

CHAPTER 1163

Improvement Standards and Specifications

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CROSS REFERENCES

Improvements defined - see P. & Z. 1151.13
Improvement completion prior to final plat approval - see
P. & Z. 1155.06, 1157.05(b)(2)
General requirements - see P. & Z. Ch. 1161

**1163.01 CITY'S SAFETY-SERVICE AND UTILITY DEPARTMENTS
AUTHORITY.**

The City's Safety-Service and Utilities Departments shall approve the plans and inspect the installation of all street, storm drainage, sanitary sewer, water and electrical distribution, and other improvements as set forth in the following specifications and regulations.

1163.02 SUBMISSION OF CONSTRUCTION PLANS.

(a) Plan Contents and Requirements. The subdivider or developer shall submit, to the Safety-Service Director for his approval, six complete sets of construction plans for the improvement of the roads, streets, utilities or other improvements, prepared by a registered professional engineer. The Safety-Service Director shall within forty-five days after receiving the plans, approve, disapprove or require changes to be made to the plans, otherwise such plans are deemed to be satisfactory. The construction plans shall include title of the plan, generalities, location map, topographic map with contours, plans and profile, miscellaneous engineering details, and an estimate of quantities. Completed cross sections as required by the Safety-Service Director shall also be submitted with these plans. Sample sets of plans may be inspected at the office of the Safety-Service Director.

When the subdivider or developer submits for approval a construction plan for a street improvement in part of a subdivision area, preliminary street grades and proposed drainage facilities for the entire subdivision shall also be presented.

All street and storm sewer materials and construction procedures shall be in accordance with the current Construction and Material Specifications of the State of Ohio, Department of Transportation. The construction plans and specifications as herein required are to be submitted to the Safety-Service Department. The Standard Street Designs, as presently on file with the Safety-Service Department, such Standard Street Designs having been established by the Safety-Service Department and adopted January 21, 2005, are included in these Subdivision Regulations and are approved and adopted as a part of these Regulations. All elevations shown must be sea level datum (USGS).

All water and sanitary sewer materials and construction procedures shall be in accordance with the General Rules and Regulations of the Water Department and/or the Water and Sewer Pipe Standards of the Department of Public Utilities. All electric and telecommunication materials and construction procedures shall be in accordance with the Electric Division General Rules and Regulations.

(b) Estimates of Quantities. An estimate of the quantities of all work specified or indicated on the construction plans shall be shown.

1163.03 INSPECTION FEES.

Before any construction plan is given final approval, the subdivider or developer shall deposit a sum of money for inspection fees. The amount of the estimated inspection cost shall be deposited with the Finance Director before authorization of any construction. Such inspection fee shall be based on an hourly rate. (Ord. 44-66. Passed 10-17-66.)

1163.04 DRAWINGS.

The construction drawings shall be reproducible and from which clean, legible prints may be made. Freehand linear drawing must not be attempted nor should other principles of good surveying, engineering or draftsmanship be offended. The material upon which drawings are made shall be Mylar or equal and measuring not more than twenty-four inches by thirty-six inches.

1163.05 TITLE SHEET.

The title sheet shall contain the name of the subdivision, street, road or court name, and the name of the City and County in which the subdivision is located. Scales, an index and a location map shall also be included. The title sheet shall also indicate the number of the sub-lots of the proposed subdivision. The name of the firm submitting the plans shall be shown in the lower right hand corner. Space shall be provided on the title sheet or the first sheet of the plans for approval of the proper authorities as follows:

- (a) I/we, the undersigned, owners of the land embraced within this subdivision, do hereby acknowledge this plat to be my/our free act and deed, and dedicate the streets and alleys herein shown to public use forever. (add waiver of dower clause, if needed)(if owner is a corporation, use corporate form).

WITNESS my/our hand(s) this ____ day of _____, 20 ____.

WITNESS _____ Signed _____

WITNESS _____ Signed _____

The State of Ohio, Wayne County SS:

Signed and acknowledged before me, a Notary Public, in and for said Wayne County, Ohio, this ____ day of _____, 20 ____.

Notary Public _____

(b) I hereby certify the survey of the boundaries of this plat, and of each of the lots contained therein, to be correct, and that the error of closure does not exceed 1 to 5,000.

____ No. _____ Date _____
Registered Surveyor

(c) The Planning Commission of the City of Orrville, Ohio, did on the ____ day of _____, 20____, by majority vote, recommend to City Council to approve and accept this subdivision as hereon platted.

Signed _____
Chairman

(d) The streets, storm drainage and water retention, as planned, designed, and installed for this subdivision, are hereby approved.

Date: _____ By: _____
Safety-Service Director

(e) The sanitary sewerage system, electric and telecommunications systems, street lighting, and water system, as planned, designed, and installed for this subdivision are hereby approved.

Date: _____ By: _____
Utilities Director

(f) This plat was duly accepted by Ordinance No. ____ of Orrville City Council at a regular meeting held on the ____ day of _____, 20 ____.

Signed: _____
Clerk of Council

(g) Received for transfer _____, 20_____.

Signed: _____
Tax Map Draftsman

(h) Received for transfer _____, 20_____.

Signed: _____
Wayne County Auditor

(i) Received for record _____, 20_____, at _____ am/pm. Recorded _____,
20_____, in Volume _____ page _____.
Fee \$ _____

Signed: _____
Wayne County Recorder

1163.06 PLAN, PROFILE AND CROSS SECTIONS.

The plan and profile shall be drawn, at a scale of not smaller than one inch to fifty feet horizontally and one inch to five feet vertically, on Mylar or equal and not larger than twenty-four inches by thirty-six inches of the proposed grading, draining, paving, sanitary sewers and water lines within the subdivision. Such plan and profile will show both the location and elevation of all improvements to be made. The centerline of the plan will be stationing and the location of improvements will be located with regard to this stationing. Such plan shall be accompanied by cross sections of the proposed streets, at a scale of not smaller than one inch to ten feet, on Mylar or equal and not larger than twenty-four inches by thirty-six inches. Such cross sections shall be taken at intervals not exceeding fifty feet along the centerline of such streets, and shall extend a minimum of 100 feet left and right of the centerline. Such cross sections shall show the contour of the existing ground and the contour of the proposed pavement, walks and finish grading, and the relative location of the proposed sewers and water lines. Such plan shall include the following information:

- (a) Name of proposed subdivision;
- (b) North arrow, scale, date and benchmark with elevation above sea level on each sheet;
- (c) Typical cross section of the proposed street right of way showing in detail the pavement design, sidewalks and the relative location of the proposed water line, sanitary sewer, storm sewer, electrical, phone, cable television, telecommunications cable, and gas line.

1163.07 MISCELLANEOUS ENGINEERING DETAILS.

- (a) Drainage.

- (1) Purpose. These design standards and specifications shall serve as minimum requirements for the handling of surface water and drainage. These procedures and regulations shall govern the development of all new and/or modified drainage systems. The development of such drainage systems shall include the conveyance of surface water to an adequate outlet that is capable of carrying the flow.
- (2) Preliminary drainage plan. A preliminary drainage plan for all major subdivisions shall be submitted for review and preliminary approval by the Safety-Service Director. The plan shall show the general runoff pattern of the area that is to be improved as well as showing the runoff patterns of adjacent areas that affect or may be affected by the proposed improved area. A copy of the preliminary plan required by the Planning Commission may serve as the preliminary drainage plan. Sufficient data shall be supplied for the Safety-Service Director to check the feasibility of the drainage system and stormwater runoff control as proposed by the developer. The preliminary drainage plan shall be approved prior to the preliminary approval of the subdivision plan by the Planning Commission.
- (3) Adequate drainage outlet. Surface water runoff of a development shall be drained off site in accordance with this code. The location of the adequate outlet shall be approved by the Safety-Service Director. The adequate outlet may consist of a ditch, stream, storm sewer, or approved retention basins, having sufficient capacity to accommodate the surface water runoff in a reasonable manner.
- (4) Drainage easement. An adequate drainage easement shall be required along any drainage way, ditch, watercourse, stream, or storm sewer which is not already within the public right-of-way. The easement shall be of sufficient width to allow cleaning, widening, deepening, replacement or other general maintenance of such drainage course. When it is required of the developer to convey surface water outside the limits of the proposed improved area in order to discharge into an approved adequate outlet, it shall be the responsibility of the developer to obtain easements or right-of-ways for construction and/or maintenance of such drainage course. All drainage easements shall be shown on the plat and construction plans. The drainage easements shall be recorded for public use and the maintenance of such drainage courses shall be the responsibility of the property owners receiving direct benefit therefrom.
- (5) Right-of-way for drainage structures. When a drainage structure within the public right-of-way extends beyond the limits of the normal public right-of-way, additional right-of-way shall be provided around the structure to allow for adequate maintenance.
- (6) Final drainage plan. A final drainage plan showing the entire drainage system shall be submitted with utility improvements to the Safety-Service

