

ENGINEERING CODE FOR SUBDIVISION DEVELOPMENT

A large, light gray silhouette of the state of Ohio is centered on the page. A small rectangular box is superimposed on the map, highlighting the location of Wayne County in the eastern part of the state.

Wayne
County,
Ohio

Wayne County Engineer's Office
3151 West Old Lincoln Way
Wooster, Ohio 44691
2009 Edition (330) 287-5500



WAYNE COUNTY ENGINEERING
CODE FOR SUBDIVISION
DEVELOPMENT
(AS AMENDED 2009)

BOARD OF COUNTY COMMISSIONERS
WAYNE COUNTY, OHIO

SCOTT S. WIGGAM, PRESIDENT

ANN M. OBRECHT JIM CARMICHAEL

COUNTY ENGINEER'S OFFICE

ROGER K. TERRILL, P.E., P.S.
WAYNE COUNTY ENGINEER

3151 W. OLD LINCOLN WAY

WOOSTER, OHIO 44691

ADOPTED JANUARY, 1979
REVISED MAY 11, 1983
AMENDED FEBRUARY 18, 2004
AMENDED FEBRUARY 15, 2007
AMENDED JULY 8, 2009

ACKNOWLEDGMENT

ORIGINAL PUBLICATION, JANUARY 1979:

The original document, which was the forerunner of this edition was prepared under the direction of William D. McCullough. (County Engineer 1977-1980) by his staff members, David L. Miller, Assistant County Engineer, Stephen P. Topovski, Hydraulics Engineer and Robert L. Murray, Assistant Sanitary Engineer. Significant input was provided by other Governmental Officials, Consulting Engineers and Surveyors, Contractors, Developers, Real Estate Companies and Financial Institutions.

REVISED EDITION, APRIL 1983:

Under the direction of Richard J. McDaid, County Engineer, a committee, consisting of Jeff Sparr, Hydraulics Engineer, Lauren Mellinger, Right-of-Way Specialist, Gary Covert, Construction Inspector, and Chester Six, Engineering Technician, reviewed the original text and prepared recommendations for updating. While proposing no major change in engineering requirements, the text has been re-arranged to some extent for ease of reading with minor updating consistent with current practice.

AMENDED EDITION, FEBRUARY 2004:

With the initial guidance of the Board of Wayne County Commissioners, a committee consisting of Roger K. Terrill, Wayne County Engineer, Betsy C. Sparr, Wayne County Planning Director, Beverly Shaw, Wayne County Treasurer, and Robert Burrige, Assistant Wayne County Prosecutor, began meeting periodically in 2002 to discuss the need for a general revision of the *Engineering Code's* "Article V- Guaranties Required of Developer" to coordinate a standard development agreement and procedures with those of the current *Subdivision Regulations, Including Comprehensive Plan Policies, for Wayne County, Ohio*. A proposed set of revisions to the *Code* were presented to the commissioners in December, 2003. The Board of Wayne County Commissioners held a public hearing on the revisions on February 11, 2004 and subsequently amended the *Code* on February 18, 2004 under Resolution No. 2004-110.

AMENDED EDITION, FEBRUARY 2007:

This revision was initiated in December 2005 as part of an effort by the Wayne County Planning Department's Technical Review Committee to coordinate provisions in the *Engineering Code* with those of recently adopted documents used by other Wayne County agencies in the review, inspection and approval of proposed major subdivisions in unincorporated areas. The primary focus of this review was sections on preliminary plan reviews, developer agreements, sediment and erosion control, stormwater management, road construction, and surveying standards. In addition, the Wayne County Engineer received a request from the Township Trustees during their March 24, 2006 quarterly meeting that the Wayne County Engineer should support a change in the *Engineering Code* which would give the Trustees the option of specifying standard pavement designs for new subdivision roads within their townships, which would complement their road maintenance operations. In response, the Wayne County Engineer distributed questionnaires to the Township Trustees and then shared the findings with the Township Trustees, the Board of Wayne County Commissioners, and the Wayne County Planning Commission in a letter dated June 19, 2006. The proposed revisions were then included in the *Engineering Code* and presented to the Board. The Board held a public hearing on all of the proposed revisions to the *Engineering Code* on January 10, 2007 and subsequently the Board adopted the amended *Engineering Code* on February 15, 2007 under Resolution No. 2007-102.

AMENDED EDITION, July 2009:

The Engineering Code was amended to reflect the adoption of the Wayne County Storm Water Management Regulations by the Board of Wayne County Commissioners in May 2009.

ABSTRACT

The development process is such that many people may be adversely affected from small areas of land undergoing development. Developments that have not been properly engineered may cause considerable economic damage to individuals, the general public and governmental agencies involved.

This *Code* has been provided in hopes that it will encourage technically sound, properly engineered and imaginatively designed land development. The *Code* is written to permit the future development of land in Wayne County in keeping with the expressed desires and objectives of the citizens of Wayne County and the policies established by the elected officials of Wayne County.

Resolution

No. 2009-364

Board of Wayne County Commissioners
Jim Carmichael Ann M. Obrecht Scott S. Wiggam

Adopted: July 8, 2009

Subject: Adoption of Revisions to Engineering Code for Subdivision
Development for Wayne County

It was moved by Mrs. Obrecht and seconded by Mr. Carmichael that the following resolution be adopted:

WHEREAS, the Wayne County Engineer has recommended revisions to the Engineering Code for Subdivision Development for Wayne County; and

WHEREAS, the Wayne County Planning Department has reviewed and recommends the revisions; and

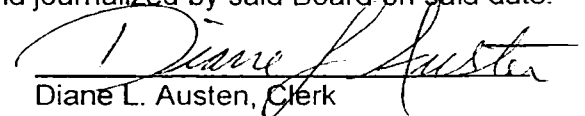
WHEREAS, the Board of Wayne County Commissioners held a Public Hearing on July 1, 2009 pursuant to Section 711.10 of the Ohio Revised Code with proper notice;

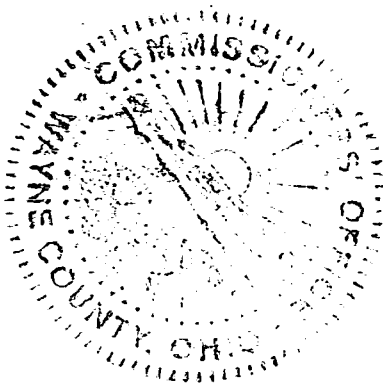
NOW, THEREFORE, BE IT RESOLVED by the Board of Wayne County Commissioners that the revisions as recommended for Wayne County Engineering Code Subdivision Development are hereby approved with an effective date of June 19, 2009.

The vote is as follows: Jim Carmichael yea Ann M. Obrecht yea Scott S. Wiggam yea

CERTIFICATE

I, Diane L. Austen, Clerk of the Board of County Commissioners, Wayne County, Ohio, hereby certify that the above is a true and correct copy of the resolution adopted and journalized by said Board on said date.


Diane L. Austen, Clerk



Resolution

No. 2007-102

Board of Wayne County Commissioners

Cheryl A. Noah Ann M. Obrecht Scott S. Wiggam

Adopted: February 15, 2007

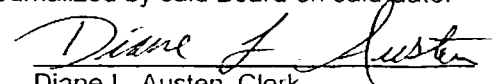
Subject: Adoption of Amendments to the Engineering Code for Subdivision Development

It was moved by Mr. Wiggam and seconded by Mrs. Obrecht that the current proposed amendments to the Engineering Code for Subdivision Development be approved.

The vote is as follows: Cheryl A. Noah yea Ann M. Obrecht yea Scott S. Wiggam yea

CERTIFICATE

I, Diane L. Austen, Clerk of the Board of County Commissioners, Wayne County, Ohio, hereby certify that the above is a true and correct copy of the resolution adopted and journalized by said Board on said date.


Diane L. Austen, Clerk



Resolution No. 2004-110
Board of Wayne County Commissioners
Cheryl A. Noah Ann M. Obrecht Fred Cannon

Adopted: February 18, 2004

Subject: Adoption of Amendments to the Engineering Code for Subdivision Development

It was moved by Mrs. Obrecht and seconded by Mrs. Noah that the current proposed amendments to the Engineering Code for Subdivision Development be approved.

On roll call, the vote was as follows:

Cheryl A. Noah yea Ann M. Obrecht yea Fred Cannon Absent

CERTIFICATE

I, Diane L. Austen, Clerk of the Board of County Commissioners, Wayne County, Ohio, hereby certify that the above is a true and correct copy of the resolution as adopted by said Board under said date.



Diane L. Austen, Clerk

Resolution

No. 83-229

Wayne County Commissioners

Distribution

Adopted May 11, 1983
REVISION TO WAYNE COUNTY ENGINEERING CODE
Subject FOR SUBDIVISION DEVELOPMENT

Commissioners

Ed E. Acker
Wayne L. Hostetler
Mark W. Altier

It was moved by Mr. Wayne L. Hostetler and seconded by
Mr. Mark W. Altier that the following resolution be adopted:

WHEREAS, in the interest of preserving the public health and general welfare of the present and future residents of Wayne County, this Board officially adopted the "Wayne County Engineering Code for Subdivision Development" effective January 1, 1979, consisting of rules, regulations, procedures and general specifications for the installation and construction of improvements as shown on plats and plans as required by Section of the Ohio Revised Code, and

WHEREAS, pursuant to the instruction of the Board of County Commissioners, the Wayne County Engineer has prepared and recommended a revision of the "Wayne County Engineering Code for Subdivision Development", and

WHEREAS, after due consideration of the recommendations of the Wayne County Engineer and consideration of comments received at the required public hearing, under Section 711.101 of the Ohio Revised Code, this Board is of the opinion that said revision of the "Wayne County Engineering Code for Subdivision Development" is reasonable and should be adopted, and


NOW, THEREFORE, BE IT RESOLVED by this Board of County Commissioners in and for Wayne County, Ohio, that this revision of the "Wayne County Engineering Code for Subdivision Development" be made a part of the resolution and is hereby adopted as of June 1, 1983 to govern the installation and construction of improvements within the jurisdiction of the County.

On roll call, the vote was as follows:

Mr. Acker Yes Mr. Hostetler Yes Mr. Altier Yes

CERTIFICATE

I, Donald K. Pond, Administrator/Clerk of the Board of County Commissioners, hereby certify that the foregoing is a true and correct copy of a resolution adopted by the Board of County Commissioners of Wayne County, and appears upon the official records of the Board.



RESOLUTION OF THE BOARD OF COUNTY COMMISSIONERS
OF WAYNE COUNTY ADOPTING RULES, REGULATIONS,
PROCEDURES AND GENERAL SPECIFICATIONS FOR THE
INSTALLATION AND CONSTRUCTION OF IMPROVEMENTS
AS SHOWN ON PLATS AND PLANS AS REQUIRED BY
CHAPTER 711 OF THE OHIO REVISED CODE.

WHEREAS, in the interest of preserving the public health and
general welfare of the present and future residents of Wayne County, it
is necessary in the opinion of this Board to adopt rules, regulations,
procedures and general specifications for the installation and construction
of improvements as shown on Plats and Plans as required by Section 711 of
the Ohio Revised Code, and

WHEREAS, pursuant to the instructions of the Board of County
Commissioners, the Wayne County Engineer has prepared and recommended the
adoption of said "Code For Subdivision Development", and

WHEREAS, after due consideration of the recommendations of the
Wayne County Engineer and consideration of comments received at the required
public hearing, under Section 711.101 of the Ohio Revised Code, this Board
is of the opinion that said "Code For Subdivision Development" is reasonable
and should be adopted, and

NOW, THEREFORE BE IT RESOLVED, by this Board of County Commissioners
in and for Wayne County, Ohio, that these rules, regulations and general
specifications separately bound be made a part of this resolution and
same to govern the installation and construction of improvements within
subdivision development from January 1, 1979, forward, and

BE IT FURTHER RESOLVED, that said resolutions shall be certified
to the Recorder of Wayne County before December 31, 1978.

Mr. Wayne L. Hostetler moved the adoption of the foregoing
resolution. Mr. Clifford Emerson seconded the motion.

On a roll call vote the result was as follows:

Mr. Acker Yes Mr. Hostetler Yes Mr. Emerson Yes

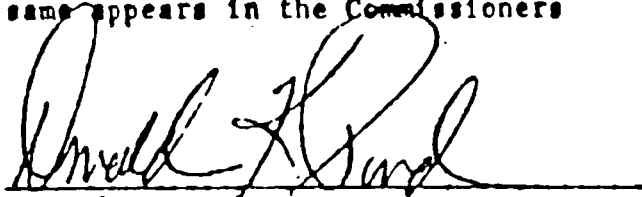
John E. Acker
President
Clifford Emerson
Wayne L. Hostetler
BOARD OF WAYNE COUNTY COMMISSIONERS

Attest: Donald K. Clark
Clerk/Administrator

Passed: December 13, 1978 1978

C E R T I F I C A T I O N

I, Donald K. Pond, Clerk for the Board of County Commissioners of Wayne County, Ohio, do hereby certify that the attached is a true and correct copy of the Resolution adopted by said Board under said date, and as same appears in the Commissioners Journal, Volume WW.

A handwritten signature in cursive script, appearing to read "Donald K. Pond", written over a horizontal line.

Donald K. Pond
Clerk

EFFECTIVE DATE: These regulations were adopted by the Board of County Commissioners on December 13, 1978 and were certified to the Recorder of Wayne County on December 27, 1978 (Vol. 12 P. 173). These regulations shall govern the installation and construction of improvements within subdivision development from January 1, 1979 forward.

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ARTICLE I

GENERAL CONSIDERATION

100 - PURPOSE

The purpose of these regulations, as adopted by the Wayne County Board of Commissioners, hereinafter referred to as the "County Commissioners"; is to provide standard specifications for subdivision development in Wayne County, Ohio, which will define the minimum requirements for surveying, engineering, and construction.

There shall be no variance from these regulations without the written consent of the County Commissioners, based on the recommendations of the Wayne County Engineer, hereinafter referred to as the "County Engineer."

101 - TITLE

These regulations shall be known, and may be cited and referred to as the Wayne County Engineering Code for Subdivision Development, and shall hereinafter be referred to as "these regulations."

102 - AUTHORITY

The County Commissioners, by virtue of "Chapter 711" of the Ohio Revised Code, are authorized to adopt regulations, governing the construction of improvements within their jurisdiction.

103 - JURISDICTION

These regulations shall be applicable to all subdivisions of land hereinafter, which are located within the unincorporated areas of Wayne County. They shall not be applicable to subdivisions of land, which are within three (3) miles of a city's corporation limits if the city has exercised extra-territorial jurisdiction under Section 711.09 of the Ohio Revised Code.

104 - INTERPRETATION OF TEXT

These regulations shall be interpreted and applied as minimum requirements. They are not intended to interfere with, or annul any easements, covenants, or other agreements between parties, unless they violate these regulations. When two specific provisions of these regulations conflict, or a provision of these regulations conflict with any other lawfully adopted regulation, ordinance, or resolution, the most restrictive, or that imposing the higher standard shall apply.

105 - ADMINISTRATION

These regulations shall be administered by the Wayne County Engineer for the County Commissioners.

106 - ADOPTION

These regulations shall become effective after the necessary public hearings, adoption by the County Commissioners, and certification to the Wayne County Recorder in accordance with "Chapter 711" of the Ohio Revised Code.

107 - AMENDMENTS

These regulations may be amended in accordance with the same procedure as stated in Section 106.

108 - SEPARABILITY

The invalidation of any clause, sentence paragraph, or section of these regulations by a court of competent jurisdiction shall not affect the validity of the remainder of these regulations in whole or in part.

109 - INTERPRETATION OF TERMS

For the purpose of these regulations, certain terms or words used herein shall be interpreted as follows:

- 1) The word "person" includes a firm, association, partnership, trust, company, or corporation, as well as an individual.
- 2) The present tense includes the future tense, the singular number includes the plural, and the masculine includes the feminine.
- 3) The word "shall" is a mandatory requirement, the word "may" is a permissive requirement, and the word "should" is a preferred requirement.

110 - DEFINITIONS

Administrative Officer: The staff person so designated by the Wayne County Commissioners as being responsible for processing and coordinating subdivision proposals on their behalf.

AASHTO: American Association of State Highway and Transportation Officials.

ADT: Average Daily Traffic.

ASTM: American Society for Testing and Materials.

Bond: Any form of security, including; a cash deposit, surety bond, collateral, property, or instrument of credit in an amount and form satisfactory to the governing body. All bonds shall be approved by the governing body wherever a bond is required by these regulations.

CBR: The California Bearing Ratio is the ratio of the resistance to penetration developed by a subgrade soil to that developed by a specimen of standard crushed rock base material. The resistance of the crushed rock under standardized conditions is well established. The objective of a CBR factor is to show the relative resistance of the subgrade material, so that proposed structures can be designed, knowing the soil bearing capacity.

Covenant: A written promise or pledge.

Developer: Any individual, subdivider, firm, association, trust, or any other legal entity commencing proceedings under these regulations to affect a subdivision of land for himself or for another.

Development Agreement: An agreement between a developer and the Wayne County Commissioners which outlines the public improvements to be constructed, the necessary approvals the developer must receive from county and other agencies, and commitments made by the developer in the installation of these improvements.

Easement: Authorization granted by a property owner to another for a specific use of a designated portion of property.

Engineer: Any person registered to practice Professional Engineering by the State Board of Registration as specified in Section 4733.14 of the Ohio Revised Code.

Escrow: A deposit of cash from the developer to the Wayne County Commissioners in an account managed by the County Treasurer.

Improvements: Street paving or resurfacing, curbs, gutters, sidewalks, water lines, sanitary sewer lines, storm sewer lines, catch basins, flood control and drainage facilities and other related matters normally associated with the development of public infrastructure for subdivisions.

Major Subdivision: Any subdivisions not classified as minor subdivisions, including but not limited to subdivisions of more than five (5) lots or any size subdivision requiring any new road or extension of the local governmental facilities, or the creation of any public improvements.

Minor Subdivision: A division of a parcel of land that does not require a plat to be approved by a planning authority, according to Section 711.131 of the Ohio Revised Code. Also known as a "lot split".

Monuments: Permanent concrete, iron, or steel markers used to establish definitely all lines of a plat of a subdivision, including all lot corners, boundary line corners, and points of change in street alignment.

NRCS: Natural Resources Conservation Service.

ODOT: Ohio Department of Transportation.

ORC: Ohio Revised Code.

Performance Agreement: An agreement by a developer with the County for the amount of the estimated construction cost and interim maintenance, guarantying the completion of physical improvements, according to plans and specifications within the time prescribed by the development agreement.

Plat: A map of a survey of a tract or parcel of land.

Public Utility: Any person, firm, corporation, governmental agency, or board having a public utility commission permit to furnish to the public, under regulations: electricity, gas, sewer, water, telephone, transportation, steam, or other similar public services.

Storm Water Management Regulations: Most recent version of Storm Water Management Regulations, Wayne County, Ohio, as adopted by the Wayne County Commissioners.

Street, Private: A right-of-way or easement, in private ownership, which provides vehicular and pedestrian access to adjacent properties.

Street, Public: A right-of-way, dedicated, and accepted, for public use, which provides vehicular and pedestrian access to adjacent properties.

Subdivision: The definition of subdivision, as given in Section 711.001 of the Ohio Revised Code, is as follows:

Either of the following:

(1) The division of any parcel of land shown as a unit or as contiguous units on the last preceding general tax list and duplicate of real and public utility property, into two or more parcels, sites, or lots, any one of which is less than five acres for the purpose, whether immediate or future, of transfer of ownership, provided, however, that the following are exempt:

(a) A division or partition of land into parcels of more than five acres not involving any new streets or easements of access;

(b) The sale or exchange of parcels between adjoining lot owners, where that sale or exchange does not create additional building sites;

(c) If the planning authority adopts a rule in accordance with section 711.133 of the Revised Code that exempts from division (B)(1) of this section any parcel of land that is four acres or more, parcels in the size range delineated in that rule.

(2) The improvement of one or more parcels of land for residential, commercial, or industrial structures or groups of structures involving the division or allocation of land for the opening, widening, or extension of any public or private street or streets, except private streets serving industrial structures, or involving the division or allocation of land as open spaces for common use by owners, occupants, or leaseholders or as easements for the extension and maintenance of public or private sewer, water, storm drainage, or other similar facilities.

Subdivision Coordinator: An individual tasked with oversight of meeting the day-to-day administrative requirements of the Minor Subdivision section of the Subdivision Regulations, designated by the Administrative Officer.

Subdivision Regulations: Most recent version of The Subdivision Regulations Including Comprehensive Plan Policies, Wayne County, Ohio, as adopted by the Wayne County Commissioners for the Wayne County Planning Commission.

Surveyor: Any person registered to practice surveying by the State Board of Registration as specified in Section 4733.14 of the Ohio Revised Code.

Title Guaranty: A title, the validity of which is insured by an abstract, title or indemnity company. Also, called insured title.

TRC: Technical Review Committee of the Wayne County Planning Department; a committee responsible for the informal, preliminary review of development plans per the Subdivision Regulations.

USGS: United States Geological Survey.

Variance: A variance is a modification of the relevant regulations, which may be granted to an applicant: where owing to conditions peculiar to a property, enforcement of the regulations would result in unnecessary and undue hardship. The modification shall not be contrary to public interest or a result of the action of the applicant.

Water Management Engineer: The registered professional engineer employed or appointed by the Wayne County Commissioners and his or her agents, experienced in the practice of storm water management analysis and design, sediment and erosion control, and National Pollutant Discharge Elimination System (NPDES) permit compliance, who administers and/or enforces the Storm Water Management Regulations.

WCPC: Wayne County Planning Commission.

III - REVIEW

To keep up with changes in technology and the development process; it may be necessary to have periodic reviews of this text.

Requests for reviews shall be made through the County Commissioners with the reason for the review being so stated. Any such request will be reviewed by the County Commissioners and if they feel it necessary, they will conduct a public hearing.

ARTICLE II

GENERAL PLAN PROCEDURE

200 - PURPOSE

The necessary procedure, which a developer must follow for approval of plans, is outlined within this article.

201 - MINOR SUBDIVISION PROCEDURE

Normally, the County Engineer will not review plans for minor subdivisions. However, if an engineering issue is encountered during the Concept Review Phase, the Subdivision Coordinator shall request the County Engineer's assistance. The County Engineer, Subdivision Coordinator, other TRC representatives, and developer may meet to address the issue, as needed.

202 - MAJOR SUBDIVISION PROCEDURE *

For approval of major subdivisions, the developer shall proceed as outlined below.

- 1) Concept Plan: The developer shall submit sketches and other general information on the proposal to the Administrative Officer for review and comment by the County Engineer and others. During the Concept Review Phase, the developer should meet with the County Engineer, so that both parties can become familiar with existing conditions affecting the proposed improvements.
- 2) Preliminary Plan (Plat): The developer should prepare a preliminary plan (plat) and additional information as required by the Administrative Officer for distribution and review by the County Engineer and others. The preliminary plat package should contain sufficient information to enable the County Engineer to determine if the proposed improvements will be satisfactory and will serve the public interest. Also, if the preliminary plat package is prepared properly, it should insure the developer that he will not expend excessive monies without some assurance that his final plans will be approved.
- 3) Final Construction Plans: The developer shall submit a full set of construction drawings and also, all supporting data, computations, and documents, of the proposed subdivision to the County Engineer for review, as outlined in "Article III." The County Engineer, then shall determine if the proposed improvements fully comply with the current Wayne County design standards.

****See the WCPC Subdivision Regulations for information on policies and procedures governing the creation or alteration of parcels in Wayne County.***

203 - REVIEW FEES

The County Engineer's Office shall be reimbursed by the developer for costs incurred during the review of preliminary and construction plans. The rate charged by the County Engineer shall be the actual cost plus fifty percent (50%) to cover items such as employee benefits, office expenses, etc..

The payment for these fees shall be in increments of five hundred dollars (\$500.00) payable to the Wayne County Engineer. The County Engineer shall maintain an itemized statement of time and costs incurred, and shall return any unexpended amounts to the developer upon completion of the maintenance agreement period.

ARTICLE III

CONSTRUCTION DRAWINGS

300 - PURPOSE

A general format is specified for the construction drawings to facilitate their review by all involved parties.

301 - PROCEDURE

The procedural steps, which are necessary for the approval of the construction drawings, are given below:

- Step 1) Only after the approval of the Preliminary Plan by the Wayne County Planning Commission, may the developer submit construction drawings for review by the County Engineer. The developer shall comply with all minimum standards of the Engineering Code and the Storm Water Management Regulations in effect on the date that construction plans are approved by the County Engineer, unless the developer is granted a variance from those standards by the Board of Commissioners.
- Step 2) Two (2) complete sets of the construction drawings and one (1) set of all computations shall be submitted to the County Engineer.
- Step 3) One (1) complete set of all support data and documents as deemed necessary shall be submitted to the County Engineer.
- Step 4) The County Engineer shall notify the Township Trustees and other agencies that the plans are available for review at the County Engineer's Office. All agencies reviewing the plans shall make their review and send comments to the County Engineer within ten (10) days from the date of transmission.
- Step 5) The County Engineer shall make every attempt to initially review the plans within thirty (30) calendar days after receiving them and may arrange a meeting with the developer's engineer to go over them.
- Step 6) In cases where only slight modifications to the drawings are needed, the County Engineer shall notify the developer and the design engineer of those items granted conditional approval, and those items which require correction.
- Step 7) If extensive modifications are required, the drawings will be rejected by written notice of such actions, including reference to the design standards violated. After these corrections are made, the drawings may be resubmitted until approval is obtained.
- Step 8) After all construction is completed; the developer's engineer shall supply to the County Engineer a set of "as built" drawings or the County Engineer shall prepare the drawings at the developer's cost.

302 - GENERAL

All construction drawings shall be prepared in ink on 22" x 34" sheets of reproducible drafting film.

303 - TITLE SHEET

A title sheet shall be used when the construction drawings require more than three (3) sheets. A title block shall be placed in the lower right corner and the Professional Engineer responsible for the preparation of the drawings shall affix his registration stamp to the title sheet. Also the title sheet shall contain the following information, unless waived by the County Engineer:

- 1) Location Map: The location map shall indicate the allotment's location within the County and shall be at a scale of not less than 1" = 5,280' unless approved otherwise by the County Engineer.
- 2) Typical Section: A typical section shall be included to show design elements of roadway construction. Typical sections for county design purposes are shown in Figures 6-1 through 6-3.
- 3) Approval Block: An area shall be prepared for the signature of both the developer and the County Engineer approving the plans.
- 4) General and Special Notes: A set of general notes shall be included, as well as those provided by the County Engineer covering special situations, which are not covered under the general specifications.
- 5) General Summary: A table of "Estimated Quantities" shall be included, which shall include a column for "Item No.," "Description," "Quantity," and "Unit" in that order.
- 6) Index: An index shall be provided to facilitate referencing if the construction drawings exceed ten (10) pages.

304 - TOPOGRAPHIC & DRAINAGE SHEET

A topographic map of the subdivision area, to a scale of 1" = 100' for areas over six (6) acres and 1" = 50' for areas less than six (6) acres, shall be provided with the proposed subdivision and drainage system shown. Topographic and drainage details which shall be indicated on this sheet are given below, unless waived by the County Engineer:

- 1) Topographic Details:
 - A. All elevations shall be to mean sea level datum.
 - B. Contour intervals should be two (2) foot if the slope of the ground is ten

percent (10%) or less; and five (5) foot if the slope is greater than ten percent (10%). Contours shall be field-established.

- C. All lot numbers and proposed or existing utilities, such as: storm and sanitary sewers, water lines, gas lines, sewage treatment plants, etc., shall be indicated.
- D. Surface features, such as; woods, crops, pasture, buildings, etc., shall be indicated.

2) Drainage Details:

- A. The drainage area for each pipe or drainage structure shall be outlined and have the acreage shown. To show the entire drainage area an additional sheet may be required. If this additional sheet is needed, existing aerial mapping or USGS mapping will be sufficient.
- B. Drive pipe sizes shall be noted for each lot in table form or shown on each lot.

305 - SPECIAL CONSTRUCTION DRAWINGS

This sheet shall contain detail drawings of special construction items not otherwise included in the plans, as required by the County Engineer. Utility casing pipe, as approved by the County Engineer, shall be shown on the construction plans for road crossings as determined by all utility companies to be installed by the developer's contractor.

306 - PLAN AND PROFILE SHEETS

All roads within and fronting the subdivision shall be shown on standard plan and profile sheets. Requirements of the plan and profile sheets are as follows, as required by the County Engineer:

1) Normal Scale:

- A. Use one (1) inch equals fifty (50) feet for the horizontal scale and one (1) inch equals five (5) feet for the vertical scale on rural type subdivisions.
- B. Use one (1) inch equals twenty (20) feet for the horizontal scale and one (1) inch equals five (5) feet for the vertical scale on urban type subdivisions.

