed 3 inches. The maximum slump for vibratory screed methods shall not exceed 3 ½ inches. The maximum slump for small areas (less than 25 square feet) of hand placed materials shall not exceed 4 inches.

(b) The use of superplasticizer, calcium chloride or any other additions shall be approved in advance by the Village.

(c) Slump testing must be done before superplasticizer is added.

(d) The minimum slump shall not be less than 1 ½ inches.

(2) Portland Cement Concrete must be produced at an IDOT approved plant using IDOT currently approved materials for the IDOT approved mix design.

(3) No more than ½ gallon of water for every cubic yard of concrete may be added on-site.

(4) An IDOT approved mix design specification sheet must be provided to the Village prior to use of the Portland Cement Concrete mixture for pavement construction.

(5) Longitudinal construction joints shall be tied with epoxy coated #4 deformed tie bars, 30 inches long at 30 inch intervals. All joint patterns are to be approved by the Village.

(6) Sawed contraction joints shall be provided at a maximum of 15 foot intervals.

(7) The Portland Cement Concrete shall meet the following requirements:

(a) Have a minimum compressive strength of not less than 3,500 psi or a minimum modulus of rupture of not less than 650 pounds per square inch at an age of 14 days.

(b) The first truck and every fourth truck thereafter each day, at a minimum, shall be field tested for slump and air content.

(c) Be field tested for strength by an independent testing laboratory during construction by taking beam or cylinder specimens at a minimum rate of two (2) from the first truck and two (2) from every fourth truck thereafter each day. If a seven (7) day test is desired by the developer three (3) specimens shall be taken.

(d) Be cured by standard procedures, as approved by the Village. Curing compound shall be applied within 30 minutes of completion of surface finishing.

(e) Be finished with a finishing machine approved by the Village ; the machine shall be self-propelled, capable of striking off, consolidating and finishing the concrete of a consistency required to the proper crown and grade, or other method approved by the Village .

(f) Be air entrained (5% to 8%), with the first truckload each day and every fourth truckload thereafter tested to verify the entrainment.

(8) Portland Cement Concrete pavement shall be protected from all traffic (including construction equipment) for a period of not less than 7 days, or when test cylinders indicate that the pavement has reached a minimum compressive strength of 3,500 psi (650 psi – minimum modulus of rupture) whichever is greater.

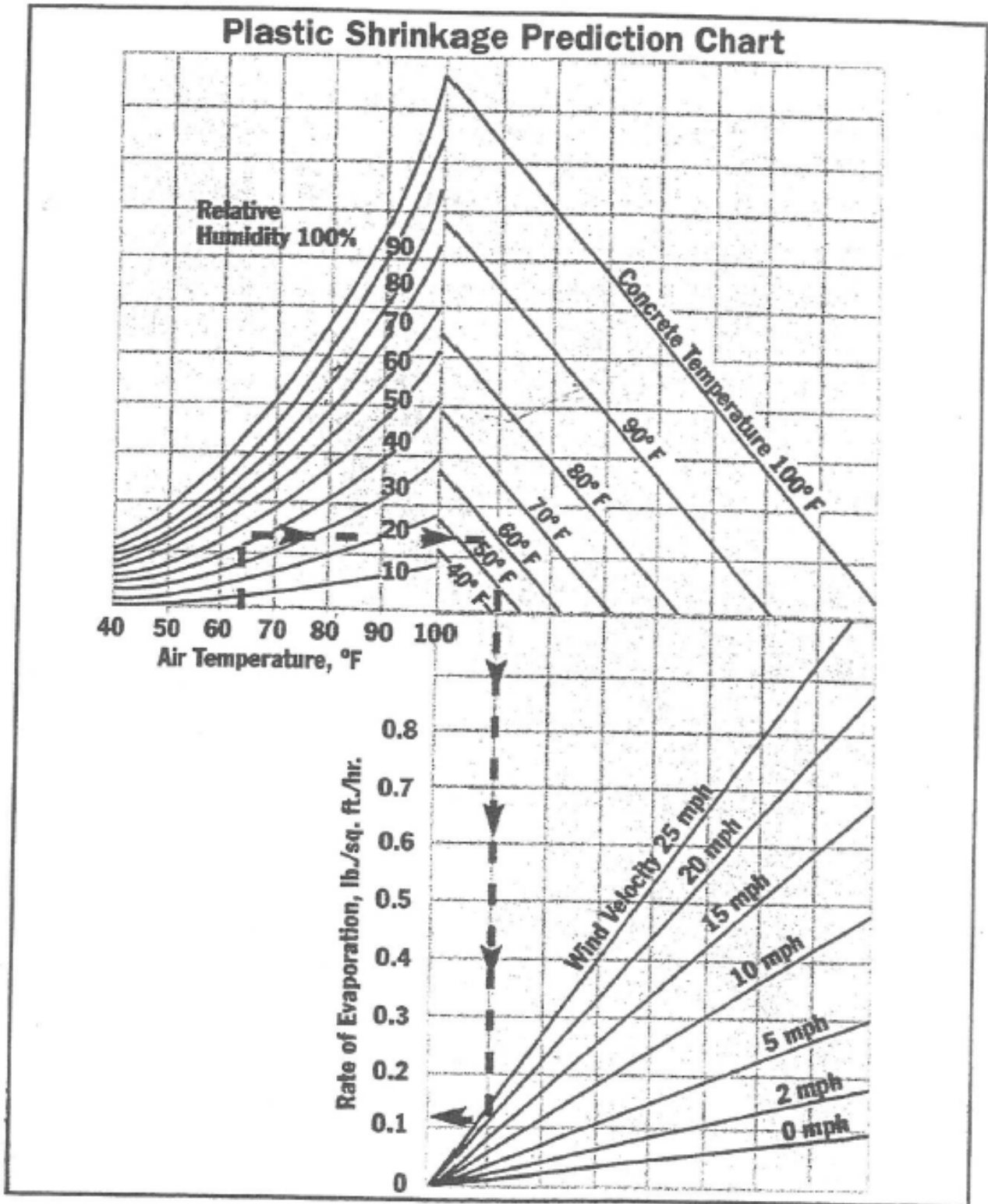
(9) Sawing of joints shall commence as soon as the concrete has hardened sufficiently to permit sawing without excessive raveling, but no later than 10 hours after concrete has been placed.

(a) Weather conditions can have a significant impact upon the final setting time and plastic shrinkage of Portland Cement Concrete.

Do not place Portland Cement Concrete for street pavements when the evaporation rate is expected to be above 0.15 lb. / sq. ft. / hour.

Adjust sawcut times to account for ambient air temperature.

<u>Temperature Degrees Fahrenheit</u>	<u>Optimum Sawcut Time (hours)</u>
40	9 – 10
50	8 – 9
60	7 – 8
70	6 – 7
80	5 – 6
90	4 – 5



Design and Control of Concrete Mixtures, Portland Cement Association

Sawcut all joints at not less than 25% and not more than 35% of slab thickness.

Re-apply curing compound to saw joints within ½ hour of sawing.

(b) All joints shall be sawed to the full depth as shown in the details before uncontrolled shrinkage cracking takes place. This information has been incorporated into the design standard detail sheets. If necessary, the sawing operations shall be carried on both during the day and night regardless of weekends, holidays, or weather conditions. The Village may grant relief from the Noise Ordinance Regulations on a case by case basis in a manner consistent with the policy as set forth in the Administrative Rules.

(c) If stray cracking occurs, IDOT Standard Specifications for Road and Bridge Construction Art. 420.05(c)(1) a-e apply.

(10) The developer's Engineer shall provide written documentation to the Village as to the time when Portland Cement Concrete is placed and the time when sawcutting of joints takes place.

(11) Joints in Portland Cement Concrete pavement shall be cleaned and filled with hot poured joint sealer.

(12) Joint pattern details shall be provided in the Construction Plans for all intersections, cul-de-sacs, and other unusual situations. The standard joint pattern shall be utilized unless prior approval of an alternate joint pattern is obtained from the Village.

(13) The approved joint pattern shall be strictly adhered to during construction unless prior approval is obtained from the Village.

(14) The developer is responsible to guard fresh concrete until it sets and hardens sufficiently to prevent people from writing, marking, defacing, or causing depressions of any type in the concrete in a permanent fashion. Any concrete so marked will be removed and replaced by the developer at the developer's expense.

(15) The contractor shall "box out" around proposed storm inlets and manholes that lie within the combination curb and gutter section and within the pavement utilizing concrete forms.

(16) Tie bars may be omitted along longitudinal joints on local streets (≤ 28 feet wide) except that bars must be used on all "stand alone" tied curb and along all longitudinal "cold" construction joints. All tie bars shall be epoxy coated.

(17) Jointing adjacent to manhole casting lid assemblies and curb frame and grate assemblies shall follow the standard details adopted by the Village.

(18) Upon request of the Village, surface smoothness tests may be required. Tests shall be conducted per the most recent IDOT Standard Specification that includes straight edge (surface smoothness) test procedures.

(M) Hot Mix Asphalt Pavement.

(1) Materials for full depth concrete pavement shall conform to the IDOT Standard Specifications for Road and Bridge Construction for Hot Mix Asphalt Pavement (Full Depth) except as amended or expanded as follows:

(a) All proposed Hot Mix Asphalt binder and surface courses shall be designed in accordance with IDOT mix design procedures and be approved by IDOT. Evidence of IDOT approval must be submitted to the Village.

(b) An IDOT approved Quality Control / Quality Assurance (QC / QA) Plan must be submitted to the Village prior to the use of a mix for pavement construction.

(c) Hot Mix Asphalt materials must be produced at an IDOT approved plant using IDOT approved materials for the IDOT approved mix design.

(2) The Hot Mix Asphalt binder course mix shall be submitted and approved by the Village.

(3) The Hot Mix Asphalt surface course mix shall be submitted and approved by the Village.

(4) Base course aggregate shall be treated with a bituminous prime coat prior to the application of Hot Mix Asphalt surface course or binder course.

(5) Upon request of the Village, surface smoothness tests may be required. Test shall be conducted per the most recent IDOT standard specification that includes straight edge (surface smoothness) test procedures.

(6) All pavement binder courses and surface courses shall be field tested for proper compaction. Tests shall be at the rate of two (2) per lane per 500 feet. Hot Mix Asphalt binder and surface courses shall have a minimum in place density of 93.0%; with no individual test below 92.5%.

(7) All Hot Mix Asphalt delivery trucks shall be tested for temperature. Hot Mix Asphalt that is below 250° F shall not be placed. The developer's Engineer shall document the temperature of each truck load of material at the time of placement.

(8) The contractor shall box out around all manholes that lie within the pavement surface. The boxed out area shall be trimmed and filled with darkened Portland Cement Concrete pavement.

(9) Longitudinal joint sealant shall be placed under the surface lift and under the top binder lift of all Hot Mix Asphalt Pavements. The joint sealant shall comply with the requirements of the IDOT "Standard Specifications for Road and Bridge Construction".

(N) Portland Cement concrete curb and gutter.

(1) All street pavements except Rural Collector streets shall be provided with Portland Cement concrete curb and gutter.

(2) The shape shall conform to the Mahomet concrete curb and gutter, Type "B" or Type "M", or as approved by the Village. Standard shapes shall be B6.18 or M4.18.

(3) The Portland Cement concrete shall meet the requirements for pavements as set forth elsewhere in this chapter and the requirements of Section 606 of the IDOT Standard Specifications for Road and Bridge Construction. All testing requirements shall apply.

(4) The minimum thickness of the curb shall be the same as the minimum thickness for the pavement adjacent to the curb.

(5) The concrete curb and gutter shall be constructed separate from concrete pavement. The curb shall be constructed by machine in a manner approved by the Village. Small areas (less than 25 lineal feet) of hand formed curb may be allowed by the Village.

(6) Contraction joints shall be provided at not less than 20 foot intervals for curb and gutter adjacent to Hot Mix Asphalt pavements, and not less than 15 foot intervals adjacent to Portland Cement concrete pavement.

(7) Expansion joints shall be provided at locations as indicated in the standard details. Expansion joints for curbs and gutter shall include a 1 ½" diameter 18 inch long smooth dowel bar with pinched stop cap, placed at mid-depth.

(8) When curb and gutter is constructed independently from Portland Cement concrete pavement, the longitudinal joint shall be considered a construction joint. For construction joint requirements see 4.1(L)(5).

(9) Curb and gutter shall be provided with not less than ¾ inch slope per foot transverse gutter slope, as shown on the attached details. Curb and gutter with less than this minimum slope shall not be acceptable, and shall be removed and replaced if installed with inadequate transverse slopes.

(O) Testing and acceptance.

(1) All pavements shall be tested for compliance with the requirements of the Standard Specifications for Road and Bridge Construction and this manual. Pavements will not be accepted that do not conform to all testing requirements. Missing tests shall be considered failed tests.

(2) Before final approval all pavements shall be cored for thickness by the subdivider in the presence of a representative of the Village. A thickness core shall be taken at 200 foot intervals per each lane unless deficiencies are encountered. When deficiencies are encountered, additional cores shall be taken as needed to document the extent of the deficiency. The Village shall determine when a deficiency exists, and the extent of any deficiency. Requirements in the event of deficient pavements thickness shall be as follows:

(a) Up to 4% deficiency will be accepted only in isolated areas.

(b) 4% and over deficiency will be removed and replaced to the plan thickness.

(3) If Portland Cement concrete pavement test specimens do not attain the required strength as stated above, then pavement may be accepted if the in-place strength meets a minimum strength of at least 3,800 psi, when cored and tested according to American Concrete Institute (ACI) standard methods.

(4) If Hot Mix Asphalt pavement does not meet the minimum compaction requirements, the minimum thickness requirements, or is otherwise out of specification the developer shall remit a lump sum non-reimbursable payment to the Village in the amount of 25% of the value of the pavement in the deficient area.

(5) The Village shall determine if pavement is out of specification by reviewing the materials, testing, strength, appearance, etc. While it is understood that random cracks may appear in concrete pavement, this should be a rare occurrence. Cases of numerous cracks, shrinkage or otherwise, shall be subject to removal and replacement per the direction of the Village. At the discretion of the Village, pavements with moderate defects may be secured by a long term bond in lieu of removal as set forth in Paragraph 6 below.

(a) If the in-place pavement strength or thickness is found to be deficient or other obvious defect is found to exist, subject to the approval of the Village, the subdivider shall remove and replace the deficient pavement sections.

(P) Signage.

(1) Street name signs and traffic control devices of the size, height, and type approved by the Village shall be supplied and placed by the developer at all intersections within or abutting any subdivision.

(2) Street name signs shall be placed at all street intersections.

(3) Sign height and location shall conform to the Manual on Uniform Traffic Control Devices and IDOT specifications, except as otherwise required in these specifications.

(4) Street name sign material shall be aluminum (0.080) gage thickness.

(5) Street name signs shall use engineer grade 3M blue sheeting for the background, with a ½" silver (white) border, and silver (white) for the lettering. Initial letter of the street name shall be in uppercase primary letters six (6) inches in height with subsequent letters in lowercase letters four and one half (4 ½) inches in height.

(6) Street name sign posts shall be twelve gauge steel posts, 10 foot in length, and hot dip galvanized.

(7) Street name sign mounting shall be on the top of the sign post. The street name sign shall have a vertical ground clearance of 7 feet.

(8) Street name signs shall be erected within 30 days after completion of street paving activities and before new streets are opened for local traffic.

(9) Post mounting shall be embedded in the ground a minimum of 3 feet.

(10) All regulatory signs shall conform to the Manual on Uniform Traffic Control Devices and IDOT specifications, pertaining to materials, shapes, lettering, symbols, coloring, location and placement.

(11) Stop signs, yield signs and other traffic control signs shall be installed by the developer at locations designated by the Village.

(12) Traffic control signs shall meet the requirements of the Manual on Uniform Traffic Control Devices (MUTCD).

(13) Stop signs shall be a 3M 3990 VIP Diamond grade, minimum size of 30 inch by 30 inch on 0.080 aluminum blank.

(Q) Pavement markings.

- (1) All pavement markings shall conform to the Manual on Uniform Traffic Control Devices and the IDOT Standard Specifications for Road and Bridge Construction. The allowed material for striping on concrete pavement shall be modified urethane only. Paint will not be allowed.
- (2) Pavement lane and edge lines are required on arterial and collector streets unless otherwise directed by the Village.
- (3) The Village requires High-Visibility Crosswalks for bikepath crossings, for select locations that are considered as direct routes to school, for locations that are high pedestrian traffic areas, or as directed by the Engineer. These High-Visibility Crosswalks shall be "open ladder" style consisting of 12" lines at 36" centers perpendicular to the crossing and matching the width of the bikepath or sidewalk at that specific location.

(R) Pavement markings shall be constructed prior to occupancy of adjacent building(s).

4.2 PUBLIC STORM DRAINAGE SYSTEM.

(A) General.

(1) All subdivisions shall be provided with drainage facilities having a design capacity adequate to carry off surface water falling or coming on the streets and developed areas in a ten (10) year return period storm event under the projected final state of development of the entire upstream watershed.

(2) The minor drainage system components shall consist of storm drains, street gutters, small open channels, and swales designed to store and convey the peak rate of runoff from a ten (10) return period precipitation event of critical duration.

(3) The major drainage components such as open ditches, waterways and streams draining 20 acres or more in area shall be designed to store and convey stormwater flows beyond the capacity of the minor drainage components. They shall be designed to convey the peak rate of runoff from the 30 or 50 year return period precipitation event.

(4) An excess stormwater passageway shall be provided for the floodplain of all natural water courses and such manmade water courses and storm drainage systems as the Village may direct, which shall have adequate capacity to convey the excess stormwater runoff from the tributary watershed. The capacity of this excess stormwater passageway shall be adequate to transport the peak rate of runoff from the 100 year return period storm, assuming all upstream areas are fully developed for uses specifically permitted by existing zoning, and antecedent rainfall in the tributary watershed is average (e.g., Antecedent Moisture Condition II).

(a) An excess stormwater passageway shall be provided within the design of all parts of a subdivision with a watershed area of 10 acres or more. The excess stormwater passageway through the subdivision shall be adequate to transport the peak rate of runoff from the twenty-five (25) year return period storm.

(b) No buildings or structures shall be constructed within an excess stormwater passageway; however, streets, parking lots, playgrounds, park areas, pedestrian walkways, open green space, and utility and sewer easements may be considered compatible uses.

(5) All storm drainage facility construction activity shall conform to the IDOT Standard Specifications for Road and Bridge Construction and the Standard Specifications for Water and Sewer Main construction in Illinois.

