

# SUBDIVISION DEVELOPMENT PROCEDURES, STANDARDS AND SPECIFICATIONS



Adopted by the Macomb County Department of Roads  
this 2<sup>nd</sup> day of May 2011

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**Part I**  
**PROCEDURES**

**LAND DIVISION ACT  
ACT 288 OF 1967, AS AMENDED**

“An Act to regulate the division of land; to promote the public health, safety and general welfare; to further the orderly layout and use of land; to require that the land be suitable for building sites and public improvements and that there be adequate drainage of the land; to provide for proper ingress and egress to lots and parcels; to promote proper surveying and monumenting of land subdivided and conveyed by accurate legal descriptions; to provide for the approvals to be obtained prior to the recording and filing of plats and other land division; to provide for the establishment of special assessment districts and for the imposition of special assessments to defray the cost of the operation and maintenance of retention basins for land within a final plat; to establish the procedure for vacating, correcting and revising plats; to control residential building development within floodplain areas; to provide for reserving easements for utilities in vacated streets and alleys; to provide for the filing of amended plats; to provide for the making of assessors plats; to provide penalties for the violation of the provisions of this act; and to repeal certain parts of this Act on specific dates; and to repeal acts and parts of acts.”

This publication is intended to be used as an instrument to expedite the processing of proposed plats in Macomb County. The contents within pertain to the subdivision of lands located outside of corporate limits of any township, city or village in the County of Macomb, and also pertains to lands within incorporated areas when such lands are adjacent to public roads under the jurisdiction of the Macomb County Department of Roads (MCDOR), County of Macomb, State of Michigan.

The contents of this publication do not supersede but are in compliance with Act 288 of 1967, as amended, also known as the Land Division Act and the rules promulgated herein are by authority of Sections 105(c), 183(F) and 248 of said act. If any part of these Subdivision Development Procedures, Standards and Specifications (hereinafter referred to as MCDOR Subdivision Specifications) is found to be invalid, such invalidity shall not affect the remaining portions of this publication which can be given effect without the invalid portion, and to this end the MCDOR Subdivision Specifications are declared to be severable.

**DEFINITIONS**

As used herein, the following words shall have the definitions set forth:

**Office of County Executive (OCE)**

The office of the County Executive, County of Macomb, State of Michigan.

## **Macomb County Department of Roads (MCDOR)**

The Department of Roads, County of Macomb, State of Michigan and/or their duly authorized agents.

### **PERMIT**

Authorization by the Permit Department of the MCDOR to work within road right-of-way under the jurisdiction of Macomb County.

### **ROADS**

Roads are defined as, but not limited to; all roadway systems, including streets, highways, alleys and all platted and non-platted road rights-of-way under the jurisdiction of the MCDOR, or about to come under the jurisdiction of the MCDOR, and as referenced within this publication, public or private platted roads constructed in accordance with the provisions of Act 288 of 1967, as amended.

There are four different roadway classifications: principal arterials, minor arterials, collectors, and local roads.

Principal arterials generally carry long distance, through-travel movements, and also provide access to important traffic generators, such as major airports or regional shopping centers.

Minor arterials are similar in function to principal arterials, except they carry trips of shorter distance and to lesser traffic generators.

Collectors tend to provide more access to property than do arterials. Collectors also funnel traffic from residential or rural areas to arterials.

Local roads primarily provide access to property. Examples of this are residential streets and lightly-traveled county roads.

### **VARIANCE**

A written authorization by the OCE to deviate from the published MCDOR Subdivision Specifications as contained within this publication.

### **PRE-PRELIMINARY PLAT, PRELIMINARY PLAT AND FINAL PLAT**

#### **Pre-Preliminary Plat**

A pre-preliminary plan indicating the proposed Subdivision, sufficient for review by the Macomb County Plat Coordinating Committee and meeting the requirements of this publication.

### Preliminary Plat

A preliminary plan indicating the proposed layout of the Subdivision in sufficient detail to provide adequate basis for review by the MCDOR and meeting the requirements of this publication.

### Final Plat

A plan of all or part of a Subdivision prepared and the accuracy certified by a Professional Land Surveyor, in accordance with the requirements of Act 288 of 1967, as amended, and suitable for recording in the Macomb County Register of Deeds Office.

All other relevant definitions per Act 288 of 1967, as amended, are incorporated herein.

## **GENERAL REQUIREMENTS**

### **PRE-PRELIMINARY PLAT**

The MCDOR requires that a Pre-Preliminary Plat showing the basic information concerning a proposed development be submitted prior to commencing with land plans and preliminary designs. It is anticipated that such submittals will avoid needless delays and wasted effort by acquainting the Proprietor and their agents with any plans of the MCDOR which may have a bearing on the development and to discuss any points of these MCDOR Subdivision Specifications that may not be clear. See Plat Approval Flow Chart (Figure 1-1).

### **PRELIMINARY PLAT**

The Preliminary Plat shall show all pertinent data necessary to develop Construction Plans and shall be drawn on standard size (24 inch x 36 inch) drawing paper.

### **PRELIMINARY PLAT APPROVAL**

1. One copy of the Preliminary Plat shall be submitted to the MCDOR for review and/or approval.
2. All design considerations shall be in accordance with these MCDOR Subdivision Specifications.
3. The Proprietor's Engineer or Land Surveyor will be advised in writing of approval or rejections within 30 days after receipt of the Preliminary Plat.
4. Preliminary Plat approval by the MCDOR shall be void after two years from date of approval, unless extended by the MCDOR.

## **ENGINEERING PLANS**

The Michigan Department of Transportation Standard Plans and Specifications (hereinafter referred to as MDOT Specifications), which includes the current edition of the Michigan Department of Transportation Standard Specifications for Construction are to be adhered to, and are incorporated herein.

Where there is a conflict between the MCDOR Standards and Specifications and that of any other governing agency with respect to road and road drainage improvements, the MCDOR Standards and Specifications shall prevail.

The Proprietor's Engineer will be advised in writing of approval or rejection of the Engineering Plans within 60 days. Absolutely no construction will be authorized until Engineering Plan approval has been granted by the MCDOR.

Engineering Plan approval shall be void after one year from the date of approval, unless construction of roads has been initiated. The initiation of construction shall be defined for the purposes of provision to be the moving of earthen materials for the purpose of site road development. The Proprietor's Engineer is responsible for resubmitting Engineering Plans for re-review and re-approval.

The Engineering Plans shall be of the same dimensions and clarity as the Preliminary Plat (24 inches x 36 inches), shall indicate that all work is to be performed in accordance with the requirements of this publication, and shall show all pertinent design and construction information. See Engineering Plan Review Checklist (Appendix B, Form 2).

**ALL PLAN SHEETS SHALL INCLUDE THE FOLLOWING MISS DIG INFORMATION: CALL MISS DIG at 811 or 1-800-482-7171 TOLL FREE**

## **PLAN SUBMITTALS**

All Plats and Engineering Plans shall be submitted to the MCDOR Traffic Department for review and approval.

## **FINAL PLAT APPROVAL**

The Proprietor, having obtained MCDOR approval of the Engineering Plans, shall submit copies of contracts or an engineer's estimate, for the cost of all roads and road drainage improvements to be made for the development. The Proprietor will be advised in writing as to the requirements which must be fulfilled, financial and otherwise, to obtain OCE approval of the Final Plat. A Final Plat will not be approved until all required items have been submitted and found acceptable by MCDOR staff. Items which are, or may be required include:

1. MCDOR approval of the Preliminary Plat
2. MCDOR approval of the Construction Plans
3. Application for permit from the MCDOR Permit and Local Roads Department, if applicable.
4. Financial Deposits
  - a. Construction Deposit, Inspection and Administration Fees
  - b. Signage Fees
5. Submission of one true copy of the Final Plat along with an original signed and sealed surveyor's statement stating that the drawings are a true copy of the original Final Plat, a statement that the plat is subject to the approval of each of the officers and agencies, and the date of the certificate.
6. Recorded copies of all offsite easements as required by the MCDOR or Local Municipality.

When all applicable plat procedures and requirements have been fulfilled, the Final Plat will be recommended by the MCDOR's Director of Roads for approval by the OCE. The plat will be placed on the next available MCDOR Staff Agenda which shall be within 15 days of receipt of the plat, unless otherwise notified. See Plat and Engineering Plan Approval Flowchart for sequence of plat and engineering review submittals (Figure 1-1).

#### **CONSTRUCTION OF ROADS**

1. Road and road drainage improvements shall be started within one year after approval of the Final Plat unless granted an extension of time by the Macomb County Director of Roads.
2. It is recommended that all proposed public and private underground utilities in the road right-of-way be installed prior to surfacing of the roads.
3. All complaints during the course of construction and prior to acceptance of the roads for maintenance by the MCDOR will be referred to the Proprietor.
4. Inspections:
  - a. Inspections by the MCDOR shall not relieve the Proprietor's Engineer or the Municipal Engineer of their respective obligations. Spot inspections will be made by the MCDOR during various construction stages, such as storm drains, water main, sanitary sewers, finished subgrade, etc. to verify that proper materials and procedures are being used.
  - b. The Proprietor's Engineer/Surveyor shall establish the vertical and horizontal alignment within the road right-of-way and drainage easements.

- c. Prior to commencement of any paving operation (aggregate base, curbs, etc.), the grade must be reviewed and approved by the MCDOR.
- d. The following inspections of material quality and placement will be made by the MCDOR:
  - 1. 21AA Crushed Aggregate Base
  - 2. Bituminous Paving
  - 3. Concrete Paving
  - 4. Concrete Curb and Gutter
- e. A separate permit will be required for installation of each of the following:
  - 1. Driveway Approaches, Storm Sewers and Ditching
  - 2. Sanitary Sewer and Watermain
  - 3. Bike Paths and Sidewalks
  - 4. Landscaping, Signs, Entrance Markers, Berms, etc.
- f. A minimum of 48 hours notice shall be given to the Permits and Local Roads Department of the MCDOR prior to the start of each phase of construction.
- 5. Approval by a MCDOR Inspector at one construction phase is not a waiver of any defective or unacceptable condition discovered by the Inspector at a later construction phase that may have existed during the prior approval.
- 6. Approval of any construction phase by the MCDOR does not guarantee acceptance of the road for maintenance or relieve the Proprietor of responsibilities or liabilities incurred by the development of the plat.

#### **ACCEPTANCE OF STREETS FOR MAINTENANCE**

- 1. All roads shall be maintained by the Proprietor in an approved condition for a period of three years after initial construction by the Proprietor and/or until they are accepted by the MCDOR for maintenance.
- 2. All roads within the plat must be completed in their entirety prior to acceptance by the MCDOR for maintenance.
- 3. Prior to MCDOR acceptance of the roads, the Proprietor's Engineer shall submit a complete set of "as-built plans" in accordance with the procedures shown on Page 12.
- 4. The Proprietor's Engineer shall certify that the construction of all road and road drainage improvements are substantially in accordance with the vertical and horizontal alignments as shown on the approved plans (Appendix B, Form 4).
- 5. After construction of the roads and all other related facilities is complete, the MCDOR will conduct a final inspection. This inspection will be made to assure the MCDOR that all visible

construction has been satisfactorily completed, including road and storm sewer cleanup and acceptable vegetation establishment.

6. Final acceptance for maintenance of the roads and road drainage improvements is effective when the final release of the construction deposit has been approved by MCDOR.
7. The MCDOR reserves the right to refuse to accept for maintenance any road which has not been constructed in accordance with the requirements contained within this publication.

### **AS-BUILT PLANS**

Construction plans showing all approved field changes shall be submitted by the Proprietor's Engineer to the MCDOR at the completion of construction. These as-built plans are to be submitted on a CD-ROM in PDF format for GIS mapping purposes. The as-built plans shall be submitted on a CD-ROM in Microstation/CAD format. The as-built plans will be kept on file with the MCDOR for permanent public record. As-built plans shall be submitted as follows:

1. Specify vertical datum by reference to the United States Geological Survey (USGS).
2. Reference horizontal datum to the Michigan Coordinate System of 1983 (NAD83-94) Zone: South (NOAA/NGS #2113). Distances drawn in International Feet.
3. Electronic drawing files on removable media (i.e. CD-ROM) in \*.dgn format, readable by MicroStation Version 8.0 or later as manufactured by Bentley Systems, Inc. or in \*.dwg format, readable by AutoCAD Version 2004 as manufactured by Autodesk, Inc.

### **APPEAL PROCEDURE/VARIANCE REQUEST**

During the process of developing a new plat, situations may arise which create difficulties in complying with the various requirements of this publication. The Appeal Procedure has been established for requesting a variance from the Director of Roads when the situation requires a change which cannot be granted by MCDOR staff. It should be noted, however, that decisions regarding engineering design or construction standards and specifications will be made by the Director of Roads. The procedure involves:

1. Submission of a letter by the Proprietor or his Engineer to the Director of Roads which shall include:
  - a. A statement of the situation.
  - b. Reference to the section(s) of these MCDOR Subdivision Specifications for which the variance is being requested.
  - c. Reasons why the sections cannot be complied with.

- d. A specific statement of the variance being requested.
  - e. Supporting data from the municipality or other governing agency, when appropriate.
2. Upon receipt, MCDOR will make an evaluation of the request and prepare a recommendation to the Director of Roads.
  3. As determined by the Director of Roads, the evaluation and recommendation may be forwarded to the OCE for its consideration of the request.
  4. Written notice of the OCE's action will be mailed to the Proprietor and other associated parties.

In general, this procedure may take up to 30 days. It is important to note that it is the Proprietor's obligation to substantiate the position or need. Therefore, care should be taken to insure that all supporting data, documentations, drawings, etc. are included with the letter of request.



## **Part II**

# **STANDARDS AND SPECIFICATIONS**

## **SUBDIVISION CONTROL ACT**

Section 105(c) of the Subdivision Control Act gives County Road Departments the authority to promulgate Rules and Regulations for the construction of roads within newly-created subdivisions. In an effort to assist the Proprietors to this end and to safeguard the future residents of a development, the MCDOR has established the following Rules and Regulations for processing plats within Macomb County.

By authority of Act 288 of 1967, as amended, Section 183(1), the MCDOR may require the following as a condition of approval of Final Plat for all highways, streets and alleys in its jurisdiction or to come under its jurisdiction and also for all private roads in unincorporated areas:

### **ROAD RIGHT-OF-WAY**

Principal Arterial road right-of-way dedication shall be in accordance with the MCDOR Long Range Master Plan (2004-2030). Such dedication will generally be 120 feet for total dedication and 60 feet for half-width dedication.

Minor Arterial or Collector road right-of-way dedication shall be in accordance with the MCDOR Long Range Master Plan (2004-2030). Such dedication will generally be 86 feet to 120 feet for total dedication and 43 feet to 60 feet for half-width dedication.

Subdivision street or local road right-of-way dedication shall be a minimum of 60 feet full width in single-family residential subdivisions.

Cul-de-sac right-of-way dedication shall be not less than 120 feet in diameter in residential subdivisions.

Collector street right-of-way dedications shall be a minimum of 70 feet full-width for streets with curbs and gutters and 86 feet full-width for streets with shoulders and open ditches.

Public roads in multiple housing developments shall have a minimum of 60 feet full width right-of-way. If the MCDOR Traffic Engineer judges that the traffic demands to be placed on the public road meet collector street criteria, the road shall have a minimum of 70 feet full-width right-of-way.

Industrial street right-of-way dedication shall be a minimum of 70 feet full-width. Dedication of 60 feet width right-of-way with additional 5 feet of public easements for road purposes on each side of the 60 feet right-of-way may be allowed.

Cul-de-sac right-of-way dedication shall not be less than 150 feet in diameter in industrial subdivisions.

Boulevard right-of-way dedication shall not be not less than 86 feet for single-family residential developments and 100 feet for Collector streets and industrial developments.

Right-of-way widths greater than those shown on the MCDOR Long Range Master Plan (2004–2030) may be required where the governing body of a Municipality has an adopted and published plan requiring a greater width.

### **RIGHT-OF-WAY REQUIREMENTS**

1. There shall be no half street width dedications other than:
  - a. Additional right-of-way on existing roads and/or undeveloped future primary and secondary roads, except Subdivision interior roads.
  - b. When the boundary of the proposed plat coincides with the boundary of a recorded plat on which a half of an interior road has previously been dedicated.
2. Dedication of the public roads (roads certified as public and maintained by the MCDOR) within the width limits of the proposed Subdivision shall be minimally as follows:

Section Line Roads . . . . .	120 feet
Quarter Line Roads . . . . .	86 feet
Local Roads . . . . .	60 feet

Dedication may also be required along Section line and Quarter line roads in unplatted lands deemed necessary for road system improvements.
3. Landscaping within the right-of-way shall comply with MCDOR Policy and/or must comply with the MCDOR Long Range Master Plan (2004-2030).
4. The MCDOR prohibits permanent structures to be constructed within the public right-of-way.

### **ROAD LAYOUT AND TRAFFIC SAFETY**

#### **GENERAL**

Road geometrics shall provide for internal vehicle circulation between developments as well as to adjacent streets, existing or proposed, public or private (Figure 2-1).

Temporary 88 foot diameter Cul-de-sacs are required for street stubs that are 200 feet or greater in length. Dedication of a 15 foot temporary turnaround easement on each side of the proposed 60 foot right-of-way is required (Figure 2-2).

Temporary "T" turnarounds (within 60 foot right-of-way) are required for stub streets less than 200 feet in length (Figure 2-2).

A Cul-de-sac's length shall not exceed 800 feet. However, a greater length will be considered if it is approved by the Local Municipality and City/Township Fire Marshal and notice of such approval is furnished to the MCDOR (Figures 3-1 and 3-2).

Provide standard "Road Ends" Treatments per the Michigan Manual on Uniform Traffic Control Devices (MMUTCD) for roads intended to be extended in the future.

### **INTERSECTION CRITERIA**

It is recommended that all proposed subdivisions have a minimum of two points of ingress/egress (Figure 2-1).

Acceleration and deceleration lanes and tapers are required along all existing section or quarter section line roads with proposed intersections (Figures 2-4 and 2-6).

It is recommended that bypass lanes be provided at major points of ingress/egress to all proposed Subdivisions. Failure to provide bypass lanes may result in the prohibition of left turn movements to the proposed Subdivision (Figure 2-4).

Minimum corner sight distance for entrances onto existing county roads shall be in accordance with the Posted Speed Limit as designated by the Guide for Corner Sight Distance (Figure 3-8).

It is desirable that proposed streets be offset a minimum of 250 feet from an existing street located on the opposite side of an existing road (Figure 2-5).

Closely spaced offset intersections are considered to be undesirable for reasons of public safety (Figure 2-5).

Strip-type subdivisions along existing/proposed primary and local roads where access to each lot is from the major roadway shall be discouraged. The concept of fronting lots on an internal road system is encouraged for reasons of safety. If this cannot be achieved, the proprietor shall be required to construct a 12 foot

widening lane with mountable curb and gutter (Figure 3-7) and on each side of roadway along with enclosed drainage facilities along the entire limits of the proposed development.

### **CONSTRUCTION SIGNING**

All construction signing shall be provided in accordance with the requirements of the current edition of the Manual of Uniform Traffic Control Devices (hereinafter referred to as MUTCD). All required signs shall be installed prior to the start of any construction activity along existing streets and all costs incurred shall be borne by the Proprietor and/or Contractor.

## **DRAINAGE REQUIREMENTS**

### **GENERAL**

The Final Plat of a Subdivision will not be approved by the MCDOR until the Local Municipality and the Macomb County Office of Public Works have approved the onsite and offsite drainage systems. Offsite drainage easements, where required, shall be executed in a form acceptable to the MCDOR and Municipality or the Macomb County Office of Public Works, whichever has jurisdiction.

Storm drainage systems shall be designed for a 10-year anticipated storm runoff from the development as well as all offsite contributory areas.

### **DRAINAGE EASEMENTS**

It is required that all storm drains conveying road drainage within the plat boundaries be enclosed, located in properly-sized easements and centered within the middle 1/3 of the easement unless otherwise authorized. The minimum acceptable width of easements for storm sewers shall be: 12 feet wide for sewers 21 inches and under in diameter; 20 feet for sewers 24 inches through 48 inches in diameter; and 30 feet wide for sewers over 48 inches in diameter. The sewer shall be placed within the middle third of the designated easement width. Special designs will be considered for major drainage courses.

### **RETENTION/DETENTION BASINS & PUMP STATIONS**

Retention/detention basins and pump stations shall be designed in accordance with the requirements of the Macomb County Office of Public Works and/or the appropriate government agency. MCDOR review of these facilities will be with regard to the potential effect on road and road drainage systems, both existing and proposed. The MCDOR will not approve construction plans which include drainage basins and pump stations with the potential of adversely affecting any existing or proposed road and/or road drainage facility. The MCDOR will not accept the responsibility for maintenance of any retention/detention basin or pump station. All such facilities shall be located outside of the road right-of-way areas and should outlet to natural drainage areas. It should be noted that road

ditches are generally considered unacceptable outlets for retention/detention basins and pump stations.

### **STORM SEWER AND UNDERDRAIN MATERIALS**

1. Unless otherwise authorized, only 6 inch perforated PVC pipe wrapped in geotextile fabric shall be used for underdrains (Figure 4-8).
2. All current MDOT Standard Specifications, Standard Plans and Requirements shall be adhered to for the following:
  - a. Materials used in the construction of storm sewer and appurtenant structures
  - b. Storm sewer classes based on location and pipe depth
  - c. Catch basin and manhole design
  - d. Equipment and construction procedures for the installation of storm sewers and structures

### **STORM SEWER DESIGN**

In designing a storm sewer system or crossroad culvert, the current Macomb County Office of Public Works Procedures and Design Standards for Stormwater Management shall be followed:

1. Design velocities of all enclosed storm sewers shall be such that the velocity will cause neither siltation nor scouring of the pipe.
  - Minimum recommended velocity 2.5 fps
  - Maximum recommended velocity 10 fps
2. The MCDOR requires enclosed storm sewers in Subdivisions. All roadway storm sewers must be maintained in the road right-of-way.
3. All storm sewer pipes shall have a minimum 3 feet of cover measured from top of pipe to bottom of pavement.
4. Wet systems are prohibited.
5. Stormwater shall not be carried on the surface for more than 300 feet in one direction nor more than 600 feet in two directions before entering the catch basin.
6. For accessibility and maintenance reasons, no more than three catch basins shall empty into any one catch basin. Provide a manhole with catch basin cover and two foot sump where necessary.
7. No storm sewer will be permitted with a diameter of pipe less than 12 inches.
8. Storm water may be conveyed through road catch basins if storm sewer pipe is 15 inches or less in diameter. However, road catch basins must be offset when the storm sewer pipe is 18 inches or greater in diameter.

### **CROSS ROAD CULVERTS**

1. The minimum size for cross road culverts shall be 12 inches in diameter for maintenance reasons.
2. The design of cross road culverts shall include end sections.

## **STORM DRAINS AND STRUCTURES**

1. Manholes shall be spaced:
  - a. A maximum of 300 feet apart on storm sewer lines of 30 inches in diameter or less, and a maximum of 500 feet apart on storm sewer lines larger than 30 inches in diameter.
  - b. At all changes in the storm sewer's alignment, grade or size.
  - c. At the junction of sewer.
2. Catch Basins shall be spaced:
  - a. So that the runoff does not exceed the intake capacity of the sewer.
  - b. At all low points in the gutter grade.
  - c. Behind curbs to drain low spots.
  - d. At any location that is apt to have a heavy concentration of runoff.

It is desirable that all catch basins located in the gutter be positioned at lot lines or in the middle of lots to avoid conflict with future driveways.

The main trunk of the storm sewer system should be located in the right-of-way 10 feet from right-of-way line. For curvilinear streets and cul-de-sacs, the MCDOR may require additional manholes in order to locate the main trunk of the storm sewer within practical limits of the outside 10 feet of the right-of-way. Locating storm manholes in the influence of pavement and longitudinal runs of the main trunk line under the pavement or curbs is not acceptable.

3. Backfilling
  - a. All storm sewer and cross road culverts, along with their related structures (manholes, catch basins, headwalls and/or end sections), installed in the area between lines projected down from the top of curb or a 1 on 1 slope shall be backfilled with a granular material conforming to MDOT specifications.
  - b. In cohesive soils, granular backfilled trenches shall be drained into the storm sewer structures by means of a 6 inch PVC underdrain with MDOT 34R open graded aggregate (pea stone) backfill.
  - c. All granular backfill materials shall be placed in layers not to exceed the capabilities of the mechanical compaction equipment used to achieve the required density of 95% of the material's maximum unit weight per cubic foot as defined by the Michigan Cone Test.
  - d. Backfill outside the limits of road influence, as defined in Item 3a. above, shall be excavated material. Such backfill shall be placed in 1 foot layers and compacted with an approved mechanical compactor to 95% of the material's maximum unit weight per cubic

foot as defined by AASHTO T99 or the Michigan Cone Test, whichever is applicable.

4. Sewer Structures and Covers

All structures, covers and frames shall be in accordance with designated MDOT Specifications. Covers and frames shall be as follows unless otherwise authorized by the MCDOR.

<u>Structure</u>	<u>Type</u>	<u>Cover and Frame</u>
Manhole	4' Dia.	"B"
Catch Basin	2' Dia. or 4' Dia.	"E", "G" or "K"

All manhole and catch basin castings shall have complete bearing on their respective structures and shall be placed so as to insure full accessibility to the structures.

