VILLAGE OF SUGAR GROVE
BOARD REPORT

TO: VILLAGE PRESIDENT & BOARD OF TRUSTEES

FROM: BRAD MERKEL, DIRECTOR OF PUBLIC WORKS
BRIAN SCHIBER, VILLAGE ENGINEER

SUBJECT: DISSCUSSION: COMPLETE STREETS POLICY & SUBDIVISION REGULATIONS

AGENDA: JULY 18, 2023 REGULAR BOARD MEETING

DATE: JULY 10, 2023

ISSUE

Staff will discuss the Village of Sugar Grove Complete Streets Policy and Subdivision Regulations.

DISCUSSION

The Village has a history of creating long-range planning documents that have been used successfully to help guide the growth and redevelopment within the Village. On July 7, 2020, the Village adopted a Complete Streets Policy. Complete Streets Polices are designed to improve mobility, access and connectivity for persons traveling by all modes, encourage healthy lifestyles, increase safety for all users, enhance neighborhoods, businesses, institutions and advance the quality of life for Village of Sugar Grove citizens. Transportation and Development projects shall be treated as an opportunity to offer improvements in access and connectivity in and around the Virgil Gilman Trail. Attached for review and discussion is the Complete Streets Policy.

President Konen asked staff to review our current Subdivision Regulations to verify they are current with today's design standards. I have attached a copy for review and discussion.

COST

There is no cost.

RECOMMENDATION

The Village Board discusses The Complete Streets Policy and Subdivision Regulations.

RESOLUTION NO. 20200707PW2

A RESOLUTION ADOPTING A COMPLETE STREETS POLICY VILLAGE OF SUGAR GROVE

WHEREAS, the Village of Sugar Grove has a history of creating long-range planning documents that have been used successfully to help guide growth and redevelopment; and,

WHEREAS, Complete Streets are designed to improve mobility, access, and connectivity for persons traveling by all modes, encourage healthy lifestyles, increase safety for all users, enhance neighborhoods, businesses, and institutions, and advance the quality of life for all Village of Sugar Grove citizens and visitors; and

WHEREAS, developing Complete Streets is a priority on all corridors and routes. Transportation and development projects may be treated as an opportunity to offer improvements in access and connectivity by all modes of travel to Village of Sugar Grove services, businesses, neighborhoods, schools, parks, trails, and adjacent communities; and

WHEREAS, the Village of Sugar Grove is a key connection point for the Virgil Gilman Trail, which is a regional multi-use trails that encourage local development, promote a healthy lifestyle and bring many visitors to the community on foot and by bicycle; and

WHEREAS, streets are a key public space, shape the experience of residents of and visitors to the Village of Sugar Grove, directly affect public health and welfare, and provide the framework for current and future development.

NOW, THEREFORE, BE IT RESOLVED by the Village President and Village Board of Trustees of the Village of Sugar Grove, Kane County, Illinois as follows:

SECTION 1: ADOPTION OF A COMPLETE STREETS POLICY

VISION

This Complete Streets Policy may direct the Village of Sugar Grove to develop and provide a safe and accessible, well-connected and visually attractive surface transportation network, that

balances the needs of all users, including: motorists, pedestrians, bicyclists, public transportation riders and drivers, emergency vehicles, freight carriers, agricultural vehicles and land uses and promote a more livable community for people of all ages and abilities, including children, youth, families, older adults and individuals with disabilities.

PURPOSE

This policy is intended to ensure that all planning, scoping, programming, design, right-of-way acquisition, construction, construction engineering, reconstruction, operation and maintenance activities produce safe and accessible surface transportation network improvements that allow all users of the public right of way to safely and conveniently reach their destination regardless of their chosen mode of transportation. This policy is also intended to encourage walking and biking, producing the health benefits that result from these types of activities, help reduce the demand for fossil fuels, ease traffic congestion, reduce wear on roadways, improve air quality and make streets and public and private spaces more attractive for businesses and customers and increase economic activity.

DEFINITIONS

For the purpose of this section, the following definitions may apply unless the context clearly indicates or requires a different meaning.

Complete Street – a street that is designed and operated to enable safe access for all Users, so that pedestrians, bicyclists, motorists and public transportation users of all ages and abilities are able to safely and conveniently move upon, along and across a street.

Complete Street Infrastructure – design features that contribute to a safe, convenient, or comfortable travel experience for Users, including but not limited to features such as: sidewalks; shared use paths; bicycle lanes; automobile lanes; paved shoulders; street trees and landscaping; planting strips; curbs; accessible curb ramps; crosswalks; refuge islands; pedestrian and traffic signals, including countdown and accessible signals; signage; street furniture; bicycle parking facilities; public transportation stops and facilities; transit priority signal; traffic calming devices such as rotary circles, traffic bumps, and surface treatments such as paving blocks, textured asphalt and concrete; narrow vehicle lanes; raised medians; and dedicated transit lanes.

Street – any right-of-way, public or private, including arterials, connectors, alleys, ways, lanes and roadways by any other designation, as well as bridges, tunnels and any other portions of the transportation network.

Project – the construction, reconstruction, retrofit, maintenance, alteration, repair of any Street or Public Way, and includes the planning, design, approval, and implementation processes. Project does not include minor routine upkeep such as cleaning, sweeping, mowing, spot repair, or interim measures on detour routes.

Users – individuals that use Streets, including motorists, pedestrians, bicyclists, public transportation riders and drivers, emergency vehicles, freight carriers agricultural vehicles and people of all ages and abilities, including children, youth, families, older adults and individuals with disabilities.

Public Way – any transportation improvement accessible by the public; including but not limited to parks and public lands.

PLANNING

The Village may incorporate Complete Streets principles into the Village's Comprehensive Plan, area plans, transportation plans, Village Code of Ordinances, standards and specifications, documents and other plans, manuals, rules, regulations and programs as appropriate.

PROJECTS AND PHASES

The Village of Sugar Grove may approach every transportation and transportation-related improvement and project phase as an opportunity to create safer, more accessible streets for all users. These phases include, but are not limited: planning, scoping, programming, design, right-of-way acquisition, construction, construction engineering, reconstruction, operation and maintenance.

Other changes to transportation facilities on streets and rights-of-way, including capital improvements and major maintenance (resurfacing & reconstruction) must also be included. Complete Streets principles may be applied on all Village projects, privately funded development and incrementally on existing streets through a series of small improvements and activities over time.

Maximum financial flexibility is important to implement Complete Streets principles. Available sources of transportation funding, public and private, should be drawn upon to implement Complete Streets within the Village of Sugar Grove.

It is understood that maintenance activities do not necessarily trigger requirements for major street improvements and should not be expected to do so. However, maintenance activities do present some opportunities that can improve the environment for other roadway users.

EXCEPTIONS

Exceptions to this policy may be approved by Village Staff and documented to indicate the basis for the decision. Such documentation may be publicly available upon request. Additional review by the Planning Commission and/or Village Board of Trustees will be utilized on a case-by-case basis, when deemed necessary. Circumstances for exceptions may include:

- An affected roadway prohibits by law the use by pedestrians and bicyclists (such as state & federal limited-access highways) in which case a greater effort may be made to accommodate those specified users elsewhere, including on roadways that cross or otherwise intersect with the affected roadway.
- The costs of providing accommodation for some travel modes are excessively disproportionate to the need or probable use by those modes.
- Where the construction is not practically feasible or cost effective because of unreasonable adverse impacts on the environment or on neighboring land uses including impact from right-of-way acquisition.
- Where routine maintenance of the transportation network does not change the roadway geometry or operations.

- There is a reasonable and equivalent project along the same corridor, effectively serving the same destinations and providing the same access and mobility, which is already programmed to provide facilities, therefore exempting the project at hand.

DESIGN

The Village of Sugar Grove may follow accepted or adopted design standards and use the best and latest design standards available, including but not limited to, existing design guidance from: Illinois Department of Transportation, American Association of State Highway and Transportation Officials, Federal Highway Administration, the Institute of Transportation Engineers, National Association of City Transportation Officials, the Americans with Disabilities Act, the Public Right-of-Way Accessibility Guidelines, and the Active Transportation Alliance.

In recognition of various contexts and public input, a flexible, innovative and balanced approach that follows other appropriate design standards may be considered, provided that a comparable level of safety for all users is present.

CONTEXT SENSITIVITY

The Village of Sugar Grove may implement Complete Streets solutions in a manner that is sensitive to the local context and character, aligns transportation and land use goals and recognizes that the needs of users may vary by case, community or corridor.

PERFORMANCE MEASURES

The Village of Sugar Grove may measure the success of this Complete Streets policy using, but not limited to, the following criteria:

- Linear feet of pedestrian accommodations built
- Number of ADA accommodations built
- Miles of bike lanes/trails built or striped
- Number of transit accessibility accommodations built
- Number of street trees planted
- Crosswalk and multimodal intersection improvements

IMPLEMENTATION

The Village views Complete Streets as integral to everyday transportation decision-making practices and processes. To this end:

- The Department of Community Development, the Department of Public Works, and other relevant departments, agencies or committees may incorporate Complete Streets principles into all appropriate plans, manuals, checklists, decision trees, rules, regulations and programs as appropriate.
- May Review all new roadway projects, public and private developments and other Complete Streets-related improvements, early in the planning process, to ensure consistency with this policy and the Bicycle and Pedestrian Plan.
- May ensure that the Five-Year Capital Plan incorporates implementation of the Complete Streets Policy and the Bicycle and Pedestrian Plan with any proposed roadway and parks projects.
- Village Staff may identify current and potential future sources of funding for street improvements and recommend improvements to the project selection criteria to

support Complete Streets projects.

- When available, the Village may encourage Staff professional development and training on non-motorized transportation issues through attending conferences, classes, seminars and workshops.
- Review any requests for exceptions to the Complete Streets Policy and related documentation.
- May carry out and monitor the implementation and impact of this policy based on the goals set out within this section.

PASSED AND APPROVED by the President and Board of Trustees of the Village of Sugar Grove, Kane County, Illinois, this 7th day of July, 2020.

_____

P. Sean Michels,
President of the Board of Trustees of the Village of Sugar Grove, Kane County, Illinois

ATTEST: _____

Alison Murphy,
Clerk, Village of Sugar Grove

	Aye	Nay	Absent	Abstain
Trustee Sean Herron	_____	_____	_____	_____
Trustee Jennifer Konen	_____	_____	_____	_____
Trustee Ted Koch	_____	_____	_____	_____
Trustee Heidi Lendi	_____	_____	_____	_____
Trustee Rick Montalto	_____	_____	_____	_____
Trustee Ryan Walter	_____	_____	_____	_____
President P. Sean Michels	_____	_____	_____	_____

CHAPTER 11

STANDARD SPECIFICATIONS FOR IMPROVEMENTS

SECTION:

12-11-1: GENERAL CONDITIONS:

These subdivision regulations shall apply to all infrastructure improvements within the Village and may be modified by the Village Board as needed, upon the advice of the Director of Public Works and/or the Village Engineer, to address changes in State of Illinois specifications, accepted construction industry standards, material or equipment preferences of the Village or for special identified situations or conditions. Any clause or language within an annexation agreement or development agreement which discusses locking in or freezing of codes, ordinances or standards of the Village shall not apply to these Standard Specifications for Improvements as long as they are applied equally to all infrastructure improvements within the Village. The Standard Specifications for Improvements that are in effect at the time of application for final plat approval are those that will govern unless approved otherwise by the Board of Trustees in conjunction with final plat approval.

All improvements constructed in the Village of Sugar Grove and within one and one-half ($1^1/_2$) miles of its corporate limits shall be designed and constructed in accordance with these Standard Specifications for Improvements. In addition to the specifications contained herein, all of said improvements shall conform with: a) the Illinois Department of Transportation "Standard Specifications for Road and Bridge Construction", latest edition; b) the current edition of "Standard Specifications for Water and Sewer Main Construction In Illinois"; c) the Illinois Urban Manual, latest edition; d) the Manual On Uniform Traffic Control Devices for Streets and Highways, latest edition; and e) the "Illinois Accessibility Code" latest edition, and all amendments to any of the cited references. These documents shall be considered part of the Village of Sugar Grove Standard Specifications for Improvements. In the case of a conflict between any part, or parts of the said specifications, the most stringent requirements shall apply. The Village Engineer, with the advice of the Director of Public Works and the Board of Trustees, shall be the sole judge when interpreting the Standard Specifications for Improvements.

All work performed under these specifications shall be done by qualified approved contractors and subcontractors familiar with the type of work to be accomplished. Prior to awarding any contract for work to be done under these specifications, the developer or general contractor shall furnish to the Village the names and addresses of the contractors and subcontractors as they become available.

The Village Engineer may, under special conditions, grant deviations within the intent of these specifications. Any changes in the approved plans must have prior approval in writing by the Village Engineer.

These specifications shall become a part of each and every project approved by the Village Engineer and all such approval signatures shall be conditioned upon these specifications unless noted otherwise.

The Village Engineer, or his representative, will, upon notice of improper material or installation practices, issue a written document to the developer, or his contractor, stating that failure to stop and correct such deficiencies will result in the Village's refusal to accept such improvements. If the work being performed causes an unsafe condition, the Village Engineer will issue a stop order. Failure to comply and eliminate the unsafe conditions will invoke the penalty clauses contained within this Code.

Contractors that have done unsatisfactory work within the Village of Sugar Grove will not be allowed to work within the public right-of-way. (Ord. 2018-02-20, 2-20-2018)

12-11-1-1: PLAN SUBMITTALS:

Plan submittals shall be in accordance with the current checklists for plan submittal that are on file with the Village Clerk. All plans and plats shall be submitted under the signature and seal of the appropriate licensed professional. Improvement plans shall be clearly marked "Not for Construction" until such time as all approvals have been granted and applicable permits have been issued.

A. In general, the following requirements shall apply to all engineering plan submittals:

1. Plan sheet size shall be 22" x 34" or 24" x 36".

2. Minimum plan scale shall be 1" = 50', except for general or overall reference sheets.

3. The Village topographic datum is NGVD 1988. Plans with any other datum or with conversion factors will not be accepted.

4. All design information shall be presented clearly and completely to the satisfaction of the Village Engineer. Pre- design meetings are encouraged to review specific subdivision design concerns and to minimize design time, review time and revisions.

B. All engineering plans shall include, but not be limited to, the following:

1. Cover Sheet containing plan title, engineer's certification, sheet index, bench mark information (including at least 2 on-site elevation reference marks), JULIE note and site location map.

