

PROCEDURES AND REGULATIONS FOR DEVELOPING PUBLIC ROADS



Washtenaw County Road Commission

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August 6, 2014

RC14-304

**BOARD OF COUNTY ROAD COMMISSIONERS
OF WASHTENAW COUNTY**

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WASHTENAW COUNTY ROAD COMMISSION
RESOLUTION CERTIFICATION

Adoption of New Procedures & Regulations for Developing Public Roads
Resolution No. RC14-304

"Moved...

WHEREAS, the Board of County Road Commissioners of the County of Washtenaw deems it necessary to adopt revised "Procedures and Regulations for Developing Public Roads"; and

WHEREAS, such procedures and regulations function to provide rules and assistance to land developers and others to ensure that public roadways, dedicated to public use, are designed by accepted methods and constructed with approved materials and by appropriate methods.

NOW, THEREFORE, BE IT RESOLVED that the Procedures and Regulations for Developing Public Roads, as filed with the Board 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 the Washtenaw County Road Commission's Procedures and Regulations for Developing Public Roads.

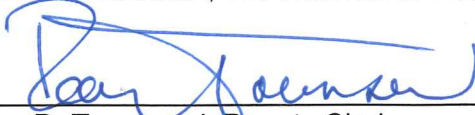
BE IT FURTHER RESOLVED, that in the event other previous resolutions or parts of previous resolutions conflict with this resolution adopting the aforesaid Procedures and Regulations for Developing Public Roads, such resolutions, or parts thereof, only to the extent of conflict, are hereby repealed.

BE IT FURTHER RESOLVED, that if any section, clause, or portion of the aforesaid Procedures and Regulations for Developing Public Roads be declared invalid by courts, the balance of same shall remain valid and in effect, except for that part declared invalid.

BE IT FURTHER RESOLVED, that the effective date of the aforesaid Procedures and Regulations for Developing Public Roads shall be August 6, 2014.

Voice Vote: YEAS: 3 NAYS: 0 ABSENT: 0 ABSTAIN: 0 Motion Carried.

I hereby certify that the foregoing is a true copy of a resolution duly adopted at a meeting of the Board of Washtenaw County Road Commissioners held on August 5, 2014, and is on file at the Office of the Washtenaw County Road Commission, 555 North Zeeb Road, Ann Arbor, Michigan 48103.



Roy D. Townsend, Deputy Clerk

Dated: 8/6/14

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SECTION 1 – INTRODUCTION

This document contains detailed procedures and regulations for proposed public roads to be constructed within Washtenaw County. The publication is intended to assist design professionals, Township officials, WCRC staff, and members of the Board of County Road Commissioners who may ultimately approve and accept new roads into the WCRC public road system. WCRC will only approve for acceptance into the public road proposed roads that demonstrate benefit to the local community and the general public interest. WCRC will review for acceptance only those proposed public roads which are included in proposed platted subdivisions. Site Condominium and land division projects such as lot splits shall be developed using private roads.

The scope of this document includes only proposed roads within those parcels of land located outside the corporate limits of all cities and villages within Washtenaw County and which would, if accepted, be subject to the jurisdiction of the Board of County Road Commissioners of the County of Washtenaw, State of Michigan.

This document as adopted by resolution RC14-304 by the Board of County Road Commissioners at its meeting held on August 5, 2014, replaces and supersedes the previous publication, *Procedures and Regulations for Developing Public Roads*, dated October 19, 2004.

The content of this document does not supersede any part of MCL 560.101 (Public Act 288 of 1967) as amended, commonly known as the Land Division Act, and is intended for use only as an instrument to expedite review of proposed public road developments to be constructed within Washtenaw County.

If any part of these rules and regulations shall be found by a court of competent jurisdiction to be invalid, void or illegal, no such finding shall in any way affect, impair or invalidate any other provision contained in these rules and regulations, and such other provisions shall remain in full force and effect. To this end, these rules and regulations are declared severable.

In the event that the standards contained herein change between the approval date of a Preliminary Plat and submission of Road & Drainage Plans for a particular development or phase of a development, the standards in effect when the Road & Drainage Plans are submitted shall apply.

SECTION 2 – DEFINITIONS

AASHTO – The American Association of State Highway and Transportation Officials

ADA – Americans with Disabilities Act

ATSSA – American Traffic Safety Services Association

Access Management – The process of developing, providing and managing reasonable access while preserving the flow of traffic and maintaining safety, capacity, and proper speed on the roadway system

Agreement for Public Road Development – An agreement executed by a Developer and WCRC that describes certain construction and financial obligations of the Developer and the intention of WCRC to accept the new roads as public roads provided those obligations are met.

Arterial – A major roadway intended primarily to serve through traffic, where access is carefully controlled; generally roadways of regional importance, intended to serve moderate to high volumes of traffic traveling relatively long distances and at higher speeds.

Berm – A mound of earth with sloping sides that is located between areas of approximately the same elevation.

Board – The Board of County Road Commissioners of the County of Washtenaw.

Certified Survey – MCL 525.201 (Public Act 132 of 1972 as amended).

Clear Vision Area – Land acquired or used by the WCRC for maintaining unobstructed vision.

Collector Road – A road intended to move traffic between local roads and arterial roads.

Complete Streets - A transportation policy and design approach that requires streets to be planned, designed, operated, and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation. Complete Streets allow for safe travel by those walking, bicycling, driving or occupying all categories of licensed motor vehicles (passenger cars & trucks), or riding public transportation.

Condominium Act – MCL 559.101 et seq. (Public Act 59 of 1978 as amended).

Condominium Unit – The portion of a condominium project designed and intended for individual ownership and use.

Cul-de-sac – A road open at one end only that includes a special turning area at the closed end; also referred to as a dead-end road.

Deceleration Lane – A lane, including a taper, constructed for the purpose of enabling a vehicle to leave the through traffic lane at a speed equal to or slightly less than the speed of traffic in the through lane and then decelerate to a stop or execute a slow-speed turn.

Design Engineer – Refer to Professional Engineer.

Design Speed – A selected speed used to determine the various geometric design features of a roadway, based on the topography, anticipated operating speed, adjacent land use, and the functional classification of the roadway.

Design Spread – An engineering calculation to determine catch basin spacing necessary to accommodate the accumulated storm water runoff flow in and next to the roadway gutter. This water often represents an interruption to traffic flow during rainstorms measured by lateral distance, in feet, of roadway ponding from the curb.

Developer – A person, firm, association, partnership, corporation or combination of same which holds ownership interest in land upon which a plat, condominium or other development is planned.

Drainage District - Drainage areas wholly within one county can be established as County Drainage Districts per rules and regulations of the Washtenaw County Water Resources Commissioner's Office.

Driveway - Any lane, road, or other way providing vehicular access to or from a public road from or to the property adjoining the road.

Easement – A right of way granted by the owner of land, but not dedicated, for specific and limited use of private land by another.

EPA - Environmental Protection Agency.

FAUB – The current Federal-Aid Urban Boundary in Washtenaw County as approved by MDOT and FHWA.

FHWA – The Federal Highway Administration.

Franchise Utility – A public utility company, recognized by the Michigan Public Service Commission, which provides service or distribution for telecommunication, natural gas, petroleum, electricity, or cable television.

Final Plat – An exact and detailed map of all or part of a subdivision prepared and certified by the Developer's Professional Surveyor in accordance with the requirements of the MCL 560.101 et seq. (Public Act 288 of 1967 as amended).

Frontage – The private property that abuts the road right-of-way.

Governing Body – Township Board, City Council, or Village Board having jurisdiction over the land in which a proposed development is to be located.

HMA – Hot Mix Asphalt.

ITE - Institute of Transportation Engineers.

Inspection – The close observation and examination of various construction operations, materials, and installations for the purpose of determining the acceptability of completed roads and appurtenant structures.

Land Division Act – MCL 560.101 et seq. (Public Act 288 of 1967 as amended).

LID – Low Impact Design.

Local Road – A roadway with the primary function of providing access to and from adjacent properties and to and from roadways of a higher functional classification.

Lot – A measured portion of a parcel or tract of land, which is described and fixed in a recorded plat or condominium.

MCL – Michigan Compiled Laws.

MDEQ – The Michigan Department of Environmental Quality.

MDOT – The Michigan Department of Transportation.

MMUTCD – The Michigan Manual of Uniform Traffic Control Devices.

MS4 – Municipal Separate Storm Sewer System.

Michigan Coordinate System – the system defined in MCL 54.231 et seq. (Public Act 9 of 1964 as amended).

National Functional Classification – A system used to group public roadways into classes according to their purpose in moving vehicles and providing access.

NPDES – National Pollutant Discharge Elimination System.

Plat – A map or chart of a subdivision of land.

PCC – Portland Cement Concrete.

PRPA – WCRC Procedures & Regulations for Permit Activities.

Preliminary Plan – Analogous to and will be treated as a preliminary plat as described herein.

Preliminary Plat – A map showing the salient features of a proposed subdivision submitted to an approving authority for purposes of preliminary consideration.

Private Road – A road that is NOT certified by WCRC as a public road and therefore is outside the jurisdiction of WCRC. Typically serves four or more businesses, homes, or lots.

Professional Engineer – A civil engineer licensed under MCL 339.2001 et seq. (Public Act 299 of 1980 as amended) Also the licensed civil engineer employed by the Developer of a proposed subdivision development to prepare plans and supervise inspection of the roads in the development area. The Professional Engineer is referred to as the Design Engineer during the preliminary engineering phase and as the Construction Engineer during the construction phase.

Professional Surveyor – A surveyor licensed under MCL 339.2001 et seq. (Public Act 299 of 1980 as amended). Also the licensed surveyor employed by the Developer to prepare preliminary and final plats of the proposed subdivision development.

Property Owner – A person, firm, association, partnership, corporation, or combination of any of these or any other party having an ownership interest in land.

Reverse Frontage – Frontage on an access road constructed at the rear of lots fronting on a major roadway.

Right-of-Way – The land over which the Board has jurisdiction and which is subject to use for highway purposes. Right-of-way may be obtained by deed, statutory or plat dedication, condemnation, or a ten-year period of use pursuant to statute. It may be held either in fee or as an easement.

ROW – Right-of-way, see above.

Road – A way for vehicular traffic, whether designated as a “street”, “highway”, “thoroughfare”, “freeway”, “expressway”, “parkway”, “through-way”, “avenue”, “boulevard”, “lane”, “cul-de-sac”, “drive”, “court”, or other title including the entire area within the right-of-way.

Road Construction – The act or process of building a road.

Road & Drainage Plan – A document which describes or depicts the land over which the proposed public roads will be developed and which is proposed for public road and drainage purposes. Right-of-way may be obtained by deed, statutory or plat dedication, condemnation, or a ten-year period of use pursuant to statute. It may be held either in fee or as an easement.

SAD – Special Assessment District: A designated area where a majority of property owners agree to allow a government agency to levy a special property tax in exchange for a specific service such as the improvement of public roads. There are two pertinent SAD statutes: MCL 41.271 et seq. (Public Act 246 of 1931 as amended), which is administered by the Road Commission, and MCL 41.721 et seq. (Public Act 188 of 1954 as amended), which is administered by a Township.

SEMCOG – The Southeast Michigan Council of Governments.

Sight Distance – Visibility requirements as described and defined by AASHTO, see above.

Sight Triangle – An area of unobstructed sight distance along both approaches of an access connection.

Storm Sewer – A closed or open conduit that conveys stormwater that has been collected by inlets to an adequate outfall. It generally consists of laterals or leads and trunklines or mains. Culverts connected to the storm sewer are considered part of the storm water management system.

Subdivision – A division of land as described in the Land Division Act or the Condominium Act.

Engineering Department – The unit of WCRC responsible for administering the process of developing proposed public roads within developments.

TRB – Transportation Research Board.

Traffic Control Plan – A plan identifying all required traffic control devices, including but not limited to signs, barriers, barricades, plastic drums, lights and pavement markings, in accordance with the current MMUTCD.

Traffic Impact Study (TIS) – Analysis of the potential traffic impacts generated by a proposed project on intersection level-of-service and the safety and operation of the public road system, as prepared by a Professional Engineer.

WATS – The Washtenaw Area Transportation Study.

WCRC – Washtenaw County Road Commission.

WCWRC – Washtenaw County Water Resources Commissioner's Office

Waiver – Permission to depart from a regulatory standard where required conditions are satisfied.

SECTION 3 – GENERAL PROVISIONS

3.1 ORDER OF SUBMITTAL

The following steps, which will be explained in detail in subsequent sections, will be administered by WCRC when considering a platted subdivision. As previously stated, land division and Site Condominium projects must be developed using private roads.

WCRC may require up to a 30-day review period for plans and supporting information for the following submittals.

3.1.1 Preliminary Plat Submittal

- a) Permit Application(s) and Fee(s)
- b) Preliminary Plat Review Fee
- c) Traffic Impact Study Submittal (If applicable, refer to PRPA Section 3.5)
- d) Confirmation from Governing Body of Preliminary Plat Approval
- e) Initial Stormwater Management System Concept Approval from WCWRC

3.1.2 Preliminary Plat Board Approval

3.1.3 Road & Drainage Plan Submittal

- a) Cost Estimate
- b) Construction Inspection and Administrative Fee Submittal
- c) Right of Way Conveyance/ Easement Submittal
- d) Title Commitment & Other Pertinent Documentation Submittal
- e) Completion Guarantee Submittal
- f) Proof of Insurance Submittal
- g) Proof of Preliminary approval by the WCWRC
- h) Agreement for Public Road Development
- i) Road Improvement Agreement (If Applicable)

3.1.4 Road & Drainage Plan Board Approval

3.1.5 Pre-Construction Meeting and Permit Issuance

3.1.6 Construction

3.1.7 Final Plat Board Approval

3.1.8 Board Acceptance of Roadways

3.2 STANDARDS, GUIDELINES & SPECIFICATIONS FOR DESIGN & CONSTRUCTION

3.2.1 The non-exhaustive list of engineering authorities in Section 3.2.2 will provide guidance to Professional Engineers and WCRC staff in the design of the proposed public roads. These

authorities do not supersede the need for sound engineering judgment in conformity with accepted engineering principles.

3.2.2 WCRC hereby adopts by reference and incorporates in these Procedures and Regulations as if fully stated herein the most current editions of the following publications:

- AASHTO: A Policy On Geometric Design of Highways and Streets
- AASHTO: Roadside Design Guide
- AASHTO: A Guide for Achieving Flexibility in Highway Design
- AASHTO: A Guide for Planning, Design, and Operation of Pedestrian Facilities
- AASHTO: A Guide for the Development of Bicycle Facilities
- AASHTO: A Guide for Geometric Design of Very Low-Volume Local Roads (ADT Less Than 400)
- ADA Standards for Accessible Design
- ITE: Traffic Calming, Parking and Trip Generation, & Standards Journals
- LID Manual for Michigan - SEMCOG
- MDOT: Standard Plans & Special Details
- MDOT: Standard Specifications for Construction
- MDOT: Manuals & Guides
- MMUTCD
- TRB: Highway Capacity Manual
- WATS: Complete Streets Plan
- WCWRC: Rules and Guidelines

3.3 COMPLETE STREETS

Complete Streets Design Practices shall be applied where applicable. The WATS Complete Streets Toolkit offers potential treatments to address the specific needs of the design. Complete Streets is defined by WATS as the planning, designing, & constructing of transportation corridors to promote efficient travel by all users and all modes. Complete Streets are site sensitive, providing bike lanes, automobile parking, and pedestrian facilities in urban settings, while recognizing connected wide, paved shoulders in rural settings that can accommodate both bicycles and farm equipment.

Design Components of Complete Streets include:

- Signage and Pavement Markings
- Green Streets/Stormwater management
- Lane Reduction Treatments
- Bicycle Treatments
- Pedestrian Treatments
- Freight Treatments
- Transit Treatments
- Automobile Treatments
- Lighting

SECTION 4 – SUBMITTAL REQUIREMENTS

4.1 APPLICABILITY

Proposed public roads within a platted subdivision shall conform to the requirements of this document. As previously stated, land division and Site Condominium projects must be developed using private roads. Standard fees for engineering review, inspection, and administration costs will be required in accordance with the current WCRC published fee schedule.

4.2 PLANNING

The Developer may submit concept plans in order to solicit comments from WCRC, and shall pay an initial conceptual review fee for this service. A concept plan should contain enough information concerning the proposed geometry and drainage that comments can be provided to the Developer prior to commencing formal development of the Preliminary Plat. An aerial survey is acceptable for the concept plan. This exchange is intended to avoid delays by acquainting the Developer and the Design Engineer with any long-range plans of the Board which may have bearing on the development; any coordination which may be required between the Board and the affected governing body; and any points contained herein that may require clarification to the Developer or the Design Engineer.

4.3 GENERAL

- 4.3.1 As set forth in MCL 560.113 and MCL 560.183, the Developer must submit a Preliminary Plat which meets the requirements of this document and all applicable supporting documents.
- 4.3.2 If either a Preliminary Plat or the Road & Drainage Plan, as approved by the Board, is later revised due to requirements of the Township, the Washtenaw County Water Resources Commissioner's Office, or any other regulatory agency, or if the Developer otherwise makes revisions, all revisions shall be incorporated into the respective document(s) and re-submitted for approval or denial by the Board. Additionally, the Michigan Department of Transportation, the Michigan Department of Natural Resources, the Michigan Department of Environmental Quality, and the Washtenaw County Health Department may also be required to review and approve the Preliminary Plat and the Road & Drainage Plan.