2) Plan Items:

- A. Road centerline, stationing, right-of-way line, curve data, road names, subplot lines, drainage, utility, access, and temporary construction easements, and lot numbers.
- B. Pavement, curbs, gutters, storm and sanitary sewer structures, bridges, culverts, guardrail and other proposed or existing utilities.

- C. Topographic features within the general area and any obstruction within the right-of-way or construction area.
- D. Benchmarks with description and elevation.

3) Profile Items:

- A. Centerline stationing, original ground profile grade on the centerline, and proposed profile grade, for all existing and proposed roads, including those proposed for later phases of development, as required by the County Engineer.
- B. Vertical curve data and sight distance data.
- C. Storm and sanitary sewer structures, bridges, culverts, and other proposed or existing utilities.

307 - CROSS SECTION SHEETS

Cross sections shall be provided as follows:

- 1) Scale: Both horizontal and vertical scales shall be one (1) inch equals five (5) feet.
- 2) Location: A cross section shall be shown for all proposed public roads and all existing roads within or fronting the subdivision, as required by the County Engineer at each fifty (50) foot station and other needed locations, and shall show the existing ground line dashed, with the proposed section drawn solid.
- 3) Data: Identify station at centerline and provide proposed finished grade and existing elevations.
- 4) Drainage Sections: If a detail culvert sheet is not used, then a cross section at any proposed culvert or other structure shall be shown. This detail shall include the elevation at both the inlet and outlet, and also the type and size of the structure.
- 5) Earthwork Table: At the right side of each cross section sheet there shall be a column for end areas in square feet and volumes in cubic yards for both cut and fill. Each sheet shall have a summation of volumes at the bottom.
- 6) Seeding: At the left side of each cross section sheet there shall be a column showing the width in feet and seeding area in square yards and a column showing the summation of all areas.

308 - DRAINAGE STRUCTURES

Detailed drawings of all bridges and other drainage structures (other than standard culvert pipe without headwalls) shall be provided in the construction drawings, as required by the County Engineer.

ARTICLE IV

GUARANTIES REQUIRED OF DEVELOPER

400 - PURPOSE

The purpose of this article is to inform the developer of the agreements, guaranties and insurances required during the construction and maintenance period.

401 - LIABILITY INSURANCE

The developer shall carry such insurance as is deemed necessary by the County Commissioners and in a form approved by the County Prosecutor to indemnify and save harmless the County from any and all liability arising from conditions, which may arise or grow out of the construction and maintenance of any improvements. This insurance shall in no case be allowed to expire earlier than the effective period of the required Maintenance Guaranty. A copy of said insurance policy shall remain with the Clerk of the County Commissioners at all times.

402 – DEVELOPMENT AGREEMENT/ CONSTRUCTION AUTHORIZATION

A development agreement must be submitted by the developer for all major subdivision projects. The Developer shall not submit a Development Agreement to the County Engineer until all preliminary approvals have been accepted by the appropriate county agencies, including the County Engineer's approval of all necessary construction drawings. The developer shall not proceed with any construction work on the proposed major subdivision until notified in writing by the Clerk to the Board of County Commissioners that the Board of Commissioners have accepted the Development Agreement.

403 - CONSTRUCTION PERFORMANCE GUARANTY

All public improvements shall be constructed prior to the granting of the final plat approval by the County Commissioners, unless a guaranty is permitted pursuant to the Subdivision Regulations of Wayne County, Ohio. In lieu of actual installation or completion of the required improvements, a Performance Guaranty Agreement shall be furnished as consideration to the County Commissioners for the approval of a final plat.

Said "Performance Guaranty Agreement - Public Improvements" shall be required as follows:

- a. Type of Guaranty: Cash Escrow
- b. Amount of Guaranty: The financial guaranty shall be in an amount equal to one hundred thirty percent (130%) of the County Engineer's total estimate of cost (or one-hundred thirty percent (130%) of the cost for remaining construction). The funds in the escrow shall be used for the sole purpose of guarantying all costs associated with the construction and maintenance of the public improvements and shall be assigned to the Board of County Commissioners.

- c. Term of Guaranty: The financial guaranty shall be made for a minimum period of one (1) year from the date of the Performance Guaranty Agreement. The County Commissioners may extend the guaranty term if they determine that weather conditions or other unusual factors have caused a delay.
- d. Reduction of Guaranty: The Developer may request a partial release of the funds in escrow upon partial completion of the improvements to the satisfaction of the County Engineer. Upon recommendation by the County Engineer, the County Commissioners may authorize the County Treasurer to disburse a portion of the escrow deposit back to the Developer. The amount retained after the partial releases from escrow shall not be less than 25% of the original financial guaranty.
- e. Release of Guaranty: Upon the written request of the developer, the County Engineer shall make an inspection of the subdivision to check if all improvements have been completed and that they are satisfactory. If said improvements, as specified in these regulations, have been completed to the satisfaction of the County Engineer, the County Engineer shall report to the County Commissioners of said approval of improvements and shall recommend to the County Commissioners the amount and terms of the required Maintenance Guaranty Agreement. The County Engineer shall promptly make an inspection of the improvements two (2) months prior to the end of the terms of the agreement, at which time the County Engineer shall notify the Developer of any unfinished improvements. The Developer shall have one (1) month after the notification to complete the improvements to the satisfaction of the Engineer. If the improvements have not been completed within this one (1) month period, then the County Engineer shall notify the Commissioners and the Prosecutor that the improvements have not been satisfactorily completed. Upon receipt of this notification, the Commissioners may take action to acquire the funds from the Performance Guaranty to complete the improvements.
- f. Maintenance During Construction: The developer shall be responsible for the maintenance and repair of the improvements installed and for providing the services necessary to guaranty access to all the occupied lots, including snow removal. Any damage to any public improvements within any existing or proposed public right of way is the responsibility of the Developer.

404 - MAINTENANCE GUARANTY AGREEMENT - PUBLIC IMPROVEMENTS
AFTER IMPROVEMENT APPROVAL

At the time of the County Engineer's acceptance of the improvements within the subdivision as satisfactorily completed, the developer shall furnish the County Commissioners a maintenance guaranty for a period for the minimum of eighteen (18) months, but may be greater as determined by the County Engineer, to insure that the improvements will hold up under actual conditions, to guaranty the maintenance of the improvements, and to provide the service necessary to guaranty access to all occupied lots, including snow removal.

Said "Maintenance Guaranty Agreement - Public Improvements" shall be required as follows:

- A. Type of Guaranty: Cash Escrow
- B. Amount of Guaranty: The financial guaranty shall be in an amount as determined by the County Engineer. The amount shall be determined by taking into consideration soil condition, topography features, and current costs of labor and materials. The minimum amount of the guaranty shall not be for less than fifteen percent (15%), but may be greater as determined by the County Engineer, of the original financial guaranty as approved by the County Engineer for all improvements at the prevailing construction rate.
- C. Term of Guaranty: This financial guaranty shall be made for a minimum period of eighteen (18) months, which in the opinion of the County Commissioners is a just and fair time to determine that all improvements are adequate and constructed satisfactorily. If necessary, the County Engineer shall recommend a period greater than eighteen (18) months.
- D. Items Covered Under Guaranty: The developer shall be responsible for routine maintenance and repair of any damages that are a result of faulty construction, work by utility companies, or any other reason. Said maintenance shall also include snow removal, mowing, ditch cleaning, etc. Prior to the end of the maintenance period, all improvements shall be restored to the satisfaction of the County Engineer.
- E. Release of Maintenance Guaranty: The County Engineer shall promptly make an inspection of the improvements two (2) months prior to the end of the terms of the agreement, at which time the County Engineer shall notify the Developer of any needed repairs. The Developer shall have one (1) month after the notification to complete the repairs to the satisfaction of the Engineer. If the repairs have not been completed within this one (1) month period, then the County Engineer shall notify the Commissioners and the Prosecutor that the repairs have not been satisfactorily completed. Upon this notification, the Commissioners may take action to acquire the funds from the Maintenance Guaranty to complete the repairs. The funds in said escrow shall be used for the sole purpose of guarantying the maintenance of the improvements and shall be assigned to the County Commissioners. The County Commissioners agree that any funds remaining on deposit in the Performance Escrow for this subdivision may be used toward the Maintenance Guaranty; and the County Treasurer will release any funds, including any interest earned, above and beyond the required maintenance amount to the Developer. If the developer fails to perform any required maintenance to the complete satisfaction of the County Engineer, the County Treasurer shall make funds available to the County Engineer to complete the required maintenance.

405 - PUBLIC ACCEPTANCE

The Developer and the County Commissioners agree that the subdivision improvements, referred to by this agreement, shall remain private and only become public upon the recommendation of acceptance by the County Engineer of the improvements at the end of the terms of the Maintenance Guaranty and the approval and acceptance by resolution of the Board of County Commissioners.

DEVELOPMENT AGREEMENT*

This agreement executed on this _____ day of _____, 200__ by and between _____, hereinafter called "Developer", pertaining to a proposed subdivision known as _____, located in _____ Township, Section, _____, _____ Quarter. said proposed subdivision plat to be duly recorded with the County Recorder of Wayne County and the Board of Commissioners of Wayne County, Ohio, hereinafter called "the County Commissioners", is governed by the following conditions and considerations, to wit:

1. Developer is to construct, install or otherwise make all improvements shown and set forth to be done and performed in accordance with the engineering drawings and specifications, which are herein incorporated by reference and are part of this agreement. subject to the inspection and approval of the County Engineer. Private improvements including but not limited to natural gas, electric, telephone, cable television, yard enclosures and drive pipes are the responsibility of the Developer and shall be completed according to the plans referenced herein. Any damage to any public improvements within any existing or proposed public rights- of- way is the responsibility of the Developer. The Developer shall also be responsible for the proper installation of all private drainage and access improvements carried out within existing or proposed public road rights- of- ways and public easements as approved by the County Engineer.
2. Developer shall not transfer any lot, parcel or tract therefrom nor proceed with any construction work on the proposed subdivision including grading that may affect the arrangements of streets or other public improvements until compliance with the Technical Review Committee requirements according to the Wayne County Subdivision Regulations. Developer will obtain the approval of the Wayne County Engineer for all engineering documents before beginning construction and the County Engineer will neither inspect nor approve any work until the Development Agreement has been so approved by the Board of Commissioners.
3. Developer shall notify the County Engineer forty-eight (48) hours before the start of any construction for inspection purposes in accordance with the Engineering Code for Subdivision Development.

If guaranty is allowed, Paragraph 4 shall be included in this agreement:

4. Developer shall furnish a performance guaranty in the form of an escrow deposit with the County Treasurer along with an approved Performance Guaranty Agreement.

If guaranty is NOT allowed, Paragraph 4 shall be deleted and the following paragraphs renumbered accordingly.

5. Developer shall hold Wayne County free and harmless from any and all claims for damages of every nature arising or growing out of the construction of such improvements.

6. Developer shall begin work within 180 days from the date of this Development Agreement and all improvements are to be completed and accepted within a period of two years after the signing of this agreement. The completion of all improvements within a period of two years after the signing of this agreement is hereby fixed by Wayne County as a reasonable period, but an extension of time may be granted if approved by the County Commissioners. The County Engineer's recommendation for approval to the County Commissioners is contingent upon the Developer's successful completion of the improvements as required by the County Engineer.
7. Developer shall furnish such insurance as is deemed necessary by the County Commissioners which shall indemnify and save harmless the County from any and all liability arising by reason of conditions which may arise or grow out of the construction or installation of said improvements. The insurance shall be of such duration as determined by the County Commissioners, but shall in no case be allowed to expire earlier than the effective period of any performance or maintenance guaranty. A copy of the insurance policy shall remain at all times with the Clerk of the County Commissioners.
8. Developer shall furnish a Title Guaranty, naming the County Commissioners as an additional insured and including certification from the County Treasurer that property taxes are current, to the County Commissioners to guaranty title of the lands to be dedicated as indicated on the final plat.
9. Upon completion of all improvements, the Developer shall forward to the County Engineer a written request for approval of said improvements.
10. At the time of the approval of the improvements within the subdivision by the County Engineer, the Developer shall furnish the County Commissioners an approved Maintenance Guaranty Agreement, according to the Engineering Code for Subdivision Development.
11. At the time of approval of the improvements by the County Engineer, Developer shall provide the original construction drawings, on a reproducible media, which shall become the property of Wayne County and be on file in the office of the County Engineer.

12. Any notice, correspondence, inquiry or request permitted or required under this agreement shall be by certified mail, return receipt requested, and shall be complete upon mailing. All parties are obligated to give notice of any change of address. Any notice, correspondence, inquiry or request permitted or required shall be given as follows:

To the County Commissioners: The Board of Wayne County Commissioners
Wayne County Administration Building
428 West Liberty Street
Wooster, OH 44691
(330) 287-5400

To the County Engineer: Wayne County Engineer
3151 West Old Lincoln Way
Wooster, OH 44691
(330) 287-5500

To the Developer:

()

In Witness Whereof, the parties have hereunto set their hands as follows:

Developer

Developer

Commissioner

Commissioner

Commissioner

ATTEST:

Approved as to form

Wayne County Prosecuting Attorney

DOCUMENT REVIEWED AND APPROVED BY:

Wayne County Engineer

***All major subdivisions are required to submit a Development Agreement per Subdivision Regulations Section 204.04.**

PERFORMANCE GUARANTY AGREEMENT - PUBLIC IMPROVEMENTS*

This Agreement made and entered into pursuant to Chapter 711, Revised Code of Ohio, between, _____, hereinafter called "Developer", and the Board of Wayne County Commissioners, hereinafter called "the County Commissioners".

WHEREAS, the Developer has entered into a Development Agreement with the County Commissioners, dated _____ pertaining to a proposed subdivision known as _____ located in _____ Township, Wayne County, Ohio, and

WHEREAS, in furtherance of said Development Agreement said subdivision will be duly recorded with the County Recorder of Wayne County, Ohio on _____, and

WHEREAS, in furtherance of said Development Agreement Developer will be responsible for improvements associated with said proposed subdivision, and

WHEREAS, County Engineer has submitted an engineer's estimate for the total cost of subdivision improvements, attached hereto as Exhibit A, for said subdivision improvements in the amount of \$_____.

NOW THEREFORE, in consideration of the foregoing premises and to ensure the faithful performance of said Development Agreement, the Developer will undertake the following:

1. Developer shall deposit \$_____ in escrow with the Wayne County Treasurer to secure the performance of the construction and interim maintenance of the improvements associated with the subdivision. The escrow deposit shall include sufficient funds to cover 130% of Exhibit A (Total construction cost) or 130% of the County Engineer's estimate of cost for remaining construction and subsequent maintenance.
2. The funds in said escrow shall be used for the sole purpose of guarantying all costs associated with the construction and interim maintenance of the improvements and shall be assigned to the County Commissioners.
3. The Developer shall be free to select contractors and suppliers of Developer's own choosing.
4. Developer may request partial release of the funds in escrow upon partial completion of the improvements to the satisfaction of the County Engineer. Upon recommendation by the County Engineer, the County Commissioners may authorize the County Treasurer to disburse a portion of the escrow deposit back to the Developer. The amount retained after all partial releases shall not be less than 25% of the original financial guaranty (\$_____).

5. The County Engineer shall promptly make an inspection of the improvements two (2) months prior to the end of the terms of the agreement, at which time the County Engineer shall notify the Developer of any unfinished improvements. The Developer shall have one (1) month after the notification to complete the improvements to the satisfaction of the Engineer. If the improvements have not been completed within this one (1) month period, then the County Engineer shall notify the Commissioners and the Prosecutor that the improvements have not been satisfactorily completed. Upon receipt of this notification, the Commissioners may take action to acquire the funds from the Performance Guaranty to complete the improvements.
6. Upon completion of the improvements to the satisfaction of the County Engineer, the County Engineer shall recommend to the County Commissioners the amount and terms of the required Maintenance Guaranty Agreement, according to the requirements of the Engineering Code for Subdivision Development.
7. Upon County Engineer discovery of a breach of the Development Agreement, the County Engineer shall notify the Developer and the County Commissioners. The Developer shall respond with a plan of action within two (2) weeks from notice of deficiencies and any defects shall be cured within four (4) weeks of said notice.
8. Failure to comply with the terms of Paragraph 7 shall result in the Developer being found to be in breach of this agreement by the County Commissioners. The County Commissioners may use the escrow deposit to complete the improvements associated with _____ subdivision, and the County Treasurer shall make the escrow deposit available for such use.
9. The County Commissioners and the Developer mutually agree that the performance obligation created herein shall continue until the completion of the installation of the subdivision improvements to the satisfaction of the County Engineer.

Any notice, correspondence, inquiry or request permitted or required under this agreement shall be by certified mail, return receipt requested, and shall be complete upon mailing. All parties are obligated to give notice of any change of address. Any notice, correspondence, inquiry or request permitted or required shall be given as follows:

To the County Commissioners: The Board of Wayne County Commissioners
Wayne County Administration Building
428 West Liberty Street
Wooster, OH 44691
(330) 287-5400

To the County Engineer: Wayne County Engineer
3151 West Old Lincoln Way
Wooster, OH 44691
(330) 287-5500

To the Developer:

_____)

In Witness Whereof, the parties have hereunto set their hands as follows:

Developer

Developer

Commissioner

Commissioner

Commissioner

ATTEST:

Approved as to form

Wayne County Prosecuting Attorney

DOCUMENT REVIEWED AND APPROVED BY:

Wayne County Engineer

** Note a: All subdivisions allowed to guaranty in place of completed construction shall be required to provide a Performance Guaranty Agreement.*

Note b: The escrow amount is to be an amount up to 130% of Exhibit A (Total construction cost as approved by the County Engineer), based on the progress and status of work at the time the agreement is submitted.

MAINTENANCE GUARANTY AGREEMENT - PUBLIC IMPROVEMENTS*

This Agreement, entered into this _____ day of _____ by and between _____, hereinafter called "Developer", and the Board of Wayne County Commissioners, hereinafter called "the County Commissioners".

WHEREAS, Developer is about to complete all improvements in _____ Township, as recorded in Wayne County Record of Plats, Volume _____ and Page _____; known as _____ Subdivision, and

WHEREAS, a Maintenance Guaranty is required at the time of acceptance of the improvements by the County Engineer.

NOW THEREFORE, the parties agree as follows:

1. Developer guarantees that all improvements are in satisfactory condition and agrees that Developer will repair, at their sole cost, all failures or damages as soon as same become apparent.
2. Developer shall be responsible for all maintenance of all improvements installed as a result of the Development Agreement including but not limited to snow removal, mowing, ditch cleaning, etc.
3. The Developer shall be in breach of the Maintenance Guaranty Agreement should the Developer fail to complete or cause to be undertaken any required maintenance upon the improvements.
4. Upon County Engineer discovery of a breach of this agreement, the County Engineer shall notify the Developer and the County Commissioners. The Developer shall respond with a plan of action within two weeks from notice of deficiencies and any defects shall be cured within four weeks of said notice.
5. Failure to comply with the terms of Paragraph 4 shall result in the Developer being found to be in breach of this agreement by the County Commissioners. The County Commissioners may use the escrow deposit to complete the maintenance associated with _____ subdivision, and the County Treasurer shall make the escrow deposit available for such use.
6. The County Engineer shall promptly make an inspection of the improvements two (2) months prior to the end of the terms of the agreement, at which time the County Engineer shall notify the Developer of any needed repairs. The Developer shall have one (1) month after the notification to complete the repairs to the satisfaction of the Engineer. If the repairs have not been completed within this one (1) month period, then the County Engineer shall notify the Commissioners and the Prosecutor that the repairs have not been satisfactorily completed. Upon this notification, the Commissioners may take action to acquire the funds from the Maintenance Guaranty to complete the repairs.

7. All improvements shall be in a condition acceptable to the County Engineer at the end of the maintenance period which shall be (see Note a) months from the date of execution of this agreement.
8. Developer shall deposit \$ (see Note b) in escrow with the Wayne County Treasurer to secure the maintenance of the subdivision public improvements.
9. The funds in said escrow shall be used for the sole purpose of guarantying the maintenance of the improvements and shall be assigned to the County Commissioners.
10. The County Commissioners agree that any funds remaining on deposit in the Performance Escrow for this subdivision may be used toward the Maintenance Guaranty; and the County Treasurer will release any funds, including any interest earned, above and beyond the required maintenance amount to The Developer. If Developer fails to perform any required maintenance to the complete satisfaction of the County Engineer, the County Treasurer shall make funds available to the County Engineer to complete the required maintenance.
11. The Developer and the County Commissioners agree that the subdivision improvements, referred to by this agreement, shall remain private and only become public upon the recommendation of acceptance by the County Engineer of the improvements at the end of the terms of this Maintenance Guaranty and the approval and acceptance by resolution of the Board of County Commissioners.
12. At the end of the term of this agreement and upon written notification by the County Commissioners, the County Treasurer shall cause any funds remaining on deposit in the maintenance escrow, including any interest earned, to be returned to the Developer.

Any notice, correspondence, inquiry or request permitted or required under this agreement shall be by certified mail, return receipt requested, and shall be complete upon mailing. All parties are obligated to give notice of any change of address. Any notice, correspondence, inquiry or request permitted or required shall be given as follows:

To the County Commissioners: The Board of Wayne County Commissioners
Wayne County Administration Building
428 West Liberty Street
Wooster, OH 44691
(330) 287-5400

To the County Engineer: Wayne County Engineer
3151 West Old Lincoln Way
Wooster, OH 44691
(330) 287-5500

To the Developer: _____

In Witness Whereof, the parties have hereunto set their hands as follows:

Developer

Developer

Commissioner

Commissioner

Commissioner

ATTEST:

Approved as to form

Wayne County Prosecuting Attorney

DOCUMENT REVIEWED AND APPROVED BY:

Wayne County Engineer

Note a: *This period shall be a minimum of eighteen (18) months but may be greater as determined by the County Engineer.*

Note b: *This amount shall be a minimum of fifteen (15) percent of the original financial guaranty, but may be greater as determined by the County Engineer.*

***All subdivisions will be required to provide a Maintenance Guaranty Agreement and will be allowed to submit the plat for approval and recording at the time of acceptance by the County Engineer.**

ARTICLE V

TOWNSHIP ROAD DISTRICTS

500 - PURPOSE

To allow the political subdivisions responsible for the maintenance of the subdivision improvements to select the "Typical Pavement Section/Composition" installed, so that it will be compatible with their normal maintenance operations.

501 - GUIDELINES

The Township responsible for the maintenance of road improvements, by resolution, shall state their preference for "Typical Pavement Section/Composition" (See Table 8-1) within their road district. The "Typical Pavement Section/Composition" shall fall within the guidelines, as called out in this text. If no resolution is passed by the Township, the final decisions as to type of improvement installed shall rest with the developer, as long as it meets the requirements of this document.

502 - PROCEDURE

The Township shall pass the resolution for the "Typical Pavement Section/Composition" within their road district and submit the resolution to the Board of Commissioners. The Board of Commissioners shall approve or reject the Township's resolution, based upon the recommendations of the County Engineer. Contact the County Engineer's Office for the "Typical Pavement Section/Composition" for each road district. If a Township does not choose one (1) of the "Typical Pavement Sections/Compositions", then the developer shall have the authority to choose either "Typical Pavement Section/Composition A, B or C".

503 - VARIANCE

Once a road district has been approved by the Board of Commissioners, a variance to the Township road district resolution can only be made by a majority vote and resolution by the Board of Trustees, with final acceptance from the Board of Commissioners. Any variance granted must fall within the guidelines of this text.

REGULAR MEETING -

The Board of Township Trustees of _____ Township, Wayne County, Ohio, met in regular session on this date with the following members present:

_____ offered the following resolution and moved the adoption of same which was duly seconded by _____.

RESOLUTION NO. _____

RESOLUTION OF THE BOARD OF TOWNSHIP TRUSTEES OF _____ TOWNSHIP, WAYNE COUNTY, OHIO, ADOPTING THE ROAD DISTRICT AS PRESCRIBED BY ARTICLE V OF THE WAYNE COUNTY ENGINEERING CODE FOR SUBDIVISION DEVELOPMENT OF WAYNE COUNTY, OHIO.

WHEREAS, in the interest of preserving the public health and general welfare of the present and future residents of Wayne County, it was deemed necessary in the opinion of the Board of Wayne County Commissioners to adopt general rules and regulations setting standards and requirements in securing the construction of improvements shown on the plats and plans as allowed by Section 711.101 of the Ohio Revised Code; and

WHEREAS, it was the further opinion of the Board of Wayne County Commissioners that through Article V of these rules and regulations, a road district per township should be established so that the political subdivision having the maintenance responsibility of said improvements will have roads constructed compatible to their normal maintenance procedures and the varying topographic and physical conditions of the respective township.

NOW, THEREFORE, BE IT RESOLVED by this Board of Township Trustees in and for _____ Township, Wayne County, Ohio, that the following rules and regulations setting the criteria to be used within this road district for subdivision developments within said township shall govern all construction pertaining to subdivision developments from (date) _____, 200__ forward:

TYPICAL STREET SECTION/PAVEMENT TYPE (For Local Residential as defined by the "Wayne County Engineering Code for Subdivision Development")

PAVEMENT TYPE (Pick One)

- Pavement A - Granular Base with Double Chip & Seal.
- Pavement B - Granular Base and Bituminous Cold Mix Surface Course with Double Chip & Seal.
- Pavement C - Granular Base and Asphalt Concrete Base with Asphalt Concrete Surface Course.

ADOPTED THE ___ DAY OF _____, 200__.

ATTEST _____
TOWNSHIP CLERK

TOWNSHIP TRUSTEES

FIGURE 5-1 Sample Road District Resolution

ARTICLE VI

ROADWAY DESIGN STANDARDS

600 - PURPOSE

This article focuses on the minimum design standards, which shall control the design and arrangement of roads and other improvements within a subdivision. The standards are flexible for the purpose of coordinating design and topography in a feasible and economical manner. However, any variance from these standards must be approved by the County Engineer.

For additional design information, refer to the sources given below:

- 1) From the American Association of State Highway and Transportation Officials (AASHTO).
 - A. A Policy on Geometric Design of Highways and Streets, Current Edition
 - B. Guidelines for Geometric Design of Very Low-Volume Local Roads, Current Edition
- 2) From the Ohio Department of Transportation (ODOT)
 - A. Location and Design Manual, Current Revision

601 - FUNCTIONAL CLASSIFICATION OF ROADS

Classification is the means of identifying all roads in a system according to the type and degree of service they provide to the public. These regulations define six (6) classes of roads as given below. Also see Table 6-1.

- 1) Arterial: An arterial thoroughfare carries primarily through traffic. It is usually a continuous route carrying heavy loads and large volumes of traffic. Any road projected to carry an ADT over 5000 veh/day is considered an arterial.
- 2) Collector: A collector conducts traffic between arterial thoroughfares and major centers of activity. This may include: a major route between residential, commercial, or industrial areas, which carries a relatively large volume of traffic. Any road projected to carry an ADT of 3000-5000 veh/day is considered a collector.
- 3) Sub - Collector : A sub-collector provides access from residential streets to collectors or areas of major activity. Any road projected to carry an ADT of 1000-3000 veh/day is considered a sub-collector.
- 4) Commercial and Industrial Street: A commercial or industrial street provides access to and from an area that is predominately commercial or industrial in nature now, or has the potential to become so in the near future.

- 5) Residential/Multi-Family Street: A residential/multi-family street provides access to and from an area that is predominately comprised of multi-family dwelling units. A residential/multi-family street shall not have an ADT in excess of 1000 veh/day.
- 6) Residential Street: A residential street primarily provides access to and from a single family residential area or to and from an area where at least an equal combination of single family and duplex dwelling units exist. A residential street shall not have an ADT in excess of 1000 veh/day.

602 - TRAFFIC DESIGN CRITERIA

Traffic data is an important factor, as it directly affects the geometric features of design. such as; alignment, grade, shoulder widths, etc..

- 1) Traffic Expansion Factor: The historical rate of population growth and increase in travel per capital within Wayne County has been 2.9% per year. The traffic count on any road being designed within Wayne County, except permanent dead-end streets, shall be expanded for a twenty (20) year growth period using a factor of 2.5% for rural areas and 3.5% per year within any comprehensive plan area of a city.
- 2) Vehicle Demand Factor: A newly proposed road can be classified by assuming ten (10) vehicles per single family residential dwelling unit per day. Additional vehicles from commercial, recreational, and educational facilities shall also be taken into account, as approved by the County Engineer.
- 3) Design Speeds: Design features shall be consistent with a design speed selected as appropriate for the conditions and type of road. In general, the design speeds shown in Table 6-1 shall be used, unless approved otherwise by the County Engineer due to unusual situations and environmental features.

