

*Procedures, Guidelines, and Specifications
for
Developing New Public Roads*



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Adopted: March 3, 2006

POLICY

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PROCEDURES, GUIDELINES, AND SPECIFICATIONS FOR DEVELOPING NEW PUBLIC ROADS

WHEREAS, the Board of County Road Commissioners of the County of Kalamazoo, Michigan, deems it necessary to adopt procedures, guidelines and specifications relative to the construction of highways and appurtenant structures coming under our jurisdiction; and

WHEREAS, such procedures, guidelines, and specifications function to provide rules, regulations, and assistance to land developers and others to ensure that public highways, dedicated for public use, are constructed with approved materials and by appropriate methods,

NOW, THEREFORE, BE IT RESOLVED, that the PROCEDURES, GUIDELINES AND SPECIFICATIONS FOR DEVELOPING NEW PUBLIC ROADS, as filed with us on this date, by and the same, are hereby adopted as administrative rules and regulations governing the development of public roads and the same shall be known and cited as our PROCEDURES, GUIDELINES AND SPECIFICATIONS FOR DEVELOPING NEW PUBLIC ROADS,

BE IT FURTHER RESOLVED, that in the event other previous resolutions or parts of previous resolutions conflict with this resolution adopting the aforesaid PROCEDURES, GUIDELINES AND SPECIFICATIONS FOR DEVELOPING NEW PUBLIC ROADS, such resolutions, or parts thereof, only to the extent of conflict, are hereby repealed.

BE IT FURTHER RESOLVED, that if any section, clause, or portion of the aforesaid PROCEDURES, GUIDELINES AND SPECIFICATIONS FOR DEVELOPING NEW PUBLIC ROADS be declared invalid by the courts, the balance of same shall remain valid and in effect, except for the part declared invalid.

BE IT FURTHER RESOLVED that the effective date of the aforesaid PROCEDURES GUIDELINES AND SPECIFICATIONS FOR DEVELOPING NEW PUBLIC ROADS shall be March 3, 2006.

BOARD OF COUNTY ROAD COMMISSIONERS
OF KALAMAZOO COUNTY

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***Procedures, Guidelines and Specifications
For
Developing New Public Roads***

I. PURPOSE AND SCOPE

These procedures, guidelines and specifications for developing new public roads in Kalamazoo County are the published rules adopted by the Board of County Road Commissioners of Kalamazoo County (Board) to carry out the provisions of the Land Division Act, Act 288 of 1967, as amended, MCL 560.101 et seq. These rules promote public safety, health and general welfare and enhance the opportunity for future interconnecting development. These procedures, guidelines and specifications apply only to lands located outside the corporate limits of any incorporated city or village in Kalamazoo County and to lands within incorporated areas, when such lands are adjacent to public highways under the jurisdiction of the Kalamazoo County Road Commission (KCRC).

The contents of this publication do not supersede any part of the Land Division Act, Act 288, Public Acts of 1967, as amended.

II. VARIANCE CLAUSE

A variance from these procedures, guidelines and specifications may be requested. A variance request must be submitted to the County Engineer for approval prior to preliminary or construction plan approval. The request must be submitted in writing and must state the reasons why the variance should be granted. Although instances may arise that requests for a variance may be submitted after the plan approval, in such instances the plans must be resubmitted with the approved revisions.

Appeal of Staff Variance Decision

If the County Engineer does not grant the request for a variance, that decision may be appealed to the Board. A variance will be allowed by the Board only in cases involving practical difficulties or unnecessary hardship and when the record on the appeal to the Board supports the following affirmative findings.

- A. The hardship or difficulties, or both, are exceptional or peculiar to a given site.
- B. The Board's failure to grant the variance will result in substantially more than an inconvenience or an inability to attain a higher financial return or both.
- C. Allowing the variance will result in substantial justice being done, considering the benefit to the public and the individual hardships that will be suffered by a failure of the Board to grant the variance.
- D. The conditions and circumstances, which are the basis of the variance request, must not be self-imposed.

If a variance has been granted and the construction authorized with the variance has not commenced within one year from the date of its approval, the grant of the variance will be automatically withdrawn.

III. DEFINITIONS

AASHTO The American Association of State Highways and Transportation Officials. AASHTO guidelines are included in the current edition of "A Policy of Geometric Design of Highways and Streets and Standard Specifications for Highway Bridges."

All-Season Road A local or primary road constructed to a standard that will not require seasonal weight restrictions.

Board Board of County Road Commissioners of Kalamazoo County.

Best Management Practices Generally accepted measures for Soil Erosion and Sedimentation Control.

CAD Computer-Aided-Design.

CIP Compacted in place.

County Engineer The Chief Engineer of the Kalamazoo County Road Commission or the Managing Director, if authorized by the Board, or his or her authorized representative.

Commercial Development The name given to primary roads or a development with streets and lots designed primarily for multi-family residential, industrial, commercial and/or warehouse operation.

Cul-de-sac Street A street open at one end only, with special provisions for turning around.

Highway, Street, or Road General terms denoting a public way for purposes associated with travel, including the entire area within the right-of-way.

HMA Hot Mix Asphalt.

KCDC The Kalamazoo County Drain Commissioner and/or the Drain Commissioner's Office.

KCRC The Kalamazoo County Road Commission.

Local Road A road or street that is designated as a local road or street by the KCRC Board.

MDEQ The Michigan Department of Environmental Quality.

MDOT The Michigan Department of Transportation. MDOT specifications are as found in the Department's most current edition of "Standard Specifications for Construction."

MMUTCD The Michigan Manual of Uniform Traffic Control Devices.

Primary Road A road or street that is certified as a part of the Primary County Road system.

Proprietor A person, firm, association, partnership, corporation or combination that may hold any ownership interest in land, whether recorded or not, or as defined by law.

Public Road An easement or right-of-way which has been dedicated for use of the public and accepted into the County Road System by the Board.

Residential Development The name given to a development with streets and lots designed primarily for individual single-family dwellings.

Secondary Roads All through streets or roads certified as Local County Roads, other than roads within a residential development.

USGS United States Geological Survey.

Woody Vegetation All woody plant growth such as volunteer trees, low-hanging limbs, shrubs, and stump growth.

IV. ORDER OF PROCEDURE

- A. Following is the sequence to be used by the Proprietor in the developing of lands, which are intended to be incorporated into the KCRC Road System.
1. Hold a preapplication review meeting, as outlined in section 111 of the Land Division Act 288 of 1967, as amended (MCL 560.111), if desired by the Proprietor.
 2. Submit preliminary plans to the County Engineer for approval.
 3. Submit road and drainage construction plans to the County Engineer for approval.
 4. Construct streets and drainage systems per approved plans.
 5. Submit required documentation for final acceptance and approval.
- B. Details for preparing projects are supplied in subsequent sections. To aid in submitting this material, checklists of Procedures, Guidelines and Specifications for Developing New Public Roads are provided in Appendix B, beginning on Page 33.

V. PRELIMINARY REQUIREMENTS AND PLAN DEVELOPMENT

- A. Two copies of the preliminary plans must be submitted and approved by the KCRC before construction plans are submitted. Preliminary plans must be prepared, signed and sealed by a Registered Land Surveyor or Professional Engineer registered in the State of Michigan. The plans must be drawn on 24" x 36" sheets to a scale not less than 1"=100' horizontal, 1"=10' vertical.

A letter of transmittal introducing the proposed development and indicating the action requested by the KCRC must accompany the plans. A plan review fee, in accordance with KCRC schedule of permit and inspection fees, must be paid at time of plan submission. Within 30 days after the date of receipt, a letter will be returned indicating approval or rejection. No verbal approvals will be given. If the plans are rejected, the KCRC will include its reasons within the letter. The approval or rejection letter will be sent to the individual whose name appears on the letter of transmittal.

- B. Preliminary plans must indicate the name of the proposed development and must include a situation sketch that shows the relationship of the proposed development to the existing county roads.
- C. Preliminary plans must show the complete proposed street system layout and right-of-way. The street system must provide a continuous circuit, without excessive street curvature, and must continue the appropriate existing public streets terminating at the

development's boundaries. The street system must provide for a logical continuation of streets beyond the development by extending the proposed streets to the development boundaries. When a request is made to not extend a street to the development's boundaries, consideration will be given when the township planning commission and the township board endorse the request.

Permanent cul-de-sacs will be allowed where it is demonstrated that a street connection is not feasible due to site conditions, such as severe grade transitions or sensitive natural features, or other existing development will not allow for a continuous road system, or when endorsed by the township planning commission and township board. Written justification must accompany all cul-de-sac requests. That justification can be either the township's endorsement, or the unique site conditions.

A boulevard section may be permitted and must provide a minimum 100' right-of-way width for residential development roads, and a minimum 120' right-of-way width for commercial development roads. A boulevard median must be at least 75' in length. Sufficient taper of the right-of-way width, in accordance with design speed, must be provided adjacent to a boulevard section. The minimum cross-section requirements are shown in Appendix A, Figure VI and VII, pages 25 and 26.

A hold-harmless agreement to the KCRC and a maintenance agreement must be provided, assuring permanent maintenance of landscaping or other items in a boulevard. Permission for a development identification sign, flagpole, or similar encroachment in a boulevard median must be incorporated into the hold-harmless agreement. Median plantings should be selected on their ability to thrive in a roadside environment and be specified in the maintenance and hold-harmless agreement.

- D. The preliminary layout must show the entire parcel from which the proposed development is to be taken, and must be tied down to section and/or 1/4-section posts using bearings and distances. The owners of unplatted land within 300' of the proposed development boundaries must be identified, along with the parcel number where applicable. Land use zoning for all abutting parcels must be shown. Streets, streams, lakes, railroads, cemeteries, county drains and any other features that may govern or influence the development must be included on the plans. Using USGS datum, relief will be indicated at not more than 4' contour intervals. To assure sufficient sight distance requirements, the centerline profile of an intersected county road must be shown for a minimum distance of 600' in both directions from the proposed centerline. Section and 1/4-section line roads must be centered on the section line or 1/4 section line.

If a proprietor wishes to subdivide a given area, but desires to begin with only a portion of the total area, the preliminary layout plans must include the proposed overall layout for the entire area. The part proposed to be subdivided first must be clearly superimposed upon the overall plan in order to illustrate the method of development that the proprietor intends to follow.

- E. The proposed road network must be properly drained by a storm-sewer system. Design and development of the storm-sewer system must be in coordination with both the KCRC and the KCDC, where applicable. The KCRC will accept and maintain all storm-sewer facilities properly designed and constructed within the road right-of-way.

The KCDC may accept responsibility for maintenance of the storm-sewer and appurtenances located outside the road right-of-way. A copy of the "Rules of the Kalamazoo County Drain Commissioner for Stormwater Management" may be obtained at the office of the KCDC.

- F. Required minimum widths for road right-of-way are as follows:
- | | |
|---|------|
| Residential development roads | 66' |
| Residential development roads — Boulevard | 100' |
| Commercial development roads | 66' |
| Commercial development roads — Boulevard | 120' |
| Primary roads | 100' |
| Secondary roads | 100' |

In special cases, the KCRC may require greater widths and/or an intersection corner triangle right-of-way, which may be used for clear-vision or for future intersection expansion. The additional property may be acquired in the form of a permanent easement.

Where a proposed development is located along a road that is currently part of the county road system, right-of-way must be dedicated on the side of the road adjacent to the development equal to at least one-half the minimum width required above.

- G. Where the law requires, private easements for public utilities must be located outside and contiguous to the road right-of-way along both sides of all proposed roads.
- H. Intersection legs must meet at 90-degree angles and have a minimum straight-a-way length of 100', as measured from the centerline of the intersected street. Centerline-to-centerline distance between street intersections with primary and secondary roads must be a minimum of 266'. Centerline-to-centerline distance between street intersections in a residential development may be less.
- I. All streets must afford safe ingress and egress at all intersections. Acceptance of site access onto an existing county road is subject to the field review and recommendation of the County Engineer. Considerations include, but are not limited to, vehicle speed, sight distance and topography. An area of clear vision, free from obstructions and encroachments, must be provided. Trees, brush, shrubs, poles, signs, boulders, mailboxes, and other obstacles must be removed from this area to afford an unobstructed view in both directions of the approaching traffic. See Appendix A, Figure XI, Page 30.
- J. As determined by the KCRC, an intersected county primary or secondary road must be improved to provide any necessary auxiliary lanes (deceleration lane, right-turn lane and/or left-turn lane). See Appendix A, Figures VIII and IX, Pages 27 and 28.