4.4 FEE SCHEDULES

- 4.4.1 WCRC requires payment of various fees with the submittal of a Preliminary Plat, a Final Plat, or a Road & Drainage Plan. These fees are non-refundable. All applicable fees shall be paid to WCRC at the time of submittal. The current Fee Schedule, as adopted by the Board, is listed on the WCRC website (www.wcroads.org).
- 4.4.2 If plan revisions are necessary, a resubmittal fee is required. Non-payment of any fee will result in suspension of the review process.
- 4.4.3 A Construction Inspection & Administration Fee, based on the current WCRC Fee Schedule, shall be paid to WCRC prior to the Board's Road & Drainage Plan Approval.
- 4.4.4 A Sign Fee, based on the current WCRC Fee Schedule, shall be paid to WCRC prior to Board acceptance of the proposed public roads. This fee is non-refundable.

4.5 PRELIMINARY PLAT

- 4.5.1 Three (3) copies of the Preliminary Plat, drawn to a scale no smaller than one inch = 100 feet on 24" X 36" sheet(s), prepared by the Design Engineer or Professional Surveyor, along with electronic files of the Plat, shall be submitted to the Engineering Department for review. All Preliminary Plats shall be signed and sealed by a Professional Engineer or Professional Surveyor licensed in the State of Michigan.
- 4.5.2 At a minimum, a Preliminary Plat shall consist of a title sheet, existing conditions sheet, proposed grading and utility plan, and proposed site plan.
- 4.5.3 The Preliminary Plat shall show dimensions and bearings of the entire parcel proposed for development, a layout of the entire development (master plan), and that portion of the layout for which approval is requested.
- 4.5.4 The Preliminary Plat shall show the location of the plat or parcel with reference to the part of the section and township in which the parcel is situated, and shall dimension all section and quarter lines and corners adjacent to and within the parcel. An updated, executed land corner recordation certificate, in conformance with MCL 54.201 et seq., shall be submitted for each corner at the time of preliminary plan submittal. It shall be the responsibility of the Design Engineer to record these documents with the Washtenaw County Register of Deeds. The submittal shall include a location map showing the plat in relation to the Washtenaw County road system with a scale not smaller than 1" = 1,000'.
- 4.5.5 Each initial Preliminary Plat layout shall be superimposed on a topographic map with not more than two-foot contour intervals, using the North American Vertical Datum (NAVD 88). The Preliminary Plat shall be based upon the Michigan Coordinate System of 1983 with three points of reference, two section corners and one property corner.
- 4.5.6 The Preliminary Plat shall show locations and names of proposed roads together with arrows indicating the direction of surface water drainage within the subdivision to an established drainage course or drain and proposed storm sewers, culverts, detention/retention basins, and other proposed drainage features. A Drainage District shall be established in accordance with current WCWRC rules and regulations.
- 4.5.7 The Preliminary Plat shall identify the name of the development, the name of the Developer, the Design Engineer, and the Professional Surveyor, with mailing addresses, email addresses, and telephone numbers for each on the cover sheet. Cover sheets shall also provide a site map, legal description of the parcel(s), tax I.D. number(s), sheet index, and the date of the plans as submitted, including all revisions.
- 4.5.8 The Preliminary Plat shall plainly show all governing conditions such as:
 - a) Adjoining subdivisions with lot lines and lot numbers and easements for public access to drains, public utilities, adjoining roads, and outlots where applicable. Include existing and proposed zoning for the subject parcels along with descriptions of what type of development can be built within the given type of zoning.
 - b) Names, address, and parcel identification numbers of all adjacent lands.
 - c) State highways, identified by name and route number. Proposed work within a state right-of-way shall be noted as such.

- d) All existing conditions in and around the property being developed shall be labeled on the existing conditions sheet. These items include, but are not limited to, railroads, cemeteries, parks, wetlands, natural water courses, easements, utilities (buried and overhead), county and private drains, rivers including the one hundred year flood plain contour, sewers, and culverts. Where a road is proposed over or under an existing utility easement, the Developer must provide written correspondence from the easement owner authorizing the construction of the road and its facilities within the easement.
 - e) All other existing topographic features whose location or existence might influence the layout of the plat, including existing and proposed private roads, and driveways within 500 feet of the proposed subdivision's boundaries.
- 4.5.9 The Preliminary Plat shall show the locations and names of proposed roads on the site plan. The existing road name shall be used for any proposed road that is an extension of an existing road or in a direct line with an existing road. Other roads shall be given such names as the owner may choose, subject to the current WCRC Road Naming Procedure. Public road names shall be limited to fourteen (14) characters, including spaces and an abbreviated suffix. The use of double suffixes shall not be permitted. A road name which may be confused with a similarly named road within the county or postal delivery area will not be approved and shall not be adopted.
- 4.5.10 The Preliminary Plat shall show typical cross section of roads to be constructed. The typical cross section shall comply with all requirements contained herein, including without limitation right-of-way width, road lengths, pavement width, pavement materials, and pavement thicknesses. All roads shall be provided with facilities for adequate surface drainage. Drainage Districts shall be established in accordance with current WCRC Rules and Guidelines. All public road developments shall utilize concrete curb and gutter and enclosed drainage systems.
- 4.5.11 Layout of proposed roads shall connect to existing outlots in adjacent developments and shall provide outlots or other provisions for future connections to adjacent land that is presently undeveloped or underdeveloped. Outlot widths shall be no less than 66 feet, and shall be labeled as "Outlot for Future Road Extension." A temporary sign stating such shall be placed in the center of the outlot, at the ROW edge of the adjacent road.
- 4.5.12 Layout of proposed roads shall provide at least two access connections to the existing public road system. In order to satisfy this requirement in early phases of a multi-phase development, the WCRC may consider approval of temporary connecting roads that meet all standards. Easements and completion guarantees are required for such roads.
- 4.5.13 The Design Engineer shall show all phase boundaries indicating the order of construction. Phase lines shall be so located that each phase satisfies WCRC requirements for two access connections.
- 4.5.14 The minimum centerline radius for horizontal curves shall be 175 feet.
- 4.5.15 Cul-de-sac roads may be considered as part of a proposed interconnected road layout. A cul-de-sac shall not be more than 600 feet nor less than 145 feet in length as measured along the road centerline from the point of intersection with the intersecting road to the center point of the circular turnaround. Neither single cul-de-sac nor multi cul-de-sac designs with one access connection to a public road will be approved.

- 4.5.16 Easements for public access for construction and maintenance of drains, public utilities, etc., and their dimensions, in, over, and across private property within the development shall be shown on the Plat.
- 4.5.17 The Preliminary Plat shall provide stationing for all roads. Stationing shall not duplicate itself for the same road.
- 4.5.18 The Preliminary Plat shall show all existing and proposed road right-of-way widths within and adjacent to the development. Proposed widths shall comply with the requirements of the established WCRC standards.
- 4.5.19 The Preliminary Plat shall show sight distances, in both directions, at all proposed intersections with existing county roads, in accordance with the current version of the WCRC PRPA. Plan and profile sheets of the existing county road centerline may be required by WCRC. If sight distances on the existing county road do not meet the PRPA requirements, WCRC may require that the Developer relocated the proposed entrance and/or improve the existing county road to achieve required sight distances.
- 4.5.20 In any case where the Developer proposes to subdivide a given parcel of land but wishes to begin development of only a portion of the total parcel, the Preliminary Plat submittal shall include the proposed general layout for the entire parcel. The portion which is proposed to be subdivided first and all subsequent portions shall be clearly defined on the Preliminary Plat in order to illustrate the sequence of development which the Developer intends to follow. Phase boundary lines shall be designated to ensure a continuous route of travel for WCRC maintenance vehicles. Each subsequent phase shall follow the same procedure until the entire development is subdivided. All phase boundaries shall be drawn to allow each phase to qualify for road acceptance independently. Each phase shall provide two points of access to an existing public road.
- 4.5.21 Because interconnected subdivisions facilitate efficient road maintenance, school busing, and emergency services while minimizing congestion and preserving capacity on the public road system, no proposed development that isolates lands from existing public roads will be approved. The Board may require that any road constructed for a future connection shall have a temporary paved turnaround at its terminus to facilitate plowing and routine maintenance of the road system. Temporary turnarounds shall be located within dedicated road right-of-way or recordable easements. Proposed developments adjacent to existing developments with public roads shall connect to all such roads and shall fit the pattern established by adjacent roads to provide a continuous circuit for travel. If a temporary turnaround is required on adjacent property, the Developer shall obtain an executed and recordable easement from the property owner prior to Road & Drainage Plan approval.
- 4.5.22 Half-width road right-of-ways shall be dedicated when the boundary of the proposed development coincides with the boundary of a recorded plat on which a half width road right-of-way has previously been dedicated. Developments proposed for parcels of land which extend to a section or quarter section line and which lack an existing road centered upon it may be required to dedicate half-width right-of-ways along the section or quarter section line for future road construction.
- 4.5.23 Direct access from individual lots or units within a subdivision to existing collector and arterial roads is prohibited for reasons of access management and public safety. All lots within the proposed development shall front on an internal road system. WCRC may require existing, adjacent driveways to be relocated to intersect the proposed subdivision road.

- 4.5.24 Where a development abuts or contains an existing county road, WCRC may require marginal access roads, reverse frontage, or such other treatment as may be necessary for adequate protection of residential properties and to afford separation of through and local traffic. When such requirement is made a condition of approval of the final plat or acceptance of the roads, the Developer shall dedicate the property or grant an easement for the purpose of a marginal access road and shall be responsible for improving said marginal access road as required by the Board.
- 4.5.25 Within 30 days of receipt of the Preliminary Plat WCRC staff shall either reject the proposed Preliminary Plat for noncompliance or recommend it for Board approval. If staff rejects the submittal, the reasons for rejection and requirements for approval shall be provided to the Developer in writing. Preliminary Plat approval shall be void after two years from the date of approval if the Road & Drainage Plan has not been approved, unless otherwise extended by the Board.

4.6 ROAD & DRAINAGE PLAN

- 4.6.1 After approval of the Preliminary Plat three copies of a proposed Road & Drainage Plan, prepared by the Design Engineer and covering the roads within the proposed development, along with electronic files of the Plan, may be submitted to WCRC for review. The plans shall contain all information essential for constructing the project. The plans shall be in accordance with the requirements stated in this document and shall comply with all current specifications required by the Board. All submittals shall be stamped and signed by a Professional Engineer.
- 4.6.2 Within 30 days of receipt of the Road & Drainage Plan WCRC staff shall either reject the proposed Road & Drainage Plan for noncompliance or recommend it for Board approval. If staff rejects the submittal, the reasons for rejection and requirements for approval shall be provided to the Developer in writing. A revised plan will be recommended for approval when it shows compliance with all requirements. In order to assure that a Road & Drainage Plan will be considered at a scheduled Board meeting, all required fees, easements and related documents must be submitted at least 10 days prior to the meeting.
- 4.6.3 Approval of any Road & Drainage Plan by WCRC does not guarantee acceptance of the roads into the public road system or relieve the Developer of any responsibilities or liabilities incurred in the development of the road or subdivision.
- 4.6.4 The Road & Drainage Plan shall become void after two years from the date of approval if no road construction, as previously defined, has been started, unless the date is otherwise extended by the Board.
- 4.6.5 The Developer shall submit a traffic control plan for the existing and proposed road network during the construction period. The Developer will be required to provide and maintain all traffic control devices called for on the approved traffic-control plan.
- 4.6.6 The Developer will be responsible for the cost of all measures deemed necessary by WCRC to provide for public safety along the proposed roads within the development boundaries. These measures may include the erection of WCRC approved road-name signs, stop signs, other traffic control signs (regulatory, warning, and informational), signals or pavement markings required for public safety and convenience.
- 4.6.7 All work within the existing WCRC right-of-way shall require permits in accordance with the most current version of the PRPA.

- 4.6.8 Construction of homes or commercial buildings within a proposed development or phase of development may not begin until all roads within the phase are built with suitable pavement (through HMA leveling course or completed PCC pavement). An exception will be considered, with the consent of the governing body, when construction haul routes are used which avoid use of the proposed public roads.
- 4.6.9 All proposed development work within proposed and existing right-of-way must be detailed and the construction plans must be reviewed and approved by WCRC. The construction plans shall show all pertinent data required for review and construction of the development.
- 4.6.10 The Road & Drainage Plan shall show proposed locations of survey monuments on road right-of-way and centerlines. A typical survey monumentation detail can be found in the Appendix.
- 4.6.11 The Design Engineer shall completely illustrate all intersections with the existing road system. Illustration details shall include, but are not limited to, centerline profiles, cross-sections, radii dimensions, pavement widths, taper lengths, traffic control devices and pavement striping details.
- 4.6.12 Drainage plans shall be shown for existing adjacent county roads and constructed to the standards required by the WCWRC Rules and Guidelines and PRPA.
- 4.6.13 The Design Engineer shall submit the approved Road & Drainage Plan electronic files including CAD drawings and PDF files of the plan set to WCRC prior to the issuance of WCRC permits.

4.7 COST ESTIMATE

The Design Engineer shall submit a detailed estimate of construction costs for all work within the proposed and existing right-of-ways at the time of final submittal of the Road & Drainage Plan. This estimate shall be used to determine the amounts of the completion guarantee and the construction inspection and administrative fees.

4.8 RIGHT-OF-WAY DEDICATION

- 4.8.1 For platted developments, all right-of-ways and easements shall be submitted and approved by the Board at the time of final plat approval. If an easement not described on the final plat is required for development, all easements with applicable attachments shall be conveyed to WCRC in a format that is recordable at the Washtenaw County Register of Deeds Office and which meets the drafting requirements of MCL 54.211 et seq., prior to Road & Drainage approval. All documents shall be signed and sealed by a Professional Surveyor.
- 4.8.2 The Board may request that additional right-of-way be conveyed to WCRC in accordance with the Washtenaw County Segment of the Inter-County Highway Plan and Right-of-Way Requirements for Southeastern Michigan.
- 4.8.3 All proposed public roads shall have minimum right-of-way of 66 feet for residential roadways and 86 feet for corporate parks or office developments. Right-of-way shall be of sufficient width to allow proper drainage, installation of sidewalks and multi-use paths, and installation of public utilities.
- 4.8.4 The right-of-way on all curvilinear roads shall be the same width as the right-of-way on the tangent portions. Where curves limit sight distance, the right-of-way may need to be expanded to encompass the sight lines.

- 4.8.5 All road construction shall be centered within the road right-of-way. Section line and quarter section line roads shall be centered on the respective lines.
- 4.8.6 All dead end (cul-de-sac) roads shall include a circular turnaround with a minimum right-of-way radius of 75 feet.
- 4.8.7 Additional right-of-way width may be required due to existing conditions or future adjacent developments including, but not limited to, commercial areas, multi-lane roadways, divided roadways, non-motorized facilities, utilities, cut or fill sections of roadway, grading, drainage, clear vision, or for other reasons of health, welfare and safety.
- 4.8.8 When a grading permit, tree removal agreement or tree trimming agreement is required for work on neighboring private property, the Developer shall be responsible for obtaining the appropriate approval and providing copies to WCRC prior to Road & Drainage approval.
- 4.8.9 All right-of-ways shall be monumented in accordance with the Land Division Act prior to acceptance of the roadways.
- 4.8.10 The following will be required before any right-of-way conveyance:
- a) Title Commitment: A current title commitment indicating clear title for the roadways to be conveyed must be submitted.
 - b) Metes and bounds legal description for the conveyance of right-of-way for each existing county road and for the proposed roads.
 - c) A drawing meeting the drafting requirements of a certified survey.
 - d) The right-of-way conveyance documents must meet the formatting requirements of the Washtenaw County Register of Deeds Office.
 - e) Depending upon the type of legal entity involved, the following will also be required:
 - Limited Liability Companies are required to submit:
 - Certified copy of the Articles of Organization
 - Certified copy of the Operating Agreement
 - Management Agreement (if applicable)
 - Current Certificate of Good Standing
 - Partnerships are required to submit:
 - A copy of the Partnership Agreement
 - A copy of the Current Certificate of Partnership
 - Corporations are required to submit:
 - A resolution authorizing the conveyance of the parcel to the WCRC
 - Current Certificate of Good Standing

4.9 AGREEMENT FOR PUBLIC ROAD DEVELOPMENT

The Developer shall submit two original copies of a signed and witnessed Agreement for Public Road Development upon submission of the Road & Drainage Plan. Upon acceptance by the Board, the

Agreement obligates the Developer to complete construction of roads within three years. The Agreement document shall use the format presented in the Appendix.

4.10 COMPLETION GUARANTEE

- 4.10.1 A completion guarantee shall be submitted by the Developer, who must be identical to the person or entity who executes the Agreement For Public Road Development, at the time of formal submission of the Road & Drainage Plan for approval by the Board. The guarantee shall be sufficient to ensure that construction of proposed roads is completed in accordance with the approved Road & Drainage Plan. The guarantee shall be presented in the form of a Cashier's check or irrevocable standby letter of credit (see Appendix) for 100% of the approved cost estimate. An irrevocable standby letter of credit shall automatically renew on its own terms for periods of no less than one year unless written notification to WCRC from the financial institution is received sixty days prior to its expiration date.
- 4.10.2 The Board will grant release of the completion guarantee upon acceptance of the roads or improvements. Partial releases may be granted by WCRC staff prior to acceptance upon request of the Developer, provided commensurate construction is satisfactory. In such cases the minimum retained balance of the guarantee shall be 20% of the total, plus the estimated cost of remaining construction items.