603 - HORIZONTAL ALIGNMENT

Horizontal alignment should be to as high a standard as possible with the terrain and design traffic volume. Sudden changes between curves of widely-different radii or long tangents and sharp curves should be avoided. For the maximum curvature for different design speeds; see Table 6-1. Where possible, a tangent of at least one-hundred (100) feet should be introduced between reverse curves on major road and at least fifty (50) feet on residential roads.

604 - VERTICAL ALIGNMENT

Profile grades shall be connected by vertical curves to provide adequate stopping sight distance for the required design speed. To determine the minimum length of a vertical curve, refer to Table 6-2.

- 1) Minimum Grades: A minimum grade of two percent (2 %) shall be used on all streets, except when approved otherwise by the County Engineer.

2) Maximum Grades:

A. Residential roads: The gradient for residential roads shall be less than ten percent (10%), except where due to unusual terrain situations the County Engineer agrees to permit an increase.

B. Major roads: The gradient for roads other than residential, shall be six percent (6%) or less, except where other grades are approved by the County Engineer.

605 - CROSS SECTION ELEMENTS

Design criteria for various cross section elements are given below:

- 1) Pavement Width: The pavement width for each class of road should be as shown in Table 6-1.
- 2) Shoulders: The minimum width of graded shoulders for various traffic volumes and design speeds shall be as shown in Table 6-1. Shoulder width is measured from the edge of pavement to the point where the shoulder slope intersects the side slope. Where guardrails are used, the shoulder width shall be increased by two (2) feet.
- 3) Side Slopes: Side slopes shall be graded as shown in Figures 6-1 through 6-3, unless approved otherwise by the County Engineer.
- 4) Right-of-Way Width: The right-of-way width for all roads will normally be sixty (60) feet. This minimum width may be varied where and to the extent the County Engineer deems it necessary to conform with topographic, construction, and drainage features. The road right-of-way shall be cleared of all obstructions for its full width, unless approved otherwise by the County Engineer.

606 - PARKING

Although on-street parking constitutes a safety hazard and impedes traffic flow, parallel parking on one side where curb and gutter is required, has been provided for in the minimum pavement widths in Table 6-1. Where conditions of lot size and intensity of development require additional on-street parking, an additional parking lane may be required by WCPC. Parking lanes in residential areas will be at least eight (8) feet and in other areas at least ten (10) feet. The parking lane width may include the gutter pan as part of the required width.

607 - GENERAL INTERSECTION DESIGN

The design of intersections shall be subject to the following criteria:

- 1) Angle of Intersection: Roads should be laid out to intersect as nearly as possible at right angles. No road shall intersect any other road at an angle of less than seventy degrees (70°).

- 2) Offset Intersections: Intersections of roads offset less than one-hundred twenty-five (125) feet should be avoided. However, those offset less than ten (10) feet may be approved.
- 3) Grades: Areas where vehicles will stop before entering the intersection should be designed as level as possible. A grade of six percent (6%) shall be the maximum.
- 4) Sight Distance: Intersections shall be designed with adequate sight distance. In order to maintain the required sight distance free of obstacles, the County Engineer shall restrict the height of embankments, locations of buildings, screen fencing, and landscaping within this area. Table 6-2 and Figure 6-4 should be consulted for the appropriate sight distance required.
- 5) Radius Returns: At intersections the minimum radius return on the outside edge of pavement or face of curb shall be twenty-five (25) feet for residential roads and fifty-two (52) feet for other roads. The minimum radius return for the right-of-way lines at intersection corners should be twenty-five (25) feet.

608 - PERMANENT TURN-AROUNDS

Roads terminating in a permanent circular turn-around (cul-de-sac), as shown in Figures 6-5 and 6-6, shall have a minimum right-of-way radius of seventy-five (75) feet. The outer edge of pavement shall have a minimum radius of fifty-five (55) feet for cul-de-sacs paved solid and sixty (60) feet for cul-se-sacs paved with an island in the middle. Islands shall be properly drained with a pipe system to the outside drainage system. Cul-de-sacs with islands also shall have a minimum pavement width of twenty-four (24) feet and in no case shall the outside edge of pavement be located within fifteen (15) feet of any right-of-way line.

609 - TEMPORARY TURN-AROUNDS

Where temporary cul-de-sacs are permitted, they shall conform to the design requirements for a permanent cul-de-sac. If the temporary turn-around is within four hundred (400) feet of an intersection, a T-type turn-around may be used if approved by the County Engineer. See Figure 6-7 for design standards for T-type turn-arounds.

Where temporary turn-arounds or temporary cul-de-sacs are used, they shall be provided with a temporary easement covering the portion of the turn-around, which extends beyond the normal right-of-way limits. Such temporary easements shall be automatically vacated for the use of the abutting property owner when the temporary turn-around is no longer needed. The following note shall be included on the final plat "The Temporary Turn-around Easement shall automatically be vacated after the Temporary Turn-around has physically been removed and regraded, and after the road right-of-way extension has been platted, at no public expense".

610 - PAVEMENT MARKING

All pavement marking, as required by the Ohio Manual of Uniform Traffic Control Devices (MUTCD), shall be applied and paid for by the developer.

611 - TRAFFIC SIGNS

All necessary traffic signs are to be erected by the County Engineer, and the cost of the signs and labor shall be paid for by the developer. The signs shall conform to standards set forth in the MUTCD.

612 - LIGHTING

The developer shall contact the Township Trustees to see if street lighting is necessary. Required lighting shall follow the guidelines as adopted by the Township Trustees and the power company in the development area.

613 - CURBS AND GUTTERS

The design of curbs and gutters shall conform to ODOT's Standard Construction Drawings.

614 - GUARDRAIL

Guardrail will be required for all embankments six (6) feet or higher. All guardrail shall be shown on the construction drawings as to type and location. Installation shall conform to ODOT standards.

615 - SIDEWALKS

Sidewalks shall be made of concrete four (4) inches thick (six (6) inches thick under driveways) and at least four (4) feet wide. In areas, which have high pedestrian traffic, like near schools, parks, and commercial areas, sidewalks may need to be wider than four (4) feet as determined by the WCPC.

616 - ORNAMENTAL CONSTRUCTION

If the developer elects to install a decorative fence or other ornamental construction within the right-of-way limits, he shall show such construction on the plan and profile drawings, or submit separate drawings for approval by the County Engineer.

617 - TREES

All existing trees, where necessary, shall be removed from the right-of-way.

618 - UNDERGROUND UTILITIES

Utilities, such as; gas lines, telephone cables, electrical power street lighting circuits shall be installed underground in designated utility easements outside the dedicated road right of way with electrical transformers located in vaults, unless approved otherwise by the County

Engineer. Utility easements shall be shown on the final plat. Said easement shall be ten (10) feet wide and shall be provided around the complete boundary of each lot. When electrical power cables are installed underground in a subdivision, electrical street lighting cables may also be installed whether for present or future use. Unused wires and cables shall be de-energized and protected against physical damage.

Any installation of utility pipe, conduit, cable, wires, vaults, and pertinent equipment shall comply with the current regulations of the Public Utilities Commission of Ohio. All location and detailed drawings of the utilities prepared by the developer and /or the utility companies shall be submitted to the County Engineer for approval.

All utilities, such as; gas lines, telephone cables, electrical power, street lighting circuits, etc. (excludes waterline, storm sewer or sanitary sewer) shall be placed within a utility easement outside of the road right-of-way. These utilities shall only be allowed within the right-of-way where transverse crossings of the roadway are allowed. All trenches within two (2) feet of any pavement area shall be backfilled with granular material compacted by vibratory or mechanical tamping in six (6) inch layers. See Figure 6-8 for general placement of utilities along new roads.

619 - BRIDGES AND SPECIAL STRUCTURES

All bridges and special structures shall be designed using ODOT Standards, except where other standards are approved by the County Engineer. See Table 6-1 for required loading, roadway clearance width, and vertical clearance standards for each type of road.

620 - SURVEYING MONUMENTS

Road centerline monuments shall be accurately set and established at all centerline P.C. and P.T. locations and all road intersections. Iron pins shall be accurately set and established at all subplot corners. The County Engineer may require other monuments or iron pins to be set in the subdivision. All monuments shall be approved by the County Engineer. Monuments and iron pins that may be disturbed by grading, may be set after the grading has been completed. All monuments and iron pins shall be identified on the final plat, and shall be in place at the time the roads and other improvements are inspected for acceptance by the County Engineer.

Standards Classification	Design Traffic ADT VEH/DAY	Design Speed MI/HR	Minimum Radius FT	Maximum Grades %	Minimum Stopping Sight Distance FT	Pavement Width FT	Shoulder Width FT	Structures		
								Design Load TONS	Roadway Clear Width FT	Vertical Clearance FT
Arterial	Over 5000	All design standards for arterials shall be based upon the traffic requirements of the study area and shall meet the County Engineer's approval.								
Collector	3000 to 5000	50	700	6	350	24 *37	8	HS-20	36	14.5
Sub-Collector	1000 to 3000	40	500	6	275	24 *27	8	HS-20	32	14.5
Residential and Multi-Family	0 to 1000	35	300	10	235	20 *27	6	HS-20	26	14.5
Commercial and Industrial	(1) NA	40	500	6	275	24 *27	8	HS-20	32	14.5

(1) The ADT for design purposes shall be determined by the County Engineer.

* For curbed roads the pavement width and roadway clear width shall be increased as shown. This width is measured from back of curb to back of curb (B/B). On residential and multi-family roads a 21' B/B width may be used for permanent cul-de-sacs serving single family units. The pavement width for commercial and industrial streets may need to be increased above that shown if determined necessary by the County Engineer.

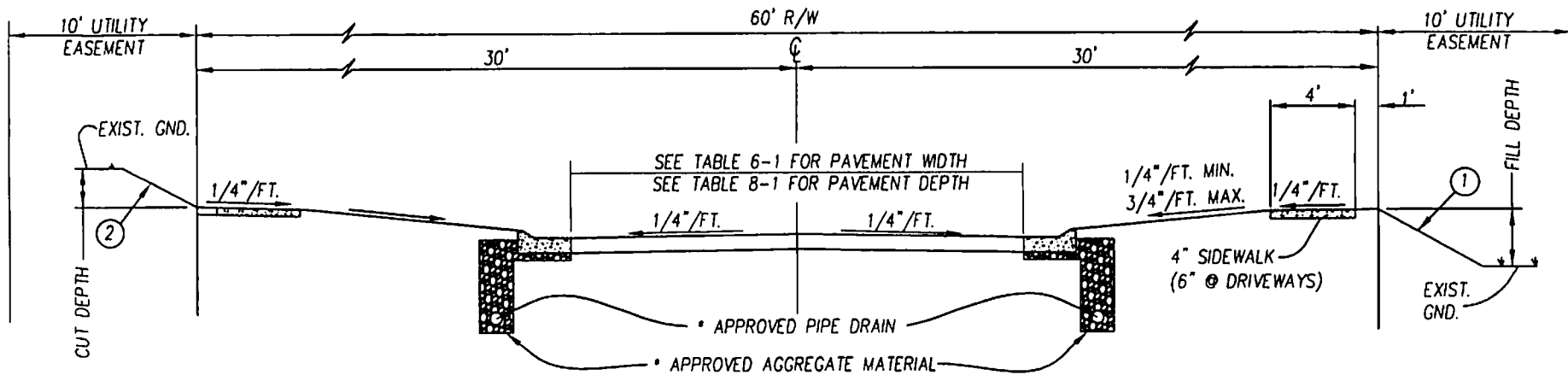
Table 6-1 Minimum Roadway Design Standards

Design Speed MI/HR	Minimum Sight Distance		Vertical Curve K*	
	Stopping FT	Intersection FT	Crest	Sag
60	475	475	160	155
55	410	410	120	130
50	350	350	85	100
45	315	315	70	80
40	275	275	55	60
35	240	240	40	50
30	200	200	28	35
25	160	160	20	25

Height of eye = 3.75 feet
 Height of object = 0.50 feet

*K is a coefficient by which the algebraic difference in grade may be multiplied to determine the length of the vertical curve, which will provide the minimum sight distance required.

Table 6-2 Design Controls for Sight Distance



NOTES:
REQUIRES STORM SEWER SYSTEM WITH CATCH
BASINS, AS REQUIRED HEREIN.

* SEE "SUBSURFACE DRAINAGE".

① & ②	
SLOPE	CUT OR FILL DEPTH
4:1	2' & UNDER
3:1	OVER 2'
2:1	WHEN APPROVED BY THE COUNTY ENGINEER

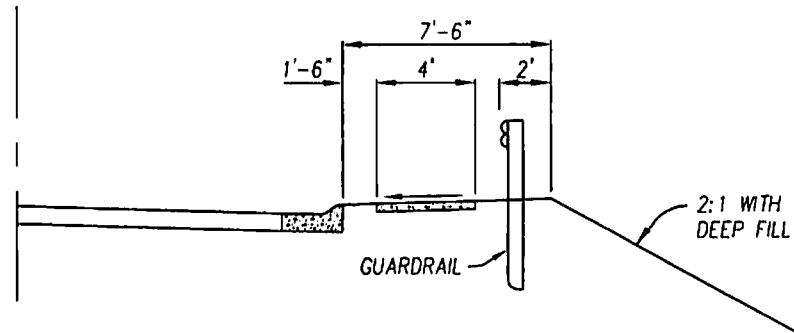
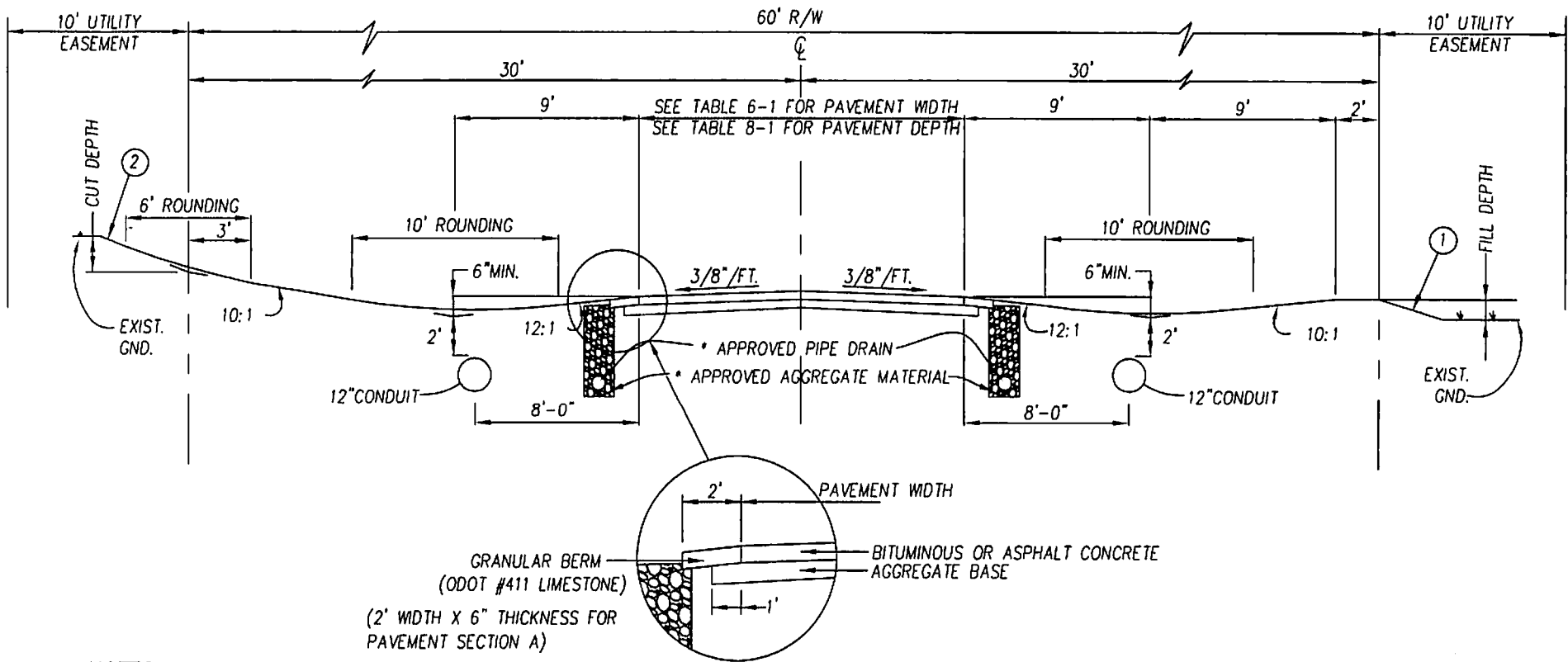


FIGURE 6-1 Typical Street Section I - Curb and Gutter with Storm Sewer



NOTES:

- 1.) REQUIRES STORM SEWER SYSTEM WITH CATCH BASINS, AS REQUIRED HEREIN.
- 2.) ODOT 2-2B CATCH BASINS SHALL BE INSTALLED BY PROPERTY OWNERS ON UPSTREAM SIDE OF DRIVEWAY IN LIEU OF DRIVE CULVERTS.

* SEE "SUBSURFACE DRAINAGE".

①	
SLOPE	FILL DEPTH
4:1	3' & UNDER
3:1	OVER 3'
2:1	WHEN APPROVED BY THE COUNTY ENGINEER

②	
SLOPE	CUT DEPTH
3:1	5' & UNDER
2:1	OVER 5'