Director and the Director of Utilities for construction approval. The final drainage plan shall conform to these regulations and to any special conditions that were required by the Planning Commission in approving the preliminary plat. The final plan shall include engineering calculations used in determining the design of the drainage courses, the drainage structures, and stormwater runoff control structures. The following shall serve as a minimum requirement for plans and engineering calculations for the on-site drainage:

- A. The total tributary drainage areas entering the improved area.
- B. Times of concentration, intensity, and runoff coefficients used for determining runoff.
- C. Discharge volume in cubic feet per second, velocity, and additional data needed to establish that the drainage system will convey the flow to the approved adequate outlet.
- D. The plan and profile of all drainage courses to where the system discharges into the adequate outlet.
- E. Size and type of all drainage improvements including all drainage structures.
- F. Sufficient contours and grading details to show that the proposed improvements will function adequately.

All drainage construction plans shall be sealed with the stamp of a professional engineer registered in the State as required by Ohio R. C. Chapter 4733. The drainage plan shall be approved by the Safety-Service Director prior to the construction of any portion of the drainage system.

- (7) Storm sewers. The Safety-Service Director may require a storm sewer system wherever an open ditch may present future problems, such as flooding, erosion or endangers the health and safety of the residents of the subdivision or wherever the pavement classification dictates a storm sewer system should be used. The storm sewer system shall be designed to accommodate the tributary drainage areas of the subdivision. The minimum drainage easement for storm sewers outside of the right-of-way shall be twenty feet in width. This easement shall be shown on both the final plat and the construction plans and it shall be labeled "Public Drainage Easement."
- (8) Culverts. Culverts shall be used to convey water through a roadway embankment and shall be designed so as not to impose a hazard to the roadway or the surrounding area. Attention shall be given to alignment, grade, and sizing so hazards shall not exist. The design system shall be reviewed and approved by the Safety-Service Director.
 - A. All culverts shall be installed, bedded and backfilled in accordance with the State of Ohio Department of Transportation (O.D.O.T.), Construction and Materials Specifications.

- B. All conduit shall be reinforced concrete or approved equal.
- C. The type of conduit used will be determined by the amount of fill in the embankment in accordance with O.D.O.T. Construction and Materials Specifications.
- D. Headwalls and endwalls shall be installed when required by ODOT design standards.
- E. Any special treatment, including catch basins, improved inlets, headwalls, stilling basins, energy dissipaters, downstream channel improvements and erosion control shall be taken into consideration by the design engineer.
- F. All culverts draining areas larger than 200 acres shall be designated major culverts and shall be designed to convey a twenty-five year frequency storm.
- G. All culverts draining areas 200 acres or less shall be designated minor culverts and shall be designed to convey a ten year frequency storm.

(9) Subsurface drainage.

- A. Subsurface drainage shall be used as required to control the flow of ground water. Subsurface drainage is to be used as a measure to maintain firm, stable subgrades and foundations; eliminating wet cuts and preventing frost heave; and preventing sloughing and saturation of cut and fill slopes.
- B. Where a roadway consists of a total aggregate buildup with a chip and seal surface, it may be determined that an aggregate underdrain will provide adequate subdrainage so long as the roadside ditch remains open and provides an adequate outlet for the aggregate underdrain.
- C. Where a higher classification pavement is being used over an aggregate base or where the ditches are closed in, pipe underdrains shall be used. For roadway structures and slope stabilization, pipe underdrains are to be used as required.
- D. In the design of the pipe underdrain system, consideration shall be given to the type of pipe used, the filter material, and the surrounding soils that are to be drained in order to avoid clogging and achieve adequate hydraulic capacity.
- E. The design and construction of all subsurface drainage systems shall be reviewed and approved by the Safety-Service Director.

(10) Downspout drain lines.

- A. Downspout drain lines may be installed into the storm sewer drainage system. The downspout drain lines should empty into the

nearest catch basin or manhole to prevent excessive pipe sizes for the downspout drain lines.

- B. A six-inch pipe shall be the minimum size for the collector line.
- C. The design and construction of the downspout drain lines shall be reviewed and approved by the Safety-Service Director.
- D. Roof drains and sump pumps shall be tied into drains back of the curb connected to the storm sewer system, or if impractical where the lot slopes to the rear and a drainage swale, storm sewer, or other outlet method is available, it may be used if approved. All connection into the existing storm sewer shall be inspected and approved by the Safety-Service Director.
- E. Under no circumstances shall any storm drainage system, downspout drain line, or footer drain be allowed to empty into a sanitary sewer.
- F. Each lot shall be provided with at least one connection to the storm sewer system.

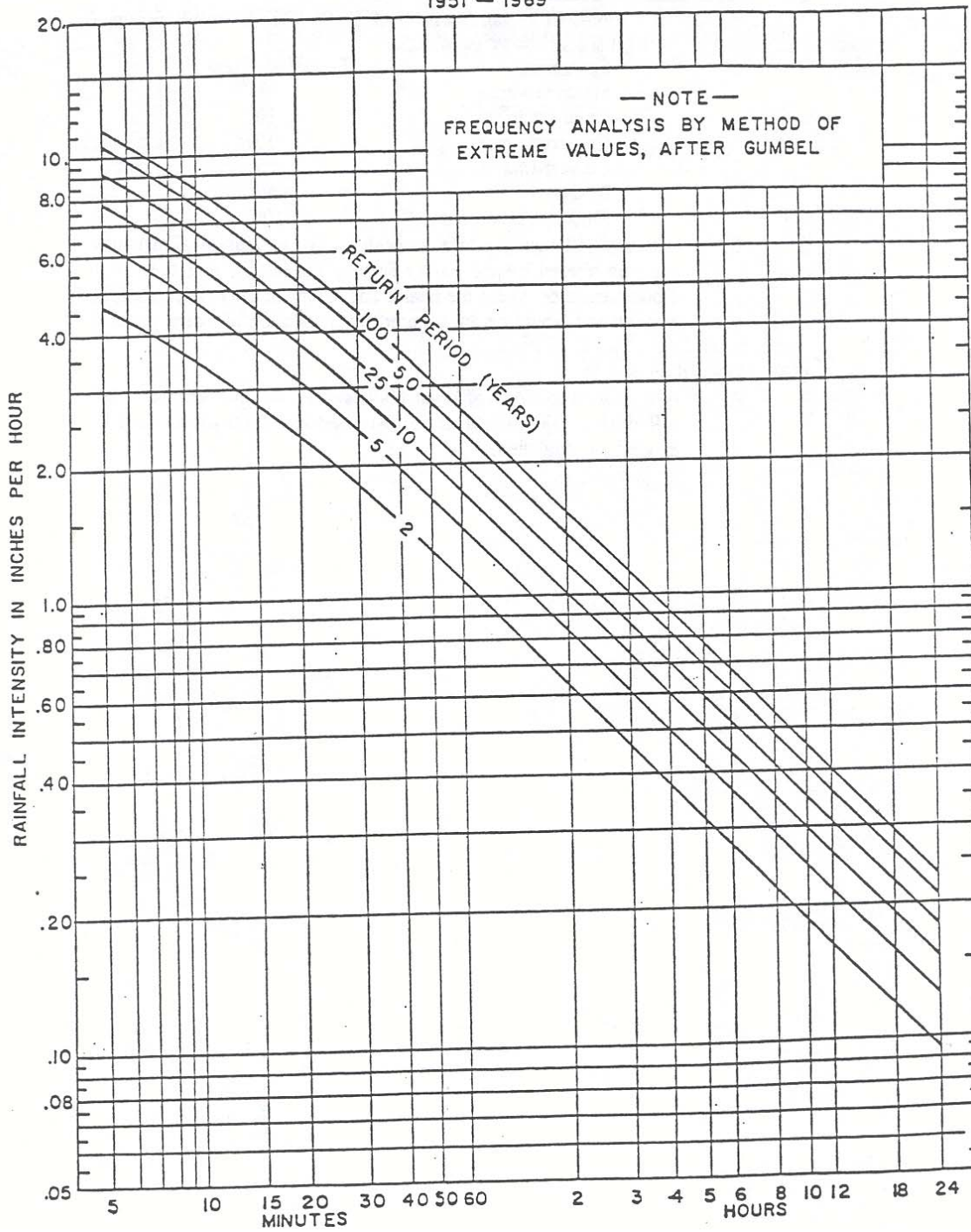
(11) Hydrologic design.