2. General Notes, Legends, Estimated Quantities and Specifications Sheet(s) which shall reference these Village of Sugar Grove Standard Specifications for Improvements in the heading paragraph. No general notes or specifications typically utilized by the design engineering firm which conflict with these Standard Specifications for Improvements, or any specifications referenced herein, will be allowed. An estimated quantities table shall be provided for all work proposed by the plan set.

3. Geometric Plan or Final Plat of Subdivision shall be included in the plan set indicating all geometric information for subdivision boundary, streets, lots and open space. Street names and lots numbers are required.

4. Overall Utility Plan with all structures (i.e., manholes, catch basins, inlets, valve vaults, fire hydrants, street lights) numbered, lettered or otherwise labeled. All water, sanitary sewer and storm sewer mains shall be shown on this sheet with pipe sizes indicated.

5. Grading and Drainage Plan showing existing and proposed contour lines, one foot (1') interval, for all areas being developed. High points and low points of all roads shall be shown with centerline elevations at one hundred foot (100') intervals. Spot elevations shall be shown for all lot corners, tops of curb opposite front lot corners, all peaks and all low points with the rim elevations of yard inlet structures. Minimum top of foundation elevations shall be provided with a standard note regarding the relationship between top of foundation and garage floor. Lookout and walkout basements shall be indicated with minimum top of foundation elevations and the general location of foundation steps. Retaining walls will not be allowed for side yard grade transitions between lots. Lots shall be made wider or houses shall be custom designed such that the grade transitions are accomplished on individual lots with stepped foundations, lookout basements or dropped siding. Overflow routes for stormwater conveyance shall be clearly shown and cross sections with flow calculations and high water levels shall be provided. A storm sewer design report with map showing areas tributary to all inlets is required. Time of concentration calculations and composite runoff coefficient calculations are required.

6. Erosion and Sedimentation Control Plan, incorporating all design elements required by these Standard Specifications for Improvements and all requirements of the Illinois Urban Manual, the Kane County stormwater ordinance and the Kane-DuPage Soil and Water Conservation District. Topsoil stockpile areas shall be shown. It shall be clearly noted that all areas of the subdivision to be vegetated shall be respread with a minimum of six inches (6") of quality topsoil. Borrow pits will not be filled with topsoil and topsoil will

not be transported out of the Village corporate boundary without written approval of the Village Engineer or the Village Board. This section of the plan set shall include a Stormwater Pollution Prevention Plan (SWPPP) in accordance with IEPA NPDES phase II permitting requirements.

7. Plan and Profile Sheets shall be provided for all roads and for all easements containing water, sewer and storm sewer mains. Easements, a minimum of ten feet (10') beyond the centerline of such mains (wider if necessary depending on the depth and size of the utility and soil conditions), shall be indicated on the engineering plans and coordinated with the final plat of subdivision. Rim and invert elevations for all pipes and all sanitary and storm structures shall be shown in plan view. Sanitary sewer manhole rims and inverts shall be shown in plan and profile. Sanitary sewer services shall be shown in plan view and in profile where they cross all water mains and where they cross any other utility with a potential elevation conflict. All risers shall be indicated, and all stub elevations shall be provided demonstrating that the sewer service can enter the residence at least two feet (2') below the basement floor. Valve vault rims and top of water main elevations shall be shown. Fire hydrants shall be shown with finish grade elevations. Water service lines and curb box locations and finish grade elevations shall be shown. Use of a table presenting all service data is preferred. All lot numbers and street names shall be shown in the plan view. Pipeline lengths, sizes, types and slopes shall be shown in plan and profile views. 1" = 5' is the preferred vertical scale for all profile drawings. Water main shall be shown in profile as it will actually be laid. Fittings will not be allowed for vertical deflections at elevation conflicts. Ninety degree (90°) bends are not allowed on the water main. Cross sections at one hundred foot (100') intervals shall be provided for all rural type roadways that do not utilize curb and gutter.

8. Intersection Details at a scale of 1" = 10' shall be provided for all street intersections. All utilities shall be shown (with outside diameter of pipes and manholes to scale). Curb slopes and top of curb elevations, with stations at all curb return points of curvature, shall be shown. High points and curb return midpoint elevations shall be provided. Curb depression and spot elevations shall be indicated for all sidewalk and multi-use path ramps demonstrating compliance with accessibility standards. Street names and adjacent lot numbers shall also be provided.

9. Street Lighting, Traffic Control, Signage and Striping Plan, showing all street lights, street light wiring, traffic control devices, all traffic control signs and all striping as required for lanes, stop signs, parking, shared use paths and crosswalks.

10. Village of Sugar Grove Standard Notes and Detail Sheets, in their entirety, which will be provided by the Village Engineer in PDF format. Those details on any particular sheet which do not apply to a particular subdivision or plan set shall be crossed out. These standard notes and detail sheets are on file in the Village. In the event there is a conflict between the text specifications outlined in this title and the details and notes provided in the Standard Notes and Detail Sheets, the conflict shall be brought to the attention of the Village Engineer. The more restrictive requirement shall govern unless otherwise specified by the Village Engineer. (Ord. 2018-02-20, 2-20-2018)

12-11-1-2: REVIEW AND INSPECTION FEES:

All proposed public improvements and stormwater management facilities, whether privately or publicly maintained, shall be inspected during the course of construction by the Village Engineer or his/her duly authorized representative. The level of effort required for inspections (and subsequent billings to the developer) will be directly related to the type of improvements being installed and the demonstrated diligence, competence and willingness of the selected contractors to strictly follow all requirements of these specifications.

All plats, plans and other related documents shall be reviewed and approved in writing by Village staff and/or the Village's professional consultants.

The costs for all such reviews, inspections and approvals shall be reimbursed by the subdivider, developer, applicant or owner. (Ord. 2018-02-20, 2-20-2018)

12-11-1-3: REQUIRED PERMITS, MEETINGS AND INSPECTIONS:

Prior to the start of construction for any project, a pre- construction conference shall be held. Required attendees shall be the developer, his or her project superintendent, a contractor's representative for each contractor who will perform work, the Director of Public Works and the Village Engineer. The pre-construction conference shall include, but not be limited to, discussion of the following: construction schedule, subcontractors list, insurance requirements, existing utility locations, construction observation, emergency contacts list, permitting requirements, soil erosion and sediment control, material specifications, material suppliers, materials testing, construction record drawing requirements, letter of credit reductions and general safety requirements.

No work shall begin until all applicable permits have been received, the engineering plans have been approved in writing by the Village Engineer and accepted by the Village Board and the pre-construction conference has been held. Any changes to the approved plans must be approved in writing by the Village Engineer. The Village Engineer or a representative will, upon discovery of improper material or installation practices, issue a written document to the contractor, stating that failure to stop and correct such deficiencies will result in the Village's refusal to accept such improvements or to issue any further building permits or to perform required inspections.

The developer and all (sub) contractors shall obtain and keep in force insurance coverage for workers' compensation and employers liability, commercial general liability, commercial automobile liability, and umbrella liability as described in IDOT's "Standard Specifications for Road and Bridge Construction". The Village, their employees, agents, consultants or other assignees shall be named as an additional insured. The insurance coverage shall remain in effect until the entire development is accepted by the Village.

The Village, or its representative, will inspect all public and certain private improvements. The construction observer shall witness all utility tests and be present for all curb installation and pavement proof rolling.

The contractor/developer shall notify the construction observer a minimum of forty eight (48) hours in advance of starting any major construction phase and will also make arrangements forty eight (48) hours in advance for witnessing utility tests, curb installations and proof rolls.

The construction observer serves as the representative of the Village Engineer. The construction observer will not keep quantities or

survey grades for the developer or contractor nor will the construction observer make decisions regarding major revisions to the approved engineering plans. The design engineer shall submit all revisions in writing to the Village Engineer for review and written approval.

A final inspection of all improvements will occur prior to final acceptance of the improvements. A punchlist will be created and submitted to the developer. Upon completion of the punchlist items, the developer shall notify the construction observer, in writing, for a re-inspection. As part of the acceptance of the streets, all sidewalk and multi-use path ramps through and including the common square shall be installed and shall meet ADA requirements. (Ord. 2018-02-20, 2-20-2018)

12-11-1-4: CONSTRUCTION RECORD DRAWINGS:
Prior to and as a condition of final acceptance of improvements, construction record drawings shall be prepared and submitted for review and approval.

Upon approval, construction record drawings shall be provided in the following formats:

A. Four (4) prints on bond paper;

B. An electronic file of the full set in Acrobat Adobe format; and,

C. An electronic file in AutoCAD 2010 (or newer) format on CD ROM or via e-mail to the address designated by the Village Engineer.

Provide only plan view drawing at preferred scale of 1" = 50'. Alternate allowable scales are 1" = 40', 1" = 30' and 1" = 20'. Multiple sheets shall be used as necessary. Large scale details of stormwater restrictor structures and water main interconnects are encouraged and may be required.

All structures shall be numbered or lettered using the same system as the approved engineering plans for the subdivision. Rim and invert (or top of water main) elevations shall be shown at all structures and for all pipes entering and leaving each structure. Size, material, lengths and slopes (except slopes of water main or sanitary force main) of all pipelines shall be shown on the plan or in a table thereon. Sewer and water service stub locations shall be shown, including the b-box. All b-boxes shall be visible, accessible and be keyed in the presence of the Director of Public Works, or their representative, prior to acceptance. All valve boxes shall be similarly visible, accessible and keyed.

Topographic surveys of all stormwater management facilities shall be shown certifying all critical elevations, volumes and restrictor sizes. Elevations and cross sections of critical stormwater overflow routes may also be required as deemed appropriate by the Village Engineer.

All roadways shall be cross sectioned (top of curb, centerline and top of curb) with elevations provided at minimum one hundred foot (100') intervals and at all crests and low points.

Record drawing intersection grades shall be provided such that the design engineer confirms compliance with accessibility standards.

Street lights and all underground wiring shall be shown.

Following the completion of, but prior to the Letter of Credit (or other guaranty) reduction with regard to the sanitary sewer and water main service stubs, an interim record drawing shall be submitted in an electronic format showing the actual constructed locations of sewer stubs and b-boxes.

The condition of the bench marks shown on the approved engineering plans shall be verified and noted on the construction record drawings. Elevations of the top of all fire hydrants in the subdivision shall be shown for use as bench marks for all future construction within the subdivision. All elevations shall be referenced to National Geodetic Vertical Datum of 1988 (NGVD 1988).

The final construction record drawing shall have the following statement affixed and signed:

State of Illinois)

) ss

County of _)

We, (name of engineering firm) , hereby certify that these "Record Drawings" have been prepared under our direct supervision and that the information contained hereon has been provided and/or verified by us and accurately reflects the existing conditions on (date) . We further certify that in our professional opinion, these "Record Drawings" adequately depict and substantiate that the improvements constructed as part of this project will function in substantial conformance with the design intent of the engineering plans and specifications as accepted and approved by the Village of Sugar Grove.

By: (Signature) .

Title:___.

Date: ___. seal

Illinois Licensed Professional Engineer No. _____.

License Expiration Date: _.

(Ord. 2018-02-20, 2-20-2018)

12-11-1-5: CONFORMITY TO PLAN AND AUTHORITY:
Reserved. (Ord. 2018-02-20, 2-20-2018)

12-11-2: GENERAL LAYOUT OF STREETS AND BLOCKS:

Reserved. (Ord. 2018-02-20, 2-20-2018)

12-11-3: STREETS:

12-11-3-1: GENERAL CONDITIONS:

All street pavements shall be constructed in accordance with the design criteria for the various classes as established in the "Bureau of Design and Environment Manual" and "Highway Standards" of the State of Illinois Department of Transportation, latest edition. Construction materials and methods shall meet the requirements of the "Standard Specifications for Road and Bridge Construction", latest edition. The thickness of the pavements for major collectors and arterials shall be determined in accordance with the current Illinois Department of Transportation "Manual for Structural Design of Portland Cement Concrete Pavement" and the "Manual of Instructions for the Structural Design of Bituminous Concrete Pavements", or as required by the jurisdictional authority.

Streets shall not be constructed on a subgrade having an Illinois bearing ratio (IBR) of less than 3.0. In no case shall the subbase material be placed on a wet subgrade. All removal of unsuitable material in the subgrade must be replaced with compacted clay of proper moisture content to a minimum ninety five percent (95%) modified laboratory density in accordance with AASHTO T99 (method A or C). The soil support IBR value selected for use by the designer shall represent a minimum value for the soil to be used. An adequate number of soil borings shall be obtained to determine the subdivision's soil characteristics for street and utility construction purposes. A copy of the Soil Borings Report shall be provided to the Village Engineer as part of the final engineering plan submittal.

The Village Engineer may approve lime stabilization, when soils are compatible as determined by a geotechnical engineer. The lime shall meet the Illinois Department of Transportation's guidelines for Lime Stabilized Soil Mixture as outlined in the "Standard Specifications for Road and Bridge Construction", latest edition.

When the soils report indicates a subbase area below the water table or having poor drainage characteristics, the pavement design must provide additional subbase drainage which will allow the new subgrade to be drained into the storm sewer or roadside ditch system.

On all streets where new pavements meet existing pavements, transitional pavement shall be provided in accordance with Illinois Department of Transportation District 1 Detail BD-32, *Butt Joint and HMA Taper Details,* most current version.

The sub-grade shall drain to the curb line and to the inlets and catch basins. Water will not be allowed to pocket if applied on the sub-grade. Positive drainage must be accomplished on the compacted subgrade or the placement of base material will not be allowed. Verification by the Village Engineer of the proper sub- grade drainage will be required prior to any additional roadwork.

The base material shall not be placed prior to approval of the subgrade by the Village Engineer. The subgrade, base course and binder course shall be proof rolled by the contractor as described below. The contractor shall contact the Village Engineer a minimum of forty eight (48) hours minimum prior to the "proof roll".

Proof rolls by the contractor and witnessed by the Village Engineer will be conducted as follows:

A. A loaded truck shall be driven over the area to be tested at a speed, pattern, and number of cycles to be determined by the Village Engineer. The test truck shall be the common tractor- trailer type with no more than five (5) axles with a total of eighteen (18) wheels loaded to a net weight of no less than twenty two (22) tons. The load ticket shall be provided to the Village Engineer for record.

B. Areas of unstable or damaged subbase, base course, or binder course shall be determined by the Village Engineer and removed and replaced to the satisfaction of the Village Engineer at no cost to the Village.

C. The Village Engineer is responsible for indicating whether the proof roll passes or fails. The contractor is responsible for determining how to fix any unsatisfactory areas.