FIGURE 6-2 Typical Street Section II - Roadside Swales with Storm Sewers

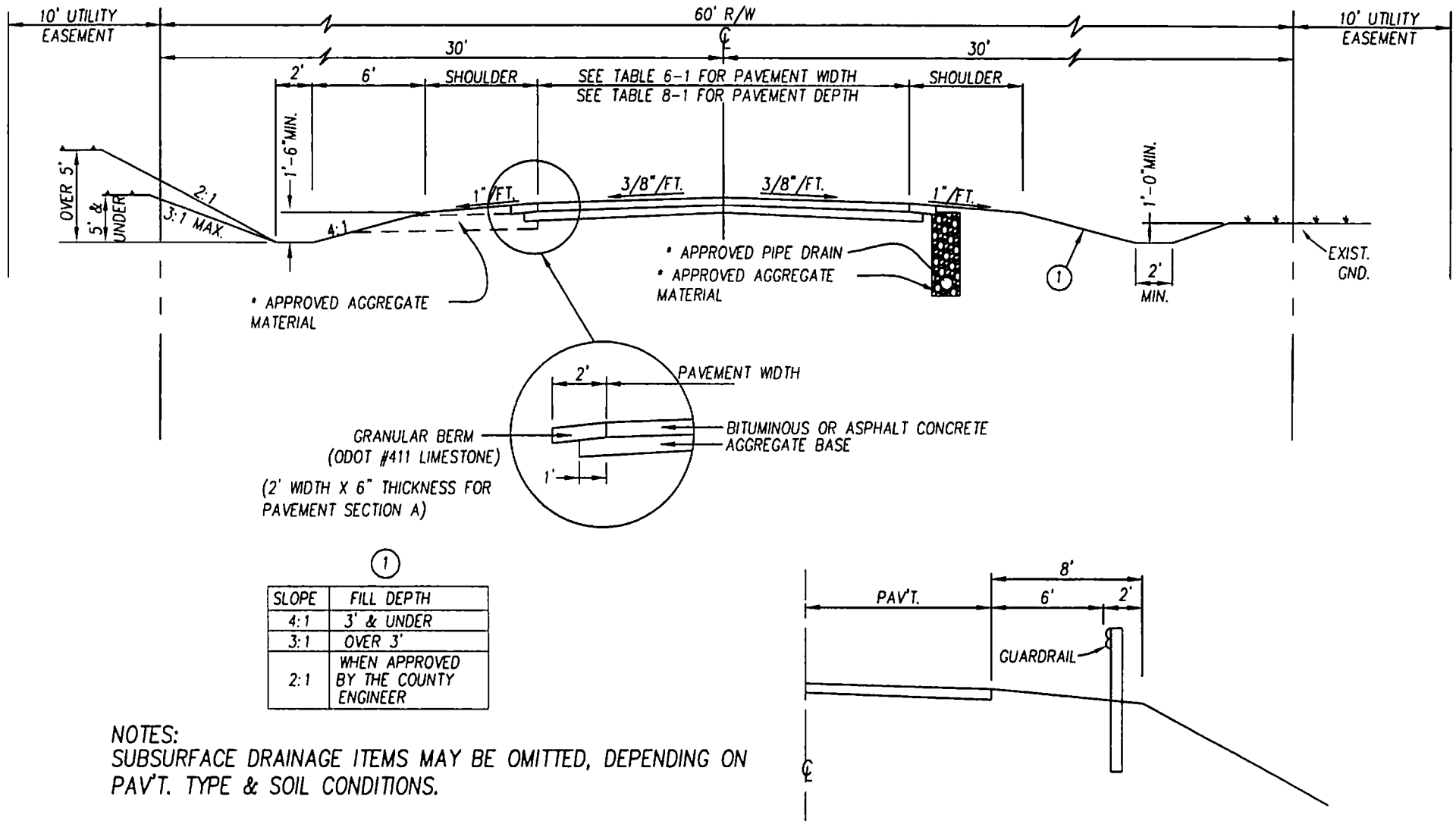


FIGURE 6-3 Typical Street Section III - Roadside Ditches

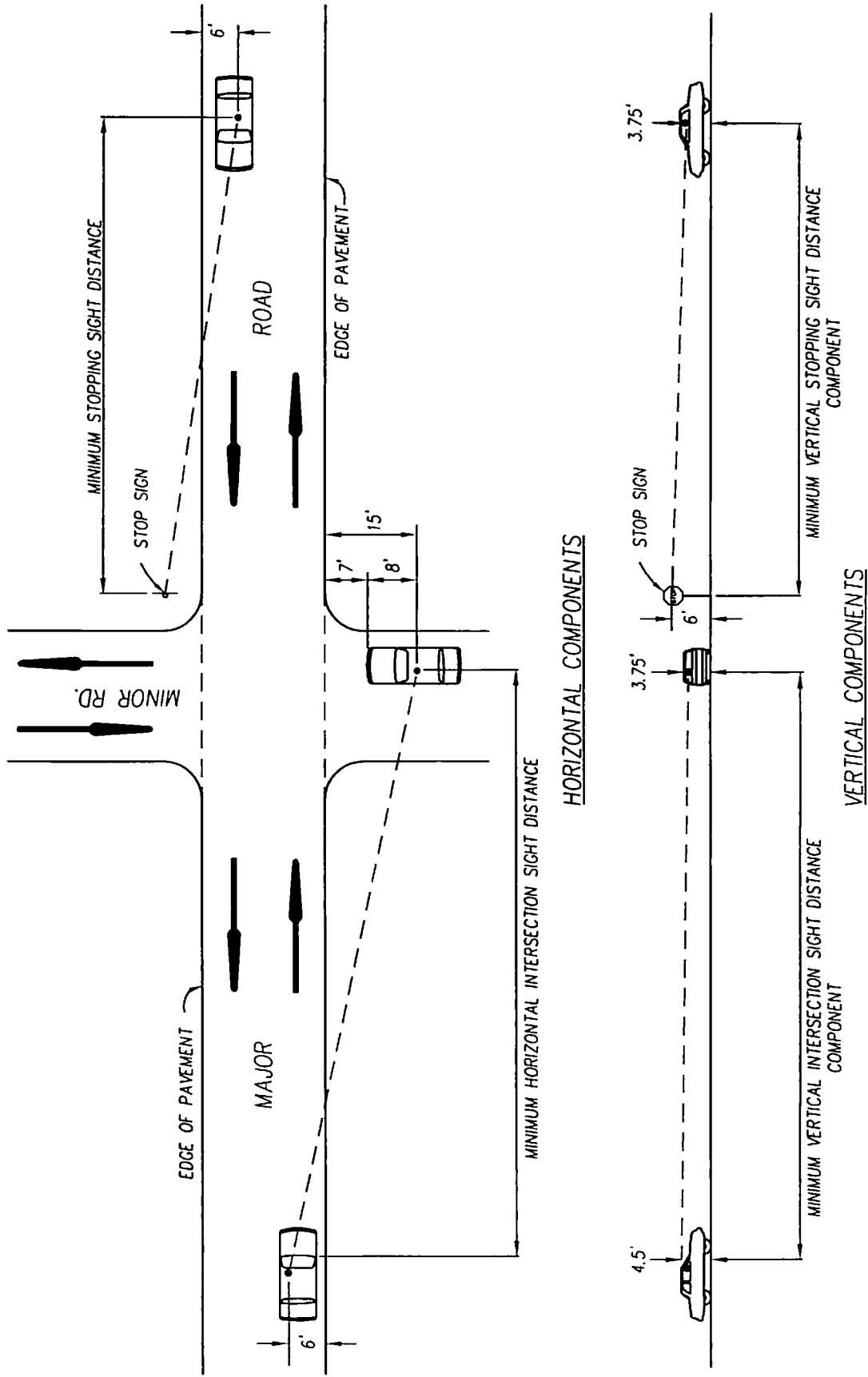


FIGURE 6-4 Intersection Sight Distance Requirements

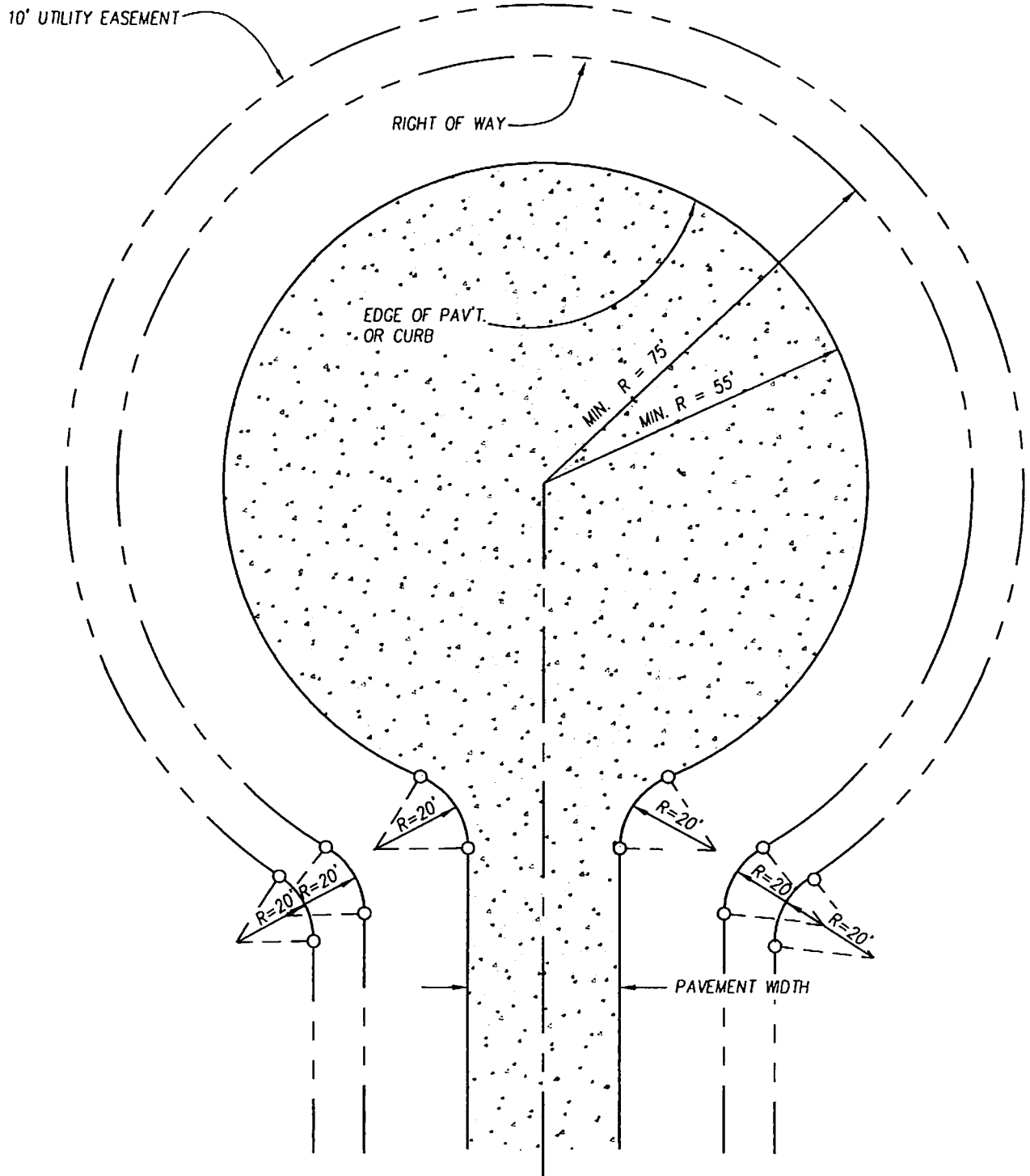


FIGURE 6-5 Cul-De-Sac without Island

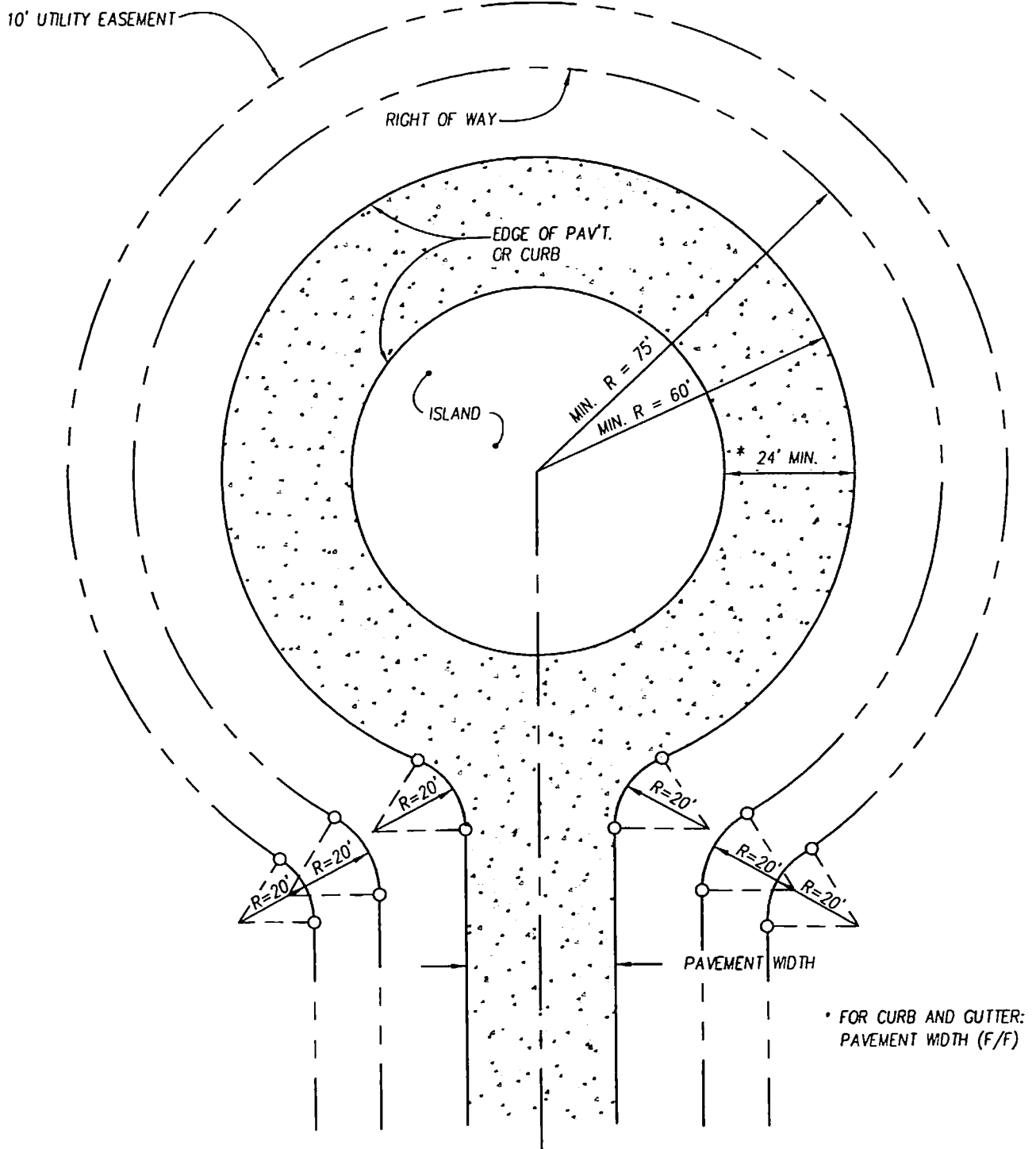


FIGURE 6-6 Cul-De-Sac with Island

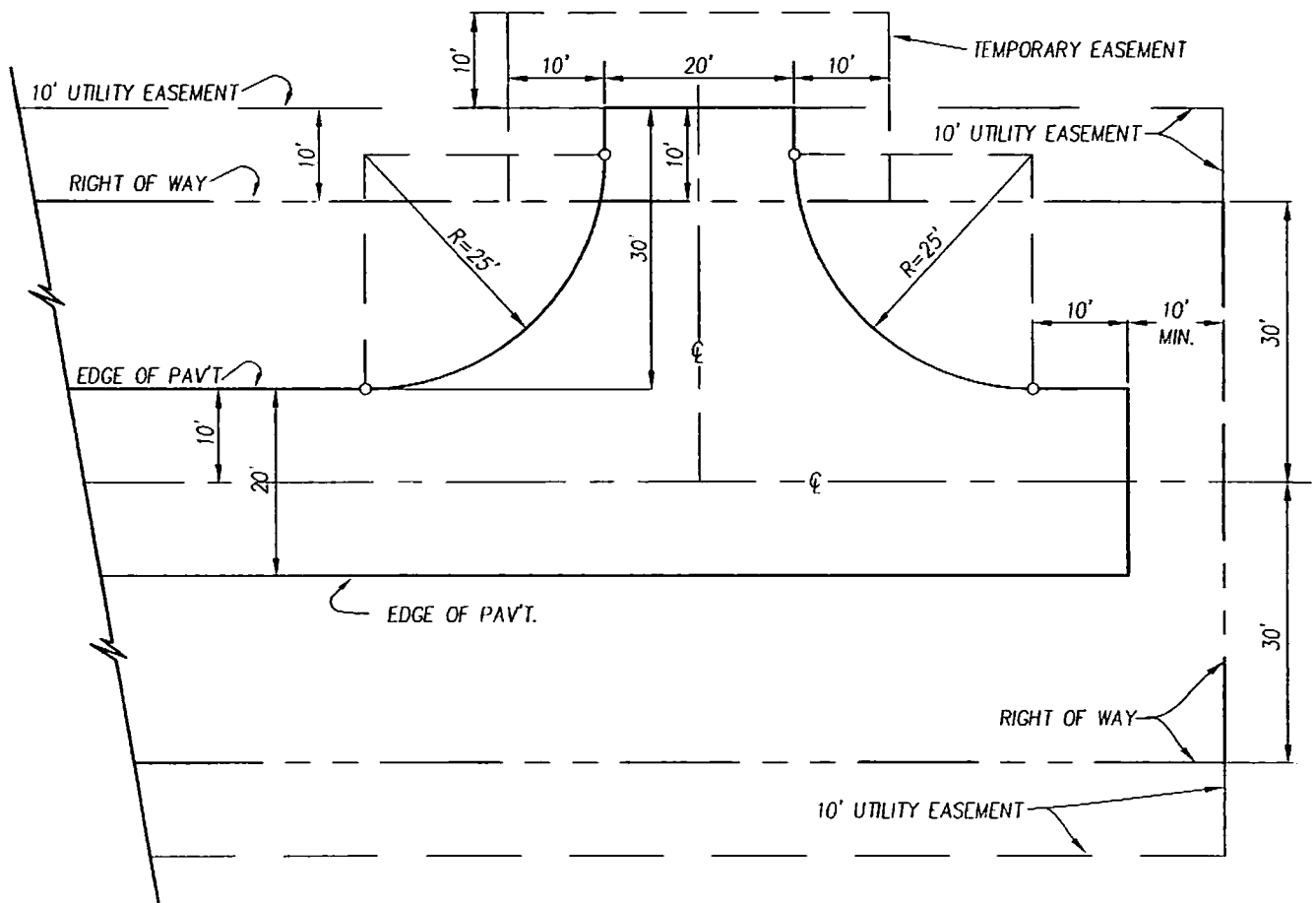
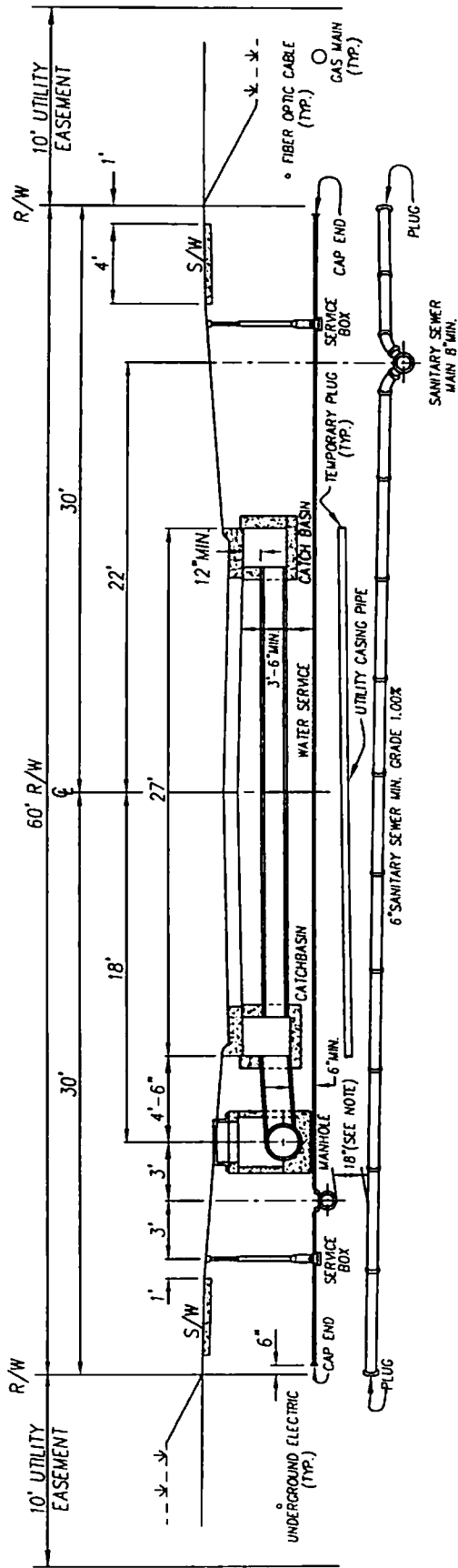


FIGURE 6-7 "T" Type Turn-Around



NOTES:
 THE LOCATION OF GAS LINES, TELEPHONE CABLES, AND ELECTRICAL POWER LINES SHALL BE APPROVED BY THE COUNTY ENGINEER BASED ON THE INDIVIDUAL MERIT OF EACH DEVELOPMENT.

WATER LINES AND SANITARY SEWER MUST HAVE A VERTICAL SEPARATION OF 18" UNLESS SPECIAL TREATMENT IS PROVIDED.

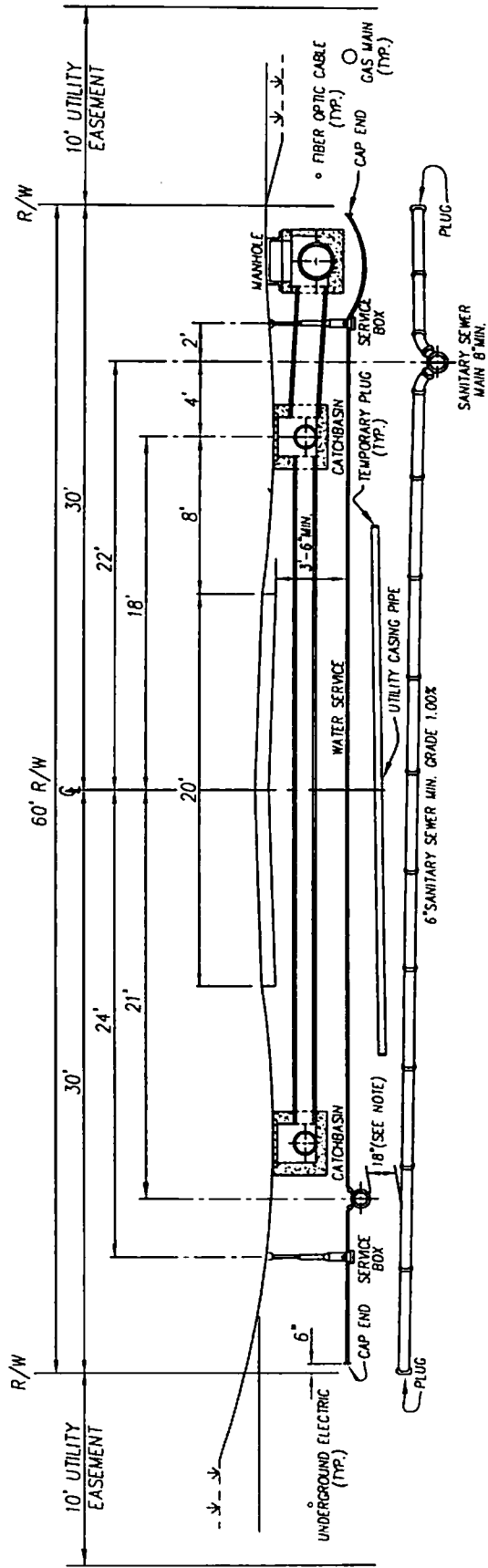


FIGURE 6-8 Public Utility Placement

ARTICLE VII

DRIVEWAYS, YARD ENCLOSURES, AND BORINGS

700 - PURPOSE

This article has been provided to set standards for all new driveway construction in order to help eliminate hazardous conditions at driveways. Also included, are the requirements for approval of yard enclosures and road borings.

701 - GENERAL

The efficiency and safety of a road largely depends on the amount and character of roadside interference with the movement of traffic. Vehicles entering, leaving, or standing nearby, cause most of the roadside interference. The major interference originates in vehicle movement to and from businesses, residences, and other development along the road. Accordingly, regulations and overall control of driveway connections are necessary to provide efficient and safe operations of the road system.

702 - DRIVEWAY DESIGN STANDARDS

To provide for safe driveway connections, the following design standards shall be adhered to.

- 1) Profile Grades: Driveways along roads with open ditches and yard enclosures shall be graded as shown in Figures 7-1 and 7-2, respectively. Driveways along roads with curbs shall be graded as shown in Figure 7-3.
- 2) Vertical Curves: To help prevent center or overhang drag, with some allowance for load and bounce, a vertical curve of at least eight (8) feet should be provided. Crest vertical curves should not exceed a three and one-quarter (3¼) inch hump in a ten (10) foot length and sag vertical curves should not exceed a two (2) inch depression in a ten (10) foot length.
- 3) Width: The driveway's width shall be measured perpendicular to the driveway's centerline. The width may vary according to the classification of the road, which the driveway intersects. See Figure 7-4, 7-5 or Figure 7-6 for the appropriate width. If a variance is requested, the County Engineer will review the variance to ensure that traffic flow will not be adversely affected.
- 4) Intersection Angle: The intersection angle is the interior angle between the centerlines of the driveway and road. This is shown in Figures 7-4, 7-5, and 7-6. The allowable intersection angle shall be within a range of seventy degrees (70°) to ninety degrees (90°).
- 5) Approaches: The approaches shall be constructed as shown in Figures 7-4, 7-5 and 7-6.

703 - SIGHT DISTANCE

Driveways should be located and designed to enable vehicles traveling at or near legal highway speeds to see a driveway in time to safely reduce speed and enter the driveway. Conversely, the driveway should be placed in areas to allow vehicles, while within the approach area, to observe the through highway traffic for a distance sufficient to make a safe entry onto the highway. The lengths adequate to accomplish the above varies with each installation and depends on the horizontal and vertical alignment of the highway, speed along the highway, and the location of existing objects, such as; trees, signs, buildings, etc., which may restrict visibility along the highway. See Figure 6-4 and Table 6-2 in Article VI for the required sight distance.

704 - DRIVE PIPES

A County drive pipe policy has been adopted to achieve uniformity in drive pipe installations.

- 1) Existing Road Frontage: All drive pipes installed along existing road frontage shall conform to either the County's or an individual township's adopted pipe policy. The developer and/or owner shall be responsible for seeing that the appropriate permit is obtained before the installation of any drive pipe. See Figure 7-6 for a sample permit form.
- 2) New Allotment Roads: In a major allotment, where new roads are to be constructed, all drive pipe sizes shall be submitted with the construction drawings for the County Engineer's approval. If the drive pipe sizes are approved, they shall then be recorded with the plan.

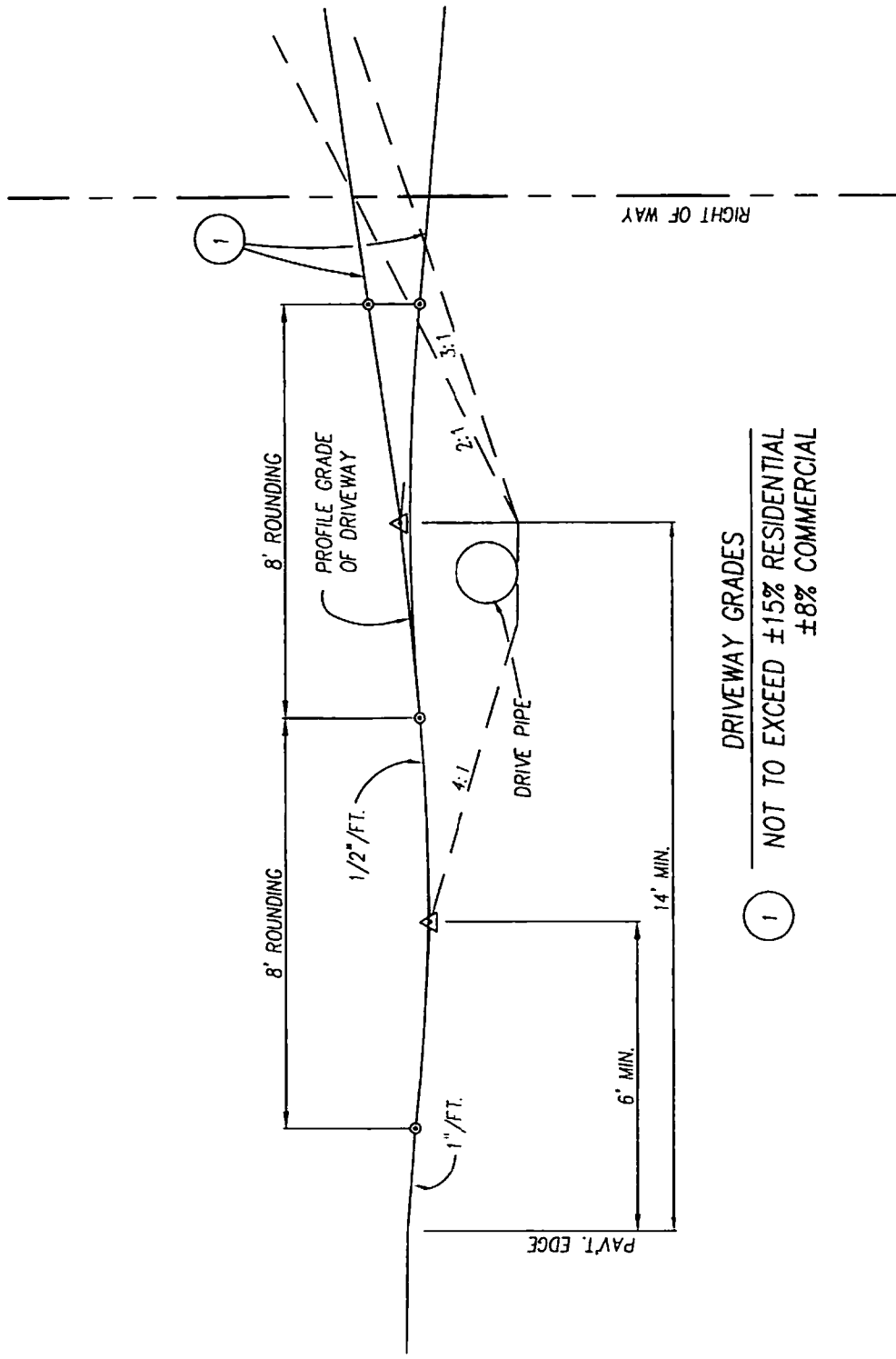
New home construction may be possible in the allotment before the road improvement is finally accepted by the County and Township. The developer shall be responsible for obtaining the appropriate permit before any drive pipes are installed. Also, the developer shall be responsible for drive pipes throughout the maintenance period. Any defective pipes shall be replaced according to the County's or Township's adopted pipe policy, before the road improvement receives final acceptance.

705 - YARD ENCLOSURES

Developers and/or property owners requesting the enclosure of ditches in front of their properties must obtain a permit from the County Engineer for an enclosure on a county road or the Township Trustees for an enclosure on a township road. The person requesting the enclosure must employ a Registered Surveyor to make a survey of the road and ditch, which is to be closed. The Surveyor shall then prepare a plan and profile sheet showing the location of the existing road and ditch and the proposed work to be done. When this is approved by the County Engineer, the property owner may then enclose the ditch as proposed. The property owner is required to pay the entire cost of this enclosure, including; survey, plan, materials, and labor to complete the work. Following completion of this work it will be inspected and when done in accordance with plans, will be approved by the County Engineer or the Township Trustees. All design standards for this enclosure shall be in accordance with the standards for drainage structures in Article IX, unless a variance is granted by the County Engineer or Township Trustees. The application and permit form for a yard pipe installation is shown in Figure 7-8.

706 - ROAD BORINGS

The owner of any installation requiring a boring through the roadway must first obtain an application and permit from the County Engineer's Office. Work shall not begin until permission is granted by the County Engineer's Department. An application form is shown in Figure 7-9. Along with the application, an owner must also submit a typical road bore section as shown in Figure 7-10. The permit form is shown in Figure 7-11. All forms are available at the County Engineer's Office upon request.



DRIVEWAY GRADES
 1 NOT TO EXCEED ±15% RESIDENTIAL
 ±8% COMMERCIAL

FIGURE 7-1 Driveway Profile with Ditches Open

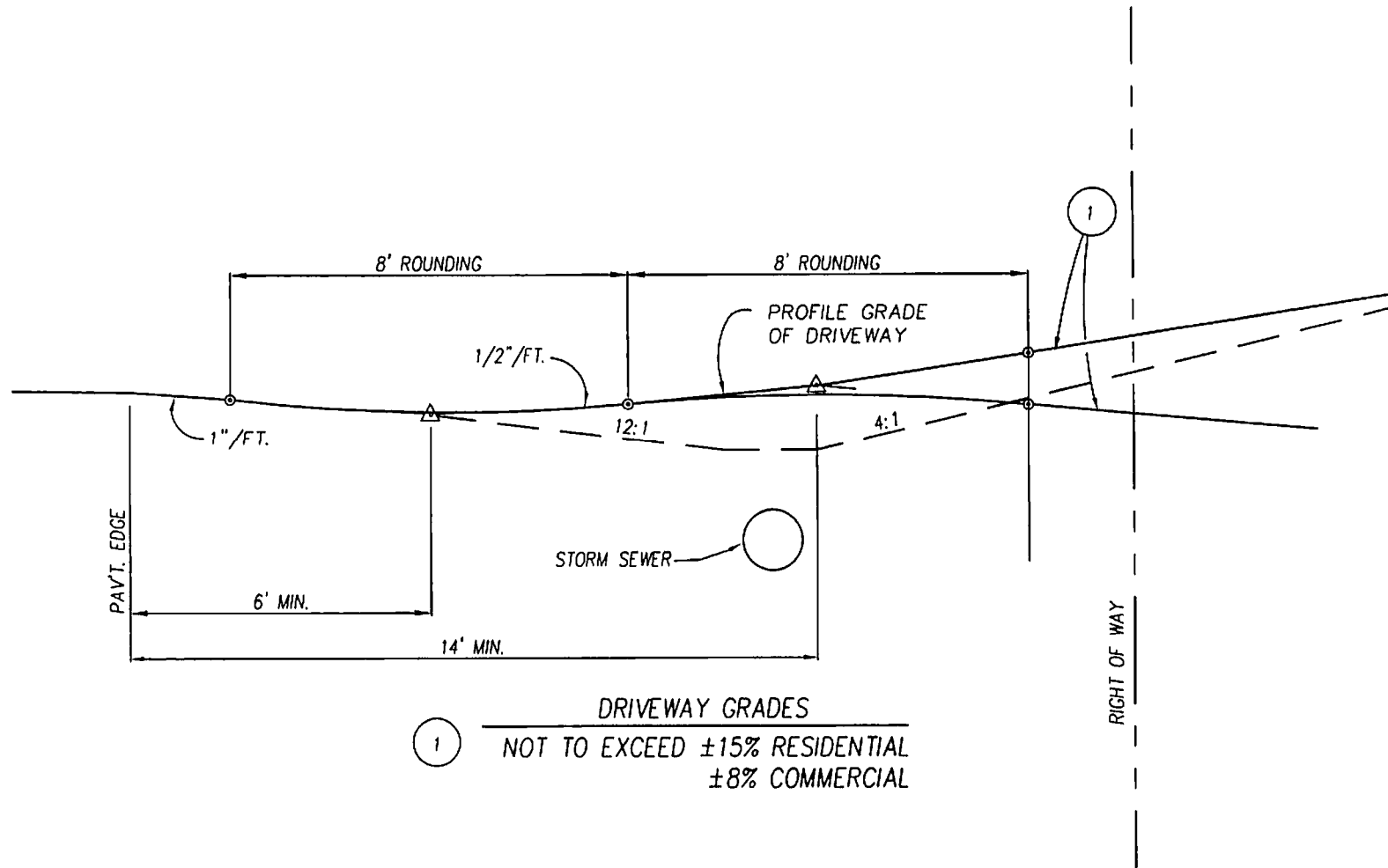


FIGURE 7-2 Driveway Profile with Ditches Enclosed

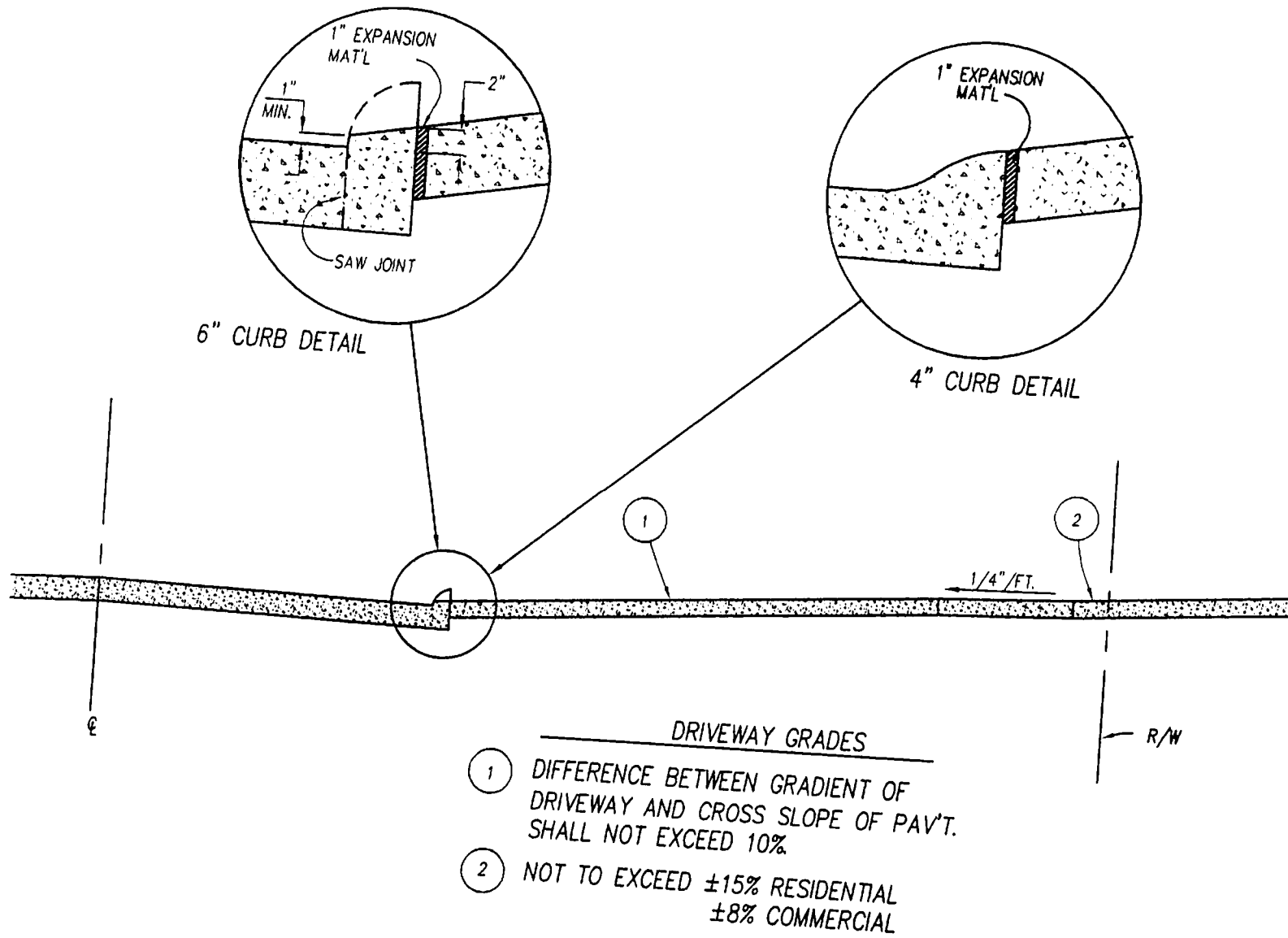
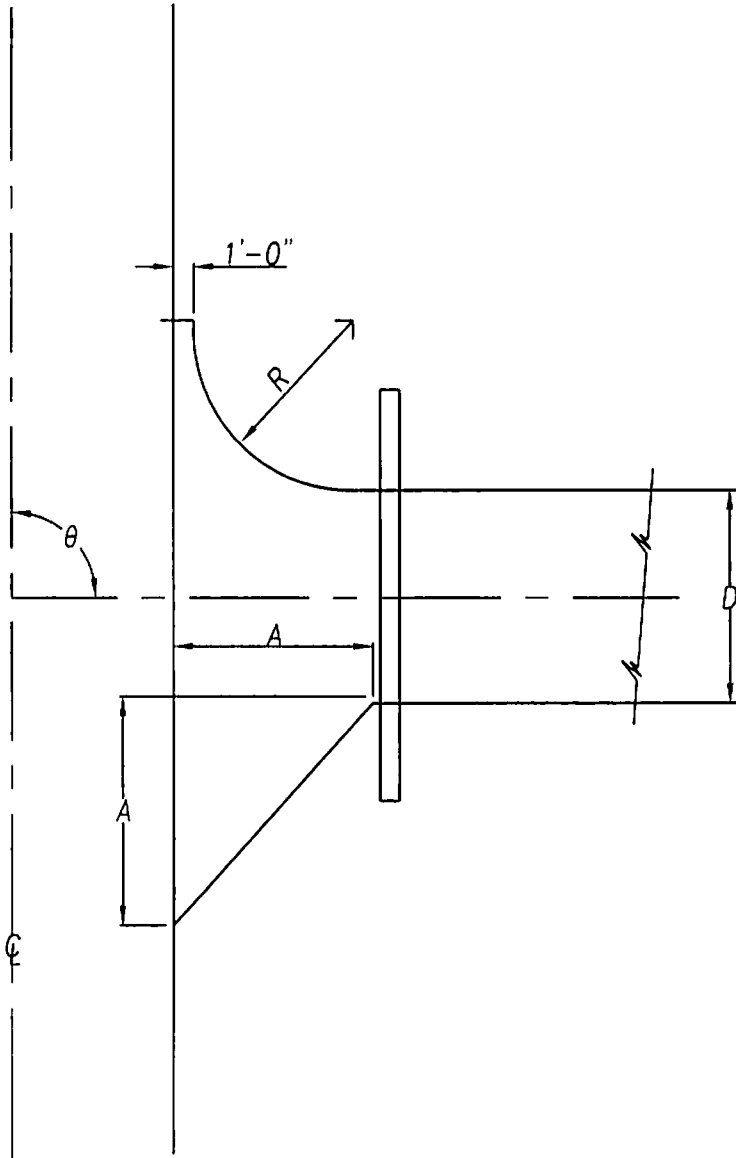