- A. All calculations for the design rate of runoff (Q) shall be submitted for review and approval of the Safety-Service Director.
- B. The rational method: $Q = CIA$
Where: Q = Runoff (cubic feet per second)
C = Runoff coefficient
I = Intensity of rainfall (inches per hour)
A = Tributary area (acres)
Shall normally be an acceptable method for computing the design rate of runoff for tributary areas of less than 200 acres.
- C. The ASCE Manual 137 - "Design and Construction of Sanitary and Storm Sewers" shall serve as a guideline for determining runoff coefficients for use in the rational formula.
- D. Table 4, "Rainfall Intensity and Time of Concentration" shall be used in determining the intensity of rainfall.
- E. For tributary areas over 200 acres the "Floods in Ohio - Magnitude and Intensity" Bulletin by the Ohio Department of Natural Resources or the Soil Conservation Service method may be used in computing the design rate of runoff.

RAINFALL INTENSITY AND TIME OF CONCENTRATION

AKRON - CANTON AIRPORT

1951 - 1969



- (12) Design frequency; structures.
 A. The minimum design frequencies to be considered for drainage structures shall be as follows:

<u>Structures</u>	<u>Frequency (years)</u>
Storm sewers	5
Open ditch	10
Culvert (minor)	10
Culvert (major)	25
Bridges	50
Flood plain structure	100

- B. The design frequency to be considered for an individual structure may be altered by the Safety-Service Director where there is a flood hazard or where the health and safety of the residents of the subdivision would be endangered by inundation of storm water.
- (13) Open ditches.
 A. The minimum slope of open ditches shall be one percent (1%). All ditches, slopes and areas disturbed by construction shall be seeded and mulched.
 B. Ditch linings shall be installed as follows:
- | <u>Type of Cover</u> | <u>Allowable Velocity (ft./second)</u> |
|---|--|
| Seeded lining | 0 - 3 |
| Sodded lining | 3 - 5 |
| Lining to be approved
by Safety-Service Director | Above 5 |
- C. The minimum dimensional requirements for open ditches shall be a two-foot bottom width, one and one-half foot depth, with back slopes graded to a four to one slope unless otherwise approved by the Safety-Service Director.
 D. All open ditches outside of the normal right-of-way shall be protected with a minimum twenty-foot drainage easement.
 E. The easement shall be shown on the final plat and the construction plans and it shall be labeled "Public Drainage Easement."

- (14) Seeding and mulching.
 A. All ditches, right-of-way areas, and areas disturbed during construction are to be seeded and mulched. The specifications in Table 5, developed in cooperation with the Soil Conservation Service, outline the minimum requirements that shall be followed for both rate of application and timetable for seeding.

TABLE 5 SPECIFICATION FOR SEEDING AND MULCHING

Kind of Seed	Seeding Dates	Per 1,000 Sq. Ft.	Per Acres
Tall fescue	March 1 to	1 pound	40 pounds
Annual rye grass	September 1	¼ pound	10 pounds
Red clover		¼ pound	10 pounds
Small grain	March 1 to	100 pounds	2 tons
Mulch	September 1	(3 bales)	(50 bales)
Fertilizer	March 1 to	25 pounds of	1000 pounds of
	September 1	10-10-10 or	10-10-10 or
		equivalent	equivalent
For seedings made from September 1 to March 1, add the following:			
Rye or wheat		3 pounds	2 bushels
Tall fescue		1 pound	40 pounds

- B. Seeding shall be done within two days after final grading or following seedbed preparation with a disc or other suitable equipment. On sloping land the final operation shall be done on the contour.
- C. Mulch shall be applied immediately after seeding and spread evenly over the entire area.
- D. Seed shall be applied uniformly with a cyclone seeder, drill, cultipacker seeder, or hydro seeder.

(15) Storm sewer design.

- A. Where a storm sewer system is to be constructed within a roadway where curbs are installed, catch basins with curb inlets shall be required in accordance with the design specifications and standard drawings of the State of Ohio Department of Transportation, Division of Transportation, Bureau of Location and Design.
- B. Where a storm sewer system is being constructed and there are no curbs being installed or the storm sewer system is being installed away from the roadway, there shall be a drainage swale over the storm sewer system draining to the inlet basin. All such inlet basins shall be spaced according to these regulations and of the type specified by O.D.O.T.

Design Criteria.

1. Computation of conduit design profile.
Computation of storm sewer lines shall be based on either Manning's or Kutter's Formula:

MANNING'S FORMULA

$$V = \frac{1.486}{n} R^{2/3} S^{1/2}$$

KUTTER'S FORMULA

$$V = \left[\frac{1.811}{n} + \frac{0.00281}{S} \right] (RS)^{1/2} \left[1 + \frac{\left[\frac{n}{R^{1/2}} \right] \left[\frac{0.00281}{41.67 + S} \right]}{\left[\frac{n}{R^{1/2}} \right] + \left[\frac{0.00281}{41.67 + S} \right]} \right]$$

WITH
WHERE

- Q = VA
- S = Slope (feet/feet)
- n = Friction factor
- Q = Discharge (cubic feet/second)
- R = Hydraulic radius (feet)
- V = Velocity (feet/second)
- A = Area (square feet)

2. All storm sewers shall be designed with hydraulic slopes sufficient to give a mean velocity of not less than three feet per second, when flowing full, based on a value of n = .015 for sewers up to and including twenty-seven inches; and n = .013 for sewers greater than twenty-seven inches for clay and concrete pipe.
3. All catch basins and manholes shall be precast or cast-in-place concrete and shall be constructed in accordance with the design specifications of O.D.O.T.
4. In the case of sewers where velocities exceed fifteen feet per second, special provisions shall be made to protect against erosion and displacement.
5. No storm sewer shall be less than twelve inches in diameter, and must be reinforced concrete or approved equal. (Ord. 32-00, Passed 6-5-00)
6. Single-family house spouting and footer drain connections shall not be less than four inches in diameter. Each lot shall be provided with at least one storm sewer connection.
7. When storm sewers are increased in size, or when smaller sewers join larger ones, the invert of the larger should be lowered to maintain the same energy gradient, i.e., by placing the crown of both sewers at the same elevation.
8. In no case shall a larger pipe empty into a smaller one, even though the capacity of the smaller pipe is greater, unless prior approval is given by the Safety-Service Director.

- (16) Appurtenances to storm drainage design.
- A. Storm sewers constructed within five feet, center to center, of sanitary sewers, shall have premium joints, i.e., meeting A.S.T.M. C433 or C425. This criteria shall apply to mains as well as connections.
 - B. Storm manhole joints shall be of the same type as its incoming sewer, premium joint sewer, A.S.T.M. C433 or C425, hence premium joint manhole A.S.T.M. C443.
 - C. Manholes or catch basins shall be installed at all changes of size, grade, and/or alignments.
 - D. Maximum spacing for manholes and catch basins shall be 300 feet, as measured horizontally along the centerline of the pipe.
 - E. The minimum cover for drainage pipes under pavement shall be twelve inches from the bottom of the pavement build-up to the crown of the pipe.
 - F. The minimum internal diameter of manholes shall be forty-eight inches.
 - G. Inlet catch basins shall be placed at all low points, and/or where required by the Safety-Service Director.
 - H. All trench loading calculations shall be submitted to the Safety-Service Director. The type of pipe selected shall be of the class, material, construction, and structure required to withstand the loads imposed.
 - I. Headwalls and endwalls shall be designed by a professional engineer registered in the State. Architectural treatment of headwalls and endwalls may be required.
 - J. The Safety-Service Director shall be consulted for design criteria for special manholes, noncircular sewers, or special structures.
 - K. The Safety-Service Director may require a special pipe material to be used for conditions such as alkalinity, excessive depth, polluted water or flat slopes.
 - L. All drainage pipes shall be laid and maintained to the required lines and grades as shown on the plans. Manholes shall be installed with the main line unless otherwise approved in writing by the Safety-Service Director.
 - M. All drainage pipes laid under pavement or within three feet of the edge of the pavement shall be bedded, backfilled with granular material and mechanically tamped.