Final placement of asphalt surface course shall be delayed for a minimum of one full winter unless otherwise approved by the Village Engineer. Before the placement of the surface course, all underground utility punch list items for final inspection shall be completed and approved. Also, the binder course patches must be completed and the curb and gutter repaired as required by the Village Engineer.

After any binder course deficiencies have been corrected to the satisfaction of the Village Engineer and immediately prior to placing the asphalt surface course, the pavement shall be thoroughly cleaned and primed with bituminous materials at a residual asphalt rate of 0.05 pounds per square foot. When bituminous materials are applied under traffic conditions, sanding at the approximate rate of two (2) pounds to four (4) pounds per square yard will be required. All affected residents and businesses shall be notified a minimum of twenty four (24) hours prior to placement of bituminous materials.

The bituminous base course, leveling binder, binder course, and surface course mixtures shall be laid on a surface, which is dry and only when weather conditions meet all standards stated in the IDOT Standard Specifications for Road and Bridge Construction.

All paving shall be done with an IDOT approved paving machine utilizing electronic grade control of a minimum length of fifteen feet (15'), but the length of the machine shall be suitable for the width of the road and be verified as acceptable by the Village Engineer.

All asphalt mixtures shall be delivered and handled so that the asphalt mixture immediately behind the paver screed is at or above two hundred seventy degrees Fahrenheit (270°F). All asphalt delivered to the project shall be covered.

Paving timeframe and condition requirements shall be consistent with IDOT Standard Specifications. However, the Village Engineer may approve a written request to allow the installation of binder course after this date provided the above requirements are met. The request must be made in writing to the Village Engineer forty eight (48) hours prior to the requested paving dates, along with a weather forecast for the next ninety six (96) hours. Surface course must be placed the paving season following binder course installation, after a winter has passed. The asphalt laying pattern must be approved by the Village Engineer or his/her representative in order to minimize longitudinal joints. A certified nuclear density technician must be on site to set the asphalt pavement rolling pattern and confirm

compaction densities. The technician shall revise the rolling pattern as deemed necessary. The technician shall stop the paving operation if the required densities are not being met. Density test results shall be submitted to the Village Engineer within one week of completion of the paving operation.

The binder course and surface course may be tested for smoothness with a sixteen foot (16') straightedge after it has been thoroughly compacted. Any surface variations which warrant penalties per section 406.11 of the Illinois Department of Transportation Standard Specifications will be paid to the Village of Sugar Grove per the rates per each surface variation and/or repairs identified in the Illinois Department of Transportation Standard Specifications. This will be done at the sole expense of the contractor. For any surface variations 0.75 inch or greater, the contractor shall remove and replace a large number of bumps; however, complete removal and replacement of the surface course at the contractor's expense will be required.

All streets and roadways shall conform to the minimum design standards shown in section 12-11-3-2, table 12-11-3-2, "Minimum Standards For Street Design", of this section 12-11-3. Existing roadways running through or adjacent to a development shall be reconstructed by the developer to comply with these Standard Specifications for Improvements unless the Village Engineer recommends and the Village Board concurs that "substantial improvement", in lieu of reconstruction, will meet the intent of these specifications. If these roadways to be improved exist within prescriptive right-of-way, off center improvements may be required with greater width dedications on the side of the proposed development. Recapture agreements will most likely be appropriate as determined by the Board of Trustees. (Ord. 2018-02-20, 2-20-2018)

12-11-3-2: PAVEMENT:

All street pavements shall be designed in accordance with the following minimum standards:

A. Procedure: The thickness of the pavements for major collectors and arterials shall be determined in accordance with the current Illinois Department of Transportation "Manual for Structural Design of Portland Cement Concrete Pavement" and the "Manual of Instructions for the Structural Design of Bituminous Concrete Pavements". Design Standards shall be not less than for Class III roads and based on a 20 year pavement design. The above thickness determination procedures shall be followed unless required otherwise by a jurisdictional authority.

B. Minimum Design Criteria: The following are the minimum pavement requirements that will be required in the design and construction of all roadway pavements in the Village of Sugar Grove.

1. Pavement Standards:

a. Pavements shall be constructed of hot mix asphalt mixtures. The hot mix asphalt mixtures shall be designed, produced and constructed in accordance with IDOT Standard Specifications and IDOT District 1 special provisions. Portland cement concrete pavement designs are not prohibited and will be considered for some roadway designs if the developer so desires.

b. All roadways shall have concrete curb and gutter, type M-3.12 where driveway access is allowed in residential neighborhoods, and type B-6.12 in all other applications, unless recommended otherwise by the Village Engineer. The required cross section of these curb types is as shown in the Standard Details. Two (2) no. 4 steel reinforcing bars, twenty feet (20') in length, shall be installed centered on all trench crossings. Expansion joints, in accordance with the Standard Detail, shall be spaced per the Typical Expansion Joint Spacing Curb and Gutter Chart in the Standard Drawing, all points of curvature, five feet (5') each side of drainage structures and between separate pours. Minimum two inches (2") deep contraction joints shall be saw cut at minimum ten feet (10') intervals within twenty four (24) hours of curb placement. Contraction joints shall be sealed with a sealant to be approved by the Village. An approved spray-on curing compound with white fugitive dye shall be applied immediately after finishing of the curb. A concrete sealer, WR Meadows TIAH, or approved equal, shall be applied between seven (7) days and ten (10) days following curb installation. The curb shall be installed on a minimum of four inches (4") of the same aggregate base course used for the roadway construction. The compacted curb sub-grade shall be shaped parallel to the curb flow line and positively drained to the inlets and catch basins so that any water, if applied, would not pocket in this subgrade.

c. All rough grading of the roadway(s) shall be completed prior to construction of any underground utility with the exception of storm sewers and sanitary sewers.

d. In accordance with 605 Illinois Compiled Statutes 5/9-115.1 regarding the location of earthen berms in relation to the right- of-way, no part of a berm shall be located within ten feet (10') of the right-of-way line.

e. Pavement cross slope shall be two percent (2%) from the center of the road to the edge of the pavement.

f. Following installation of the asphalt surface course, hot poured joint sealer shall be applied to the joint between the finished pavement surface and the curb and gutter in accordance with section 451 of the IDOT Standard Specifications.

g. All roadways shall be constructed on a select compacted sub- grade, graded parallel to the finish surface.

h. Any street cut which is permitted by the Village shall be restored to like or better conditions and shall be acceptable to the Village Engineer.

2. Roadway Design Criteria:

a. The definitions of all proposed roadway classifications shall be consistent with table 12-11-3-2, "Minimum Standards For Street Design", of this section.

b. Table 12-11-3-2, "Minimum Standards For Street Design", of this section, sets forth the minimum design thickness for each roadway material for various road designations. For all categories in table 12-11-3-2 of this section, under Village jurisdiction, the hot-mix asphalt binder course hot mix surface course shall be an IDOT approved mix. The CA-6 base course shall be compacted to a minimum ninety five percent (95%) modified laboratory density in accordance with AASHTO T99 method A or C.

TABLE 12-11-3-2

MINIMUM STANDARDS FOR STREET DESIGN

Street Designation	Minimum ROW Width	Minimum Pavement Width (e-e)	Minimum Pavement Width (B-B)	Minimum Horizontal Centerline Radius	Minimum Tangent	Minimum Gradient	Maximum Gradient	Maximum ADT	Minimum Aggregate	Minimum Binder	Minimum Surface
Street Designation	Minimum ROW Width	Minimum Pavement Width (e-e)	Minimum Pavement Width (B-B)	Minimum Horizontal Centerline Radius	Minimum Tangent	Minimum Gradient	Maximum Gradient	Maximum ADT	Minimum Aggregate	Minimum Binder	Minimum Surface
Local	66'	28'	31'	200'	50'	0.50%	7.00%	1,000	12"	2.5"	1.5"
Minor collector	80'	24'	27.16'	300'	100'	0.50%	5.00%	2,500	12" (aggregate or modified soil layer)	5"	1.5"
Major collector	80'	36'	39.16'	300'	100'	0.50%	5.00%	3,500	12" (aggregate or modified soil layer)	7.5"	1.5"
Minor arterial	100'	62'	65.16'	500'	200'	0.50%	5.00%	10,000	12" (aggregate or modified soil layer)	11"	1.5"
OR&I	100'	50'	53.16'	500'	200'	0.50%	5.00%	3,500	12" (aggregate or modified soil layer)	7"	2.5"
Parking lots:											
Primary automobile traffic									8"	2.75"	1.5"
Significant truck traffic									8"	3"	2.5"

Note: These are minimum pavement thicknesses. For any proposed facility above a local road, perform a pavement design.

(Ord. 2018-02-20, 2-20-2018)

12-11-3-3: SIDEWALKS AND MULTI-USE PATHS:

A. Multi-Use Path Ramps And Sidewalks: Multi-use path ramps shall be concrete as to accommodate the detectable warning tile.

Curb and gutter, sidewalk and drive approaches shall be constructed in accordance with the timeframes, temperatures, and conditions set forth in the IDOT Standard Specifications. Unless authorized in writing by the Village Engineer, concrete operations shall be discontinued if they are not being completed in accordance with the IDOT Standard Specifications.

All public sidewalks shall be constructed of concrete in accordance with an IDOT approved mix.

The base shall be four inches (4") of compacted, crushed stone base on a dry natural or compacted subgrade. In no case shall the base be placed on a subgrade of topsoil or other unsuitable material.

The sidewalk shall be five feet (5') wide and shall be placed within the right-of-way, one foot (1') from the property line. The sidewalk shall be placed a minimum of five inches (5") thick. At all residential drive locations this minimum thickness shall be six inches (6"). At all commercial drive locations this minimum thickness shall be eight inches (8"). The surface finish shall be a light broom finish.

Sidewalk and multi-use path curb ramps with a detectable warning surface shall be constructed at all crosswalks according to the IDOT standard in effect at the time of final plat approval except as noted in the Village's Sidewalk Ramp Detail Sheet on file in the Village. The design engineer shall be responsible for including the current IDOT standard ramp details in the final engineering plans. The IDOT standard that appears on the approved engineering improvement plans shall be the standard at which the sidewalk ramps shall be evaluated for final Village acceptance. Note: Intersection details for all street intersections, showing the grading details and spot elevations for all curbs, curb depressions, ramps, manhole rims, pavement slopes, sidewalk slopes, curb slopes and parkway slopes shall be required as part of the engineering improvement plans. This information shall also be provided at the time of the record drawings such that the design engineer can confirm the design intent of the intersection and that the sidewalk ramps meet the ADA requirements.

The sidewalk shall be constructed with contraction joints at five foot (5') intervals and shall be saw cut to a minimum depth of one inch (1") full width within twenty four (24) hours of concrete placement, or tooled at the time of placement to the same depth.

Expansion joints of three-fourths inches ($^3/_4$") full depth bituminous fiber material, or approved equal, are required where the new sidewalk abuts all curb, buildings, poles, other structures, through all drives on each side and at maximum intervals per the Typical Expansion Joint Spacing Curb and Sidewalk Chart in the Standard Drawing.

Class SI concrete as specified in the IDOT "Standard Specification for Road and Bridge Construction" shall be used on all sidewalks. A concrete delivery ticket from the concrete supplier with this information and the location and date of the pour shall be submitted to the Village prior to any Village approvals of said work.

The contractor shall notify the Village forty eight (48) hours prior to placing the concrete for an inspection of the base, reinforcing and formwork.

B. Multi-Use Paths: Multi-use path ramps shall be concrete as to accommodate the detectable warning tile.

Multi-use paths shall be constructed in accordance with the standard notes and detail sheets on file in the Village. (Ord. 2018-02-20, 2-20-2018)

12-11-3-4: DRIVE APPROACHES:

All drive approaches shall be constructed with a sawcut or cast in place depressed curb (unless in a residential area where M-3.12 exists), with a twenty four inch (24") transition to make a neat transition to the curb opening and shall have a flare of three foot (3') at the street. Maximum driveway width at the right-of-way line shall be twenty feet (20'). All drive approaches shall be constructed to a maximum grade within the right-of-way of six percent (6%). In no case shall the algebraic difference of the drive grade and the street grade exceed eight percent (8%). See Standard Detail on file in the Village.

Where private streets, drives, entrances, and alleys intersecting public streets, the public street curb and gutter shall remain continuous across the access and depressed where needed.

The contractor shall notify the Village forty eight (48) hours prior to placing the concrete drive approach for an inspection of the base, reinforcing and formwork.

All drive approaches shall be constructed as a minimum to the standards outlined in the Village's zoning ordinance (title 11 of this Code).

For commercial and industrial drives, a stop sign shall be installed outside of the right-of-way at the request of the Village Engineer. The sign shall meet Village standards as outlined in the Zoning Code and shall be owned and maintained by the property owner. (Ord. 2018-02-20, 2-20-2018)

12-11-3-5: GUARDRAIL:

Steel plate beam guardrail shall be provided when an embankment is six feet (6') or higher, having a side slope steeper than 4:1, or when, in the judgment of the Village Engineer, it is necessary to provide protection against roadside obstacles or a non- traversable roadside hazard. IDOT's current end section standard will be required at both ends of all guardrail installations. (Ord. 2018-02-20, 2-20-2018)

12-11-3-6: TRAFFIC REGULATORY SIGNS AND STRIPING:

Installation of regulatory signs will be required of the developer where shown on the final engineering plans. All such signs shall conform to the "Manual On Uniform Traffic Control Devices for Streets and Highways", latest edition.

Stop signs shall be 30" x 30" on all streets. Yield signs shall be 30" x 30". Speed limit signs (R2-1) shall be 24" x 30". Warning signs shall be 30" x 30". "No Parking" signs shall be 12" x 18". All posts shall be Telespar, seven foot (7') from finished grade to the bottom of the sign, 1.75 inch square with a pyramidal rain cap with a four foot (4') deep two inch (2") Telespar base, or approved equal.

All sign faces shall be 3M Company, or approved equal, using reflective high intensity face material. Stop signs will be required where collector streets intersect with arterial streets and all other intersections where warranted and shall include a twenty four inch (24") stop bar.

Cross walks shall be installed where determined necessary by pedestrian and traffic volumes or upon recommendation of the Village Engineer.

All striping shall follow IDOT standards and shall be thermoplastic pavement markings. (Ord. 2018-02-20, 2-20-2018)

12-11-3-7: STREET NAME SIGNS:

At each street intersection there shall be installed one or more street name signs showing the names of the streets and shall be indicated on the construction plans. Street signs shall be installed, by the developer, prior to issuance of building permits.