4.11 INSURANCE

Before performing any work through completion of the project, the Developer shall furnish to WCRC, and maintain, proof of liability insurance pursuant to current policy established by the Board. An example of the required insurance certificate and specific requirements can be found in the Appendix.

4.12 WCRC PERMITS

- 4.12.1 The Developer shall obtain permits from WCRC Engineering Department for all construction within the existing and proposed right-of-way and any haul routes in accordance with the PRPA.
- 4.12.2 Any driveway accessing a proposed public road shall be required to obtain a driveway permit from the WCRC Engineering Department as a condition of access to the road right-of-way.

4.13 FINAL PLAT

- 4.13.1 Following approval of the Road & Drainage Plan, the Developer shall submit the final plat for approval and signing by the Board. In addition to the original mylar copy, the Developer shall submit two prints of the final plat. WCRC will require at least 30 days for review of the plat prior to approval.
- 4.13.2 A Final Plat will not be approved until WCRC has established the required Drainage District(s) and has the proper easements recorded, or has approved the plat in accordance with the Land Division Act.

4.14 WAIVERS AND VARIANCES

- 4.14.1 Waiver of or variance from WCRC Procedures and Regulations may be requested in writing by the Developer of a proposed public road development. A written request for a waiver or variance shall include sufficient technical details to support a reasonable justification for the request.
- 4.14.2 A request for a waiver or variance shall be submitted for review by WCRC staff prior to consideration of the Preliminary Plat or Road & Drainage Plans by the Board. Requests received after Board approval of a Preliminary Plat or Road & Drainage Plan may require reconsideration of approved plans by the Board.

SECTION 5 – ROAD & DRAINAGE DESIGN STANDARDS

5.1 PLAN PREPARATION

5.1.1 General

- a) Road design shall conform to current AASHTO guidelines, applicable MDOT design methodology, and WCRC requirements described herein.
- b) Road & Drainage Plans shall contain all information necessary for constructing the project. The importance of general uniformity in plan documents is emphasized.
- c) Road & Drainage Plans shall be submitted on 24" X 36" sheets and 11" X 17" half-size sheets.
- d) English units of measure shall be used exclusively.

5.1.2 Survey & Drafting Methods

The Preliminary Plat shall be based upon the Michigan Coordinate System of 1983 using the current National Geodetic Survey adjustment on the date of the submittal with three points of reference, two section corners and one property corner. A statement by the Professional Surveyor as to how coordinates were developed and the datum and any adjustments used shall appear on the plans.

- a) All elevations shall be based on the North American Vertical Datum of 1988 (NAVD 88). A permanent benchmark, conforming to standards adopted by WCRC, shall be established in each development and shown on the plans. Each phase of a development shall have at least one benchmark, and all developments larger than 20 acres shall have at least two benchmarks. A benchmark detail can be found in the Appendix.
- b) All plans shall be generated using a computer aided drafting system.

5.1.3 Plan Sheets – At a minimum, Road & Drainage Plans shall include all of the following plan sheets and related information:

- a) Title Sheet signed and sealed by a Professional Engineer.
- b) Topographic and Boundary Survey Sheet signed and sealed by a Professional Surveyor
- c) Overall Layout Plan: Proposed road center line alignments shall be tied to two section corners and show bearings and distances.
- d) Overall Utility Plan
- e) Stormwater Management Plan
- f) Grading & Soil Erosion/Sedimentation Control Plan
- g) Municipal Utility Plan/Profile Sheet
- h) Road and Drainage Plan/Profile Sheet
- i) Intersection Detail Plan
- j) Typical Cross Section & Miscellaneous Detail Plan
- k) Landscape Plan

- l) Construction Traffic Control Plan
 - m) Permanent Traffic Control Devices Plan
- 5.1.4 The plan must meet the current requirements of WCWRC Rules and Guidelines.
- 5.1.5 All road and drainage construction shall be illustrated using plan/profile drawings.
- 5.1.6 Plan/Profile sheets shall be drawn scales not less than one inch = 50 feet horizontal and one inch = 5 feet vertical.
- 5.1.7 Plan/Profile sheets shall show the location, size, material type and elevation of all existing and proposed drainage systems and underground utilities within existing and proposed road right-of-ways.
- 5.1.8 Plan view of each road shall show the centerline, stations, curve data, edge of pavement, back of curb, sidewalk, sidewalk ramps, and sidewalk landings.
- 5.1.9 The profile of each proposed road shall be shown directly below the plan view and shall contain the following:
- a) Profile of existing centerline.
 - b) Proposed centerline.
 - c) Percent of grade and vertical curve data.
 - d) Existing and proposed grades at the right-of-way.
 - e) Left & right proposed top of curb.
 - f) Centerline and any proposed/existing ditch of existing county road(s) adjacent to proposed subdivision with proper outlet thereto.
 - g) Numerical elevations of the existing ground and proposed roads at each half station (50 ft.)
- 5.1.10 Plan/Profile sheets shall show sizes, gauge, lengths, material, end treatments and locations of all cross road culverts.
- 5.1.11 Plan/Profile sheets shall show location, size and cover type of proposed catch basins, inlets and cleanout points for underground drainage systems.
- 5.1.12 Plan/Profile sheets shall show plan and profile of all proposed drainage system elements outside of the road right-of-way that are to be connected to existing or proposed road drainage facilities.
- 5.1.13 Road & Drainage Plans shall include all WCRC and MDOT Standard Plans and Special Details that are being utilized in the development.

5.2 GRADES & EARTHWORK

- 5.2.1 Vertical alignment of the road surface establishes the profile grade line of a proposed road construction project. Establishing the vertical alignment is based on many factors, including but not limited to terrain, existing conditions, soils, drainage, coordination with the horizontal alignment, location of bridges, culverts, intersections, design speed, and earthwork balance.
- a) The minimum centerline profile grade on any road shall be 0.5 percent.
 - b) The maximum centerline profile grade on any road shall be 6.0 percent.

- 5.2.2 A vertical curve shall be required when the algebraic difference in road grade is greater than or equal to one. A vertical curve shall be required for any change in grade when the design speed is greater than or equal to 30 mph.
- 5.2.3 Stopping sight distance is the principal controlling factor for the design of both crest and sag vertical curves. Stopping sight distance shall meet or exceed the stopping sight distance values illustrated in Table 1.
- 5.2.4 Vertical curves shall have minimum length of 100 feet and shall be designed with K values that meet or exceed the minimums listed in Table 1.

TABLE 1

Design Speed (MPH)	Stopping Sight Distance (Feet)	Design K Value for Crest Vertical Curves	Design K Value for Sag Vertical Curves
25	155	12	26
30	200	19	37
35	250	29	49
40	305	44	64
45	360	61	79
50	425	84	96
55	495	114	115

- 5.2.5 Where intersecting roads meet existing primary or local roads, the grade of the proposed intersecting road shall match the transverse slope (crown) of the existing primary or local road as extended to the right-of-way line. Special consideration must be given to intersecting roads with existing super-elevated primary or local roads.
- 5.2.6 Typical Cross Sections
- The minimum requirements for road widths and pavement structures will vary, and will be based on traffic volumes and public need. Residential roads will have a minimum width of 11 foot lanes, up to a maximum of 14-foot lanes. Corporate Park/Commercial roads will have a minimum width of 14-foot lanes. WCRC typical cross sections are provided in the Appendix.
 - All roadways shall include MDOT F4 24-inch concrete curb and gutter. No open ditch drainage systems will be allowed for new public roadways.
 - Non-standard pavement section designs may be considered provided their structural strengths are equivalent or greater than those contained in the Appendix. The Design Engineer may submit complete pavement designs for WCRC consideration using the AASHTO Pavement Design methodology for either flexible or rigid pavements.
- 5.2.7 The transverse slope (crown) on all pavements shall be 2%.
- 5.2.8 Slopes behind curbs shall be 4% (½ inch per foot) through cut and fill sections from the back of curb to the hinge point. The hinge point shall be located five feet from the back of curb. Slopes from the hinge point to existing ground shall be 1V:4H or flatter.
- 5.2.9 Continuous subgrade underdrains shall be provided on all roadways. Subgrade underdrains shall be at least 6" diameter and conform to the current MDOT Standard Plan Series R-80. Positive outlets for underdrains, such as catch basins, shall be spaced no more than 300 feet apart.

- 5.2.10 All proposed road approaches at existing roadways shall utilize MDOT B2 Modified 30-inch curb and gutter through the internal spring point.
- 5.2.11 Berms will not be allowed within the road right-of-way.
- 5.2.12 Designs that necessitate guardrail installation are discouraged. Any design that utilizes guardrail will require a written justification. Further, a full design meeting current MDOT standards will be required.
- 5.2.13 Earthwork
- a) Log of Soil Borings: A detailed soils investigation shall be conducted and submitted to WCRC to determine the suitability of proposed roadbed material. The soils investigation report shall be signed and sealed by a Professional Engineer. Soil boring locations shall be shown on the plans at the true and accurate locations where they were performed. All borings must occur within the influence of the proposed roadway. Soil boring logs shall be superimposed on the plan/profile sheets and shall include geotechnical information including: date the boring was taken, who performed the boring, the elevation of the water table (or “dry”), soil classification using the Unified Soil Classification System (USCS) or the AASHTO System, and subgrade modulus or California Bearing Ratio (CBR).
 - b) All trees, stumps, roots and brush shall be removed from the AASHTO clear zone within the road right-of-way unless otherwise permitted by WCRC.
- 5.2.14 Soil Erosion & Sedimentation Control
- Soil erosion and sedimentation controls shall be designed in accordance with current MDOT Standard Plans, Special Details, and Standard Specifications for Construction to minimize erosion and to prevent sedimentation from adversely affecting water resources and adjacent properties.

5.3 ALIGNMENT & GEOMETRICS

5.3.1 Horizontal Alignment

- a) The centerline of construction shall coincide with the centerline of the right-of-way. Section line and quarter-section line roads shall be centered on the respective survey lines.
- b) The minimum centerline radius for horizontal curves shall be 175 feet. A horizontal curve table shall be provided on the sheet showing where the point of intersection appears, chord length of the intersecting alignments, point of curvature, point of tangency, point of intersection, external angle, degree of curve, and length of the curve.
- c) Curves shall be sufficiently long to avoid the appearance of an abrupt change (“kink”) in the alignment of the road.
- d) Back-to-back reverse curves are generally discouraged. However, if they must be used the curves shall have the same radius and length of curve.

5.3.2 Intersections

- a) It is desirable that all intersecting roads meet at right angles, but in no case shall the intersecting angle be more than a 10-degree difference from 90 degrees. Corner radii of skewed intersections shall be increased as necessary to conform to AASHTO guidelines.
- b) Adjacent intersections on the same side of an intersected road within a subdivision shall be spaced no less than 125 feet apart, as measured between the points of intersection.

- c) Intersecting roads on opposite sides of an intersected road within a subdivision shall be in direct opposition (share a common point of intersection) or be offset no less than 255 feet, as measured between the points of intersection.
 - d) All dead-end roads shall be provided with a paved circular turnaround. See the Appendix for cul-de-sac details.
 - e) The radii of corners at intersections shall be 35 feet to the back of curb.
 - f) Each approach at an intersection shall provide a minimum 100-foot tangent along the centerline, measured from the center of the intersection. A variance may be granted for an approach located on the outside of a curve, if sight distance per AASHTO is assured.
 - g) Boulevards for an entrance may only be considered where a 'T' intersection is created, and where development directly across from the proposed entrance is unlikely. Where boulevards are permissible, they shall be curbed with a width no less than 20 feet back-to-back. Boulevard sections shall be no more than 300 feet in length, and shall not extend beyond the edge of the intersecting road or its auxiliary lane. Sufficient taper of the roadway width must be provided adjacent to the interior end of the boulevard, per MDOT requirements. Breaks between boulevards are not permissible. In no case shall a boulevard exist within the road right-of-way of the existing road.
 - h) Proposed subdivision roads intersecting with existing primary or local roads shall be designed and constructed in accordance with the current WCRC PRPA.
- 5.3.3 Sight Distance – Both stopping sight distance and intersection sight distance must be evaluated for all road designs. In general, the Design Engineer can use graphical methods to check sight distance on horizontal curves and at intersections. Both the horizontal and vertical alignments must be considered when designing for sight distance. Sufficient sight distances must be ensured based on current WCRC PRPA.

5.4 DRAINAGE

The stormwater management system shall be in accordance with WCWRC Rules and Guidelines and constructed in accordance with MDOT Standard Specifications for Construction. All storm sewers constructed within the right-of-way shall be MDOT class E sewers.

5.5 UTILITIES

All utilities shall be located in accordance with alignment requirements in the PRPA. All franchise utilities shall be located in an easement outside the right-of-way when available. All lot or house services shall be extended to the right-of-way line prior to subgrade approval. All public underground utilities shall be installed after the rough grading has been completed so that proper cover over the utilities can be determined and verified.

5.6 MISCELLANEOUS

- 5.6.1 The Developer shall incorporate Complete Streets Best Design Practices where applicable.
- 5.6.2 Sidewalks shall conform to applicable MDOT standard plans and specifications and shall adhere to all ADA requirements.

- 5.6.3 Multi-use or shared use pathways may require special considerations such as additional right-of-way or a separate easement beyond the road right-of-way, depending upon the required road cross section and other geometric features.
- 5.6.4 Streetlights (luminaires) placed within the right-of-way shall be owned and maintained by a public utility recognized by WCRC in accordance with the PRPA.
- a) Streetlight supports shall be located at a uniform offset at least 5 feet behind the back of curb.
 - b) Streetlight supports are not permitted in locations where they would obstruct sight distances.
 - c) Target positions to traffic flow should be avoided if possible. The number of streetlight supports should be kept to a practical minimum.
 - d) For purposes of placement, a streetlight includes all related appurtenances.
 - e) All streetlight supports shall be equipped with breakaway devices, typically classified as frangible bases, slip bases, or frangible couplings, which meet the current requirements of the *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*.
- 5.6.5 Landscaping
- a) Trees are allowed in the road right-of-ways of subdivision developments with the exception of those areas illustrated in the Appendix. Such trees shall be located outside the clear zone as defined by the current AASHTO Roadside Design Guide.
 - b) Non-deciduous plantings are prohibited within the right-of-way. Deciduous trees are allowed within cul-de-sac islands when sufficient sight distances are ensured.
 - c) All trees must be shown on the landscaping plan.
 - d) Landscaping berms will not be allowed within the road right-of-way.
- 5.6.6 Sign Plans
- Plans shall illustrate all required signs and locations pursuant to the current MMUTCD and shall include a quantity table identifying the MMUTCD codes and sign dimensions. Prior to acceptance of roads the Developer shall be responsible for erecting and maintaining interim traffic control devices (stop signs, road names, etc.) pursuant to the approved Road & Drainage Plan.
- 5.6.7 Mailboxes shall be located in the right-of-way pursuant to the current WCRC *Procedures for the Installation of Mailboxes and Newspaper Delivery Boxes along County Roads*.
- 5.6.8 Encroachments are strictly prohibited in the road right-of-way. Examples of encroachments include, but are not limited to, plantings in the right-of-way other than exceptions granted herein, rocks, berms, headwalls, private signs, flagpoles, irrigation systems, fences, buildings, landscape lighting, and privately owned utilities.
- 5.6.9 Residential Driveways
- a) A WCRC permit is required in accordance with PRPA prior to driveway construction.

- b) Driveway approaches within the right-of-way shall not have a width greater than 20 feet nor a vertical profile exceeding +/- 6%.
- c) Proposed or existing driveways within the development shall be located no closer than 50 feet from the right-of-way of an intersecting road or outlot.

SECTION 6 – CONSTRUCTION

6.1 GENERAL

- 6.1.1 Public road improvements and proposed public roads shall be constructed in accordance with the Road & Drainage Plans, current MDOT Standard Specifications for Construction, Standard Plans, Special Details, and specifications described herein.
- 6.1.2 The Construction Engineer shall be responsible to WCRC for ongoing liaison with construction contractors and shall be available on a regular basis for consultation with WCRC staff.
- 6.1.3 The Construction Engineer shall coordinate utility installation and relocations so that completed Road & Drainage improvements are not damaged.
- 6.1.4 The Construction Engineer shall set and check grade and alignment, conduct tests and furnish test slips and material certifications from suppliers to WCRC of materials incorporated in the road and drain construction, and supervise the inspection of all construction in the right-of-way and drainage easements.
- 6.1.5 Any field changes to the approved plans and specifications deemed necessary due to unforeseen circumstances encountered during construction shall be submitted by the Construction Engineer to WCRC for approval before the work begins. If work is performed without approval WCRC may require the work to be redone in accordance with WCRC standards. Costs associated with such work shall be the responsibility of the Developer. All field changes shall be illustrated and/or noted on the as constructed drawings.
- 6.1.6 The Construction Engineer shall provide a certificate of satisfactory construction following each stage of construction listed below:
 - a) Performance or construction of soil erosion and sedimentation control measures, tree removal, rough grading and land balancing, and stormwater management facilities.
 - b) Installation of underground drainage and utilities, including all road crossings and conduit for the Franchise Utilities.
 - c) Preparation of finish subgrade
 - d) Installation of subgrade underdrain
 - e) Construction of subbase
 - f) Construction of aggregate base course
 - g) Installation of concrete curb and gutter
 - h) Construction of pavement (HMA Base, Leveling and Top courses or PCC pavement)
 - i) Installation of permanent turf

A Permit-to-Place from WCRC will be required prior to each succeeding stage of construction. A copy of the Permit-to-Place form can be found in the Appendix.
- 6.1.7 The Developer shall be responsible for maintenance of all roads and drainage systems throughout the construction period and up until the time of acceptance of the roads by WCRC. The Developer shall maintain roadway surfaces in safe and clean condition.