(b) Intersection/Curb Radius. The minimum curb radius shall be twenty-five feet to face of curb. An area of clear vision at street intersection shall be provided.

(c) Driveways. The maximum grade on driveways shall not exceed twelve percent. Driveway pipe shall be reinforced concrete pipe or equal with a minimum diameter of twelve inches and a minimum length of twenty feet.

(d) Sidewalks. Sidewalks shall be composed of Portland cement concrete, and shall conform to Item 608 of the current Construction and Material Specifications, State of Ohio, Department of Transportation. The outside edge of sidewalks will normally be placed within one foot of the street right-of-way line.

(e) Guard Rail, Seeding, etc. The necessity for guard rail, seeding, type backfill or other special conditions shall be determined with the assistance of the Safety-Service Director or his representative before completion of the construction plans.

(f) Cul-de-sac/Boulevard. The paved area within the circular space at the termination of cul-de-sacs shall have a minimum outside radius of fifty-two feet and an inside radius of thirty-two feet.

(g) Street Name Signs. The owner shall furnish and erect street name signs at all street intersections within the subdivision. The minimum requirements for the signs shall be 0.08 inch, reflectorized, six inches by twenty-four inches, with three-inch letters erected on two-inch galvanized, wrought-iron steel posts driven thirty inches into the ground and extending eight feet aboveground.

(h) Public Utilities. Where public utilities, including telephone, gas, water, cable television, telecommunications, electric and sewers are available, provision shall be made for the installation of same before the street improvement is made, if feasible and possible. Laterals to gas, water, sewer, electric, and telecommunication lines shall be sufficient in number to accommodate all possible users and shall extend to or beyond the street lines. Gas, water and sewer lines shall have sufficient capacity to provide service for all users and for the users that may in the future be added to the extension of the lines.

All underground gas, telephone, cable television, telecommunications cable, and electric lines shall be so designed and constructed as to avoid conflict with the water and sewer lines, and the use of underground utilities is encouraged by the Commission.

All trenches under the paved areas shall be backfilled with sand, gravel or screenings. (See subsection (a) hereof.)

Poles for aboveground utilities shall be so located as to avoid conflict with the underground utilities. Space should be reserved as shown on the typical section. (Ord. 44-66. Passed 10-17-66.)

(i) Stormwater Runoff Control.

(1) Purpose. This criteria shall serve as the minimum requirements for control of stormwater runoff leaving developments. These regulations require controlling of the discharge rate of runoff prior to its release to off-site land.

(2) Design frequency.

- A. The peak rate of runoff from an area after development shall not exceed the peak rate of runoff from the same area before development for all storms from a two-year to a 100-year frequency.
- B. Determine the total volume of runoff from a two-year frequency storm occurring on the area before and after development.
- C. Using the percent increase in volume of runoff due to development, pick the critical storm from the following table:

The Percentage of Increase In Volume of Runoff is		The Critical Storm for Discharge Limitation Shall Be
equal to or greater than	and less than	
0	20	2 year
20	50	5 year
50	100	10 year
100	250	25 year
250	550	50 year
500	-	100 year

- D. The peak rate of runoff from the critical storm and all more frequent storms occurring on the development area shall not exceed the peak rate of runoff from a two year frequency storm occurring on the same area under predevelopment conditions. Storms of less frequent occurrence than the critical storm of the 100-year storm shall have peak runoff rates from equivalent size storms under predevelopment conditions.
- E. Storage volume does not have to be provided for runoff from off-site upstream areas. Upstream runoff waters should be conveyed through the site in accordance with the current conditions.

(3) Final stormwater runoff control plan. A final stormwater runoff control plan shall be submitted to the Safety-Service Director for final approval. The final plan shall be developed in accordance with currently accepted policy and criteria. The final plan shall include all the engineering data required in subsection (i)(2) hereof, and shall also include:

- A. The predevelopment rate of runoff and intensity for the various rainfall frequencies used in the analysis.
- B. The hydrologic data of the tributary area, including time of concentration, intensity and runoff coefficients.
- C. The location of the proposed detention facility in relation to the tributary area.

- D. The inflow hydrographs for the tributary area prior to development for the various rainfall frequencies used in the analysis outlined in subsection (i)(2) hereof.
- E. The critical storm hydrograph based on the criteria outlined in subsection (i)(2) hereof.
- F. The storm hydrographs of the less frequent occurrences to check peak runoff rates.
- G. The maximum permissible release rate from the detention facility (i.e., outflow hydrograph).
- H. The storage volume required for the detention facility.
- I. The design of a facility for release of stored water and for bypassing excess flows of exceedingly rare rainfalls that cannot be accommodated by the storage facility.
- J. The design for complete and timely drainage of stored runoff by sufficient basin slope and/or alternate release mechanisms without causing secondary problems.
- K. Type of detention facility (rooftop, parking lot, basin, etc.).
- L. Safety precautions.

- (4) Maintenance. The City shall assume responsibility for permanent maintenance of storm sewer lines, catch basins and manholes designed to control storm water runoff. Maintenance of storm water retention/detention structures, ditches and all other open water courses, shall be the responsibility of the individual property owner(s) upon whose property those structures, ditches and water courses are located. Easements shall be shown on the final plat and copies of special covenants shall be submitted with the final plat. Additionally, special covenants and easements shall be written into the title of individual lots thereby informing the property owner that portions of the lot shall be used for temporary water storage. (Amended Ord. A-05, Passed 2-7-05.)
- (5) Right of entry. Ownership and/or easements for the purpose of maintenance shall be granted to the City for access to all major stormwater control structures and facilities for which the City is assuming permanent maintenance responsibility.
- (6) Parking Area. When utilizing a parking area for detention facilities, the depth of water retained shall not exceed 10", and preferably 6".

(j) Erosion and Sedimentation Control.

- (1) Administration. The Director of Public Safety and Service, acting as the City of Orrville's duly authorized representative, shall administer these regulations. Staff of the Wayne SWCD shall be responsible for the determination of compliance with these regulations and shall, through the Director of Public Safety and Service, issue notices and orders as may be necessary.
- (2) Purpose. The Council of the City of Orrville adopts these Erosion and Sediment Control Rules to establish technically feasible and economically reasonable standards to achieve a level of management and conservation practices to abate soil erosion and degradation of the waters of the State by soil sediment, caused by non-agricultural earth-disturbing activities. Further these regulations intend to:
 - A. Permit development while keeping downstream flooding, erosion and sedimentation at existing levels.
 - B. Protect adjacent landowners from property loss due to sedimentation, erosion, and flooding.
 - C. Protect City ditches and culverts from loss of capacity due to siltation.
 - D. Protect water and habitat quality in all watercourses flowing throughout the City.
- (3) Scope. These regulations apply to all earth-disturbing activities performed within the City of Orrville, Wayne County, Ohio, being used or developed for non-agricultural commercial, industrial and residential purposes, including but not limited to, individual or multiple lots, subdivisions, multi-family developments, commercial and industrial developments, recreational projects, general clearing and grading projects, underground utilities, highways, building activities, and all other uses.

Activities exempt from the regulations:

- A. Activities producing agricultural crops or silvicultural operations or areas regulated by Ohio Agricultural Sediment Pollution Abatement Rules.
- B. Strip and Surface mining operations regulated under Revised Code 1513.01, 1514.01.
- C. An erosion and sediment control plan is not required for a public

highway, transportation, drainage improvement or maintenance thereof undertaken by a government agency or political subdivision in accordance with a statement of its Standard Sediment Control Policies that is approved by the Director of Public Safety and Service or the Chief of the ODNR Division of Soil and Water Conservation.

