ORDINANCE NO. O-05-98

STANDARD SPECIFICATIONS FOR DESIGN AND CONSTRUCTION

VILLAGE OF ADDISON

COMMUNITY DEVELOPMENT DEPARTMENT

ONE FRIENDSHIP PLAZA

ADDISON, IL 60101

STANDARD SPECIFICATIONS
FOR THE
VILLAGE OF ADDISON

INDEX OF SHEETS

STANDARD SPECIFICATIONS FOR THE VILLAGE OF ADDISON

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SECTION 100

ENGINEERING PLANS

ENGINEERING PLANS

SECTION 100 - PRELIMINARY ENGINEERING PLANS:

Preliminary engineering plans shall consist of exhibits portraying engineering concepts, with a limited amount of design engineering. The exhibits shall show the areas earmarked for detention or retention, also any park and school donation parcels. The plans shall show existing contours, streets, cul-de-sacs, and the layout of sanitary sewers, storm sewers, and water mains. The sizes of the various utilities and the locations of the related appurtenances need not be included in the preliminary engineering plans; however, elevations of sewers at important locations are desirable.

If a variance is desired, it shall be clearly shown on the preliminary plans.

The plan size shall be thirty six (36) inches by twenty four (24) inches and drawn to a suitable scale providing maximum convenience for review. Other information that shall be shown on the preliminary plan are a location sketch, title of the improvement, contours, spot elevations, and the engineering firm responsible for plan preparation. The contours and spot elevations shall be U.S.G.S. datum, showing sufficient information with respect to existing conditions within the project and on adjoining properties for a distance of not less than two hundred (200) feet from the proposed project.

SECTION 101 - FINAL ENGINEERING PLANS:

The plan size shall be thirty six (36) inches by twenty four (24) inches and drawn to a scale of one (1) inch equals fifty (50) feet or larger. Final engineering plans shall contain all the pertinent information that is necessary for a final review, and shall be suitable for the construction of the project or improvements proposed.

Each separate sheet shall be titled according to its subject matter, and identified with the development. Any other appropriate identification of land, scale, contour intervals, north arrow, date of preparation, date of revision, etc., shall be included.

SECTION 101.1 - TITLE SHEET:

The first sheet of any engineering plan shall include informative items like the title of the project, name of the engineering firm responsible for the plan preparation, the owner, location sketch, index of sheets, general notes, benchmarks, and the engineer's seal. Each revision shall be noted on the title sheet with the date and a short description or note about the nature of the revision.

SECTION 101.2 - PLAT OF SUBDIVISION:

The second sheet shall be the plat of subdivision as approved (not necessarily recorded) showing the various lots, streets, and any easements required by the Village for the purpose of maintaining the public utilities and the protection of drainage swales.

SECTION 101.3 - SITE PLAN:

The site plan shall show the right-of-way lines of all streets, alleys and pedestrian ways, to be used for public use. Existing streets which are proposed to be abandoned, shall be shown in a shaded pattern, or otherwise distinctly indicated. It shall show the existing and proposed locations and dimensions of buildings, streets, curb and gutter, sidewalks,

driveways, parking lots, parking stalls, loading docks, trash enclosures, detention and / or retention basins, also towers, poles, or other structures in connection with electric transmission lines, benchmarks, etc.

Sites for public use, such as schools, parks and playgrounds, shall be identified on the Site Plan with scaled dimensions and the approximate area of each site.

SECTION 101.4 - GRADING PLAN:

The grading plan shall show the existing topography with suitable contour intervals not greater than one (1) foot, except as otherwise may be allowed by the Director of Community Development. The source and accuracy of the topographic details shown on the grading plan shall be in terms of U.S.G.S. data and field surveys. Streets, lots, storm sewers, and all related appurtenances to the storm sewer such as manholes, catch basins, and inlets, shall be superimposed on the existing contours. The top of foundation, lot corners, side yard break points, other break points in swales, and the top of frame for drainage structures shall be clearly marked with elevations. The direction of surface drainage and the proposed flood routes shall be clearly marked with arrows.

The plans shall clearly show existing tree lines, buildings, etc. on adjoining properties along the perimeter of the project for a distance of not less than two hundred (200) feet.

Detention/retention basin areas shall show the proposed contours, bottom of basin, high water level, inlet, and outlet structure elevations, overflow spillway elevation, etc.

SECTION 101.5 - UTILITY PLAN:

The utility plan shall show the proposed utilities within the project and shall include any off-site utility extensions. These utilities shall include all sanitary sewers, storm sewers, and water mains. Also on this sheet shall be shown gas or oil transmission lines, with the pipe sizes and direction of slope, streets, curbs and gutters, sidewalks, and lot lines to show the relationship of the utilities to the overall project. Additional, separate sheets shall be provided for each utility, if the utility plan sheet becomes too cluttered for easy reviewing. The size and type of the pipe along with the location of valves, fire hydrants, manholes, catch basins, inlets, etc. shall be shown. Prepare a schedule of all utility crossings, showing the elevations and noting any conflicts. Show casing pipe at the crossings, if required, or note how the conflict will be resolved.

SECTION 101.6 - PLAN AND PROFILE SHEETS:

The plan and profile sheets shall show the geometric design elements of all horizontal curves in alignment and vertical curves and grades in profile.

The plan and profile should be shown on the same sheet, with the plan appearing on the top part of the sheet and the profile at the bottom.

The profile shall show the existing and proposed elevations of the streets and sewers. The rim and invert elevations of all manholes, catch basins, and inlets shall appear on the

profile sheet, along with the size and slope of the pipe. Water mains shall appear on the profile sheet with elevations at all sewer crossings.
A profile plan shall be submitted for each new street.

The alignment of utilities, sidewalks, streets, curb and gutter, along with any appurtenances related with the utilities, shall be shown on the plan drawing. The exact location of the appurtenances, both the station along the center line and the lateral distance from the center line shall be noted:

Example: Sanitary Sewer Manhole No. 3
48 inch Diameter
Station 7+35
20 Foot LT.
Rim Elevation 697.60
Invert Elevation 688.80

An outline of the detention/retention areas, along with the size and location of the system into which the storm sewer will discharge, shall also be shown.

SECTION 101.7 – STORMWATER POLLUTION PREVENTION PLAN:

The Stormwater Pollution Prevention Plan shall identify those areas where potential sedimentation and erosion damage may develop. The plans shall address those issues by providing for the protection of adjacent property and storm sewer inlets, temporary stabilization of disturbed areas and dirt stockpiles, the construction of access routes, and the permanent restoration of the site.

The control measures selected shall be identified on the plan along with an inspection schedule, soil stabilization chart, construction sequence, and responsible contractor's schedule.

SECTION 101.8 - STREET LIGHTING PLAN:

The street lighting plan shall illustrate the complete street lighting system. This shall include the location of the service connection, remote disconnect, service cable, control cabinet, unit duct, luminaires and the length and size of any conduit used for crossings.

A Photometric Plan, separate from the Site Plan, Street Lighting Plan or the Landscaping Plan shall be submitted to support the street light spacing.

SECTION 101.9 - LANDSCAPING PLAN:

The landscaping plan shall show sodding and rip-rap around detention/retention basins, seeding or sodding of the parkway, and parkway trees. The plans shall be prepared according to, “Section 900 - Standard Specifications for Landscaping” as found in the Standard Specifications for the Village of Addison.

SECTION 101.10 - CONSTRUCTION DETAILS:

The last sheets of the engineering plans shall show the construction details of the various utilities and the related appurtenances. Typical cross sections of the pavement, curb and gutter, sidewalks, special structures that will be built in detention/retention basins, drainage ditches, rip-rap, etc. shall also be shown. This sheet shall include detail drawings and shop drawings of items that are of interest or requested by the Village.

SECTION 102 - AS-BUILT DRAWINGS:

It shall be the responsibility of the owner or developer to ensure that the engineering firm that prepared the plans makes changes to the plans as they occur during construction. If the original engineering firm is no longer under contract with the owner or developer, then the owner or developer shall hire a new engineering firm to make the changes. These may be changes due to unusual field conditions or as dictated by economical conditions.

After completion of the improvements, the engineering firm shall submit a set of paper print "As-Built" drawings for approval to the Director of Community Development. Upon approval of the drawings, an original set of drawings shall be submitted and shall become the property of the Village. The originals shall be of good quality Mylar, drawn in ink, capable of reproducing clear and good quality prints.

The drawings shall clearly show any changes made to the project along with "As-Built" grades of the curb and gutter, sidewalk, lot corners, foundations, etc. The water main service locations shall be measured from the nearest fire hydrant, with the B-Box and service end measured from the right-of-way. The size and length of the water main between fire hydrant, valve vaults, tees, bends, etc. shall be shown. (See Sections 407.5 and 420) Sanitary sewer service locations shall be measured from the down stream manhole to the tee or wye. The sanitary sewer service end shall be measured from the right-of-way with the invert elevation given. (See Section 307.3) The size and length of the sanitary sewer and storm sewer between structures, along with top of frame and invert elevations, shall be shown. (See Sections 214 and 315) The locations of the street lights, controller, remote disconnect, Commonwealth Edison service, along with the size and length of conduit, shall be shown. (See Section 614)

All fire hydrants located within three (300) feet of the project shall be shown on the drawings as benchmarks. Their location and elevation shall be given. (See Section 105)

As-built drawings shall be complete, including a cover sheet and the detail sheets incorporating all field changes.

Detention / Retention Basin "As-Built" calculations shall be provided separately.

SECTION 103 - STANDARDS:

The construction of the various improvements shall follow the Standard Specifications for the Village of Addison in size, shape, materials, and installation. Any items not

covered in the Standard Specifications shall be submitted for special consideration by the Village.

Errors and omissions in reviewing the plans shall not relieve the owner, developer, or the contractor from constructing the improvements per the Standard Specifications.

SECTION 104 - VARIANCES:

All variances covered in a pre-annexation or development agreement relating to the project shall be listed in the General Notes, subtitled "Variances".

SECTION 105 - BENCHMARKS:

Per Ordinance 0-90-32, Section Two, Page 3, Benchmarks:

"No permit required for construction will be issued unless the applicant for such permit shall make reference upon the permit application to at least two (2) benchmarks from which the proposed structure and accompanying site improvements will be measured. The benchmarks shall be within three hundred feet (300') of the proposed structure. Benchmarks shall be established on fire hydrants permanently identified. The benchmark elevations shall be set on the "arrow" imprinted on the flange of "Eddy" and most type hydrants. Hydrants that do not have such arrows shall have benchmarks established on the top of the southernmost flange bolt or in a place acceptable to the Village Engineer. In the event that hydrants are not within the specified distance, the benchmarks may be established at other suitable places and transferred to hydrants when they are installed. If a benchmark is disturbed for any reason, another benchmark shall be established to replace it. It is the intent of this ordinance that every permanently adjusted hydrant will be a benchmark."

SECTION 200

STORM SEWER SYSTEM

STANDARD SPECIFICATIONS FOR STORM SEWER CONSTRUCTION

SECTION 200 - GENERAL:

The standards and requirements found in this section are for materials and construction of storm sewers within the Village of Addison.

SECTION 200.1 - SPECIFICATIONS:

These specifications cover the installation of storm sewers, manholes and all appurtenances normally used for the construction of a storm sewer collection system. Storm sewers shall be installed in accordance with the latest edition of the Standard Specifications for Water and Sewer Main Construction in Illinois, IDOT Standard Specifications for Road and Bridge Construction, and applicable ordinances of the Village of Addison. In case of a conflict, the Village of Addison's Standard Specification for Storm Sewer Construction and other applicable ordinances of the Village of Addison shall take precedence and shall govern.

SECTION 200.2 - REGULATIONS AND PERMITS:

Additional regulations and requirements governing the construction of storm sewers in the Village of Addison are:

A. Any restrictions, policies, and instructions that may be adopted or issued from time to time by the Village of Addison.

B. No unauthorized person shall uncover, make any connections with or openings into, use, alter, or disturb any public sewer or appurtenance thereof without first obtaining a written permit from the Village of Addison.

C. All work shall be available for inspection by the Village of Addison at all times.

SECTION 200.3 - GENERAL DESIGN REQUIREMENTS:

All new storm sewer systems shall be designed to service the entire upstream area tributary to the drainage system, in addition to conveying the run-off from the ten (10) year storm for the proposed project. All stormwater drainage systems shall be separate and independent of the sanitary sewer system.

Storm sewers shall be located the full length of each street in a subdivision, whether the subdivision is residential, commercial, or industrial. However, in areas outside the Village limits where satisfactory storm drain facilities do not exist or are not available, and in residential areas with a density of over twenty thousand (20,000) sq. ft. per dwelling unit, the storm sewer may be omitted if proper surface drainage is provided, or as recommended by the Director of Community Development. Storm sewers shall also be located along the rear property line of residential subdivisions so that every lot has access to a drainage structure.

Drainage structures shall be installed so that the distance between each structure shall not exceed two hundred and fifty (250) feet, and each structure shall drain a maximum street gutter length of two hundred and fifty (250) feet. Drainage structures shall be placed upstream from an intersection to prevent large amounts of water running through the

intersection. Structures shall also be located in the driveways of industrial, commercial, and institutional projects to intercept run-off before it reaches the street. Low points may require additional drainage structures. No more than two (2) inlets shall be interconnected. Storm sewer systems shall be designed to have inlets flow to catch basins, and catch basins shall flow to manholes. Catch basins shall be installed immediately upstream of stormwater detention basins or ponds. All stormwater shall be directed to a stormwater detention basin or pond.

A uniform slope shall be maintained between drainage structures. Sufficient slope to provide a minimum self-cleaning velocity of not less than three (3) feet per second when the pipe is flowing full, shall be maintained. Slopes less than this shall only be permitted in special cases, and at the discretion of the Director of Community Development.

The design of all curb structures shall be submitted to the Village Engineer, along with the design of the storm sewer system, to demonstrate that the structures, grates and pipes have sufficient capacity to accept the flows anticipated at each structure.

SECTION 201 - PIPE MATERIALS:

All storm sewer pipe shall conform to the latest applicable ASTM, ANSI, AWWA, or other nationally accepted standards. Only the following storm sewer pipe and joint materials are approved for use in the Village of Addison:

A. Polyvinyl chloride (PVC) SDR-26 sewer pipe four (4) inches to fifteen (15) inches in diameter per ASTM D-3034, with Elastomeric Seal Joints per ASTM D-3212, or SDR 26PR sewer pipe per ASTM D-2241, with Elastomeric Seal Joints per ASTM D-3139.

B. Reinforced concrete pipe (RCP) ten (10) inches and larger in diameter, pipe conforming to ASTM C-76, Table III, Class III, wall thickness B or stronger, rubber "O" ring gasket joints per ASTM C-361, rubber gasket joints per ASTM C-443, or mastic compound joints.

C. Ductile iron pipe (DIP) conforming to ANSI A21.51 (AWWA C-151), thickness Class 52 per ANSI A21.50 (AWWA C-150), bituminous seal coated and cement lined per ANSI A21.4 (AWWA C-104), with mechanical or rubber gasket push-on joints "Bell-Tite" or equal per ANSI A21.11 (AWWA C111 and AWWA C600).

All pipe shall be suitable for use as a gravity sewer conduit. All fittings and accessories shall be manufactured and furnished by the pipe supplier and have a bell and / or spigot configuration identical to that of the pipe.

SECTION 201.1 - MINIMUM SIZE:

The minimum size of any public storm sewer or inlet connection located within the right-of-way or an easement, shall be twelve (12) inches in diameter. However, under special conditions such as clearance problems, low flow rear yard or detention systems, pipes

smaller than twelve (12) inches in diameter may be used with the approval of the Director of Community Development.

The desirable minimum size of any private storm sewer system located outside of the right-of-way is also twelve (12) inches in diameter. However, smaller sizes may be justified by the anticipated design flows.

Larger pipe shall not discharge into a smaller pipe, except when used in a detention system.

SECTION 201.2 - CONNECTION OF DISSIMILAR PIPES:

When joining storm sewer pipe of dissimilar material, a "mission band" or similar coupling shall be used. Where a suitable coupling is not available, the Director of Community Development may approve a joint fully encased in concrete. A concrete collar shall extend a minimum of two (2) feet on either side of the joint being made, and shall consist of a minimum of eight (8) inch thick concrete. The concrete shall be a six (6) bag mix.

When replacing a storm sewer over a utility trench, the storm sewer shall be replaced with one (1) length of ductile iron or polyvinyl chloride SDR 26 pipe of the same inside diameter as the existing sewer. The joint shall be made on a solid shelf cut a minimum of three (3) feet beyond the trench wall. Four (4) inch x four (4) inch oak timbers equally spaced around the pipe shall extend a minimum of three (3) feet beyond the trench wall. The timbers shall be banded to the pipe with four (4) steel bands equally spaced along the length of the pipe.

SECTION 202 - PROTECTION OF THE WATER DISTRIBUTION SYSTEM:

See Section 402. Whenever a water main and storm sewer cross, pipe elevations shall be shown on the plan sheet. Were concrete pipe is permitted, the pipe shall be supplied with "O"-Ring joints per ASTM C-361, and shall be used for a distance of ten (10) feet on either side of the watermain.

SECTION 203 - CONSTRUCTION AND SURVEY STAKES:

(See Section 1211)

SECTION 204 - QUALITY OF MATERIALS:

It is the intent of this specification that only first-class materials shall be used throughout the project, and that they shall be incorporated in such a manner as to produce a completed job that is workmanlike and acceptable in every detail.

SECTION 204.1 - DEFECTIVE MATERIALS:

All materials not conforming to the requirements of these specifications shall be considered as defective and shall be removed from the project. If in place, they shall be removed by the contractor at his expense and replaced with acceptable materials. No defective material shall be used. The contractor shall carefully inspect all materials and reject any material with detectable defects before installation. The Village reserves the right to make such an inspection and to order the rejection of any materials which have

detectable defects. The Village will observe the work as it progresses and may reject any material or workmanship which is determined to be defective or carelessly performed. However, primary responsibility for the quality of the work and performance of the system remains with the contractor.

SECTION 204.2 - HANDLING OF PIPE:

Storm sewer pipe shall be handled in the manner that will prevent damage to the pipe. Methods of construction which may damage the sewer pipe shall be corrected when called to the attention of the contractor.

SECTION 205 - TRENCH EXCAVATION:

All trenches shall be excavated to a minimum depth of four (4) inches below the bottom of the pipe barrel. Whenever a storm sewer excavation crosses any other underground utility, that utility shall be left undisturbed and in place, unless removal or replacement has been provided for.

SECTION 205.1 - STOCKPILING EXCAVATED MATERIAL:

Excavated material shall not be placed on pavement or sidewalks, except on the authorization of the Director of Community Development, and then only when adequate provisions have been made for the temporary passage of pedestrians and vehicles. Gutters shall be kept open or other satisfactory provisions shall be made for street drainage.

Excavated material shall not be stockpiled in a manner that will damage the work or obstruct natural water courses.

SECTION 205.2 - TRENCH WIDTH:

The ground shall be excavated in open trenches of sufficient width and depth to provide ample room within the limits of the excavation for the proper construction of the storm sewer, and all appurtenances as shown on the plans.

The maximum trench width at and below the top of the pipe shall not exceed the following widths:

A. For trenches five (5) feet or less in depth, the maximum width shall be:
Nine (9) inches + outside diameter of the pipe + nine (9) inches.

B. For trenches greater than five (5) feet in depth, the maximum width shall be:
Eighteen (18) inches + outside diameter of the pipe + eighteen (18) inches.

If these trench widths are exceeded without the written permission of the Director of Community Development, the contractor shall, at his own expense, install a stronger class of pipe than originally specified to the satisfaction of the Director of Community Development.

SECTION 205.3 - USE OF TRENCH SUPPORTS (TRENCH BOX):

Trench supports shall be used as required by the rules and regulations of OSHA. Any trench five (5) feet or more in depth shall require trench supports.

When using a movable trench support, care shall be exercised so as not to disturb the pipe. Trench supports should ride on a shelf above the top of the pipe, with the pipe installed in a narrow vertical wall sub-ditch (step trench).

Trench supports below the top of the pipe shall not be used except when approved by the Director of Community Development.

SECTION 205.4 - TRENCHES WITH SLOPING SIDES:

The contractor may, at his option, where working conditions and the right-of-way permit (as determined by the Director of Community Development), excavate the storm sewer pipe line trench with sloping sides, but with the following limitations:

A. In general, only supported vertical trenches will be permitted in the streets, alleys or narrow easements.

B. Where trenches with sloping sides are permitted, the slopes shall not extend below the top of the pipe, and trench excavation below this point shall be made with vertical sides and the width shall not exceed those specified for the various sizes of pipe.

SECTION 205.5 - OPEN EXCAVATION:

The excavation of the trench shall not advance more than fifty (50) feet ahead of the completed work and in no way shall more trench be opened than can be completely backfilled by the end of the work day. If during the progress of work, it becomes necessary to keep the trench open overnight, this shall be done only with the approval of the Director of Community Development. Care shall be taken to fence off the open excavation in a manner satisfactory to the Director of Community Development to prevent anyone from entering the excavation. Where a utility crosses an existing street, see Section 1205 - Open Cutting A Municipal Street, and Section 1209 - Casing Pipe.

Streets, sidewalks, parkways, and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the Director of Community Development.

SECTION 205.6 - DEWATERING TRENCH:

The contractor shall at his own expense do all pumping, well pointing, or other work necessary to keep the trench clear of ground water, sewage or stormwater while the storm sewer pipe is being placed, and until the joint has been made.

All trench water pumped or drained from the trench shall be disposed of in a manner approved of by the Director of Community Development without damage to adjacent property or to other work under construction. No sanitary sewer shall be used for disposal of trench water, unless specifically approved of by the Director of Community

Development. No water containing settleable solids or raw sewage shall be discharged into the storm sewer system.

SECTION 205.7 - OVER-EXCAVATION:

In cases where the excavation has been made deeper than necessary or where a firm foundation is not encountered at the grade established in the plans, the contractor shall replace the material removed with crushed stone refill.

Crushed stone refill shall be used up to six (6) inches below the bottom of the pipe and overlain with pipe bedding material per Section 205.8. Crushed stone refill shall be compacted to ninety five (95%) of modified proctor density. Crushed stone refill shall meet IDOT Specifications for CA-1 (crushed limestone).

SECTION 205.8 - PIPE BEDDING:

Granular pipe bedding material shall be required on all storm sewer lines installed in the Village of Addison. Granular pipe bedding shall be a minimum of four (4) inches deep in earth excavation and a minimum of six (6) inches deep in rock excavation. The pipe bedding shall be placed so that the entire length of pipe will have full bearing. No blocking of any kind shall be used to adjust the pipe to grade. When pipes having a bell or hub are used, cross trenches of sufficient depth and not more than two (2) inches wider than the bell or hub shall be excavated to provide uniform bearing.

Granular pipe bedding material shall meet IDOT specifications as follows:

A. CA-11 (crushed limestone) for polyvinyl chloride pipe.

B. CA-6 (crushed limestone) for reinforced concrete pipe.

C. FA-6 (sand) for ductile iron pipe.

D. FA-6 may be used in place of CA-11 or CA-6.

SECTION 206 - LAYING OF PIPE:

Storm sewer pipe shall be laid only after the trench has been dewatered and the bedding material has been properly prepared. Dirt or other foreign material shall be prevented from entering the pipe or pipe joint during handling or laying operations. Any pipe or joint that has been installed with dirt or foreign material in it shall be removed, cleaned, and re-laid. At times when pipe laying is not in progress, the open end of the pipe shall be closed with a water tight plug or by other means approved by the Director of Community Development to ensure absolute cleanliness inside the pipe.

The sewer contractor shall utilize a laser when laying any storm sewer that is to become the property of the Village except for those specific locations waived by the Director of Community Development. In those locations where the laser is not used, each pipe shall be checked for line and grade by the contractor.

The sewer pipe, unless otherwise approved by the Director of Community Development, shall be laid upgrade from the point of connection on the existing sewer, manhole, or from a designated starting point. The sewer pipe shall be installed with the bell end forward (upgrade), unless approved otherwise.

All laid pipe shall be held in position to maintain alignment and a tight joint until sufficient haunching material has been placed to hold the pipe (See Section 206.3). Pipe having a diameter greater than forty two (42) inches shall be set, (brought home) and held with a winch, come-along, or other mechanical means.

Lifting holes in concrete pipe shall be filled with a precast concrete plug, set in and covered with bituminous mastic.

SECTION 206.1 - LAYING OF PIPE ON CURVES:

The curvature of storm sewer lines is not allowed unless, in the opinion of the Director of Community Development, special circumstances dictate otherwise. Pipe required to be laid on curved alignment shall be joined in straight alignment and then deflected, joint by joint. Special care shall be taken in blocking the pipe just previously laid, by shovel-slicing haunching material around the pipe to prevent misalignment. In no case shall the degree of deflection exceed two thirds (⅔) of the manufacturer's recommendations for the respective pipe size, material, and barrel length.

SECTION 206.2 - DEPTH OF PIPE:

All pipe shall be laid to a minimum depth of three (3) feet as measured from the existing or proposed ground surface to the top of the pipe barrel unless specifically allowed otherwise by the Director of Community Development.

Any sewer having less than one (1) foot of cover (from the top of the pipe to the bottom of the sub-grade) shall be installed using ductile iron pipe.

SECTION 206.3 - HAUNCHING OF PIPE:

Granular material shall be placed and compacted by shovel-slicing under the pipe haunch to provide adequate side support to the storm sewer pipe while avoiding both vertical and horizontal movement. The same material used for bedding shall be used for haunching. (See Section 205.8)

Shovel-slicing of the granular haunching material shall take place when the material is no higher than the quarter point of the pipe. The remainder of the haunching material can then be placed to the spring line of the pipe.

SECTION 206.4 - INITIAL BACKFILL:

Granular material shall be placed and compacted in all storm sewer trenches to an elevation of one (1) foot over the top of the pipe. Initial backfilling shall not start until the storm sewer pipe, or any appurtenances have been inspected and approved. Where initial backfilling has taken place prior to being inspected and approved, the contractor shall uncover the work for inspection. The cost for this work shall be borne by the contractor. Initial backfill material shall be the same material that is used for bedding

material (See Section 205.8) and shall be compacted with vibratory equipment to ninety five (95%) percent of the Modified Proctor density.

SECTION 207 - TRENCH BACKFILL:

Unless otherwise directed, all trenches and excavations shall be backfilled as soon as the initial backfilling has been completed.

SECTION 207.1 - GRANULAR TRENCH BACKFILL:

All trenches caused by the construction of storm sewers, or appurtenances which fall beneath or within Two (2) feet of the outer edge of existing or proposed pavement, curb and gutter, sidewalks, paved or unpaved driveways, shall be backfilled with granular trench backfill to the elevation of the finished subgrade.

Granular trench backfill shall be placed to two (2) feet outside of the existing or proposed pavement, curb and gutter, sidewalk, paved or unpaved driveways, and then sloped at a 45 degree angle down to the top of the initial trench backfill.

Granular trench backfill shall be free of frozen lumps and foreign material that has become mixed with it during handling.

Granular trench backfill shall meet IDOT specifications for CA-6 (crushed limestone) or FA-6 (sand).

SECTION 207.2 - EXCAVATED TRENCH BACKFILL:

Where granular trench backfill is not required, selected materials originally excavated from the trench may be used. The backfill material shall not contain tree limbs, stumps, boulders, frozen clumps of dirt, or rubble of any kind.

Where there is a deficiency of suitable backfill material due to a rejection of part or all of the excavated material as unsatisfactory for backfill purposes as directed by the Director of Community Development, the contractor shall furnish sufficient satisfactory material to complete the backfilling.

All rejected or surplus excavated material which is not used for backfilling shall be removed from the site.

Any settlement of the backfill shall be remedied by the contractor for a period of one (1) year after final completion and acceptance upon receipt of a written notice from the Director of Community Development.

SECTION 207.3 - BACKFILL COMPACTION:

Initial backfill material shall be carefully deposited in uniform layers not exceeding eight (8) inches thick (loose measure) to a height of twelve (12) inches above the pipe. The material in each layer shall be firmly compacted by mechanical methods approved by the Director of Community Development in such a manner as to not disturb or damage the pipe.

All trenches shall have the remaining backfill (above the initial backfill) compacted by either water jetting or mechanical methods, except that water jetting will not be allowed where granular trench backfill is used.

A. Mechanical Method: Backfill material shall be deposited in uniform layers not exceeding twelve (12) inches thick (loose measure), and each layer shall be compacted by mechanical methods approved by the Director of Community Development. Granular trench backfill shall be compacted to ninety five (95%) of Modified Proctor density.

B. Water Jetting: The trench shall be backfilled with loose material and settlement secured by introducing water through holes jetted into the backfill to a point approximately one (1) foot above the top of the pipe as set forth in Section 20-2.21D(2), Jet Holes of Standard Specifications for Water and Sewer Main Construction in Illinois, and in Article 603.08, Method 3 of IDOT Standard Specifications for Road and Bridge Construction.

NOTE: Water for jetting shall not be taken from any fire hydrant within the municipal limits of the Village of Addison.

It shall be the contractor's responsibility to provide to the Village of Addison compaction reports on all granular trench backfilled areas.

SECTION 208 - STORM SEWER MANHOLES, CATCH BASINS, AND INLETS:

Manholes, catch basins, and inlets shall be constructed of reinforced precast concrete units with a monolithic concrete bottom cast integrally with the barrel. Precast units shall conform to ASTM C-478. A minimum dimension of eight (8) inches shall be maintained between pipes entering the structure. All storm sewer structures shall be water-tight below the frame.

Manholes and catch basins for storm sewers shall have a minimum inside diameter as follows:

A. When the storm sewer pipe are eighteen (18) inches or less in diameter, a four (4) foot diameter structure shall be provided.

B. When the storm sewer pipe are from twenty one (21) inches to thirty six (36) inches in diameter, a five (5) foot diameter structure shall be provided.

C. When the storm sewer pipe are forty two (42) inches or greater in diameter, a six (6) foot diameter structure, or a reinforced concrete pipe tee manhole shall be provided.

Manholes and catch basins, four (4) foot diameter and larger, shall be furnished with eccentric cone sections. Where conditions do not permit the use of an eccentric cone, a restricted depth top (also known as a flat slab top) may be used.

Type-C catch basins shall be two (2) feet in diameter and may be used in lieu of a Type-A inlet.

All catch basins shall be constructed with a minimum eighteen (18) inch deep sump.

Type-A inlets shall be two (2) feet in diameter with a maximum depth of four (4) feet.

Type-B inlets shall be three (3) feet in diameter.

Larger diameter structures may be required by the Director of Community Development.

Field conditions may require a cast-in-place portland cement concrete structure. These will be evaluated and approved on a case by case basis, at the sole discretion of the Director of Community Development.

SECTION 208.1 - TEE MANHOLES:

Reinforced concrete pipe tee manholes may be used where pipe sizes are forty two (42) inches in diameter and larger. Wall thickness and the type of joint shall match the concrete pipe being used. Bedding shall be per Section 208.4. Concrete shall be poured around the outside of a tee manhole up to the spring line. Riser sections shall be a minimum of three (3) feet in diameter and topped with either an eccentric cone or a flat slab top.

SECTION 208.2 - FLOW CHANNEL:

Each manhole and inlet shall contain a flow channel. The flow channel shall conform in shape and slope to that of the pipe. A bench shall be provided on each side of the flow channel. The bench shall have a maximum slope of two (2) inches per foot.

SECTION 208.3 - MANHOLE LOCATION:

Manholes shall not be spaced more than three hundred (300) feet apart. Additional manholes may be required by the Director of Community Development. Manholes shall be required at changes in sewer direction, size, slope, and at sewer junctions.

SECTION 208.4 - MANHOLE, CATCH BASIN, AND INLET BEDDING:

Granular bedding material shall be required for all storm sewer structures installed in the Village of Addison. Granular bedding shall be a minimum of three (3) inches in thickness and shall extend to the limits of the excavation. Bedding shall be firmly tamped, and made smooth and level to assure uniform contact and support for the base.

Granular bedding material shall be IDOT specification Grade CA-6 (crushed limestone) or FA-6 (sand).

SECTION 208.5 - PIPE CONNECTIONS:

Openings through which pipes enter inlets, catch basins, or manholes shall be as follows:

A. Flexible water tight rubber gasketed couplings, precast into the wall of the structure. After the pipe has been secured to the structure, the joint between the

rubber gasket and the structure shall be grouted with a non-shrink or hydraulic grout and smoothed on the outside. A mastic joint sealer shall then be applied over the grouted area on the outside of the structure. These connections shall conform to the requirements of ASTM C-923.

B. Pre-fabricated openings in structures shall be constructed so as to provide true alignment and proper grade for the inlet or outlet pipes. If an opening needs to be created or enlarged, a concrete saw or core drill capable of cutting all the way through the structure shall be used. Sledge hammers or jackhammers shall not be used to create or enlarge an opening.

Pipes shall be placed into the structure in such a manner as to not create an obstruction in the structure. No pipe shall project more than two (2) inches into a structure, and in no case shall a bell or spigot of a pipe be built into the wall of a structure. Masonry shall then be carefully constructed around the pipe using non-shrink or hydraulic grout. The grouted area shall be smoothed on the inside and outside. A mastic sealer shall be applied over the grouted area on the outside of the structure in order to reduce infiltration.

SECTION 208.6 - PRECAST COMPONENTS:

Cones, barrel sections, and flat slab tops shall be of sound construction and free from gravel pockets, fractures, large or deep cracks, and surface roughness. Cones shall be eccentric in design. Joints shall be of the tongue and groove type. Precast sections shall be placed and aligned to provide vertical sides and vertical alignment of the steps.

Bituminous material shall be used to securely seal the joints between precast sections. Surfaces may be set in full bituminous mastic beds or two (2) rows of resilient, flexible, non-hardening, pre-formed, bituminous mastic material (Ramnek or approved equal). Pre-cast mortar plugs shall not be used to plug lifting holes in drainage structures. All lifting holes and joints shall be thoroughly wetted and then completely filled with a non-shrink or hydraulic grout and smoothed both inside and out. The grouted area shall then be covered with a bituminous water proofing compound on the outside only.

Precast concrete units shall have the following thicknesses:

A. TYPE-A INLETS AND TYPE-C CATCH BASINS: Shall have a minimum bottom thickness of four (4) inches, and a minimum wall thickness of three (3) inches.

B. TYPE-B INLETS: Shall have a minimum bottom thickness of six (6) inches, and a minimum wall thickness of three (3) inches.

C. TYPE-A MANHOLES AND CATCH BASINS: Shall have a minimum bottom thickness of six (6) inches for a four (4) or a five (5) foot diameter structure and eight (8) inches for a six (6) foot diameter structure.

The wall thickness shall be as follows:

Manhole and Catch Basin Diameter	Minimum Thickness
Four (4) feet	Four (4) inches
Five (5) feet	Five (5) inches
Six (6) feet	Six (6) inches
Seven (7) feet and larger: As approved by the Director of Community Development.	

The inside diameter of a catch basin or manhole shall meet the following minimum requirement:

Diameter of the Largest Pipe Entering the Structure	Minimum Diameter of the Structure
Eighteen (18) inches	Four (4) feet
Thirty six (36) inches	Five (5) feet
Forty two (42) inches	Six (6) feet
Forty eight (48) inches	Seven (7) feet
Fifty four (54) inches and larger: As approved by the Director of Community Development.	

D. FLAT SLAB TOPS: The minimum thickness of the top at the opening shall be six (6) inches for a four (4) foot diameter structure and eight (8) inches for a five (5) foot or larger diameter structure.

SECTION 208.7 - FRAMES AND LIDS:

Each manhole, catch basin, and inlet shall be furnished with a frame and lid of cast iron. Closed frames shall be furnished with a Type "B" lid design, and the word "Storm" imprinted on the lid. Type 1, open grates shall be furnished with a Type "R-2015" grate, with the words “Dump No Waste, Drains To Waterways” imprinted on the grate. All frames shall be furnished with bicycle safe grates and shall meet the following Village of Addison requirements:

A. Standard frame and lid for use in paved areas and driveways shall be of heavy duty construction and equivalent to:

1. Closed lid: Neenah R-1713

2. Open lid: Neenah R-2504

B. Standard frame and lid for use in parkways and other non-paved areas shall be of medium duty construction and equivalent to:

1. Closed lid: Neenah R-1700-A

2. Open lid: Neenah R-1700-A

C. MISCELLANEOUS FRAMES:

1. Non-paved area

   a) Neenah R-4340-B not to be used on flat slab tops without a four (4) inch adjusting ring.

2. Curb and gutter frames shall be of heavy duty construction, and supplied with curb boxes imprinted with the "Fish" logo and the words "Dump No Waste, Drains To River".

   a) M-3.12 curb and gutter - Neenah R-3501-E2

   b) M-6.12 curb and gutter - Neenah R-3503-B

   c) M-6.18 curb and gutter - Neenah R-3525-L

   d) B-6.12 curb and gutter - Neenah R-3281-A or AL

   e) B-6.18 curb and gutter - Neenah R-3278-A or Neenah R-3525-L

   f) B-6.18 curb and gutter - Neenah R-3278-AL
   Recommended frame for new construction

3. The following frames require eighteen (18) inch gutters:

   a) Neenah R-3525-L

   b) Neenah R-3278-A

   c) Neenah R-3278-AL

SECTION 208.8 - MANHOLE AND CATCH BASIN STEPS:

Steps shall be furnished and installed in all storm sewer catch basins, except Type-C catch basins, and in all manholes. Steps shall be polypropylene coated steel reinforcing rods with load and pullout ratings conforming to OSHA requirements. The first step shall be located eight (8) inches below the top of the structure, with the remaining steps sixteen (16) inches on centers. The bottom step shall not be located more than two (2) feet above the bottom of the structure. The line of steps shall be placed on the side of the structure which is clear of openings.

SECTION 208.9 - EXCAVATION AND BACKFILLING OF MANHOLES, CATCH BASINS, AND INLETS:

Any excavation for a manhole, catch basin, or inlet shall be made a minimum of one (1) foot greater than the outside diameter of the structure in order to permit proper patching and compaction of the backfill material. Excavations shall be undercut to provide for three (3) inches of granular bedding (See Section 208.4)

Backfilling shall not begin until the exterior of the structure has been inspected and approved. The space between the sides of the excavation and the outer surface of the structure shall be completely backfilled with granular trench backfill if the edge of excavation is within two (2) feet of the outer edge of existing or proposed pavement, curb and gutter, sidewalks, paved or unpaved drives.

If the excavation falls beyond these limits, then excavated trench backfill material may be used, provided that it meets .with the approval of the Director of Community Development.

SECTION 208.10 - MANHOLE, CATCH BASIN, AND INLET FRAME ADJUSTMENT:

All new and existing storm sewer structures on the site or in the area disturbed by the construction shall be adjusted to finished grade prior to final inspection of the work.

Adjustments shall be made using precast, reinforced concrete adjusting rings. No more than two (2) adjusting rings shall be installed on a given structure; however, no more than one (1) of these rings shall be two (2) inches in thickness. Adjusting rings shall be placed with the thickest ring on the bottom. In no case shall more than twelve (12) inches of adjusting rings be permitted. If the total thickness of all adjustments exceeds twelve (12) inches, then adjustments shall be made by interchanging and or adding / removing complete barrel sections to achieve the desired elevations. Where a rectangular frame does not completely cover a circular opening, a steel plate with a minimum thickness of one quarter (¼) inch shall be placed over the opening.

Bituminous material shall be used at all joints to securely seal the concrete adjusting rings, steel plate, and frame to the drainage structure. Surfaces may be set in full bituminous mastic beds or two (2) rows of resilient, flexible, non-hardening, pre-formed, bituminous mastic material (Ramnek, or approved equal). This mastic shall be applied in such a manner that no surface or ground water can enter the manhole through the joints.

Also see Section 1201 - Frame and Grate Adjustment, for structures located within the curb and gutter or paved areas.

SECTION 208.11 - INSPECTION OF MANHOLES, CATCH BASINS, AND INLETS:

Any existing storm structure that is incorporated into the project by adjustment, reconstruction, or new connections, shall be upgraded to meet Village Standards as if it were a new structure. This may require patching, replacing concrete adjusting rings, adding or replacing steps, replacing a frame or lid, pouring a bench, or replacing the complete structure.

All structures shall be thoroughly cleaned of dirt and debris and all visible leakage eliminated before final inspection and acceptance.

SECTION 208.12 - OUTLET CONTROL STRUCTURES:

An outlet control structure shall be constructed at each detention or retention basin. Control structures shall be designed to conform to Village Ordinance 0-90-40 with respect to controlling the stormwater release rate from the basin. Control structures shall be located so that they are easily accessible even when the basin is full.

A control structure shall consist of a sixty (60) inch minimum diameter catch basin with a baffle wall. The baffle wall shall extend from the bottom of the catch basin to the high water level. Additional room shall be provided between the top of the baffle wall and the bottom of the flat slab top for stormwater overflow from the basin. This additional room shall be capable of conveying flows in excess of the one hundred (100) year storm event. The minimum capacity shall be one (1) cfs / acre of area tributary to the detention basin. If the down stream storm sewer does not have the capacity to safely convey the additional overflow, an emergency spillway needs to be constructed to provide the needed overflow.

The baffle wall shall be secured to the structure in such a way as to prevent the seepage of stormwater, except through the restrictor openings. Access to both sides of the baffle wall shall be provided with twin manhole frames and lids.

Alternate control structure designs may be approved by the Director of Community Development.

SECTION 209 - FLARED END SECTIONS:

Precast reinforced flared end sections shall be installed at the inlet and outlet points of all storm sewer systems where there is not already a structure. The flared end section shall be manufactured of Class III, Wall "B", reinforced concrete pipe that conforms to the applicable requirements of ASTM C-76.

A cast-in-place reinforced concrete end block shall be constructed at the end of each flared end section. The end block shall contain two (2) No. 4 bars that are located approximately three (3) inches above the bottom of the end block. Each end block shall be 8 inches wide and twelve (12) inches in height. The length of the end block shall equal or exceed the outside width of the flared end section.

Grating or trash guards shall be placed over all flared end sections. An opening of six (6) inches or less in height will be permitted at the end of the grate. If the opening is greater than six (6) inches, additional grating will be required.

SECTION 210 - FIELD TILE:

Any field tile encountered during construction shall be recorded as to its location, size, and depth by the contractor that uncovered the field tile. Damaged field tile shall be returned to their original, or better condition, by being repaired, rerouted, or connected into the new or existing storm sewer system. No water shall be allowed to be trapped underground.

SECTION 211 - TESTING OF STORM SEWER:

Prior to placing a storm sewer system into service, it shall be tested and inspected as follows:

A. The Director of Community Development, at his discretion, may require an infiltration test or exfiltration test.

B. All sections shall be televised.

SECTION 211.1 - EXFILTRATION TEST:

The exfiltration test shall be performed in the absence of ground water and as described below:

A. Plug the upper and lower section of sewer main to be tested.

B. Fill the line and all manholes with water to a depth of four (4) feet above the invert of the mid-point of the section being tested.

C. Let the water stand in the section of sewer main being tested for a period of twenty four (24) hours to allow for absorption and escape of trapped air.

D. After a period of twenty four (24) hours has elapsed, refill the section to original depth.

E. After an additional one (1) hour period has elapsed, refill the line again to original depth, recording the total amount of water necessary (measured in gallons) for refill.

F. The maximum acceptable exfiltration rate shall be one hundred (100) gallons per day per inch-diameter per mile of pipe which is equal to 0.000789 gallons per hour per foot of length per inch-diameter, including all manholes.

SECTION 211.2 - INFILTRATION TEST:

When ground water is present above a storm sewer line, the infiltration test shall be used. The infiltration test shall measure the ground water entering the pipe line and manholes.

A. Plug the upper and lower section of sewer main to be tested.

B. Collect and measure the flow over a specified period of time. This can be done with flow-through plugs, dams or troughs. Direct reading V-notch weirs shall not be used. These quantities can be measured in ounces per minute or some other suitable measurement, and then converted to gallons per day per inch-diameter per mile of pipe.

Example: It takes fifteen (150 minutes to collect one (1) quart, or one (1) gallon per hour. Convert to gallons per day per mile of sewer line.

$$(\text{Gal.per Hr.}) \times (24 \text{ Hrs. per Day}) \times \frac{(\text{Length of Sewer Line in Ft.})}{5280 \text{ ft}} \div \text{Pipe Diameter In Inches}$$

C. The maximum acceptable infiltration rate shall be one hundred (100) gallons per day per inch-diameter per mile of pipe, which is equal to 0.000789 gallons per hour per foot of length per inch-diameter.

D. Combined infiltration from the pipe line, including all service lines, and the manholes shall be measured. No correction factor shall be used for manholes since they are to be water-tight. (See Section 208)

SECTION 211.3 - TELEVISING STORM SEWER LINES:

The developer or owner who installs (or causes to be installed) a new storm sewer system that will become the property of the Village, will furnish the Village, with a bond to cover the cost of a closed-circuit television inspection prior to the issuance of a construction permit, or if the sewer is part of a new subdivision, prior to the approval of the final plat of subdivision.

The Director of Community Development shall require that prior to final acceptance of any newly installed storm sewer and approximately one month after the installation of the sewer, the owner or the developer shall cause to be made an inspection by closed-circuit television of the sewer system. Televising shall show that the sewer system has been constructed in accordance with the approved plans and specifications, that the sewer system is free and clear of all accumulations of foreign substances and debris so as to prevent clogging, and that there are no structural defects.

If, as determined by the Director of Community Development, the storm sewers are large enough for a visual inspection to be made, (in lieu of an inspection by closed-circuit television) a visual inspection may be made and a report of such inspection submitted to the Village.

Prior to televising the sewer, the owner or developer shall, at his own expense, clean the sewer line with a jet-rodder or other equipment approved by the Director of Community Development.

Upon completion of such inspection, and upon receipt of a written report of such inspection, together with a VHS format videotape of the actual inspection, and, if satisfied that such sewer is free and clear of all foreign substance, and free of all structural defects, the Director of Community Development is authorized to recommend to the President and Board of Trustees approval of the storm sewer. All inspection records and videotapes shall remain the property of the Village.

If, in the event the owner or developer fails to perform the inspection within thirty (30) days of receipt of a written request from the Village, the Village shall cause such inspection to be made and shall recover the cost of the inspection from the bond.

SECTION 211.4 - TEST RESULTS:

The decision of the Director of Community Development shall be final in determining the test results. If the storm sewer installation fails to meet the specified test requirements, the contractor shall determine the cause (or causes) of the defect and shall, at his own expense, repair or replace all materials and workmanship as may be necessary to comply with the test requirements before the termination of the guarantee period. No reduction in the amount of monies held in contingency shall be permitted until this is completed.

SECTION 212 - CERTIFICATION:

It shall be the contractor's responsibility to secure certification from the pipe manufacturer that the pipe and joint materials furnished are capable of meeting the infiltration test, the exfiltration test, and are manufactured in conformance with the ASTM or ANSI specifications.

SECTION 213 - SUMP PUMP DISCHARGE:

A storm sewer stub for the connection of a sump pump shall be provided to each residential lot adjacent to a storm sewer being installed. The stub shall extend a minimum of four (4) feet onto the property, and shall be constructed of four (4) inch SDR 26 PVC pipe. A storm sewer stub shall be terminated with a manufactured plug, and the location marked by placing a two (2) inch x four (4) inch board at the end of each stub before backfilling. The board shall extend three (3) feet above the ground surface, with the upper part painted green.

Sump pumps shall discharge into a storm sewer, or onto the ground of the rear yard, at a distance not to exceed five (5) feet from the foundation wall. Discharge to the front yard shall be permitted only when topography or other conditions render rear yard discharge impractical. In those cases, the Director of Community Development shall determine where the discharge will be directed. Discharge shall not be permitted into the side yard unless it is directed by proper grading and will not create a drainage problem on the adjacent lot.

Discharge from a sump pump shall not be permitted on public right-of-way such as sidewalks, parkways, and street gutters.

SECTION 213.1 - OWNER INSTALLED SUMP PUMP CONNECTION:

Whenever a storm sewer stub for a sump pump connection has not been provided, the owner of the property may connect to the Village storm sewer system upon approval of the Director of Community Development. The owner shall assume full responsibility and liability for any and all damage to utilities during installation.

Connection to a storm sewer structure shall be though a machine cored hole. Where a storm sewer structure is not available, a neat hole shall be cut into the storm sewer pipe by using a "Shewer Tap" machine or similar, and properly installing a neoprene boot with stainless steel clamps.

Underground connections shall be constructed of four (4) inch SDR 26 PVC pipe. An air gap shall be provided between the sump pump discharge from the house, and the underground connection.

SECTION 214 - "AS-BUILT" DRAWINGS:

Upon completion of construction, "As-Built" or "Record" drawings (drawn in ink on mylar) shall be prepared by the owner or developer. The drawings shall show the exact locations of all storm sewer mains, including the length, size, and type of each pipe run, manholes, catch basins, and inlets, including the top of frame and invert elevations, and other similar facilities. Sump pump stubs shall be shown with their location, size of pipe, type of pipe, and invert elevation. The drawings shall show the location, size of pipe, type of pipe, and invert elevation of any field tile encountered on the project. Final payment to the contractor shall be held until the as-built records are received by the engineer. If the contractor fails to properly locate any of the above information, the contractor shall be responsible for all costs which are incurred as a result of inadequate information. These drawings shall be submitted to, and approved by, the Director of Community Development prior to the acceptance of the storm sewer system by the President and the Board of Trustees.

SECTION 215 - PIPE UNDERDRAIN:

Where sub-surface drainage is desired, a pipe underdrain may be used. Underdrains shall be constructed using a minimum sized pipe of four (4) inches in diameter. The pipe shall be perforated, SDR 26 pipe, encased in a filter fabric envelope.

A trench shall be excavated to the required dimensions and grade shown on the plans. The trench bottom shall be compacted to the satisfaction of the inspector prior to the installation of the filter fabric. Filter fabric shall be delivered to the job site in such a manner as to facilitate installation without damaging the fabric. In no case shall filter fabric be stored, or exposed to sunlight, that will diminish its strength or toughness. Damaged fabric shall not be used. Filter fabric shall be loosely rolled out so the center of the fabric is at the centerline of the excavation, and will not tear when the aggregate is placed. When more than one (1) section of filter fabric is used, the filter fabric shall be overlapped a minimum of two (2) feet.

A minimum two (2) inch layer of three quarter (¾) inch washed river gravel shall be placed in the bottom of the trench as bedding material. The pipe underdrain shall be firmly embedded in the bedding material. Pipe underdrains shall be laid at a minimum of one (1) percent slope, with the perforations toward the bottom. The lowest invert elevation of an underdrain system shall be at, or above, the spring line of the outfall pipe at the storm structure where the system is connected. To prevent the entry of granular material into the pipe, open joints shall not be allowed, and the pipe shall be terminated with an end cap. After the pipe installation has been inspected, the trench shall be backfilled with three quarter (¾) inch washed river gravel to a minimum height of six (6) inches over the top of the pipe underdrain. Enough fabric shall remain uncovered after the pipe has been backfilled to provide for a fabric overlap at the top of twelve (12) inches. The remaining trench shall then be backfilled with a minimum of six (6) inches of topsoil and sod, or a minimum of six (6) inches of washed crushed stone, meeting an IDOT gradation of CA-1.

No equipment shall be operated upon the completed pipe underdrain system to avoid damaging the pipe.