6.2 PRE-CONSTRUCTION MEETING

A pre-construction meeting shall be held between the Developer and the Construction Engineer, the independent material sampling and testing agent, the Contractor, utility companies, representatives of the governing body, WCWRC, and WCRC. The meeting is intended to delineate the proposed construction, discuss testing requirements and progress inspections, identify haul routes, and define the sequence of construction and construction schedule.

6.3 CONSTRUCTION INSPECTION

Spot inspections will be conducted by WCRC during construction. The Construction Engineer remains responsible for setting and checking grade and alignment, documenting all construction, and making all observations necessary during all phases of construction to verify that the proper materials are used and that the work conforms to the approved plans and specifications.

6.4 INSPECTION AND TESTING

- 6.4.1 Inspections may be performed by WCRC authorized representatives prior to, during, and after any road construction. The Developer shall allow access onto the site as a condition of Road & Drainage construction plan approval. Upon completion of each element of the road construction process the Construction Engineer shall request and accompany WCRC on an inspection of the completed construction. If the WCRC and the Construction Engineer grant written approval of the completed construction the Contractor may continue with road construction. WCRC personnel will inspect for suitability of the completed work only. WCRC inspection does not relieve the Construction Engineer of the responsibility to ensure and certify that the roadway is built per the approved plans and all specifications.
- 6.4.2 The Developer or its representative shall arrange for an independent testing company to perform materials sampling and testing. All testing shall conform to MDOT specifications and all results shall be reported to the Construction Engineer and WCRC. Copies of all independent testing results shall be forwarded to WCRC as soon as they are available so that an evaluation can be made as to whether subsequent construction should continue. The independent testing agent shall inform the Contractor when tests indicate that the required materials fail to meet specifications and/or required density is not being achieved. Upon notice, the Contractor shall alter its construction methods to meet or exceed the requirements contained herein.
- 6.4.3 Inspection by WCRC shall not relieve the Construction Engineer of any of his or her obligations but will verify the proper construction of the roads in their various stages of construction by means of spot inspections during the course of construction. The Construction Engineer shall inspect grades and alignment, verify all materials incorporated into road and utility construction, arrange and supervise independent materials testing services, evaluate the test results, and inspect all roadway construction so that he or she can certify that the roadways are constructed per the approved plans and all specifications. Inspection notifications to WCRC are required with at least 24-hour advance notice for each stage of construction listed in section 6.1.6.

6.5 SOIL EROSION & SEDIMENTATION CONTROL

Soil erosion and sedimentation controls shall be installed and maintained in accordance with the permit requirements.

6.6 CLEARING & GRUBBING

All trees, stumps, brush, and roots shall be entirely removed from within the grading limits of all proposed roads and shall be disposed of outside the right-of-way.

6.7 STORM SEWER & CULVERTS

Video inspection is required for all storm sewers located within the right-of-way. One copy of the video inspection and a written log of all damage and installation defects identified in the video shall be submitted to WCRC for review prior to issuance of a permit to place the pavement top course.

6.8 SUBGRADE

- 6.8.1 The finished subgrade shall be smooth and free of all topsoil, stones, stumps, organic material, muck, peat and material prone to frost heave. The finished subgrade shall be prepared in accordance with MDOT specifications.
- 6.8.2 Upon completion of the subgrade preparation the Construction Engineer shall request and accompany a WCRC representative on an inspection of the finished subgrade. A proof-roll will be conducted with a loaded tri-axle truck, earth scraper, or front end loader with full bucket to identify areas of unstable materials. The inspection shall be conducted with a level or string line to ensure that the prepared subgrade has been constructed to the proper grade and transverse slope.
- 6.8.3 If approval of the subgrade is granted through a Permit to Place signed by the Construction Engineer and an authorized representative of WCRC installation of subbase material may begin. WCRC personnel will inspect the subgrade for suitability only. Inspections conducted by WCRC do not relieve the Construction Engineer of the responsibility to ensure and certify that the roadway is constructed per the approved plans and all specifications. Sufficient construction staking shall be present so that horizontal and vertical alignment can be determined and plan grade elevations can be verified. Construction staking is the responsibility of the Developer.

6.9 SUBBASE

- 6.9.1 Upon completion of subbase installation the Construction Engineer shall request and accompany a WCRC representative on an inspection of the subbase installation. Inspection shall be conducted with a level or string line to ensure that the prepared subgrade has been constructed to the proper grade and transverse slope.
- 6.9.2 If approval of the subbase is granted through a Permit to Place signed by the Construction Engineer and an authorized representative of WCRC installation of aggregate base material may begin. WCRC personnel will inspect the subbase for suitability only. Inspections conducted by WCRC do not relieve the Construction Engineer of the responsibility to ensure and certify that the roadway is constructed per the approved plans and all specifications. Sufficient construction staking shall be present so that horizontal and vertical alignment can be determined and plan grade elevations can be verified. Construction staking is the responsibility of the Developer.

6.10 AGGREGATE BASE

- 6.10.1 Upon completion of aggregate base installation the Construction Engineer shall request and accompany the WCRC representative on an inspection of the aggregate base installation. Inspection shall be conducted with a level or string line to ensure that the prepared aggregate base has been constructed to the proper grade and transverse slope.
- 6.10.2 If written approval of the aggregate base is granted through a Permit to Place signed by the Construction Engineer and an authorized representative of WCRC preparation for pavement placement may begin. WCRC personnel will inspect the aggregate base for suitability only. Inspections conducted by WCRC do not relieve the Construction Engineer of the responsibility to ensure and certify that the roadway is constructed per the approved plans and all specifications. Sufficient construction staking shall be present so that horizontal and vertical alignment can be determined and plan grade elevations can be verified. Construction staking is the responsibility of the Developer.

6.11 CURB & GUTTER

- 6.11.1 Placement of concrete curb and gutter shall not commence until the Construction Engineer has approved the line and grade of the curb and gutter. WCRC personnel shall be provided a minimum of 48 hours notice of intent to place concrete curb and gutter.
- 6.11.2 The Contractor shall submit a Quality Control (QC) Plan for Concrete to WCRC and the Construction Engineer for review and approval.
- 6.11.3 The independent material sampling and testing company shall submit a Quality Assurance (QA) Plan for Concrete to WCRC and the Construction Engineer for review and approval.
- 6.11.4 Expansion joint material shall be placed at all spring points; at 400-foot maximum intervals as measured along the back of curb and gutter; and as further directed by WCRC.
- 6.11.5 Horizontal sawing of curb cuts on straight-back curbs is allowed provided the finished curb cut conforms to the geometric requirements of MDOT Standard Plan Series R-29.

6.12 HOT MIX ASPHALT PAVEMENT

- 6.12.1 WCRC personnel shall be provided a minimum of 48 hours notice of intent to place HMA pavement. Paving shall occur only between May 5 and November 15 of any year. Should the Developer wish to pave before or after these dates a prior written request must be submitted to WCRC and approved by an authorized representative. All paving operations shall comply with MDOT specifications.
- 6.12.2 The Contractor shall submit an HMA Quality Control (QC) Plan to WCRC and the Construction Engineer for review and approval.
- 6.12.3 The independent material sampling and testing company shall submit an HMA Quality Assurance (QA) Plan to WCRC and the Construction Engineer for review and approval.
- 6.12.4 The independent material sampling and testing company shall conduct at least one extraction test per 1,000 tons of HMA per course and in any case not less than one test per day per course.
- 6.12.5 Butt joints shall be provided at connections to existing paved roads.

- 6.12.6 All Franchise Utilities for the site must be installed prior to issuance of a Permit to Place the HMA top course.

6.13 PORTLAND CEMENT CONCRETE PAVEMENT

- 6.13.1 WCRC personnel shall be provided a minimum of 48 hours notice of intent to place PCC pavement. The contractor shall provide cold weather, hot weather, and rain protection as directed by the Construction Engineer and/or WCRC in order to protect the concrete from environmental damage during curing.
- 6.13.2 The Contractor shall submit a Quality Control (QC) Plan for Concrete to WCRC and the Construction Engineer for review and approval.
- 6.13.3 The independent material sampling and testing company shall submit a Quality Assurance (QA) Plan for Concrete to WCRC and the Construction Engineer for review and approval.
- 6.13.4 Integral curb and gutter may be allowed if approved by WCRC.

6.14 TURF ESTABLISHMENT

- 6.14.1 The Contractor is responsible for the performance and quality of turf growth in those areas of turf shown on the plans and/or directed by WCRC. Contractor shall establish a durable, permanent, weed-free, mature, perennial turf. The work consists of fundamental turf work, including but not limited to topsoiling, seeding, mulching, erosion control, maintenance, watering, and repair turf.
- 6.14.2 The Contractor shall perform a site analysis, interpret the results and implement a turf establishment program to ensure compliance with applicable standards for performance and quality of turf growth. The site analysis must take into consideration topsoil needs, fertilizer and pH requirements, seed mix, existing and future soil moisture levels, slopes and grades, required erosion control practices and devices, maintenance requirements, local roadway snow removal and deicing practices, and any other characteristics that influence and affect turf establishment.
- 6.14.3 Weed control must be performed by a commercial herbicide applicator, licensed by the State of Michigan and certified by the Michigan Department of Agriculture (MDA) in the appropriate category. Application procedures and materials must comply with federal, state and local regulations. Use of restricted use chemicals is prohibited. The Contractor must provide appropriate documentation and secure approval from the Construction Engineer before application of herbicides.
- 6.14.4 At least 10 work days before the start of turf establishment the Contractor shall provide documentation to the Construction Engineer and WCRC satisfying one or both of the following requirements.
- a) At least one person employed by the Contractor performing the turf establishment work and assigned to the job site has a degree or certificate in Turf Management, Horticulture or a related field.
 - b) At least one person employed by the Contractor performing the turf establishment work and assigned to the job site has at least 5 years of experience in roadside turf establishment.
- 6.14.5 The Contractor is responsible for ensuring that all materials selected meet the following minimum conditions:

- a) **Soil:** Furnished or salvaged topsoil, which may be blended compost, must support vigorous growth. Topsoil must be humus bearing, placed at least 4 inches deep, and must be free of stones larger than 1/2 inch (2 inches on freeway projects) in diameter and other debris. The finished slope must be trimmed and graded in accordance with the current MDOT Standard Specifications for Construction.
- b) **Seed:** Seeding mixture must be composed of four or more species of perennial grass. All species and their cultivars or varieties must be guaranteed hardy for Michigan. Recommended species of perennial grasses include: Kentucky Bluegrass, Perennial Ryegrass, Hard Fescue, Creeping Red Fescue, Chewings Fescue, Turf-type Tall Fescue, Buffalo grass, and Alkaligrass-Fults Puccinellia distans. Cultivars or varieties of grasses must be disease and insect resistant and of good color. No one species in the mix may be less than 5 percent nor more than 25 percent of the mixture by weight. Grass species considered noxious or objectionable including without limitation Quack Grass, Smooth Brome, Orchard Grass, Reed Canary Grass et al must not be used.
- The seed must be legally saleable in Michigan. The seed product must not contain more than 10 percent inert materials. The seed source must be from an MDOT approved certified vender.
 - The species and varieties of seed must be adapted to the site conditions, to the site use, and to the soils, moisture and local climate. Site use may include, but is not limited to, detention pond, wildlife habitat, playground, wetlands, forested wetland, rural roadside, urban roadside and highly maintained front yard.
 - At least two of the species in the mixture to be planted within 15 feet behind the curb or the shoulder must be salt tolerant.
- c) **Mulch:** Seeded areas must be mulched with appropriate materials for the site conditions so as to promote germination and growth of seed and mitigate soil erosion and sedimentation. Mulch anchoring is required for all types of mulch placed in the right-of-way.
- d) **Herbicides:** All herbicides must comply with all federal, state and local laws. As part of the MDA weed control application the Contractor shall make proper notifications and/or postings as per label and MDA requirements for all locations to be sprayed. The Contractor must notify the Construction Engineer 48 hours prior to any applications being made. The Contractor shall furnish and apply herbicide(s) as needed. It is the Contractor's responsibility to select the herbicide(s) and the rate at which it is used. The Contractor shall complete and submit to the Construction Engineer a spray log at the conclusion of each day an application is made. The Contractor or applicator shall not draw water to be mixed with herbicides from any waterway (i.e. river, ditch, creek, lake etc.) located on state, county or municipal right-of-way.
- e) **Fertilizers:** The Contractor shall furnish and apply fertilizer(s) as needed. It is the Contractor's responsibility to select the fertilizer(s) and the rate at which it is used. Phosphorus is allowed for use only at the time of planting and when required by soil conditions.
- f) **Water:** The Contractor shall furnish and apply water from an approved source at a rate sufficient to promote healthy growth.
- g) **Mowing and Weeding:** Prior to acceptance of the roads by WCRC turf must be maintained to a visually appealing level, and not more than 8 inches in height at any time, by the

Developer. Weeds must be controlled to less than 10 percent of the Turf Establishment area at all times during construction.

6.14.6 Final Acceptance and Supplemental Performance Security.

- a) **Turf Establishment Final Acceptance:** Before final acceptance of the turf establishment work all of the following minimum parameters must be met throughout all exposed areas of the project designated on the plans or identified by WCRC as turf establishment areas (1) there must be no exposed bare soil; and (2) the turf must be fully germinated, erosion free, weed free, disease free, dark green in color and in a vigorous growing condition. The Contractor shall notify WCRC and agree upon dates and times of all turf establishment acceptance inspections. The Contractor may accompany WCRC during these inspections.
- b) **Supplemental Performance Security:** In the event that all road construction work has been completed, including the placement of all turf establishment items, of work but not the final acceptance of the turf establishment items; the Contractor may propose to WCRC the use of a supplemental performance security. Such security shall serve to ensure the successful completion of turf establishment work and fulfillment of all final acceptance parameters for the turf establishment work. The supplemental performance security must be in all respects satisfactory and acceptable to WCRC. The security must be in an amount equal to 50 percent of the value of the turf establishment work items for the project. The security shall remain in place for two growing seasons. At the sole discretion of WCRC the security may be reduced on a prorated basis as portions of the areas designated for turf establishment on the project meet the final acceptance parameters.

6.15 CONSTRUCTION WITHIN THE EXISTING ROAD RIGHT-OF-WAY

Construction activities within an existing county road right-of-way require a WCRC permit in accordance with the PRPA. Such work typically involves the construction of turn lanes, driveway approaches, shoulder additions, underground utilities, drainage facilities and intersection construction. Typical details illustrating road approaches can be found in the Appendix.

SECTION 7 – ACCEPTANCE OF ROADS

7.1 FINAL INSPECTION OF COMPLETED CONSTRUCTION

After the interim stages of construction has been completed, inspected, and approved by the Construction Engineer and the WCRC inspector and a written request for final inspection is received WCRC staff will inspect the completed construction and provide a punch list of items to be corrected to the Developer and the Construction Engineer for further action.

7.2 ACCEPTANCE OF COMPLETED ROADS

- 7.2.1 The Construction Engineer shall provide a certification letter (see Appendix) certifying that he or she has personally directed the observation/inspection and that all construction has been built in accordance with the approved plans and specifications. The Construction Engineer shall submit all test reports and certify that they verify the adequacy of materials and installation in accordance with the MDOT Materials Sampling Guide and MDOT Standard Specifications. The Construction Engineer shall provide a Professional Surveyor's signed and sealed certification that all the survey monuments are properly installed and recorded where applicable. WCRC will review the submitted information, may consult those responsible for providing the information contained in the submittals and/or ask for additional information, and make a recommendation to the Board regarding acceptance of roads once all required submittals and information has been provided.
- 7.2.2 The Construction Engineer shall provide a letter from the WCWRC stating that the storm drainage system installed as part of the development has been approved and will be accepted as part of the County drainage system. A letter of "Construction Acceptance" from the WCWRC will be considered acceptable.
- 7.2.3 The final inspection must take place between April 15 and November 15. Road acceptance will not be considered between the first Board meeting in December of any year and the first Board meeting in April of the following year.
- 7.2.4 If the final inspection reveals that the work is not completed to the satisfaction of WCRC the Developer will be notified of any deficiencies by means of a punch list. WCRC will conduct a re-inspection of the work after being notified that the deficiencies have been corrected.
- 7.2.5 All driveways installed prior to acceptance of the roads shall be constructed in accordance with WCRC standards. The Construction Engineer shall certify all such driveway construction and compliance with sight distance requirements. The Developer shall be responsible for repair or replacement of improperly installed driveways, including those of homeowners when applicable.
- 7.2.6 If a temporary turnaround is required in any phase of development in order to provide access for WCRC maintenance crews the turnaround must be completed prior to acceptance of the roads.
- 7.2.7 Permanent benchmarks are required and must be in place before acceptance.
- 7.2.8 If any mailboxes have been placed in the right-of-way the Developer shall ensure their compliance with all applicable standards before acceptance of the roads.