- (4) Variances to the Rules. The Orrville Planning Commission may grant a variance to these rules where the applicant for permit or permit holder can show that compliance with all or part of these regulations is not appropriate. A variance may be granted if the probability for off-site damage is not eminent because of exceptional topographic or other physical conditions of the development area. Adverse economic condition shall not be a valid reason to grant a variance.
- (5) Disclaimer of Liability. Neither submission of a plan under the provisions, nor compliance with provisions of these regulations, shall relieve any person from responsibility for damage to any person or property otherwise imposed by law.
- (6) Severability. If any clause, section, or provision of these regulations is declared invalid or unconstitutional by a court of competent jurisdiction, validity of the remainder shall not be affected thereby.
- (7) Interpretation of Terms and Words.
 - A. Words used in the present tense include the future tense and the singular includes the plural, unless the context clearly indicates the contrary.
 - B. The term “shall” is always mandatory and is not discretionary. The word “may” is permissive. The term “should” is permissive but indicates strong suggestion.
 - C. The word or term not interpreted or defined by this section shall be construed according to the rules of grammar and common usage so as to give these rules their most reasonable application.
- (8) Words and Terms Defined.

Acre: A unit of measure equaling 43,560 square feet.

Agricultural: Land or water devoted to the production of an agronomic crop.

Channel: A natural stream that conveys water. A ditch or channel excavated for the flow of water.

Cut and fill slope: A portion of land surface or area from which soil

material is excavated and/or filled forming a slope or embankment.

Development area: Any tract, lot or parcel of land which is in one ownership or is contiguous and has many owners, which is being used for non-agricultural, commercial, industrial, residential or institutional construction and is involved in earth-disturbing activity which will change existing runoff characteristics of the land.

Ditch: An open channel, either dug or natural, for the purpose of drainage or irrigation and has intermittent flow.

Dumping: Grading, pushing, piling, throwing, unloading or placing soil.

Earth-disturbing: Any grading, excavating, filling or other alteration of the earth's surface where natural or man-made ground cover is destroyed and which may result in or contribute to erosion and sediment pollution.

Erosion: The process by which the land surface is worn away by the action of water, wind, ice, or gravity.

Erosion and Sediment Control: Conservation measures used to control sediment pollution and includes structural practices, vegetative practices and management techniques.

Grading: Earth-disturbing activity such as excavation, stripping, cutting, filling, stockpiling or any combination thereof.

Grassed waterway: A broad or shallow natural watercourse or constructed channel, covered with erosion resistant grasses or similar vegetative cover, used to convey surface water.

Landslide: The rapid mass movement of soil and rock materials downhill under the influence of gravity.

Outfall: An area where water flows from a structure such as a conduit, storm sewer, improved channel or drain and the area immediately beyond the structure which is impacted by the velocity of flow in the structure.

Person: An individual, corporation, firm, trust, commission, board, public or private partnership, joint venture, agency, unincorporated association, municipal corporation, county or state agency, federal government, or any combination thereof.

Post-development: The conditions which exist following the completion of the earth-disturbing activity in terms of topography, vegetation, land use and rate, volume or direction of storm water runoff.

Runoff: The portion of rainfall, melted snow or irrigation water that flows across the ground surface and is eventually returned to a watercourse.

Sediment: The soils or other surface materials that can be transported or deposited from its site of origin by the action of wind, water, ice or gravity as a product of erosion (sedimentation).

Sediment basin: A barrier or other suitable retention structure built across an area of water flow to intercept runoff water and allow transported sediment to settle and be retained prior to the discharge into waters of the state.

Sloughing: A slip of downward movement of an extended layer of soil resulting from the undermining action of the water or the earth disturbing activity of construction.

Soil and Water Conservation District: An entity organized under Chapter 1515 of the Ohio Revised Code referring either to the Soil and Water Conservation Board of Supervisors or its designated employee, hereinafter referred to as the Wayne SWCD.

Soil stabilization: The instillation of vegetative and/or structural measures to establish a soil cover in order to reduce soil erosion by stormwater runoff, wind, ice, and gravity.

Stream: A body of water running or flowing on the earth's surface or channel in which such flow occurs. Flow may be seasonal or intermittent.

Ten (10) year frequency storm: A storm that is capable of producing rainfall expected to be equaled or exceeded on the average of once in 10 years. It may also be expressed as an exceedence probability with a 4 percent chance of being equaled or exceeded in any given year.

Watercourse: A definite channel with bed and banks within which concentrated water flows either continuously or intermittently.

Watershed: The total drainage area contributing runoff to a single point.

Water resources: All rivers, streams, lakes, ponds, wetlands, watercourses, drainage systems and all other bodies or accumulations of surface water, natural, artificial, that are situated wholly or partly within or border upon this state, or are within its jurisdiction, except those private waters that do not continue or effect a junction with natural surface waters.

- (9) No person shall cause or allow earth-disturbing activities, land clearing, grading, excavating or filling except in compliance with the requirements set forth in these regulations.
- (10) When a proposed earth-disturbing activity on land used or being developed, either wholly or partially, for residential, commercial, industrial, or other non-agricultural purposes consisting of five (5) or more contiguous acres of land owned by one person or operated as one development unit, the land owner shall prepare and file with the Wayne SWCD an Erosion and Sediment Control Plan and an application for permit.
- (11) Areas of earth-disturbing activity more than ten thousand (10,000) square feet and less than five (5) acres need not file an Erosion and Sediment Control Plan, and shall not be exempt from compliance with all other provisions of these rules and must file an application for permit with the Wayne SWCD prior to any earth-disturbing activity.
- (12) Areas earth-disturbing activity less than ten thousand (10,000) square feet need not file an Erosion and Sediment Control Plan or an application, but shall not be exempt from compliance with all provisions of these rules.
- (13) The submitted Erosion and Sediment Control Plan must be approved by the Wayne SWCD prior to the start of any earth-disturbing activity specified in Section 1163.07(j)(10). After a permit is obtained the landowner shall notify the Wayne SWCD no less than two (2) working days before the start of soil disturbing activity.
- (14) The Erosion Control Plan and permit application shall be submitted to the Wayne SWCD for review and no less than thirty (30) working days prior to any earth-disturbing activity at the proposed site.
- (15) The Erosion Control Plan shall contain drawings and narratives that explain practices used to prevent soil erosion during construction activities.
- (16) Erosion and sediment control practices used to satisfy the performance criteria of these rules shall meet the specifications provided in the current edition of ***Rainwater and Land Development Manual: Ohio's Standards for Storm Water Management and Land Development and Urban Stream Protection***, published by the Ohio Department of Natural Resources.
- (17) The Erosion and Sediment Control Plan shall be certified by a professional engineer registered in the state of Ohio.
- (18) The Erosion and Sediment Control Plan shall contain all documentation and permits levied by other natural resource agencies, including but not

limited to:

- A. Certified Wetland Delineations
- B. Permits for the US Army Corps of Engineers jurisdictional streams, wetlands, and waterways.
- C. Ohio Environmental Protection Agency (EPA) National Pollution Discharge Elimination System (NPDES) permit.
- D. Flood plain permit

(19) Earth-disturbing activity shall be coordinated with the Wayne SWCD as follows:

- A. The owner, developer, engineer, contractor or other principal parties of the proposed project shall meet with the Wayne SWCD for a pre-construction meeting no less than two (2) days prior to earth-disturbing activity at the site.
- B. The project engineer or designated contact person for all sites which have an approved Erosion and Sediment Control Plan, shall perform first inspection of erosion and sediment control devices to certify that the “as built” condition complies with the approved plan no less than two (2) working days prior to the start of the project. An inspection report shall be sent to the Wayne SWCD within five (5) working days from the date of inspection.
- C. All permitted activity shall be subject to monitoring by the Wayne SWCD. Site inspection by the Wayne SWCD shall record compliance with regulations.
- D. A pre-winter stabilization meeting shall be held if a soil disturbing activity is planned to stay active through the winter months. The owner, project engineer, contractor or developer shall meet with the Wayne SWCD prior to October 1, to plan winter sediment and erosion control.
- E. The permit holder will notify the Wayne SWCD in writing upon completion of construction and final stabilization has been achieved on all permitted earth-disturbing sites.

