

**BOARD OF  
COUNTY ROAD COMMISSIONERS  
OF THE COUNTY OF IONIA, MICHIGAN**

**RULES FOR PLAT  
STREET DEVELOPMENT**

**1995**

1995

**IONIA COUNTY ROAD COMMISSION**

169 E. Riverside Drive  
Ionia, Michigan 48846  
(616) 527-1700

This publication contains revised rules for street development in the proposed subdivision of lands located outside the corporate limits of any city or village in the County of Ionia and for public roads to come under the jurisdiction of the Board of County Road Commissioners of the County of Ionia, State of Michigan and supersedes all prior Procedures and Standards.

To establish proper procedures and standards for the design and construction of all streets, both public and private, in plats; and streets that are to be public streets in unplatted areas, it is deemed necessary to adopt these requirements. Inspections, both field and office, of submitted streets in plats and the approval of these streets will be based on the requirements as outlined in this publication. Other governmental units may have additional requirements.

These revised regulations were approved and adopted by the Board of Ionia County Road Commissioners at its meeting of \_\_\_\_\_.

The contents of this publication do not supersede any part of Act 288, Public Acts of 1967, as amended, and are intended for use only as an instrument to expedite the processing of proposed plats in Ionia County.

**BOARD OF IONIA COUNTY  
ROAD COMMISSIONERS**

Eugene Cook  
Herbert Cusack  
Thomas Ferguson



# TABLE OF CONTENTS

## Rules for Plat Street Development

|             |  |       |
|-------------|--|-------|
| Section I   | Order of Procedure.....                                      | 1     |
| Section II  | Definitions.....   | 2     |
| Section III | General Requirements.....                                    | 4     |
| Section IV  | Preliminary Requirements.....                                | 6-12  |
|             | A. Preliminary Plat .....                                    | 6     |
|             | B. Preliminary Construction Plans .....                      | 9     |
|             | C. Right-of-Way Requirements .....                           | 12    |
| Section V   | Final Plans and Specifications for Street Construction ..... | 13-24 |
|             | A. Construction Plans .....                                  | 13    |
|             | B. Typical Pavement Sections .....                           | 14    |
|             | C. Alignment (Sight Distance Tables pages 17-19) .....       | 15    |
|             | D. Road Drainage .....                                       | 19    |
|             | E. Outlet Ditches & Culverts .....                           | 21    |
|             | F. Clearing & Grubbing .....                                 | 21    |
|             | G. Existing Road Cleanup .....                               | 21    |
|             | H. Utilities and Backfill .....                              | 22    |
|             | I. Finished Earth Grade .....                                | 22    |
|             | J. Sub-base, Base Material & Construction Methods .....      | 22    |
|             | K. Surfacing Materials & Construction Methods .....          | 23    |
|             | L. Sidewalks and Curb & Gutter .....                         | 23    |
|             | M. Topsoil, Seed, Fertilizer & Mulch .....                   | 24    |
|             | N. Trees .....   | 24    |
|             | O. Non-specified Materials & Construction .....              | 24    |
|             | P. Seasonal Requirements .....                               | 24    |
| Section VI  | Construction of Streets .....                                | 25-27 |
|             | A. Coordination .....  | 25    |
|             | B. Inspection & Testing .....                                | 25    |
|             | C. Acceptance & Maintenance .....                            | 27    |

|             |  |       |
|-------------|--|-------|
| Section VII | Financial Requirements and Responsibilities .....                          | 29-33 |
|             | A. Plan Review Fee .....   | 29    |
|             | B. Inspection Fee .....  | 29    |
|             | C. Insurance .....   | 29    |
|             | D. Security Deposit .....  | 31    |
|             | E. Sign Fee .....  | 32    |
|             | F. Duration of Agreement .....   | 32    |
|             | G. Maintenance Bond .....  | 33    |
|             | H. Permits .....   | 33    |
| Section VII | Condominium Projects .....   | 35    |
| Section IX  | Severability Clause .....  | 36    |
| Section X   | Examples of Application, Checklists, Letter and Bond .....                 | 37-47 |
|             | A. Application for Plat Approval .....                                     | 37    |
|             | B. Preliminary Plan Review Checklist .....                                 | 38    |
|             | C. Construction Plan Review Checklist .....                                | 39    |
|             | D. Subdivision Acceptance Review Checklist .....                           | 41    |
|             | E. Irrevocable Commercial Letter of Credit .....                           | 42    |
|             | F. Plat Agreement (Individual Form) .....                                  | 43    |
|             | G. Plat Agreement (Corporation Form) .....                                 | 44    |
|             | H. Agreement for Unplatted Development .....                               | 45    |
|             | I. Certificate .....   | 46    |
|             | J. Maintenance Bond .....  | 47    |
| Section XI  | Examples of Required Documents<br>and Sketches of Other Requirements ..... | 49-62 |
|             | A. Road Section Nomenclature .....   | 49    |
|             | B. Design Standards - Residential Rural no scale .....                     | 50    |
|             | C. Design Standards - Residential Urban no scale .....                     | 51    |
|             | D. Design Standards - Industrial no scale .....                            | 52    |
|             | E. Edgedrain Detail no scale .....   | 53    |
|             | F. Minimum Standards for Boulevard .....                                   | 54    |
|             | G. Cul-De-Sac - Temporary Turnaround .....                                 | 55    |
|             | H. Concrete Curb - Concrete Curb and Gutter .....                          | 56    |
|             | I. Typical Preliminary Plat .....  | 57    |
|             | J. Typical Plan & Profile Sheet .....                                      | 58    |
|             | K. Utility Trenches .....  | 59    |
|             | L. Financial Requirements - Proprietor Engineer's Estimate .....           | 61    |
|             | M. Flow Diagram of Platting Procedure .....                                | 62    |

**RULES FOR PLAT STREET DEVELOPMENT**

## **SECTION I**

### **Order of Procedure**

The following steps, which will be explained in detail in subsequent sections, will be followed by the Board in considering any plat:

1. Approval of a Preliminary Plat.
2. Approval of Construction Plans for Road & Utility.
3. Construction of Roads and Utilities.
4. Final Inspection Approval and Acceptance of Constructed Road.
5. Approval of Final Plat.

Deviations from this order of procedure can cause delays, confusion and unnecessary expenses.

## **SECTION II Definitions**

- A. A.A.S.H.T.O. The American Association of State Highway and Transportation Officials.
- B. A.S.T.M. The American Society for Testing Materials.
- C. Board: The Board of County Road Commissioners of the County of Ionia, State of Michigan.
- D. County Engineering Department: The Engineering Department of the County Road Commission or other representative designated by the Board to carry out the duties entailed by the Plat Act and these Procedures for Plat Street Development.
- E. Final Plat: A map of all or part of the subdivision prepared and certified by the Proprietor's Engineer of the Proprietor's Land Surveyor in accordance with the requirements of the Subdivision Control Act of 1967, Act 288, of the Public Acts of 1967, as amended.
- F. Governing Body: Township Board, City Council or Village Board having jurisdiction of the land in which the plat is to be located.
- G. Laboratory: Any materials testing laboratory which is approved by the County Engineer.
- H. M.D.O.T. Michigan Department of Transportation.
- I. M.D.O.T. Specifications: The Michigan Department of Transportation current Standard Specifications for Construction.
- J. Pre-Preliminary Plat: A Pre-Preliminary Plat is a sketch plan or informal plan drawn to scale and may be in pencil, if desired, showing the existing features of a site and its surroundings and the general layout of the proposed subdivision.
- K. Preliminary Plat: A map showing the preliminary layout of a subdivision in sufficient detail to allow review by the Board and other interested agencies.
- L. Proprietor: A natural person, firm, association, partnership, corporation or combination of any item which may hold ownership interest in land whether recorded or not.

M. Proprietor's Engineer or Proprietor's Land Surveyor:

1. With reference to the Preliminary Plat, and/or the Final Plat means a civil engineer who is licensed in the State of Michigan as a licensed professional engineer or a land surveyor who is licensed in the State of Michigan as a licensed land surveyor and who is representing the Proprietor.
2. With reference to design and construction plans means a civil engineer who is licensed in the State of Michigan as a licensed professional engineer and who is representing the Proprietor.

N. Subdivision Control Act of 1967: Act 288 of the Michigan Public Acts of 1967 and all amendments thereto.

O. Utilities: All persons, firms, corporations, co-partnerships or municipal or other public authority providing gas, electricity, water, steam, telephone, sanitary sewer, storm sewer, cable television or other services of a similar nature. Also included is the service that these utilities would provide.

### **SECTION III General Requirements**

- A. The contents of this publication do not supersede any part of the Subdivision Control Act of 1967, as amended.
- B. A Pre-Preliminary Plat may be made by a Proprietor or a Proprietor's Engineer to submit to the County Engineering Department. This Pre-Preliminary Plat should contain basic information concerning the proposed development for discussion prior to commencing with the Proprietor's land plans and preliminary designs. It is hoped that these discussions will avoid needless delays and wasted effort by acquainting the Proprietor and the Proprietor's Engineer with any long range plans of the Board which may have bearing on the development; any coordination which may be required between the Board and the affected township; and to discuss any points of these Procedures for Plat Street Development that may not be clear to the Proprietor or the Proprietor's Engineer.
- C. Private roads within plats or unplatted areas shall conform to the minimum requirements for public roads as established in the current Board's Procedures for Plat Street Development when allowed by respective Township Ordinances.
- D. Streets that are to be public streets in unplatted areas shall conform to the current Board's Procedures for Plat Street Development. The standard fees covering engineering review costs and construction inspection costs will be required for these streets.
- E. Proprietors desiring variations from these requirements may submit their requests in writing to the Board. The Board, in cases which it considers meritorious, may waive individual requirements in specific instances.
- F. When a proposed plat incorporates an existing county road which is not constructed to current standards, said road shall be reconstructed by the Proprietor as necessary to improve the road to conform with standards acceptable to the Board. The Board may require service roads to be constructed by the Proprietor where commercial development is proposed. When a proposed lot is bordered by an interior subdivision street, an existing local road or a primary road, access will be allowed only from an interior subdivision street in the proposed plat.
- G. Permits must be obtained from the Board by the Proprietor for any construction within the right-of-way of existing county roads. (See page 33.)
- H. All work, including plans for such work, within any proposed road right-of-way must be reviewed and approved by the County Engineering Department.
- I. It is desired that all initially proposed public and private underground utilities in the

street right-of-way should be installed prior to the construction of the sub-base and base of the street. The final determination is to be made by the County Engineering Department.

- J. It is desirable that the street sub-base and base construction and underground utility work be accomplished in one construction season, and that the street surfacing be done after construction traffic and one freeze/thaw season has compacted the roadway and trenches to the specified densities of current M.D.O.T. Specifications or to the satisfaction of the County Engineering Department.
- K. The Board reserves the right, in its discretion, to add requirements and to delete or modify existing requirements in the exercise of its statutory authority to maintain streets reasonably safe and convenient for public travel.
- L. It is also desirable that the Proprietor, developer, or engineer who is handling the development or construction of the plat keep an open line of communication (utilizing some type of progress report) with the Road Commission and all agencies involved.

## SECTION IV Preliminary Requirements

The Proprietor is reminded that approvals of the Preliminary Plat by the Governing Body and the Ionia County Drain Commissioner are also required under the Subdivision Control Act. If a Preliminary Plat approved by the Board is revised because of requirements of such approving agencies or revisions are otherwise made by the Proprietor, such revisions shall be incorporated in a revised Preliminary Plat for approval or disapproval by the Board. The Proprietor is further reminded that under certain conditions, the Michigan Department of Transportation, the Michigan Department of Natural Resources, Michigan Water Resources Commission and the Ionia County Health Department are also required to give its approvals to the Preliminary Plat.

When received, the final approval of the Preliminary Plat by the Board confers upon the Proprietor for a period of two years from date of approval, the conditional right that the general terms and conditions under which Preliminary Plat approval was granted, will not be changed.

The Proprietor must re-submit the Preliminary Plat to the Board for approval or disapproval if the Governing Body has not given its final approval within one year after the date of the Board's approval.

### A. Preliminary Plat

Two copies of the Preliminary Plat layout drawn to scale not smaller than one inch to 200 feet on a 24" x 36" sheet by the Proprietor's Engineer shall be submitted to the Board for approval. (See page 58.)

The Preliminary Plat layout shall show plainly all of the following and meet the requirements listed:

1. Show locations and extent of property. This shall include a location map showing the plat in relation to the county road system.
2. Show plat dimensions on the portion of layout for which approval is requested. Approximate dimensions are sufficient.
3. Give the location of the plat with reference to the part of section and township in which the parcel is situated.
4. Each initial Preliminary Plat layout shall be accompanied by a topographic

map showing relief with not more than two foot contour intervals (refer to USGS elevation datum) and upon which the overall plat layout is superimposed. Provided the dimension scale allows it without sacrificing other details, the plan layout complete with contours can be submitted as a single unit.

5. Show locations and names of proposed streets and alleys together with arrows showing drainage flow.
6. Show plainly all governing conditions such as:
  - a. Adjoining named subdivisions, lot numbers and adjacent named streets.
  - b. State highways shall be identified.
  - c. Rivers, one hundred year flood plain datum, natural water courses, existing county or private drains, sewers and cross culverts on existing roads.
  - d. Railroads, cemeteries and parks.
  - e. All other features that the location or existence of which might influence the layout of the plat, including streets and driveways, existing and proposed, within 300 feet of the proposed subdivision.
7. Show typical cross section of street to be constructed including right-of-way width which shall comply with the requirements as established in the Procedures for Plat Street Developments.
8. Show the name of the Proprietor and Proprietor's Engineer or Land Surveyor, with mailing address and telephone number of each.
9. In the case where the Proprietor proposes to subdivide a given area but wishes to begin with only a portion of the total area, the original plat shall include the proposed general layout for the entire area (master plan). The part which is proposed to be subdivided first shall be clearly superimposed upon the master plan in order to illustrate clearly the method of development which the Proprietor intends to follow. Each subsequent plat shall follow the same procedure until the entire area controlled by the Proprietor is subdivided.

If an individual phase is part of a preliminary master plan approved by the Board within the last two years (24 months), and is in accordance with the

current standards, the individual phase will not require separate preliminary approval. However, the individual phase shall require a site plan approved by the County Engineering Department.

The minimum street length to be constructed in each subdivision or phase of a subdivision, should not be less than 500 feet.

10. The layout of roads, streets and alleys in the proposed plat shall provide a continuous circuit for travel except when, in the opinion of the Board, the lands are limited in area or are subject to a natural barrier. In such cases a dedication that provides access to a public highway of one end only will be acceptable, if a dedication or easement is given on additional land at its terminus so as to permit turning in a continuous circuit or by some other means approved by the Board. The street layout shall fit the pattern established by the adjacent roads and streets. All existing public roads, streets or alleys that terminate at the boundaries must be connected with the road and street system of the proposed plat. When the proposed plat abuts unplatted land, provisions shall be made for future street extensions to the title line of the unplatted area.
11. The edge of pavement, both left and right of the centerline, must maintain a parallel alignment. "Elbows" and other non-uniform sections of roadway will not be allowed.
12. All streets and highways which are extensions of, or in line with, existing streets must carry the names of those in existence. Other streets and highways shall be given such names as the owner may choose, subject to the approval of the Board.
13. Half-width streets or alleys will be acceptable only when the boundary of the proposed plat coincides with the boundary of a recorded plat on which a half-width street or alley has previously been dedicated.
14. Strip-type subdivisions along existing roads where access to each lot is from the existing roadway shall be discouraged. The concept of fronting lots on an internal road system is encouraged for reasons of safety.
15. The Preliminary Plat shall be filed with the County Engineering Department for the consideration by the Board. The Board will give approval or disapproval of the Preliminary Plat in writing within 30 days. If the Preliminary Plat is rejected, the reasons for the rejection will be provided to the Proprietor.

Preliminary Plat approval by the Board shall be void after two years from the date of approval unless otherwise extended in writing.