- 7.2.9 If any landscaping items other than conventional grading and seeding have been placed in the right-of-way the Developer shall ensure their compliance with all applicable standards before acceptance of the roads.
- 7.2.10 After WCRC has completed the final visual inspection and approved the construction, and all other required submittals are approved, WCRC staff will recommend to the Board acceptance of the roads into the County road system. Approval of any phase of construction does not guarantee acceptance by the Board of any other phase or relieve the Developer of responsibilities and liabilities inherent in developing a parcel of land.
- 7.2.11 If a deficit exists in the Developer's Administration and Inspection Fee account prior to road acceptance, the Developer shall pay all sums due before acceptance of the roads. After the roads are accepted by the Board any balance in the Administration and Inspection Fee account will be promptly returned.
- 7.2.12 After the roads are accepted by the Board the Developer's Completion Guarantee will be promptly released.
- 7.2.13 WCRC shall install permanent traffic control devices after acceptance of the roads.

SECTION 8 – SPECIAL ASSESMENT DISTRICT (SAD) FOR ROAD IMPROVEMENTS

8.1 ROAD FUNDING: BACKGROUND

WCRC is required by statute to maintain more than 1,600 miles of certified public roads. More than 1,000 miles of those roads are categorized as ‘local roads’. Property taxes primarily fund local townships, the County, and school districts. WCRC receives no revenues from property taxes. The majority of the funds collected and allocated to maintain and improve public roads come from gasoline/diesel taxes and vehicle registration fees. This funding source for public roads is known as the Michigan Transportation Fund (MTF).

Michigan’s gas tax rates have been substantially below the national average for decades and have not kept up with the rate of inflation. Michigan presently ranks last in the nation for road funding per capita. The majority of the funds received from the MTF are used for winter maintenance operations. The remaining funds are used for other routine maintenance activities such as pothole patching, road grading, pavement markings, weed and brush removal, sign replacement, drainage, and other such activities. As a result, the local road funding available to the WCRC is not adequate to meet all of the road infrastructure’s needs for maintenance and improvements.

8.2 SAD DEFINITION

An SAD is a designated geographic area within which the majority of property owners agree to allow a government agency to levy a special property tax in exchange for a specific service such as road improvements. An SAD may apply toward any public road, but most typically is used for local residential roads (paved or gravel).

8.3 SAD PROCEDURE

When an SAD is established through statutory legal procedures the government agency agrees to incur the cost of the service at the outset and the property owners in an established district agree to pay back their allocated shares over a period of years in the form of a special property tax. There are two pertinent SAD statutes: MCL 41.271 et seq. (Public Act 246 of 1931 as amended), which is administered by a Road Commission, and MCL 41.721 et seq. (Public Act 188 of 1954 as amended), which is administered by a Township. Please refer to the specific Township as to its process for administering an SAD under MCL 41.721 et seq. (Public Act 188 of 1954 as amended).

MCL 41.271 et seq. (Public Act 246 of 1931 as amended) allows property owners along public roads under the jurisdiction of WCRC to file a petition seeking improvements to the road through an SAD. Per this statute a Township may also file a petition on behalf of a group of property owners to have a public road(s) or portion of same improved. In general, the cost of the improvements is borne by the property owners in the established SAD area. Bonds or notes are sold to pay for design, construction, and administrative costs. The Township then assesses the property owners in the district through their winter tax bills to repay the bond/notes over a period not to exceed 10 years. There is no penalty for early payoff.

In order for a public road to be considered for an SAD road improvement project under MCL 41.271 et seq. (Public Act 246 of 1931 as amended), it must meet the following minimum requirements:

- It must be a public, county road; private roads are not eligible.
- It must be outside corporate city or village limits (WCRC does not have jurisdiction over residential streets within incorporated cities and villages).
- At least 75 percent of the property owners along the road or section of road must be subdivided into parcels of 300 feet or less in width, or in the alternative there can be no fewer than one building for every 300 feet of road frontage.
- In order for the SAD to be established by law, the owners of properties representing more than 51 percent of the lineal footage along the road or section of road must support the SAD project.

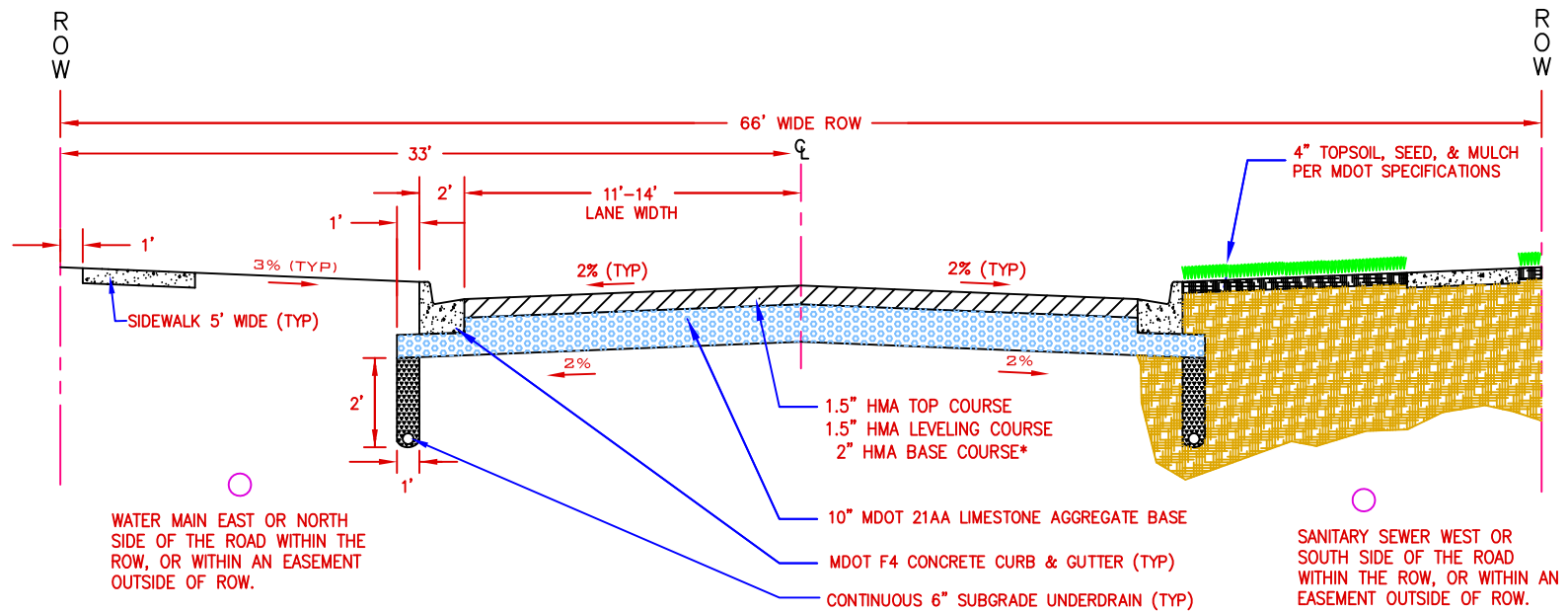
The Board has adopted a procedure to help property owners understand the SAD process prior to submitting a formal petition. This procedure includes WCRC staff meeting with interested property owners to explain the nature of the road improvements, provide a general overview, and describe the process.

Once property owners have submitted a valid petition to WCRC to initiate a road improvement project, WCRC staff will process the SAD petition in accordance with the detailed procedures set forth in MCL 41.271 et seq. (Public Act 246 of 1931 as amended). The following is a summary of the major milestones of the process.

- 8.3.1 **Acknowledgement of the Petition:** The Board acknowledges receipt of the petition by resolution and instructs WCRC staff to review the validity of the petition.
- 8.3.2 **Initial Determination of Necessity:** Upon confirming the petition is valid and deeming the proposed improvements are necessary, the Board shall pass a resolution instructing WCRC staff to perform the preliminary engineering for the project.
- 8.3.3 **First Order of Determination:** Upon determining the project is of benefit to the public welfare and convenience, the Board passes a resolution to hold a Hearing of Objections.
- 8.3.4 **Hearing of Objections:** WCRC staff shall explain to property owners the scope of project, the boundary of the SAD, the preliminary estimated costs, costs per parcel, payment options, etc. Property owners will be provided an opportunity to state their objections during the hearing.
- 8.3.5 **Final Order of Determination:** Occurs within 30 days after the Hearing of Objections, the Board shall pass by resolution a final order of determination.
- 8.3.6 **Advertisement for Construction Bids:** WCRC shall advertise the project for bid. WCRC requires all bidders and subcontractors to be MDOT pre-qualified to perform the work.
- 8.3.7 **Bid Letting:** A public bid letting shall be held at WCRC where sealed bids shall be opened and read aloud. WCRC staff will review the bids and determine the lowest qualified bidder.
- 8.3.8 **Assessment Roll:** The Board shall pass a resolution to hold a public hearing to confirm the assessment roll. Upon the conclusion of the hearing, the Board shall pass a resolution confirming the final assessment roll.
- 8.3.9 **Sale of Bonds or Notes:** WCRC will proceed to sell bonds or notes that will cover the costs of the project; construction costs, contingency fund, engineering, administrative, materials testing, etc.
- 8.3.10 **Commence Construction:** Construction may begin once a contract is entered with the lowest qualified bidder and the funds are received from the sale of bonds or notes.

APPENDIX

HMA PAVEMENT CROSS-SECTION



* REFER TO CURRENTLY APPROVED WCRC HMA MIX DESIGNS & BINDER REQUIREMENTS.

TYPICAL RESIDENTIAL - 66' ROW

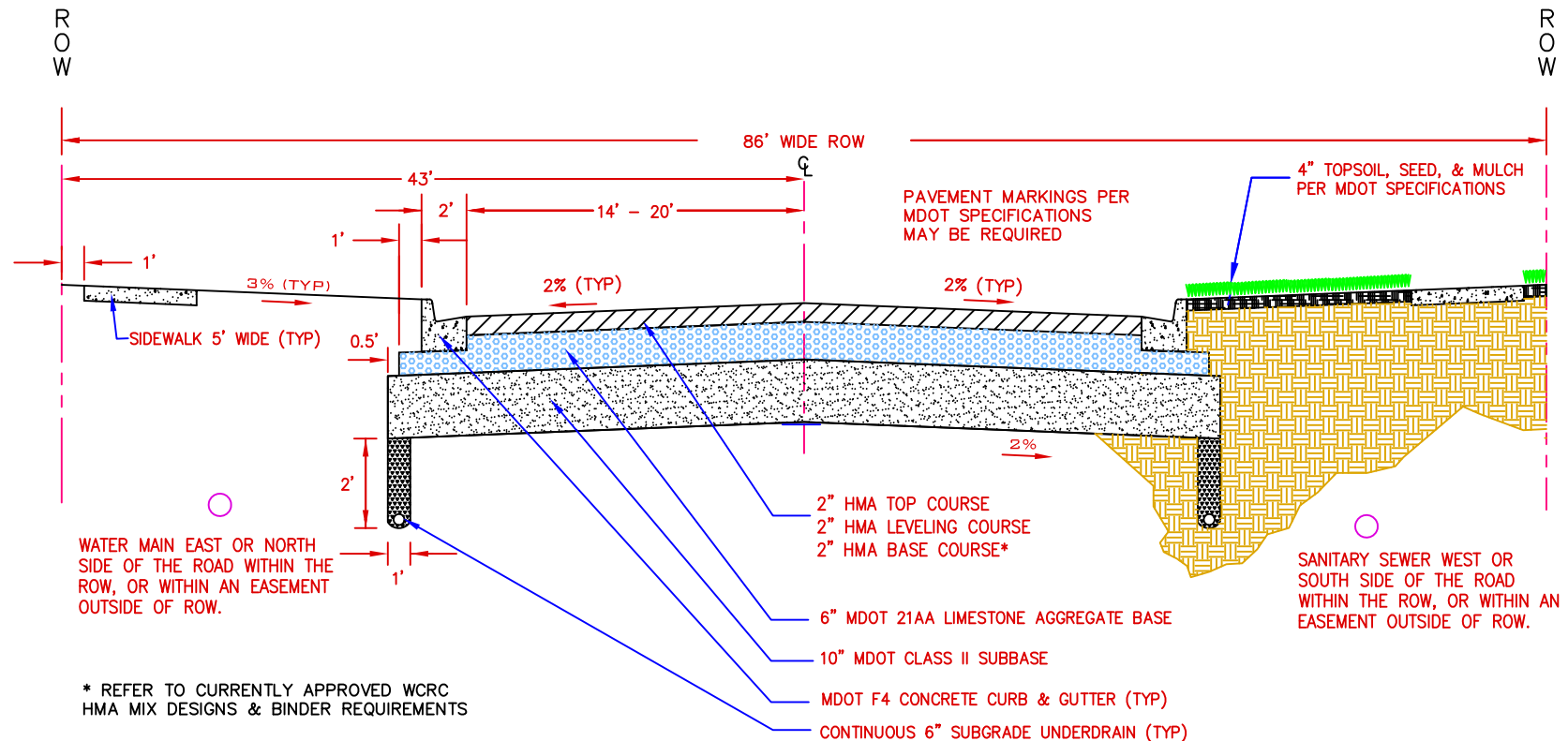
SCALE: N.T.S.



8-6-14

Figure 1: Typical HMA Residential Pavement Cross Section

HMA PAVEMENT CROSS-SECTION



TYPICAL CORPORATE & COMMERCIAL OFFICE - 86' ROW

SCALE: N.T.S.



8-6-14

Figure 2: Typical HMA Corporate & Commercial Office Pavement Cross Section

The diagram illustrates a cross-section of a road construction project. Key features include:

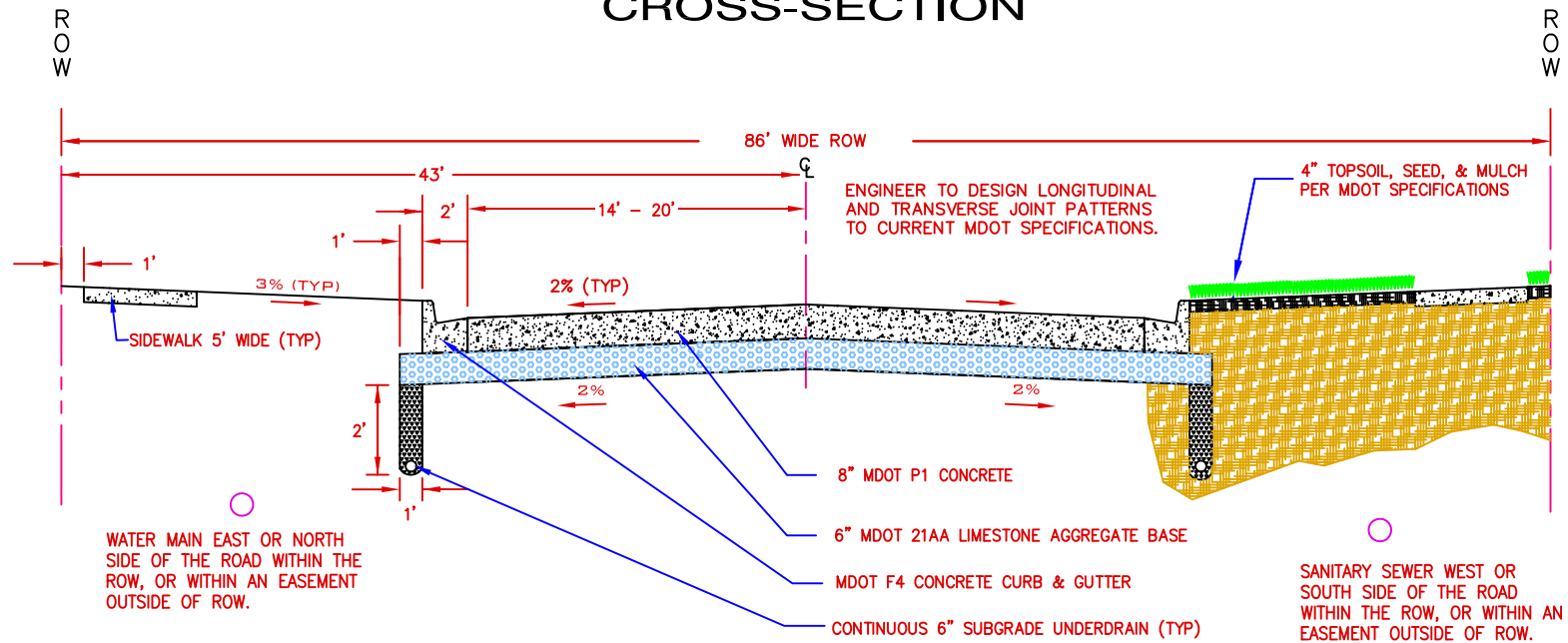
- Dimensions:** A total width of 66' WIDE ROW is indicated at the top. The lane width is specified as 11'-14'. Other dimensions shown are 33', 2', 1', 1', 2', 1', and 5'.
- Grading:** Slopes are indicated as 3% (TYP) on the left side and 2% (TYP) on both sides of the main road surface.
- Materials and Layers:**
 - 7" MDOT P1 CONCRETE
 - 6" MDOT 21AA LESTONE AGGREGATE BASE
 - MDOT F4 CONCRETE CURB & GUTTER
 - CONTINUOUS 6" SUBGRADE UNDERDRAIN (TYP)
 - 3" TOPSOIL, SEED, & MULCH PER MDOT SPECIFICATIONS
- Notes:**
 - ENGINEER TO DESIGN LONGITUDINAL AND TRANSVERSE JOINT PATTERNS TO CURRENT MDOT SPECIFICATIONS.
 - SIDEWALK 5' WIDE (TYP)
 - WATER MAIN EAST OR NORTH SIDE OF THE ROAD WITHIN THE ROW, OR WITHIN AN EASEMENT OUTSIDE OF ROW.
 - SANITARY SEWER WEST OR SOUTH SIDE OF THE ROAD WITHIN THE ROW, OR WITHIN AN EASEMENT OUTSIDE OF ROW.