Considerations necessitating construction of such auxiliary lanes include approach roadway speeds, traffic volumes, traffic mix, development type and size, and adjoining land use. On roadways where the posted speed is 35 MPH or lower, or where the traffic volume is less than 3,500 vehicles per day, a left-turn lane may not be required.

At a minimum, the left-turn lane must be 11' in width, must have 150' of storage lane length and generally be constructed symmetrical with the centerline. Determination of appropriate storage lengths, taper lengths and design specifications of the left-turn lane must be obtained from the KCRC.

- K. Lot access from a proposed development will not be permitted onto a primary road and should be held to a minimum on secondary roads. Lot access onto boulevard sections must be approved by KCRC, township planning commission, and township board.

- L. If connectivity is required, outlots for future roads will not be allowed. Access streets for future connection to adjoining parcels must be continued to the proposed development boundaries. Streets carrying non-residential traffic, especially truck traffic, will not normally be extended to the boundaries of adjacent existing and potential residential areas. No driveway access will be permitted to any dead-end street that does not have a turnaround conforming to KCRC requirements. Driveways will not be permitted onto gravel turnarounds. These driveway restrictions must be noted on the pertinent recorded documents.
- M. The cul-de-sac turnaround must provide a minimum back-to-back of curb diameter of 100' and must be centered on a minimum dedicated right-of-way diameter of 140'. Only in residential developments may an island be included as an option in the center of the turnaround. Any such island must have mountable concrete curb with a maximum back-to-back of curb diameter of 40'. The center of the island must be no less than 1' higher than the back-of-curb, must be graded to blend to the top back-of-curb and must be clear of all obstructions. Alternative configurations of the turnaround will be allowed if found to be acceptable for traffic maneuvering. Recorded restrictions must assign the maintenance of the island to adjacent lot owners, the township, or to an owner's association. See Appendix A, Figure X, Page 29.
- N. No existing cul-de-sac street may be extended without the removal and reconstruction of its turnaround to the extended roadway cross-section. The resulting roadside areas must be restored, including lawn areas, driveways, and sidewalks, to match the adjacent existing areas.
- O. Where a continuation of a roadway is planned, a temporary turnaround may be required. The temporary turnaround area must be surfaced with MDOT 22A coarse aggregate or an approved alternate. The Proprietor must provide an easement and a cash escrow or Irrevocable Letter of Credit equal to 150% of the cost remaining to complete the turnaround in accordance with KCRC requirements. The Letter of Credit must have an expiration date of not less than 2 years. If the road is not extended within two years time, the KCRC will complete the construction of the turnaround using the cash escrow or by cashing the Letter of Credit. Any unused balance of the funds will be returned to the Proprietor. The easement will be released at such time as the roadway is extended as a public road.
- P. Sidewalks and non-motorized pathways are allowed along roads. The recommended location of the back-of-sidewalk or non-motorized pathway should be 1' inside the right-of-way line. Sidewalks and non-motorized pathways must be constructed in accordance with AASHTO or local ordinances.
- Q. Privately held reserve strips controlling access to streets are prohibited.
- R. The preliminary plan approval will be granted for a period of one year. If the construction plans are not submitted within this period, preliminary plans must be resubmitted and reapproved. The required plan review fee must be paid again. An extension of one year may be requested within 30 days of expiration of the original one-year period. Any such extension must be requested in writing.
- S. Road and drainage construction plans are to be submitted only after the preliminary plans have been approved.
- T. Approval of any plans by the KCRC does not alleviate the Proprietor from meeting standards and obtaining permits required by other agencies.

VI. CONSTRUCTION REQUIREMENTS AND PLAN DEVELOPMENT

A. General Construction Requirements

After approval of the preliminary plans, two sets of road and drainage construction plans, and an application for a permit for the work in the public right-of-way where the proposed road intersects with the existing public road, must be submitted for approval. The plans must be signed and sealed by a Professional Engineer registered in the State of Michigan. The plans must include a cover sheet indicating:

- Name of the proposed development,
- Index of sheets,
- Location sketch of the proposed development within Kalamazoo County,
- Name of the responsible contact person, on behalf of the Proprietor, including the company name, address, phone numbers and fax number,
- Name of the design engineer and company name, address, phone number and fax number.

A letter of approval for street names must be obtained from the Kalamazoo County Department of Planning & Community Development or appropriate agency. A copy of this letter must be submitted with the construction plans. Any extension of a street must retain the name of the existing street.

The plans must be drawn on 24" x 36" sheets and to a standard scale of not less than 1"=50' horizontal and 1"=5' vertical. Within 30 days after the date of receipt, a letter will be sent indicating approval or rejection. No verbal approval will be given. If the plans are rejected, the KCRC will include its reasons within the letter. This letter will be sent to the Design Engineer unless instructed to do otherwise.

The construction plans must show the complete street, sidewalk and non-motorized pathway system within the right-of-way and must include a plan view, profile view and a typical cross section of all proposed streets. The names of all proposed streets must be clearly labeled. A permanent or temporary benchmark established at USGS datum, and the log and location of soil borings must also be shown on the plans. Curve data for all proposed horizontal and vertical curves and centerline stationing for all side streets must be shown on the plans.

A permanent benchmark must be placed near the entrance to the proposed development and may be required at each additional phase as determined by the County Engineer. The permanent benchmark will be established at USGS datum.

A prefabricated benchmark will be furnished by the KCRC and must be installed by a survey crew under the supervision of a registered land surveyor. The benchmark must be placed flush with the ground, in a location that is readily accessible, out of harm's way and within the road right-of-way.

If so desired, the permanent benchmark may be installed after all construction is complete and prior to KCRC acceptance. If the option of placing the benchmark after all construction is complete is desired, a temporary benchmark must be established and shown on the construction plans. The permanent benchmark must be shown on the "as-built" plans.

In the event the proposed development will encompass an original Government Survey Corner, the subject corner must be preserved. A document outlining the procedures required to preserve Government Survey Corners can be obtained from the KCRC Engineering Department.

Plan notes must indicate that all unsuitable subbase material will be removed to a minimum depth of 24" below the top of the subgrade or as determined by the County Engineer. A note stating that all work will comply with the provisions of Part 91 of the Erosion and Sedimentation Control Act of the Natural Resources and Environmental Protection Act P.A. 451 of 1994, as amended and as administered by the KCDC, or the duly authorized agent, must appear on the plans. A copy of the soil erosion and sedimentation control plan, as required by the controlling agency, must be included in the construction plans. Drainage plans must be included on the plans and must clearly indicate percent of sewer grades, sizes, lengths, depths, locations and types of pipes and proposed drainage structures.

B. Utilities

Utilities constructed prior to the acceptance of the plans must be shown and comply with existing KCRC requirements. If they are to be placed within the right-of-way, utility locations must be staked prior to their installation and must be placed as follows.

- Telephone, fiber optic, or cable TV lines, when hung or buried separately from the gas and electrical facilities, must be located within the area 0 to 5' of the westerly or southerly right-of-way lines. Telephone, fiber optic, or cable TV lines, when hung or buried with gas and electrical facilities, must be located within the area 5' to 7' of the westerly or southerly right-of-way lines.
- Gas and electric lines must be located within the area 5' to 7' of the westerly or southerly right-of-way lines.
- Water main must be located within the area 5' to 7' of the easterly and northerly right-of-way lines.
- Gravity sanitary sewer must be located within 6' east or north of the right-of-way centerline. The manhole casting must be placed 6' east or north of the right-of-way centerline.
- Force main sanitary sewer must be located within the area between the road curb and westerly or southerly right-of-way lines. In no case may it be closer than 10' to the edge of pavement.
- Storm sewer must be located under the curb line, generally 13.5' to 17' west or south of the right-of-way centerline.

All utilities must be installed prior to placement of the HMA wearing course. Under no circumstances will final construction approval be given without issuance of all required KCRC utility permits and completion of proposed utility installation.

C. Minimum Road Design Requirements

1. All proposed roads must have an underground storm-sewer system and be of HMA valley gutter, mountable concrete curb-and-gutter, or high-back concrete curb-and-gutter construction.
2. The distance from the back-of-curb to the side slope must be not less than 10'. All woody vegetation must be removed to provide a clear area within this 10' area. High-back concrete curb-and-gutter residential road, back-of-curb distance to side slope and clear area may be reduced to 8'. Side slopes must be a minimum of 1:3 in fill sections and 1:2 in cut sections. See Appendix A, Figures I, II, III, IV, V, and VI, Pages 20-25.

3. The full right-of-way must be properly pruned and brought to the required cross-section grade. Removal of trees inside the remaining area, which is outside the 10' wide clear area, must be in accordance with the KCRC's Roadside Vegetation Management Policy, and as necessary to construct and maintain the roadway. Soil erosion and sedimentation-control measures must comply with P.A. 451 of 1994, as amended, and all applicable MDEQ and KCRC guidelines. In conformance with specifications of the MDOT, all disturbed areas must be top soiled to a minimum 3" depth, fertilized, seeded and mulched, or covered with another approved ground cover.
4. The maximum grade of any street must be 7%. Minimum grade for any concrete curb and gutter street must be 0.75%. Minimum grade for any HMA valley gutter street must be 1.00%. Grade transitions must be designed with vertical curves. Vertical curve K Values for sags and crests must be designed according to AASHTO. A cul-de-sac turnaround must be constructed to ensure a minimum grade of 1.25% along the flow line of the gutter.
5. All interior horizontal curves within a proposed residential development that appear to be continuous must have a minimum centerline radius of 165'. On non-continuous roads, 90-degree corners are permissible but will require a minimum 45' inside edge-of-pavement radius. All intersections must have a minimum edge-of-pavement radius of 25'.
6. Any proposed street or road approaching an existing county road, or proposed street or road, must be constructed with the approach profile grade between 0% and 2% for a minimum 50' in length, as measured from the edge of the through street. For proposed road grades of 6% to 7%, the 0% to 2% approach profile grade length must be a minimum 100' in length.
7. Roadway subbase material must conform to MDOT's specification for Class III Granular Material. Soil borings must be taken to identify unsuitable existing material. Any unsuitable material must be removed and replaced with MDOT Class III Granular Material. One soil boring for every 500' of roadway, with a minimum of three soil borings, will be required. Soil borings must be a minimum of 6' below bottom of proposed aggregate base elevation. Locations and logs of soil borings must be shown on the plans.
8. Road Cross-Sections
 - A. Residential Street
 1. Standard pavement (30' back-to-back)
Roads within a single-family residential development, having lot frontage less than 125' at the road right-of-way line, must be constructed with a 26' HMA pavement width with HMA valley gutter, mountable concrete curb-and-gutter, or concrete pavement with mountable integral curb, as selected by the Proprietor.
 2. Large Lot Alternate (28' back-to-back)
Roads within a single-family residential development, having lot frontage at the road right-of-way line of 125' or greater, and where local zoning ordinances prohibit splits of the platted lots, may be constructed with a 24' HMA pavement width with HMA valley gutter, mountable concrete curb-

and-gutter, or concrete pavement with mountable integral curb, as selected by the Proprietor.

3. High back concrete curb-and-gutter (36' back-to-back)
Roads within a single-family residential development may be constructed with a 32' HMA pavement width with the high back curb-and-gutter, as selected by the Proprietor.

- B. Commercial Development Street (36' back-to-back)
Roads within an industrial development must be constructed with a 32' HMA pavement width with high-back concrete curb-and-gutter, or concrete pavement with high-back integral curbs, as selected by the Proprietor. A pavement design using the AASHTO pavement design program must be submitted to the Road Commission.