**SUMP PUMP DISCHARGE**

Open discharge of sump pump flows to the MCDOR right-of-way or storm drainage systems is prohibited for residential subdivisions. All sump leads must be connected into rear yard storm systems and shall meet Township standards for sump pump discharge. The Proprietor shall not make any subsequent physical modifications after construction approval and MCDOR acceptance of roads as public.

**DRAINAGE TO EXISTING COUNTY ROADS**

Any drainage from the proposed development entering the existing county right-of-way storm system, shall be restricted via a 4" PVC restrictor. Drainage from areas which did not previously contribute to the road drainage system will not be accepted unless specifically authorized by the MCDOR.

Existing roadside ditches disturbed during construction shall have an established growth of vegetation or other treatment as required by the MCDOR so that the ditches shall be stabilized and free of sedimentation and erosion.

The MCDOR will only authorize drainage entering into an existing county right-of-way storm system, upon the ratification of a Hold Harmless and Indemnification Covenant between the plat Proprietor and the MCDOR in a form provided by the MCDOR. This Covenant shall be filed on the title of the platted property, and shall be binding on all of the Proprietor's successors and assigns.

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
PHASE II REQUIREMENTS FOR PROPOSED SUBDIVISIONS**

The MCDOR of Macomb County is required to fulfill its responsibilities under the National Pollutant Discharge Elimination System (NPDES) Phase II for municipal separated storm sewer systems. In order to facilitate meeting these requirements, the MCDOR will require all Proprietors who will be deeding public and/or private roads and land for public use to submit the following items:

- 1) An AutoCAD® accessible electronic file of the as-built plan, including the following in the County road right-of-way:
  - a. The location and digital photograph of the most downstream discharge point(s) for the storm sewer system;
  - b. The location of all stormwater storage facilities, including detention/retention ponds and the location of the detention pond discharge point; and
  - c. The location of any innovative stormwater management techniques; such as retention/detention ponds, bioretention trenches, infiltration fields, rain gardens, and porous pavements.
- 2) A table, in electronic format, including the identification, state plane coordinates, and the public road right-of-way name, detention pond discharge points, and any other discharge points to open or enclosed drains. All data shall be referenced to State Plane Zone 2113 Michigan South Lambert.

All items mentioned above must be submitted prior to acceptance of the roads.

The following table is the standard procedure to be used for this type of data collection.

**MACOMB COUNTY DEPARTMENT OF ROADS  
 Illicit Discharge Elimination Program (IDEP)  
 Attribute Descriptions for Outfall Survey/Drain Investigations**

**Bold items** are suggested to be completed by the Proprietor(s) of new Subdivisions

<i>Attribute</i>	<i>Description of Attribute</i>
<b>Outfall Id</b>	<b>Unique outfall identifier (by township and section)</b>
<b>Date</b>	<b>Date that the outfall is GPS'd</b>
<b>Time</b>	<b>Time that the outfall is GPS'd</b>
<b>Position</b>	<b>Lat and Long (degrees, minutes, seconds)</b>
Agency	Agency performing survey <ul style="list-style-type: none"> <li>• MCDOR</li> <li>• MCHD</li> <li>• MCOPW</li> </ul>
Init	Initials of person operating GPS
<b>Twp</b>	<b>Township/City in which the sample point/outfall is located</b>
Jurisd	Jurisdiction of discharge point <ul style="list-style-type: none"> <li>• Roads</li> <li>• PWO</li> <li>• Local</li> <li>• State</li> <li>• Private</li> </ul>
Photo	Digital camera pic# and file path (converted to hotlink in database).
<b>Size (Text)</b>	<b>Pipe diameter (inches unless noted otherwise)</b>
<b>Material</b>	<b>Pipe Material</b> <ul style="list-style-type: none"> <li>• PVC</li> <li>• CMP</li> <li>• Iron</li> <li>• Clay Tile</li> <li>• Concrete</li> <li>• Stream/creek</li> <li>• Hidden</li> <li>• Other</li> <li>• BCP</li> <li>• Manhole</li> </ul>
<b>Compass</b>	<ul style="list-style-type: none"> <li>• <b>Compass direction of a tap within a manhole or catch basin (0° is North, 90° is east, etc.)</b></li> <li>• <b>Upstream direction of open ditch or outfall from point sampled</b></li> </ul>
<b>Drawings</b>	<b>Subdivision, road or property believed to be drained by discharge point</b>
<b>Flow</b>	<b>Flow rate of any dry weather flow</b> <ul style="list-style-type: none"> <li>• None</li> <li>• Slow</li> <li>• Moderate</li> <li>• Fast</li> </ul>

<b>Attributes</b>	<b>Description of Attribute</b>
<b>Odor</b>	<b>Odor of discharge</b> <ul style="list-style-type: none"> <li>• None</li> <li>• Sewage</li> <li>• Laundry</li> <li>• Gas/Oil</li> <li>• Other</li> </ul>
<b>Visual</b>	<b>Appearance of discharge</b> <ul style="list-style-type: none"> <li>• Clear</li> <li>• Black</li> <li>• Gray</li> <li>• Muddy</li> <li>• Foamy</li> <li>• Oily</li> <li>• Other</li> <li>• None</li> </ul>
<i>E. coli</i> (numeric)	<i>E. coli</i> result (MPN/100 ml)
Detergents (numeric)	Surfactants screening result (ppm)
Conductivity (numeric)	Conductivity screening result ( $\mu\text{S}/\text{cm}$ )
Temperature (numeric)	Temperature reading ( $^{\circ}\text{C}$ )
<b>Comment</b>	<b>Field Observations</b>

## ROAD GRADING AND CONSTRUCTION REQUIREMENTS

### ROAD GRADING

#### **1. *Clearing, Grubbing and Tree Removal***

Stumps, brush, fences and other obstructions within the proposed street right-of-way and along existing County Roads shall be removed. All trees shall be removed which are located within 6 feet of the back of curbs or to centerline of ditch along proposed Subdivision streets and as directed by the MCDOR along County Roads for sight distance and other safety concerns.

#### **2. *Subgrade Preparation***

The finished subgrade shall be free of all topsoil, stumps, organic matter, peat, muck, frost heave material, or any other material unstable in nature. During subgrade preparation, the MCDOR will make spot inspections to determine the suitability of the subgrade. Upon completion of subgrade preparation, an inspection will be made by the MCDOR for determination of its acceptability for paving. Approval of the subgrade for vertical and horizontal alignment shall be by the Proprietor's Engineer and the MCDOR.

### ROAD CROSS-SECTIONS

#### **1. *Residential Streets***

- a. Standard pavement (28 feet back-to-back)  
All roads within a single-family residential development having lot frontage less than 150 lineal feet at the road right-of-way line shall be constructed with a bituminous pavement and concrete curbs and gutters or concrete pavement with integral curbs, as selected by the Proprietor (Figures 4-1 and 4-2).
- b. Cul-de-sacs and eyebrows in residential subdivisions  
For cul-de-sacs and eyebrow geometrics, please refer to Figures 3-1 and 3-3. Islands within Cul-de-sacs are prohibited due to maintenance and fire truck/EMS accessibility reasons.
- c. Large Lot Alternate (24 foot pavement with 5 feet wide aggregate shoulders each side)  
All roads within a single-family residential development having lot frontage at the road right-of-way line of 150 lineal feet or greater, and where local zoning ordinances prohibit splits of the platted lots, may be constructed with open ditches and a bituminous or concrete pavement as selected by the Proprietor (Figure 4-5). Cul-de-sacs and approaches to primary or local roads within such developments shall contain a concrete curb and gutter (Figures 3-6 and 3-7).

**2. Industrial Street (36 feet back to back)**

- a. All roads within an industrial development shall be constructed using concrete pavement with integral curbs (Figure 4-3).
- b. Cul-de-sacs and eyebrows within Industrial Subdivisions  
For cul-de-sacs and eyebrow geometrics, please refer to Figures 3-2 and 3-4. Islands within cul-de-sacs are prohibited due to maintenance and fire truck/EMS accessibility reasons.

**3. Collector Roads (36 feet back-to-back)**

Collector roads shall be designed to provide general circulation between developments. For access management reasons, the lot layout and development shall be such that no lot fronts on, or has driveway access from a Collector street. These streets may be designed using concrete pavement with integral concrete curb and gutter (Figure 4-4).

**4. Pavement Section(s)**

See Figures 4-1 through 4-5 for pavement cross-section information.

**5. Widening Lane**

Where a proposed Subdivision abuts with fronting lots on an existing County Road, the Proprietor is required to construct a 12 foot widening lane for the entire limits of the frontage. The reason for the widening lane is to maintain through traffic capacity which would be adversely affected by slower moving traffic turning in and out of the driveways.

**6. Paved Residential Drive Approaches**

- a. The construction of a paved residential approach on all primary local road systems under the authority of the MCDOR shall consist of a minimum thickness of 6 inches of concrete placed on a sand surface of 4 inches minimum or 4 inches of asphalt placed on 6 inches of 21 AA Crushed Aggregate base.
- b. Paving block, patterned concrete, and similar decorative approaches will be allowed in the County right-of-way if the property owner agrees to sign the required Hold Harmless Agreement.
- c. The maximum width of a paved approach shall be 24 feet with the exception of those with a 3 car attached garage facing the roadway. In those cases, the maximum width shall be 30 feet if the lot size allows for it. In all cases, the width of paved approaches shall not exceed 50 percent of the lot width.
- d. Gravel approaches will not be permitted onto a paved roadway.

**ALIGNMENT**

- 1. Horizontal curves on 28 foot back-to-back roads should be a minimum of 250 radius with a minimum of 50 foot tangent between curves. For 36 foot back-to-back roads, horizontal curves should be at a minimum of 350 foot radius with a minimum 100 foot tangent between curves.

Horizontal curves shall be designed in accordance with the MCDOR and AASHTO standards.

2. Vertical curves shall be designed in accordance with the MCDOR and AASHTO standards. Vertical curves will be required where the grade change exceeds 2 percent.
3. The centerline of construction shall generally coincide with the right-of-way centerline.
4. The construction plans shall include profiles and cross-sections of existing county roads as deemed necessary to determine that adequate sight distance exists as required by AASHTO standards.

### **GRADES**

Grades as listed shall apply; however, existing terrain features may warrant a deviation from those listed. Any deviation in grades must be approved by the MCDOR.

Subdivision Streets / Industrial Streets and Collector Roads <u>with Concrete Curb and Gutter</u>	Subdivisions Streets/ Industrial Streets and Collector Roads with <u>Open Ditches</u>
0.5%	Road Profile Minimum Grade
5.0%	Road Profile Maximum Grade
	0.2%
	5.0%

The grades within a street intersection shall not exceed 3 percent for a distance of 100 feet from the point of intersection.

### **AGGREGATE BASE**

1. Construction and Materials  
Aggregate Base construction and materials shall be 21AA crushed aggregate and in accordance with the current MDOT Specification requirements for 21AA Crushed Aggregate base.

### **AGGREGATE BASE MATERIAL AND CONSTRUCTION**

This work shall be done in accordance with the current MDOT Specifications except as herein provided.

1. The acceptability of all aggregate base course material will be based on inspection and approval by the MCDOR.
2. Layers shall be spread uniformly and graded until the surface is smooth and evenly distributed. The grading and leveling shall be done in combination with rolling by a tamping type, vibrating type, or pneumatic tired roller until each layer is compacted to 95% of its maximum unit weight per cubic foot as defined by the Michigan Cone Test. The compacted base course shall conform to the required line, grade and

cross-section shown on the construction plans as approved by the MCDOR.

3. Aggregate base course preparation shall include the removal of wet material, and unacceptable subgrade, subbase or base course material, and fine grading.

## **BITUMINOUS MIXTURES**

This work shall be done in accordance with current MDOT Specifications, except as herein provided:

### ***1. Bituminous Base Courses***

This work shall be done in accordance with MCDOR standards with particular reference to specifications commonly referred to as HMA 2C as modified to current MCDOR specifications.

- a. The bituminous base course for Full Depth Asphalt Pavement shall consist of mineral aggregate per MDOT Specifications.
- b. The bituminous base course shall be placed in approximately equal lifts to the minimum compacted thickness called for on the approved construction plans.
- c. The asphalt cement shall be sampled by an approved testing laboratory and meet a penetration grade per MDOT Specifications or equivalent as directed by the MCDOR.

### ***2. Bituminous Wearing and Leveling Courses***

This work shall be done in accordance with MCDOR standards with particular reference to specifications commonly referred to as HMA 4C and 3C as modified to current MCDOR Specifications.

- a. Bituminous surface and leveling mixtures shall use mineral aggregate as provided in the contract documents.
- b. Bituminous surface and leveling mixture shall be placed to the minimum compacted thickness on the approved construction plans.
- c. The asphalt cement shall be sampled by an approved testing laboratory and meet a penetration grade per MDOT Specifications or equivalent as directed by the MCDOR.

### ***3. General***

- a. Before succeeding courses of asphalt pavement are placed, the preceding course shall be swept clean of all dust, dirt, or other loose material by the use of a mechanical sweeper or other approved method. The Contractor shall then apply a bond coat of SS-1H to the bituminous surface at the rate of 0.10 gallons per square yard between the 3C and the 2C layer and at the rate of 0.05 gallons per square yard between the 4C and 3C layer (Figure 4-9).
- b. The construction of the second and succeeding bituminous courses may have to be delayed, as directed by the MCDOR, until the previously placed bituminous course has sufficiently cooled.

- c. Bituminous wearing and leveling courses shall not be placed unless the surface temperature is at least 40° and rising and bituminous base courses shall not be placed unless the surface temperature is at least 35° F and rising.
- d. Terminal Butt joints shall be provided at connections to existing paved roads and at overnight construction joints, when the final course of bituminous surface mixture is being placed. During all other paving operations, joint treatment shall be as directed by the MCDOR (Figure 2-3).

**4. Construction**

- a. For proposed drive approaches, acceleration, deceleration, bypass lanes and tapers abutting existing bituminous roads under the jurisdiction of MCDOR, bituminous or concrete pavement in accordance with MCDOR specifications shall be used (Figure 4-9).

**CONCRETE PAVEMENT**

This work shall be done in accordance with current MDOT Specifications, except as herein provided:

**1. Materials**

The mix design and materials used in producing concrete shall be in accordance with current standards of the MCDOR and the Michigan Department of Transportation.

**2. Joints (refer to Appendix A, Figures 3-3, 3-4, 4-10, 4-11, 4-11a, Detail 5-Sheet 1 and Detail 9 – Sheet 2 of MCDOR Standard Detail Sheets for joint details)**

- a. All longitudinal and transverse contraction joints shall be sawed 1/4 inch wide and to a depth of 1/4 of the pavement thickness.
- b. Transverse pavement joints shall be spaced at 12 foot intervals or as directed for all pavement widths. Transverse joints must be sawed unless otherwise approved by the MCDOR.
- c. Longitudinal pavement saw joints shall be provided at third points for 24 and 28 foot wide pavements and at quarter points for 36 foot wide pavements.
- d. Prior to sealing, all joints shall be cleaned with a jet of compressed air supplied at a working pressure of not less than 90 psi in addition to any other cleaning which may be required to insure a thoroughly clean joint.
- e. Pavement joints shall be filled and sealed with a hot poured rubber-asphalt type compound (1/8 inch below pavement surface) which shall be placed in two applications.
- f. 1 inch and 2 inch expansion joints shall be installed in accordance with Figures 4-12 and 4-13.

### **3. Lane Tie Bars**

Number 5 bars, epoxy coated, 30 inches long, shall be placed along all longitudinal joints, at a right angle to the joint and at 40 inch maximum intervals. Tie bars shall be supported by chairs sufficiently rigid to support the bar during concrete placement (Figure 4-10).

### **4. Curb End Transitions**

Curb end transitions shall be provided as directed by the MCDOR (Figure 3-6).

### **5. Construction**

- a. For proposed drive approaches, acceleration, deceleration, bypass lanes and tapers abutting existing concrete roads under the jurisdiction of MCDOR, concrete pavement in accordance with MCDOR specifications shall be used (Figure 4-9).
- b. All forms or slip form control line shall be set on a true line and on grade with approximately 1,000 lineal feet set prior to and maintained during paving operations.
- c. No concrete shall be produced or placed in rain or threatening weather. When rain appears imminent, the Contractor shall take such precautions as are necessary to protect the concrete from damage.
- d. All manholes, catch basins and any other utility castings shall be adjusted to line and grade and shall have complete bearing on their respective structures.
- e. No concrete shall be placed unless the grade is frost free and the air temperature is at least 30°F and rising, unless specifically approved by the MCDOR. Paving will not be allowed between **November 15 and April 15 without written approval from the Director of Roads**.
- f. The Contractor shall provide cold weather protection as needed to protect the concrete from freezing. Any concrete damage by freezing or frost action shall be removed and replaced at the Contractor's expense, as directed by the MCDOR.

### **6. Supplemental Pavement Specifications**

- a. Concrete pavement shall be constructed in accordance with the current MDOT Standard Specifications for Construction. When the Contractor elects to use paving forms, the subgrade, especially that part under the forms, shall be carefully shaped to conform to the pavement grade and thoroughly compacted and cut to grade so that the form when set will be uniformly supported for its entire length at the specified elevation. Forms shall join neatly and in such a manner that the joints are free from play or movement in any direction. Forms shall be set, as herein specified, for at least one day's construction.
- b. The pavement shall be struck-off and consolidated with an approved mechanical finishing machine. The concrete shall be struck-off at such a height that after consolidation and final finishing it shall be at the exact elevation and have the exact crown as shown on plans. A depth

of at least two inches of concrete shall be carried in front of the strike-off screed for the full width of the slab. Integral curb shall be formed by extrusion or other approved process to carefully conform to the size and shape shown on the curb detail sheet.

- c. The curing of the finished pavement shall be carefully and systematically carried out in accordance with MDOT requirements. Curing compound shall be applied immediately after completion of the finishing operation.
- d. Failure to provide sufficient curing material to maintain the protection required or lack of sufficient equipment for care of both curing and other construction requirements shall be cause for the immediate suspension of construction operations.
- e. After the forms have been removed, the slab edges shall be cured in the same manner as the slab surface, after which the ground shall be shaped, uniformly graded and compacted in accordance with the requirements as shown on the plans. Care shall be exercised in placing and compacting the earth at the edges of the pavement, so that the new concrete will not be spalled or fractured.
- f. Before the pavement will be considered completed in accordance with these specifications and in line for final acceptance, the shoulders, ditches, back slopes, and structures shall be placed in a neat and orderly condition conforming to the plans and specifications in all respects. Equipment, surplus material, and construction debris of every description shall be removed from the project.
- g. The pavement shall be closed to traffic, including the vehicles of the Contractor, for a period of 10 days after the concrete is placed or longer, if in the opinion of the MCDOR Engineer the conditions make it desirable to extend this time.
- h. Following the machine finishing of the pavement surface, it shall be checked and made smooth by scraping or dragging with a rigid straightedge 10 feet in length.
- i. Joint sawing shall be carried out and carefully completed as soon as possible after the concrete has attained sufficient set to prevent raveling or spalling caused by the sawing action.

#### **CONCRETE CURB AND GUTTER**

Concrete curb and gutter or integral curb along all new streets shall be 4 inch mountable curb (Figure 3-7). Concrete curb and gutter construction is subject to the conditions as outlined under the CONCRETE PAVEMENT Section above.

#### **OTHER MATERIALS AND CONSTRUCTION METHODS**

All construction items that are not specified within these Rules and Regulations shall be performed in accordance with the current MDOT Specifications.

## **UTILITIES AND SOIL EROSION**

### **SANITARY SEWER AND WATERMAIN**

All proposed sanitary sewer shall be located in an easement outside of the MCDOR right-of-way.

It is required that sanitary sewer and watermain installation be completed prior to placing curb and gutter or any material which is part of the pavement section. These systems must be pressure tested and approved by the appropriate Local Municipality prior to placing concrete pavement or asphalt surfacing. All structures constructed with these systems shall be located outside of pavements and curbs. Crossings of these utilities under the pavement shall be at 90° to the pavement unless otherwise approved by the MCDOR. Longitudinal runs of the main trunk line under the pavement are not acceptable.

### **PRIVATE UTILITIES**

It is recommended that all private underground utilities (gas, electric, phone, cable, etc.) be installed prior to the surfacing of the road. Such utilities are to be located in the road right-of-way three to five feet from the back of the curb. A permit must be obtained from the MCDOR prior to the installation of any utility.

### **EXISTING MANHOLES AND UTILITY STRUCTURES**

All existing utility structure covers within a paved area shall be adjusted to grade and backfilled with approved material prior to laying the pavement surface course.

### **EROSION CONTROL PROVISIONS**

Prior to the start of any construction activity, a soil erosion permit must be obtained from the Macomb County Office of Public Works in accordance with the provisions of Part 91, Soil Erosion and Sedimentation Control of the Natural Resources and Environmental Protection Act, Act 451 of the Public Acts of 1994. During all phases of construction, proper soil erosion controls must be installed and maintained by the Contractor and/or Proprietor. Prior to MCDOR acceptance of the streets for maintenance, acceptable vegetation must be established and all temporary soil erosion controls removed from the road right-of-way.



## Part III

# FINANCIAL REQUIREMENTS



## **CONSTRUCTION DEPOSIT REQUIREMENTS**

### **CONSTRUCTION DEPOSIT**

Construction Deposits shall be in an amount equal to 10% of the cost of all uncompleted road and road drainage improvements. The amount of the Construction Deposit shall be determined by the MCDOR and posted with MCDOR prior to the start of construction or Final Plat Approval, whichever is earlier.

### **CONSTRUCTION ACCEPTANCE/RELEASE**

Subdivision roads shall be maintained with no structural failures for a period of three years after formal acceptance of the Subdivision. This will constitute the final release and all deposits will be processed for return at that time.

### **CONSTRUCTION DEPOSIT COVERAGE**

Items to be covered by the Construction Deposit shall include, but not be limited to, earth excavation, storm sewers, edge drains, culverts, ditches, subgrade preparation, subbase pavement, final pavement, watermain, sanitary sewer, vegetation establishment and clean-up of the roads and road drainage system, including correction of any erosion damage.

### **FORM OF CONSTRUCTION DEPOSIT**

The MCDOR requires that all Construction Deposits be issued for a time period of three years commencing on the approximate date the MCDOR is scheduled to approve the final plat. The Proprietor shall be held responsible for keeping the expiration date current on the Construction Deposit until all required improvements are completed and the deposit has been released by the MCDOR.

1. Cash Deposits and Certified Checks

Cash, Certified Checks and Cashier's Checks may be used for all Construction Deposits. All checks shall be made payable to the MCDOR.

2. Letter of Credit

If a developer seeks to utilize a letter of credit to assure obligations on the part of the developer to make improvements associated with either a plat or a site condominium development before final plat approval acceptance, an irrevocable bank letter of credit shall be submitted meeting all of the following:

- a. The irrevocable letter of credit shall provide for notice of expiration by the issuing bank, at least forty-five (45) days prior to expiration. This notice shall be addressed to the Director of Roads of the MCDOR. (The letter of credit will be drawn upon if an acceptable replacement is not in place prior to expiration.)
- b. The issuing bank must be approved by the MCDOR. The MCDOR will review, utilizing available rating agencies, the strength of the bank issuing the letter of the bank credit before issuing approval.

- c. In the event there has been a change in costs or pricing prior to renewal, the irrevocable letter of credit requirement shall be increased to insure available funds for completion of improvements.
  - d. By approval of the MCDOR, the letter of credit may be reduced in an amount provided that a sufficient amount remains available to secure the completion of the improvements.
  - e. Any other funds on deposit or bonds may be utilized to complete improvements if funds are insufficient or unavailable from the letter of credit.
3. Surety Bonds
- Surety Bonds shall be issued by a company acceptable to the Board and doing business in the Macomb County area. Surety Bonds shall be executed in favor of the MCDOR, Macomb County, Michigan, as beneficiary, commencing on the approximate date the OCE is scheduled to approve the final plat.

### **FEES – COUNTY MCDORS**

As referenced in the Land Division Act 288 of 1967, "The county road department may adopt as part of the published rules by resolution, a reasonable schedule of fees, to be charged to proprietors seeking approval of plats. The fee shall be for the examination of those plat features which require approval of the county road department as provided in Section 183, and plans and inspection of highways, streets and alleys, together with bridges, culverts, drainage structures or other improvements constructed in connection with the plat and related expenses."

#### **CONSTRUCTION DEPOSIT, INSPECTION AND ADMINISTRATION FEES**

Inspection and Administration Fees shall be in an amount equal to 6% Paving, 6% Storm Sewer, 4% Watermain, and 4% Sanitary Sewer of the cost of all road and road drainage improvements as determined by the MCDOR. These fees shall be paid to the MCDOR in the form of certified check or cashier's check prior to any site construction.

#### **CERTIFICATE OF INSURANCE**

The Proprietor and/or their Contractor are required to provide a valid Certificate of Insurance (listing the MCDOR as an additional insured) prior to commencement of any onsite construction.