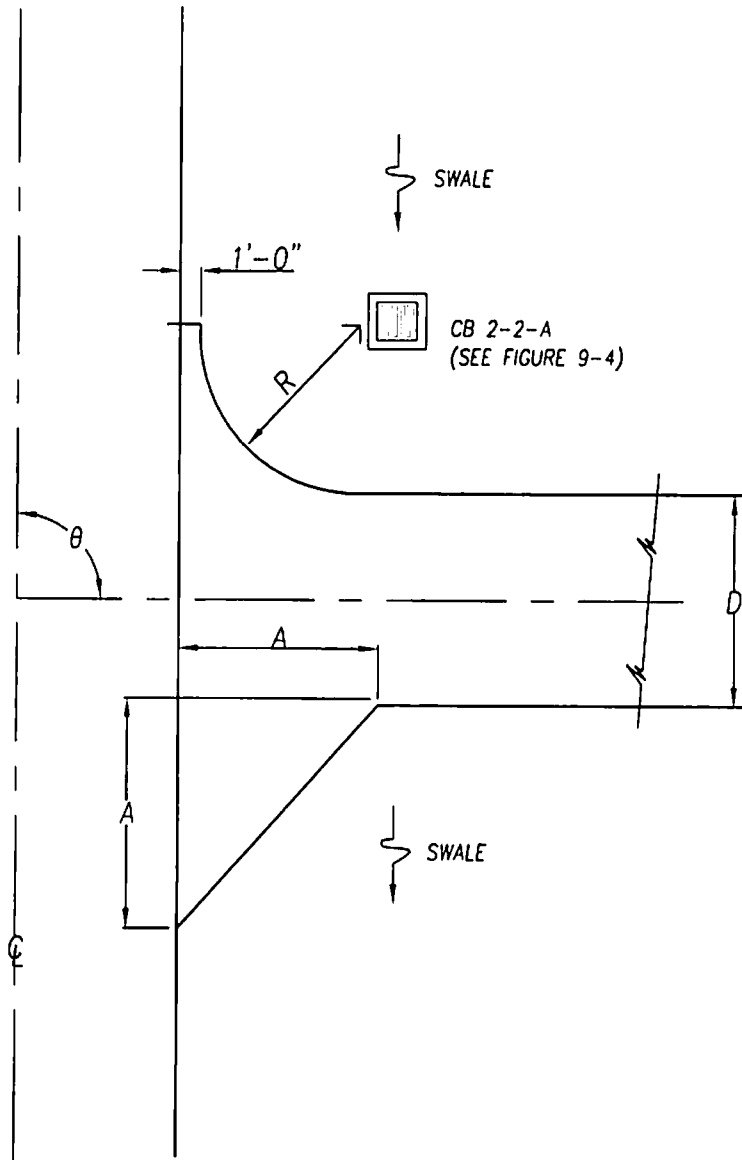
FIGURE 7-3 Driveway Profile with Curb and Gutter



MK	RESIDENTIAL	COMMERCIAL
A	12'	15'
D	10'-20'	25'-35'
R	10'	25'
* θ	70°-90°	70°-90°

*WHEN ANGLE OF INTERSECTION IS LESS THAN 70°, DESIGN STANDARDS TO BE DETERMINED BY THE COUNTY ENGINEER.

FIGURE 7-4 Approach Plan for Driveway with Ditches Open



MK	RESIDENTIAL	COMMERCIAL
A	12'	15'
D	10'-20'	25'-35'
R	10'	25'
* θ	70°-90°	70°-90°

*WHEN ANGLE OF INTERSECTION IS LESS THAN 70°, DESIGN STANDARDS TO BE DETERMINED BY THE COUNTY ENGINEER.

FIGURE 7-5 Approach Plan for Driveway with Ditches Enclosed

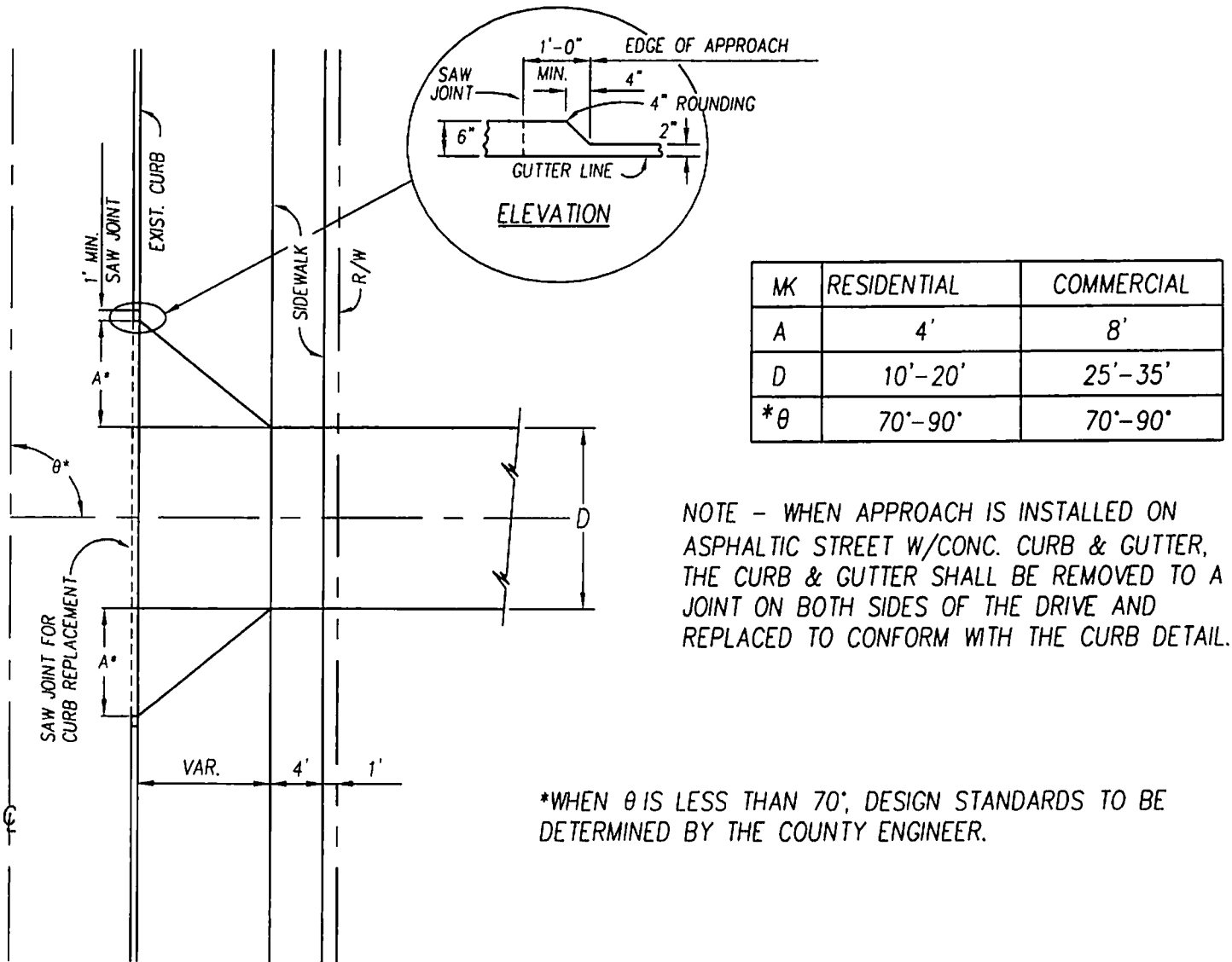


FIGURE 7-6 Approach Plan for Driveway with Curb and Gutter

APPLICATION AND PERMIT FOR DRIVE PIPE INSTALLATION

Application fee: \$20.00

Checks payable to: Wayne County Engineer

Wayne County Engineer's Office

3151 West Old Lincoln Way

Wooster, OH 44691

(330) 287-5500

Office Use Only

Road No. _____

Permit No. _____

Amt. Pd. _____

Status: c _____ m _____ e _____

VOID AFTER 90 DAYS

A. Application:

Contractors Name _____

House # _____

Address: _____

Lot # _____

Phone: _____

Owners Name: _____

Mailing Address: _____

Phone: _____

Location: Road No. ____ Township: _____

The drive is located on the (N,S,E,W) side of the road.

The drive is located approximately ____ miles (N,S,E,W) of Rd. No. _____

Type of Installation: (check one)

_____ Residential Drive

_____ Public Institution

_____ Farm Field Entrance

_____ Other (describe)

_____ Commercial Drive

Proposed Driveway Width: Single or Double

Note: The minimum length of pipe shall be 24' or the length required to properly serve the entrance. Also, the minimum diameter shall be 12", unless approved otherwise by the County Engineering Department.

B. Procedure:

1. Owner or contractor makes an application for a drive pipe installation.
2. Field inspection, design, and recommendations are made by the Engineering Dept.
3. Permission is formally granted to install drive pipe.
4. Owner purchases required materials and completes all work necessary to install drive pipe as outlined on permit.
5. Owner notifies Engineering Department that pipe installation is completed and ready for final inspection by returning application and permit form.

C. Permit:

Applicants Statement:

The applicant agrees to install or have installed a drive pipe of the type and size herein specified and in the location indicated on the Field Inspector's sketch. The owner accepts full responsibility for the maintenance of this pipe forever. Failure to properly maintain this pipe shall void the owner's permit.

Signed: _____, Owner

Date: _____

Authorization:

Permission is hereby granted to the applicant to install a drive pipe of the type and size specified in Section "D" of this form.

Signed: _____

Date: _____

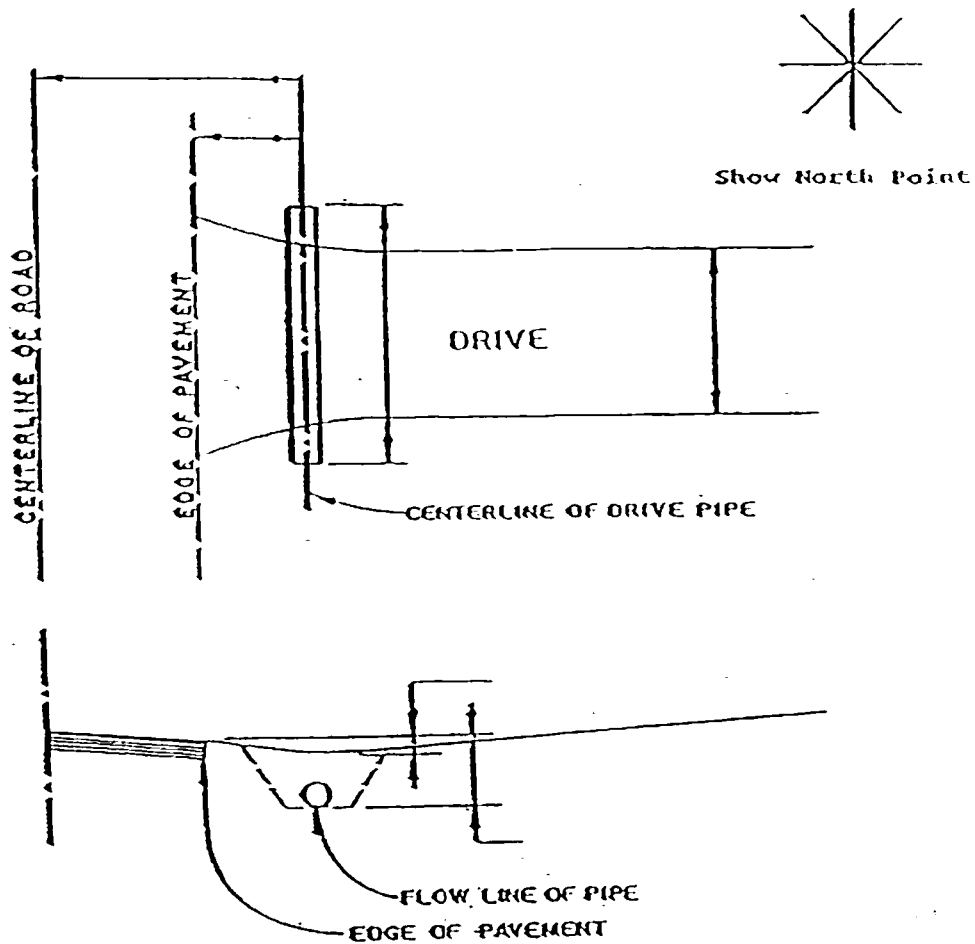
D. Field Inspection:

Inspector: _____ Date: _____

Recommendations for Pipe:

Length: _____ feet, Diameter: _____

Type: _____



E. Special Notes:

1. Embed pipe in 3" or 4" of 304 gravel or limestone.
2. There shall be no large stones, blocks, curbing or any other protruding obstruction, higher than the road surface at each end of the pipe.
3. Leave one foot at each end of pipe uncovered.

F. Final Inspection:

This drive pipe installation has been inspected and found to be

Satisfactory _____

Unsatisfactory _____

Remarks: _____

Signed: _____

Title: _____

Date: _____

APPLICATION AND PERMIT FOR YARD PIPE INSTALLATION

Application fee: \$20.00

Checks payable to: Wayne County Engineer

Wayne County Engineer's Office
3151 West Old Lincoln Way
Wooster, OH 44691
(330) 287-5500

Office Use Only
Road No.
Permit No.
Amt. Pd.
Status: c m e

VOID AFTER 90 DAYS

A. Application:

Contractors Name
Address:
Phone:
House #
Lot #
Owners Name:
Mailing Address:
Phone:

Location:

Road No. Township:
The installation is located on the (N,S,E,W) side of the road.
The installation is located approximately miles (N,S,E,W) of Rd. No.

B. Procedure:

- 1. Owner or contractor makes an application for a yard pipe installation.
2. Field inspection, design. and recommendations are made by the Engineering Dept.
3. Permission is formally granted to install yard pipe.
4. Owner purchases required materials and completes all work necessary to install yard pipe as outlined on permit.
5. Owner notifies Engineering Department that pipe installation is completed and ready for final inspection by returning application and permit form.

C. Permit:

Applicants Statement:

The applicant agrees to install or have installed a yard pipe of the type and size herein specified and in the location indicated on the Field Inspector's sketch. The owner accepts full responsibility for the maintenance of this pipe forever. Failure to properly maintain this pipe shall void the owner's permit.

Signed:
Date:

Authorization:

Permission is hereby granted to the applicant to install a yard pipe of the type and size specified in Section "D" of this form. The County reserves the right to remove any, or all, defective pipes after this permit is voided.

Signed:
Date:

D. Field Inspection:

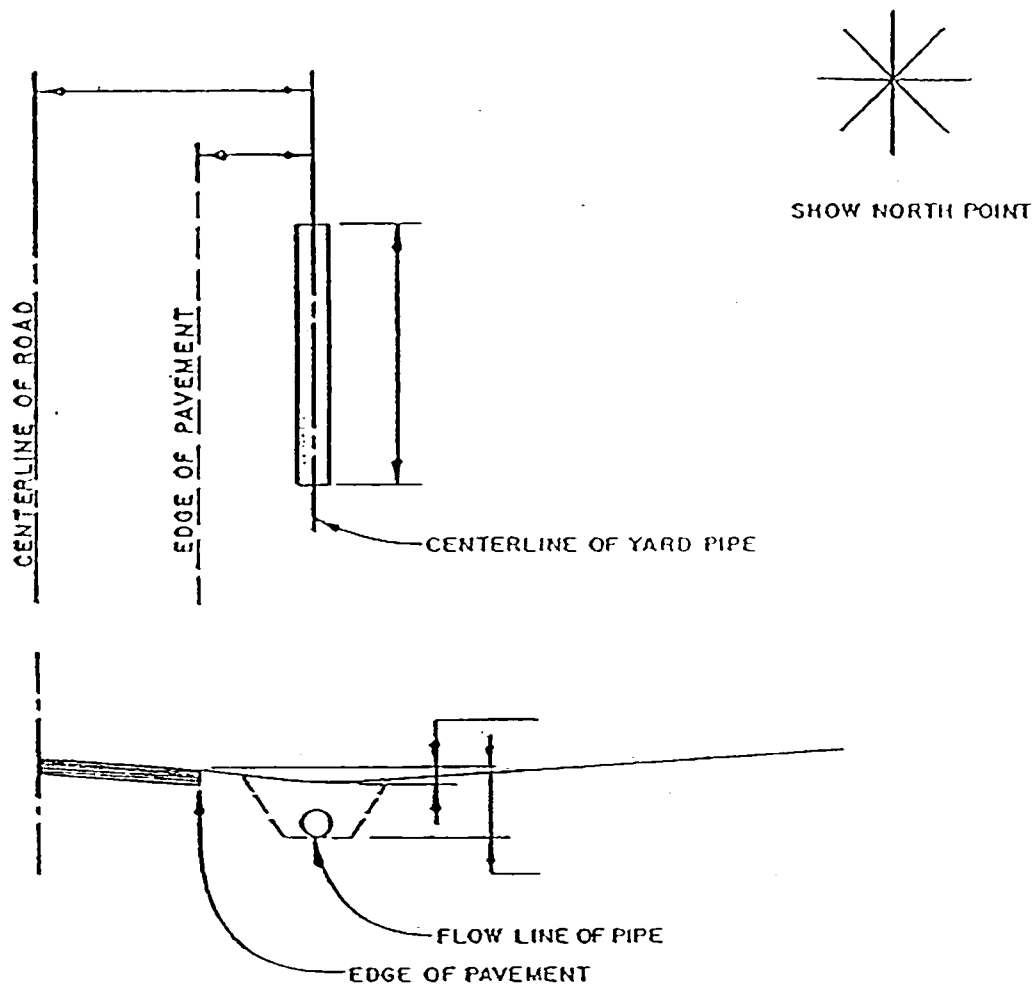
Inspector: _____ Date: _____

Recommendations for Pipe:

Length: _____ feet No. of Inlets _____

Diameter: _____ inches

Type: _____



F. Final Inspection:

This yard pipe installation has been inspected and found to be

Satisfactory _____

Unsatisfactory _____

Remarks: _____

Signed: _____

Title: _____

Date: _____

APPLICATION FOR PERMIT

Wayne County Engineer's Office
3151 West Old Lincoln Way
Wooster, OH 44691

Date _____

Gentlemen:

Application is hereby made by (1) _____

_____ P.O. Address (2) _____

to (3) _____ Telephone number _____

at the following described location (4) _____

_____ in _____ Township along/under Co. Rd. No. _____

and in accordance with the attached plan (5) _____

(6) Work will commence on or about _____ and will require
_____ days.

Enclosed please find my check for _____ dollars
(\$ _____).

If this permit is granted I, we agree to comply with all the General Provisions, conditions, restrictions and regulations of the Engineer's Department in such cases made and required.

By _____

TO BE FILLED IN BY COUNTY ENGINEER:

C.R. No. _____ Section _____ Township _____ Sec. _____

Width of R/W _____ Road Station _____

Construction Permit Officer _____ Date _____

FIGURE 7-9 Permit Application for Road Boring

APPLICATION FOR PERMIT

Instructions

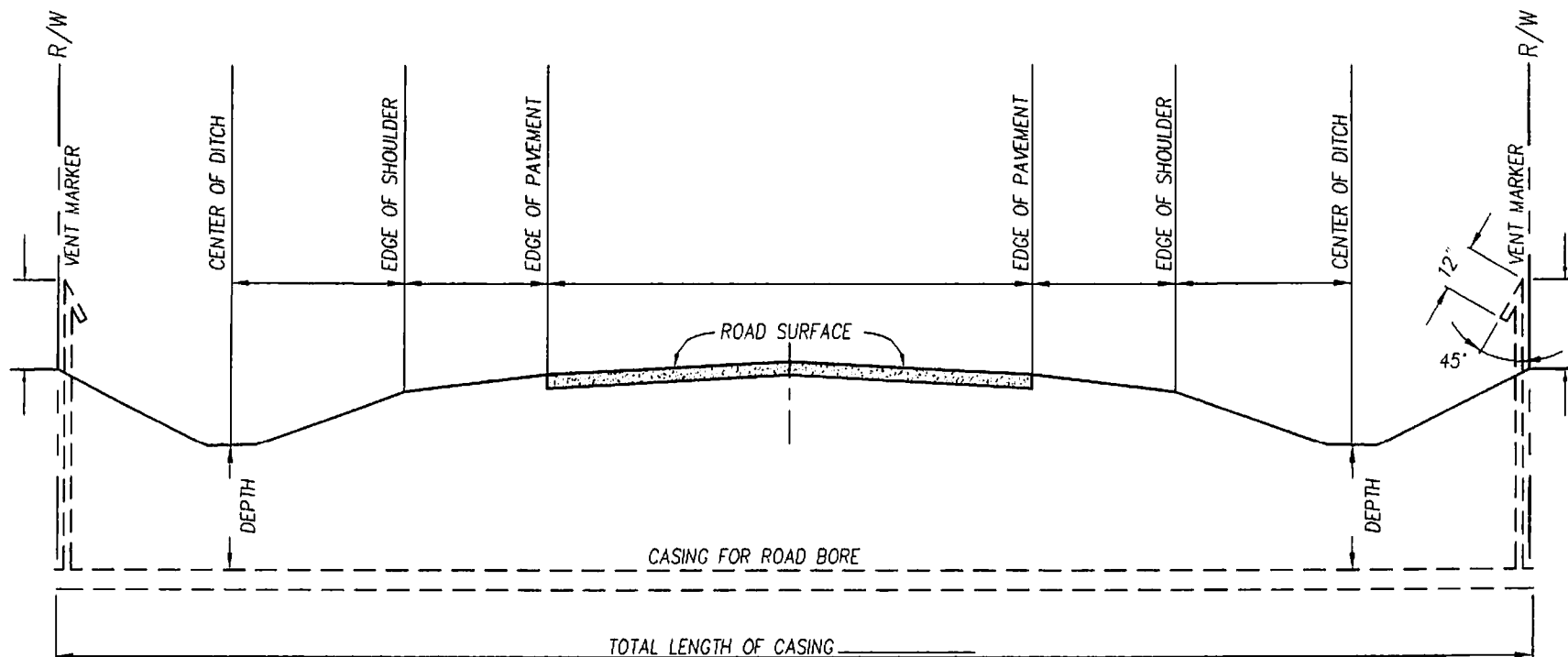
1. Owner of installation (application by contractor not acceptable).
2. Mailing address and telephone number of Owner.
3. State fully and completely type of installation.

If pole line, give the following information:
Number of poles, total length of line, type of wire, character of service, vertical clearance over pavement, and voltage if power line.

If pipe line, give the following information:
Type of service, internal size, length of line, depth of trench, kind of pipe (sewer, oil, gas, etc.) or conduit. All fluid lines require encasement with suitable material, size and length satisfactory to the Department.

If access approach, give the following information:
Type of construction, width, thickness and drainage data.
4. Give Township, Road number and distance from some geographical point such as intersecting state highways, city or village corporate limits, section lines, county or township highways.
5. Attach two (2) copies of a plan showing proposed location of structures with reference to pavement and right of way line. If installation crosses the highway, show present roadway and proposed installation.
6. Give anticipated dates for beginning and for completion of proposed installation.
7. A check, payable to Wayne County Engineer, must accompany application.

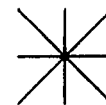
See other side for General Provision to be complied with all cases.



FIRM _____

ADDRESS _____

PHONE _____



INDICATE NORTH
BY ARROW

SIGNED _____ DATE _____

FIGURE 7-10 Typical Road Bore Section

VOID PERMIT AFTER 180 DAYS
County of Wayne
ENGINEERS DEPARTMENT

CR

PERMIT

Subject to all of the terms, conditions and restrictions printed or written below, and on the reverse side hereof, permission is hereby granted to

CR No. Section , in Township, Section in WAYNE COUNTY, OHIO. This permit be in possession of employees in charge of work at all times. To be shown upon request to any employee of the County Engineers Department, County Commissioners, or Wayne County Sheriff.

No work shall be done under this permit until the party or parties to whom it is granted shall have communicated with and received instruction from Mr. Ben Saurer, Superintendent of Maintenance, of the County Engineers Department, Wooster, Ohio 287-5500.

This permit shall be void unless the work herein contemplated shall have been completed before

_____ Dated at Wooster, this
_____ day of _____, 2004.

Wayne County Engineer

GENERAL PROVISIONS

Conditions Relating Particularly to Permits for the Laying of Pipes, Conduits, Etc.

After any pipes, conduits, drains or other underground structures are laid or any excavation is made in the roadway, the trenches or openings shall be properly backfilled with suitable material, the material shall be placed in courses not to exceed six (6) inches, loose measurement. Each course shall be thoroughly tamped or rolled, and shall be firm and uniform or backfilling may be made as directed by the County Superintendent of Highways, or County Engineer.

Material satisfactory to the Road Superintendent shall be used as the final course, so there will be a firm and solid surface. In no case shall the material so placed be allowed to project above or below the grade of the road as originally established. All surplus material shall be removed in a manner satisfactory to the County Superintendent of Highways. The permit holder shall maintain the berm over the trench in a manner acceptable to the County Superintendent of Highways for the period of one year.

If the work performed is under the pavement, it will be required that any portions removed in excavating or damaged in the progress of the work, with the exception of the road base and surface, shall be replaced with the above section. It is required that the permit holder notify the County Superintendent of Highways of the day on which the opening of the pavement will be made, also the time of completion of the backfill.

Whenever the pavement is disturbed it will be replaced by the County Highway Department and the cost of such work shall be borne by the permit holder. Until such time as the road base and surface shall have been replaced by the County Highway Department, any cost of maintenance of keeping the highway in passable condition shall be borne by the permit holder.