All local road intersections shall have one street sign on the northerly and easterly corner. Collector and major streets shall have two (2) street signs, one on the northerly and easterly corner and one on the southerly and westerly corner of the intersection. Signalized intersections shall install the two (2) required signs on the appropriate overhead mast arm per the applicable IDOT standard. An exception would be a tee intersection where one sign would be required on the terminating street side of the intersection on the northerly or easterly corner thereof. All street signs shall be set back three feet (3') from the curb on the radius midpoint. All street signs shall conform to the following specifications:

A. All street signs, including the installation thereof, shall conform to the "Manual On Uniform Traffic Control Devices for Streets and Highways", latest edition, and the Illinois supplement thereto.

B. Sign length is twenty four inch (24") minimum and as long as necessary determined by the length of the street name. Blanks shall have a three-quarter inch ($^3/_4$") radius at all corners.

C. The blank faces shall be covered with Scotchlite™ brand reflective sheeting, or approved equal. The initial letter shall be upper case six inches (6") tall with following letters lower case 4.5 inches tall, cut and removed from 3M # 1177 Green Film, or approved equal, and then placed over the white film to produce white letters on a green background.

D. Nine inch (9") signs are covered on one side but two (2) are required for each street. They are riveted to the sides of a Telespar, twelve foot (12') long, 1.75 inch square, bolted in a two inch (2") square anchor, one per side for each street name with enough room at the top for a 1.75 inch pyramidal rain cap on the post.

E. The street signs shall be in place prior to the issuance of any building permits. Temporary street signs constructed of wood with neat lettering may be installed with seven foot (7') clearance prior to the issuance of any building permit and must be removed immediately after the placement of the permanent street sign.

F. A uniform deviation from this street sign standard may be authorized by the Village Board as part of a planned development approval. (Ord. 2018-02-20, 2-20-2018)

12-11-3-8: TRAFFIC STUDIES:

A. A traffic study shall be required and shall include:

1. Levels of service for existing conditions.

2. Level of service for post-construction conditions.

3. Calculations conducted according to the "Highway Capacity Manual".

4. Recommendations as to additional/limited access, additional lanes, signalization, etc.

B. The need or requirement for a traffic impact study shall be determined during the concept or preliminary planning stage of the proposed development. The developer/subdivider shall meet with Village of Sugar Grove officials during one of these stages for the purpose of determining the traffic study requirements. When the Village of Sugar Grove requires that a traffic study be prepared based upon the above, the study shall include, but not be limited to addressing the following issues:

1. Introduction: A general description of the proposed development including its size, location, the political jurisdiction in which the site is located, the boundary limits of the study area, and any other information needed to aid in the review of the development's traffic impacts.

2. Project Description: A description of the existing and proposed land uses of the development. (If alternative land uses are being proposed, the highest trip generation uses shall be assigned for each land use.)

3. Site Accessibility: A clear and concise description of the proposed ingress/egress points to the proposed development including a sight distance analysis.

4. Existing External Roadway Network: A description of the existing external roadway network in the vicinity of the proposed development to include functional classification, primary traffic control devices, signalized intersections, roadway configurations, geometric features (curves and grades), lane usage, parking regulations, street lighting, driveways serving sites across from or adjacent to the site, and right-of-way data. (The area of influence shall be determined by the traffic generated from the site, the trip distribution of traffic, and the trip assignment of the traffic generated by the development over the surrounding area road network.)

5. Existing A.M., P.M. And Total Daily Traffic Volumes: Existing A.M., P.M. and total daily traffic volumes for access driveways (if existing), intersections and the roadway network in the site vicinity shall be determined and displayed on a graphic(s) in the final report. To determine A.M. and P.M. existing traffic volumes, machine counts and/or manual counts shall be conducted during a three (3) hour period of the morning between approximately six o'clock (6:00) A.M. to nine o'clock (9:00) A.M. of an average or typical weekday, and between approximately three o'clock (3:00) P.M. to six o'clock (6:00) P.M. on an average or typical weekday. Peak hour counts may be required on Saturday and/or Sunday depending on the proposed land use. All A.M. and P.M. peak hour counts shall be recorded and summarized in fifteen (15) minute increments and included in the appendix of the final report. Manual counts shall include vehicle classifications, i.e., passenger cars, single-unit, multi-unit trucks and buses. Traffic counts shall show both entering and exiting traffic at the proposed access points (if existing) in addition to turning and through traffic movements at critical intersections.

6. Trip Generation Rates And Volumes: Trip generation rates and volumes for each type of proposed land use shall be determined for the A.M. and P.M. peak hours, and total daily volumes may be required on Saturday and/or Sunday depending on the proposed land use. The trip generation rates shall be calculated from the latest data available contained in the Institute of Transportation Engineer's "Trip Generation Manual". If trip generation rates for a specific land use are not available from the "Trip Generation Manual", the Village of Sugar Grove shall approve the substitute rates.

7. Site Generated Trip Distribution And Assignment: The most logically traveled routes in the vicinity of the development shall be used for trip distribution and assignment purposes. The directional distribution of site-generated traffic approaching and departing the development should be shown in both graphic and tabular form. All assumptions used in the determination of distribution and assignment shall be clearly stated.

8. Existing Plus Site Generated Traffic Volumes: Existing plus site generated traffic volumes for the A.M., P.M. peak hours and total daily traffic for access drives, intersections and the roadway network in the site vicinity shall be determined and displayed on a graphic(s) in the final report. Traffic volumes shall show both entering and exiting traffic at the proposed access points in addition to turning and through traffic movements at critical intersections.

9. Future Traffic (Existing Plus Site Generated) Volumes: Future traffic (existing plus site generated traffic volumes) for the A.M. and P.M. peak hours, and the total daily traffic for access drives, intersections and roadway network in the site vicinity shall be determined and displayed on a graphic(s) in the final report. Projected increases in the external (non-site related) roadway traffic must also be determined. The selection of a horizon year for which traffic operation conditions are to be characterized may be considered as the date full buildout and occupancy is achieved. If the project is a large multi-phased development in which several stages of development activity are planned, a number of horizon years may be required that correspond to the bringing on line of major development phases. Horizon dates should be timed to coincide with major stages of the overall project or to coincide with increments of area transportation system improvements.

10. Intersection Capacity Analysis: Proposed access driveways and influenced intersections shall be subject to an existing plus projected capacity analysis. Projected traffic conditions shall include the effects of any committed developments with the influenced area. The existing and projected levels of service derived from the analysis shall be used to aid in the evaluation of design and operation alternatives of the access driveways and influenced intersections. The capacity analysis shall be in accordance with the techniques described in the most recent edition of the Transportation Research Board's "Highway Capacity Manual", Special Report 209.

11. Specialization Warrants: If it is anticipated that the development's driveway(s) or existing external non-signalized intersections will satisfy signalized warrants, a warrant analysis shall be conducted using the projected volumes determined from the trip generation. The results of such an analysis shall be tabulated in the traffic impact study.

12. Conclusions And Recommendations: Clear and concise descriptions of the findings shall be presented in the final report. These findings shall include all recommended improvements for access facilities, internal roadways and intersections, and external roadway and intersection improvements. (Ord. 2018-02-20, 2-20-2018)

12-11-3-9: STREET LIGHTING:

A. General: All plans for street lighting shall be designed by an Illinois registered professional engineer.

The subdivider and/or his project engineer shall be held responsible for coordinating all phases of the work and correcting any deficiencies to the satisfaction of the Village Engineer.

The Village Engineer must be notified at least forty eight (48) hours before any construction is to begin.

The plans shall include a time schedule or other schedule, setting forth when the street lights will be installed by the subdivider and such schedule shall be subject to approval by the Village Engineer. However, in all cases, the street lights shall be installed and operable prior to the issuance of any occupancy permits.

The street light plan shall be provided to the Village Engineer in electronic format.

B. Installation:

1. Location: There shall be at least one street light on each intersection, curve, cul-de-sac, and at other points as may be required in the public interest in unusual or special conditions. They shall be located on the property lines and on the same side of the street as the sanitary sewer wherever possible, and shall be set three feet (3') from the back of curb to face of pole. The streetlights shall be placed opposite of fire hydrant locations wherever possible.

2. Line Drop: Voltage drop shall be no greater than three percent (3%) from power supply to last unit with no wire size smaller than #6 and no larger than #2 type RHH or RHW underground service cable (USE). All street lights shall operate on one hundred twenty (120) volts.

3. Power Supply Location: Power supply shall be furnished by the nearest Commonwealth Edison pedestal.

4. Power Supply Connection: Connections to power supply shall be made by Commonwealth Edison Company.

5. Conduit: All existing driveways, street, and sidewalk crossovers shall have one and one-half inch ($1\frac{1}{2}$") galvanized rigid steel conduit used as raceways for underground cable. Heavy duty PVC or A85 conduit will be allowed if it is encased in a three inch (3") minimum concrete collar.

6. Underground Cable: All underground cable shall be placed in unit duct and buried at least thirty inches (30") below the normal finished grade. A red plastic marking tape shall be placed in the trench fifteen inches (15") below finished grade.

7. Splices: All cable on the underground cable section shall be continuous and no splicing shall be made underground. All necessary splices shall be made above ground level.

8. Underground Cable Location: Underground cable shall be installed in a trench not more than two feet (2') from the "back" edge of the curb except that in no case shall the underground cable be installed under a sidewalk.

9. Grounding: Each street light fixture must be ground at the pole; an acorn ground connection shall be provided with a ground rod and #8 copper wire minimum. In addition, the grounding of the street light fixture and arm shall also be in accordance with the adopted Electrical Code.

Each pole shall be connected to the ground by means of a copper wire of the #10 size and shall be welded to the inside wall of the pole and connected to a five-eighths inch ($\frac{5}{8}$") diameter, eight foot (8') long copper clad steel ground rod. The upper end of the ground rod shall be at least one foot (1') below finished grade.

10. Fusing: All underground feeders shall be fused at or below their rated capacity. Each standard shall contain Tron in-line fuse holders with rubber boots and proper fusing in series with each underground conductor to protect the luminaire located on that pole.

11. Street Light Standard: The lighting pole for all types of streets shall be as specified in table 12-11-I-9 of this subsection:

TABLE 12-11-I-9

STREET LIGHT REQUIREMENTS

Street Type	*Spacing*	*Pole*	*Arm*	*Luminaire*	*Luminaire Photocell*
Minor collector and local streets option no. 1	300' maximum spacing IES printout required	King Luminaire KM15 Memphis spun concrete pole (S40 - pearl gray finish) or Village approved equal	n/a	King Luminaire model no. K56 Octagonal luminaire, Cleveland style (no spurs) C/W #15 final & 3 1/2" O.D. slipfitter Cul-de-sac: K56-C-T- P4AR-V-75(SSL)-7030-120(MT)-#15-PE All other locations: K56- C-T-P4AR-III-75(SSL)-7030-120(MT)-#15-PE All paint: Black or Village approved equal	King Luminaire Twistlock receptacle c/w photo-eye or Village approved equal
Minor collector and local streets option no. 2	300' maximum spacing IES printout required	Stresscrete Octagonal Pole model #E240-APO- G-S40 (S40 - pearl gray finish) or Village approved equal	Stresscrete arm model #184 or Village approved equal	CREE RSW Series LED - small model #RSWS-A-HT-2ME-5L-30K7-UL-GY- N or Village approved equal	Tork S961 Electronic Series Photocontrol or Village approved equal
Major collector streets	300' maximum spacing IES printout required	Stresscrete Octagonal Pole model #E280-APO- G-S40 (S40 - pearl gray finish) or Village approved equal	Stresscrete arm model #186 or Village approved equal	CREE RSW Series LED - medium model #RSWM-A-HT-2ME-9L-30K7-UL- GY-N or Village approved equal	Tork S961 Electronic Series Photocontrol or Village approved equal
Minor arterial and OR&I streets	300' maximum spacing Required on both sides with staggered spacing IES printout required	Stresscrete Octagonal Pole model #E280-APO- G-S40 (S40 - pearl gray finish) or Village approved equal	Stresscrete arm model #186 or Village approved equal	CREE RSW Series LED - medium model #RSWM-A-HT-2ME-9L-30K7-UL- GY-N or Village approved equal	Tork S961 Electronic Series Photocontrol or Village approved equal

12. Conduit: All pipes shall be Yoloy, or approved equal, weathering steel pipe.

13. Wire: Underground cable from power supply to pole base shall be rated USE type RHH or RHW. The cable size shall be no smaller than #6 and no larger than #2, and shall be validated by an approved electrical analysis. Pole and bracket wire installed from the hand hole in the base of pole to photo cell and luminaire shall be #12 type RHW. Only copper wire shall be used, and the wire shall be stranded wire.

14. Parking Lot Lighting: Parking lots in areas zoned business, residential, or office-research shall be provided with lighting necessary to achieve a minimum average of 2.0 footcandles as measured across the entire parking lot, and a maximum of 1.0

footcandles as measured at the adjoining property lines. Parking lots in areas zoned manufacturing shall have a minimum average lighting intensity of 1.0 foot-candles. Lighting shall be designed to avoid casting direct light or glare onto adjacent residential property.

15. Guarantee: The subdivider shall supply to the Village an inventory equal to at least ten percent (10%) of the number of poles, luminaires, photocells, ballasts, etc., installed along public streets and for public parking lots for the subdivision. This inventory shall be used to replace lighting system components that fail or are damaged after expiration of the guarantee period.

16. Minor Collector And Local Residential Streets: Two (2) types of street lights are detailed below for use on minor and local residential streets. Option no. 1 shall be utilized for minor collector and local streets unless otherwise approved by the Village.

a. Minor Collector And Local Residential Streets - Option No. 1:

(1) Spacing: The maximum spacing shall not exceed three hundred feet (300') between luminaries on minor collector and local streets. A computer printout will be required to establish spacing, wattage, and mounting height for lighting. The standards for lighting levels shall be those recommended by the IES minimums and maximums.

(2) Pole: The light pole shall be a King Luminaire Octagonal KM15-G-S40 C/W 140 (35/40) Memphis spun concrete pole with TBD polish or approved equal. Two (2) coats of VEX-HSFT acrylic coating shall be applied to the full length of the pole. The pole length shall be nineteen feet six inches (19'6"), of which fifteen feet zero inches (15'0") shall be above the ground and four feet six inches (4'6") shall be buried. The pole shall be backfilled with crushed CA-6 limestone watered and compacted around the butt of the pole.