SECTION 300

SANITARY SEWER SYSTEM

STANDARD SPECIFICATIONS FOR SANITARY SEWER CONSTRUCTION

SECTION 300 - GENERAL:

The standards and requirements found in this section are for materials and construction of sanitary sewers within the Village of Addison.

SECTION 300.1 - SPECIFICATIONS:

These specifications cover the installation of sanitary sewers, service connections, sewer fittings, manholes, and all appurtenances normally used for the construction of a sanitary sewer collection system. Sanitary sewers shall be installed in accordance with the latest edition of the Standard Specifications for Water and Sewer Main Construction in Illinois, IDOT Standard Specifications for Road and Bridge Construction, and applicable ordinances of the Village of Addison. In case of a conflict, the Village of Addison's Standard Specifications for Sanitary Sewer Construction and other applicable ordinances of the Village of Addison shall take precedence and shall govern.

SECTION 300.2 - REGULATIONS AND PERMITS:

Additional regulations and requirements governing the construction of sanitary sewers in the Village of Addison are:

A. Any restrictions, policies, and instructions that may be adopted or issued from time to time by the Village of Addison.

B. All sanitary sewer extensions shall be designed in accordance with the requirements of the Illinois Environmental Protection Agency. No construction of a sanitary sewer shall be performed unless a permit has been issued from said agency.

C. No unauthorized person shall uncover, make any connections with or openings into, use, alter, or disturb any public sewer or appurtenance thereof without first obtaining a written permit from the Village of Addison.

D. All work shall be available for inspection by the Village of Addison at all times.

SECTION 300.3 - STATEMENT OF POLICY:

It is the policy of the Village of Addison to control the use, and possible misuse, of the Village's sanitary sewer system. Only sanitary sewage consisting of domestic, industrial, and other water-borne wastes shall be collected and conveyed in the sanitary sewer pipe system. Sump pumps shall not be connected to any sanitary sewer line. No sanitary sewage shall be allowed to enter any storm sewer system or discharged onto the ground or into a receiving stream without first being given the degree of treatment necessary to be in compliance with the conditions set forth in the "National Pollution Discharge Elimination System" criteria.

SECTION 300.4 - GENERAL DESIGN REQUIREMENTS

Sanitary sewer mains, including service stubs, shall be constructed throughout the entire subdivision in such a manner as to adequately serve each lot or tract of land within the subdivision.

All new sanitary sewer systems (where applicable) shall be considered an extension of the Village's sanitary sewer system, and shall be designed to service the entire area tributary to the system, allowing for the future extension of the Village's sanitary sewer system into adjacent areas.

Sanitary sewers shall be designed so that a uniform slope is maintained between structures. Sufficient slope to provide a minimum self-cleaning velocity of not less than two (2) feet per second when the pipe is flowing full, shall be maintained.

The following are the minimum and maximum velocities of two (2) feet per second and fifteen (15) feet per second respectively, based on Manning's formula using an "n" value of 0.013.

Sewer Size (Inches)	Minimum Slope (Percent)	Maximum Slope (Percent)
8	0.40	22.0
10	0.28	15.0
12	0.22	11.0
15	0.15	8.3
18	0.12	6.5
21	0.10	5.1
24	0.08	4.2

SECTION 301 - PIPE MATERIALS:

All sanitary sewer pipe and sanitary sewer service lines shall conform to the latest applicable ASTM, ANSI, AWWA, or other nationally accepted standards. Only the following sanitary sewer pipe and joint materials are approved for use in the Village of Addison:

A. Polyvinyl chloride (PVC) SDR-26 sewer pipe six (6) inch to fifteen (15) in diameter per ASTM D-3034, with Elastomeric Seal Joints per ASTM D-3212, or SDR-26PR sewer pipe per ASTM D-2241, with Elastomeric Seal Joints per ASTM D-3139.

B. Extra strength vitrified clay pipe (ESVCP) twenty four (24) and smaller diameter per ASTM C-7000, joint per ASTM C-425, plain end vitrified clay pipe shall have a PVC bell and joint conforming to ASTM C-594.

C. Reinforced concrete pipe (RCP) twenty seven (27) and larger in diameter, pipe conforming to ASTM C-76, Table III, Class III, wall thickness B, rubber "O" ring gasket joints per ASTM C-361 or rubber gasket joints per ASTM C-443.

D. Ductile iron pipe (DIP) conforming to ANSI A21.51 (AWWA C-151), thickness Class 52 per ANSI A21.50 (AWWA C-150), bituminous seal coated and cement lined per ANSI A21.4 (AWWA C-104), with mechanical or rubber gasket push-on joints "Bell-Tite" or equal per ANSI A21.11 (AWWA C111 and AWWA C600.

E. Alternate pipe materials and jacking pipe shall be individually approved by the Director of Community Development before starting the work.

All pipe shall be suitable for use as a gravity sewer conduit.

Provisions shall be made for the contraction and expansion of each joint through the use of a rubber gasket. All fittings and accessories shall be manufactured and furnished by the pipe supplier and have a bell and / or spigot configuration identical to that of the pipe, or approved equal.

When ductile iron pipe is used, it shall be encased in polyethylene liners in accordance with the manufacturer's requirements unless it is determined by a competent soils laboratory that each type of soil encountered in the sanitary sewer installation is not corrosive to ductile iron pipe. Polyethylene liners shall be Class C (black) ANSI/AWWA C-105-77.

SECTION 301.1 - MINIMUM SIZE:

Minimum size of any public sanitary sewer shall be eight (8) inches in diameter.

SECTION 301.2 - CONNECTION OF DISSIMILAR PIPES:

When joining sanitary sewer pipe of dissimilar material, a "mission band" or similar coupling shall be used. Where a suitable coupling is not available, the Director of Community Development may approve a joint fully encased in concrete. A concrete collar shall extend a minimum of two (2) feet on either side of the joint being made, and shall consist of a minimum of eight (8) inch thick concrete.

When replacing a sanitary sewer over a utility trench, the sanitary sewer shall be replaced with one (1) length of ductile iron or polyvinyl chloride SDR-26 pipe of the same inside diameter as the existing sewer. The joint shall be made on a solid shelf cut a minimum of three (3) feet beyond the trench wall. Four (4) inch x four (4) inch oak timbers equally spaced around the pipe shall extend a minimum of two (2) feet beyond the trench wall. The timbers shall be banded to the pipe with four (4) steel bands equally spaced along the length of the pipe.

SECTION 302 - PROTECTION OF THE WATER DISTRIBUTION SYSTEM:

Whenever a water main and sanitary sewer cross, pipe elevations shall be shown on the plan sheet. (See Section 402)

SECTION 303 - CONSTRUCTION AND SURVEY STAKES:

(See Section 1211)

SECTION 304 - QUALITY OF MATERIALS:

It is the intent of this specification that only first-class materials shall be used throughout the project and that they shall be incorporated in such a manner as to produce a completed job that is workmanlike and acceptable in every detail.

SECTION 304.1 - DEFECTIVE MATERIALS:

All materials not conforming to the requirements of these specifications shall be considered as defective and shall be removed from the project. If in place, they shall be removed by the contractor at his expense and replaced with acceptable materials. No defective material shall be used. The contractor shall carefully inspect all materials and reject any material with detectable defects before installation. The Village reserves the right to make such an inspection and to order the rejection of any materials which have detectable defects. The Village will observe the work as it progresses and may reject any material or workmanship which is determined to be defective or carelessly performed. However, primary responsibility for the quality of the work and performance of the system remains with the contractor.

SECTION 304.2 - HANDLING OF PIPE:

Sanitary sewer pipe shall be handled in a manner that will prevent damage to the pipe. Methods of construction which may damage the sewer pipe shall be corrected when called to the attention of the contractor.

SECTION 305 - TRENCH EXCAVATION:

All trenches shall be excavated to a minimum depth of four (4) inches below the bottom of the pipe barrel.

Whenever a sanitary sewer excavation crosses any other underground utility, that utility shall be left undisturbed and in place, unless removal or replacement has been provided for.

SECTION 305.1 - STOCKPILING EXCAVATED MATERIAL:

Excavated material shall not be placed on pavement or sidewalks, except on the authorization of the Director of Community Development, and then only when adequate provisions have been made for the temporary passage of pedestrians and vehicles. Gutters shall be kept open or other satisfactory provisions shall be made for street drainage.

Excavated material shall not be stockpiled in any manner that will damage the work or obstruct natural water courses.

SECTION 305.2 - TRENCH WIDTH:

The ground shall be excavated in open trenches of sufficient width and depth to provide ample room within the limits of the excavation for the proper construction of the sanitary sewer, sanitary service, and all appurtenances shown on the plans.

The maximum trench width at and below the top of the pipe shall not exceed the following widths:

A. For trenches five (5) feet or less in depth, the maximum width shall be equal to: nine (9) inches plus the outside diameter of the pipe plus nine (9) inches.

B. For trenches greater than five (5) feet in depth, the maximum width shall be equal to: eighteen (18) inches plus the outside diameter of the pipe plus eighteen (18) inches.

If these trench widths are exceeded without the written permission of the Director of Community Development, the contractor shall, at his own expense, install a stronger class of pipe than originally specified to the satisfaction of the Director of Community Development.

SECTION 305.3 - USE OF TRENCH SUPPORTS (TRENCH BOX):

Trench supports shall be used as required by the rules and regulations of OSHA. Any trench five (5) feet or more in depth shall require trench supports.

When using a movable trench support, care shall be exercised so as not to disturb the pipe. Trench supports should ride on a shelf above the top of the pipe, with the pipe installed in a narrow, vertical-wall subditch (step trench).

Trench supports below the top of the pipe shall not be used except when approved by the Director of Community Development.

SECTION 305.4 - TRENCHES WITH SLOPING SIDES:

The contractor may, at his option, where working conditions and the right-of-way permit (as determined by the Director of Community Development), excavate the sanitary sewer pipe line trench with sloping sides, but with the following limitations:

A. In general, only trench supported and vertical trenches will be permitted in the traveled streets, alleys, or narrow easements.

B. Where trenches with sloping sides are permitted, the slopes shall not extend below the top of the pipe, and trench excavation below this point shall be made with vertical sides, and the width shall not exceed those specified for the various sizes of pipe.

SECTION 305.5 - OPEN EXCAVATIONS:

The excavation of the trench shall not advance more than fifty (50) feet ahead of the completed work and in no way shall more trench be opened than can be completely backfilled by the end of the work day. If during the progress of work, it becomes necessary to keep the trench open overnight, this shall be done only with the approval of the Director of Community Development. Care shall be taken to fence off the open excavation in a manner satisfactory to the Director of Community Development to

prevent anyone from entering the excavation. Where a utility crosses ~~a~~ an existing street, see Section 1205 - Open Cutting A Municipal Street, and Section 1209 - Casing Pipe.

Streets, sidewalks, parkways, and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the Director of Community Development.

SECTION 305.6 - DEWATERING TRENCH:

The contractor shall at his own expense do all pumping, well pointing, or other work necessary to keep the trench clear of ground water, sewage, or stormwater while the sanitary sewer pipe is being placed, and until the joint has been made.

All trench water pumped or drained from the trench shall be disposed of in a manner approved by the Director of Community Development without damage to adjacent property or to other work under construction. No sanitary sewer shall be used for disposal of trench water, unless specifically approved of by the Director of Community Development. No water containing settle able solids or raw sewage shall be discharged into the storm sewer system.

When connections are made to an active sanitary sewer, special care shall be taken so that no part of the work is built under water. A flume or dam shall be installed, and pumping maintained if necessary to keep the new work dry until completed. Water shall not be allowed to come in contact with any concrete or mortar until it has set for a minimum of twelve (12) hours.

SECTION 305.7 - OVER-EXCAVATION:

In cases where the excavation has been made deeper than necessary or where a firm foundation is not encountered at the grade established in the plans, the contractor shall replace the material removed with crushed stone refill.

Crushed stone refill shall be used up to six (6) inches below the bottom of the pipe and overlain with pipe bedding material per Section 305.8. Crushed stone refill shall be compacted to ninety five (95%) percent of modified proctor density. Crushed stone refill shall meet IDOT Specifications for CA-1 (crushed limestone).

SECTION 305.8 - PIPE BEDDING:

Granular pipe bedding material shall be required on all sanitary sewer lines installed in the Village of Addison. Granular pipe bedding shall be a minimum of four (4) inches deep in earth excavation and a minimum of 6 inches deep in rock excavation. The pipe bedding shall be placed so that the entire length of pipe will have full bearing. No blocking of any kind shall be used to adjust the pipe to grade. When pipes having a bell or hub are used, cross trenches of sufficient depth and not more than 2 inches wider than the bell or hub shall be excavated to provide uniform bearing.

Granular pipe bedding material shall meet IDOT specifications as follows:

A. CA-11 (crushed limestone) for polyvinyl chloride pipe.

B. CA-11 (crushed limestone) for vitrified clay pipe.

C. CA-6 (crushed limestone) for reinforced concrete pipe.

D. FA-6 (sand) for ductile iron pipe.

E. FA-6 may be used in place of CA-11 or CA-6.

SECTION 306 - LAYING OF PIPE:

Sanitary sewer pipe shall be laid only after the trench has been dewatered and the bedding material has been properly prepared. Dirt or other foreign material shall be prevented from entering the pipe or pipe joint during handling or laying operations. Any pipe or joint that has been installed with dirt or foreign material in it shall be removed, cleaned, and re-laid. At times when pipe laying is not in progress, the open end of the pipe shall be closed with a water tight plug or by other means approved by the Director of Community Development to ensure absolute cleanliness inside the pipe.

The sewer contractor shall utilize a laser for all sanitary sewer lines that will become the property of the Village, except for those specific locations waived by the Director of Community Development. In those locations where the laser is not used, each pipe shall be checked for line and grade by the contractor.

The sewer pipe, unless otherwise approved by the Director of Community Development, shall be laid upgrade from the point of connection on the existing sewer, manhole, or from a designated starting point. The sewer pipe shall be installed with the bell end forward (upgrade), unless approved otherwise.

Pipes shall be laid as follows:

A. Vitrified clay pipe per ASTM C-12.

B. Polyvinyl chloride pipe per ASTM D-2321.

C. All other pipe shall be installed in accordance with the applicable specifications.

All laid pipe shall be held in position to maintain alignment and a tight joint until sufficient haunching material has been placed to hold the pipe. (See Section 306.3)

SECTION 306.1 - LAYING OF PIPE ON CURVES:

The curvature of sanitary sewer lines is not allowed unless, in the opinion of the Director of Community Development, special circumstances dictate otherwise. Pipe required to be laid on curved alignment shall be joined in straight alignment and then deflected, joint

by joint. Special care shall be taken in blocking the pipe just previously laid by shovel-slicing haunching material around the pipe to prevent misalignment. In no case shall the degree of deflection exceed two thirds (⅔) of the manufacturer's recommendations for the respective pipe size, material, and barrel length.

SECTION 306.2 - DEPTH OF PIPE:

All pipe shall be laid to a minimum depth of four (4) feet as measured from the existing or proposed ground surface to the top of the pipe barrel, to protect the sewer line from freezing.

SECTION 306.3 - HAUNCHING OF PIPE:

Granular material shall be placed and compacted by shovel-slicing under the pipe haunch to provide adequate side support to the sanitary sewer pipe while avoiding both vertical and horizontal movement. The same material used for bedding shall be used for haunching. (See Section 305.8)

Shovel-slicing of the granular haunching material shall take place when the material is no higher than the one quarter (¼) point of the pipe. The remainder of the haunching material can then be placed to the spring line of the pipe and mechanically compacted.

SECTION 306.4 - INITIAL BACKFILL:

Granular material shall be placed and compacted in all sanitary trenches to an elevation of one (1) foot over the top of the pipe. Initial backfilling shall not start until the sanitary sewer pipe, sanitary sewer service, or any appurtenances have been inspected and approved. Where initial backfilling has taken place prior to being inspected and approved, the contractor shall uncover the work for inspection. The cost for this work shall be borne by the contractor. Initial backfill material shall be the same material used for bedding (See Section 305.8) and shall be compacted with vibratory equipment to ninety five (95%) percent of Modified Proctor density.

SECTION 306.5 - TRENCH BACKFILL:

Unless otherwise directed, all trenches and excavations shall be backfilled as soon as the initial backfilling has been completed.

A. GRANULAR TRENCH BACKFILL: All trenches caused by the construction of sanitary sewers, sanitary sewer services, or appurtenances which fall beneath or within two (2) feet of the outer edge of existing or proposed pavement, curb and gutter, sidewalks, paved or unpaved driveways, shall be backfilled with granular trench backfill to the elevation of the finished subgrade.

Granular trench backfill shall be placed to two (2) feet outside of the existing or proposed pavement, curb and gutter, sidewalk, paved or unpaved driveways, and then sloped at a forty five (45) degree angle down to the top of the initial trench backfill.

Granular trench backfill shall be free of frozen lumps and foreign material that may have become mixed with it during handling.

Granular trench backfill shall meet IDOT specifications for CA-6. (crushed limestone), or FA-6 (Sand).

B. EXCAVATED TRENCH BACKFILL: Where granular trench backfill is not required, selected materials originally excavated from the trench may be used. The backfill material shall not contain tree limbs, stumps, boulders, frozen clumps of dirt, or rubble of any kind.

Where there is a deficiency of suitable backfill material due to a rejection of part or all of the excavated material as unsatisfactory for backfill purposes as directed by the Director of Community Development, the contractor shall furnish sufficient satisfactory material to complete the backfilling.

All rejected or surplus excavated material which is not used for backfilling shall be removed from the site.

Any settlement of the backfill shall be remedied by the contractor for a period of one (1) year after final acceptance of the subdivision upon receipt of a written notice from the Director of Community Development.

SECTION 306.6 - BACKFILL COMPACTION:

Initial backfill material shall be carefully deposited in uniform layers not exceeding eight (8) inches thick (loose measure) to a height of twelve (12) inches above the pipe. The material in each layer shall be firmly compacted by mechanical methods approved by the Director of Community Development in such a manner as to not disturb or damage the pipe.

All trenches shall have the remaining backfill (above the initial backfill) compacted by either water jetting or mechanical methods, except that water jetting will not be allowed where granular trench backfill is used.

A. MECHANICAL METHOD: Backfill material shall be deposited in uniform layers not exceeding twelve (12) inches thick (loose measure), and each layer shall be compacted by mechanical methods approved by the Director of Community Development. Granular trench backfill shall be compacted to ninety five (95%) percent of Modified Proctor density.

B. WATER JETTING: The trench shall be backfilled with loose material and settlement secured by introducing water through holes jetted into the backfill to a point approximately one (1) foot above the top of the pipe as set forth in Section 20-2.21D(2), Jet holes of Standard Specifications for Water and Sewer Main Construction in Illinois, and in Article 603.08, Method 3 of IDOT Standard Specifications for Road and Bridge Construction.

NOTE: Water for jetting shall not be taken from any fire hydrant within the municipal limits of the Village of Addison.

It shall be the contractor's responsibility to provide to the Village of Addison compaction reports on all granular trench backfilled areas.

SECTION 307 - SANITARY SEWER SERVICES:

A sanitary sewer service shall be installed to serve each adjoining lot, tract of land, or building site. Such services shall be located at the approximate center of each lot and at right angles to the right-of-way. Sanitary sewer services shall be installed at the time of the sanitary sewer installation, and shall extend five (5) feet beyond the property line. A sanitary sewer service shall be terminated with a manufactured plug and the location marked by placing a two (2) inch x four (4) inch x ten (10) foot board at the end of each service before backfilling. The board shall extend three (3) feet above the ground surface, with the upper two (2) feet painted green.

Sanitary sewer services shall be a minimum of six (6) inches in diameter and shall be installed with a minimum grade of one (1) percent or one eighth (⅛) inch per foot.

Sanitary sewer services shall be connected to the Village sanitary sewer main with a manufactured wye or tee branch. The wye shall have an angle of forty five (45) degrees, and the tee an angle of ninety (90) degrees. Connection into a manhole shall be with the Director of Community Development's approval only. If there is no wye or tee branch available, the owner or developer shall, at his expense, install a wye or tee branch at the location specified by the Director of Community Development. One of the following methods shall be used:

A. Where the public sewer is greater than ten (10) inches in diameter, a neat hole may be cut into the public sewer by using a "Shewer Tap" machine or similar, and properly installing a hub saddle.

B. For any size public sewer, the desired length of pipe may be neatly and accurately cut out for the insertion of a wye or tee branch, using a "mission band" or similar coupling to hold it firmly in place.

The hub saddle, wye, or tee branch shall be the same size as the sanitary sewer service, and shall be installed so that entry will be in the downstream direction and that the invert of the service at the point of connection shall be at the same or at a higher elevation than the invert of the sanitary sewer main. In no instance shall any connection to the sanitary sewer main restrict, obstruct, diminish, or otherwise interfere with the flow in the sewer.

Connections to the sanitary sewer main shall be made in the presence of the Director of Community Development, Inspector, or approved representative, and be approved before backfilling. In the event this is not done, the contractor shall uncover the connection so that a proper inspection can be made.

Bedding, haunching, initial backfill, and trench backfill for sanitary sewer services shall be the same as the main line, and shall be compacted to prevent the settlement of the service trench. Any settlement of the backfill shall be remedied by the contractor for a period of one (1) year after final acceptance of the subdivision upon receipt of a written notice from the Director of Community Development.

SECTION 307.1 - RISERS:

Risers shall be required where sanitary sewer mains are ten (10) feet or more in depth and shall be constructed with a wye or tee and riser, to within eight (8) feet of finished grade. The riser connection shall be backfilled with granular trench backfill or encased in concrete to the satisfaction of the Director of Community Development.

Extreme care shall be taken in backfilling around risers.

SECTION 307.2 - SEPARATION OF SERVICES:

A sanitary sewer service should be located at least ten (10) feet horizontally from a any water service, and should be separated by undisturbed or compacted earth.

A sanitary sewer service may be located closer than ten (10) feet to a water service when:

A. The bottom of the water service pipe is a minimum of eighteen (18) inches above the top of the sanitary sewer service at its highest point; and

B. The water service is placed on a solid shelf, excavated to one side of the sanitary sewer service.

When it is impossible to meet any of the conditions listed above, the sanitary sewer service shall be constructed of ductile iron pipe or polyvinyl chloride pressure rated pipe with push-on joints, equivalent to watermain quality pipe.

SECTION 307.3 - AS-BUILT RECORDS:

The contractor shall record the location of each sanitary sewer service that they install. Wyes, or tees shall be located by measurement to the nearest down stream sanitary sewer manhole. The ends of all sanitary services shall be located by measurement to the right-of-way, to a side yard property line, and the invert elevation given.

This information shall be given to the developer's engineer so that at the completion of the project, accurate as-built drawings can be prepared. Final payment to the contractor shall be held until the as-built records are received by the engineer. If the contractor fails to properly locate on the as-built records any sanitary sewer service, the contractor shall be responsible for all costs which are incurred as a result of inadequate information.

SECTION 308 - SANITARY SEWER MANHOLES:

Manholes for sanitary sewers shall have a minimum inside diameter of four (4) feet. Manholes shall be constructed of reinforced precast concrete units with a monolithic concrete bottom cast integrally with the barrel and containing a flow channel. Manhole

cones shall be eccentric in design. Where conditions do not permit the use of an eccentric cone, a restricted depth top (also known as a flat slab top) may be used. Precast manholes shall conform to ASTM C-478. A minimum of eight (8) inches shall be maintained between the edges of the pipes entering the structure. Larger diameter manholes may be required by the Director of Community Development.

Field conditions may require a cast-in-place Portland cement concrete manhole. These will be evaluated and approved on a case by case basis, at the sole discretion of the Director of Community Development.

All sanitary sewer manholes shall be water-tight, to prevent inflow or infiltration of storm or ground water into the sanitary sewer system.

SECTION 308.1 - DROP MANHOLES:

Drop manholes shall be constructed where the invert elevation of the incoming sewer is more than twenty four (24) inches above the invert of the manhole. Drop manholes shall be constructed with an external drop. Manhole sections shall be precast reinforced concrete, which consist of monolithic sections that include the drop pipes and the concrete that surrounds the drop pipes. Drop manhole sections shall meet the requirements of the latest edition of ASTM C-478. Joints between sections shall meet the requirements of ASTM C-443. All other requirements of a sanitary sewer manhole shall be satisfied.

Any existing sanitary sewer manhole, that is to be converted to a drop manhole, shall be provided with an external drop, encased in a minimum of six (6) inches of concrete on all sides. In special conditions, with approval of the IEPA, and the Director of Community Development, an internal drop may be constructed in an existing four (4) foot diameter manhole. Where an existing sanitary sewer manhole is five (5) feet in diameter, an internal drop may be permitted with the approval of the Director of Community Development. Internal drop connections shall be attached to the manhole wall with stainless steel bands and anchors, spaced approximately thirty (30) inches on center. When an internal drop interferes with access into a manhole, the cone shall be repositioned, and new steps installed.

SECTION 308.2 - FLOW CHANNEL:

Each manhole shall contain a flow channel. The flow channel shall conform in shape and slope to that of the pipe. A bench shall be provided on each side of the flow channel. The bench shall have a maximum slope of two (2) inches per foot.

SECTION 308.3 - MANHOLE LOCATION:

Manholes shall be spaced not more than three hundred (300) feet apart. Additional manholes may be required by the Director of Community Development. Manholes shall be required at changes in sewer direction, size, slope, and at sewer junctions.

SECTION 308.4 - MANHOLE BEDDING:

Granular bedding material shall be required for all sanitary sewer manholes installed in the Village of Addison. Granular bedding shall be a minimum of three (3) inches in thickness and shall extend to the limits of the excavation. Manhole bedding shall be firmly tamped, made smooth and level to assure uniform contact and support for the base.

Granular manhole bedding material shall meet IDOT specifications for CA-6 (crushed limestone) or FA-6 (sand).

SECTION 308.5 - PIPE CONNECTIONS:

Openings through which pipes enter the manhole shall be provided with flexible water-tight rubber gasketed couplings precast into the base of the manhole. After the pipe has been secured to the structure, the joint between the rubber gasket and the structure shall be grouted with a non-shrink or hydraulic grout and smoothed both inside and out. Those areas grouted shall then be covered with a bituminous water proofing compound, both inside and out. Connections shall conform to the requirements of ASTM C-923.

SECTION 308.6 - PRECAST MANHOLE COMPONENTS:

Cones and sections shall be of sound construction and free from gravel pockets, fractures, large or deep cracks, and surface roughness. Sanitary manhole cones shall be eccentric in design. Joints shall be of the tongue and groove type. Precast sections shall be placed and aligned to provide vertical sides and vertical alignment of the manhole steps.

Bituminous material shall be used to securely seal the joints between precast sections. Surfaces may be set in full bituminous mastic beds or two (2) rows of resilient, flexible, non-hardening, pre-formed, bituminous mastic material (Ramnek or approved equal). Pre-cast mortar plugs shall not be used to plug lifting holes in sanitary sewer structures. All lifting holes and joints shall be thoroughly wetted and then completely filled with a non-shrink or hydraulic grout and smoothed both inside and out. The grouted area shall then be covered with a bituminous water proofing compound on the outside only.

SECTION 308.7 - MANHOLE FRAMES AND LIDS:

Each sanitary sewer manhole shall be furnished with a Type 1 frame and a Type "B" lid design, the word "Sanitary" shall be imprinted in the lid and shall meet the following Village of Addison requirements:

A. Standard frame and lid for use in paved areas, curb and gutter, or driveways shall be of cast iron, heavy duty construction, and equivalent to Neenah R-1031 or Neenah R-1712-B.

   Additionally, the lid shall be self-sealing and have concealed pick-holes to prevent the inflow of surface water into the manhole.

B. Standard frame and lid for use in parkways and other non-paved areas shall be of cast iron, medium duty construction, and equivalent to Neenah R-1060 or Neenah R-1700.

Approximately twenty five (25%) percent of the lids used in parkways and other non-paved areas shall contain a one (1) inch small type pick-hole. These lids shall be installed in areas that will not be subject to flooding. The locations of these lids shall be subject to the approval of the Director of Community Development.

The remaining lids shall be self-sealing and have concealed pick-holes.

C. For those locations that will be subjected to prolonged standing water (locations shall be subject to the approval of the Director of Community Development) the Director of Community Development shall require the use of a water-tight frame and lid. They shall be of heavy duty construction, and equivalent to Neenah R-1755-B or Neenah R-1916-E.

SECTION 308.8 - MANHOLE STEPS:

Manhole steps shall be furnished and installed in all sanitary sewer manholes. Manhole steps shall be polypropylene coated steel reinforcing rods with load and pullout ratings conforming to OSHA requirements. The first step shall be located eight (8) inches below the top of the structure, with the remaining steps sixteen (16) inches on centers. The bottom step shall not be located more than two (2) feet above the bottom of the structure. The line of steps shall be placed on the side of the structure which is clear of openings.

SECTION 308.9 - EXCAVATION AND BACKFILL OF MANHOLES:

Any excavation for a manhole shall be made a minimum of one (1) foot greater than the diameter of the structure in order to permit proper patching and compaction of the backfill material. Excavations shall be undercut to provide for three (3) inches of granular bedding. (See Section 308.4)

Backfilling shall not begin until the exterior of the manhole has been inspected and approved. The space between the sides of the excavation and the outer surface of the manhole shall be completely backfilled with granular trench backfill if the edge of excavation is within two (2) feet of the outer edge of existing or proposed pavement, curb and gutter, sidewalks, paved or unpaved drives.

If the excavation falls beyond these limits, then excavated trench backfill material may be used, provided that it meets with the approval of the Director of Community Development. (See Section 306.5)

SECTION 308.10 - MANHOLE FRAME ADJUSTMENT:

All new and existing sanitary sewer manholes on the site or in the area disturbed by the construction shall be adjusted to finished grade prior to final inspection of the work. Adjustments shall be made using precast, reinforced concrete adjusting rings. No more

than two (2) adjusting rings shall be installed on a given manhole; however, no more than one (1) of these rings shall be two (2) inches in thickness. Adjusting rings shall be placed with the thickest ring on the bottom. In no case shall more than twelve (12) inches of adjusting rings be permitted. If the total thickness of all adjustments exceeds twelve (12) inches, then adjustments shall be made by interchanging and or adding / removing complete barrel sections to achieve the desired elevations.

Bituminous material shall be used at all joints to securely seal the concrete adjusting rings and frame to the manhole. Surfaces may be set in full bituminous mastic beds or two (2) rows of resilient, flexible, non-hardening, pre-formed, bituminous mastic material (Ramnek or approved equal). This mastic shall be applied in such a manner that no surface or ground water can enter the manhole through the joints.

Also see Section 1201 (Frame and Grate Adjustment) for structures located in the curb and gutter or paved areas.

SECTION 308.11 - MANHOLE CHIMNEY SEALS:

All new, and any existing manholes requiring adjustment or reconstruction shall be required to have an external or internal chimney seal (Cretex or approved equal). This seal shall be an elastomeric band a minimum of ten (10) inches in width and extending a minimum of four (4) inches below any adjusting rings. The chimney seal shall be clamped onto the manhole frame and cone.

SECTION 308.12 – ADJUSTMENT AND INSPECTION OF MANHOLES:

Any existing sanitary structure that is incorporated into the project by adjustment or new connections, shall be upgraded to meet Village Standards as if it were a new structure. This may require patching, pouring a bench, adding or replacing a chimney seal (See Section 308.11) replacing concrete adjusting rings, replacing a frame or lid, adding or replacing steps, etc.

All manholes shall be thoroughly cleaned of dirt and debris and all visible leakage eliminated before final inspection and acceptance.

SECTION 308.13 - INTERCEPTOR DEVICES:

An interceptor device shall be installed to separate and retain any undesirable matter from normal waste, and to permit the normal sewage or liquid waste to discharge into the sanitary sewer system. Interceptor devices shall be installed when, in the opinion of the Director of Community Development and the Director of Environmental Services, they are necessary for the proper handling of liquid wastes. However, at no time shall any substance that may cause a fire, explosion, or may cause injury to a person or damage the sanitary sewer system, be allowed to enter the sanitary sewer system. Interceptor devices shall not be required for private living quarters or dwelling units. All interceptor devices shall be of a type and capacity approved by the Director of Community Development. Interceptor devices shall be located so that they are readily and easily accessible for cleaning and inspection.

Interceptor devices shall be constructed of impervious materials capable of withstanding abrupt and extreme changes in temperature. They shall be of substantial construction and shall be provided with a heavy metal cover, which, when bolted into place, shall be gas and water tight, equivalent to Neenah R-1757-E.

Bedding for the interceptor device shall be as per Section 308.4.

SECTION 308.14 - INSPECTION MANHOLES:

Inspection manholes (also known as control manholes or sampling chambers) shall be installed on all sanitary sewer services other than residential, to facilitate observation, sampling, and measurement of wastes. Inspection manholes shall be easily accessible and safely located. The facility shall be located so that it will not be obstructed by landscaping, parked vehicles, or other activities of the user. When a building contains more than one (1) unit, each unit shall have its own sanitary sewer service terminating in an inspection manhole. When an inspection manhole has only one (1) service entering it, the manhole shall have a minimum inside diameter of four (4) feet. Manholes having multiple connections shall have a minimum inside diameter of five (5) feet. A maximum of three (3) connections will be allowed in any inspection manhole. A depth of six (6) feet to eight (8) feet shall be maintained for all inspection manholes.

A preliminary flow device (Palmer-Bowlus parshall flume or equivalent) may be required on a case by case basis, as determined by the Director of Environmental Services, or his agent.

SECTION 309 - SANITARY SEWER LIFT STATIONS:

Sanitary sewer lift stations shall not be permitted unless specifically authorized by the Director of Community Development. When a sanitary sewer lift station is authorized, its design shall meet the approval of the Director of Community Development and the Director of Environmental Services. Sanitary sewer lift stations that will become the property of the Village of Addison shall meet the following minimum requirements:

A. The lift station shall be factory assembled with all equipment and components connected permanently within the modules. Dry well construction shall be of cathodically protected steel or fiberglass. Instrumentation shall include automatic and manual controls for pumps, high and low wet-well level alarms, flow metering and a telephone alarm dialer. The instrumentation control panel shall be located in the dry well. All the equipment shall be compatible with existing Village of Addison lift stations. Heating, ventilation, and dehumidification shall be provided. A sump pump shall be provided to drain the dry well.

B. Lift stations may also be designed using a wet-well and submersible pumps. All instrumentation shall then be located in the generator shed.

C. The lift station shall be provided with a stationary diesel or natural gas powered engine generator. The auxiliary power source and automatic transfer switch shall be of sufficient capacity to power the entire lift station including the concurrent

starting of all electric motors. The engine generator shall be housed in a generator shed of heavy duty, insulated fiberglass or exposed aggregate, and shall be provided with a muffler adequate to reduce engine noise levels to that compatible with a residential neighborhood. Generator sheds shall be provided with a sump pump. The floor of the shed shall pitch to the sump pump pit.

D. The wet well shall be constructed of reinforced concrete and shall have sufficient volume to prevent short-cycling of the pump and motor. The floor of the wet well shall be sloped toward the suction bell at a one to one (1:1) slope or greater to minimize deposition of solids. A sluice gate shall be provided to shut off sewage flow into the wet well.

E. Access openings or hatches shall be located to permit the removal of pumps, motors, and other equipment.

F. Force mains shall be cement lined ductile iron pipe, polyethylene encased, and shall be installed in accordance with all applicable provisions for Village of Addison water main construction.

Blow-offs and / or air valves may be required, depending upon the design of the force main. The force main discharge shall be designed to minimize turbulence in the receiving manhole by aligning the crowns of the force main and the receiving sewer and providing a smoothly sloped manhole invert between the inverts of the force main and the sanitary sewer.

SECTION 310 - SANITARY SEWER STREAM CROSSINGS:

SECTION 310.1 - ALIGNMENT:

Sanitary sewers crossing streams shall be designed to cross the stream as nearly perpendicular to the stream flow as possible and shall be designed without change in grade. Sewer systems shall be designed to minimize the number of stream crossings. Sewers located along streams shall be located outside of the stream bed and sufficiently removed there from to provide for future possible stream widening and to prevent pollution by siltation during construction.

SECTION 310.2 - STRUCTURES:

Sanitary sewer manholes shall be designed with water tight frames and lids. Sanitary sewer structures shall be located so they do not interfere with the free discharge of flood flows of the stream.

An inspection manhole shall be located on each side of the stream.

SECTION 310.3 - CONSTRUCTION REQUIREMENTS:

A. MATERIALS AND BACKFILL: Sewers entering or crossing streams shall be constructed of ductile iron pipe with mechanical joints, and be constructed so that they will remain watertight and free from changes in alignment and grade.

The backfill used in the trench shall be washed coarse aggregate, gravel, or other materials which will not cause siltation, pipe damage during placement or damage to the polyethylene liner around the ductile iron pipe.

B. SILTATION AND EROSION: Construction methods that will minimize siltation and erosion shall be employed. The design engineer shall include in the project specifications the methods to be employed in the construction of sewers in or near streams to provide adequate control of siltation and erosion, subject to approval of the Director of Community Development.

SECTION 310.4 - COVER DEPTH:

The top of all sewers entering or crossing streams shall be at a sufficient depth below the natural bottom of the stream bed to protect the sewer line. In general, the following cover requirements shall be met:

A. One (1) foot of cover is required where the sewer is located in rock.

B. Three (3) feet of cover is required in other material. In major streams more than three (3) feet of cover may be required.

C. In paved stream channels, the top of the sewer line shall be placed below the bottom of the channel pavement.

NOTE: Less cover will be approved only if the proposed sewer crossing will not interfere with future improvements to the channel.

SECTION 310.5 - AERIAL CROSSINGS:

A. STRUCTURAL SUPPORT: Supports for all joints shall be provided in pipes utilized in aerial crossings. The supports shall be designed to prevent frost heave, overturning and settlement.

B. FREEZE AND EXPANSION PROTECTION: Protection against freezing shall be provided. This may be accomplished through the use of insulation, increased slope, and expansion jointing between the aerial and buried sections of the sewer line.

SECTION 311 - INVERTED SIPHONS:

Shall not be used in Addison.

SECTION 312 - INSTALLATION OF PERMANENT MARKERS:

The developer or owner who installs or causes to be installed a new sanitary sewer that will become the property of the Village, shall cause permanent markers to be installed in the concrete curb identifying the points where the curb crosses the service trench.

The developer or owner shall require his curb contractor to embed permanent markers in the vertical or horizontal face of the curb at all crossing points before the concrete hardens. The markers shall be the letter "S" and shall measure at least three (3) inches in height. Materials may be metal, plastic or other material approved by the Director of Community Development.

If the service line is installed under an existing curb, it shall be the responsibility of the sewer contractor to saw cut into the concrete curb a "▲" to mark the location of the sanitary service line. This marker shall measure at least three (3) inches in height.

SECTION 313 - TESTING OF SANITARY SEWERS:

Prior to placing a sanitary sewer into service, it shall be tested and inspected as follows:

A. All sections including services shall pass a low pressure air test.

B. The Director of Community Development, at his discretion, may require an exfiltration test, or infiltration test.

C. PVC piping shall pass a deflection test.

D. All sections shall be televised. The sanitary sewer line, prior to testing, shall be flushed and cleaned of debris as necessary. No debris shall be flushed into an operating sanitary sewer.

SECTION 313.1 - LOW PRESSURE AIR TEST:

The low pressure air test shall be conducted as per ASTM C-828 and as described below.

Pneumatic plugs shall be placed in both ends of the pipe to be tested. The sealed sewer pipe shall then be pressurized to four (4.0) PSI on the test gauge and allowed to stabilize for at least two (2) minutes. The pressure will normally show some drop until the temperature of the air in the test section stabilizes. When the pressure has stabilized above three and one half (3.5) PSI, reduce the pressure to three and one half (3.5) PSI and start the test. If the stabilized pressure has fallen below three and one half (3.5) PSI, repressurize and restabilize until the stabilized pressure is above three and one half (3.5) PSI. If this cannot be accomplished, consider the section being tested as having failed the test. With a stabilized test pressure of three and one half (3.5) PSI to start with, record the drop in pressure for the test period. If the pressure has not dropped more than one (1.0) PSI during the test period, the line has passed. The test may be discontinued when the prescribed test time has been completed even though the one (1.0) PSI drop has not occurred.

SECTION 313.2 - EXFILTRATION TEST:

The exfiltration test may be performed in the absence of ground water and as described below:

A. Plug the upper and lower section of sewer main to be tested.

B. Fill the line and all manholes with water to a depth of four (4) feet above the invert of the mid-point of the section being tested.

C. Let the water stand in the section of sewer main being tested for a period of twenty four (24) hours to allow for absorption and escape of trapped air.

D. After a period of twenty four (24) hours has elapsed, refill the section to original depth.

E. After an additional one (1) hour period has elapsed, refill the line again to original depth, recording the total amount of water necessary (measured in gallons) for refill.

F. The maximum acceptable exfiltration rate shall be one hundred (100) gallons per day per inch-diameter per mile of pipe (which is equal to 0.000789 gallons per hour per foot of length per inch-diameter) including all manholes and service lines.

SECTION 313.3 - INFILTRATION TEST:

When ground water is present above a gravity sanitary sewer line, the infiltration test may be used. The infiltration test shall measure the ground water entering the pipe line, service lines, and manholes.

A. Plug the upper and lower section of sewer main to be tested.

B. Collect and measure the flow over a specified period of time. This can be done with flow-through plugs, dams or troughs. Direct reading V-notch weirs shall not be used. These quantities can be measured in ounces per minute or some other suitable measurement, and then converted to gallons per day per inch-diameter per mile of pipe.

Example: It takes fifteen (15) minutes to collect one (1) quart, or one (1) gallon per hour. Convert to gallons per day per mile of sewer line.

$$\text{(Gal. per hour)} \times \text{(24 Hrs. per Day)} \times \frac{\text{(Length of Sewer Line in Ft.)}}{\text{5280 Ft.}} \div \text{Pipe Diameter in Inches}$$

C. The maximum acceptable infiltration rate shall be one hundred (100) gallons per day per inch-diameter per mile of pipe (which is equal to 0.000789 gallons per hour per foot of length per inch-diameter).

D. Combined infiltration from the pipe line, including all service lines and the manholes, shall be measured. No correction factor shall be used for manholes since they are to be water-tight. (See Section 308)

SECTION 313.4 - DEFLECTION TEST FOR PVC PIPING:

PVC sewer lines shall be tested for excess deflection by pulling a rigid ball or mandrel through the pipe from manhole to manhole.

A. The Director of Community Development shall randomly select portions of the project to be deflection tested. Such portions shall consist of the manhole intervals in the initial twelve hundred (1200) feet of the sewer and not less than ten (10) percent of the remainder of the sewer project.

B. The deflection test is to be run using a rigid ball or mandrel. It shall have a minimum diameter equal to ninety two and one half (92.5%) percent of the base diameter of the pipe as established in ASTM D-3034, Table x1.1.

Mandrel Size Table x 1.1
Based on ASTM D-3034 for SDR-26

Nominal size in inches	Average inside diameter	Base inside diameter	92.5% of base inside diameter
6	5.764	5.612	5.19
8	7.715	7.488	6.93
10	9.644	9.342	8.64
12	11.480	11.102	10.27
15	14.053	13.575	12.56

C. The test shall be performed without mechanical pulling devices.

D. The individual lines to be tested shall be so tested no sooner than thirty (30) days after they have been installed.

E. Wherever possible and practical, the testing shall initiate at the downstream lines and proceed towards the upstream lines.

F. No pipes shall exceed a deflection of seven and one half (7.5) percent.

G. In the event that the deflection exceeds the seven and one half (7.5) percent limit in ten (10) percent or more of the manhole intervals tested, the total sewer project shall be tested.

H. Where deflection is found to be in excess of seven and one half (7.5) percent of the base inside diameter, the contractor shall excavate to the point of excess

deflection and shall carefully compact around the point where the excess deflection was found. The line shall then be retested for deflection. However, should the pipe again fail the deflection test, the line shall be replaced.

SECTION 313.5 - TELEVISING SANITARY SEWER LINES:

The developer or owner who installs (or causes to be installed) a new sanitary sewer that will become the property of the Village will furnish the Village with a bond to cover the cost of a closed-circuit television inspection prior to the issuance of a sewer permit, or if the sewer is part of a new subdivision, prior to the approval of the final plat of subdivision.

The Director of Community Development shall require that prior to final acceptance of any newly installed sanitary sewer and approximately eleven (11) months after the installation of the sanitary sewer, the owner or the developer shall cause an inspection to be made by a closed-circuit television camera, capable of looking up into the lateral connections of the sanitary sewer system. Sanitary sewer services beyond the lateral connection, will not be required to be televised. Televising shall show that the sewer system has been constructed in accordance with the approved plans and specifications, that the sewer system is free and clear of all accumulations of foreign substance and debris so as to prevent clogging, and that there are no structural defects.

If, as determined by the Director of Community Development, the sanitary sewers are large enough for a visual inspection to be made (in lieu of an inspection by closed-circuit television), a visual inspection may be made and a report of such inspection submitted to the Village.

Prior to televising the sewer, the owner or developer shall at his own expense, clean the sewer line with a jet-rodder or other equipment approved by the Director of Community Development.

Upon completion of such inspection, and upon receipt of a written report of such inspection, together with a VHS format videotape of the actual inspection, and, if satisfied that such sewer is free and clear of all foreign substance, and free of all structural defects, the Director of Community Development is authorized to recommend to the President and Board of Trustees approval of the sanitary sewer. All inspection records and videotapes shall remain the property of the Village.

If, in the event the owner or developer fails to perform the inspection within thirty (30) days of receipt of a written request from the Village, the Village shall cause such inspection to be made and shall recover the cost of the inspection from the bond.

SECTION 313.6 - TEST RESULTS:

The decision of the Director of Community Development shall be final in determining the test results. If the sanitary sewer installation fails to meet the specified test requirements, the contractor shall determine the cause (or causes) of the defect and shall, at his own expense, repair or replace all materials and workmanship as may be necessary to comply with the test requirements before the termination of the guarantee period. No

reduction in the amount of monies held in contingency shall be permitted until this is completed.

SECTION 314 - CERTIFICATION:

It shall be the contractor's responsibility to secure certification from the pipe manufacturer that the pipe and joint materials furnished are capable of meeting the low pressure air test, infiltration test, and the exfiltration test and are manufactured in conformance with the ASTM, ANSI, or AWWA test(s) specified.

SECTION 315 - "AS-BUILT" DRAWINGS:

Upon completion of construction, "As-Built" or "Record" drawings (drawn in ink on mylar) shall be prepared by the owner or developer. The drawings shall show the exact locations of all sanitary sewer mains, including the length, size, and type of each pipe run, manholes including rim and invert elevations, service connections dimensioned per Section 307.3, and other similar facilities. These drawings shall be submitted to (and be approved by) the Director of Community Development prior to the acceptance of the sanitary sewer system by the President and Board of Trustees.

SECTION 400

WATERMAIN SYSTEM

STANDARD SPECIFICATIONS FOR WATER MAIN CONSTRUCTION

SECTION 400 - GENERAL:

The standards and requirements found in this section are for materials and construction of a water distribution system within the Village of Addison.

SECTION 400.1 - SPECIFICATIONS:

These specifications cover the installation of water mains, service connections, fire hydrants, valve vaults, and all appurtenances normally used for the construction of a water distribution system. Water mains shall be installed in accordance with the latest edition of the Standard Specifications for Water and Sewer Main Construction in Illinois, IDOT's Standard Specifications for Road and Bridge Construction, and applicable ordinances of the Village of Addison. In case of a conflict, the Village of Addison's Standard Specifications for Water Main Construction and other applicable ordinances of the Village of Addison shall take precedence and shall govern.

SECTION 400.2 - REGULATIONS AND PERMITS:

Additional regulations and requirements governing the construction of water mains in the Village of Addison are:

A. Any restrictions, policies, and instructions that may be adopted or issued from time to time by the Village of Addison.

B. All water main extensions shall be designed in accordance with the requirements of the Illinois Environmental Protection Agency. No construction of a water main shall be performed unless a permit has been issued from said agency.

C. No unauthorized person shall uncover, make any connections with or openings into, use, alter, or disturb any public water main or appurtenance thereof without first obtaining a written permit from the Village of Addison.

D. All work shall be available for inspection by the Village of Addison at all times.

E. Only Village of Addison Water Department personnel shall turn on or off valves which affect the flow of water in the Village's water system.

F. At no time shall a contractor use water from a fire hydrant which is connected to the Village's water system.

SECTION 401 - PIPE MATERIALS:

All water main pipe and water service lines shall conform to the latest applicable ASTM, ANSI, AWWA, or other nationally accepted standards. Only the following water main pipe is approved for use in the Village of Addison:

A. Ductile iron pipe (DIP) conforming to ANSI A21.51 (AWWA C-151), thickness Class 52 per ANSI A21.50 (AWWA C-150), bituminous seal coated and cement lined per ANSI A21.4 (AWWA C-104), with mechanical or rubber gasket

push-on joints "Bell-Tite" or approved equal per ANSI A21.11 (AWWA C111 and AWWA C600).

B. Alternate pipe materials and jacking pipe shall be individually approved by the Director of Community Development before starting the work.

All pipe shall be suitable for use in a water distribution system.

SECTION 401.1 - PIPE FITTINGS:

All fittings shall be ductile iron with mechanical or push type joints conforming to ANSI A21.10 (AWWA C-110), lined and coated to match the pipe requirements. Fittings shall be manufactured in the USA, and furnished by the pipe supplier or approved equal and have a bell and/or spigot configuration identical to that of the pipe.

SECTION 401.2 - MINIMUM SIZE:

Minimum size of any public water main shall be eight (8) inches in diameter, except where the main serves a cul-de-sac (450 feet or less in length) and is a minor branch main, then the size can be reduced to six (6) inches upon the approval of the Director of Community Development.

SECTION 402 - PROTECTION OF THE WATER DISTRIBUTION SYSTEM:

Water mains and water service lines shall be protected from sanitary sewer, combined sewer, sanitary sewer service connections, and storm sewers in accordance with the applicable regulations of the Illinois Environmental Protection Agency and as follows:

A. HORIZONTAL SEPARATION:

1. Whenever possible, a water main should be laid at least ten (10) feet horizontally from any existing or proposed drain or sewer line.

2. Should local conditions prevail which would prevent a lateral separation of ten (10) feet, a water main may be laid closer than ten (10) feet to a storm or sanitary sewer, provided that the water main invert is at least eighteen (18) inches above the crown of the sewer, and the water main is laid either in a separate trench or in the same trench on an undisturbed earth shelf located to one side of the sewer.

3. If it is impossible to obtain proper horizontal separation as stipulated in paragraph 1 or 2 above, the sewer should be constructed of slip-on or mechanical joint ductile iron pipe, and be pressure tested to assure water tightness before backfilling.

B. VERTICAL SEPARATION:

1. Whenever water mains must cross house sewers, storm drains or sanitary sewers, the water main should be laid at such an elevation that the bottom

of the water main is eighteen (18) inches above the top of the drain or sewer. This vertical separation should be maintained for the portion of the water main located within ten (10) feet horizontally of any sewer or drain crossed, such ten (10) feet to be measured as the normal distance from the water main to the drain or sewer.

2. Where such conditions exist that the minimum vertical separation as set forth in Paragraph 1 above cannot be maintained, or where it is necessary for the water main to pass under a sewer or drain, the sewer or drain shall be laid with ductile iron pipe, and the pipe should extend on each side of the crossing until the normal distance from the water main to the sewer or drain lines is at least ten (10) feet. In making such crossing it is preferable to center a length of ductile iron pipe over the water main to be crossed, so that the joints will be equal distance from the water main and as remote there from as possible. Where a water main must cross under a sewer, a vertical separation of eighteen (18) inches between the bottom of the sewer and the top of the water main shall be maintained, along with means to support the sewer lines to prevent their settling and damaging the water main.