(20) Performance Standards. No person shall cause or allow earth-disturbing activities on a development area except in compliance with the criteria established by these regulations. Erosion and sediment control practices used to satisfy the performance standards and specifications shall meet the current edition of the *Rainwater and Land Development Manual* and as

defined by the Ohio Department of Natural Resources Division of Soil and Water Conservation and the Natural Resource Conservation Service and shall conform to the most current Ohio Environmental Protection Agency, Ohio Revised Code Chapter 6111, requirements. Erosion and Sediment Control practices shall comply with the following standards:

- A. Installing erosion and sediment perimeter controls shall be the first action of construction prior to any earth-disturbing activity. Perimeter controls will protect stream corridors, stream crossings, wetlands and site entrances. Perimeter controls shall protect all adjacent property from sediment runoff and damage. Perimeter controls may be sediment barriers, filters, dikes, sediment basins or a combination of such measures.
- B. Concentrated storm water runoff and runoff from bare soils shall pass through a sediment control device before leaving the earth-disturbing site boundaries. Runoff water shall be treated in a settling pond, sediment control structure or other approved sediment barrier.
- C. All earthen structures which include basins, water diversions, dams, work along streams and other site modifications shall be seeded and mulched within seven (7) days of installation.
- D. All critical areas within 50 feet of a stream or wetland shall be stabilized within two (2) days of disturbance if the area will remain inactive for fourteen (14) days or longer.
- E. A temporary stream crossing must be constructed if construction vehicles will be crossing regularly during construction. Construction activities shall not place soil into or close to the stream in such a manner that it may erode, slough or slip.
- F. Temporary soil stabilization shall occur within seven (7) days after rough grading if the area will remain inactive longer than thirty (30) days during earth-disturbing activities.
- G. Permanent soil stabilization shall occur seven (7) days after final grade has been reached. Permanent vegetation shall cover 80% of the soil surface and will be mature enough to survive winter conditions.
- H. Any soil which will be stockpiled must be stabilized or protected to prevent soil loss.
- I. Construction accesses shall control the transport of soil onto surfaces where runoff will not be controlled by sediment and

erosion control practices, such as public roads.

- J. No soil, rock, debris, or any other material shall be dumped or placed into such proximity that it may readily slough, slip or erode into a water resource. Unstable soils prone to slipping or landslides shall not be graded, excavated, filled or have loads imposed upon them unless the work is done in accordance with a professional engineer's recommendations to correct, eliminate or adequately address such problems.
- K. Cut and fill slopes shall be designed and constructed in a manner which will minimize erosion. Consideration shall be given to the length and the steepness of the slope, soil type, up-slope drainage area, groundwater conditions and slope stabilization.
- L. All channels and outfalls shall be constructed to withstand expected velocity of flow from a post-development, Ten (10) Year Frequency Storm without eroding.
- M. All storm sewer inlets accepting stormwater runoff from the development area shall be protected so sediment-laden water will not enter the storm water system without treatment.
- N. All temporary and permanent erosion and sediment control practices shall be designed and constructed to minimize maintenance requirements. Practices shall be maintained and repaired as needed to assure continued performance of their intended function. The Wayne SWCD must be notified as to who will be responsible for the maintenance of the permanent and temporary erosion and sediment control measures.
- O. All temporary sediment and erosion control measures shall be removed or permanently stabilized within thirty (30) days after final site stabilization is achieved or after the temporary practices are no longer needed.

(21) Administration of Permits.

- A. Application for a permit shall be submitted to the Wayne SWCD before approval of construction plans by the Director of Public Safety and Service in the case of subdivisions. All other earth-disturbing activities shall submit application for permit thirty (30)

days prior to construction.

- B. The Wayne SWCD shall review the application for permit and the proposed Sediment and Erosion Control Plan. If the Wayne SWCD finds the Plan in conformance with these regulations, a permit will be issued within fourteen (14) days. A plan rejected and returned for revision within fourteen (14) days after submittal will have a narrative report attached stating the deficiencies in the plan and the procedure for re-submitting the plan. After re-submittal of an Erosion and Sediment Control Plan the Wayne SWCD will have another fourteen (14) day review period to either approve or deny the proposed plan.
- C. Approved plans will be valid for one (1) year from the date of approval. Approved plans will be kept on file at the Wayne SWCD.
- D. The Wayne SWCD may charge fees necessary to cover the costs of administration of this section.

(22) Erosion and Sediment Control Plan Content. A plan will be approved and considered to be complete when it contains the following information:

- A. Construction Sequence—Schedule of major construction operations which will include installation of sediment erosion control measures, utilities installation, road construction, construction of structures, and final grading and stabilization.
- B. Contact information—Address and phone number of landowner, developer, project engineer, surveyor. The project name, project location, and project location map.
- C. Maintenance requirements of temporary sediment and erosion control measures—Phone number and address of contact person responsible for development area sediment and erosion control plan implementation.
- D. Existing Site Conditions—Existing drainage patterns, watershed acreage, location of subsurface drainage tiles, soil types and boundaries, ditches, springs, streams, lakes, vegetation, woodlands, agricultural fields, any downstream watercourses within 1000' of the project. Must be shown with maximum scale of 1" = 200' and 2' contour intervals.
- E. Project Description—Description of earth-disturbing activities, and area the total project will encompass.

- F. Grading Plan—Show limits of disturbance, areas of cut and fill, final contours, final drainage patterns, storm sewer inlets and outlets, permanent stormwater facilities and estimated building envelope for structures.
- G. Erosion and Sediment Control Plan—Perimeter controls which includes: location, type, and construction detail; sediment settling ponds and devices; buffers for streams, lakes, wetlands, ponds and watercourses; seeding rates, seeding mixtures, mulch types and rates.
- H. Verification of other agency permits including but not limited to: OEPA NPDES permit, Wetland permit and Flood plain permit.

(23) Inspection and Enforcement Actions. The Wayne SWCD may inspect any earth-disturbing activity in the City of Orrville, Ohio, to determine compliance with these regulations. The Wayne SWCD reserves the right to make on-site modifications of any Sediment and Erosion Control Plan if a deficiency is found in the plan. When it is determined there is a violation or the earth-disturbing activity is out of compliance with the Sediment and Erosion Control Plan the following procedure will be followed:

- 1. The inspector representing the Wayne SWCD shall notify the designated contact person for the site of the violation.
- 2. Seven (7) days following the inspection during which the violation was noted, the Wayne SWCD inspector shall re-inspect the site for compliance.
- 3. If the violation still exists the Wayne SWCD may issue by certified mail, an order to comply. The order shall describe the violation and work needed to comply. Seven (7) days will be given whereby the work will be completed and ready for inspection.
- 4. On the date specified the site will be re-inspected for compliance.
- 5. If the violation still exists the non-compliance shall be reported to the Director of Public Safety and Service. The Director of Public Safety and Service determines a violation exists they shall request in writing that the City's Law Director institute the appropriate action or proceedings at law or equity to restrain, correct, remove or prosecute such violation in compliance with these regulations.

(Ord. E-02, Passed 6-3-02.)

1163.08 MATERIALS AND CONSTRUCTION PROCEDURE.

(a) Maintenance Bond. After completion of the improvements required by these Subdivision Regulations, and after final inspection by the City which results in a finding that all installations meet the requirements of the approved plans, specifications and the provisions of these Regulations, the owner of the subdivision shall give to the City a maintenance bond in an amount equal to ten percent of the reasonable value of the improvements constructed, guaranteeing against defective workmanship or material incorporated in the project, or any displacement of or damage to the pavement, walks or other improvements for a period of twelve months from the time of the final inspection following the completion of the improvements. Such bond shall be executed by the owner and a surety or sureties satisfactory to the City's Finance Director and Law Director and be given to the City before approval of the final plat.

At the termination of such twelve-month maintenance period, the owner may apply to the City for an inspection of the various items of work. Before such inspection is made, the owner shall cause the sanitary sewer, storm sewers and the surface of the pavement and walks to be cleaned. When the City finds that any defects in workmanship or materials which might have developed within the twelve-month maintenance period have been properly corrected, they shall notify the owner that the bond may be released, and the City shall assume all maintenance thereafter.