9. Road design Geometrics not specifically outlined in this policy, must be in accordance with AASHTO.

D. Road Surface and Base Requirements

1. Typical Minimum Cross-Sections

- a. Residential Roads
165 lb/syd 1-1/2"
KCRC HMA Mix 36A Mod.
165 lb/syd 1 1/2"
KCRC HMA Mix. No. 13A Mod.
6" CIP MDOT 22A Aggregate Base
24" CIP MDOT Granular Material Class III Subbase
- b. Secondary Roads
165 lb/syd 1-1/2"
KCRC HMA Mix. No. 13A Mod. Surfacing
165 lb/syd 1-1/2"
KCRC HMA Mix. No. 13A Mod. Leveling
165 lb/syd 1-1/2"
KCRC HMA Mix. No. 13A Mod. Base
6" CIP MDOT 22A Aggregate Base
24" CIP MDOT Granular Material Class III Subbase
- c. Commercial Roads
165 lb/syd 1-1/2"
KCRC HMA Mix. 13A Mod. Surfacing
165 lb/syd 1-1/2"
KCRC HMA Mix. No. 13A Mod. Base
220 lb/syd 2"
KCRC HMA Mix. No. 11A Base
8" CIP MDOT 22A Aggregate Base
24" CIP MDOT Granular Material Class III Subbase

or

6" MDOT Grade P1 Non-Reinforced Concrete Pavement
3" CIP MDOT 22A Aggregate Base
24" CIP MDOT Granular Material Class III Subbase

2. Alternatives to those above may be permitted when approved by the County Engineer.
3. Aggregate base must be final graded with an approved road grader.
4. All HMA courses must be constructed with equipment capable of paving the roadway in two passes, resulting in a single pavement joint at the centerline.
5. Final adjustment of drainage structures, utility valves, and monument boxes located within the HMA pavement must be made after the leveling course is completed and prior to placement of the wearing course. Mechanical adjustment rings are not acceptable.
6. Requirements for HMA mixtures must meet the KCRC specifications supplied in Appendix A, Table I, Page 31.
7. Reinforcement steel is not required in residential road mountable concrete curb or residential road high-back concrete curb-and-gutter streets.

E. Drainage System Requirements.

Storm-sewer facilities located in the road right-of-way will become the property of the KCRC. Storm-sewer facilities located outside the road right-of-way may become the property of the KCDC. The following storm-sewer system requirements are established as the minimum necessary to meet the concerns of the KCRC. Meeting these requirements does not in any way substitute for the necessity of obtaining any required permit from, and meeting all requirements of, the KCDC and the MDEQ.

1. Storm-sewer design must be based on a minimum ten-year storm of twenty minutes duration and not less than 30% imperviousness. The storm-sewer system must have a positive outlet. If a natural outlet area is not available, a storm-sewer discharge area must be constructed per the KCDC design criteria or an approved alternative.
2. A complete engineering analysis supporting the design concept utilized for all developments is required and must be submitted with construction plans. The submittal must include a storm-sewer drainage area sketch, all calculations, required basin volume and provided basin volume. "The Rules of the Kalamazoo County Drain Commissioner for Stormwater Management" must be followed for storm-sewer designs. The design criteria used must be shown on the calculation sheets.
3. The maximum surface run for storm water must be no longer than 300'. The surface run must not be longer than 200' for street grades exceeding 4%. For the purpose of storm-sewer cleanout, structures must be placed no further than 300' apart. Drainage structures must be provided at the highest end of radii where drainage may cross an intersected roadway.
4. Main line drainage structures must be constructed with 2' sumps. All other drainage structures may be constructed with a poured flow-line bottom.
5. During construction, and until the County Engineer approves its removal, all drainage structures must be covered with an approved filter fabric or a Best Management Practice as approved by the KCRC, to eliminate soils from infiltrating into the storm-sewer system. Routine cleaning of the fabric while in place must be accomplished as needed. The Proprietor is responsible for this work.

6. Reinforced Concrete Pipe or Smooth-Lined Corrugated Plastic Pipe of appropriate size and class is acceptable. Storm sewer less than 12" diameter will not be permitted. When using plastic pipe, a minimum of 3' of earth cover, and not more than 10' of earth cover, must be maintained over top of pipe unless current MDOT specifications approve otherwise. All installed pipes may be subject to testing per MDOT specifications and documentation of testing must be submitted to KCRC. Typical tests include mandrel, television inspection and backfill compaction. Tests must be completed prior to paving. The cost of testing will be paid for from the required inspection fee.
7. Concrete pipe joints must be sealed with cold applied bituminous sealer, flexible watertight rubber gaskets, or external-type rubber gaskets. Plastic pipe must have a premium joint sealing system per current MDOT specifications.
8. Leaching basins will be allowed only under very special circumstances. If a leaching basin is proposed, a full written justification must be submitted with the plans. A suggested leaching basin detail may be obtained from the KCRC Engineering Department.
9. The County Engineer may require edge drains as soil borings and/or field observations warrant. Required edge drains must meet the material and installation specifications of the MDOT.
10. Ditch lines adjacent to county roads may require installation of culverts.
11. Under no circumstance may drainage from private property have a direct piped discharge into the public storm-sewer system.
12. If the storm-water discharge area is located outside the road right-of-way, the KCDC may require a 48" or larger diameter manhole to be placed just outside the right-of-way line over the discharge pipe.

F. Additional Provisions

1. Crossroad culverts and bridges must meet minimum AASHTO and MDOT requirements and specifications and be of the size and type approved by the County Engineer. Crossroad culverts must have a diameter of not less than 15". All crossroad culverts 30" or larger must be supplied with an approved end section. All necessary permits required for placement of culverts or construction of bridges must be obtained from the agency that has jurisdiction over the watercourse. In accordance with requirements of the MDOT, a scour analysis must be supplied for structures with a natural stream bottom.
1. Any existing county road providing an access to any part of the proposed development may be subject to improvements for upgrading to minimum roadway improvements as outlined in this policy and as determined by the County Engineer. Any existing county road abutting a proposed development may be subject to improvements for upgrading to minimum roadway improvements as outlined in this policy and as determined by the County Engineer unless the township board does not endorse the improvements. These improvements, which may include paving, resurfacing, curb and gutter, storm drainage improvements, grading, etc., will be the responsibility of the Proprietor.

3. All grading work required to construct the road cross-section that is outside the proposed road right of way and that encroaches upon land not owned by the proprietor will require written permission from the abutting property owner. This document must be submitted prior to the start of any grading.
4. MDOT or KCRC standard plan and specification designations must be noted on the road and drainage construction plans where applicable. A detail not specifically covered by MDOT or KCRC standard plan and specifications must be submitted to and approved by the County Engineer prior to construction of or use of the item.
5. While complying with minimum requirements, horizontal and vertical curve alignment must be equal to the highest standard that is compatible with the topographical details and reasonably obtained right-of-way
6. Street lighting poles must be no closer than 6' off the back-of-curb and must be of breakaway design.
7. Entry identification signs must be located beyond the road right-of-way. Installations must be away from the clear-vision area to afford an unobstructed view in both directions of the approaching traffic.
8. All construction materials must conform to the requirements of the current MDOT and/or KCRC specifications.
9. Road and drainage construction plan approval will be granted for a period of two years. If the development is not completed for acceptance within this period, construction plans must be resubmitted and reapproved. All required fees must be paid as if it were an original submittal. Also, an inspection fee must be paid in accordance with the KCRC's schedule of Permit and Inspection Fees, minus the plan review fee previously submitted. Along with the inspection fee, an estimate of costs for the proposed road and drainage construction must be submitted, which will be used to justify the amount of the inspection fee. An extension of one year may be requested within 30 days of the expiration of the original two-year period. Any such extension must be requested in writing.
10. The minimum design standards, specifications, and details established in this policy are devised to meet specific goals with regard to maintenance, drainage, and surface problems. The KCRC will give consideration to proposals that accomplish these goals in an innovative or original fashion. Such alternate proposals must be submitted with sufficient detail and documentation to facilitate their review. When departure from minimum standards is contemplated, it is recommended that early and close ongoing contact be maintained with the KCRC.
11. During construction, the County Engineer will have authority to require minor changes in plan specifications. Modifications will be made only to serve the public's best interest. Special alterations include, but are not limited to, changes in location and number of drainage structures, changes in minor road and sewer grades, size of radii and other dimensions.
12. Work-zone traffic-control plans must be developed and included in the construction plans. The plans must be consistent with the current edition of the MMUTCD. The traffic control devices must be installed prior to the beginning of any construction and must be maintained and remain in place until all work associated with the proposed development has been completed. A "Not a Public Road Keep Out" sign with 4" letters must be installed and maintained at the proposed development entrances and must be left in place until the roads are accepted by the KCRC.

When a right-turn lane and taper, passing or left-turn lane are required, separate traffic control plans must be developed and included in the construction plans. Traffic control plans must be consistent with the current edition of the MMUTCD. All traffic control devices must be installed prior to the beginning of any construction on the auxiliary lanes and must be maintained and left in place until all work associated with the construction of these auxiliary lanes has been completed.

13. Major deviations from the approved plans must be submitted in writing and approved by the County Engineer. All approved changes must be reflected on the required "as-built" plans.
14. The attached appendices are hereby incorporated as part of this policy.

VII. GENERAL REQUIREMENTS

- A. Approval of road and drainage plans does not relieve the Proprietor of the responsibility to meet the minimum KCRC requirements in force at the time of approval.
- B. Prior to any construction activity, the Proprietor, or his or her designee, must schedule and hold a preconstruction meeting. Notification must include the KCRC project inspector, Proprietor, the township supervisor, the Proprietor's design engineer, representatives of each utility, and a representative of the Contractor that is to do the work.

At the meeting, the Proprietor must submit a written progress schedule outlining a systematic procedure of construction. Also at this time, if not already submitted, an inspection fee must be paid in accordance with the KCRC's schedule of Permit and Inspection Fees, minus the plan review fee previously submitted. In addition to the inspection fee, an estimate of costs for the proposed road and drainage construction must be submitted, which is used to justify the amount of the inspection fee.

A project manager must be named during the pre-construction meeting. This project manager will be responsible for all stages of construction of the roads. The project manager will act as the liaison between the KCRC and all other agencies and individuals pertaining to the construction and acceptance of the roads.

- C. No work will be permitted within the existing county road right-of-way until the Proprietor's contractor has provided proof of insurance in accordance with the Board's Requirement for Insurance.
- D. Construction staking, utility placement staking, and layout will be the responsibility of the Proprietor. Any construction staking and/or layout completed by the KCRC will be for the convenience of the KCRC inspector and is not a required responsibility of the KCRC. All construction staking, utility placement staking, and layout must be completed in a method agreed upon between the KCRC and the agencies doing the construction and the agencies undertaking the staking and layout work. The method of staking and layout must be presented at the preconstruction meeting. Under no circumstances should construction staking be done prior to this agreement being made. Specific items that must be agreed upon are as follows:
 1. Size of stakes: length and width,
 2. Information required on the stakes: cuts, fills, offset distance, stationing when it pertains,

3. Staking intervals and offsets for: clearing stakes, slope stakes, rough centerline stakes, drainage stakes, curb stakes pavement stakes, and utility placement staking.

Construction staking, utility placement staking, and/or layout not done to the satisfaction of the KCRC will be restaked or laid out at cost to the Proprietor and to the satisfaction of the KCRC inspector.

- E. The KCRC project inspector must be given notice, and the Proprietor receive acknowledgement of the notice, at least 24 hours, or one business day, whichever is longer, prior to the start or resuming of all phases of construction for the following:
 1. Land clearing of site.
 2. Topsoil stripping.
 3. Construction staking and layout.
 4. Subbase excavation and embankment.
 5. Storm and sanitary sewer installation.
 6. Water main installation.
 7. Subgrade grading and compacting.
 8. Aggregate base placing, grading and compacting.
 9. Concrete curb and gutter installation.
 10. HMA paving operations.
 11. Landscaping.

All paving operations will be subject to weather limitation, per MDOT Standard Specifications for Road Construction, and will be strictly enforced, except that the final HMA surface course must be installed prior to October 15 unless special approval in writing is obtained from the KCRC.

Work completed without proper notification to the KCRC project inspector may be ordered removed or replaced and may be reason for non-acceptance of the entire road.