At all times during the progress of the work, adequate protection and passage shall be provided by the permit holder for the traveling public. Not more than one-half of the traveled roadway shall be closed at one time unless special permission is given in permit; such barriers shall be erected and maintained as may be necessary for the protection of the traveling public; the same shall be properly lighted at night; and the party or parties to whom this permit is issued shall be responsible for all damages to persons or property due to or resulting from any work done under this permit.

No tunneling shall be done under this permit; where pipes or conduits are to cross the highway, the crossing shall be made without disturbing the pavement, by driving the pipe under the roadway; the pipe shall be carried under and across the road in a larger pipe or casing unless otherwise herein provided or by written consent of the County Engineer. All pipe crossings shall be vented on both sides of crossing.

When manholes are placed in the berm of the highway, they shall be located at such depth that the berm can be maintained over the top of the same. If at some future time the pavement is widened over the conduit, the manholes shall be raised to conform with the surface of the pavement.

The pavement shall be kept clear of all dirt from the excavation. In the event the highway becomes damaged because of said construction, the party or parties to whom this permit is granted shall promptly restore said highway to its former state of usefulness.

All of the above conditions shall apply in event it becomes necessary to open the trench at some future date for repairs or removal of structures.

Conditions Relating Particularly to Permits for the Erection of Poles, Wires and Overhead Structures

1. In the erection of pole lines, unless otherwise herein provided or by written consent of the Engineer, the center of all poles shall be located not more than one foot inside the right of way of the highway or as authorized.
2. No cutting or trimming of trees is authorized by this permit; in case it is found necessary to trim trees within the boundaries of the highway, the least amount possible shall be done, and in all cases the consent of the abutting property owners must be secured before poles are set and trees trimmed.
3. When the poles are side guyed across the highway, the stub to which the guy is attached shall be located not more than one foot inside the right of way line; the vertical clearance between the guy and the edge of the pavement farthest from the pole being guyed shall not be less than 14 feet.
4. When "A" pole, "H" pole or a brace pole construction is used not more than one of the poles shall be set on the highway right of way.

General Provisions Applicable to All Permits

During the progress of the work, all traffic control devices shall be erected and maintained in conformance with the Ohio Manual of Uniform Traffic Control Devices, or as directed by the County Engineer; the same shall be properly lighted at night; the party or parties to whom this permit is issued shall be responsible for all damages to persons or property due to or resulting from any work done under this permit.

Except as herein authorized, no excavations shall be made or obstacle placed within the limits of the highway in such manner as to interfere unnecessarily with the travel over the road.

If any grading or sidewalks work done under this permit interferes with the drainage of the highway in any way, such catch basins and outlets shall be constructed as may be necessary, in the opinion of the County Engineer to take proper care of said drainage.

If the party or parties to whom this permit is issued does anything contrary to the orders of the County Engineer and after due notice, fails to correct such work or to remove such structure or material as he or they may be ordered to remove, the County Highway Department may, with or without notice, correct such work or remove such structures or material; and the party or parties to whom this permit is issued shall reimburse the County Highway Department for any expense incurred in correcting the work or removing the structure or materials.

All the work herein contemplated shall be done under the supervision and to the satisfaction of the County Department of Highways, and the entire expense thereof, shall be borne by the party or parties to whom this permit is issued.

On the completion of the work herein contemplated all rubbish and debris shall be removed and the roadway and roadsides shall be left neat and presentable and satisfactory to the County Superintendent of Highways.

The granting of this permit does not in any way abridge the right of the County Engineer in his jurisdiction over the County highways. If, in the process of any future work or for the benefit of the traveling public, it becomes necessary, in the opinion of the County Engineer to order the removal, reconstruction, relocation or repair or any of the fixtures, or work performed under this permit, said removal, reconstruction, relocation or repair shall be wholly at the expense of the owners thereof, and be made as directed by the County Engineer.

The right is reserved, during the time any or all the work is being performed, to appoint an inspector over the work who shall represent the interests of the County on the work, and any compensation arranged for shall be paid wholly by the permit holder.

All of the above conditions shall be applicable to the work herein authorized, unless the same are inconsistent with the conditions on the face of the permit, in which case the conditions written or printed on the face of the permit shall apply.

The acceptance of this permit or the doing of any work thereunder shall constitute an agreement by the party or parties to whom the permit is granted to comply with all of the conditions and restrictions printed or written herein.

This permit may at any time, be revoked and annulled by the County Engineer for nonperformance of or noncompliance with, any of the said conditions, restrictions and regulations hereof.

See other side for application instructions.

ARTICLE VIII

PAVEMENT DESIGN

800 - PURPOSE

Within this article, pavement design specifications are set forth in a practical and orderly manner. The specifications were developed according to design guides published by AASHTO and ODOT.

801 - PAVEMENT THICKNESS AND COMPOSITION

The primary design factor to consider for selecting the appropriate thickness and composition for a particular road is that road's classification. This would include the expected average daily traffic. Another important factor to consider is the strength of the subgrade.

The tables within this section provide the required pavement thickness and composition for residential and multi-family streets. The pavement design of all other streets shall meet with the approval of the County Engineer.

802 - BITUMINOUS SEAL COAT

The shoulders shall be brought to grade by applying the required base course and installing granular or pipe subdrains as required herein, and as approved by the County Engineer. Seal coat work shall consist of the construction of a wearing surface composed of two applications of bituminous material and cover aggregate, compacted in accordance with the 1997 ODOT specifications, and in reasonably close conformity with grades shown on the plans.

- 1) A bituminous primer (MC-70), and cover aggregate at 20 lb./sq. yd., shall be placed on the completed base course as a stabilizer and applied at a rate of 0.50 gal./sq.yd..
- 2) A bituminous surface treatment and cover aggregate of crushed limestone, No. 8, shall be applied the first year at rates of 0.50 gal./sq. yd. and 40 lbs./sq. yd., respectively.
- 3) After the winter following the acceptable installation of the first seal coat, a second seal coat shall be applied. The bituminous treatment shall be applied at a rate of 0.40 gal./sq.yd. and the limestone at a rate of 40 lbs./sq.yd., as approved by the County Engineer.

803 - ASPHALT CONCRETE WITH AGGREGATE BASE

Asphalt concrete with aggregate base shall consist of a base course of aggregate, a base course of asphalt and the construction of a surface course of asphalt. All compacted in accordance with ODOT specifications, and in reasonably close conformity with the grades shown on the plans.

- 1) A base course of asphalt shall be placed on the base course of aggregate the first year. At this same time the shoulders shall be brought to grade by applying the required base course and installing pipe subdrains as required herein, as approved by the County Engineer.
- 2) After the winter following the acceptable installation of the base course of asphalt, the surface course of asphalt shall be applied. The surface course of asphalt shall be applied at a time and in a manner as approved by the Engineer.

804 – SHOULDERS AND BERMS

For “Typical Street Section I – Curb and Gutter with Storm Sewer”, “Typical Street Section II – Roadside Swales with Storm Sewers” and “Typical Section III - Roadside Ditches”, the aggregate base shall extend one (1) foot beyond the edge of the pavement (under total width of curb for Typical Street Section I – Curb and Gutter with Storm Sewer”) on each side of the pavement and shall be the same thickness as the aggregate base. The berm for “Typical Street Section I – Curb and Gutter with Storm Sewer” shall not extend beyond the edge of the pavement, since the concrete curb and gutters will take the place of the berms. The berm for “Typical Street Section II – Roadside Swales with Storm Sewers” and “Typical Section III - Roadside Ditches” shall extend two (2) feet beyond the edge of the pavement on each side of the pavement and shall be five (5) inches thick for Pavement Section B & C, and six (6) inches thick for Pavement Section A (See Figure 6-2 & 6-3).

805 - PLACEMENT OF PAVEMENT MATERIALS

All materials shall be handled, placed and compacted per the ODOT Construction and Materials Specifications, any special construction notes in the drawings, or as directed otherwise by the Engineer. Item 304 aggregate base must be placed with self-propelled spreading machines (not dozers) capable of placing the material true to line and grade without segregation. Spreading machines such as spreader boxes or pavers are allowed.

806 - INSPECTION

Approval of the subgrade and base material must be obtained from the County Engineer. Each course of material shall be inspected and accepted before the placement of the next succeeding course. All materials, as well as the handling and placement of the materials, shall conform to ODOT's Construction and Material Specifications, unless determined otherwise by the County Engineer.

Initial Pavement Construction

Pavement Section A	Pavement Section B	Pavement Section C
ODOT # 204 Subgrade Compaction	ODOT # 204 Subgrade Compaction	ODOT # 204 Subgrade Compaction
4" ODOT # 304 Aggregate Base	6" # 1 Limestone Aggregate Base	6" ODOT # 304 Aggregate Base
8" #1 Limestone Aggregate Base	5" ODOT #304 Aggregate Base	ODOT # 408 Prime Coat Bituminous Material: ½ gal/sy
6" ODOT # 304 Aggregate Base	ODOT # 408 Prime Coat Bituminous Material: ½ gal/sy ODOT # 409 Seal Coat Limestone Cover Aggregate 40 lbs./s.y.	3 ½" ODOT # 301 Bituminous Aggregate Base (Limestone)
ODOT # 408 Prime Coat Bituminous Material: ½ gal/sy	3" ODOT # 405 Bituminous Cold Mix (Limestone) 150 lbs./s.y.	
ODOT # 409 Seal Coat Bituminous Material: ½ gal/sy Seal Coat Limestone Cover Aggregate 40 lbs./s.y.	ODOT # 409 Seal Coat Bituminous Material: ½ gal/sy Seal Coat Limestone Cover Aggregate 40 lbs./s.y.	

Final Pavement Construction (After first Winter)

Pavement Section A	Pavement Section B	Pavement Section C
ODOT # 409 Seal Coat Bituminous Material: .5 gal/sy Seal Coat Limestone Cover Aggregate 40 lbs./s.y.	2" ODOT # 405 Bituminous Cold Mix (Limestone) 150 lbs./s.y.	ODOT # 407 Tack Coat 0.10 gal./s.y.
	ODOT # 409 Seal Coat Bituminous Material: .5 gal/sy Seal Coat Limestone Cover Aggregate 40 lbs./s.y.	1 ½" ODOT # 448 Asphalt Concrete (Limestone)

NOTE: DESIGN OF TYPICAL PAVEMENT SECTIONS/COMPOSITIONS, OTHER THAN LOCAL RESIDENTIAL AND MULTI-FAMILY, SHALL MEET WITH THE APPROVAL OF THE COUNTY ENGINEER. THE 1997, OR LATER, OHIO DEPARTMENT OF TRANSPORTATION (ODOT) "CONSTRUCTION AND MATERIAL SPECIFICATIONS" SHALL BE USED HEREIN, AS APPROVED BY THE COUNTY ENGINEER.

NOTE: NO RECYCLED MATERIAL OF ANY KIND WILL BE ALLOWED.

General Pavement Section Description

Pavement Section A; Granular base with double chip & seal.

Pavement Section B; Granular base and bituminous cold mix surface course with chip & seal.

Pavement Section C; Granular base and asphalt concrete base with asphalt concrete surface course.

**Table 8-1 Typical Pavement Sections/Compositions
(RESIDENTIAL AND MULTI-FAMILY)**

ARTICLE IX

DRAINAGE

900 - PURPOSE

The development of all new and modified drainage systems shall be governed by the guidelines set forth in this article, in coordination with the Wayne County Storm Water Management Regulations.

901 - PRELIMINARY DRAINAGE PLAN

A preliminary drainage plan for all major subdivisions shall be submitted to the County Engineer for review and approval. It shall include a drawing showing the general runoff pattern and proposed storm water management systems for the area to be improved, as well as the runoff patterns of adjacent areas which may affect or be affected by the proposed improvement. Sufficient data shall also be supplied to check the feasibility of the drainage system as proposed by the developer.

902 - DRAINAGE EASEMENT

Easements of adequate width shall be required for all existing and proposed drainage courses that are not within the road right-of-way. Public drainage easements shall be provided outside of the road right-of-way to allow for positive roadside ditch drainage under all anticipated circumstances. The development's owner shall be responsible for obtaining any easements required outside the subdivision boundaries, and have them properly recorded in the County Recorder's Office.

All drainage easements shall be shown on the plat and construction drawings along with their intended purpose specified in writing. Maintenance of private drainage courses is the responsibility of the owners whose lands are benefited by the drainage system.

903 - RIGHT-OF-WAY FOR DRAINAGE STRUCTURES

When a drainage structure extends beyond the limits of the normal road right-of-way, additional right-of-way shall be provided around the structure to allow for adequate maintenance.

904 - FINAL DRAINAGE PLAN

A final drainage plan shall include drawings of the entire drainage system and be submitted to the County Engineer. The plan shall conform to the guidelines herein and to any special requirements of the Wayne County Storm Water Management Regulations and the WCPC in approving the preliminary plat. The plan shall also include the engineering calculations used in determining the design of the drainage courses, drainage structures, and storm water control structures.

Minimum requirements for drawings and engineering calculations for onsite drainage shall be as noted in Article III and also the following:

- 1) The acreage of all tributary drainage areas and their sum.
- 2) Times of concentration, intensity, and runoff coefficients used in the Rational Method to estimate the amount of runoff.

Overland slopes, curve numbers, hydraulic lengths, etc., used in the SCS Peak Discharge Method.

For methods other than these two, enough information must be provided to the County Engineer to allow for an accurate review.

- 3) Discharges in cubic feet per second (cfs), velocities in feet per second (fps), and any additional data needed to establish that the drainage system will convey the flow.
- 4) The plan and profile of all drainage courses.
- 5) Cross sections along the drainage course at one-hundred (100) foot intervals or as directed by the County Engineer.
- 6) Sizes and types of all drainage improvements - detailed standard drawings.

905 - COMPUTATION OF STORMWATER RUNOFF

Given the type of drainage structure to be designed, the rate of runoff shall be computed using the storm frequencies given below:

<u>Structure</u>	<u>Storm Frequency (Yrs.)</u>
Storm sewers	5
Open ditches	10
*Culverts (minor)	10
*Culverts (major)	25
Bridges	50
Floodplain structures	100

*A minor culvert is designed to handle the runoff from a tributary drainage area of less than 200 acres. Whereas a major culvert is designed to handle the runoff from a tributary drainage area of greater than 200 acres.

The design storm frequency to be considered for an individual structure may be altered by the County Engineer where the health and safety of residents would be endangered by the hazards of floodwaters.

The Rational Method. $Q = CIA$

Where: Q = peak rate of runoff (cfs)
 C = runoff coefficient
 I = intensity of rainfall (in/hr.)
 A = tributary area (acres)

will normally be an acceptable method for computing the peak rate of runoff for tributary drainage areas of less than two-hundred (200) acres. The intensity may be determined from Figure 9 - 1.

For tributary drainage areas greater than two-hundred (200) acres: the Soil Conservation Service's method may be used to compute the peak rate of runoff. See the SCS Engineering Field Manual and Technical Release No. 55 - Urban Hydrology for Small Watersheds for explanation and limits of the method.

The Ohio Department of Natural Resources publication Bulletin 45 - Floods in Ohio may also be used in the computation of runoff for tributary drainage areas larger than two-hundred (200) acres.

906 - BRIDGES AND SPECIAL STRUCTURES

The design and construction of bridges or any other special drainage structure within an existing or proposed public right of way or drainage easement, shall be reviewed and approved by the County Engineer.

907 - CULVERTS

Culverts installed to convey water under a roadway embankment shall be designed so as not to impose a hazard to the roadway or surrounding area. All culverts shall be installed in accordance with ODOT's Construction and Material Specifications.

The hydraulic design of a culvert is primarily influenced by headwater depth and the flow is classified as being under inlet or outlet control. The following publications from the Federal Highway Administration (FHWA) are useful aids in culvert size selection:

- 1) HEC#5 Hydraulic Charts for the Selection of Highway Culverts.
- 2) HEC#10 Capacity Charts for the Hydraulic Design of Highway Culverts.

The type of pipe required shall be selected by determining the pH of the watercourse and the depth of cover over the pipe. For depth of cover requirements, see ODOT's Location and Design Manual. Headwalls and endwalls shall be required for concrete pipe and corrugated metal pipe shall be at least of the minimum gauge specified by the County Engineer.

The design engineer shall also consider the need for special treatment, such as; catch basins, improved inlets, stilling basins, energy dissipators, downstream channel improvements, or erosion controls.

908 - OPEN DITCHES

Items which should be considered when designing open ditches are the anticipated runoff, capacity, and maximum allowable velocity. The maximum allowable velocity is dependent upon the type of soil within the ditch.

An open ditch shall have a slope of not less than two percent (2 %). Ditches shall also be lined to prevent erosion. The ditch's susceptibility to erosion shall be based upon the soil type in the area and the velocity of the estimated peak flow. Ditches susceptible to erosion shall be lined in accordance with Table 9-1.

A drainage easement shall be provided for open ditches that are outside the road right-of-way in accordance with Section 902.

The width of the easement shall include the distance between the back slopes of the ditch, plus an additional strip of land at least ten (10) feet wide along one side of the top of the channel bank, as approved by the County Engineer.

This easement shall be shown on the construction drawings and on the final plat and labeled "Private Drainage Easement", "Public Drainage Easement", etc., as required.

909 - DAMS AND PONDS

No public road shall be built across a dam without the approval from the County Engineer and Township Trustees.

910 - SUBSURFACE DRAINAGE

Subsurface drainage shall be used as required to control the flow of groundwater and maintain firm, stable subgrades and foundations.

Aggregate underdrains may be used under roadways having a chip and seal surface over an aggregate buildup, providing the drains have adequate outlets in the roadside ditch. Aggregate outlets shall be installed at locations approved by the County Engineer (not more than four-hundred (400) foot spacing, each side of pavement).

Pipe underdrains shall be used under roadways with a bituminous pavement over an aggregate base or where ditches are enclosed. In the design of a pipe underdrain system, consideration shall be given to the type of pipe, filter material, and surrounding soils that are to be drained to avoid clogging and achieve adequate hydraulic capacity. Pipe drainage systems shall be required as approved by the County Engineer, shall be installed along the entire length of the edge of the pavement and shall have drainage outlets installed at locations approved by the County Engineer (not more than four-hundred (400) foot spacing, each side of pavement). Drainage outlets shall be connected to a manhole or catch basin, unless otherwise approved by the County Engineer.

911 - STORM SEWERS

The County Engineer may require a storm sewer system if an open ditch creates a hazard to traffic, or where adequate grade is not present. Erosion may also be a problem with open ditches. The system shall be designed to accommodate the runoff from the tributary drainage area. Storm sewers shall be straight and include manholes and/or catch basins spaced no more than four-hundred (400) feet apart for cleaning, or as approved by the County Engineer. Storm manholes and catch basins shall be placed to align with existing and proposed property lines and/or close to the middle of lots, as approved by the County Engineer to avoid future driveways.

A drainage easement, with a minimum width of twenty (20) feet as determined by the County Engineer, shall be provided for storm sewers outside of the road right-of-way for the purposes as stated in Section 902. This easement shall be shown on both the final plat and the construction drawings and labeled "Private Drainage Easement", "Public Drainage Easement", etc., as required.

For a storm sewer installed within a roadway with curbing, curb inlets shall be provided. Whereas, if a storm sewer is installed away from the roadway without curbing, a drainage swale shall be provided over the sewer and drain to an inlet basin.

Design Criteria

- 1) The hydraulics of the storm sewer system should be arrived at by the use of Manning's Equation:

$$V = \frac{1.49}{n} R^{2/3} S^{1/2} \quad \text{also} \quad Q = AV$$

Where:
V = velocity (fps)
n = Manning's roughness coefficient
R = hydraulic radius (ft)
S = slope
Q = flow (cfs)
A = area (sf)

Kutter's formula may also be used in the hydraulic computations of storm sewers.

- 2) All storm sewers shall be designed with hydraulic slopes sufficient to provide a mean velocity, when flowing full, of not less than three (3) feet per second. Where the velocity exceeds ten (10) feet per second, special provisions shall be made to protect against erosion and displacement.
- 3) No storm sewer shall be less than twelve (12) inches in diameter. Single family house spouting and footer drain connections shall not be less than four (4) inches in diameter. The collector line for these drains shall not be less than six (6) inches in diameter. Service connections from other sources shall be of adequate capacity as determined by the County Engineer. The minimum cleansing velocity for all connections shall be two (2) feet per second, or as approved by the County Engineer.

- 4) When storm sewers are increased in size in the direction of flow, the invert of the larger pipe should be lowered to maintain the same energy gradient, i.e., place the crowns of both pipes at the same elevation. A larger pipe shall not discharge into a smaller pipe, unless prior approval is given by the County Engineer.
- 5) All pipes shall be able to withstand the imposed loadings. For depth of cover requirements, see ODOT's Location and Design Manual.
- 6) The County Engineer shall be consulted for design criteria for unusual situations such as: limited cover, excessive cover, abnormal pH of water, limited slope, etc..

912 - DRAINAGE PIPE SPECIFICATIONS

All pipe shall be of the size, kind, and class required to meet the full satisfaction of the County Engineer. The pipe shall conform to the following specifications:

- 1) Reinforced Concrete Pipe (RCP)
Reference: ASTM C 76
- 2) Non-reinforced Concrete Pipe (NRCP)
Reference: ASTM C 14
- 3) Corrugated Metal Pipe (CMP)
Reference: ODOT Construction and Material Specifications Item 707
- 4) Vitrified Clay Pipe
Reference: ASTM C 700
- 5) Plastic Pipe
 - A. Polyvinyl Chloride Sewer Pipe (PVC-SP)
Reference: ASTM D 3033 and D 3034
 - B. Polyvinyl Chloride Service Drain (PVC-SD)
Reference: ASTM D 2729
 - C. Smooth Lined, Double Walled Polyethylene (PE) Tubing
Reference: ASTM F 405

913 - DRAINAGE PIPE JOINT SPECIFICATIONS

Pipe joints shall conform to the following specifications:

- 1) Reinforced and Non-Reinforced Concrete Pipe
 - A. Under pavement
Reference: ASTM C 443
 - B. Outside pavement
Reference: Cold-applied mastic

- 2) Corrugated Metal Pipe
Reference: ODOT Construction and Material Specifications Item 707
- 3) Vitrified Clay Pipe
Reference: ASTM C 425
- 4) Plastic Pipe
 - A. Polyvinyl Chloride Sewer Pipe
Reference: ASTM D 3033 and D 3034
 - B. Polyvinyl Chloride Service Drain
Reference: ASTM D 2729
 - C. Smooth Lined, Double Walled Polyethylene Tubing
Reference: ASTM F 405

914 - APPURTENANCES TO STORM DRAINAGE DESIGN

All structures shall conform to the design standards herein or to the ODOT Standard Construction Drawings and shall be either precast or cast-in-place concrete. Specifications for concrete manholes, catch basins, or other inlets are as follows:

- 1) Concrete
 - A. Precast
Reference: ASTM C 478
 - B. Cast-in-Place
Reference: ODOT Construction and Material Specifications Item 604
- 2) Joints
Reference: Mortar or ASTM C 443 where required.
- 3) Concrete Building Brick
Reference: ASTM C 55
- 4) Manhole Steps
Reference: NEENAH R-1981-N or approved equal.
- 5) Frames and Covers
 - A. Storm Manholes
 - 1. Covered manhole (paved and grassy areas)
Reference: NEENAH R-1782 (vented) or approved equal.

2. Inlet manhole (paved area)
Reference: NEENAH R 2668 or approved equal.
3. Inlet manhole (grassy area)
Reference: NEENAH R 2668 or approved equal.

B. Catch Basins and Inlets

1. Standard inlet
Reference: NEENAH R-3246-B (DL or DR grate style) or approved equal - See Figure 9-2.
2. Standard double inlet
Reference: NEENAH R-3295-A (DL or DR grate style) or approved equal - See Figure 9-3.
3. Non-curbed inlet for 2-2-B catch basin
Reference: NEENAH R-4871 or approved equal - See Figure 9-4.

C. Yard Inlets

Reference: To be approved by County Engineer.

6) Workmanship

- A. Bases to be precast concrete sections or cast-in-place ODOT Class C concrete.
- B. Manhole top sections to be eccentric cone with vertical portion facing pavement.
- C. Invert to be Class C concrete or half round pipe.
- D. Lift holes to be filled with mortar after setting.
- E. Three courses of brick to be maximum to bring manhole to correct grade.

915 - HEADWALLS. RIPRAP. STONE PROTECTION

The design of headwalls shall conform to ODOT's Standard Construction Drawings. Other specifications are:

- 1) Concrete
Reference: ODOT Class C
- 2) Steel Reinforcement
Reference: ASTM A 617

Riprap, when properly placed can be an effective deterrent to erosion along stream banks. Use of the following criteria can be helpful in the selection and placement of riprap.

- 1) Materials
Reference: ODOT Construction and Material Specifications Item 601.04 except as modified herein.

- 2) Type
 - A. Storm Drainage Outlet
Reference: Stone protection on granular filter.
 - B. Outfall Sewer Outlet
Reference: Grouted stone protection.

- 3) Limits and Depth
 - A. Limits: As shown on drawings or ordered by County Engineer.
 - B. Depth: As shown on drawings with six (6) inch minimum depth for filter.

- 4) Filter Material
Reference: ODOT Construction and Material Specifications Table 703-1, size No. 357.

- 5) Alternates: The concrete slab alternate referred to in ODOT's Construction and Material Specifications Item 601.04 will not be acceptable.

916 - STORM SEWER INSTALLATION

The work shall consist of the construction of storm sewers of the size and type specified. The following shall serve as minimum guidelines.

- 1) The trenches in which the sewers and appurtenances are to be constructed shall be excavated in all cases in such a manner and to such widths as will accommodate the building of the structures they are to contain. Unauthorized excavation below grade shall be filled with granular material, at the expense of the contractor. Also, do not open more than two-hundred (200) feet of trench in advance of laying pipe, unless given permission by the County Engineer.

- 2) Widths of trenches shall be held to a minimum to accommodate the pipe, and in no event shall the trench width at the top of the pipe exceed twelve (12) inches on each side of the pipe for pipe diameters or spans of twenty-four (24) inches or less, unless prior approval has been received from the County Engineer. Figure 9-7 illustrates a typical trench. Also see Figure 9-8 for trench details for encasing pipe in concrete.

- 3) All pipes shall be constructed on firm foundations and the contractor shall use such construction methods as may be necessary to prevent settlement of the pipe after it is laid. Rock, if encountered, shall be removed to a depth of four (4) inches below the bottom of the bell and to a clear width of six (6) inches on each side of all pipes or structures.

- 4) Should water be encountered, the contractor shall furnish and operate suitable pumping plant equipment of capacity adequate to dewater the trench, dispose of such water, and to maintain drainage conditions satisfactory to the County Engineer.

- 5) The trench bottom shall be excavated to an elevation six (6) inches or one-fourth the internal diameter of the pipe, whichever is greater, below the bottom of the sewer pipe. The bottom shall be brought to required grade by backfilling with granular material, consisting of crushed stone or pea gravel, which will pass the three-quarter ($\frac{3}{4}$) inch sieve, but will be retained on the No. 4 sieve. The granular backfill material shall be used as pipe bedding and shall extend halfway up the pipe barrel at the sides. The granular material shall be hand-placed and tamped along the sides of the pipe and worked under the sides of the pipe without lifting or moving the pipe, causing a break at a joint or the pipe to move off alignment.
- 6) The laying of pipes in finished trenches shall be commenced at the lowest point so that the spigot ends point in the direction of flow. All pipes shall be laid with ends abutting and true to line and grade.
- 7) Before the joint is made, both the spigot and bell shall be thoroughly cleaned to remove any extraneous material and shall be kept clean until the joint is made. The joints shall be made according to the manufacturer's recommendations.
- 8) From the centerline of the pipe to a depth of one (1) foot above the top of the pipe, the trench shall be backfilled with selected and approved excavated material by hand or approved mechanical methods. The contractor shall use special care in placing this portion of the backfill so as to avoid damaging or moving the pipe.

From one (1) foot above the top of the pipe to the finished grade, the trench shall be backfilled by hand or approved mechanical methods. Backfill shall be made with the best of the excavated material and no material shall be used, which will damage the pipe.

When the excavation is made through permanent pavements, curbs, driveways, or sidewalks, the entire backfill from halfway up the pipe barrel to the sub-grade shall be granular material. The granular material shall extend beyond the edge of pavement, curbs, driveways, or walks to a forty-five degree 45° line sloping outward from surface of the above items to the bottom of the trench. Figure 9-9 depicts pavement replacement details for asphalt pavement.