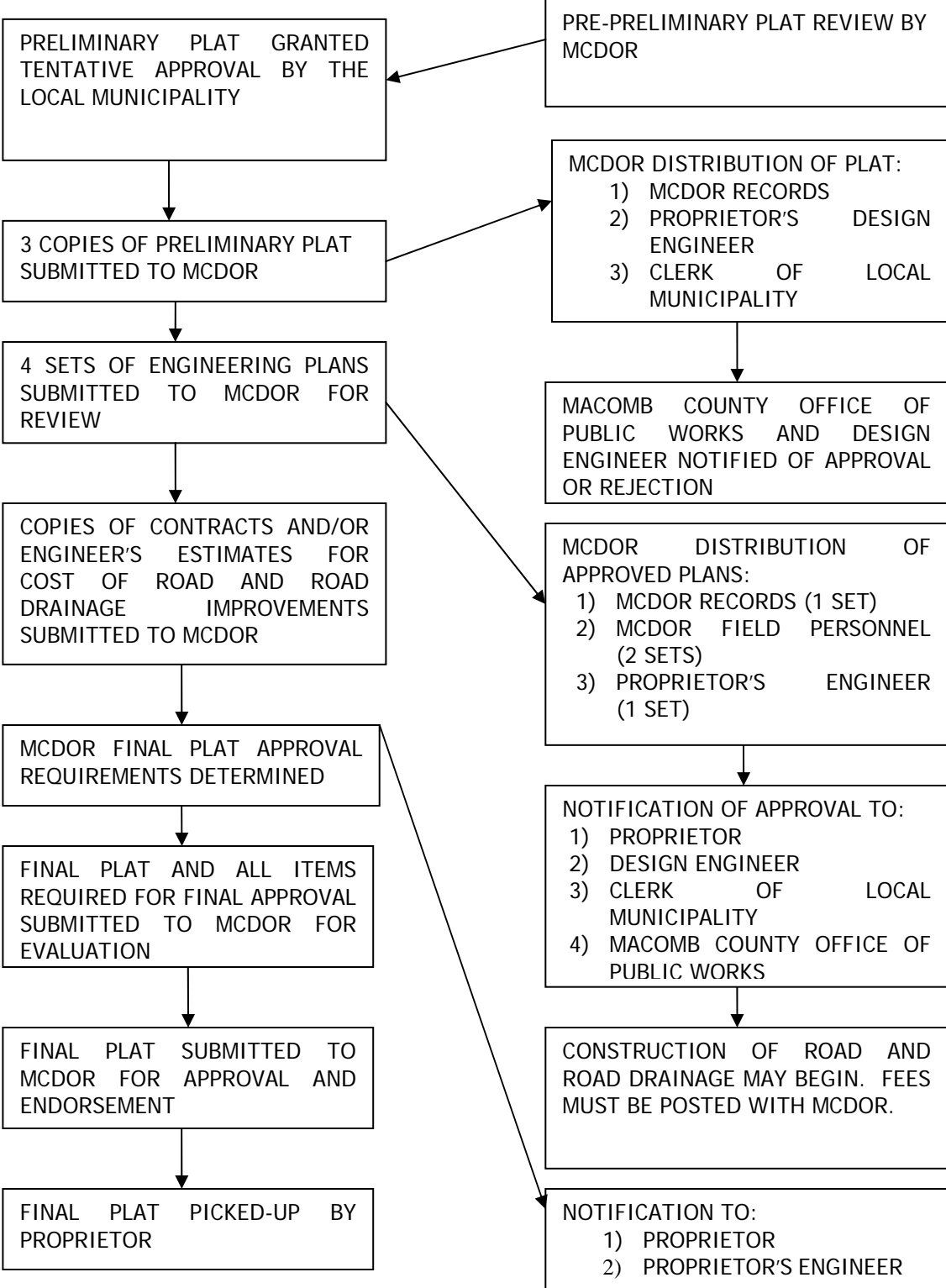
#### **SIGNAGE FEES**

Sign fees will be determined by the MCDOR and payment shall be made prior to Final Plat Approval. Payment shall be in the form of certified check or cashier's check made payable to: "Macomb County Department of Roads. Signs or

appurtenances are the sole responsibility of the proprietor and will not be funded by the MCDOR.

APPENDIX A  
(Figures)

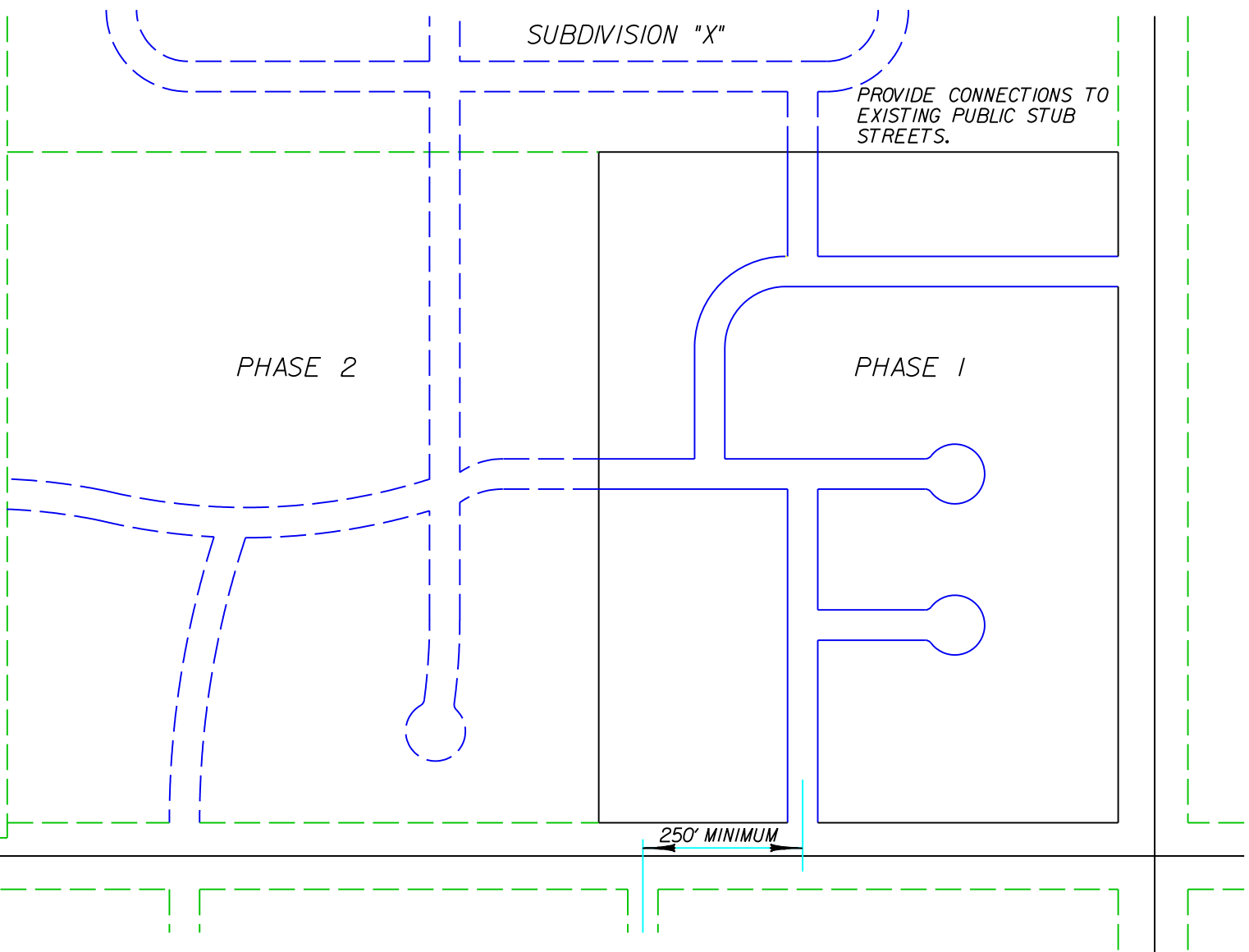
**MACOMB COUNTY DEPARTMENT OF ROADS  
PLAT AND ENGINEERING PLAN APPROVAL FLOW CHART**



**NOTE:**

- Preliminary Plat approval will not be granted by MCDOR until tentative Municipal Approval has been granted.
- Section designation relative to Act 288 of 1967, as amended, as it applies to the MCDOR.

**Figure 1-1**



PROVIDE STUB STREETS TO ADJACENT PARCELS.

PROVIDE CONNECTIONS TO EXISTING PUBLIC STUB STREETS.

PHASE 2

PHASE 1

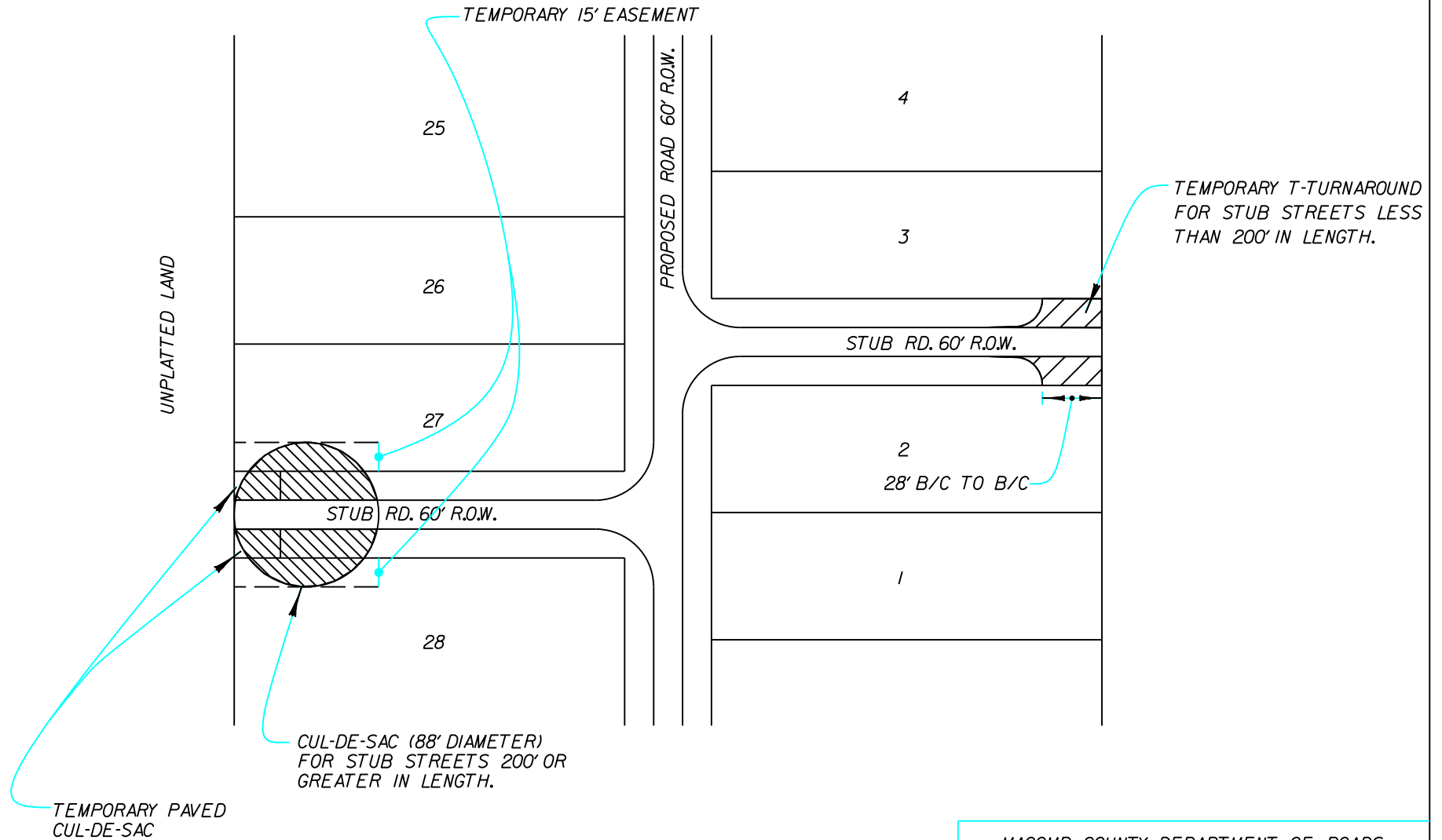
SUBDIVISION "X"

250' MINIMUM

NOTE:  
WHILE MAINTAINING ADEQUATE PROVISIONS FOR INGRESS/EGRESS, THE GEOMETRIC LAYOUT OF THE PROPOSED STREET SYSTEM SHOULD NOT ENCOURAGE THROUGH TRAFFIC.

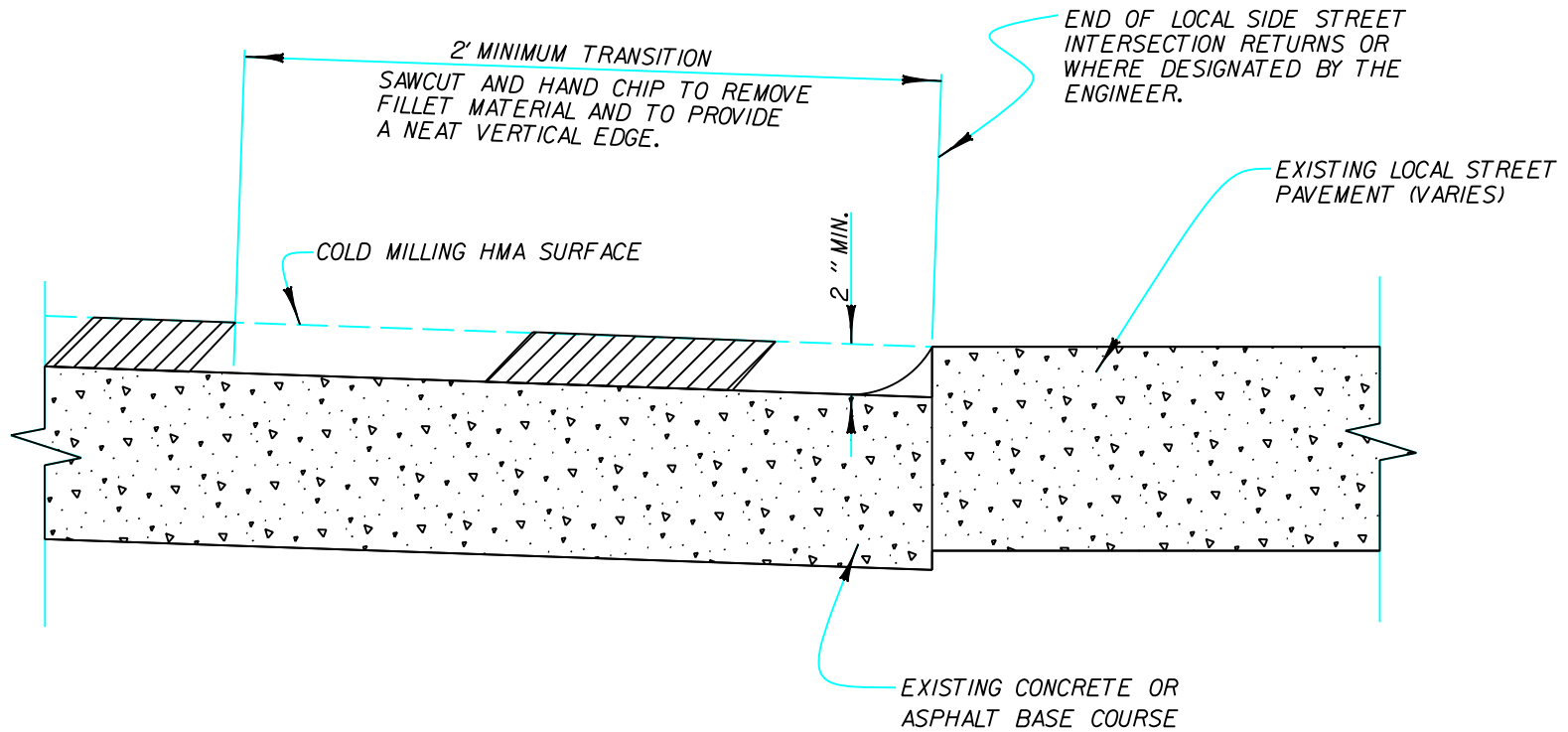
MACOMB COUNTY DEPARTMENT OF ROADS  
SUBDIVISION STANDARD PLAN  
FOR

ROAD GEOMETRICS  
N.T.S.



MACOMB COUNTY DEPARTMENT OF ROADS  
 SUBDIVISION STANDARD PLAN  
 FOR  
STUB ROAD CONSTRUCTION  
FOR TEMPORARY CUL-DE-SAC  
AND TEMPORARY T-TURNAROUND  
 N.T.S.

FIG. 2-2



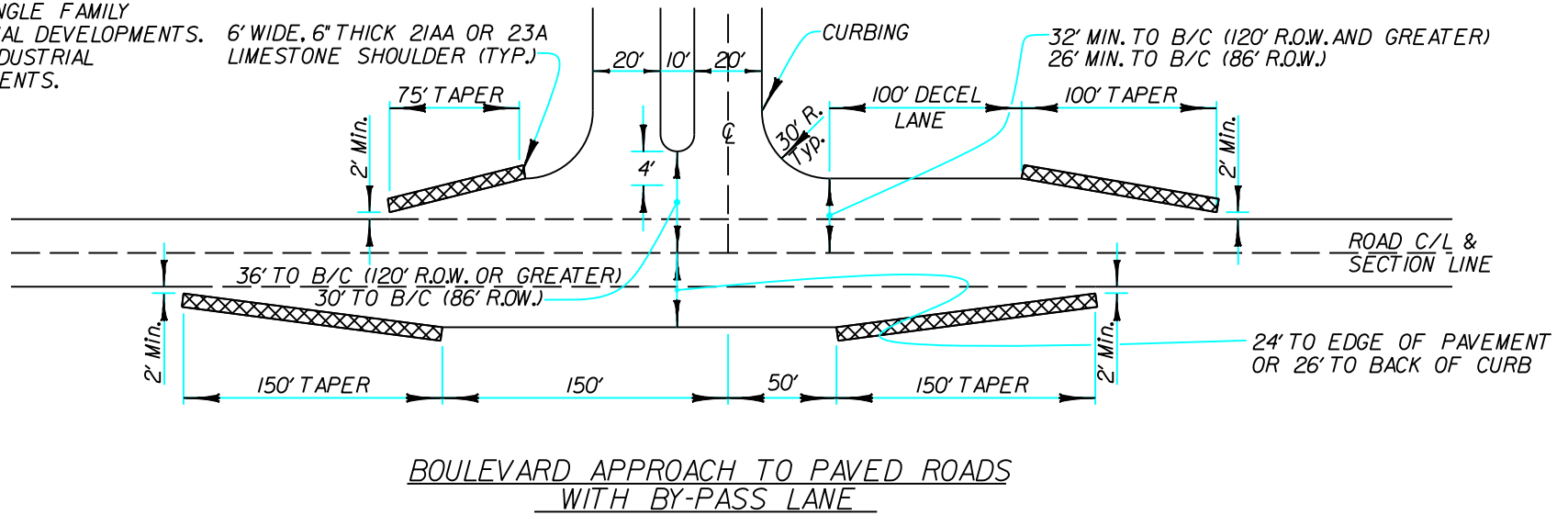
MACOMB COUNTY DEPARTMENT OF ROADS  
SUBDIVISION STANDARD PLAN  
FOR

TERMINAL BUTT JOINT DETAIL  
N.T.S.

FIG. 2-3

\* BOULEVARD WIDTH B.C. TO B.C.:

50' - IN SINGLE FAMILY RESIDENTIAL DEVELOPMENTS. 6' WIDE, 6" THICK 21AA OR 23A LIMESTONE SHOULDER (TYP.) AND IN INDUSTRIAL DEVELOPMENTS.



**NOTES:**

ON CURVED ROADS THE LENGTH AND ALIGNMENT OF LANE TAPERS AND FULL WIDENINGS MAY VARY AS DIRECTED BY M.C.D.O.R.

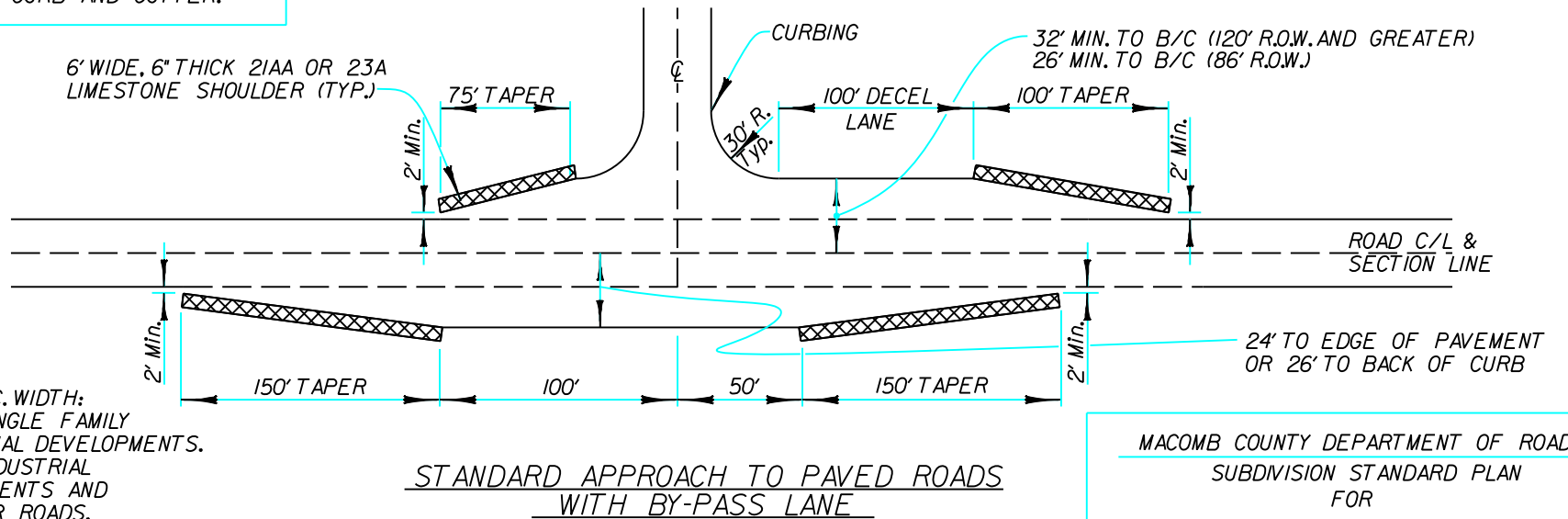
CONCRETE CURB AND GUTTER REQUIRED ON TAPERS IF EXISTING ROAD HAS CURB AND GUTTER.

**NOTES:**

APPROACH GEOMETRICS FOR COLLECTOR STREETS MAY EXCEED THESE STANDARDS BASED ON M.C.D.O.R. ENGINEERING REVIEWS.