When approval of the Preliminary Plat is granted, the Proprietor's Engineer may proceed with the road and drainage plans.

B. Preliminary Construction Plans

1. After approval of the Preliminary Plat, two copies of a preliminary road and utility construction plan as prepared by the Proprietor's Engineer covering all the roads within the plat must be submitted to the County Engineering Department for approval. These plans shall consist of plan and profile drawings and specifications required by the Board. The preliminary plans shall show all pertinent data necessary to develop construction plans and shall be drawn to standard size (24" x 36") sheets to a scale of not less than one inch to 50 feet.

All dead-end streets shall be provided with a turnaround. This treatment shall be designed in accordance with the Board's specifications. (See page 55.) Cul-de-sac length shall not exceed 1320 feet measured from the centerline intersection of the streets to the center point of the cul-de-sac circle. Special consideration may be given by the Board for longer cul-de-sacs for topographic conditions or other unusual situations. Galvanized steel beam guard rails, erected by the Proprietor, will normally be required at the stub end of streets which are temporarily dead-ended at the subdivision limits. At such dead-end streets, the Proprietor will be required to place such signs as the County Engineering Department specifies, informing the public that the street is not a through street.

A boulevard section may be permitted at the main entrance to a plat development. The boulevard type of section shall not exceed 300 feet in length and should not have any drives entering the 300 foot length. The minimum cross section is shown in the illustration on Page 54.

Intersections shall not be permitted less than 250 feet apart. Intersections of platted streets entering primary county roads shall not be permitted less than 660 feet apart unless the Board approves an exception.

The maximum length of blocks shall be 1320 feet. The maximum distance between access points (public streets) to abutting property shall be 1320 feet.

All streets and alleys shall be provided with facilities for adequate surface drainage. This may be accomplished by the use of ditches, county drains, natural water courses, or constructed tributaries thereto. It is strongly recommended that this be done with underground storm drains in the Urban Area of Ionia County.

Where ditches, other than standard roadside ditches, or underground drainage are provided, they shall be made a part of the county drain system, by proper legal procedures through the Ionia County Drain Commissioner, and meet all necessary requirements as to right-of-way, easements and permits for use of land.

No construction of roads or utilities shall be started until the final road and utility construction plans have been approved.

When the plans are approved or disapproved, such action will be marked on the plans and one copy will be returned to the Proprietor's Engineer. Revised plans will be approved when they show compliance with all requirements. If sidewalk and/or curb and gutter are to be provided in the subdivision they must be detailed in the preliminary road and drainage plans.

## 2. Preliminary Road and Utility Plans

All work within proposed right-of-way must have plans reviewed and approved by the County Engineering Department. The plans must show plainly all of the following information:

- a. Plan view with the certificate profile or top of curb profile directly below the plan view.
- b. Typical cross section of the road to be constructed.
- c. The proposed grades shall coincide with datum determined by the United States Geological Survey (USGS) or U.S. Coast & Geodetic Survey (USC&GS), if practicable. A permanent benchmark shall be established in the plat and shown on the plans.
- d. The location, size and depth of all underground utilities used for road drainage within the plat.
  - (1) Show clearly sizes, lengths and locations of all cross road culverts.

- (2) Show location and type of inlets and clean out points for underground drainage systems.
- (3) Show standard plan for all catch basins, inlets, manholes, etc. This may be done by reference to current M.D.O.T. Standard Plans.
- e. Show locations and profile of all drains outside of the roadway area that are going to be utilized for roadside drainage.
- f. Soil borings will be required and shown on the plans at a maximum spacing of 300 feet or more often if apparent existing soil changes.
- g. The preliminary utility plan may be superimposed on the preliminary road plan if this can be done without sacrificing clarity.

Utilities are encouraged to be located within private easements outside of the public road right-of-way. When located within the public road right-of-way, locations for underground utilities shall be as follows:

- (1) Storm Sewers:
  - (a) West side of road, 12 feet inside right-of-way
  - (b) South side of road, 12 feet inside right-of-way
- (2) Water Mains:
  - (a) West side of road, 7 feet inside right-of-way
  - (b) South side of road, 7 feet inside right-of-way
- (3) Sanitary Sewers:
  - (a) East side of road, 7 feet inside right-of-way
  - (b) North side of road, 7 feet inside right-of-way
- (4) Gas Mains:
  - (a) North side of road, 9 feet inside right-of-way
  - (b) East side of road, 9 feet inside right-of-way
  - (c) Depth of cover in roadway, 48" minimum
  - (d) Depth of cover outside of roadway, 36" minimum
- (5) Other:  
By approval of the County Engineer

C. Right-of-Way Requirements

All road rights-of-way shall comply with the Ionia County Major Thoroughfare Plan.

1. State or U.S. Trunklines shall be of the width required by the Michigan Department of Transportation.
2. Each mile or section line road within the County shall be a minimum width of 100 feet.
3. All major thoroughfares as established in the Ionia County Major Thoroughfare Plan shall be a minimum width of 150 feet.
4. All half-mile or quarter section line roads shall be a minimum width of 86 feet.
5. Residential subdivision streets shall be a minimum width of 66 feet.
6. All dead-end roads shall be provided with a turnaround with a minimum external diameter of 150 feet unless otherwise provided for in the Procedures for Plat Street Development.
7. Alleys shall not be permitted.
8. The right-of-way on all curvilinear streets shall be the same width as the right-of-way on the tangents.
9. The minimum width of drainage easements shall be 20 feet.
10. Widths of rights-of way in excess of the widths required above may be required by the Board when considered necessary due to situations including, but not limited to, commercial areas, multi-lane roadways, non-motorized travelways, utilities, cut or fill sections of roadway, or for reasons of safety.

**SECTION V**  
**Final Plans and Specifications for Street Construction**

A. Construction Plans

The construction plans shall be of the same dimension and clarity as the preliminary construction plans. The approved preliminary construction plans may be used as final construction plans if approved by the County Engineering Department. Current A.A.S.H.T.O. and M.D.O.T. Standards and engineering judgment will be used as a guideline for the design of streets. If a change in the road design affects a utility. The drawings shall include drawings of all construction details, paving layout, sanitary sewer layout, water main layout and drainage layout, together with profiles of the above. The plan and profile drawings of each sheet shall be on standard size (24" x 36") plan and profile sheet. Minimum scale horizontal 1" = 50' vertical 1" = 5'. (See page 58.) The construction plans shall include the following drawings:

1. Typical cross section.
2. Paving and drainage layout.
3. Sanitary sewer and water main layout.
4. Construction details referred to.

The construction plans must bear the seal of a licensed professional engineer.

Typical Pavement Sections

| Pavement Section/<br>Design Feature | Light<br>Residential<br>Section | Medium<br>Residential<br>Section | Heavy<br>Residential<br>Section | Industrial or<br>Heavy<br>Commercial<br>Section |
|-------------------------------------|---------------------------------|----------------------------------|---------------------------------|---|
| Number of Lots Served               | 0-25                            | 26-50                            | 51+                             | -----   |
| Width of ROW; ft.                   | 66                              | 66                               | 66                              | 66-100  |

**Bituminous Pavement with Granular Base:**

|                                      |       |       |    |                     |
|--------------------------------------|-------|-------|----|---------------------|
| Curb & Gutter, Face To<br>Face; feet | 30    | 30    | 36 | To Be<br>Determined |
| Bit. Top; inches                     | 2-1/2 | 2-1/2 | 3  | -----               |
| 22A Aggregate Base; inches           | 6     | 8     | 8  | -----               |
| Class II, Sub-base; inches           | 12    | 12    | 12 | -----               |

**Full Depth Asphalt Pavement:**

|   |       |       |       |       |
|---|-------|-------|-------|-------|
| Curb & Gutter, Face to<br>Face; feet    | 30    | 30    | 36    | 36-60 |
| Bit. Top; inches                        | 1-1/2 | 1-1/2 | 1-1/2 | ----- |
| Bit. Base; inches                       | 6     | 6     | 7-1/2 | ----- |
| Sub-base Under Curb<br>& Gutter; inches | 10    | 12    | 15    | ----- |

**Concrete Pavement:**

|                                      |    |    |    |       |
|--------------------------------------|----|----|----|-------|
| Curb & Gutter, Face to<br>Face; feet | 30 | 30 | 36 | 36-60 |
| Portland Cement<br>Concrete; inches  | 6  | 6  | 7  | 9     |
| Class II Sub-base; inches            | 6  | 8  | 8  | 12    |

1. Sub-grade undercutting of unsuitable sub-grade soils may be required if

determined necessary by the Engineering Department.

2. Under drains may be required to be constructed due to detrimental surface water or ground water if determined by the Proprietor's Engineer and/or the County Engineering Department.

B. Alignment

1. Minimum sight distance onto existing county roads from subdivision streets shall be as follows:
  - a. Stopping sight distance shall meet or exceed the desirable stopping sight distance in accordance with Table 1 - Minimum Stopping Sight Distance.
  - b. Corner sight distance at internal subdivision intersections shall meet or exceed Table 2 - Corner Sight Distance at Rural Intersections.
  - c. Corner sight distance at an intersection of a subdivision street with a local road or primary road shall meet or exceed the distance in Table 3.
  - d. Special conditions, in the County Engineering Department judgment, may warrant adjustments to the above standards. See Design Tables on next pages.
2. Vertical curves shall be designed with a minimum length of 200 feet and a minimum sight distance as required in 1.a. above.
3. Horizontal curves shall be designed with a minimum centerline radius as shown in Table 4.
4. The minimum grade on any street shall be 0.5 percent.
5. The maximum grade on any street shall be 5.0 percent.
6. The crown on any street shall be 2.0 percent minimum.
7. A minimum edge radius of 20 feet should be provided at 90 degree intersections within the subdivision streets and 30 feet shall be provided where intersecting streets meet the existing county roads.
8. Intersection streets should meet at approximately a 90 degree angle.

Skewed intersections will be discouraged.

9. Approach streets at intersections should have a 1% to 0% approach grade for a minimum distance of 50'.

**Minimum Stopping Sight Distance  
Table 1**

| Design Speed (mph) | Assumed Speed for Condition (mph) | Stopping Sight Distance (Rounded for Design; feet) | K Value (a) for Crest Vertical Curves (Rounded) | K Value (a) for Sag Vertical Curves (Rounded) |
|--------------------|-----------------------------------|--|---|---|
| 25                 | 24-25                             | 150-150  | 20-20   | 30-30   |
| 30                 | 28-30                             | 200-200  | 30-30   | 40-40   |
| 35                 | 32-35                             | 225-250  | 40-50   | 50-50   |
| 40                 | 36-40                             | 275-325  | 60-80   | 60-70   |
| 45                 | 40-45                             | 325-400  | 80-120  | 70-90   |
| 50                 | 44-50                             | 400-475  | 110-160   | 90-110  |
| 55                 | 48-55                             | 450-550  | 150-220   | 100-130                                       |

(a) K Value is a coefficient by which the algebraic difference in grade may be multiplied to determine the length in feet of the vertical curve which will provide minimum sight distance.

For stopping sight distance the height of eye is 3.5 feet and the height of object is 0.5 feet.

**Corner Sight Distances at  
Internal Subdivision Intersections  
Table 2**

| Design Speed<br>(mph) | Corner Intersection<br>Sight Distance (ft.) (a) |
|-----------------------|---|
| 35                    | 365   |
| 25                    | 265   |

(a) Corner sight distance measured from a point on the minor road at least 15 feet from the edge of the major road pavement and measured from a height of eye at 3.50 feet on the minor road to a height of object at 4.25 feet on the major road.

**Subdivision Corner Sight Distances at a  
Local Road or Primary Road Intersection  
Table 3**

| Design Speed<br>(mph) | Corner Intersection<br>Sight Distance (ft.) (a) |
|-----------------------|---|
| 55                    | 565-810   |
| 45                    | 465-660   |
| 35                    | 365-510   |
| 25                    | 330   |

(a) Corner sight distance measured from a point on the subdivision street at least 18 feet from the edge of the crossing roadway pavement and measured from a height of eye at 3.50 feet on the subdivision street to a height of object at 4.25 feet on the crossing roadway.

**Minimum Horizontal Curves (Centerline Radius)**  
**Table 4**

| Type of Street                 | Design Speed<br>25 mph | Design Speed<br>35 mph |
|--------------------------------|------------------------|------------------------|
| Light Residential              | 150 feet               |                        |
| Medium Residential             | 175 feet               | 350 feet               |
| Heavy Residential              | 175 feet               | 350 feet               |
| Industrial or Heavy Commercial | 175 feet               | 450 feet               |

C. Road Drainage

1. General

- a. Road drainage shall be provided through an underground system outletting into an approved outlet. An approved outlet shall be an existing stream, creek, river, or other natural watercourse, a county drain, or drainage easement.
- b. The plans shall clearly show all pipe sizes, materials, lengths and locations. The design method and design calculations shall be submitted with the plans.
- c. Materials shall be as specified by the current MDOT Specifications. Plastic storm sewer pipe shall conform to the specifications included in the Appendix.

2. Curb and Gutter Drainage

- a. All structure design shall be in accordance with the current MDOT Standard Plans for Manholes, Catch Basins, and Inlets.
- b. All structure covers shall be in accordance with current MDOT Standard Plans, or approved equivalent.
- c. Catch basins and inlets shall be placed such that all intersections, low points, and necessary intermediate points are properly drained or as indicated and approved by the County Engineer.
- d. The drainage structures should, if practical, be placed in alignment

with side lot lines and/or the intersection to avoid conflict with driveway openings.

- e. Manholes shall be located at all changes in alignment or grade and be spaced approximately 300 feet apart.
- f. Sub-grade drain shall be 4" diameter corrugated perforated plastic in a geotextile sock wrap. (See page 53.)

3. Enclosed Ditch Drainage

- a. Pipe material shall be corrugated, smooth-lined, perforated plastic pipe (Hancor Hi-Q, ADS N-12, Contech A-2000, or equivalent) in accordance with MDOT Specifications, enclosed in a geotextile wrap.
- b. All structure design shall be in accordance with the current MDOT Standard Plans for Manholes, Catch Basins, and Inlets. 24" plastic tees are acceptable for inlets.
- c. Manholes shall be located at all changes in alignment or grade and be spaced approximately 300 feet apart.
- d. An inlet or catch basin is required whenever a ditch is enclosed between two driveways or at a point along the inverted grade of the swale where the cover over the drainage pipe is less than one (1) foot deep.
- e. All structure covers shall be in accordance with current MDOT Standard Plans, or approved equivalent.
- f. Final grading shall provide a minimum one (1) foot deep swale ditch (at the crest point) and shall be graded at a minimum of 0.2% to an inlet, catch basin, or approved outlet.

4. Construction

To be inspected by the Proprietor's Engineer and be true to line and grade and properly bedded and backfilled. See Section V., H., Utilities and Backfill.

D. Outlet Ditches and Cross-road Culverts

1. The minimum outlet ditch grade shall be 0.2%. Grades of outlet ditches less than 2% shall have an established growth of vegetation provided by topsoiling, seeding and mulching in accordance with current MDOT Specifications. Grades from 2% to 4% shall be sodded. Grades over 4% shall be rip-rapped or paved.
2. Where drains cross the roadway, construction and installation must meet current MDOT Class B Culvert requirements, or as approved by the County Engineer.
3. The minimum size of cross-road culverts shall be 18" diameter, or equivalent size where applicable. Culvert material shall be approved by the County Engineer.
4. All outlet ends of culverts shall have flared end sections installed according to the manufacturer's specification.
5. The Proprietor shall provide an acceptable system of drainage to enable lot owners to outlet sump pump drainage and roof drainage into the storm sewer system, if determined necessary by the County Engineer. Any connections shall be made at the storm sewer manhole during construction of the manhole. No such connections to the manhole shall be allowed following construction of the manhole. No such connections shall be allowed at any other point in the storm sewer system.

In all cases, outletting private drainage onto the roadway surface is prohibited.

The Governing Body shall maintain and have jurisdiction over drainage easements dedicated to the public.