(6) All stormwater drainage facilities shall comply with the requirements of the Village Stormwater Management Ordinance. When required by the Stormwater Management Ordinance, stormwater detention facilities shall be provided for new subdivisions.

(7) The Rational Method, USDA Natural Resource Conservation Service (NRCS) TR-55 Method, TR-20 Method, Manning's equations, or other similar recognized design methods may be used to size the drainage components for any development.

The National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Precipitation Data, published in 2004 shall be utilized as the source for precipitation data (hdsc.nws.noaa.gov). Other more recently available rainfall data acceptable to the Village may also be used. Illinois State Water Survey Bulletin 70 data shall no longer be utilized.

(8) Open grates to subsurface drainage systems shall be designed at 90% of their rated capacity to account for clogging by debris.

(9) All design calculations must be submitted to the Village for approval.

(10) Standard drainage systems shall consist of storm drains, inlets, manholes, and other related underground drainage facilities.

(11) Reduced Impact Development drainage systems may utilize surface drainage components such as roadside swales, culverts, subsurface drain tiles, and other related surface drainage facilities.

(12) Alternate drainage systems may be approved by the Village if a detailed engineering study performed by the subdivider's engineer demonstrates that the alternate drainage system provides a level of service at least equal to that provided by the above requirements without increasing maintenance and operating costs to the Village.

(13) All single family and two-family residential lots shall be provided with the ability to connect a sump pump discharge line to a tile drain or sump pump discharge line.

(14) All multi-family residential, commercial, and industrial lots larger than 1 acre in size shall be provided with a subsurface service connection to the storm drainage system.

(15) The storm drain system in each new subdivision shall continue and extend existing, connecting storm drains in adjoining subdivisions where appropriate.

(16) The storm drain system in each new subdivision shall be extended to any property adjacent to the new subdivision and shall accommodate the tributary watershed from adjacent property.

(17) All single family and two-family residential lots shall be graded such that the building site elevation on the lot is not less than 18 inches above the highest adjacent back of curb elevation of the adjacent pavements. The first floor elevation shall be not less than 24 inches above the highest adjacent back of curb elevation of the adjacent pavement. All lots shall be graded to fully drain. See lot grading diagram in Mahomet Standard Drawings. Special lot grading to meet unusual site conditions may be utilized, as approved by the Village.

(18) Topsoil minimum thickness shall be 4 inches on all street right-of-way areas, residential lots, and common areas.

For purposes of design of stormwater drainage and stormwater management systems within the Village of Mahomet the following assumptions shall apply.

1. Soils under developed conditions have been significantly disturbed, and will therefore be considered "C" soils or worse for design purposes and determination of NRCS "CN" values.
2. Soils for undeveloped areas shall be assigned the CN value consistent with their land use and soil type per NRCS guidelines.

The following Rational Method Runoff Coefficient minimum “C” values shall apply for storm events smaller than the 10 year return period storm for developed conditions.

<u>Character of Surface</u>	<u>Runoff Coefficients</u>
Pavement	0.95
Roofs	0.95
Lawns	
Flat < 3%	0.15
Steep > 3%	0.20
Single Family Residential	
7,000 square foot lot	0.50
8,000 square foot lot	0.45
10,000 square foot lot	0.40
12,000 square foot lot	0.35
Multi-Family Residential	
Duplex	0.45
Apartments	0.70
Commercial	0.85
Neighborhood Commercial	0.75
Light Industrial	0.80
Heavy Industrial	0.90
Parks	0.20
Wooded Tracts	0.15

Runoff coefficients shall be increased up to a maximum value of 1.0 for storm events larger than a 10 year return period storm event. Multiplier factors shall be as follows:

<u>Storm Event</u>	<u>Multiplier</u>
25 year	1.20
50 year	1.25
100 year	1.30

(B) Stormwater management plan.

(1) The subdivider shall submit a drainage plan containing the following information to assure that the provisions of this chapter are met. The submittal shall include sufficient information to evaluate the environmental characteristics of the property, the potential adverse impacts of the development on water resources both on site and downstream, and the effectiveness of the proposed drainage plan in managing stormwater runoff.

(2) The materials submitted shall be as follows:

(a) Topographic map. A topographic survey of the property with 1 foot contour interval meeting National Map Accuracy Standards under existing and proposed conditions, and areas upstream and downstream, as necessary, in the opinion of the Village, to determine off site impacts of the proposed drainage plan. Proposed spot elevations at lot corners, at building sites, along pavement centerlines, along drainage swales and at other relevant locations shall be provided in addition to proposed contours. The map shall be keyed to a consistent vertical datum specified by the Village (normally the North American Vertical Datum of 1988).

(b) Drainage system. Mapping and descriptions, where relevant, of existing and proposed drainage system features of the property and immediate vicinity including:

1. The banks and centerline of streams and channels;
2. Shoreline of lakes, ponds, and existing or proposed stormwater basins;
3. Farm drains and field tiles;
4. Sub-watershed boundaries within the property controlled by the owner;
5. Watershed soils classifications;
6. The property's location within the larger watershed and the area of all upstream watersheds;
7. Locations, size, cross sectional shape, and slope of stormwater conduits, storm drains, drainage swales and culverts;
8. Direction and velocity of stormwater flows;
9. Delineation of upstream and downstream drainage features and watershed which might be affected by the development;
10. Locations, size, and shape of stormwater detention and retention facilities;
11. Roads, streets, other paved areas and associated stormwater inlets;
12. Base flood elevations, and regulatory floodway where identified for the property; and

13. Basis for design for the final drainage network components, including design assumptions utilized.

(C) Storm drain design.

(1) All storm drain systems shall be designed for a ten (10) year return period storm. The minimum pipe diameter shall be 12 inches. The minimum time of concentration shall be 10 minutes. The system shall have a free outlet and shall generally be designed for gravity flow conditions. Low pressure flow conditions may be allowed near the outlet of the storm drain system if physical conditions preclude a free outlet, as approved by the Village. In general, the hydraulic grade line for a ten (10) year return period storm shall be wholly within the pipe.

(2) The maximum distance for overland flow of stormwater runoff before reaching a storm drain inlet shall be 600 feet. The Village may approve/require +/- 60 feet.

(3) All manholes and catch basins and storm drains shall be constructed in accordance with the standard details issued by Administrative Rule and shall conform to applicable IDOT Standard Specifications for Road and Bridge Construction.

(4) Sufficient inlets shall be provided so that water will not drain across the crown of any street or flow in the gutter of any street for more than 500 feet during the 10 year return period storm event. Flow along the gutter shall extend no more than 8 feet out from the face of the gutter during the ten (10) year return period storm event. At least one (1) lane of street pavement shall remain free of flowing or standing water. The subdivider's engineer shall submit calculations showing compliance with these requirements.

(5) Gutter flow for all collector and arterial street classifications shall comply with minimum spread criteria as indicated in IDOT Drainage Manual.

(6) Inlets in street pavements shall be located, to the extent practical, in alignment with nearby lot lines to reduce conflicts with individual driveways.

(7) Storm drain grades shall be such that a minimum of 2 feet of cover is maintained over the top of the pipe. Uniform slopes shall be maintained between inlets, manholes and inlet to manhole. Minimum and maximum allowable slopes shall be those capable of producing velocities between 2 and 10 feet per second, respectively, when the drain is flowing full.

(8) Manholes shall be installed to provide access to continuous underground storm drains for the purpose of inspection and maintenance. Manholes shall be provided at the following locations:

(a) Where two (2) or more storm drains converge.

(b) Where pipe sizes change.

(c) Where an abrupt change in alignment occurs.

(d) Where a change in pipe slope occurs.

(9) The maximum distance between manholes shall be as follows. The storm drain shall be constructed in a straight line between manholes:

12 inch to 24 inch diameter	400 feet
Over 24 inch diameter	500 feet

(10) Pipes of equal diameter shall be provided with not less than 0.1 feet of fall across manholes. The crowns or 0.8 diameter point of pipes of unequal diameter shall be matched at manholes to promote continuous hydraulic grade lines.

(11) Inlets and catch basins on drainage structures shall be utilized to collect surface water through grated openings and convey it to storm drains. Inlet spacing in streets shall comply with the design provisions of the IDOT Drainage Manual, latest edition. Two (2) foot diameter inlets and catch basins shall not exceed four (4) feet in depth.

(12) Diameter of manholes shall be as follows:

Outlet Pipe Diameter	Manhole Diameter
18 inches and under	4 feet
21 inches to 42 inches	5 feet
48 inches to 60 inches	6 feet

(13) Trench backfill requirements shall conform to the applicable portions of the IDOT Standard Specifications for Road and Bridge Construction, and the following additional requirements:

(a) Trench backfill consolidation by water inundation and jetting will not be allowed under or within 2 feet of any street pavement.

(b) Granular backfill under or within 2 feet of pavements shall be compacted by ramming and tamping tools and shall be deposited in uniform layers not exceeding 6 inches. The trench backfill material shall be compacted to not less than 95% of the standard laboratory density. The density of the trench backfill must be determined at 2 foot depth intervals of the backfill construction and the test results shall be taken at maximum 100 foot intervals along the trench when a trench runs longitudinally beneath a pavement. Compaction shall be tested for every trench beneath a pavement and test results shall be provided to the Village.

The use of large vibratory plate compactors mounted on hi-hoe excavator arms is allowable for all utility trenches exceeding 5 feet in depth in areas beneath paved surfaces. Granular trench backfill lifts of up to 4 feet in loose depth shall be allowable when large plate compactors are utilized. Each lift shall be tested for compaction. In general each trench shall be tested 1 foot below finish grade, 4 ½ feet below finish grade, 8 feet below finish grade, and each 3 ½ feet further in depth thereafter.

Before a particular vibratory plate compactor is utilized the contractor shall demonstrate its ability to provide adequate compaction of granular trench backfill materials to the full 4 foot loose depth.

(c) Controlled low strength material (CLSM), or flowable fill, may be required by the Village Engineer in lieu of compacted granular trench backfill. Construction of CLSM shall be in accordance with IDOT Standard Specifications for Road and Bridge Construction.

(14) The type of drain pipe shall be:

(a) Concrete and/or reinforced concrete pipe, with gasketed or bituminous mastic joints;

(b) Extra strength vitrified clay pipe, with gasketed joints;

(c) Precoated and fully lined, PVC lined, or smooth lined aluminized corrugated steel pipe, with gasketed joints, for pipes 18 inches in diameter and smaller;

(d) Type S high density corrugated, dual-wall, smooth interior polyethylene pipe with push-on gasketed joints, with a pipe stiffness not less than 75pii (pii=(lbs./in/in)) for pipes 18 inches in diameter and smaller;

(e) Polyvinyl chloride pipe (heavy wall type) with push-on gasketed joints, for pipes 18 inches in diameter and smaller.

(f) Type S high density corrugated, dual wall, smooth interior, steel reinforced polyethylene pipe with push-on gasketed joints with a pipe stiffness of not less than 120 pii for pipes 18 inches to 36 inches in diameter. The pipe shall comply with the requirements of ASTM F-2562 or AASHTO MP-20 and ASTM 3350. Pipe joints shall be gasketed bell and spigot type per ASTM D-3212.

(g) High-performance corrugated, dual-wall, smooth interior, polypropylene pipe with push-on gasketed joints for pipes 18 inches in diameter and smaller. The pipe shall comply with the requirements of ASTM F-2881 and AASHTO M330. Pipe joints shall be gasketed bell and spigot type per ASTM D-3212.

(15) Pipe materials shall comply with all applicable requirements of the IDOT Standard Specifications for Road and Bridge Construction and all applicable AASHTO and ASTM requirements. Storm drain pipe shall be joined and sealed with tightly drawn, approved connectors and joints with gaskets or mastic as needed, to provide a tightly sealed joint. The Village shall be provided with appropriate data to verify compliance with pipe material and jointing compliance.

(16) Storm drain discharges shall be provided with end sections and measures to reduce flow velocity to minimize soil erosion at the discharge point.

(17) Storm drains shall be constructed in a straight line between manholes insofar as possible. Where long radius curves are necessary to conform to street layout, the minimum radius of curvature shall be not less than 500 feet. Deflection of pipe sections shall not exceed the maximum deflection recommended by the pipe manufacturer. The deflection shall be uniform and the finished installation shall follow a smooth curve.

(18) Construction of any utility pipe or conduit, such as gas, electric and water through any storm sewer structure shall be prohibited, except with approved conflict structures.

(D) Surface drainage system design.

(1) Surface drainage will be permitted for stormwater when Reduced Impact Development is intended or when cost estimates show that storm drains are not economically feasible (including all life-cycle costs and the value of the land consumed), where land use conditions indicate this method is

feasible, and where topographic conditions indicate there will be no difficulty from this method of disposal of storm waters. The economic and feasibility studies shall be reviewed and approved by the Village.

(2) All surface drainage systems of stormwater shall be designed for the peak rate of runoff from a minimum of a ten (10) year return period storm when the upstream watershed has an area of less than 20 acres. Surface drainage systems shall be designed for the peak rate of runoff from a minimum of the 30 or 50 year return period storm when the upstream watershed has an area larger than or equal to 20 acres.

(3) The surface drainage system shall have a free outlet and shall be designed for gravity flow conditions. The effects of backwater due to culverts or other obstructions shall be accounted for in the design.

(4) Stormwater surface drains shall be constructed with uniform bottom slopes the entire length of the drains. Minimum and maximum allowable grades shall be those capable of producing velocities between 0.5 and 4.5 feet per second. Stormwater velocity shall be controlled to eliminate problems of soil erosion or other damage which could detract from the primary use of the area.

(5) Surface drains shall be constructed having trapezoidal cross sections with side slopes of 3.0 feet horizontal to 1 foot vertical, or flatter. Side slopes steeper than 3.0 feet horizontal to 1 foot vertical shall not be used without site specific approval by the Village. The side slope maximum shall also apply to the slope from the road surface to the end of the culvert. A channel bottom width of not less than 1 foot shall be provided.

(6) Design of surface drains shall include control of soil erosion. Temporary seeding, straw bale dikes, silt fencing, or other soil stabilization measures shall be utilized during construction to control erosion. Permanent erosion control measures such as mulching, hydroseeding, nurse crops, ditch checks, conventional seeding, or other similar measures shall be utilized upon completion of construction. These measures shall meet the standards established within Procedures and Standards for Urban Soil Erosion and Sediment Control and the Illinois Urban Manual latest edition.

(7) Culverts and similar structures shall have a capacity which meets or exceeds the capacity of the surface drain, but shall be a minimum of 12 inches in diameter. The flowline of a culvert shall match the flowline of the surface drain.

(8) The following standards shall apply to culverts:

(a) Culvert pipe materials shall be the same as pipe materials for storm sewers.

(b) Culverts shall create not more than 6 inches of backwater upstream from the structure.

(c) End sections shall be provided for all culverts. End sections for culverts 15 inches in diameter and larger shall be provided with open grates.

(d) A minimum cover of 6 inches shall be provided between the top of the culvert pipe and the bottom of a street pavement.

(9) Where Reduced Impact Development is intended the developer shall provide sizing calculations for all culverts, including those to be utilized for access to individual lots.

(10) Roadside swales installed as a part of Reduced Impact Development shall be provided with tile drainage systems.

(11) Culverts shall be installed in accordance with the requirements of the IDOT Standard Specifications.

(E) Casting / frame and grates:

(1) Heavy duty castings. Storm inlet and manhole castings located in the right-of-way and in areas subject to vehicular traffic shall be heavy duty complying with the requirements of the IDOT Standard Specifications for Road and Bridge Construction. The following applications are referenced by Neenah Foundation Catalogue, latest edition. Similar casting provided by another manufacturer may be acceptable and are subject to approval by the Village.

(2) Casting types shall be as follows:

Casting Location	application		Neenah Casting number	EastJordan Casting number	Notes
	new constr.	retro fit existing			
Barrier Curb	✓		R-3278 AL	7220	vane grate, good
Barrier Curb	✓		R-3278 AR	7310	vane grate, good
Barrier Curb (for low point)	✓		R-3278 A		deleted by Admin Rule, accidental
Mountable Curb		✓	R-3502 B	7236	deleted R-3270, odd and low inlet capacity
Mountable Curb	✓		R-3501 N	7490	goes with new curb design; used in Hunter's Ridge 7, for example
Driveway Conflict		✓	R-3508 A2	7300	avoid driveway conflicts wherever possible
Driveway Conflict		✓	R-3237 A/B	7060	was on list for mountable curb, but only acceptable for driveways
Backyard or Area Drains	✓	✓	R-4340 B	6527	
Ditch Grates	✓	✓	R-4342	6489 N	
Storm Manhole / Inlets	✓	✓	R-2502 C	1020	changed to bike safe lid w/ more inlet capacity / shorter casting
Sanitary Sewer	✓	✓	R-1772	1022	

(3) Pavement castings. Castings located within a paved area shall be set upon an approved rubber gasket seal and set in a full bed of mortar and sealed completely around the outside with concrete.

(4) Yard / parkway castings. Castings located outside a paved area shall be set in a full bed of mastic.

(5) Constructed elevation. Castings located in unpaved areas that are designed to accept stormwater flows shall be constructed with the top of the casting 1 inch below the adjacent ground surface. The frame and grate will be constructed to the plan elevation in accordance with the requirements of the IDOT Standard Specifications for Road and Bridge Construction. A maximum of 6 inches of adjusting rings shall be allowed.

(F) Tile drains.

(1) All major stormwater surface drains as designated by the Village shall be constructed with a subsurface drainage tile system as shown on the attached standard details.

(2) All dry bottom stormwater detention basins shall be constructed with a low flow drain and, if necessary, a subsurface drainage tile system.

(3) Tile drains shall be constructed in accordance with the requirements of the IDOT Standard Specifications for Road and Bridge Construction. Minimum pipe size shall be 8 inch diameter. Minimum capacity shall be at the rate of discharge necessary for a drainage coefficient of 0.50 inches per acre per day for the tributary watershed or 0.02cfs per house, whichever is greater.

(4) The type of pipe material allowable shall be:

(a) Perforated corrugated and perforated non-corrugated polyvinyl chloride pipe with a smooth interior.

(b) Perforated corrugated high density polyethylene pipe with a smooth interior.

(5) The minimum slope of tile drains shall be 0.3%.

(6) Tile drains shall be provided with inlets or cleanouts to allow for inspection and maintenance of the tile systems. Inlet spacing shall not exceed 400 feet.

(7) Placement of tile drains in rear yard areas shall be avoided wherever possible.

(8) Existing agricultural tile drains serving upstream, off-site areas shall be intercepted at the edge of the development site and redirected into the storm drain, tile drain, or surface drainage systems provided within in the development.