**NOTES:**

PASSING LANES SHOULD BE PROVIDED WHEN WARRANTED. FAILURE TO PROVIDE A WARRANTED PASSING LANE MAY NECESSITATE THE PROHIBITING OF LEFT TURNS. (SEE FIG. 2-5)



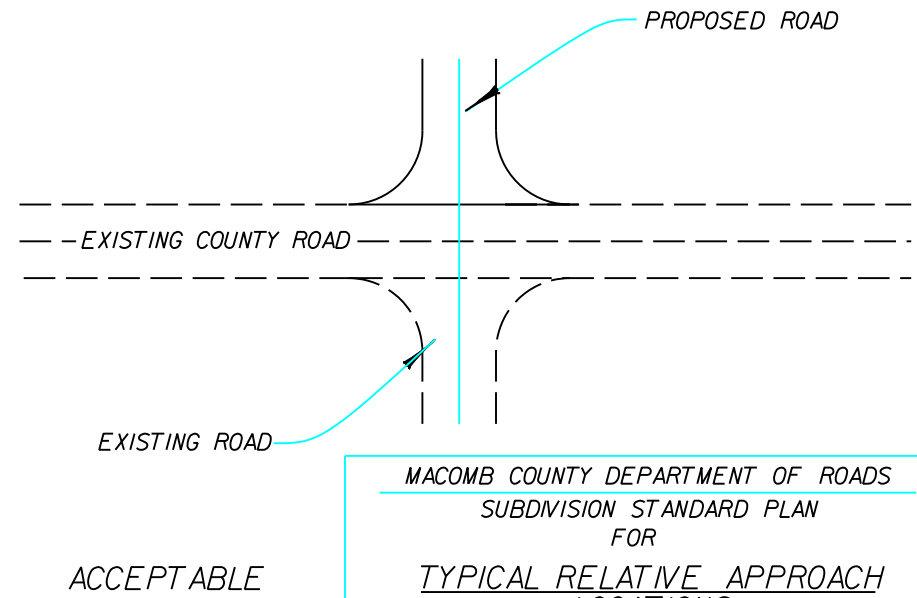
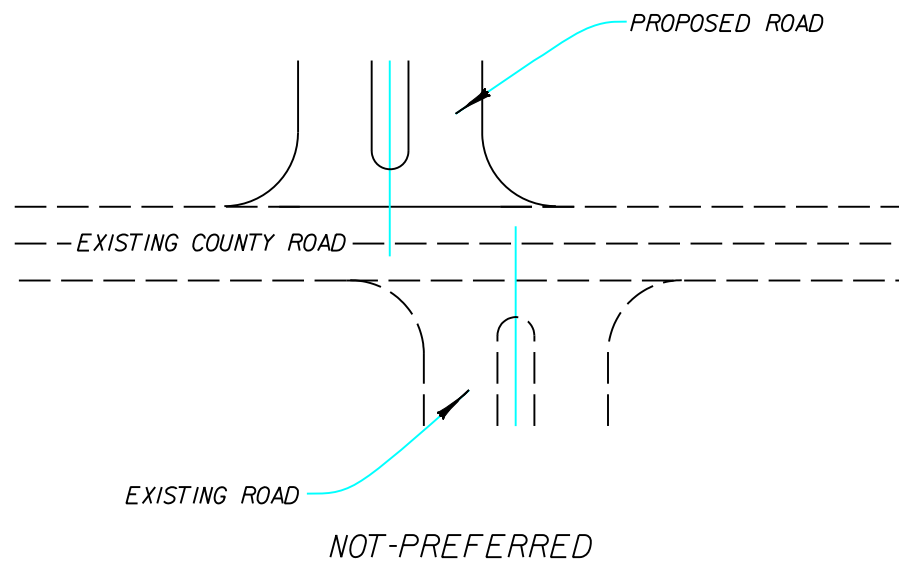
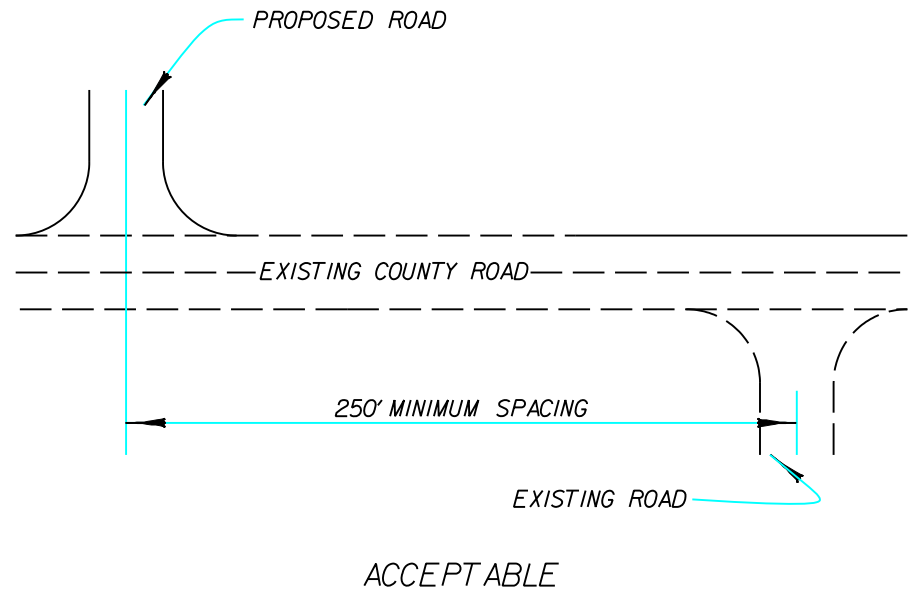
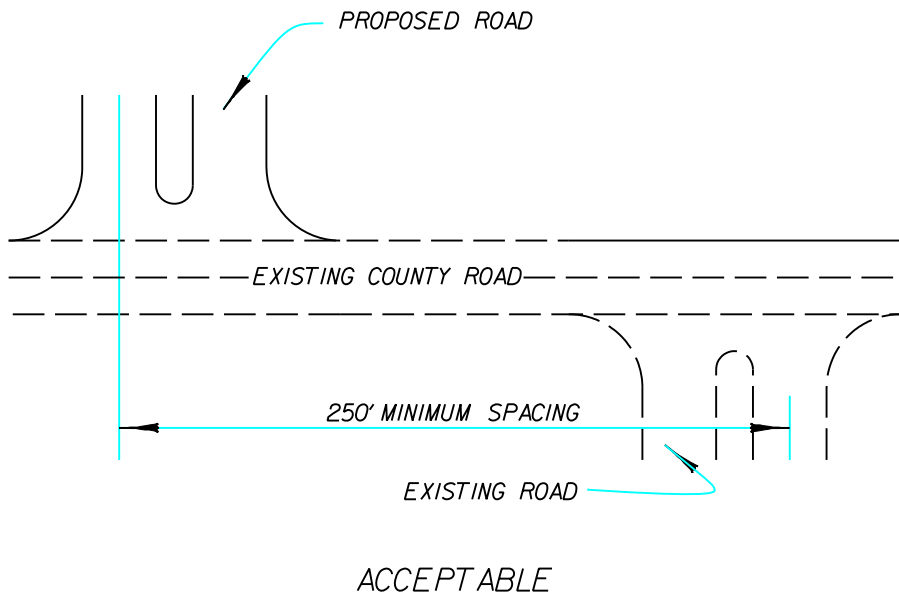
\* B.C. TO B.C. WIDTH:

28' - IN SINGLE FAMILY RESIDENTIAL DEVELOPMENTS. 36' - IN INDUSTRIAL DEVELOPMENTS AND COLLECTOR ROADS.

**STANDARD APPROACH TO PAVED ROADS WITH BY-PASS LANE**

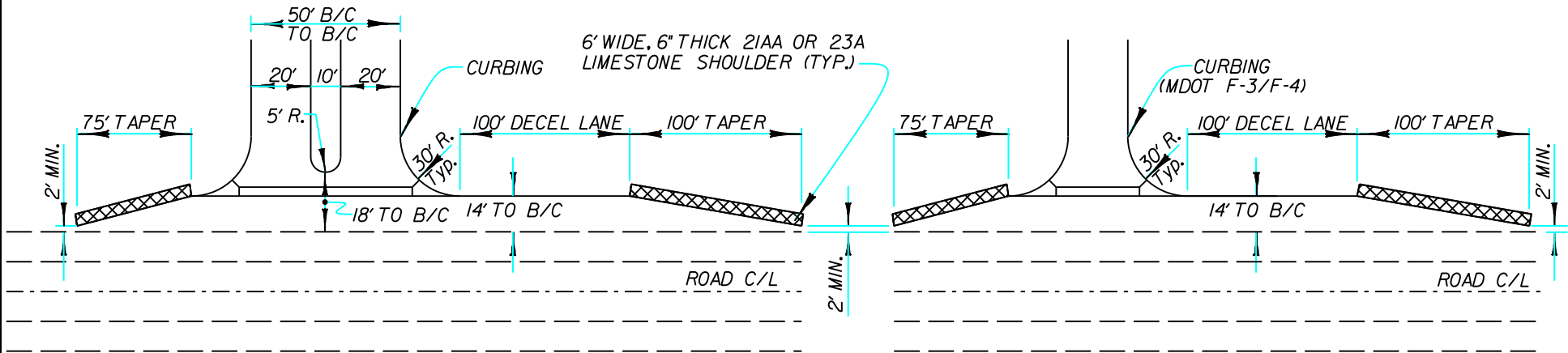
MACOMB COUNTY DEPARTMENT OF ROADS  
SUBDIVISION STANDARD PLAN  
FOR  
TYPICAL APPROACH & BY-PASS  
LANE GEOMETRICS  
N.T.S.

FIG. 2-4



MACOMB COUNTY DEPARTMENT OF ROADS  
 SUBDIVISION STANDARD PLAN  
 FOR  
TYPICAL RELATIVE APPROACH  
LOCATIONS  
 N.T.S.

FIG. 2-5  
 FIG 2-05.dgn 4/26/2011 2:18:13 PM

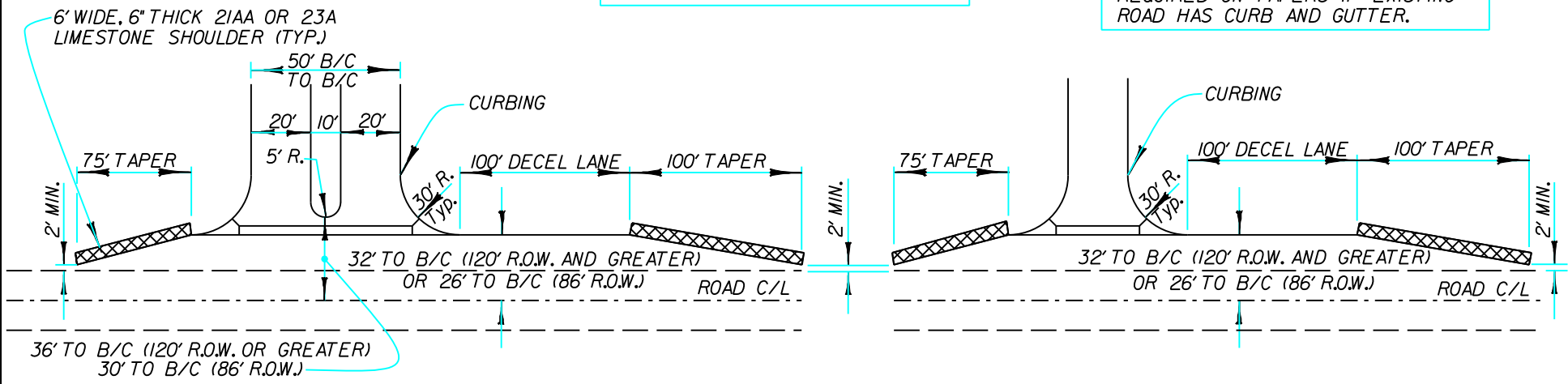


STANDARD & BOULEVARD APPROACH TO MULTI-LANE ROADWAY

BOULEVARD WIDTH B.C. TO B.C.:  
50' - IN SINGLE FAMILY RESIDENTIAL DEVELOPMENTS, AND INDUSTRIAL DEVELOPMENTS.

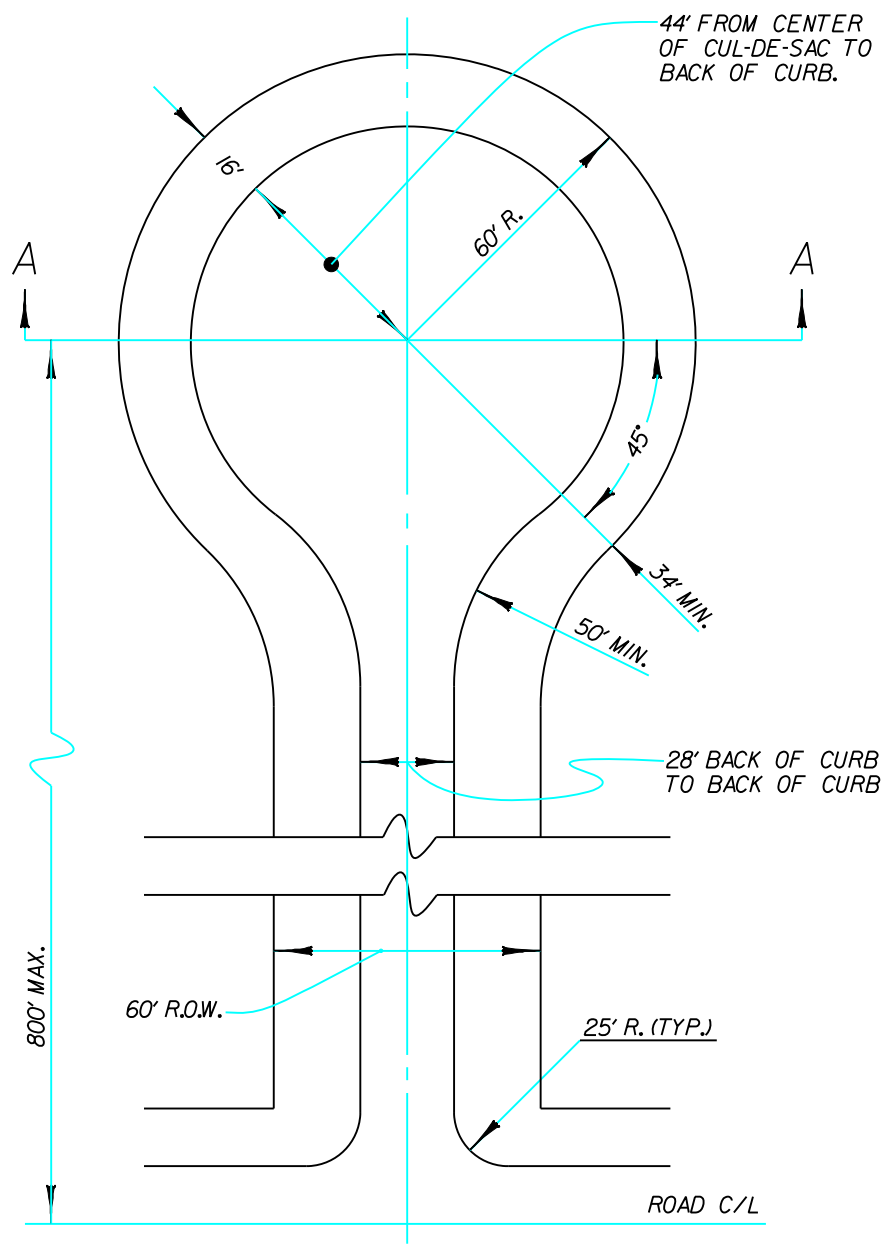
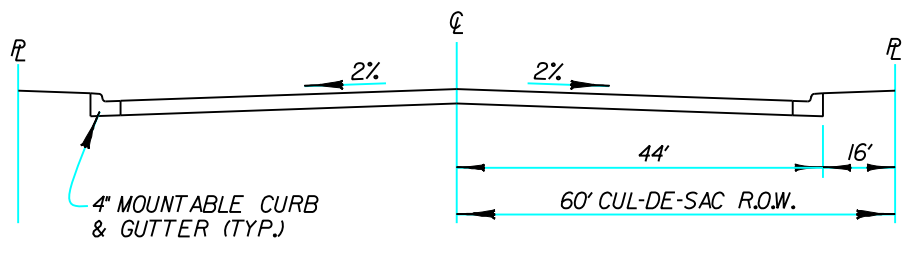
NOTE:  
APPROACH GEOMETRICS FOR COLLECTOR STREETS MAY EXCEED THESE STANDARDS BASED ON M.C.D.O.R. ENGINEERING REVIEWS.

B.C. TO B.C. WIDTH:  
28' - IN SINGLE FAMILY RESIDENTIAL DEVELOPMENTS.  
36' - IN INDUSTRIAL DEVELOPMENTS AND COLLECTOR ROADS.  
NOTE: CONCRETE CURB AND GUTTER REQUIRED ON TAPERS IF EXISTING ROAD HAS CURB AND GUTTER.

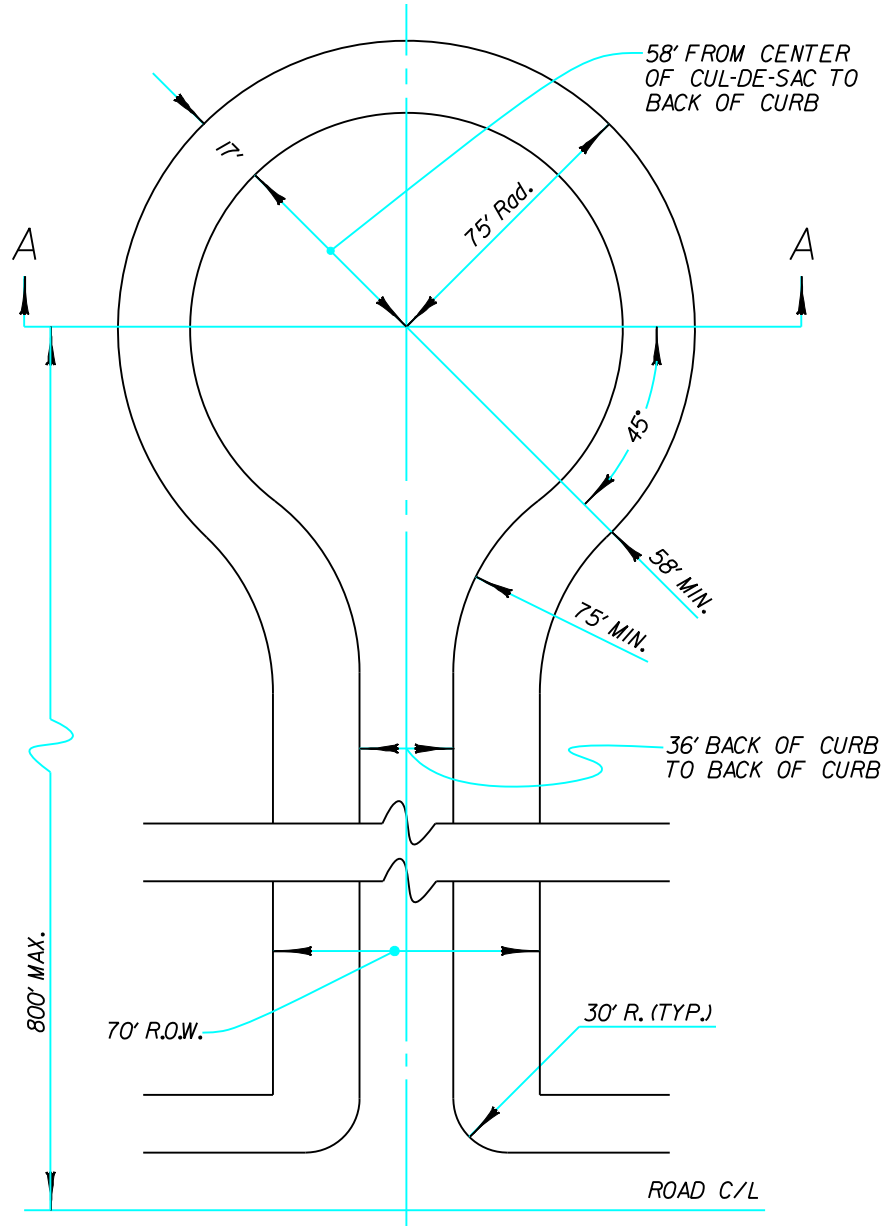
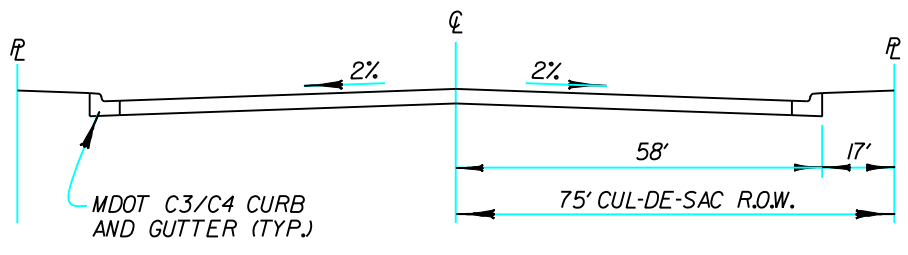


STANDARD & BOULEVARD APPROACH TO GRAVEL ROADS

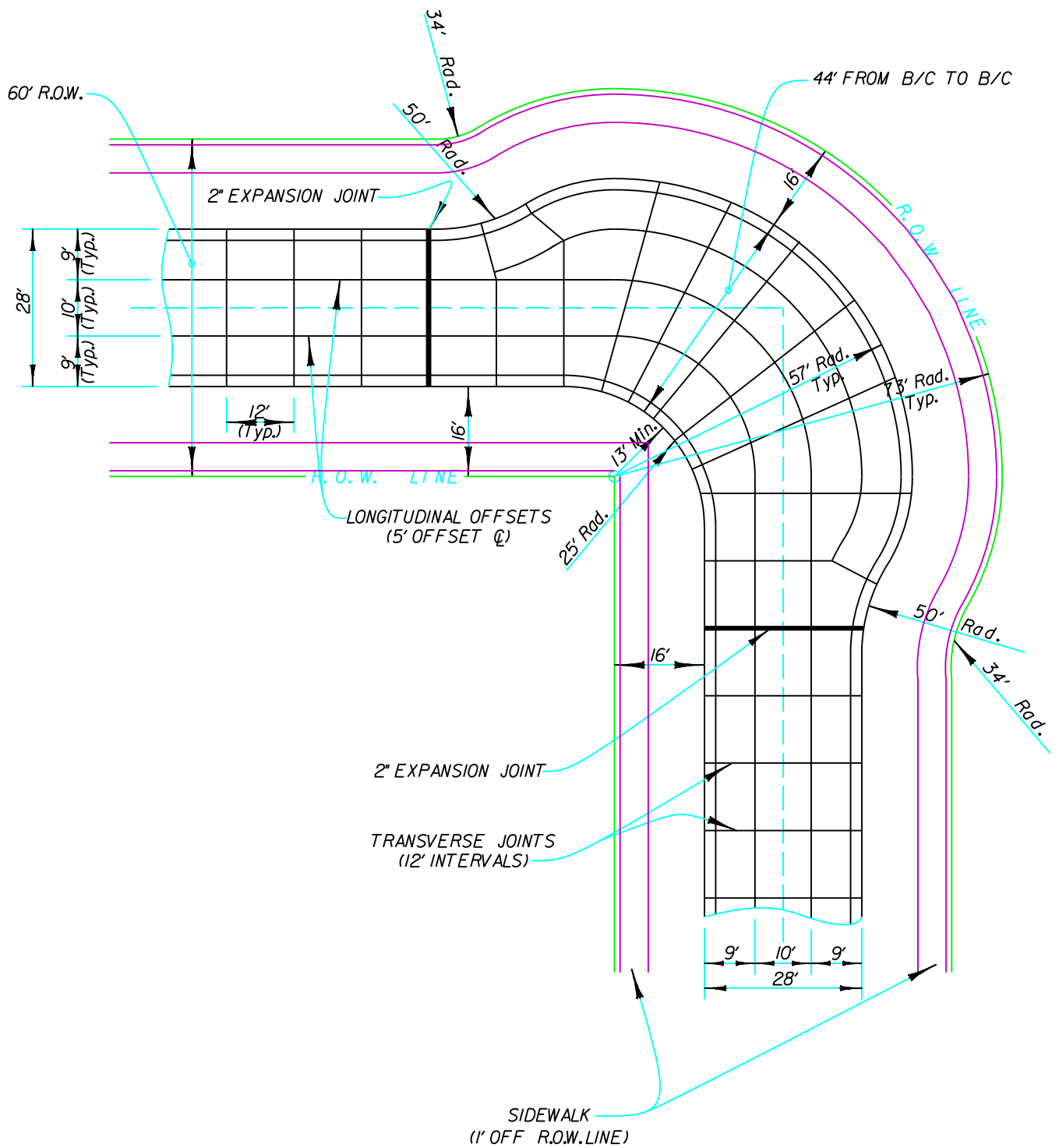
MACOMB COUNTY DEPARTMENT OF ROADS  
STANDARD PLAN  
FOR  
TYPICAL APPROACH GEOMETRICS  
N.T.S.



MACOMB COUNTY DEPARTMENT OF ROADS  
 SUBDIVISION STANDARD PLAN  
 FOR  
RESIDENTIAL CUL-DE-SAC  
 N.T.S.

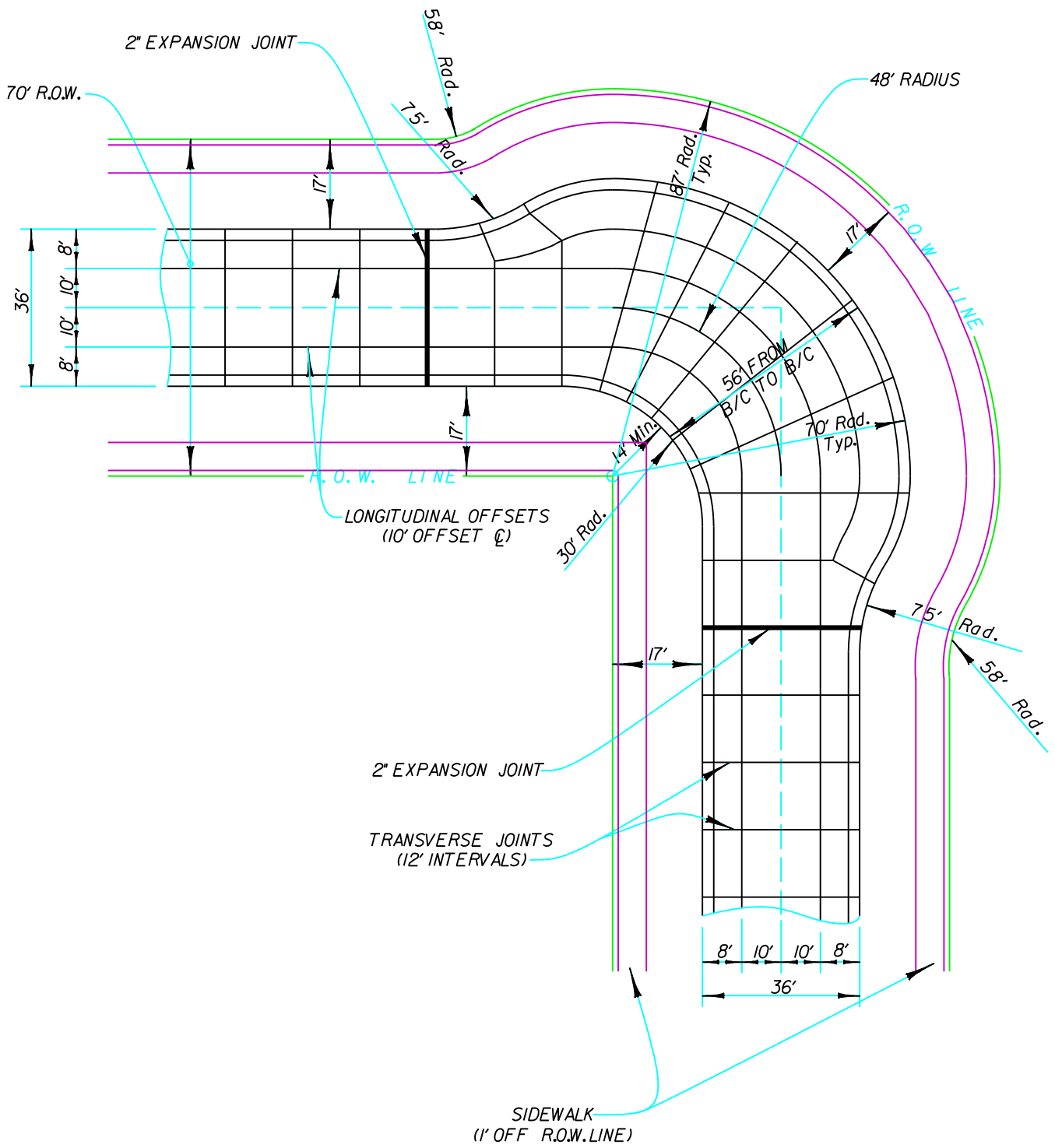


MACOMB COUNTY DEPARTMENT OF ROADS  
 SUBDIVISION STANDARD PLAN  
 FOR  
INDUSTRIAL CUL-DE-SAC  
 N.T.S.