E. Clearing and Grubbing

All trees and brush including the roots thereof shall be removed from the right-of-way of the streets within the limits of the subdivision, unless otherwise permitted by the County Engineering Department.

F. Existing Road Cleanup

Ditches along existing county roads shown on the plat shall be cleaned out to such a depth as to provide positive drainage. All brush, fences,

obstructions, etc., shall be removed from the right-of-way. Trees shall be removed as directed by the County Engineering Department.

G. Utilities and Backfill

All utilities should be located in accordance with Section IV, B, of Rules for Plat Street Development and all lot or house services stubbed to the right-of-way line prior to curb and gutter construction. In this connection, it is strongly recommended that all public and private underground utilities be installed after the rough grading has been completed. (See page 59.)

I. Finished Earth Grade

The finished sub-grade shall be free of all topsoil, stones, stumps, organic matter, muck, peat and frost heave material and shall be prepared in accordance with the current (M.D.O.T. Standard Specifications. The backfill of all trenches (such as trenches for sewer, water, utility or culverts) that are within the grade of the proposed streets, shall be thoroughly compacted. The entire width of the right-of-way shall be graded so that any point on the right-of-way shall be not more than 1.0' above or below the finished centerline grade; the County Engineering Department may vary this requirement if topographic conditions warrant.

J. Sub-base, Base Material and Construction Methods

1. Sub-base and base materials and construction methods for this placement shall be in accordance with the current M.D.O.T. Specifications.
  - a. The Proprietor's Engineer shall present to the County Engineering Department, a certified analysis, made by a laboratory, of the granular material and aggregate that is intended to be used on the streets. This analysis must be presented and approved before any aggregate surfacing is placed on the streets.
  - b. The use of bituminous base course mixture is permissible. The method of construction must be according to Section 4.00 of the current M.D.O.T. Specifications laid at a compacted uniform depth of five and one half inches (5-1/2") in two courses. A tolerance of one quarter inch (1/4"), plus or minus, will be allowed in the compacted bituminous aggregate base course. The bituminous mixture shall be in accordance with the current M.D.O.T. Specifications.
2. The complete aggregate or bituminous base course shall conform to the required line, grade, and cross section. The use of water or chemical

admixtures to aid in the consolidation of the aggregate base course shall be approved by the County Engineering Department.

3. Road construction specifications for industrial streets and/or collector streets will be as outlined in general requirements and as shown on the typical section for industrial streets.

K. Surfacing Materials and Construction Methods

1. Bituminous surface courses shall be constructed in accordance with the current M.D.O.T. Specifications, Section 4.00. The bituminous mixture shall be in accordance with the current M.D.O.T. Specifications.
2. Concrete pavements shall be constructed in accordance with the current M.D.O.T. Specifications Section 4.50. Pavement integral with the curb will be permitted at the option of the Proprietor.

L. Sidewalks and Curb and Gutter

1. Sidewalks

Sidewalks, when called for on the plans, shall meet the current M.D.O.T. Specifications. The depth of walk shall be not less than four inches (4"), except at driveways where it shall be not less than six inches (6"). Sidewalk grades shall be shown on the plans, when the walks are to be constructed.

2. Curb and Gutter

- a. The roadway, curb elevation, and Ionia County Road Commission curb and gutter cross section shall be shown on the plans. Materials and methods for construction of concrete curb and gutter shall meet the requirements of the current M.D.O.T. Specifications and shall include two (2) half inch (1/2") reinforcing bars (#4 rebar).
- b. Expansion joint material shall be placed at all spring points and at 100' intervals. Contraction joints shall be located at 10' spacings.
- c. Either straight faced curb and gutter or rolled curb and gutter may be used at the option of the Proprietor. (See page 54.)
- d. All standard curb cuts shall be done by saw-cutting a minimum depth of two inches (2").

M. Topsoil, Seed, Fertilizer and Mulch

All graded areas within the right-of-way shall be seeded, fertilized and mulched. The methods and time of seeding and mulching shall meet the requirements of the current M.D.O.T. Specifications. All disturbed areas shall be covered with three inches (3"), minimum, of topsoil. No road will be accepted by the County Engineering Department where ditch or bank erosion or sedimentation is evident. All disturbed area within the road right-of-way, excluding the roadbed, must have vegetative ground cover established to such a length and density that washing will not occur.

N. Trees

1. Tree Planting Standards

Any new trees being planted must be a minimum of 15 feet behind the curb for Evergreen Trees and a minimum of 10 feet behind the curb to Deciduous Trees (leafing).

2. Existing Tree Standards

The above shall also apply to existing trees except when in the opinion of the County Engineering Department, a Deciduous Tree is of significant aesthetic value and not closer than five feet behind the curb.

O. Non-specified Materials and Construction

All items that are not specified within these specifications but that are essential to the proper construction of the roads in question, shall be of material and construction in accordance with the current M.D.O.T. Specifications.

P. Seasonal Requirements

All construction materials, placement of materials, and method or practices shall conform to the current M.D.O.T. Specifications on seasonal limitations unless otherwise approved in writing by the County Engineering Department.

## SECTION VI Construction of Streets

### A. Coordination

1. It is recommended that a pre-construction meeting be conducted by the Proprietor's Engineer, including the County Engineering Department, before street construction commences and that a systematic procedure of construction be followed in order to eliminate any possible disagreements between the County Engineering Department and the Proprietor and its agents.
2. At the start of construction the Ionia County Road Commission may, or contract to, furnish and install a sign(s) stating, "**STREET NOT OPEN FOR PUBLIC TRAVEL**" at each access point to a public road or extension of a public road until the County Engineering Department determines that the roadway is reasonably safe for the public to travel. The estimated cost shall be included in the street sign installation fee paid by the Proprietor.
3. Traffic control shall be maintained in an orderly manner. All construction signing and permanent signing shall be in accordance with the Michigan Manual of Uniform Traffic Control Devices. If there is a need for a detour route, it shall be clearly shown on the construction plans (title sheet). All proper authorities shall be notified by the Proprietor's Engineer or contractor, and the detour route must be approved by the County Engineering Department.

### B. Inspection and Testing

1. Inspections may be made by the County Engineering Department prior to and during the placing of the sub-base and the aggregate base. Any road cuts made after the placing of the aggregate base shall be properly backfilled and compacted. (See page 59, Utility Trenches.)
2. Inspection by the County Engineering Department shall not relieve the Proprietor's Engineer of any of his obligations. The Proprietor's Engineer shall provide a written progress report to the County Engineering Department of the start of the various stages of any construction within the street rights-of-way, if at all possible, and as the work progresses.

3. The Proprietor's Engineer shall set and check grade and alignment, inspect all materials incorporated in the street and drain construction, and supervise and inspect all construction within the street right-of-way and drainage easements.
4. Construction on, or use of, frozen material will not be approved.
5. Minimum testing that requires documentation by the Proprietor's Engineer, subject to change if deemed necessary by the Engineering Department, are as follows:
  - a. Utility Trench Backfill - one sieve analysis, per 3,000 cubic yards of material. Density test shall be taken one test for every 300 linear feet of roadway and one test for every 1 feet of vertical backfilling.
  - b. Sub-grade - visual inspection that all unstable material is removed. Uncertain situations may warrant additional soil borings and/or testing of questionable soils. A minimum 2% slope in the sub-grade surface should be constructed from the centerline to the edge of the sub-grade.
  - c. Sub-base - one sieve analysis per 3,000 cubic yards of material. Density test shall be taken every 300 feet of roadway. Frequency of density test may be increased if compaction is a problem and decreased if consistent acceptable compaction is obtained. This includes granular material under the concrete curb and gutter.
  - d. Aggregate Base - one sieve analysis per 1,200 cubic yards of 22A aggregate. Density test same as for the sub-base.
  - e. Concrete Curb & Gutter - proper base construction, air, slump and strength tests of concrete. The concrete shall be tested at least once in the a.m. and once in the p.m. Air content at least every two hours.
  - f. Bituminous Mixture - one extraction per 1,000 tons of mixture, minimum of one extraction per day - one recovered penetration over 2000 ton.

C. Conditional Acceptance and Maintenance (Optional)

1. After construction of the roads, streets, alleys and drains is completed, except for placement of the bituminous wearing course, the Proprietor shall furnish the Board a letter requesting an inspection by the County Engineer, a certificate (see page 46) from the Proprietor's Engineer, and a set of as-built plans reflecting field changes.
2. If the work is not completed and is not acceptable, the Proprietor and the Proprietor's Engineer will be notified by the County Engineer as to the deficiency. The County Engineer will make a reinspection of the work after being notified by the Proprietor that the deficiencies have been corrected.
3. Approval of any construction phase by the County Engineer does not guarantee acceptance by the Board or relieve the Proprietor of responsibilities or liabilities by the development of the plat.
4. When all plat procedures have been completed satisfactorily, the Final Plat will be recommended by the County Engineer for signature by the Board.
5. The Ionia County Road Commission shall conditionally accept the road(s) for routine maintenance if the construction has been accepted by the County Engineer and the plat has been recorded at the Ionia County Register of Deeds.
6. The period of conditional acceptance shall not extend past the time that 65% of the lots within the subdivision, or phase of the subdivision, are occupied by buildings, or a period of two (2) years, whichever comes first.
7. During the period of conditional acceptance the Proprietor shall repair, replace or reconstruct any portion of the road improvement, at his expense, to the satisfaction of the County Engineer. The Proprietor shall secure a maintenance bond in accordance with Section VII G to ensure that satisfactory repairs are made.

Also, at the time of conditional acceptance, a security deposit in the amount of 100% of the approved Proprietor's executed contract for the cost to construct the bituminous wearing course shall be required. The security deposit will serve as surety for completion of the bituminous wearing course. The security deposit shall be one of the following:

- (a) Cash/Certified Check with security deposit agreement
- (b) Irrevocable Bank Letter of Credit

D. Final Acceptance and Maintenance

1. After construction of the roads, streets, alleys and drains is completed, the Proprietor shall furnish the Board a letter requesting an inspection by the County Engineer, a certificate (see page 46) from the Proprietor's Engineer, and a set of as-built plans reflecting field changes.
2. If the work is not completed and is not acceptable, the Proprietor and the Proprietor's Engineer will be notified by the County Engineer as to the deficiency. The County Engineer will make a reinspection of the work after being notified by the Proprietor that the deficiencies have been corrected.
3. Approval of any construction phase by the County Engineer does not guarantee acceptance by the Board or relieve the Proprietor of responsibilities or liabilities by the development of the plat.
4. When all plat procedures have been completed satisfactorily, the Final Plat will be recommended by the County Engineer for signature by the Board.
5. The Ionia County Road Commission shall assume maintenance of the street(s) if the construction has been accepted by the County Engineer and the plat has been recorded at the Ionia County Register of Deeds.

However, before assuming maintenance, if any material or reconstruction is required, it shall be accomplished at the expense of and by the Proprietor.

## SECTION VII FINANCIAL REQUIREMENTS AND RESPONSIBILITIES

The Ionia County Road Commission shall require, as a condition of final plat approval and acceptance of the roadways to come under its jurisdiction, completion of all required improvements or a deposit by the Proprietor with the Board in an amount sufficient to ensure completion of the proposed improvements within a specified period of time. The Proprietor shall be responsible for the total of all costs incurred to install the proposed improvements and ensure that they meet the requirements of the Board. Should the Proprietor fail to fulfill the obligations and requirements set forth in this publication, the Board will exercise its rights to remedy such situation.

Refer to the "Document" section of this booklet for standard forms and the Application for Plat Approval form which summarized the financial requirements to the Board.

A. Plan Review Fee

A fee in the amount of \$150.00 per plat or phase of a subdivision, plus \$2.00 per lot for developments in excess of 25 lots, shall be submitted to the Road Commission before the County Engineer will begin reviewing the subdivision plans. This fee will not be refundable once the County Engineer has begun review of the proposed plans. Reducing the size of the development will not warrant a refund of any part of the review fee.

The plan review fee shall be paid in cash or by certified check.

B. Inspection Fee

A fee in the amount of two percent (2%) of the Proprietor's executed contracts, or of the approved Proprietor's Engineer's estimate of the total cost of the street improvements, shall be submitted to the Road Commission prior to construction and plat approval. This fee is to cover administrative costs and inspections made by the Road Commission in relation to the plat.

The inspection fee shall be paid in cash or by certified check.

C. Insurance

1. Damage Liability and Insurance

The Proprietor shall save harmless and indemnify the Board of County Road Commissioners of the County of Ionia against all claims for damage to public or private property and for injuries to persons arising out of and/or during the

work contemplated.

If a permit is required (see Section VII H.) the contractor shall, prior to issuance of the permit, file with the Road Commission a certificate that he carries Worker's Compensation Insurance which insurance the contractor will keep in force for the duration of the permit.

The contractor, prior to issuance of the permit, shall file with the Road Commission copies of completed certificates of insurance, as evidence that he carries adequate insurance satisfactory to the Road Commission, to afford protection against all claims for damages to public or private property, and injuries to persons arising out of the work, and similar insurance to protect the owner of premises on or near where construction operations are to be performed.

All insurance policies and certificates must name the Ionia County Road Commission, its Commissioners and employees as insureds and include an endorsement providing 30 days prior written notice to the Road Commission of cancellation or reduction of coverage. The contractor shall cease operation on the occurrence of any such cancellation or reduction, and shall not resume operations until new insurance is in force.

2. General Liability

Unless otherwise specifically required, the minimum limits of property damage and bodily injury liability covering each permit shall be:

|                   |                             |
|-------------------|-----------------------------|
| Bodily Injury and | \$1,000,000 Each Occurrence |
| Property Damage   | \$1,000,000 Aggregate       |

Such insurance shall include, but not be limited to, coverage for: (a) underground damage to facilities due to drilling and excavating with mechanical equipment; and (b) collapse or structural injury to structures due to blasting or explosion, excavation, tunneling, pile driving, cofferdam work or building moving or demolition.

3. Owner's Protective Liability

As an alternative to General Liability Coverage, bodily injury and property damage protection shall be extended to the Road Commission; and, where indicated by the identity of the contracting parties, the protection shall be extended to all participating political subdivisions and political corporations.

4. Automobile Liability

Unless otherwise specifically required, the minimum limits of property damage and bodily injury liability covering each permit shall be:

|                                      |   |
|--------------------------------------|---|
| Bodily Injury and<br>Property Damage | \$1,000,000 Per Accident<br>\$1,000,000 Aggregate           |
| Michigan No-Fault                    | Personal Injury Protection<br>Property Protection Indemnity |

D. Security Deposit

A security deposit in the amount of 100% of the Proprietor's executed contracts, or of the approved Proprietor's Engineer's estimate of the total cost of street improvements, shall be required when final plat approval is requested prior to completion of all construction improvements required by the Board. The security deposit will serve as surety for completion of the improvements in the subdivision.

The security deposit shall be one of the following:

1. Cash/Certified Check with security deposit agreement
2. Irrevocable Bank Letter of Credit
  - (a) Each Irrevocable Letter of Credit shall be reviewed and approved by the Board on an individual basis.
  - (b) Under the terms of the letter of credit, the Road Commission shall have the right to secure payment from the issuer (surety) on said line of credit without consent from the principal (applicant/Proprietor) or objection by the issuer without recognition of any claims or objections of said principal.
  - (c) The following shall be required in Letters of Credit issued by federally chartered banks whether in Michigan or out of Michigan:  
\_\_\_\_(name of bank)\_\_\_\_ hereby consents to the jurisdiction of the Ionia County Circuit Court, Ionia, Michigan, for any legal action necessary to resolve any disputes arising out of the Letter of Credit and further waives its right under Federal Law to sue or to be sued in any Federal District in which venue may be proper.
  - (d) The following shall be required in Letters of Credit issued by

out-of-state banks: \_\_\_\_\_ (name of bank)\_\_\_\_\_ hereby consents to the jurisdiction of the Ionia County Circuit Court, Ionia, Michigan, for any legal action necessary to resolve any disputes arising out of this Letter of Credit.