C. WATER SERVICE LINES: The horizontal and vertical separation between water service lines and all sanitary sewers, storm sewers or any drain should be the same as for water mains; except that, when minimum horizontal and vertical separation cannot be maintained, copper or ductile iron shall be used for water service lines.

Whenever a water main and sanitary sewer or storm sewer cross, pipe elevations shall be shown on the plan sheet.

SECTION 402.1 - SEPARATION OF SERVICES:

A water service should be located at least ten (10) feet horizontally from a any sanitary sewer service, and should be separated by undisturbed or compacted earth.

A water service may be located closer than ten (10) feet to a sanitary sewer service when:

A. The bottom of the water service pipe is a minimum of eighteen (18) inches above the top of the sanitary sewer service at its highest point; and

B. The water service is placed on a solid shelf, excavated to one side of the sanitary sewer service.

When it is impossible to meet any of the conditions listed above, the sanitary sewer service shall be constructed of ductile iron pipe or polyvinyl chloride pressure rated pipe with push-on joints, equivalent to watermain quality pipe.

When a water service crosses under a sanitary sewer, sanitary service, storm sewer or drain, the water service shall be encased in watermain quality pipe.

SECTION 402.2 - WATER MAIN RELOCATION:

When an existing water main, and a proposed sewer cross, a minimum vertical separation of eighteen (18) inches shall be maintained between them. Water mains shall be relocated to comply with the minimum separation.

It is preferred that a water main be relocated over a sewer line. Water mains shall only be raised a maximum of eighteen (18) inches when using mechanical joint offset fittings. The top of the water main shall remain five (5) feet, six (6) inches or greater below finished grade.

When a water main can not be relocated over a sewer, it shall be relocated under the sewer, and the sewer constructed of pressure rated pipe such as; Class 52 DIP, SDR 26PR pipe, or RCP with "O"-ring joints. Pressure rated pipe shall extend from manhole to manhole over the water main. In place of using pressure rated pipe, the sewer may be encased in a bituminous coated steel casing pipe. The casing pipe shall extend a minimum of ten (10) feet on either side of the water main.

Meg-a-lug retainer glands and thrust blocks shall be used at all fittings and joints when relocating a water main.

SECTION 403 - CONSTRUCTION AND SURVEY STAKES:

(See Section 1211)

SECTION 404 - QUALITY OF MATERIALS:

It is the intent of this specification that only first-class materials shall be used throughout the project, and that they shall be incorporated in such a manner as to produce a completed job that is workmanlike and acceptable in every detail. Therefore, all water main, water main parts, fittings and valves shall be manufactured in the USA.

SECTION 404.1 - DEFECTIVE MATERIALS:

All materials not conforming to the requirements of these specifications shall be considered as defective and shall be removed from the project. If in place, they shall be removed by the contractor at his expense and replaced with acceptable materials. No defective material shall be used. The contractor shall carefully inspect all materials and reject any material with detectable defects before installation. The Village reserves the right to make such an inspection and to order the rejection of any materials which have detectable defects. The Village will observe the work as it progresses and may reject any material or workmanship which is determined to be defective or carelessly performed. However, primary responsibility for the quality of the work and performance of the system remains with the contractor.

SECTION 404.2 - HANDLING OF PIPE:

Water main pipe shall be handled in the manner that will prevent damage to the pipe. Methods of construction which may damage the pipe shall be corrected when called to the attention of the contractor.

SECTION 405 - TRENCH EXCAVATION:

All trenches shall be excavated to a minimum depth of four (4) inches below the bottom of the pipe barrel, and unless otherwise specified, shall have a flat bottom conforming to the grade to which the pipe is to be laid.

SECTION 405.1 - STOCKPILING EXCAVATED MATERIAL:

Excavated material shall not be placed on pavement or sidewalks, except on the authorization of the Director of Community Development, and then only when adequate provisions have been made for the temporary passage of pedestrians and vehicles. Gutters shall be kept open or other satisfactory provisions shall be made for street drainage.

Excavated material shall not be stockpiled in any manner that will damage the work or obstruct natural water courses.

SECTION 405.2 - TRENCH WIDTH:

The ground shall be excavated in open trenches of sufficient width and depth to provide ample room within the limits of the excavation for the proper construction of the water main, water service, and all appurtenances shown on the plans. The maximum trench width at and below the top of the pipe shall not exceed a width of (eighteen (18) inches + outside diameter of the pipe + eighteen (18) inches).

If these trench widths are exceeded without the written permission of the Director of Community Development, the contractor shall, at his own expense, install a stronger class of pipe than originally specified to the satisfaction of the Director of Community Development.

SECTION 405.3 - USE OF TRENCH SUPPORTS (TRENCH BOX):

Trench supports shall be used as required by the rules and regulations of OSHA. Any trench five (5) feet or more in depth shall require trench supports.

When using a movable trench support, care shall be exercised so as not to disturb the pipe.

Trench supports shall ride on a shelf above the top of the pipe, with the pipe installed in a narrow, vertical-wall sub-ditch (step-trench). Trench supports below the top of the pipe shall not be used except when approved by the Director of Community Development.

SECTION 405.4 - TRENCHES WITH SLOPING SIDES:

The contractor may, at his option, where working conditions and the right-of-way permit (as determined by the Director of Community Development), excavate the pipe line trench with sloping sides, but with the following limitations:

A. In general, only trench supported and vertical trenches will be permitted in the traveled streets, alleys, or narrow easements.

B. Where trenches with sloping sides are permitted, the slopes shall not extend below the top of the pipe, and trench excavation below this point shall be made with vertical sides and the width shall not exceed those specified for the various sizes of pipe.

SECTION 405.5 - OPEN EXCAVATION:

The excavation of the trench shall not advance more than fifty (50) feet ahead of the completed work and in no way shall more trench be opened than can be completely backfilled by the end of the work day. If during the progress of work, it becomes necessary to keep the trench open overnight, this shall be done only with the approval of the Director of Community Development. Care shall be taken to fence off the open excavation in a manner satisfactory to the Director of Community Development to prevent anyone from entering the excavation. Where a utility crosses an existing street, see Section 1205 - Open Cutting A Municipal Street, or Section 1209 - Casing Pipe.

Streets, sidewalks, parkways, and other public property, disturbed in the course of this work, shall be restored in a manner satisfactory to the Director of Community Development.

SECTION 405.6 - DEWATERING TRENCH:

The contractor shall at his own expense do all pumping, well pointing, or other work necessary to keep the trench clear of ground water, sewage, or stormwater while the water main is being placed, and until the joint has been made.

All trench water pumped or drained from the trench shall be disposed of in a manner approved of by the Director of Community Development without damage to adjacent property or to other work under construction. No sanitary sewer shall be used for disposal of trench water, unless specifically approved of by the Director of Community Development, and then only if the trench water does not ultimately arrive at an existing pumping or sewage treatment facility. No water containing settle able solids or raw sewage shall be discharged into the storm sewer system.

SECTION 405.7 - OVER-EXCAVATION:

In cases where the excavation has been made deeper than necessary or where a firm foundation is not encountered at the grade established in the plans, the contractor shall replace the material removed with crushed stone fill.

Crushed stone refill shall be used up to six (6) inches below the bottom of the pipe and overlain with pipe bedding material. (See Section 405.8)
Crushed stone refill shall be compacted to ninety five (95%) percent of modified proctor density. Crushed stone refill shall meet IDOT specifications for CA-1 (crushed limestone).

SECTION 405.8 - PIPE BEDDING:

Granular pipe bedding material shall be required on all water lines installed in the Village of Addison. Granular pipe bedding shall be a minimum of four (4) inches deep in earth excavation and a minimum of six (6) inches deep in rock excavation. The pipe bedding shall be placed so that the entire length of pipe will have full bearing. No blocking of any kind shall be used to adjust the pipe to grade. When pipes having a bell are used, cross trenches of sufficient depth and not more than two (2) inches wider than the bell shall be excavated to provide uniform bearing.

Granular pipe bedding material shall meet IDOT specifications for FA-6 (sand).

SECTION 406 - LAYING OF PIPE:

Water main pipe shall be laid only after the trench has been dewatered and the bedding material has been properly prepared.

SECTION 406.1 - LAYING OF PIPE ON CURVES:

Pipe required to be laid on curved alignment shall be joined in straight alignment and then deflected, joint by joint. Trenches shall be made wider on curves for this purpose. Special care shall be taken in blocking the pipe just previously laid, by shovel-slicing haunching material around the pipe to prevent misalignment. Maximum deflections at pipe joints and laying radius for various pipe lengths can be found in AWWA C600. In no case shall the degree of deflection exceed two thirds (⅔) of the manufacturer's recommendations for the respective pipe size.

SECTION 406.2 - JOINTING DUCTILE IRON PIPE:

Joints for ductile iron pipe shall consist of mechanical joints or push-on rubber gaskets, unless otherwise approved by the Director of Community Development.

Dirt or other foreign material shall be prevented from entering the pipe or pipe joint during handling or laying operations. Any pipe or joint that has been installed with dirt or foreign material in it shall be removed, cleaned, and re-laid. At times when pipe laying is not in progress, the open end of the pipe shall be closed with a water tight plug or by other means approved by the Director of Community Development to ensure absolute cleanliness inside the pipe.

All pipe laid shall be held in position to maintain alignment and a tight joint, until sufficient haunching material has been placed to hold the pipe. (See Section 406.5)

A. JOINING MECHANICAL JOINT PIPE: The outside of the spigot and inside of the bell of mechanical joint pipe shall be thoroughly cleaned to remove all foreign

matter from the joint. The ductile iron gland (Meg-A-Lug, by EBAA Iron Sales, Inc.) shall then be slipped onto the spigot end of the pipe with the lip extension of the gland toward the socket or bell end. The rubber gasket shall be placed on the spigot end with the thick edge toward the gland. The pipe shall be pushed forward to completely seat the spigot end in the bell. The gasket shall then be pressed into place within the bell, being careful to have the gasket evenly located around the entire joint. The ductile iron gland shall then be moved along the pipe into position and bolted.

Nuts, evenly spaced, shall be tightened alternately to AWWA C600 Standards in order to produce an equal pressure on all parts of the gland.

B. JOINTING RUBBER GASKET PUSH-ON JOINT PIPE (AWWA C111): The inside of the bell shall be thoroughly cleaned to remove all foreign matter from the joint. The circular rubber gasket shall be inserted in the gasket seat provided.

A thin film of gasket lubricant shall be applied to the inside surface of the gasket. Gasket lubricant shall be a solution of vegetable soap or other solution supplied by the pipe manufacturer and approved by the Director of Community Development.

The spigot end of the pipe shall be cleaned and entered into the rubber gasket in the bell, using care to keep the joint from contacting the ground. The joint shall then be completed by forcing the plain end into the seat of the bell. Pipe which is not furnished with a depth mark shall be marked before assembly to assure that the spigot end is inserted to the full depth of the joint.

Field-cut pipe lengths shall be beveled to avoid damage to the gasket and facilitate making the joint.

SECTION 406.3 - DEPTH OF PIPE:

All pipe shall be laid to a minimum depth of five (5) feet six (6) inches as measured from the proposed ground surface to the top of the pipe barrel. Where conflicts arise with other underground utilities, greater depths may be allowed with the approval of the Director of Community Development.

SECTION 406.4 - THRUST RESTRAINTS:

Thrust restraints, to prevent movement of the water line when under pressure, shall be provided. Several methods of restraining the water main are to be used.

Thrust blocking and retained joints shall be used at all bends, tees, reducers, caps, valves and fire hydrants. Where conditions prevent the use of concrete thrust blocks, such as in soft ground, tie rods and retained joints shall be used.

A. THRUST BLOCKING: Blocking shall consist of solid prefabricated Portland Cement concrete blocks, a minimum of twelve (12) inches thick, placed between

solid ground and the fitting. Wood wedges may be used between the fitting and the concrete block. Blocking shall be placed in such a manner that the pipe and fitting joints will be accessible for repairs. Poured in place concrete will not be permitted without prior approval of the inspector.

B. RETAINED JOINTS: Ductile iron (Meg-A-Lug) retainer glands, by EBAA Iron Sales, Inc.

C. TIE RODS: Stainless steel rods with stainless steel nuts.

Dead end water mains shall be retained by using "Locking Gaskets" on the last sixty (60) feet of the watermain, and a "Retained Cap" with thrust blocking, at the end of the water main.

SECTION 406.5 - HAUNCHING OF PIPE:

Granular material shall be placed and compacted by shovel-slicing under the pipe haunch to provide adequate side support to the water main pipe while avoiding both vertical and horizontal movement. The same material used for bedding shall be used for haunching.

Shovel-slicing of the granular haunching material shall take place when the material is no higher than the quarter point of the pipe. The remainder of the haunching material can then be placed to the spring line of the pipe and mechanically compacted.

Granular haunching material shall meet IDOT specifications for FA-6 (sand).

SECTION 406.6 - INITIAL BACKFILL:

Granular material shall be placed and compacted in all water main and water service trenches to an elevation of one (1) foot over the top of the pipe. Initial backfilling shall not start until the water main, water service, or any appurtenances have been inspected and approved. Where initial backfilling has taken place prior to being inspected and approved, the contractor shall uncover the work for inspection. The cost for this work shall be borne by the contractor. Initial backfill material shall meet IDOT specifications for FA-6 (sand) and shall be compacted with vibratory equipment to ninety five (95%) percent of Modified Proctor Density.

SECTION 406.7 - TRENCH BACKFILL:

Unless otherwise directed, all trenches and excavations shall be backfilled as soon as the initial backfilling has been completed.

A. GRANULAR TRENCH BACKFILL: All trenches caused by the construction of water mains, water services or appurtenances which fall beneath or within two (2) feet of the outer edge of existing or proposed pavement, curb and gutter, sidewalks, paved or unpaved driveways, shall be backfilled with granular trench backfill to the elevation of the finished subgrade.

Granular trench backfill shall be placed from two (2) feet outside of the existing or proposed pavement, curb and gutter, sidewalks, paved or unpaved driveways, at a forty five (45) degree angle to the top of the initial trench backfill.

Granular trench backfill shall be free of frozen lumps and foreign material that may have become mixed with it during handling.

Granular trench backfill shall meet IDOT specifications for CA-6 (crushed limestone) or FA-6 (sand).

B. EXCAVATED TRENCH BACKFILL: Where granular trench backfill is not required, selected materials originally excavated from the trench may be used. The backfill material shall not contain tree limbs, stumps, boulders, frozen clumps of dirt, or rubble of any kind.

Where there is a deficiency of suitable backfill material due to a rejection of part or all of the excavated material as unsatisfactory for backfill purposes as directed by the Director of Community Development, the contractor shall furnish sufficient satisfactory material to complete the backfilling.

All rejected or surplus excavated material which is not used for backfilling shall be removed from the site.

Any settlement of the backfill shall be remedied by the owner / developer for a period of one (1) year after final acceptance of the subdivision upon receipt of a written notice from the Director of Community Development.

SECTION 406.8 - BACKFILL COMPACTION:

Initial backfill material shall be carefully deposited in uniform layers not exceeding eight (8) inches thick (loose measure) to a height of twelve (12) inches above the pipe. The material in each layer shall be firmly compacted by mechanical methods approved by the Director of Community Development in such a manner as to not disturb or damage the pipe. All trenches shall have the remaining backfill (above the initial backfill) compacted by either water jetting or mechanical methods, except that water jetting will not be allowed where granular trench backfill is used.

A. MECHANICAL METHOD: Backfill material shall be deposited in uniform layers not exceeding twelve (12) inches thick (loose measure), and each layer shall be compacted by mechanical methods approved by the Director of Community Development. Granular trench backfill shall be compacted to ninety five (95%) percent of Modified Proctor density.

B. WATER JETTING: The trench shall be backfilled with loose material and settlement secured by introducing water through holes jetted into the backfill to a point approximately one (1) foot above the top of the pipe as set forth in Section

20-2.21D(2), Jet Holes from IDOT's Standard Specifications for Road and Bridge Construction.

NOTE: Water for jetting shall not be taken from any fire hydrant within the municipal limits of the Village of Addison.

It shall be the contractor's responsibility to provide to the Village of Addison with compaction reports on all granular trench backfilled areas.

SECTION 407 - WATER SERVICES:

A water service shall be installed to serve each adjoining lot, tract of land, or building site. When a building contains more than one (1) unit, each unit shall have its own water service, water meter and external shut off valve. Manifolding of the water service is not acceptable. All water services shall run from the watermain tap to a b-box and then on to the water meter. Water services shall be located at the approximate center of each lot and at right angles to the right-of-way. Water services shall be installed at the time of the water main installation, and shall terminate at the b-box. The underground contractor shall protect the unused threaded fitting of the curb stop by installing a manufactured cap. When the water service is extended from the curb stop to the water meter, it shall be installed by a Licensed Plumber, and run in one continuous piece of copper. A watermain quality protective casing pipe shall be installed whenever the water service runs under a storm sewer, sanitary sewer or sanitary sewer service. This casing pipe shall extend a minimum of ten (10) feet beyond either side of the sewer or service.

When a water service is installed after the installation of the watermain (meaning that the water service is being installed not in conjunction with the installation of a watermain.) the entire water service (tap to meter) shall be installed by a Licensed Plumber.

The minimum size of a water service in the Village of Addison shall be one (1) inch copper water tube, type K, soft temper, for underground service, conforming to ASTM B-88 and B-251. All copper connections shall be made with flared joints. For water services having an inside diameter larger than two (2) inches, cement lined ductile iron pipe shall be used, and shall comply with all specifications for the installation of water mains.

When a copper water service is installed beneath an existing road, sidewalk, or driveway, the service pipe shall be installed by pushing or auguring a hole beneath the road, sidewalk, or driveway and installing the service pipe through the hole. A ductile iron water service pipe shall be installed in a casing pipe. (See Section 1209) The size of the opening in the road to connect the water service to the water main shall be kept to a minimum, and the road repaired. (See Section 1205)

When a water service is installed to supply a fire sprinkler system, there shall be both a domestic service, and a fire service. The domestic service shall be tapped off the fire service, out side the building, and provided with a separate Buffalo Box.

SECTION 407.1 - SERVICE TAPS:

Service taps shall only be made on water mains that are under pressure. The size and location of all taps shall be shown on the plans. There shall be a minimum separation of two (2) feet between each tap or any pipe joint. All taps and connections to the water main shall be made in the presence of an authorized Village Inspector.
Service taps shall be as follows:

A. Service taps one (1) inch in size shall be made using a corporation stop.

B. Service taps over one (1) inch in diameter, up to and including two (2) inches in size, shall be made with a stainless steel tapping sleeve and a corporation stop.

C. Service taps larger than two (2) inches in diameter, shall use a stainless steel tapping sleeve and a tapping valve. Taps shall be made in accordance with Section 410-A "Pressure Connections". A valve vault shall be used on all service taps four (4) inches in diameter and larger.

Corporation stops shall be fabricated of brass, with outlets suitable for flared joint copper connections, Ford Grip-Tight, Mueller Ori-Seal (or approved equal). Taps shall be made by using a tapping machine in the upper third of the water main at an angle of forty five (45) degrees to the water main. A tap into the top of the water main will not be permitted. The corporation stop shall be turned so that the T-handle will be on top. Sand shall be placed to one (1) foot above the corporation stop and hand tamped to prevent damage during backfilling.

SECTION 407.2 - LAYING WATER SERVICE PIPE:

A water service pipe shall not be laid less than ten (10) feet horizontally from a sanitary sewer service, and shall be separated by undisturbed or compacted earth. When this condition cannot be met:

A. The bottom of the water service pipe shall be installed a minimum of eighteen (18) inches above the top of the sanitary sewer service at its highest point, and shall be placed on a solid shelf, excavated to one side of the sanitary sewer service.

B. The sanitary sewer service shall be constructed of ductile iron pipe with push-on joints or SDR 26, PVC pipe.

Copper water services shall be laid on undisturbed, smooth earth, sufficiently weaving from side to side to allow for not less than one (1) foot of extra slack in the line to prevent undue stress on the water main. The service pipe shall be laid at least five (5) feet six (6) inches below finished grade, in a trench that shall not exceed two (2) feet six (6) inches in width.

The water shall be shut off at the curb stop.

Ductile iron water services shall be laid on four (4) inches of granular pipe bedding, at least five (5) feet six (6) inches below finished grade. The trench width shall comply with the specifications for the installation of water mains.

Initial backfill shall be placed and compacted to an elevation of one (1) foot over the top of all water services. (See Section 406.6)

All service trenches which are located within the right-of-way shall be backfilled with granular trench backfill to within one (1) foot of finished grade, per Section 406.8. Granular trench backfill shall meet IDOT specifications for CA-6 (crushed limestone) or FA-6 (sand). Service trenches outside the right of way shall be backfilled, per Section 406.7.

Water services shall be left water tight. The location shall be marked by placing a two (2) inch x four (4) inch x eight (8) foot board at the end of each service before backfilling. The board shall extend a minimum of three (3) feet above the ground surface, with the upper two (2) feet painted blue.

SECTION 407.3 - CURB STOPS AND CURB BOXES:

A curb stop shall be furnished and installed for each water service. Curb stops shall be fabricated of brass and shall be provided with outlets suitable for flared joint copper connections. Curb stops shall be of the round-way type, Ford, Mueller Ori-seal (or approved equal). Curb stops shall be set on a flat concrete block twelve (12) inches x twelve (12) inches x one (1) inch, at least five (5) feet six (6) inches below finished dirt grade.

A cast iron curb box, of the Buffalo type with an arch-type saddle, Mueller (or approved equal) shall be furnished and installed over the curb stop. Curb boxes, also known as Buffalo boxes or B-boxes, shall be size 95E with the top section having a two (2) and one half (½) inch shaft size. The lid of a curb box shall contain the word "Water". Curb boxes shall be installed approximately seven (7) feet from the property line on the right-of-way, and shall not be located in any sidewalk or driveway. The contractor shall record the location of the boxes from the nearest fire hydrant. Curb boxes shall be held in a truly vertical position, and staked in place to ensure permanent vertical alignment of the box. The location of the box shall be marked with a two (2) inch x four (4) inch x eight (8) foot board. The board shall extend three (3) feet above the ground surface, with the upper two (2) feet painted blue.

Curb boxes shall be installed flush with the finished grade. This may require adjusting prior to final acceptance.

SECTION 407.4 - TESTING OF WATER SERVICES:

Testing of all water services that will supply a fire sprinkler system shall be required. The contractor that installed the water service shall be responsible for testing the water service. Testing of the water service shall conform to Section 416 (Testing Of Water Main), and shall also include a flush and flow test.

A flush and flow test shall be witnessed by a representative of the Addison Fire Protection District, and the Village of Addison's Public Works Water Department. The contractor shall advise the Addison Fire Protection District and Public Works Water Department forty eight (48) hours in advance of performing the tests.

Flushing of the water service shall be performed as outlined in Section 417.1 (Flushing), with the exception that a hydrant will not be required.

Flow testing of the water service shall be performed to satisfy the Addison Fire Protection District's code requirements.

SECTION 407.5 – WATER SERVICE AS-BUILT RECORDS:

The contractor shall record the location of each water service that they install. Corporation stops shall be located by measurement to the nearest fire hydrant. B-boxes, and the ends of all water services, shall by located by measurements to the right-of-way, and to the nearest side property line. The depth from finished grade at the end of each water service shall also be recorded.

This information shall be given to the developer's engineer so that at the completion of construction, accurate as-built drawings can be prepared. Final payment to the contractor shall be held until the as-built records are received by the engineer. If the contractor fails to properly locate any water service, he shall be responsible for all costs which are incurred as a result of inadequate information.

SECTION 408 - VALVE VAULTS:

Valve vaults shall be used on all valves four (4) inches in diameter and larger, except for fire hydrant auxiliary valves.

Minimum inside diameter for a valve vault shall be five (5) feet for four (4) inch to twelve (12) inch valves, and six (6) feet for fourteen (14) inch to sixteen (16) inch valves. Valve vaults shall be constructed of reinforced precast concrete units. Split concrete bottoms will not be allowed. Precast units shall conform to ASTM C-478. Larger diameter valve vaults may be required by the Director of Community Development. All valve vaults shall be water-tight to prevent the infiltration of storm or ground water into the structure. Valve vaults shall not put undue pressure on the water main. The contractor shall be liable for any costs due to repairing a water main break that may occur within ten (10) feet of the valve vault for a period of one (1) year after installation.

SECTION 408.1 - VALVE AND VALVE VAULT LOCATIONS:

A valve vault shall be located so that in the event of a single break, not more than five hundred (500) feet of main will be out of service and require the closing of not more than three (3) valves. Whenever possible, a valve and valve vault shall not be located in a street, driveway, or other paved areas. Additional valves and valve vaults may be required by the Director of Community Development.

SECTION 408.2 - VALVE VAULT BEDDING:

Granular bedding material shall be required on all valve vaults installed in the Village of Addison. Granular bedding shall be a minimum of three (3) inches in thickness and shall extend to the limits of the excavation. Valve vault bedding shall be firmly tamped, made smooth and level to assure uniform contact and support for the base.

Granular valve vault bedding material shall meet IDOT specifications for CA-6 (crushed limestone), or FA-6 (sand).

SECTION 408.3 - PRECAST VALVE VAULT COMPONENTS:

Cones and sections shall be of sound construction and free from gravel pockets, fractures, large or deep cracks, and surface roughness. Walls shall have a minimum thickness of five (5) inches and slab bottoms a minimum thickness of six (6) inches. Joints shall be of the tongue and groove type. Valve vault cones shall be concentric in design.

Bituminous material shall be used to securely seal the joints between precast sections. Surfaces may be set in full bituminous mastic beds or two (2) rows of resilient, flexible, non-hardening, pre-formed, bituminous mastic material (Ramnek or approved equal). Pre-cast mortar plugs shall not be used to plug lifting holes in valve vaults. Lifting holes and joints shall be thoroughly wetted, and then filled with a non-shrink or hydraulic grout. Openings through which pipes enter the valve vault shall be blocked shut using solid concrete blocks, bricks, and non-shrink or hydraulic grout. All grouted areas shall be smoothed, both inside and out, and then covered with a bituminous water proofing compound on the outside only.

SECTION 408.4 - VALVE VAULT FRAMES AND LIDS:

Each valve vault shall be furnished with a Type-1 frame and a Type "B" lid design. The lid shall be self-sealing and have concealed pick-holes to prevent the inflow of surface water into the valve vault. The word "Water" shall be imprinted in the lid. Valve vault frames and lids shall meet the following Village of Addison requirements:

A. Standard frame and lid for use in paved areas, curb and gutter, or driveways shall be of cast iron, heavy duty construction, and equivalent to Neenah R-1031.

B. Standard frame and lid for use in parkways and other non-paved areas shall be of cast iron, medium duty construction, and equivalent to Neenah R-1060 or Neenah R-1700.

C. For those locations that will be subjected to prolonged standing water (locations shall be subject to the approval of the Director of Community Development) the Director of Community Development shall require the use of a water tight frame and lid. They shall be of heavy duty construction, and equivalent to Neenah R-1755-B, or Neenah R-1916-E.

SECTION 408.5 - VALVE VAULT STEPS:

Steps shall not be installed in valve vaults.

SECTION 408.6 - EXCAVATION AND BACKFILL OF VALVE VAULTS:

Any excavation for a valve vault shall be made a minimum of one (1) foot greater than the diameter of the structure in order to permit proper patching and compaction of the backfill material. Excavations shall be undercut to provide for three (3) inches of granular bedding. (See Section 408.2)

Backfilling shall not begin until the exterior of the valve vault has been inspected and approved. The space between the sides of the excavation and the outer surface of the valve vault shall be completely backfilled with granular trench backfill if the edge of excavation is within two (2) feet of the outer edge of existing or proposed pavement, curb and gutter, sidewalks, paved or unpaved drives.

If the excavation falls beyond these limits, then excavated trench backfill material may be used, provided that it meets with the approval of the Director of Community Development. (See Section 406.7).

SECTION 408.7 - VALVE VAULT FRAME ADJUSTMENT:

All new and existing valve vaults on the site or in the area disturbed by the construction shall be adjusted to finished grade prior to final inspection of the work. Adjustments shall be made using precast, reinforced concrete adjusting rings. No more than two (2) adjusting rings shall be installed on a given valve vault; however, no more than one (1) of these rings shall be two (2) inches in size. Adjusting rings shall be placed with the thickest ring on the bottom. In no case shall more than twelve (12) inches of adjusting rings be permitted. If the total thickness of all adjustments exceeds twelve (12) inches, then adjustments shall be made by interchanging and or adding / removing complete barrel sections to achieve the desired elevations.

Bituminous material shall be used at all joints to securely seal the concrete adjusting rings and frame to the valve vault. Surfaces may be set in full bituminous mastic beds or two (2) rows of resilient, flexible, non-hardening, pre-formed, bituminous mastic material (Ramnek, or approved equal). This mastic shall be applied in such a manner that no surface or ground water can enter the valve vault through the joints.

Also see Section 1201 (Frame and Grate Adjustment) for structures located in the curb and gutter or paved areas.

SECTION 408.8 - INSPECTION OF VALVE VAULTS:

All valve vaults shall be thoroughly cleaned of dirt and debris and all visible leakage eliminated before final inspection and acceptance.

SECTION 409 - WATER MAIN VALVES:

Valves shall be manufactured in the USA, and shall be of the gate valve type, suitable for use in an underground water distribution system. All gate valves shall be of the resilient wedge type, conforming to the latest edition of AWWA C-509. The name, or make of the manufacturer, size, and working pressure shall be plainly cast in raised letters on the valve body. Valve bodies shall be of ductile iron. All bolts used in the assembly of a

valve shall be stainless steel. Valves from the following manufacturers are acceptable: Clow, Waterous, or Mueller. All gate valves shall be furnished with mechanical or flanged joints conforming to ANSI A21.11 (AWWA C-111).

All gate valves shall be equipped with a two (2) inches square operating nut that shall turn to the left (counter clockwise) to open the valve. The word "Open" in one half (½) inch or larger letters shall be cast on the nut to clearly indicate the direction of opening. Operating nuts shall have a flanged base with an arrow, (minimum two (2) inches long) cast on the base, showing in which direction to turn the nut to open the valve. All gate valves shall be designed to withstand a cold water working pressure of one hundred and fifty (150) psi, and a hydrostatic test pressure of three hundred (300) psi.

SECTION 409.1 - TAPPING VALVES:

All pressure connections shall be made with a tapping valve. Tapping valves shall be furnished with flanged inlet and outlet connections. The outlet end shall conform in dimensions to the AWWA standards for hub or mechanical joint connections, except that the outside of the hub shall have a flange for attaching the tapping machine. The seat opening of the valve shall be larger than normal size to permit for full diameter cuts.

SECTION 409.2 - INSTALLATION OF GATE VALVES:

All gate valves shall be inspected upon delivery in the field to insure proper working order before installation. Valves shall be installed in a vertical position, supported on a solid concrete block. Three quarter (¾) inch thick asphalt impregnated fiberboard expansion joint material shall be placed between the concrete block and the valve.

SECTION 409.3 - CAST IRON VALVE BOXES FOR GATE VALVES:

Cast iron valve boxes with the word "Water" imprinted in the lid shall be used to enclose gate valves smaller than 4 inches in size and fire hydrant auxiliary valves. A screw type cast iron valve box shall be set in position during the backfilling so that it will be in vertical alignment to the gate valve operating stem. The lower part of the unit shall be installed on concrete blocks in such a manner as to not rest directly on the body of the gate valve, or on the water main. The upper part of the valve box shall then be placed and adjusted to finished grade. Valve boxes shall be staked in place to insure permanent alignment with the valve stem. Backfill around the valve box shall be placed and compacted to the satisfaction of the Director of Community Development.

Valve boxes shall be installed flush with the finished grade. This may require adjusting prior to final acceptance.

SECTION 410 - CONNECTION TO AN EXISTING WATER SYSTEM:

The existing water main shall be uncovered and exposed to allow for confirmation of the existing pipe size in advance of making the connection.

Sufficient length of main shall be exposed to allow for the connection. The main shall be supported to properly carry its own weight plus the weight of the connection. The owner / developer shall be liable for any costs incurred in repairing any water main break that

may occur within ten (10) feet of the connection for a period of one (1) year after installation.

All connections to the Village of Addison's water system shall be made in the presence of an authorized Village inspector.

A. PRESSURE CONNECTIONS: Connections to the existing water system shall be accomplished whenever possible without interruption of service. A pressure tap, using a stainless steel tapping sleeve (See Section 410.1), a tapping valve (See Section 409.1) and pressure connection vault (See Section 410.2) shall be provided at the point of connection to the existing system. The size and location of all pressure taps shall be shown on the plans. There shall be a minimum of two (2) foot between a pressure tap and any pipe joint, and a minimum of five (5) feet from any other tap.

B. CUT IN CONNECTIONS: When a new water main of equal or smaller size is to be connected to the existing water system, a ductile iron cut in tee, of equal size, shall be installed. When this requires a shut down of the Village's water system, the contractor shall agree upon a date and time for the shut down with the Village of Addison's water department. A minimum of forty eight (48) hours shall be required, which will allow ample time for the water department to notify all customers affected. If the work on the connection goes beyond regular working hours, the cost of the overtime shall be reimbursed to the Village by the owner / developer.

SECTION 410.1 - STAINLESS STEEL TAPPING SLEEVE:

A stainless steel tapping sleeve with a full circle gridded, tappered overlapping gasket (Rockwell 662, 663, or approved equal) shall be used whenever a tap is larger than one (1) inch in size. All nuts and bolts used with the tapping sleeve shall also be of stainless steel.

SECTION 410.2 - PRESSURE CONNECTION VAULT:

A pressure connection vault shall be used on all pressure connections four (4) inches and larger. A pressure connection vault shall be similar to a valve vault except that the minimum size shall be six (6) feet.

SECTION 411 - FIRE HYDRANTS:

Fire hydrants with auxiliary valves shall be installed throughout the entire development, located at intervals not to exceed three hundred (300) feet as measured along the pipe length. A fire hydrant shall also be located at the end of every water main that is not looped, to provide the ability to flush the water main at scouring velocity. The closest edge of the fire hydrant shall be no closer than two (2) feet from the back of curb nor more than four (4) feet. The steamer port shall be fourteen (14) inches to twenty six (26) inches above the proposed surface of the ground, per State Bill 1291, passed 1/1/88, and shall face the street.

All fire hydrants shall be located a minimum of six (6) feet from any existing or proposed driveways.

SECTION 411.1 - HYDRANT DETAILS:

The dimensions and details of hydrants and nozzles, unless otherwise noted, shall be as follows:

A. Fire hydrant type: Clow-Eddy F-2640
Supplied with a breakaway flange.
Inlet connection size: Six (6) inch
Main valve opening size: Five and one quarter (5¼) inch
Hose nozzles, number and size: Two (2) – (2½) inch
Pumper nozzle, number and size: One (1) – (4½) inch
Auxiliary gate valve size: Six (6) inch
Thread pattern: National standard

B. All nozzles shall be fitted with cast iron threaded caps securely connected to the fire hydrant with one eighth (⅛) inch thick chain. An operating nut on the end of the cap shall be of the same design and proportions as the fire hydrant stem nut. Caps shall be threaded to fit the corresponding nozzles and shall be fitted with suitable gaskets for positive water tightness under test pressures. After testing, all nozzles and caps shall have their threads greased.

C. The hydrant valve shall open by turning to the left (counter clockwise).

D. All fire hydrants shall be painted yellow (Dura-King Supreme # 457-57 School Bus Yellow - Truck, Tractor, and Implement Enamel).

SECTION 411.2 - AUXILIARY VALVE:

A six (6) inch auxiliary valve shall be provided at each fire hydrant. The auxiliary valve shall be connected directly to the water main with a locking hydrant tee. The auxiliary valve shall be a resilient wedge gate valve. The valve shall be designed for a minimum water pressure of 200 psi. Auxiliary valves shall be provided with a cast iron valve box. (See Section 409.3)

SECTION 411.3 - LOCKING HYDRANT TEES:

Locking hydrant tees, also known as anchoring tees, shall be used on all fire hydrant installations. When a fire hydrant auxiliary valve cannot be connected directly to a locking hydrant tee, Meg-A-Lug retainer glands and stainless steel tie rods shall be used to connect the auxiliary valve to the tee.

SECTION 411.4 - INSTALLATION DETAILS:

The contractor shall inspect all fire hydrants in the field upon delivery to the job site to insure proper operation before installation. The hydrant shall be set on a concrete block, twelve (12) inch x twelve (12) inch x eight (8) inch in size, to insure a firm bearing for the hydrant base. Additional concrete blocks a minimum of twelve (12) inches thick

shall be placed in back of the hydrant. The concrete blocks shall extend from the hydrant to undisturbed soil. Wood wedges may be used to ensure a solid fit. Care shall be taken to ensure that the weep holes are not covered by the concrete blocks. Poured-in-place concrete blocking will not be allowed. A minimum of one cubic yard of washed gravel shall be placed at and around the base of the hydrant to insure proper drainage of the hydrant after use. A layer of filter fabric shall be installed over the gravel drain field before backfilling begins. Fire hydrants shall be set in a vertical position, and staked in place to insure that the hydrant stays in a permanent vertical position. All hydrants shall be adjusted to finished grade.

The resetting, moving, or reconnection of any existing fire hydrant shall be handled in the same manner as a new installation.

SECTION 412 - POLYETHYLENE LINERS:

All new and replaced water main shall be encased in polyethylene liners unless it is determined by a competent soils laboratory that each type of soil encountered in the water main installation is not corrosive to ductile iron water main.

Polyethylene liners shall be Class C (black) conforming to ANSI A21.5 and AWWA C-105. The polyethylene shall have a minimum thickness of 0.0008 inch (8 mils).

SECTION 412.1 - TUBE SIZE OR SHEET WIDTH:

The tube or sheet size for each pipe diameter shall be as listed in the following table:

Nominal Pipe Diameter	Minimum Polyethylene Width	
	Flat Tube	Sheet
3 inches	14 inches	28 inches
4 inches	16 inches	32 inches
6 inches	20 inches	40 inches
8 inches	24 inches	48 inches
10 inches	27 inches	54 inches
12 inches	30 inches	60 inches
14 inches	34 inches	68 inches
16 inches	37 inches	74 inches

SECTION 412.2 - INSTALLATION:

The polyethylene liner shall prevent contact between the pipe and the surrounding backfill and bedding material but is not intended to be a completely air and water tight enclosure. Overlaps shall be secured by the use of polyethylene tape capable of holding the polyethylene liner in place until backfilling operations are completed. The encased pipe shall be lowered into the trench using a sling that will not tear the polyethylene liner.

SECTION 412.3 - PIPE WRAPPING:

This standard includes three different methods for the installation of polyethylene liners on pipe. Methods A and B are for use with polyethylene tubes and Method C is for use with polyethylene sheets.

A. METHOD A: Cut polyethylene tube to a length approximately two (2) feet longer than that of the pipe section. Slip the tube around the pipe, centering it to provide a one (1) foot overlap on each adjacent pipe section, and bunching it in accordion fashion lengthwise until it clears the pipe ends.

Lower the pipe into the trench and make up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at joints to facilitate installation of the polyethylene tube.

After assembling the pipe joint, overlap the polyethylene tube. Pull the bunched polyethylene from the preceding length of pipe and slip it over the end of the new length of pipe, and secure it in place. Then slip the end of the polyethylene from the new pipe section over the end of the first wrap until it overlaps the joint at the end of the preceding length of pipe. Secure the overlap in place. Take up the slack width to make a snug, but not tight, fit along the barrel of the pipe, securing the fold at quarter points.

Repair any rips, punctures, or other damage to the polyethylene with polyethylene tape or with a short length of polyethylene tube cut open, wrapped around the pipe and secured in place. Proceed with installation of the next section of pipe in the same manner.

B. METHOD B: Cut polyethylene tube to a length approximately one (1) foot shorter than that of the pipe section. Slip the tube around the pipe, centering it to provide six (6) inches of bare pipe at each end. Make polyethylene snug, but not tight; secure ends as described elsewhere.

Before making up a joint, slip a three (3) foot length of polyethylene tube over the end of the preceding pipe section, bunching it in accordion fashion lengthwise. After completing the joint, pull the three (3) foot length of polyethylene over the joint, overlapping the polyethylene previously installed on each adjacent section of pipe by at least one foot. Secure each end as described elsewhere.

Repair any rips, punctures, or other damage to the polyethylene. Proceed with installation of the next section of pipe in the same manner.

C. METHOD C: Cut polyethylene sheet to a length approximately two (2) feet longer than that of the pipe section. Center the cut length to provide a one (1) foot overlap on each adjacent pipe section, bunching it until it clears the pipe ends. Wrap the polyethylene around the pipe so that it circumventially overlaps the top quadrant of the pipe. Secure the cut edge of polyethylene sheet at intervals of approximately three (3) feet.

Lower the wrapped pipe into the trench and make up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at joints to facilitate

installation of the polyethylene. After completing the joint, make the overlap as described above.

Repair any rips, punctures, or other damage to the polyethylene. Proceed with installation of the next section in the same manner.

SECTION 412.4 - WRAPPING OF PIPE-SHAPED APPURTENANCES:

Cover bends, reducers, offsets and other pipe-shaped appurtenances with polyethylene in the same manner as the pipe.

SECTION 412.5 - WRAPPING OF ODD-SHAPED APPURTENANCES:

Valves, tees, crosses, and other odd-shaped pieces can be wrapped by passing the sheet under the appurtenance and bringing it up around the body, making seams by bringing the edges together, folding over twice, and taping down. Handle width and overlaps at joints as described above. Tape polyethylene securely in place at valve stem and other penetrations.

SECTION 412.6 - OPENINGS IN ENCASEMENTS:

Provide openings for service taps and similar appurtenances by making an X-shaped cut in the polyethylene and temporarily folding back the film. After the appurtenance is installed, tape the slack securely to the polyethylene with tape.

SECTION 412.7 - JUNCTION BETWEEN WRAPPED AND UNWRAPPED PIPE:

Where polyethylene wrapped pipe joins an adjacent pipe that is not wrapped, extend the polyethylene wrap to cover the adjacent pipe for a distance of at least two (2) feet. Secure the end with turns of tape.

SECTION 412.8 - BACKFILL FOR POLYETHYLENE-WRAPPED PIPE:

Use the same backfill material as that specified for pipe without polyethylene wrapping, exercising care to prevent damage to the polyethylene wrapping when placing backfill. Backfill material shall be free from cinders, refuse, boulders, rocks, stones, or other material that could damage the polyethylene.

SECTION 413 - WATER MAIN STREAM CROSSINGS:

Water mains crossing streams should be designed to cross the stream as nearly perpendicular to the stream flow as possible. A water distribution system shall be designed to minimize the number of stream crossings. Water mains located along streams shall be located outside of the stream bed and sufficiently removed there from to provide for future possible stream widening. A valve and valve vault shall be located on each side of the stream, located so as not to interfere with the free discharge of flood flows of the stream.

SECTION 413.1 - CONSTRUCTION REQUIREMENTS:

A. MATERIALS: Water mains crossing streams shall be constructed of ductile iron river crossing pipe (Clow River Crossing Pipe or approved equal).

B. COVER DEPTH: The top of the water main shall be a minimum of five (5) feet six (6) inches below the natural bottom of the stream bed.

C. BACKFILL: The backfill used in the trench shall be washed gravel, or other materials which will not cause siltation or damage the pipe during placement.

D. SILTATION AND EROSION: Construction methods shall be employed that will minimize siltation and erosion. The design engineer shall include in the project specifications the method to be employed in the construction of the water main in or near streams to provide adequate control of siltation and erosion.

SECTION 414 - AERIAL CROSSINGS:

A. STRUCTURAL SUPPORT: All joints shall be supported with the supports designed to prevent frost heave and settlement.

B. FREEZE AND EXPANSION PROTECTION: Protection against freezing shall be provided. This may be accomplished through the use of insulation. Increased expansion shall be provided for between the aerial and buried sections of the water line.

C. FLOOD CLEARANCE: For aerial stream crossings the impact of flood waters and debris shall be considered. The bottom of the pipe shall be placed no lower than two (2) feet above the elevation of the one hundred (100) year flood.

SECTION 415 - INSTALLATION OF PERMANENT MARKERS:

The developer or owner who installs or causes to be installed a new water main that will become the property of the Village, shall cause permanent markers to be installed in the concrete curb identifying the points where the curb crosses the service trench.

The developer or owner will require his curb contractor to embed permanent markers in the vertical or horizontal face of the curb at all crossing points before the concrete hardens.

The markers shall be the letter "W" and shall measure at least three (3) inches in height. Materials may be metal, plastic, or other material approved by the Director of Community Development.

If the service line is installed under an existing curb, it shall be the responsibility of the water main contractor to saw cut into the concrete curb a "W" to mark the location of the water service line. This marker shall measure at least three (3) inches in height.

SECTION 416 - TESTING OF WATER MAIN:

Prior to placing a new water main into service, it shall pass a pressure and leakage test. The contractor shall be responsible for supplying the equipment and performing the tests.

The Engineering Division shall be notified by the contractor at least twenty four (24) hours in advance, so that a representative can be present during the test.

The contractor shall notify the Public Works Water Department forty eight (48) hours in advance of the test. (The Water Department is solely responsible for opening and closing all water valves in Addison.)

SECTION 416.1 - PRESSURE TEST:

Each section of pipe shall be slowly filled with water, and all the air shall be expelled from the pipe. Each section of pipe shall be brought to the specified test pressure by means of a pump connected to the pipe. Auxiliary valves on all fire hydrants on the test section shall be open at the time of the test so that the hydrants and connections are pressure tested at the same time the main is tested. The water main shall be pressure tested for at least two (2) hours at a minimum pressure of one hundred and fifty (150) pounds per square inch.

Test results shall show the main not losing more than five (5) psi in the two (2) hour test. The test shall not begin until the inspector has visually checked the pressure and noted the time. Any cracked or defective pipes, fittings, valves, or hydrants discovered by this pressure test shall be removed and replaced by the contractor with sound material and the test repeated until a satisfactory test is witnessed by the inspector.

SECTION 416.2 - LEAKAGE TEST:

After satisfactorily completing the pressure test, a leakage test shall be conducted to determine the quantity of water lost by leakage during the pressure test. Suitable means shall be provided by the contractor for determining the quantity of water lost during the pressure test.

Allowable leakage (in gallons per hour) for the water main being tested shall not be greater than that determined by the following formula:

$$L = \frac{SD\sqrt{P}}{133{,}200}$$

Note: D = Nominal diameter of the pipe (in inches)
L = Allowable leakage (in gallons per hour)
P = Average test pressure during the test (in pounds per square inch)
S = Length of pipeline tested (in feet)

Leakage is defined as the quantity of water that has to be added to the test section to bring the test pressure back to its original starting point.

SECTION 417 - CHLORINATION:

Upon passing the pressure and leakage test, the contractor shall have the water main flushed and disinfected.

SECTION 417.1 - FLUSHING:

Those sections of water main to be chlorinated shall first be flushed to remove any solids or contaminated material that may have become lodged in the main. The contractor shall advise the Village of Addison's water department forty eight (48) hours in advance of any flushing. The Water Department shall supervise the flushing. A hydrant shall be installed at the end of the main to facilitate flushing of the main. A velocity of at least two and one half (2½) feet per second shall be maintained in the main during the flushing. A two and one half (2½) inch hydrant opening will, under normal water main pressure, provide this velocity in pipe sizes up to, and including twelve (12) inches.

SECTION 417.2 - DISINFECTANT:

Before being placed into service, all new water mains, repaired sections, or extensions to existing mains shall be chlorinated. The initial chlorine residual is not to be less than fifty (50) parts per million, and a chlorine residual of not less than twenty five (25) parts per million shall remain in the water after standing in the pipe for twenty four (24) hours. The contractor shall notify the Village of Addison's Water Department at least twenty four (24) hours in advance of the chlorination and sampling, so that a representative can be present.

SECTION 417.3 - FORM OF APPLIED CHLORINE:

Chlorine shall be applied by one of the following methods, subject to approval by the Director of Public Works:

A. LIQUID CHLORINE: A chlorine gas-water mixture shall be applied by means of a solution-feed chlorinating device or the dry gas may be fed directly through proper devices for regulating the rate of flow and providing effective diffusion of the gas into the water within the pipe being treated. Chlorinating devices for feeding solutions of the chlorine gas or the gas itself must provide means for preventing the backflow of water into the chlorine.

B. CHLORINE BEARING COMPOUNDS IN WATER: In certain instances, when the usage of chlorine gas is not practical, such as in congested or confined areas, upon approval of the Director of Public Works, a chlorine-bearing compound of known chlorine content, prepared in solution form, may be substituted for chlorine gas.

SECTION 417.4 - POINT AND RATE OF APPLICATION:

A. POINT OF APPLICATION: The preferred point of application of the chlorinating agent is at the beginning of the pipe line extension or any valved section of it, and through a corporation stop inserted in the pipe. The water injector (for delivering the chlorine-bearing water into the pipe) should be supplied from a tap made on the pressure side of the gate valve controlling the flow into the pipe line extension. Alternate points of application may be used when approved or directed by the Director of Public Works.

B. RATE OF APPLICATION: Water from the existing distribution system or other approved source of supply shall be controlled to flow very slowly into the newly laid pipe line during application of the chlorine. The rate of chlorine mixture flow shall be in such proportion to the rate of water entering the newly laid pipe that the dosage applied to the water will be at least FIFTY (50) parts per million unless otherwise directed by the Director of Public Works.

C. RETENTION PERIOD: Treated water shall be retained in the pipe at least twenty four (24) hours. After this period, the chlorine residual at pipe extremities and at other representative points shall be at least twenty five (25) parts per million.

D. CHLORINATING VALVES AND HYDRANTS: In the process of chlorinating newly laid pipe, all valves and other appurtenances shall be operated while the pipe line is filled with the chlorinating agent and under normal operating pressure.

E. PREVENTING REVERSE FLOW: Valves shall be manipulated so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water. Check valves may be used if desired.

SECTION 417.5 - FINAL FLUSHING AND TESTING:

Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipe at its extremity until the replacement water throughout its length shows, upon test, the absence of chlorine. In the event chlorine is normally used in the source of supply, then the tests shall show a residual not in excess of that carried in the system.

After flushing, water samples collected on two (2) successive days from the treated piping system, as directed by the Director of Public Works, shall show satisfactory bacteriological results. Bacteriological analyses must be performed by a laboratory approved by the Director of the Illinois Department of Public Health and the Director of Public Works.

Should the initial treatment result in an unsatisfactory bacterial test, the chlorination procedure shall be repeated by the contractor until satisfactory results are obtained.

No water shall be used until a satisfactory report has been received by the Water Department.

SECTION 418 - TEST RESULTS:

The decision of the Director of Community Development shall be final in determining the test results. If the water main installation fails to meet the specified test requirements, the contractor shall determine the cause (or causes) of the defect and shall, at his own expense, repair or replace all materials and workmanship as may be necessary to comply with the test requirements before the termination of the guarantee period. No reduction in the amount of monies held in contingency shall be permitted until this is completed.

SECTION 419 - CERTIFICATION:

It shall be the contractor's responsibility to secure certification from the pipe manufacturer that the pipe and joint materials furnished are capable of meeting the air and leakage tests, and are manufactured in conformance with the ASTM, ANSI, or AWWA test(s) specified.