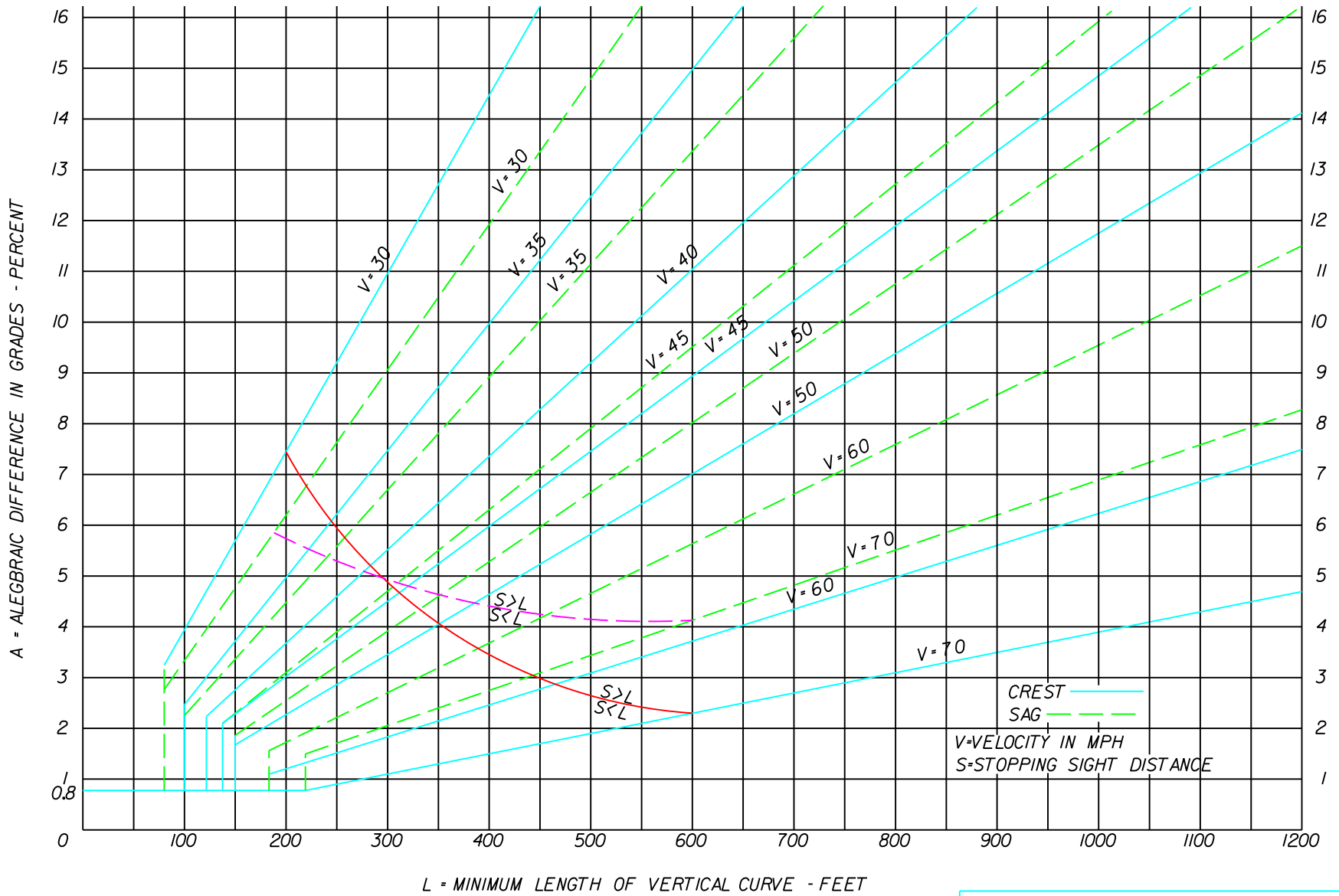
MACOMB COUNTY DEPARTMENT OF ROADS  
 SUBDIVISION STANDARD PLAN  
 FOR  
 EYEBROW DETAIL & JOINT  
 LOCATION FOR 28' B/C TO B/C  
 RESIDENTIAL SUBDIVISIONS  
 N.T.S.

FIG. 3-3



MACOMB COUNTY DEPARTMENT OF ROADS  
 SUBDIVISION STANDARD PLAN  
 FOR  
EYEBROW DETAIL FOR  
36' B/C TO B/C  
INDUSTRIAL SUBDIVISIONS  
 N.T.S.

FIG. 3-4  
 FIG 3-04.dgn 4/28/2011 11:46:13 AM



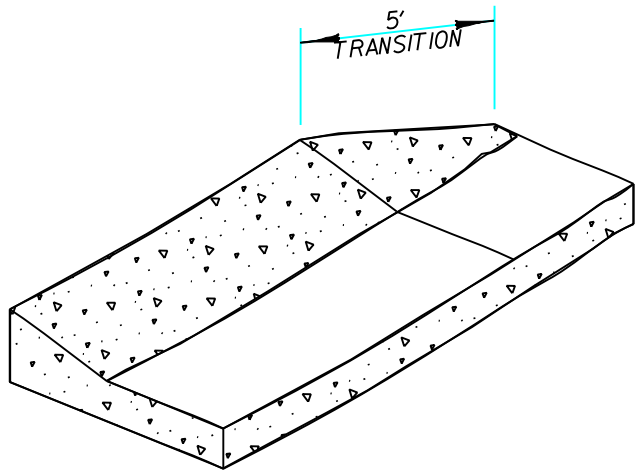
DESIGN CONTROLS FOR CREST & SAG VERTICAL CURVES

RESIDENTIAL & INDUSTRIAL MINIMUM DESIGN SPEED - 35 MPH  
COLLECTOR STREET MINIMUM DESIGN SPEED - 40 MPH

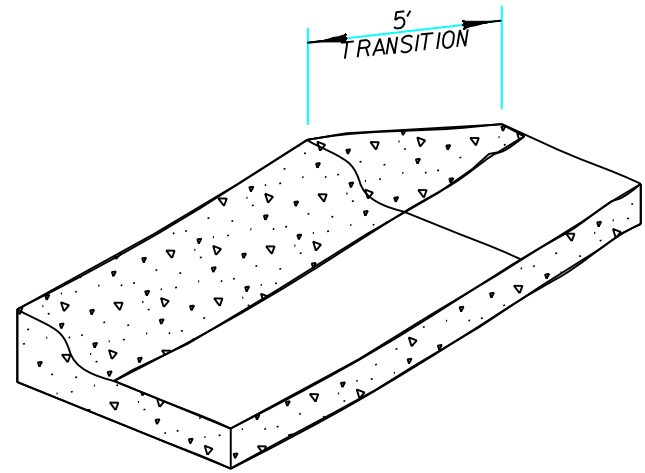
MACOMB COUNTY DEPARTMENT OF ROADS  
SUBDIVISION STANDARD PLAN  
FOR

VERTICAL CURVES  
FOR SUBDIVISION STREETS  
N.T.S.

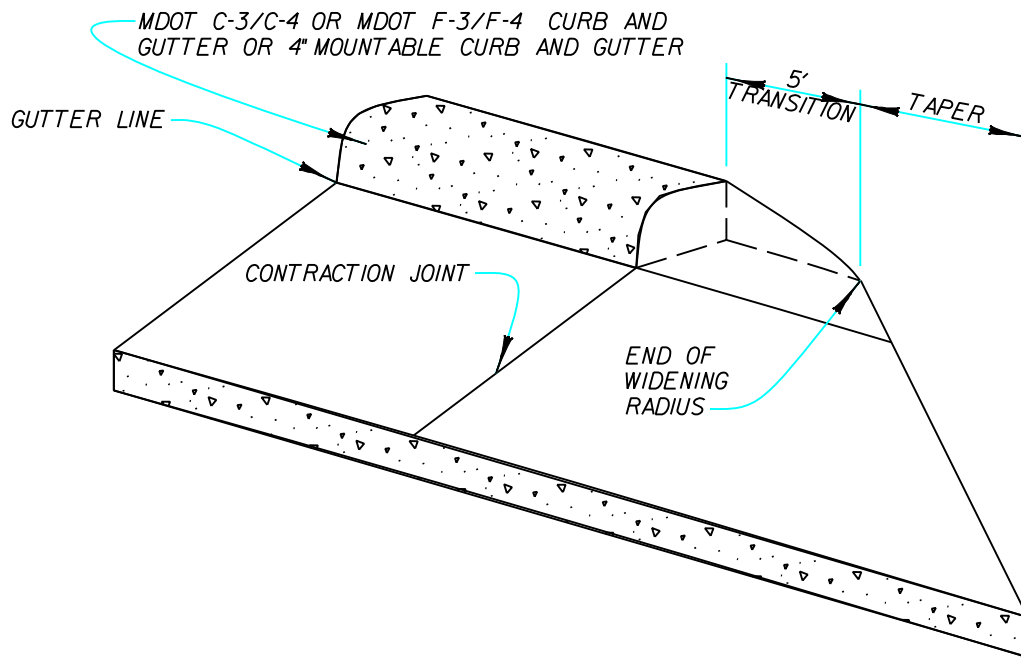
FIG.3-5



4" MOUNTABLE CURB TRANSITION AT END OF CURB AND GUTTER IN SUBDIVISIONS



MDOT F-3, F-4 AT END OF CURB AND GUTTER AT APPROACH RADII, DECELERATION LANES AND BY-PASS LANE WIDENINGS

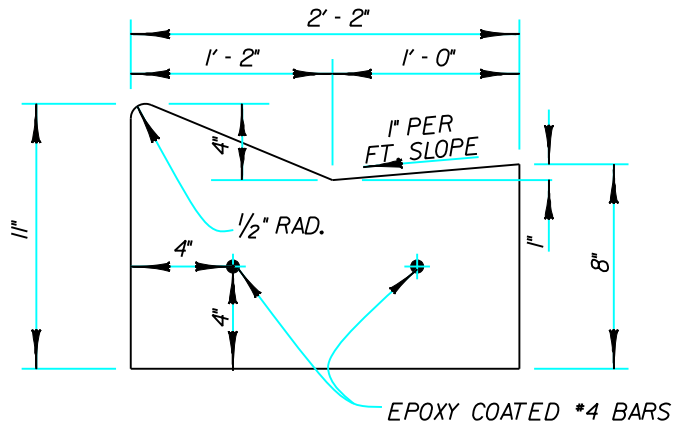


CONCRETE PAVEMENT TRANSITION

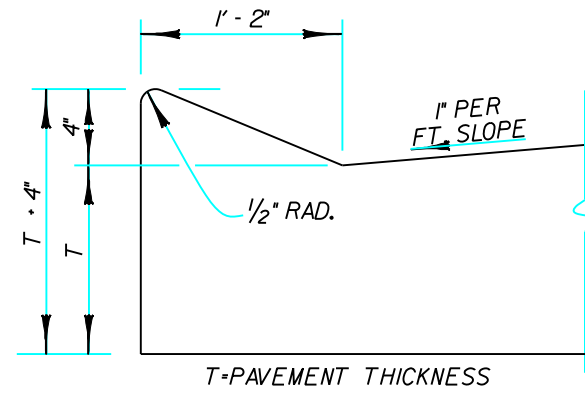
MAINTAIN GUTTER PAN THROUGH 5' TRANSITION (TYP.)

MACOMB COUNTY DEPARTMENT OF ROADS  
SUBDIVISION STANDARD PLAN  
FOR

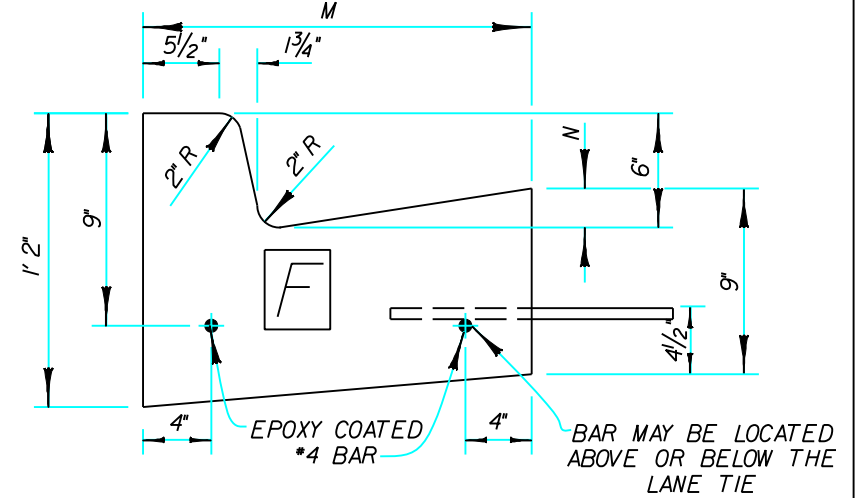
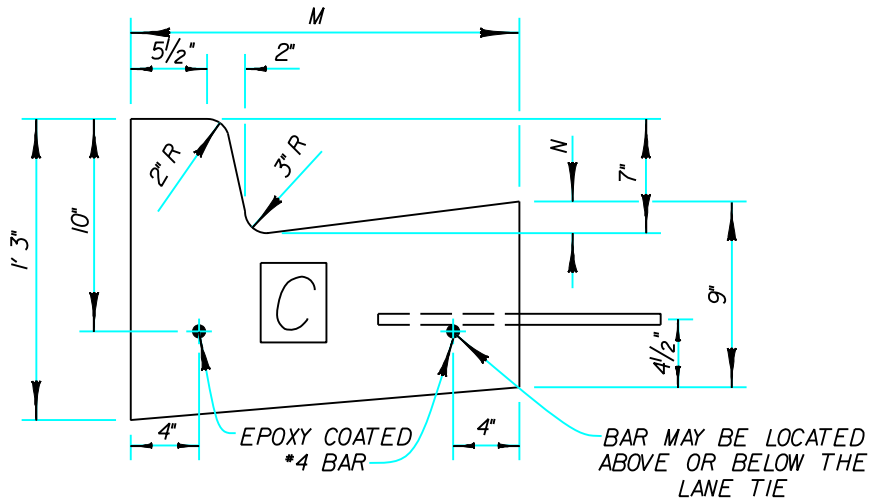
END TRANSITIONS  
N.T.S.



MOUNTABLE CURB & GUTTER DETAIL



INTEGRAL MOUNTABLE CURB DETAIL

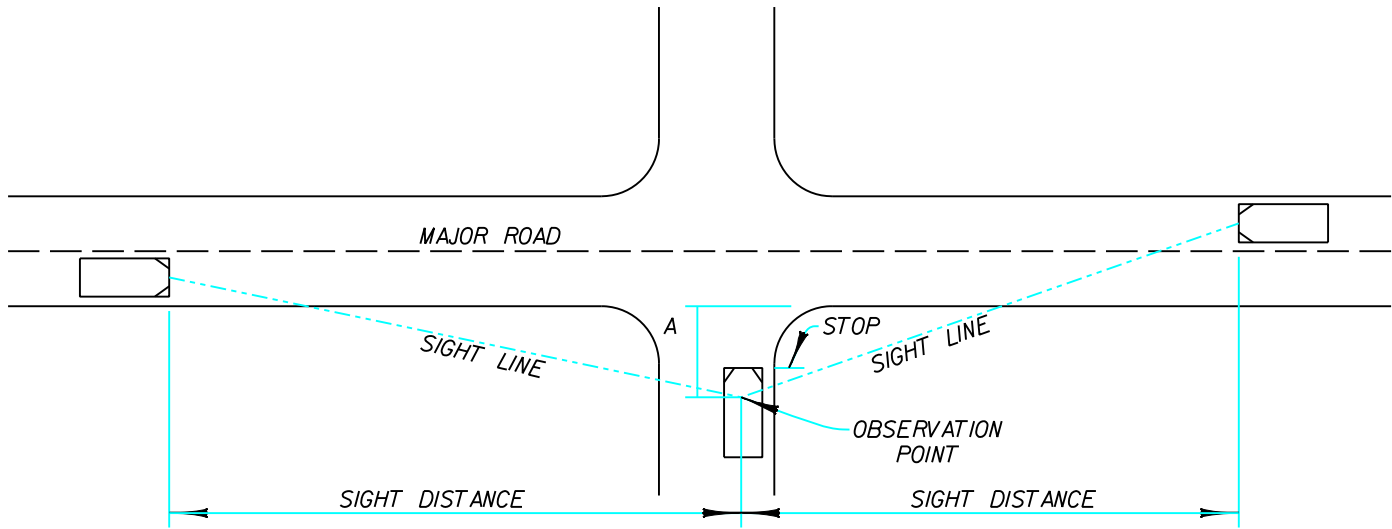


DETAIL	DIMENSION		LANE TIES	CONCRETE CYD/LFT	
	M	N			
RESIDENTIAL	F3	2' - 0"	1 3/8"	AS SHOWN	0.0610
	F4	2' - 0"	1 3/8"	OMITTED	0.0610
INDUSTRIAL	C3	2' - 0"	1 3/8"	AS SHOWN	0.0632
	C4	2' - 0"	1 3/8"	OMITTED	0.0632

MACOMB COUNTY DEPARTMENT OF ROADS  
SUBDIVISION STANDARD PLAN  
FOR

CURB AND GUTTER DETAILS  
N.T.S.

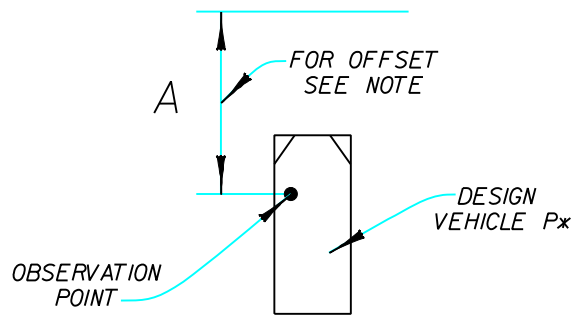
FIG. 3-7



POINT OF OBSERVATION

Major Road (A) Paved Surface:  
 (A) Fifteen (15) feet from edge of pavement of through lanes.

Major Road (A) Gravel Surface:  
 (A) Fifteen (15) feet from edge of gravel.



For gravel surface roads an assumed speed of 45 mph shall be used to determine sight distance unless otherwise posted. Certain existing conditions may require an engineering study to determine the sight distance.

\* FOR RESIDENTIAL DRIVEWAYS APPROACHING GRAVEL OR PAVED ROADS (A) IS 10' FROM THE EDGE OF GRAVEL.

The point of vision shall be from the height of eye, 3.5 feet above the proposed intersecting elevation to a height of object 3.5 feet above the existing or proposed road centerline and shall be continuously visible within the specified limits.

TABLE I MINIMUM CORNER SIGHT DISTANCE		
MAJOR THROUGH ROAD POSTED SPEED (MPH)	MINIMUM SIGHT DISTANCE IN FEET, BOTH DIRECTIONS	
	2 OR 3 LANE THRU ROAD	4 OR 5 LANE THRU ROAD
25	280	295
30	335	355
35	390	415
40	445	470
45	500	530
50	555	590
55	610	650

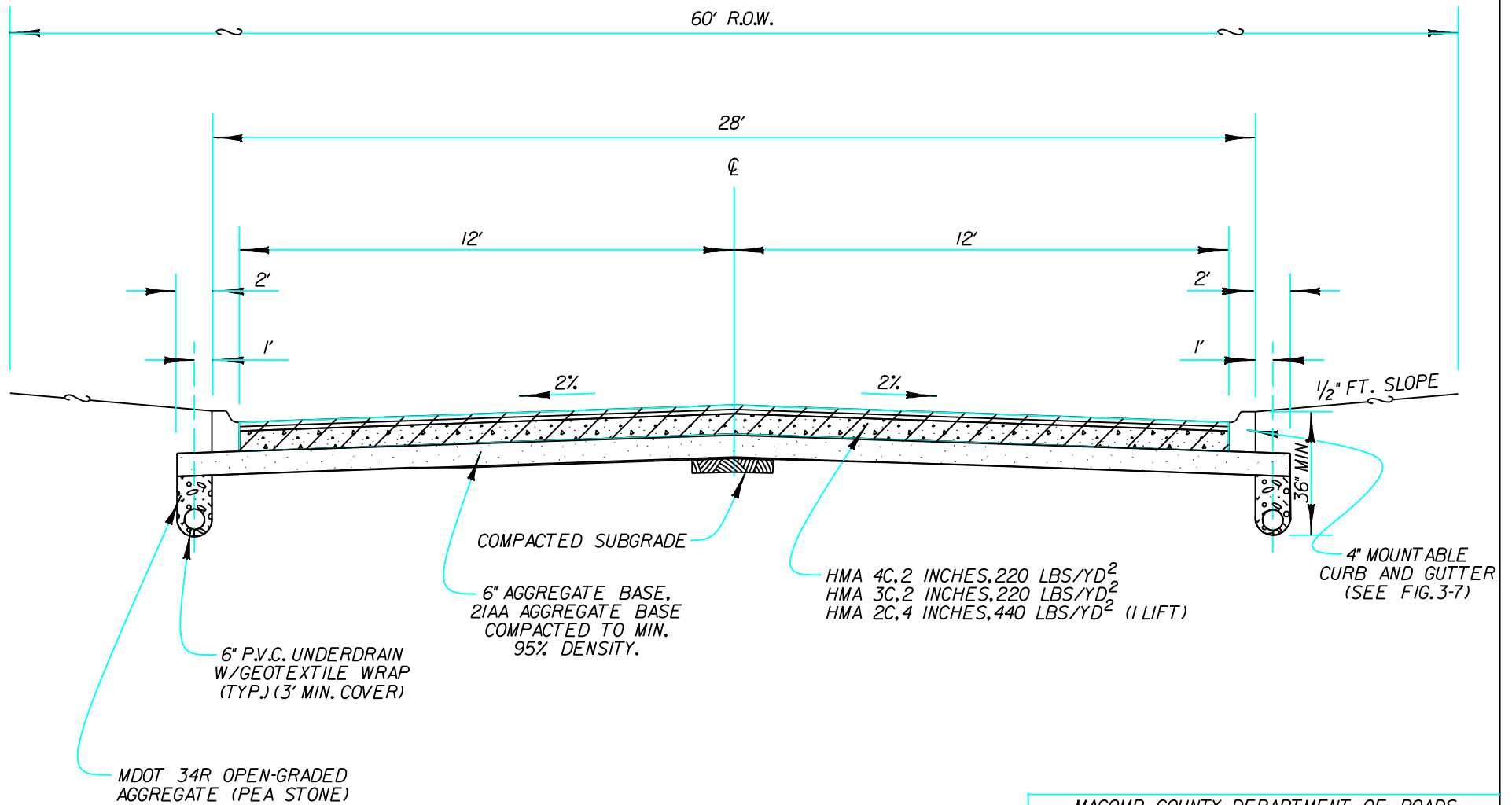
Note:  
 The above data is based on a left turn maneuver into the intersection major roadway as described in AASHTO. Due to the higher potential accident severity, the left turning sight distance was used to determine the corner sight distance required. Right turn onto major roads shall have the same sight distances.

Any deviation from given data requires an engineering study by the M.C.D.O.R. Traffic Safety Department. For new reconstructed roadway projects the Design Division shall address corner sight distance as suggested by AASHTO (green book 2004) for at-grade intersection design; and at minimum shall meet sight distance shown in Table I.