- (e) Proposed work items covered by the security deposit shall include, not be limited to, clearing and grubbing, earth excavation, sub-grade preparation, sub-grade under drain, aggregate base, drainage structures, concrete curb and gutter, bituminous or concrete pavement, turf establishment, traffic and safety devices, and final cleanup.
- (f) Security deposits may be released by the Board in amounts proportional to the completed construction as work progresses, less ten (10) percent retainage for contingencies. Amounts may be released no more than two (2) times throughout the life of the project in addition to the final release. Subsequent releases will not be made until at least one (1) month after the date on which any prior amounts were released. The Road Commission will not act as agent or project manager for the Proprietor with respect to the Proprietor's obligations to other parties and the timeliness of obligations thereof.

Final release of the security deposit will not occur until the County Engineer is satisfied that all requirements of the Board have been met.

E. Sign Fee

The Proprietor shall pay to the Board the amount necessary to furnish and erect street name signs and traffic control signs and devices as determined necessary at locations specified by the County Engineer. The payment shall be made to the Board prior to final plat approval.

F. Duration of Agreements

The required time of completion of the street improvements under the plat agreement and security deposit agreements shall not be for a time period greater than two (2) years from the date of the agreement. If, after this period, the improvements are not completed, the Board may exercise its rights under these agreements to ensure completion of the proposed improvements.

Irrevocable Letters of Credit shall be in effect until released by the County Engineer.

Irrevocable Letter of Credit with specific expiration dates shall not be accepted unless the Proprietor has demonstrated *to the satisfaction of the County Engineer* that the improvements will be completed in the time period specified.

G. Maintenance Bond

After all road improvements have been completed to the satisfaction of the County Engineer, the Proprietor shall secure a two (2) year maintenance bond in the amount of ten (10) percent of the construction cost rounded off to the nearest hundred dollars with a minimum bond amount of \$5,000.00. Refer to the “Documents” section of this booklet for a standard maintenance bond form.

Subsequent to completion of construction, the County Engineer will conduct a final inspection of the project to determine whether the improvements have been properly constructed and maintained by the Proprietor. The two (2) year term of the bond will begin on the date of the final inspection provided that all improvements meet the required standards.

During and/or at the end of the two (2) year period, the County Engineer will inspect the improvements and, if found to be in good condition in accordance with the provisions of the bond, no corrective work will need to be performed. The bond principal will be notified by certified mail, return receipt requested, if any repairs are needed and will have ten (10) days from receipt of such notification to respond and schedule the needed work. Should the Proprietor fail to repair any damage or make needed adjustments during the duration of the bond, the Board will exercise its rights to ensure that the required work is performed.

H. Permits

1. All work scheduled within existing and proposed right-of-way roads and streets must have plans reviewed and approved by the County Engineer.
2. If the scheduled work is within the proposed right-of-way of streets or within right-of-way of roads dedicated in the plat, and is included in the construction plans approved by the County Engineer and the street has not been accepted by the Ionia County Road Commission for maintenance, a permit will not be required.
3. If the work is within the right-of-way of an existing road or street, a permit including applicable fee, is required from the Engineering Department of the Ionia County Road Commission.
4. If the work is not included in the construction plans approved by the County

Engineer or the street has been accepted by the Ionia County Road Commission for maintenance, a permit, including applicable fee, is required from the Engineering Department of the Ionia County Road Commission.

5. Where public utilities are installed under a permit issued by the Ionia County Road Commission to a township, city, or public utility, no fees will be charged for a permit.
6. All driveways installed by the developer prior to acceptance of the street for maintenance will be inspected during final inspection. If not included on the construction plans, a driveway shall require a completed driveway permit, including applicable fee, processed through the Engineering Department of the Ionia County Road Commission.

## **SECTION VIII CONDOMINIUM PROJECTS**

All sections of the "Procedures for Plat Street Development" shall apply to the development of roads and streets within condominium projects established in accordance with Act 59, P.A. 1978, as amended. For the purpose of this section, the terms "plat" and "subdivision" shall mean the same as "condominium project" and the term "Proprietor" shall mean the same as "developer".

If the roads and/or streets within the condominium project are to be a part of the county road system, prior to acceptance by the Board, the developer shall convey the road right-of-way, by warranty deed, to the Ionia County Road Commission.

If the roads and/or streets within the condominium project are to not be a part of the county road system, but intersects with, or connect to, an existing public road or street, a permit, including applicable fee is required from the Engineering Department of the Ionia County Road Commission.

**SECTION IX**  
**Severability Clause**

If any part of these procedures or requirements are found to be invalid, each invalidity shall not affect the remaining portion of the procedures or requirements which can be given effect without the invalid portion, and to this end the procedures or requirements are declared to be severable.



PRELIMINARY PLAN REVIEW CHECKLIST

Subdivision Name \_\_\_\_\_

Township \_\_\_\_\_ Section \_\_\_\_\_ Plat Dated/Revised \_\_\_\_\_

Engineer \_\_\_\_\_ Telephone \_\_\_\_\_

Address \_\_\_\_\_

Proprietor \_\_\_\_\_ Telephone \_\_\_\_\_

Address \_\_\_\_\_

Type of Development \_\_\_\_\_

|                       |   | Shown on<br>Plan |       | Approved |       |
|-----------------------|---|------------------|-------|----------|-------|
|                       |   | YES              | NO    | YES      | NO    |
| <b><u>GENERAL</u></b> |   |                  |       |          |       |
| 1.                    | Drawing Sheet Size (24" x 36") .....                        | _____            | _____ | _____    | _____ |
| 2.                    | General location map .....                                  | _____            | _____ | _____    | _____ |
| 3.                    | North arrow and scale (1" = 100' ) .....                    | _____            | _____ | _____    | _____ |
| 4.                    | Contours .....  | _____            | _____ | _____    | _____ |
| 5.                    | Topography .....  | _____            | _____ | _____    | _____ |
| 6.                    | Governing conditions .....                                  | _____            | _____ | _____    | _____ |
| 7.                    | Engineer's or Surveyor's seal .....                         | _____            | _____ | _____    | _____ |
| 8.                    | Statement describing nature of planned improvements.....    | _____            | _____ | _____    | _____ |
| 9.                    | Plan marked preliminary .....                               | _____            | _____ | _____    | _____ |
| 10.                   | Permanent B.M. elevation (USGS) or current standard.....    | _____            | _____ | _____    | _____ |
| 11.                   | Adjacent streets and properties shown .....                 | _____            | _____ | _____    | _____ |
| 12.                   | Multi-phase provisions .....                                | _____            | _____ | _____    | _____ |
| 13.                   | Letter of transmittal .....                                 | _____            | _____ | _____    | _____ |
| 14.                   | Dimensions (may be approximate) .....                       | _____            | _____ | _____    | _____ |
| 15.                   | Drainage/storm sewer and/or general pattern (as required).. | _____            | _____ | _____    | _____ |
| 16.                   | Watermain .....   | _____            | _____ | _____    | _____ |
| 17.                   | Sanitary sewer .....  | _____            | -     | _____    | _____ |
| <b><u>ROADWAY</u></b> |   |                  |       |          |       |
| 18.                   | Proposed right-of-way .....                                 | _____            | _____ | _____    | _____ |
| 19.                   | Street names .....  | _____            | _____ | _____    | _____ |
| 20.                   | Sight distance .....  | _____            | _____ | _____    | _____ |
| 21.                   | Road alignment data .....                                   | _____            | _____ | _____    | _____ |
| 22.                   | Street layout .....   | _____            | _____ | _____    | _____ |
| 23.                   | Traffic concerns .....                                      | _____            | _____ | _____    | _____ |

Date \_\_\_\_\_ Reviewed by \_\_\_\_\_

Date \_\_\_\_\_ Field Inspection by \_\_\_\_\_

Date \_\_\_\_\_ Preliminary plat approval recommended by \_\_\_\_\_

Date \_\_\_\_\_ Approval/Revision (circle one) letter sent by \_\_\_\_\_

IONIA COUNTY ROAD COMMISSION

CONSTRUCTION PLAN REVIEW CHECKLIST

Subdivision Name \_\_\_\_\_

Township \_\_\_\_\_ Section \_\_\_\_\_ Plat Dated/Revised \_\_\_\_\_

Engineer \_\_\_\_\_ Telephone \_\_\_\_\_

Address \_\_\_\_\_

Proprietor \_\_\_\_\_ Telephone \_\_\_\_\_

Address \_\_\_\_\_

Type of Development \_\_\_\_\_

|                        |   | Shown on Plan |       | Approved |       |
|------------------------|---|---------------|-------|----------|-------|
|                        |   | YES           | NO    | YES      | NO    |
| <b><u>GENERAL</u></b>  |   |               |       |          |       |
| 1.                     | Plan review fee submitted.....                                    | YES.....      | NO    |          |       |
| 2.                     | Preliminary plan approved .....                                   | YES.....      | NO    |          |       |
| 3.                     | Letter of transmittal.....  | YES .....     | NO    |          |       |
| 4.                     | General location map .....  |               | _____ | _____    | _____ |
| 5.                     | North arrow and scale (1" = 50' horizontal; 1" = 5' vertical).... |               | -     |          |       |
| 6.                     | Plan sheet size (24" x 36") .....                                 | _____         | _____ | _____    | _____ |
| 7.                     | Engineer's seal .....   | _____         | _____ | _____    | _____ |
| 8.                     | Permanent B.M. elevations (USGS) or current standard .....        | _____         | _____ | _____    | _____ |
| 9.                     | Topography and contours .....                                     | _____         | _____ | _____    | _____ |
| 10.                    | Dimensions/storm sewer .....                                      | _____         | _____ | _____    | _____ |
| 11.                    | Watermain .....   | _____         | _____ | _____    | _____ |
| 12.                    | Sanitary sewer .....  | _____         | -     | _____    | _____ |
| 13.                    | Easements .....   | _____         | _____ | _____    | _____ |
| 14.                    | Sidewalks .....   | _____         | _____ | _____    | _____ |
| <b><u>DRAINAGE</u></b> |   |               |       |          |       |
| 15.                    | Depth of cover over pipe .....                                    | _____         | _____ | _____    | _____ |
| 16.                    | Location of structures .....                                      | _____         | _____ | _____    | _____ |
| 17.                    | Structure covers .....  | _____         | _____ | _____    | _____ |
| 18.                    | Under drains .....  | _____         | _____ | _____    | _____ |
| 19.                    | Trench backfill .....   | _____         | _____ | _____    | _____ |
| 20.                    | Gradient .....  | _____         | _____ | _____    | _____ |
| <b><u>ROADWAY</u></b>  |   |               |       |          |       |
| 21.                    | Right-of-way .....  | _____         | _____ | _____    | _____ |
| 22.                    | Street names .....  | _____         | _____ | _____    | _____ |
| 23.                    | Sight distance .....  | _____         | _____ | _____    | _____ |
| 24.                    | Alignment data .....  | _____         | _____ | _____    | _____ |
| 25.                    | Vertical and horizontal curves .....                              | _____         | _____ | _____    | _____ |
| 26.                    | Grades .....  | _____         | _____ | _____    | _____ |
| 27.                    | Layout, plan, and profile .....                                   | _____         | _____ | _____    | _____ |

IONIA COUNTY ROAD COMMISSION

CONSTRUCTION PLAN REVIEW CHECKLIST

Page 2

Subdivision Name \_\_\_\_\_

| <u>GENERAL</u> |                                       | Shown on Plan |       | Approved |       |
|----------------|---------------------------------------|---------------|-------|----------|-------|
|                |                                       | YES           | NO    | YES      | NO    |
| 28.            | Typical pavement cross-sections ..... | _____         | _____ | _____    | _____ |
| 29.            | Plotted roadway cross-sections .....  | _____         | _____ | _____    | _____ |
| 30.            | Earth slopes behind curbing .....     | _____         | _____ | _____    | _____ |
| 31.            | Intersection details .....            | _____         | _____ | _____    | _____ |
| 32.            | Curb details .....                    | _____         | _____ | _____    | _____ |
| 33.            | Soil borings .....                    | _____         | _____ | _____    | _____ |
| 34.            | Pavement design calculations .....    | _____         | _____ | _____    | _____ |

Date \_\_\_\_\_ Reviewed by \_\_\_\_\_

Date \_\_\_\_\_ Construction plan reviewed by \_\_\_\_\_

Date \_\_\_\_\_ Approval/Revision (circle one) letter sent by \_\_\_\_\_

Any approval on this form does not constitute final approval

IONIA COUNTY ROAD COMMISSION

SUBDIVISION ACCEPTANCE REVIEW CHECKLIST

Subdivision Name \_\_\_\_\_  
 Township \_\_\_\_\_ Section \_\_\_\_\_ Plat Dated/Revised \_\_\_\_\_  
 Engineer \_\_\_\_\_ Telephone \_\_\_\_\_  
 Address \_\_\_\_\_  
 Proprietor \_\_\_\_\_ Telephone \_\_\_\_\_  
 Address \_\_\_\_\_  
 Type of Development \_\_\_\_\_

SUBDIVISION STREET ACCEPTANCE REVIEW

|   | APPROVED | DATE  |
|---|----------|-------|
| - Final plat approved (signed by Board) .....                   | _____    | _____ |
| - Firm/agency providing construction inspection .....           | _____    | _____ |
| - Construction approved by inspector (letter received) .....    | _____    | _____ |
| - As-built Mylar drawings received ( or diskette) .....         | _____    | _____ |
| - Final inspection and approval of construction by the Engineer | _____    | _____ |
| - Two year maintenance bond .....                               | _____    | _____ |
| - Inspection and testing costs paid .....                       | _____    | _____ |
| - Sign fees paid in full by the Proprietor .....                | _____    | _____ |
| - Resolution prepared to accept roads for maintenance .....     | _____    | _____ |
| - Streets added to next revision of certification maps .....    | _____    | _____ |

RELEASE OF SURETY

Security deposit(s) should not be released until:

Completed improvements are approved by the Inspector and Engineer

As-built mylars (or diskette) are received

Maintenance bond is secured

All fees are fully paid by the Proprietor

IONIA COUNTY ROAD COMMISSION  
ANY BANK, MICHIGAN

\_\_\_\_\_  
Number

Date

IRREVOCABLE COMMERCIAL LETTER OF CREDIT

Board of County Road Commissioners of the County of Ionia  
169 E. Riverside Drive  
Ionia, Michigan 48846

Dear Commissioners:

We hereby establish our Irrevocable Letter of Credit # (Number) and hereby authorize the Ionia County Road Commission to draw on us at sight for the account of (Proprietor's Name and Address) up to a total of (Amount).

Funds are available hereunder in an amount not exceeding in the aggregate \_\_\_\_\_ for road improvements in (Name of Plat).

All drafts must be marked "Drawn under Letter of Credit of (Name of Proprietor) number \_\_\_\_\_ dated \_\_\_\_\_".

We hereby agree with the drawers, endorsers, and bona fide holders of drafts, that such drafts will be duly honored on due presentation to the drawees presented at this office together with this Letter of Credit.

NAME OF BANK

\_\_\_\_\_  
Signature of Authorized Personnel

IONIA COUNTY ROAD COMMISSION  
PLAT AGREEMENT  
(Individual Form)

In consideration of the approval of the \_\_\_\_\_  
by the Board of County Road Commissioners of the County of Ionia, hereinafter called the  
Commission, the undersigned Plator agrees to install, construct and complete by  
\_\_\_\_\_, all of the improvements on said plat as required by the Plat  
Laws of the State of Michigan, in accordance with the subdivision procedures,  
requirements, and specifications as adopted by the Commission, and road improvement  
plans for \_\_\_\_\_, prepared by \_\_\_\_\_  
dated \_\_\_\_\_ and approved by the Commission on \_\_\_\_\_  
consisting of \_\_\_\_\_ sheets.