(9) Existing easements for any agricultural drainage tile located within development sites shall be preserved. If no easement exists, an easement shall be granted for access and maintenance of the tile drain. Such easements shall be of sufficient width and located to provide for continued functioning and necessary maintenance of drainage facilities. No buildings or permanent structures, including paved areas but excluding streets, sidewalks, or driveways, which cross the easement by the shortest possible route may be located within the easement without the consent and approval of the public body to which the easement was granted.

(10) Sub-surface tile drain systems located within Village street right-of-way shall be operated and maintained by the Village. Subsurface tile drain systems located within easements on private property shall be owned, operated and maintained by the property owners association. The Owner's

Certificate shall include adequate provisions which clearly designate and set forth this maintenance responsibility.

(11) Agricultural drainage tile which, due to development, will be located underneath roadways, drives, or parking areas shall be replaced with storm sewer quality pipe materials.

(12) All agricultural drainage tile facilities which are broken or damaged during construction shall be restored as nearly as possible to their original state by the subdivider, except that all drain tiles shall be connected to the storm sewer system where necessary for protection of improvements or prevention of upstream flood damage. This requirement may be waived by the Village if the repair or connection would serve no useful purpose.

(G) Sump pump drain lines.

(1) Subsurface sump pump drain lines shall be provided adjacent to new single-family and two-family residential lots to allow for connection of sump pump outlets, downspouts and other dry weather water outlets to the drainage system.

(2) Sump pump drain lines shall be constructed in accordance with the requirements of the IDOT Standard Specification for Road and Bridge Construction. Minimum pipe size shall be 6 inch diameter. Minimum capacity shall be at the rate of discharge necessary for a drainage rate of 0.02 cfs per house.

(3) The type of pipe material allowable shall be:

(a) Non-perforated corrugated and non-perforated non-corrugated polyvinyl chloride pipe with a smooth interior.

(b) Non-perforated corrugated high density polyethylene pipe with a smooth interior.

(4) The minimum slope of sump pump drain lines shall be 0.2%.

(5) Sump pump drain lines shall be provided with inlets or cleanouts to allow for inspection and maintenance of the drain line systems. Inlet spacing shall not exceed 400 feet.

(6) Placement of sump pump drain lines in rear yard areas shall be avoided wherever possible.

(7) Sub-surface sump pump drain line systems shall be owned, operated and maintained by the property owner's association. The Owner's Certificate shall include adequate provisions which clearly designate and set forth this maintenance responsibility.

(8) Private connections to sump pump drain lines shall be provided with backflow prevention devices.

(H) Stormwater detention.

(1) Stormwater detention facilities shall be constructed as required and as approved by the Village and shall comply with the provisions and requirements of the Village Stormwater Management Ordinance.

(2) Permanent arrangements shall be made designating an entity who shall be responsible for future maintenance of stormwater detention facilities. The Owner's Certificate shall include adequate provisions which clearly designate the responsible entity and set forth for their maintenance responsibilities.

(3) Stormwater detention facilities shall be constructed as part of the first activities on the development site. Upon completion of construction activities any accumulated sediment within the basin and its storm drains and tile drains shall be removed. All subsurface drainage pipes shall be jetted periodically during construction and before final acceptance to remove accumulated sediment.

(4) See Section 4.4 Stormwater Detention for additional requirements related to the installation of stormwater detention facilities.

(I) Testing.

(1) Testing of storm drains, tile drains, and sump pump drain lines utilizing flexible pipe materials shall be performed in accordance with the procedures of the Standard Specification for Water and Sewer Main Construction in Illinois, except that all reaches of pipe shall be tested and must pass all requirements. The following tests shall be performed:

(a) Lamping;

(b) Deflection of flexible pipe shall not exceed 3% of the base internal diameter for pipes 12 inches in diameter and larger and 1 inch for pipes smaller than 12 inches in diameter.

(2) Any storm drain, tile drain, or sump pump drain line failing any of the tests shall be repaired to the satisfaction of the Village and retested until the line passes all tests.

(3) All storm drains and all tile drains 10 inches in diameter or larger utilizing flexible pipe materials shall be inspected via a television camera survey. A recording of the inspection shall be made, a copy of which shall be provided to the Village. Any defects noted during the television camera inspection shall be repaired to the satisfaction of the Village.

4.3 PRIVATE STORM DRAINAGE SYSTEMS.

(A) General.

(1) All multi-family, commercial, and industrial site developments shall be provided with drainage facilities having a minimum design capacity adequate to carry off surface water falling upon developed areas in a 10 year return period storm event under the projected final state of development of the entire upstream watershed.

(2) Private storm drainage systems shall meet the same requirements as public systems except as noted herein.

(3) Excess Stormwater Passageway

(a) An excess stormwater passageway shall be provided for the floodplain of all natural water courses and such manmade water courses and storm drainage systems as the Village may direct, which shall have adequate capacity to convey the excess stormwater runoff from the tributary watershed. The capacity of this excess stormwater passageway shall be adequate to transport the peak rate of runoff from the 100 year return period storm, assuming all upstream areas are fully developed for uses specifically permitted by existing zoning, and antecedent rainfall in the tributary watershed is average (e.g., Antecedent Moisture Condition II).

(b) An excess stormwater passageway shall be provided within the design of all parts of a development with a watershed area of 10 acres or more. The excess stormwater passageway through the development shall be adequate to transport the peak rate of runoff from the 25 year return period storm.

(c) No buildings or structures shall be constructed within an excess stormwater passageway; however, driveways, parking lots, playgrounds, park areas, pedestrian walkways, open green space, and utility and sewer easements may be considered compatible uses.

(4) All storm drainage facility construction activity shall conform to the IDOT Standard Specifications for Road and Bridge Construction and the Standard Specifications for Water and Sewer Main Construction in Illinois.

(5) All stormwater drainage facilities shall comply with the requirements of the Village Stormwater Management Ordinance. When required by the Stormwater Management Ordinance, stormwater detention facilities shall be provided for new development activities.

(6) The Rational Method, USDA Natural Resource Conservation Service (NRCS) TR-55 Method, TR-20 Method, Manning's equations, or other similar recognized design methods may be used to size the drainage components for any development.

The National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Precipitation Data, published in 2004 shall be utilized as the source for precipitation data (hdsc.nws.noaa.gov). Other more recently available rainfall data acceptable to the Village may also be used. Illinois State Water Survey Bulletin 70 data shall no longer be utilized.

(7) All design calculations must be submitted to the Village for approval.

(8) Standard drainage systems shall consist of storm drains, inlets, manholes, and other related underground drainage facilities.

(9) Alternate drainage systems may be approved by the Village if a detailed engineering study performed by the developer's engineer demonstrates that the alternate drainage system provides a level of service at least equal to that provided by the above requirements without increasing maintenance and operating costs to the Village.

(10) All multi-family residential, commercial, and industrial lots larger than 1 acre in size shall be provided with a subsurface service connection to the public storm drainage system.

(11) The storm drain system in each new development site shall continue and extend existing, connecting storm drains in adjoining development sites where appropriate and shall be extended to adjacent property to accommodate the tributary watershed from that adjacent property.

(12) All development sites shall be graded such that the building site elevation on the lot is not less than 18 inches above the highest adjacent back of curb elevation of the adjacent pavements. The first floor elevation shall be not less than 24 inches above the highest adjacent back of curb elevation of the adjacent pavement. All lots shall be graded to fully drain. See lot grading diagram in Mahomet Standard Drawings. Special lot grading to meet unusual site conditions may be utilized, as approved by the Village.

(13) See 4.2 A (20) for acceptable runoff coefficients.

(B) Stormwater management plan.

(1) The developer shall submit a drainage plan containing the following information to ensure that the provisions of this manual are met. The submittal shall include sufficient information to evaluate the environmental characteristics of the property, the potential adverse impacts of the development on water resources both on site and downstream, and the effectiveness of the proposed drainage plan in managing stormwater runoff.

(2) The materials submitted shall be the same as those required for a public system.

(C) Storm drain design.

(1) All storm drain systems shall be designed for a 10 year return period storm. The minimum pipe diameter shall be 8 inches. The minimum time of concentration shall be 10 minutes. The system shall have a free outlet and shall generally be designed for gravity flow conditions. Low pressure flow conditions may be allowed near the outlet of the storm drain system if physical conditions preclude a free outlet, as approved by the Village. In general, the hydraulic grade line for a 10 year return period storm shall be wholly within the pipe.

(2) The maximum distance for overland flow of stormwater runoff before reaching a storm drain inlet shall be 600 feet.

(3) All manholes and catch basins and storm drains shall be constructed in accordance with applicable IDOT Standard Specifications for Road and Bridge Construction.

(4) Storm drain grades shall be such that a minimum of 1 foot of cover is maintained over the top of the pipe. Uniform slopes shall be maintained between inlets, manholes and inlet to manhole. Minimum and maximum allowable slopes shall be those capable of producing velocities between 2 and 10 feet per second, respectively, when the drain is flowing full.

(5) Manholes and inlets shall be installed to provide access to continuous underground storm drains for the purpose of inspection and maintenance. Manholes or inlets shall be provided at the following locations:

(a) Where two (2) or more storm drains converge.

(b) Where pipe sizes change.

(c) Where an abrupt change in alignment occurs.

(d) Where a change in pipe slope occurs.

(6) The maximum distance between manholes and / or inlets shall be 500 feet.

(7) Pipes of equal diameter shall be provided with not less than 0.1 feet of fall across manholes. The crowns or 0.8 diameter point of pipes of unequal diameter shall be matched at manholes to promote continuous hydraulic grade lines.

(8) Inlets and catch basins on drainage structures shall be utilized to collect surface water through grated openings and convey it to storm drains. Maximum depth of ponding at an inlet within a pavement shall be 12 inches. Two foot diameter inlets and catch basins shall not exceed 4.0 feet in depth.

(9) Trench backfill requirements shall conform to the applicable portions of the IDOT Standard Specifications for Road and Bridge Construction.

(10) Pipe materials shall comply with all applicable requirements of the IDOT Standard Specifications for Road and Bridge Construction, the Standard Specifications for Water and Sewer Main Construction in Illinois, and all applicable AASHTO and ASTM requirements. Storm drain pipe shall be joined and sealed with tightly drawn, approved connectors and joints with gaskets or mastic as needed, to provide a tightly sealed joint. The Village shall be provided with appropriate data to verify compliance with pipe material and jointing compliance. See 4.2 C (14) for list of allowed pipe materials.

(11) Storm drain discharges shall be provided with end sections and measures to reduce flow velocity to minimize soil erosion at the discharge point.

(D) Surface drainage system design.

(1) Surface drainage will be permitted for stormwater when Reduced Impact Development is intended or when cost estimates show that storm drains are not economically feasible (including all life-cycle costs and the value of the land consumed), where land use conditions indicate this method is feasible, and where topographic conditions indicate there will be no difficulty from this method of disposal of storm waters. The economic and feasibility studies shall be reviewed and approved by the Village.

(2) Design of surface drains shall include control of soil erosion. Temporary seeding, straw bale dikes, silt fencing, or other soil stabilization measures shall be utilized during construction to control erosion. Permanent erosion control measures such as mulching, hydroseeding, nurse crops, ditch checks, conventional seeding, or other similar measures shall be utilized upon completion of construction. These measures shall meet the standards established within Procedures and Standards for Urban Soil Erosion and Sediment Control and the Illinois Urban Manual.

(3) Culverts and similar structures shall have a capacity which meets or exceeds the capacity of the surface drain but shall be a minimum of 10 inches in diameter. The flowline of a culvert shall match the flowline of the surface drain.

(E) Casting / frame and grates:

(1) Storm inlet and manhole castings located in areas subject to vehicular traffic shall be heavy duty complying with the requirements of the IDOT Standard Specifications for Road and Bridge Construction.

(2) Constructed elevation. Castings located in unpaved areas that are designed to accept stormwater flows shall be constructed with the top of the casting 1 inch below the adjacent ground surface. The frame and grate will be constructed to the plan elevation in accordance with the requirements of the IDOT Standard Specifications for Road and Bridge Construction.

(F) Private Tile drains.

(1) All major stormwater surface drains as designated by the Village shall be constructed with a subsurface drainage tile system as shown on the standard details adopted by Administrative Rule.

(2) Tile drains shall be constructed in accordance with the requirements of the IDOT Standard Specifications for Road and Bridge Construction. Minimum pipe size shall be 8 inch diameter. Minimum capacity shall be at the rate of discharge necessary for a drainage coefficient of 0.35 inches per acre per day for the tributary watershed. Minimum slope shall be 0.1%.

(3) The type of pipe material allowable shall be:

(a) Perforated corrugated and perforated non-corrugated polyvinyl chloride pipe with a smooth interior.

(b) Perforated corrugated high density polyethylene pipe with a smooth interior.

(4) Tile drains shall be provided with inlets or cleanouts to allow for inspection and maintenance of the tile systems. Inlet spacing shall not exceed 500 feet.

(5) Existing agricultural tile drains serving upstream, off-site areas shall be intercepted at the edge of the development site and redirected into the storm drain, or tile drain systems provided within the development.

(6) Existing easements for any agricultural drainage tile located within development sites shall be preserved. If no easement exists, an easement shall be granted for access and maintenance of the tile drain. Such easements shall be of sufficient width and located to provide for continued functioning and

necessary maintenance of drainage facilities. No buildings or permanent structures, including paved areas but excluding streets, sidewalks, or driveways, which cross the easement by the shortest possible route, may be located within the easement without the consent and approval of the public body to which the easement is granted.

(7) Subsurface tile drain systems located within easements on private property shall be owned, operated, and maintained by the property owner.

(8) Agricultural drainage tile which, due to development, will be located underneath drives or parking areas shall be replaced with storm sewer quality pipe materials.

(9) All agricultural drainage tile facilities which are broken or damaged during construction shall be restored as nearly as possible to their original state by the developer, except that all drain tiles shall be connected to the storm drain system where necessary for protection of improvements or prevention of upstream flood damage. This requirement may be waived by the Village if the repair or connection would serve no useful purpose.

(G) Private Stormwater detention.

(1) Stormwater detention facilities shall be constructed as required and as approved by the Village and shall comply with the provisions and requirements of the Village Stormwater Management Ordinance.

(2) Permanent arrangements shall be made designating an entity who shall be responsible for future maintenance of stormwater detention facilities. A deed covenant shall be provided which shall include adequate provisions which clearly designate the responsible entity and set forth for their maintenance responsibilities.

(3) Stormwater detention facilities shall be constructed as part of the first activities on the development site. Upon completion of construction activities any accumulated sediment within the basin and its storm drains and tile drains shall be removed. All subsurface drainage pipes shall be jetted periodically during construction and before final acceptance to remove accumulated sediment.

(4) See Section 4.4 Stormwater Detention for additional requirements related to the installation of stormwater detention facilities.

4.4 STORMWATER DETENTION.

(A) General Requirements.

(1) When the maximum controlled stormwater runoff rate would be exceeded upon the development, redevelopment, or new construction on the Owner's land, stormwater storage methods shall be provided and constructed by the Owner. Any one or all of the stormwater storage methods listed shall be provided and constructed.

(2) Stormwater detention facilities shall be constructed as required and as approved by the Village and shall comply with the provisions and requirements of the Village Stormwater Management Ordinance.

(3) Permanent arrangements shall be made designating an entity who shall be responsible for future maintenance of stormwater detention facilities. The documentation provided shall include adequate provisions which clearly designate the responsible entity and set forth for their maintenance responsibilities.

(4) Stormwater detention facilities shall be constructed as part of the first activities on the development site. Upon completion of construction activities any accumulated sediment within the basin and its storm drains and tile drains shall be removed. All subsurface drainage pipes shall be jetted periodically during construction and before final acceptance to remove accumulated sediment.

(5) See 4.2 A (20) for acceptable runoff coefficients.

(B) Scope of Application. A combination of stormwater storage and controlled release of stormwater runoff is required for all non-agricultural development activities within the boundaries of the Village of Mahomet involving:

(1) All non-agricultural developments greater than two (2) acres in size.

(2) All non-agricultural developments between 10,000 square feet and two (2) acres in size with greater than 35% impervious surface area.

(3) All new or expanded subdivisions which require approval of the Village pursuant to the provisions of the Village Subdivision Ordinance, as amended.

(4) Generally, any new construction within the Village of Mahomet's area of zoning jurisdiction, pursuant to the provisions of the Village Zoning Ordinance, that increases the amount of impervious area of the lot or parcel of land upon which it is constructed.

(C) Existing Conditions.

(1) Whenever storage and controlled release of stormwater is required for existing developed parcels, and where improvements upon such parcels were constructed prior to 1972, such storage and the required controlled release rate shall apply only to the net increase in the amount of runoff since January 1, 1972.

(2) A land owner shall be allowed to pass through existing excess stormwater runoff from tributary areas upstream from that land owner's land without storage or controlled release of such runoff. The controlled release of excess stormwater runoff resulting from development on an owner's land is required. The controlled release rate of excess stormwater runoff from an owner's land shall not exceed the rate of runoff which would have occurred from that owner's land prior to the development or redevelopment of that owner's land.

(3) It is presumed that prior to development, the owner's land had a traditional agricultural use. It is further presumed that the maximum safe stormwater drainage capacity for downstream stormwater drainage systems is the capacity required to carry the peak rate of stormwater runoff from a five (5) year return period storm event prior to January 1, 1972.

(D) Exemptions. Stormwater detention shall not be required for the following developments:

(1) Any development constructed totally upon a lot or parcel of land, recorded prior to December 14, 1981, that contains less than 10,000 square feet of land area, provided the development has less than 50% impervious surface area; or

(2) Any single-family residential or two-family residential development on any lot or parcel of land, which was recorded prior to December 14, 1981; or

(3) Modification of single-family residential or two-family residential structures which will continue to be used as single-family or two-family dwellings; or

(4) Modification of existing structures or appurtenances, other than a single-family dwelling or two-family dwelling, which do not increase the amount of impervious area of the lot or parcel upon which it is constructed; or

(5) Traditional agricultural uses; or

(6) Improvement of any existing roadways which do not increase the number of traffic lanes in the typical cross-section of the roadway; or

(7) Any development greater than two (2) acres in size in which the total impervious area is less than 15% of the total area of the site.

(8) New development in which the total impervious area, including the area of the existing, adjacent public or private streets, is less than 20% of the total area or 5,000 square feet, whichever is less.

(E) Release Rate for Design Event.