MACOMB COUNTY DEPARTMENT OF ROADS

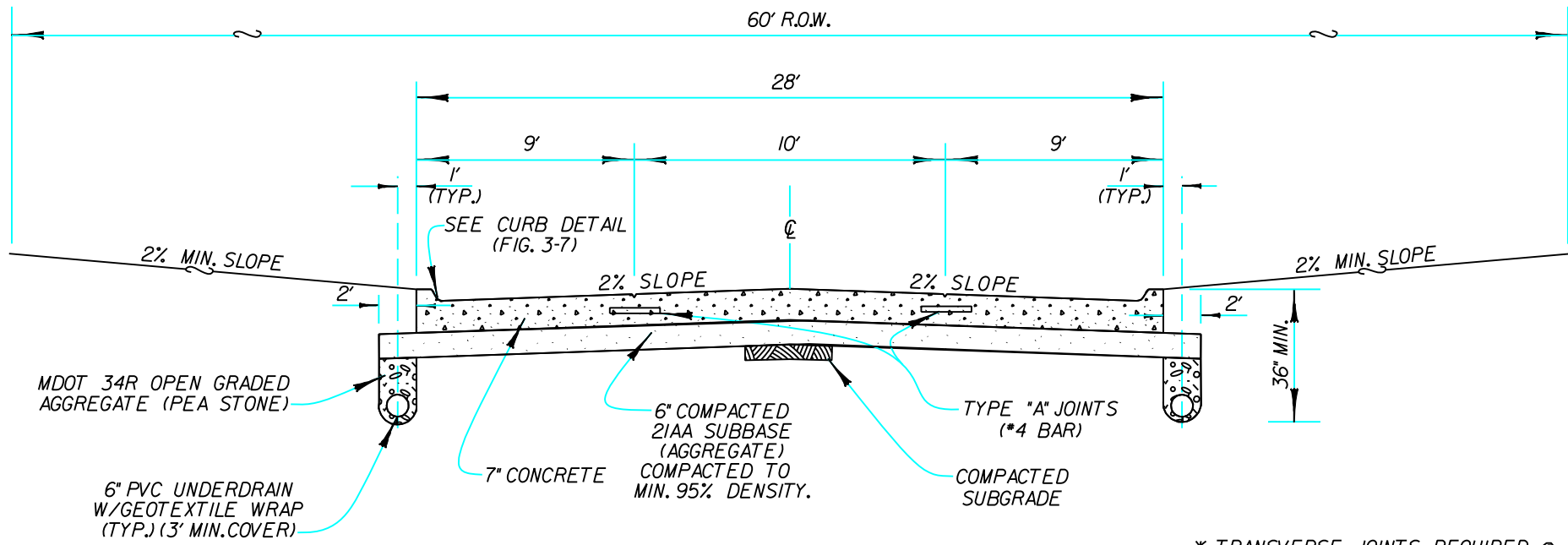
GUIDE FOR  
CORNER SIGHT DISTANCE

FIG. 3-8



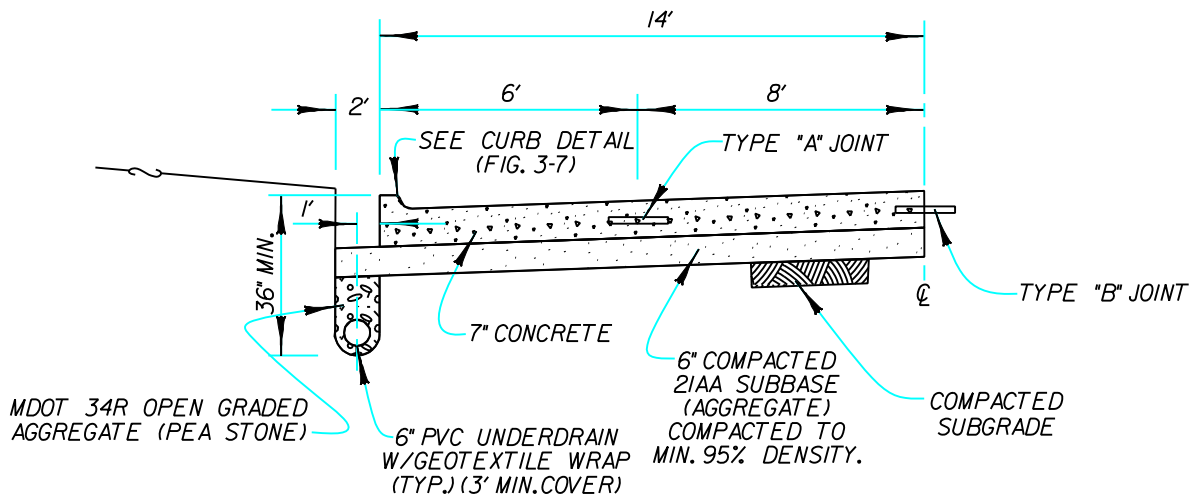
MACOMB COUNTY DEPARTMENT OF ROADS  
 SUBDIVISION STANDARD PLAN  
 FOR  
TYPICAL CROSS SECTION FOR  
24' BITUMINOUS PAVEMENT WITH  
2' MOUNTABLE CURB AND GUTTER  
(RESIDENTIAL)  
 N.T.S.

FIG.4-1  
 FIG 4-01.dgn 4/26/2011 11:50:07 AM



**TWO POUR CONSTRUCTION**  
(NOT TO SCALE)

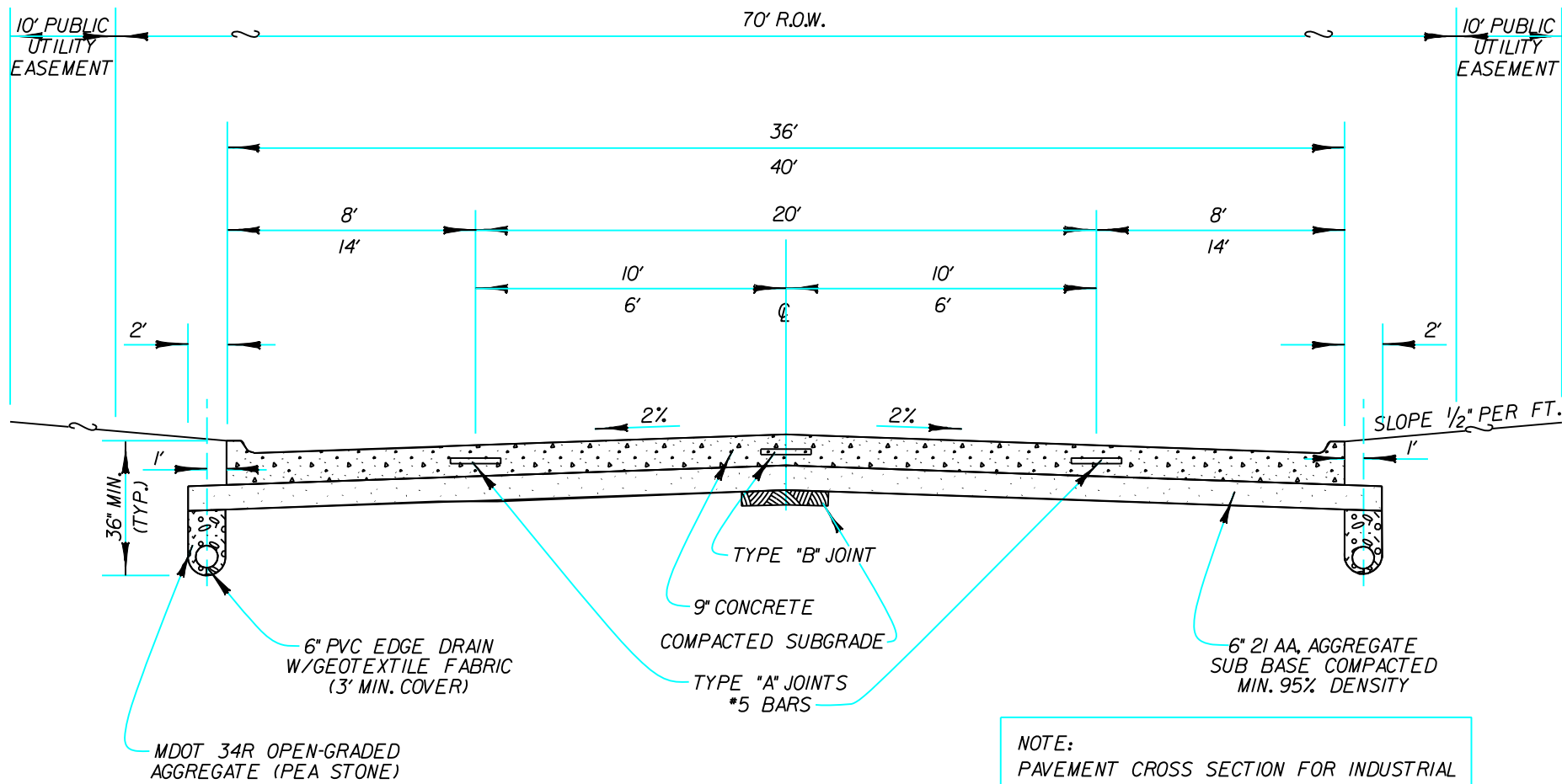
- \* TRANSVERSE JOINTS REQUIRED @ 12' C-C.
- \* 1" EXPANSION JOINTS REQUIRED BETWEEN C.B.'S (24' SPACING).
- \* 300' MAX. BETWEEN EXPANSION JOINTS THROUGHOUT REMAINDER OF SUBDIVISION.
- \* FOR COMMERCIAL & INDUSTRIAL SITES, USE 9" CONCRETE ON 6" 21AA LIMESTONE.



MACOMB COUNTY DEPARTMENT OF ROADS  
SUBDIVISION STANDARD PLAN  
FOR

TYPICAL CROSS SECTION FOR  
28' BACK-TO-BACK CONCRETE  
PAVEMENT (RESIDENTIAL)

N.T.S.

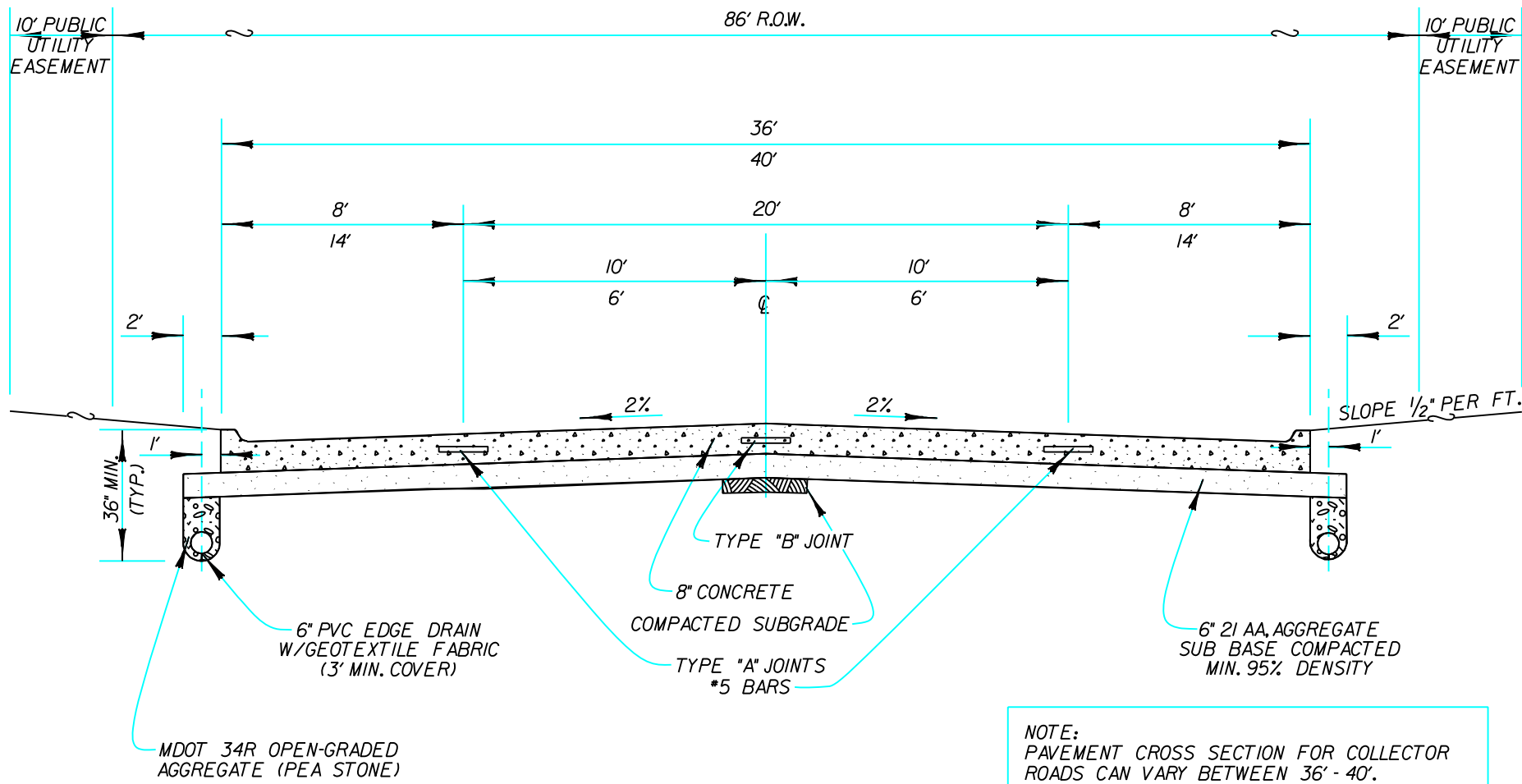


NOTE:  
PAVEMENT CROSS SECTION FOR INDUSTRIAL ROADS CAN VARY BETWEEN 36' - 40'.

NOTE:  
TRANSVERSE JOINTS @ 12' C-C ARE REQUIRED.  
\*IF USING ASPHALT PAVEMENT SECTION SEE FIG. 4-9

MACOMB COUNTY DEPARTMENT OF ROADS  
SUBDIVISION STANDARD PLAN  
FOR  
TYPICAL CROSS SECTION FOR  
CONCRETE PAVEMENT  
(INDUSTRIAL)  
N.T.S.

FIG. 4-3  
FIG 4-03.dgn 4/26/2011 11:53:25 AM

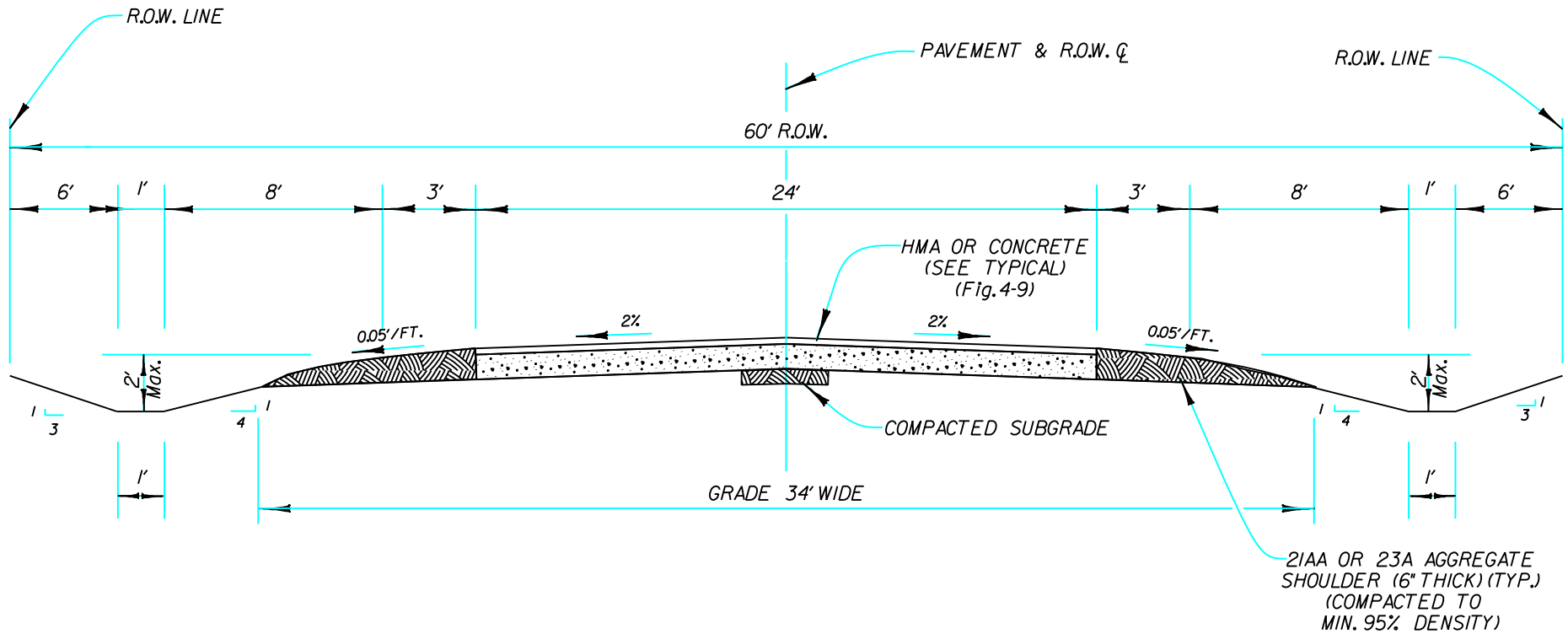


NOTE:  
PAVEMENT CROSS SECTION FOR COLLECTOR ROADS CAN VARY BETWEEN 36' - 40'.

NOTE:  
TRANSVERSE JOINTS @ 12' C-C ARE REQUIRED.  
\*IF USING ASPHALT PAVEMENT SECTION SEE FIG. 4-9

MACOMB COUNTY DEPARTMENT OF ROADS  
SUBDIVISION STANDARD PLAN  
FOR  
TYPICAL CROSS SECTION FOR  
CONCRETE PAVEMENT  
(COLLECTOR ROADS)  
N.T.S.

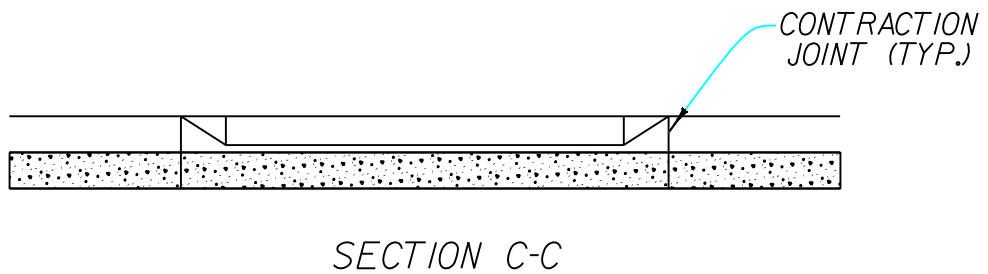
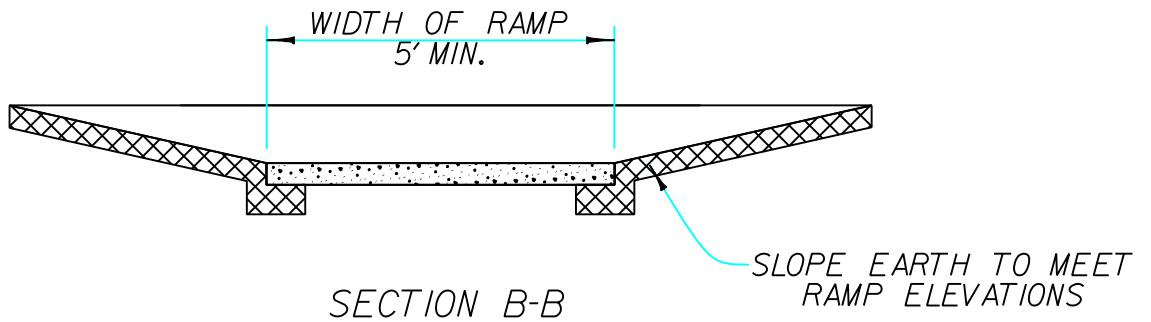
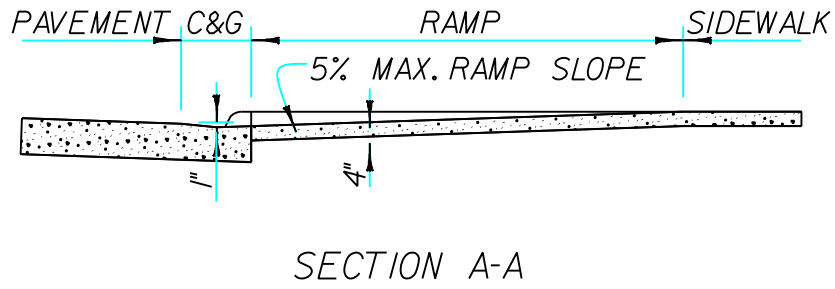
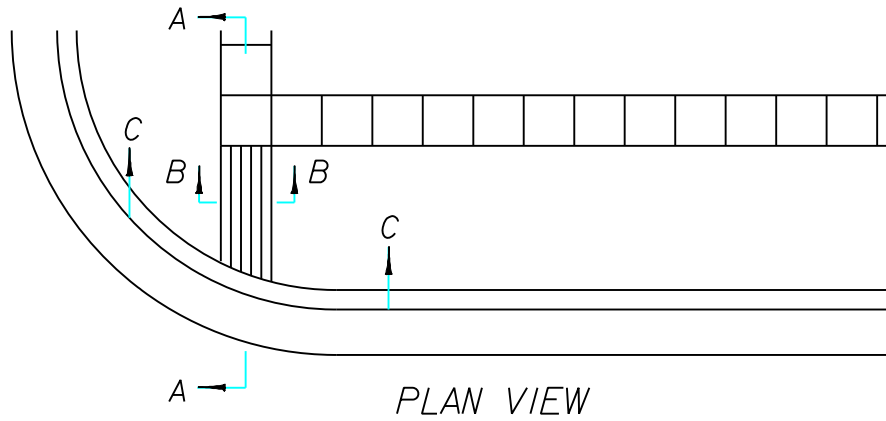
FIG. 4-4  
FIG 4-04.dgn 4/26/2011 11:56:28 AM



NOTE: FOR INDUSTRIAL SUBDIVISIONS, 32' WIDE PAVEMENT  
REQUIRED WITH 4' WIDE SHOULDERS (GRADE  
WIDTH = 40') (70' R.O.W. REQUIRED).

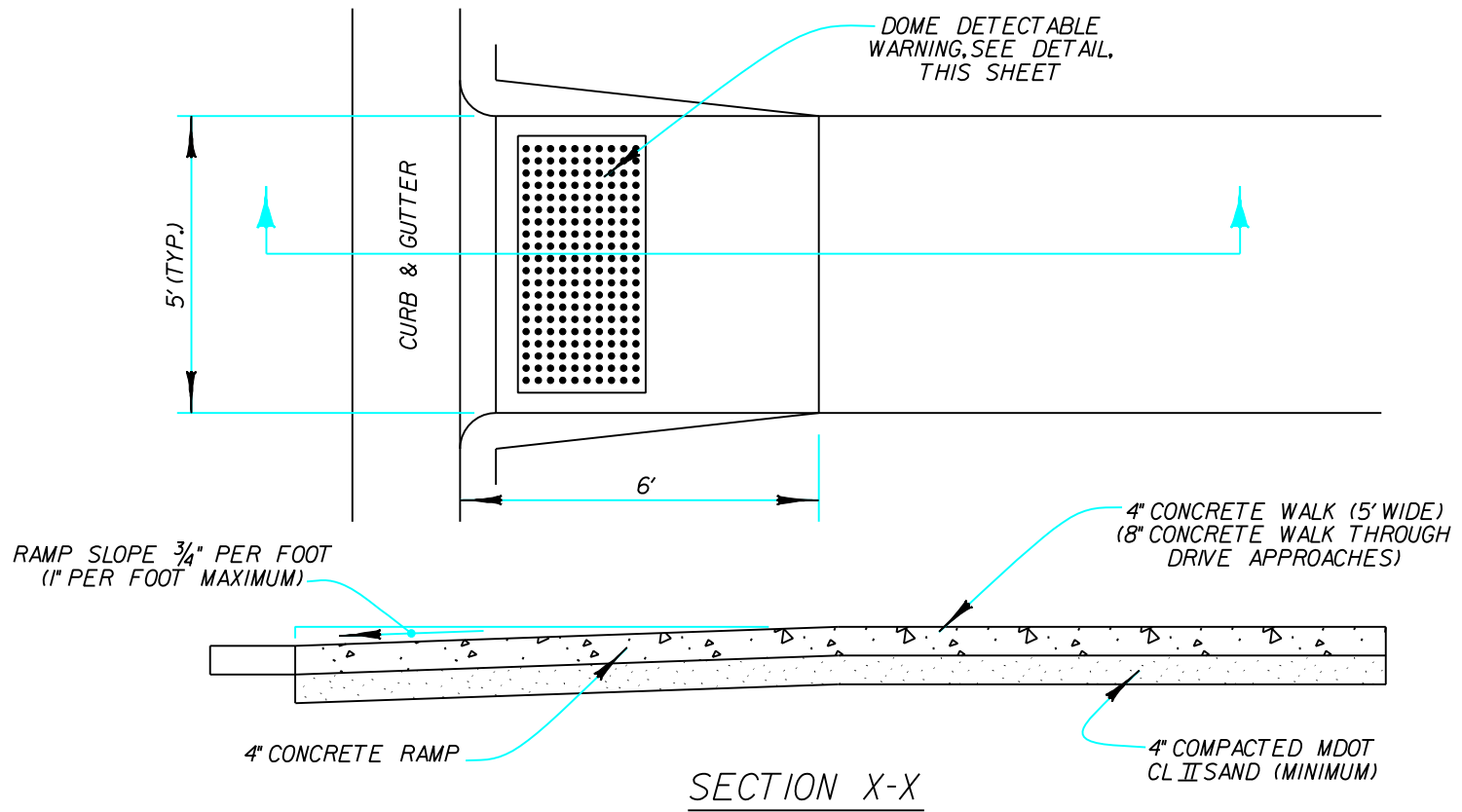
MACOMB COUNTY DEPARTMENT OF ROADS  
SUBDIVISION STANDARD PLAN  
FOR  
TYPICAL RESIDENTIAL ROAD  
CROSS SECTION FOR  
OPEN DITCH CONSTRUCTION  
N.T.S.