SECTION 420 - "AS-BUILT" DRAWINGS:

Upon completion of construction, "As-Built" or "Record" drawings (drawn in ink on mylar) shall be prepared by the owner or developer. The length, size, and type of each pipe run shall be given from valve vault to valve vault, valve vault to fire hydrant, valve vault to tee, valve vault to bend, etc. The size of each valve shall be noted, and service connections dimensioned per Section 407.5. These drawings shall be submitted to (and be approved by) the Director of Community Development prior to the acceptance of the water main system by the President and Board of Trustees.

SECTION 500

SIDEWALKS

STANDARD SPECIFICATIONS FOR SIDEWALK CONSTRUCTION

SECTION 500 - GENERAL:

The standards and requirements found in this section are for materials and construction of sidewalks within the Village of Addison.

SECTION 500.1 - SPECIFICATIONS:

These specifications cover the installation of sidewalks which shall be installed in accordance with the latest revision of IDOT's Standard Specifications for Road and Bridge Construction, and applicable ordinances of the Village of Addison. In case of a conflict, the Village of Addison's Standard Specifications for Sidewalk Construction and other applicable ordinances of the Village of Addison shall take precedence and shall govern.

SECTION 500.2 - REGULATIONS AND PERMITS:

Additional regulations and requirements governing the construction of sidewalks in the Village of Addison are:

A. Any restrictions, policies, and instructions that may be adopted or issued from time to time by the Village of Addison.

B. No person shall construct or remove a public sidewalk without first obtaining a written permit from the Village of Addison.

C. No person shall construct or remove a walkway or a private service walk, without first obtaining a written permit from the Village of Addison.

D. All work shall be available for inspection by the Village of Addison at all times.

E. New public sidewalks shall connect to existing public sidewalks where available. When an existing sidewalk is within one hundred (100) feet of a proposed sidewalk, the developer or builder shall at the discretion of the Director of Community Development, connect the two (2) sidewalks.

SECTION 501 - CONCRETE SIDEWALKS:

Public sidewalks shall be constructed of concrete, unless otherwise approved by the Village Board. Sidewalks not intended for use as a public sidewalk may also be constructed of concrete. All concrete sidewalks shall be constructed on a prepared sub-base, and as described herein.

A. Sidewalks shall be required on both sides of the street within a residential subdivision, and on the peripheral side of the street, around a residential subdivision.

B. Sidewalks shall be installed in Business Districts.

C. Sidewalks are not required in the Commercial / Industrial Districts, but shall be installed if there is an existing sidewalk to connect with. (See Section 500.2.E.)

D. Sidewalks shall be installed on both streets of a through lot.

SECTION 501.1 - EARTH EXCAVATION:

The excavation shall consist of removing all topsoil and unsuitable sub-grade material to a width of one (1) foot on either side of the sidewalk. If material is removed below sub-grade elevation, a suitable material such as sand, limestone screenings, or crushed limestone shall be used as fill to the correct sub-grade elevation. This fill material shall be compacted with vibratory equipment to ninety (90%) percent of Modified Proctor density. Tree roots exposed by the excavation shall be cut off at least three (3) inches outside of the new sidewalk and three (3) inches below the sub-grade elevation.

SECTION 501.2 - SUB-BASE PREPARATION:

The sub-base shall consist of three (3) inches of sand, limestone screenings, or crushed limestone to a width of not less than six (6) inches wider on each side than the new sidewalk. This sub-base material shall be compacted with vibratory equipment to ninety five (95%) percent of Modified Proctor density, and shall be true to grade and cross section for the bottom of the sidewalk.

SECTION 501.3 - CONCRETE MIX:

The concrete shall be an SI mix, made with portland cement. A compressive strength of not less than 3,500 lb. per square inch shall be achieved after fourteen (14) days of curing. All concrete used shall be uniform throughout the mass, with air-entrainment of five (5%) percent to eight (8%) percent of the volume, and a slump of two (2) inches to four (4) inches. Admixtures other than air-entraining agents shall not be used.

SECTION 502 - INSTALLATION OF FORMS:

Side forms shall be of lumber of not less than two (2) inches nominal thickness or of steel of equal rigidity. They shall be held securely in place by stakes or braces, with the top edges true to line and grade. In most cases, the high side of the forms should be set six (6) inches above the top of the curb, (unless otherwise permitted by the Director of Community Development) and pitched one quarter (¼) inch per foot toward the street. Forms shall be oiled before concrete is poured.

No concrete shall be poured until the sub-base and forms have been approved by the Village of Addison.

SECTION 502.1 - REMOVAL OF FORMS:

Forms shall remain undisturbed for a minimum of twelve (12) hours, or until the concrete has attained sufficient strength to sustain its own weight, in addition to any temporary or permanent loads that may be placed upon it.

SECTION 503 - CONCRETE PLACING AND FINISHING:

The sub-base and forms shall be moistened just before the concrete is placed. Concrete shall be poured in successive batches for the entire width of the sidewalk, struck off from one half (½) inch to three quarter (¾) inch higher than the finished grade, tamped until all voids are removed and free mortar appears on the surface, thoroughly spaded along the edges, struck off to the true grade, and finished to a true and even surface with floats and trowels. After the water sheen has disappeared, the surface shall be given a final broom finish. In no case shall dry cement or sand be applied to dry up the surface. The broom shall be drawn across the sidewalk at right angles to the edges of the walk, with adjacent

strokes slightly overlapping, producing a uniform, slightly roughened surface with parallel broom marks.

SECTION 504 - GROOVED CONTRACTION JOINTS:

The surface shall be divided by grooved contraction joints at right angles to the center line of the sidewalk. These grooves shall extend to one quarter (¼) the depth of the sidewalk, with the width being not less than one eighth (⅛) inch nor more than one quarter (¼) inch in width. The grooves and edges of the slab shall be edged with an edging tool having a one quarter (¼) inch radius. The sidewalk shall be grooved at five (5) foot intervals.

SECTION 505 - EXPANSION JOINTS:

Expansion joints of the thickness specified below shall consist of preformed bituminous joint filler. The top of the joint shall be placed one quarter (¼) inch below the surface of the sidewalk. Expansion joints shall extend the full depth and width of the sidewalk.

A. One half (½) inch thick expansion joints shall be placed between the sidewalk and any structure such as a street light pole foundation, traffic light pole foundation, handhole foundation, utility pole, etc. that extends through the sidewalk.

B. Three quarter (¾) inch thick expansion joints shall be placed at intervals of not more than thirty (30) feet in the sidewalk, or wherever it is practical. Where the sidewalk is constructed adjacent to pavement or curb having expansion joints, the expansion joints in the sidewalk shall be placed opposite the existing expansion joints. Expansion joints shall also be placed where the sidewalk abuts existing buildings, driveway pavement, curb, grade changes in the sidewalk, and at any locations where it is deemed necessary by the Director of Community Development.

SECTION 506 - SIDEWALK THICKNESS:

In most cases, concrete sidewalks shall have a minimum thickness of five (5) inches except as noted below:

A. In single and multi-family residential areas where driveway locations have not been established prior to sidewalk installation, the minimum sidewalk thickness shall be six (6) inches.

B. In single and multi-family residential areas, where vehicles cross a sidewalk at a driveway, the minimum sidewalk thickness shall be six (6) inches.

C. Private residential service walks shall have a minimum thickness of four (4) inches.

SECTION 507 - SIDEWALK WIDTH:

In most cases, sidewalks shall have a minimum width of five (5) feet except as noted below:

A. Private residential service walks shall be a minimum of three (3) feet wide.

B. Sidewalks abutting curb and gutter, where the curb and gutter is used as a wheel stop, shall be a minimum of seven (7) feet wide.

C. Sidewalks in Business Districts shall be at least ten (10) feet wide, and may abut the curb line.

SECTION 508 - LOCATION OF THE SIDEWALK:

In most cases the public sidewalk shall be located one (1) foot within the right-of-way. When the sidewalk must vary from this requirement, the Director of Community Development shall approve the location. When conditions require the public sidewalk to be constructed outside of the right-of-way, an easement for the sidewalk shall be required.

Residential service walks when constructed in a side yard, shall not restrict the stormwater flow in the drainage easement, and shall not be constructed closer than two (2) feet to a sideyard property line.

SECTION 509 - CURING:

Newly poured concrete sidewalks shall be cured in the manner as called for in Article 1020.13 of the IDOT Standard Specifications for Road and Bridge Construction and to the satisfaction of the Director of Community Development. The material used for curing shall conform to the material specifications per Article 1020.13 of the specifications noted above. A minimum three (3) day curing period is required.

SECTION 510 - BACKFILL:

The spaces along the edges of the sidewalk shall be backfilled to the required elevation with approved material. The material shall be compacted until firm, and the surface neatly graded to receive grass cover.

SECTION 511 - DISPOSAL OF SURPLUS MATERIAL:

Surplus, or waste material, resulting from the sidewalk construction operations shall be disposed of by the contractor.

SECTION 512 - PROTECTION OF THE SIDEWALK:

Special attention is called for in the protection of fresh concrete sidewalks against the following:

A. VANDALISM: While the concrete is still soft, the contractor should maintain a watch.

B. FREEZING: Protection of fresh concrete sidewalks against freezing should follow the methods in Section 516 - Cold Weather Protection.

C. VEHICLES: All vehicles shall be kept off the sidewalk for five (5) days.

D. RAIN: All exposed surfaces shall be protected against washing by rain.

The contractor shall assume all responsibility for damage to the sidewalk by action of the elements or from any other cause, and shall repair, or remove and replace all damaged sidewalk.

SECTION 513 - SIDEWALK REMOVAL:

All sidewalk removals shall extend to an existing grooved contraction joint or expansion joint. The contractor shall saw to full depth the joint between the portion of the sidewalk being removed and that part left in place. It shall be the responsibility of the contractor to determine the thickness of the existing sidewalks to be removed. Sawing shall be done with a concrete saw in such a manner that a straight joint will result. If, while removing the sidewalk, additional sidewalk is damaged, the damaged sidewalk shall also be removed.

SECTION 514 - HANDICAPPED RAMPS:

Whenever new sidewalks or existing sidewalks that are to be replaced, begin or end at a curb, handicapped ramps shall be constructed. Where driveways or alleys intersect with sidewalks, design priority shall be given to the sidewalk, rather than the driveway or alley. This may require ramping the sidewalk down to the driveway or alley. Construction of handicapped ramps may require the removal and replacement of existing curb, or depressing proposed curb. Handicapped ramps shall not exceed a one to twelve (1:12) running slope (i.e., the slope longitudinal to the ramp). The cross slope of a sidewalk on an accessible route or handicapped ramp shall not exceed one to fifty (1:50).

Handicapped ramps shall be the same thickness and constructed as the adjacent sidewalk, except a textured finish (detectable warning surface) will be required. The detectable warning surface shall provide both visual and tactile cues to pedestrians who are about to enter traffic. The warning area shall begin six (6) inches from the back of curb and continue two (2) feet in the direction of pedestrian travel for the entire width of the walking surface.

The detectable warning area shall present a contrast in color from the adjacent sidewalk surface, either light on dark or dark on light. The material used to provide contrast should contrast by at least seventy percent (70%). This shall be accomplished by constructing the warning area, plus the six (6) inch area between the warning area and the back of curb, out of concrete that is integrally colored red (Federal Standard Color 30166 Brick Red). However, if the sidewalk is brick or some other dark color, the contrast requirement shall be achieved with normal “gray” Class SI concrete, or the concrete may be integrally colored Traffic Yellow.

Type “A” ramps should be used only when the area on both sides of the ramp is a planting or otherwise non-walking area, otherwise, the Type “B” ramp with flared sides shall be used.

Handicapped signs or other objects shall not protrude more than four (4) inches into the walking area when headroom below the sign is less than six (6) feet eight (8) inches. Protruding objects shall not reduce the clear width of the accessible route below thirty six (36) inches.

SECTION 514.1 – DETECTABLE WARNING SURFACE – RAISED TRUNCATED DOMES:

The Raised Truncated Dome texture specified in ADAAG 4.29.2 is the only surface that should be considered a detectable warning surface. The detectable warning area shall consist of raised truncated domes with a diameter of nominal 0.9 in (23mm), a height of nominal 0.2 in (5mm) and a center to center spacing of nominal 2.35 in (60mm).

SECTION 514.2 –TEXTURED SURFACE – DIAMOND PATTERN:

When used, the Diamond Pattern texturing is to be done with a metal grate placed and removed from the wet concrete to leave a diamond pattern. The long axis of the diamond pattern shall be perpendicular to the curb. Grooves shall be one eighth (⅛) inch deep and one quarter (¼) inch wide.

SECTION 515 - PEDESTRIAN WAYS:

Pedestrian ways shall be required wherever a public sidewalk will be installed between lots or buildings. A pedestrian way shall be a minimum of twelve (12) feet wide, with a five (5) foot minimum width sidewalk centered in the pedestrian way.

Pedestrian ways located between lots shall have a four (4) foot high chain link fence with top rail, or a solid shrub hedge a minimum of four (4) feet high. These shall be installed on both sides of the pedestrian way.

SECTION 516 - COLD WEATHER PROTECTION:

No concrete shall be placed on ice, snow, or any frozen material. The contractor shall be responsible for all concrete damaged by low temperatures, and any concrete so damaged shall be removed and replaced at the contractor's expense.

No concrete shall be placed when the air temperature is below forty (40) degrees F. without the permission of the Director of Community Development. When placing of concrete is permitted during cold weather, the temperature of the mixed concrete shall not be less than fifty (50) degrees F. nor more than one hundred (100) degrees F. at the time it is placed. The aggregate shall be heated by steam or dry heat prior to being placed in the mixer, and the water shall be heated to not hotter than one hundred and seventy (170) degrees F. When the air temperature is expected to drop below thirty five (35) degrees F., a supply of straw or other insulating material shall be brought to the job site. When the air temperature is expected to reach, or drop below, thirty two (32) degrees F. during the day or night, the straw or insulating material shall be spread over the sub-grade if concrete is to be placed the next day, or over the newly poured concrete if it has already been poured. The straw or insulating material shall be spread to a sufficient depth to prevent freezing. Concrete less than seventy two (72) hours old shall also be covered. New concrete shall be protected for a minimum period of four (4) days, so as to maintain a temperature of fifty (50) degrees F. or higher.

SECTION 517 - WALKWAYS:

Sidewalks located outside of the right-of-way, and constructed of materials other than concrete, shall be known as walkways. Walkways shall be approved on an individual basis by the Director of Community Development.

SECTION 518 - TESTING:

Testing shall be the responsibility of the owner or developer at the discretion of the Director of Community Development. All unsuitable material used shall be removed and replaced by the contractor.

SECTION 600

STREET LIGHTING

STANDARD SPECIFICATIONS FOR STREET LIGHTING

SECTION 600 - GENERAL:

The standards and requirements found in this section are for materials and construction of a street lighting system within the Village of Addison.

SECTION 600.1 - SPECIFICATIONS:

These specifications cover the installation of luminaires, poles, foundations, control cabinets, remote disconnects, and all appurtenances normally used for the construction of a street lighting system. Street lighting systems shall be installed in accordance with the latest revision of IDOT's Standard Specifications for Road and Bridge Construction, and applicable ordinances of the Village of Addison. In case of a conflict, the Village of Addison's Standard Specifications for Street Lighting and other applicable ordinances of the Village of Addison shall take precedence and shall govern.

SECTION 600.2 - REGULATIONS AND PERMITS:

Additional regulations and requirements governing the construction of a street lighting system in the Village of Addison are:

A. Any restrictions, policies, and instructions that may be adopted or issued from time to time by the Village of Addison.

B. Light distribution for major streets shall be in conformance with the latest edition of the American National Standard Practice for Roadway Lighting, approved by the American National Standards Institute and published by the Illuminating Engineering Society.

C. All work shall conform with the requirements of the National Electric Code.

D. No unauthorized person shall uncover, make any connections to, use, alter, or disturb any public street lighting system or appurtenance thereof without first obtaining a written permit from the Village of Addison. Any electrical contractor that will be performing work on a Village street lighting system, shall first notify the Addison Public Works Department prior to commencing any work. The contractor shall then follow all of OSHA'S lockout - tagout procedures.

E. All work shall be available for inspection by the Village of Addison at all times.

F. The contractor shall submit a list of the materials he proposes to use, with the manufacturer's name, catalog cut sheets, and the catalog number of the items. Similar items shall not be obtained from more than one source, and the contractor must receive written approval of all items before ordering them.

G. Street lighting shall be completed within three (3) months from the completion of the concrete curb and gutter.

SECTION 601 - DESIGN:

All streets and alleys, public or private, which are located within (or which border) a development, shall be adequately illuminated by a street lighting system. The developer or owner of a project shall include provisions for the design and construction of the street lighting facilities. A Photometric Plan, separate from the Site Plan, Street Lighting Plan or the Landscape Plan shall be submitted to support the street light spacing. In no instance shall the street light spacing be greater than one hundred (100) feet for coach lights, and fifty (150) feet for mast arm lights. The details and design of the street lighting system shall be approved by the Director of Public Works. Design criteria shall be for major or minor streets.

SECTION 601.1 - ROADWAY ILLUMINATION:

	Average Maintained Horizontal Illumination (Foot Candle)	Uniformity Ratio .
Major Streets:	1.2	3:1
Minor Streets:	0.4	6:1

SECTION 601.2 - LUMINAIRE MOUNTING HEIGHTS:

Coach lights	Major streets	Minor streets
Pole length	N/A	14 feet
Luminaire mounting heights	N/A	15 feet

Mast Arm Lights	Major streets	Minor streets
Pole length	27 feet	22 feet
Mast arm length	12 feet	10 feet
Luminaire mounting heights	30 feet	25 feet

SECTION 602 - MATERIAL:

All material shall meet the requirements of the appropriate Illuminating Engineering Society, National Electrical Manufacturers Association Standard and shall be approved by the Underwriter's Laboratory.

SECTION 603 - MAST ARM STREET LIGHTS:

SECTION 603.1 - POLES:

The minimum pole requirements shall be as follows:

	Wall thickness	Top diameter	Bottom diameter
Major street:	0.250 inch	4 inches	8 inches
Minor street:	0.188 inch	4 inches	7 inches

Poles shall be of spun aluminum (designed to withstand a wind velocity of at least 100 mph) with a satin ground finish. The aluminum pole shaft shall be a one piece, seamless,

round tapered tube of aluminum alloy. The pole shall be full length heat treated after welding on the base flange to provide a T3 temper. The light poles shall have a bolt down base using an eleven and a half (11½) inch, four (4) bolt circle. Breakaway coupling shall be provided where the speed limit is thirty five (35) mph or greater, or as required by the Director of Public Works. Light poles shall be supplied with an aluminum pole cap and a wiring handhole with a heat treated aluminum alloy cover, located on the downstream traffic side of the pole. Handholes shall be located one (1) foot six (6) inches above the top of the concrete foundation. The screws for the handhole cover shall be coated with an oxide inhibitor, ILSCO "De-Ox" or equal. A festoon lighting outlet shall be supplied when poles are to be installed in commercial areas.

A five eighths (⅝) inch x eight (8) foot long copper-clad steel ground rod shall be installed through each foundation and connected to the pole with No. 6 bare stranded copper wire and an aluminum to copper approved lug. A grounding nut and stud shall be provided in the base of each pole at the handhole for lug attachment.

A quick disconnect "Tron" type fuse holder with insulating boots shall be connected to each wire in the light pole at the handhole. The fuse holder shall be supplied with a five (5) amp fuse on the power leg, and a slug on the neutral and ground leg.

Vertical cables in the lighting standard, from the fuse holder to the luminaire, shall be of No. 10 stranded copper. The cables shall be color coded so that (neutral = white) and (power = black).

Each pole shall be plumbed to within one (1) degree of vertical and maintained within this tolerance for the duration of the one (1) year material and workmanship guarantee period. Leveling nuts or steel washers may be used to plumb poles provided the anchor bolts project from the foundation sufficiently.

Pole numbers shall be installed five (5) feet above finished grade on all light poles. The numbers shall be four (4) inches tall, black on silver poles and white on black poles.

SECTION 603.2 - MAST ARMS:

Mast arms shall be manufactured of aluminum alloy pipe (equal to the light pole requirement) with a smooth internal raceway, and shall accommodate the slipfitter type of luminaire. Mast arms shall be attached to the light poles with heat treated aluminum alloy castings and stainless steel nuts and bolts.

SECTION 603.3 - POLE LOCATIONS AND LIGHTING DISTRIBUTION PATTERNS:

Street lights shall be installed at all intersections, curves, and cul-de-sacs. Light poles shall not be located any closer than six (6) feet from any driveway. Additional poles shall be installed as needed to provide the required roadway illumination. In no case shall the spacings be greater than one hundred and fifty (150) feet.

A. INTERSECTIONS: The support arm shall bisect the angle that is formed by the intersection of the center lines of the intersecting streets. A Type IV lighting distribution pattern shall be used.

B. "T" INTERSECTIONS: A street light shall be provided on the centerline extended of the terminating street at the top of the "T". The support arm shall extend toward the center of the intersection. A Type IV lighting distribution pattern shall be used.

C. BETWEEN INTERSECTIONS: The mast arm shall be orientated at a right angle to the centerline of the street. A Type II or Type III lighting distribution pattern shall be used.

D. CUL-DE-SACS: When a center median is proposed at the end of a cul-de-sac, street lights shall be placed in the center median using a Type V lighting distribution pattern. If no center median is to be constructed, then a street light shall be placed at the end of the cul-de-sac along the centerline extended. A Type IV lighting distribution pattern shall be used.

SECTION 603.4 - LUMINAIRES:

The luminaire shall be highly efficient and provide a .80 maintenance factor. A luminaire shall consist of a housing, reflector, refractor, refractor holder, lamp, lamp socket, and ballast. Luminaires shall be delivered as a completely assembled unit. The luminaire shall be UL listed as "Suitable for use in wet locations". The contractor shall adjust the luminaire to the satisfaction of the Director of Public Works to obtain proper light distribution. On new installations, all luminaires shall be of the power door type.

SECTION 603.5 - LUMINAIRE HOUSING:

The housing and cover shall be made of aluminum alloy, with provisions for the mounting of an enclosed lamp holder. It shall be equipped with a slip fitter suitable for mounting on a two (2) inch pipe arm. The housing shall have a pipe arm barrier to limit the amount of insertion. A maximum of two (2) stainless steel door latches shall allow quick, easy, tool-free access to all internal components. The door shall hinge at the top and shall be removable from the housing without the use of tools. When closed for operation, the optical assembly shall be sealed against entry of moisture, dirt, and insects. The luminaire shall be provided with a leveling surface and shall be capable of being tilted $\pm$ three (3) degrees and rotated to any degree with respect to the supporting arm. It shall not be necessary to remove more than the cover, reflector, and refractor to mount the luminaire. All external nuts, screws, washers, pins, and other parts shall be made of stainless steel. The terminal block shall be equipped with pressure type connectors.

SECTION 603.6 - LAMP:

Lamps shall be high pressure sodium, two hundred (200) watt for commercial / industrial, and major streets, and one hundred and fifty (150) watt for minor streets.

SECTION 603.7 - LAMP SOCKET:

The lamp socket shall be a mogul type, porcelain enclosed, and shall be provided with grips or other suitable means to hold the lamp against vibrations. The rating of the socket shall exceed the lamp starting voltage.

SECTION 603.8 - REFLECTOR:

The reflector shall be made of aluminum sheet of such quality that the reflecting surface shall have a mirror like finish. The cover and reflector junctions shall be sealed with a high temperature rubber gasket or dacron felt.

SECTION 603.9 - REFRACTOR:

The refractor, (also known as the lens) shall be of polycarbonate and free of imperfections, with a smooth outer surface. The polycarbonate refractor shall be heat and impact resistant and shall not discolor. It shall contain prisms on the inside surface and where necessary on the outside surface to redirect the light from the lamp and upper reflector to produce an IES Type II, III, IV, or V, medium cutoff light distribution pattern conforming with the specifications. The refractor shall be clearly marked with "Street Side" and "House Side".

SECTION 603.10 - REFRACTOR HOLDER:

The refractor shall be held in such a manner so as to allow for its expansion and contraction.

SECTION 603.11 - BALLAST:

The ballast shall be mounted in the luminaire for accessibility to the wiring. The ballast shall be designed to operate an individual high pressure sodium lamp, but shall also be designed to operate on a multiple circuit, wired for one hundred and twenty / two hundred and forty (120 / 240) volt operation. Ballasts shall be of the constant wattage type.

SECTION 603.12 - PACKAGING AND MARKING OF CARTONS:

Each luminaire assembly shall be packed in a suitable carton so that it will not be damaged in shipping or handling. Each carton containing a luminaire shall be clearly marked on the ends, for instance "Luminaire two hundred and fifty (250) watt HPS", and with the light distribution type.

SECTION 604 - COACH LIGHTS:

In certain residential developments, where the streets are classified as minor streets, ornamental street lights of a "coach light" style may be permitted. The Mayor and Board of Trustees shall determine if coach lights may be used in lieu of mast arm style lights.

Where applicable, coach light requirements shall match those of the mast arm light requirements.

SECTION 604.1 - POLES:

The minimum pole requirements shall be as follows:

Wall thickness:	0.188 inch
Top diameter:	3 inches
Bottom diameter:	5 inches

Poles shall be of spun aluminum, designed to withstand a wind velocity of at least one hundred (100) mph, with a black acrylic paint finish. The aluminum pole shaft shall be a

one piece, seamless, round tapered tube of aluminum alloy. The pole shall be full length heat treated to provide a T3 temper. The light pole shall be supplied with a transform base using an eight (8) inch, three (3) bolt circle. The pole shall be (GE-ARTA143S5.0BBLT or approved equal).

See Section 603.1 for pole numbers.

SECTION 604.2 - LUMINAIRES:

The luminaire shall be colonial in design and supplied with a one hundred (100) watt high pressure sodium lamp. The lamp socket shall be attached to the inside of the housing in such a way that the lamp will point down from the top of the housing. The housing and canopy shall be of die-cast aluminum with a black acrylic paint finish. The canopy shall be hinged on one side and secured on the opposite side with a stainless steel screw or a stainless steel latch. The housing shall be supplied with a cast slipfitter capable of mounting the luminaire on a three (3) inch tenon. The refractor shall be of Lexan polycarbonate resin. The luminaire shall be (GE-T10R10SIAILAS2BL American Electric 247 Series, or Cooper Lighting LXF Lexington Series).

SECTION 605 - FOUNDATIONS:

Street light foundations shall be of steel reinforced concrete. Foundation holes shall be augured, twenty four (24) inches in diameter, with all loose material removed from the hole so that the concrete will be poured against undisturbed soil. The center of the foundation shall be a minimum of three (3) feet behind the back of the curb. A five eights (⅝) inch x eight (8) foot long copper-clad steel grounding rod shall be installed through each foundation.

All surplus material shall be disposed of by the contractor. The area around the foundation disturbed during construction shall be restored to its original condition. This shall include any backfilling, placement of topsoil, sodding, or any other care deemed necessary by the Director of Community Development.

Minimum foundation depths shall be:

A. Major streets with mast arm poles - eight (8) feet.

B. Minor streets with mast arm poles - six (6) feet.

C. Minor streets with coach light poles - five (5) feet.

The actual depth of a foundation shall be determined from the Light Pole Foundation Design Tables, (see standard drawings) by the Director of Community Development, during the excavation of the foundation. Deeper foundations may be required whenever warranted by adverse soil conditions, obstructions, or as determined by the Director of Community Development.

SECTION 605.1 - ANCHOR BOLTS:

Anchor bolts with a six (6) inch threaded end on top and a four (4) inch hook on the bottom shall be used at each foundation. The top twelve (12) inches of each anchor bolt shall be hot dipped galvanized steel. Two (2) hex nuts, one (1) lock washer, and one (1)

flat washer shall be furnished with each anchor bolt. The nuts and washers shall be galvanized steel.

Anchor bolts shall extend approximately two (2) inches to four (4) inches above the top of the pole foundation.

Anchor bolts shall be as follows:

A. Major streets with mast arm poles: Four (4) - one (1) inch diameter anchor bolts, forty two (42) inches in length.

B. Minor streets with mast arm poles: Four (4) - one (1) inch diameter anchor bolts, thirty (30) inches in length.

C. Minor streets with coach light poles: Three (3) – (¾) inch diameter anchor bolts, Twenty (20) inches in length.

The pattern used for embedding the anchor bolts shall match the pattern on the light pole base. The contractor shall be responsible for the correct setting of all anchor bolts, and any other fittings needed to insure proper installation of the light pole.

SECTION 605.2 - STEEL REINFORCEMENT:

Steel reinforcement for concrete foundations shall consist of four (4) vertical #6 bars, equally spaced around a spiral cage. The spiral cage shall be eighteen (18) inches in diameter of #3 bar with a six (6) inch pitch. The steel shall be set on concrete bricks or plastic chains, and shall be held in position to maintain a two (2) inch to three (3) inch clearance at the top, bottom, and sides.

The contractor has the option of substituting #3 hoops at twelve (12) inches on centers in place of the spiral cage.

The spiral cage, hoops, and the vertical bars, shall be tack welded or tied together with wire ties.

SECTION 605.3 - CONCRETE:

Concrete for the foundations shall be Class X with a minimum twenty eight (28) day compressive strength of three thousand (3000) psi, using a minimum of a six (6) bag mix. A mechanical vibrator shall be used to prevent honey combing. The top of the pole foundation shall extend one and a half (1½) inches to two (2) inches above the finished dirt grade, with the peripheral edge being beveled. A minimum two (2) inch diameter raceway consisting of polyvinyl chloride (PVC) or galvanized steel conduit, shall be

installed in the concrete base for the passage of the cable-duct in and out of the foundation.

SECTION 606 - UNDERGROUND WIRING:

All underground wiring shall be installed in galvanized steel conduit, unit duct, PVC pipe or direct burial cable.

SECTION 606.1 - UNIT DUCT:

Unit duct (also known as cable duct) shall consist of the required number of conductors (or cables) Type RHH or Type THWN and a ground wire, factory installed in black polyethylene duct, suitable for direct burial in the ground. The duct shall have a minimum wall thickness of 0.122 inch, and a minimum inside diameter of one and a quarter (1¼) inches. The duct shall withstand the impact and bending normally associated with transportation, handling, and installation. It shall not split, fracture, or be damaged in any way by normal handling.

Unit duct shall be installed in a trench, and the run shall be continuous without splicing the duct or conductors. Unit duct shall extend a minimum of two (2) inches above light pole foundations and four (4) inches above any control cabinet foundation. The unit duct shall be installed as straight as possible to facilitate conductor replacement. Wherever tees or alignment changes are necessary, a handhole shall be installed (see Section 608). After backfilling a section of unit duct, the contractor shall demonstrate to the inspector that the conductors move freely within the duct by pulling the conductors out a minimum of two (2) feet. All unit duct shall be marked with metallic warning tape.
(See Section 607)

When two (2) or more unit ducts run adjacent to each other, they shall be placed in a common trench, so as not to cross each other.

When unit duct is to be placed under a road, driveway, or sidewalk, the unit duct shall be installed in rigid galvanized steel conduit.

SECTION 606.2 - RIGID GALVANIZED STEEL CONDUIT:

Rigid galvanized steel conduit shall be hot dip galvanized with standard threaded conduit couplings. All conduit connections shall be liquid tight, and all bends shall be made with standard conduit elbows. Rigid galvanized steel conduit shall be used in the following situations:

A. Rigid galvanized steel conduit shall be used whenever a conduit must extend above the ground, is not in an enclosure, or wherever needed to conform in size and placement with Commonwealth Edison's rules and requirements. (See Section 609.1). The steel conduit shall extend a minimum of one (1) foot below ground level when connecting to PVC pipe, and shall extend a minimum of twenty four (24) inches down and thirty six (36) inches away if direct burial cable or unit duct is used.

B. When a street lighting circuit crosses a proposed street, driveway, or sidewalk, conduit shall be installed in a suitable trench, so that the conduit will extend a minimum of one (1) foot beyond the proposed improvement.

C. Conduit shall be pushed under existing streets, driveways, sidewalks, or other structures. The conduit shall extend one (1) foot on either side of the obstruction.

Service cable shall be pulled through galvanized steel conduit that shall have a minimum diameter of two (2) inches. All galvanized steel conduit shall be provided with an insulated fiber bushing at each end. Unit duct shall be pulled through a minimum diameter of two and one half (2½) inch galvanized steel conduit and then the ends of the conduit shall be sealed with a workable soft plastic sealing compound (duct seal or approved equal).

SECTION 606.3 - PVC PIPE:

PVC pipe shall be a minimum of Schedule 40. The pipe shall be installed so that it is surrounded by not less than six (6) inches of sand (FA-6) to prevent cracking and breaking when backfilling. At no time shall PVC pipe extend above ground level. All PVC pipe joints shall be primed and glued to ensure a water tight seal. All buried PVC pipe shall be marked metallic warning tape. (See Section 607) PVC pipe can be used in the following situations:

A. For service wires from the Commonwealth Edison Service to the remote disconnect and from the remote disconnect to the control panel. When used to run service wires, the PVC pipe shall not be less than two (2) inches in diameter.

B. For street lighting circuits from the control panel to the street lights, and from street light to street light. When used for street lighting circuits, PVC pipe shall not be less than one and a quarter (1¼) inches in diameter, and shall be sized in accordance with the National Electrical Code, Chapter 9, Table 4, Rigid PVC Conduit Schedule 40 over two (2) wires 40%.

SECTION 606.4 - DIRECT BURIAL CABLE:

Direct burial cable shall be of the THWN cable type or XLP / USE cable if single cables are used. Direct burial cable shall be installed so that it is surrounded by not less than six (6) inches of sand (FA-6) to prevent damage to the cable during backfilling. All Direct buried cable shall be marked with metallic warning tape. (See Section 607) Direct burial cable can be used in the following situations:

A. For service wires from the Commonwealth Edison Service to the remote disconnect and from the remote disconnect to the control panel. Direct burial cable shall be no smaller than # 2 AWG, three (3) conductor with ground.

B. For lighting circuits where both cables are direct burial in a common trench.

SECTION 606.5 - CONDUCTORS:

The underground wiring system from the control cabinet to the light poles, and in between the light poles, shall be a parallel system of two (2) or three (3) insulated conductors of stranded copper wire. No conductor shall be smaller than No. 6 AWG copper. The conductor size shall be computed by a maximum voltage drop from the control cabinet to the farthest light pole to be served on that circuit. The voltage drop shall not exceed five (5%) percent. Insulation shall be six hundred (600) volt, flame retardant, moisture and heat resistant thermoplastic, conforming to Underwriter's

Laboratories requirements for Type THW, THWN XLP/USE or tray cable with a sufficient number of conductors.

All underground electrical conductors shall be installed in one and a quarter (1¼) inch diameter cable duct. (See Section 606.1)

Cable slack shall be provided as follows: Three (3) feet of slack at the base of all light poles, five (5) feet of slack at the base of the control cabinet, and six (6) feet of slack in all handholes.

Installation shall be in accordance with the National Electrical Code. Conductors shall be color coded so that each conductor may be readily identified at any point on the circuit.

SECTION 606.6 - SPLICES:

No splicing of the duct shall be allowed. Splices of the conductors will be permitted only in handholes, and at light pole bases.

Conductor splicing shall be done in accordance with the manufacturer's recommendations to the extent that the material used shall be compatible with the insulation of the conductor. Straight or line splices shall be made with copper-clad pressed sleeves, or an approved equal. Tee splices shall be made with a pressed sleeve, split or unsplit type, or approved equal. After a conductor splice is made, it shall be insulated with layers of plastic pressure-sensitive, all weather, 8.5 mil electrical tape. The tape shall be applied half-lapped over the entire splice to a thickness of not less than one and a half (1½) times the original insulation and jacket thickness, and tapered off over the jacket to a point approximately three (3) inches from the splice. All sharp points and edges of the connector shall be padded, and all voids filled with extra wraps of plastic tape. The tape shall not be stretched excessively in such a manner as to cause creeping.

Splicing in the light pole base between the pole conductors and the underground conductors shall be made with a premolded quick disconnect "Tron" type fuse holder and insulating boots. A fuse shall be installed on the power leg and a slug on the neutral leg. The remaining splices in the pole base shall be made as noted above. There shall be sufficient slack in the cable to withdraw a splice a minimum of eighteen (18) inches from the pole handhole. This equates to three (3) feet of slack in each pole base.

SECTION 606.7 - TESTING:

After the unit duct is in place, and before being connected to the ballast or other equipment, the underground system shall be tested for grounds and shorts. An approved type constant potential "megger" shall be used. The "megger" shall impose a voltage on the lighting circuit under test, but shall not exceed the voltage for which the conductor was designed as attested to by Underwriter's Laboratories. The insulation resistance to ground of each completed lighting circuit shall be not less than 40,000 meg ohm. All conductors showing insulation resistance lower than the minimum acceptable shall be replaced.

The contractor shall provide a suitable five hundred (500) volt DC, zero to 100 meg ohm range, hand operated, resistance measuring device for making the resistance test.

All testing shall be done in the presence of a Village of Addison inspector.

SECTION 606.8 - GROUND WIRE:

A No. 6 copper ground wire shall be connected between each light pole and the control cabinet. The ground wire shall be installed in the unit duct, galvanized steel conduit, PVC pipe or included with the direct burial cable.

SECTION 607 - TRENCHING AND BACKFILL:

The trench shall be located approximately three (3) feet in back of the curb and shall be not less than thirty (30) inches deep and of sufficient width to permit easy placing of the unit duct, galvanized steel conduit, PVC pipe or direct burial cable. The trench bottom shall be tamped and the trench inspected by a Village of Addison inspector before the unit duct or conduit may be placed in the trench. The walls of the trench shall be essentially vertical so that a minimum of surface area is disturbed. The trenching shall be conducted so as to avoid disturbing existing streets, driveway, sidewalk, and other facilities. Whenever existing utilities or other obstructions are encountered, the trench shall be made deeper than the minimum depth so that the unit duct, galvanized steel conduit, PVC pipe or direct burial cable can be installed under the utility or obstruction.

All trenches shall be backfilled as soon as possible after the installation of the unit duct or conduit. Material excavated from the trench that in the opinion of the inspector is satisfactory backfill material, may be used for backfilling the trench. The backfill material shall not contain tree roots, rocks, frozen clumps of dirt, or rubble of any kind. Trenches under, or within, proposed streets, driveways, or sidewalks shall be backfilled with compacted FA-6 (sand) or limestone screenings.

All backfilling material shall be deposited in the trench in layers, not to exceed six (6) inches in depth, and shall be thoroughly compacted by tamping before the next layer is deposited in the trench. The trench and any openings around light pole and control cabinet foundations shall be backfilled one (1) foot in either direction from the foundation with compacted sand or stone screenings.

Extreme caution is to be observed when backfilling to prevent damage to the installed unit duct or conduit.

A six (6) inch wide reinforced metallic warning tape, red with black lettering with the wording "Caution - Electrical Line Buried Below" shall be placed one (1) foot minimum to two (2) feet maximum below finished grade.

SECTION 608 - HANDHOLES:

All handholes shall be of concrete, cast-in-place against undisturbed earth. With the approval of the Director of Public Works, and the submittal of appropriate shop drawings, precast concrete handholes may be permitted. The top of the handhole shall be installed 1 inch above finished grade. Handholes shall have cast iron frames and covers,

Neenah R-6660-JP for light duty and Neenah R-6662-HP for heavy duty. Handhole frames shall be furnished with type "G" lifting handles. The cover shall have the words "Street Lighting" imprinted on it.

A minimum of six (6) feet of cable slack shall be provided in each handhole.

Handholes shall be constructed at all tees, or whenever there is a change in alignment of the cable duct greater than twenty (20) degrees. No handhole will be required where the cable duct is laid with a minimum radius of twenty (20) feet.

Circuits shall be properly labeled in all handholes by means of aluminum identification tags attached to the cables with aluminum wire.

SECTION 608.1 - HANDHOLE GROUNDING REQUIREMENTS:

The contractor shall ground each handhole in accordance with Sections 250-42 and 370-28C of the National Electrical Code, by doing the following:

A. A five eighths (⅝) inch x eight (8) foot copper clad steel ground rod shall be driven through the open bottom of the handhole after the handhole has been installed. Approximately one (1) foot of the ground rod shall extend into the handhole.

B. Cad weld one end of a No. 8 bare stranded copper wire to the top of the ground rod, and connect the other end to one of the sides of the handhole frame. The connection shall be made with a stainless steel hex bolt and lock washer.

C. Drill the under side of the handhole lid, and connect a No 8 bare stranded copper jumper wire to it using a stainless steel hex head bolt, lock washer, and nut. Connect the other end of the jumper wire to one of the sides of the handhole frame as noted above.

The length of the jumper wire shall be the minimum length necessary to connect the handhole lid to the frame, plus two (2) feet of slack.

SECTION 609 - METERING AND CONTROL CENTER:

A metering and control center shall be provided for each street light system, which will control all the street lights on the system. Each metering and control center shall include

the service cable, conduit, remote disconnect, service pad, foundation, and the control cabinet. The developer shall be responsible for costs involved with the service connection or any excess facility changes required by the Commonwealth Edison Company to extend their services to the project.

SECTION 609.1 - SERVICE CABLE AND CONDUIT:

The electric service cable and conduit shall be run in a trench, a minimum of three (3) feet deep, from the control cabinet to the remote disconnect and from the remote disconnect to the Commonwealth Edison Company service pole or pedestal. The service load shall determine the size of the service cable, with the minimum size being No. 2 copper conductors. Service cable shall be six hundred (600) volt Type RHH or THWN cable, and shall be pulled in a minimum two (2) inch diameter conduit.

If direct burial cable is used, the cable shall be installed in conduit whenever the cable extends above the ground. The buried end of the conduit shall extend a minimum of thirty six (36) inches from the remote disconnect, Commonwealth Edison Company service pole or pedestal, so they do not have to be disturbed to replace the cable.

All bends in the conduit shall be made with standard conduit elbows, and all connections shall be liquid tight. The service cable and conduit sizes shall be as required by the Commonwealth Edison Company.

SECTION 609.2 - REMOTE DISCONNECT:

A remote disconnect shall be installed on all Commonwealth Edison Company service lines. A ground mounted pedestal enclosure shall be provided unless prior approval has been granted by the Director of Public Works for a pole mounted enclosure.

A. Ground mounted pedestal enclosures shall be located on the service line, within fifteen (15) feet of the Commonwealth Edison Company service pole or pedestal. The pedestal enclosure shall be ten and a half (10½) inches x ten and a half (10½) inches x thirty six (36) inches in size, with a locking hasp, and attached with five eighths (⅝) inch thru bolts, lock washers, and hex nuts to a one and five eighths (1⅝) inch x eight (8) foot galvanized steel unistrut driven into the ground. A one hundred (100) amp two (2) pole circuit breaker (Type TEB or Type FAL) matched to the service load of the system being installed, and an appropriately sized neutral bar, shall be mounted on a half (½) inch thick Benlex board, and installed in the pedestal enclosure.

   A five eighths (⅝) inch x eight (8) foot copper clad steel ground rod shall be bonded to the pedestal enclosure with a No. 8 bare stranded copper wire.

B. Pole mounted enclosures shall be located on the service pole, a minimum of nine (9) feet to a maximum of eleven (11) feet above the finished dirt grade. The enclosure shall be an aluminum weather proof enclosure (NEMA4X) twelve (12) inches X ten (10) inches X six (6) inches in size, with a lockable, gasketed cover. The enclosure shall be attached to a bracket which is lag screwed to the service pole. A one hundred (100) amp two (2) pole circuit breaker (Type TEB) matched

to the service load of the system being installed, along with a ground stud for a neutral connection, shall be installed in the enclosure. A five eighths (⅝) inch x eight (8) foot copper clad steel ground rod shall be bonded to the enclosure with a No. 8 bare stranded copper wire installed in a half (½) inch galvanized steel conduit.

SECTION 609.3 - CONTROL CABINET:

The control cabinet shall be a Class C, pedestal mount cabinet. The cabinet shall be a solid casting, made of aluminum, with the sides and back complete in one piece. The entire front of the cabinet shall be a reinforced, hinged door of the same cast construction

as the cabinet. The door shall close against a sponge neoprene or rubber gasket making the cabinet moisture and dust resistant. A hood shall extend one quarter (¼) inch from the front of the cabinet over the top of the door. A police type lock, rain and ice resistant, with two keys shall be built into the door. On the door shall be imprinted in one (1) inch letters "Street Lighting" or "Lighting Control". Minimum cabinet dimensions shall be seventeen (17) inches wide, twenty nine (29) inches high, and twelve (12) inches deep. The walls shall have a minimum thickness of one quarter (¼) inch. The bottom of the cabinet shall be mounted forty two (42) inches above the foundation. The cabinet shall sit on a minimum four (4) inch outside diameter pipe pedestal with a pedestal adapter and an ornamental pedestal base of cast ferrous alloys. The pedestal base shall have a handhole for wiring access, and shall be secured to the foundation by a minimum of three (3) – three quarter (¾) inch galvanized steel bolts, twelve (12) inches long.

A meter socket shall be furnished, connected, and installed on the left side of the control cabinet by the electrical contractor. Control cabinets shall be installed so that the door of the control cabinet opens away from traffic. This meter socket shall be installed in accordance with Commonwealth Edison Company requirements.

The meter itself will be furnished and installed by the Commonwealth Edison Company.

A wiring diagram of the control cabinet components shall be approved by the Director of Public Works prior to assembly and shall include the following:

A. The neutral ground terminal strip shall provide box-type compression connectors, each suitable for a single conductor ranging in size from No. 8 to No. 2 stranded copper. Compression shall be applied by means of a screwdriver or wrench. The ground strip may be mounted on the insulated mounting panel or mounted directly on the cabinet. A No. 8 bare copper ground cable shall be connected to the ground terminal, control cabinet, and a grounding rod driven through the foundation.

B. An insulated mounting panel, mounted by means of corrosion-proof hardware to the back of the control cabinet in such a way that no bolts will protrude outside the back of the cabinet.

C. The main service disconnect shall be a two pole, one hundred (100) amp circuit breaker, two hundred and forty (240) volt, type TEB, FAL or approved equal.

D. Each street lighting circuit shall be provided with a circuit breaker. Additional breakers shall be installed to provide for one (1) spare circuits.

NOTE: The above breakers shall be sized according to the service load. They shall be constructed so that a standard breaker of larger size can be substituted on any of the circuits at some future time.

E. A fifteen (15) amp one pole circuit breaker, one hundred and twenty (120) volt, type TEB shall control a fifteen (15) amp, one hundred and twenty (120) volt

duplex outlet and an incandescent lighting fixture with a one hundred and twenty (120) volt, seventy five (75) watt bulb on a pull chain switch.

F. A fifteen (15) amp, one (1) pole circuit breaker, one hundred and twenty (120) volt, type TEB shall control a one hundred and twenty (120) volt photo-cell control circuit for the lighting contactor.

G. A three (3) position test switch, or selector switch, to manually turn on the contactor, by-passing the photo-cell, shall be mounted in a four (4) inch x four (4) inch box. The switch shall be twenty (20) amp, SPDT HOA, one hundred and twenty (120) volt. The selector switch shall be marked "Manual, Off, and Automatic". The positions shall be designated by a permanent nameplate of metal or rigid laminated plastic.

H. The lighting contactor shall be a two (2) pole, one hundred (100) amp electrically operated and preferably electrically held contactor with a one hundred and twenty (120) volt air conditioning coil. The contactor shall be sized according to the service load.

All the controls shall be mounted in the cabinet and properly wired. The wire used in the control cabinet shall be rated for six hundred (600) volts and of the appropriate size. The wiring shall be arranged in standard switch board fashion as follows:

A. Wires shall be laced together when more than twelve (12) inches in length.

B. Wires shall be supported at intervals not exceeding twelve (12) inches by cleats attached to the panel or by the terminals of the various components.

C. Bends in the wires shall be ninety (90) degrees maximum, and the wires shall be formed to be parallel and/or vertical to the surface of the cabinet.

D. Only mechanical connectors shall be used.

E. There shall be no splices permitted in the control cabinet.

The control cabinet and pedestal shall have a factory applied paint finish consisting of a baked primer, followed by two (2) coats of Rustoleum Industrial Enamel, Chestnut Brown No. 977 high gloss, baked after application. After the installation is completed, any scratches shall be touched up. If directed by the Director of Community Development, the contractor shall wash the exterior of the control cabinet and pedestal with an approved degreasing compound. The contractor may then be directed to reprime and repaint with two (2) coats of enamel the complete cabinet and pedestal.

SECTION 609.4 - SERVICE PAD:

A twenty four (24) inch x twenty four (24) inch x eight (8) inch concrete service pad or public sidewalk shall be installed in front of the control cabinet door. Service pads shall be constructed of Class X concrete, and shall meet the same requirements as the light

pole foundations. The top of the service pad shall be flush with the proposed finished grade. The pad shall be tied into the control center foundation with four (4) No. 6 deformed tie bars. Instead of the service pad, the control cabinet door may face the public sidewalk if there is a sidewalk. The control center foundation shall then be poured adjacent to and one (1) inch above the sidewalk.

SECTION 609.5 - CONTROL CENTER FOUNDATION:

The control center foundation shall be constructed of Class X concrete, and shall meet the same requirements as the light pole foundation with the following exceptions:

A. The control center foundation shall be twenty four (24) inches in diameter and five (5) feet in depth.

B. Reinforcing steel will not be required except to tie in the service pad.

C. Anchor bolts shall be three (3) – three quarter (¾) inch diameter, twelve (12) inches in length.

D. Top of foundation shall be one (1) inch above finished grade, with the peripheral edge beveled.

E. A minimum two (2) inch diameter raceway will be supplied for each lighting circuit, and shall exit the foundation a minimum of thirty (30) inches below finished grade.

F. A minimum three (3) inch diameter raceway shall be supplied for the service cable, and shall exit the foundation a minimum of three (3) feet below finished grade.

G. A ground rod, ten (10) feet long, and three eighths (¾) inch or larger in diameter, made of copper clad steel, shall be driven through the foundation. The ground rod shall be connected to the neutral ground terminal strip in the control cabinet by a bare No. 8 strand copper conductor.

H. All openings around the service cable and unit duct where it enters the pedestal base, shall be sealed with duct seal.

The control cabinet shall be set plumb and level on the foundation.

SECTION 610 - PHOTO-ELECTRIC CELL:

The street light system shall be controlled in such a way that it will be on at dusk and off at dawn. This shall be accomplished by mounting a photo-electric cell on the top of the luminaire on the pole nearest to the control center. One (1) luminaire per circuit shall be furnished with a weather tight adapter fitting for mounting the photo-cell on top of the luminaire. Wiring shall run from the photo-cell to the terminal block of the luminaire, and then from the photo-cell lug of the luminaire to the control center. The photo-cell shall energize and de-energize the lighting circuits through the contactor coil. The photo-cell shall be a one hundred and twenty (120) volt type. The wires for connecting the

photo-cell to the contactor shall be No. 10 copper conductors and shall be run in the same unit duct as the lighting circuit. A quick disconnect, located at the light pole handhole, shall be installed on each wire going to the photo cell. A minimum of thirty (30) inches of slack shall be provided at the light pole handhole.

SECTION 611 - CONNECTING TO AN EXISTING CONTROL CABINET:

When connecting a new lighting system to an existing control cabinet, the developer shall be responsible for the modification or replacement of the existing circuitry inside the existing control cabinet. The electrical contractor shall provide and install any new components and / or whatever work is required to provide a complete and fully working control system for the new lighting system, and the existing lighting system. The contractor shall notify the Village of Addison's Engineering and Public Works Departments twenty four (24) hours prior to starting this work.