(1) The maximum controlled release rate for the 50 year return period precipitation event for each independent watershed area within the Owner's land as stormwater exits the Owner's land when the stormwater detention basin is at full capacity shall be as follows:

<u>Watershed Area</u>	<u>Maximum Allowable Release Rate</u>
0 to 5 acres	0.40 cfs per acre
5 to 40 acres	0.35 cfs per acre
40 to 160 acres	0.30 cfs per acre
Above 160 acres	0.25 cfs per acre

(2) The maximum controlled release rate for the 50 year return period precipitation event for each independent watershed area within the Owner’s land as stormwater exits the Owner’s land when the stormwater detention basin is “half full” shall be as follows:

<u>Watershed Area</u>	<u>Maximum Allowable Release Rate</u>
0 to 5 acres	0.35 cfs per acre
5 to 40 acres	0.30 cfs per acre
40 to 160 acres	0.25 cfs per acre
Above 160 acres	0.20 cfs per acre

(F) Maximum Release Rate for Frequent Storm Events.

(1) The maximum controlled release rate for the 5 year return period precipitation event for each independent watershed within the Owner’s land as stormwater exits the Owner’s land shall be as follows:

<u>Watershed Area</u>	<u>Maximum Allowable Release Rate</u>
0 to 5 acres	0.20 cfs per acre
Above 5 acres	0.15 cfs per acre

(G) Maximum Release Rate for Pass Through Situations. In general, stormwater runoff from upstream off-site areas shall be directed around the stormwater storage area. However, when pass-through conditions are deemed necessary, the maximum controlled release rate for each independent watershed area within the Owner’s land shall be determined in the following manner:

(1) For that portion of the watershed outside of an Owner’s land, the peak rate of runoff which would have occurred for a 10 year return period storm under the state of development existing just prior to application for development of the Owner’s land shall be calculated and determined.

(2) For that portion of the watershed within the lands of an Owner, the maximum allowable controlled release rate shall be determined as set forth in Paragraph E above.

(3) The maximum controlled release rate for each independent watershed area within the Owner’s land as it exits the Owner’s land for storms up to and including the 50 year return period storm shall be the sum of Items 1 and 2 above. The principal spillway shall be designated to provide this maximum release rate during storm events up to and including the 25 year return period storm event. A secondary spillway may provide additional release of stormwater for storm events larger than the 25 year return period storm event for stormwater flows from that portion of the watershed outside of the Owner’s land.

(4) The emergency spillway shall not be utilized as the secondary spillway.

(H) Small Developments Release Rate with a total watershed area of less than 5 acres. For small developments the allowable maximum release rates may be increased to allow for the installation of an 8 inch diameter pipe as the flow restriction device without the need for the installation of weirs, orifices, or other similar devices.

(I) Reduced Release. The Village may consider or require reduced release rates under certain circumstances.

(1) In the event that the downstream stormwater runoff drainage system is inadequate to accommodate the maximum release rate provided above, then the Village, at its option, may reduce the allowable release rate to that rate permitted by the capacity of the receiving stormwater runoff drainage system and additional storage as determined by the Village may be required to store that portion of the runoff exceeding the capacity of the receiving stormwater runoff drainage system. When the Village exercises this option, the Owner and Village shall pay a proportional share of the costs of the storage, as mutually determined by the Village and the Owner.

(2) In the event that stormwater runoff control can be provided exceeding the requirements of this Ordinance and the benefit of this additional control would accrue to the Village at large, the Village may participate in the increased cost of the control of stormwater runoff in proportion to the additional benefits derived therefrom.

(J) Calculation of Required Storage. The volume of required stormwater storage shall be calculated on the basis of the maximum value achieved from the runoff of a design event less the volume of water released through the outlet structure. The following standards shall apply to watersheds of various sizes:

(1) Standard Methods. Standard reservoir routing methods shall be utilized to determine the required storage volume. Soil Conservation Service TR-55, TR-20, or equivalent methodologies shall be utilized to develop hydrographs of the stormwater runoff for the site. Stage / storage / discharge relationships shall be developed for the detention basin utilizing standard engineering methods and utilized to route the hydrographs through the stormwater detention storage facility. All analyses and calculations shall comply with the recommended procedures of the IDOT Drainage Manual.

(2) Modified Rational Method. The Modified Rational Method may be utilized to calculate required storage volume for developments with watershed areas of less than 25 acres and which do not involve significant off-site drainage that must pass through the detention basin.

Time of concentration shall be estimated utilizing SCS TR-55 Methods for developed conditions. "C" values utilized shall be set at 125% percent of "normal" 5 year storm values to account for reduced soil infiltration capabilities during large storm events, up to a maximum "C" value of 1.0. In determining the volume of storage required when using the Modified Rational Method, the release rate of the outlet structure can be assumed constant only if the release rate utilized in the calculations is equal to the release rate through the outlet structure when one half of the storage volume is filled.

When using the Modified Rational Method, the critical storm duration (that requiring the largest detention volume) for any design event shall be identified and used in determining required storage volume.

(3) Direct Method for Small Developments. For small developments with a total watershed area of less than five (5) acres, the total volume of stormwater storage required shall be determined by the Direct Method, which does not require hydrologic analyses. When the Direct Method is utilized, the total storage volume provided shall be equal to 2.50 inches of water over the watershed area.

For small developments standard methods or the Modified Rational Method may be utilized only upon permission of the Village.

(4) Minimum Storage Volume. The volumes of stormwater detention required vary with the type of development. Regardless of the results of the design analysis the minimum volume of required stormwater storage shall be calculated on the basis of the depth of rainfall in inches over the entire development area.

<u>Type of Development</u>	<u>Minimum Required Storage Volume</u>
Single-Family Residential	2.5 inches over the watershed area
Multi-Family Residential	3.0 inches over the watershed area
Commercial	3.0 inches over the watershed area
Industrial	3.0 inches over the watershed area

(5) Small Development Minimum Storage Volume. For small developments of less than 1 acre in which the outlet pipe size has been increased to the minimum 8 inch diameter size, the minimum required storage volume shall be reduced to 1.5 inches over the watershed area.

The National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Precipitation Data, published in 2004 shall be utilized as the source for precipitation data (hdsc.nws.noaa.gov). Other more recently available rainfall data acceptable to the Village may also be used. Illinois State Water Survey Bulletin 70 data shall no longer be utilized.

(K) Emergency Overflow. Each stormwater storage facility shall be provided with a means of emergency overflow. This emergency overflow structure shall be constructed to function without special maintenance attention and can become a part of the excess stormwater passageway for the entire development. The emergency overflow structure shall be capable of passing the 100 year return period storm event flow. The overflow level of the emergency overflow structure shall be not less than 0.3 feet above the high water surface elevation during the 50 year return period storm event.

(L) Flood Elevations. The entire stormwater storage facility shall be designed and constructed to fully protect the public health, safety, and welfare. The minimum building site elevation adjacent to stormwater detention basins shall be set at a minimum of one (1) foot above the maximum created head during the 100 year return period storm event. The maximum created head will include the energy head at the emergency overflow structure.

(M) Freeboard. Stormwater detention basins shall be provided with a freeboard of not less than 0.5 feet above the water surface elevation that is anticipated to occur during the 50 year return period storm event. The freeboard shall not be overtopped during the 100 year return period storm event.

(N) Off-Site Tributary Areas. Stormwater storage facilities shall not receive runoff from tributary areas outside the development site unless the Village determines that runoff from such areas can be

accommodated in the storage area in a manner that will protect immediate downstream properties. In making this determination, the Village may require the Owner to provide additional data or calculations.

When stormwater runoff from tributary areas outside of the development cannot reasonable be directed around the stormwater storage area, the Village may allow use of staged release outlet structures, which allow stormwater runoff from off-site areas to pass through the stormwater storage area undetained, while simultaneously detaining and providing controlled release for the volume of excess stormwater runoff from the site.

(O) Sediment Traps. Stormwater storage facilities that receive runoff from tributary areas of five (5) or more acres outside of the development site that are utilized primarily for row crop agricultural purposes shall be provided with permanent sediment trapping basins upstream from the stormwater storage area. Minimum sediment storage volume shall be 150 cubic yards per acre of upstream watershed. Minimum discharge capacity from the main spillway of the sediment basin shall be not less than 0.2 cfs per acre of upstream watershed. The basin shall have a length-to-width ratio of at least 2.0 at the spillway crest elevation.

(P) Compensatory Storage. Where portions of the Owner's land are tributary to the same drain for an outlet, but which are within two (2) or more tributary areas to that drain, the owner may construct, upon site-specific approval by the Village, compensatory stormwater detention facilities within one (1) tributary area which offset the lack of construction of stormwater detention facilities in another tributary area. Such compensatory storage shall be designed and constructed such that the net effect of the facilities shall be to limit the rate at which stormwater runoff is released into the drain to that rate which would have occurred had stormwater detention facilities been constructed for all the tributary areas.

(Q) Storage Duration. The storage of excess stormwater runoff from a 50 year return period storm having a duration of 24 hours, released at the allowable rate, shall generally not result in a storage duration in excess of 24 hours. Storage duration may be as long as 30 hours due to unique site conditions, upon site-specific approval of the Village.

(R) Protection of Public Health, Safety, and Welfare. The entire stormwater storage area shall be designed and constructed to fully protect the public health, safety, and welfare. If a condition occurs in the stormwater storage area which is hazardous to the public health, safety, or welfare, the person responsible for the condition will be required to provide approved corrective measures. In the event these corrective measures are not provided, the Village may eliminate the hazard at the expense of the person responsible.

(S) Joint Construction. Stormwater storage areas may be planned and constructed jointly by two (2) or more landowners provided the provisions of this Ordinance are met. Adequate easements and provisions for future maintenance by the landowners must be provided.

(T) Early Completion. Where stormwater detention, retention, or depressional storage areas are to be used as part of the drainage system for a property, they shall be constructed as the FIRST element of the initial earthwork for the development. Any eroded sediment captured in these facilities shall be removed by the applicant before project completion to maintain the design volume of the facilities.

(U) Dry Bottom Stormwater Storage Areas.

(1) Dry bottom stormwater storage facilities should be designed where possible to serve a secondary purpose for recreation, open space, or similar types of uses which will not be adversely affected by occasional intermittent flooding and will not interfere with stormwater management.

(2) Minimum grades for turf areas within the basin shall be 2% (50 units horizontal to one unit vertical), except that the minimum grade may be 1/2% (200 units horizontal to one unit vertical) if tile underdrains are adequately installed underneath the turf areas. Storage facility side slopes shall not be steeper than 3 ½ to 1 (three and one-half units horizontal to one unit vertical), and shall provide for the reasonably safe approach of persons and reasonably safe maintenance practices. Side slopes steeper than 3 ½ to 1, may be allowed upon a determination by the Village that adequate precautions are taken to avoid unreasonable hazard. Storage basin excavations shall follow the natural land contours as closely as practicable. The geometry of dry bottom stormwater storage basins shall be approved by the Village.

(3) The control outlet structure shall be provided with an interceptor for trash and debris, and it shall be designed and constructed to minimize soil erosion and not to require manual adjustments for its proper operation. The control structure shall be designed to operate properly with minimal maintenance or attention. The control structure shall be provided with safety screens for any pipe or opening, other than a weir, to prevent children or large animals from crawling into structures. The control structure shall be constructed to allow access to it at all time, including times of flood flow.

(4) Subsurface low flow conduits shall be provided in dry bottom stormwater storage basins. These conduits shall be constructed so that they will not unnecessarily interfere with any secondary use of the storage area and will reduce the frequency of time that the storage area will be covered with water. The low flow conduits shall facilitate dewatering of the soils in the stormwater storage area to avoid saturated soil conditions. Low flow conduits shall facilitate completed interior drainage of the stormwater storage area and shall be designed to intercept trickle flows from storm sewers and other drainage facilities which outlet into the basin. Low flow conduits shall be not less than 8 inches in diameter. Tile underdrain systems may be combined with the low flow conduits. Low flow conduits shall have a minimum flow capacity of not less than 0.4 inches per acre per day for the tributary watershed.

(5) Pipe outlets of less than 8 inches in diameter shall not be allowed unless specifically approved by the Village. Multiple pipe outlets from a stormwater storage area shall be avoided if they are designed to be less than 12 inches in diameter. For small developments the allowable maximum release rates may be increased to allow for the installation of an 8 inch diameter pipe without the need for the installation of weirs, orifices, or other similar devices.

(6) Surface low flow conduits may be substituted for subsurface conduits within storage areas serving less than five (5) acres, upon approval of the Village. Surface low flow conduits shall be paved channels, not less than 12 inches in depth, with a minimum grade of not less than 1.0%. Surface low flow conduits shall have a minimum flow capacity of not less than 0.4 inches per acre per day for the tributary watershed.

(7) Temporary seeding, silt fencing, straw bale dikes or other soil stabilization measures, shall be established in the stormwater storage area immediately following construction. During construction of the overall development, it is recognized that a limited amount of sediment buildup may occur in the stormwater storage area due to erosion. In no case shall the volume of the storage area reduced to less than 90% of the required volume during the construction phase of the development. All sediment shall be removed before construction is completed.

(8) Permanent erosion control measures such as mulching, hydroseeding, conventional seeding, nurse crops, fertilizing, or sod installation shall be utilized to control soil movement and erosion within the storage area. These measures shall meet the standards established in "Procedures and Standards for Urban Soil Erosion and Sedimentation Control in Illinois" and the Illinois Urban Manual. The installation of these permanent measures shall take place only after the majority of the construction and other silt and sediment producing activities have been completed. Prior to the establishment of the permanent erosion control measures, the required capacity of the stormwater storage area and the excess stormwater passageway shall be restored by removal of any deposited sediment.

(9) Adequate impact stilling basins shall be provided at the downstream side of any outlet structure to ensure that downstream soil erosion is mitigated as much as practical and the regime of the stormwater drainage facility is not disturbed.

(10) The maximum planned depth of stormwater stored shall not exceed six (6) feet.

(11) Tile underdrains shall be provided for all dry bottom detention basins serving a watershed area of more than five (5) acres, and for all dry bottom detention basins located in soils with typical groundwater elevations of less than three (3) feet below ground surface. Tile underdrains shall be constructed such that they will not interfere with any secondary usage of the storage area. Tile underdrains shall be constructed so that they shall facilitate dewatering of the soils in the stormwater storage area to avoid marshy or saturated soil conditions. Tile underdrain systems may be combined with low flow conduits.

(12) Warning signs shall be placed at appropriate locations to warn of deep water, possible flood conditions during storm periods, and of other dangers that exist to pedestrian and vehicular traffic.

(13) Backyard storage areas in residential developments will generally not be allowed unless extraordinary lot depth and area is provided, along with appropriate easements.

(V) Wet Bottom Stormwater Storage Areas.

(1) Wet bottom stormwater storage facilities shall be designed in compliance with all applicable regulations which govern the construction of dry bottom stormwater storage facilities. The following additional regulations shall apply to wet bottom stormwater storage facilities.

(2) The water surface area of the permanent pool shall not exceed one-fifth of the area of the tributary watershed, or as approved by the Village.

(3) Minimum normal water depth (excluding safety ledges and side slopes) shall be six (6) feet, provided however, that if fish are to be maintained in the pool, at least one-quarter of the pond area shall be a minimum of ten (10) feet deep.

(4) Measures shall be included in the design to minimize pond stagnation and to help ensure adequate aerobic pond conditions. Appropriate mechanical aeration devices shall be provided for all basins.

(5) Storage facility side slopes shall provide a maximum side slope below the normal water elevation which shall not be steeper than a slope of 3:1 (three (3) horizontal units to one (1) vertical unit) to a point at which the normal water depth is no less than four (4) feet. A ten (10) foot wide flat safety

ledge shall be provided at a point four (4) feet below the normal pool water surface. Below a normal depth of five (5) feet, side slopes shall not be steeper than the stable angle of repose under saturated conditions of the soil material of the basin. Side slopes steeper than those set forth herein may be approved by the Village on a case-by-case basis due to unusual or unique circumstances.

(6) Facilities shall be provided to lower the pond elevation at least three (3) feet for cleaning purposes and shoreline maintenance, unless the Village determines that construction of such facilities is not practical.

(7) Warning signs shall be placed at appropriate locations to warn of deep water, possible flood conditions during storm periods, and of other dangers that exist to pedestrian and vehicular traffic.

(8) The volume of the water permanently stored shall not be considered to be a part of the required excess stormwater storage.

(9) All wet bottom stormwater detention basins shall be provided with shoreline stabilization to minimize wave action erosion. Shore stabilization shall extend down the side slope to an elevation 1 foot below the normal water surface elevation and up the side slope to an elevation 1 foot above the normal water surface elevation. Approved shoreline stabilization methods include riprap revetment constructed in accordance with the requirements of the IDOT Standard Specifications for Road and Bridge Construction; cast-in-place Portland Cement Concrete retaining walls; soil reinforcement mats; or modular concrete block retaining walls. Alternative shoreline stabilization methods may be submitted to the Village for review and approval. Any proposed shoreline stabilization method shall be reviewed and approved by the Village prior to installation.

(W) Alternative Stormwater Storage Areas.

(1) The use of stormwater storage facilities, as described in Sections U and V are the preferred means of stormwater storage. The following alternative means of stormwater storage may be used on development sites under five (5) acres in area or where practical necessity makes the use of more traditional stormwater storage facilities infeasible. The use of such alternative stormwater storage area is only permitted upon the approval of the Village.

(a) Paved / Structured Stormwater Storage. Design and construction of the pavement and structural elements must assure that there is minimal damage due to flooding. Control structures must be readily accessible for maintenance and cleaning. Flow control devices will be required unless otherwise approved by the Village.

(b) Street Pavement Surface Ponding. No stormwater detention shall be located upon street pavements. Street pavement surface ponding shall not exceed nine (9) inches in depth in the gutter line nor over the roadway crown if no gutter is present under all rainfall conditions and up to and including the 50 year storm event. Open waterways such as surface overflow swales shall be designed into the grading plan to receive all excess stormwater runoff. Depressing sidewalks across such overflow swales to meet this requirement shall be acceptable. Street ponding shall be allowed only for the conveyance of excess stormwater runoff and will be subject to approval by the public body accepting dedication of the street.

(c) Rooftop Stormwater Storage. Rooftop storage of excess stormwater shall be designed and constructed to provide permanent control inlets and parapet walls to contain excess

stormwater. Adequate structural roof design must be provided to ensure that the weight of the stormwater will never exceed the structural capacity of the roof. Any rooftop storage of excess stormwater shall be approved only upon submission of building plans signed and sealed by a licensed structural engineer or architect attesting to the structural adequacy of the design.