Dated \_\_\_\_\_

Witnesses:

\_\_\_\_\_  
\_\_\_\_\_

By:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

State of Michigan}  
County of Ionia} ss,

On this \_\_\_\_\_ day of \_\_\_\_\_, 19 \_\_\_\_\_ before me personally  
appeared \_\_\_\_\_  
to me known to be the person(s) described in and who executed the foregoing instrument  
and acknowledged that \_\_\_\_\_ executed the same as \_\_\_\_\_ free act  
and deed.

\_\_\_\_\_  
Notary Public, \_\_\_\_\_ County, Michigan  
Acting in \_\_\_\_\_ County, Michigan  
My Commission Expires \_\_\_\_\_

IONIA COUNTY ROAD COMMISSION  
PLAT AGREEMENT

(Corporation Form)

In consideration of the approval of the \_\_\_\_\_  
by the Board of County Road Commissioners of the County of Ionia, hereinafter called the  
Commission, the undersigned Plator agrees to install, construct and complete by  
\_\_\_\_\_, all of the improvements on said plat as required by the Plat  
Laws of the State of Michigan, in accordance with the subdivision procedures,  
requirements, and specifications as adopted by the Commission, and road improvement  
plans for \_\_\_\_\_, prepared by \_\_\_\_\_  
dated \_\_\_\_\_ and approved by the Commission on \_\_\_\_\_  
consisting of \_\_\_\_\_ sheets.

Dated \_\_\_\_\_

Witnesses:

\_\_\_\_\_, Inc.  
A Michigan Corporation

\_\_\_\_\_

By: \_\_\_\_\_  
President

\_\_\_\_\_

By: \_\_\_\_\_  
Treasurer

State of Michigan}  
County of Ionia} ss,

On this \_\_\_\_\_ day of \_\_\_\_\_, 19 \_\_\_\_\_ before me personally  
appeared \_\_\_\_\_

being by me duly sworn, did depose and say: that they are respectively  
\_\_\_\_\_ and \_\_\_\_\_ of \_\_\_\_\_, the  
corporation described in and which executed the above instrument; that they know the seal  
of said corporation; that the seal affixed to the said instrument on behalf of the corporation  
by authority of their office under the Standing Resolution thereof, \_\_\_\_\_  
executed the same as \_\_\_\_\_ free act and deed.

\_\_\_\_\_  
Notary Public, \_\_\_\_\_ County, Michigan  
Acting in \_\_\_\_\_ County, Michigan  
My Commission Expires \_\_\_\_\_

**IONIA COUNTY ROAD COMMISSION  
AGREEMENT FOR UNPLATTED DEVELOPMENT**

In consideration of the approval of the \_\_\_\_\_ by the Board of County Road Commissioners of the County of Ionia, hereinafter called the Commission, the undersigned developer/property owner agrees to install, construct and complete by \_\_\_\_\_, all of the improvements, in accordance with the subdivision procedures, requirements, and specifications as adopted by the Commission, and road improvement plans for the property described as follows:

---

---

---

---

---

Said road improvement plans have been prepared by \_\_\_\_\_ dated \_\_\_\_\_ and approved by the Commission on \_\_\_\_\_, consisting of \_\_\_\_\_ sheets.

Dated \_\_\_\_\_

Witnesses:

|       |       |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

Address

State of Michigan}  
County of Ionia} ss,

On this \_\_\_\_\_ day of \_\_\_\_\_, 19 \_\_\_\_\_ before me personally appeared \_\_\_\_\_

to me known to be the person(s) described in and who executed the foregoing instrument and acknowledged that \_\_\_\_\_ executed the same as \_\_\_\_\_ free act and deed.

\_\_\_\_\_  
Notary Public, \_\_\_\_\_ County, Michigan

Acting in \_\_\_\_\_ County, Michigan

My Commission Expires \_\_\_\_\_

IONIA COUNTY ROAD COMMISSION  
CERTIFICATE

TO: ENGINEERING DEPARTMENT  
IONIA COUNTY ROAD COMMISSION

Please be advised that the finished grades on the streets in the plat of \_\_\_\_\_, \_\_\_\_\_ Township, Michigan are as shown and approved on the street and utility plans approved by the Ionia County Road Commission on \_\_\_\_\_, or are as subsequently changed and approved for construction and shown on the attached "as constructed" street and utility plans.

I certify that the construction of all street improvements is complete and that:

1. Water, storm sewers, and sanitary sewers have been installed in accordance with the approved plans;
2. All streets are built in accordance with the approved plans and standard specifications;
3. The surfacing materials and other specified materials meet the requirements of the Michigan Department of Transportation Specifications and that reports of laboratory tests of these materials are filed with the Ionia County Road Commission.

\_\_\_\_\_  
(Consulting Firm)

By \_\_\_\_\_  
(Licensed Professional Engineer)

Engineer's Seal

Date: \_\_\_\_\_

IONIA COUNTY ROAD COMMISSION  
MAINTENANCE BOND

No. \_\_\_\_\_ Amount \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that we, \_\_\_\_\_  
as Principal, and \_\_\_\_\_ as Surety, are held firmly bound  
unto the Board of County Road Commissioners of the County of Ionia, State of Michigan,  
hereinafter called the Commission, to guarantee for a period of two (2) years from and  
after the date of its final acceptance of street improvements of those certain streets located  
in the plat known as \_\_\_\_\_ in the  
Township of \_\_\_\_\_, County of Ionia, State of Michigan in accord with  
the minimum standards as set forth and established by said Commission, "Rules for Plat  
Street Development", and road improvement plans for \_\_\_\_\_  
prepared by \_\_\_\_\_ and approved by the Commission on  
\_\_\_\_\_, incorporated by reference and made a part thereof.

We do specifically warrant and guarantee that in the event any part of portion of the  
road construction, including but not limited to surface, drainage, utilities, and curbs, shall  
become defective or worn by reasonable use, or otherwise, constructed by said principal  
before or at the time of expiration of two (2) years from the date of final acceptance of the  
improvement, then any portion of such construction found to be defective or not to be of  
a quality in accordance with the Commission's "Rules for Plat Street Development" shall  
be repaired or replaced, as the case may be, by the Principal at his expense with new  
material and approved by the Commission. We further undertake the continuing  
maintenance of said streets upon the basis that the Principal will, upon written notice, and  
within ten (10) days after receipt thereof, make whatever repairs that are necessary to  
comply with the Commission's "Rules for Plat Street Development". Said notice shall be  
served by registered or certified mail, return receipt requested, to the Principal by  
addressing the same to \_\_\_\_\_ and to Surety by addressing  
the same to \_\_\_\_\_. In the event that the Principal shall  
fail to make such repairs within the time herein before allotted, then the required repairs

IONIA COUNTY ROAD COMMISSION  
MAINTENANCE BOND

Page 2

may be made by the Commission, and the entire cost thereof charged to said Principal.

In the event such charges are not paid by said Principal within 30 days from and after the date of receipt of notice of the charges, the Surety will forthwith pay the same upon demand.

The obligation of this maintenance bond shall be deemed to be fulfilled at the end of two (2) years from the date of final acceptance of the improvements by the Commission; provided, that at the time all parts of all road construction done within the plat known as \_\_\_\_\_ shall meet the minimum standards of said Commission made a part hereof.

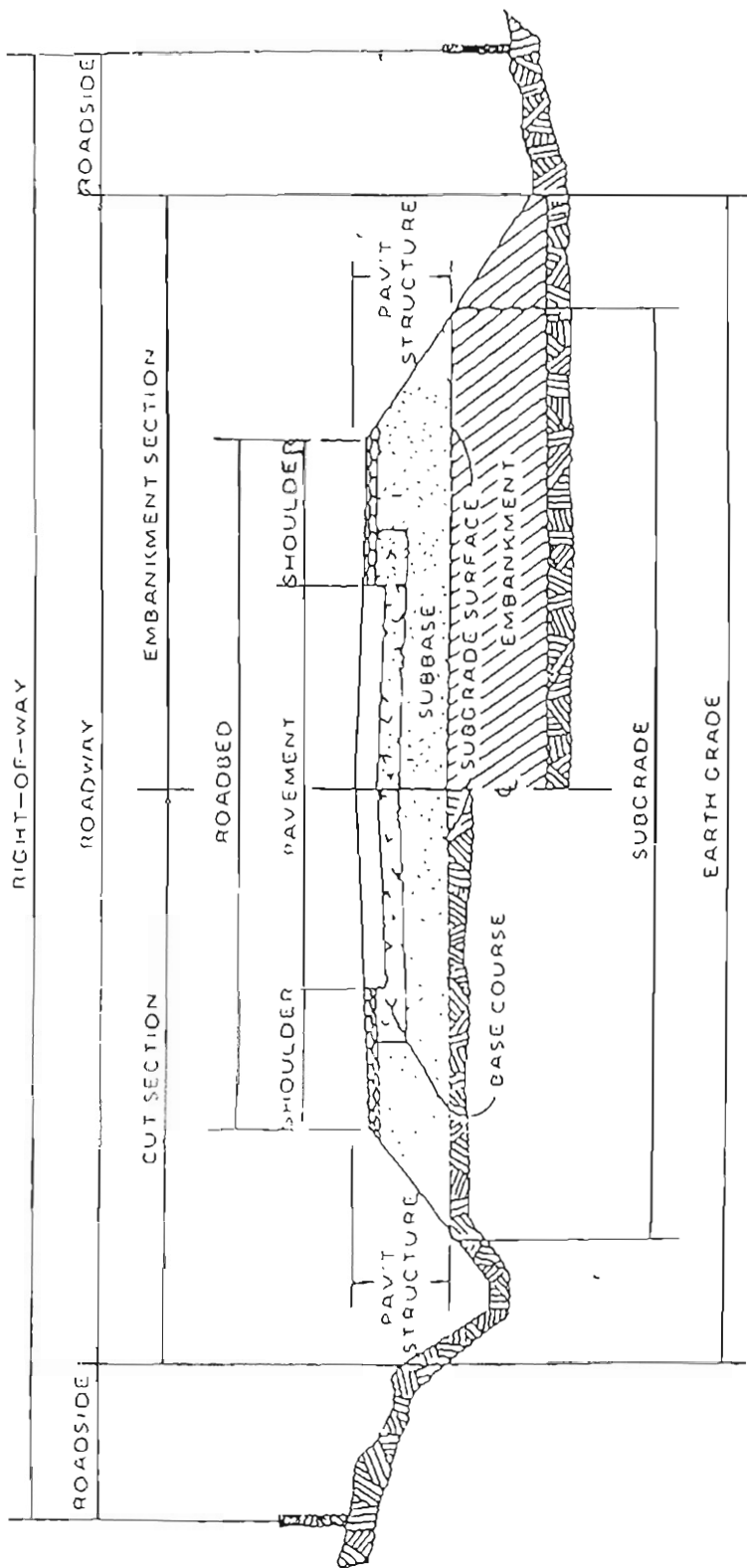
IN WITNESS WHEREOF, we have hereunto set our hands and seals this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_.

WITNESSES:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
Principal  
\_\_\_\_\_  
\_\_\_\_\_  
Surety

IONIA COUNTY ROAD COMMISSION



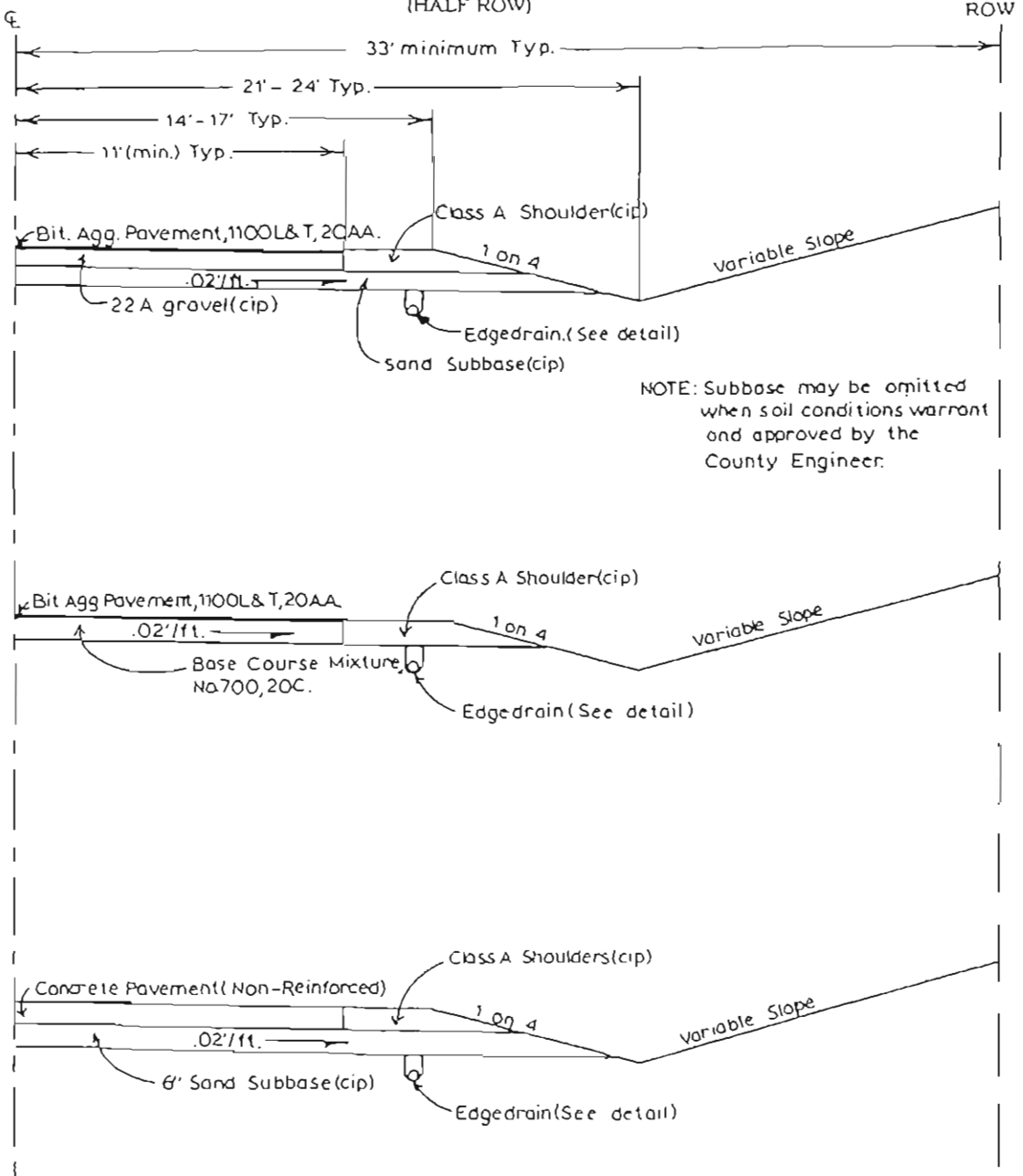
Road Section Nomenclature

07-07-95

DESIGN STANDARDS  
RESIDENTIAL-RURAL  
no scale

66' ROW (minimum)  
22' wide Pavement (min.) For required Pavement Sections.  
Surface drainage  
Class A Shoulders (23A Gravel)

TYPICAL SECTIONS  
(HALF ROW)