SECTION 612 - RESTORATION:

The contractor shall exercise care at all times so as to avoid damaging any existing sidewalks, driveways, curb and gutter, street pavement, yards, trees, shrubbery, signs, buildings, etc. Those items damaged by the contractor shall be repaired or replaced by the contractor (as directed by the Director of Community Development) at no cost to the Village.

Existing grass lawns shall be restored with four (4) inches of top soil and sod. All natural appurtenances shall be restored as nearly as possible to their original condition.

All rubbish and surplus material shall be disposed of promptly upon completion of the work. The general area shall be left in a neat and workmanlike condition. The contractor shall be responsible for maintaining all disturbed areas until final acceptance.

SECTION 613 - EASEMENTS:

A ten (10) foot easement shall be provided in new developments for the installation of the street lighting service cable. This easement shall run from the Commonwealth Edison

Company service connection to the right-of-way. The easement for street lighting service cable shall be solely dedicated to street lighting, no other use shall be permitted.

SECTION 614 - "AS-BUILT" DRAWINGS:

"As-Built" or "Record" drawings shall be kept by the electrical contractor throughout the project. Upon completion, the contractor shall give a copy of the "As-Built" drawings to the developer. This information shall be given to the developer's engineer so that accurate "As-Built" drawings can be prepared. Final payment to the contractor shall be held until the as-built records are received by the engineer. If the contractor fails to properly locate on the as-built records any required information, the contractor shall be responsible for all costs which are incurred as a result of inadequate information.

These drawings shall show the locations of the street lights, control center, remote disconnect, Commonwealth Edison Company service connection, unit duct size, the size and length of conduit under streets, sidewalks, driveways, etc. The developer shall then consolidate the street lighting "As-Builts" with the other utility "As-Builts", or

submit a separate "As-Built" for the street lights. All "As-Built" drawings shall be drawn in ink on mylar. The "As-Built" drawing shall be submitted to, (and approved by) the Director of Community Development, prior to the acceptance of the street lighting system.

SECTION 615 - FINAL ACCEPTANCE:

The following requirements shall be fulfilled prior to final acceptance of the project.

A. The contractor shall submit a certificate of testing verifying that the materials and equipment used on the project conform to the applicable standards.

B. A manufacturer's letter or certificate of compliance stating that the materials meet the specifications can be submitted in lieu of a certificate of testing.

C. All underground lines shall be tested for grounds, shorts, and voltage leaks. (See Section 606.5)

D. The lighting system shall be turned on (steady burn) for forty eight (48) hours, after which the entire lighting system shall operate automatically for two (2) weeks. Any item failing to operate shall be replaced.

E. An "As-Built" drawing of the street lighting system shall be approved by the Director of Community Development. (See Section 614)

SECTION 700

CURB AND GUTTER

STANDARD SPECIFICATIONS FOR CURB AND GUTTER CONSTRUCTION

SECTION 700 - GENERAL:

The standards and requirements found in this section are for materials and construction of concrete curb, concrete gutter, and combination concrete curb and gutter within the Village of Addison. These items are the most apparent to the traveling public, therefore, good lines and a smooth appearance are of the utmost importance.

SECTION 700.1 - SPECIFICATIONS:

These specifications cover the installation of concrete curb, concrete gutter, and combination concrete curb and gutter which shall be installed in accordance with the latest revision of IDOT's Standard Specifications for Road and Bridge Construction, and applicable ordinances of the Village of Addison. In case of a conflict, the Village of Addison's Standard Specifications for Curb and Gutter Construction and other applicable ordinances of the Village of Addison shall take precedence and shall govern.

SECTION 700.2 - REGULATIONS AND PERMITS:

Additional regulations and requirements governing the construction of curb and gutter in the Village of Addison are:

A. Any restrictions, policies, and instructions that may be adopted or issued from time to time by the Village of Addison.

B. No person shall construct or remove any public curb and gutter without first obtaining a written permit from the Village of Addison.

C. No person shall construct private curb and gutter without first obtaining a written permit from the Village of Addison.

D. All work shall be available for inspection by the Village of Addison at all times.

E. New curb and gutter shall connect to existing curb and gutter where available. When existing curb and gutter is within one hundred (100) feet of a proposed curb and gutter, the developer or builder shall at the discretion of the Director of Community Development connect the two (2) curb and gutters.

SECTION 700.3 - GENERAL DESIGN REQUIREMENTS:

All streets and medians shall be bordered by combination concrete curb and gutter for their full length. However, in areas outside the Village limits where satisfactory storm drain facilities do not exist or are not available, and in residential areas with a density of over twenty thousand (20,000) sq. ft. per dwelling unit, the curb and gutter may be omitted if proper surface drainage is provided, or as recommended by the Director of Community Development.

New street curb and gutter shall be of the B- 6.18 type with Neenah R-3278-AL frame and grates. Median curb and gutter shall be B-6.12. Gutter flags shall be a minimum of ten (10) inches thick. Curb corners in residential areas shall have radii of not less than thirty (30) feet, commercial areas shall have radii of not less than forty (40) feet. Larger radii may be required by the Director of Community Development at his discretion.

When a curb cut is proposed on one side of the street, to permit pedestrians to cross the street, there shall be a corresponding curb cut on the opposite side of the street to accept the pedestrians. This may require the removal and replacement of existing sidewalk, curb and gutter.

SECTION 701 - CONCRETE CURB AND GUTTER:

All public curb and gutter shall be concrete, constructed on a prepared subgrade with expansion and contraction joints as shown in the standard drawings and described herein.

SECTION 701.1 - EARTH EXCAVATION:

The excavation shall consist of removing all topsoil and unsuitable sub-grade material to a width of one (1) foot outside of the proposed curb and gutter. If material is removed below sub-grade elevation, a suitable material such as sand, limestone screenings, or crushed limestone shall be used as fill to the correct sub-grade elevation. This fill material shall be compacted with vibratory equipment to ninety (90%) percent of Modified Proctor density. Tree roots exposed by the excavation shall be cut off at least three (3) inches outside of the new curb and gutter and three (3) inches below the sub-grade elevation.

SECTION 701.2 - SUB-BASE PREPARATION:

The sub-base shall consist of four (4) inches of crushed limestone to a width of not less than one (1) foot wider than the new curb and gutter. This sub-base material shall be compacted with vibratory equipment to ninety five (95%) of Modified Proctor density, and shall be true to grade and cross section for the bottom of the curb and gutter.

SECTION 701.3 - CONCRETE MIX:

The concrete shall be a SI mix, made with portland cement. A compressive strength of not less than thirty five hundred (3500) lb. per square inch shall be achieved after fourteen (14) days of curing. The compressive strength shall be determined in accordance with ASTM C-31. All concrete used shall be uniform throughout the mass, with air-entrainment of five (5%) percent to eight (8%) percent of the volume, and a slump of three (3) inches to five (5) inches. Admixtures other than air-entraining agents shall not be used.

SECTION 702 - INSTALLATION OF FORMS:

Side forms shall be of lumber of not less than two (2) inches nominal thickness or of steel of equal rigidity. They shall be held securely in place by stakes or braces, with the top edges true to line and grade. The forms shall be of a depth equal to the depth of the curb and gutter. All forms shall be cleaned and oiled before concrete is placed against them. With the approval of the Director of Community Development, the curb and gutter may

be constructed by using a slip forming machine. If a slip forming machine is used, the concrete slump shall be adjusted to meet the conditions for this type of work. The continued use of a slip forming machine shall be based on satisfactory results.

No concrete shall be poured until the sub-base and forms have been approved by the Village of Addison.

SECTION 703 - PLACING AND FINISHING:

The sub-grade and forms shall be moistened just before the concrete is placed. The concrete shall be placed to the proper depth, tamped and spaded or mechanically vibrated sufficiently to bring the mortar to the surface. Before the curb and gutter is given the final finishing, the surface shall be checked with a ten (10) foot straight edge, and any irregularities of more than ¼ inch in ten (10) feet shall be eliminated. Extreme care shall be taken to insure a well defined gutter section. This is necessary to accomplish complete drainage to the nearest drainage structure. Gutter drainage irregularities greater than those noted shall be corrected. All edges shall be rounded with finishing tools having the radii as shown on the standard drawings. The exposed surfaces of the curb and gutter shall be finished smooth and even, and given a light broom finish. The broom shall be drawn across the curb and gutter, with adjacent strokes slightly overlapping, producing a uniform, slightly roughened surface.

SECTION 703.1 - REMOVAL OF FORMS:

Forms shall remain undisturbed for a minimum of twelve (12) hours, or until the concrete has attained sufficient strength to sustain its own weight in addition to any temporary or permanent loads that may be placed upon it. After the forms have been removed, minor honey-combing, porous areas, and defects shall be filled with mortar composed of one part of portland cement, and two parts of fine aggregate.

SECTION 704 - JOINTS:

All joints shall conform to the details as shown in the standard drawings of these specification. Joints shall be straight and perpendicular to the face of the curb.

SECTION 704.1 - CONTRACTION JOINTS:

Contraction joints shall be installed at a maximum interval of twenty five (25) feet, and shall be one of the following:

A. Grooved contraction joints shall extend a minimum of two (2) inches below the surface of the curb and gutter. The groove shall not be less than one eighth (⅛) inch nor more than one quarter (¼) inch in width, and shall be edged with an edging tool having a one quarter (¼) inch radius.

B. Saw cut contraction joints shall be cut to a minimum depth of two (2) inches while the concrete is still green. Sawing shall commence as soon as the concrete has hardened sufficiently to prevent spilling, and shall be completed within twenty four (24) hours of pouring the concrete.

SECTION 704.2 - EXPANSION JOINTS:

Expansion joints shall be constructed using one (1) inch thick pre-formed expansion joint filler, cut to the exact cross section of the curb and gutter. A single one and one quarter (1¼) inch diameter x eighteen (18) inch long epoxy coated, smooth dowel bar, fitted with a pinched stop cap that will provide one (1) inch of expansion, shall be placed mid-depth through the joint filler.

Expansion joints shall be installed five (5) feet on either side of any structure that is located within the curb line, at the beginning and ending of a radius, and at the end of each concrete pour.

SECTION 704.3 - CONSTRUCTION JOINTS:

Construction joints shall be used whenever the placing of concrete is held up for thirty (30) minutes or more. Construction joints shall be installed in the same manner as expansion joints.

SECTION 704.4 - SEALING JOINTS:

As soon after the curing period as possible, all sawed and grooved joints shall be sealed with either hot-poured or cold-poured joint sealer, meeting with the approval of the Director of Community Development. Each joint shall be thoroughly cleaned of all foreign material, and dry before sealing. Sealing shall be done in such a manner that the material will not be spilled on the exposed concrete surface. Any excess material on the surface of the concrete shall be removed immediately and the surface cleaned. Poured joint sealing material shall not be placed when the air temperature in the shade is less than fifty (50) degrees F.

A. Hot-poured joint sealer shall comply with the requirements of ASTM D 3405. The material shall be stirred during heating so that localized overheating does not occur.

B. Cold-poured joint sealer shall comply with the requirements of ASTM D 1850.

SECTION 704.5 - STEEL REINFORCEMENT OVER TRENCH CROSSINGS:

Steel reinforcement, consisting of two (2) continuous No. 4 bars, shall be centered in the curb over all trench crossings. The bars shall extend five (5) feet beyond the trench edge on each side.

SECTION 705 - CURING:

Newly poured curb and gutter shall be cured in the manner as called for in Section 625 of IDOT's Standard Specifications for Road and Bridge Construction and to the satisfaction of the Director of Community Development. The material used for curing shall conform with the material specifications per article 718.04 of the specifications noted above. A minimum five (5) day curing period is required.

SECTION 706 - BACKFILL:

The space along the outside edge of the curb and gutter shall be backfilled to the required elevation with approved material. The material shall then be compacted until firm, and the surface neatly graded to receive grass cover.

SECTION 707 - DISPOSAL OF SURPLUS MATERIAL:

Surplus or waste material resulting from the construction of curb and gutter shall be disposed of by the contractor.

SECTION 708 - PROTECTION OF THE CURB AND GUTTER:

Special attention is called for in the protection of fresh concrete curb and gutter against the following:

A. VANDALISN: While the concrete is still soft, the contractor should maintain a watch.

B. FREEZING: Protection of fresh concrete curb and gutter against freezing shall follow the methods in Section 713 - Cold Weather Protection.

C. VEHICLES: All vehicles shall be kept off the curb and gutter for seven (7) days.

D. RAIN: All exposed surfaces shall be protected against washing by rain.

The contractor shall assume all responsibility for damage to the curb and gutter by action of the elements or from any other cause, and shall repair, or remove and replace all damaged curb and gutter.

SECTION 709 - CURB AND GUTTER REMOVAL:

The contractor shall saw to full depth the portion of the curb and gutter being removed and that part left in place. It shall be the responsibility of the contractor to determine the thickness of the existing curb and gutter to be removed. Sawing shall be done with a concrete saw in such a manner that a straight joint will result. If, while removing the curb and gutter, additional curb and gutter is damaged, the damaged curb and gutter shall also be removed.

SECTION 710 - INSTALLATION OF PERMANENT CURB MARKERS:

The developer or owner shall require his curb contractor to embed permanent markers in the vertical or horizontal face of the curb before the concrete hardens. These permanent markers shall identify the points where the curb crosses a service trench. The permanent marker shall be in the shape of the letter "W" for a water service, and the letter "S" for a sanitary service. The markers shall be a minimum of three (3) inches in height, and made of metal, plastic, or any other material approved by the Director of Community Development.

SECTION 711 - DRIVEWAY AND PARKING LOT CURB AND GUTTER:

All driveways and parking lots shall be bordered by B-6.12 combination concrete curb and gutter, except for one (1) and two (2) family residential units which shall not be required to have curb and gutter.

The back of the curb shall be located no closer than:

A. Ten (10) feet to the front yard property line; and

B. Five (5) feet to the rear and side yard property line.

When the property line is also the boundary line of a zoning district, additional setback requirements may be required by the Zoning Ordinance.

SECTION 712 - DEPRESSED CURB AND GUTTER:

Where curb and gutter intersect with a driveway or sidewalk, the curb shall be depressed to meet the sidewalk or driveway. The transition shall be at the rate of three (3) inches per one (1) foot. (See Section 514)

SECTION 713 - COLD WEATHER PROTECTION:

No concrete shall be placed on ice, snow, or any other frozen material. The contractor shall be responsible for all concrete damaged by low temperatures, and any concrete so damaged shall be removed and replaced at the contractor's expense.

No concrete shall be placed when the air temperature is below forty (40) degrees F., without the permission of the Director of Community Development. When placing of concrete is permitted during cold weather, the temperature of the mixed concrete shall not be less than fifty (50) degrees F. nor more than one hundred (100) degrees F. at the time it is placed. The aggregate shall be heated by steam or dry heat prior to being placed in the mixer, and the water shall be heated to not hotter than one hundred and seventy (170) degrees F. When the air temperature is expected to drop below thirty five (35) degrees F., a supply of straw or other insulating material shall be brought to the job site. When the air temperature is expected to reach, or drop below, thirty two (32) degrees F. during the day or night, the straw or insulating material shall be spread over the sub-grade if concrete is to be placed the next day, or over the newly poured concrete if it has already been poured. The straw or insulating material shall be spread to a sufficient depth to prevent freezing. Concrete less than seventy two (72) hours old shall also be covered. New concrete shall be protected for a minimum period of four (4) days, so as to maintain a temperature of fifty (50) degrees F. or higher.

SECTION 714 - TESTING:

Testing shall be the responsibility of the owner or developer at the discretion of the Director of Community Development. All unsuitable material shall be removed and replaced by the contractor.

When testing is requested by the Director of Community Development, a set of four (4) test cylinders shall be made for each day a minimum of twenty (20) cubic yards of concrete is poured. An air test, slump test, and concrete temperature shall be taken along with the test cylinders.

SECTION 800

STREETS

STANDARD SPECIFICATIONS FOR STREETS

SECTION 800 - GENERAL:

The standards and requirements found in this section are for the design, materials and construction of streets, cul-de-sacs, and alleys within the Village of Addison.

SECTION 800.1 - SPECIFICATIONS:

These specifications cover both rigid and flexible pavement which shall be constructed in accordance with the latest revision of IDOT's Standard Specifications for Road and Bridge Construction, and applicable ordinances of the Village of Addison. In case of a conflict, the Village of Addison's Standard Specifications for Streets and other applicable ordinances of the Village of Addison shall take precedence and shall govern.

SECTION 800.2 - REGULATIONS AND PERMITS:

Additional regulations and requirements governing the construction of streets in the Village of Addison are:

A. Any restrictions, policies, and instructions that may be adopted or issued from time to time by the Village of Addison.

B. No person shall construct or remove any public or private street without first obtaining a written permit from the Village of Addison.

C. All work shall be available for inspection by the Village of Addison at all times.

SECTION 801 - STREETS:

A public street shall be provided to afford convenient access to all property within a subdivision. When, in the opinion of the Director of Community Development, it is desirable to provide for street access to adjoining property, the proposed street shall be extended to the boundary of such property. No private street shall be permitted except in a Planned Unit Development. All streets shall be bordered by combination concrete curb and gutter, except as provided for in Section 700.3. An existing street, fronting a new subdivision, shall be improved to match the typical cross section of a street as shown in the standard drawings. This may require removal and replacement of the old street. The extent of the improvements shall be determined by the Director of Community Development. Half streets shall not be permitted without prior approval of the Village Board.

Street alignment shall conform to the Official Map of the Village and shall be considered in relation to existing and proposed streets. A reasonable circulation of traffic within the subdivision, topographical conditions, storm water runoff, public convenience, and safety shall also be considered. Residential streets shall be designed so that their use by through traffic is discouraged.

When an Arterial / Collector Street as shown on the Official Map is located in a proposed subdivision, the Village shall require the Subdivider to comply with the Official Map and these Specifications. The Village may construct the Arterial / Collector Street as shown on the Official Map at the Village’s expense and require the Subdivider to pay the Village an amount equal to the cost of construction.

SECTION 801.1 - DEFINITION OF STREETS:

A. RESIDENTAL STREET: A street adjoining and serving primarily the needs of a residential area, and providing for traffic movement between residential areas. This type of street shall carry residential traffic.

B. COMMECIAL / INDUSTRIAL STREET: A street adjoining and serving primarily the needs of a commercial or industrial area, and providing for traffic movement between those areas. This type of street shall carry a mixture of passenger and truck traffic.

C. ARTERIAL / COLLECTOR STREET: A street providing for traffic movement through and across the Village, or between municipalities. This type of street shall carry a mixture of passenger and truck traffic.

The Village of Addison's Comprehensive Plan shall be used to determine the classification of a street.

SECTION 801.2 - MINIMUM PAVEMENT WIDTHS:

The minimum pavement width from edge of pavement to edge of pavement shall be:

A.	Alley:	
	One-way	Eighteen (18) feet
	Two-way	Twenty Four (24) feet
B.	Residential	Thirty (30) feet
C.	Commercial / Industrial	Forty (40) feet
D.	Arterial / Collector	Forty four (44) feet

SECTION 801.3 - CONTINUATION OF EXISTING STREETS:

New streets shall connect to existing streets where possible. When an existing street is within one hundred (100) feet of a proposed street, the developer or builder shall at the discretion of the Director of Community Development connect the two (2) streets. The Village may require the acquisition of right-of-way on land which is not owned by the developer or builder. In that instance, the Village may take such action as may be required to acquire such off-site right-of-way, and the developer or builder shall pay such acquisition costs, including legal and other condemnation expenses, as well as the costs of the required off-site improvements.

SECTION 801.4 - ACCESS STREETS:

Where deemed necessary for the purpose of providing adequate protection of residential properties and to afford separation of through and residential traffic, the Director of Community Development may recommend that access streets be required to service areas fronting on Arterial / Collector streets. It shall be incumbent upon the developer or builder to dedicate right-of-way for an access street, or obtain dedication of such land by

the owner, if not owned by the developer or builder. If such right-of-way is within the Village, the developer or builder shall agree to pay the cost of acquiring such right-of-way by condemnation, including legal fees and other expenses.

SECTION 801.5 - VISIBILITY:

Clear visibility at intersections shall be achieved by keeping them clear of foliage or structures within the vision triangle as defined in the Addison Zoning Ordinance at each corner. Except for traffic control devises, utility poles, fire hydrants and street name signs, no structure or plant material (when mature) which will exceed thirty (30) inches in height above the top of curb, or center line elevation of the street in the event there is no curb, shall be permitted within this area in order to provide adequate site distance.

SECTION 801.6 - CURVES:

When the deflection in the horizontal center line of a street is in excess of ten (10) degrees, a horizontal curve shall be used. Horizontal curves shall have a minimum radius of three hundred (300) feet for any Arterial / Collector street, and one hundred and fifty (150) feet for all other streets.

All changes in grade shall be connected by a vertical curve. The minimum length of a vertical curve shall be two hundred (200) feet.

All curves, both horizontal and vertical, shall be approved by the Director of Community Development.

SECTION 801.7 - DRAINAGE:

The crown, or cross section of the various streets shall be one quarter (¼) inch per foot.

The profile grade of a street shall not exceed five (5) percent for Arterial / Collector streets and seven (7) percent for all other residential or Commercial / Industrial streets, with a minimum grade of not less than one half (0.5) percent.

Street grades shall provide for natural surface drainage. The intent is to avoid depressions greater than one (1) foot in depth along any given street profile, thereby providing the flood routing necessary during a flash storm.

SECTION 801.8 - INTERSECTIONS:

Streets shall be laid out so as to intersect as nearly as possible at right angles. An intersection of two (2) streets at an angle of less than seventy (70) degrees shall not be acceptable. The intersection of more than two streets shall be avoided unless specific conditions of design dictate otherwise, and then only with the approval of the Director of Community Development.

Intersections shall be designed with a minimum curb radius of fifteen (15) feet at an alley, thirty (30) feet for residential, and forty (40) feet for Commercial / Industrial. Larger curb radii may be required at the intersection of Arterial / Collector streets, angular intersections less than ninety (90) degrees, or in any case were the Director of Community Development may deem it necessary.

A proposed intersection along an existing street shall, wherever practical, coincide with an existing intersection on the opposite side of the street. Street jogs with centerline offsets of less than one hundred and twenty five (125) feet shall not be permitted, except when the existing street to be intersected is divided by a center median, and there are no median breaks at either intersection.

SECTION 801.9 - USE OF EXISTING STREETS:

The Director of Community Development shall designate the street, or streets to be used for access to the subdivision by all equipment and trucks engaged in the construction of all public improvements, utility services, and buildings. The developer or builder shall be responsible for all damage to an access street, regardless of its original condition, and shall repair or replace the street to the approval of the Director of Community Development.

SECTION 802 - CUL-DE-SACS:

All dead end streets shall end in cul-de-sacs. A dead end street shall be defined as a street blocked by limited access highways, railroad right-of-ways, bodies of water, etc. with no anticipation of the street being extended. A street that is proposed to be extended shall not be classified as a dead end street, and will not be required to end in a cul-de-sac.

The maximum length of a cul-de-sac street shall be:

A. RESIDENTIAL: One thousand (1000) lineal feet.

B. COMMERCIAL / INDUSTRIAL: Five hundred (500) lineal feet.

The minimum radius of a cul-de-sac to the edge of pavement shall be:

A. RESIDENTIAL : Forty eight (48) feet.

B. COMMERCIAL / INDUSTRIAL: Sixty two (62) feet.

Parkways along a cul-de-sac shall be the same width as the parkways in the remainder of the subdivision.

A minimum of two (2) drainage structures shall be installed at the end of a cul-de-sac.

Each cul-de-sac shall be considered on its individual merit and desirability, and shall be subject to the recommendations of the Director of Community Development.

SECTION 803 - RIGHT-OF-WAY:

When a subdivision or part of a subdivision is adjacent to an existing right-of-way that is less than the required width, the developer or builder shall dedicate additional right-of-way to meet the required width.

The minimum right-of-way shall be:

A. RESIDENTIAL STREETS: Sixty six (66) feet.

B. COMMERCIAL / INDUSTRIAL STREETS: Sixty six (66) feet.

C. ARTERIAL STREETS: One hundred (100) feet.

D. RESIDENTIAL CUL-DE-SACS: Sixty six (66) foot radius.

E. COMMERCIAL / INDUSTRIAL CUL-DE-SACS: Seventy five 75 foot radius.

F. ALLEYS: One-way, twenty four (24) feet;
Two-way, thirty (30) feet

SECTION 803.1 - RIGHT-OF-WAY LINE (CORNER CLIP):

Special attention shall be given to the right-of-way at intersections. Property lines located at the corners of an intersection, shall be truncated by a straight line or a radius, thereby joining two (2) points located a minimum distance (as noted below) from the intersection of the property lines. Right-of-way dedications at intersections shall take this form, and shall be known as a Corner Clip.

Corners shall be cut off to provide a:

A. Ten (10) foot by ten (10) foot triangle or a tem (10) foot radius at an intersection with an alley.

B. Twenty (20) foot by twenty (20) foot triangle or a twenty (20) foot radius at an intersection with a residential street.

C. Thirty (30) foot by thirty (30) foot triangle or a thirty (30) foot radius at an intersection with an industrial or commercial street.

The Director of Community Development may require additional right-of-way in cases involving:

A. Angular intersections.

B. To provide for safe sight distance.

C. To provide for safe traffic channelization.

D. To provide for safe vehicular movement.

E. In any case where more right-of-way is deemed necessary.

Abrupt changes in alignment within a block shall have the corners cut off in accordance with standard engineering practice, to permit safe vehicular movement.

SECTION 804 - PREPARATION OF EXISTING GROUND SURFACE:

See Section 1500 - Asphalt And Concrete Pavement Specifications

SECTION 805 - STREET PAVEMENT DESIGN:

The thickness of the pavement shall be determined in accordance with the procedures as specified by the Illinois Department of Transportation, Bureau of Local Roads and Streets.

A. The following structural numbers shall be considered the minimum values, as established by the Village of Addison, that will be permitted in the design of the pavement:

RESIDENTIAL STREETS: 3.30

COMMERCIAL / INDUSTRIAL STREETS: 4.00

ARTERIAL STREETS: 4.40

These structural numbers shall be considered only as the minimum values, and in no way relieves the owner or developer of supplying the Village with soils reports, anticipated traffic volumes, and the traffic factors used in the design of the street. The Director of Community Development shall review and approve all design information before construction starts.

B. The following are the strength coefficients of the approved material which, when multiplied by the thickness, in inches, of the proposed pavement shall equal or exceed the structural number previously noted:

Bituminous concrete surface course, Class I…..... 0.40
Bituminous concrete binder course, Class I..... 0.33
Bituminous aggregate mixture…..... 0.24 to 0.33*
Portland cement concrete..... 0.50

* Varies in accordance with the Marshall Stability. Design engineer to submit specific design for approval.

Sub-base granular material shall not be included when determining the thickness of the pavement.

C. The following are the minimum thicknesses of street pavement permitted to be constructed within the Village of Addison:

RESIDENTIAL STREET:

Composite Pavement		Bituminous Pavement	
6 inches PCC	3.00	6 inches BAM	1.98
2 inch surface	0.80	2 inches binder	0.66
	3.80	2 inches surface	0.80
			3.44

Concrete Pavement	
7 inches	3.50

COMMERCIAL / INDUSTRIAL STREETS :

Composite Pavement		Bituminous Pavement	
7 inches PCC	3.50	8 inches BAM	2.64
2 inches surface	0.80	2 inches binder	0.66
	4.30	2 inches surface	0.80
			4.10

Concrete Pavement	
8 inches	4.00

ARTERIAL STREETS:

Composite Pavement		Bituminous Pavement	
8 inches PCC	4.00	9 inches BAM	2.97
2 inches surface	0.80	2 inches binder	0.66
	4.80	2 inches surface	0.80
			4.43

Concrete Pavement	
9 inches	4.50

SECTION 806 - GRANULAR SUB-BASE:

All street pavement shall be constructed on FOUR (4) inches of crushed limestone, sub-base granular material, Type A or B. The sub-base material shall be placed, graded and compacted in accordance with Section 311 of IDOT's Standard Specifications for Road and Bridge Construction.

Granular sub-base material shall meet IDOT specifications for CA-6.

SECTION 807 - RIGID (CONCRETE) PAVEMENT:

See ASPHALT AND CONCRETE PAVEMENT (Section 1503)

SECTION 808 - FLEXIBLE (BITUMINOUS CONCRETE) PAVEMENT:

See ASPHALT AND CONCRETE PAVEMENT (Section 1504)

SECTION 809 - COMPOSITE PAVEMENT:

See COMPOSITE PAVEMENT (Section 1505)

SECTION 810 - PAVEMENT REMOVAL:

See PAVEMENT REMOVAL (Section 1506)

SECTION 811 - OPENING STREET PAVEMENT TO TRAFFIC:

Temporary pavement marking tape shall be placed between all lanes that are open to traffic prior to the end of work each day.

A. Yellow tape, four (4) inches wide and forty eight (48) inches in length at forty (40) foot intervals, is to be placed along the center line of two (2) lane streets.

B. White tape, four (4) inches wide and forty eight (48) inches in length at forty (40) foot intervals, is to be placed along the lane line separating two (2) or more lanes of traffic moving in the same direction.

C. Yellow tape, two (2) parallel, four (4) inches wide and forty eight (48) inches in length at forty (40) foot intervals, is to be placed along the center line of undivided multi-lane streets.

The Director of Community Development, at his discretion, may require a thorough cleaning of the pavement prior to opening the pavement to traffic.

SECTION 812 - ALLEYS:

Alleys may be provided at the rear of all lots in new subdivisions intended for commercial or industrial use. No new alleys shall be constructed in subdivisions intended for residential use.

Alleys shall be constructed like any other street. They shall be bordered by curb and gutter and provided with drainage structures.

Parking will not be permitted in any alley unless the pavement width meets the respective requirements of commercial / industrial pavement widths. (See Section 801)

SECTION 813 - GUARANTEE:

The owner or developer shall provide a one (1) year guarantee for all pavement. This guarantee shall be effective for a period of one (1) year after the completion and initial acceptance of the surface course by the Director of Community Development. During this final one (1) year period, the Village shall perform street sweeping and snow removal. All construction deficiencies, whether they are deficiencies in construction of the pavement, or the trench backfill of utilities under the pavement, shall be corrected by the owner or developer at their own expense. If a deficiency develops during this period, the Director of Community Development will notify the owner or developer of this deficiency, and if it is not corrected in a reasonable period, the Village may make or have the necessary corrections made, and charge the cost to the owner or developer. The Village may also make emergency repairs as the Village deems necessary for the protection of the public without first contacting the owner or developer. The Village shall charge the cost of emergency repairs to the owner or developer. At the end of this

period, the owner or developer, and the Director of Community Development shall conduct a final inspection, and if the work is found to be acceptable, it will be approved for acceptance by the Director of Community Development.

SECTION 814 - STREET NAMES:

Proposed streets which are obviously in alignment or a continuation of an existing street which is already named, shall bear the name of such existing street, whether in the Village or unincorporated area. In no case shall the name for a proposed street duplicate or be confused with existing street names, irrespective of the use of the suffix Street, Road, Boulevard, Drive, Place or Court, or an abbreviation thereof. All street names shall be subject to the approval of the Village Board.

SECTION 815 - PRIVATE STREETS:

Private streets are permitted only if they are required by the design or ownership of the subdivision, and can be demonstrated to be to the benefit of the community. Private streets are permitted only if covenants or agreements, acceptable to the Village are provided which guarantee maintenance of such streets in perpetuity, at no cost to the Village. Private streets will not be allowed if a public street is feasible.

SECTION 900

LANDSCAPING

STANDARD SPECIFICATIONS FOR LANDSCAPING

SECTION 900 - GENERAL:

It is the intent of this section to provide for lasting aesthetic benefits and to attempt to avoid undue future maintenance costs. This section also sets guidelines to avoid hazards to the motoring public and situations which may create problems with the street and its associated appurtenances such as sidewalks, curb and gutter, street signs, and street lights.

SECTION 900.1 - SPECIFICATIONS:

These specifications cover the placement of landscaping, and all the appurtenances used in landscaping. All planting stock shall conform in size and grade to the requirements of the American Standard for Nursery Stock ASA Z60.1 adopted by the American Association of Nurserymen. The planting and maintenance of trees and other vegetation shall be in accordance with accepted horticultural practices. Additional standards include IDOT Standard Specifications for Road and Bridge Construction, Illinois Procedures and Standards for Urban Soil Erosion and Sedimentation Control, and applicable ordinances of the Village of Addison. In case of a conflict, the Village of Addison's Standard Specifications for Landscaping and other applicable ordinances of the Village of Addison shall take precedence and shall govern.

SECTION 900.2 - PERMIT APPLICATION:

Any person doing work which involves any landscaping, underground sprinklers, planting, removal, or other work which in any way affects trees or grass located in the right-of-way which is not covered by another permit shall request, and receive, an approved landscaping permit from the Village of Addison, before beginning any work. All applications for a permit shall be accompanied by a landscape plan.
(See Section 901)

Applications shall state the person or contractor performing the work, and shall indicate the owner's identity and address. The application shall also state that the owner will assume all maintenance for the proposed landscaping.

Any violation of, or deviation from, any element of the permit shall be considered sufficient grounds for the suspension or revocation of the entire permit.

Any permit granted by the Village may be withdrawn by the Director of Community Development, or his designated representative, at his discretion.

The owner or contractor shall notify the Engineering Department a minimum of twenty four (24) hours in advance of any work taking place.

Note: Underground sprinkler systems also require a plumbing permit from the Building Division.

Any item placed with or without a permit within the right-of-way is subject to removal without compensation should such removal be required for the improvement or proper function of the street or its appurtenances.

SECTION 900.3 - PARKWAY LANDSCAPING BOND:

Upon approval of a landscaping permit, a bond shall be established by the applicant, for all landscaping within the right-of-way. The size of the bond shall be determined by the amount of work to be done within the right-of-way. This amount shall be bonded for in the amount of one hundred and twenty (120) percent of the engineer's cost estimate.

SECTION 901 - LANDSCAPING PLANS:

Landscaping plans shall be submitted to the Director of Community Development for approval. The plan shall show the location, size, common name, botanical name, quantity, and key number of the various plants and materials to be used. Information relating to landscaping of adjacent or surrounding areas, existing lawns, or any other areas to be affected by the proposed improvement shall be shown. The location of streets, driveways, sidewalks, right-of-way, and property lines shall be shown on the plan. Details of all items and features that deal with site preservation or improvements such as proposed areas to be seeded or sodded; existing trees to be preserved, transplanted, or removed; proposed trees to be planted; erosion and sediment control, retaining walls and tree wells shall also be shown.

A special note by the landscaping architect describing soil preparation, fertilization, plant material, methods of planting, initial maintenance of the plant material, and plant coverage on any slope areas to control erosion shall be included on the plans.

Where a residential subdivision adjoins a railroad right-of-way, a waterway, an industrial area, a business area or other land use which would have a depreciating effect on the residential use of the property, a buffer planting strip ten (10) feet minimum in width not coincidental with utility easements and suitably planted to form a screen and / or fence may be required by the Plan Commission. See Zoning Ordinance General Requirements Manufacturing Districts.

Any variations shall be determined and governed solely on the discretion of the Director of Community Development.

SECTION 901.1 - EXISTING TREES:

The location, size, species, and condition of all existing trees six (6) inches and larger shall be shown on the landscaping plan. Also noted on the plans shall be the existing and proposed dirt grades at the base of all existing trees. This information shall be used in the preparation of the site development plans with the specific intent of preserving and protecting the existing trees. All site grading and engineering plans shall include the tree location information and the proposed methods for preserving and protecting the existing trees.

SECTION 901.2 - PROTECTION OF EXISTING TREES:

All parkway trees, and those onsite trees chosen to be saved, shall be shown on the Landscape Plan, and noted for protection.

Prior to commencement of any grading activities, the contractor shall erect a snow fence around all trees located within the right-of-way, and any on site trees to be saved. Protective fencing shall be placed in a circle around each tree. The diameter of the circle shall be ten (10) feet or to the drip line (extent of furthest extending branches) whichever is greater. The existing dirt grade within the fence line shall not be disturbed.

SECTION 902 - PARKWAY TREES:

It is the intention of these specifications that trees shall be planted along all streets where trees do not exist. If no trees exist within the parkway adjacent to the site to be improved, then the owner or developer shall be required to plant parkway trees. No building permit shall be issued without first complying with the parkway tree requirements.

Parkway shade trees shall have a straight trunk with limbs not lower than six (6) feet above the ground, and a trunk diameter, measured six (6) inches above the ball or ground line of not less than two and one half (2½) inches.

Parkway ornamental trees shall be single stem, with a trunk diameter, measured six (6) inches above the ball or ground line of not less than two (2) inches.

No trees shall be planted on any parkway or median that is less than six and one half (6½) feet in width (back of curb to back of curb or back of curb to sidewalk) unless in the opinion of the Director of Public Works the trees will not endanger the sidewalk, curb, sewer, water main, or other street appurtenances.

Trees shall be planted along the centerline of the parkway or median, unless specifically approved otherwise.

No tree shall be planted under the direct overhang of (an) adjacent mature tree(s).

SECTION 902.1 - PARKWAY TREE PLANTING DISTANCES:

A. MINIMUM DISTANCE BETWEEN TREES: Trees planted in a parkway or median shall be spaced not more than forty (40) feet apart, except that no tree shall be planted closer than what is called out for in "B" and "C".

Where trees can not be planted due to a parkway or median being too narrow, or being in conflict with "B" and "C", the planting distance requirement can be satisfied if an equivalent number of trees of the same size or larger are planted in the front yards of all adjoining lots a minimum distance of three (3) feet from the sidewalk.

B. MINIMUM DISTANCE FROM INTERSECTIONS, DRIVEWAYS, AND ALLEYS:

1. INTERSECTIONS: No tree shall be planted within forty (40) feet on the near side and thirty (30) feet on the far side of the intersection. Trees planted in medians shall be located a minimum of fifty (50) feet from the intersection.

2. ALLEYS: No tree shall be planted within ten (10) feet of any alley.

3. DRIVEWAYS:

   a. COMMERCIAL: No tree shall be planted within ten (10) feet of a driveway.

   b. RESIDENTIAL: No tree shall be planted within six (6) feet of a driveway.

C. MINIMUM DISTANCE FRON CURBS, SIDEWALKS, UTILITY STRUCTURES, ETC:

1.	Sidewalks	Three (3) feet
2.	Curb	Three (3) feet
3.	Manholes, catch basins, valve vaults, etc.	Five (5) feet
4.	Fire hydrants	Ten (10) feet
5.	Street lights	Fifteen (15) feet
6.	Utility poles	Fifteen (15) feet
7.	Railroad crossings	Twenty (20) feet

8. Overhead wires - Only those trees so identified in Section 902.2 shall be planted under overhead wires.

SECTION 902.2 - PERMITTED PARKWAY TREE SPECIES:

Only the following species of trees will be allowed to be planted within the right-of-way.

A. SHADE TREES PREFERRED FOR VILLAGE PARKWAY:

Botanical Name / Common Name - "Cultivars"

Acer campestre / Hedge Maple
Acer x freemanii/Maple - "Autumn Blaze"
Acer miyabe 'Morton' / Maple - "State Street miyabe maple"
Acer platanoides / Norway Maple - "Crimson King"
"Deborah"
"Emerald Luster"
"Emerald Queen"
"Schwedler"
"Royal Red"
Acer saccharum / Sugar Maple - "Green Mountain"
Acer 'Warrenred' / Maple - Pacific Sunset maple
Aesculus glabra / Ohio Buckeye
Aesculus hippocastanun / Horse Chestnut
Celtis occidentalis / Hackberry
Corylus colurna / Turkish filbert
Ginkgo biloba / Ginkgo (male only) "Autumn Gold" or
"Princeton Sentry"
Gleditsia triacanthos var. inermis / Thornless honeylocust
"Shademaster"
"Skyline"
Koelreuteria pariculata / Golden raintree
Pyrus calleryana / Callery Pear - "Aristocrat"
"Chanticleer"
"Cleveland Select"
Quercus bicolor / Swamp White Oak
Quercus imbricaria / Shingle oak
Quercus macrocarpa / Bur Oak
Quercus robur / English Oak (non-columnar)
Quercus rubra / Northern Red Oak
Taxodium distichum / Bald Cypress
Tilia Americana / American Linden - "Redmond"
Tilia cordata / Littleleaf Linden - "Glenleven"
"Greenspire"
Ulmus 'Liberty' / Elm - "American Liberty elm"
Tilia tomentosa / Silver Leaf Linden
Zelkova serrota 'Green Vase' / Green Vase zelkova

B. ORNAMENTAL TREES FOR PARKWAYS WITH OVERHEAD UTILITY LINES:

If planting is to occur under overhead utility wires, only the following low growing species of trees shall be used.

Botanical Name / Common Name - "Cultivars"

Amelanchier x grandiflore / Serviceberry - "Forest Prince"
"Robin Hill Apple serviceberry"
Amelanchier x lamarckii / Serviceberry –
"Cumulus serviceberry"
Carpinus caroliniana / American Hornbeam
Cercis Canadensis / Red Bud
Crataegus crusgalli var. inesmis / Thornless Cockspur Hawthorn
Malus / Crabapple - "Adams"
"Donald Wyman"
"Floribunda"
"Prairie Fire"
"Profusion"
"Sargentii"
"Snowdrift"
Syringa reticulate / Japanese Tree Lilac - "Ivory Silk"
Syringa pekinesis 'Morton' / Japanese Tree Lilac
"China Snow Pekin lilac"

Variations to the approved tree species list may be allowed with the approval of the Director of Public Works.

The number of tree species will be determined by the number of lots. Two (2) species will be required for each ten (10) lots or a fraction thereof, with a minimum of five (5) species of trees in all proposed subdivisions of over ten (10) lots. Trees shall be planted by alternating the different species on a forty (40) foot spacing rotation.

SECTION 903 - QUALITY ASSURANCE OF NEW TREES:

All trees shall be grown in a nursery that specializes in growing and cultivating trees. The nursery shall be located in the northern half of the State of Illinois. An inspection of the trees at the nursery, prior to digging, may be made by the Director of Community Development or an authorized inspector. Collected, multi-stem, trees shall not be used within the right-of-way.

Trees selected for planting in Addison shall be first class representatives of their species and varieties. They shall be healthy, free of insects, diseases, bark bruises and scrapes. The trees shall have well developed branches and a vigorous root system. Selected trees shall have a straight trunk and a single leader.

All trees shall be balled and burlapped in their original soil. No foreign material shall be added to the ball.

SECTION 904 - TREE PLANTING:

Before digging, the contractor shall locate all existing underground utilities and shall be responsible for their protection during planting.

The planting season shall be approximately September 15 to December 1 and March 15 to May 30. No trees shall be planted when the ambient temperature is expected to drop below thirty five (35) degrees F. or above ninety (90) degrees F., or when the wind velocity exceeds thirty (30) MPH.

Trees shall be delivered immediately prior to planting, and kept moist. They shall remain on site only seventy two (72) hours before being planted. Trees delivered to the site that will not be planted within this period shall be protected by being placed in temporary storage. (See Section 904.4) Trees delivered to the site shall bear legible waterproof labels of the botanical and common name of the tree.

Tree holes may be machine dug, but the edges of the hole shall be scored with a shovel to remove any glazing of the soil caused by the machinery. Regardless of how the tree hole is dug, all trees shall be hand planted. The planting hole shall be twice the diameter of the root ball if possible, but in no case shall the hole be less than twelve (12) inches wider, and five (5) inches to six (6) inches deeper than the ball. Any soil covering the tree's root flair shall be removed to expose the crown, along with any secondary root growth, prior to planting. Topsoil shall be placed in the hole and adjusted until the root flair is exposed, above grade, to the same depth that it was growing in the nursery. After the tree has been set in this position, the top three quarters (¾) of the wire basket and associated burlap shall be removed, with the remaining burlap loosened and scored so as to provide the root system quick contact with the soil. All ropes or wires shall be removed from the root ball and tree trunk. The hole shall then be half (½) filled with soil, firmly packed, then saturated with water. After the water has soaked in, more soil shall be added to the top of the hole, and then the hole shall be saturated again. Visible root flair shall be left exposed, uncovered by the addition of soil. By mounding up the soil around the hole, create a saucer depression around the tree to hold future water. In most cases, the backfill around the root ball shall be the same soil that was removed from the hole. Where rocks, gravel, or other debris are encountered, clean top soil shall be used. Mulch shall be provided at the base of each tree to its dripline. (See Section 904.2)

Within seven (7) days of planting, all trees shall have their trunk protected with tree wrap tape, from the base of the trunk up to the first branch. Tree wrap tape shall not be less than four (4) inches in width and designed to prevent bore and winter freezing damage.

No staking will be required when the backfill around the ball is well tamped and the trees are planted in a straight and neat manner, but when in the opinion of the inspector it becomes necessary, the trees shall be staked to ensure that they remain straight.
(See Section 904.3)

The contractor shall affix to each tree a weather proof tag indicating the date the tree was planted. This tag, and the botanical name tag, shall only be removed by the contractor after all the trees in a project have been accepted. All other tags, wires, plastic ties, and dead wood shall be removed from each tree planted, and the planting site cleaned up before leaving the planting area at the end of work each day.

If any existing lawn is damaged by the planting of a tree, it shall be the responsibility of the contractor to restore the lawn to its original condition, as found prior to the planting. Any excess soil, debris, or trimmings shall be removed from the job site immediately after completion of all planting.

After a tree is planted, the contractor shall furnish and distribute to the adjoining property owner an instruction sheet for the care and maintenance of the newly planted tree.

SECTION 904.1 - PRUNING TREES:

Pruning shall be done in such a manner as to preserve the natural growth habit of each tree. All pruning shall be done with sharp tools in accordance with the best horticultural practices. All broken branches, stubs, and improper cuts of former pruning shall be removed. Pruning shall consist of thinning the twigs and branches as dictated by the habit of growth of the various species of trees to be pruned. The leader and terminal buds shall not be cut unless directed by the Director of Public Works.

SECTION 904.2 - MULCH:

Mulch shall be provided around all trees to their dripline. The mulch shall consist of wood chips or shredded tree bark free of leaves and other foreign matter. A four (4) inch deep circular watering saucer of soil shall be constructed around the perimeter of the root ball, and filled with two (2) to four (4) inches of mulch. The mulch shall be pulled away from the tree trunk, allowing the crown / root flair at the base of the tree to be exposed and free of mulch contact.

SECTION 904.3 - TREE STAKES:

Tree stakes shall be installed to help support a tree in a vertical position, for added stability when necessary, or when directed by a Village inspector. The stakes shall be of hardwood lumber two (2) inches x two (2) inches with a pointed end or of steel. Duckbill earth anchors or soil - screw eye bolts shall be used to stake the tree into the ground. Reflective or florescent ribbon shall be tied to the support wires to aid in their visibility. The wire, eye bolts and turnbuckles shall be non-corrosive and of sufficient strength to withstand wind pressure and the resulting movement of the tree.

Trees two and one half (2½) inches to four (4) inches in diameter shall be supported with three stakes. For trees over four (4) inches in diameter, four (4) stakes shall be required. The stakes shall be equally spaced around the tree, and placed adjacent to the outside of the root ball. All stakes shall be driven vertically into the compacted ground outside the hole, to a minimum depth of eighteen (18) inches. The tree shall be firmly attached to the stakes with a guy wire. The portion of the wire in contact with the tree shall be encased

in a rubber sleeve or a section of hose to protect the tree trunk and branches. The guy wire shall be tightened with a turnbuckle or a cable clamp.

SECTION 904.4 - TEMPORARY STORAGE:

No tree shall remain in temporary storage over the winter or summer. Trees delivered to a project that are not planted immediately shall be protected by being kept moist and the root ball carefully preserved. To prevent drying out or freezing, unplanted trees shall be stored in a compact group with mulch placed around and between the root balls so that they are completely covered.

Once the planting season is over, any trees left in storage shall be removed from the project. Fresh new trees shall be brought out to finish any planting that is remaining.

SECTION 905 - TREE MAINTENANCE:

It shall be the responsibility of the developer or applicant to ensure the survivability of the planted trees. Maintenance of the trees shall begin immediately after planting, and shall continue for one (1) full year after completion of the planting where all trees survive to the satisfaction of the Director of Community Development. If any trees must be replaced due to death, diseases, or other damage, all trees in the development shall be maintained for an additional year, or until accepted by the Director of Community Development.

Trees planted in heavy clay soils shall be watered thoroughly a minimum of two (2) times per month during dry weather. Trees planted in light or sandy soils shall be watered more frequently, at a rate if three (3) to four (4) times per month during dry weather, or as needed. It shall be the responsibility of the developer or applicant to properly water all newly planted trees at the time of planting and subsequently thereafter to provide for sufficient moisture to insure their survival. Additional watering may be required by the Director of Community Development.

Restoring watering saucers, adding mulch, pruning dead wood, tightening guy wires, and replacing damaged tree wrappings, shall take place as needed or when requested by the Director of Community Development.

Pesticides shall be applied in accordance with the manufacturer's instructions, as required to keep the trees free from insects and disease.

SECTION 906 - PARKWAY TREE GUARANTEE:

All parkway trees shall be guaranteed for one (1) full year from the date of the final planting by the developer or applicant. Should a tree become diseased, damaged, die, or fail to grow adequately in the opinion of the Director of Community Development, it shall be replaced by the developer or applicant at no cost to the Village. The replacement tree shall be the same size, species and quality as the tree it is replacing.

The bond for the trees shall not be released until the one (1) year guarantee period is up and the all the trees have been accepted by the Director of Community Development.

SECTION 906.1 - FINAL INSPECTION AND ACCEPTANCE OF PARKWAY TREES:

Final inspection of parkway trees will be made during the month of September of each year. To be acceptable, a tree must be in a live healthy condition, representative of its species, and shall have been growing in place for not less than one (1) year prior to inspection. Only at that time will the Village assume the responsibility for all trees found to be acceptable at the time of final inspection. No portion of work will be inspected until all the parkway trees are planted within a project.

This delay in inspection and acceptance of parkway trees shall not delay acceptance of a project if the applicant or developer provides the Village with a cash bond in the full amount of all parkway trees planted or to be planted. This cash bond shall remain with the Village until final inspection and acceptance of all parkway trees.

SECTION 906.2 - FORFEITURE OF A CASH BOND:

A cash bond will be forfeited upon either of the following conditions:

A. If an applicant or developer does not plant a tree or trees in compliance with the original landscape plan within eighteen (18) months of posting the cash bond, or

B. If after three (3) years from the date of posting the cash bond, an acceptable tree is not in existence as per the original landscape plan.

SECTION 907 - SODDING:

Sod shall be placed in the following locations:

A. Along the sides of berms and swales when the side slope is four to one (4:1) or greater.

B. Detention and retention ponds.

C. Outlots that will become the maintenance responsibility of a Property Owner's Association or the Village.

D. Adjacent parkways where grass already exists.

E. Along the bottom of a swale when deemed necessary by the Director of Community Development.

F. Wherever off-site restoration work is to take place.

G. Wherever called out on the landscaping plans.

SECTION 907.1 - GROUND PREPARATION:

The area to be sodded shall be covered with four (4) inches of top soil, and prepared not more than twenty four (24) hours before the sod is to be placed. The soil surface shall be worked until it is free from debris, washes, gullies, clods, and stones. The top soil shall

be worked to a depth of not less than three (3) inches with a disk, tiller, or other approved equipment. If the prepared surface becomes crusted, it shall be reworked until acceptable before being sodded.