(3) Luminaire: The luminaire shall be King Luminaire catalogue no. K56-C-T-P4AR-V-75(SSL)-7030-120(MT)-#15-PE or approved equal for streetlights located at cul-de-sacs. The luminaire for streetlights located at all other locations shall be catalogue no. K56-C-T-P4AR-III-75(SSL)-7030-120(MT)-#15-PE or approved equal. The luminaire shall be set fifteen feet zero inches (15'0") with a sixty (60) watt solid state lighting and one hundred twenty (120) volt operation and light emitting diodes (LED). All paint necessary on the luminaire shall be black.

(4) Photocell: Each light shall be controlled by a King Luminaire Twistlock receptacle complete with photo-eye or approved equal.

(5) Light Distribution: Luminaires of the type III distribution as approved by the Illuminating Engineering Society (hereinafter for brevity referred to as IES) shall be used except at cul-de- sacs where type V distribution shall be used. The Village Engineer may designate that IES type III distribution luminaires be used in the public interest under unusual or special conditions.

b. Minor Collector And Local Residential Streets - Option No. 2:

(1) Spacing: The maximum spacing shall not exceed three hundred feet (300') between luminaries on minor collector and local streets. A computer printout will be required to establish spacing, wattage, and mounting height for lighting. The standards for lighting levels shall be those recommended by the IES minimums and maximums.

(2) Pole: The light pole shall be a Stresscrete Octagonal Concrete Pole Model #E240-APO-G-S40 or #E280-APO-G-S40 with a natural polish and pearl gray finish or approved equal. The pole length shall be twenty four feet zero inches (24'0"), of which nineteen feet zero inches (19'0") shall be above ground, and five feet zero inches (5'0") shall be buried. The pole shall be backfilled with crushed CA-6 limestone watered and compacted around the butt of the pole.

(3) Luminaire: The luminaire shall be a CREE RSWS-A-HT-2ME-5L-30K7-UL-GY-N on local residential streets and CREE RSWM-A-HT-2ME-9L-30K7-UL-GY-N on minor collector streets. The luminaire shall have a mounting height of twenty feet zero inches (20'0") with a fifty (50) utility label wattage for the RSWS and eighty (80) utility label wattage for the RSWM, one hundred twenty (120) volt operation and light emitting diodes (LED), or approved equal.

(4) Photocell: Each light shall be controlled by a photo-electric control mounted on top of the luminaire (Tork S961 Electronic Series Photocontrol or approved equal). The photocontrol shall be rated for LED luminaire use, UL listed and approved by the Village before installation.

(5) Light Distribution: Luminaires of the type II distribution as approved by the IES shall be used. The Village Engineer may designate that IES type III distribution luminaires be used in the public interest under unusual or special conditions.

(6) Arm: The four foot zero inch (4'0") arm shall be Stresscrete model #184. The bracket shall be furnished with the pole.

17. Major Collector Streets:

a. Spacing: The maximum spacing shall not exceed three hundred feet (300') between luminaries on major collector streets. A computer printout will be required to establish spacing, wattage, and mounting height for lighting. The standards for lighting levels shall be those recommended by the IES minimums and maximums.

b. Pole: The light pole shall be a Stresscrete Octagonal Concrete Pole model E280-APO-G-S40 with a natural polish and pearl gray finish or approved equal. The pole length shall be twenty eight feet zero inches (28'0"), of which twenty three feet zero inches (23'0") shall be above ground, and five feet zero inches (5'0") shall be buried. The pole shall be backfilled with crushed CA-6 limestone watered and compacted around the butt of the pole.

c. Luminaire: The luminaire shall be a CREE RSWM-A-HT-2ME-9L-30K7-UL-GY-N luminaire with an eighty (80) utility label wattage, one hundred twenty (120) volt operation and light emitting diodes (LED), or approved equal.

d. Photocell: Each light shall be controlled by a photo-electric control mounted on top of the luminaire (Tork S961 Electronic Series Photocontrol or approved equal). The photocontrol shall be rated for LED luminaire use, UL listed and approved by the Village before installation.

e. Light Distribution: Luminaires of the type II distribution as approved by the IES shall be used. The Village Engineer may designate that IES type III distribution luminaires be used in the public interest under unusual or special conditions.

f. Arm: The six foot zero inch (6'0") arm shall be Stresscrete model #186. The bracket shall be furnished with the pole.

18. Minor Arterial And Office Research And Industrial (OR&I) Streets:

a. Spacing: The maximum spacing shall not exceed three hundred feet (300') between luminaries with street lights on each side of the road on minor arterials and OR&I streets. Street light spacing shall be staggered on each side of the road. A computer printout will be required to establish spacing, wattage, and mounting height for lighting. The standards for lighting levels shall be those recommended by the IES minimums and maximums.

b. Pole: The light pole shall be a Stresscrete Octagonal Concrete Pole model E280-APO-G-S40 with a natural polish and pearl gray finish or approved equal. The pole length shall be twenty eight feet zero inches (28'0"), of which twenty three feet zero inches (23'0") shall be above ground, and five feet zero inches (5'0") shall be buried. The pole shall be backfilled with crushed CA-6 limestone watered and compacted around the butt of the pole.

c. Luminaire: The luminaire shall be a CREE RSWM-A-HT-2ME-9L-30K7-UL-GY-N luminaire with an eighty (80) utility label wattage, one hundred twenty (120) volt operation and light emitting diodes (LED), or approved equal.

d. Photocell: Each light shall be controlled by a photo-electric control mounted on top of the luminaire (Tork S961 Electronic Series Photocontrol or approved equal). The photocontrol shall be rated for LED luminaire use, UL listed and approved by the Village before installation.

e. Light Distribution: Luminaires of the type II distribution as approved by the IES shall be used. The Village Engineer may designate that IES type III distribution luminaires be used in the public interest under unusual or special conditions.

f. Arm: The six foot zero inch (6'0") arm shall be Stresscrete model #186. The bracket shall be furnished with the pole.

19. Street Light Testing: The subdivider shall test the street lighting system by measuring insulation resistance, amperages, voltage drops, ground system continuity, and ground system resistance. Insulation resistance shall exceed fifty (50) megohms for circuits carrying over twenty (20) amperes, and shall exceed one hundred (100) megohms for circuits carrying less than twenty (20) amperes. Amperage readings shall be within ten percent (10%) of the connected load based on equipment ratings. Voltage drops shall not exceed three percent (3%). In addition, the subdivider shall manually trigger the photocell in order to have each street light burn continuously for at least forty eight (48) hours. Any component found to be faulty shall be repaired, and that component shall be re-tested. (Ord. 2018-02-20, 2-20-2018)

12-11-3-10: STREET PARKWAY LANDSCAPING:

All parkways within the dedicated street right-of-way shall be final graded with a minimum of six inches (6") of topsoil and sodded in an approved manner. The minimum gradient of all parkways shall be two percent (2%) and the maximum shall be eight percent (8%).

The subdivider, developer, or contractor shall provide and plant healthy and properly pruned trees along all streets at a rate of one tree per lot, provided that the lot width is seventy five feet (75') or less. If the lot width is greater than seventy five feet (75') the subdivider shall provide and plant two (2) trees per lot. Corner lot plantings, trees shall be planted at least twenty feet (20') from the street intersection property corner. Corner lot planting on private property or public property shall within a certain triangular area be trimmed to a height of thirty inches (30") or less above the elevation of the nearest street centerline elevation. Said triangular area shall be described by the right-of-way lines of the two (2) intersecting streets extended, and a third line intersecting the right-of-way lines at points twenty feet (20') from the right-of-way line intersection. Corner lots shall have a minimum of one tree on each frontage measuring seventy five feet (75') or less and a minimum of two (2) trees on each frontage greater than seventy five feet (75').

All tree plantings within the right-of-way shall be completed through the Village's Tree Consortium.

Prohibited tree species are as follows:

Aspen

Black locust

Black willow

Box elder

Buckthorn

Chinese elm

Corkscrew willow

Cottonwood

Mulberry

Osage orange

Persimmon

Poplar

Russian olive

Siberian elm

Silver maple

Tree of Heaven

Permitted tree species are as follows:

Allegheny serviceberry

American beech

American hornbeam

Amur maple

Apple serviceberry

Bald cypress

Bitternut hickory

Black cherry

Black maple

Blue ash

Burr oak

Common hackberry

Crabapple

Downy serviceberry

Eastern redbud

English oak

European beech

European black alder

European hornbeam

Freeman maple

Ginko (male only)

Green ash

Honey locust

Horsechestnut

Japanese tree lilac

Japanese zelkova

Kentucky coffeetree

Larch

Littleleaf linden

Ohio buckeye

Ornamental pear

Pin oak

Red maple

Red oak

Redmond linden

Regal elm

River birch

Shagbark hickory

Silver linden

Sugar maple

Swamp white oak

Tulip tree

Turkish filbert

White ash

White oak

All landscaping within the right-of-way shall be in accordance with the final landscaping plan approved by the Village Board as part of the planned development or subdivision application. (Ord. 2018-02-20, 2-20-2018)

12-11-3-11: TEMPORARY TURN-AROUNDS:

A. Temporary turn arounds when required by the Village Board shall be constructed with the following specifications:

1. The geometry of this temporary paving shall be a "T" configuration at the end of such a street which is paved from inside of sidewalk to the far side, inside of sidewalk fifteen feet (15') wide with two (2) 15-foot radii to the street. The curb and gutter shall not be constructed through the temporary turn around, unless the curb is M-3.12 on that street.

2. The temporary turn around shall be paved with eight inches (8") of compacted crushed limestone base and two and one-half inches ($2^1/_2$") of hot-mix asphalt surface course with no curb and gutter around the edges.

3. The section of sidewalk through the temporary turn around shall be six inches (6") thick.

4. The developer extending the street in the future shall remove the excess paving and base, construct the additional curbing so that the curb and gutter is continuous and uninterrupted from one development to another development, and shall landscape the parkway where disrupted by the asphalt and base removal. (Ord. 2018-02-20, 2-20-2018)

12-11-3-12: STREET CUTS:

Any street cut which is permitted by the Village Engineer shall be repaired as directed by the Village Engineer or Director of Public Works. A bonded and licensed contractor per Village ordinance shall accomplish all work with a fully executed right- of-way permit issued by the Village Engineer. (Ord. 2018-02-20, 2-20-2018)

12-11-4: UTILITIES:

12-11-4-1: STORM SEWER COLLECTION AND CONVEYANCE:

A. Specifications And Design Criteria: Control of stormwater runoff and all stormwater management facilities shall be in accordance with the Kane County stormwater ordinance, adopted by the Village.

The proposed storm sewer system shall be sized, at a minimum, to convey the stormwater runoff generated during a rainfall event with a return frequency of not less than five (5) years. The design peak runoff shall be determined using the modified rational method. The design rainfall intensity shall be determined from "Illinois State Water Survey Bulletin 70", specifically appendix A (Aurora) and summarized below. Please note the table is only an excerpt from Bulletin 70 appendix A for Aurora and reflects the depth of rainfall in inches and the rainfall intensity (in/hr) for a 5-year frequency in northeastern Illinois. The provided values can be interpolated to determine incremental intensity for various times of concentrations.

5-YEAR FREQUENCY RAIN EVENT

Duration	**Rainfall Depth (Inches)**	**Intensity (Inches Per Hour)**
Duration	**Rainfall Depth (Inches)**	**Intensity (Inches Per Hour)**
5 minutes	0.47	5.52
10 minutes	0.86	5.04
15 minutes	1.06	4.12
30 minutes	1.45	2.82
1 hour	1.85	1.79
2 hours	2.32	1.12
3 hours	2.52	0.81
6 hours	2.95	0.48

The time of concentration used to determine the design rainfall intensity shall be calculated for the fully developed condition using Worksheet 3, as published in the SCS Technical 55 Manual.

The capacity of the storm sewer system must be determined by gravity flow only. The Village will not allow siphons or pump stations to convey stormwater runoff. The design shall disallow the effects of surcharging, with the exception of decreases in capacity due to tail water effects on outlets. The tailwater elevation of the receiving pond, or other body of water, to be used in storm sewer design shall be that which exists at the specific time being evaluated.

The storm sewer must be designed to have a minimum full flow velocity of two feet (2') per second. When storm sewers of different diameters enter or exit storm sewer structures, the controlling elevation shall be 0.8 times the respective diameters. Storm sewers smaller than the largest exit pipe may be raised above the controlling "0.8" elevation.

The composite runoff coefficient for the area tributary to each storm sewer structure collecting surface water shall be determined by the character of the land to be drained when fully developed using the following runoff coefficients:

Grass	0.40
Impervious surfaces	0.96
Water surfaces	1.00

Storm sewers of sufficient capacity shall be constructed throughout the entire subdivision and shall be connected to an adequate outfall. Intercepting stormwater inlet or catch basin structures in streets shall be provided at maximum intervals such that the continuous length of flow along a gutter line is not in excess of three hundred feet (300'), as measured along the gutter line. However, additional inlets may be required, as determined by the Village Engineer, such that the width of flow during the design storm does not create a hazard to the motoring public. The Illinois Department of Transportation's Drainage Manual shall be used as guidance for allowed pavement encroachment.

All stormwater runoff which flows overland into or out of a storm sewer system must enter or exit through a curb inlet, catch basin, flared end section, slope box, or a cast in place, reinforced concrete headwall. Grates shall be required on all flared end sections twelve inch (12") diameter and larger. The minimum diameter of all storm sewers shall be twelve inches (12"), with the exception of closed lid systems which accept no surface water and which are solely designed for handling sump pump discharges, in which case the minimum size shall be six inch (6"). Two feet (2') minimum cover above the top of the pipe shall be provided for all storm sewers, unless otherwise approved by the Village Engineer due to unique circumstances. No pipe shall extend upward into the aggregate base course of a roadway.

Curb inlets, curb catch basins and rear yard catch basins shall not be constructed on storm sewers greater than eighteen inches (18") in diameter. Storm sewer trunk lines are encouraged in rear yards and limited longitudinal installation of storm sewer under roadways may be permitted by the Village Engineer. For each pair of curb inlet structures on opposite sides of a roadway, the downstream structure shall be a catch basin. No more than three (3) precast concrete adjusting rings, not exceeding ten inches (10") thickness, may be used on any structure. All storm sewer structures, other than curb inlets and curb catch basins shall be marked at the time of construction with a 4" x 4" hardwood post neatly installed vertically with a minimum four feet (4') bury and a minimum four feet (4') exposed. The top one foot (1') of the post shall be neatly painted green.