SCALE: N.T.S.



Figure 3: Typical Concrete Residential Pavement Cross Section

PORTLAND CEMENT CONCRETE PAVEMENT CROSS-SECTION



TYPICAL CORPORATE & COMMERCIAL OFFICE - 86' ROW

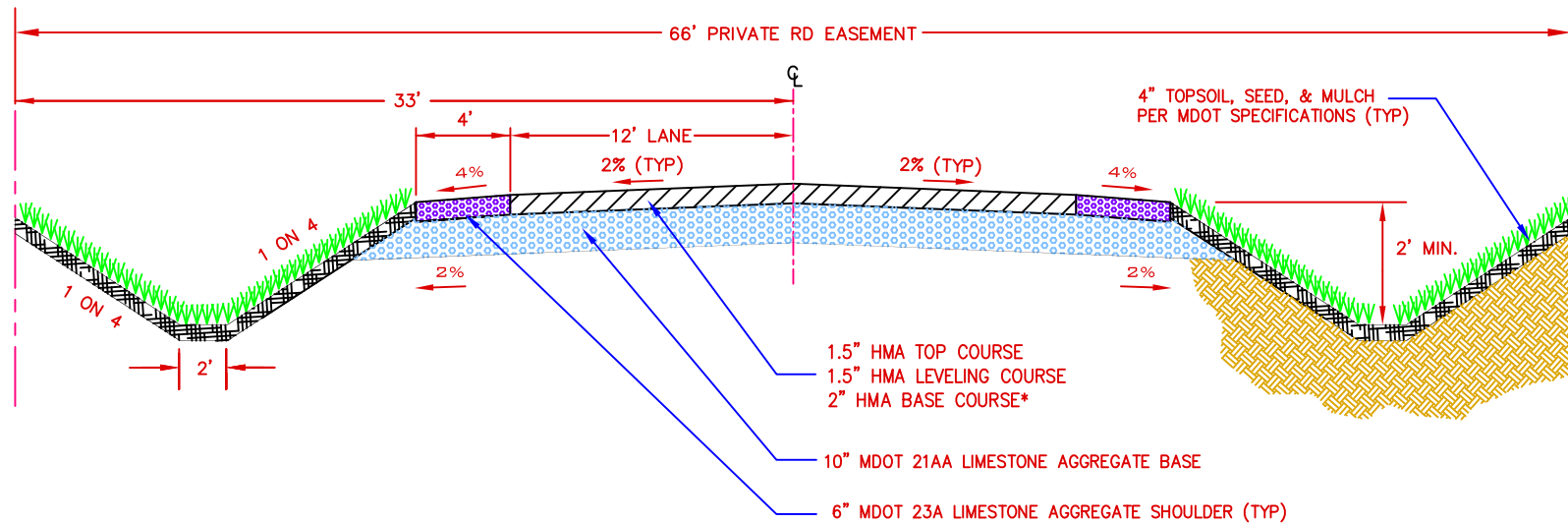
SCALE: N.T.S.



8-6-14

Figure 4: Typical Concrete Corporate & Commercial Office Pavement Cross Section

HMA PAVEMENT CROSS-SECTION



* REFER TO CURRENTLY APPROVED WCRC
HMA MIX DESIGNS & BINDER REQUIREMENTS

RECOMMENDED TYPICAL PRIVATE ROAD - OPEN DITCH

SCALE: N.T.S.