- F. The Proprietor will be legally and financially responsible to clean and keep clean all public roads, including intersecting or surrounding county public roads, which have an accumulation of mud, dirt, debris etc. that is a result of the construction development.

VIII. FINAL ACCEPTANCE

- A. The following requirements and provisions must be satisfactorily completed before acceptance.
 1. All construction must be completed according to approved road and drainage plans. All utility permits and other required documents must be in place, or an escrow arrangement made and accepted by the County Engineer, for unfinished work.
 2. The Proprietor must submit a letter stating their understanding of the ongoing responsibilities to meet soil erosion and sedimentation control requirements. This must include all lots, impacted road right-of-way, and storm-sewer discharge areas within and abutting the development.
 3. For plat roads, documentation and other issues pertaining to platting of land must be met as required under the Land Division Act 288, Public Acts of 1967 as amended.
 4. For roads not part of a plat, a warranty deed must be provided to the Board for all lands within the road right-of-way. Title insurance must also be provided. If the

KCDC does not accept responsibility for storm sewer and appurtenances located outside the road right-of-way, a drainage agreement giving the KCRC drainage rights for use and emergency maintenance of storm-sewer appurtenances outside the road right-of-way must be provided. The drainage agreement must be included as part of the master deed, an amendment to the development's master deed, the development's recorded building-use-restrictions document, or referenced by name and recorded document number in one of the above recorded documents.

This agreement must grant the KCRC indemnification for liability of the storm-sewer system outside the road right-of-way. The KCRC will provide pertinent language for these documents. It is recommended that the documents be submitted early and that an on-going contact be kept with the KCRC. A checklist for required documents for non-platted developments is provided in Appendix B, beginning on Page 40.

5. A set of "as-built" plans must be furnished showing all changes, additions and deletions and including utilities constructed within the road right-of-way. The "as-built" plans must be on reproducible Mylar and signed and sealed by a Professional Engineer registered in the State of Michigan. If available, CAD files of the "as-built" plans must be submitted. Files must be furnished in .DXF, .DWG, or DGN format on a Compact Disc (CD) or other electronic form acceptable to the KCRC.
6. All required test reports must be submitted and accepted by the County Engineer. Examples of test reports that may be required are as follows:
 - a. Aggregate sieve analysis.
 - b. Compaction tests.
 - c. Log of Mandril test taken for plastic storm-sewer pipe.
 - d. Concrete compression tests.
 - e. HMA extraction and gradation tests.

Any other test result that is appropriate for the completed construction.

The costs of all required testing are included as part of the required inspection fee.

Testing frequency and type is at the discretion of the KCRC inspector.

7. The County Engineer may require a waiver of lien, certifying that the Proprietor's indebtedness relating to the proposed development has been satisfactorily discharged or secured.
8. The required permanent KCRC benchmark must be in place and an information card must be filled out and submitted to the KCRC with the required information.
9. Upon satisfactory completion of all provisions of this policy, the documentation related to the creation of the new public road(s) will be submitted to the KCRC Board for acceptance and formal approval, including formal action adding the approved proposed road(s) into the KCRC public road system.

IX. ESCROW PROCEDURE

- A. It is the policy of the KCRC to approve for final acceptance only developments in which all required and proposed improvements have been properly completed and all required documents have been received and approved.

- B. The Escrow procedure must not be used for developments unless all construction has been completed up to and including the HMA base course. Backfill of the curb-and-gutter must be in place. If the roadside landscaping is not complete, soil erosion measures must be in place and approved by the County Engineer. However, the escrow procedure may be used as part of final plat approval, as provided by State Law (MCL 560.183) without regard to the amount of road construction accomplished. All required documentation must be submitted, approved and accepted by the County Engineer.
- C. Escrow accounts must be established in the form of a cash escrow or Irrevocable Letter of Credit, equal to 150% of the approved contract costs of the remaining improvements and the cost to develop "as-built" plans if not submitted at this time. The Letter of Credit must have an expiration date of not more than one year from date of issuance. If there is a need to cash a Letter of Credit from a lending institution that is farther than 50 miles from the KCRC office, an administration fee will be added to the project inspection fee, based on the time required and the miles driven, or other appropriate form of transportation (charged at the current government rate), to and from the lending institution to cash the Letter of Credit. See Letter of Credit sample format, Appendix A, Page 32.
- D. If the Proprietor desires to use the escrow procedure, a letter must be submitted to the KCRC requesting such action. Specifics pertaining to the request for use of the escrow procedure must be included in the letter. The "who, what, where, when and why" for the request for use of the escrow procedure must be outlined. The letter must be submitted a minimum of seven days prior to the scheduled meeting.
- E. If the Proprietor is granted approval of the development using the escrow procedure, the Proprietor must maintain all roads within the development until construction of the roads has been approved by the County Engineer and the Board grants final acceptance. Maintenance of the roads must include but not be limited to snow and ice removal and soil erosion and sedimentation control. The Proprietor must indemnify and hold the Kalamazoo County Road Commission, its agent's officers, Board members and employees, harmless from any claims, which may be made against them for damages arising from the use of roads that have not been accepted into the County Road System. During this period, the Proprietor must maintain liability insurance in accordance with the Board's Requirement for Insurance Policy. A copy of this insurance policy must be on file at the KCRC. Under the escrow procedure, the KCRC will require completion of the development within one year; unless circumstances arise that can justify extending this period. In no case must this period exceed two years.

X. SEVERABILITY CLAUSE

If any part of these Procedures, Guidelines, and Specifications for Developing New Public Roads are found to be invalid, such invalidity must not affect the validity of the remaining portions of these Procedures, Guidelines, and Specifications for Developing New Public Roads.

XI. CONVERSION OF PRIVATE ROADS TO PUBLIC ROADS

All requests to incorporate existing private roads into the Kalamazoo County Road Commission Road system must be in writing. The required plan review fee must accompany this request. From this initial correspondence, the KCRC will make a determination that it may or may not be a possibility for the KCRC to assume ownership of the roads. If the determination is positive the KCRC staff will examine the road or road system. In order for the

KCRC to examine the road or road system, the following documentation, as outlined in the KCRC Procedures, Guidelines and Specifications for Developing New Public Roads, must be submitted:

Section V PRELIMINARY REQUIREMENTS AND PLAN DEVELOPMENT paragraphs:

- C. Street Layout
- E. Storm Sewer
- F. Right-of-Way Requirements
- G. Utility Easements
- H. Intersections
- I. Clear Vision Area
- J. Auxiliary Lanes
- L. Future Connections
- N. Turnaround Requirements

and Section VI CONSTRUCTION REQUIREMENTS AND PLAN DEVELOPMENT paragraphs:

- A. General Construction Requirements
- B. Utilities
- C. Minimum Road Design Requirements
- D. Road Surface and Base Requirements
- E. Drainage System Requirements
- F. Additional Provisions

This documentation must be signed and sealed by a Professional Engineer assuring that the roads have been built to minimum KCRC requirements. In addition to the required verification pertaining to construction of the road or road system, all required documentation, as stated in the KCRC policy, must be provided.

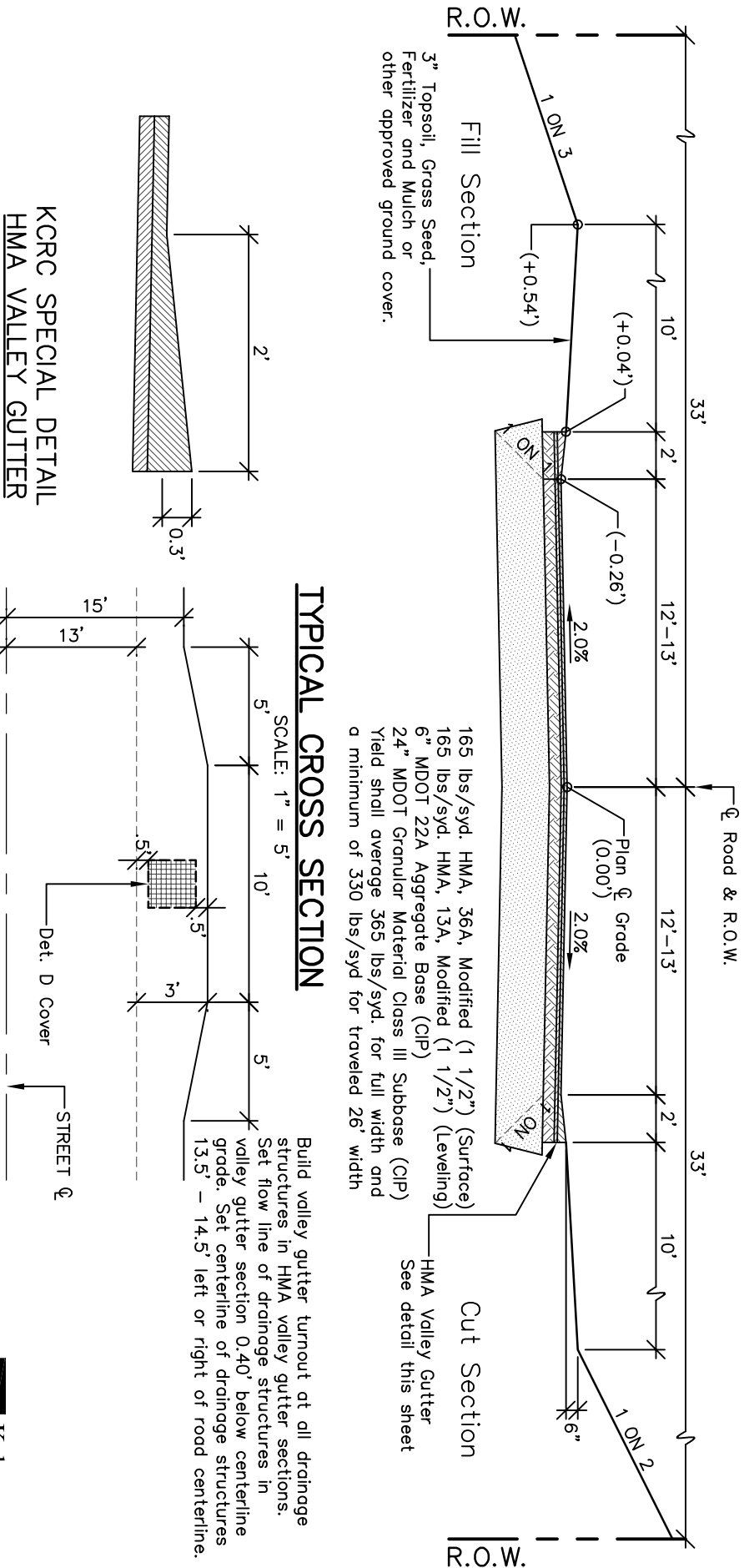
APPENDIX A
FIGURES, TABLES AND LETTER OF CREDIT FORMAT

INDEX OF PAGES

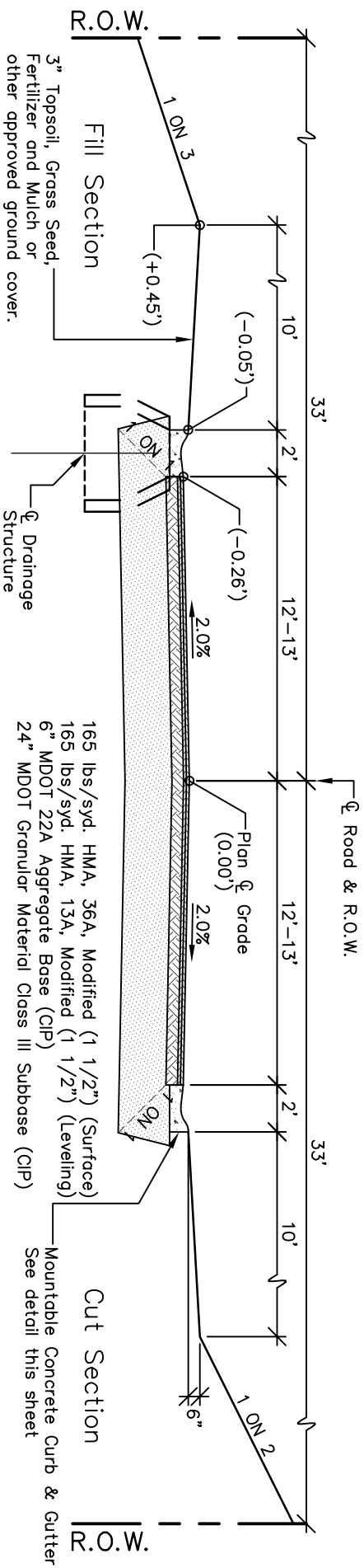
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Typical Cross-Section of Mountable Concrete Curb & Gutter Street — Figure II	21
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RESIDENTIAL HMA VALLEY GUTTER ROAD MINIMUM DESIGN REQUIREMENTS