FIG. 4-5  
FIG 4-05.dgn 4/26/2011 11:58:16 AM

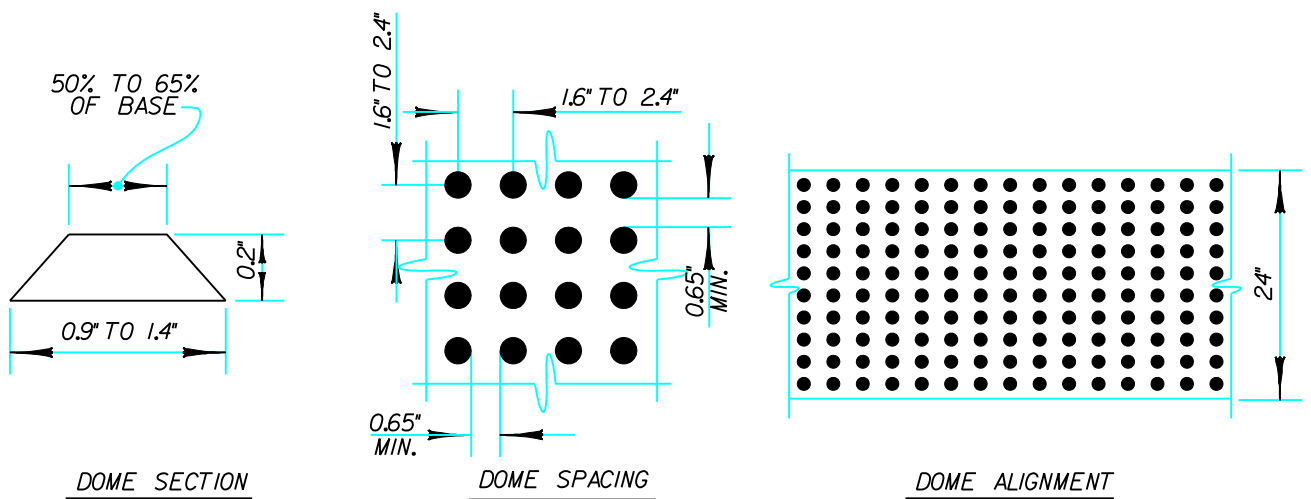


MACOMB COUNTY DEPARTMENT OF ROADS  
SUBDIVISION STANDARD PLAN  
FOR  
SIDEWALK RAMP DETAILS  
(PER ADA STANDARDS)  
N.T.S.

FIG. 4-6

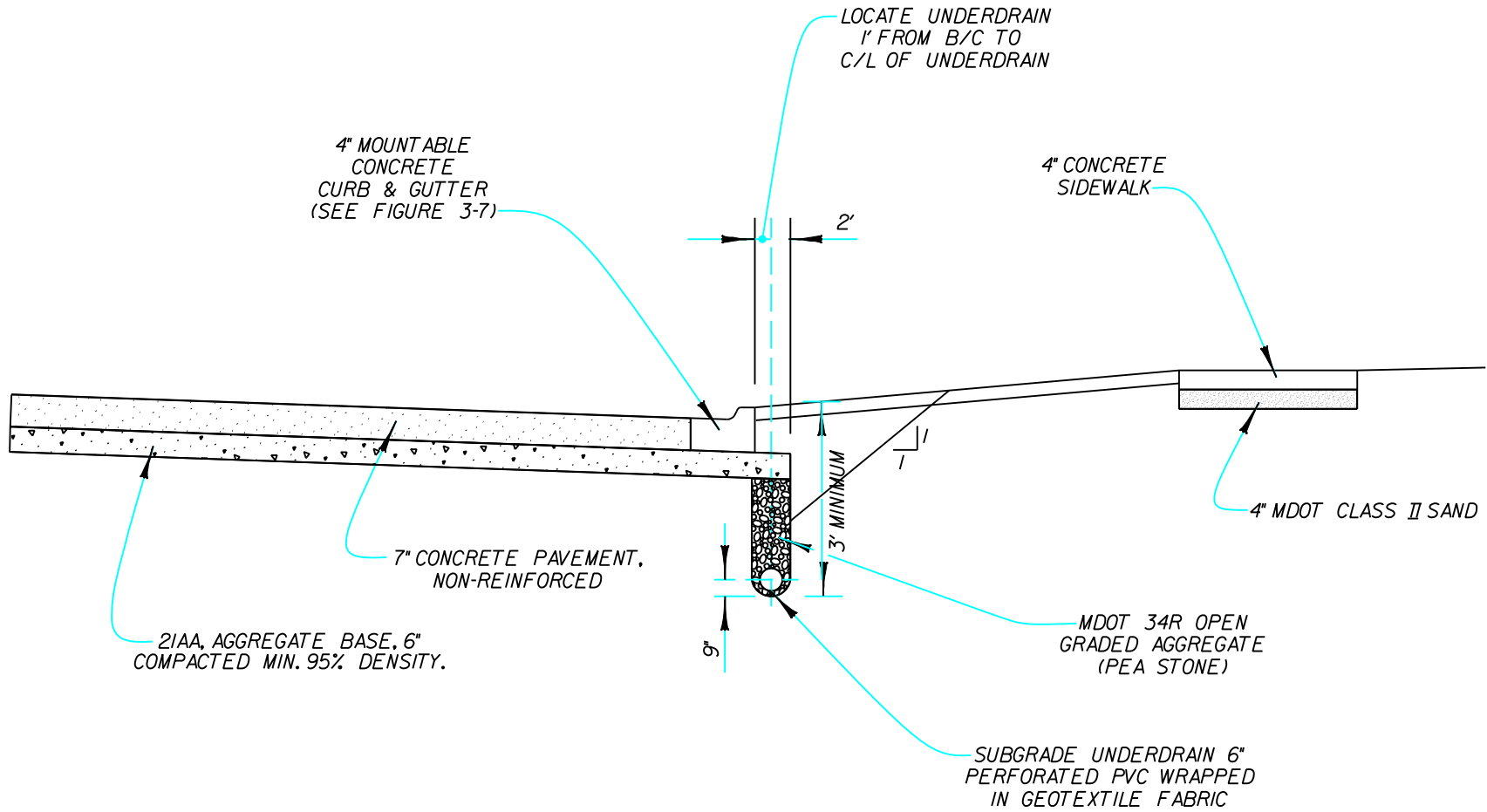


DETECTABLE WARNING DETAILS



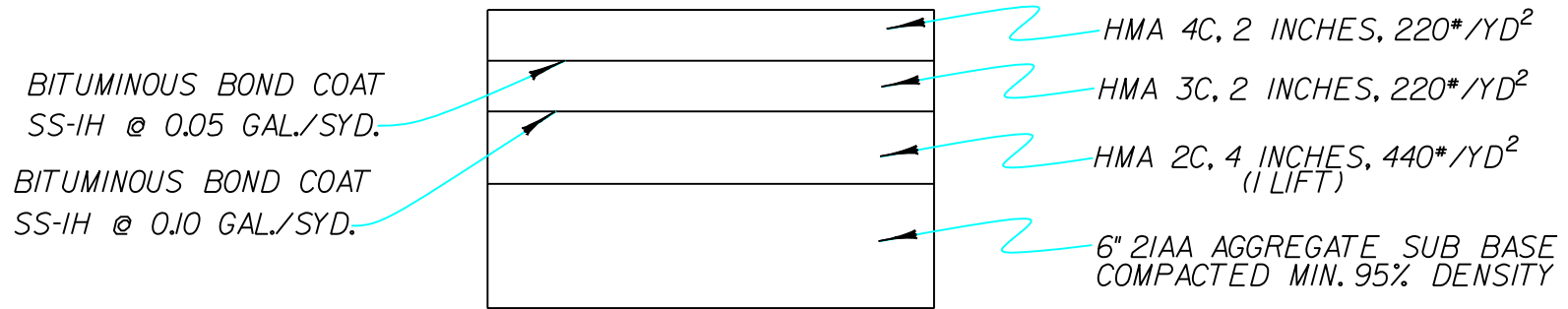
MACOMB COUNTY DEPARTMENT OF ROADS  
 SUBDIVISION STANDARD PLAN  
 FOR  
WHEEL CHAIR RAMP AND  
 TYPICAL SIDEWALK DETAIL  
 N.T.S.

FIG. 4-7  
 FIG 4-07.dgn 4/28/2011 11:44:50 AM

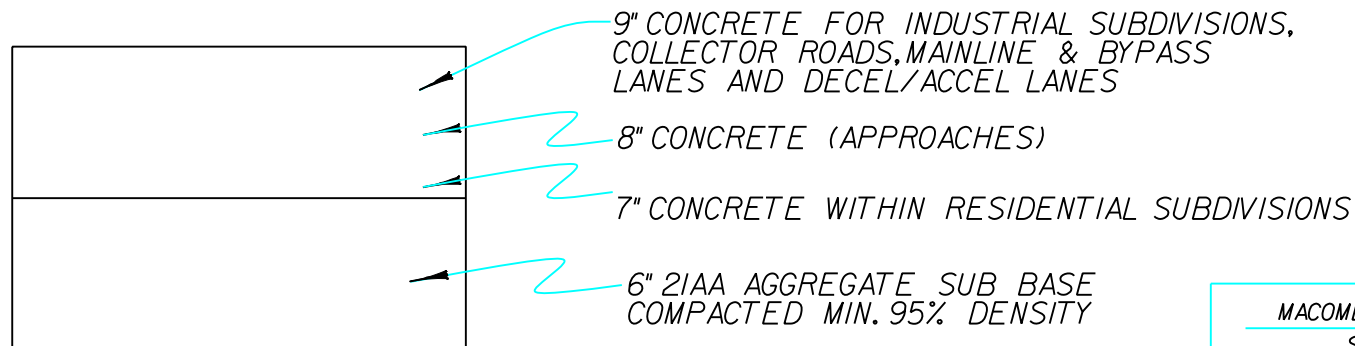


MACOMB COUNTY DEPARTMENT OF ROADS  
 SUBDIVISION STANDARD PLAN  
 FOR  
TYPICAL SUBGRADE  
 UNDERDRAIN FOR  
 SUBDIVISIONS  
 N.T.S.

FIG. 4-8  
 FIG 4-08.dgn 4/26/2011 12:01:08 PM



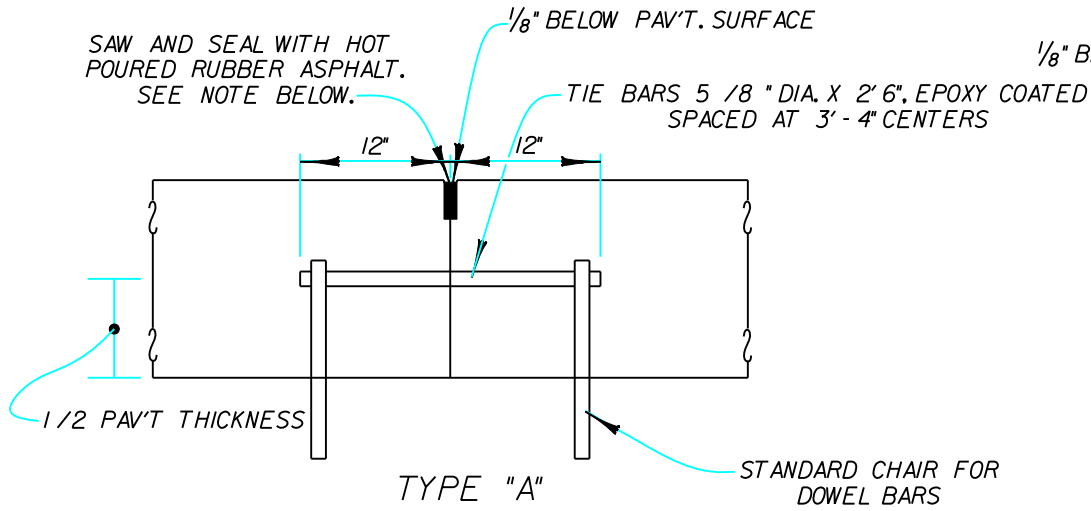
Current MDOT Standard Specifications shall apply  
Asphalt Binder PG 64-22  
Recycled Asphalt Product (R.A.P.) is NOT allowed in Wearing Course, 4C.  
As an alternative, the following Cross-Section can be used:



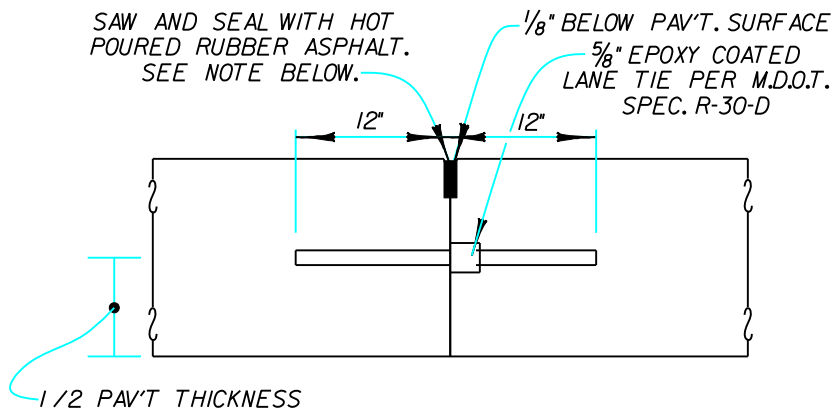
MACOMB COUNTY DEPARTMENT OF ROADS  
SUBDIVISION STANDARD PLAN  
FOR

PAVEMENT CROSS-SECTION  
DETAILS FOR ROADS  
AND APPROACHES  
N.T.S.

FIG. 4-9



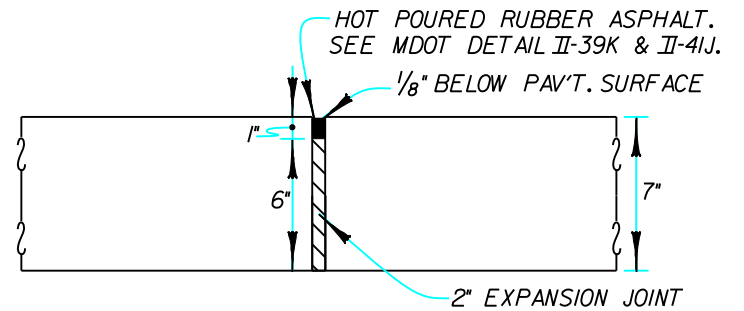
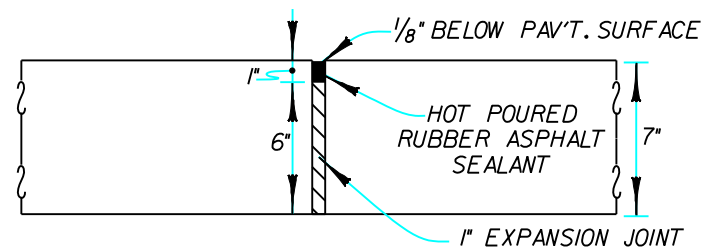
TYPE "A"  
LONGITUDINAL LANE TIE JOINT



TYPE "B"  
LONGITUDINAL BULKHEAD JOINT



TYPE "D"  
TRANSVERSE JOINT



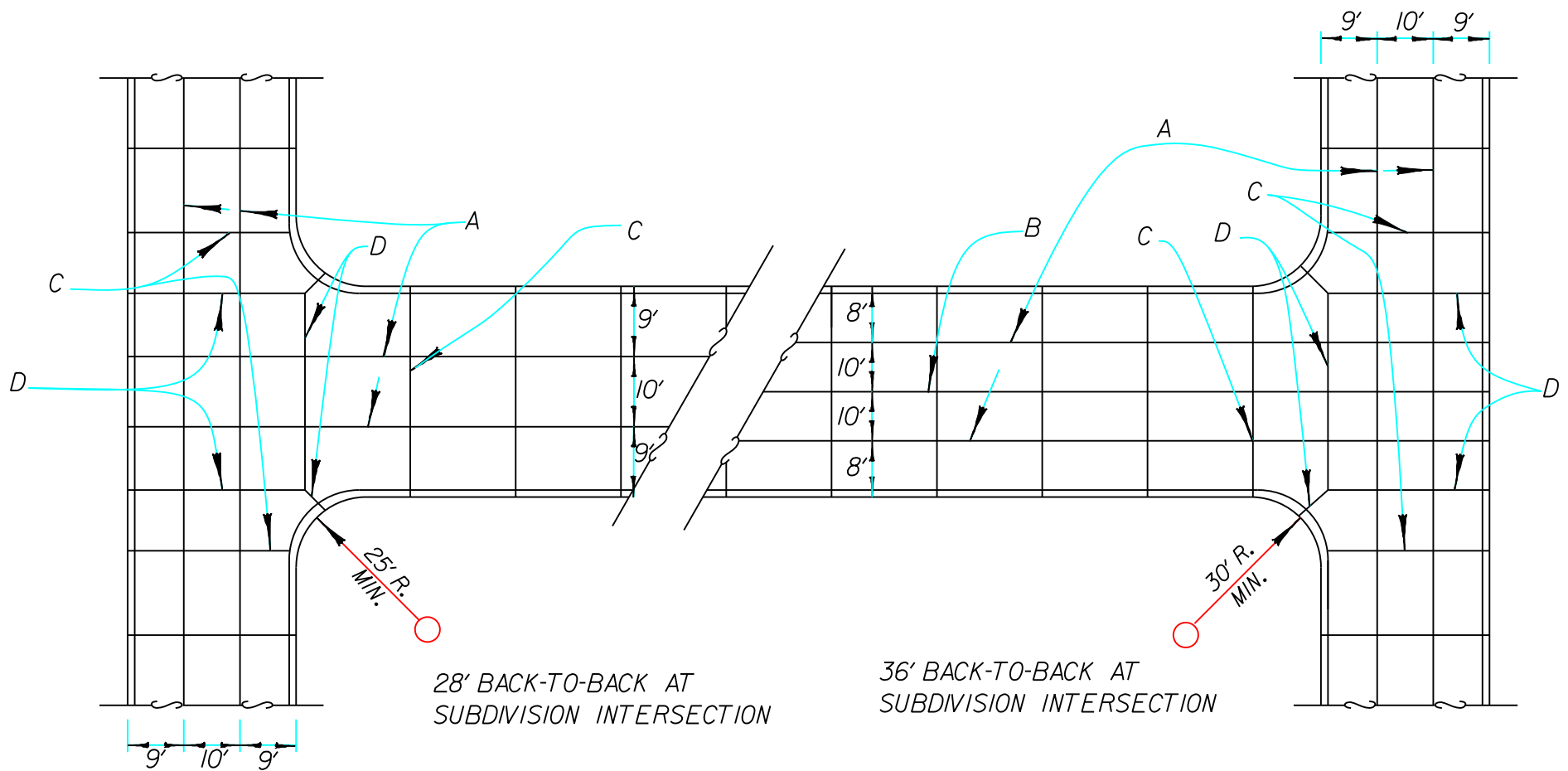
TYPE "C"  
TRANSVERSE EXPANSION JOINT

NOTE:  
ALL SAWED JOINTS SHALL HAVE A  $\frac{1}{4}$ " MIN. WIDTH BY  $\frac{1}{4}$ " OF SLAB  
THICKNESS (INCHES). USE HOT-POURED RUBBER-ASPHALT SEAL.

MACOMB COUNTY DEPARTMENT OF ROADS  
SUBDIVISION STANDARD PLAN  
FOR

TYPICAL CROSS-SECTION  
JOINT DETAIL

N.T.S.

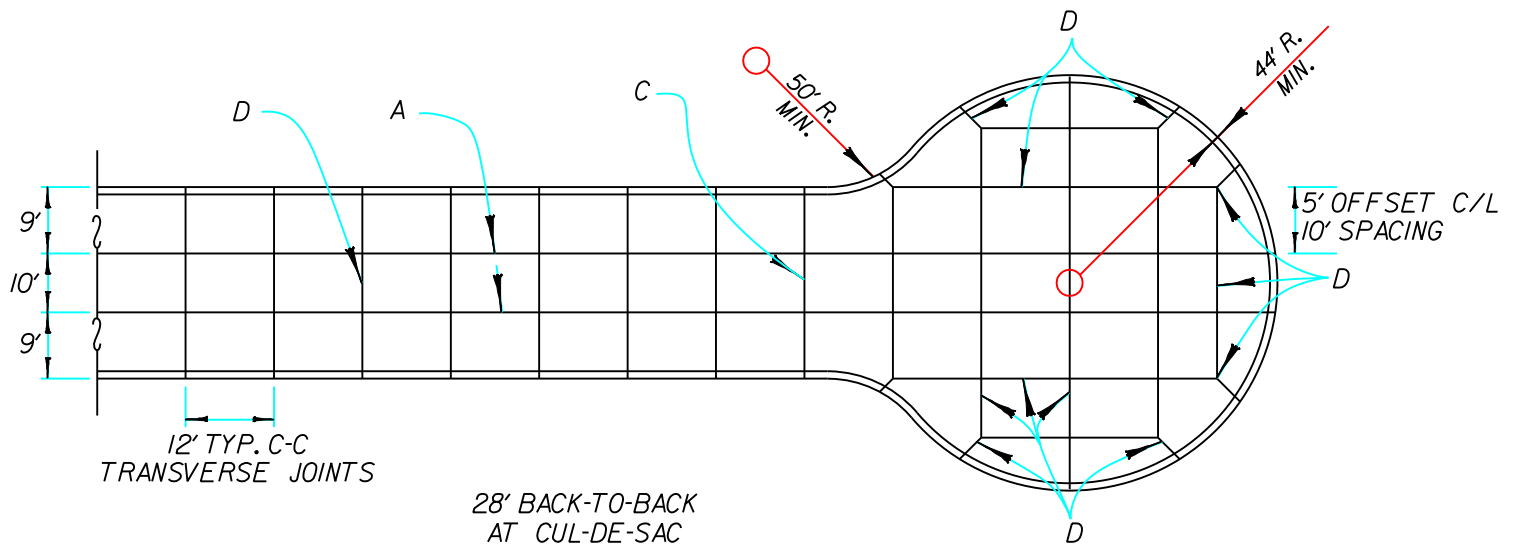
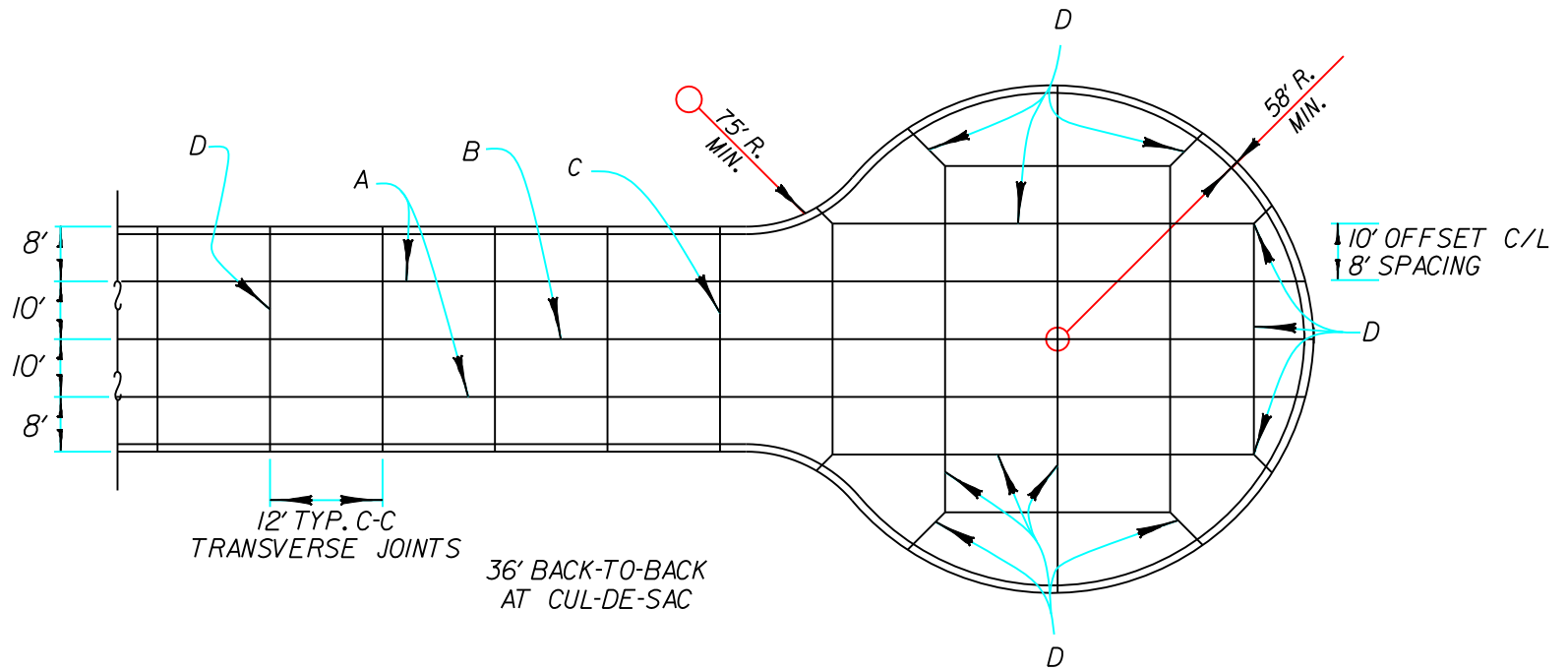


28' BACK-TO-BACK AT  
SUBDIVISION INTERSECTION

36' BACK-TO-BACK AT  
SUBDIVISION INTERSECTION

MACOMB COUNTY DEPARTMENT OF ROADS  
SUBDIVISION STANDARD PLAN  
FOR  
TYPICAL PLAN JOINT LOCATION  
FOR T-INTERSECTIONS  
N.T.S.

FIG. 4-11

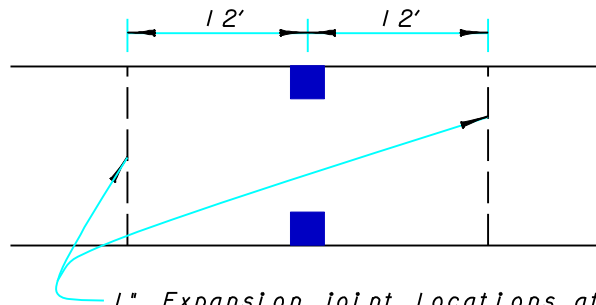


MACOMB COUNTY DEPARTMENT OF ROADS  
 SUBDIVISION STANDARD PLAN  
 FOR  
 TYPICAL PLAN JOINT LOCATION  
 FOR INDUSTRIAL & RESIDENTIAL  
 CUL-DE-SACS  
 N.T.S.