(d) Automobile Parking Lot Storage Area. Automobile parking lots may be designed to provide temporary detention storage on a portion of their surfaces. Automobile parking facilities used to store excess stormwater may be constructed having a maximum depth of stored stormwater of 0.6 feet; and these areas shall be located in the most remote, least used areas of the parking facility. Design and construction of automobile parking in stormwater areas must ensure that there is minimal damage to the parking facility due to flooding, including minimal damage to the subbase. Warning signs shall be mounted at appropriate locations to warn of possible flood conditions during storm periods.

(e) Underground Stormwater Storage. Underground stormwater storage facilities must be designed for easy access to remove accumulated sediment and debris. These facilities must be provided with a positive gravity outlet unless otherwise approved by the Village.

(X) Pumped Storage Outlets. Pumped outlets for stormwater storage areas shall consist of duplex, alternating pumps capable of pumping stormwater. Pump stations shall be adequately screened to prevent clogging by debris. Stormwater pumping stations shall include automatic alternators, ventilation fan, an alarm light, running time meters, a high water alarm sensor, a solid state level controller and a backup level controller, an emergency discharge outlet for stormwater, and other such features as the Village may deem necessary. The pumping station shall be designed consistent with the requirements of the IDOT Drainage Manual, latest edition.

(Y) Excess Stormwater Passageways. An excess stormwater passageway shall be provided for the area downstream from the emergency spillway of any stormwater detention basin. The excess stormwater passageway shall have adequate capacity to convey the excess stormwater runoff from the tributary watershed. The capacity of this excess stormwater passageway shall be adequate to transport the peak rate of runoff from the 100 year return period storm, assuming all upstream areas are fully developed for uses specifically permitted by existing zoning, and antecedent rainfall in the tributary watershed is average (e.g., Antecedent Moisture Condition II).

No buildings or structures shall be constructed within this passageway; however, streets, parking lots, playgrounds, parks areas, pedestrian walkways, open green space, and utility and sewer easements may be considered compatible uses.

(Z) Drainage Plan Submittal Requirements.

(1) Once it is determined that a development is subject to the provisions of this Section, the Owner shall submit a Drainage Plan containing the information set forth in the Infrastructure Design Manual, to ensure that the provisions of this Manual are met. The submittal shall include sufficient information to evaluate the environmental characteristics of the property, the potential adverse impacts of the development on water resources both on-site and downstream, and the effectiveness of the proposed Drainage Plan in managing stormwater runoff. The applicant shall certify on the drawings that all clearing, grading, drainage, and construction shall be accomplished in strict conformance with the Drainage Plan.

(2) Information to be included in the submittal shall be as follows:

- (a) The shoreline of lakes, ponds, and existing or proposed stormwater detention basins;
 - (b) The property's location within the larger watershed and the area of all upstream watersheds;
 - (c) Delineation of upstream and downstream drainage features and watersheds which might be affected by the development;
 - (d) Locations, size, shape and volume of stormwater detention and retention facilities; and
 - (e) Locations, size, capacity, and construction details for the control structure of all stormwater detention and retention facilities.
- (3) Basis of Design. Design calculations shall be provided for stormwater detention system components, including a summary of design assumptions utilized.
- (4) Engineer's Certificate. All design work must be signed and sealed by an Illinois Professional Engineer.
- (5) Submittals. Three (3) copies and a PDF copy of all stormwater detention system designs shall be submitted by the developer to the Village for review and approval. All calculations shall be shown legibly on 8 1/2 inch by 11 inch sheets of paper. For all detention systems, a plot or tabulation of storage volumes with corresponding water surface elevations (stage storage table) and of the basin outflow rates for those water surface (stage discharge) elevations shall be furnished. These tabulations shall be listed for water surface elevation intervals not exceeding 0.5 foot.

(AA) Inspections During Construction. Construction of impervious surfaces shall not begin until the developer's engineer has certified in writing to the Village that any necessary detention facilities are in place and operational. Village staff may conduct periodic inspections of the work in progress to be certain that the stormwater detention system is being built as designed. If any violations of the provisions or requirements of the Village are noted during such inspections the Village shall notify the property owner in writing of the items needing correction.

The property owner shall have thirty (30) calendar days to make such corrections unless given a specific extension of time in writing by the Village. Failure to complete such corrections within the specified time period shall constitute a violation of the Stormwater Management Ordinance.

(BB) Maintenance Access. All dry bottom and wet bottom stormwater detention basins shall be provided with not less than two (2) direct access points to a public street that are each not less than 20 feet in width. Not less than 20 feet in width shall be provided around the exterior of a wet bottom stormwater detention basin to allow for maintenance access.

4.5 SANITARY SEWER SYSTEM.

(A) General.

(1) No plat of any subdivision shall be approved unless the subdivider provides for construction of a sanitary sewer system adequate to serve the needs of the entire subdivision when the same is fully developed. The location and design of the sanitary sewer system shall be approved by the Village, the Illinois Environmental Protection Agency, and the corporate authorities of the public water district in which the subdivision is located. This requirement shall not apply to any new subdivision which cannot reasonably be provided with sanitary sewer service.

(2) The adequacy of the existing sanitary sewers to which the proposed development is to outlet into must first be determined by the subdivider. If the existing sewers are not adequate, it shall be the subdivider's responsibility to find an outlet for the sanitary sewers. This work shall be done in cooperation with the Village. Capacity of sanitary sewers shall be determined utilizing Illinois Environmental Protection Agency regulatory requirements. The peaking factor for all 8 inch and 10 inch diameter sewers shall be at least 4.0.

(3) All design calculations must be submitted to the Village for approval.

(4) If authorized by the Village, on-site wastewater disposal systems may be utilized. See the separate section of this Manual for further information. In general, all sites within 500 feet of a public sanitary sewer shall connect to and utilize the public sanitary sewer system.

(5) All permits required must be obtained by the subdivider (i.e. Environmental Protection Agency permit). Permit application forms shall be reviewed and approved by the Village before being submitted to the Illinois Environmental Protection Agency.

(6) All sanitary sewer work shall be performed in accordance with the current Standard Specifications for Water and Sewer Main Construction in Illinois, the regulations of the Illinois Environmental Protection Agency, the Village Sewer Use Ordinance, and the regulations of the Sangamon Valley Public Water District when the sewers are located within its service area.

(B) Design.

(1) Sanitary sewer mains shall be a minimum of 8 inch diameter.

(2) Maximum distance between manholes shall be 350 feet.

(3) Manholes shall be 4 foot diameter precast reinforced concrete units constructed in accordance with the standard details adopted by Administrative Rule and shall have rubber gasketed "O"-Ring joints. All manholes shall be provided with external chimney seals.

(4) There shall be not less than 0.10 feet of drop between the inverts of influent and effluent pipes in manholes. There shall be not more than 2.0 feet of fall between influent and effluent pipes unless an external type drop manhole is provided.

(5) All main sanitary sewer lines shall be terminated with a manhole. This requirement may be waived for sewer lines less than 150 feet in length upon approval by the Village.

(6) Minimum slope for the last main line reach of an 8 inch diameter sewer shall be 0.60%, unless future extension of that line is anticipated.

(7) Sanitary sewers shall be large enough and / or deep enough to be extended to provide service to upstream tributary areas upon buildout. Sanitary sewers shall end at a terminal manhole at the boundary of the development to allow for future extension unless waived by the Village.

(8) Each lot shall be provided with a wye connection located near the center of the lot (with pancake plug) except as otherwise approved by the Village.

(9) The inverts of all service line connections made at manholes must be above the centerline of the main line pipe.

(10) Any service line stub which is greater than 8 feet below the finished surface shall be provided with a riser to bring the service within 7 feet of the surface; all such service wyes shall be encased with 6 inches of concrete (with pancake plug) or coarse aggregate material CA-6 gradation.

(11) Drop connections for service lines at manholes will not be allowed.

(12) Back lot line sanitary sewer services shall be provided with manholes at all street crossings.

(13) The minimum design flow velocity for sanitary sewer mains shall be 2 feet per second.

(14) Sanitary sewer service lines shall have a minimum diameter of 6 inches and a minimum slope of 1/8 inch per foot, shall be extended to at least 5 feet beyond the property line, and shall be at least 6 feet below finished ground surface at the property line.

(15) The openings through which pipes enter the manhole structure shall be gasketed and shall be completely and firmly filled with nonshrink grout. The exterior of the joint shall be covered with bituminous mastic. Non-gasketed joints will be allowed for new openings into existing manholes.

(16) All wye locations and the ends of all service lines shall be staked with a wood leader at least 1 inch by 2 inches extending from the wye to a point at least 1 foot above the finished ground line. Detectable tape shall be wrapped around the end of the service line or wye and extended to the ground surface. Additionally, the outside of the sidewalk or the pavement curb shall be marked with a permanent "S" when poured to mark the location of each service line.

(17) Duplex lots may have a single service line serving a maximum of two (2) dwelling units. A separate sanitary sewer cleanout shall be provided for each dwelling unit.

(18) The type of sewer pipe for mains and laterals shall be:

(a) Extra strength vitrified clay pipe (ASTM Specification C-700) with rubber gasket push-on compression joints (ASTM Specification C-425) or factory installed PVC bell and collar joints (material meeting ASTM Specification D-1784).

(b) Polyvinyl chloride (PVC) pipe (ASTM Specification D-3034 type PSM for 4 inches through 15 inches and ASTM Specification F-679 for sizes 18 inches through 27 inches) with minimum wall

thickness standards dimension ratio (SDR) of 26 and push-on flexible elastomeric seal joints (ASTM Specification D-3212).

(c) Ductile iron pipe (ANSI -21.51 or AWWA C-151), class 50 thickness designed per ANSI A-21.51 or AWWA C-151 with mechanical or rubber slope ring seal or push-on joints (AWWA C-111 and AWWA C-600) and shall be provided with ceramic epoxy lining suitable for wastewater use.

(d) Reinforced concrete pipe (ASTM Specification C-76) Class I, II, III, IV, or V with flexible gasket joints (ASTM Specification C-443) may be used for pipe sizes 15 inch diameter or larger. The interior of concrete pipe shall be coated with a material that is non-reactive with sewer gas or any other materials allowed in the waste stream in accordance with applicable Village Ordinances.

(19) All force main pipe shall be thickness class 50 ductile iron pipe in conformance with AWWA C-150, AWWA C-151, and ASA A21.51 with mechanical or push-on joints per AWWA C-11 and AWWA C-60 and shall be provided with a ceramic epoxy lining suitable for wastewater use.

(20) Frames and lids shall be gray cast iron which are watertight with self-sealing covers, and concealed pick hole lids to prevent intrusion of stormwater runoff into the sanitary sewer system. The top of the casting shall be set 2 inches above the finished ground or flush with the paved surface. Castings shall be set on manholes in a bituminous mastic bed.

(21) Chimney seals shall be provided for all manholes and their castings. They shall consist of an external flexible rubber sleeve and extension per the requirements of ASTM C-923 with a minimum 1,500 psi tensile strength. Minimum thickness shall be 1/8 inches. Stainless steel compression bands shall be Type 304 per ASTM A-740, shall be a minimum of 16 gauge thickness with a minimum width of 1 inch. A watertight seal shall be created.

(22) Fittings shall be the same type of material as the pipe. All joints shall be watertight and gas tight.

(23) Minimum cover for sanitary sewers shall be at least five (5) feet from finished grade to top of pipe.

(24) Sewer taps to existing sewer lines shall be constructed as required by the Village utilizing band seal couplings, and shall be made watertight. A section of existing pipe shall be removed and a wye inserted with pipe couplings. Sewer taps to existing sewer lines shall be inspected by the Village before they are encased or backfilled.

(25) Bedding of the pipe shall be performed in accordance with the Standard Specifications for Water and Sewer Main Construction in Illinois as more particularly described herein. Sanitary sewer pipe shall be placed and solidly seated with the barrel of the pipe resting on a shaped bed of selected granular materials 4 to 6 inches thick. A small excavation shall be made at the joint to permit proper joining of the pipe and to eliminate bridging from joint to joint. Haunching shall be placed up to the centerline of the pipe with selected granular material sliced under the pipe haunches and mechanically compacted into place. Primary initial backfill consisting of select granular materials mechanically compacted into place shall be placed to the top of the pipe. Secondary initial backfill consisting of select granular materials or granular cradle shall be placed to a point 12 inches above the top of the pipe. This work shall conform to ASTM D-2321 and / or ASTM C-12.

(26) Pipe couplings shall conform to the applicable portions of ASTM C-425, C-443, C-5864, C-1173, and D-1869. They shall be made of elastomeric polyvinyl chloride, shall be specifically sized to fit the outer diameter of the pipes being joined, and shall have stainless steel take-up clamps to fit the appropriate outer diameter of the coupling. The take-up clamps shall be tightened to the manufacturers recommended torque value and the joints tested in accordance with the manufacturer's recommendations. Testing may be waived at the discretion of the Village, provided that the installation passes visual inspection. After the connection has been inspected, tested where required, and approved by the Village, the entire connection shall be encased in granular fill to a minimum of 6 inches all around.

(27) Backfill shall be placed in accordance with the Standard Specifications for Water and Sewer Main Construction, with the following exceptions:

(a) Trench backfill consolidation by water inundation and jetting will not be allowed under or within 2 feet of any street pavement.

(b) Granular backfill under pavements shall be compacted by ramming and tamping tools and shall be deposited in uniform layers not exceeding 6 inches. The trench backfill material shall be compacted to not less than 95% of the standard laboratory density. The density of the trench backfill must be determined at 2 foot depth intervals of the backfill construction and test results shall be provided to the Village. Tests shall be taken at not less than 100 foot intervals along each trench beneath pavement surfaces. Regardless of length, every trench shall be tested for compaction and test results shall be provided to the Village.

The use of large vibratory plate compactors mounted on hi-hoe excavator arms is allowable for all utility trenches exceeding 5 feet in depth in areas beneath paved surfaces. Granular trench backfill lifts of up to 4 feet in loose depth shall be allowable when large plate compactors are utilized. Each lift shall be tested for compaction. In general each trench shall be tested 1 foot below finish grade, 4 ½ feet below finish grade, 8 feet below finish grade, and each 3 ½ feet further in depth thereafter.

Before a particular vibratory plate compactor is utilized the contractor shall demonstrate its ability to provide adequate compaction of granular trench backfill materials to the full 4 foot loose depth.

(c) Controlled Low Strength Material (CLSM), or flowable fill, may be required by the Village Engineer in lieu of aggregate backfill. Construction of CLSM shall be in accordance with IDOT Standard Specifications for Road and Bridge Construction.

(28) Drop manhole connections shall be installed externally, unless otherwise allowed by the Village, and shall be constructed in accordance with the details adopted by Administrative Rule.

(29) New connections made to any existing manhole shall be angled in the direction of flow, and shall be accomplished by core drilling through the wall of the manhole and installing an appropriately sized connector boot, such as KOR n SEAL[®] by NPC, Inc., or approved equal.

(30) When the proposed sewers are located within the service area of the Sangamon Valley Public Water District, the sewers shall comply with the regulations of that agency. The subdivider shall obtain written approval from Sangamon Valley Public Water District of the Construction Plans and Specifications.

(C) Testing.

(1) Testing of sanitary sewers shall be performed in accordance with the procedures of the Standard Specification for Water and Sewer Main Construction in Illinois, except that all reaches of sewer shall be tested and must pass all requirements. The Village shall be notified at least 48 hours before testing occurs to allow the Village to witness the tests. The following tests shall be performed.

- (a) Lamping;
- (b) Exfiltration of water, infiltration of water, or exfiltration of air under pressure;
- (c) Deflection of PVC pipe shall not exceed 3% of the base internal diameter.

(2) Any sewer line failing any of the tests shall be repaired to the satisfaction of the Village and retested until the line passes all tests. Manholes shall be furnished with a ½ inch diameter pipe nipple 10 inches long with a cap extending through the manhole wall and located at the top of sewer pipe or by an alternative method approved by the Village to assist in determining the level of the ambient water table.

(3) All sanitary sewer line work shall be inspected via a television camera survey. A recording of the inspection shall be made, a copy of which shall be provided to the Village. Any defects noted during the television camera inspection shall be repaired to the satisfaction of the Village.

(4) All manholes shall be tested for leakage in accordance with the procedures of the Standard Specifications for Water and Sewer Main Construction in Illinois per ASTM 1244. The leakage test shall include the joint between the manhole casting and the manhole chimney.

(5) Prior to putting any service connection from a house or other user to a main line into use, the subdivider’s engineer shall file a certificate with the Village stating that the required improvements were constructed in accordance with the approved Construction Plans and Specifications. The certificate shall include the following:

- (a) The elevation of the groundwater surface for each portion of sewer tested;
- (b) The elevation of the upper and lower inverts for each portion of sewer tested;
- (c) The infiltration, exfiltration, or air pressure drop rates of each portion of sewer tested and the allowable rates based upon the test method utilized.

(D) Minimum constructed slopes for sanitary sewer installation.

The following table lists a penalty system that may be used for sanitary sewer lines that are installed at less than minimum design slopes.

Constructed Slope Deficiency (%) of Design Slope	Penalty (% of construction cost)
0 – 4%	0
4 – 8%	25
8 – 12%	50
Greater than 12%	Remove and Replace

The penalties shall be assessed in the form of non-refundable cash, in the amount determined from the official contractor's bid, or the replacement cost as determined by the Village per industry standard prices.

If the sanitary system is laid at less than minimum slopes of 0.4% for 8 inch diameter, 0.28% for 10 inch diameter, and 0.22% for 12 inch diameter, etc., or less than 95% of the required design slope if greater than the minimum, the Village reserves the right to require full removal and replacement. Full removal and replacement shall include removing the substandard portion of the sewer main system and replacing it in its entirety. This work shall include required manholes, piping, bedding, haunching, backfilling, grading, seeding, surface restoration and all appurtenances and requirements associated with a sanitary sewer system installation.

(E) Construction. All construction shall be in accordance with the current Standard Specifications for Water and Sewer Main Construction in Illinois, the Illinois Environmental Protection Agency regulations, and the following additional requirements:

(1) All lines shall be capable of transmitting direct light between manholes.

(2) Infiltration shall not exceed 200 gallons per day per inch diameter per mile; this test procedure is to be used only for sewers located below the water table, otherwise exfiltration or air tests shall be conducted.

(3) Exact location of all service wye connections shall be shown on the "As-Built" drawings as measured from the nearest downstream manhole and other readily available surface features.

(4) Unstable trench bottom material shall be removed and replaced with stone or gravel.

(5) Water and sewer separation requirements shall be strictly adhered to at all times.

(F) Sanitary Sewer Lift Stations.