If during such twelve-month maintenance period defects in workmanship or materials develop and are not corrected by the owner, then the bond shall be forfeited and the money shall be collected by the City and used to correct such defects. The money that is collected from the bond shall be used for no other purpose, and any remaining after the completion of the work shall be returned to the original depositor.

(b) Materials. Unless otherwise indicated on the plans, with advance approval of the Safety-Service Director, materials shall meet the requirement and shall be in accordance with the Material Details of the current volume of the Construction and Material Specifications, State of Ohio, Department of Transportation. The materials will be referred to by material grade or section number of the same current volume.

(c) Field Construction and Engineering. All items of work covered and stipulated in the construction plans, altered or extra work shall be performed in accordance with the lines, grades, typical cross sections and dimensions shown on the construction plans. All streets shall be graded the full width of the right of way. The setting and marking of all line, profile and grade stakes necessary for the proper prosecution of the work in accordance with the construction plans will be performed only by an authorized engineer or surveyor. Should any misunderstanding arise as to the intent or meaning of the construction plans, or as to the proper method of setting and marking of the construction stakes, the decision of the Safety-Service Director, in such cases, shall be final.

(d) Inspection. It shall be the duty of a City inspector to act on behalf of the City to see that all improvements are constructed in accordance with the plans and specifications therefore. No grading, paving or installation of any of the various utilities shall be done in the absence of a City Inspector. The presence of a City inspector on the job shall in no manner

relieve the owner from his responsibility to do the work in accordance with the approved plans and specifications therefore.

(e) Supervision. The owner shall have a competent superintendent on the job at all times when work is in progress. Such superintendent shall be qualified to supervise and coordinate various items of work efficiently. He shall be authorized by the owner to receive and fulfill instructions from the Safety-Service Director. Should any person be considered by the Safety-Service Director to be disorderly or incompetent at his work; he shall, upon notice from the Safety-Service Director, be discharged and not employed again without the Safety-Service Director's permission.

(f) Grading. All streets shall be graded to the full width of the dedicated right of way in accordance with the typical cross section, and to the approved grade indicated on the profile therefore. In fill areas, all sod and topsoil shall be removed and the fill built up in layers not exceeding eight inches in thickness, loose measurement. Each layer shall be compacted to the proper density as determined by the engineer. After the pavement and walks have been completed, the unpaved area shall be properly shaped and raked free of stone and debris, and shall be left in a suitable manner for seeding.

(g) Paving. The paving of streets shall be done in accordance with the Orrville Standard Drawings entitled "Typical Paving Sections, City of Orrville, Ohio." (These drawings are part of this Ordinance and are on file with the Safety-Service Director.) The construction of these pavements shall be done in accordance with the latest Construction and Material Specification, State of Ohio, Department of Transportation. Drawings are herewith made a part of these Subdivision Regulations.

- (1) Paved streets. The owner or subdivider shall construct paved streets within the subdivision according to the following specifications: the design and thickness of which are to be determined by the Safety-Service Director, and shall be constructed of permanent type pavement with integral curbs constructed on a properly prepared subgrade. The gradient shall be less than ten percent (10%), except where due to unusual terrain the Safety-Service Director agrees to an increase.
- (2) Cost of improvement. The entire cost of construction, preparing drawings and specifications, including engineering supervision and overhead together with the inspection of construction, shall be borne by the developer.

(h) Sidewalks.

- (1) In the event the owner or subdivider constructs sidewalks within the subdivision, they shall be constructed of Portland cement concrete, a minimum of four feet in width and in accordance with Chapter 903.
- (2) The entire cost of construction, preparing drawings and specifications, including engineering supervision and overhead, together with the inspection of construction, shall be borne by the developer.

(i) Street Lighting. The owner or subdivider shall install street lights within the subdivision according to the City of Orrville's Electric Division Rules and Regulations.

(j) Acceptance of Work. When the work has been completed, the Safety-Service Director or his representative shall be notified. The improvement shall then be inspected by the Safety-Service Director or his representative.

If the work is found to be satisfactory and done in accordance with the specifications, and such street is in good repair, the Safety-Service Director will make such recommendations to Council for final acceptance of the improvement.

1163.09 UTILITY ENGINEERING.

(a) Public Water and Sewer Disposal System. In the event a public water supply and a public sewage disposal system can reasonably be made available by the extension and construction of water mains and sanitary sewers, the developer shall be required to provide such utilities, as follows:

- (1) Sanitary sewer system. The developer shall construct, at his expense, all necessary sanitary sewers, including manholes, house laterals and all other related appurtenances and incidentals, according to the "Water and Sewer Pipe Standards" of the Department of Public Utilities and Chapter 913 of the Codified Ordinances of the City of Orrville. All sewer mains shall be a minimum of eight inches in internal diameter. The pipe shall be bedded in, and backfilled to a depth of twelve inches above the barrel of the pipe with sand or pea gravel. The sanitary sewer lateral pipe shall be a minimum of six inches in internal diameter. The lateral pipe shall be bedded in, and backfilled to a depth of twelve inches above the barrel of the pipe with sand or pea gravel. All trenches under paved areas shall be backfilled to the finished grade with sand or gravel. All sanitary sewer pipe shall be installed with a minimum of four feet of cover.

Public sanitary sewer mains may need to be larger than the minimum to allow for future growth beyond the proposed development. Sizing of main sewers shall be determined by the Department. All costs for the sewer improvements, including necessary oversizing shall be borne by the developer. Sanitary sewer mains shall be extended to the far property line, at the expense of the developer, to accommodate future sewer main extensions.

No plat showing the subdivision of a parcel of land into two or more smaller parcels and intended for residential, commercial or industrial structures which are so located as to require individual sewage disposal systems shall be approved by City authorities until investigated and approved by the County Health Commissioner or his authorized agent. No building permit shall be issued until a percolation test has been submitted to and approved by the County Health Commissioner or his authorized

agent and all such sewage disposal systems shall be installed in accordance with State and County or local board of health requirements.

Any such parcel of land proposed for residential building shall contain not less than one acre of land.

The sanitary sewer system design shall be in accordance with the "Recommended Standards for Wastewater Facilities", latest revision, by the Great Lakes-Upper Mississippi Board of State Public Health and Environmental Manager, and the requirements of Ohio EPA.

A map must be provided delineating the contributing area in acres to the sanitary sewer system. All sanitary sewer manholes shall be numbered, consistent with the numbering on the improvement plans. A copy of the location map may be used for this purpose.

Whenever practical, sanitary sewer mains shall be laid within or adjacent to the right-of-way.

Sanitary sewer service shall be provided to each lot. Multifamily residences such as condominiums consisting of individually owned units shall have separate sewer service laterals.

Gravity sanitary sewers are to be provided whenever possible. Sewage system lift stations must be specifically approved by the Director of Utilities.

Basement sewer service is to be provided whenever practical. If basement service is not to be provided, it shall be noted on the plat, preliminary and construction plans and must be specifically approved by the Director of Utilities.

Roof drains, foundation drains, and other clean or surface water connections to the sanitary sewer are prohibited.

Manhole tops shall be built or subsequently adjusted to meet surface grades established for the development. Cost of this work is to be included in the price bid for the various sewer items.

All sanitary sewer mains installed using PVC pipe shall be cleaned by a high velocity sewer cleaner at the expense of the developer. Such pipe shall be deflection tested by pulling an approved mandrel equal in diameter to 95% of the pipe diameter through the pipe after the pipe has been backfilled for at least 30 days. Rerounding of failed pipe may be performed only if less than 10 percent of the tested sewers fail the mandrel test. All failed pipe in excess of 10% shall be replaced and warranted an additional year.

Existing sanitary sewer flows shall be maintained at all times at the expense of the developer.