Fertilizer shall be applied at the designated rate over the area to be sodded. (See Section 909)

SECTION 907.2 - PLACING SOD:

Sod shall only be placed when the top soil is in a workable condition and the temperature is less than ninety (90) degrees F. Sod shall not be placed when the sod or the ground surface is frozen or during an extended drought.

Sod cut for more than forty eight (48) hours, shall only be used with the approval of the Director of Community Development. Any sod that has dried out, has been heated to over one hundred (100) degrees F., or is frozen prior to placing shall be rejected and immediately removed from the site by the contractor.

The sod shall be placed on the prepared surface with the edges in close contact and alternate courses staggered. The exposed outside edges of the sod shall be buried flush with the adjacent soil.

In ditches, the sod shall be placed with the longer dimension perpendicular to the flow of water in the ditch. On slopes, starting at the bottom of the slope, the sod shall be placed with the longer dimension parallel to the contours of the ground.

Any surplus or waste material left over from the sodding shall be removed from the site by the contractor

SECTION 907.3 - STAKING SOD:

Sod shall be staked on all slopes of two to one (2:1) or steeper. The sod shall be staked with not less than four (4) stakes per square yard and shall have at least one (1) stake for each piece of sod. The stakes shall be a minimum of six (6) inches long, and installed so they hold the sod firmly in place, yet pose no danger to pedestrians or mowing crews. The type of stake and the method of staking shall meet with the approval of the Director of Community Development.

SECTION 907.4 - WATERING SOD:

It shall be the responsibility of the applicant or developer to ensure the survivability of the sod. Within eight (8) hours of placing the sod, five (5) gallons of water per square yard of sod shall be applied. The contractor shall have on hand enough equipment to completely water all the sodded areas in two (2) days. After the initial watering, water shall be applied at the rate of three (3) gallons per square yard of sod as needed. The contractor shall continue watering as needed until the sod has become knitted to the soil and is growing in place. During periods of intense heat or subnormal rainfall, the contractor shall continue to water the sod until advised to stop watering by the Director of Community Development.

All watering shall be done with a spray application; an open end hose will not be acceptable.

The applicant, developer, or contractor, shall not use any fire hydrant for a water supply.

SECTION 908 - GRASS SEED:

All parkways within the dedicated street area, and in all areas that are disturbed during construction, except for those areas that are to be sodded, shall be graded, top soiled, fertilized, grass seeded, and mulched.

SECTION 908.1 - SEED BED PREPARATION:

Those areas to be seeded shall be prepared by first eliminating uneven and low spots in the subsoil. Rocks, gravel, plants, weeds, roots and similar material shall be removed. The subsoil shall be disked or scarified to a depth of three (3) inches, reducing all soil particles to a size not larger than two (2) inches. Repeat this in areas where equipment used for hauling and spreading topsoil has compacted the subsoil.

Top soil shall be spread to a minimum depth of four (4) inches over the area to be seeded, and shall be placed during dry weather and on dry, unfrozen subgrade. It shall be graded to eliminate rough, low, or soft areas, and to ensure positive drainage. The top soil shall be raked until smooth. The surface shall be free of rocks, gravel, plants, weeds, roots, and sticks. If the seed bed becomes crusted, eroded, rutted, or depressions exist for any reason, the contractor shall rework the top soil until it is smooth.

Fertilizer shall be applied after the smooth raking of the topsoil. (See Section 909) The fertilizer shall not be applied at the same time or with the same equipment used to apply the seed. After applying the fertilizer, thoroughly rake it into the upper two (2) inches of the topsoil.

No seeding shall take place until the seed bed has been inspected and approved.

SECTION 908.2 - SEED MIXTURE:

The class and type of seed shall be called out on the landscape plans. The following seed mixtures are to be considered the minimum acceptable. A better quality seed mixture may be substituted.

Class	Type	Seed	Lbs./acre
1	Lawn mixture	Kentucky bluegrass	50
		Perennial ryegrass	30
		Creeping red fescue	20
2	Roadside mixture	Kentucky 31 or Alta fescue	50
		Perennial ryegrass	30
		Creeping red fescue	20
		Oats, spring planting only	48

The lawn mixture shall be used in all residential areas, with the roadside mixture used in all other locations.

Grass seed shall be fresh, clean, new crop seed, and free of noxious weed seeds. The seed mixture shall be delivered in sealed containers, and shall show the seed mix, year of production, net weight, date of packaging, location of packaging, and the name of the manufacturer.

SECTION 908.3 - SEEDING:

The contractor shall notify the Village of Addison's Engineering Division forty eight (48) hours before beginning to seed. The planting season shall be from April 15 to June 30 and September 1 to December 1. No seed shall be sown during high winds, immediately after a rain, when the ground is dry, or when the seed bed is not in an acceptable condition for seeding.

Seeding equipment shall be operated in a manner to ensure complete coverage of the entire area to be seeded. The seed shall be applied evenly in two intersecting directions with a spreader or seeding machine. The area seeded shall not exceed the area that can be mulched and rolled on the same day.

All areas seeded shall be rolled at right angles to the run off with a roller or cultipacker to compact the seed bed and place the seed in contact with the soil. The roller shall not exceed one hundred and twelve (112) lbs. in weight. Rolling will not be required in the following conditions:

A. On slopes requiring a jute mat (also known as an excelsior blanket).

B. When a mulch stabilizer is used to anchor the mulch.

C. When a hydraulic seeder is used to apply the seed.

D. When the seeding equipment is equipped with a roller that achieves the desired compaction.

After seeding and rolling, apply mulch. After mulching, the area shall be watered with a fine spray, saturating the soil to a depth of at least four (4) inches.

SECTION 908.4 - HYDRAULIC SEEDING:

When seed or fertilizer is applied with a hydraulic seeder (also known as hydro-seeding), the rate of application shall be no less than one thousand (1000) gallons of slurry per acre. This slurry shall contain the proper quantity of seed or fertilizer specified per acre.

When using a hydraulic seeder, the fertilizer and seed shall be applied in two (2) separate operations.

SECTION 908.5 - MULCH:

Immediately following seeding and rolling, mulch shall be applied in one (1) of the following ways:

A. Straw mulch shall be spread by hand or by machine method. The mulch shall consist of oat, rye, or wheat straw, free from weeds and foreign matter that may be detrimental to plant life. The straw shall be dry when applied. Hay or chopped cornstalks shall not be used. Straw mulch shall be placed to a thickness of one (1) inch, approximately two (2) tons of straw per acre, and care shall be taken to insure that the placed mulch contains no lumps or clumps of compacted material. The mulch shall be placed loose enough to permit air to circulate, but compact enough to reduce erosion. Do not use straw mulch where the possibility of fire exists, adjacent to shoulders where traffic may blow off mulch, and on slopes that may be prone to erosion. Use jute mats in these locations.

One (1) of the following methods shall be used to anchor the straw mulch:

1. The mulch shall be sprayed with emulsified asphalt in such a way that it will partially coat the mulch. The rate of application shall be not less than seventy five (75) gallons of asphalt per ton of mulch.

2. The mulch shall be pushed into the soil by means of dull blades or disks. The blades or disks shall not excessively cut or break the straw.

B. Wood or paper fiber mulch shall be applied with a hydraulic seeder. The mulch shall be applied as a slurry of two thousand (2000) pounds of mulch and not less than two thousand (2000) gallons of water per acre. The mulch slurry shall be agitated a minimum of five (5) minutes before application and shall be in continuous agitation during application. The slurry shall be green in color to allow visual inspection of its application, and shall be sprayed uniformly onto the surface. Seeding shall not take place during this operation.

C. A jute mat (also known as an excelsior blanket) shall be used on slopes that are four to one (4:1) or greater. (See Section 907 for Sodding Requirements). The jute mat shall be laid smoothly on the slope without stretching or pulling, and the fibers shall be in contact with the soil. The mat shall be covered on the top side with a biodegradable plastic mesh netting. The netting shall be entwined with the fibers for maximum strength and ease of handling. In ditches, the mat shall be laid in the direction of the flow of the water. On slopes, the mat may be laid either horizontally or vertically to the contour. Mats shall be butted snugly against each other and secured in place with wood stakes or wire staples. Secure the edges and the center of the mat at three (3) foot intervals. Stakes and staples shall be a minimum of six (6) inches long. They shall be installed so as to not pose a danger to pedestrians or mowing crews. The type of stake or staple shall meet with the approval of the Director of Community Development.

Following the mulching operation, every precaution shall be taken to prohibit foot or vehicular traffic, or the movement of equipment over the mulched area. Any location where the seed or mulch is damaged shall immediately be repaired.

SECTION 908.6 - LAWN MAINTENANCE:

It shall be the responsibility of the developer or applicant to maintain lawn areas. Lawn areas shall consist of parks, parkways, retention, detention, and common areas. Maintenance shall begin immediately after seeding or sodding and shall continue until taken over by the Property Owner's Association.

Maintenance shall consist of watering, fertilizing, weeding, mowing, trimming, rolling, regrading, and reseeding or sodding as required to provide a smooth lawn free of weeds, bare, and eroded areas.

Grass shall be mowed at regular intervals to maintain a maximum height of three (3) inches. Not more than one half (½) of the grass blade shall be cut at any one (1) mowing. After mowing or trimming, immediately remove any noticeable clippings.

Weeds shall be controlled by herbicides in accordance with the manufacturer's instructions. Immediately repair any damage resulting from improper use of herbicides.

SECTION 909 - FERTILIZER:

The quantities and application rates for fertilizer nutrients are subject to adjustment, and will be determined on the basis of a soil sample analysis. The owner or developer shall be responsible for the soil analysis, and a copy of the results shall be submitted to the Director of Community Development.

Fertilizer will be measured by weight in pounds of actual nutrients. The following formula will be used to determine the pounds of fertilizer nutrients applied:

Total weight of mixed fertilizer (in pounds)	X	Percentage of each nutrient in the fertilizer applied	=	Pounds of each fertilizer nutrient

Small areas of one (1) acre or less may use five, three, two (5-3-2) ratio fertilizer at a rate of one hundred and eighty (180) pounds of nutrients per acre in place of a soil sample analysis.

SECTION 910 - GRANULAR LANDSCAPED AREAS WITHIN THE PARKWAY:

Those areas that are exposed to parkway rutting, due to trucks mounting the curb, may be landscaped with a protective course of granular material in lieu of grass. The size of the area to receive granular material shall be reviewed by the Director of Community Development on a case-by-case basis, with the minimum width being fifteen (15) inches.

SECTION 910.1 – CRUSHED GRANULAR BORDER:

The area to receive the crushed granular material shall be prepared by first excavating to a minimum depth of ten (10) inches. A minimum of two (2) inches of IDOT

specification grade FA-6 (sand) shall then be leveled out in the bottom of the excavation. Filter fabric (American Colloid N-140 or approved equal) shall be laid on the sand and a

border of pressure treated landscape timbers installed around the edge of the filter fabric. The landscape timbers shall be a minimum size of six (6) inches x eight (8) inches, and placed on the six (6) inch edge. This area shall then be filled with granular material meeting IDOT specification Grade CA-1. The granular material shall not be placed or dropped from a height of more than one (1) foot so as not to damage the filter fabric. The material shall be placed to its full course thickness of eight (8) inches and finished to present a reasonable even surface free from mounds or depressions.

SECTION 910.2 – COBBLE STONE BORDER:

The area to receive the cobble stone shall be prepared by first excavating to a minimum depth of twelve (12) inches. A minimum of two (2) inches of IDOT specification grade FA-6 (sand) shall then be leveled out in the bottom of the excavation. Filter fabric (American Colloid N-140 or approved equal) shall be laid on the sand. An additional two (2) inches of sand shall be placed around the perimeter of the excavation to support the landscape timbers. A border of pressure treated landscape timbers shall then be installed around the edge of the excavation. The landscape timbers shall be a minimum size of six (6) inches x eight (8) inches, and placed on the six (6) inch edge. This area shall then be filled with multi-colored, elliptical granite stones, approximately twelve (12) to fourteen (14) inches in size. The stones shall not be placed or dropped from a height of more than one (1) foot so as not to damage the filter fabric, and arranged in such a manner that their centers will touch. All void spaces shall be filled with FA-6 (sand). Upon completion, the finished cobble stone border shall present a reasonably even surface with the nearby concrete curb.

SECTION 911 - RESTORATION:

All excess waste material shall be continuously and promptly removed. The contractor shall be responsible for the prevention of tracking, dropping, and accumulation of dirt, mud, or other loose material on sidewalks, driveways, alleys, or streets. If this does occur, the area shall be cleaned up before the end of work each day. When in the opinion of the Director of Community Development a safety hazard is being created, the contractor will be contacted and shall immediately clean the area in question.

All reasonable precautions shall be taken to avoid damage to existing structures, plants, and lawns. Should any damage or unauthorized disturbance to any public or private property, or utility facility occur, the contractor shall immediately notify the owner of the property or facility, and the Village of Addison, Engineering Division. It shall be the responsibility of the contractor to restore, or cause to be restored, to their original or better condition, any property or facility damaged during landscaping.

SECTION 912 - GROUND COVER:

Landscape material used for ground cover other than grass must be approved by the Director of Community Development, and will be limited to those materials manufactured or sold as landscape material.

Broken concrete or asphalt will not be allowed in any landscaped areas.

SECTION 913 - GRADING AND LAND FILLING:

It shall be unlawful for any person or agent acting there under to cause any grading, land filling, or changes to drainage easements what so ever on property within the Corporate

limits of the Village of Addison without a permit being secured in accordance with these Specifications.

If an area of more than five thousand (5000) square feet of ground cover is to be disturbed, a Stormwater Management Permit will be required. (See Section 1305)

A permit shall be obtained though the Director of Community Development for any activity where the total volume of material disturbed, stored, disposed of, or used as fill, exceeds fifteen (15) cubic yards, but is less than five thousand (5,000) square feet of disturbed area. Plans shall be submitted clearly outlining the scope of work to be approved. The plans will be reviewed by the Engineering Division for compliance with the Specifications and Ordinances of the Village of Addison. Upon approval and payment of fees, a permit will be issued.

No permit will be required for gardening as long as drainage and easements remain unaffected.

SECTION 913.1 - ROUGH GRADING:

The builder, owner, or developer shall be responsible for the proper grading of the entire lot or site to conform with the grading plan approved by the Director of Community Development. Rough grading shall be accomplished as soon as possible in order to provide for proper drainage of the lot or site and any adjacent properties. Proper erosion and sediment control shall be maintained at all times. (See Section 1300)

SECTION 913.2 - FINISHED GRADING:

Finished grading shall include the spreading of suitable topsoil and seeding or sodding all yards, parkways, and any on-site, or off-site areas disturbed during grading or land filling. (See Sections 907 and 908)

When working around residential foundations, the topsoil shall be held to not less than four (4) inches, and not more than six (6) inches below the top of the foundation, except as approved by the Director of Community Development.

All grading and landscaping shall be complete prior to the final approval of any site.

SECTION 914 - TREES NOT LOCATED WITHIN THE PARKWAY:

In addition to all the parkway trees noted in Section 902.2, the following trees are acceptable for planting in and around detention basins, on berms, (as long as the berm is not acting as a dam) and used for screening.

Botanical Name / Common Name - "Cultivars"

Alnum glutinosa / European Black Alder
Betula nigra / River Birch
Larix deciduas / European Larch
Picea abies / Norway Spruce
Picea pungens / Colorado Green Spruce
Pinus nigra / Austrian Pine
Pignus Strobus / White Pine
Pinus sylvestris / Scotch Pine
Pseudotsuga menziesii / Douglas Fir
Thuja occidentalis / Arborvitae
Salix alba / Weeping Willow

SECTION 1000

DRIVEWAYS AND PARKING LOTS

STANDARD SPECIFICATIONS FOR DRIVEWAYS AND PARKING LOTS

SECTION 1000 - GENERAL:

It is the intent of these specifications that each building or structure within the Village of Addison shall be provided with a parking area which has access from a street, alley, or driveway.

All parking areas, driveways, and parking lots shall be constructed of bituminous concrete pavement or portland cement concrete pavement as noted in these specifications.

SECTION 1000.1 - SPECIFICATIONS:

These specifications cover the installation of driveways, parking lots, and parking areas which shall be constructed in accordance with the latest revision of IDOT's Standard Specifications for Road and Bridge Construction, and applicable ordinances of the Village of Addison. In case of a conflict, the Village of Addison's Standard Specifications for Driveways and Parking Lots and other applicable ordinances of the Village of Addison shall take precedence and shall govern.

SECTION 1000.2 - REGULATIONS AND PERMITS:

Additional regulations and requirements governing the construction of driveways, parking lots, and parking areas in the Village of Addison are:

A. Any restrictions, policies, and instructions that may be adopted or issued from time to time by the Village of Addison.

B. No person shall construct, alter, enlarge, or remove any driveway, parking lot, or parking area without first obtaining a written permit from the Village of Addison.

C. All work shall be available for inspection by the Village of Addison at all times.

D. Zoning requirements pertaining to parking lots.

SECTION 1001 - CONSTRUCTION REQUIREMENTS:

Preparation of the area for an apron, driveway or parking lot, shall be in accordance with the following sections:

A.	Earthwork	Section 1501
B.	Clearing and Grading	Section 1501.1
C.	Subgrade	Section 1501.2

Materials used in the construction of aprons, driveways and parking lot pavements, shall be constructed of impervious material, and shall conform to the Asphalt and Concrete Pavement Specifications, Sections 1500. Pavement thicknesses listed in the following Sections are the minimum pavement requirements. Heavier wheel loads or greater

frequencies of use shall require the design of stronger pavements at the discretion of the Director of Community Development.

An additional one (1) inch of binder or surface material may be substituted for three (3) inches of sub-base material in the driveway and parking lot pavement design. In no case shall the pavement design be reduced to less than four (4) inches of sub-base material.

Bituminous pavement shall not be driven on for at least four (4) hours after installation of the surface course.

Concrete pavement shall cure for a minimum of three (3) days, during which time traffic shall be kept off the pavement.

SECTION 1002 - SINGLE FAMILY DRIVEWAYS:

This type of driveway shall serve a single family. If more than one (1) family uses the drive, it will be considered an access drive and shall be constructed as a multi-family driveway.

Driveway accesses to an arterial street shall provide sufficient pavement on-site to allow for a turnaround, so that vehicles do not have to back out onto the public right-of-way.

See Section 1013 for "Separation Of Driveway Approaches".

SECTION 1002.1 - DRIVEWAY APRON WIDTH ON PARKWAY:

The width of a driveway apron as measured at the property line shall be a minimum of ten (10) feet and a maximum of twenty four (24) feet. (The accumulative width of all driveways on any given lot shall not exceed the maximum width of twenty four (24) feet). The width shall increase an additional three (3) feet on each side to provide for a flare at the street.

SECTION 1002.2 - DRIVEWAY WIDTH ON PRIVATE PROPERTY:

The minimum width of a driveway shall be ten (10) feet.

A driveway may not exceed the width of garage doors plus two (2) feet on either side of the doors when in excess of twenty four (24) feet of total width. In addition, a driveway shall be allowed to have a forty two (42) inch wide sidewalk in order to go around the side of the garage. The driveway shall begin to taper from its maximum width in front of the garage at a point twenty (20) feet in front of the garage down to its maximum width of twenty four (24) feet at the front property line. (Ord. 0-01-23)

SECTION 1002.3 - DRIVEWAY CONSTRUCTION:

Single family driveway aprons constructed on the parkway, or a driveway constructed on private property, shall be constructed of one (1) of the following:

A. PC concrete, a minimum of six (6) inches thick in the parkway, and five (5) inches thick on private property. Concrete driveways shall include mesh, and shall be constructed on a base of three (3) inches of compacted crushed limestone.

B. Bituminous concrete, a minimum (after compaction) of one and one half (1½) inches of bituminous concrete binder and one and one half (1½) inches of bituminous concrete surface, or three (3) inches of bituminous concrete surface in the parkway, and one (1) inch of bituminous concrete binder, and one (1) inch of bituminous concrete surface, or two (2) inches of bituminous concrete surface on private property. The bituminous material shall be laid on a base of eight (8) inches of compacted crushed limestone. The edges of the bituminous material shall be sloped to form an angle of approximately forty five (45) degrees with the surface.

Driveways shall be constructed so as to pitch away from the foundation with a minimum slope of not less than two (2) percent and a maximum slope of not more than ten (10) percent. Slopes not meeting these requirements may be used with the approval of the Director of Community Development.

Driveways located closer than five (5) feet to the property line shall be bordered with a six (6) inch barrier curb the entire length of the driveway, to prevent storm water from draining onto adjacent property. At the request of the homeowner, a "V" shaped driveway may be used in place of the curb, but only after explaining to the homeowner the dangers associated with a "V" shaped driveway. Existing topographical conditions may be reviewed by the Director of Community Development and, if conditions do not warrant the curb, it may be eliminated or only used where the Director of Community Development feels it will be of use.

SECTION 1002.4 – CIRCULAR DRIVES:

In addition to the general requirements for driveways, circular drives shall be permitted in the front yards of Single Family Residential Districts only when meeting the following requirements.

1) Circular drives shall be permitted in the R-1 Single Family Residential Zoning District.
2) Circular drives shall be permitted in the R-2 and R-3A Single Family Residential Districts only when needed to improve public safety on streets with high traffic volumes.
3) Corner lots shall not be permitted to have a driveway on one (1) street and a circular drive on another street.
4) Corner lots shall maintain a twenty five (25) foot minimum setback from the corner for circular drives.
5) A circular drive shall not be permitted to exceed twenty four (24) feet in combined width at the front property line.
6) The interior radius of a circular drive shall be landscaped at a minimum with grass and shrubs. (Ord. 0-01-23)

SECTION 1003 - MULTI-FAMILY ACCESS DRIVES AND PARKING LOTS:

Multi-family access drives and parking lots shall be constructed where more than one (1) family will use the access drive or parking lot.

SECTION 1003.1 – DRIVEWAY APRON WIDTH ON PARKWAY:

A driveway apron shall have a minimum width of twelve (12) feet for a one-way drive and twenty four (24) feet for a two-way drive. The maximum width at the property line is twenty four (24) feet. These widths shall increase an additional five (5) feet on each side to provide for a flare at the back of curb.

SECTION 1003.2 - DRIVEWAY APRON CONSTRUCTION ON PARKWAY:

The driveway apron shall be a minimum of six (6) inches of PC concrete with mesh, on a base of three (3) inches of crushed limestone.

SECTION 1003.3 - DRIVEWAY WIDTH ON PRIVATE PROPERTY:

The drive shall have a minimum width of twelve (12) feet for a one-way drive and twenty four (24) feet for a two-way drive.

SECTION 1003.4 - CONSTRUCTION ON PRIVATE PROPERTY:

Multi-family access drives and parking lots shall be constructed of either one of the following:

A. PC concrete, a minimum of six (6) inches thick with mesh, on a base of three (3) inches of crushed limestone.

B. Bituminous concrete, a minimum (after compaction) of one and one half (1½) inches of bituminous concrete binder and one and one half (1½) inches of bituminous concrete surface on ten (10) inches of compacted crushed limestone. The edges shall be sloped to form an angle of approximately forty five (45) degrees with the surface.

SECTION 1003.5 - PARKING LOT WHEEL STOPS:

Multi-family parking lots having less than eight (8) parking stalls, and located five (5) feet or more from the property line shall be provided with concrete wheel stops.

SECTION 1003.6 - PARKING LOT AND DRIVEWAY CURB AND GUTTER:

Multi-family parking lots located closer than five (5) feet to the property line, or with eight (8) or more parking stalls, shall have B-6.12 combination concrete curb and gutter placed around the perimeter of the parking lot and driveway to the right-of-way.
(See Section 700).

The back of the curb and gutter shall not be located closer than two (2) feet to the property line.

SECTION 1004 - COMMERCIAL/ INDUSTRIAL DRIVEWAYS:

This section shall include all aprons and driveways not included in single family and multi-family sections.

SECTION 1004.1 - DRIVEWAY APRON WIDTH ON PARKWAY:

The width shall be a minimum of twelve (12) feet for a one-way drive and twenty four (24) feet for a two-way drive at the property line, as measured at right angles to the driveway edge of pavement. No driveway across public property shall have a width greater than twenty four (24) feet, exclusive of curb returns. The Director of Community Development may grant a variation in driveway width from twenty four (24) feet to thirty five (35) feet, providing the following is established:

A. That the variation will not conflict with any state requirement.

B. That the variation can only be granted on a primary street.

C. That the variation is necessary to protect the public safety and welfare or to protect against property damage.

Curb returns at the street shall be provided as follows:

A. Autos only - seven (7) foot flare or fifteen (15) foot radius.

B. Trucks - fifteen (15) foot flare or thirty (30) foot radius.

SECTION 1004.2 - DRIVEWAY APRON CONSTRUCTION ON PARKWAY:

The driveway apron shall be a minimum of eight (8) inches of PC concrete with mesh on a base of four (4) inches of crushed limestone. The apron shall extend the entire width of the right-of-way, and shall be bordered with B-6.12 curb and gutter.

SECTION 1004.3 - DRIVEWAY WIDTH ON PRIVATE PROPERTY:

A one-way drive shall have a minimum width of twelve (12) feet and a minimum width of twenty four (24) feet for a two-way drive.

SECTION 1004.4 – PROPERTY LINE CLEARANCE:

Wherever feasible, a driveway shall be located so that the required curb return lies entirely within the subject property line (extended) unless the driveway is being shared by adjacent property owners.

SECTION 1004.5 – MAXIMUM NUMBER OF DRIVEWAYS:

Unless a traffic engineering study or other documentation indicates to the satisfaction of the Director of Community Development the need for additional driveways, only one driveway shall be permitted on a street frontage. (See Section 1013.2)

SECTION 1004.6 – DRIVEWAY STORAGE LENGTH:

Sufficient driveway storage space shall be provided for all entrances and exits, subject to the approval of the Director of Community Development. The amount of storage to be provided, shall consider the conditions and configuration of the adjoining roadway, the design of the on-site parking improvements, and the volume of traffic anticipated by the development.

SECTION 1005 – PARKING LOTS:

Parking lots shall be designated as; new construction, reconstruction, or maintenance.

A. New Construction shall consist of any increase in the impervious area, and shall require the construction of concrete B-6.12 curb and gutter as noted in Section 1003.6 and 1005.4. Stormwater management shall also be provided for all new construction.

B. Reconstruction shall consist of overlaying an existing gravel parking lot with bituminous concrete pavement, or portland cement concrete pavement, and shall require the construction of concrete barrier curb, or curb and gutter. Stormwater management shall also be provided for reconstruction. Any increase in the size of the parking lot shall be considered new construction.

C. Maintenance shall consist of pavement patching, or the removal and replacement of existing pavement with no increase in the impervious area and shall not require curb, curb and gutter, or stormwater management.

SECTION 1005.1 – NEW CONSTRUCTION ON PRIVATE PROPERTY (AUTOS):

Those areas that are designated for automobile traffic or parking, with occasional light truck traffic (that being a vehicle with a maximum of four (4) tires in contact with the pavement) shall be constructed of one of the following:

A. PC concrete, a minimum of six (6) inches thick with mesh, on a base of three (3) inches of crushed limestone.

B. Bituminous concrete, a minimum (after compaction) of one and one half (1½) inches of bituminous concrete binder, and one and one half (1½) inches of bituminous concrete surface on ten (10) inches of compacted crushed limestone, primed at the rate of 0.35 gallons per square yard.

SECTION 1005.2 – NEW CONSTRUCTION ON PRIVATE PROPERTY (TRUCKS):

Those areas that are designated for truck traffic or parking, shall be constructed of one of the following:

A. PC concrete, a minimum of eight (8) inches thick with mesh, on a base of four (4) inches of crushed limestone.

B. Bituminous concrete, a minimum (after compaction) of two (2) inches of bituminous concrete binder, and two (2) inches of bituminous concrete surface on twelve (12) inches of compacted crushed limestone, primed at the rate of 0.35 gallons per square yard.

Those areas designated for loading docks, loading berths, areas intended to be used for dumpsters over two (2) cubic yards in capacity, the parking of semi-trailers without tractor attached, or other heavy concentrated loads, shall be constructed of the following:

A. PC concrete, a minimum of eight (8) inches thick with mesh, on a base of four (4) inches of crushed limestone.

SECTION 1005.3 – SEMI-TRAILER DOLLY PADS:

Semi-trailer dolly pads shall be required in all semi-trailer parking areas not constructed of eight (8) inch thick PC concrete. Dolly pads shall be a minimum of five (5) feet long and ten (10) feet wide for each trailer being parked. Dolly pads shall be constructed of eight (8) inches of PC concrete with mesh, on a base of four (4) inches of compacted crushed limestone.

SECTION 1005.4 – CURB AND GUTTER:

The perimeter of all access drives, parking lots, landscaped islands and other locations where deemed appropriate, including that section of the driveway apron in the parkway, shall be curbed with B-6.12 combination concrete curb and gutter. (See Section 700)

Generally, the back of curb shall be located no closer than ten (10) feet to the front yard property line, and five (5) feet to a side or rear yard property line. See Ordinance 0-92-01 (Off-Street Parking) for additional information. This setback area shall be used for landscaping.

SECTION 1005.5 - WHEEL STOPS:

Wheel stops shall be placed at each parking stall located next to a building or an existing sidewalk that is less than seven (7) feet in width, unless the parking stall is parallel to the building or sidewalk, in which case, the wheel stops may not be required. Wheel stops shall be placed so that no part of any parked vehicle will extend beyond the property line, encroach upon any adjacent sidewalk in such a way that it reduces the sidewalk width to less than five (5) feet, or come closer than six (6) inches to any building. Wheel stops may be used at handicapped parking stalls, to protect the handicapped parking sign.

Wheel stops shall not be used in place of curb and gutter.

Any parking lot that does not require curb or curb and gutter as noted in Section 1005, shall be required to have wheel stops at each parking stall around the perimeter of the parking lot.

The concrete wheel stops shall be secured to the pavement with a minimum of two (2) steel pins, eighteen (18) inches long and one half (½) inch in diameter.

SECTION 1005.6 – TRAFFIC CONTROL:

For traffic control and safety, stop signs and other Regulatory Signs shall be provided.

Directional signs, arrows and appropriate pavement markings shall be installed to control the direction of movement along driving aisles and driveways, as deemed necessary by the Director of Community Developments.

SECTION 1005.7 – PEDESTRIAN WALKWAYS:

In order to insure pedestrian safety where parking stalls are not aligned perpendicular to the primary pedestrian objective, or where pedestrians are requires to cross parking aisles, a pedestrian walkway at least five (5) feet wide and clearly indicated by pavement markings shall be provided at intervals not to exceed two hundred (200) feet.

SECTION 1005.8 - DRAINAGE:

Parking lots shall be designed for adequate drainage. The discharge of stormwater runoff from the parking facility into existing public storm sewers, drains, streets, ditches, channels or any other public drainage way shall be subject to the limitations and requirements as set forth by the Village of Addison, or any other governmental agency having jurisdiction over said drainage way. The discharge of stormwater runoff onto adjacent private property or into a privately owned drain will not be permitted unless written approval is obtained from said private owner.

Parking lots with eight (8) or more parking stalls shall be drained utilizing underground storm sewers. The design of the storm sewer shall comply with Section 200.

When required, on-site stormwater detention and / or retention shall be provided.

When off-street parking facilities are located within a designated flood plain, planning, design, and construction of said parking facility shall comply with the applicable requirements of the "Addison Storm Water and Floodplain Management Ordinance", Ordinance No. O-90-40, and the "DuPage County Countywide Stormwater And Flood Plain Ordinance".

A minimum slope of one (1) percent for asphalt and one half (½) percent for concrete should be provided, with up to two (2) percent being desirable. Grades should not generally exceed three (3) percent in directions longitudinal to the parking stalls or five (5) percent for cross-slopes or aisles.

Adequate provisions shall be made so that stormwater runoff will not flow across sidewalks in a quantity or manner that would be detrimental or inconvenient to persons using the sidewalk.

SECTION 1005.9 – ILLUMINATION:

See Parking Lot Lighting, Section 1206.

SECTION 1005.10 – SCREENING AND LANDSCAPING:

All parking lots containing more than four (4) parking spaces shall be landscaped, or effectively screened on each side, by a wall, fence or densely planted compact hedge, conforming to the requirements of the district in which the parking is located. Landscape material shall not be planted so that there is any interference with the overhang of parked vehicles.

SECTION 1005.11 – CIRCULATION:

Driveway approaches on public streets shall not be used to furnish circulation from one row of parking to an adjacent row of parking. This traffic circulation shall be provided off the public right-of-way.

SECTION 1005.12 – BACKING ONTO THE PUBLIC RIGHT-OF-WAY:

Backing a vehicle onto or from a public right-of-way is prohibited in all areas, except residential areas located on streets that are classified as local or collector streets. Parking spaces shall be designed and arranged so that it is more convenient for the parking space user to accomplish any necessary backing on private property.

No backing maneuver from a parking stall shall conflict with, or block, any driveway apron located within the public right-of-way, except in residential areas.

Those areas designed and constructed prior to the passage of this Ordinance are grand fathered into this Ordinance. All possible attempts to correct this situation shall be attempted from time to time, or during a new permitting processes.

SECTION 1006 - LOADING AREAS:

Any building or structure which requires the receipt or distribution of materials or merchandise by truck or similar vehicles, shall be provided with areas exclusively designated for loading and unloading purposes. Loading areas shall not be used to satisfy the space requirements for any other off-street parking space.

All required loading areas shall be located on the same lot as the use to be served, and no portion of the vehicle shall project into a street or alley. A loading area shall be designed to permit vehicle ingress and egress with on-site maneuvering of the delivery vehicle without infringement on any public right-of-way, or encroachment onto other adjacent lots, except when a covenant or an easement, approved by the Director of Community Development and recorded with the County is provided.

In the Manufacturing Districts:

A. No loading area for vehicles of more that two (2) ton capacity, shall be located within fifty (50) feet of any Residential District.

B. Loading areas shall not be located within twenty five (25) feet of the intersection of any two (2) streets, nor shall it be located in a required front or side yard, except in an M2 District, an open off street loading area may be located in part of

the front yard, provided not more than thirty (30) percent of the front yard is so occupied.

This Standard provides for two styles of loading areas, a loading berth and a loading dock.

Such space shall have a vertical clearance of at least fourteen (14) feet.

SECTION 1006.1 - LOADING DOCKS:

A loading dock shall provide a platform to facilitate the loading and unloading of a delivery vehicle. Loading docks shall have a minimum width of ten (10) feet, and a minimum length of eighty (80) feet, exclusive of any aisle, parkway, parking stalls or maneuvering space.

Pavement shall consist of eight (8) inches of PC concrete with mesh, on a base of four (4) inches of compacted crushed limestone.

SECTION 1006.2 – LOADING BERTHS:

A loading berth shall be used where a loading dock is not needed, such as a restaurant, office, or small retail establishment. Loading berths shall be considered temporary parking, used exclusively for the loading and unloading of a delivery vehicle. Loading berths shall have a minimum width of ten (10) feet, and a minimum length of fifty (50) feet, exclusive of any aisle, parkway, parking stalls or maneuvering space.

Pavement shall consist of eight (8) inches of PC concrete with mesh, on a base of four (4) inches of compacted crushed limestone.

SECTION 1006.3 - MANEUVERING SPACE:

Maneuvering space shall not include parking stalls, or other obstructions, nor shall it interfere with the use of any required parking stall or driving aisle.

Sufficient maneuvering space shall be provide so all vehicle movement associated with the loading area is performed on-site.

There shall be a minimum of eighty (80) feet of maneuvering space provided in front of all loading docks.

SECTION 1006.4 – SCREENING AND LANDSCAPING:

All open trailer and truck parking areas shall be landscaped, or effectively screened on each side, by a wall (not to exceed twelve (12) feet in height), fence or densely planted compact hedge, conforming to the requirements of the district in which the parking is located.

SECTION 1007 – PARKING STALLS:

Each parking stall shall be separated by at least one yellow or white delineator line. Delineator lines shall be a minimum of four (4) inches in width, and extending the length of the parking stall. Such striping shall be maintained in a clearly visible condition.

The width of a parking stall shall be measured from the center point of the delineator line. Parking stall dimensions shall not include access drives, aisles, ramps, columns, light poles, maneuvering space, office or work areas.
An automobile parking stall shall have a vertical clearance of at least seven (7) feet, and a truck parking stall at least fourteen (14) feet.

SECTION 1007.1 – PARKING STALL DIMENSIONS:

An off-street parking stall shall measure not less than:

A. Automobile: Nine (9) feet X eighteen (18) feet
Nine (9) feet X twenty two (22) feet for Parallel Parking

B. Truck: Ten (10) feet X fifty (50) feet

C. Handicap: Sixteen (16) feet X eighteen (18) feet

SECTION 1007.2 – PARKING STALLS RESERVED FOR THE HANDICAPPED:

In all parking lots where parking is provided for employees, the public, or both, except in the case of single family attached or detached, parking stalls reserved for the handicapped shall be provided as specified in the "Illinois Accessibility Code". In case of conflicting requirements, the higher standard or greater restriction shall apply.

A. Reserved spaces may be credited toward compliance with the off-street parking requirements of the Zoning Ordinance.

B. Handicapped parking shall be located on the shortest possible handicapped accessible route to a handicapped accessible building entrance. Surface slopes of accessible routes shall not exceed 1:20 five (5) percent. Handicapped parking stalls and access aisles, shall be located on level pavement, with surface slopes not exceeding 1:50 two (2) percent in all directions.

C. Each handicapped parking stall, except when located on a street where the stall is parallel to the street, shall be sixteen (16) feet wide. Each space shall consist of an eight (8) foot wide parking stall and an adjacent eight (8) foot wide access aisle. Adjacent handicapped parking stalls shall not share a common access aisle. Access aisles shall be diagonally striped.

D. When a curb cut ramp is located adjacent to a handicapped parking space, the curb cut ramp shall be located on the access aisle side of the parking space so that it won't be blocked by a vehicle parked in the stall. Curb cut ramps shall not

exceed a slope of 1:12 (8.3) percent. Access aisles shall not be ramped. The entire access aisle shall be flat and level.

E. Each handicapped parking space shall be provided with a handicapped parking sign, (See Section 1104) and a wheelchair symbol painted on the pavement. The wheelchair symbol shall be white, thermoplastic or a double coat of white paint, centered on a blue (Pratt and Lambert, E142 Safety Blue) square background.

SECTION 1007.3 – VEHICULAR OVERHANG:

When a vehicle overhangs a required landscape area, a minimum of two (2) feet of width shall be added to the landscaped area. When approved by the Director of Community Development, this two (2) foot additional width for landscaping may be compensated for by shortening the parking space to sixteen (16) feet.

SECTION 1008 – OFF-STREET PARKING CHART:

All other requirements as to parking stall and aisle width shall be as set forth or interpolated from the "Off Street Parking Chart".

SECTION 1009 - DISPOSAL OF SURPLUS MATERIAL:

Surplus or waste material resulting from the pavement construction operations of driveways and parking lots shall be disposed of by the contractor.

SECTION 1010 - FIRE LANES:

Fire lanes shall be provided at all new buildings or structures, when any portion of the exterior wall on the first floor:

A. Is located more than one hundred and fifty (150) feet from a Fire Department access point, or;

B. When the building exceeds thirty (30) feet in height and is located more than fifty (50) feet from a Fire Department access point.

Fire lanes shall be a minimum of twenty (20) feet in width. The nearest edge of the fire lane to the building, shall be a minimum of ten (10) feet, and a maximum of thirty (30) feet.

Fire lanes shall have a minimum vertical clearance of thirteen and one half (13½) feet. A dead end fire lane, more than three hundred (300) feet in length, shall be provided with a turn around at the dead end. The turn around shall be approved by the Addison Fire Protection District.

Pavement for a fire lane shall be concrete or asphalt, except when enhanced aesthetics are desired, a porous pavement system approved by the Addison Fire Protection District may be substituted. Porous pavement systems shall be marked with thirty six (36) inch tall delineator posts, topped with a reflector. Fire lanes shall be constructed to withstand the

weight of a seventy two thousand (72,000) pound vehicle, exerting one hundred and twenty (120) P.S.I. minimum.

All fire lanes shall be posted "FIRE LANE - NO PARKING" by the owner of the property upon which the fire lane is located. Maintenance, including snow removal, shall also be performed by the owner.

SECTION 1011 - RIGHT IN - RIGHT OUT DRIVEWAY APPROACH:

At times, do to safety issues, the Director of Community Development may designate a specific driveway approach as a right in - right out driveway. This style driveway approach is designed to prohibit left turns. The design shall be similar to a standard driveway with the addition of a concrete channelizing island and signage.

A. Width of channelizing island (measured parallel to the street) forty (40) feet.

B. Length of channelizing island (measured perpendicular to the street) twenty five (25) feet.

C. Offset of channelizing island (measured perpendicular to the face of the island curb, and the nearest edge of pavement of a through lane, right-turn lane, or paved shoulder) five (5) feet.

D. Curb return fifty (50) feet.

E. Driveway approach width thirty (30) feet.

F. Lane width at island fourteen (14) feet.

Minimum signage shall include a “Stop” sign with stop bar and a “No Left Turn” sign at the exit lane, and a “No Left Turn” sign on the road right-of-way opposite the driveway approach, visible to oncoming traffic.

SECTION 1012 – CONTROL OF OFF-STREET PARKING FACILITIES:

In cases where parking facilities are permitted on a lot other than the lot on which the structure or use served is located, the owners of those lots shall prepare a covenant or easement agreeing to the use of this land for off-street parking. This covenant or easement shall prohibit any other use of the land, except for parking, and shall run with the land upon which the accessory off-street parking is located. The document shall be recorded in the office of the Recorder of Deeds of DuPage County, Illinois, with a copy of the recorded covenant or easement, certified by the Recorder of Deeds of DuPage County, Illinois, submitted to the Director of Community Development. The covenant or easement shall not be released until such time as either one of the following conditions occurs:

A. The structure on the lot containing the principal use is removed and the principal use is terminated; or

B. Other land of the required size within the permitted distance, is properly developed and used as the required accessory off-street parking in place of and in lieu of the initial land used for accessory off-street parking with the same requirements, covenants or easements, and conditions attached to such substitute accessory use as approved by the same authority as required for approval of the initial accessory off-street parking.

SECTION 1013 – SEPARATION OF DRIVEWAY APPROACHES:

Access control standards are intended to promote safe and efficient operation of driveway approaches, with the least interference with through traffic movements.

Those distances noted below are the minimum distances between approaches, and are measured between the edges of pavement at the property line, or as noted.

Where driveway approaches cannot meet the minimum separation requirements, the Director of Community Development may determine spacing based on location, design and traffic volume. The Director of Community Development may also increase the minimum separation requirements in order to prevent overlapping of left-turn lanes or other issues that may interfere with a safe driveway approach.

SECTION 1013.1 – SINGLE FAMILY RESIDENTIAL:

The minimum distance between two driveways on the same lot, at the property line, shall be twenty (25) feet.

SECTION 1013.2 – COMMERCIAL OR INDUSTRIAL:

When it has been determined that more than one driveway is required, the minimum distance between two (2) driveways on the same lot, at the property line, shall be fifty (50) feet. (See Section 1004.5)

SECTION 1013.3 – FROM AN INTERSECTION:

No driveway shall be constructed within thirty (30) feet of an intersection, as measured from the intersection of the right-of-way lines, and the nearest edge of the driveway.

SECTION 1014 – DRIVEWAY MEDIANS:

When a driveway is divided by a median, the following minimum standards shall apply.

A. A median shall be a minimum of four (4) feet wide and twenty five (25) feet in length. It shall be bordered by B-6.12 concrete curb and gutter and landscaped.

B. A median shall only be permitted after it has been determined that the median will not interfere with vehicle turning movements.

C. A driveway median shall be off set five (5) feet (as measured perpendicular to the face of the median curb, and the nearest edge of pavement of a through lane, right turn lane, or paved shoulder).

SECTION 1015 – MAINTENANCE OF PARKING FACILITIES AND EQUIPMENT:

All paving, directional devices, protective equipment, landscaping, and other items furnished or required on the parking facility, shall be maintained to insure safe pedestrian movement, vehicular operation, adequate protection of adjoining properties, and to present a neat and attractive appearance of the facility.

TABLES OF MINIMUM PAVEMENT REQUIREMENTS

TYPE OF DEVELOPMENT	PARKWAY PAVEMENT	
	FLEXIBLE	RIGID
Single Family Residential	3" Bituminous Concrete 8" Stone	6" PC Concrete 3" Stone Mesh
Multi Family Residential	N/A	6" PC Concrete 3" Stone Mesh
Commercial and Industrial	N/A	8" PC Concrete 4" Stone Mesh
Loading Docks and Dolly Pads	N/A	N/A

TYPE OF DEVELOPMENT	PRIVATE PROPERTY PAVEMENT			
	FLEXIBLE	RIGID	WHEEL STOPS	CURB
Single family residential	2" Bituminous Concrete 8" Stone	5" PC Concrete 3" Stone Mesh	N/A	See Section 1004.3
Multi family residential	3" Bituminous Concrete 10" Stone	6" PC Concrete 3" Stone Mesh	See Sec. 1005.5	See Section 1005.6
Commercial & Industrial	Auto: 3" Bituminous Concrete 10" Stone Truck: 4" Bituminous Concrete 12" Stone	Auto: 6" P.C. Concrete 3" Stone Mesh Truck: 8" PC Concrete 4" Stone Mesh	N/A	See Section 1006.6
Loading docks & dolly pads	N/A	8" PC Concrete 4" Stone Mesh	N/A	N/A

OFF-STREET PARKING CHART
FOR 9 FOOT STALLS AT VARIOUS ANGLES

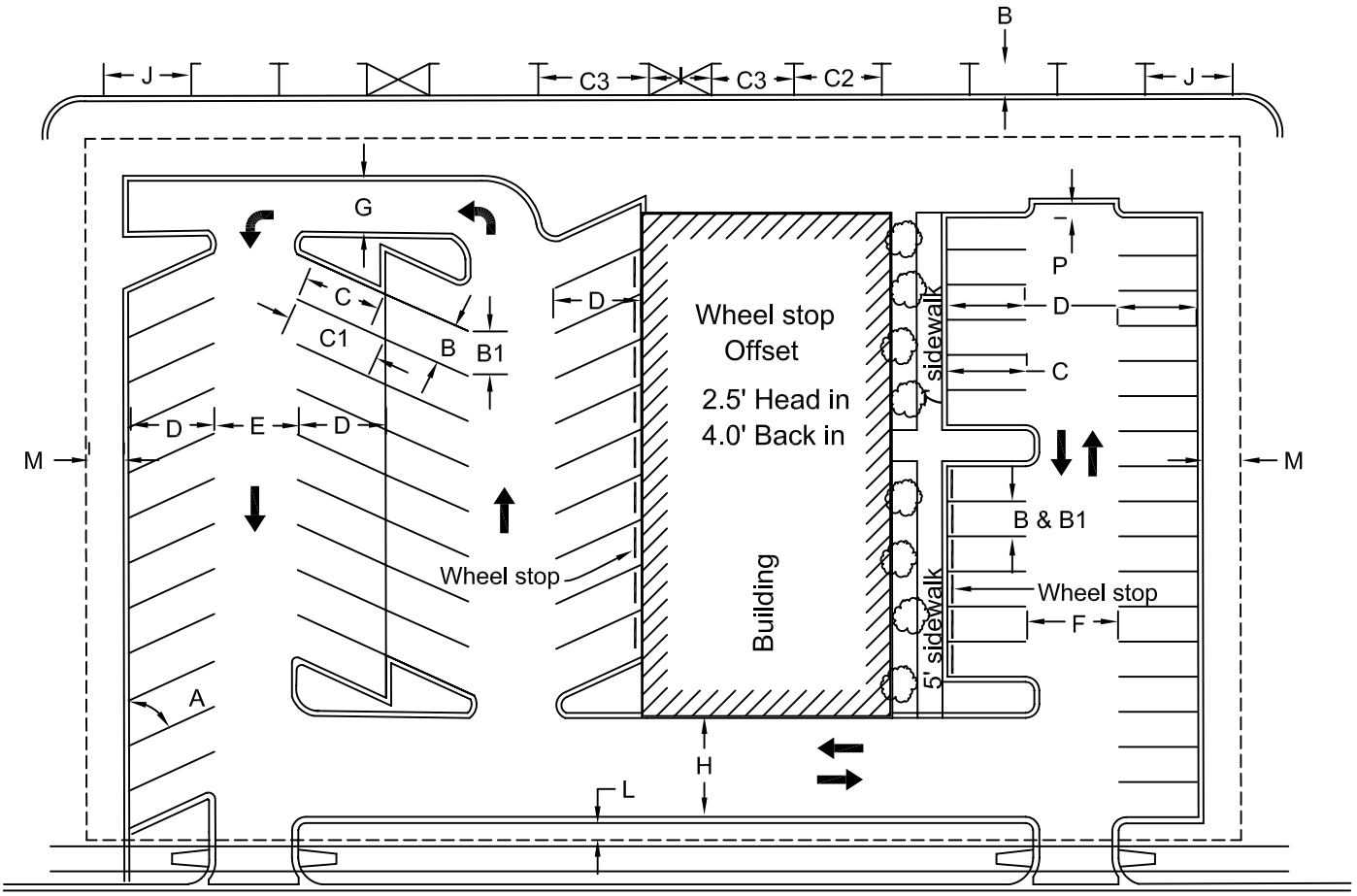
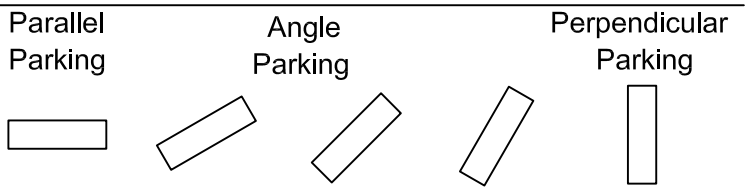


TABLE OF DIMENSIONS (In feet)



A	Parking Angle	0°	30°	45°	60°	90°
B	Stall Width	9'	9'	9'	9'	9'
B1	Stall Width (Parallel to Aisle)		18'	12.7'	10.4'	9'
C	Stall Length		18'	18'	18'	18'
C1	Stall Length (Length of Stall Line)		33.6'	27'	23.2'	18'
C2	Stall Length (Without Maneuvering Space)	22'				
C3	Stall Length (With Maneuvering Space)	18'				
D	Stall Depth (To Wall or Face of Curb)		16.8'	19.1'	20.1'	18'
E	One-Way Aisle Width (Between Stall Lines)	12'	12'	15'	18'	24'
F	Two-Way Aisle Width (Between Stall Lines)	24'	24'	24'	24'	24'
G	One-Way Turn Around Aisle Width	14'	14'	14'	14'	14'
H	Two-Way Driving Aisle Width	24'	24'	24'	24'	24'
I	Maneuvering Space	5'				
J	Intersection Setback	25'	25'	25'	25'	25'
K	Bumper Overhang		2'	2'	2'	2'
L	Front Yard Setback	10'	10'	10'	10'	10'
M	Side and Rear Yard Setback	5'	5'	5'	5'	5'
N	Handicapped Stall Width		16'	16'	16'	16'
O	Handicapped Stall Length		18'	18'	18'	18'
P	Dead-End Setback					7'

SECTION 1100

SIGNS

STANDARD SPECIFICATIONS FOR SIGNS

SECTION 1100 - GENERAL:

The owner or developer of a subdivision or parking lot shall install signs to help ensure the safety of the public by providing for the orderly and predictable movement of traffic.