All manholes, catch basins, and inlets shall be reinforced precast concrete and shall be sealed with butyl rope joint sealant unless approved otherwise by the Village Engineer in high groundwater or high moisture soil areas. Storm sewer manholes shall be spaced at a general interval of four hundred feet (400'). All manholes shall be placed near the extension of side property lines whenever possible.

All stormwater from paved areas must pass through a catch basin prior to entering the storm sewer trunk line. All stormwater will also be required to pass through a catch basin prior to entering a detention/retention pond. Inlets or catch basins with a diameter of two feet (2') will not be allowed if more than one (1) 12-inch diameter pipe is proposed. The exception to this rule is if the other connections are four inch (4") diameter sump pump discharge lines. All catch basins and inlets will be backfilled with CA-7 crushed limestone or crushed gravel to allow for sub- grade seepage. If sub-grade conditions are excessively wet, excessively sensitive to moisture or special conditions exist as deemed by the Village or Village Engineer, a capped perforated pipe underdrain stubbed from the structure may be required.

The stormwater drainage system shall be separate and independent of the sanitary sewer system. Storm sewer shall be constructed of reinforced concrete pipe (RCP) conforming to the ASTM designation C-76, Class III or better. Other materials for storm sewers may be used in special cases upon the written approval of the Village Engineer. Any flexible pipe storm sewer systems so approved by the Village Engineer shall be subject to mandrell testing, for all sections, thirty (30) days following installation. Existing ground water drain tiles that enter the site from other properties shall be connected to the new storm sewer system with the use of a manhole or shall be restored to operating condition at the direction of the Village Engineer. The design capacity of the on-site storm sewer system shall consider all flows attributed to these drain tiles so connected. Joints for all concrete storm sewers shall be of the bituminous mastic or rubber gasket type, except when otherwise required by the Illinois Environmental Protection Agency or the Village Engineer. All storm sewers that encroach within fifteen feet (15') of any building foundation shall be "O"-ring, or other rubber, gasketed joints as per the ASTM C-443 specification.

Street grades and lot and block drainage shall be established so as to permit positive drainage to the storm sewer system. Parking lots shall be drained internally and directed to the storm sewer system where practical. Horseshoe drainage of individual lots should be avoided.

B. Manholes, Frames And Grates:

1. Inlet And/Or Catch Basin Castings: For M-3.12 curb and gutter under ponding or continuous grade conditions, inlet and/or catch basin frames and grates shall be Neenah R-3501-P, EJIW 7525, or approved equal. For B-6.12 curb and gutter under ponding conditions, inlet and/or catch basin frames and grates shall be Neenah R-3281-A, EJIW 7210 with type M2 grate and T1 back, or

approved equal. For B-6.12 curb and gutter under continuous grade conditions, inlet and/or catch basin frames and grates shall be Neenah R-3281-AL, EJIW 7210 with type M4 vane grate and T1 back, or approved equal. All curb inlet frames shall be sealed with a hydraulic cement fillet between the frame and top adjusting ring or cone section.

When additional grate capacity is needed in ponding conditions to handle the tributary flow, additional inlet structures shall be utilized. In cases where storm sewer inlets are used in depressed barrier curb areas, use Neenah R-3339-1, EJIW 5130, or approved equal. In rear yards and all other turf applications (except roadside ditch drainage applications) catch basins shall use Neenah R-1713 with type D cover, EJIW 1050 with type M1 radial flat grate, or approved equal. Roadside ditch drainage structures shall be evaluated on a case by case basis.

All closed storm structure lids shall have "Village of Sugar Grove" and "STORM" cast into top and shall be the concealed pick hole type.

2. Sediment Control: All storm sewer inlet structures shall utilize Flexstorm Inlet Filters™, or approved equal, to properly manage sediment control and to minimize storm sewer televising and cleaning which would otherwise be required prior to Village acceptance of the storm sewer system. All inlet filters shall be properly maintained until such time as all areas tributary to a particular inlet have been adequately vegetated.

3. Manhole Castings: Construction and installation of all storm sewer manholes shall comply with the Standard Specifications for Water and Sewer Main Construction in Illinois. Storm sewer structures shall be sized such that a minimum of twelve inches (12") of precast concrete structure is provided between all pipe openings. When closed lids are needed, manhole castings shall be IDOT type 1 Neenah R-1713 frame with type B cover, EJIW 1050, or approved equal. In paved areas, cast in place concrete blocking, a minimum of ten inches (10") thick, extending eighteen inches (18") out from the frame is required. The surface of the concrete blocking shall be set at the elevation of the bituminous binder course. In concrete pavement applications, the surface of the blocking shall match the finish pavement surface. When open lids are needed, use Neenah R-1713 with type D cover, EJIW 1050 with type M1 radial flat grate, or approved equal. All type B covers shall have "Village of Sugar Grove" and "STORM" cast into the top and shall be the concealed pick hole type.

C. Sump Pumps: The connection to the storm sewer shall be through a structure. Stubs shall be provided as appropriate for all lots and shall extend at a minimum to the easement line to avoid excavation issues with other buried utilities. All pipe used for sump pump discharge collector lines shall be PVC (SDR-26) of the size specified by the engineer. Sump pump discharges to a closed pipe system shall be provided with an outside air break to facilitate flow.

All individual sump pump lines shall be connected to a storm structure or sump pump discharge collector line structure. Sump pump collection lines shall be six inches (6") diameter minimum. Sump pump discharge collector lines shall have a cleanout/inlet structure at the upstream end and shall have a cleanout/inlet structure every three hundred feet (300') maximum. Sump pump cleanout structures shall be two foot (2') diameter structures and will not be allowed to pick up surface drainage. All sump connections to the cleanout/inlet structure shall be precast or core drilled and shall be sealed inside and outside the structure with hydraulic cement. The minimum depth of cover for sump pump service lines is twenty four inches (24"). The frame and lid shall be Neenah no. R-1706-1 or approved equal. All sump pump service stubs shall be marked at the time of construction with a 2" x 4" wood post neatly installed vertically with the bottom set at the invert elevation of the capped stub, a minimum three feet (3') bury and a minimum four feet (4') exposed. The top one foot (1') of the post shall be neatly painted green. (Ord. 2018-02-20, 2-20-2018)

12-11-4-2: SANITARY SEWER:

A. General: Standard Specifications for Water and Sewer Main Construction in Illinois, and all requirements therein shall be met for any sanitary related work. In addition, all materials and construction of sanitary collection system improvements shall also be in accordance with any requirements, specifications and standards set forth by Fox Metro Water Reclamation District (FMWRD). FMWRD's standard notes and details shall be included in all final engineering plan submittals. If there is a conflict with the requirements of FMWRD and these specifications, the more stringent shall apply.

Public sanitary sewers shall be constructed across the entire frontage of all lots unless otherwise approved by the Village. All lots shall have direct access to a public sanitary sewer. No service sewer shall run across another lot or connect to another service sewer. All lots having nonresidential uses shall have control manholes placed over their sanitary service lines to facilitate monitoring of waste water characteristics.

The minimum diameter for all sanitary sewer mains is eight inches (8"). The maximum allowable distance between manholes is four hundred feet (400'). All sanitary sewer manholes shall be marked at the time of construction with a 4" x 4" hardwood post neatly installed vertically with a minimum four feet (4') bury and a minimum four feet (4') exposed. The top one foot (1') of the post shall be neatly painted red.

B. Sanitary Sewer Pipe Materials: All sanitary sewers shall be PVC (polyvinyl chloride) plastic pipe. All pipe and fittings shall conform to type PSM (ASTM - SDR series) in accordance with ASTM D-1784, D-3034 for SDR 26, D-2241, D-3212, F-412 and F-477. The standard dimension ratio (SDR) or dimension ratio (DR) for PVC pipe shall be 26 as a minimum and shall be dependent on the depth of cover. All PVC plastic pipes and fittings shall have a cell classification of 12454-B or C, as defined in ASTM D-1784.

1. The following pipe materials shall be used for various depths:

a. For applications where the finished cover is fifteen feet (15') or less, PVC, SDR-26 shall be used.

b. For applications where the finished cover is greater than fifteen feet (15'), but less than or equal to twenty feet (20'), PVC, SDR-21 shall be used.

c. For applications where the finished cover is greater than twenty feet (20'), PVC, DR-18 shall be used.

C. Manholes, Frames And Lids: All sanitary manhole frames shall be IDOT type 1 (standard 604001) and all manhole lids shall have

"Village of Sugar Grove" and "SANITARY" cast into them.

All final adjustments of castings will be accomplished by the use of concrete adjusting rings set in butyl rope joint sealant; mortar joints will not be allowed. Height of adjusting rings shall not exceed eight inches (8").

D. Sanitary Service Lines: The minimum sanitary sewer service diameter is six inches (6"). Service connections and services shall be constructed in accordance with Fox Metro Water Reclamation District's specifications and ordinances. All sanitary sewer service stubs shall be marked at the time of construction with a 2" x 4" wood post neatly installed vertically, with depth originating at the sewer service cap and extending a minimum four feet (4') above ground. The top one foot (1') of the post shall be neatly painted red.

The location of the ends of all sanitary sewer service locations shall be tied to each property corner with the location being included in the record drawings.

E. Sanitary Sewer Testing:

1. Air Testing: All public sanitary sewers shall be exfiltration tested using air, by the developer or contractor, at his/her expense, under the supervision of the Village Engineer. A copy of the sanitary testing report shall be forwarded each to the Village of Sugar Grove and the Village Engineer.

2. Deflection Testing: A mandrel test (7 point minimum) shall be performed, by the developer, at his/her expense, under the supervision of the Village Engineer, for all PVC pipe thirty (30) days after backfilling. All testing will be done in conformance with the "Standard Specifications for Water and Sewer Main Construction in Illinois", current edition.

3. Closed Circuit Television: FMWRD is responsible for the televising of the sewer lines.

4. Manholes: All sanitary sewer manholes shall be vacuum tested after the frame has been set at finished grade. The test shall conform to the following specifications or other specifications approved by the Village:

a. All lift holes shall be permanently plugged with an approved nonshrink grout. All pipes entering the manhole shall be temporarily blocked with braced plugs.

b. A vacuum of ten inches (10") of mercury shall be applied to the manhole, after which the test pump shall be shut off. The time for the vacuum to drop to nine inches (9") of mercury shall be measured. The manhole/frame assembly shall be approved if the test time is greater than or equal to that listed ASTM C 1244-93 for the manhole diameter and depth specified.

c. If the manhole/frame assembly fails the test, necessary repairs shall be made with a nonshrink grout while the vacuum is still being applied. Retesting shall proceed until a satisfactory test is achieved.

d. If the manhole frame is readjusted after testing, the entire manhole shall be retested.

The Village Engineer shall witness all testing and shall be contacted forty eight (48) hours in advance of all testing. The Village Engineer will forward all test results to FMWRD upon passing results of the entire system.

F. Lift Stations: These standards shall be used for general guidance of design of sanitary lift stations for the Village. The final design shall be subject to the approval of the Village.

1. Stormwater Pumping Stations Prohibited: These standards are for sanitary sewage lift stations. Stormwater pumping stations are not permitted.

2. Design: The sewage collection system and lift station shall be of conventional design. Sewage shall be collected and transported to the lift station by gravity sewers.

3. Force Mains: Force mains shall be sized to carry the initial, intermediate and ultimate flow rates from the tributary area at a velocity of between two feet (2') and eight feet (8') per second. Material shall be PVC, DR-18, AWWA C900 or AWWA C905. At the request of the Village Engineer, gate valves in vaults shall be constructed in the force main at intervals not exceeding six hundred feet (600') to allow quick isolation in the event of a leak. Blow-off valves in vaults shall be constructed at high points in the force main and shall discharge to sanitary sewers where possible. Air release valves shall be placed as necessary and/or directed by the Village Engineer. A continuous locating wire of a size and type to be approved by the Village shall be laid in the force main trench and shall be connected to all valves and extend into the discharge manhole and valve chamber. Force mains shall be tested at one hundred fifty (150) psi for two (2) hours and shall conform with AWWA C-600 and C-603.

4. Lift Stations: Lift stations shall be of the submersible design, have a wet well and valve chamber made of precast concrete and shall have at least two (2) pumps. Pumps shall be centrifugal and be capable of passing three inch (3") diameter solids. The valve chamber shall have a quick disconnect tee fitting to accommodate emergency bypass pumping.

5. Motor Control Center: The motor control center shall have solid state duplex logic. Sewage level in the wet well shall be measured with a pressure transducer. A dial out alarm system, matching that currently in use in the Village, shall be provided. The lift station shall include a backup generator capable of powering the ultimate pump motors. The generator shall be fueled by natural gas. The controls shall be consistent and compatible with the Village's current controls programming manufacture and type.

6. Lift Station Building: The wet well, valve chamber, motor control center, backup generator and all other equipment shall be covered and/or enclosed in a lift station building. The building shall be of frame construction with brick siding. The building doors shall be keyed to match the standard Village lock used for all lift stations. The building shall be accessible from the street by way of a paved driveway at least fifteen feet (15') wide. The building shall comply with all the Village Building Code regulations and shall be heated and ventilated. The subdivider shall follow normal building permit procedures and pay the normal fees for construction of the lift station building.

7. Parts Inventory: The subdivider or developer shall supply an inventory of three (3) sets of each size and type fuse, relay and other plug in type devices used in the lift station motor control center. These items shall be housed in a wall mounted metal cabinet. The subdivider or developer shall also supply a heavy- duty freestanding metal shelf with not less than twenty (20) square feet of shelf space and one fire extinguisher rated for type A, B and C fires.

8. Startup Training; Maintenance Manuals: The subdivider or developer shall provide adequate startup training to the Public Works Department personnel and shall provide three (3) sets of operations and maintenance manuals for all equipment at the lift station. (Ord. 2018-02-20, 2-20-2018)

12-11-4-3: WATER SUPPLY:

A. General: All work and material shall be in accordance with Village ordinances and with current "Standard Specifications for Water and Sewer Main Construction in Illinois", latest edition, and the AWWA, American Water Works Association. In case of conflict, the Village Engineer shall be contacted to confirm which is correct.

The Village desires commodity standardization for all applicable items with economic use of function including standardization of application, simplification of design, maximum interchangeability of components and parts, minimum required spare parts, etc. Component items of use in a water distribution system are included below.

B. Water Main: Public water mains shall be constructed across the entire frontage of all lots, unless otherwise approved by the Village. All lots shall have direct access to a public water main. No water service shall run across another lot or connect to another water service. All water mains shall be looped and all areas of a development shall be double fed, unless approved otherwise by the Village Engineer. Subdivisions shall have a minimum of two (2) connections to the existing Village water distribution system. Water main shall extend to all property corners and/or key connection points for future or existing water main connections. Water mains shall be a minimum of eight inches (8") internal diameter with a cover of five feet six inches (5'6") minimum below finished grade.