07-07-95

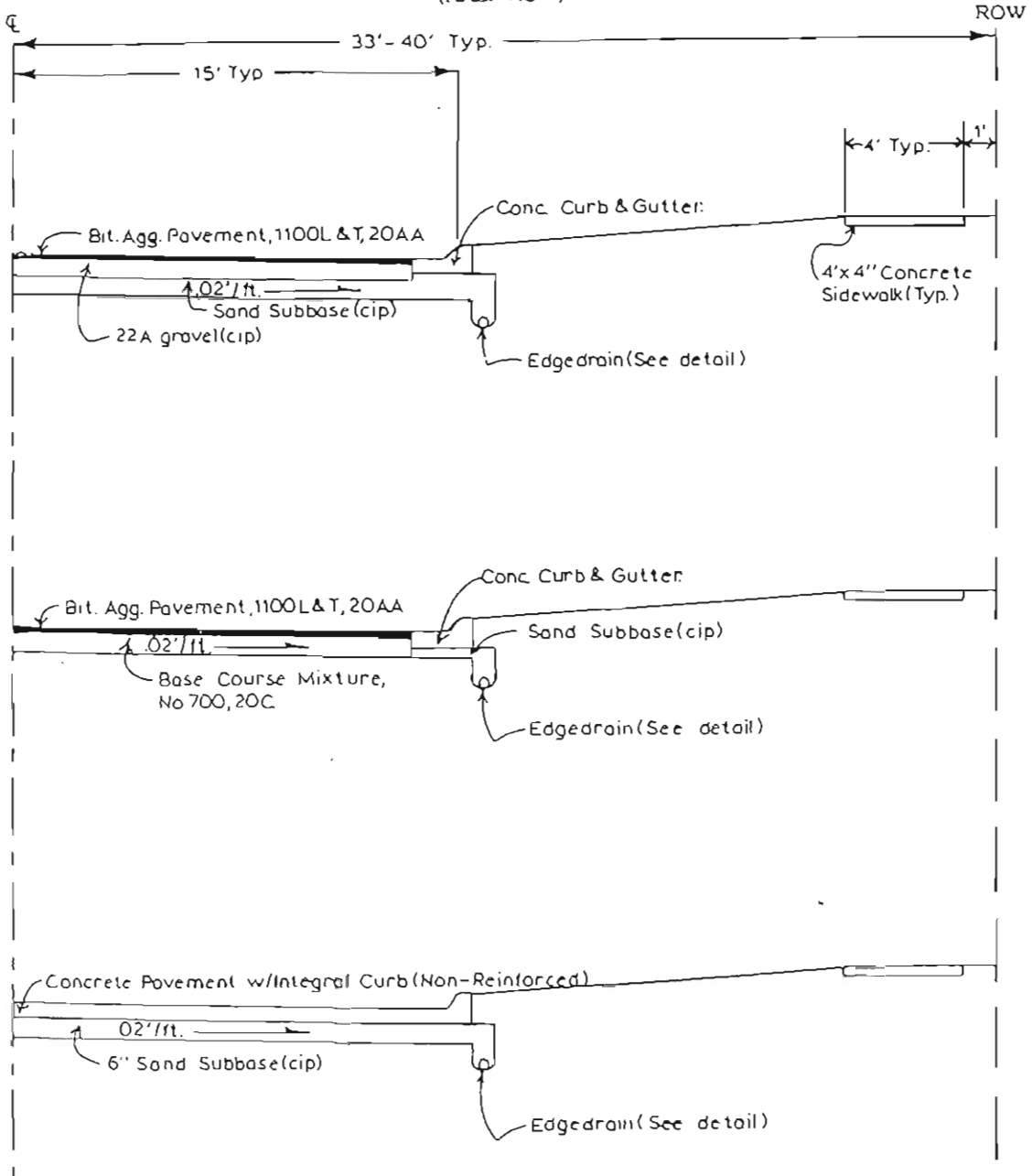
DESIGN STANDARDS

RESIDENTIAL-URBAN

no scale

66' ROW (minimum)  
CURB & GUTTER - 30' face to face For required Pavement Sections.  
Underground Storm Drainage

TYPICAL SECTIONS  
(HALF ROW)



07-07-95

IONIA COUNTY ROAD COMMISSION  
Example D

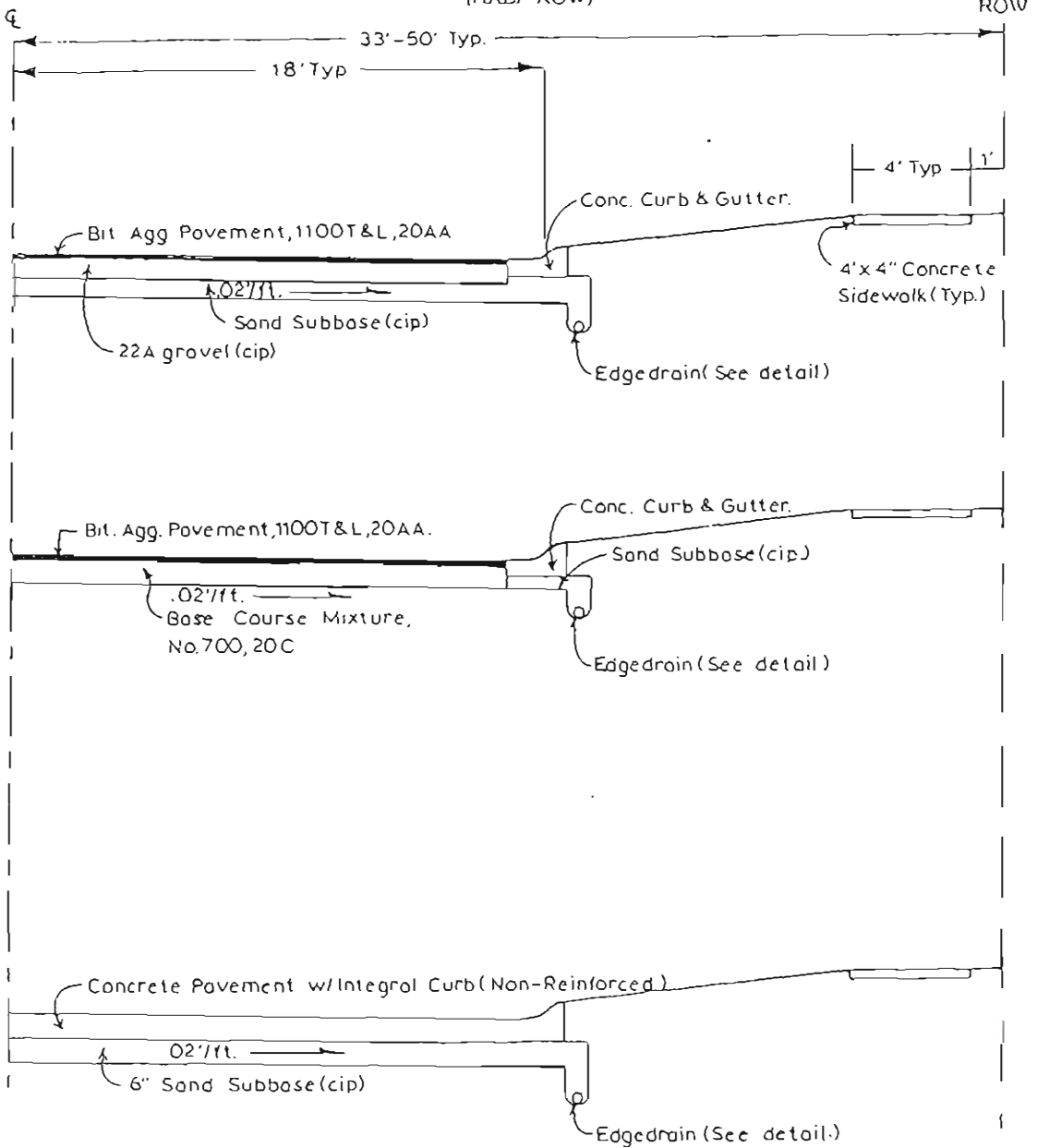
DESIGN STANDARDS

INDUSTRIAL  
no scale

66' ROW (minimum)  
CURB & GUTTER - 36' face to face.  
Underground Storm Drainage  
For required Pavement Sections.

NOTE This standard may be required on Residential Collector streets as directed by the County Engineer

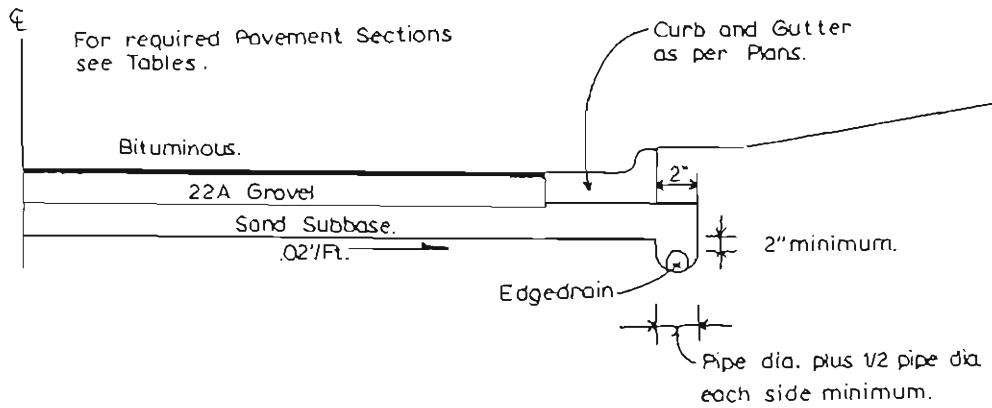
TYPICAL SECTIONS  
(HALF ROW)



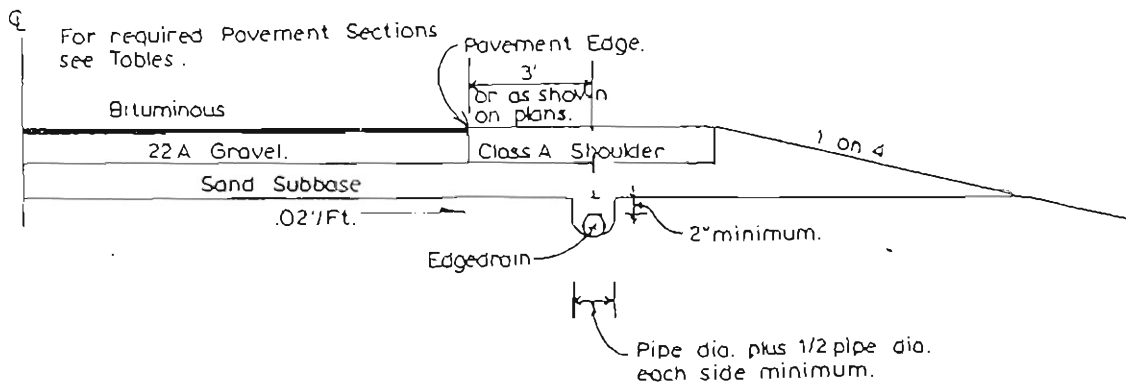
NOTE: The Board of Ionia County Road Commissioners may require wide of streets in Industrial Parks if they deem it necessary.

07-07-95

EDGEDRAIN DETAIL  
no scale



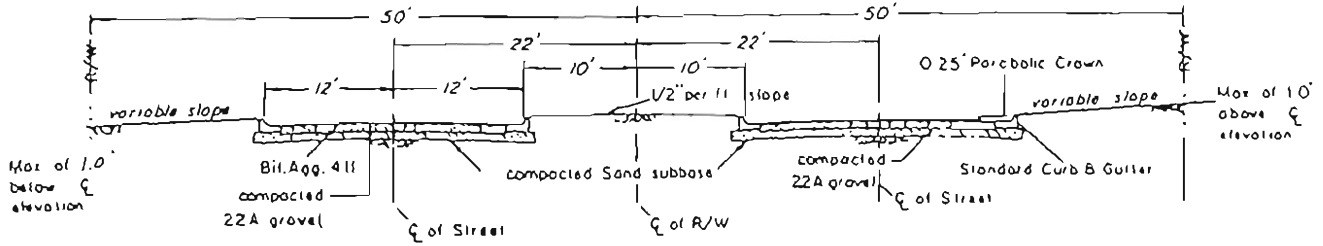
Curbed Roadway



Residential Rural

07-07-95

MINIMUM STANDARDS FOR BOULEVARD

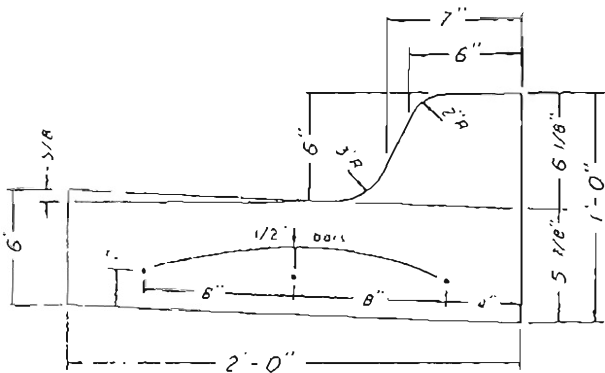


NOTE: Subbase may be omitted when soil conditions warrant and approved by the Engineering Department. 6" Open Joint Sewer Pipe Underdrain as required by the Engineering Department.

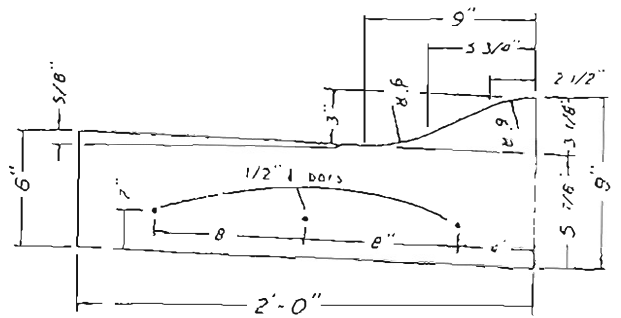
If areas of heavy soils or soil susceptible to frost heave or high water table are encountered, additional sand subbase and an underdrain system approved by the Engineering Department will be required.

CONCRETE CURB & GUTTER

STANDARD



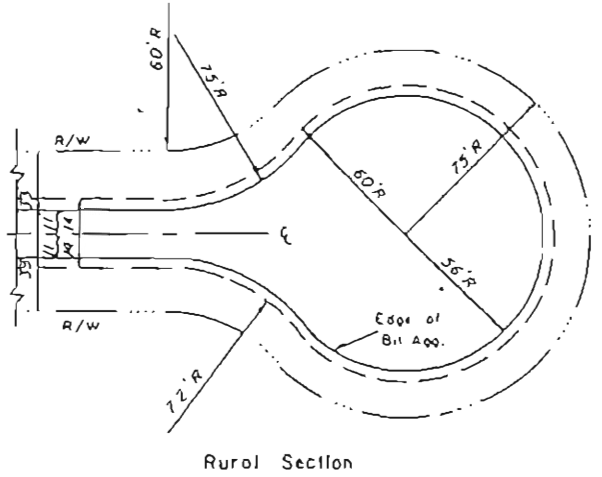
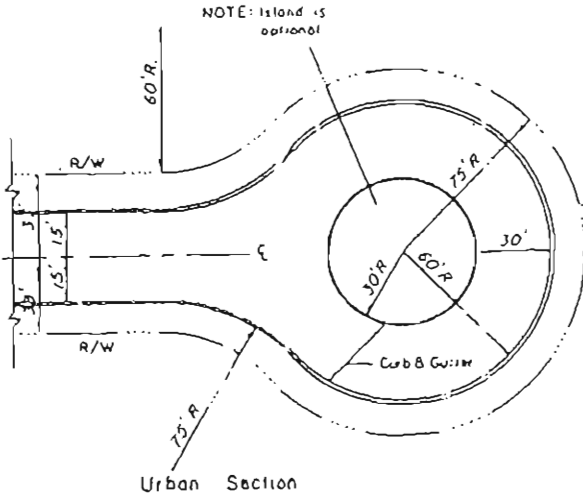
ROLL



07-07-95

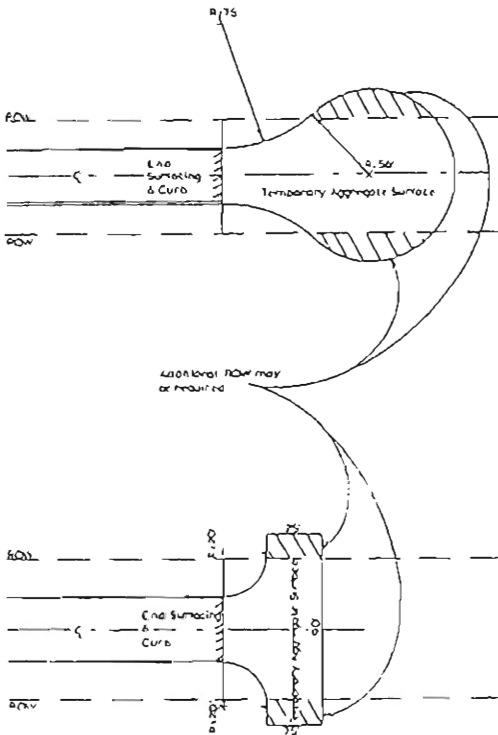
CUL-DE-SAC

Cul-de-Sac Section  
(max. length = 1,320')



TEMPORARY TURNAROUND

TEMPORARY TURN-AROUNDS  
no scale



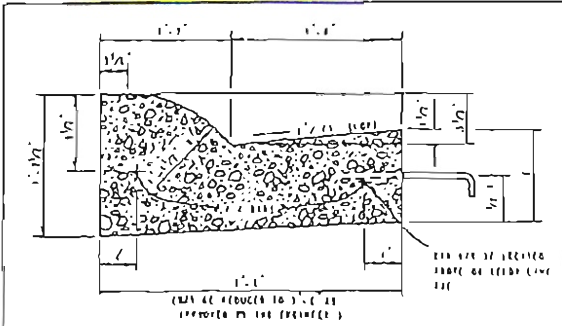
Temporary turnaround may be allowed for up to five years. A separate irrevocable letter of credit is required to guarantee the completion of the turnaround. The letter of credit shall be valid for five years.