The developer shall furnish all material, equipment, and labor to make connections to existing manholes. The sewer pipe to manhole connections for all sanitary sewers shall be flexible and watertight. All holes shall be neatly cored. The sewer pipe barrel at the springline shall not extend more than one inch beyond the inside face of the manhole. To maintain flexibility in the connection, a one inch space shall be left between the end of the pipe inside the manhole and the concrete channel; this space shall be filled with a waterproof flexible joint filler. Any metal that is used shall be Type 300 Series Stainless Steel. The connection may be any of the following types:

- A. Rubber sleeve with stainless steel banding
 - 1. Kor-N-Seal as manufactured by National Pollution Control Systems, Inc.
 - 2. Lock Joint Flexible Manhole Sleeve as manufactured by Interpace Corporation.
 - 3. Or equal as approved by the Director of Utilities.

- B. Rubber gasket compression
 - 1. Press Wedge II as manufactured by Press-Seal Gasket Corporation.
 - 2. Dura Seal III as manufactured by Dura Tech, Inc.
 - 3. Link-Seal as manufactured by Thunderline Corporation.
 - 4. Or equal as approved by the Director of Utilities.

- (2) Water System. The developer, at his expense, shall construct all necessary water lines, including valves, fittings, hydrants and house services and other appurtenances, according to the "Water and Sewer Pipe Standards" and/or "General Rules and Regulations of the Water Department". The water mains shall be a minimum of eight inches in internal diameter in residential areas and 12 inches in diameter in commercial and industrial areas. Six inch mains may be used in prior developed areas if looped with an existing network and approved by the Director of Utilities. All water mains shall have a minimum of four feet of cover and shall be bedded in, and backfilled to a minimum of twelve inches above the barrel of the pipe with sand or pea gravel. All trenches under paved areas shall be backfilled to the finished grade with sand or gravel. All water services shall be a minimum of one inch internal diameter and have a minimum of four feet of cover. Hydrants shall conform to the "Water and Sewer Pipe Standards" of the Department and shall be installed at a maximum spacing of 500 feet in residential areas and 300 feet in all other areas, except that a hydrant shall be installed at the end of all lines.

Sizing of water mains to accommodate future growth shall be determined by the Department. All costs for water improvements, including necessary oversizing shall be borne by the developer. Water mains shall be extended to the far property line, at the expense of the developer, to accommodate future water main extensions.

Wet taps to the main line for house services shall be made by the City Utilities Department and a charge for the same shall be made to the owner at the rate established by the Public Utilities Board. Dry taps may be made by the developer at the time the main is installed. All trenches under the paved areas shall be backfilled to the finish grade with sand, gravel or screenings or shall be backfilled in six-inch layers and properly compacted to ninety-five percent (95%) at maximum density, unless the pavement shall not be installed within three years, in which case the puddling process may be used.

All public water mains shall be a minimum of Class 52 cement lined ductile cast iron pipe.

Service connections shall be provided for each lot and to each unit of a multifamily residence and shall be installed a minimum of two feet past the property line at the time the water main is installed.

Wherever practical, public water mains shall be laid within the public right-of-way between the edge of the pavement and the sidewalk.

Phasing of water mains may not be permitted as all new water mains shall be looped whenever practical.

Water mains shall be laid at least 10 feet horizontally from any existing or proposed sanitary sewers or force main. The distance shall be measured edge to edge. In cases where it is not practical to maintain a 10 foot separation, the Utilities may allow deviation on a case by case basis as approved by the Director of Utilities, provided that the bottom of the water main is at least 18 inches above the top of the sewer.

Water mains crossing sanitary sewers shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. At crossings, one full length of water pipe should be located so both joints will be as far from the sewer as possible. Special structural support for the water and sewer pipes may be required. At all crossings of sewers and other utilities, compacted granular material is required between the deeper and shallower pipe.

Fire hydrants are required at the end of all water mains.

Fire hydrants shall be AWWA Standard C-502 latest revision thereof and shall conform to Orrville specification, Mueller No. A-423 Centurion, and be installed with a watch valve.

Fire hydrants shall be placed three (3) feet on center from the back of the curb, whenever possible, or a minimum of 8 feet behind the edge of pavement in uncurbed streets.

Valves shall be placed outside of pavement whenever practical. In general, two valves shall be placed at every main line tee, and three valves shall be placed at every main line cross. The maximum distance between main line valves shall be 1,000 feet.

All tees, bends, plugs, and hydrants shall be provided with reaction blocking, tie rods, or joints designed to prevent movement. Tie rods shall be a minimum 3/4 diameter and coated with epoxy or two coats of bitumastic material equal to Inertol No. 49 Thick.

If the top of the operating nut for any valve is more than 36" below the finished grade, an extension stem shall be provided to place the operating nut between 24" and 36" of the finished grade.

The Utilities "standard" water meter shall be provided by the Utilities at the expense of the developer or customer.

Water meters shall be installed inside proposed structures unless a meter pit is approved by the Director of Utilities.

The developer shall thoroughly clean, test, disinfect and flush the water mains prior to being put into service and before acceptance by the City.

The subdivider shall provide the Director of Utilities with all required Ohio EPA permits and approvals and pay all Ohio EPA review fees.

(b) Electric and Telecommunication System. In the event an electrical and telecommunication system can reasonably be made available by the extension and construction of transmission lines, the developer shall be required to provide for these utilities as follows:

- (1) Electrical System. All developers shall make known to and consult with the Utility as to their intent and requirements of power prior to any construction. All installations must follow the National Electric Code and the City of Orrville's Electric Division General Rules and Regulations.

Detailed construction plans shall be furnished to the Utility in sufficient time to allow engineering, material acquisition and work schedules to be made.

When the developer desires that the subdivision be served by means of an underground system of distribution, in lieu of the overhead construction that is normally installed by the Utility, the Utility shall furnish and install all primary electrical cable, transformers, conduits, poles and make all connections. Trenching and backfilling shall be done by the developer to Utility specifications and applicable codes. The cost difference between overhead and underground installation will be paid by the developer.

When a subdivision is phased, all phases must conform to the initial phase's installation of overhead or underground construction. Any deviation from the above must be approved by the Director of Utilities.

Pad mount transformers must be located within 30 feet of the roadway for maintenance access by the Utility.

Installation of the electric system will not commence until the road grade bedding has been completed.

Electrical and telecommunication conduit crossings shall be in place prior to construction of streets.

Before any work is commenced, the Utility reserves the right to require an Aid-to-Construction payment equal to the difference between Utility's estimated cost to provide overhead distribution system and the cost of the underground system to service to each phase.

Before any work is done by the Utility, a contract and a blanket Right-of-Way Easement for the electric and Telecommunications system shall be executed between the owner of the subdivision tract and the Utility. Said contract and blanket Right-of-Way Easement shall constitute a covenant that shall be a part of and run concurrently with each and every subsequent deed transfer covering the sale of any land within the subdivision.

2. Telecommunication System. Telecommunication system components will be installed with and at the same time as the electric system construction.

All subdivisions must provide conduit crossings for streets to handle telecommunication system wiring.

All new subdivisions must supply blanket easements from the nearest transformer to the meter location for telecommunications wiring and electrical service wiring.

(c) Cost of Improvement. The entire cost of construction and preparing drawings and specifications, including engineering supervision and overhead together with the inspection of construction, shall be borne by the developer.

(d) Rules and Regulations of the County Sanitary Engineer. All applicable rules and regulations of the City or Wayne County Sanitary Engineer's Department shall be complied with in respect to the design, installation and specifications for water lines. (Ord. 29-81. Passed 2-16-81.)

1163.10 SURVEY MONUMENTS.

(a) Location. A monument meeting the requirements of Ohio Administrative Code Chapter 4733, Section 4733-37 - Minimum Standards for Boundary Surveys in the State of Ohio, shall be placed at each lot corner and at each change in direction of the boundary, and two such monuments shall also be placed at each street and intersection on the right-of-way line and at the beginning and end of curves on both sides of the street on the right-of-way line.

(b) Certification. Before final acceptance of the street improvements by the City, the subdivider or developer shall, through a registered surveyor, certify to the City that all required monuments are in place or that those removed during construction have been replaced (see subsection (a) hereof). (Ord. 44-66. Passed 10-17-66.)

1163.11 HEALTH REQUIREMENTS.

Health requirements shall be in accordance with the regulations adopted by the Board of Health of the Wayne County General Health District. Such health requirements shall be administered by and enforced by the Wayne County General Health District. (Ord. 44-66. Passed 10-17-66.)

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