FIGURE I

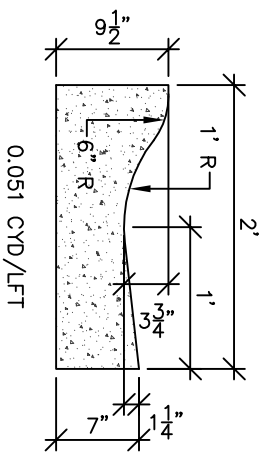


RESIDENTIAL CONCRETE CURB & GUTTER ROAD MOUNTABLE CONCRETE CURB & GUTTER MINIMUM DESIGN REQUIREMENTS



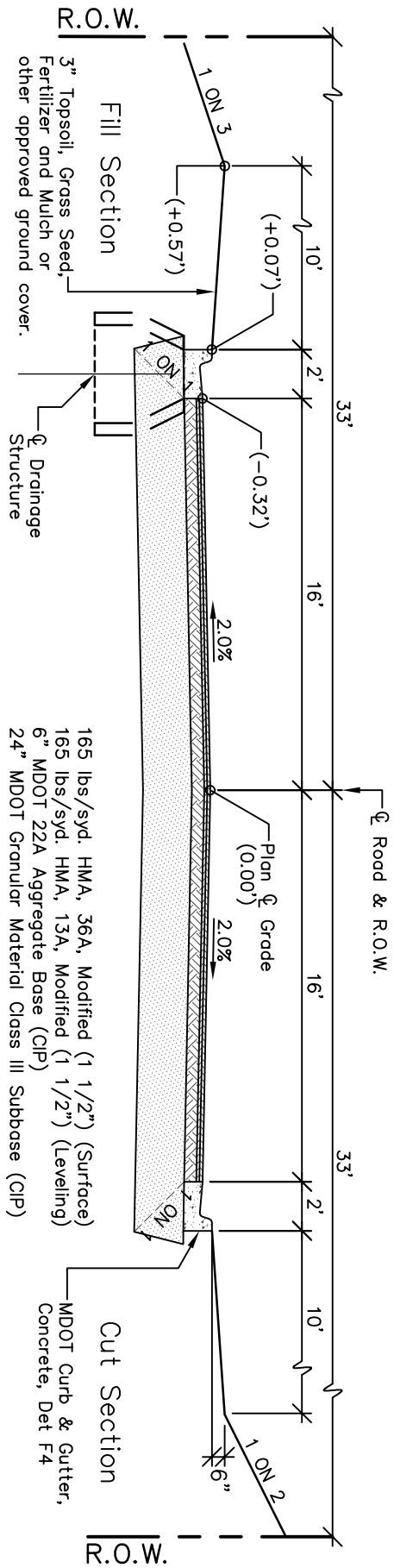
TYPICAL CROSS SECTION

SCALE: 1" = 5'



KCRC SPECIAL DETAIL MOUNTABLE CONCRETE CURB & GUTTER

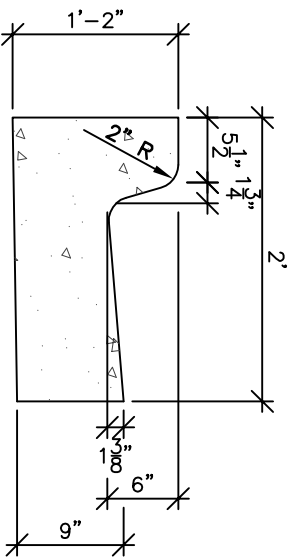
FIGURE III RESIDENTIAL CONCRETE CURB & GUTTER ROAD HIGH BACK CONCRETE CURB & GUTTER MINIMUM DESIGN REQUIREMENTS



- 165 lbs/syd. HMA, 36A, Modified (1 1/2") (Surface)
- 165 lbs/syd. HMA, 13A, Modified (1 1/2") (Levelling)
- 6" MDOT 22A Aggregate Base (CIP)
- 24" MDOT Granular Material Class III Subbase (CIP)

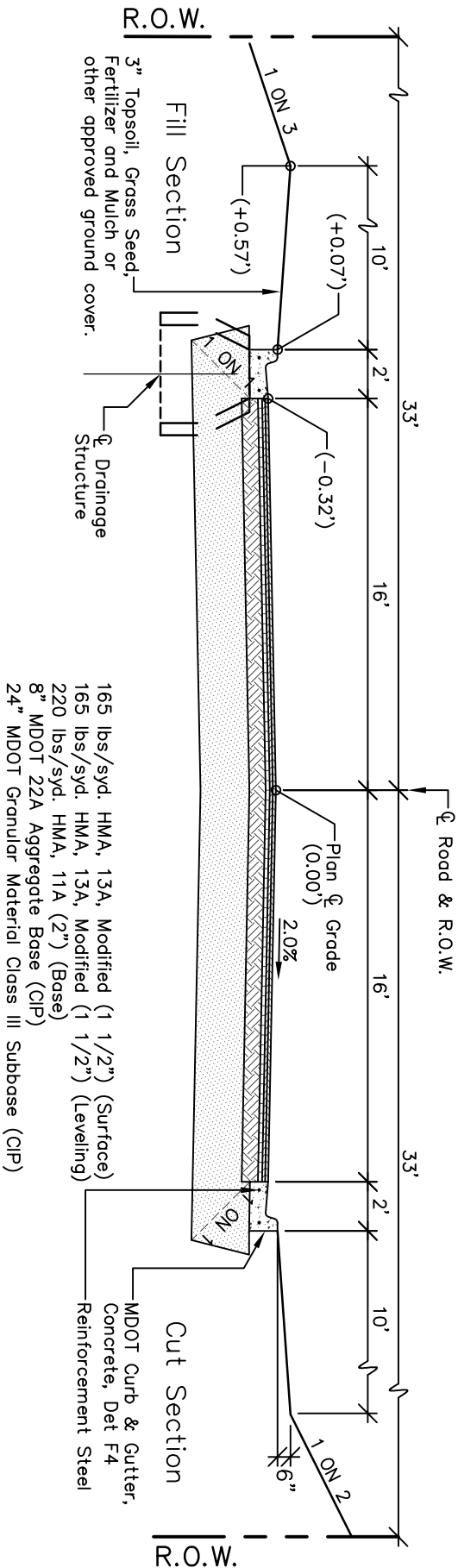
TYPICAL CROSS SECTION

SCALE: 1" = 5'



CONCRETE CURB & GUTTER - MDOT DETAIL F4

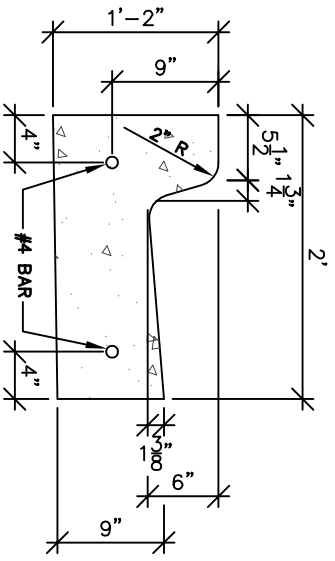
FIGURE IV
COMMERCIAL CONCRETE CURB & GUTTER ROAD
HMA PAVEMENT
MINIMUM DESIGN REQUIREMENTS



- 165 lbs/syd. HMA, 13A, Modified (1 1/2") (Surface)
- 165 lbs/syd. HMA, 13A, Modified (1 1/2") (Leveling)
- 220 lbs/syd. HMA, 11A (2") (Base)
- 8" MDOT 22A Aggregate Base (CIP)
- 24" MDOT Granular Material Class III Subbase (CIP)

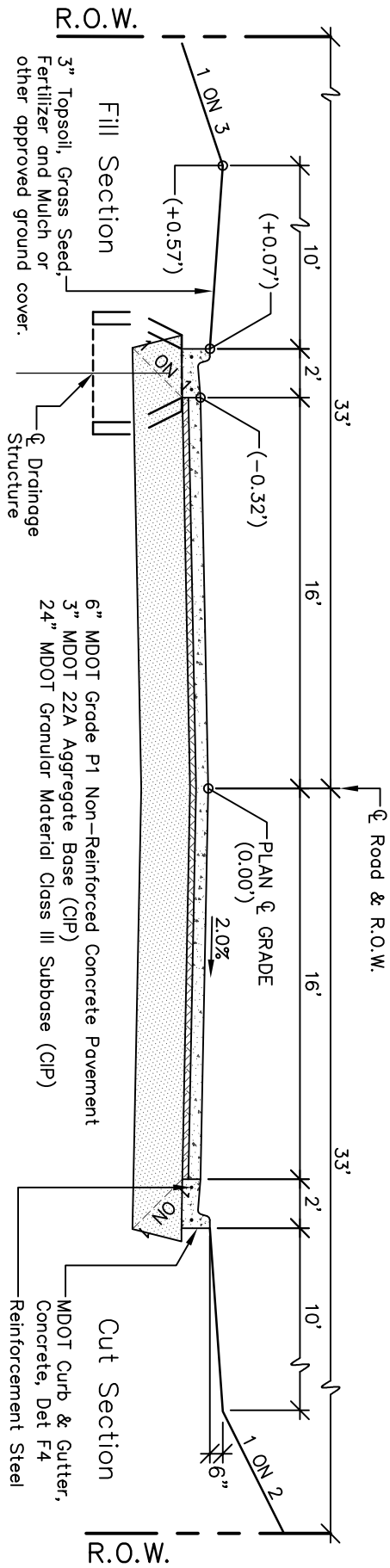
TYPICAL CROSS SECTION

SCALE: 1" = 5'

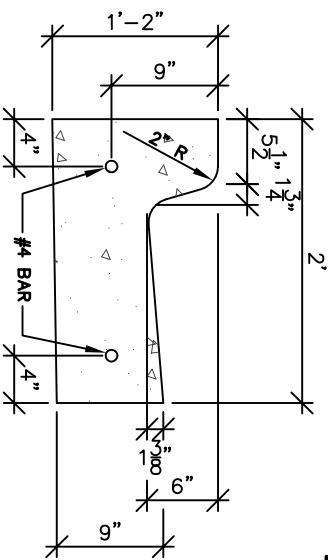


CONCRETE CURB & GUTTER – MDOT DETAIL F4

FIGURE V COMMERCIAL CONCRETE CURB & GUTTER ROAD CONCRETE PAVEMENT MINIMUM DESIGN REQUIREMENTS

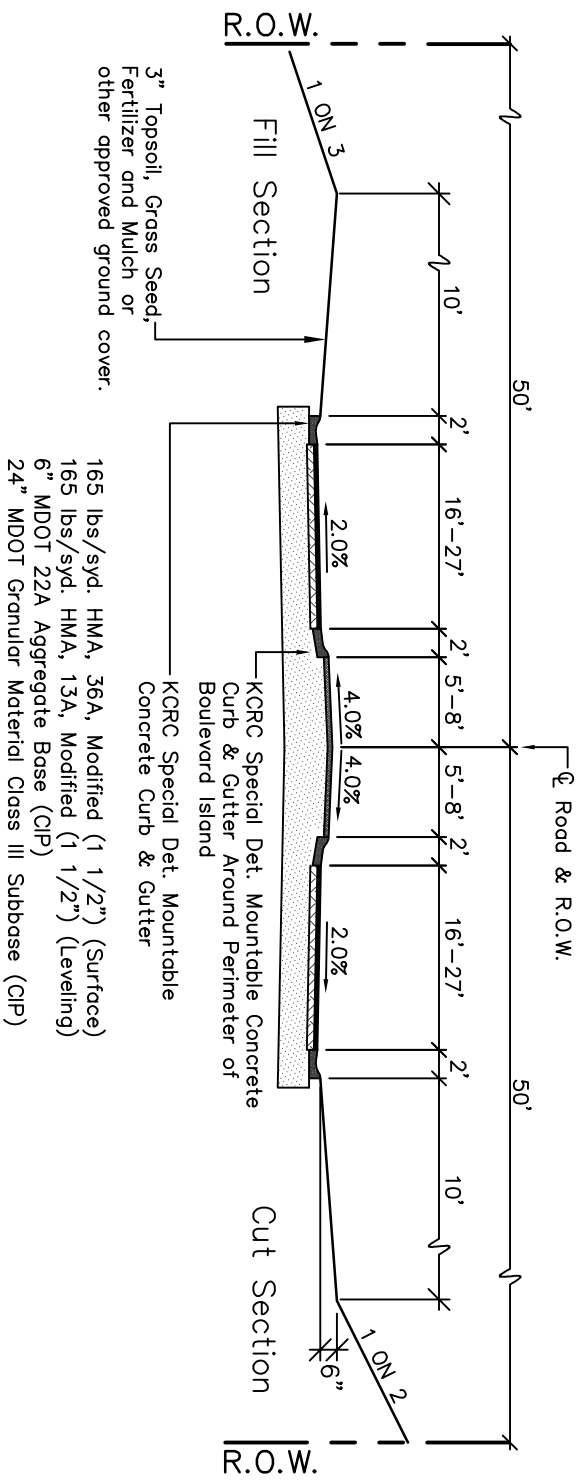


TYPICAL CROSS SECTION SCALE: 1" = 5'