8-6-14

Figure 5: Recommended Open Ditch Private Road Pavement Cross Section

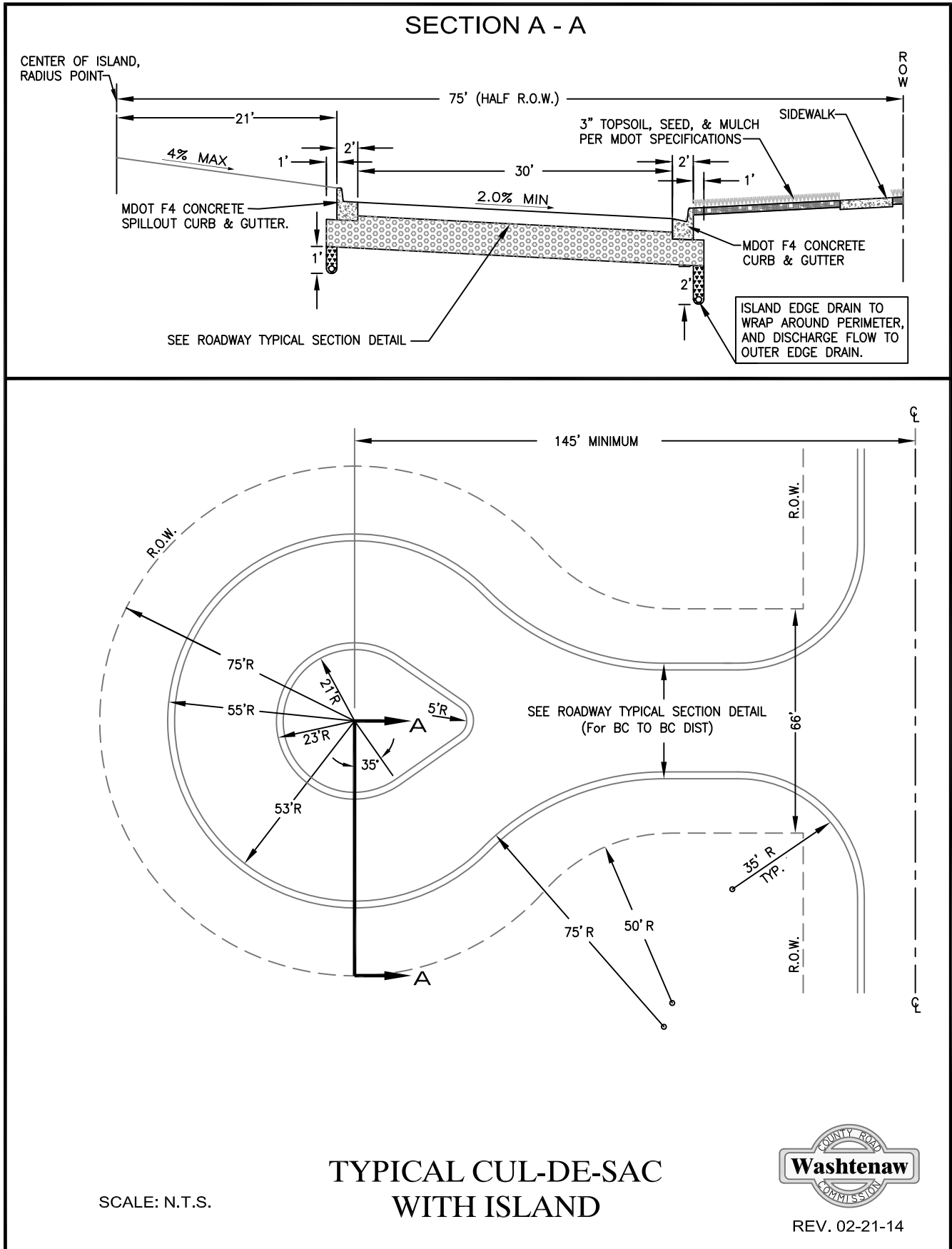


Figure 6: Typical Cul-de-sac with Island

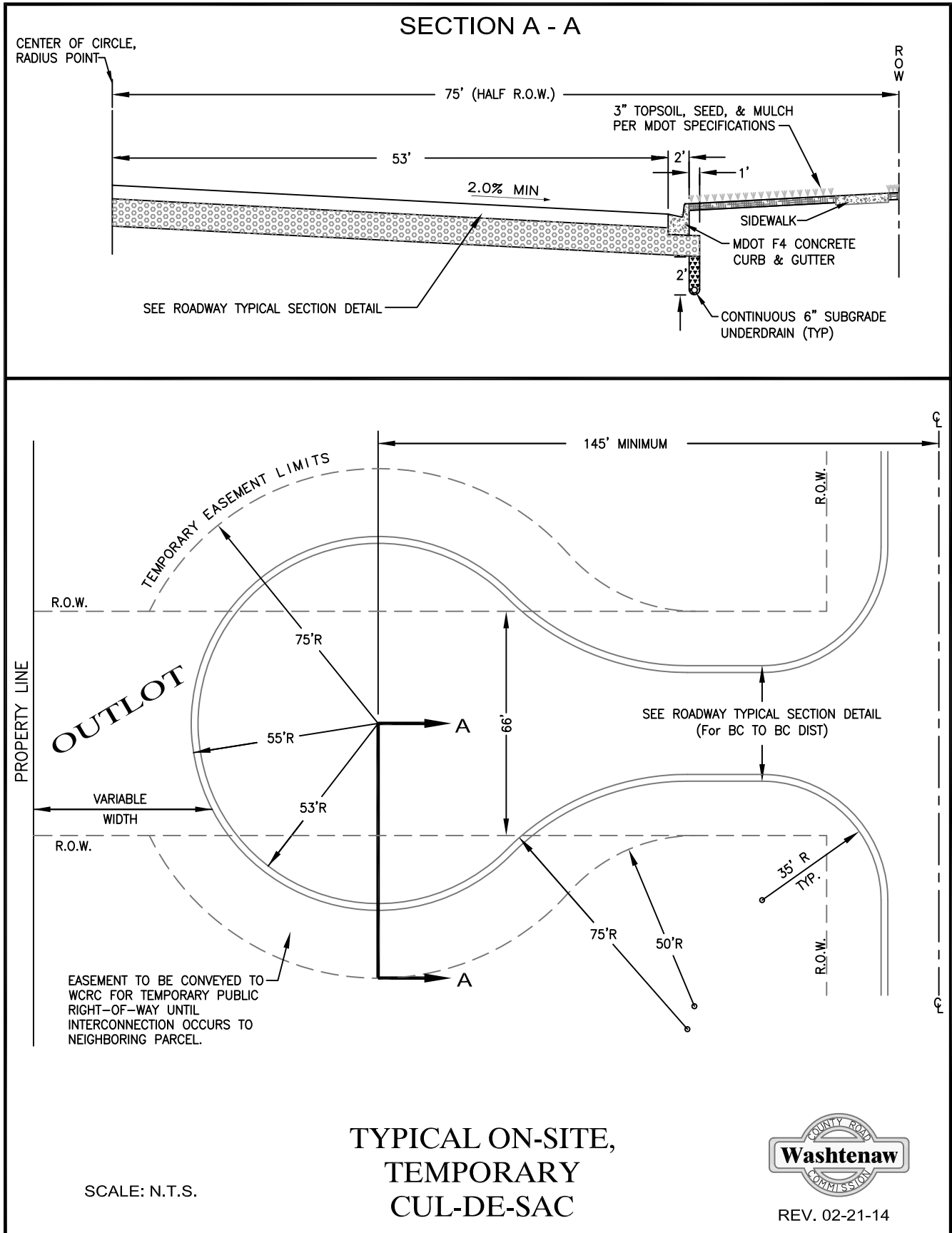


Figure 7: Typical On-site Temporary Cul-de-sac

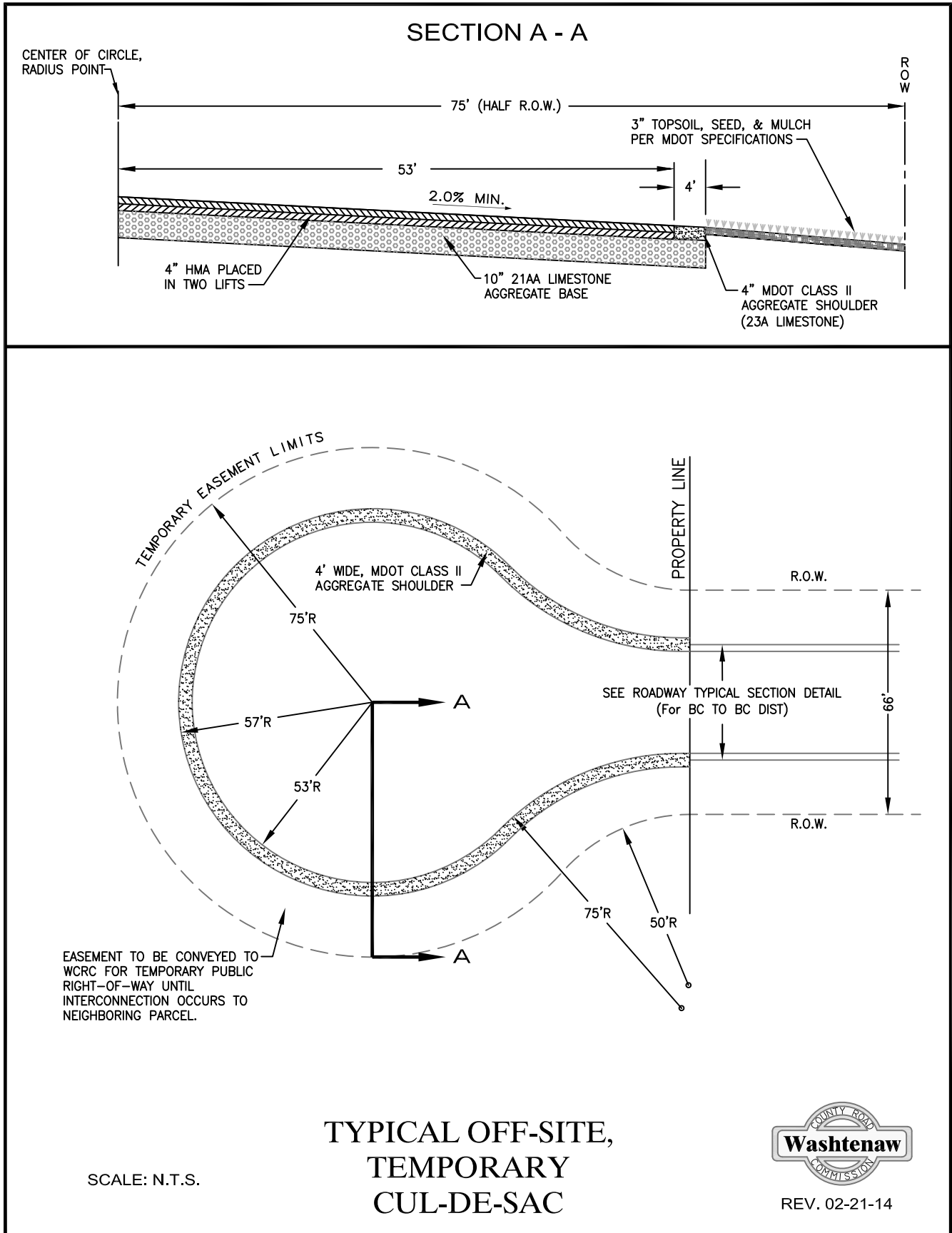


Figure 8: Typical Off-site Temporary Cul-de-sac

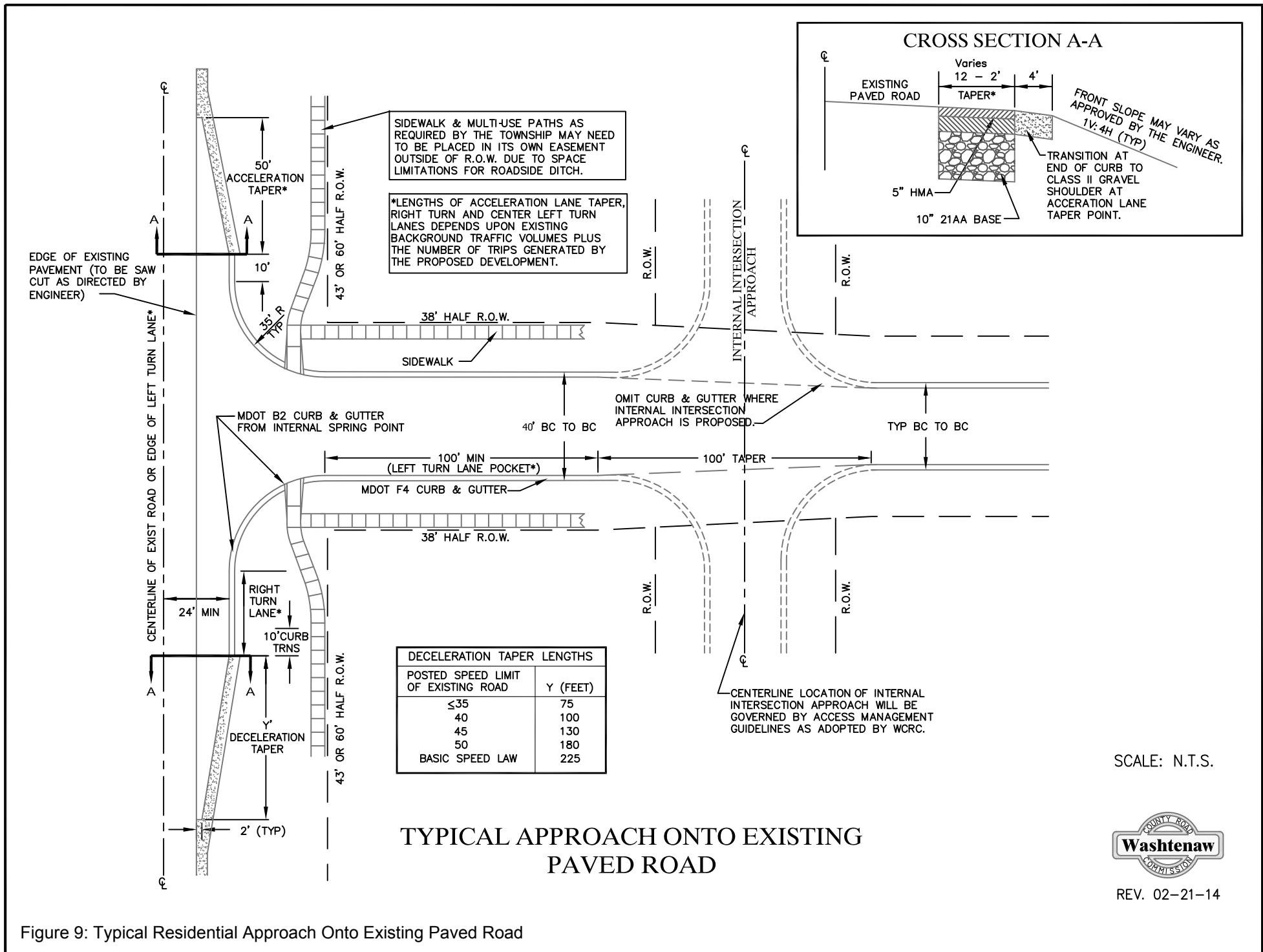


Figure 9: Typical Residential Approach Onto Existing Paved Road

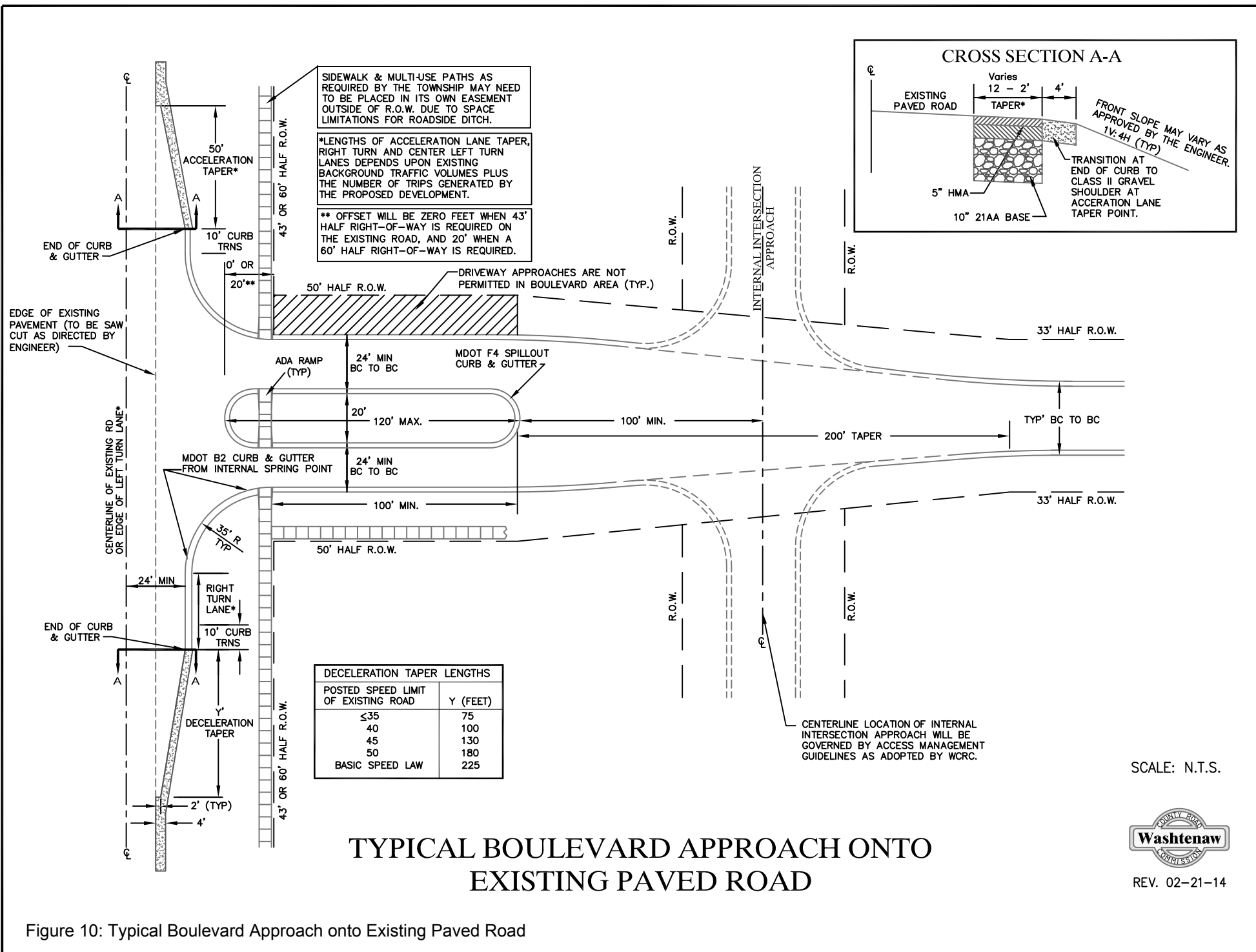


Figure 10: Typical Boulevard Approach onto Existing Paved Road

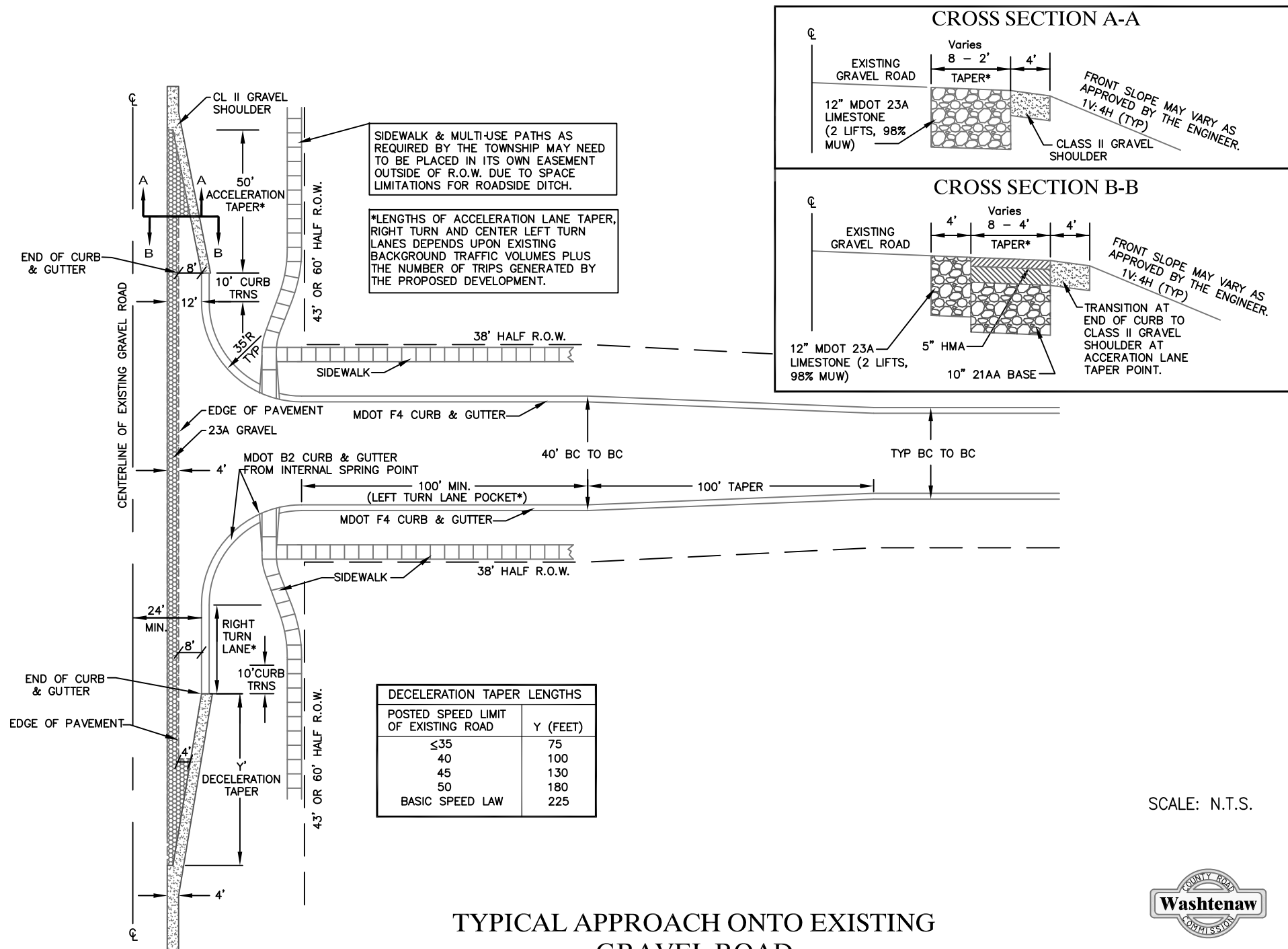
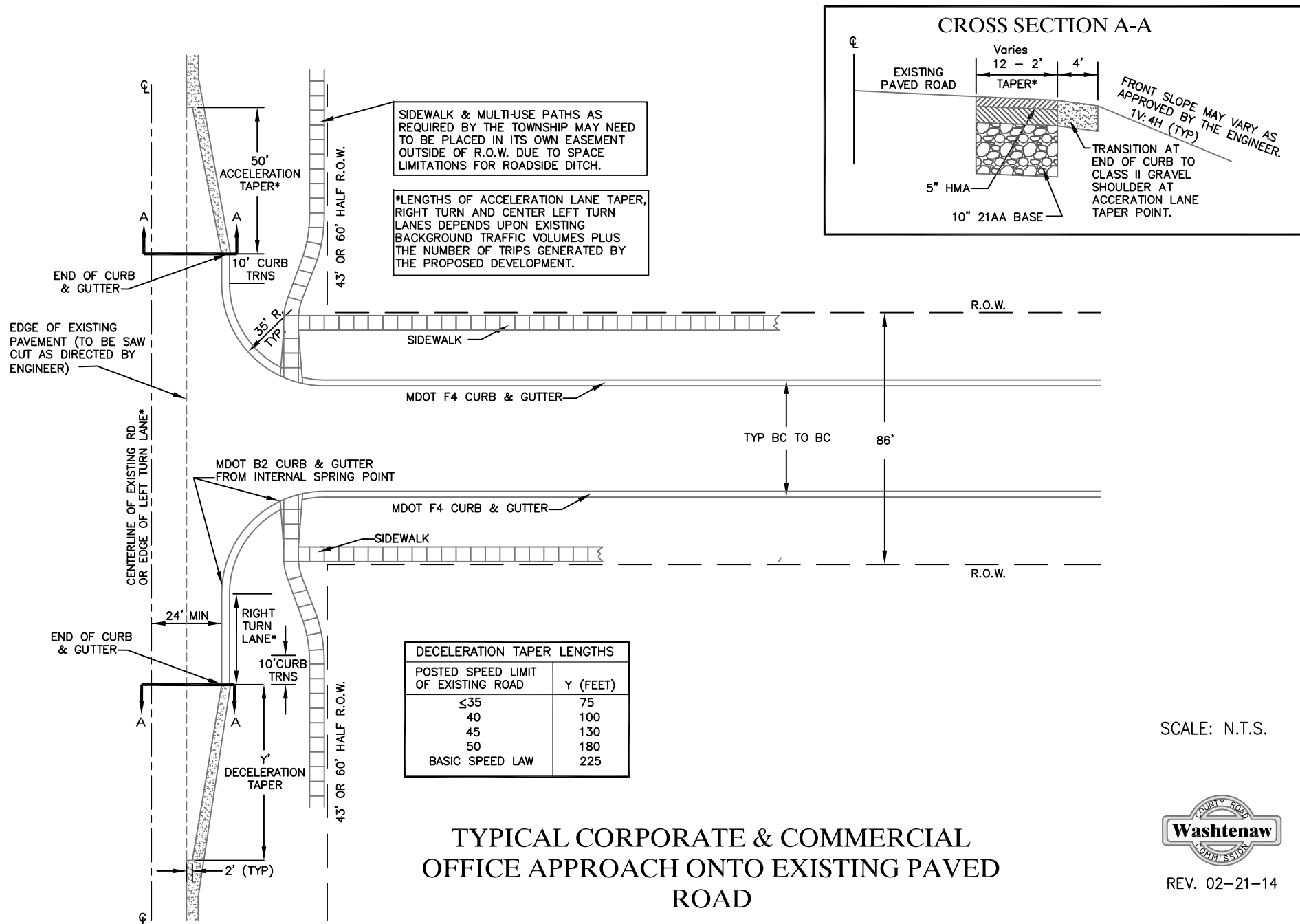


Figure 11: Typical Residential Approach onto Existing Gravel Road

SCALE: N.T.S.



REV. 02-21-14



SCALE: N.T.S.



REV. 02-21-14

Figure 12: Typical Corporate & Commercial Office Approach onto Existing Paved Road