(1) The design of lift stations shall conform to Title 35: Environmental Protection; Subtitle C: Water Pollution; Chapter II: Environmental Protection Agency; Part 370: Illinois Recommended Standards for Sewage Works; Subpart D: Sewage Pumping Stations; of the State of Illinois Rules and Regulations, and the Standard Specifications for Water and Sewer Main Construction in Illinois.

(2) The owner / developer shall install all necessary lift station(s) and appurtenances at no cost to the Village unless financial arrangements are made beforehand. Lift stations shall be considered part of the improvements. The lift station shall be placed within a permanent parcel of land to be owned by the property owners association or the Village.

(3) Every lift station shall be located off the traffic way of streets and alleys and shall be enclosed by a maintenance free fence. Areas inside the fence shall be rocked with 6 inches CA-6 aggregate with a weed control barrier.

(4) The owner / developer shall provide a driveway surface of 6 inches of CA-6 for access to any lift station so that lift stations are readily accessible by maintenance vehicles during all weather conditions.

(5) Sewage lift station structures and mechanical equipment shall be protected from physical damage and designed to remain operational during a 100 year flood event.

(6) Electrical systems and components shall comply with the National Electrical Code requirements for Class1, Group D, Division 1 locations.

(7) The Village shall specify the electrical panel and control systems required.

(8) The owner / developer shall also equip the lift station with a 6 inch quick disconnect and a 4 inch female fitting for bypass pumping in emergency situations.

(9) The lift station shall be equipped with a high water alarm light and a telemetering system.

(10) Under no circumstances shall the wet well inlet be less than 4 feet above the pumps.

(11) Wet wells shall be a minimum 6 feet in diameter. Valve vaults shall be a minimum of 5 feet by 5 feet square. Safety hatches shall be installed on all aluminum access hatches approved by the Village.

(12) All lift station components, design criteria, and IEPA permit application shall be reviewed by the Village prior to approval for construction.

(13) All sewage pumping stations shall be "Factory-Built Duplex Sewage Pumping Stations" as manufactured by Smith and Loveless Inc., or equal, as approved by the Village. All sewage pumping stations shall be supplied with standby power generators.

(14) All design calculations must be submitted to the Village for approval.

(15) All shop drawings must be submitted to the Village for approval.

(16) Operations and maintenance manuals shall be provided for all sanitary sewage pumping stations.

(17) Sewage pumping stations shall include automatic alternators, ventilating fan, a heater with thermostat, an alarm light, an alarm horn, running time meters, a high water alarm sensor, an automatic telephone dialer, a solid state level controller and backup level controller, a backup pump connection, and other such features as the Village shall deem necessary.

(18) Pump motors shall be high efficiency, three-phase, 230 volt type, unless otherwise approved by the Village.

(19) Force mains shall comply with the applicable requirements for construction of water mains as set forth herein.

(20) All electrical systems shall be constructed in accordance with the applicable provisions of the IDOT Standard Specifications for Road and Bridge Construction.

4.6 WATER DISTRIBUTION SYSTEM.

(A) General. In general, all sites within 500 feet of a public water main shall connect to and utilize the public water supply system. This requirement may be waived by the Village if a substantial physical obstruction prevents connection without incurring extraordinary expense.

(1) No plat of any subdivision shall be approved unless the subdivider provides for construction of a public water supply system adequate to serve the needs of the entire subdivision when the same is fully developed. The location and design of the public water supply system shall be approved by the Village, the Illinois Environmental Protection Agency, and the corporate authorities of the public water district in which the subdivision is located. This requirement shall not apply to any new subdivision which cannot be provided with public water service.

(2) The adequacy of the existing public water mains to which the proposed development is to connect into must first be determined by the subdivider. If the existing public water mains are not adequate, it shall be the subdivider's responsibility to find an adequate connection. This work shall be done in cooperation with the Village. Capacity of water mains shall be determined utilizing Illinois Environmental Protection Agency regulatory requirements.

(3) All design calculations must be submitted to the Village for approval.

(4) Where the subdivider can show by cost estimates that it is not economical to connect to a public water supply system (taking into account the cost of installing individual water wells and their maintenance costs), on-site well systems may be utilized. See the separate section of this chapter for further information.

(5) All permits required must be obtained by the subdivider (i.e. Environmental Protection Agency permit). Permit application forms shall be reviewed and approved by the Village before being submitted to the Illinois Environmental Protection Agency.

(6) All water main work shall be performed in accordance with the current Standard Specifications for Water and Sewer Main Construction in Illinois, the regulations of the Illinois Environmental Protection Agency, the Village Water Use Ordinance, and the regulations of the Sangamon Valley Public Water District whenever the water main will be in its service area.

(B) Design.

(1) All design criteria shall conform with the current Illinois Environmental Protection Agency regulations and the Recommended Standards for Waterworks, (Ten State Standards), latest addition.

(2) Design and construction of all water mains shall be governed by the requirements of the Standard Specifications for Water and Sewer Main Construction in Illinois, latest edition.

(3) Water main sizes shall depend upon factors such as the demand requirements, the pressure requirements in distribution system, and plans for the expansion of the municipal system. All mains located within the distribution system shall be a minimum of six (6) inches in diameter, except in certain circumstances where the constructed water main does not serve a fire hydrant and will not be extended in the future.

(4) It is anticipated that water mains along collector streets and arterial streets will typically not be less than eight (8) inches in diameter to provide a system of arterial mains. Water mains around cul-de-sacs that are dead-ends, do not serve a fire hydrant, and will never be extended in the future shall not be less than four (4) inches in diameter.

(5) The layout of the water mains shall be as needed to serve adequately all lots and tracts with connection to the municipal system. The mains shall be looped and valved to permit shutting off of service to only a small number of connections for repairs or maintenance. Preferably, disruption of service should be limited to one block. Looped mains shall be provided in all locations except cul-de-sacs, or scattered properties. The design and construction shall include the placement of tees, crosses, etc., where future development indicates looping will be required.

(6) Unlooped mains or dead ends shall be equipped with a fire hydrant or permanent flushing hydrant. See details as adopted by Administrative Rule.

(7) Fire hydrants shall be installed throughout the entire distribution system. The hydrant spacing shall provide for hose lines along right-of-way lines not exceeding 350 feet to any portion of a lot or a 500 foot interval between hydrants along the street within a single or two family residential area. Fire hydrant spacing shall be not greater than 350 feet in multi-family residential, commercial and industrial areas. Fire hydrants shall also be placed at all high spots in the distribution system.

(8) All fire hydrants shall be equipped with an auxiliary valve located between the main and the hydrant.

(9) All hydrant leads shall be a minimum six (6) inch diameter. Gradelok style hydrant leads may be utilized to provide depth adjustment as needed.

(10) Hydrants shall be set so that at least the minimum pipe cover is provided for branch supply line and the nozzles are 18 to 24 inches above finished grade. Each hydrant shall be anchored with two (2), ¾ inches threaded stainless steel rods from the hydrant to the mechanical joint tee on the main.

(11) All hydrants shall have a seven (7) inch barrel, two (2) 2 ½ inch hose connections, and one (1) 4 ½ inch pumper connection.

(12) All plugs, caps, tees, bends, and fittings deflecting 22.5 degrees or more on water mains shall be provided with a reaction backing. The reaction backing should be concrete of a mix having a compressive strength of not less than 3,000 psi at 28 days. Reaction backing shall be placed between solid ground and the fitting to be anchored; the area of bearing on the pipe and on the ground in each instance shall be shown on the Plans.

(13) Valves shall be uniformly located in some standard area such as a street or curb line to facilitate their location. A valve box, with its cover at the finished grade, shall always be placed over a

buried valve. Valves should be located on all branches from feeder mains and between distributors and fire hydrants. Three (3) valves shall be provided at crosses and two (2) valves at tees; the valves should be placed on the smaller lines at each cross or tee. The Village may require that valves located in paved areas of collector or arterial streets be constructed in a valve vault

(14) Valves shall be spaced not more than 700 feet apart along water mains longer than 900 feet in length.

(15) At the outer limits of the subdivision, valves at tees and crosses shall be placed to require the least number of water main shutdowns that would be needed when the mains for future subdivisions are extended. Water mains shall be extended to the outer boundary of the development to facilitate future expansion.

(16) A service connection shall be extended to each lot. All service connections shall be supplied with corporation stops and curb stops with box. The service pipe shall conform with the Village rules and regulations for water service.

(17) Minimum cover for mains shall be 45 inches, and minimum cover for services shall be 42 inches.

(18) All water mains shall be constructed in strict accordance with the applicable water and sewer separation requirements.

(19) All materials shall conform to the latest standard issued by the American Water Works Association, and shall be NSF rated for potable water.

(20) All water mains shall be designed for a normal working pressure during average flow and use conditions of not less than 35 psi, and a minimum pressure of 20 psi under maximum flow conditions.

(21) Tie rod joint restraints shall be designed for a minimum internal pipe pressure of 100 psi. The blocking shall be kept clear of the entire bell configuration of any adjacent joint and shall be at least as large as is necessary to restrain the fittings from movement.

(22) All hydrants shall stand plumb. Hydrants with pumper nozzles shall have hose nozzles parallel with, and the pumper nozzle perpendicular to, the curb line. Hydrants located behind curbs, where sidewalks extend close to or about the curb, shall be set so that no portion of the pumper or hose nozzle caps will be less than 12 inches from the back edge of the sidewalk and 3 feet from the back of curb. Where set between the curb and sidewalk, or between the sidewalk and the property line, no portion of the hydrant nozzle cap shall be within 12 inches of the sidewalk and three (3) feet from the back of curb.

(23) Immediately before installation of a hydrant, the following operations shall be performed:

(a) The hydrant shall be thoroughly inspected;

(b) The hydrant interior shall be thoroughly cleaned; and

(c) The hydrant shall be opened and closed as many times as may be necessary to determine if all parts are in proper working order, with valves seating properly and the drain valve operating freely.

(24) When the proposed water mains are located within the service area of the Sangamon Valley Public Water District, the water mains shall comply with the regulations of that agency. The subdivider shall obtain written approval from Sangamon Valley Public Water District of the Construction Plans and Specifications.

(C) Materials.

(1) Water main pipe shall be thickness Class 50, pressure Class 350 ductile iron pipe with push-on joints and cement lining as described and manufactured in accordance with AWWA C151. Gaskets must properly match bell configuration. Gasket and pipe materials shall be NSF certified. Joints shall be in accordance with AWWA C111 or AWWA C110. Pipe shall be cement lined per AWWA C104.

(2) Fire hydrants shall be flanged joint bell, dry barrel, standard compression, two-piece standpipe, break-away design, 5 inch valve opening, with two (2) 2 ½ inch nozzles and one (1) 4 ½ inch nozzle, conforming to AWWA Standard C502, manufactured by Mueller or U.S. Pipe. Fire hydrants shall be painted red. Outlets shall be designed for not less than 150 psi working pressure, and shall open counterclockwise. The inlet shall be a minimum 6 inches in diameter.

(3) Fittings, other than valves, shall be Pressure Class 350 psi ductile iron fittings with mechanical joints and cement lining, as described and manufactured in accordance with AWWA C153, AWWA C111, and AWWA C110. Mechanical joint end connections and retainer glands may be required where site conditions require joint restraint. Tapped and solid plugs shall have set screws for securing plug in bell or pipe or fittings. All material must be NSF certified.

(4) Gate valves shall be iron body resilient-seat gate valves manufactured in accordance with AWWA C509. Gate valves shall have the standard 2 inch operating nut, O-ring seal, vertical non-rising brass stem, interior ferrous surfaces epoxy coated (minimum 8 millimeter thickness), in accordance with AWWA C550. Mechanical joint ends shall open be turning to the left (counter-clockwise). Gate valves shall be designed for 200 psi water working pressure and 400 psi test pressure. All gate valve materials and gaskets shall be NSF certified. Valves shall have a clear waterway equal to the full nominal diameter.

(5) When circumstances require, insertion valves shall be EZ-2 type as manufactured by Advanced Valve Technologies, or equal. Insertion valves shall comply with the requirements of AWWA C-509 and shall meet the same requirements as a standard gate valve.

(6) Valve boxes shall be adjustable, screw type, and made of best quality cast iron. Valve boxes for four (4) inch through twelve (12) inch valves shall have a minimum 5 ¼ inch diameter shaft and consist of a base, bottom section, top section and a lid. Minimum thickness of metal shall be 3/16 inches. Box shall be installed over the outside of all gate valves and shall be of length that can be adapted, without full extension, to depth of cover required. The word "WATER" shall be cast in the cover. A plastic centering insert shall be provided.

(7) All service pipes shall be copper tube size polyethylene SDR-9 – 200 psi rated, minimum 1 inch diameter, for underground service, conforming to ASTM B-2737. The pipe shall be marked with the manufacturer's name or trademark and a mark indicative of the type of pipe.

(8) All corporation stops and curb stops shall be fabricated of brass and shall be provided with outlets suitable for copper connections. Curb stops shall be of the roundway type. Fittings shall be copper and of the compression type.

(9) Tapping sleeves, flange and bolts shall be stainless steel, as approved by the Engineer.

(10) Service boxes shall be of the best quality cast iron, with the base of ample size to completely house the service stop, and of such construction that it shall be capable of extension from a minimum of three (3) feet six (6) inches in length, to a maximum of six (6) feet six (6) inches in length. Boxes shall be 2 ½ inches in diameter for stops 1 ¼ inches and smaller, and shall be three (3) inches in diameter for stops over 1 ¼ inches. Boxes shall be furnished with a cast iron cover labeled "WATER".

(11) Concrete for reaction backing shall consist of an aggregate not to exceed 1 inch with the slump of the concrete when placed not to exceed three (3) inches, and have a crushing strength of not less than 3,000 psi in 28 days.

(12) Flushing hydrant shall have materials as specified in typical flushing hydrant detail adopted by Administrative Rule.

(13) No service connection shall pass through property other than the property it serves. Individual services are required for each customer. A curb stop is required for each service line.

(14) Tapping saddles shall be AWWA taper thread (cc) 85-5-5-5 water works brass 2 inch to have double bend (ASTM B-62) Ford 101B or equal.

(15) Granular trench backfill shall be CA-6, CA-10, FA-1, or FA-2 complying with the provisions of the IDOT Standard Specifications for Road and Bridge Construction.

(16) Tracer wire shall be direct bury rated #12 AWG solid copper or copper-clad steel wire with 30 mil HDPE jacketing, blue in color. Stranded copper wire, THHN electrical wire and bare copper wire shall not be utilized.

(17) Insertion Valves and Wet-Tapping Tees

- (a) When insertion of a valve into an existing water main is required the valve shall be an EZ valve unit manufactured by Advanced Valve Technologies, Inc. or equal as approved by Village staff.
- (b) When insertion of a tee into an existing water main that is 4 inches in diameter or larger is required the hot-tap process shall generally be used. Hot-tap tees shall meet the requirements of applicable ASTM Standards. The hot-tap tee shall be a full encirclement split sleeve type fitting.
- (c) Tapping Sleeves – Tapping sleeves shall be used for making wet taps 4 inch nominal size and larger on existing water mains 4 inch nominal size and larger. Tapping sleeves shall not be used for water main taps concurrent with construction. Tapping sleeves shall be stainless steel split sleeves with a flanged outlet and a full-face rubber gasket to form the seal (SS), all as specified herein. The type of tapping sleeve used shall be as shown on the plans, or as determined by Village staff.
- (d) Stainless steel tapping sleeves, including flanges, outlet, armor plates, lugs, nuts, bolts and washers shall be constructed of 18-8 type stainless steel. Each sleeve shall be

rated at a minimum working pressure of 150 psi and shall be factory hydrostatically tested on a pipe to a minimum of 300 psi for a minimum of 3 minutes with zero leakage allowed. The sleeves shall incorporate drop-in type bolt lugs with pass-through bolt design and supplied with a minimum of two (2) longer starter bolts. Sleeves employing lifter bars and / or bolts welded to one-half of the sleeve shall not be accepted.

- (e) Sleeves shall incorporate a full circle, full length, overlapping body gasket made of virgin Buna-N, or equal, compounded for water service. The stainless steel flange shall have ANSO 125 lb drilling and be recessed for a tapping valve per MSS-SP60 and furnished with a full-face gasket permanently bonded in place. Sleeves shall be sized properly to fit the pipe outside diameter. The branch outlet shall be oversized to accept standard tapping saws or bits. Stainless steel tapping sleeves shall be as manufactured by JCM Industries, Inc. Model JCM 432 or PowerSeal Pipeline Products Corporation Model 3490 or approved equal.
- (f) Installation of Tapping Sleeves – Installation of tapping sleeves shall be in accordance with the manufacturer's recommendations and these specifications. After excavating the water main and immediately prior to installing the sleeve, remove all dirt, grease, oil and foreign matter from the outside of the water main. The water main shall then be rinsed thoroughly with water. Install the tapping sleeve with particular attention to the position of gaskets, "O" rings, and seals. Bolts shall be drawn up and torqued to the manufacturer's specifications in a uniform and accepted pattern.
- (g) The tapping valve shall be installed on the flange, as recommended by the valve manufacturer. The downstream flange of the valve shall be blocked temporarily so as to accept the weight of the valve and the tapping machine. The sleeve and valve installation shall be tested for leaks prior to installing the tapping machine. The water main shall not be tapped if a leak is present. If the tapping valve is the suspected source of leakage, the valve shall be replaced and the test repeated.
- (h) The tap shall be performed in accordance with the tapping machine manufacturer's recommendations. The tapping machine shall be supported and blocked so as to reduce strain on the sleeve, valve or water main. The coupon shall be removed with the tapping machine. If, for whatever reason, the coupon is not recovered with the machine, the Contractor shall be responsible for coupon retrieval from the system and shall cooperate fully with directions given by the Village staff while locating and removing the coupon.
- (i) Upon removal of the tapping machine, the entire tapping sleeve and valve assembly shall be inspected for water leaks. All visual leaks shall be repaired. All repair methods shall be subject to approval by Village staff. The valve shall be opened enough to flush any shavings, chips, and debris from the water main.
- (j) Coordination – Installation of insertion valves and hot-tap tees shall be coordinated in advance with Village staff. Installation activities shall not occur without prior approval by Village staff. All materials, equipment, and methods shall be subject to review and approval by Village staff.

(D) Construction.

(1) All construction methods, pressure tests, leakage tests, and sterilization shall conform with the current Standard Specifications for Water and Sewer Main Construction in Illinois. For construction details, see the attached standard details.