Any unauthorized sign placed on the Village right-of-way by a private organization or individual constitutes a public nuisance. All unofficial and nonessential signs shall be removed. (See Addison Sign Ordinance)

SECTION 1100.1 - SPECIFICATIONS:

These specifications cover the installation of various signs within the Village of Addison. Signs shall be installed in accordance with the Manual on Uniform Traffic Control Devices, IDOT's Standard Specifications for Traffic Control Items, and applicable ordinances of the Village of Addison.

SECTION 1101 - SIGNS:

The term "Signs" shall mean traffic control signs and street name signs.

SECTION 1101.1 - SIGN LOCATION:

Traffic control signs shall be located on the right hand side of the street, and should be individually erected on separate posts or mountings, except where one sign supplements another. When possible, traffic control signs should be mounted on street light posts. Traffic control signs should be located so that they do not obscure each other, or are hidden from view by other objects.

Street name signs may be mounted on sign poles, street light poles, or traffic signal mast arms.

SECTION 1101.2 - SIGN HEIGHT:

In commercial, industrial, or residential areas where parking or pedestrian movement is likely to occur, the clearance to the bottom of a traffic control sign shall be at least seven (7) feet. The height to the bottom of a secondary sign mounted below another traffic control traffic control sign may be one (1) foot less than the appropriate height specified above.

Street name signs shall be mounted a minimum of eight (8) feet above finished grade.

SECTION 1101.3 - SIGN LATERAL CLEARANCE:

Normally, signs should not be located closer than two (2) feet from the face of the curb to the nearest edge of the sign. Although two (2) feet is the recommended distance, a clearance of one (1) foot is permissible where parkway width is limited, or where existing street light poles are closer to the curb.

A traffic control sign face shall be placed at a ninety three (93) degree angle to the center line of the street.

A street name sign shall be placed parallel to the street it names.

SECTION 1101.4 - SIGN POSTS:

Sign posts for traffic control signs, shall be Qwik-Punch posts, manufactured by Allied Tube and Conduit or approved equal. The posts shall be made of twelve (12) gauge steel, galvanized by the hot-dip process, with seven sixteenths (7/16) inch perforated mounting holes spaced one (1) inch on centers the full length of the post on all four (4) sides, and shall be used for all sign and base posts.

A. Sign posts shall be one and three quarter (1¾) inch square, having a minimum length of nine (9) feet, and a minimum weight of 2.3 pounds per lineal foot.

B. Base posts shall be two (2) inch square, having a minimum length of three (3) feet, and a minimum weight of 2.65 pounds per lineal foot.

Base posts shall be driven a minimum of two and one half (2½) feet below grade with a minimum of three (3) inches left above grade. The sign post shall then be inserted into the base post and bolted in place.

Sign posts for street name signs, shall be galvanized steel posts, with a two (2) inch diameter. The posts shall be a minimum of twelve (12) feet long, and driven a minimum of two and one half (2½) feet below grade.

SECTION 1102 - TRAFFIC CONTROL SIGN DESIGN AND MATERIALS:

All traffic control signs shall be made from aluminum sign blanks, with high intensity reflective sheeting for the face, border, legend, and letters. Reflective sheeting shall be 3M's Diamond Grade for "Stop" signs, Engineer Grade for "No Parking" signs, and High Intensity for all other signs.

Sign design, dimensions, and lettering shall conform to the Manual on Uniform Traffic Control Devices.

Stop signs shall be a minimum of thirty (30) inches X (30) inches in size.

SECTION 1103 - STREET NAME SIGN DESIGN AND MATERIALS:

All street name signs shall be made from aluminum sign blanks, with high intensity reflective sheeting for the face and letters. Signs shall have a green face with white letters.

Street name signs shall have a maximum length of forty eight (48) inches, a height of nine (9) inches, and rounded corners. The street name shall be displayed on both sides of the sign. The lettering shall be four (4) inch upper case, standard alphabet, C series. The signs shall be mounted on the post with heavy duty four (4) way assembly mounting

brackets. The mounting hardware shall be die-cast aluminum, consisting of a post cap with bracket, and a ninety (90) degree bracket. The brackets shall have twelve (12) inch long holding slots for the sign panels. Stainless steel set screws shall hold the sign in the bracket.

SECTION 1103.1 - TEMPORARY STREET NAME SIGNS:

The owner or developer of a subdivision shall erect temporary street name signs until permanent signs can be erected.

The temporary street name sign shall be erected after the curb and gutter has been installed, but before any building permits are issued.

The lettering shall be a minimum of four (4) inches tall with the letter strokes a minimum of one half (½) inch wide. Temporary street name signs may be hand painted, but must be legible. The signs shall be mounted seven (7) feet above finished grade.

The owner or developer shall be responsible for maintaining the temporary street name signs, and repairing or replacing them as necessary, until permanent street name signs are installed.

SECTION 1104 - HANDICAPPED PARKING SIGNS:

Each parking space reserved for a handicapped person shall be designated by posting a handicapped parking sign, and a fine sign.

The Illinois Vehicle Code requires that the upright R7-8 sign, adopted by the U.S. Department of Transportation be used to designate handicapped accessible parking. Attached directly below the handicapped parking sign shall be an Illinois Standard R7-I101 sign stating the amount of the fine for illegally parking in the reserved space(s). Per Village Ordinance O-96-74, the amount of $100 shall be noted on the plate designating the fine amount.

Handicapped parking signs shall be permanently mounted:

A. Either on a post, permanently set in the ground, located not more than five (5) feet from the front of the parking space, or;

B. On a building wall directly in front of the parking space.

The sign shall be centered between the parking stall and the access aisle. The bottom edge of the fine sign shall be mounted a minimum of four (4) feet above the finished grade.

Posts for handicapped signs may be "U" channel, one and one half (1½) inch diameter or greater, steel tube with a closed end at the top, or a four (4) inch x four (4) inch pressure treated timber. Steel posts shall be galvanized.

SECTION 1105 - MAINTENANCE OF SIGNS:

Traffic control signs, or street name signs which become damaged shall be repaired or replaced by the owner or developer until the subdivision has been accepted by the Village of Addison.

Handicapped parking signs shall be maintained by the owner of the parking lot and shall be repaired or replaced as necessary. Non-conforming signs, that were in use prior to January 1, 1988, will not constitute a violation during the sign's useful life. The useful life of the sign may not be extended by means other than normal maintenance.

SECTION 1200

MISCELLANEOUS ITEMS

STANDARD SPECIFICATIONS FOR MISCELLANEOUS ITEMS

SECTION 1200 - GENERAL:

It is the intent of this section to provide a location for miscellaneous items not found in other sections.

SECTION 1201 - FRAME AND GRATE ADJUSTMENT:

This work shall consist of adjusting the frames and grates of drainage and utility structures located within the curb and gutter, or paved areas.

For frames and grates located in the area to be resurfaced, the existing pavement adjacent to, and for a distance not exceeding twelve (12) inches outside the base of the casting to be adjusted, shall be broken sufficiently to permit its removal. Where a casting is enclosed in a concrete platform, the entire platform shall be broken, removed, and replaced. The existing pavement shall be broken and the casting adjusted just prior to placing the surface course.

The casting shall be adjusted to the finished elevation of the surface course. After adjusting, the space around the casting shall be filled with SI mix concrete to the surface of the adjacent pavement. This work shall be cured and protected for a period of seventy two (72) hours.

Where the street is open to traffic, and the surface course is not immediately placed, bituminous material shall be placed around the casting, flush with its surface and ramped two (2) feet. This material shall remain in place until surfacing operations begin. Prior to placing the surface course, the temporary ramps shall be removed and properly disposed of by the contractor.

The exposed surface of each casting shall be coated with fuel oil to prevent the bituminous material from adhering to the casting.

Frames and grates located in the curb and gutter shall be adjusted to match the cross-section of the curb and gutter. The sewer contractor shall have on site sufficient manpower, equipment, and material to make adjustments while the curb contractor is pouring the curb and gutter.

Frame and grate adjustments may require the use of tapered adjusting rings or metal shims with non-shrink grout. The sewer contractor shall make arrangements to have these items available where they are needed.

SECTION 1202 - CONSTRUCTION NOISE:

The owner, developer, contractor, or any other person shall not operate, or permit to be operated upon premises under their control, any construction equipment within one thousand (1,000) feet of an occupied residence, motel, hotel, or similar establishment between the following hours:

A. Monday through Saturday, between the hours of 7:00 PM and 7:00 AM.

B. Sunday and holidays that are observed by the Village of Addison, between the hours of 7:00 PM and 8:00 AM.

The above time limitations will not apply to construction work that is of an emergency nature provided that the Director of Community Development shall be notified as soon as possible of the nature and cause of the emergency.

Requests to modify or deviate from the above requirements shall be filed with the Director of Community Development in writing. A request shall be allowed for good cause only, and must be approved in writing by the Village Manager before any modifications or deviations can occur.

SECTION 1203 - BUMPER POSTS:

A bumper post (also known as a bollard) shall be used where utilities or a building are likely to be damaged by vehicular traffic.

Posts shall be made of eight (8) inch diameter steel pipe, filled with concrete. The concrete at the top of the post shall be crowned. Both the crowned concrete and the post shall be painted.

Posts shall be anchored in a two and a half (2½) foot diameter by three (3) foot deep concrete foundation. The top of the concrete foundation shall be approximately one (1) foot below finished grade.

SECTION 1204 - NOT USED

SECTION 1205 - OPEN CUTTING A MUNICIPAL STREET:

It is the intent of the Village of Addison not to permit the open cutting of municipal streets. It is also recognized that the open cutting of a street may be absolutely necessary (the Director of Community Development shall make this determination) in which case a permit and a public improvement bond shall be required.

SECTION 1205.1 - STREET OPENING PERMIT:

When a municipal street is to be open cut, a permit shall be issued for the work. The cost of the permit will be determined by the size of the open cut. The fee shall be $125.00 per square yard of open cut, with a minimum fee of $500.00

The Village of Addison may deny a “Street Opening Permit”, when in the opinion of the Director of Community Development, tunneling, boring, augering or other construction methods would be more in the public interest. This may also include denying approval to retrieve lost or immobilized equipment located under the pavement. Increased traffic hazards, delays to the motoring public and future pavement maintenance issues are all reasons for denying a permit.

SECTION 1205.2 - STREET OPENING PUBLIC IMPROVEMENT BOND:

A public improvement bond in the form of a cash bond shall be posted with the Engineering Division for any open cutting of a municipal street. The minimum amount for an open cutting improvement bond shall be $2,000.00. The bond will be refunded one year after the work is completed, as outlined in Section 813.

SECTION 1205.3 - CONSTRUCTION REQUIREMENTS:

The pavement shall be saw cut to its full depth, and excavated only to such a width that will permit the proper installation of the utility. Where curb and gutter, sidewalk, or driveways are encountered, care shall be taken to protect them from damage.

Lane closures shall take place between the hours of 9 A.M. and 3 P.M., Monday thru Friday, excluding Holidays. Signs, barricades, warning lights, and flagpersons shall be utilized to conform to the latest edition of IDOT's Manual of Uniform Traffic Control Devices for Street and Highways.

The street shall remain open to traffic, with only one half (½) of the pavement being excavated at a time. After the trench has been properly backfilled, the remainder of the street crossing can be excavated. Pavement openings shall be temporarily patched with 3 inches of cold patch mix prior to the close of work each day, and permanently patched within forty eight (48) hours of the completion of the crossing. When it is necessary to leave an excavation open in any pavement or traveled way, a steel plate sized for the maximum vehicular weight of the traveled road (minimum of one (1) inch in thickness) shall be placed over the open excavation. The steel plate shall extend beyond the excavation by a minimum of three (3) feet, with cold patch mix or similar used to build a ramp up to the plate on all sides.

Noncompliance with the above standards will be due cause for the revocation of the permit, and the immediate opening of all lanes of the street to traffic.

Excavation, installation of the utility, and backfilling shall be done in accordance with the appropriate sections for the utility being installed.

SECTION 1205.4 - PAVEMENT PATCHING:

Street patching shall conform to the appropriate Section for Rigid (Concrete) Pavement, Section 1503; Flexible (Bituminous Concrete) Pavement, Section 1504; or Composite Pavement, Section 1505. The thickness of the patch shall conform to Section 805.

SECTION 1206 - PARKING LOT LIGHTING:

All parking lots containing eight (8) or more parking spaces, or a parking lot containing less than eight (8) parking spaces that when added to a contiguous parking lot, will result in a total of eight (8) or more parking spaces, shall be lighted.

Light poles shall be located in landscaped islands.

SECTION 1206.1 - REGULATIONS AND PERMITS:

The following are regulations and requirements governing the construction of parking lot lighting systems within the Village of Addison:

A. The installation of parking lot lights will require a construction permit from the Engineering Division, and an electrical permit from the Building Division.

B. All work shall conform with the requirements of the National Electrical Code.

C. All material shall meet the requirements of the National Electrical Manufacturer's Association, and shall be approved by Underwriter's Laboratory.

D. Illumination shall be designed in accordance with the standards of the Illuminating Engineering Society (IES).

E. All work shall be available for inspection by the Village of Addison at all times.

SECTION 1206.2 - PARKING LOT LIGHTING PLANS:

Detailed lighting plans shall be submitted at the same time an application is made for a building permit.

The plans shall show the following:

A. Type, location, and height of the light poles.

B. Type and number of luminaires to be used.

C. Location and size of the conduit.

D. Location of the control center and the electric service.

SECTION 1206.3 - PARKING LOT LIGHT POLES:

The entire light standard shall be designed to resist a wind velocity of at least one hundred (100) MPH with a safety factor of 1.65.

SECTION 1206.4 - PARKING LOT LUMINAIRES:

In Residential parking lots, the lighting shall be designed for a minimum average maintained horizontal illumination of 0.75 foot candles, with a minimum maintained horizontal illumination of 0.075 foot candles at the darkest point.

In Commercial and Industrial parking lots, the lighting shall be designed for a minimum average maintained horizontal illumination of 2.0 foot candles during the times the parking lot is open for general use. In no case shall such lighting exceed 0.5 foot candles as measured at the property line.

A luminaire may be mounted directly to a building, on top of a light pole, or on a mast arm.

Illumination shall be directed so as not to affect or disturb adjacent buildings, properties, or traffic on adjacent streets. In order to comply with this requirement, lighting standards may be required to be equipped with suitable shields when the illumination is deemed abusive in the opinion of the Director of Community Development.

The minimum mounting height shall be ten (10) feet with a maximum height of thirty (30) feet. Lighting heights higher than thirty (30) feet may be reviewed by the Director of Community Development on a case by case basis. Foundations for parking lot lights shall not exceed two (2) feet in height above finished grade. Mounting height of the luminaire shall be added to the height of the foundation.

Residential parking lot lighting shall be turned on at dusk and off at dawn.

Commercial and industrial parking lot lighting shall be turned on at dusk and turned off a minimum of one hour after the facility is closed, but no latter than two (2) hours, except for security lighting.

Parking lot lighting systems shall be controlled in such a way that they will be turned on and off with a photo electric cell or an electric timer as approved by the Director of Community Development.

When a photo-cell is used, it may be centrally located on a building or on top of the luminaire located nearest to the control center. The photo-cell shall energize and de-energize the lighting circuits through the contactor coil.

A three position test switch or selector switch, to manually turn on the contactor, by-passing the photo-cell or timer, shall be mounted in the control center.

SECTION 1206.5 - WIRING FOR PARKING LOT LIGHTS:

All wiring shall be under ground. In landscaped areas it may be direct burial; under paved areas the wiring shall be placed in conduit. The conduit may be galvanized steel or polyvinyl chloride (PVC) pipe, sized to accept one and one half (1½) times the number of wires to be used. The conduit and wire shall be installed twenty four (24) inches below grade.

SECTION 1206.6 - MAINTENANCE OF PARKING LOT LIGHTING:

The parking lot lighting shall be owned, maintained, and operated by the owner of the property. The owner shall be responsible for keeping the luminaires clean, replacing burned out bulbs, repairing or replacing damaged light poles and luminaires, and other work associated with maintaining the lighting system in good operating condition at all times.

SECTION 1207 - CONCRETE REMOVAL:

The contractor shall saw to full depth all concrete to be removed. It shall be the responsibility of the contractor to determine the thickness of the existing concrete to be removed. Sawing shall be done with a concrete saw in such a manner that a straight joint

will result. If while removing the concrete, additional concrete is damaged, the damaged concrete shall also be removed.

SECTION 1208 - PEDESTRIAN WAY LIGHTING:

All pedestrian ways shall be lighted. The lighting shall be designed for a minimum average maintained horizontal illumination of 0.50 foot candles, with a minimum maintained horizontal illumination of 0.075 foot candles at the darkest point.

The lights may be pole top or bracket mounted. Illumination shall be directed so as not to affect or disturb adjacent properties. When necessary, shielding shall be installed where the illumination is deemed abusive in the opinion of the Director of Community Development.

Pedestrian way lighting shall be turned on at dusk, and off at dawn. The lighting shall be controlled by a photo electric cell located on top of the luminaire located nearest to the control center. The photo cell shall energize and de-energize the lighting circuits through the contactor coil. A three position test switch or selector switch, to manually turn on the contactor, by-passing the photo cell, shall be mounted in the control center.

All wiring shall be under ground. In landscaped areas it may be direct burial; under paved areas the wiring shall be placed in conduit. The conduit may be galvanized steel or polyvinyl chloride (PVC) pipe, sized to accept one and one half (1½) times the number of wires to be used. The conduit and wire shall be installed twenty four (24) inches below grade.

SECTION 1208.1 - MAINTENANCE OF PEDESTRIAN WAY LIGHTING:

The lighting along a pedestrian way shall be owned, maintained, and operated by the owner of the property where the pedestrian way is located. The owner shall be responsible for the cleaning of the luminaires, replacing bulbs, and any other work associated with maintaining the lighting system in good operating condition at all times.

SECTION 1209 - CASING PIPE:

Casing pipe shall be installed at the discretion of the Director of Community Development. When used, the casing pipe shall be a minimum of four (4) inches larger than the outside diameter of the bell of the utility pipe it is encasing. Casing pipe shall be steel pipe, having a minimum wall thickness of one quarter (¼) inch, with a minimum yield strength of thirty five thousand (35,000) PSI. All joints shall be welded, leak proof, and capable of withstanding the street loading. The outside of the casing pipe shall have an asphalt coating.

Plans shall show elevations of all utilities within the vicinity of the crossing.

Bored or jacked installations shall have a hole diameter essentially the same as the outside diameter of the casing pipe. If voids develop, or if the hole diameter is greater than the outside diameter of the casing pipe by one (1) inch, remedial measures as approved by the Director of Community Development shall be taken.

The utility pipe shall be centered in the casing pipe with either oak wood spacers, stainless steel bolt on spacers by Cascade Waterworks Mfg. Co., or an approved equal.

A. Oakwood spacers: Three (3) oak wood runners shall be equally spaced, and metal banded around the pipe. The metal band shall be a minimum of one (1) inch wide. It shall fit in a recessed groove in the runner and shall be bolted to the runner in the area of the recessed groove. Oak runners shall be a minimum of four (4) inches wide, and eighteen (18) inches long. A minimum of two (2) spacers shall be used per length of pipe.

B. Stainless steel spacers: These spacers shall be made in two (2) sections, each having runners, and shall be bolted on to the utility pipe. The shell of the spacer, and all nuts and bolts, shall be of stainless steel. The runners shall be of a plastic polymer with high abrasion resistance. A minimum of three (3) spacers shall be used per length of pipe.

The void between the utility pipe and the casing pipe shall be blown full of pea gravel or sand. Brick and mortar both ends of the casing pipe.

When a casing pipe is run to a manhole or valve vault, it shall extend to the inside edge of the manhole or valve vault. Casing pipe shall extend a minimum of two (2) feet beyond the back of the curb and gutter.

When an auger pit is installed off the right-of-way, a permanent easement shall be secured for future maintenance.

STANDARD SPECIFICATIONS FOR DETENTION POND AERATORS

SECTION 1210 - GENERAL:

All new detention ponds shall be required to have a properly sized aerator in order to maintain the water quality of the pond.

SECTION 1210.1 - SPECIFICATIONS:

These specifications cover the installation of the aerator, underground meter fitting, control center, and all appurtenances normally used in the installation of an aeration system.

SECTION 1210.2 - REGULATIONS AND PERMITS:

Additional regulations and requirements governing the installation of an aeration system in the Village of Addison are:

A. Any restrictions, policies, and instructions that may be adopted or issued from time to time by the Village of Addison.

B. All work shall conform with the requirements of the National Electric Code.

C. No unauthorized person shall install, uncover, make any connections to, use, alter, or disturb any aeration system or appurtenance thereof without first obtaining a written permit from the Village of Addison.

D. All work shall be available for inspection by the Village of Addison at all times.

E. The contractor or owner shall submit a list of the materials he proposes to use, with the manufacturer's name, catalog cut sheets, and the catalog number of the items. Similar materials shall not be obtained from more than one source, and the contractor must receive written approval of all items before installing them.

SECTION 1210.3 - AERATOR:

Aerators shall not be confused with cosmetically similar floating fountains. An aerator shall be capable of adding approximately two (2) pounds of dissolved oxygen per horsepower-hour into the water. Aerators shall be sized to the surface area of the pond. Two (2) horsepower per surface acre shall be required, with the minimum size of any aerator being two (2) horsepower. The pumping rate of a two (2) horsepower pump shall be approximately one thousand one hundred (1100) gallons per minute. Aerators shall be capable of full flotation even with the flotation device punctured or cracked. Large or irregularly shaped ponds may require more than one (1) aerator.

An aerator shall be anchored approximately in the middle of the pond in such a way as to facilitate its removal for repair or storage during winter months.

SECTION 1210.4 - CONTROL CENTER:

The control center shall consist of two (2) cabinets; one (1) to house the controls, the other to house an underground meter fitting. The cabinets shall be mounted back to back, within site of the pond, on two (2) one and five eights (1⅝) inch X eight (8) foot galvanized steel unistruts driven into the ground. If a ground mounted cabinet is used to house the controls, a concrete pad four (4) inches thick shall be constructed under the cabinet in lieu of the unistruts.

The control cabinet shall house the aerator circuits, magnetic starter, twenty four (24) hour timer, and a surge protector. The cabinet shall be of steel construction, NEMA 3 R rated enclosure, approximate size of twenty six (26) inches X sixteen (16) inches X eight (8) inches, gray in color, with UL approval. The door to the cabinet shall be hinged, lockable, and shall close against a sponge neoprene or rubber gasket. The lock for the door shall be rain and ice resistant with two (2) keys provided.

The service load shall determine the size of the main disconnect, with the minimum size being one hundred (100) amp. The main disconnect shall be located in the same cabinet that housed the meter fitting.

Each aerator shall be provided with its own circuit breaker.

Each aerator shall be controlled by a magnetic starter, sized according to the amperage draw of the aerator, and equipped with a low voltage release coil. The magnetic starter

shall be UL approved. A hand-off-auto selector switch shall control the starter and shall be equipped with a manual reset button.

A twenty four (24) hour time clock shall operate the aerator while the selector switch is in the automatic mode. The timer shall be set to turn on the aerator at 7:00 AM and off at 10:00 PM.

The control cabinet shall be equipped with a lightning and power surge protection device which is UL approved.

No controls shall be mounted on the outside of the cabinet, unless the control cabinet is housed inside an additional cabinet.

SECTION 1210.5 - SERVICE CABLE AND CONDUIT:

The electric service cable and conduit shall be run in a trench, a minimum of three (3) feet deep, from the control center to Commonwealth Edison Company's service pole or pedestal. The service load shall determine the size of the service cable with the minimum size being one hundred (100) amp and No. 3 copper conductors. Service cable shall be six hundred (600) volt THW type and shall be pulled in a minimum two and one half (2½) inch diameter hot dipped galvanized steel conduit.

All bends in the conduit shall be made with standard conduit elbows, and all connections shall be liquid tight. The service cable and conduit sizes shall be as required by the Commonwealth Edison Company.

SECTION 1210.6 - WIRING:

The wiring from the control center to the pond shall be installed in conduit, properly sized for the number and size of the conductors being run. The last ten (10) feet of conduit shall be stubbed out into the pond and shall be of PVC conduit, with the remaining conduit either galvanized steel or P.V.C. conduit. The conduit shall be placed in a trench not less than thirty (30) inches deep. The ends of the conduit shall be provided with insulated bushings.

No conductor shall be smaller than No. 12 AWG stranded copper wire. The conductor size shall be computed by a maximum voltage drop from the control center to the aerator. The voltage drop shall not exceed five (5) percent.

Wiring installed under water shall be of SOWA type insulated conductors specifically designed for underwater use. The underwater power cable shall be triple insulated to resist moisture, cracking, softening, and shall be able to be furnished in unplaced lengths of up to one thousand (1,000) feet.

Underwater electrical connections made between the aerator and the underwater power cable shall consist of a receptacle and plug constructed of non-conductive materials. The system shall create a vacuum seal when connected, and shall be provided with a strain relief system to ensure that the connection will not become separated. The connection system shall be UL approved.

Underwater power cable shall be run from the aerator, through the conduit stubbed out into the pond, to the control center. For long runs the underwater cable may be terminated at an electrical pull box (Neenah R-6684-1 or approved equal). The pull box shall be installed flush with the finished grade at a minimum elevation of one (1) foot above the high water elevation of the pond.

When an electrical pull box is used, the wiring from the pull box to the control center may be underwater power cable or six hundred (600) volt THW type insulated conductors.

No splicing will be allowed except in an electrical pull box. Conductor splicing shall be done in accordance with the manufacturer's recommendations to the extent that the material used shall be compatible with the insulation of the conductor.

SECTION 1210.7 - RESTORATION:

The contractor shall exercise care at all times so as to avoid damaging any existing sidewalks, driveways, curb and gutter, street pavement, yards, trees, shrubbery, signs, buildings, etc. Those items damaged by the contractor shall be repaired or replaced by the contractor (as directed by the Director of Community Development) at no cost to the Village.

Existing grass lawns shall be restored with four (4) inches of top soil and sod. All natural appurtenances shall be restored as nearly as possible to their original condition.

All rubbish and surplus material shall be disposed of promptly upon completion of the work. The general area shall be left in a neat and workmanlike condition. The contractor shall be responsible for maintaining all disturbed areas until final acceptance.

SECTION 1210.8 - EASEMENTS:

A ten (10) foot easement shall be provided for the running of the aerator service cable if necessary. This easement shall run from the Commonwealth Edison Company service connection to the detention pond lot. The easement for the aerator service cable shall be solely dedicated to the electrical service; no other use shall be permitted.

SECTION 1210.9 - "AS-BUILT" DRAWINGS:

"As-Built" drawings shall be kept by the electrical contractor throughout the project. Upon completion, the contractor shall give a copy of the "As-Built" drawings to the developer. These drawings shall show the location and size of the aerator, the location of the control center, remote disconnect, Commonwealth Edison Company service connection, the size of the conduit, service cable easement if required and all other appurtenances to the aeration system. The developer shall then consolidate the aeration system "As-Built" drawings with the other utility "As-Built" drawings or submit a separate "As-Built" drawing for the aeration system. An "As-Built" drawing shall be drawn in ink on mylar. The "As-Built" drawing shall be submitted to and approved by the Director of Community Development prior to the acceptance of the aeration system.

SECTION 1210.10 - FINAL ACCEPTANCE:

The following requirements shall be fulfilled prior to final acceptance of the project:

A. A manufacturer's letter or certificate of compliance stating that the materials and equipment meet the specifications.

B. All underground lines shall be tested for grounds, shorts and voltage leaks.

C. The aeration system shall be turned on so as to run continuously for forty eight (48) hours, after which the system shall operate automatically for two weeks. Any item failing to operate shall be replaced.

D. An "As-Built" drawing of the aeration system shall be approved by the Village (see Section 1210.9).

SECTION 1211 - CONSTRUCTION AND SURVEY STAKES:

A consulting engineer on behalf of the owner or developer shall furnish the contractor with staking to mark the location, alignment, elevations, and grade of all improvements.

The contractor shall check the vertical and horizontal dimensions between structures and the cut and fill grades with the data shown on the plans.

The contractor shall report any discrepancies which may be suspected in the lines and grades to the consulting engineer.

If plan line and grade cannot be met, the contractor shall immediately stop work, notify the consulting engineer, and the Director of Community Development. The cause shall be remedied before proceeding with the work.

Stakings or markings established by the consulting engineer shall be carefully preserved by the contractor.

Staking furnished by the consulting engineer on behalf of the owner or developer, for the benefit of the contractor, shall include, but may not be limited to, the following:

A. Control staking: Benchmarks, boundary control and traverse control staking shall not be disturbed under any condition without specific approval of the consulting engineer. The contractor shall maintain a minimum distance of five (5) feet from these stakes.

B. Rough grade stakes: Upon completion of the clearing, tree and hedge removal, the consulting engineer shall set line and grade stakes at suitable intervals.

C. Water, sewer, and drainage staking: Upon completion of the rough grading, additional line and grade stakes shall be set by the consulting engineer. The staking shall be used as reference points for all water, sewer, and drainage locations. Every structure shall be referenced from a separate off set stake, with

the actual location of the structure marked with a lathe. It shall be the contractor's responsibility to transfer the line and grade to the bottom of the trench.

"As-Built" rim and invert elevations shall be obtained as the work progresses by the consulting engineer. If additional rim elevations or fire hydrant bench mark elevations are required due to adjustments, these shall also be obtained by the consulting engineer.

D. Subgrade staking: Upon completion of the water, sewer, and drainage system work, the center line and edge of pavement stakes shall be placed and graded prior to approval of the subgrade.

E. Property markers: Upon completion of the underground utilities and final grading, all lot corners and right-of-way markers that have been moved, removed, lost, or damaged shall be replaced.

SECTION 1212 - PARKWAY MAILBOX PLACEMENT:

Mailboxes located in the parkway shall be installed according to the following specifications:

A. The face of the mailbox shall be located twelve (12) inches behind the back of curb.

B. The bottom of the mailbox shall be located forty two (42) inches above the finished grade.

C. A mailbox post shall have a maximum size of six (6) inches x six (6) inches. The post shall not be made of concrete or masonry.

D. Posts may be anchored in concrete or masonry that does not project more than one (1) inch above the finished grade.

Mailboxes failing to meet these specifications will not be repaired or replaced by the Village of Addison in the event they receive snowplow related damage.

STANDARD SPECIFICATIONS FOR REFUSE DISPOSAL AREAS

SECTION 1213 - INTENT:

It is the intent of this Section that all new commercial / industrial and multi-family buildings shall have access to refuse disposal and grease storage containers. To provide for aesthetic benefits and to minimize the blowing of trash, the containers shall be screened on three (3) sides by an enclosure, seven (7) feet tall, of masonry construction to match the building, and constructed with a concrete pad on a poured concrete foundation. The enclosure (Also known as a Trash Enclosure) shall be used strictly for the confinement of refuse and grease containers, and shall not be used for the outside storage

of any other materials or equipment. The open side of the enclosure shall be situated such that, to the greatest extent possible, it does not face towards an abutting property or street. Enclosures shall be provided with an operable gate, and shall be located no closer that five (5) feet to a property line, shall not be permitted in any easement, and shall be considered an accessory structure.

Detached single-family residences are exempt from screening requirements.

SECTION 1213.1 - SIZE:

The size of an enclosure shall be commensurate with the number and size of refuse dumpsters and grease storage containers necessary to accommodate the amount of waste generated.

The minimum size of a dumpster shall be three hundred (300) gallons in capacity and the minimum enclosure size shall be eight (8) feet by ten (10) feet.

SECTION 1213.2 - FOUNDATION:

Foundation walls shall be constructed of concrete, a minimum of eight (8) inches thick. The walls shall extend a minimum of forty two (42) inches below the finished grade, and shall rest on solid ground.

SECTION 1213.3 - CONCRETE PAD:

The concrete pad shall be a minimum of six (6) inches in thickness, with six (6) inch by six (6) inch No. 6 woven wire fabric. The pad shall be placed on a minimum of four (4) inches of compacted granular sub-base material.

SECTION 1213.4 - MASONRY:

Refuse Disposal Enclosures shall be of masonry construction matching that of the building. The masonry walls shall be a minimum of seven (7) feet in height.

SECTION 1213.5 - GATE:

An operable gate shall be installed on the enclosure so that when the gate is closed, the refuse dumpsters and grease storage containers will be screened from view.

STANDARD SPECIFICATIONS FOR UNDERGROUND FIRE MAINS

SECTION 1214 - UNDERGROUND SERVICE FOR FIRE SPRINKLER SYSTEM:

All new underground water services supplying a fire sprinkler system shall be tested prior to being connected to the fire sprinkler system. The water service, including the lead-in connection, shall first pass a pressure and leakage test, a chlorination test, and a flushing and flow test. The contractor who installed the underground water service shall be responsible for supplying the equipment and manpower to perform the tests.

SECTION 1214.1 - PRESSURE AND LEAKAGE TEST:

See Section 416

SECTION 1214.3 - CHLORINATION TEST:

See Section 417

SECTION 1214.3 - FLUSHING:

The contractor shall notify the Water Department forty eight (48) hours in advance, and the Engineering Department twenty four (24) hours in advance of flushing the water service. All underground water services and lead-in connections to a fire sprinkler system riser shall be flushed before being connected to the fire sprinkler piping. Flushing shall remove all foreign material which may have entered the underground piping during installation. Flushing shall continue until the water is clear.

SECTION 1214.4 - FLOW TEST:

The contractor shall notify the Addison Fire Protection District, and the Water Department forty eight (48) hours in advance of the test, and the Engineering Department twenty four (24) hours in advance of the test so that representatives of these departments can be present during the test.

The underground water service and lead-in connection shall be flow tested at a rate not less than that indicated below:

Pipe Size	Flow Rate
4 inch	390 GPM
6 inch	880 GPM
8 inch	1560 GPM

The contractor shall make provisions for the disposal of the water coming from the test outlet to avoid any property damage.

SECTION 1215 - PAVEMENT PATCHING AT CURB AND GUTTER REMOVAL:

When existing curb and gutter is removed and replaced, any damage to the street shall be repaired with P.C.Concrete and a two (2) inch Bituminous Concrete Surface overlay.

P.C. Concrete shall be used to fill any void space between the new curb and gutter and the existing pavement. The concrete shall be a minimum of ten (10) inches in depth, stopping a minimum of two (2) inches from the finished surface, and shall be poured separately from the curb.

SECTION 1300

EROSION AND SEDIMENT CONTROL

STANDARD SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL

SECTION 1300 - GENERAL;

The Standards and Requirements found in this Section are for the implementation of erosion and sediment control measures within the Village of Addison.

SECTION 1301 - SPECIFICATIONS:

These specifications cover the installation of permanent, as well as temporary control measures. Erosion and sediment control shall be installed in accordance with the latest edition of the Procedures and Standards for Urban Soil Erosion and Sedimentation Control in Illinois (IL. SWCD 1988 Green Book), IDOT's Standard Specifications for Road and Bridge Construction, DuPage County's Countywide Stormwater and Flood Plain Ordinance, and applicable ordinances of the Village of Addison. In case of a conflict, the Village of Addison's Standard Specifications for Erosion and Sediment Control and other applicable ordinances of the Village of Addison shall take precedence and shall govern.

SECTION 1302 - REGULATIONS AND PERMITS:

Additional regulations and requirements governing the design and installation of erosion and sediment control devices in the Village of Addison are:

A. Any restrictions, policies, and instructions that may be adopted or issued from time to time by the Village of Addison.

B. No person shall commence or perform any grading, stripping, excavating, or filling of land without first obtaining a written permit from the Village of Addison.

C. All work shall be available for inspection by the Village of Addison at all times.

SECTION 1303 - STATEMENT OF POLICY:

It is the policy of the Village of Addison to safeguard persons, protect property, prevent damage to the environment, and promote the public welfare by guiding, regulating and controlling the design, construction, or other activities which disturb or break the topsoil or otherwise result in the movement of earth on land situated in the Village of Addison.

SECTION 1304 - GENERAL DESIGN PRINCIPLES:

The general design principles outlined in this section have been proven effective in minimizing soil erosion, and in reducing the damaging effects of the erosion and sedimentation which does occur. They should serve as guidelines for the preparation of site development plans, erosion and sediment control plans, and in the conduct of activities which are exempt from the permit requirements in these specifications.

All development activities within the Village of Addison should follow these design principals:

A. Development activities should be situated on the site so as to create the least potential for erosion. Areas of steep slopes where high cuts and fills may be required should be avoided when ever possible, and natural contours should be followed as closely as possible.

B. Natural vegetation should be retained and protected whenever possible. Areas immediately adjacent to natural watercourses should be left undisturbed whenever possible.

C. The smallest practical area of land should be exposed for the shortest possible time during development.

D. Sediment basins and sediment traps should be constructed and maintained to remove sediment from runoff waters from land undergoing development.

E. In the design of erosion control facilities and practices, aesthetics and the requirements of continuing maintenance should be considered.

F. Provisions should be made to accommodate the increased runoff caused by changing the soil and surface conditions during and after development. Drainageways should be designed so that their final gradients and the resultant velocities of discharge will not create additional erosion.

G. Permanent vegetation, building structures, and finished parking facilities should be constructed as soon as practical during development.

H. Those measures taken to control erosion and sediment shall be adequate to assure that sediment from erosion is not transported from the site by a storm event of ten (10) year frequency or less.

SECTION 1305 - STORMWATER MANAGEMENT PERMIT:

Except as otherwise provided in this Section, no person or agent acting there under shall commence or perform any grading, stripping, excavating, or filling that disturbs more than five thousand (5,000) square feet of ground cover without having first obtained a Stormwater Management Permit from the Director of Community Development.

No Building Permit, or Site Development Permit shall be issued for any construction activity which disturbs or otherwise results in the movement of earth within the Village of Addison unless:

A. An Erosion and Sediment Control Plan has been prepared which demonstrates compliance with the principals and standards set forth in these specifications; and

B. A Stormwater Management Permit application, accompanied by all submittals required by Village Ordinance 0-90-40 and its amendments, has been submitted to the Director of Community Development for review; and

C. Upon approval of the project, payment of review fees, and the posting of a letter of credit; or

D. It is an exempt construction activity as noted below:

1. Construction of a single family residence, or appurtenant structure on a single family lot.

2. Installation, renovation, or replacement of a public utility or a utility service within the right-of-way, utility easement, or to a dwelling or structure.

3. Agricultural use of the land including cultivation, conservation measures, or gardening as long as drainage and easements remain unaffected.

4. Maintenance, repair, or at-grade replacement of an existing lawn area. (See Section 913)

5. Any emergencies posing an immediate danger to life or property.

It may be unnecessary or impractical to require an erosion and sediment control plan for exempt construction activities do to the type and scale of soil disturbances involved. However, basic and effective erosion and sediment controls shall still be utilized to avoid erosion and the transportation of sediment from the site.

SECTION 1306 - INSPECTIONS:

On site inspections are to be provided at critical times during the construction process to assure that development practices and erosion and sediment control measures are effectively being implemented. Inspections of erosion and sediment control shall be performed by the Community Development, Engineering and Building Divisions.

Prior to the start of any construction activity, all temporary erosion and sediment control measures as outlined in the plans and specifications shall be in place. The contractor shall schedule a job site inspection, at least twenty four (24) hours in advance with the Community Development, Engineering Division, to review the location and type of erosion and sediment control protection installed.

If found by inspection that the conditions on a construction site are not substantially as stated or shown in the approved erosion and sediment control plan, the Director of Community Development or their designated representative, may stop any further work until all deficient conditions are corrected.

It shall be the General Contractors responsibility to daily inspect the erosion and sediment control measures to assure that they are continuously maintained.

SECTION 1306.1 - SPECIAL PRECAUTIONS:

Unanticipated site conditions or storm events may require that "Special Precautions" beyond those provided for in the approved erosion and sediment control plan be instituted as follows:

A. Site conditions likely to imperil any property, public way, watercourse or drainage structure may require as a condition of allowing the project to continue, that "Special Precautions" be taken to avoid the likelihood of such peril. "Special Precautions" may include, but shall not be limited to; construction of additional drainage facilities, berms, terracing, installation of plant materials for erosion control, and any recommendations of a Registered Soils Engineer or Geologist.

B. Prior to a storm event where it appears that storm damage may result because the grading on a construction site has not been completed, "Special Precautions" such as the installation of temporary control measures or other such measures as may be required to protect adjoining property, or the public safety.

C. On large construction projects, or where unusual site conditions exist, "Special Precautions" may dictate that the Director of Community Development specify the time when grading may start, and the time of its completion. The Director may also require that operations be conducted in specific stages so as to insure completion of corrective measures prior to the start of seasonal rains or frozen ground conditions.

SECTION 1307 - STRUCTURAL CONTROL MEASURES:

Structural control measures shall be implemented to reduce the amount of erosion, direct flows from exposed soils, store flows, or otherwise limit the runoff and discharge of sediment from the exposed areas of the site caused by erosion. Such measures may include; stabilized construction entrances, sediment basins, sediment traps, sediment barriers, check dams, earthen berms, drainage swales, and storm drain protection.

SECTION 1307.1 - STABILIZED CONSTRUCTION ENTRANCE:

A stabilized construction entrance shall be used at any point where construction traffic will be entering or leaving the construction site. The purpose of the stabilized construction entrance is to reduce or eliminate the transportation of mud from the construction site onto the right-of-way by construction vehicles. Construction entrances shall be installed prior to the start of any construction.

Stabilized construction entrances for commercial or industrial developments, and all subdivisions shall be a minimum of fifty (50) feet long, and a minimum of thirty (30) feet wide, with ten (10) foot flares at existing pavement. A single family residential lot shall have an entrance of not less than thirty (30) feet long, and ten (10) feet wide, flares are optional.

Geotextile filter fabric shall be placed over the entire area prior to placing any stone, except that geotextile filter fabric will not be required on a single family residential lot.

Stone shall be placed to a thickness of not less than six (6) inches. Stone shall be two (2) inches to three (3) inches in size, and shall be of crushed stone or crushed concrete, meeting IDOT specifications for CA-1.

Construction entrances shall not block any ROW drainage. Any surface water flowing or diverted toward the construction entrance shall be piped under the stabilized construction entrance, in a pipe adequately sized to convey the flow, and not allowed to flow along the construction entrance and out onto the public roadway.

Stabilized construction entrances shall be maintained in a condition which will prevent tracking of mud onto the right-of-way. This may require periodic top dressing or repairing with additional stone as conditions deem necessary.

Wheels shall be cleaned to remove mud prior to entering the right-of-way. Any mud dropped or tracked onto the right-of-way shall be immediately removed.

SECTION 1307.2 - SEDIMENT BASINS:

Sediment basins shall be constructed prior to the start of grading activities, or the removal of the existing vegetation. Construction of sediment basins first, will provide protection from the first erosion when grading does begins, and they shall remain in place until the drainage area is completely stabilized. Sediment basin can be formed by excavation, or by construction of embankments. The location of sediment basins should be carefully thought out during the planning phase. Basins should be located near a low point on the site. Sediment basins shall be designed to treat runoff from drainage areas larger than five (5) acres. Typically a sediment basin should have a riser pipe securely anchored to an outlet pipe, an emergency spillway, some way to dewater the basin, and erosion protection at the outlet pipe and emergency spillway.

During any major storm, a sediment basin should fill with water to the top of the riser pipe, and then discharge at a rate equal to the inflow to the basin. If the inflow exceeds the designed outflow used to size the riser, the overflow shall be discharged down an emergency spillway. The average runoff from a ten (10) year storm shall be used in the design of a sediment basin. The settling zone of any sediment basin shall remain free of accumulated sediment for a depth of at least two (2) feet. Sediment storage depths shall provide for one (1) year's accumulation. Cleaning of the basin is required whenever sediment fills the storage zone.

Sediment removed from a basin shall be placed where it will not reenter the basin, or wash into a storm sewer structure. Basins should be designed to provide a minimum length to width ratio of 10:1. Sediment basins shall be provided with a means for dewatering the basin after a storm. This may range from a minimum of three (3) days to a maximum of seven (7) days.

Outlet pipes may discharge into a storm sewer system or out onto the ground. When discharging onto the ground, the pipe should be at the bottom of the embankment, flush with the ground. Outlet protection, such as rip-rap shall be provided.

Sediment basins constructed of embankment material shall be compacted according to the specifications of a Soils Engineer. Vegetative stabilization of the banks of a sediment basin shall take place as soon as the grading of the basin has been completed.

Emergency spillways shall be constructed to pass the peak rate of runoff from a ten (10) year storm. A minimum of one (1) foot of freeboard shall be provided. Spillways shall be protected from erosion through the use of sod, or rip-rap.

As a safety measure, all sediment basins shall be fenced!

SECTION 1307.3 - SEDIMENT TRAPS:

Sediment traps may be designed in the same way as a sediment basin, but shall serve an area smaller than five (5) acres. The outlet for a sediment trap may be an earthen or stone spillway, a pipe riser, or a storm drain structure.

To minimize the area disturbed by the construction of a sediment trap, they should be located in small swales and natural depressions.

Embankments can be up to five (5) feet high, and shall be constructed of compacted material in eight (8) inch lifts. The embankment top shall be a minimum of two (2) feet in width. Side slopes shall not be steeper than 2:1. Upon completion of the embankment, it shall be seeded with protective vegetation.

SECTION 1307.4 - SEDIMENT BARRIERS:

Sediment barriers are temporary structures and may include; silt fence, straw bales, or earth and gravel berms. They are designed to intercept and filter small volumes of sheet flow. The area draining to a sediment barrier should not exceed one half (½) acre in size, with a maximum slope gradient behind the barrier of 2:1, and a maximum slope length behind the barrier of one hundred and fifty (150) feet.

Sediment barriers should follow the contour of the slope. When a barrier is installed at the toe of a slope, it should be placed a minimum of five (5) feet to six (6) feet away from the slope to provide access for maintenance. Their installation requires less site disturbance than sediment basins, or sediment traps, and they can be repositioned as grading proceeds. However, they are less durable than basins or traps, therefore, they require frequent maintenance. Sediment barriers have a useful life of three (3) to six (6) months, depending of what material was used. Straw bales last only three (3) months; silt fences can function for six (6) months or longer if sediment accumulations are removed.

Sediment barriers shall be place below those areas that are to be disturbed by grading, to capture sediment in the runoff. Sediment barriers should be located at; the base of exposed slopes, along a street or sidewalk to prevent silt from reaching the street or sidewalk, or at storm drain structures. Sediment barriers shall not be placed across a swale that carries a high-volume, or high-velocity flow. If the flow in a swale exceeds the capacity of a grass lining, sediment barriers shall not be used.

A. Straw Bales: Straw bales (not hay bales) shall be placed in an excavated trench, a minimum of four (4) inches deep, and the width of a straw bale. They shall be installed so that the bindings are orientated around the sides of the bale, rather than along the top and bottom of the bale. This will prevent early deterioration of the bindings. Straw bales shall be placed in a row, with the ends tightly butting against the adjacent bale so as not to leave any gaps. Bales shall be securely anchored in place by two (2) stakes driven through the bales. Stakes shall be driven a minimum of two (2) feet into the ground. Hardwood stakes two (2) inch by two (2) inch by four (4) foot are best, but one half (½) inch by four (4) foot long rebar can also be used. Rebar are not recommended because they can pose a safety hazard to a falling person, or to equipment when the bales disintegrate. The first stake in each bale shall be driven towards the previously laid bale at an angle to force the bales together. Any gaps between the bales shall be filled by wedging loose straw between the bales. The trench shall be backfilled with the excavated soil and compacted. Backfill shall conform to the ground level on the downhill side of the barrier, and shall be built up to four (4) inches above the ground on the uphill side.

   Straw bales shall be frequently inspected by the contractor, and promptly repaired or replaced as needed.

B. Silt Fence: A trench a minimum of four (4) inches deep by four (4) inches wide shall be excavated on the uphill side of the silt fence location. Wood posts shall be driven a minimum of two (2) feet into the ground on the downhill side of the trench. Filter fabric shall be securely fastened to the uphill side of the posts and extended a minimum of eight (8) inches into the trench. The trench shall be backfilled over the fabric, with the excavated material, and compacted.

   When two (2) sections of filter fabric are to be joined together, they shall be over-lapped by a minimum of six (6) inches, folded, and securely fastened to a common post.

   When two (2) sections of a prefabricated silt fence are to be joined together, place the end post of one section inside the end post of the other section, and rotate both posts to create a tight seal with the fabric material. Drive both posts into the ground.

Sediment barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately. Sediment deposits should be removed after each storm event. Sediment deposits shall be removed when the deposits reach approximately half the height of the barrier. Should the barrier become ineffective prior to the end of the expected usable life and the barrier still be necessary, the barrier shall be replaced promptly. If after repeated failure of the contractor to properly control erosion and or siltation, the Village reserves the right to effect the necessary corrective measures and charge any costs to the contractor.

Any sediment deposits remaining in place after the sediment barriers are no longer required, shall be dressed to conform with the existing grade, prepared, seeded, and mulched.

SECTION 1307.5 - CHECK DAMS:

A check dam is a small temporary dam built across a drainage swale. Its function is to slow down the runoff flowing in the swale, and thus reduce erosion in the swale. Check dams can be constructed using stone, silt fence, or straw bales.

The drainage area of a swale being protected with stone check dams, should not exceed ten (10) acres. Straw bale check dams should have a drainage area of less than two (2) acres. The maximum height of the check dam should be two (2) feet, and the center should be at least 1eight (8) inches lower than the outer edges. The maximum spacing between the dams should be such that the toe of the upstream dam is at the same elevation as the top center of the downstream dam.

Check dams are not intended as sediment-trapping devices, but sediment will accumulate behind them. This sediment must be removed when it accumulates to one half (½) of the original height of the dam. Sediment spoil shall be placed where it will not be washed back into the drainage system.

Check dams should be removed when they are no longer needed. In permanent drainageways, check dams should be removed when a permanent lining is installed. If the permanent lining is grass, the check dam should remain in place until the grass has matured sufficiently to protect the waterway.

SECTION 1307.6 - TEMPORARY EARTHEN BERMS AND DRAINAGE SWALES:

Temporary earthen berms and drainage swales are the simplest way to convert sheet flow to channel flow, and convey the runoff to a sediment basin. Temporary earthen berms and drainage swales do not have a precise cross section. They are simply shaped by grading equipment to a round, “V”, or trapezoidal contour. They may be reconstructed daily to protect exposed areas as site grading proceeds. The drainage area contributing runoff to a temporary earthen berm, or drainage swale should not exceed five (5) acres. If a larger area is served, a larger cross section, check dams, and often a channel lining will be required to handle the expected flows.

Unless a berm is compacted, it should not remain in place for more than one (1) week. If a temporary berm is to serve for more than thirty (30) days, the berm shall be constructed so as to have a uniform height along its entire length. It shall be a minimum of eighteen (18) inches in height, the top shall be a minimum of two (2) feet in width, and the side slopes should have a 2:1 or flatter slope. The berm shall be constructed of compacted soil, and stabilized by grass seeding and mulch. No berm shall be constructed on frozen ground, and frozen material shall not be used in its construction.

SECTION 1307.7 - STORM DRAIN PROTECTION:

All storm drains shall be protected to prevent sediment from entering the storm drain system. The best way to accomplish this is to stabilize the site with vegetation as quickly

as possible. When stabilization of the site will be delayed, three (3) days or longer, protection of storm drains shall be accomplished by using filter barriers such as straw bales, silt fence, sod, filter fabric, or course aggregate.