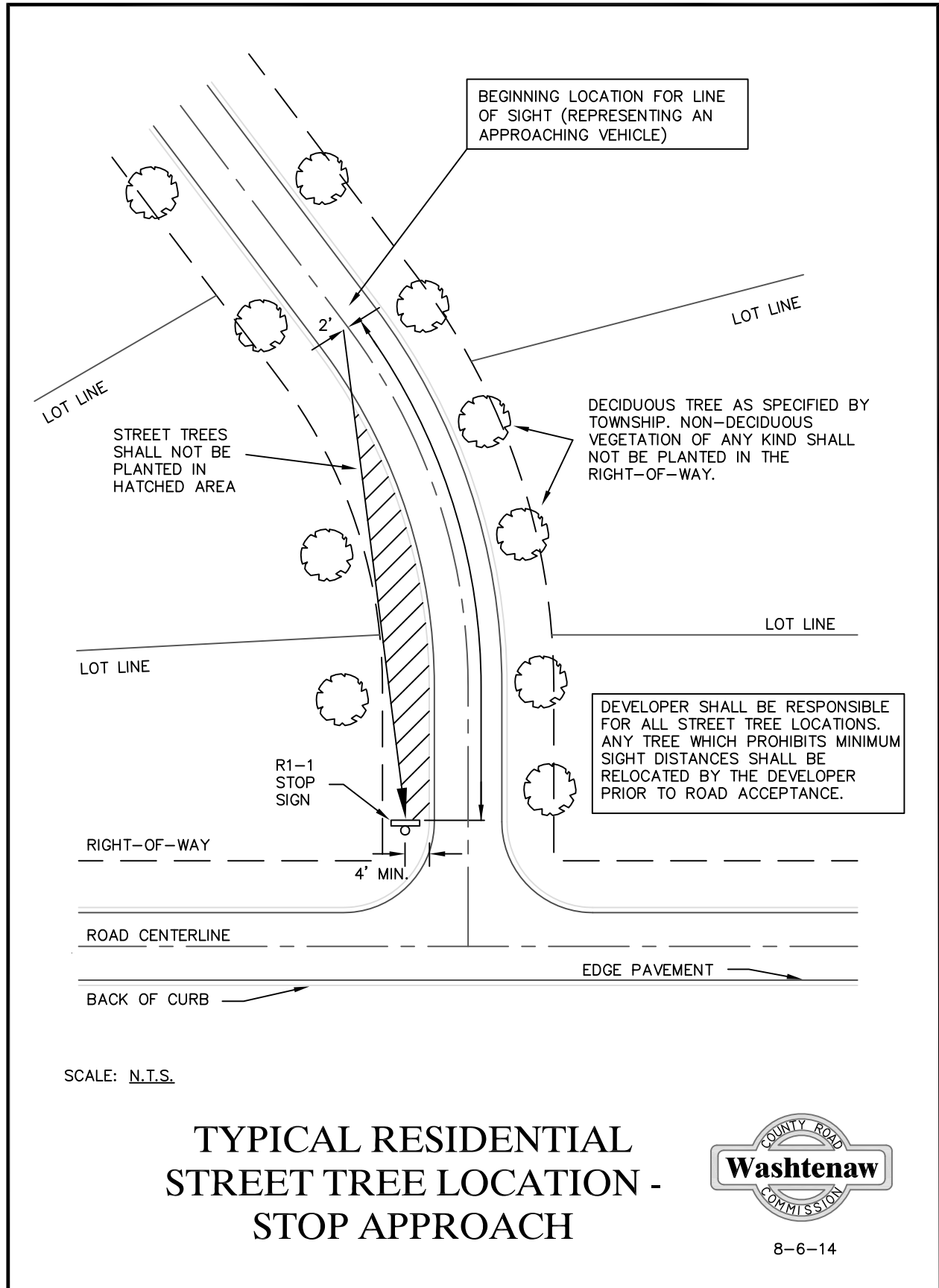
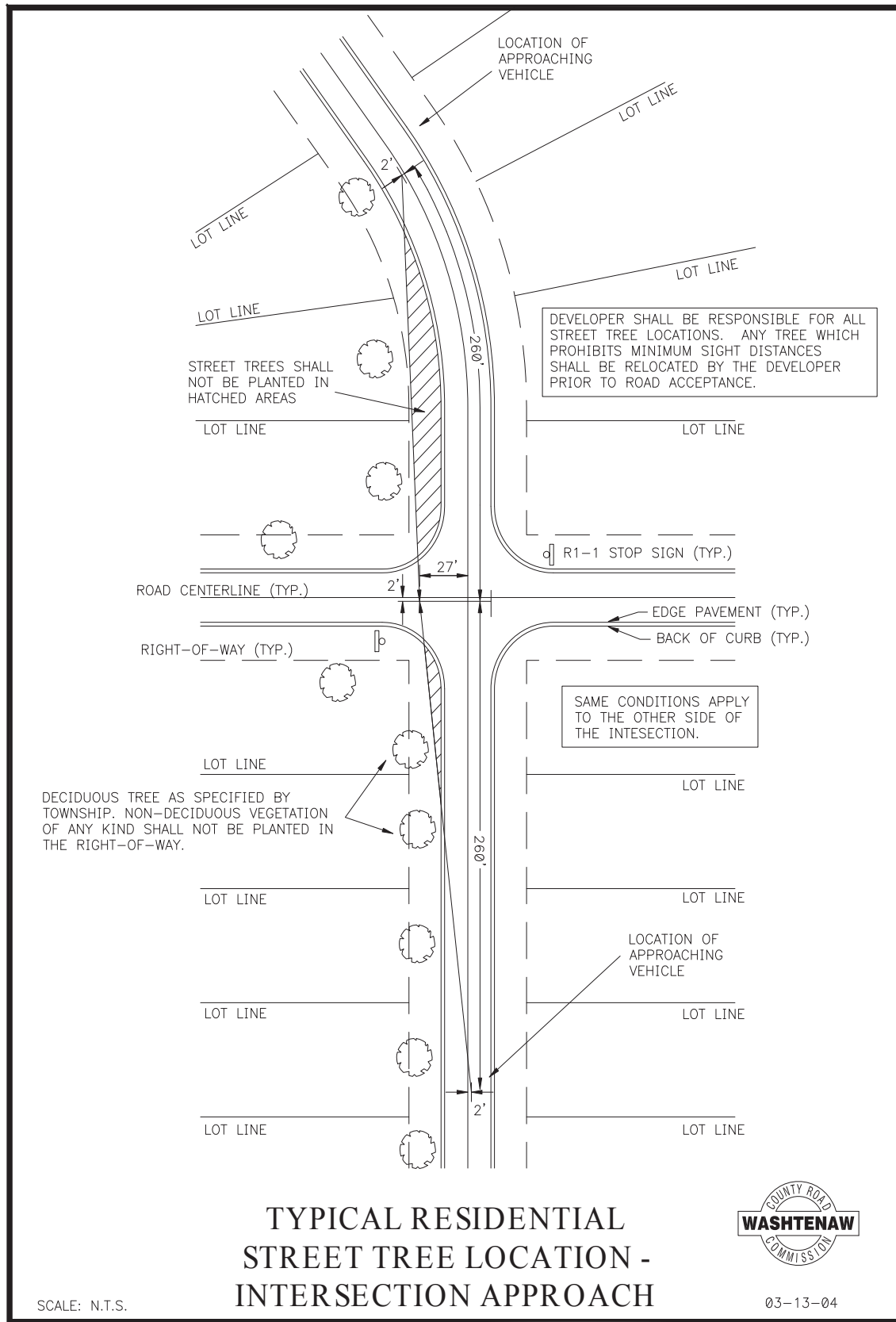


Figure 13: Typical Residential Street Tree Location - Stop Approach



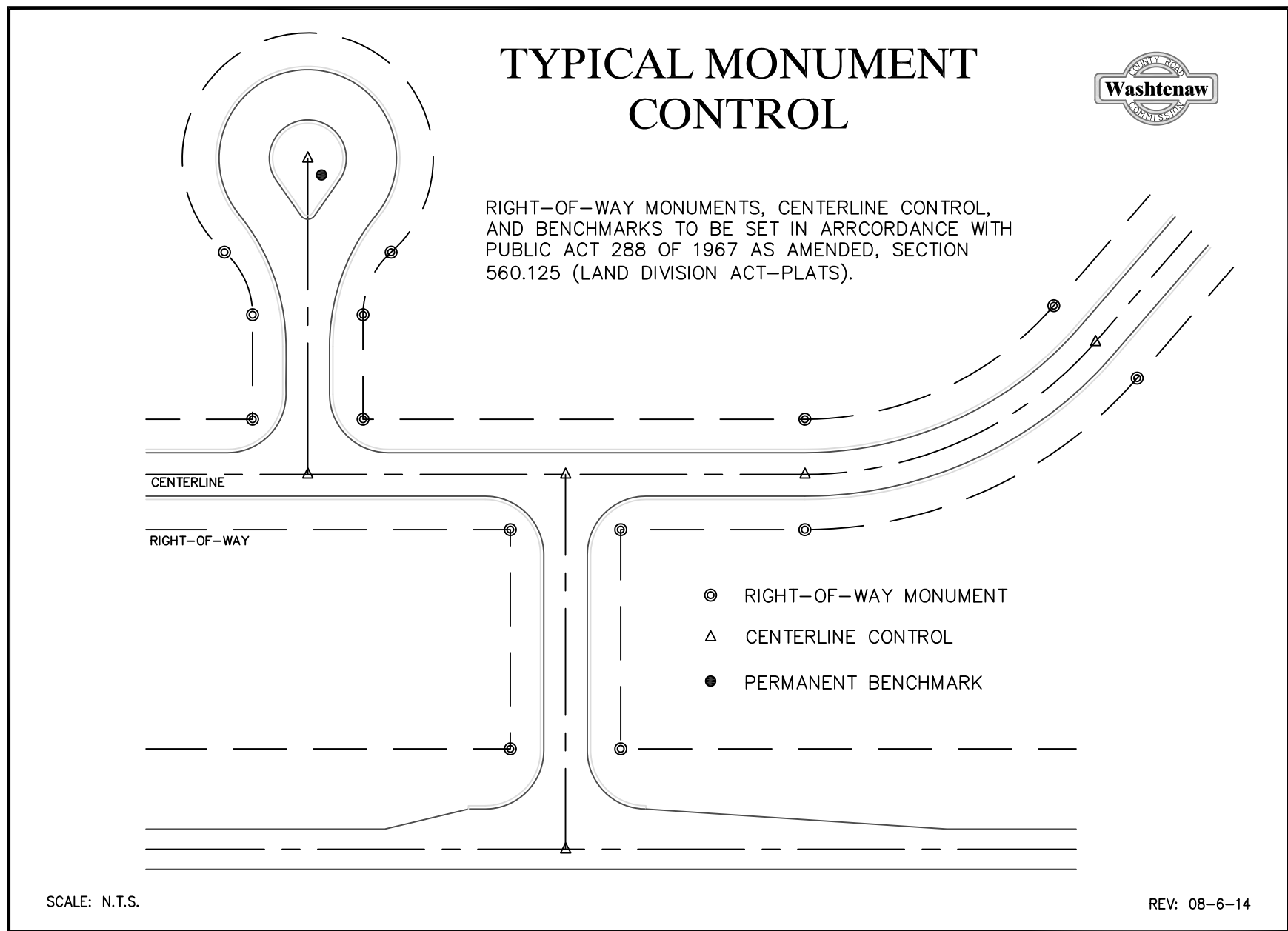


Figure 15: Typical Monument Control

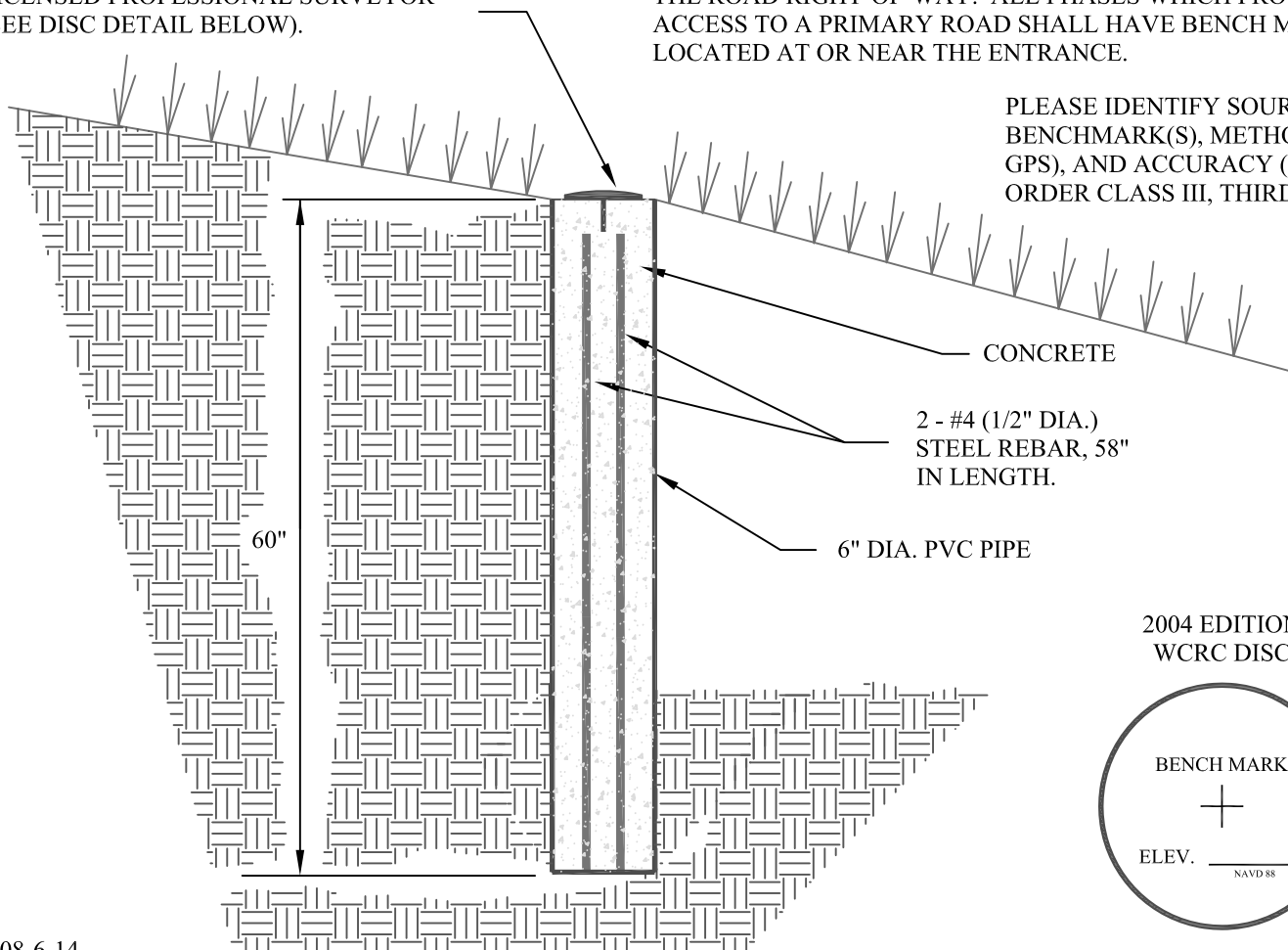


SUBDIVISION BENCHMARK DETAIL

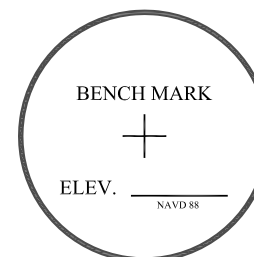
BRASS OR ALUMINUM DISC. ELEVATION TO BE STAMPED IN NAVD '88 DATUM BY LICENSED PROFESSIONAL SURVEYOR (SEE DISC DETAIL BELOW).

EACH PHASE OF DEVELOPMENT SHALL PROVIDE ONE PERMANENT BENCHMARK. ALL LOCATIONS SHALL BE WITHIN THE ROAD RIGHT-OF-WAY. ALL PHASES WHICH PROVIDE ACCESS TO A PRIMARY ROAD SHALL HAVE BENCH MARKS LOCATED AT OR NEAR THE ENTRANCE.

PLEASE IDENTIFY SOURCE BENCHMARK(S), METHODOLOGY (LEVEL, GPS), AND ACCURACY (SECOND ORDER CLASS III, THIRD ORDER).



2004 EDITION
WCRC DISC



REVISED: 08-6-14

Figure 16: Subdivision Benchmark Detail

AGREEMENT FOR PUBLIC ROAD DEVELOPMENT

Name of Development and proposed Road(s):

The Board of County Road Commissioners of the County of Washtenaw and the undersigned Developer agree to the following actions relating to the property/roads named above:

1. The Developer agrees to install and construct all improvements in accordance with the approved Road and Drainage Plans and the current "Procedures and Regulations for Developing Public Roads".
2. The Developer agrees to complete the specified improvements within three (3) years of the date of this document.
3. The Developer delivers and the Board of County Road Commissioners accepts a Cashier's check or an irrevocable standby letter of credit in the amount of \$_____ guaranteeing completion of the specified improvements.
4. The Developer agrees to be responsible for all injuries or damages to property resulting from the construction of the specified improvements, and to deliver proof of an insurance policy showing that the Board of County Road Commissioners is covered as an additional insured per WCRC current Procedures & Regulations for Permit Activities.
5. The Developer agrees to prohibit home-building construction traffic until the hot mix asphalt base and leveling courses or Portland cement concrete pavement are completed.
6. The Developer agrees to notify builders and property owners who purchase or have purchased land directly from the developer or his/her representative of WCRC permit requirements and regulations related to new home construction, in particular those provisions which require that the property owner obtain a permit from WCRC prior to constructing a driveway and that encroachments such as rocks, berms, headwalls, signs, sprinklers and irrigation, private utilities, and landscaping other than those items identified on the approved Road & Drainage Plans are prohibited in the right-of-way.
7. The Board of County Road Commissioners agrees that it will approve and sign the Plat of this property, if applicable, and will subsequently accept the roads named herein as public roads, if the construction is completed as agreed, is in compliance with WCRC current Procedures and Regulations for Developing Public Roads, and is determined to be satisfactory by the County Highway Engineer.
8. This Agreement shall be binding on and inure to the benefit of the parties hereto and their respective successors and assigns when fully executed by an authorized representative of each party. In the event of any conveyance of the property to a Successor Developer all obligations and responsibilities of the Developer hereunder shall be automatically transferred and the original Developer shall be released and discharged of any and all liability and/or responsibility under this Agreement, effective immediately upon: (A) Developer conveyance of the project by way of warranty deed; (B) delivery to the WCRC of a fully-executed assignment of the Developer's obligations and responsibilities under this Agreement; (C) replacement by the Successor Developer of the irrevocable standby letter of credit specified in Paragraph 3 above, in the same amount originally specified, less any partial releases of credit previously authorized; (D) delivery of an Agreement For Public Road Development, signed by the Successor Developer and incorporated all terms of this Agreement; (E) the Successor Developer furnishing proof of liability insurance, as specified in Paragraph 4 above; and (F) the original Developer's payment of any outstanding debts to WCRC.

Developer: _____

Authorized Representative's
Signature & Title: _____

Address: _____

BOARD OF COUNTY ROAD COMMISSIONERS OF THE COUNTY OF WASHTENAW

Managing Director: _____

Date: _____

Figure 17: Agreement for Public Road Development



PERMIT TO PLACE

DISTRIBUTION: Original – WCRC File, 1st Copy – Construction Engineer, 2nd Copy – Contractor

JOB IDENTIFICATION	JOB NO.	DATE
--------------------	---------	------

TO: (CONTRACTOR)

I have inspected the above project and find it to be constructed in reasonably close conformity with plans and specifications.
The Contractor assumes full responsibility for detail dimensions and elevations measured from lines, grades, and elevations established by the engineer. Subject to the above responsibility, permission is given to place:

☐ **SUBBASE** on the above project from:

☐ **AGGREGATE BASE COURSE** on the above project from:

☐ **CONCRETE CURB & GUTTER** on the above project from:

☐ **HOT MIX ASPHALT (HMA) PAVEMENT** on the above project from:

☐ **PORTLAND CEMENT CONCRETE (PCC) PAVEMENT** on the above project from:

☐ **CURB & GUTTER** on the above project from:

☐ **OTHER (SPECIFY)** on the above project from:

COMMENTS:

SIGNATURE

TITLE

DATE

Figure 18: Permit To Place Form

ENGINEER'S CERTIFICATE

Date: _____

Name of Development: _____

Township of: _____ Section: _____

Washtenaw County, Michigan

I hereby certify that the construction of the

_____ is complete and that:

I have personally observed and documented the construction;

All improvements to date have been installed in accordance with the approved construction plans and Washtenaw County Road Commission road and drainage standard specifications;

The construction materials meet the aforementioned specifications and the reports of materials and density testing have been filed with the Washtenaw County Road Commission;

All the monuments as shown on the plat or road plan are in place and in good condition.

Signed:

Licensed Professional Engineer

Seal



Figure 19: Engineer's Certificate