Village water mains and hydrants shall be placed on the north and west sides of the streets unless approved otherwise by the Village Engineer.

All water main shall be ductile iron pipe Class 52 with either mechanical or push on joints and shall conform to ANSI A21.51, AWWA C151 and ANSI A21.11, AWWA C111. Pipe shall be manufactured in the United States.

The 10-point soil evaluation procedure for ductile iron pipe conforming to appendix A of the ANSI/AWWA C105/A21.5 standard shall be used to determine the corrosivity of the soils on a per project basis and whether or not polyethylene wrap is required for corrosion protection. If corrosion protection is required, the water main shall be wrapped with polyethylene wrap in accordance with ANSI/AWWA C105/A21.5.

All water mains shall have a minimum depth of cover of five and one-half feet (5.5') from the finish grade to the top of pipe or as noted on plans.

Brass wedges shall be installed at each push joint for electrical conductivity. Wedges shall be installed one hundred eighty degrees (180°) apart. Two (2) wedges shall be installed per joint for water main up to twelve inches (12") and two (2) pairs of two (2) wedges shall be installed per joint on water main larger than twelve inches (12").

Long radius curves, either horizontal or vertical, may be laid with standard pipe by deflections at the joints. Maximum deflections at pipe joints and laying radius for the various pipe lengths shall be in accordance with ANSI/AWWA C600. When rubber gasketed pipe is laid on a curve, the pipe shall be jointed in a straight alignment and then deflected to the curved alignment. Trenches shall be made wider on curves for this purpose.

All vertical water main adjustments shall be accomplished by deflection, not bends in the water main.

1. Water Main Protection: Water mains and water service lines shall be protected from sanitary sewers, storm sewers, combined sewers, house sewer service connections and drains in accordance with title 35: Environmental Protection Agency subtitle F: Public Water Supplies, chapter II: Environmental Protection Agency, parts 651 - 654 Technical Policy Statements, section 653.119.

Whenever possible, a water main must be laid at least ten feet (10') horizontally from any existing or proposed drain or sewer line. Should local conditions exist which would prevent a lateral separation of ten feet (10'), a water main may be laid closer than ten feet (10') to a storm or sanitary sewer provided that the water main invert is at least eighteen inches (18") above the crown of the sewer, and is either in a separate trench or in the same trench on an undisturbed earth shelf located to one side of the sewer. If it is impossible to obtain proper horizontal or vertical separation as described above, then the sewer must also be constructed of water main type material (ductile iron pipe with slip-on or mechanical joints, prestressed reinforced concrete pipe with ASTM C-443 joints, etc.) and pressure tested to the maximum expected surcharge head to assure water tightness before backfilling.

Whenever water mains must cross house sewers, storm sewers or sanitary sewers, the water main shall be laid at such an elevation that the invert of the water main is eighteen inches (18") above the crown of the drain or sewer. This vertical separation must be maintained for that portion of the water main located within ten feet (10') horizontally of any sewer or drain crossed. This must be measured as the normal distance from the water main to the drain or sewer. If it is impossible to obtain the proper vertical separation as described above or if it is necessary for the water main to pass under a sewer or drain, then the sewer must be constructed of water main type material (as noted above). This construction must extend on each side of the crossing until the normal distance from the water main to the sewer or drain line is at least ten feet (10'). In making such crossings, center a length of water main pipe over/under the sewer to be crossed so that the joints will be equidistant from the sewer and as remote therefrom as possible. Where a water main must cross under a sewer, a vertical separation of eighteen inches (18") between the invert of the sewer and the crown of the water main shall be maintained, along with means to support the larger sized sewer lines to prevent their settling and breaking the water main.

C. Fittings: All fittings shall be compact ductile iron and shall conform to ANSI/AWWA C153/421.53-84. Fittings shall be UL listed Class 350, Tyler Union, Griffin or approved equal. Fittings shall be manufactured in the United States.

All pipe and fittings shall be cement lined in accordance with ANSI/AWWA C104/421.4.

All fittings shall be mechanical joint and installed with retainer glands unless otherwise shown on the drawings.

Sleeves shall be Rockwell DI Coupling type 441, Tyler Union or approved equal. Sleeves shall be provided at locations shown on the plans or as required. The cost of sleeves is considered as incidental to the cost of the project.

D. Valves And Vaults: All gate valves shall have a non-rising stem, shall have a standard operating nut and shall open in a counter clockwise direction. Gate valves shall be American Flow Control series 2500 ductile iron resilient wedge gate valves in accordance with AWWA C-515 standard. All water main gate valves shall be installed in valve vaults.

Valve vault frames shall be IDOT type 1 (standard 604001) with concealed pickholes and all lids shall have "Village of Sugar Grove" and "WATER" cast into them.

Valve vaults shall be adjusted with precast concrete adjusting rings to a maximum of eight inches (8").

All valves on the water main except for fire hydrant auxiliary valves and service line valves shall be constructed within precast concrete valve vaults. Vault internal diameter shall be forty eight inches (48") for eight inch (8") diameter and smaller water mains, and a minimum of sixty inches (60") for water mains greater than eight inch (8") diameter. Valve vaults for pressure tap connections shall be sized as required by the Village Engineer. Height of adjusting rings shall not exceed eight inches (8"). All valve vaults shall be completely sealed with butyl rope joint sealant, including all component parts, barrels, adjusting rings and castings.

In paved areas, cast in place concrete blocking, a minimum of ten inches (10") thick, extending eighteen inches (18") out from the frame is required. The surface of the concrete blocking shall be set at the elevation of the bituminous binder course. In concrete pavement applications, the surface of the blocking shall match the finish pavement surface.

Valves shall be installed each second consecutive hydrant at intersecting line and other locations as required such that a minimum number of services will be affected during the main isolation. Valves shall be installed at easily accessible locations as determined by the Village Engineer such that the number of single family water services affected by a water main isolation shall be 12-16 services and/or such that the number of multi-family (duplex, townhome, condominium) water services affected by a water main isolation shall be 18-24 services. For water mains that run alongside lot lines, valves shall be installed wherever the main enters or exits the public right-of-way. All valve vaults shall be marked at the time of construction with a 4" x 4" hardwood post neatly installed vertically with a minimum four feet (4') bury and a minimum four feet (4') exposed. The top one foot (1') of the post shall be neatly painted blue.

All mechanical joint fittings, valves and hydrants shall be restrained with retainer glands. Retainer glands shall be EBAA iron series 1100 Megalug or approved equal.

CA-7 stone shall be utilized to backfill all around the operating nut on all valve boxes to prevent mud from penetrating valve boxes.

E. Pipe Restraint: All tees, bends, valves, and fire hydrants shall be adequately supported with a concrete base, and supported laterally with precast concrete thrust blocking (not poured-in- place) against undisturbed earth. The Village Engineer shall witness all thrust blocking, and it is the contractor's responsibility to contact the Village Engineer prior to backfilling such water system improvements.

In addition, all mechanical joint fittings, valves and hydrants shall be restrained with retainer glands. Retainer glands shall be EBAA iron series 1100 Megalug or approved equal. The Village Engineer shall witness all restrained joints, and it is the contractor's responsibility to contact the Village Engineer prior to backfilling such water system improvements.

For subdivision inspection, all thrust blocking and mechanical restraining systems shall be inspected by the Village Engineer prior to backfilling. Should the system be backfilled prior to inspection, the restraint system will have to be excavated by the contractor for inspection at no cost to the Village of Sugar Grove.

F. Fire Hydrants: All hydrants shall be in accordance with section four (4) of AWWA C502-54 standard and shall be an American Flow Control/Waterous Pacer model no. WB-67-250 (break away style traffic design) with one (1) $4\frac{1}{2}$-inch steamer nozzle and two (2) $2\frac{1}{2}$-inch hose outlets, of which the threads conform with the standards of the Village of Sugar Grove, Illinois. All hydrants shall have an auxiliary gate valve. Hydrant installations shall have 5.5 feet depth of cover. Hydrants shall be installed with a break-away traffic flange, pentagon nut and National Standard thread for fire service. Fire hydrants shall be placed three feet (3') from the back of curb to the center of the hydrant, or where there is no curb and gutter, the face of the pumper nozzle shall be located five feet (5') from the paved road edge. Center line of pumper nozzle shall be eighteen inches (18") to twenty inches (20") above finish grade line (sidewalk to curb).

All fire hydrants and any required adjustment fittings along a potable water main shall be factory painted red. All fire hydrants along a raw water main shall be factory painted emerald green with the paint code M4157 by Waterous. Fire hydrants designated by the Village shall be fitted with flags or markers of a type to be approved by the Village.

All fire hydrant valve boxes shall be heavy wall high density polyethylene American Flow Control trench adapters. Lids to be marked "Water" (valve box extensions if required are considered incidental). Open graded (CA-7) limestone shall be utilized to backfill around the operating nut on all valve boxes to prevent mud from penetrating the valve boxes.

Fire hydrants shall be installed throughout the subdivision, at each intersection, ends of each cul-de-sac and at intervals not exceeding three hundred feet (300') within residential areas. Fire hydrants in a nonresidential area may have closer spacing if required by the Village or fire protection district. They shall be located on the property line except at block corners where they shall be placed at the curb return point of curvature.

Adjustments to grade, if required, shall be made with American Flow Control extension kits.

Base elbows of hydrants shall be properly thrust blocked and shall be provided with clean washed stone (CA-7).

G. Water Services: All water services shall be constructed of type K copper pipe of such diameter as specified by Village ordinance and in accordance with AWWA publication M-22 entitled, "Water Service Lines and Meters". Service line diameter is dependent upon peak water demand and meter distance from the main. Minimum service diameter shall be one inch (1").

All water services shall be installed in accordance with the rules and regulations of the Illinois Plumbing Code and Illinois Plumbing License Law [1] . Per the Illinois Plumbing Code, an Illinois licensed plumber must perform the work associated with the water services. The work that must be performed by a licensed plumber includes but is not limited to the tap at the water main, service pipe installation, curb stop installation, b-box installation, connection to the existing water service and any other fittings required.

All water services shall be one inch (1") diameter type "K" copper pipe with compression connections. No joints will be allowed between the corporation stop and the curb stop. Material and installation will be in general accordance with AWWA C800. The underground water service pipe and the building sewer shall be not less than ten feet (10') apart horizontally and shall be separated by undisturbed or compacted earth.

Services shall be equipped with corporation stop, curb stop, and curb box. Curb stops and all water service lines shall have a minimum 5.5 feet of cover. The curb stop shall have a concrete block placed under it for support. All curb boxes shall be marked at the time of construction with a 4" x 4" hardwood post neatly installed vertically with a minimum three feet (3') bury and a minimum four feet (4') exposed. The top one foot (1') of the post shall be neatly painted blue.

Domestic services may not be tapped on dead end water mains unless approved by the Village Engineer.

The installation of the water service shall meet the latest version of "Standard Specifications for Water and Sewer Main Construction in Illinois", latest edition and governing Plumbing Codes. The water service pipe may be placed in the same trench with the building drain or building sewer if the conditions listed below are met:

1. The bottom of the water service pipe at all points shall be at least eighteen inches (18") above the top of the sewer line, while maintaining the minimum five and one-half feet (5.5') of cover.

2. The water service pipe shall be placed on a solid shelf excavated at one side of the common trench.

A ductile iron saddle with two (2) stainless steel straps and accessories is required for water services 1.5 inches or larger. All corporation stops, curb stops, and curb boxes shall be as follows:

Brand	Mueller		
Size	1"	1.5"	2"
Corporation stop	B-25008	B-25008	B-25008
Curb stop	B-25155	B-25155	B-25155
Curb box	H-10302	H-10302-99007	H-10302-99007
Brand	Ford		
Size	1"	1.5"	2"
Corporation stop	FB1000-4-Q	FB1000-6-Q	FB1000-7-Q
Curb stop	B44-444-MQ	B44-666 MQ	B44-777 MQ
Curb box	EM2-55-67	EM2-55-67	EM2-55-67

The buffalo boxes shall be set between the sidewalk and the house/building. It shall be placed either within the right- of-way (between the sidewalk and the right-of-way) or in an easement adjacent to the right-of-way within two feet (2') of the sidewalk. No buffalo box shall be allowed in a sidewalk, driveway or other paved surface. The location of all curb boxes shall be tied to each property corner with the location being included in the record drawings.

The Village shall witness all service taps greater than one inch (1") diameter. Accordingly, the developer/contractor shall contact the Village Engineer forty eight (48) hours in advance of the tap.

H. Tap Connections: All tap connections shall be made in accordance with these standard specifications and the Illinois Plumbing Code. Pressure connections are not allowed for same size pipes. Payments for all tap fees not otherwise provided for in this Code, Annexation Agreement or Development Agreement shall be paid prior to scheduling the tap with the Utilities Superintendent or his/her designated representative.

One inch (1") taps made on ductile iron pipe shall be direct and shall not require saddles. A ductile iron saddle with two (2) stainless steel straps and accessories is required for water services 1.5 inches or larger.

The Village shall witness all service taps greater than one inch (1") diameter. Accordingly, the developer/contractor shall contact the Village Engineer forty eight (48) hours in advance of the tap.

I. Pressure Connections: All pressure connections three inches (3") and larger shall be enclosed in a minimum of a forty eight inch (48") diameter concrete vault. The vault size shall be based on the valve size. Three inch (3") taps and greater shall be made through a resilient wedge tapping valve and a tapping sleeve.

Pressure connections are not allowed when the pipe to be tapped and the new pipe are the same size. For this type of situation, a cut in tee shall be used.

All pressure taps to an existing Village main shall be made with an American Flow Control series 2800 compact ductile iron mechanical joint tapping sleeve and an American Flow Control series 2500 ductile iron resilient wedge tapping valve (MJ x FL) and shall be constructed in a five foot (5') minimum diameter valve vault. All taps shall be performed by the contractor after payment of applicable connection fees and shall be witnessed by the Village. The Village Engineer should be notified forty eight (48) hours in advance of any tap.

J. Miscellaneous - Water Systems: Water valves and fire hydrants shall be operated by Village of Sugar Grove personnel only.

The contractor shall obtain, erect, maintain and remove all signs, barricades, flagmen and other control devices as may be necessary for the purpose of regulating, warning or guiding traffic. Placement and maintenance of all traffic control devices shall be in accordance with the applicable parts of article 107.14 of the Standard Specifications and the Illinois Manual On Uniform Traffic Control Devices for Streets and Highways. Contractor shall furnish a traffic control plan for IDOT or Village approval if required.