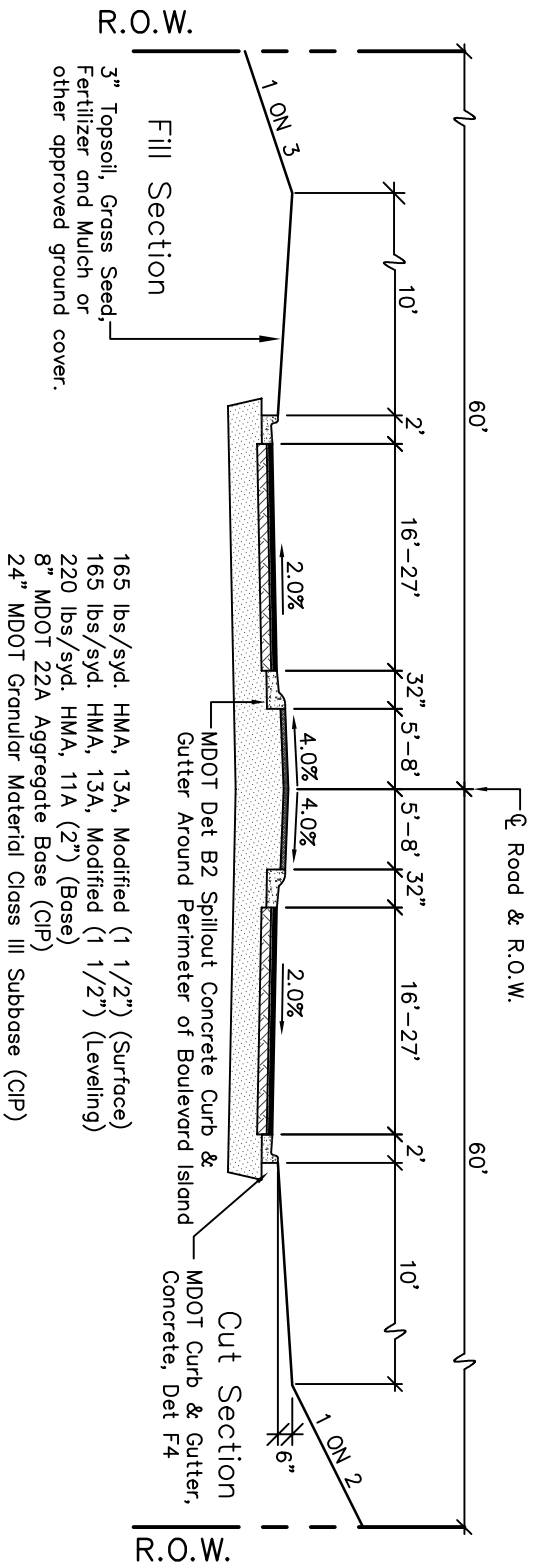
CONCRETE CURB & GUTTER – MDOT DETAIL F4

FIGURE VI
RESIDENTIAL BOULEVARD
100' R.O.W.
MINIMUM DESIGN REQUIREMENTS



TYPICAL CROSS SECTION
 SCALE: NONE

FIGURE VII
COMMERCIAL BOULEVARD
 120' R.O.W.
MINIMUM DESIGN REQUIREMENTS

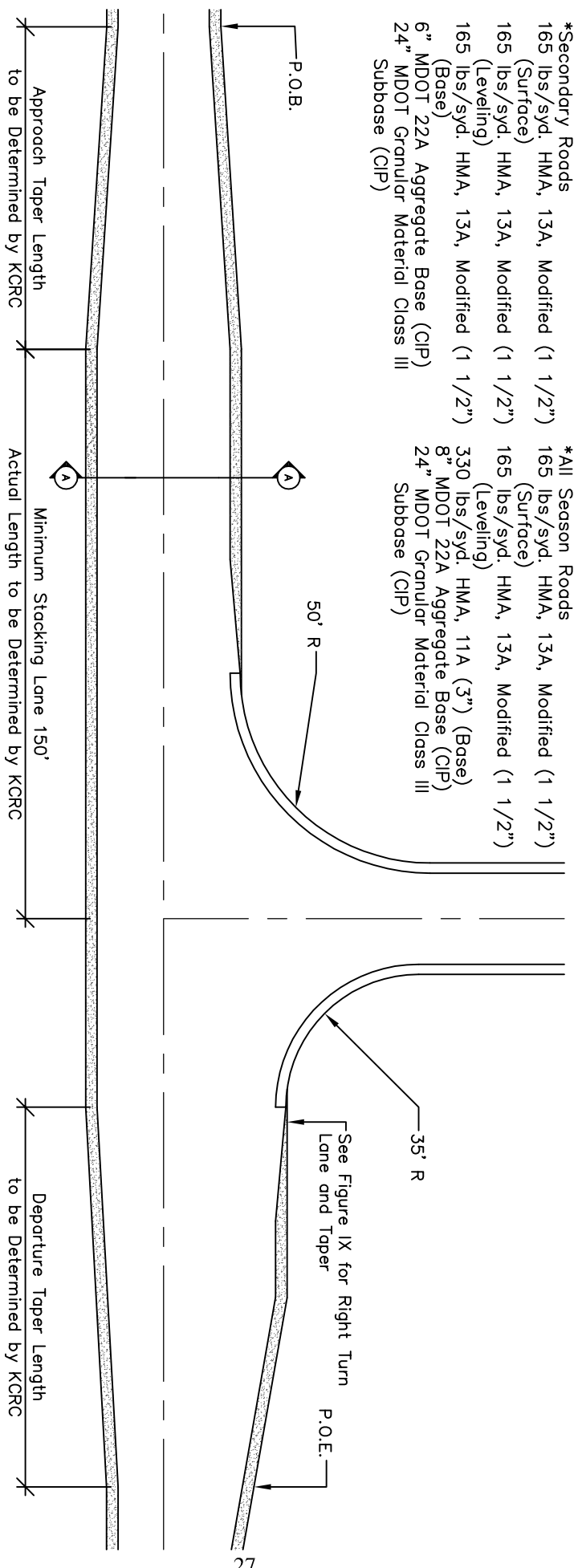


TYPICAL CROSS SECTION
 SCALE: 1" = 10'

- 165 lbs/syd. HMA, 13A, Modified (1 1/2") (Surface)
- 165 lbs/syd. HMA, 13A, Modified (1 1/2") (Leveling)
- 220 lbs/syd. HMA, 11A (2") (Base)
- 8" MDOT 22A Aggregate Base (CIP)
- 24" MDOT Granular Material Class III Subbase (CIP)

FIGURE VIII LEFT TURN LANE MINIMUM DESIGN REQUIREMENTS

*Secondary Roads	165 lbs/syd. HMA, 13A, Modified (1 1/2") (Surface)	165 lbs/syd. HMA, 13A, Modified (1 1/2") (Leveling)	165 lbs/syd. HMA, 13A, Modified (1 1/2") (Base)	6" MDOT 22A Aggregate Base (CIP)	24" MDOT Granular Material Class III Subbase (CIP)
*All Season Roads	165 lbs/syd. HMA, 13A, Modified (1 1/2") (Surface)	165 lbs/syd. HMA, 13A, Modified (1 1/2") (Leveling)	330 lbs/syd. HMA, 11A (3") (Base)	8" MDOT 22A Aggregate Base (CIP)	24" MDOT Granular Material Class III Subbase (CIP)



- Notes:
1. Continue existing HMA and/or gravel shoulder along outside of left-turn lane and taper
 2. Placing of new pavement markings is the responsibility of the proprietor
 3. Cold mill 20' wide butt joint at P.O.B. & P.O.E. and overlay with 165 lbs/syd. HMA, 13A, Modified (1 1/2") (Surface)

TYPICAL SECTION A-A

FIGURE IX RIGHT TURN LANE AND TAPER MINIMUM DESIGN REQUIREMENTS

Notes:
1. Continue existing HMA and/or gravel shoulder along outside of right-turn lane