- 9) Manholes or catch basins shall be installed at all changes in grade, size, or alignment. Radius pipe may be considered for small changes in alignment. The maximum spacing for manholes and catch basins shall be four-hundred (400) feet as measured horizontally along the center line of the pipe.
- 10) Storm sewers within five (5) feet, center-to-center, of sanitary sewers, shall have premium joints, i.e., meeting ASTM C 425 or C 413. This shall apply to mains as well as to connections.
- 11) Manhole joints shall be of the same type as the incoming sewer.
- 12) Care shall be taken to avoid damage to utilities within the vicinity of sewer construction.
- 13) Where connections are to be made to existing sewers, the contractor shall make suitable provisions for handling flow in the existing sewer until the connection is completed.

- 14) The contractor will be required to replace all drains damaged or destroyed by sewer construction. All structures shall be replaced as and when directed and shall be of the same or equal construction as the original.

917 - DRAINAGE MATERIALS TEST

To insure quality in any improvement, testing may be required. The criteria with regard to the testing are as follows:

- 1) Tests are to be performed and interpreted in accordance with appropriate ASTM specifications by a testing laboratory approved by the County Engineer.
- 2) Cost of specimens and testing shall be borne by the contractor.
- 3) The County Engineer reserves the right to waive any and all of specified tests or to accept a Certificate of Conformance in Lieu of such tests.

918 - MANUFACTURER'S REPRESENTATIVE

A representative, with knowledge of storm sewer installation, may provide valuable information during initial construction. Guidelines pertaining to this practice are as follows:

- 1) Secure services of competent manufacturer's installation instructor when laying pipe and fittings.
- 2) The instructor shall be on the job when pipe laying starts and remain until the County Engineer is satisfied that the contractor is installing the pipe properly.
- 3) Thereafter, the instructor shall be available for consultation as deemed necessary by the County Engineer.
- 4) Include the cost of the instructor's services with the pipe cost.
- 5) The above requirements may be waived, if in the opinion of the County Engineer, such instruction is not necessary.

Soil Type	Seed Lining	Sod Lining	Jute or Excelsior Matting
Sand	1.5	3.5	3.00
Firm Loam	2.0	4.0	4.00
Clay	2.5	5.0	4.00
Gravel	3.5	6.0	5.00
Wheathering Shale	4.5	6.0	5.00

Note:

1. If velocity exceeds that shown in table, the ditch lining must be approved by the County Engineer.

Table 9-1 Allowable Ditch Velocities (fps)

AKRON - CANTON AIRPORT
1951 - 1969

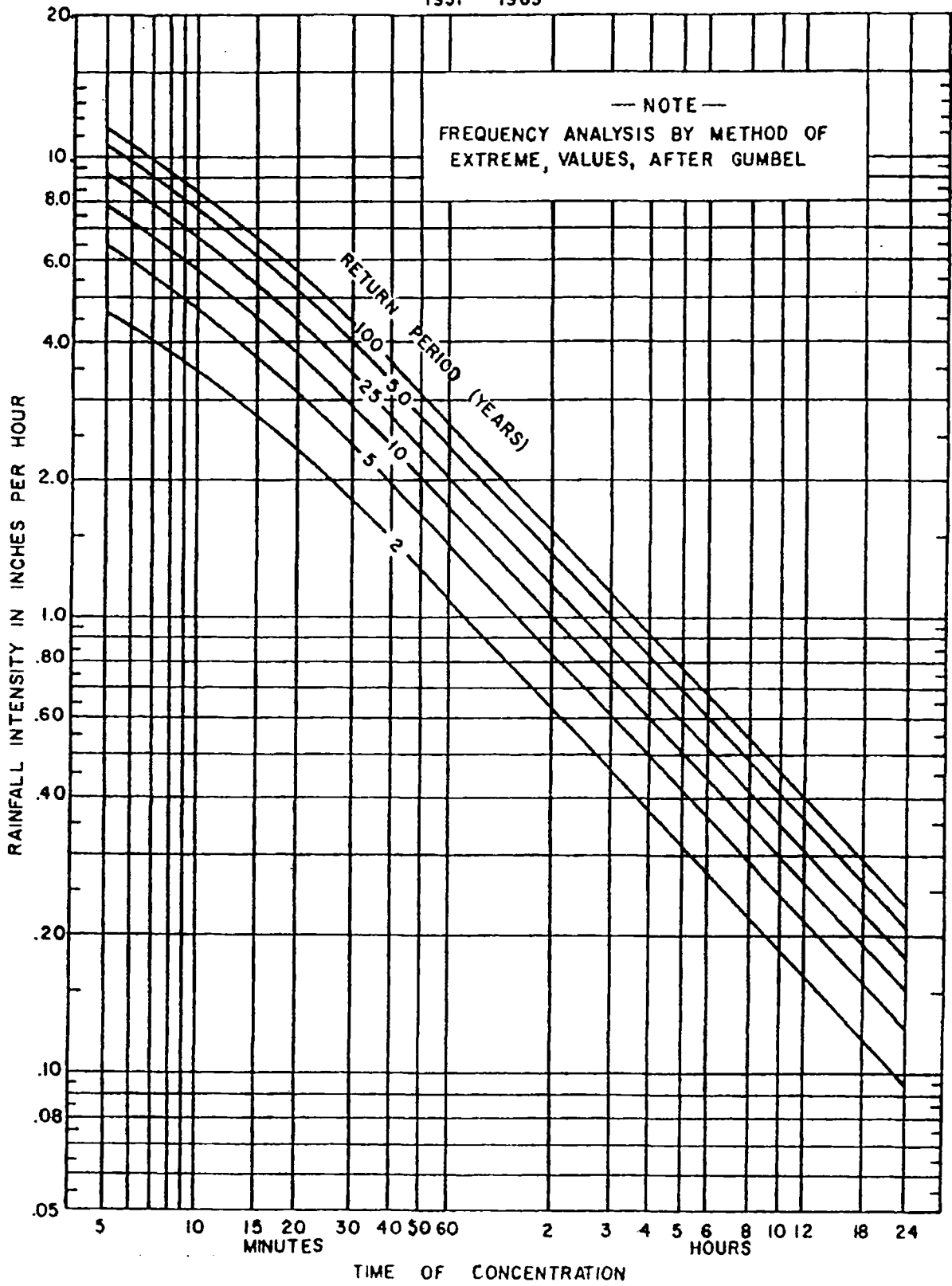


FIGURE 9-1 Rainfall Intensity and Time of Concentration

STANDARD INLET

CASTINGS: NEENAH TYPE R-3246-B WITH DIAGONAL GRATE. DL, DR, OR AN APPROVED EQUAL.

BEARING AREAS: OF FRAME AND GRATE SHALL BE SO FITTED AND FINISHED AS TO PROVIDE A FIRM AND EVEN SEAT FOR ALL PORTIONS OF THE GRATE IN THE FRAME. NO PROJECTIONS SHALL EXIST ON THE BEARING AREAS OF EITHER CASTING AND THE GRATE SHALL SEAT IN ITS FRAME, WITHOUT ROCKING. FRAME AND GRATE SHALL BE FITTED, MATCHED, AND MARKED BEFORE DELIVERY TO THE PROJECT.

CONCRETE: IS TO BE CLASS "C". PRECAST OR CAST IN PLACE.

PAVEMENT: THE PORTION BLOCKED OUT SHALL BE PLACED AFTER THE CASTING HAS BEEN SET BUT SHALL BE PAID FOR AS PART OF PAVEMENT. NO DEDUCTION SHALL BE MADE IN QUANTITIES OF PAVEMENT BECAUSE OF CASTING.

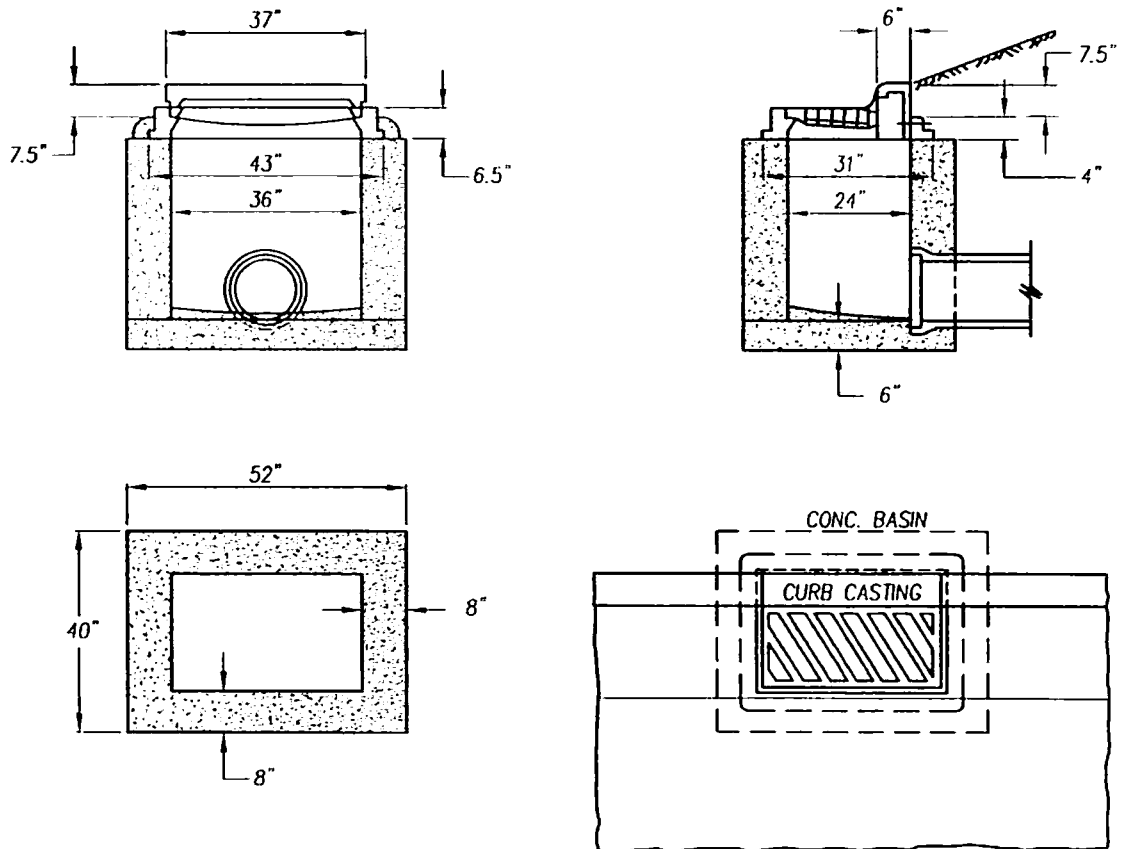


FIGURE 9-2 Standard Inlet

STANDARD DOUBLE INLET

CASTINGS: NEENAH TYPE R-3295-A WITH DIAGONAL GRATE. DL, DR, OR AN APPROVED EQUAL.

BEARING AREAS: OF FRAME AND GRATE SHALL BE SO FITTED AND FINISHED AS TO PROVIDE A FIRM AND EVEN SEAT FOR ALL PORTIONS OF THE GRATE IN THE FRAME. NO PROJECTIONS SHALL EXIST ON THE BEARING AREAS OF EITHER CASTING AND THE GRATE SHALL SEAT IN ITS FRAME, WITHOUT ROCKING. FRAME AND GRATE SHALL BE FITTED, MATCHED, AND MARKED BEFORE DELIVERY TO THE PROJECT.

CONCRETE: IS TO BE CLASS "C", PRECAST OR CAST IN PLACE.

PAVEMENT: THE PORTION BLOCKED OUT SHALL BE PLACED AFTER THE CASTING HAS BEEN SET BUT SHALL BE PAID FOR AS PART OF PAVEMENT. NO DEDUCTION SHALL BE MADE IN QUANTITIES OF PAVEMENT BECAUSE OF CASTING.

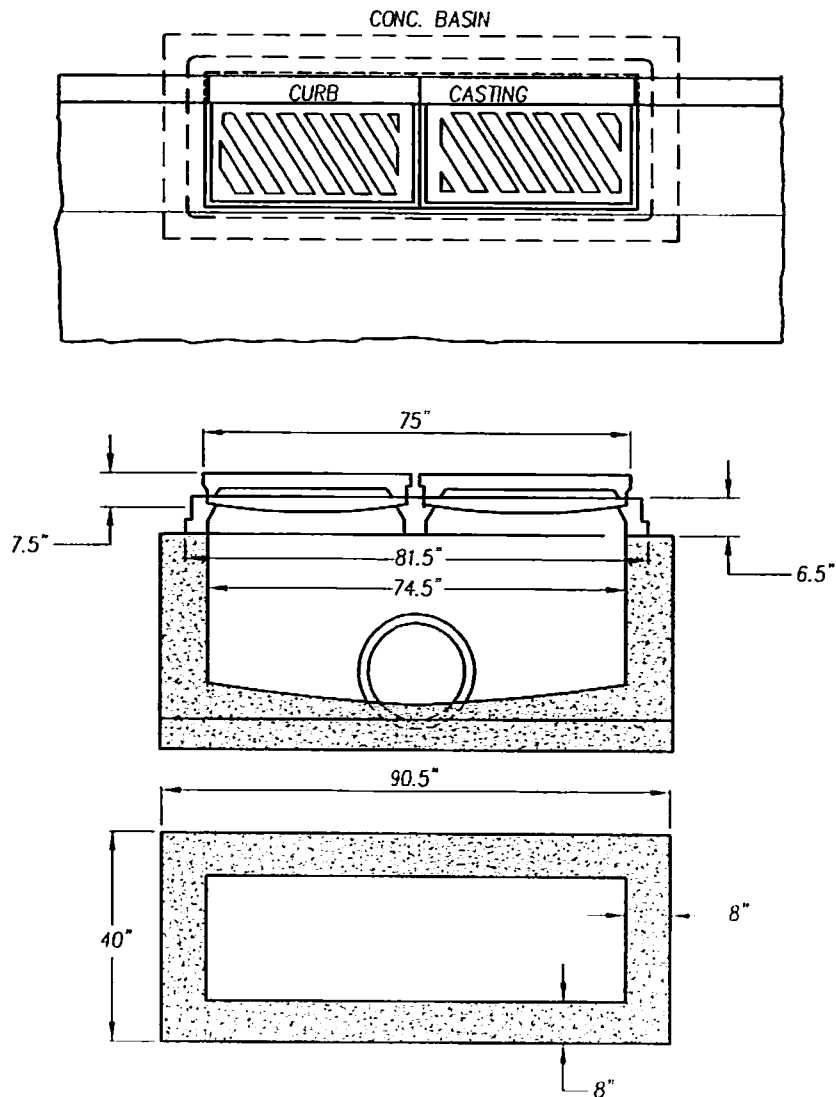
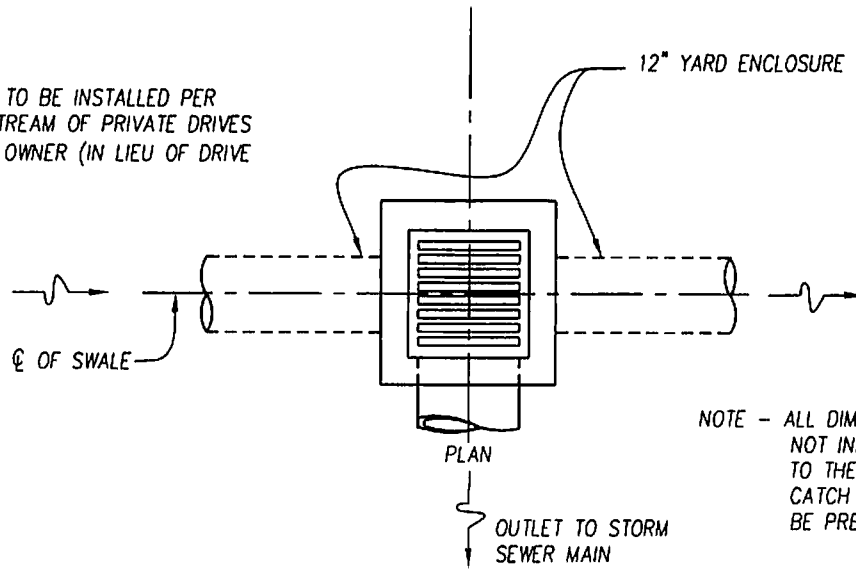


FIGURE 9-3 Standard Double Inlet

NOTE - CATCH BASINS TO BE INSTALLED PER PLAN OR UPSTREAM OF PRIVATE DRIVES BY PROPERTY OWNER (IN LIEU OF DRIVE PIPES).



NOTE - ALL DIMENSIONS & SPECIFICATIONS NOT INDICATED HEREON SHALL CONFORM TO THE STATE OF OHIO STD. No.2-2-A CATCH BASIN EXCEPT THAT THEY SHALL BE PRECAST OR CAST-IN-PLACE CONC.

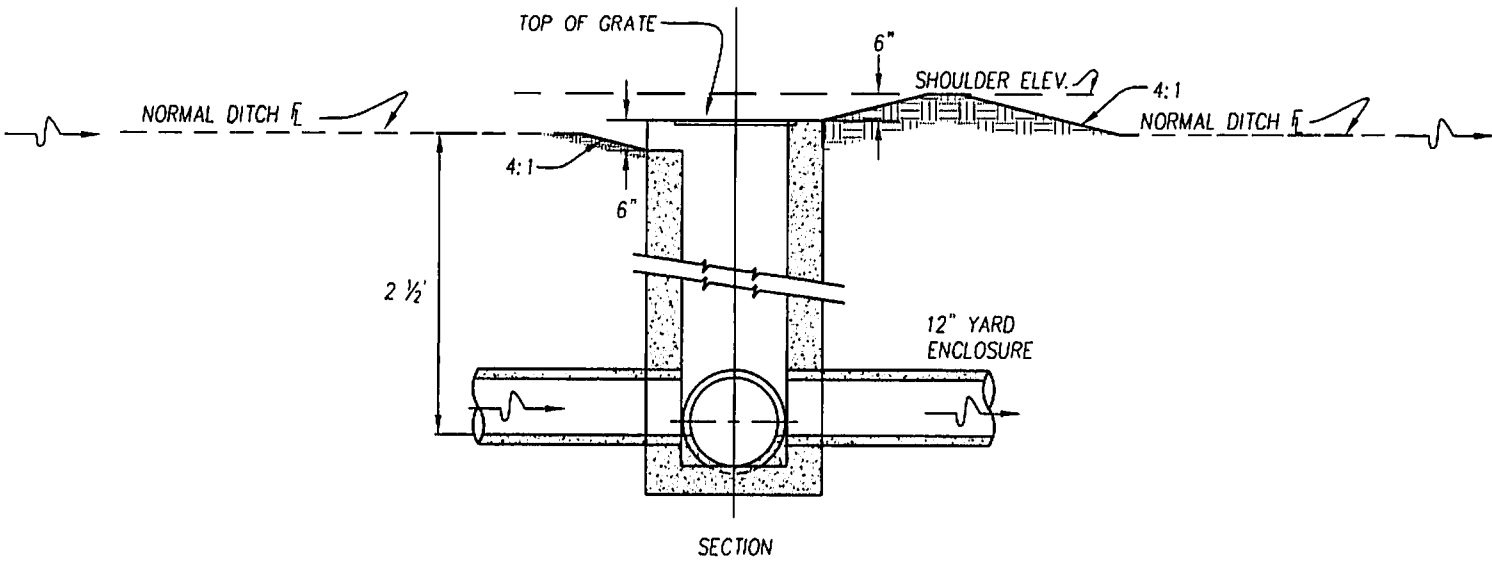
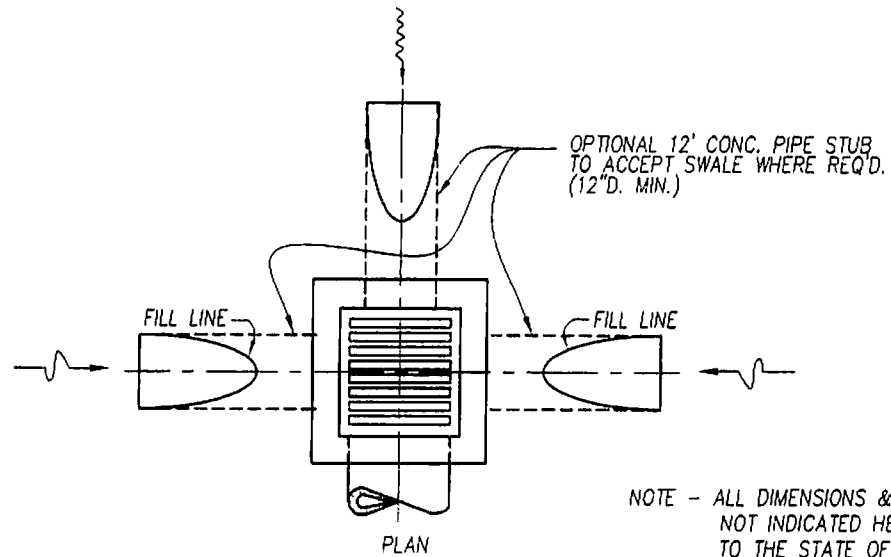


FIGURE 9-4 Modified Catch Basin No.2-2-A
(For Typical Street Section II-Roadside Swales with Storm Sewers)



NOTE - ALL DIMENSIONS & SPECIFICATIONS NOT INDICATED HEREON SHALL CONFORM TO THE STATE OF OHIO STD. No.2-2-B CATCH BASIN EXCEPT THAT THEY SHALL BE PRECAST OR CAST-IN-PLACE CONC.

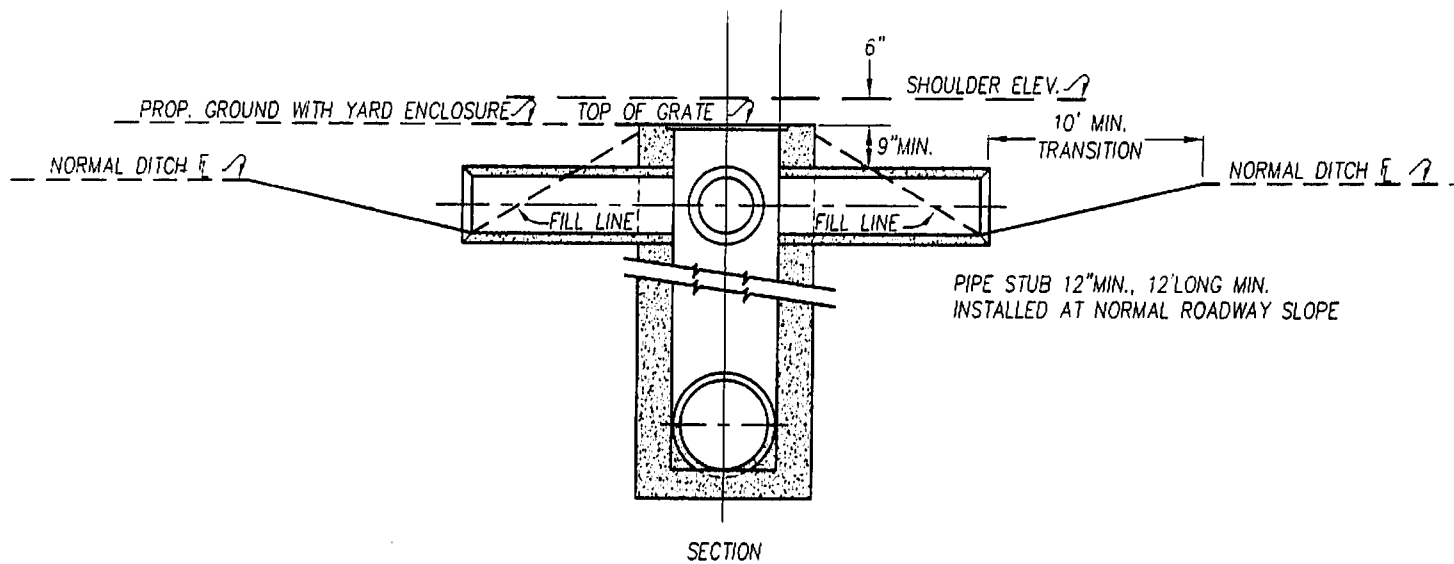
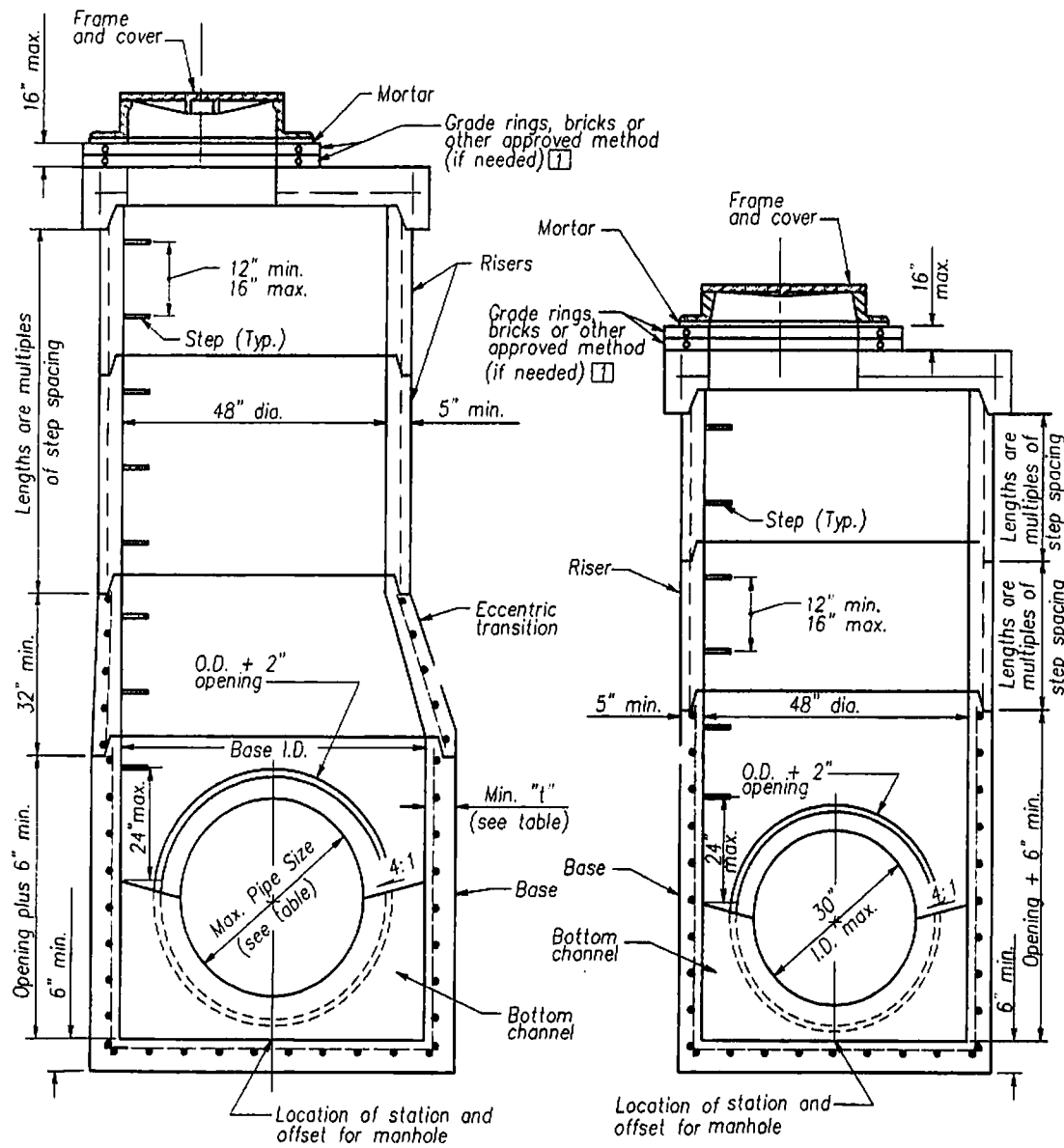


FIGURE 9-5 Modified Catch Basin No.2-2-B



NOTES

GENERAL - WITH NORMAL SOIL AND SITE CONDITIONS THIS STANDARD PRECAST MANHOLE MAY BE USED FOR ANY REQUIRED MANHOLE DEPTH.

SECTIONS OF THE PRECAST MANHOLE SHALL BE CAST AND ASSEMBLED WITH EITHER ALL TONGUE OR ALL GROOVE ENDS UP. HANDLING DEVICE FOR THE FLAT SLAB SHALL BE LEFT IN PLACE.

TOP - THIS SECTION SHALL BE AN ECCENTRIC CONE UNLESS FLAT SLAB IS APPROVED BY THE COUNTY ENGINEER.

TRANSITION (OR REDUCER) - THIS SECTION CAN BE EITHER ECCENTRIC CONE OR FLAT SLAB.