FIG. 4-11a

Expansion Joints are required at all intersection radii.

Catch basin structures act as restraint anchors resisting pavement expansion so expansion joints are located twelve (12') feet from the centerline of the catch basin to relieve the pressure resulting from the expansion within the block. Expansion joints are required at bridges, railroad tracks; and other fixed objects such as manhole structures in the pavements, at eyebrows, turnarounds and cul-de-sacs.



1" Expansion joint locations at catch basins.

Note: 300 ft. max. distance between 1" expansion joints.

Additional expansion joints will be required at the ends of the block depending on the length of the block and season, per the schedule shown below.

APRIL 15 THROUGH SEPTEMBER 15

AFTER SEPTEMBER 15 AND UNTIL APRIL 15

<u>Block Length (ft.)</u>	<u>Expansion Joints</u>
200	Radius points only
200-500	Add one to each end
500-800	Add two to each end
over 800	Add three at each end

<u>Block Length (ft.)</u>	<u>Expansion Joints</u>
160	Radius points only
160-370	Add one to each end
370-700	Add two to each end
over 700	Add three at each end

In addition, place expansion joints at the PC and PT or curves when the degree of curve is 230' or more.

On long blocks, place additional expansion joints intermediately to reduce the maximum spacing to less than 329 feet. Joints do not need to be at PC or PT during this season. When pouring in air temperature between 30 degrees, add one additional expansion joint for every 1000 feet stretch of pavement. When the air temperature at the time of placement is 30 degrees or less, place expansion joints every 164 feet.

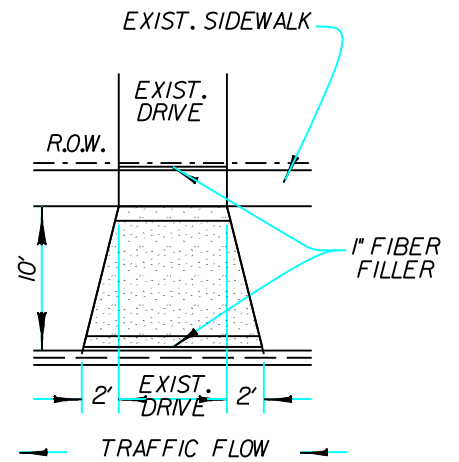
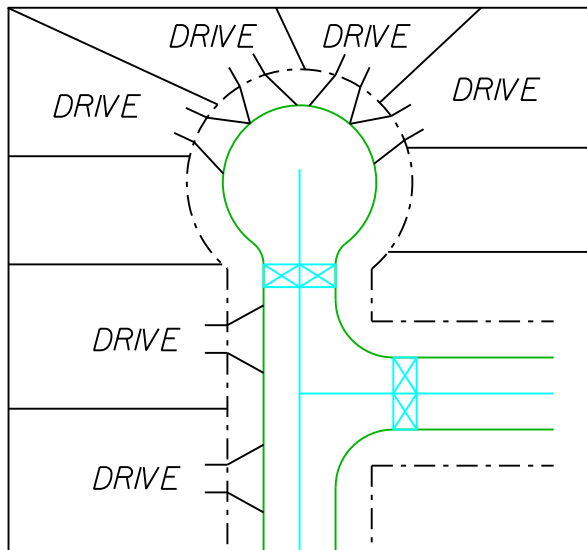
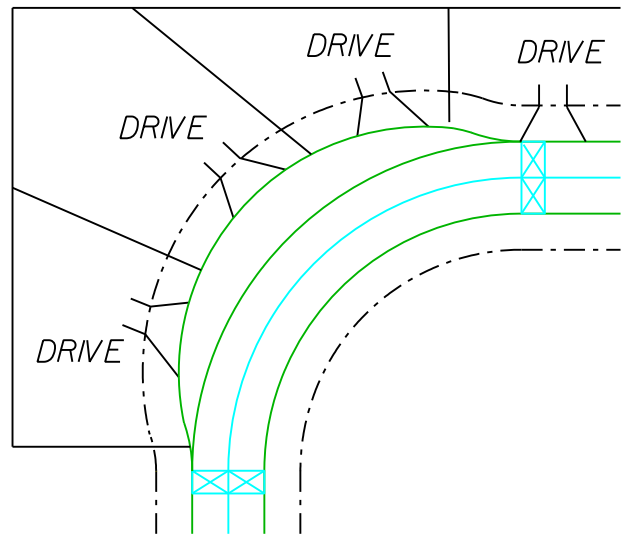
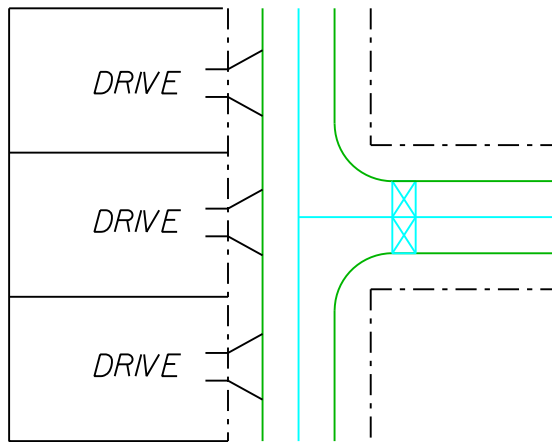
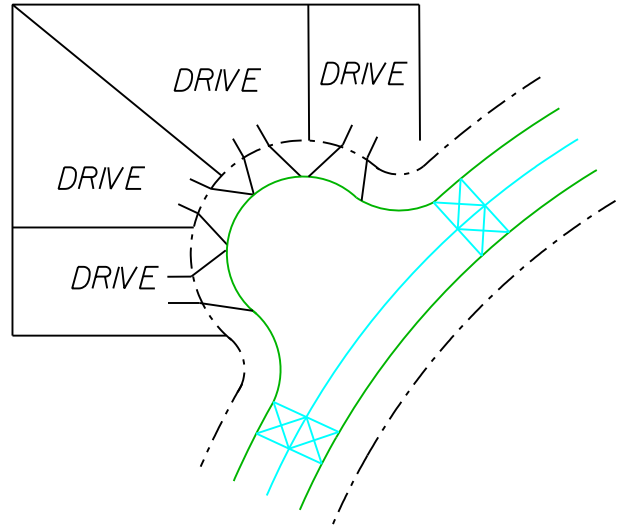
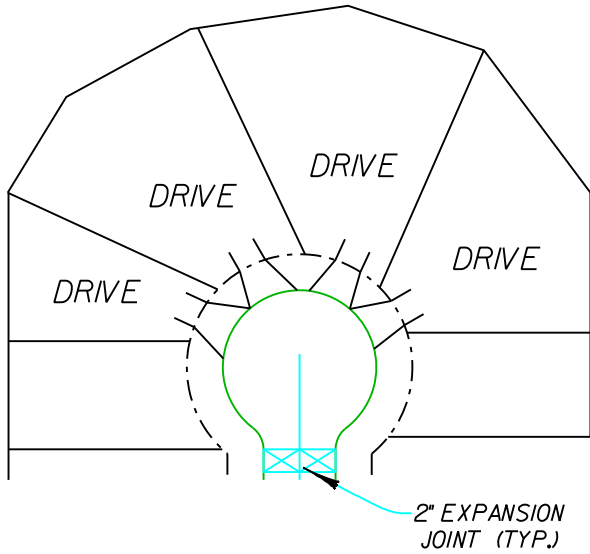
Expansion joints shall always be placed at 90 degrees to the centerline of the road. Plan of weakness joints will be sawed (Type D) at 200 foot spacing to act as contraction joints and to control cracking.

Expansion joints will be sawed 1 inch wide by 7, 8 or 9 inch deep and sealed.

\* Except where 2 inch expansion joints are noted. (See Fig. 4-13).

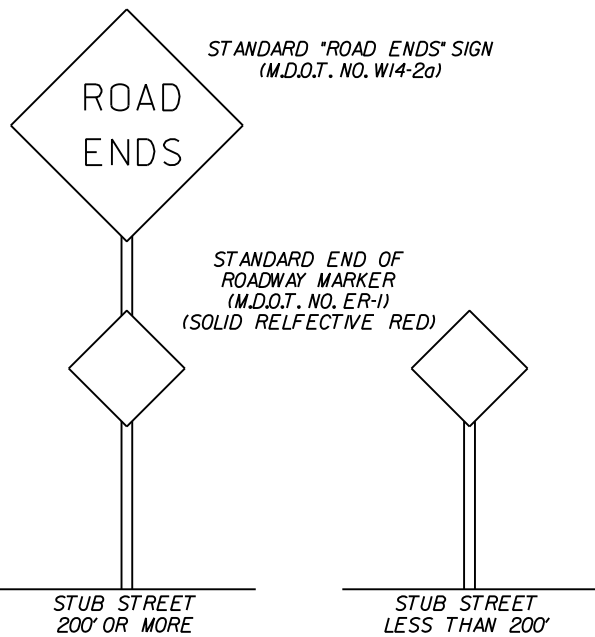
MACOMB COUNTY DEPARTMENT OF ROADS  
 SUBDIVISION STANDARD PLAN  
 FOR  
1" EXPANSION  
JOINT LOCATIONS  
 N.T.S.

FIG. 4-12



MACOMB COUNTY DEPARTMENT OF ROADS  
 SUBDIVISION STANDARD PLAN  
 FOR  
2" EXPANSION  
 JOINT LOCATIONS  
 FOR SUBDIVISIONS  
 N.T.S.

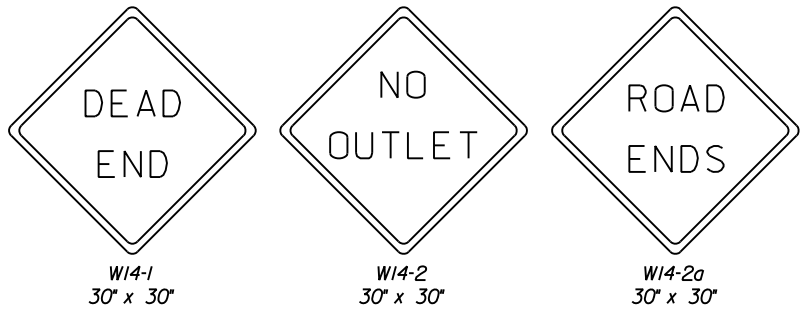
FIG. 4-13



STUB STREET  
END OF ROAD MARKINGS  
NOT TO SCALE

2C-38 DEAD END SIGNS (W14-1, W14-2, W14-2a)

The DEAD END sign (W14-1) and NO OUTLET sign (W14-2) are intended for use to warn of a street or road which has no outlet and which terminates in a dead end or cul-de-sac. The DEAD END plaque (W14-1P) and NO OUTLET plaque (W-14-2P) may be used in combination with the street name (D3) sign at intersections in lieu of or in addition to the W14-1 or W12-2 signs. The W14-1P and W14-2P signs shall not to be used in lieu of the W14-1 or W14-2 sign where traffic can proceed straight through the intersection into the dead-end street. When the W14-1 or W14-2 sign is used, the sign shall be posted a sufficient distance in advance of the intersection to permit the vehicle operator to avoid the dead end by turning off, if possible, at the nearest intersecting street. When signs or plaques are used; the number, type and location should be determined by an engineering study.



At the end of a roadway at which point there is no alternate vehicular path, a marker as outlined in Section 3C-4 may be erected. If desired, a ROAD ENDS sign (W14-2a) may be erected to supplement the End of Roadway Marker (ER-1).

MACOMB COUNTY DEPARTMENT OF ROADS  
SUBDIVISION STANDARD PLAN  
FOR

STANDARD "ROAD ENDS"  
TREATMENTS

APPENDIX B  
(Forms)

**PRELIMINARY PLAT REVIEW CHECKLIST**

**General Information**

- 1. Subdivision Name \_\_\_\_\_
- 2. Date \_\_\_\_\_
- 3. Township/City/Village, Section Number \_\_\_\_\_
- 4. Proprietor's Name, Address and Telephone Number \_\_\_\_\_  
(If Proprietor is a legal entity or corporation, identify the legal Entity and list the names of the corporate representatives)
- 5. Engineer's Name, Address and Telephone Number \_\_\_\_\_
- 6. Proper size drawing (24" x 36") \_\_\_\_\_
- 7. Scale – 1" = 100' (minimum) \_\_\_\_\_
- 8. North arrow towards top of sheet \_\_\_\_\_
- 9. Location map – 1" = 2,000' (minimum) \_\_\_\_\_
- 10. Title block at bottom of sheet \_\_\_\_\_
- 11. Date of drawing preparation \_\_\_\_\_
- 12. Revision date(s) \_\_\_\_\_
- 13. Name of preparer \_\_\_\_\_
- 14. Proper text size – minimum height of .10" \_\_\_\_\_
- 15. Boundaries shown \_\_\_\_\_
- 16. Legal Description \_\_\_\_\_
- 17. Certificate from the abstract company of ownership of property within the limits of the plat \_\_\_\_\_
- 18. Proposed street names \_\_\_\_\_
- 19. Area of the plat in acres \_\_\_\_\_
- 20. Phasing of development, if more than one phase \_\_\_\_\_
- 21. Lot layout and numbers \_\_\_\_\_
- 22. Building set-back lines, especially corner lots \_\_\_\_\_
- 23. Road right-of-way lines \_\_\_\_\_
- 24. All easements, existing and proposed \_\_\_\_\_
- 25. Designation of all land to be reserved or dedicated for public use \_\_\_\_\_
- 26. Existing subdivisions, assessor's plats, supervisor's plats shown with their recorded liber and page number \_\_\_\_\_
- 27. Plat signed and sealed by a Michigan registered Professional Engineer/Surveyor \_\_\_\_\_
- 28. Water supply, public or private \_\_\_\_\_
- 29. Type of sewage system \_\_\_\_\_

**Approval Dates**

- 1. Local Municipality (Tentative) \_\_\_\_\_
- 2. Macomb County Department of Roads \_\_\_\_\_
- 3. Local Municipality (Final) \_\_\_\_\_

**Topography**

- 1. Benchmarks (USGS) \_\_\_\_\_
- 2. Trees, wooded area, etc. \_\_\_\_\_
- 3. Contours (USGS Datum) \_\_\_\_\_
  - a. 5' intervals where slope is greater than 10% \_\_\_\_\_
  - b. 2' intervals where slope is 10% or less \_\_\_\_\_
  - c. 5' intervals for off-site drainage that is pertinent to proposed plat \_\_\_\_\_

4. Location of streams, lakes and swamps with directional drainage arrows and elevations \_\_\_\_\_
5. Location, width and names of all platted streets, railroad, military rights-of-way, public areas, permanent buildings or structures \_\_\_\_\_
6. Municipal corporation lines within or adjacent to the tract \_\_\_\_\_
7. Cemeteries \_\_\_\_\_
8. Parks \_\_\_\_\_
9. State and Federal Highways \_\_\_\_\_
10. Existing Private Roads \_\_\_\_\_
11. Wetland areas \_\_\_\_\_
12. Electrical transmission lines and towers \_\_\_\_\_
13. Gas and oil lines and pump stations \_\_\_\_\_
14. Existing water lines and pump stations \_\_\_\_\_
15. Existing sanitary sewers and pump stations \_\_\_\_\_
16. Radio and Television towers \_\_\_\_\_
17. Other pertinent factors \_\_\_\_\_

**Drainage**

1. Location map showing upstream watershed area contributing to the flow into the subdivision \_\_\_\_\_
2. Existing drainage course showing culverts, bridges and dams (private, township, county, other) \_\_\_\_\_
3. Mean surface elevation of lakes and streams \_\_\_\_\_
4. General drainage plan and outlet within the subdivision \_\_\_\_\_
5. Proposed/existing drainage easements on-site and off-site \_\_\_\_\_
6. 100-year Flood Plain Limits \_\_\_\_\_
7. On-site detention/retention plan, if applicable \_\_\_\_\_

**Roads**

1. Proposed rights-of-way in accordance with MCDOR standards \_\_\_\_\_
2. Road alignment data \_\_\_\_\_
3. Typical road cross-sections \_\_\_\_\_
4. Proposed utility locations in conformance with MCDOR Standards \_\_\_\_\_
5. Layout of streets, alleys and public crosswalks, if any, with width notes, and cross-sections (Street layout is subject to approval of MCDOR) \_\_\_\_\_
6. Sight distance information at entrance to existing main road \_\_\_\_\_
7. Connections to existing roads \_\_\_\_\_
8. Stubs to plat limits for extension to adjoining undeveloped areas \_\_\_\_\_
9. Treatment of dead end streets with permanent cul-de-sacs or temporary turnarounds \_\_\_\_\_
10. Soil types per Soil Conservation Service Maps \_\_\_\_\_

**ENGINEERING PLAN REVIEW CHECKLIST**

Date \_\_\_\_\_

**Subdivision Information**

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

Section # \_\_\_\_\_ City/Twp/Village \_\_\_\_\_

**Engineer's Information**

Engineer's Name \_\_\_\_\_

Engineer's Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Telephone # \_\_\_\_\_ Fax # \_\_\_\_\_

**Proprietor's Information**

Proprietor's Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Telephone # \_\_\_\_\_ Fax # \_\_\_\_\_

Note: If the Proprietor is a legal entity or corporation, identify the legal entity and list the names of the corporate representatives.

**General Information**

- 1. Cover Sheet (signed and sealed by a Michigan Registered Professional Engineer) \_\_\_\_\_
- 2. Typical Cross-Section Quantity Sheet and General Notes \_\_\_\_\_
- 3. Overall Utility Sheet \_\_\_\_\_
- 4. Existing Topography Sheet \_\_\_\_\_
- 5. Sanitary Sewer and Watermain Plan and Profile \_\_\_\_\_
- 6. Storm Sewer Plan and Profile \_\_\_\_\_
- 7. Offsite Drainage Plan and Profile \_\_\_\_\_
- 8. Paving Plan and Profile \_\_\_\_\_
- 9. Storm Sewer Drainage Area, Storm Sewer Design Calculations \_\_\_\_\_
- 10. Approach an Intersection Detail Sheet (1" = 20') \_\_\_\_\_
- 11. Grading Plan \_\_\_\_\_
- 12. Pavement Details Sheet \_\_\_\_\_
- 13. Drawing on proper sheet size (24" x 36") \_\_\_\_\_
- 14. Plan date/revision date \_\_\_\_\_
- 15. North arrow towards top of sheet \_\_\_\_\_
- 16. Permanent B.M. Elevations (USGS Datum) \_\_\_\_\_
- 17. Title block in lower right hand corner of plans \_\_\_\_\_
- 18. Contours
  - a. 5' intervals where slope is greater than 10% \_\_\_\_\_
  - b. 2' intervals where slope is 10% or less \_\_\_\_\_
  - c. 5' intervals for offsite drainage area \_\_\_\_\_
- 19. Topography \_\_\_\_\_
- 20. Street Names \_\_\_\_\_
- 21. Lot Layout and Numbering \_\_\_\_\_
- 22. Phasing of Development \_\_\_\_\_
- 23. Legal Description of proposed Subdivision \_\_\_\_\_

**Drainage**

(Note – Storm sewer draining pavements must be located in the road right-of-way)

- 1. Existing drainage courses and structures \_\_\_\_\_
- 2. Design surface elevation of lakes and streams (including storm sewer outlets) \_\_\_\_\_
- 3. Drainage plan layout (show watershed area to each structure, including off-site area entrance points) \_\_\_\_\_
- 4. Retention/Detention Basin along with calculations, if applicable \_\_\_\_\_
- 5. Easements \_\_\_\_\_
  - a. Off-site \_\_\_\_\_ (width) \_\_\_\_\_
  - b. On-site \_\_\_\_\_ (width) \_\_\_\_\_
- 6. Ditch cross-section(s) \_\_\_\_\_
  - a. Profile minimum grade of 0.20% \_\_\_\_\_
  - b. Slope protection \_\_\_\_\_
- 7. Culverts size (12" minimum) \_\_\_\_\_
  - a. Inverts \_\_\_\_\_
- 8. MDOT designation of structure covers \_\_\_\_\_
- 9. Proper catch basin spacing \_\_\_\_\_
- 10. Proper manhole spacing \_\_\_\_\_
- 11. Plan and profile of storm sewers showing watermain crossings, sanitary and other utility clearances (minimum 1.5' of vertical clearance between utilities) \_\_\_\_\_
- 12. Hydraulic gradients of storm sewers shown on profiles \_\_\_\_\_
- 13. Clean-out profile of existing off-site drainage ditches \_\_\_\_\_
- 14. Maintenance jurisdiction of off-site drains (Macomb County Public Works, Township, MCDOR, City, Private or Other) \_\_\_\_\_
- 15. Macomb County Public Works approval of county drain connection \_\_\_\_\_
- 16. Compacted sand trench backfill under and within 3' of pavement \_\_\_\_\_
- 17. 6" PVC edge drain along both sides of back of curb (located 1' from back of curb to centerline of edge drain). Drop inverts 0.1' at sewer size changes or 90° turns. Keep hydraulic gradient at least 1' below the profile's finish grade. \_\_\_\_\_
- 18. Storm sewer structures (manholes and catch basins) minimum of 4' diameter \_\_\_\_\_
- 19. Sufficient slope to obtain at least 2.5 FPS velocity \_\_\_\_\_
- 20. Size, slope, type of pipe, sewer inverts and rim elevations at all storm structures \_\_\_\_\_
- 21. Structure spacing \_\_\_\_\_
  - a. 300' maximum spacing for catch basins/manholes with pipe diameter of 30" or less \_\_\_\_\_
  - b. 500' maximum spacing for catch basins/manholes with pipe diameter of 36" or greater \_\_\_\_\_

**Paving and Grading**

- 1. Topographic Survey Plan (show existing ground contour lines) \_\_\_\_\_
- 2. Off-site elevations (100' beyond each property line) \_\_\_\_\_
- 3. Pavement cross-sections shown per MCDOR standards \_\_\_\_\_
- 4. Curb detail shown per MCDOR standards. Asphalt curbs not allowed. \_\_\_\_\_
- 5. Proposed elevations in boxes \_\_\_\_\_
- 6. Minimum of .30' drop around curb returns \_\_\_\_\_
- 7. Show top of curb and gutter elevations \_\_\_\_\_

- 8. Sidewalks
  - a. Along existing public rights-of-way \_\_\_\_\_
  - b. Along both sides of all proposed rights-of-way \_\_\_\_\_
  - c. Within a site, as necessary \_\_\_\_\_
  - d. Cross-section shown – 4" concrete minimum  
(8" concrete at drive crossings) \_\_\_\_\_
- 9. On-site and off-site pavement quantities (i.e., LF curb, pavement area, sidewalk area, etc.) shown on plan \_\_\_\_\_
- 10. Proposed pavement drainage slopes (longitudinal slopes and cross-slopes) \_\_\_\_\_
- 11. Adequate handicap access per ADA standards \_\_\_\_\_

**Roads**

- 1. Proposed right-of-way width \_\_\_\_\_
- 2. Road alignment (survey data) horizontal curve data \_\_\_\_\_
- 3. Intersection alignment \_\_\_\_\_
- 4. Turnarounds for temporary and permanent cul-de-sac details (1" = 20') \_\_\_\_\_
- 5. Plan and profile elevations and grades (including existing ground elevations) \_\_\_\_\_
- 6. Curb return elevations and radii \_\_\_\_\_
- 7. Provide vertical curve data, if grade change exceeds 2% \_\_\_\_\_
- 8. Provide intersection, eyebrow and cul-de-sac details (1" = 20') (elevations, dimensions and drainage scheme) \_\_\_\_\_
- 9. Cul-de-sacs – maximum length 800' \_\_\_\_\_
- 10. Provide road profiles for all proposed subdivision roads \_\_\_\_\_
- 11. Show centerline curve data \_\_\_\_\_
- 12. Show stationing left to right \_\_\_\_\_
- 13. Adequate sight distance \_\_\_\_\_
- 14. Soil boring data (400' maximum spacing and 10' below proposed grade or existing ground, whichever is deeper, to be shown on plan and profile sheets), if applicable \_\_\_\_\_
- 15. Deceleration/acceleration lane(s), taper(s), by-pass lane(s) \_\_\_\_\_
- 16. Pavement cross-section(s) indicated \_\_\_\_\_
- 17. Concrete end headers at end of stub streets \_\_\_\_\_
- 18. Standard "road ends" treatment at end of stub streets \_\_\_\_\_
- 19. Steel beam guardrail per MDOT Standards, if applicable \_\_\_\_\_

**ENGINEER'S CERTIFICATION LETTER**

Macomb County Department of Roads  
117 South Groesbeck Highway  
Mt. Clemens, MI 48043

Attention: Director of Permits and Local Roads Department

Ladies and Gentlemen:

RE: \_\_\_\_\_, Section \_\_\_\_, \_\_\_\_\_ Township

I hereby certify that all roads and road drainage improvements within \_\_\_\_\_  
\_\_\_\_\_ are complete and in accordance with the vertical and  
horizontal alignments as shown on the approved plans and specifications as filed  
with the Macomb County Department of Roads, and that all monuments as  
shown on the plat are in place and were in good condition at the time of  
placement or that proper requirements in accordance with Section 125 of the  
Subdivision Control Act of 1967 have been provided for.

\_\_\_\_\_  
Proprietor's Engineer/Surveyor

Professional Seal of a Michigan  
Registered Civil Engineer/Land Surveyor