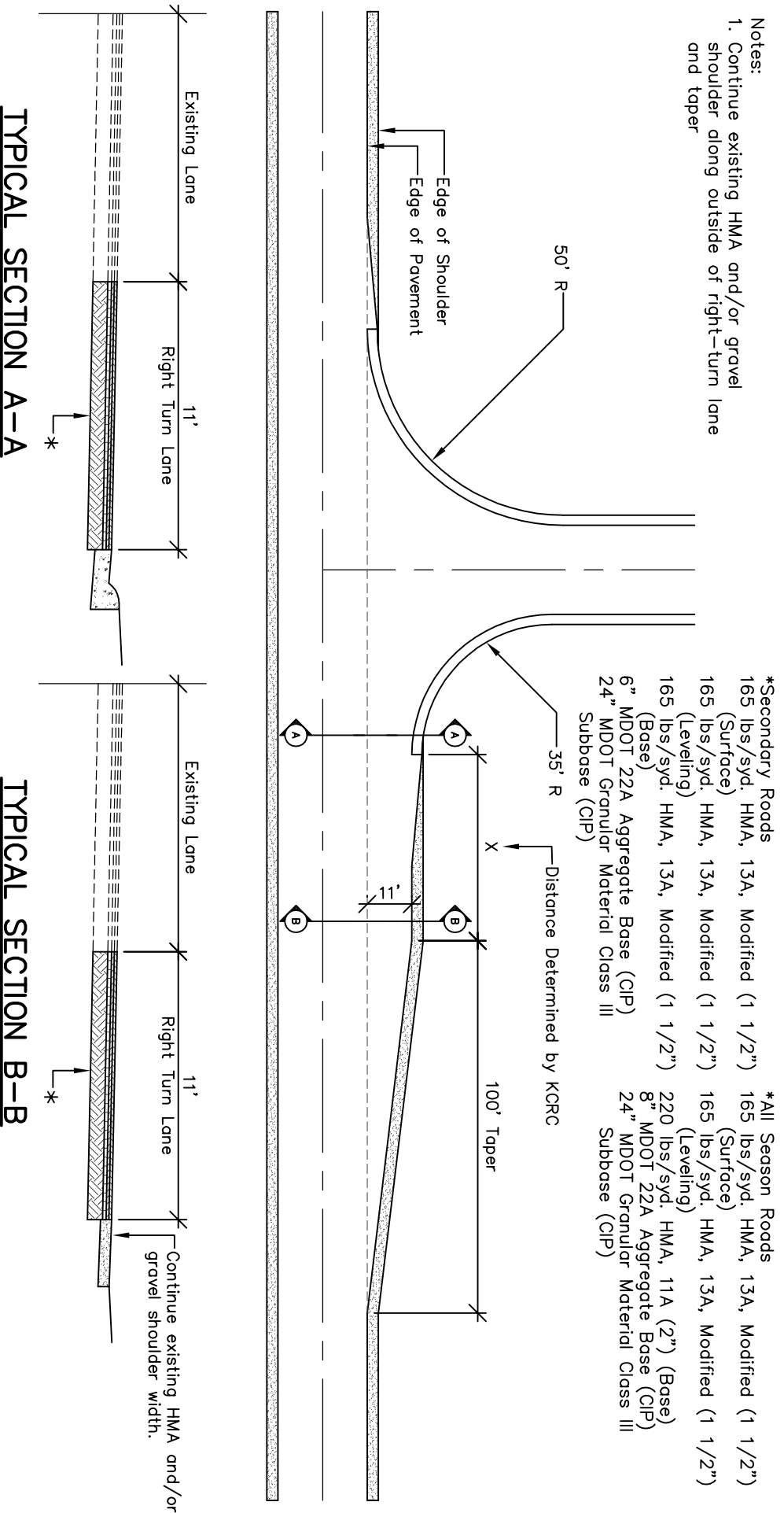
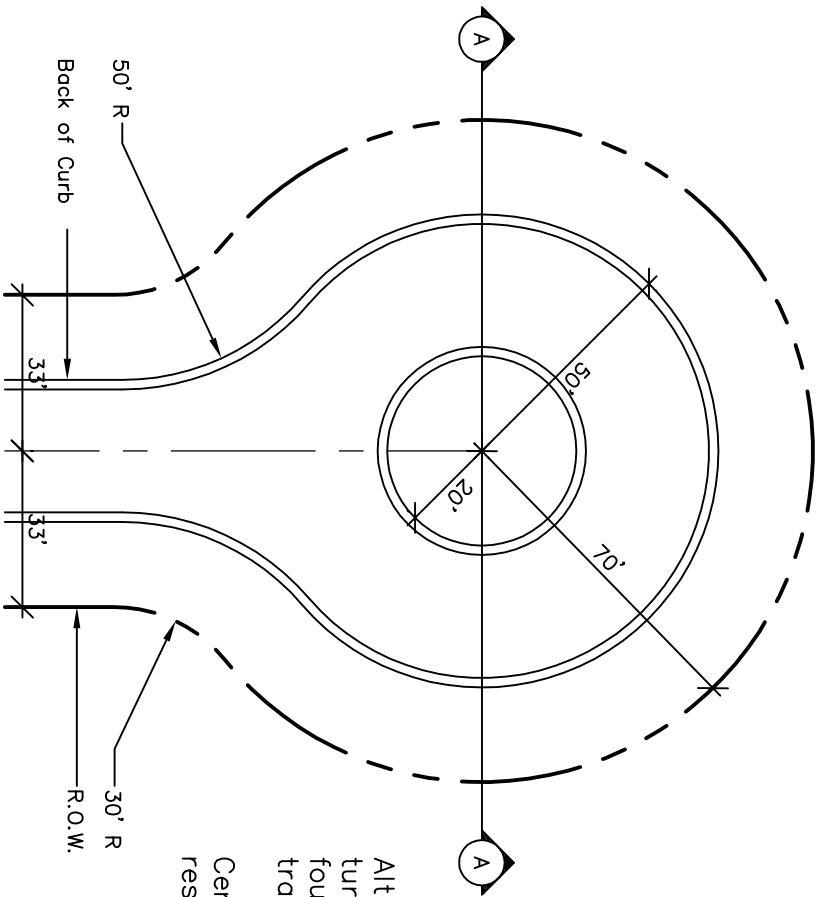
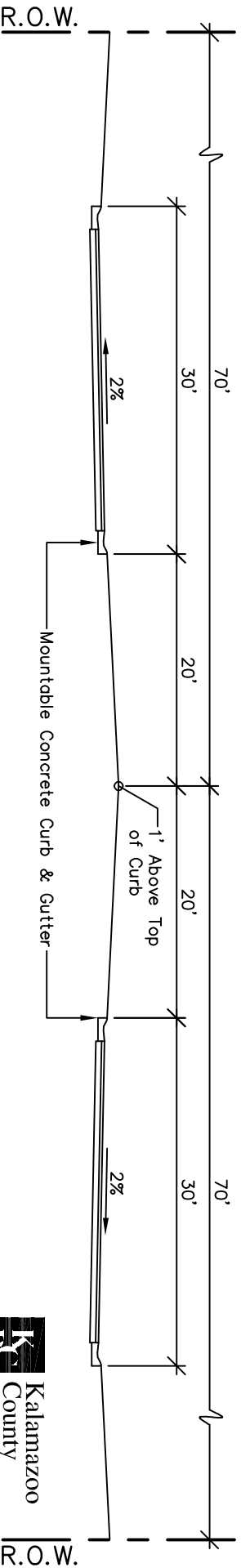


FIGURE X
CUL-DE-SAC TURNAROUND
MINIMUM DESIGN REQUIREMENTS



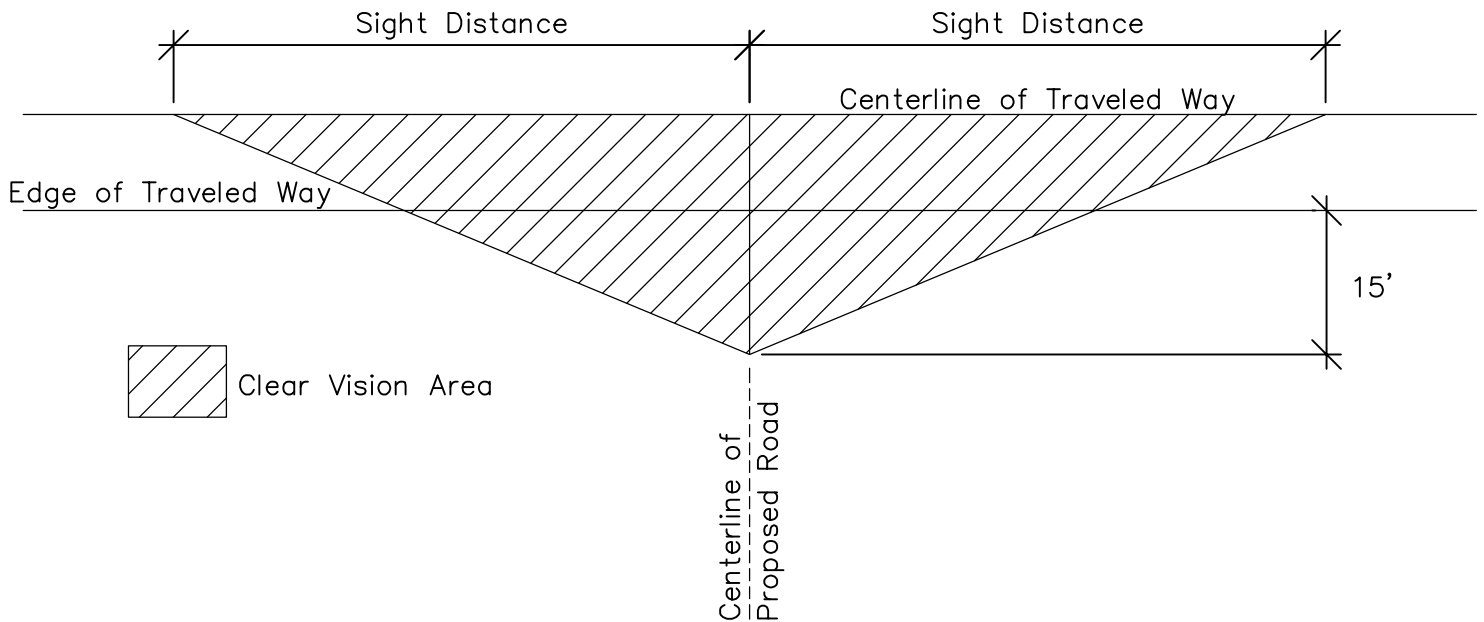
Alternative configurations of the turnaround will be allowed if found to be acceptable for traffic maneuvering.

Center island optional for residential roads only.



TYPICAL SECTION A-A

FIGURE XI CLEAR VISION AREA REQUIREMENTS



Requirements for proposed roads intersecting existing Kalamazoo County Roads

To provide for adequate vision, all obstructions must be removed or minimized within the clear-vision area. Sight distance, looking each way from the proposed road centerline, must be measured from an eye height of 3.5 feet to an object height of 3.5 feet above the roadway centerline. The eye height at the proposed road centerline must be positioned 15 feet from the edge of the traveled way.

The following information is based on the 85th percentile speed.

Distance requirements for the Clear Vision Area are:

25 MPH = 280 FT	45 MPH = 500 FT
30 MPH = 335 FT	50 MPH = 555 FT
35 MPH = 390 FT	55 MPH = 610 FT
40 MPH = 445 FT	

Source: The 2001 AASHTO Policy on Geometric Design of Highways. Exhibit 9-55 Design Intersection Sight Distance.



TABLE 1
KCRC HMA SPECIFICATIONS

Mixture No.	11A Modified	13A Modified	36A Modified
Sieve Size	% Passing Indicated Sieve		
1-1/2"	100	—	—
1"	99—100	—	—
3/4"	70—95	100	100
1/2"	55—85	75—95	97—100
3/8"	40—80	70—95	90—95
No. 4	25—65	45—80	65—90
No. 8	15—50	30—65	55—75
No. 30	7—32	15—40	25—50
No. 50	5—20	10—25	10—25
No. 100	4—12	5—15	—
No. 200	3—6	3—6	3—10
% Asphalt	4—6	5.7—6.3	5.0—8.0
Minimum % Crush	40	80	80
Asphalt Binder	PG 64—22	PG 64—22	PG 64—22

Reclaimed Asphalt Pavement (RAP) Percentages and Binder Grade Selection

Top Course mix is limited to 17% RAP.

The method for determining the binder grade in hot mix asphalt is divided into three categories designated Tier 1, Tier 2, and Tier 3.

Tier 1 (0% to 17% RAP) No binder grade adjustment is made.

Tier 2 (18% to 27% RAP) The selected grade for the asphalt binder is one grade lower for the high temperature than the grade required for the specified project mixture type.

Tier 3 (28% to 40% RAP) The grade for the asphalt binder is selected using a blending chart for high and low temperatures. The Contractor will supply the blending chart.

SAMPLE FORMAT FOR LETTER OF CREDIT

Letter Head of Lending Institution

Today's Date

To: Board of County Road Commissioners of Kalamazoo County
3801 E. Kilgore Road
Kalamazoo, MI 49001

Dear Commissioners:

We hereby establish our Irrevocable Letter of Credit No. _____, and hereby authorize the Kalamazoo County Road Commission to draw on us at sight for the amount of Proprietor's name and address up to a total amount of _____, \$ _____.

Funds are available hereunder in an amount not exceeding in the aggregate \$ _____, for the completion of construction of name of development t in the Township of _____.

This Letter of Credit will expire on date.

All drafts must be marked "Drawn under Letter of Credit of Name of Proprietor , No. _____, dated _____,

We hereby agree with the drawers, endorsers, and bona fide holders, that all drafts drawn under and in compliance with the terms of this Letter of Credit will be duly honored on due presentation to the drawers on or before expiration date.

The original Letter of Credit must be presented to us upon drawing hereunder.

All required fees will be paid for by: name of proprietor.