(2) The water mains shall be laid and maintained to lines and grades established by the Plans and Specifications, with fittings, valves, tapped or bossed outlets, and hydrants at the required locations. Valve-operating stems shall be oriented in a manner to allow proper operations. Hydrants shall be installed plumb.

(3) All water mains shall be laid to a minimum cover depth of 45 inches and a maximum cover depth of 60 inches. Depth shall be varied as necessary to accommodate crossings with other utilities. As-Built depth measurements shall be taken at intervals not greater than 200 feet to verify installed depth. Depth shall be determined to proposed finished grade.

(4) As-Built horizontal and vertical locations of all water mains shall be provided to the Village at intervals not greater than 200 feet to verify installed location.

(5) The trench bottom shall be true and even to provide support for the full length of the pipe barrel. The pipe shall be bedded in a minimum of 3 inches of selected granular material. Holes for the bells shall be provided at each joint, but shall be no larger than necessary to allow joint assembly and to ensure that the pipe barrel will lie flat on the trench bottom. Pipe shall be installed in strict accordance with AWWA C600.

(6) Maximum joint deflection angle for any water main shall be 3 degrees.

(7) All mains shall be pressure tested and leakage tested in accordance with the procedures of AWWA C600. Minimum test pressure shall not be less than 100 psi. Separate pressure and leakage tests shall be performed. Testing shall be performed with a Village representative present.

(8) Where the total length of a newly constructed water main exceeds 2000 lineal feet, the system shall be tested in segments so that no segment exceeds 2000 feet in length.

(9) All mains shall be disinfected in accordance with AWWA C651. The Specifications shall include detailed procedures for flushing disinfecting and testing. No water main shall be placed into service until laboratory tests upon water samples taken by the Village confirm that disinfection has been satisfactory.

(10) All mains shall be constructed not less than 10 feet horizontally from any storm sewer or sanitary sewer. Where water and sewer lines cross, the water main shall be constructed with at least 18 inches vertical separation between the water and sewer lines. Conflict manholes shall not be allowed.

(11) Except where otherwise required beneath paved surfaces, Type 4 backfill, complying with AWWA C600 shall be used. Previously excavated materials shall be used as backfill in landscaped areas, provided that such material consists of loam, clay, sand, gravel, or other materials that are suitable. Previously excavated material shall not be used as backfill under or within 2 feet of pavements, sidewalks, or driveways. Topsoil shall be separated and placed on the surface of the trench. All backfill material shall be free from cinders, ashes, refuse, vegetable or organic material, boulders, rocks or stones, frozen soil, or other unsuitable material.

(12) A valve box or valve vault shall be provided for every valve. The valve box shall not transmit shock or stress to the valve. The valve box shall be centered over the operating nut of the valve, with the box cover flush with the finished surface.

(13) All hydrants shall stand plumb and shall have their hose nozzles parallel with the length of the street, with pumper nozzle (4 ½ inch) facing the street. Hydrants shall be set with the bottom flange of the top section 2 inches above ultimate final grade of the ground, with a maximum deviation of 2 inches in elevation being allowed. Each hydrant shall be connected to the main with a 6 inch or larger diameter branch controlled by an independent valve. The valve shall be restrained to allow shut-off when the hydrant is to be removed. All hydrants and hydrant leads shall have restrained joints from the main to the hydrant including the connection to the main and the hydrant foot.

(14) Drainage shall be provided at the base of the hydrant by placing coarse gravel from the bottom of the trench to at least 6 inches above the waste opening in the hydrant and to a distance of 1 foot above the elbow. The surface of the coarse gravel shall be covered with geotextile fabric to prevent soil intrusion into the stone. Adequate support must be provided to prevent the hydrant from settling. The bowl of each hydrant shall be well braced against a sufficient area of unexcavated earth at the end of the trench with concrete thrust blocks.

(15) Backfill shall be placed in accordance with the Standard Specifications for Water and Sewer Main Construction in Illinois, with the following additional requirements:

(a) Trench backfill consolidation by water inundation and jetting will not be allowed under or within 2 feet of any street pavement.

(b) Granular backfill under and within 2 feet of pavements shall be compacted by ramming and tamping tools and shall be deposited in uniform layers not exceeding 12 inches. The trench backfill material shall be compacted to not less than 95% of the standard laboratory density. The density of the trench backfill must be determined at 2 foot depth intervals of the backfill construction and test results provided to the Village. Tests shall be taken at not less than 100 foot intervals along each trench. All trenches shall be tested, regardless of length.

The use of large vibratory plate compactors mounted on hi-hoe excavator arms is allowable for all utility trenches exceeding 5 feet in depth in areas beneath paved surfaces. Granular trench backfill lifts of up to 4 feet in loose depth shall be allowable when large plate compactors are utilized. Each lift shall be tested for compaction. In general each trench shall be tested 1 foot below finish grade, 4 ½ feet below finish grade, 8 feet below finish grade, and each 3 ½ feet further in depth thereafter.

Before a particular vibratory plate compactor is utilized the contractor shall demonstrate its ability to provide adequate compaction of granular trench backfill materials to the full 4 foot loose depth.

(c) Controlled low strength material (CLSM), or flowable fill, may be required by the Village Engineer in lieu of granular trench backfill. Construction of CLSM shall be in accordance with the IDOT Standard Specifications for Road and Bridge Construction.

(16) Tracer wire shall be installed for all water mains. Tracer wire shall be brought up into each valve box and terminated within 3 inches of the lid. Buried tracer wire connections shall be via moisture displacement connectors. Buried connections made via twisting wires together and taping them will not be allowed. All tracer wires shall be successfully tested before water mains will be accepted.

(E) Private Wells.

(1) If the Village authorizes construction of individual private wells, the developer shall confirm that the lots are of adequate size to permit the construction of a well on each lot at least 25 feet from any building, at least 10 feet from any lot line, and at least 75 feet from any septic system seepage field. The well shall be situated clear of any driveway, parking area or other source of contamination. There shall not be any future cross connections between the well system and any public distribution system.

(2) Private wells shall conform to the applicable requirements of the Illinois EPA and the Illinois Department of Public Health.

4.7 SIDEWALKS and PATHWAYS.

(A) General.

(1) Sidewalks shall be installed on both sides of all public streets and shall run to the back of the curb at each corner lot. Along some streets, sidewalks may be required to be replaced by pathways as directed by the Village.

All sidewalks along streets shall be installed in the public right-of-way. The back of the sidewalk shall be one (1) foot inside the right-of-way, unless, for good cause shown, a different location is approved by the Village Engineer or Village Planner.

(2) Mid block sidewalks shall be located within a ten (10) foot easement or commons area as directed by the Village. Pathways shall be located within a fifteen (15) foot easement or commons area as directed by the Village. This location shall be dependent upon the location of proposed utilities within the same easement (if any).

(3) All proposed sidewalks and pathways abutting streets shall be ramped with a non-slip surface so that the street and sidewalk blend to a common level, enabling persons in wheelchairs to travel freely. Ramp construction shall be as per the most current American Disability Act (ADA) standards.

(4) Mid-block sidewalks or pathways. Mid-block sidewalks or pathways are required when the average length of a block exceeds 800 feet or at locations deemed essential to provide circulation to schools, playgrounds, shopping areas and other community facilities, public sidewalks or pathways. They shall be constructed within a dedicated right-of-way or permanent easement of at least 10 feet in width. Such walks shall be designed so that the entire walkway is visible from the adjacent street(s). The sidewalk shall be in the center of the right-of-way, easement or commons area unless directed otherwise.

(B) Design.

(1) All sidewalks shall be a minimum of five (5) feet in width. Wider sidewalks may be required by the Villages.

(2) All multipurpose pathways shall be a minimum of eight (8) feet in width.

(3) All sidewalks and pathways shall be a minimum of 6 inch thick Portland Cement concrete. Sidewalks and pathways shall be thickened to 8 inches when crossing commercial driveways.

(4) One-half inch thick pre-molded expansion joints shall be placed at not greater than 100 foot intervals and at all curb intersections or intersections with other permanent structures.

(5) All sidewalks shall be hand-grooved at least ½ inch deep, with a 1 inch grooving tool, at 5 foot intervals, and edged with an edging tool.

(6) All multipurpose pathways shall be constructed in a manner consistent with sidewalk construction.

(7) The subgrade shall be prepared “properly” so that after compaction it will conform to the alignment, grades and cross sections shown on the approved Plans. Soft and unstable material that will not compact shall be removed and replaced with suitable materials as approved by the Village. The entire

subgrade shall be compacted to not less than 90 % of standard laboratory density. The subgrade shall be tested via a dynamic cone penetrometer at 100 foot intervals to confirm that the subgrade is properly compacted and suitable stable. Leveling sand shall be utilized when necessary. Topsoil materials shall not be used for subgrades.

(8) Sidewalks and pathways along street pavements shall be constructed with not less than 2% slope between the back of curb and closest edge of the sidewalk. All sidewalks shall be built above the street pavement, unless special circumstances dictate otherwise, as approved by the Village.

(9) Ramps shall comply with the applicable IDOT standards and the details adopted by Administrative Rule. Both transverse grooving and installation of truncated dome surfaces shall be required.

(10) Sidewalks and pathways shall be constructed to the latest accessibility standards of the American Disabilities Act (ADA).

(11) Sidewalks or pathways butting to the roadway pavement at intersections shall align with the sidewalk/pathway or proposed sidewalk/pathway on the opposite side of the street.

(12) The minimum distance between the back of curb and the face of sidewalk or pathway shall be four (4) feet.

(13) Sidewalk cross slope (slope from side-to-side) shall be 3/16 inch per foot (1 1/2%). The longitudinal slope shall not exceed 5.0% unless sidewalk is matching adjacent street profile.

(C) Construction of sidewalks and pathways.

(1) Shall be constructed in accordance with the provisions of the IDOT Standard Specifications for Road and Bridge Construction.

(2) Portland Cement concrete shall be mix SI or equivalent having a minimum compressive strength of 3,000 psi in 14 days, 5% to 8% air content, and not greater than a 4 inch slump.

(3) Shall be field tested at a rate of two (2) specimens per 350 linear feet or two (2) specimens per day, whichever is greater, for strength, air content, and slump.

(4) Shall be provided with a light broom surface finish.

(5) Shall be properly cured and protected for not less than 3 days.

(D) Timing.

(1) Sidewalks/pathways shall be constructed prior to the occupancy of adjacent buildings within the development. Developer, at his option may allow sidewalk construction to occur simultaneously with the construction of adjacent buildings, except as noted below.

(2) All sidewalk/pathway construction, shall be completed before any occupancy permit is issued for any residential building on any lot within the boundaries of the development or the subdivision

or within two (2) years after the approval of the Construction Plans and Specifications whichever comes first. .

(3) All public sidewalks/pathways shall be installed prior to the Village staff presenting the public infrastructure improvements to the Board of Trustees for acceptance by the Village.

(4) All public sidewalks require testing and certification from the developer's engineer.

4.8 SPECIFIC STANDARDS FOR ELECTRICAL SERVICE AND UTILITY SERVICES.

(A) The developer shall be responsible for all final grading, seeding, and sodding necessary after the installation of the utility facilities to achieve ground stabilization.

(B) The electrical distribution system installed in all new residential developments shall be of the underground distribution type.

(C) All electrical distribution facilities shall be installed by the electric utility or by use of an electrical contractor under contract to the electric utility.

(D) All single phase electric distribution transformers, pedestals, junctions, handholes, streetlights and all other devices that the utility may deem necessary, in its exclusive judgment, shall be installed within 10 feet of the side property line (typically) unless conflicts develop.

(E) As directed by the utility companies, the developer of residential subdivisions shall install conduits for the future installation of cable at all road crossings identified by the utility companies prior to the installation of roads. Heavy wall PVC (Schedule 80 or heavier), or rigid metal conduit shall be installed, if so directed by the utility company, of adequate size to accommodate electric conductor, telephone and CATV cables at all street crossings identified by the utility. Conduit so installed shall extend a minimum of 5 feet beyond the back curb line on each side of the street. The conduits beneath street pavements shall be laid at a minimum of 48 inches below the final grade level of the street.

(F) Underground service connections for said utilities shall be provided at the property line of each platted lot.

(G) All conduits or cables for said utilities shall be located within easements or public rights-of-way in such a manner that they do not interfere with other underground services or utilities.

(H) Minimum Cover of Underground Facilities. Cover shall be provided and maintained at least in the amount specified in the following table for minimum cover for the type of facility:

Type of Facility	Minimum Cover
Power or Communication Line (in general)	30 inches
Gas or Petroleum Products	36 inches
Water Line	42 inches
Sanitary Sewer	60 inches

(I) Standards and Requirements for Particular Types of Facilities.

(1) Electric Power or Communication Lines.

(a) Code Compliance. Electric power or communications facilities within Village rights-of-way shall be constructed, operated, and maintained in conformity with the provisions of 83 Ill. Adm. Code 305 (formerly General Order 160 of the Illinois Commerce Commission) entitled “Rules for Construction of Electric Power and Communication Lines”, and the National Electrical Safety Code.

(b) Overhead Facilities. Overhead power or communication facilities shall use single pole construction and, where practicable, joint use of poles shall be used. Utilities shall make every reasonable effort to design the installation so guys and braces will not be needed. Variances may be allowed if there is no feasible alternative and if guy wires are equipped with guy guards for maximum visibility.

(c) Underground Facilities. Cable may be installed by trenching or directional boring. Special consideration is given to directional boring to minimize damage when crossing improved entrances and pavement surfaces. If a crossing is installed by boring and jacking, encasement shall be provided between the jacking and bore pits. Cable shall be grounded in accordance with the National Electrical Safety Code.

(2) Underground Facilities Other than Electric Power or Communication Lines. Underground facilities other than electric power or communication lines may be installed by:

(a) Directional boring or open trench construction, but only if prior to roadway construction; or

(b) Tunneling with vented encasement, but only if installation is not possible by other means.

(3) Gas Transmission, Distribution, and Service. Gas pipelines within rights-of-way shall be constructed, maintained, and operated in a Village approved manner and in conformance with the Federal Code of the Office of Pipeline Safety Operations, Department of Transportation, Part 192 – Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards (49 CFR 192), IDOT’s “Standard Specification for Road and Bridge Construction”, and all other applicable laws, rules, and regulations.

(4) Petroleum Products Pipelines. Petroleum products pipelines within rights-of-way shall conform to the applicable sections of ANSI Standard Code for Pressure Piping. (Liquid Petroleum Transportation Piping Systems ANSI-B 31.4).

4.9 SPECIFIC STANDARDS FOR OTHER UTILITIES.

(A) It shall be the responsibility of the owner / subdivider to forward Plans for the subdivision / development to the respective providers of natural gas, telephone, cable television services, and any other requesting agency / utility.

(B) Said utility companies shall have 30 days to develop and submit to the owner / subdivider, proposed layouts for their facilities so that the owner / subdivider may approve said layouts and forward them to the Village for review as part of the Village's approval process.

(C) Underground service connections for said utilities shall be provided at the property line of each platted lot.

(D) All conduits or cables for said utilities shall be located within easements or public rights-of-way in such a manner that they do not interfere with other underground service or utilities.

(E) No underground utilities shall be constructed until their physical location is reviewed in writing by the Village.

4.10 RIGHT-OF-WAY LIGHTING.

(A) General.

(1) The purpose of this section is to provide the basis for construction of fixed lighting for rights-of-way, including streets, bikeways, and alleyways in the Village of Mahomet. All right-of-way lights owned or leased by the Village of Mahomet shall be designed and built in accordance with this section.

(2) A street light shall be installed, at a minimum, at each intersection of an arterial or major collector roadway with another street.

(3) Street lighting in new developments inside the Village limits shall be installed by the developer as part of improvements for new developments and shall be owned, operated, and maintained by the Village.

(4) Street lighting shall comply with the applicable requirements of the IDOT Standard Specifications for Road and Bridge Construction.

(5) Street lighting within residential subdivisions shall be full cut off and shielded to reduce glare into adjoining homes.

(B) Referenced standards.

(1) Right-of-way lights in Mahomet shall be designed in accordance with the illumination standards based on the American National Standard for Roadway Lighting as prepared and approved by the Illuminating Engineering Society of North American, latest edition, and approved by the American National Standards Institute. Right-of-way lights shall be constructed in accordance with the IDOT Standard Specifications for Road and Bridge Construction, except as modified herein. Further modifications to these specifications may be made by light-design engineers provided the modifications are approved by the Village.

(2) All work and materials shall be fabricated and installed in complete accordance with:

(a) National Electric Code (NEC), latest edition.

(b) National Electric Safety Code, (N.E.S.C.), latest edition.

(c) Underwriter Laboratories (UL) standards.

(d) Ameren Illinois standards.

(e) National Electrical Manufacturers Association standards.

(C) Illumination standards for intersection lighting. Intersection lighting systems shall be designed for each specific location. Standard plans shall not be acceptable. Intersection light systems shall be designed to provide not less than the level of intensity and uniformity defined in the table below. Designers may provide higher levels of intensity (brighter) and lower uniformity ratios (more uniform) on specific projects provided the changes in illumination characteristics are approved by the Village.

Table Illumination Standards for Intersection Lighting		
Intersection Class	Average Maintained Illumination in Foot-Candles	Uniformity Ratio (Eavg / Emin) (See Note a)
Arterial – Arterial	1.8	3.0
Arterial – Collector	1.5	3.0
Arterial – Local	1.3	3.0
Collector – Collector	1.2	4.0

Note a. The uniformity ratio is defined as the ratio of the density of the average luminous flux (Eavg) incident on a surface to the minimum flux (Emin) incident to the surface.

(D) Tall pole right-of-way lights:

(1) Pole shape. Tall right-of-way light poles shall be a spun-aluminum truss-arm pole. Truss-arm poles shall be of the general shape and dimensions as shown in the details as adopted by Administrative Rule. Poles shall have a maximum diameter at the base of 8 inches, minimum wall thickness of 0.250 inches, 8 foot or 12 foot truss arm depending upon mounting height, and an internal vibration damper.

(2) Luminaire and light source. The standard luminaire shall be of a cobra-head design, shall have full cut-off optics and shall have a distribution pattern and lamp wattage to produce illumination levels required in this chapter. The standard light source shall be LED.

(3) Coating and color. All exposed metal parts shall be coated with a long-life coating system such as a polyester-powder coating system or an epoxy-polyurethane gloss paint system. Long-life systems are those with a 15 year useable life before re-coating is necessary. The color shall be standard black on all non-residential local and collector class rights-of-way and all residential and non-residential rights-of-way. On all residential collector class rights-of-way, the pole color shall be black. Poles must have a minimum five (5) year warranty.