All work and materials shall be in accordance with code requirements.

The contractor shall restore any area disturbed to a condition equal to or better than its original use. This shall include finish grading, establishment of a vegetative cover (seeding or sod), general cleanup and pavement replacement.

The contractor shall be responsible for providing safe and healthful working conditions throughout the construction of the proposed improvements.

Before acceptance by the Village all work shall be inspected and approved by the Village or its representatives.

Easements for the existing utilities, both public and private, and utilities within public rights-of-way are shown on the plans according to available records. The contractor shall be responsible for determining the exact location in the field of these utility lines and their protection from damage due to construction operations. If existing utility lines of any nature are encountered which conflict in location with new construction, the contractor shall notify the engineer so that the conflict may be resolved.

K. Disinfection And Testing:

1. Hydrostatic Tests: The contractor shall perform hydrostatic tests in accordance with division IV, section 41 of the Standard Specifications for Water and Sewer Main Construction in Illinois, latest edition, and applicable provisions of AWWA C-600 and C-603. The water mains shall be pressure tested at one hundred fifty (150) psi. Allowable leakage shall be as set forth in AWWA C-600 latest edition. The maximum allowable leakage shall be based off of the first one thousand feet (1,000') of pipe (i.e., if 2,000 feet of pipe is being tested, the allowable leakage will be based on the first 1,000 feet only). The duration of the test shall be for two (2) hours minimum, and the maximum pressure drop during this two (2) hour period is a cumulative two (2) psi. To meet the testing requirements, the water main shall satisfy the pressure drop and the allowable leakage requirements. The gauge will be zeroed out before the pressure test begins. In addition, the pressure gauge used in the hydrostatic test shall be in two (2) psi increments or less and have a minimum of a three and one- half inch ($3^1/_2$") diameter face. When testing ductile iron services, the permanent valve on the building riser shall be installed prior to pressure testing.

2. Disinfection Of The Water Mains: Upon completion of the newly laid water mains, the water mains shall be disinfected in accordance with the American Water Works Association, Procedure Designation, AWWA C-651, latest edition. The contractor is responsible for collecting samples and having bacteriological testing performed as required by the IEPA. The contractor shall furnish to the Village the required documentation, test results, etc., required by the IEPA for placing the water mains or service lines in service and/or securing an operating permit.

3. Village To Witness Various Activities: The developer/contractor shall contact the Village Engineer to schedule operation of valves, flush and fill, pressure test, chlorination, and sampling. The Village Engineer will contact the Village accordingly. The developer/contractor shall provide forty eight (48) hours notice prior to performing any of these work items. The following activities must be scheduled with the Village Engineer on independent days:

a. Flush and fill (water main/service shall then be pre-tested).

b. Pressure test (the gauge shall be zeroed out before the start of the test).

c. Chlorination.

d. 1st day of sampling.

e. 2nd day of sampling.

All water mains shall be pre-pressure tested prior to the actual pressure test the Village Engineer and/or the Village witnesses. (Ord. 2018-02-20, 2-20-2018)

Notes

[1] 1. 225 ILCS 320.

12-11-4-4: GRANULAR TRENCH BACKFILL:

All trenches caused by the construction of sewers, water mains, water service pipes, and the excavation around catch basins,

manholes, inlets and other appurtenances which occur within two feet (2') of the limits of existing or proposed pavements, sidewalks and curb and gutters, trails and driveways or where the edge of the trench shall be within two feet (2') of said improvements, shall be backfilled with mechanically compacted granular backfill.

Granular backfill shall consist of CA-7 crushed limestone and shall be compacted in place in six inch (6") lifts to ninety five percent (95%) of maximum density at optimum moisture as determined by the Modified Proctor Test. (Ord. 2018-02-20, 2-20-2018)

12-11-4-5: FINAL ADJUSTMENTS:

All final adjustments of castings will be accomplished by the use of concrete adjusting rings set in butyl rope joint sealant; mortar joints will not be allowed. Height of adjusting rings shall not exceed ten inches (10") (no more than 3 rings) and the minimum adjusting ring thickness shall be two inches (2"). Frames set in concrete are not permitted. Metal or plastic shims may be used for fine adjustments of frames.

Public utilities, which are outside of the project limits (off- site), shall be permanently located with clearly labeled, PVC markers subject to the approval of the Village Engineer. The marker installation requirement and location shall be determined on a case-by-case basis. (Ord. 2018-02-20, 2-20-2018)

12-11-5: STORMWATER MANAGEMENT:

12-11-5-1: GENERAL:

The Village of Sugar Grove has adopted the Kane County stormwater ordinance (hereto referred as "stormwater ordinance"), by reference, as its stormwater ordinance. All submittals and designs shall be in accordance therewith. The Village Engineer is the Administrator of the stormwater ordinance.

A. Positive Drainage: Overland flood route shall be labeled on the plans and calculated to convey all the stormwater runoff for the 100-year runoff event to the proposed detention basin assuming the storm sewer system is fully functional and operating under the full head conditions of the 100-year conveyance. Roadways may be used to convey the overland flow route, but shall have a maximum flow depth at the crown of six inches (6") and in no case shall the depth of flow be greater than twelve inches (12"). Reverse parkway slopes and depressed sidewalks shall be used along overflow routes to minimize the depth of water in roadways and the overland flow routes shall be graded such that runoff shall be directed away from homes and structures.

All areas of the property must provide an overland flow path that will pass the 100-year flow. If the tributary area is less than twenty (20) acres, the vertical distance between the 100-year high water level within the overland flow path and the lowest building opening shall be a minimum of one foot (1'). If the tributary area is greater than twenty (20) acres, the 100-year high water level shall be at a stage at least two feet (2') below the lowest opening of any building in the vicinity of the flow path in accordance with the Kane County Stormwater Technical Guidance Manual section T201 (d).

B. Underground Detention: Underground detention will be considered in commercial and industrial applications but shall utilize full stormwater quality improvement methods.

C. Basement Floors: Basement floor elevations in relation to nearby stormwater management facilities normal and high water levels shall be determined by the Village Engineer based on evaluation of the soil strata in the vicinity. At a minimum the basement floors shall be set two feet (2') above the normal water level.

D. Minimum Detention Outlet Size: The minimum size for a single outlet storm detention release pipe shall be twelve inches (12") RCP with a minimum restrictor size of four inches (4") (PVC, SDR-26). If this minimum diameter permits release rates greater than that required, alternate outlet designs shall be utilized which incorporate self-cleaning flow restrictors. If restrictor size is greater than twelve inches (12") then the outlet pipe shall be at least one size larger than the restrictor.

E. Restrictor Type: All innovative restrictor designs that incorporate low maintenance and anti-clogging designs are encouraged and will be considered.

F. Parking Lots: The maximum stormwater ponding depth in any parking area shall not exceed one foot (1') for more than four (4) hours.

G. Overflow Structures: All stormwater detention basins shall be provided with an overflow structure capable of safely passing excess flows at a stage at least one foot (1') below the lowest foundation grade in the vicinity of the basin. The overflow weir shall be designed to convey the proposed critical duration 100-year peak flow entering the basin, shall not exceed one foot (1') of depth and shall have positive downstream conveyance. Once the width and elevation of the weir are established, the basin shall have a minimum of one foot (1') of freeboard above the weir elevation. The overflow weir shall have minimum width of five feet (5') and shall incorporate a concrete curtain wall, four feet (4') longer than the width of the weir on each end, cast in place in a trench cut into the berm, a minimum of forty two inches (42") deep, eight inches (8") wide. Backslope and downstream erosion control measures may be required depending on earth slopes.

H. Setback Requirements:

1. Setback between the high water level of the retention/detention basin and the building/lot: All residential development shall comply with the more restrictive of the following requirements:

a. The high water level plus one foot (1') of freeboard shall not encroach onto a residential lot, or

b. The minimum distance between the residential building envelope and the high water level shall be fifteen feet (15').

I. Early Completion Of Detention Facilities: Where detention, retention, or depressional storage areas are to be used as part of the drainage system for a property, they shall be completed as the first element of the initial earthwork program. This is to ensure that if soil erosion and sediment control practices are not adequately implemented, any eroded sediment will be captured in these areas and will

have to be removed by the developer before project completion. Note: Following construction and stabilization of stormwater management facilities, silt fencing shall be installed between the facility and all areas of the subdivision that will have future construction activities. This silt fence shall be maintained until construction activities on all upstream tributary areas have been completed and all such areas have been re-vegetated. All storm sewer inlets to a stormwater management facility shall be installed to the extent that the stabilized basin and post-construction silt fence will not be disturbed by future storm sewer installation.

J. Location Of Basins: Compliance shall be made with 605 Illinois Compiled Statutes 5/9-115.1 regarding the location of basins in relation to the right-of-way. No part of the basin shall be located within a distance of ten feet (10') plus one and one-half ($1^1/_2$) times the depth of the pond from the right-of-way line.

K. Design Computations: A copy of the design computations, showing contributing areas and other necessary information shall be submitted for approval to the Village Engineer, and shall be submitted by a registered professional engineer and sealed accordingly. All computer generated data shall also be submitted electronically. (Ord. 2018-02-20, 2-20-2018)

12-11-5-2: DETENTION BASIN DESIGN:

All detention basins shall be designed to remove stormwater pollutants, so as to be safe, aesthetically pleasing, and to provide recreational use whenever feasible. There is no depth limitation to basin design, other than that necessitated by impoundment volume safety and/or vegetative survivability and maintenance concerns due to longer drawdown times.

A. Wet Basin Depths: The normal water pool in wet basins shall be at least six feet (6') deep, excluding near shore banks and safety ledges and shall be at least ten feet (10') deep over twenty five percent (25%) of the normal water level surface area.

B. Permanent Pool Volume: The permanent pool volume at normal depth shall be equal to or greater than the runoff from its watershed for the 2-year event.

C. Life Saving Equipment: The subdivider shall install life- saving equipment at regular intervals around the perimeter of wet detention/retention ponds. The subdivider shall consult with the Police Department and the fire protection district regarding the type of equipment to be installed. The equipment shall be maintained by the entity that maintains the pond.

D. Dry Detention Ponds: Dry detention ponds shall be designed to have a high water depth of four feet (4') or less. Parking lots used for stormwater detention shall not allow ponding greater than six inches (6") deep for a period of four (4) hours. All slopes shall not be steeper than 4 to 1 (horizontal to vertical).

E. Dry Basins: Dry basins shall be designed so that at least eighty percent (80%) of the bottom area shall have standing water no longer than seventy two (72) hours for any runoff event less than the 100-year event. Underdrains directed to the outlet control shall be used to aid in keeping the pond bottom dry.

F. Aeration: All wet basins shall incorporate wind powered aeration systems to oxygenate the normal water pool. If it can be shown, based on a sheltered location of the basin, that wind powered aeration is not feasible, then an electric powered aeration system will be allowed.

G. Basin Slopes: The underwater side slopes of wet basins from the safety ledge to the high water elevation shall not be steeper than 4 to 1 (horizontal to vertical). All side slopes above normal water level shall be no steeper than 4 to 1 (horizontal to vertical). Backslopes on the side of a berm opposite the basin may be 3 to 1 if they are along the external boundary of a development and no/low maintenance groundcovers and landscaping are installed.

H. Safety Ledges: All wet detention basins shall have a level safety ledge at least five feet (5') in width from the normal water's edge and three feet (3') below the normal water level.

I. Desiltation Basins: Desiltation basins shall be provided at the pond's in-flow locations. Desiltation basin size shall be one hundred (100) cubic yards per acre of disturbed tributary area. Use of settlement basins or other sediment control practices upstream of the basins shall be taken into consideration when reviewing the proposed desiltation volume.

J. Embankment Protection: Embankment protection shall be provided and approved by the Village Engineer.

K. Velocity Dissipation: Velocity dissipation measures shall be incorporated into dry basin designs to minimize erosion at inlets and outlets and to minimize the re-suspension of pollutants.

L. Inlet And Outlet Orientation For Both Wet And Dry Detention Basins: To the extent feasible, the distance between detention inlets and outlets shall be maximized. If possible, they should be at opposite ends of the basin. (Ord. 2018-02-20, 2-20-2018)

12-11-6: GRADING:

12-11-6-1: GENERAL:

Every engineering plan shall include a topographic survey of the existing project site and shall be signed and sealed by a licensed Illinois professional land surveyor. All topographic data shall be collected a minimum of fifty feet (50') beyond the project site, but in no case less than is necessary to determine all area drainage patterns that may effect, or be affected by construction of the subdivision. All plans shall indicate the existing contours with one foot (1') contour interval. The existing contours and spot elevations must be indicated on the plans in a lighter line style or shade to provide distinction between the existing and proposed conditions. All topographic surveys shall provide bench mark information and shall be based on NGVD 1988.

The minimum slope for all vegetated areas shall be two percent (2%) unless approved by the Village Engineer under special conditions. The maximum slope for all transition areas shall be twenty five percent (25%).

Minimum slopes for parking areas shall be 0.50 percent and the maximum slopes shall be 4.0 percent. All parking areas that are adjacent to, and slope toward, stormwater detention facilities shall be constructed with guardrails or sufficient structural parking stops to

minimize or preclude the possibility of unattended vehicles rolling into the detention facility.

All grading plans shall indicate proposed spot elevations at a minimum of every fifty feet (50'). The calculated slope shall be shown with an arrow in the direction of the downward slope. Overland flood routes shall be shown with large arrows to depict the route.

Rim elevations for all storm sewer structures shall be shown on the grading plans. (Ord. 2018-02-20, 2-20-2018)

12-11-6-2: RETAINING WALLS:

Should a site require a retaining wall, a detail shall be indicated on the plans to indicate the type and style of wall to be used. A retaining wall that is greater than three feet (3') in height shall be designed and sealed by an Illinois licensed professional engineer. The design criteria can be provided during the final engineering submittal.

Retaining walls around detention basins may not be continuous. There must be a sloped opening to allow for maintenance. Walls greater than three feet (3') in height are not permitted in this application. If a height of greater than three feet (3') must be attained, the wall must be constructed in a terrace fashion, three foot (3') maximum high wall to a minimum three foot (3') wide terrace, then another three feet (3') maximum wall to another minimum three feet (3') wide terrace, etc.

The underdrain outlet shall be shown on the plans. The ends of the retaining wall shall transition so that the grading shall not exceed the maximum transition grading of 4:1. (Ord. 2018-02-20, 2-20-2018)