Signature and Title of Authorized Personnel _____

APPENDIX B

CHECKLISTS OF PROCEDURES, GUIDELINES AND SPECIFICATIONS FOR DEVELOPING NEW PUBLIC ROADS

Checklist for Preliminary Requirements and Plan Development

1. Letter of transmittal submitted _____
2. Plan Review Fee submitted _____
3. Preliminary plan requirements
 - a. Two (2) copies of plans on 24" x 36" sheets _____
 - b. Plans signed and sealed by Registered Land surveyor or Professional Engineer _____
 - c. Plans drawn to scale not smaller than 1"=100' horizontal, 1"=10' vertical _____
 - d. Sketch of proposed development showing relationship to existing road system _____
 - e. Plans show proposed street layout with ROW dimensions _____
 - f. Street layout is compatible with existing street system _____
 - g. Street layout provides for continuous circuit _____
 - h. Plans show layout of entire parcel from which proposed development is taken and tied down to section and/or 1/4 section lines using bearings and distances _____
 - I. Property owners of unplatted land within 300' of development boundaries are identified with names and parcel numbers _____
 - j. All existing streets, streams, lakes, cemeteries, railroad tracks, county drains, and any other applicable features are shown _____
 - k. Zoning of all abutting land is shown _____
 - l. Contours are shown using USGS datum at not more than 4' intervals _____
 - m. Centerline profile of intersected county road is shown for a distance of 600' in both directions from development entrance _____
 - n. Section and 1/4 section line roads are centered on section or 1/4 section lines _____
 - o. No lot access on primary roads, minimum lot access on secondary roads _____
 - p. No outlots; access streets for development of adjoining parcels is provided as required for future development _____

- | | | |
|--|------|-------|
| 4. Minimum right-of-way requirements. | | |
| a. Residential development roads | 66' | _____ |
| b. Residential development roads — Boulevard | 100' | _____ |
| c. Commercial development roads | 66' | _____ |
| d. Commercial development roads — Boulevard | 120' | _____ |
| e. Primary roads | 100' | _____ |
| f. Secondary roads | 100' | _____ |
| g. A dedicated right-of-way on the side of existing county road adjacent to the development is equal to at least 1/2 the minimum width as listed above | | _____ |
| h. A private easement for public utilities is shown | | _____ |
| 5. Preliminary design criteria | | |
| a. Intersection legs have 100' straight-away and meet at 90° angle | | _____ |
| b. Centerline-to-centerline of intersections is not less than 266' primary and/or secondary roads | | _____ |
| c. Proposed cul-de-sacs are provided with written justification and are approved by County Engineer | | _____ |
| 6. Clear vision area at county road is free of obstructions and encroachments | | |
| 7. Left-turn lane required by County Engineer | | _____ |
| 8. No private reserve strips of land will be allowed | | _____ |

Checklist for Construction Requirements and Plan Development

1. Construction plan requirements

- a. Two (2) copies of construction road and drainage plans on 24" x 36" sheets _____
- b. Application for permit to work in public road right-of-way _____
- c. Cover sheet for plans including:
 - Name of development _____
 - Index of sheets _____
 - Location of proposed development in relationship to existing county roads _____
 - Proprietor company name, responsible person's name, address, phone and fax number _____
 - Signed and sealed by Professional Engineer registered in the State of Michigan _____
- d. Letter of approval for all proposed street names _____
- e. Plans drawn to scale not smaller than 1"=50' horizontal, 1"=5' vertical _____
- f. Plans and profile views shown for all proposed streets _____
- g. Typical cross section of all proposed streets shown, including sidewalks or pathways _____
- h. Permanent KCRC benchmark installed and shown on plans, or temporary benchmark established and shown on plans, using USGS datum _____
- i. Soil boring logs and locations one (1) for every 500' of roadway, three (3) minimum shown on plans _____
- j. Soil Erosion and Sedimentation Control Plan Sheet included _____
- k. Plan notes as follows: All unsuitable material must be removed to a depth of 2' below top of subgrade or as directed by the County Engineer and backfilled with MDOT Granular Material Class III. _____

and

All work must comply with the provisions of Part 91 of the Erosion and Sedimentation Control Act of the Natural Resources and Environmental Protection Act P.A. 451 of 1994, as amended, and as administered by the KCDC, or local jurisdiction. _____

2. Locations of proposed utilities meets KCRC requirements as outlined on Page 8 of these guidelines _____

3. Minimum road design criteria

- a. Proposed road cross sections on plans as shown in Figures I, II, III, IV, V, VI, VII and VIII on Pages 20 to 26 and approved by the County Engineer _____
- b. Maximum street grade of no more than 7%, or other approved grade _____
- c. Minimum street grade of 0.75% for concrete curb, or 1% for HMA curb. _____
- d. Minimum grade of 1.25% along gutter flowline of cul-de-sac turnaround Intersection approach grades are per page 9, paragraph 6 _____
- e. Data for all horizontal and vertical curves shown on the plans _____
- f. Horizontal curves must have a minimum 165' centerline radius. 90° curves must have a minimum 45' inside-edge-of-pavement radius. _____
- g. All intersections must have a minimum edge-of-pavement radius of 25' _____
- h. Approved turnarounds must meet design criteria as shown in FigureX, Appendix A, Page 29, or approved alternative _____
- i. While meeting minimum requirements, horizontal and vertical road design must be to as high a standard as is appropriate _____
- j. Pavement design submitted (commercial roads only) _____

4. Drainage system requirements

- a. Storm sewer system design calculations, submitted with the construction plans
 - 1. Design criteria used _____
 - 2. Sketch of drainage areas _____
 - 3. Storm basin sizing — volume required — volume provided _____
- b. Storm drainage system underground _____
- c. Storm sewer meets requirements of KCDC _____
- d. Storm sewer design based on minimum 10-year storm of 20 minutes duration and not less than 30% imperviousness _____
- e. Storm sewer has positive outlet to natural low area or constructed discharge area is provided _____
If leaching basins are approved for use, include in storm sewer design calculations _____
- f. Storm sewer pipe is of concrete or smooth-lined corrugated-plastic pipe conforming to MDOT specifications _____
- g. Storm sewer pipe is 12" diameter or larger _____

- h. Details of all proposed drainage structures are shown, 2' sumps required for mainline drainage structures _____
 - i. All lengths, types, sizes, percent of grades, depths and locations of all drainage structure and pipes are shown _____
 - j. Drainage structures are provided at the highest side of radii where water may cross intersection _____
5. Requirements for crossroad culverts and bridges
 - a. Crossroad culverts and bridges meet AASHTO and MDOT specifications and are approved by County Engineer _____
 - b. Proposed crossroad culverts is not less than 15" diameter _____
 - c. All necessary permits for crossings have been obtained from agency having jurisdiction over the watercourse involved _____
 - d. In accordance with requirements of MDOT, scour analysis supplied for structures with natural stream bottom _____
 6. Proposed street lighting poles are no closer than 6' to back-of-curb and gutter and are of a breakaway design _____
 7. All proposed materials conform to current MDOT and/or KCRC specifications _____
 8. Variations from minimum design standards or specifications approved by County Engineer _____
 9. If right-turn lane and taper is required, minimum design requirements in Figure IX, Appendix A, Page 28 are met. _____
 10. If left-turn lane is required, minimum design requirements in Figure VIII, Appendix A, Page 27 are met _____
 11. Traffic control plans per MMUTCD are shown on the plans _____

Checklist for General Requirements

After construction plan approval and prior to the beginning of construction

1. Permit to work in public road right-of-way in place _____
2. Preconstruction meeting scheduled _____
 - Progress schedule submitted _____
 - Inspection fee paid _____
 - Written permission document for grading beyond property line submitted _____
2. Traffic control construction signing in place _____

Final Acceptance

1. HMA paving complete and approved _____
3. All roadway and drainage construction complete and approved _____
4. Landscape restoration complete and approved _____
5. Clear vision area clean of all obstructions _____
6. If construction is not completed:
 - All required documentation submitted and approved, such as utility installation permits, drainage agreements/easements, and hold-harmless/maintenance agreements for boulevards _____
 - Escrow arrangement accepted by Kalamazoo County Road Commission _____
 - Letter of credit or cash escrow submitted in the amount of 150% of the estimated cost to complete construction _____
7. If temporary turnaround is constructed:
 - Temporary easement supplied _____
 - Cash escrow or letter of credit submitted in the amount of 150% of the estimated cost to complete construction or the turnaround _____
8. Letter of understanding from Proprietor concerning soil erosion and sedimentation control responsibilities _____
9. Proof of liability insurance submitted _____
10. Reproducible mylar "as-built" plans submitted, CAD "as-built" plans furnished, if available _____
11. Driveway restrictions are noted on pertinent recorded document _____
12. All requested material test reports are submitted and KCRC permanent benchmark installed _____
13. If development is not to be platted, see checklist below
 - Land within road right-of-way deeded to KCRC, title insurance included _____
 - All documentation outlined in checklist for Non-Platted Developments submitted and accepted by County Engineer _____

Checklist for Required Legal Documents for Non-Platted Developments

A drainage agreement is required when the Kalamazoo County Drain Commission Office does not accept responsibility for storm sewer and appurtenances located outside the road right-of-way.

- 1. Is this a condominium, site condominium, or land-split development?
If so, has a copy of the Master Deed and any amendments or a draft of the proposed Master Deed been supplied? _____

- 2. Is the developer contemplating the creation of a Homeowners Association with mandatory, automatic membership upon becoming a member? _____

Will the Homeowners Association make provisions for dues and/or assessments from owners to provide a fund from which to pay costs related to the duties and obligations of maintenance and upkeep set forth in the agreement with the Road Commission? _____

- 3. Does the Master Deed or Homeowners Association Agreement include a system to handle the duties and obligations of maintenance and upkeep set forth in the agreement with the Road Commission for the future? _____

Has someone been designated to bear responsibility for current and/or future maintenance and upkeep duties for storm water discharge areas and easements? _____

- 4. Has someone been designated to maintain liability insurance in the future as set forth in the agreement with the Road Commission? _____

- 5. Have names and addresses of all owners of land that are relevant to the drainage agreement been submitted? _____

- 6. Has it been decided who will be allowed to discharge storm water into the designated area: Road Commission, developer/landowner, adjacent land owners? _____

- 7. Are all legal descriptions complete, accurate and drafted in recordable manner? Required descriptions for Drainage Agreement:
 - a. Entire developer parcel. _____
 - b. All pertinent roadways. _____
 - c. The storm water discharge areas. _____
 - d. The continuous or connecting parcels. _____
 - e. All easements. _____

- 8. Are all exhibits to documents titled as shown here? _____

EXAMPLE OF HOW EXHIBIT SHOULD BE TITLED
Exhibit A
Storm Sewer Discharge Area

This exhibit is an attachment to an agreement between Owner's Name and the Kalamazoo County Road Commission, a governmental entity.

Documents of Conveyance

1. Are land division act approvals obtained from the township? _____
2. Is title commitment submitted for parcels that are to be conveyed? _____
3. Are all legal descriptions complete, accurate and in recordable manner? _____
4. Are descriptions for all pertinent parcels attached?
Instruments of conveyance must include language conveying title to improvements, both above and below grade. Example of acceptable language is "therein, thereon, and hereunder." _____
5. All document exhibits must be labeled as noted in above example. _____
6. Where conveyances must comply with the Land Division Act, instruments of conveyance must include either of the following language. _____
 - a. Farm Land Development Rights
This property may be located within the vicinity of farmland or farm operations. Generally accepted agricultural and management practices which may generate noise, dust, odor, and other associated conditions may be used and are protected by Act 288 of the Public Acts of 1967, as amended. _____
 - b. Future Land Division Language
The Grantor grants to the grantee the right to make _____ future land divisions under Section 108 of the Land Division Act, Act No. 288 of the Public Acts of 1967, as amended. _____

Amendment to
Procedures, Guidelines, and Specifications for Developing New Public Roads Policy

Approved by the
Board of County Road Commissioners of Kalamazoo County
June 10, 2008

Page 3, Section V, Paragraph A, add the word "Board" to the following: "Two copies of the preliminary plans must be submitted and approved by the KCRC **Board** . . .", and

Page 6, Section V, add Paragraph U: "**Submit the Preliminary Plat for approval by the Board of County Road Commissioners of Kalamazoo County. A cover letter must specifically request Preliminary Plat approval.**", and

Page 35, Checklist for Preliminary Requirements and Plan Development, add item No. 9: "**Submit cover letter requesting Preliminary Plat Approval by the Board of County Road Commissioners of Kalamazoo County.**"

Note: In accordance with 1967 PA 288 (Amended by Act. No. 525 of 2004) Preliminary Plat Approvals are granted by the Board of County Road Commissioners of Kalamazoo County. Site Condominiums and Planned Unit Developments (PUD's) are not subject to the PA 288 process."