(4) Special event electrical supply. At locations designated by the Village, the right-of-way lighting designer shall include special event electrical supply receptacles. The location, number and load capacity of the special event electrical supply receptacles shall be determined by the Village based on the specific uses planned for the site.

(E) Foundations and junction boxes.

(1) All right-of-way lights shall be installed on foundations.

(2) Pole orientation relative to curb. Note that the octagonal pole shall be installed so one (1) of the eight (8) flat sides of the pole is parallel to the curb. The points between the flats shall not be pointed at the curb. To achieve this orientation, care must be exercised during construction of the foundation to assure proper foundation and pole orientation.

(3) A junction box shall be installed in the parkway or sidewalk near the foundation for each pole. The junction box shall provide a nominal 12 inch by 12 inch opening.

(F) Conductors. All conductors shall be made of copper. Aluminum conductors shall not be used. The sizes of all conductors shall be determined based on load and distance calculations performed by an electrical engineer licensed in the State of Illinois.

(G) Conduit and polyduct. All underground electric conductors shall be protected by conduit. Conduit materials may consist of galvanized rigid conduit, solvent welded Schedule 40 PVC conduit or polyduct. The conduit or polyduct shall have a diameter of 2 inches or larger. Larger diameter conduit or polyduct may be required depending upon the number and size of conductors planned to occupy the conduit. In areas covered with pavement, sidewalk or established sod, conduit should be installed by means of directional boring unless otherwise approved by the Village. The size of all conduits or polyduct shall be determined by calculations performed under the direction of an electrical engineer licensed in the State of Illinois.

(H) Ground rod. A 5/8 inch diameter by 10 foot long, copper-clad steel ground rod shall be installed for each right-of-way light pole and at each controller. The ground rod should be installed through the junction box.

(I) Controllers.

(1) Tall pole right-of-way lights should generally be controlled by individual photocells. However lights may be controlled by a central controller if approved by the Village. The basis of the choice between using a controller or individual photocells may include consideration of operation, maintenance or other economic factors.

(2) Right-of-way light controllers shall be installed in aluminum, ground mounted cabinets. All exposed metal parts shall be coated with a long-life coating system such as a polyester-powder coating system or an epoxy-polyurethane gloss paint system. Long-life systems are those with a 15 year usable life before re-coating is necessary. The color shall be coordinated with the color of the poles installed at the same location as the controller.

(J) Traffic signal right-of-way lights. Right-of-way lights shall be installed at all signalized intersections. Right-of-way lights shall be mounted on combination mast-arm and luminaire-arm poles, and shall provide a 40 foot mounting height. The mounting height may be varied at the discretion of the Village to reduce conflicts with overhead electric transmission or distribution lines. The right-of-way light arms shall be installed in the same direction as the mast arm for traffic signals. In many cases, the right-of-way light arm will be used to support video detection equipment for the traffic signal system. Right-of-way lights on traffic signals should be controlled by a right-of-way light controller mounted inside the traffic signal control cabinet. Lights may be controlled by individual photocells if approved by the Village.

(K) Construction. Right-of-way lights shall be constructed in accordance with the applicable sections of the Standard Specifications for Road and Bridge Construction, prepared by the IDOT. Site specific construction requirements may be further defined in the Construction Plans and Specifications for each project. Construction Plans and Specifications shall be prepared by an electrical engineer licensed in the State of Illinois.

(L) Testing and inspection. The construction of all right-of-way light systems shall be observed by experienced electrical engineers and / or engineering technicians as may be employed by the Village. The amount, frequency, intensity or duration of construction inspection shall be adequate to assure that right-of-way light systems are installed in accordance with the Plans and Specifications.

(M) Developer Upgrade. Should the developer wish to upgrade the street lighting system installed in a new development, such upgraded lighting systems shall be designed, furnished, and installed by the developer. Type of upgraded pole / light fixture and installation design shall receive approval from the utility and the Village prior to installation.

(N) LED Luminaire. An LED light source shall produce the same candela output as a comparable incandescent luminaire. LED life for the optic shall exceed 50,000 hours and the end of life output shall not depreciate below 70% of its initial rating. The LED array shall be mounted on a shock and vibration isolator in the center of the lens focal point. Illumination at the end of 50,000 hours shall meet the minimum illumination standards.

4.11 EROSION CONTROL REQUIREMENTS.

(A) General. Water caused erosion and eroded soil sediments are considered a form of pollution by the Federal Clean Water Act and the United States Environmental Protection Agency (USEPA). The current National Pollutant Discharge Elimination System (NPDES) program of the Federal Clean Water Act requires that construction sites disturbing 1 acre and greater be covered by a NPDES permit. The Illinois Environmental Protection Agency (IEPA) has issued a statewide general permit (NPDES Permit No. ILR10) that details the NPDES requirements for construction projects that meet or exceed the threshold for permit applicability.

(B) Stormwater Pollution Prevention Plan. An erosion and sedimentation control plan shall be prepared showing:

(1) All erosion and sedimentation control measures necessary to meet the objective of this chapter throughout all phases of construction and permanently after completion of development of the site.

(2) The proposed phasing of development of the site, including stripping and clearing, rough grading and construction, and final grading and landscaping. Phasing should identify the expected date on which clearing will begin, the estimated duration of exposure of cleared areas and the sequence of clearing, installation of temporary sediment control measures, installation of storm drainage, paving streets and parking areas, and establishment of permanent vegetative cover.

(3) The Plan shall comply with all applicable IEPA regulations.

(C) Referenced Standards. Design standards for erosion and sediment control shall comply with the provisions of the "Illinois Urban Manual", prepared by the United States Department of Agriculture, Natural Resources Conservation Service, latest edition.

(D) Applicability and guidelines. The following erosion control guidelines shall apply:

(1) All developments and subdivisions with larger than 1 acre of disturbed area shall require submittal of an erosion control plan with the subdivision Construction Plans for approval by the Village.

(2) It is the responsibility of the owner / subdivider to prepare and maintain documentation to meet the NPDES permit requirements for grading and construction projects.

(3) All work and materials shall conform to the applicable requirements of the Standard Specifications for Road and Bridge Construction in Illinois.

(4) The site erosion control plan shall include concrete washout facilities, installation of a stabilized construction entrance, designation of material storage areas, designation of haul routes, street sweeping of haul routes and other relevant information

(E) Construction.

(1) Timing. Erosion control measures shall be implemented on the first day of construction. As construction activities progress, erosion control measures shall be modified to fit site conditions.

(2) Maintenance. Erosion control measures shall be inspected weekly and any noted deficiencies repaired immediately. Erosion control measures shall also be inspected after any significant rain event and any noted deficiencies repaired immediately. A significant rain event shall be defined to be any rainfall in accumulation of ½ inch within a 24 hour period. Each report shall be forwarded to the Village upon completion.

(3) Construction care. Care shall be taken to not disturb any soil on any project site to a larger degree than is necessary. Tracking mud and soil debris off any site shall be avoided. Loose dirt and debris shall be knocked off equipment tires and truck beds. Tailgates shall be secured and trucks shall not be overloaded to the point that debris spill over during travel. In new subdivision construction on local streets, when debris is tracked off a site, it shall be cleaned up at the end of the workday. Haul routes shall avoid established residential areas. On commercial projects or large scale subdivision work, containment areas shall be defined, de-mudding rock aprons shall be used, and trucks shall be washed as necessary before they leave the site to prevent tracking mud off of the site. If blowing dust occurs, the site shall be sprayed down with water.

(4) Temporary seeding. All bare soil areas not anticipated to have construction take place on them within 30 days, including individual lots that do not have a complete perimeter erosion containment, shall be seeded immediately with a temporary cover crop, weather and soil conditions permitting.

(5) All work shall comply with the applicable requirements of the Illinois Urban Manual.

(6) Permanent seeding. Immediately after to completion of construction, permanent seeding shall be planted.

(7) All street rights-of-way, commons areas, and other similar areas shall be fertilized, limed, seeded and mulched. Seed mixture shall be a lawn mixture (Class 1), as set forth in the IDOT Standard Specifications for Road and Bridge Construction, or as approved by the Village . Seeding shall be at a rate of 200% of the standard seed application rate.

(8) The subdivision or development shall not be considered completed until permanent ground cover has been established within the entire subdivision.

(F) Penalties.

(1) Village staff may periodically and randomly inspect the construction site for compliance with the approved Storm Water Pollution Prevention Plan for the project. When Village staff become aware that an erosion control deficiency exists the Owner / Developer / Subdivider will be notified within 24 hours. The Owner / Developer / Subdivider shall dispatch sufficient resources to correct the identified deficiency within 24 hours after notification. If the Owner / Developer / Subdivider fails to address and fully resolve the deficiency within said 24 hours the Village may impose a fine of up to \$100 per calendar day for each day that the deficiency exists.

(2) The fine shall be paid by the Owner / Developer / Subdivider before any building permit or occupancy permit is issued, or before any acceptance of subdivision infrastructure for Village maintenance.

4.12 STREET TREES.

The Village may authorize street trees to be installed on the right-of-way per the requirements of the Tree Ordinance. Please see Chapter 94 of Mahomet Code for the Tree Ordinance.

4.13 TRAFFIC CONTROL.

(A) General. A traffic control plan shall be included in the site Construction Plans for all subdivisions. Barricades and lighting and other traffic control measures shall be provided as necessary, during construction, in accordance with the Manual on Uniform Traffic Control Devices. The traffic control plan shall indicate the locations and timing of street closures, and other disruptions to traffic on existing streets.

(B) Standard work zone traffic control procedure shall meet the requirements of Art. 701 of the IDOT Standard Specifications for Road and Bridge Construction.

(C) IDOT Highway Standards for traffic control, as applicable shall be followed.

(D) The traffic control plan shall meet with the approval of the Village.

(E) Temporary traffic control devices shall remain in place only when needed and shall be removed as soon as practical when directed by the Village. Placement of any of these devices shall be adjusted to satisfy field conditions. Signs that do not apply to current conditions shall be removed or covered. The contractor shall replace any traffic control device that has become ineffective due to its condition. The Village has the right to require changes in the traffic control related to the acceptability of the placement and maintenance of any traffic control device at any time.

(F) Construction work shall be phased so that there is minimum interference with pedestrian and vehicular traffic.

(G) At least 48 hours prior to beginning work that will partially or completely block access to any residence, business, or institution, notify the resident, business, or institution of the approximate beginning time and duration of such work.

4.14 Traffic Impact Analysis Requirements

(A) Traffic Impact Analyses (TIAS)

(1) For any new subdivision which outlets to an existing Village street or Township Road, a minor review and analysis of the existing and proposed traffic conditions shall be required. Trip generation rates shall be provided. Peak hour traffic estimates may also be required.

(2) A full Traffic Impact Analysis study may be required for any new subdivision at the discretion of the Mahomet Village Engineer where site conditions indicate the new development may cause issues to the existing traffic infrastructure system. A full Traffic Impact Analysis study may be required for street intersections involving collector or arterial streets. A full study may also be required for developments that are expected to generate more than 200 new peak hour vehicle trips on the adjacent streets or 1,500 new vehicle trips total at a single access location.

(3) The Traffic Impact Analysis study for proposed subdivisions which outlet only to Village streets or township roadways and submitted to only the Village of Mahomet shall include the following:

- (a) A vicinity map showing the location of the proposed subdivision in relation to the Village streets and/or township roadway(s) for which the proposed subdivision has a direct impact(s) on.
- (b) A description and overall site plan of the proposed subdivision including the size of the entire proposed subdivision and all proposed site access locations.
- (c) Average daily traffic volumes on the existing roads at or near the proposed access location(s) measured within the last 12 months. The Village or State may have applicable count data available for existing streets.
- (d) Safety analysis of the proposed site access locations(s) including stopping site distance, intersection sight distance and operational characteristics.
- (e) Trip generation data for the proposed subdivision with proposed distribution percentages.
- (f) Turn lane warrants and analysis, if needed, for each proposed subdivision access location.
- (g) Site distance plan / profile sheet(s).
- (h) Traffic signal warrants and analysis, if needed, for each proposed subdivision access location.
- (i) Feasibility reviews of round-about installation in lieu of traffic signals, if needed.
- (j) Appendix to include applicable raw count data, calculation sheets, etc.

(4) For any new subdivision which outlets to a State Highway controlled by the Illinois Department of Transportation (IDOT), a Traffic Impact Analysis shall be conducted in accordance with the

applicable IDOT standards and requirements. The analysis of the proposed subdivision shall be submitted to both the Village of Mahomet and IDOT for review and approval.

4.15 ON-SITE WASTEWATER DISPOSAL SYSTEMS.

Where public sanitary sewers are not available on-site wastewater disposal systems may be utilized, as approved by the Village. Within the Sangamon Valley Public Water District service area approval must also be obtained from that agency. The developer shall furnish soil percolation test results and other soil test results to indicate that the lots are of adequate size for proper sanitary wastewater disposal. This information shall be prepared by a licensed professional engineer. The area used for seepage fields shall not be under any proposed driveways, parking areas, buildings, nor on public property nor within public easements. No seepage field shall be connected to any storm drainage facility. Discharges from individual on-site treatment units shall not be directed above the ground surface. All private sewage disposal systems shall be constructed in accordance with the State of Illinois Private Sewage Disposal Licensing Act and Code of the Illinois Department of Public Health, latest revision thereof.

VALIDITY, VIOLATIONS, ENFORCEMENT, AMENDMENT, EFFECTIVE DATE

5.1 ADMINISTRATIVE FINE.

The Village President of the Board of Trustees may determine and administratively assess a fine for any instance of noncompliance with this Manual which he or she may find, noting that said fine shall continue for each day that such violation continues. The per diem administrative fine for noncompliance shall be not greater than \$50 per day. If the offender pays the administrative fine assessed and also corrects the noncompliance, then no further proceedings shall be required. In the event that an administrative fine has been assessed, the extent of the fine may be appealed to the Village Board of Trustees. The decision of the Board of Trustees shall be final.

5.2 STOP WORK ORDER.

The Village may also, in the event he or she finds any improper construction activities not in conformance with this manual, issue a stop work order which shall require the immediate cessation of any further work on the project until the violations are corrected. The Village is not responsible for any financial losses related to a stop work order.

It is the duty of the developer's engineer and / or the construction observer to prevent or stop non-conforming construction operations, and shall notify the Village immediately if non-conforming construction operations occur.

5.3 AMENDMENT.

(A) Amendments to this Manual may be proposed by the Village Administrator, any member of the Board of Trustees, any Plan and Zoning Commission member, the Village Planner, or any party in interest. Every amendment proposal shall be filed on a prescribed form with the Village Planner. The Village Planner shall promptly transmit each proposal, together with any comments or recommendations (s)he may wish to make, to the combined Administrative Rules Committee for consideration.

(B) The Administrative Rules Committee consisting of the President of the Board of Trustees, Village Administrator, Village Engineer, Village Planner, and Chair of the Plan and Zoning Commission shall be authorized to issue, amend, and withdraw administrative rules which implement, interpret and clarify the requirements of this Manual. The administrative rules shall implement, interpret and clarify the requirements of the Subdivision Ordinance and shall not amend the Subdivision Ordinance or its policies.

(C) The Administrative Rules Committee shall hold a public meeting in accordance with the Open Meetings Act for consideration of the proposed amendment.

(D) The Administrative Rules Committee shall consider the proposed amendment to the Infrastructure Design Manual at its meeting. The Committee may modify or alter the proposed amendment, may disapprove the proposed amendment, or may adopt the proposed amendment by a vote of not less than four (4) of the committee members.

(E) The Board of Trustees shall have the authority to recall any amendment so approved by the Committee by a majority vote of the Board of Trustees.

(F) At least fourteen (14) days prior to its effective date, the Administrative Rules Committee shall send a copy of any administrative rule to the Plan and Zoning Commission and Board of Trustees for review.

(G) Upon written request of any two (2) Plan and Zoning Commissioners or Board of Trustees members prior to the effective date of the administrative rule, the rule shall be subject to Plan and Zoning Commission and Board of Trustees review. After such a written request, the administrative rule shall not be effective until considered by the Plan and Zoning Commission and acted upon by the Board of Trustees. The administrative rule shall go into effect after such action unless disapproved by a majority of the Board of Trustees members or withdrawn by the Administrative Rules Committee.

(H) The form and legality of each administrative rule shall be approved by the Village Attorney prior to its effective date.

(I) The Administrative Rules Committee shall publish all of its rules in pamphlet form on or before the effective date of the rules. Prior to the effective date of an administrative rule, a copy shall be filed with the Village Clerk and Village Administrator.

(J) Before any action shall be taken as provided in this section, any private party or parties proposing an amendment to this Manual shall deposit with the Village Treasurer an application fee as set from time to time by Resolution of the Board of Trustees to cover the approximate cost of this procedure, and under no condition shall the sum or any part thereof be refunded for failure of the change to be adopted by the Village.

5.4 ADMINISTRATIVE RULES.

The Administrative Rules shall be applicable to the construction of public and quasi-public improvements within subdivisions approved under the jurisdiction of the Village of Mahomet.

5.5 CONSTRUCTION DETAIL SHEETS.

The Construction Detail Sheets issued by Administrative Rule shall be applicable to the construction of public and quasi-public infrastructure within subdivisions and developments approved under the jurisdiction of the Village of Mahomet.

**RESOLUTION FOR PLAN AND ZONING COMMISSION -
A RESOLUTION OBJECTING TO AR2025-01 INFRASTRUCTURE DESIGN MANUAL 2025 REVISIONS**

WHEREAS, the Board of Trustees of the Village of Mahomet, pursuant to the authority conferred by the Statutes of the State of Illinois, has established certain standards and procedures for review of amendments and revisions to the Infrastructure Design Manual of the Village of Mahomet, Illinois; and,

WHEREAS, the Administrative Rules Committee of the Village of Mahomet met and approved **AR2025-01 INFRASTRUCTURE DESIGN MANUAL 2025 REVISIONS**; and,

WHEREAS, the Plan and Zoning Commission has met and reviewed the **AR2025-01 INFRASTRUCTURE DESIGN MANUAL 2025 REVISIONS**; and,

WHEREAS, this Plan and Zoning Commission has objections to the **AR2025-01 INFRASTRUCTURE DESIGN MANUAL 2025 REVISIONS**.

BE IT THEREFORE RESOLVED this March 4, 2025, by the Plan and Zoning Commission of the Village of Mahomet, that:

- A. The Plan and Zoning Commission does hereby **OBJECT TO AR2025-01 INFRASTRUCTURE DESIGN MANUAL 2025 REVISIONS** for the following reasons:

Chair, Plan and Zoning Commission
Village of Mahomet