BASE - MANHOLE No. 3 IS SHOWN WITH A MONOLITHIC FLOOR AND RISER WHICH MAY BE CAST IN ONE OR TWO OPERATIONS. A PERMISSIBLE ALTERNATE IS TO CAST AND SHIP THE FLOOR AND BARREL SEPARATELY. OPENINGS FOR INLET AND OUTLET PIPES SHALL BE PROVIDED. EITHER WHEN THE UNIT IS CAST OR LATER, TO MEET THE PROJECT REQUIREMENTS. BOTTOM CHANNELS MAY BE FORMED OF CONCRETE, PRECAST IN THE BASE OR FIELD CONSTRUCTED, AS APPROVED BY THE COUNTY ENGINEER.

RISER SECTIONS - OPENINGS FOR 18" AND SMALLER INLET PIPES MAY BE EITHER PREFABRICATED, OR CUT IN THE FIELD, PROVIDED THE SIDES OF THE PIPE AT THE SPRINGLINE DO NOT PROJECT INTO THE MANHOLE.

OPENINGS - THE MAXIMUM PIPE OPENING SHALL BE THE O.D. OF THE PIPE BEING SUPPLIED PLUS 2" WHEN FABRICATED OR FIELD CUT. FILL ANY VOIDS, AS APPROVED BY THE COUNTY ENGINEER.

MATERIALS - MATERIALS FOR THE BASES AND OTHER PRECAST SECTIONS, INCLUDING REINFORCEMENT NOT SPECIFIED HEREON, SHALL BE AS APPROVED BY THE COUNTY ENGINEER.

TOP SLAB REBAR - REINFORCING STEEL USED WITHIN THE TOP SLAB SHALL BE EPOXY COATED.

LEGEND

☐ RECONSTRUCTION TO GRADE ONLY.

MAXIMUM PIPE SIZES		
BASE I.D.	MIN. "t"	MAX. PIPE SIZE
60"	5"	36"
72"	6"	48"
84"	7"	54"
90"	7-1/2"	60"
96"	8"	66"
108"	9"	72"

60" to 108" PRECAST BASE
SEE TABLE FOR MAXIMUM PIPE SIZES

48" PRECAST BASE
FOR 30" AND SMALLER PIPE

FIGURE 9-6 Reinforced Precast Storm Manholes

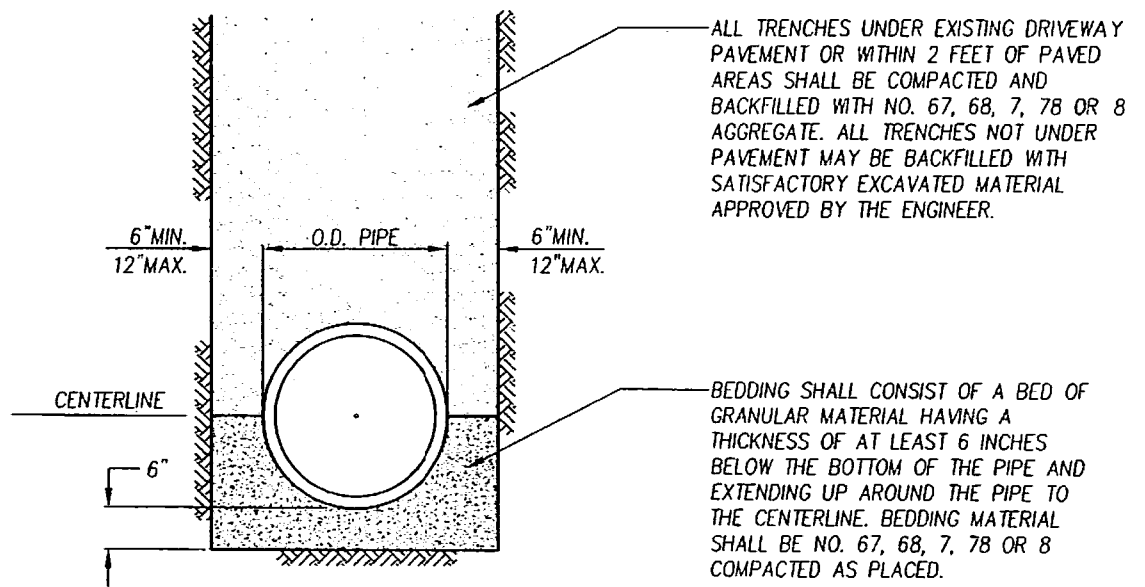


FIGURE 9-7 Typical Trench

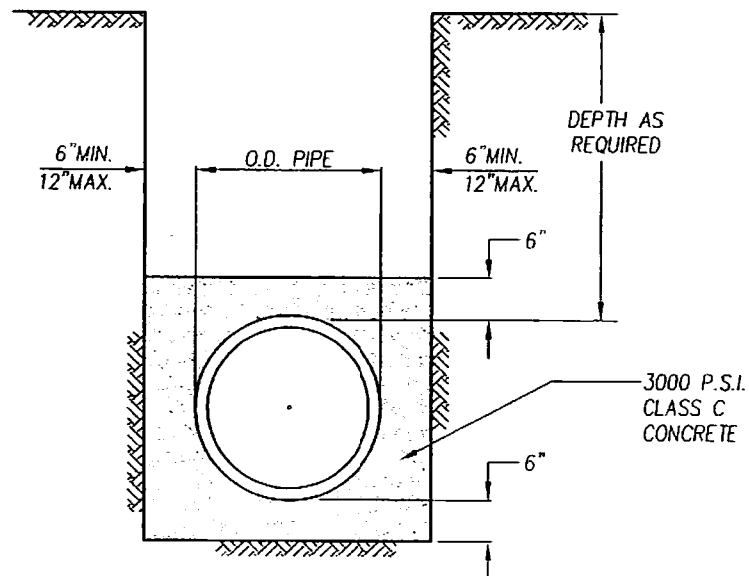


FIGURE 9-8 Pipe Concrete Encasement

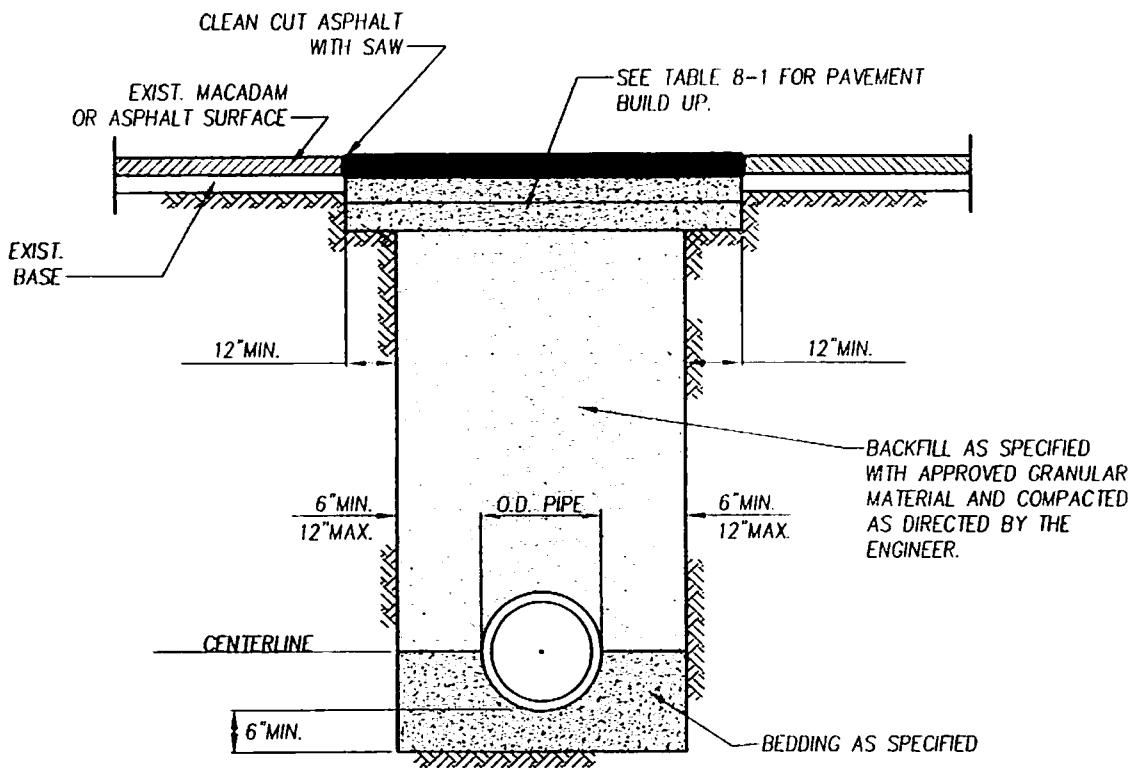


FIGURE 9-9 Asphalt Pavement Replacement

ARTICLE X

STORMWATER RUNOFF CONTROL CRITERIA

1000 - PURPOSE

The control of stormwater runoff at major subdivisions outside proposed and/or existing public rights-of-way and/or public easements is addressed in the Wayne County Stormwater Management Regulations (current edition), in coordination with Article IX of these regulations. Meeting the criteria of either regulation does not relieve any person(s) from liability for stormwater damages to another person's property and/or to any proposed and/or existing public right-of-way and/or public easements.

ARTICLE XI

EROSION AND SEDIMENTATION CONTROL

1100 - PURPOSE

The purpose of this article is to provide information on minimizing erosion and sedimentation problems within proposed and/or existing public rights-of-way and/or public easements encountered during the land development process. The Wayne County Storm Water Management Regulations shall be consulted for further requirements for all earth-disturbing activities. Meeting the criteria of this article does not relieve any person(s) from liability for erosion or sediment damage to another person's property and/or to proposed and/or existing public rights-of-way and/or public easements.

1101 - PLAN CONTENTS

The erosion and sedimentation control plan for areas of proposed and/or existing public rights-of-way and/or public easements shall be incorporated as a part of the construction plans and shall meet with the approval of the County Engineer. Refer to these regulations to satisfy the requirements in this article.

1102 – PLAN REVIEW AND CONSTRUCTION APPROVAL PROCEDURE

All subdivisions shall be reviewed by County Engineer, to see if control measures are needed to minimize water, erosion, and sediment problems.

Erosion and sediment control plans for areas within the proposed and /or existing public rights-of-way and/or public drainage easements shall be submitted as required in “Article III - Construction Drawings”. The expense of installation and maintenance of all erosion and sedimentation control measures within proposed and/or existing public rights-of-way and/or public easements shall be included in the County Engineer’s estimate of construction and maintenance costs in any performance and/or maintenance agreements made between the developer and the board of Wayne County Commissioners.

All erosion and sediment control within existing and/or public rights-of-way and public easements shall be inspected and meet with the approval of the County Engineer. A note shall be added to the construction drawings indicating this requirement.

ARTICLE XII

SOIL PROPERTIES

1200 - PURPOSE

Soils information within this article is intended for overall land use planning - planning site investigations and evaluating land use alternatives prior to design and construction. The soil characteristics in Table 12-1 were derived from field examinations and laboratory tests of soil samples from Wayne County, as well as samples of similar soils from nearby counties. These characteristics are only applicable to a depth of five (5) or six (6) feet.

Small areas of different soils may not be shown on a soils map, due to the map's scale. Therefore onsite investigation by experienced personnel may be required for a specific site selection and design.

Other soil properties that may be of interest to the developer, such as engineering textural classifications - liquid limits, plastic limits, and plasticity indices, etc., are available through the Soil Conservation Service.

Following are brief explanations of the soil properties listed in Table 12-1:

- 1) Soil Name: All soils as recognized in the completed Wayne County Soil Survey of 1980 are listed in alphabetical order. Each soil has different soil layers having different properties. The soil properties at the elevation of final construction should be used for the design of improvements.
- 2) Natural Soil Drainage: Natural soil drainage is the drainage condition which exists in the soil before it is altered, which commonly is the result of artificial drainage by tile and/or surface drains. The terms used in Table 12-1 to describe natural soil drainage are as follows:
 - A. Very Poorly Drained: Water is removed from the soil so slowly that the water table remains at or near the surface, the greater part of the year. Soils of this class usually occupy level or depressional sites and many of them are frequently ponded.
 - B. Poorly Drained: Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.
 - C. Somewhat Poorly Drained: Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly

restricts the growth of most vegetation unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

- D. Moderately Well Drained: Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically long enough that most plants are affected. They commonly have slowly pervious layer within or directly below the subsoil or periodically receive high rainfall or both.
 - E. Well Drained: Water is removed from the soil readily, but not rapidly. Well drained soils are commonly intermediate in texture although soils of other textures may also be well drained. A well drained soil has "good" drainage. Wetness does not inhibit growth of plant roots for significant periods during most growing seasons.
- 3) Depth To Seasonal High Water Table: This is the highest part of the soil that is wholly saturated with water during the wettest periods of the year. In some soils, a temporary or "perched" water table occurs above clayey or other restrictive layers. These values can be used by the design engineer in determining the need for and type of subsurface drainage within the proposed subdivision.
 - 4) Depth To Bedrock: This is the likely distance from the soil surface to the upper surface of a rock layer. The distance may vary considerably from place to place in the County.
 - 5) Permeability: Permeability refers to the relative rate at which water moves downward in undisturbed soil material in the absence of a seasonal or temporary (perched) water table. The permeability ratings are based mainly on soil texture and structure. In any given soil, percolation through the surface layer varies considerably according to previous land use and management and because of differences in soil moisture content. These ratings do not take into account lateral seepage or such transient soil features as plowpans and surface crusts.
 - 6) Corrosivity: Corrosivity refers to the risk of corrosion to uncoated steel and deterioration of concrete for the whole soil. This rating is based largely on the degree of natural soil reaction - whether acid or alkaline. These ratings may be used as a guide for determining the type of culvert pipe to be used in a proposed subdivision.

- 7) Potential Frost Action: This column rates the potential damage for each soil from freezing and thawing of soil moisture under natural drainage conditions. Frost action can damage roads, buildings, and other structures. The potential for frost action can be reduced with the use of artificial drainage to remove excess surface and subsurface water from the soil.
- 8) Embankment Stability: Ratings are made for the different soils as a source of material for embankment fills. The rating is given for the whole soil, from the surface to a depth of about five (5) feet, based on the assumption that soil horizons will be mixed in loading, dumping, and spreading. The ratings do not indicate the suitability of the natural soil for supporting an embankment. Soil properties to depths greater than the embankment height will have an effect on embankment performance and safety. Generally, deeper onsite soil-geologic investigations must be made to determine these important properties. Embankments require soil material that is resistant to seepage, piping, and erosion, that has favorable compaction characteristics and is deep enough. (Piping is the formation of subsurface tunnels or pipelike cavities by water moving through the soil.)
- 9) Shrink-Swell Potential: This is the potential for volume change in the soil with a loss or gain in moisture. If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to roads, buildings, and other structures. Special design is often needed.
- 10) California Bearing Ratio: An estimated California Bearing Ratio for the surface soil, subsoil, and substratum for each soil is listed. These figures can be used as a guide by the engineer for the design of improvements within a subdivision.

Soil Name	Natural Soil Drainage	Depth to Seasonal High Water Table (feet)	Depth to Bedrock (inches)	Permeability	Corrosivity		Potential Frost Action	Embankment Stability	Shrink Swell Potential	California Bearing Ratio		
					Steel	Concrete				Surface soil	Soil Sub-stratum	Sub-stratum
Alexandria Silt Loam	well	4.0+	60+	moderate or moderately slow	M*	M	M	moderate (piping)	moderate in subsoil; low in substratum	5	8	12
Bennington Silt Loam	somewhat poor	1.0-2.5	60+	moderately slow or slow	H*	M	H	severe (wetness)	moderate in subsoil; low in substratum	5	8	11
Berks Silt Loam	well	6.0+	20-40	moderate and moderately rapid	L*	H	L	severe (thin layer & piping)	low	5	9	-
Bethesda Silty Clay Loam	well	6.0+	60+	moderately slow	M	H	M	severe (seepage & piping)	low	5	mine spoil- too variable to rate	
Bogart Loam	moderately well	2.0-3.5	60+	moderate or moderately rapid & rapid in substratum	M	H	H	severe (piping)	low	6	12	20
Canfield Silt Loam	moderately well	1.5-3.0	60+	moderate in upper portion slow in lower subsoil	M	M	H	severe (piping)	low	5	upper portion 8 lower portion 11	13
Cardington Silt Loam	moderately well	2.0-3.5	60+	moderately slow	H	M	H	moderate (piping & wetness)	moderate in subsoil; low in substratum	5	8	1

* H-High, M-Medium, L-Low

Table 12-1 Properties of Wayne County Soils

Soil Name	Natural Soil Drainage	Depth to Seasonal High Water Table (feet)	Depth to Bedrock (inches)	Permeability	Corrosivity		Potential Frost Action	Embankment Stability	Shrink Swell Potential	California Bearing Ratio		
					Steel	Concrete				Surface soil	Sub-Soil	Substratum
Carlisle Muck	very poor	+0.5-1.0	60+	moderately slow to moderately rapid	H*	L*	H	severe (excess humus, ponding)	-	0	0	0
Chili Loam & Silt Loam	well	6.0+	60+	moderately rapid in subsoil; rapid in substratum	L	H	M*	severe (piping)	low	7	15	25
Chili Gravelly Loam	well	6.0+	60+	rapid	L	H	L	severe (piping)	low	12	21	30
Condit Silt Loam	poor	+1.0-1.0	60+	slow	H	M	H	severe (piping)	moderate	4	7	9
Coshocton Silt Loam	moderately well	2.0-3.5	60+	moderately slow or slow	H	H	M	moderate (wetness)	moderate	5	8	10
Dekalb Channery Loam	well	6.0+	20-40	moderately rapid to rapid	L	H	L	severe (thin layer & piping)	low	9	12	-
Euclid Silt Loam	somewhat poor	1.0-2.5	60+	moderately slow	H	H	H	severe (piping, wetness)	low	4	5	6
Fairport Silty Clay Loam	well	6.0+	60+	moderately slow	H	M	M	severe (piping)	moderate	mine spoil—too variable to rate		
Fitchville Silt Loam	somewhat poor	1.0-2.5	60+	moderately slow	H	M	H	severe (piping, wetness)	moderate in subsoil; low in substratum	4	5	6

H-High, M-Medium, L-Low

Table 12-1 Properties of Wayne County Soils

Soil Name	Natural Soil Drainage	Depth to Seasonal High Water Table (feet)	Depth to Bedrock (inches)	Permeability	Corrosivity		Potential Frost Action	Embankment Stability	Shrink Swell Potential	California Bearing Ratio		
					Steel	Concrete				Surface soil	Sub-Soil	Sub-stratum
Glenford Silt Loam	moderately well	2.0-3.5	60+	moderately slow	M*	M	H	severe (piping)	moderate in subsoil; low in substratum	5	6	6
Haskins Silt Loam	somewhat poor	1.0-2.5	60+	moderate in upper portion; slow or very slow in lower portion	H*	M	H	moderate (hard to pack, wetness)	low in subsoil; moderate in substratum	5	8	6
Jimtown Loam	somewhat poor	1.0-2.5	60+	moderate in subsoil; moderately rapid in substratum	H	H	H	severe (wetness)	low	6	9	14
Killbuck Silt Loam. Frequently flooded	poor	0-1.0	60+	moderately slow	H	M	H	severe (wetness, floods)	low in upper portion, moderate in lower portion	3	4	4
Linwood Muck	very poor	0-1.0	60+	moderately slow to moderately rapid in various layers	M	L*	H	severe (piping wetness)	low in the substratum	0	0	4
Lobdell Silt Loam. Occasionally flooded	moderately well	2.0-3.5	60+	moderate in subsoil; moderate or moderately rapid substratum	L	M	H	severe (piping)	low	5	7	10
Loudonville Silt Loam	moderately well & well	6.0+	20-40	moderate	M	H	M	severe (piping)	moderate in subsoil; low in stony substratum	5	10	-

* H-High, M-Medium, L-Low

Table 12-1 Properties of Wayne County Soils

Soil Name	Natural Soil Drainage	Depth to Seasonal High Water Table (feet)	Depth to Bedrock (inches)	Permeability	Corrosivity		Potential Frost Action	Embankment Stability	Shrink Swell Potential	California Bearing Ratio		
					Steel	Concrete				Surface soil	Sub-Soil	Sub-stratum
Luray Silty Clay Loam	very poor	+1-1.0	60+	moderately slow	H*	L*	H	severe (thin layer, ponding)	moderate	5	3	8
Mechanicsburg Silt Loam	well	6.0+	40-60	moderate in upper portion; moderately rapid in lower portion	M	M*	M	severe (seepage)	moderate in subsoil; low in substratum	5	10	15
Melvin Silt Loam, Frequently flooded	poor	0-1.0	60+	moderate	H	L	H	severe (wetness, piping)	low	3	4	5
Mitiwanga Silt Loam	somewhat poor	1.0-2.5	20-40	moderate	H	M	H	severe (piping)	moderate in subsoil; low in stony substratum	5	8	—
Orrville Silt Loam, Occasionally flooded	somewhat poor	1.0-2.5	60+	moderate in subsoil; moderate or moderately rapid in substratum	H	M	H	severe (piping, wetness)	low	5	4	4
Oshtemo Sandy Loam	well	6.0+	60+	moderately rapid	L	H	L	severe (piping)	low	11	19	20
Ravenna Silt Loam	somewhat poor	1.0-2.5	60+	moderate in upper portion; slow in lower subsoil	H	H	H	severe (piping)	low	5	upper portion 8 lower portion 11	12

* H-High, M-Medium, L-Low

Table 12-1 Properties of Wayne County Soils

Soil Name	Natural Soil Drainage	Depth to Seasonal High Water Table (feet)	Depth to Bedrock (inches)	Permeability	Corrosivity		Potential Frost Action	Embankment Stability	Shrink Swell Potential	California Bearing Ratio		
					Steel	Concrete				Surface soil	Sub-Soil	Sub-stratum
Rawson Silt Loam	moderately well	2.5-4.0	60+	moderate in upper portion; slow or very slow in lower portion	H*	H	M	moderate (hard to pack, wetness)	low in upper portion, moderate in lower portion	5	8	6
Riddles Silt Loam	well	6.0+	60+	moderate	M*	M	M	slight	moderate	5	10	13
Rittman Silt Loam	moderately well	2.0-3.0	60+	moderate in upper portion; slow in lower portion	H	H	H	moderate (piping, wetness)	moderate	5	upper portion 6 lower portion 8	12
Sebring Silt Loam	poor	+0.5-1.0	60+	moderately slow	H	M	H	severe (piping, ponding)	moderate	3	4	3
Tioga Silt Loam, occasionally flooded	well	4.0-6.0	60+	moderate in subsoil; moderate to rapid in substratum	L*	M	M	severe (piping)	low	6	7	10
Tiro Silt Loam	somewhat poor	1.0-2.5	60+	moderate in upper portion; moderately slow or slow in lower portion	H	M	H	severe (piping)	moderate	5	7	10

* H-High, M-Medium, L-Low

Table 12-1 Properties of Wayne County Soils

Soil Name	Natural Soil Drainage	Depth to Seasonal High Water Table (feet)	Depth to Bedrock (inches)	Permeability	Corrosivity		Potential Frost Action	Embankment Stability	Shrink Swell Potential	California Bearing Ratio		
					Steel	Concrete				Surface soil	Sub-Soil	Sub-stratum
Wadsworth Silt Loam	somewhat poor	1.0-2.0	60+	moderate or moderately slow in upper portion: slow or very slow in lower portion	H*	H	H	moderate (piping, wetness)	moderate	5	upper portion 6 lower portion 8	11
Walkill Silt Loam	very poor	0-0.5	60+	moderate in upper portion: moderately rapid to rapid in lower portion	M*	M	H	severe (excess humus. wetness)	low	3	5	0
Wooster Silt Loam	well	4.0	60+	moderate in upper portion; moderately slow in lower portion	L*	H	M	severe (piping)	low	6	upper portion 8 lower portion 11	13

* H-High, M-Medium, L-Low

Table 12-1 Properties of Wayne County Soils

ARTICLE XIII
SURVEYING STANDARDS

1300 - PURPOSE

The purpose of this article is to define the requirements that shall be followed in land surveying practices within the County. Included are standards and accuracies that are acceptable for land surveys and the preparation of survey and subdivision plats.

1301 - GENERAL SURVEY REQUIREMENTS

All surveys shall conform to latest "Requirements for Instruments of Conveyance in Wayne County, Ohio", as approved by the Wayne County Auditor and the Wayne County Engineer.

ARTICLE XIV

CONSTRUCTION PROCEDURES AND REQUIREMENTS

1400 - PURPOSE

This article outlines the general requirements of a developer and/or contractor during the construction of an improvement.

1401 - GENERAL SPECIFICATIONS

Where specifications are not specifically stated within this text, those of the Ohio Department of Transportation will be used, unless others are approved by the County Engineer.

Specifications within this text and those of ODOT are not intended to replace those prepared by the developer's engineer, but rather they are to augment them. Specifications of the County and ODOT will establish the minimum guidelines acceptable to the County Engineer and for which the developer will be held responsible to follow.

1402 - CONSTRUCTION SCHEDULE

After approval of the construction plans by the County Engineer and before starting any construction work, the developer shall submit a construction schedule of work to the County Engineer for his approval. The construction schedule shall show the starting and completion dates for each phase of construction work, including a date for the completion of the entire project.

During the progress of work the County Engineer may accept a revised project completion date if he determines that unusual factors have caused a delay that makes compliance with the original date unreasonable.

1403 - PRECONSTRUCTION CONFERENCE

At least one (1) week before any work is started on the improvements the contractor, the utility companies, the developer's engineer/surveyor, the health department, the Wayne County Soil and Water Conservation District (Water Management Engineer), and any other entity involved in the project shall meet with the County Engineer for a preconstruction conference. At this meeting the contractor and the County Engineer will go over the construction schedule, inspection procedures, material requirements, etc.

1404 - CONSTRUCTION INSPECTION

The County Engineer shall be responsible for the inspection of all improvements that fall under his authority. Inspection requirements are as follows:

- 1) Inspectors employed by the County Engineer shall be authorized to inspect any work done or materials furnished. Such inspection may extend to all parts of the work and to the preparation, fabrication, or manufacture of the materials.

- 2) The inspector shall not be authorized to revoke, alter or waive any requirements of the specifications or plans. He shall be authorized to call to attention of the contractor any failure of the work or materials to conform to the specifications and/or plans. He shall also have the authority to reject materials which do not meet specifications or requirements and suspend that portion of the work involved until any question at issue can be referred to and acted upon by the County Engineer.
- 3) Two (2) days before the start of each phase of the construction, the developer and/or contractor shall notify the County Engineer so arrangements can be made for inspection. Failure to notify the County Engineer can result in the County requiring the uninspected work to be removed.
- 4) The County Engineer shall determine the amount of inspection, including laboratory and/or other tests, required to assure that the developer and/or contractor has complied with the specifications and the approved plans.
- 5) The developer and/or contractor shall have available on the project, at all times, one (1) approved copy of all plans and specifications required and also shall cooperate with the inspector in every way possible.
- 6) The developer shall pay the actual wage or contract cost of the inspection service plus fifty percent (50 %) to cover such items as; employee benefits, engineering services, and transportation and office cost.
- 7) All fees must be paid before acceptance of the improvements by the County Engineer.

1405 - PROJECT SUPERINTENDENT

The developer and/or contractor shall at all times have a competent superintendent acting as his agent on the project. The superintendent shall be capable of reading and thoroughly understanding the plans and specifications and shall have authority to execute the plans and specifications.

1406 - GRADE STAKES

Rough/final grade, pavement and pipe grade stakes shall be set at twenty-five (25) foot intervals on horizontal and vertical curves for all grades less than one percent (1%). Rough/final grade, tangent pavement grade and pipe grades over one percent (1%) may be set at a maximum interval of fifty (50) feet. The inspector may ask for additional grade or alignment stakes if it is deemed necessary. Lasers and GPS equipment is permitted, but grade stakes shall still be provided for inspection and shall meet the satisfaction of the County Engineer.

The contractor shall provide cut sheets signed and sealed by a Registered Professional Surveyor to the County Engineer for all grade stakes. The cut sheets shall show the location, elevation, description, etc. of each grade stake set as required on the construction plans and as described herein. The cut sheets shall be provided to the County Engineer prior to the start of construction. New cut sheets shall be provided whenever the original stakes have been disturbed and when otherwise required by the County Engineer.

1407 - TEMPORARY EROSION & SEDIMENTATION CONTROL

This work shall consist of temporary control measures as shown on the plans or as ordered by the County Engineer during construction to control erosion and sedimentation.

Temporary control shall include construction work within the existing/proposed public right-of-way and public drainage easements when ordered by the County Engineer. The County Engineer shall have the authority to limit the amount of surface area of erodible earth material exposed at any one time.

1408 – UTILITY INSTALLATION

All casing pipe for the use of underground utilities beneath the roadway, must be installed after rough grading of the right-of-way and prior to the proof rolling of the subgrade.