A. Site Storm Drains: Upon installation of an open lid site storm drain, the sewer contractor shall not fully backfill around the structure, thus creating a depression or sump a minimum of eighteen (18) inches deep, for the collection of sediment. Sediment shall be removed from the sump, and the sump restored to its original dimensions when the sediment has accumulated to one half (½) the depth of the sump. The sewer contractor shall install filter fabric between the frame and grate, replacing it as it becomes clogged with sediment. A filter barrier shall then be constructed around the storm drain. Using a filter barrier will improve the capture rate of sediment, reduce the frequency of maintenance, and allow the filter fabric to serve for a longer period of time.

1. Silt fence or straw bales shall be placed around site drains that are located in relatively flat areas, with slopes no greater than five (5) percent, in which only sheet flow occurs. Silt fence and straw bale barriers of this type should not be located around storm drains receiving concentrated flows.

2. Course aggregate barriers can be used where heavy concentrated flows are expected, such as in an unpaved street.

3. Sod may be placed four (4) strips wide along each side of a site storm drain. Sodded storm drain protection shall only be used after the drainage area has been properly stabilized.

B. Street Drains: All street drains within one hundred (100) feet of the construction area shall be protected by filter fabric or a course aggregate filter. When filter fabric is used, it shall be placed between the frame and lid.

A course aggregate filter can be used at curb inlets where heavy, concentrated flows are expected. Because this style of protection has no means for handling overflows, it is likely to cause ponding, especially if sediment is not removed regularly. Therefore, aggregate filters should not be used where an overflow would endanger an exposed fill area, cause inconvenience or damage to adjacent buildings, or where ponding in front of the curb inlet is likely to interfere with the movement of traffic, or construction work.

Course aggregate filters shall be constructed by placing one half (½) inch by one half (½) inch wire mess over the curb inlet. The mesh shall extend a minimum of one (1) foot beyond each side of the curb inlet. Washed course aggregate, IDOT gradation CA-1, shall be placed over the wire mess to anchor the mess against the gutter. The depth of the aggregate shall be at least twelve (12) inches over the entire inlet opening. Extend the aggregate beyond the wire mess a minimum of six (6) inches on all sides.

Filter fabric shall be replaced when it becomes clogged with sediment. Course aggregate filters must be pulled away from the inlet and cleaned or replaced with new aggregate.

Protection measures shall remain in place until all disturbed areas tributary to a storm drain have been properly stabilized.

SECTION 1308 - RIP-RAP:

Rip-rap shall be placed at all flared end sections, and as shoreline treatment around all wet bottom basins. Rip-rap may also be placed along the length of any spillway as necessary to provide a non-erosive flow way. Rip-rap shall be dumped, hand placed, or grouted in place per specifications.

The area to be covered with rip-rap shall be excavated to receive the rip-rap. All ruts or surface irregularities in excess of two (2) inches in depth shall be graded smooth or otherwise filled to provide a reasonably smooth surface.

Control of gradation, color, and texture will be by visual inspection. The contractor shall provide a minimum two (2) ton sample of the rip-rap at the construction site, meeting the gradation specified. The sample shall be approved by the Director of Community Development before any stone is placed. It shall be the contractor's responsibility to determine that sufficient stone is available to complete the project with stone of uniform color and texture. Stone shall not be supplied from more than one source. The sample shall be used as a frequent reference for judging the gradation, color, and texture of the rip-rap supplied.

Any difference of opinion between the inspector and the contractor shall be resolved by dumping and checking two (2) random truck loads of stone. Mechanical equipment, a sorting site, and labor needed to assist in checking gradation, color, and texture shall be provided by the contractor at the contractor's expense.

Unless otherwise authorized by the inspector, the rip-rap shall be placed in conjunction with the construction of the embankment or spillway, excavation of the basin, or the installation of the flared end section. Only sufficient lag in the placement of the rip-rap as may be necessary to allow for the proper construction of that area to be protected by the rip-rap will be allowed.

The contractor shall maintain the rip-rap until it is accepted. Any material displaced or damaged by any cause shall be replaced by the contractor to the line and grade shown on the plans. It shall be the contractor's responsibility upon completion to remove and dispose of any excess rip-rap.

Rip-rap may be dumped, or hand placed when located in a commercial or industrial area. Stone used for dumped rip-rap shall be quarried stone; hard, durable, angular in shape; resistant to weathering; free from overburden, spoil, shale and organic material; and shall meet the gradation requirements for the specified usage. Neither the width, nor thickness, of a single stone shall be less than one third (⅓) its length. Rounded stones or boulders

are not acceptable. Shale and stone with shale seams are not acceptable. Crushed, broken, or recycled concrete is not acceptable. Stone for dumped rip-rap shall be placed in a manner which will produce a reasonably well graded mass of stone, with a minimum of voids. There shall be no large accumulation of either larger or smaller sizes of stone. The entire mass of stone shall be placed to conform with the lines, grades, and thicknesses shown on the plans. Some roughness in the surface is desirable, but the mass of stone should be fairly compact with all sizes of material placed in their proper proportions. Placing, or rearranging of stones by hand or mechanical equipment, may be required to the extent necessary to secure the results specified. Care shall be taken to insure that the stones, when in place provide a stable bank, with no tendency to slide. Each load of rip-rap shall be well graded from the smallest to the largest size specified.

Stone used for hand placed rip-rap shall be of better quality than specified for dumped rip-rap.

The gradation curves for dumped rip-rap are not applicable to hand placed rip-rap, as only enough rock fragments to fill the voids between the larger stones will be permitted. The stones shall be roughly square or rectangular to facilitate their laying in a more or less definite pattern with a minimum amount of voids. Individual stones shall be placed by hand, flat upon the fabric, with tightly spaced joints. Joints should be staggered as much as possible, and joint openings to the underlying layer of fabric should be avoided by careful arrangement of the various sizes of stone and closing any openings with small rock fragments. The finished surface of the rip-rap shall be relatively smooth, and shall present an even, close surface, true to the lines , grades, and sections shown in the plans.

SECTION 1308.1 - RIP-RAP AT FLARED END SECTIONS:

After the installation of a flared end section, rip-rap shall be placed around the flared end section as soon as practical. Where the installation of rip-rap is expected to be delayed, three (3) days or longer, protection of a down stream flared end section shall be accomplished by using filter barriers such as straw bales or silt fence.

Rip-rap shall be placed in a minimum two (2) foot wide band around the perimeter of all flared end sections.

Rip-rap aprons shall be sized as follows:

A. Inlet Pipes; Apron length shall equal two (2) feet or the inside diameter of the pipe, whichever is greater. The upstream end of the apron, adjacent to the flared end section, shall have a width two (2) times the inside diameter of the pipe, plus four (4) feet. The down stream end of the apron shall have a width three (3) times the inside diameter of the pipe, plus four (4) feet.

B. Outlet Pipes; Apron length (L) shall be determined from the curves shown on pages 6-40 a, and 6-40 b, of the Procedures and Standards for Urban Soil Erosion and Sedimentation Control in Illinois. The upstream end of the apron, adjacent to the flared end section, shall have a width two (2) times the inside diameter of the pipe, plus four (4) feet. The down stream end of the apron shall have a width (W)

equal to (D + L) where (D) is the inside diameter of the pipe, and (L) is the apron length. The size of the apron shall be supported with design calculations, or by using the dimensions listed in the table shown on Standard Drawings 1308.1A and 1308.1B.

Rip-rap placed around a flared end section shall be placed as follows:

A. Commercial / Industrial; Rip-rap placed around flared end sections in commercial / industrial areas shall be crushed stone placed on fabric, and shall meet a minimum IDOT gradation of RR-3. (See Section 1308.3) The area to be covered with rip-rap shall be excavated to a minimum depth of twelve (12) inches, and a minimum of twelve (12) inches of rip-rap placed on top of the fabric, in the excavation. An end trench, twenty four (24) inches deep and twelve (12) inches wide, shall be excavated at the down stream edge of the apron. The end trench shall be filled with rip-rap, and a minimum of eighteen (18) inches of fabric shall be tucked under the final course of rip-rap.

B. Residential; Rip-rap placed around flared end sections in residential areas shall be landscape boulders, grouted in place. (See Section 1308.2) The area to be covered with rip-rap shall be excavated a minimum of six (6) inches deep. A trench shall then be dug a minimum of twelve (12) inches deep and six (6) inches wide in front of the flared end section end block, and at the down stream end of the apron, to toe the concrete into the bank. Three quarter (¾) inch preformed bituminous expansion joint material shall be placed between the flared end section end block, and the toe of the grouted rip-rap.

A minimum of twelve (12) inches of cover shall be maintained over the top of the pipe and flared end section.

SECTION 1308.2 - SHORELINE TREATMENT:

Rip-rap used for shoreline treatment shall be place along the waters edge to an elevation of one and one half (1½) foot above, and one (1) foot below the normal water level. This translates to seven and one half (7½) feet of exposed rip-rap, and three (3) feet of submerged rip-rap. Rip-rap shoreline treatment shall be installed as follows:

A. Residential; Rip-rap used for shoreline treatment in residential areas shall be grouted in place. The grout, used for grouted rip-rap, shall consist of P.C. Concrete, six and one half (6½) bag mix. The minimum amount of water shall be used to prevent excess shrinkage of the concrete after placement.

The stones used for grouted rip-rap shall consist of landscape boulders, rose in color, six (6) inches to nine (9) inches in size.
The stones shall be clean and free of fines which would prevent them from adhering to the concrete.

The area to be covered with the landscape boulders shall be excavated a minimum of six (6) inches deep. A trench shall then be dug a minimum of twelve (12)

inches deep and six (6) inches wide at the top and bottom of the excavation to toe the concrete into the bank. Forms shall be set and the surface dampened to a depth and in a manner acceptable to the inspector. Methods which may cause erosion of the surface, or ponding of water, will not be allowed. Concrete shall be poured to a minimum depth of six (6) inches, and struck off.

The landscape boulders shall be thoroughly cleaned and moistened, and then neatly hand placed into the wet concrete to a depth of one half (½) to three quarters (¾) of the diameter of the boulder. The placement and pattern of the boulders shall be supervised by the inspector. Landscape boulders shall be placed while the concrete is in a plastic, adhesive state so as to securely bond the boulders into the concrete. A spacing of three (3) to five (5) inches shall be provided between boulders. The concrete surface between boulders shall be lightly brush finished and shall be uniform in appearance. Care shall be taken to remove any concrete from the exposed surface of the boulders before it hardens.

Expansion joints shall be constructed using three quarter (¾) inch by six (6) inch preformed bituminous expansion joint filler at fifty (50) foot intervals around the perimeter of the basin. Joint material shall be securely held in place to prevent movement during the placement of the concrete.

Protection of grouted rip-rap shall be the same as for sidewalk, as specified in Sections 512 and 516.

B. Commercial / Industrial; Rip-rap used for shoreline treatment in any of the commercial / industrial areas, shall be crushed stone placed on fabric and shall meet a minimum IDOT gradation of RR-3. (See Section 1308.3) The area to be covered with rip-rap shall be excavated to a minimum depth of ten (10) inches, and a minimum of ten (10) inches of rip-rap placed on top of the fabric, in the excavation. The thickness of the rip-rap layer is vital to it's successful performance as erosion protection. It shall be increased by fifty (50) percent when placed underwater to provide for irregularities associated with this type of placement.

SECTION 1308.3 - FABRIC:

Rip-rap shall be placed on a non-woven geotextile fabric (Supac 8PN, Mirafi 150X or approved equal) placed in the bottom of the excavation. No fabric shall be placed until the excavation has been approved by an inspector form the Community Development Department, Engineering Division. The fabric shall be laid loosely and free of tension, folds, wrinkles or creases. Care shall be taken to ensure that sufficient fabric is available along the edges of the excavation so that a minimum of eighteen (18) inches of fabric can be tucked under the final course of rip-rap. Fabric of insufficient length to cover the specified area shall be lapped a minimum of twelve (12) inches.

Fabric shall be protected at all times during the construction. Any fabric contaminated by surface runoff shall be removed and replaced with new fabric. Any fabric damaged during its installation shall be removed and replaced with new, undamaged fabric. If the

fabric is damaged during the placement of the rip-rap, the fabric around the damaged area shall be removed and the damaged area covered with a patch of new fabric using a minimum overlap of four (4) feet in each direction.

SECTION 1309 - SOIL STABILIZATION:

This section addresses the various soil stabilization practices that may be implemented during each phase of development to meet the objectives of these specifications.

Stabilization practices shall provide temporary and permanent stabilization of the soil, such practices may include; temporary seeding, permanent seeding, mulching, sod stabilization, vegetative buffer strips, protection of trees, preservation of mature vegetation and other practices.

Soil stabilization shall be initiated as soon as practical in those portions of the site where construction activities have temporarily or permanently ceased. In no case shall an area that is at final grade remain exposed to the elements for more than fifteen (15) days. Soil stabilization shall also be initiated within fifteen (15) days for those areas which may not be at final grade, but will remain undisturbed for longer than sixty (60) days.

Where soil stabilization has been halted do to frozen ground, or snow cover, soil stabilization shall be reinitiated as soon as practical.

SECTION 1309.1 - VEGETATION:

Vegetative soil stabilization measures refer to establishing vegetative cover on those areas exposed to erosion do to top soil striping, or site grading.

Temporary Seeding; Those areas not at final grade shall receive temporary seeding and mulch. Plants should be able to germinate and grow rapidly to a size that can provide good erosion protection. They should have dense growth that provides continuous soil cover with no exposed soil between plants. Annual grasses, and cereal crops such as annual ryegrass, oats, and barley may be used.

Permanent Seeding; Those areas that have been final graded, and spread with top soil shall be permanently seeded and mulched. Selection of the right seed mixture for the site, good seed bed preparation, and continued maintenance are required.
(See Section 908)

Dormant Seeding; When it is impossible to successfully establish turf grass do to the seasonal temperatures having dropped below the level necessary to initiate seed germination, the site shall be sodded or dormant seeded and mulched.

Sodding; Sodding shall be used where it is necessary to achieve instant turf cover, and where it may be difficult to establish soil stabilization by seeding. (See Section 907)

The critical period for vegetative stabilization is the first year. Sites shall be inspected within thirty (30) days of planting, or immediately after the first rain fall. Follow up inspections shall take place after each major storm, or on thirty (30) day intervals,

whichever is less. Any bare spots, or areas that fail to establish adequate vegetative cover to prevent erosion, shall be reseeded as soon as possible. Once the site is well stabilized, no further inspections will be necessary.

SECTION 1309.2 - MULCHING:

Mulch shall be used to protect disturbed soil from the effects of erosion until vegetative ground cover has been established. Mulch may include straw, wood or paper fiber, and jute mats. (See Section 908.5)

The choice of which mulch to use will be determined by site characteristics and effectiveness.

SECTION 1310 - TEMPORARY STOCKPILES:

Stockpiles shall not be located in special management areas. If a stockpile is to remain in place for more than three (3) days, then sediment control shall be provided for that stockpile. An earthen berm, silt fence, or straw bales shall extend around the perimeter of the stockpile. When a stockpile is on a slope, sediment control may be extend around only the down stream portion of the stockpile. If a stockpile is to remain in place for more than sixty (60) days, erosion control, in the form of temporary seeding shall be performed.

SECTION 1311 - MAINTENANCE:

Regular maintenance is vital to the success of these Erosion And Sediment Control Specifications. Control measures shall be inspected frequently, and repaired as soon as problems arise. Many of the control measures described in these Specifications are short term, temporary measures that can break down during a single storm, often failing during the first storm after installation.

A routine end of day maintenance check is strongly advised.

Rip-rap should be frequently checked for stones that have been displaced by flowing water. Displaced stones shall be replaced with a larger size stone. If erosion is occurring at the edges of a rip-rap apron, the apron needs to be enlarged.

Sediment basins and traps shall be cleaned out when the storage zone is full. The top of the storage zone shall be marked in paint, on the riser. In no case shall the sediment accumulation come closer that two (2) feet from the top of the riser.

To prepare for unexpected conditions, additional erosion control material should be stockpiled on the construction site.

SECTION 1400

DETENTION BASINS

STANDARD SPECIFICATIONS FOR DETENTION BASIN CONSTRUCTION

SECTION 1400 - GENERAL;

The Standards and Requirements found in this Section are for the design and construction of detention basins within the Village of Addison.

SECTION 1401 - SPECIFICATIONS:

These specifications cover both wet and dry detention basins, with and without berms, which shall be constructed in accordance with the latest edition of the DuPage County's Countywide Stormwater And Flood Plain Ordinance, IDOT's Standard Specifications for Road and Bridge Construction, the Village of Addison's Ordinance 0-90-40, and its applicable amendments. In case of a conflict, the Village of Addison's Standard Specifications for Detention Basin Construction and other applicable ordinances of the Village of Addison shall take precedence and shall govern.

SECTION 1402 - REGULATIONS AND PERMITS:

Additional regulations and requirements governing the design and construction of detention basins in the Village of Addison are:

A. Any restrictions, policies, and instructions that may be adopted or issued from time to time by the Village of Addison.

B. No person shall commence or perform any grading, stripping, excavating, or filling of land without first obtaining a written permit from the Village of Addison.

C. All work shall be available for inspection by the Village of Addison at all times.

SECTION 1403 - GENERAL DESIGN REQUIREMENTS:

All detention basins shall be designed with safety in mind. Shorelines shall be as level as practical to prevent accidental falls into the basin, and for ease of maintenance. Velocities throughout the drainage system shall be controlled to safe levels, taking into consideration rates and depths of flow.

Detention basins shall be designed to remove stormwater pollutants. They shall have a length to width ratio no greater than 3:1 as measured along the longitudinal axis of flow. The distance between inlets and outlets shall be maximized, and if possible, they should be located at opposite ends of the basin.

All detention basins shall be provided with a control structure. (See Section 208.12)

The top bank of a detention basin shall be a minimum of one (1) foot above the high water level.

No detention basin shall be constructed within a distance of ten (10) feet plus one and one half (1½) times the depth of the basin to any property line unless an easement is established for the purpose of a detention basin across the property line.
(See Ordinance 0-91-60)

Detention basins shall be designed to be aesthetically pleasing, and as much as possible, to be available for recreational use.

SECTION 1404 - WET BOTTOM DETENTION BASINS:

Wet bottom detention basins shall be designed as follows:

A. Depths - Wet basins shall be at least three (3) feet deep, excluding near the shore bank and safety ledge. If fish habitat is to be provided, the depth shall be at least ten (10) feet deep over twenty five (25) percent of the bottom area, to prevent winter freeze out.

B. Permanent Pool Volume - The permanent pool volume in a wet basin at normal water level, shall be equal to the runoff volume from its watershed for the two (2) year storm event.

C. Nuisance Control - Wet basins shall be designed in a manner which will reduce as much as possible nuisance problems such as algae and waterfowl. All wet bottom detention basins shall be provided with aerators. (See Section 1210)

D. Banks - The side slopes of the banks of a wet bottom detention basin shall not be steeper than five (5) horizontal to one (1) vertical above the normal water level, and three (3) horizontal to one (1) vertical below the normal water level.

E. Shorelines - Protective rip-rap shoreline treatment shall be placed around all wet bottom detention basins. (See Section 1308)

F. Safety Ledge - All wet detention basins shall have a level safety ledge extending five (5) feet into the basin from the shoreline and two (2) feet below the normal water level.

SECTION 1405 - DRY BOTTOM DETENTION BASINS:

Dry bottom detention basins shall be designed as follows:

A. Drainage - Dry basins shall be designed so that eighty (80) percent of their bottom area shall not have standing water seventy two (72) hours after a rain event of less than one hundred (100) years.

B. Bottom Slope - Dry basins shall have a minimum bottom slope of two (2) percent.

C. Banks - The side slopes of the banks of a dry bottom detention basin shall not be steeper than five (5) horizontal to one (1) vertical.

Soggy bottoms are a major problem affecting the maintenance of dry bottom detention basins. A low flow storm sewer, under ground tile drainage systems, or pilot channels may need to be constructed between inlet and outlet points in the basin.

SECTION 1406 - EARLY COMPLETION OF DETENTION BASINS:

Where a detention basin is part of the drainage system for a property, the basin shall be completed prior to the start of any grading activities. This shall ensure that if soil erosion and sediment control practices are not adequately implemented, any eroded sediment will be captured in the basin. If a basin is not designed with a storage zone for the accumulation of sediment, the basin shall be cleaned of its sediment prior to final approval.

SECTION 1407 - MAINTENANCE:

Detention basins shall be designed to minimize and facilitate maintenance. Side slopes shall be of turf grass, easily negotiated by lawn mowing equipment.

The responsibility for the maintenance of a detention basin shall be designated on the Plat of Subdivision, or in some other recorded document.
(See Ordinance 0-90-40, Section 26-208)

SECTION 1408 - EMBANKMENTS:

Embankments or berms, for the purpose of stormwater storage, shall be constructed as a dam.

A. Site Preparation: Prior to the placement of any embankment material, the area under the proposed embankment shall be cleared of all trees. Topsoil shall be striped from the area so as to remove any vegetation, roots, or other objectionable material to a minimum of two (2) feet outside the proposed embankment. Any snow or ice shall be removed from the embankment area.

B. Embankment Material: Embankment Material shall be free of vegetation, roots, oversized stones, rocks, or any other objectionable material which, by decay or otherwise, might cause settlement.

C. Placement: Areas on which embankment is to be placed shall be disked to a minimum depth of six (6) inches, and then compacted. Frozen material shall no be used as embankment, nor shall embankment material be placed on frozen ground. When construction is resumed after any winter shutdown, the top eight (8) inches of all partially completed embankments shall be disked, and compacted prior to the placing of any additional embankment material. The placement of embankment material shall not exceed eight (8) inch lifts. It shall be disked to break down oversized clods, and to mix the different materials. The minimum top width for an embankment or berm shall be two (2) feet. Embankment height shall be increased by ten (10) percent when compacted by heavy equipment such as rubber-tired scrappers. If controlled compaction is used, a suitable allowance shall be made for shrinkage during compaction. Upon completion, the

embankment shall conform to the lines, grades, and cross-sections shown on the plans.

D. Side Slopes: Upstream and downstream side slopes, after settlement and shrinkage, shall not be steeper that five (5) horizontal to one (1) vertical. The toe of an embankment or berm, shall be a minimum of ten (10) feet from the property line.

SECTION 1409 - EMERGENCY SPILLWAYS:

An emergency spillway is generally a vegetated channel designed to release storm water which can not be contained in the allocated storage space of the detention basin. The importance of an emergency spillway can not be over emphasized as it is usually the last level of a safe outlet for the storm water before the detention basin is overtopped.

An emergency spillway shall be provided whenever the principal spillway in the control structure, or the down stream storm sewer is incapable of handling additional runoff. The principal spillway, emergency spillway, or a combination of the two (2) shall be capable of safely passing flows in excess of the one hundred (100) year storm event. The minimum capacity of the combined flows shall be one (1) cfs/acre of area tributary to the detention basin.

The crest of an emergency spillway shall be set at the high water level of the detention basin. An emergency spillway shall have a minimum bottom width of ten (10) feet, with 4:1 side slopes. Flows through the emergency spillway shall be designed so as not to damage the earth embankment. Since spillways often discharge at high velocities, it may be necessary to armor the spillway and down stream slope of the spillway to protect the earth embankment.

SECTION 1500

ASPHALT AND CONCRETE PAVEMENTS

STANDARD SPECIFICATIONS FOR ASPHALT AND CONCRETE PAVEMENT

SECTION 1500 – GENERAL:

The standards and requirements found in this section are for the design and construction of asphalt and concrete pavement within the Village of Addison.

SECTION 1500.1 – SPECIFICATIONS:

These specifications cover both rigid and flexible pavement which shall be constructed in accordance with the latest revision of IDOT's Standard Specifications for Road and Bridge Construction, and applicable ordinances of the Village of Addison. In case of a conflict, the Village of Addison's Standard Specifications for Asphalt and Concrete Pavement and other applicable ordinances of the Village of Addison shall take precedence and shall govern.

SECTION 1500.2 - REGULATIONS AND PERMITS:

Additional regulations and requirements governing the construction of streets in the Village of Addison are:

A. Any restrictions, policies, and instructions that may be adopted or issued from time to time by the Village of Addison.

B. No person shall construct or remove any public or private asphalt or concrete pavement without first obtaining a written permit from the Village of Addison.

C. All work shall be available for inspection by the Village of Addison at all times.

SECTION 1501 - EARTHWORK:

Earthwork shall consist of clearing and grading of the pavement area, and the preparation of the subgrade.

SECTION 1501.1 - CLEARING AND GRADING:

Pavement areas shall be cleared of all obstructions before grading begins. This shall consist of the complete removal and disposal of fences, walls, foundations, building, trees, hedges, bushes and shrubs. Tree stumps shall be removed to a depth of not less than twelve (12) inches below the elevation of the subgrade or finished dirt grade.

When in the opinion of the Director of Community Development, any dirt bank or existing vegetation outside of the public right-of-way that would create a traffic hazard by limiting visibility, shall also be removed by the developer or builder. Dirt banks shall be cut down and vegetation, including trees, shall be removed in connection with the grading of the street right-of-way to the extent deemed necessary by the Director of Community Development to provide adequate sight distance.

SECTION 1501.2 - SUBGRADE:

All topsoil and unsuitable subgrade material shall be removed to a minimum width of one (1) foot outside the new construction. Pavement shall not be constructed on subgrade material having an Illinois Bearing Ratio (IBR) of less than three (3). If such subgrade material exists, it shall be removed and replaced with suitable excavated material, crushed stone, crushed concrete, or treated in a manner as specified by a competent soils engineer. Tree roots exposed by the grading of the subgrade shall be cut off at least three (3) inches outside of the new construction, and three (3) inches below the subgrade elevation.

SECTION 1501.3 - COMPACTION:

The subgrade shall be compacted to not less than ninety five (95) percent of the standard laboratory density, in accordance with Section 301 of IDOT's Standard Specifications for Road and Bridge Construction.

After compaction and grading, the subgrade shall conform to the alignment, grade, and cross sections shown on the plans.

SECTION 1501.4 – PROOF ROLLING:

To assure compliance with the above specifications, the contractor shall proof roll the subgrade before proceeding with the placement of the granular sub-base material. The entire subgrade shall be wheel rolled with a loaded ten (10) wheeled dump truck, or such vehicle as approved by the inspector.

Displacement shall be noted as follows:

A. Slight displacement being a movement of less than one (1) inch.

B. Moderate displacement being a movement of one (1) inch to four (4) inches.

C. Severe displacement being a movement in excess of four (4) inches.

Where moderate displacement is encountered, the subgrade shall be removed and replaced to eliminate the condition, or the contractor shall furnish laboratory test data indicating that the compaction to a depth of eighteen (18) inches meets the specifications. All severe displacement areas shall be removed and replaced to the complete satisfaction of the Director of Community Development.

SECTION 1502 – GRANULAR SUB-BASE:

Prior to placing any granular sub-base material, the sub-grade shall be inspected and approved. Granular sub-base material shall be Type A or B, consisting of crushed limestone, meeting IDOT specifications for CA-6. Granular sub-base material shall be placed a minimum of six (6) inches wider than the proposed pavement, graded and compacted in accordance with Section 311 of IDOT's Standard Specifications for Road and Bridge Construction, with vibratory equipment to ninety five (95) percent of Modified Proctor density.

The thickness of the granular sub-base material shall conform to the requirements as noted in the following Sections:

Streets - Section 806

Single Family Driveways - Section 1002.3 A and B

Multi Family Driveway Aprons - Section 1003.2

Multi Family Access Drives And Parking Lots - Section 1003.4 A and B

Commercial / Industrial Driveway Aprons - Section 1004.2

Commercial / Industrial Parking Lots (Autos) - Section 1005.1 A and B

Commercial / Industrial Parking Lots (Trucks) - Section 1005.2 A and B

Commercial / Industrial Parking Lots (Dolly Pads) - Section 1005.3

Commercial / Industrial Parking Lots (Loading Docks) - Section 1006.1

Commercial / Industrial Parking Lots (Loading Berths) - Section 1006.2

In the case of Bituminous Concrete Pavement, for each additional one (1) inch of asphalt (binder or surface), three (3) inches of granular sub-base material may be eliminated. In no case shall the granular sub-base be reduced to less that four (4) inches.

SECTION 1503 - RIGID (CONCRETE) PAVEMENT:

This type of pavement shall consist of portland cement concrete pavement (PCC pavement), with six (6) inch by six (6) inch, No. 6 woven wire fabric mesh. The pavement shall be constructed on a prepared granular Type A or B, crushed limestone sub-base. (See Section 1502)

SECTION 1503.1 - MATERIALS:

The materials used in the construction of the concrete pavement such as portland cement, fine and coarse aggregates, water and steel reinforcement, shall conform to the requirements of Section 1000 of IDOT's Standard Specifications for Road and Bridge Construction.

SECTION 1503.2 - CONCRETE MIX:

The concrete mix shall be a PV mix, having a minimum compressive strength of not less than three thousand five hundred (3,500) lbs. per square inch after fourteen (14) days of curing.

All concrete used shall be uniform throughout the mass, with air-entrainment of five (5) percent to eight (8) percent of the volume, and a slump not less than three quarter (¾)

inch and not greater than one and one half (1½) inches. A slump greater than one and one half (1½) inches may be used with the approval of the Director of Community Development, up to a maximum of three (3) inches, provided the mixture's water / cement ratio does not exceed 0.42.

When a PCC pavement will become the property of the Village, the contractor or developer shall supply the composition of the PCC pavement to the Director of Community Development for his approval prior to starting the paving.

Admixtures other than air-entraining agents shall not be used on any PCC pavement that will become the property of the Village without prior approval of the Director of Community Development, and then only after trial mixes have shown them to be compatible at job temperatures. Trial mixes shall also show that the desired results will be imparted into the fresh concrete, without any loss of strength or durability to the hardened concrete.

SECTION 1503.3 - FORMS:

Side forms shall be of lumber of not less than two (2) inch nominal thickness or steel of equal rigidity. They shall be held securely in place by stakes or braces, with the top edges true to line and grade. Forms shall be oiled before concrete is poured.

No concrete shall be poured until the sub-base and forms have been approved by the Village of Addison.

SECTION 1503.4 - SLIP FORM METHOD:

In place of setting forms, the contractor may select the option of slip forming the concrete pavement, per Article 420.17 of IDOT's Standard Specifications for Road and Bridge Construction.

SECTION 1503.5 – MIXING AND PLACING CONCRETE:

Concrete shall be mixed and placed in accordance with Articles 420.07 of IDOT's Standard Specification for Road and Bridge Construction.

The sub-grade and forms shall be moistened just before the concrete is placed. Concrete shall be poured in successive batches, struck off from one half (½) inch to three quarter (¾) inches higher than the finished grade, tamped or vibrated until voids are removed and free mortar appears on the surface, thoroughly spaded along the edges, and struck off to the true grade.

SECTION 1503.6 - WOVEN WIRE FABRIC MESH:

All concrete driveways and parking lots shall be reinforced with six (6) inch by six (6) inch, No. 6 woven wire fabric mesh, both in the parkway and on private property. The wire fabric may be supplied in sheets or in rolls.

Woven wire fabric mesh shall be free from dirt, oil, and loose or thick rust, which could impair the bond between the mesh and the concrete. All laps shall be held firmly together with wire ties, or clips, spaced not more than four (4) feet apart.

When PCC pavement is placed in two layers, the entire bottom layer shall be struck off so that the fabric may be laid on the concrete in its final position without further manipulation. Bends, kinks, or other irregularities shall be corrected in the fabric, after which the top layer of concrete shall be placed and finished. Any portion of the bottom layer of concrete which has been placed more than twenty (20) minutes without being covered with the top layer shall be removed and replaced with freshly mixed concrete.

When the concrete is placed in one layer, the fabric may be placed on the sub-base in advance of the concrete placement, and lifted up into the concrete during placement. The fabric may also be placed on the plastic concrete after it has been struck off, and pushed down into the concrete. In either case, care shall be taken to position the fabric in the center of the concrete pavement. Failure to comply with the proper placement of the fabric is cause to reject the concrete pavement. The contractor shall remove and replace that portion of the concrete pavement rejected.

SECTION 1503.7 - JOINTS:

Joints shall be constructed in accordance with Articles 420.10 of IDOT's Standard Specifications for Road and Bridge Construction.

A. Contraction Joints: The surface shall be divided by grooved or saw cut contraction joints at right angles to the center line of the pavement. These grooves or saw cuts shall extend to a depth of two (2) inches with the width being not less than an one eighth (⅛) inch nor more than one quarter (¼) inch. The grooves and edges of the slab shall be edged with an edging tool having a one quarter (¼) inch radius. Contraction joints shall be placed at ten (10) foot by ten (10) foot intervals and at changes in direction of the pavement.

B. Expansion Joints: Expansion joints shall consist of three quarter (¾) inch thick preformed bituminous joint filler. The top of the joint shall be placed one quarter (¼) inch below the surface of the pavement. Expansion joints shall extend the full depth and width of the pavement. Expansion joints shall be placed wherever the pavement meets the sidewalk, curb, foundation, or garage slab, and at intervals not to exceed fifty (50) lineal feet of pavement, and at any locations where it is deemed necessary by the Director of Community Development.

C. Construction Joints: Construction joints shall be used whenever the placing of concrete is held up for thirty (30) minutes or more. Construction joints shall be installed in the same manner as expansion joints.

SECTION 1503.8 - FINISHING:

Concrete finishing shall be done in accordance with Articles 420.11 of IDOT's Standard Specifications for Road and Bridge Construction.

PCC pavement shall be finished to a true and even surface with floats and trowels. The final trowelling shall be done with a float, leaving an even surface. Side edges shall be rounded with an edging tool. After the water sheen has disappeared, the surface shall be given a final broom finish. In no case shall dry cement or sand be applied to dry up the surface. The broom shall be drawn across the work at right angles to the edges, with adjacent strokes slightly overlapping, producing a uniform, slightly roughened surface with parallel broom marks.

Special finishes such as exposed aggregate or cast in place patterns, shall be finished according to accepted industry standards.

SECTION 1503.9 - CURING:

The surface of the newly laid PCC pavement shall be cured and the material used for curing shall conform with Article 1020.13 of IDOT's Standard Specifications for Road and Bridge Construction, and to the satisfaction of the Director of Community Development. A minimum three (3) day curing period is required during which time traffic shall be kept off the pavement.

SECTION 1503.10 - COLD WEATHER PROTECTION:

No concrete shall be placed on ice, snow, or any frozen material. The contractor shall be responsible for all concrete damaged by low temperatures, and any concrete so damaged shall be removed and replaced at the contractor's expense.

No concrete shall be placed when the air temperature is below forty (40) degrees F. without the permission of the Director of Community Development. When placing of concrete is permitted during cold weather, the temperature of the mixed concrete shall not be less than fifty (50) degrees F. nor more than one hundred (100) degrees F. at the time it is placed. The aggregate shall be heated by steam or dry heat prior to being placed in the mixer, and the water shall be heated to not hotter than one hundred and seventy (170) degrees F. When the air temperature is expected to drop below thirty five (35) degrees F., a supply of straw or other insulating material shall be brought to the job site. When the air temperature is expected to reach, or drop below thirty two (32) degrees F. during the day or night, the straw or insulating material shall be spread over the sub-grade if concrete is to be placed the next day, or over the newly poured concrete if it has already been poured. The straw or insulating material shall be spread to a sufficient depth to prevent freezing. Concrete less than seventy two (72) hours old shall also be covered. New concrete shall be protected for a minimum period of four (4) days so as to maintain a temperature of fifty (50) degrees F. or higher.

SECTION 1503.11 - REMOVAL OF FORMS:

Forms shall remain undisturbed for a minimum of twelve (12) hours, or until the concrete has attained sufficient strength to sustain its own weight in addition to any temporary or permanent loads that may be placed on it.

SECTION 1503.12 - SEALING JOINTS:

After curing, and before the pavement is opened to construction traffic, all joints except construction joints shall be thoroughly cleaned of all foreign material, and sealed with either hot or cold applied material, meeting the approval of the Director of Community Development.

The method of sealing the joints shall follow the procedures in Article 420.14, and the material shall meet the requirements of Section 716, both from IDOT's Standard Specifications for Road and Bridge Construction.

SECTION 1503.13 - PROTECTION OF THE CONCRETE PAVEMENT:

Special attention is called for in the protection of fresh concrete pavement against the following:

A. Vandalism: While the concrete is still soft, the contractor should maintain a watch.

B. Freezing: Protection of fresh concrete pavement against freezing shall follow the methods in Section 1503.10 - Cold Weather Protection.

C. Vehicles: If PCC pavement will become the property of the Village, all vehicles shall be kept off of the pavement for a minimum of fourteen (14) days, or until a compressive strength of three thousand five hundred (3,500) PSI is attained. Vehicles shall be kept off of all other PCC pavement for a minimum of five (5) days.

D. Rain: All exposed surfaces shall be protected against washing by rain. The contractor shall assume all responsibility for damage to the concrete pavement by action of the elements or from any other cause, and shall repair, or remove and replace all damaged pavement.

The contractor shall assume all responsibility for damage to the PCC pavement by action of the elements or from any other cause, and shall repair or remove and replace all damaged pavement.

SECTION 1503.14 - BACKFILL:

PCC pavement not bordered by curb, curb and gutter, sidewalk, or a building, shall have the space along the edge of the pavement backfilled to the required elevation with approved material. The material shall then be compacted until firm, and the surface neatly graded to receive grass cover.

SECTION 1503.15 - INSPECTION AND TESTING:

It shall be the responsibility of the contractor to comply with the following testing requirements for any PCC pavement that will become the property of the Village. The contractor shall hire an independent testing laboratory acceptable to the Director of

Community Development to conduct the tests, and copies of all test data shall be given to the Director of Community Development.

A set of four (4) test cylinders shall be made for every two hundred (200) feet of daily progress, with not less than one (1) set of test cylinders per day. The compressive strength shall be determined in accordance with ASTM C-31. One specimen shall be tested at seven (7) days, one specimen at fourteen (14) days, and two (2) specimens at twenty eight (28) days. Air tests, slump tests and concrete temperatures shall be taken every two hundred (200) feet or for every one hundred (100) cubic yards of concrete, whichever is greater. These tests shall also be taken at the time test cylinders are made. All unsuitable material shall be removed and replaced by the contractor, at the discretion of the Director of Community Development.

It is the intent that the concrete pavement shall be constructed to the exact thickness shown on the plans. The thickness of the concrete pavement will be determined by cores. A minimum of one (1) core shall be taken for each concrete pour, or five hundred (500) lineal feet of pavement, whichever is less. The Director of Community Development shall select the location where the cores shall be taken. When the pavement thickness is less than the specified thickness, the pavement shall be removed and replaced at the contractor's expense.

Testing of PCC pavement located on private property shall be the responsibility of the owner or developer, at the discretion of the Director of Community Development. All unsuitable material shall be removed and replaced by the contractor.

SECTION 1504 - FLEXIBLE (BITUMINOUS CONCRETE) PAVEMENT:

This type of construction provides for bituminous concrete surface course Class I, bituminous concrete binder course Class I, and bituminous aggregate mixture (BAM) base course. The pavement shall be constructed on a prepared granular Type A or B, crushed limestone sub-base, (See Section 1502), and a prime coat.

SECTION 1504.1 - MATERIALS:

The materials used in the construction of the bituminous pavement such as coarse and fine aggregate, mineral filler, and bituminous material, shall conform to the requirements of Section 1000 of IDOT's Standard Specifications for Road and Bridge Construction.

SECTION 1504.2 - PREPARATION OF EXISTING PAVEMENT:

When existing pavement is to be used as a base, unsuitable areas shall be cleaned of all loose and unsound material, primed, and filled with leveling binder to the approval of the Director of Community Development.

Open cracks and open expansion joints shall be scraped and blown clean. The clean joint or crack shall then be completely filled with a mixture of fine sand and asphalt cement. Preparation of the mixture for cracks, and joints shall be per Section 358 of IDOT's Standard Specifications for Road and Bridge Construction. This mixture shall be hand tamped into place at least 24 hours prior to placing any bituminous pavement.

SECTION 1504.3 - PRIME COAT:

Prior to placing any bituminous pavement, the entire area shall be primed.

The surface of existing pavement shall be cleaned of all dirt, foreign material, and debris, and shall be dry when applying prime. Granular sub-base material shall be graded and compacted prior to applying prime. (See Section 1502)

Bituminous priming material shall be as specified in Article 406.06 and 406.07 of IDOT's Standard Specifications for Road and Bridge Construction. Prime coat material shall be uniformly applied at the following rates:

A. A water base penetrating emulsion prime (PEP), or a medium curing liquid asphalt (MC-30), shall be applied at the rate of 0.25 to 0.50 gallons per square yard for granular bases.

B. An asphalt emulsion primer tack coat (SS-1), shall be applied at the rate of 0.05 to 0.10 gallons per square yard for concrete and bituminous concrete bases.

C. When there is a delay in placing the next course of bituminous pavement, and where the previously placed pavement has become dirty, the pavement shall first be cleaned. An asphalt cements primer (AC) shall then be applied at a rate of 0.05 to 0.10 gallons per square yard.

Prime shall be applied with a pressure distributor. A hand spray bar shall be used in places not covered by the distributor. The contractor shall protect the primed area during the curing period. Any pools of bituminous prime material that collect in depressions shall be broomed or squeegeed over the surrounding surface the same day the prime coat is applied.

The prime coat shall be applied not less than twelve (12) hours nor more than ten (10) days in advance of the placement of bituminous concrete, except for emulsified asphalt prime. Bituminous concrete may be placed over emulsified asphalt prime after the emulsion has broken and all free moisture has evaporated or drained off the surface. When an emulsified asphalt prime is used, the area primed shall be limited to that which can be covered with bituminous concrete in one day. The temperature in the shade shall be sixty (60) degrees F. or above when emulsified asphalt prime is used.

When priming an area that is to be kept open to traffic, warning signs shall be erected prior to priming. The prime coat shall be applied before 3:00 PM and immediately covered with fine aggregate mechanically spread at a uniform rate of two (2) to four (4) pounds per square yard. The fine aggregate shall meet the requirements of Article 1003.03 of IDOT's Standard Specifications for Road and Bridge Construction. The pavement shall be primed one lane at a time. The prime coat on the next lane shall not be applied until the prime coat on the first lane has cured, or fine aggregate has been applied so that the prime will not be picked up by traffic. The priming operation shall be

performed in such a manner that a minimum amount of interference will be caused to traffic.

Where the area is not open to local traffic, the prime coat does not need to be covered with fine aggregate.

SECTION 1504.4 - WEATHER CONDITIONS:

Bituminous material shall be laid on a dry surface which is not frozen, and only when weather conditions are suitable. In the event of a sudden rain, loading additional trucks shall immediately stop, whether it be from the plant or storage bins. Material in transit will be permitted to be laid at the contractor's risk, as long as there is no standing water, and the proper temperature of the mix is maintained. Approval to unload the trucks in transit shall in no way relax the requirements for quality, density, or smoothness of the bituminous mixture being placed. All unsuitable material shall be removed and replaced at the discretion of the Director of Community Development, by the contractor at the contractor's expense.

SECTION 1504.5 - PLACING AND COMPACTION OF BITUMINOUS MIXTURES:

Before placing any bituminous mixtures, the area to be covered shall be cleaned of all foreign material. Excess dirt, dust, or prolonged use by vehicles may require re-priming at the discretion of the Director of Community Development. No bituminous mixtures shall be placed on frozen or muddy surfaces. The surface of each layer shall be clean and dry before succeeding layers are placed.

Bituminous mixtures shall be delivered at the temperatures specified, and placed with a mechanical spreading and finishing machine to the proper thickness as shown on the typical section. The grade shall be controlled to match that which is shown on the plans. The operating speed of the mechanical spreading and finishing machine shall not exceed the speed that will produce a uniformly spread, and struck off mat, having a smooth texture without tearing or segregation.

After the mixture is placed, it shall be rolled in three operations. It shall be given an initial or breakdown rolling with either a three-wheel roller, pneumatic tired roller, tandem roller, or a vibratory roller. The second rolling, and the number of passes, shall be determined from a test strip. (See Section 1504.10) The finish rolling shall produce a smooth surface of uniform texture, free from depressions and roller marks.

The speed of the roller shall be slow enough to avoid displacement of the bituminous mixture. If displacement occurs, it shall be corrected at once by raking and applying fresh bituminous mixture where needed. To prevent adhesion of the bituminous mixture to the roller, the wheels shall be kept properly moistened, without an excess of water. Rolling of the binder and surface courses shall be continued until all roller marks are eliminated, and the bituminous mixture is satisfactorily compacted. In places inaccessible to rollers, such as curbs, manholes, and similar structures, the required compaction shall be secured with hand tampers. Any bituminous mixture that becomes

loose, broken, mixed with foreign material, or is in any way defective, shall be removed and replaced with fresh hot mix, and compacted to conform to the surrounding area.

If the density of a layer is less than that required, additional compaction, thinner layers, or the use of an additional roller shall be used to get the required density. Those areas failing to get the required density shall be removed and replaced at the discretion of the Director of Community Development.

SECTION 1504.6 - LEVELING BINDER:

All depressions of one (1) inch or more in the surface of the existing pavement shall be filled with leveling binder after priming. The surface to which the leveling binder is to be applied shall be dry and the air temperature in the shade at least forty (40) degrees F. and rising. Where areas to be leveled are greater than two (2) inches in depth, the leveling binder shall be placed and compacted in layers not exceeding a maximum depth of two (2) inches. The total thickness of leveling binder placed in one day shall be limited to four (4) inches. Leveling binder shall be placed at least twenty four (24) hours prior to placing the binder course, and shall be compacted to an average density of not less than ninety three (93) percent of the theoretical density.

SECTION 1504.7 - BITUMINOUS AGGREGATE MIXTURE (BAM):

Bituminous aggregate mixture (BAM) shall be prepared as per Articles 312.03 of IDOT's Standard Specifications for Road and Bridge Construction.

The delivery temperature shall be two hundred and twenty five (225) degrees F. to three hundred and twenty five (32)5 degrees F. for asphalt cement (AC) mixes. There is no delivery temperature requirement for medium curing liquid asphalt (MC) mixes.

The air temperature in the shade shall be over fifty (50) degrees F. when placing BAM containing MC-3000. There is no minimum air temperature when AC is used in the mix.

The mat temperature for an AC mix shall be two hundred (200) degrees F. or higher. If this temperature cannot be maintained behind the spreader, insulated and covered trucks shall be required.

BAM shall be placed to a maximum compacted thickness of six (6) inches. When more than one lift is to be placed, the first lift shall have a density of not less than eighty eight (88) percent of the theoretical density. Subsequent lifts shall be compacted to not less than ninety (90) percent of the theoretical density.

If the granular sub-base is damaged while placing BAM, the contractor shall halt the placement of the BAM and immediately repair the sub-base before continuing.

SECTION 1504.8 - BITUMINOUS CONCRETE BINDER AND SURFACE COURSE:

The binder and surface course shall be IDOT Class I, and prepared as per Section 406 of IDOT's Standard Specifications for Road and Bridge Construction.

Bituminous concrete binder shall only be placed when the temperature in the shade is at least forty (40) degrees F. and the forecast is for rising temperatures.

Bituminous concrete surface course shall only be placed when the temperature in the shade is forty five (45) degrees F. and the forecast is for rising temperatures.

When the air temperature is below sixty (60) degrees F. the trucks transporting the mix shall be insulated and covered.

Bituminous concrete binder and surface course mix shall be delivered at a temperature of two hundred and fifty (250) to three hundred and fifty (350) degrees F. When the temperature of the mat immediately behind the paver is less that two hundred and fifty (250) degrees F., the trucks shall be covered.

Bituminous concrete binder and surface courses shall be compacted to an average density of not less than ninety three (93) percent of the theoretical density. No individual determination shall be less than ninety one (91) percent.

In the construction of all subdivision streets, the installation of the final lift of bituminous concrete surface course shall be delayed for a minimum of one winter, and a maximum of two winters. The Director of Community Development may extend this time period at his discretion. In the spring or summer of the year the surface is to be applied, the owner or developer, and the Director of Community Development shall jointly inspect the existing pavement. All damaged pavement shall be replaced to the satisfaction of the Director of Community Development prior to placing the surface course.

The bituminous concrete surface course, after compacting, shall extend a 3 inch above all utility frames in the paved area and above the gutter flag.

The contractor shall protect all sections of the newly laid surface course for a minimum of four (4) hours, from traffic until it has hardened, or to the satisfaction of the Director of Community Development.

SECTION 1504.9 - JOINTS:

Transverse construction joints between the previous day's work and new work shall be cut back at right angles to the centerline to its full depth so as to expose a fresh vertical surface. When a butt joint is to be constructed under traffic, the contractor shall provide and maintain temporary bituminous ramps at both ends of the area removed. The contractor shall have sufficient patching material on site to construct the ramps before removing any pavement. Cold-milled bituminous trailings from the butt joint will not be acceptable for the ramps. The temporary ramps shall be constructed immediately upon completion of the removal operation. Ramps shall have a minimum taper of three (3) feet per one (1) inch of thickness removed. Temporary ramps shall be removed prior to placing the surface course. If work is suspended for any reason prior to placing the surface course, the contractor shall fill the butt joints to the elevation of the existing surface with compacted bituminous concrete surface course.

The longitudinal joint in one course shall be offset by a minimum of three (3) inches from the longitudinal joint in the coarse immediately below. The longitudinal joint in the surface course shall be at the centerline of the street.

SECTION 1504.10 - INSPECTION AND TESTING:

It shall be the responsibility of the contractor to comply with the testing requirements for any bituminous concrete pavement that will become the property of the Village. The contractor shall hire an independent testing laboratory acceptable to the Director of Community Development to conduct the tests, and copies of all test data shall be given to the Director of Community Development.

Density testing for the BAM, leveling binder, binder, and surface courses shall be by nuclear test methods. A test strip three hundred (300) feet in length shall be used to determine a rolling pattern. The purpose of the rolling pattern is to determine the types of rollers, number of passes, and the sequence of operations necessary to meet the density requirement. A test strip will be required for each lift of asphalt. Two (2) tests shall be conducted on each test strip. If the test strip results are unsatisfactory, a new test strip shall be conducted and the unsatisfactory area corrected or removed. Once a satisfactory rolling pattern is established, it shall be continued for the balance of the lift.

A "test" shall consist of five (5) density determinations, located across the width of the paved lane. A minimum of four tests shall be required per day, per lift.

After the surface course has been compacted and tested, cores shall be taken for density to check against the nuclear test results, and to check the depth of the pavement. The holes caused by the removal of the cores shall be refilled immediately with bituminous concrete surface course material, compacted and finished to the satisfaction of the Director of Community Development. No less than four (4) nor more than twenty (20) cores shall be required by the Director of Community Development for the purpose of acceptance of the pavement.

SECTION 1505 - COMPOSITE PAVEMENT:

This type of pavement shall consist of a portland cement concrete (PCC) base course with a bituminous concrete surface overlay. See Section 1503 for concrete requirements, and Section 1504 for bituminous requirements.

SECTION 1506 - PAVEMENT REMOVAL:

The contractor shall saw to full depth the portion of the pavement being removed and that part left in place. It shall be the responsibility of the contractor to determine the thickness of the existing pavement to be removed. Sawing shall be done with a concrete saw in such a manner that a straight joint will result. If, while removing the pavement, additional pavement is damaged, the damaged pavement shall also be removed.