NOTE: Bituminous surface may be required.

07-07-95

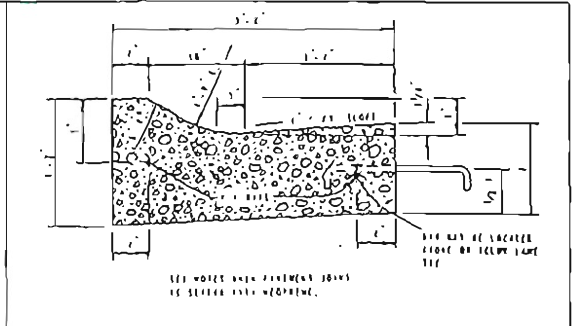
# IONIA COUNTY ROAD COMMISSION

## Example H



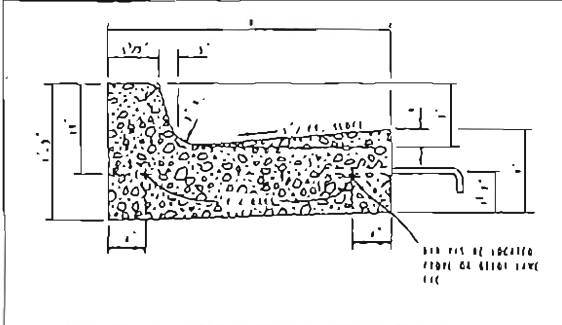
| DETAIL | DIMENSION | SLAB TYPE | CONCRETE CU. YD. / LIN. FT. |
|--------|-----------|-----------|-----------------------------|
| B1     | 1"        | AS SHOWN  | 0.8184                      |
| B2     | 1"        | GRAVELLED | 0.8184                      |
| B3     | 1"        | AS SHOWN  | 0.8184                      |

B



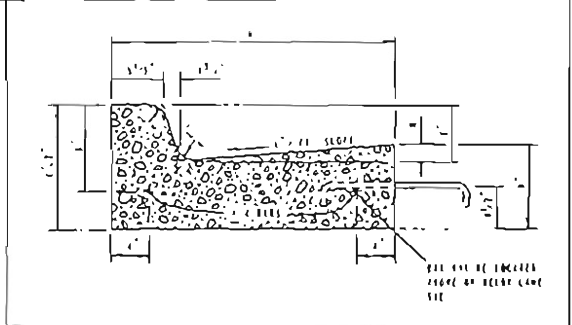
| DETAIL | DIMENSION | SLAB TYPE | CONCRETE CU. YD. / LIN. FT. |
|--------|-----------|-----------|-----------------------------|
| D1     | 1"        | AS SHOWN  | 0.8184                      |
| D2     | 1"        | GRAVELLED | 0.8184                      |
| D3     | 1"        | AS SHOWN  | 0.8184                      |

D



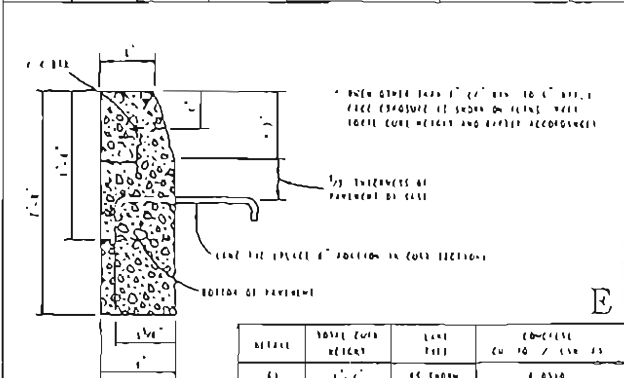
| DETAIL | DIMENSIONS |        | SLAB TYPE | CONCRETE CU. YD. / LIN. FT. |
|--------|------------|--------|-----------|-----------------------------|
|        | A          | B      |           |                             |
| C1     | 1' 1/2"    | 1/4"   | AS SHOWN  | 0.8184                      |
| C2     | 1' 1/2"    | 1/4"   | GRAVELLED | 0.8184                      |
| C3     | 3' 1/2"    | 1 1/2" | AS SHOWN  | 0.8184                      |
| C4     | 3' 1/2"    | 1 1/2" | GRAVELLED | 0.8184                      |
| C5     | 3' 1/2"    | 1 1/2" | AS SHOWN  | 0.8184                      |
| C6     | 3' 1/2"    | 1 1/2" | GRAVELLED | 0.8184                      |

C



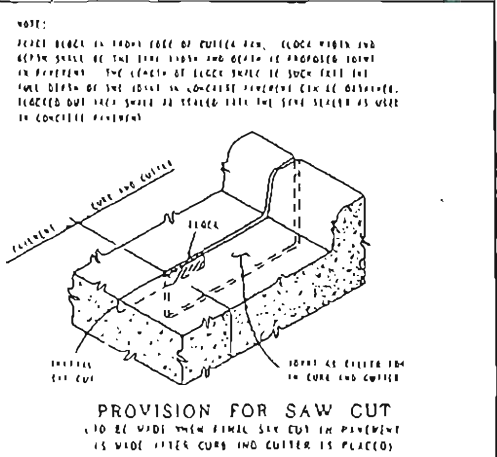
| DETAIL | DIMENSIONS |        | SLAB TYPE | CONCRETE CU. YD. / LIN. FT. |
|--------|------------|--------|-----------|-----------------------------|
|        | A          | B      |           |                             |
| F1     | 1' 1/2"    | 3/4"   | AS SHOWN  | 0.8184                      |
| F2     | 1' 1/2"    | 3/4"   | GRAVELLED | 0.8184                      |
| F3     | 3' 1/2"    | 1 1/2" | AS SHOWN  | 0.8184                      |
| F4     | 3' 1/2"    | 1 1/2" | GRAVELLED | 0.8184                      |
| F5     | 3' 1/2"    | 1 1/2" | AS SHOWN  | 0.8184                      |
| F6     | 3' 1/2"    | 1 1/2" | GRAVELLED | 0.8184                      |


F



| DETAIL | TOTAL CURB HEIGHT | SLAB TYPE | CONCRETE CU. YD. / LIN. FT. |
|--------|-------------------|-----------|-----------------------------|
| E1     | 1' 1/2"           | AS SHOWN  | 0.8184                      |
| E2     | 1' 1/2"           | GRAVELLED | 0.8184                      |
| E3     | 3' 1/2"           | AS SHOWN  | 0.8184                      |
| E4     | 3' 1/2"           | GRAVELLED | 0.8184                      |

E




  
 PREPARED BY DESIGN DIVISION  
 ENGINEER BY: *Dr. J. Cray* (REGISTERED PROFESSIONAL ENGINEER - CIVIL DESIGN)  
 CHECKED BY: *M. W. Winters* (REGISTERED PROFESSIONAL ENGINEER - CIVIL DESIGN)  
 PROJECT OF: *Dr. J. Cray* (REGISTERED PROFESSIONAL ENGINEER - CIVIL DESIGN)  
 CHECKED BY: *M. W. Winters* (REGISTERED PROFESSIONAL ENGINEER - CIVIL DESIGN)

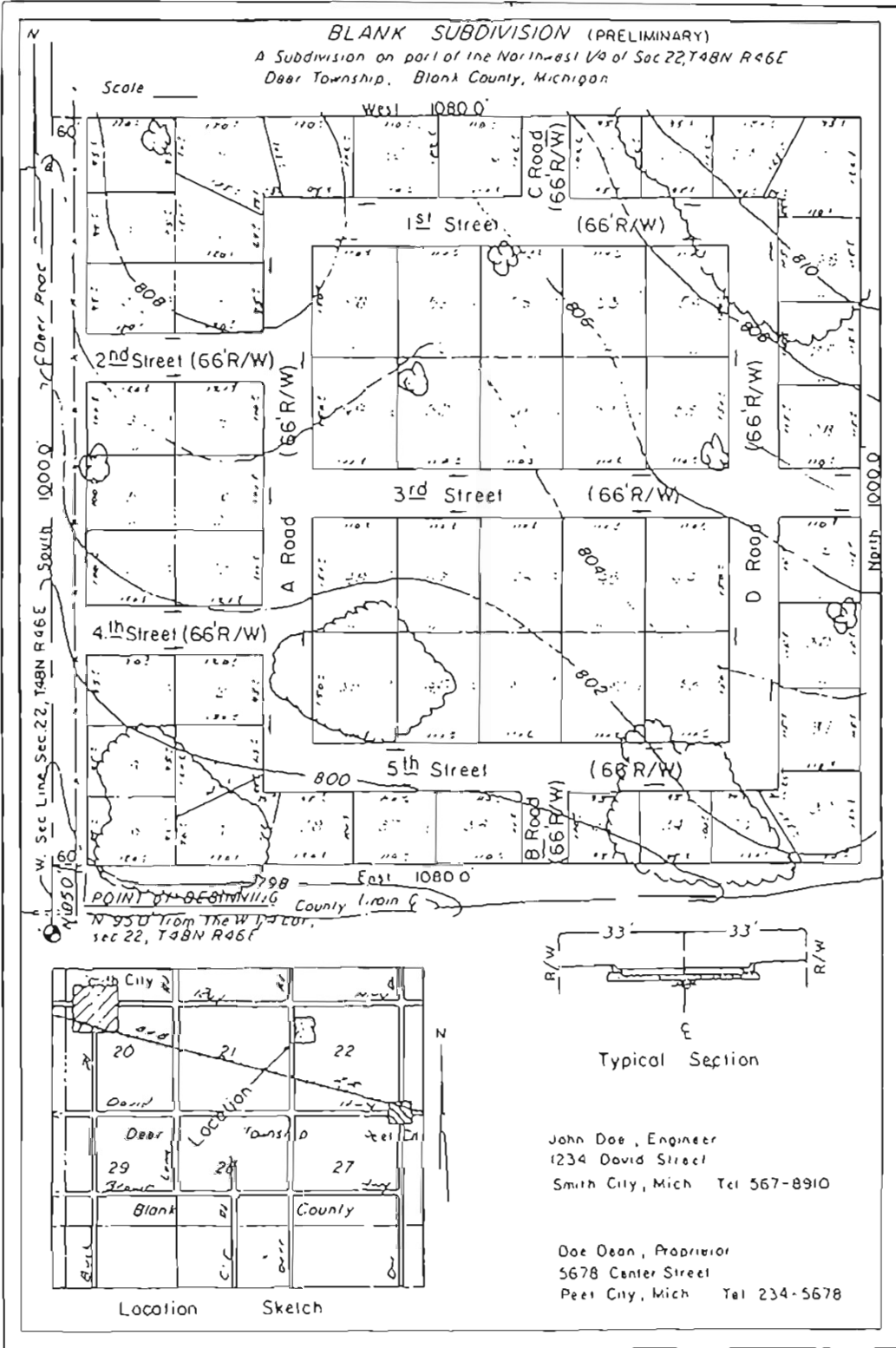
MIDLAND DEPARTMENT OF TRANSPORTATION  
 BUREAU OF HIGHWAYS STANDARD PLAN FOR  
**CONCRETE CURB AND GUTTER**  
**CONCRETE CURB & GUTTER**  
 3-22-83  
 11-30D

07-07-95

IONIA COUNTY ROAD COMMISSION  
Example I

Typical Preliminary Plat

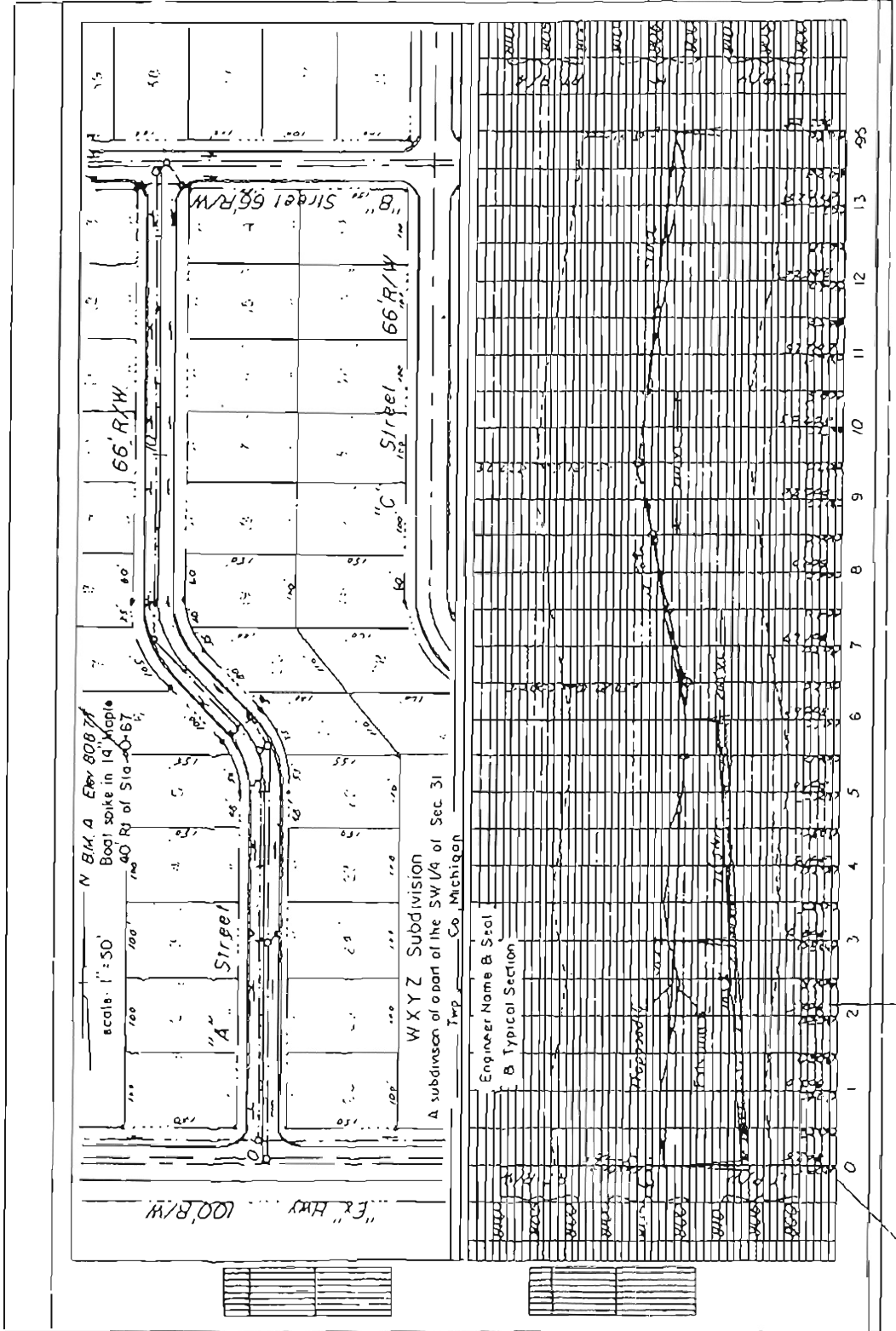
Scale, not smaller than 1" = 200' & the preliminary approval is good for 2 years only



24"

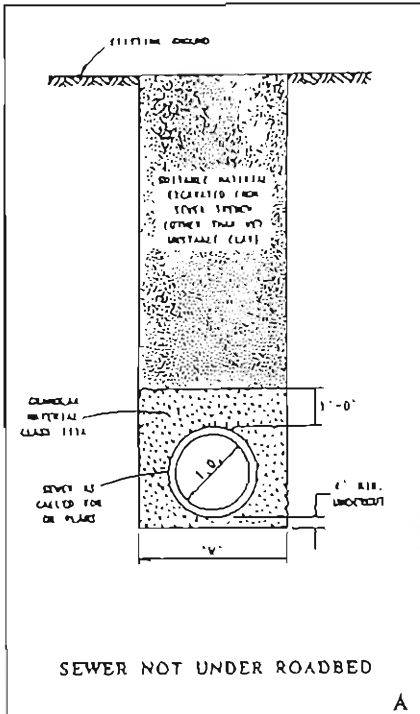
07-07-95

TYPICAL PLAN & PROFILE SHEET (Urban)  
 Scale, not smaller than 1" = 100' (Horz.) 1" = 10' (Vert.)



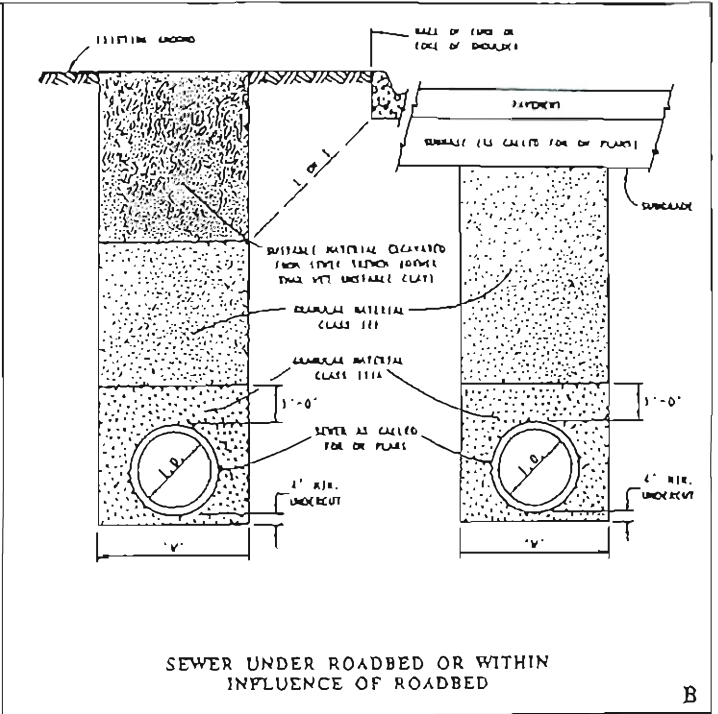
24"

07-07-95



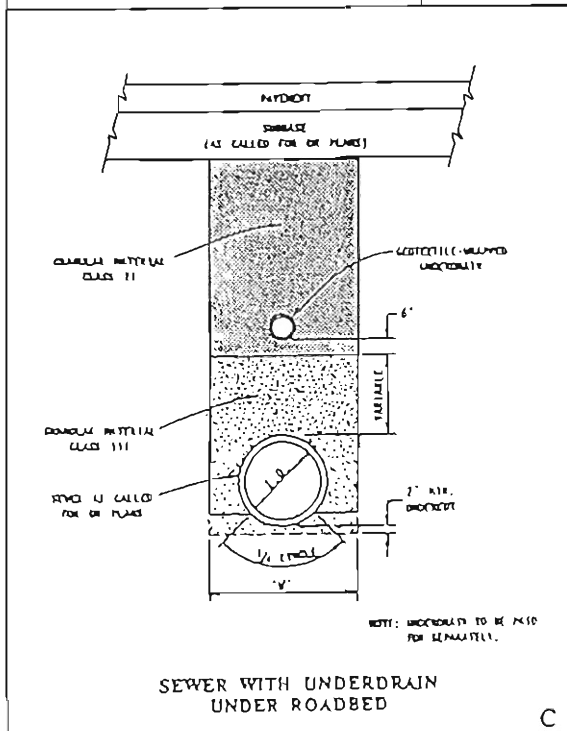
SEWER NOT UNDER ROADBED

A



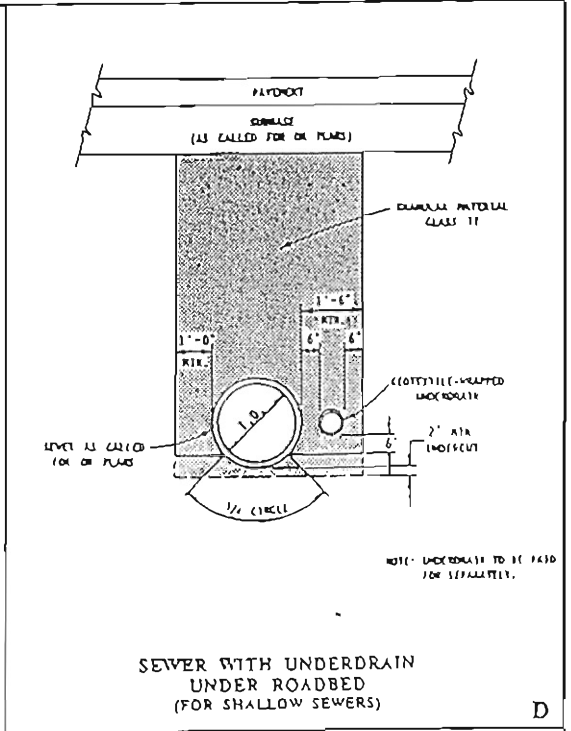
SEWER UNDER ROADBED OR WITHIN INFLUENCE OF ROADBED

B



SEWER WITH UNDERDRAIN UNDER ROADBED

C



SEWER WITH UNDERDRAIN UNDER ROADBED (FOR SHALLOW SEWERS)

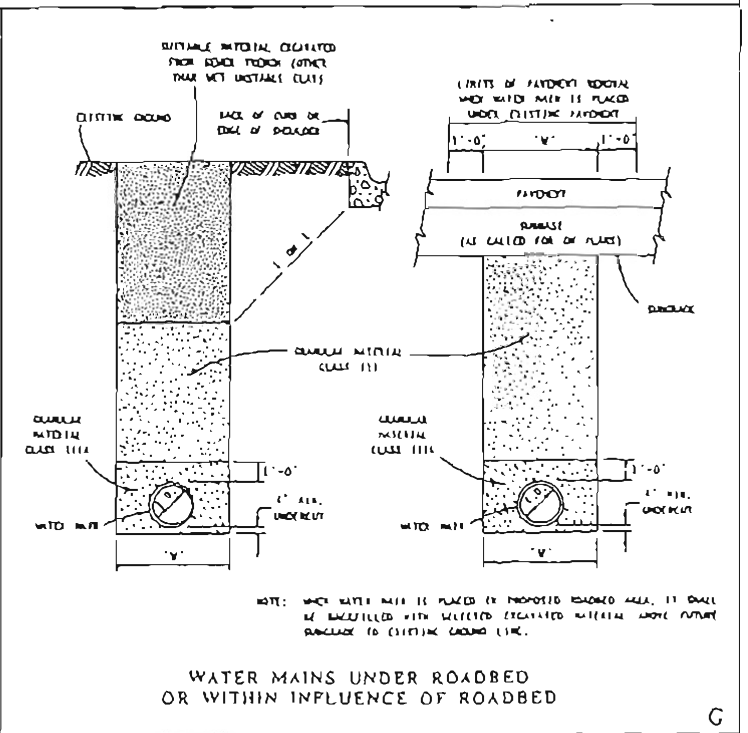
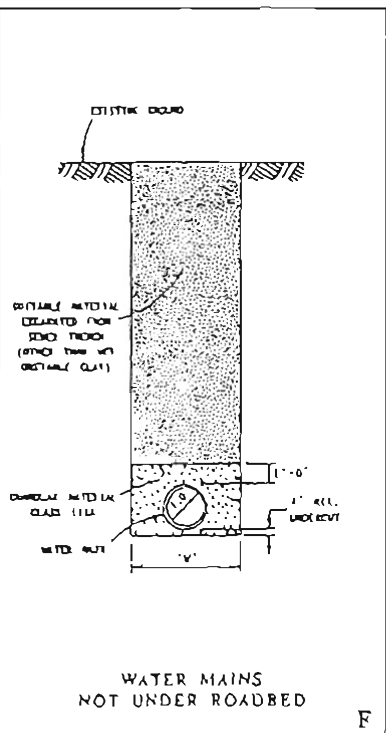
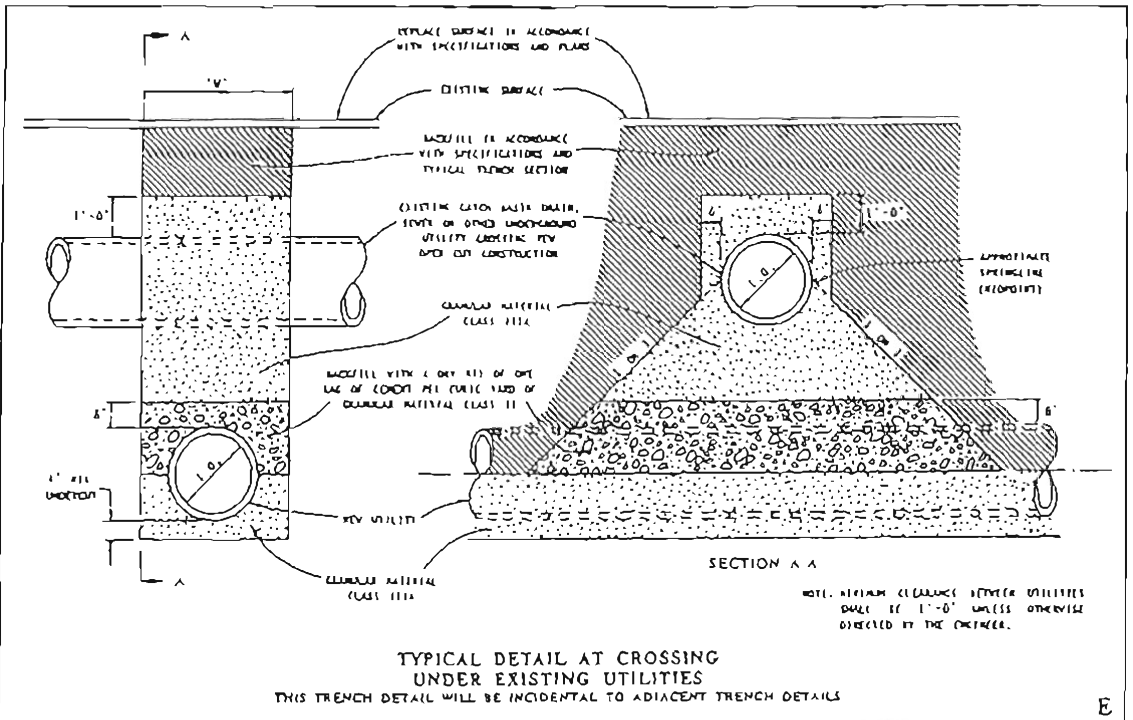
D

|  |  |  |
|--|--|--|
| <i>AP Kulkarni</i><br>DISTRICT ENGINEER    | <i>John R. K. K. K.</i><br>DISTRICT ROAD DESIGNER          | <i>Thomson</i><br>DISTRICT OF DESIGN           |
| <i>MS. W. W.</i><br>DISTRICT OF SUPERVISOR | <i>John D. Camp</i><br>DISTRICT OF INSPECTION & TECHNOLOGY | <i>Patrick M. Nowak</i><br>DEPARTMENT DIRECTOR |
| DESIGNED BY: <i>S. S. L.</i>               | <i>Robert L. ...</i><br>DISTRICT OF TRAFFIC AND SAFETY     | <i>Patrick M. Nowak</i><br>DEPARTMENT DIRECTOR |

|   |                      |
|---|----------------------|
| MICHIGAN DEPARTMENT OF TRANSPORTATION<br>BUREAU OF HIGHWAYS STANDARD PLAN FOR |                      |
| <b>UTILITY TRENCHES</b>   |                      |
| 10-22-91<br>I.C.V.A. APPROVAL   | 9-20-91<br>YEAR DATE |
| <b>IV-83G</b>   |                      |
| SHEET<br>1 of 2   |                      |

07-07-95

IONIA COUNTY ROAD COMMISSION  
Example K-2



|  |  |   |  |   |  |   |  |                 |  |
|--|--|---|--|---|--|---|--|-----------------|--|
| <i>J. K. Kulkarni</i><br>CHIEF ENGINEER                  |  | <i>John B. Kebabian</i><br>CHIEF ENGINEER               |  | <i>John A. Kulkarni</i><br>CHIEF ENGINEER               |  | MICHIGAN DEPARTMENT OF TRANSPORTATION<br>BUREAU OF HIGHWAYS STANDARD PLAN FOR |  |                 |  |
| MODIFIED BY<br>DESIGN DIVISION                           |  | <i>M. J. Watters</i><br>DESIGNER & CHECKER              |  | <i>J. K. Kulkarni</i><br>DESIGNER & CHECKER             |  | UTILITY TRENCHES  |  |                 |  |
| DRAWN BY: <i>R. E. L.</i><br>CHECKED BY: <i>J. A. L.</i> |  | <i>John D. Culp</i><br>DESIGNER & CHECKER               |  | DEPARTMENT DIRECTOR<br>PATRICK W. HOWAK                 |  |   |  |                 |  |
|  |  | <i>John A. Kulkarni</i><br>DESIGNER OF PUBLIC AND LIGHT |  | <i>John A. Kulkarni</i><br>DESIGNER OF PUBLIC AND LIGHT |  | IV-83G  |  | SHEET<br>2 OF 2 |  |

07-07-95

FINANCIAL REQUIREMENTS  
PROPRIETOR ENGINEER'S ESTIMATE

SUBDIVISION \_\_\_\_\_

SECTION \_\_\_\_\_ TOWNSHIP \_\_\_\_\_

- 1. Cost of Construction:
  - A. Clearing/Grubbing \_\_\_\_\_
  - B. Grading \_\_\_\_\_
  - C. Drainage \_\_\_\_\_
  - D. Subbase \_\_\_\_\_
  - E. Curb & Gutter \_\_\_\_\_
  - F. Base \_\_\_\_\_
  - G. Bituminous/Concrete \_\_\_\_\_
  - H. Restoration \_\_\_\_\_
  - Subtotal \_\_\_\_\_
  - Contingency (10% of subtotal) \_\_\_\_\_
  - TOTAL EST. CONSTRUCTION COST \_\_\_\_\_
  
- 2. Escrow Agreement:
  - A. Type \_\_\_\_\_
  - B. Total Estimate \_\_\_\_\_
  - C. % Completed \_\_\_\_\_
  - BALANCE DUE \_\_\_\_\_
  
- 3. Street Construction Fee:  
(1% of Total Estimated Construction Cost)  
INSPECTION & ADMINISTRATIVE FEE \_\_\_\_\_
  
- 4. Sign Fee:
  - A. Stop Signs \_\_\_\_\_
  - B. Street Signs \_\_\_\_\_
  - C. Miscellaneous \_\_\_\_\_
  - TOTAL SIGN FEE \_\_\_\_\_

Engineer's Seal

\_\_\_\_\_  
Register Professional Engineer

\_\_\_\_\_  
Date

