GRAND TRAVERSE COUNTY ROAD COMMISSION

RIGHT OF WAY PERMITTING AND PUBLIC ROAD STANDARDS

RULES, SPECIFICATIONS AND GUIDELINES

Grand Traverse County Road Commission
1881 LaFranier Road
Traverse City, MI 49696-8911

(231) 922-4848

Issued January, 2014
Revised August, 2016

GRAND TRAVERSE COUNTY ROAD COMMISSION

"Our mission is to upgrade and maintain a safe and efficient road system"

Board Motion and Resolution

Below is the motion adopting the revised Right Of Way Permit Rules, Specifications and Guidelines as per the Regular Board Meeting October 23, 2014.

D. Public Hearing on Right-of-Way Specifications and Fee Schedule
Greenan shared comments received at the public hearing regarding the right-of-way specifications and fee schedule.

Motion by McKellar, seconded by Nelson, to adopt the Right-of-Way Specifications and Fee Schedule to include a $25 agricultural right-of-way permit.

CARRIED Unanimously

(231) 922-4848 ph • (231) 929-1836 fx • www.gtcrc.org
1881 LaFranier Road • Traverse City, Michigan 49696-8911

GRAND TRAVERSE COUNTY
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INTRODUCTION

The following Rules apply to the issuance of permits, or through Board approval, for activities, other than ordinary public travel, being done in the Right-of-Way under the jurisdiction of the Road Commission for Grand Traverse County. These Rules are made part of any permit issued, or through Board Approval, by the Grand Traverse County Road Commission for these activities.

Questions regarding these Rules may be directed to the Grand Traverse County Road Commission - Traffic Services at (231) 922-4848.

Application for permits may be made at:

Traffic Services
Grand Traverse County Road Commission
1881 LaFranier Road
Traverse City, MI 49696-8911

www.gtcrc.org

Applications for new public roads may be made at:

Traffic Services
Grand Traverse County Road Commission
1881 LaFranier Road
Traverse City, MI 49696-8911

www.gtcrc.org

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PART 1 - GENERAL PROVISIONS

RULE 1.1 ACTIVITIES THAT REQUIRE PERMITTING AND APPROVALS

1.1.1 After the effective date of these Rules, no Person shall undertake or conduct any of the following activities on, within, beneath, or along county roads, county road Right-of-Way, or county road highway easements, unless and until the Road Commission for Grand Traverse County's - Traffic Services has issued a permit to allow such activity:

(A) Construct, reconstruct, relocate, surface, widen, or resurface a driveway, temporary driveway, or private road connection to a county road, or pave, widen or modify a county road.
(B) Install, repair, or maintain a non-motorized pathway.
(C) Erect or suspend a Banner.
(D) Use the ROW during an Event, or close a section of a county road to normal traffic for an Event.
(E) Install, place, or maintain any structures, facilities, landscaping, decorative items or obstructions, including without limitation, any speed bumps, berms, barriers, plantings over 36 inches high, sprinklers, lights, signs, entrance markers, U.S. Postal Service approved mailbox structures, stones, boulders, fencing, poles, shelter boxes, or any other such items.
(F) Place or store any equipment or materials on, or park any vehicles in, areas not designated for parking.
(G) Cut down, remove, trim, or tunnel under, any tree or trees.
(H) Any other activity which requires excavation in the Right-of-Way, working from the Right-of-Way to reach private property, or disruption of normal traffic patterns.
(I) Install, construct, modify, alter, remove, decorate or in any manner tamper with any traffic or pedestrian signal, sign, warning beacon or self-powered warning system.
(J) Discharge of water, gravel, soil, snow, ice, leaves, or other substance into the Right-of-Way.
(K) Install, maintain, or connect to any underground or overhead public or private utility, pipeline, wire, conduit, or sewer.
(L) Conduct geophysical or hydrological investigation.
(M) Logging operations.

All recreational trail crossings including but not limited to snowmobile, VASA, North Country or other trail crossings.

1.1.2 Activities permitted within the Right-of-Way and/or conducted under the approval process by the Road Commission shall conform to the following specifications:

(A) The current edition of the M.D.O.T. "Standard Specifications for Construction."
(B) The current edition of the "Michigan Manual of Uniform Traffic Control Devices."
(C) Grand Traverse County Road Commission: "Right of Way Permit Rules, Specifications, and Guidelines and Public Roads Standards."
(D) Grand Traverse County Road Commission: "Supplemental Specifications & Special Provisions."
(E) The current edition of the AASHTO: "Policy for Geometric Design of Highways and Streets."
(F) The American with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, and their implementing regulations, guidelines and standards.
(G) The current edition of the AASHTO: "Roadside Design Guide".
(H) Michigan Public Act 53 of 1974 (MISS-DIG), and all applicable OSHA and MIOSHA laws and regulations, including any ANSI standards adopted by MIOSHA.
(I) PA 59 of 1978, PA 288 of 1967 Rules and Regulations for Plat Development
(J) M.D.O.T. Standards and Typical Plans
(K) M.D.O.T. Road Design Manual
(L) M.D.O.T. Drainage Manual

1.1.3 No Person shall construct, install, reconstruct, relocate, widen, surface, or resurface a road approach to a county road without first obtaining a permit for the approach from Traffic Services. The approach, tapers and passing lane shall be reviewed and permitted by Traffic Services and shall conform to section 1.1.2 of these specifications. If a new road is intended to become a county road, the new road itself shall conform as applicable to the current "Standards and Specifications for Subdivision and other Development Projects with Public Roads" .

1.1.4 When the use of the land served by an existing Driveway or Private Road is changed or expanded, and the change or expansion creates a Safety Concern, the Driveway or Private Road will be considered a new Driveway or Private Road subject to Act 200 of 1969, as amended by Act 83 of 1978, being MCL 247.321 et seq.

1.1.5 Public Road Approvals

(A) This publication presents the procedures for the preparation, review and approval of plans for public roads within proposed land developments, including subdivision plats and land divisions intended to come under the jurisdiction of the Board of County Road Commissioners of Grand Traverse County, State of Michigan. In addition, it presents the minimum standards, specifications, details, letters and guidelines for the planning and construction of proposed new roads.

(B) This document provides the guidelines for design engineers preparing road plans and for review by the staff of the Road Commission, in accordance with the policies of the Board who approves the plans and accepts new roads into the County road system. Its scope applies only to those lands located outside the incorporated limits of any city, village or municipality within the County, and to those lands within those municipalities where the lands are subject to roads and highways under the jurisdiction of the Road Commission.

(C) The contents of this publication do not in any way supersede any part of Act 288, P.A. 1967, or Act 59, P.A. 1978, as amended, any promulgated administrative rules, municipal ordinance, or other applicable State or Federal laws. It is intended for use as a set of standardized instructions to expedite the processing of proposed land development and new road construction within Grand Traverse County. The minimum standards and specifications are subject to change without notice, and the Board reserves the right to require road construction to a higher standard where ever warranted by site conditions.

(D) If any part of these minimum standards and specifications 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 minimum standards and specifications, and such other provisions shall remain in full force and effect. To this end, these minimum standards and specifications are declared severable.

(E) In the event that the minimum standards and specifications contained herein change between the approval date of the preliminary plat, land division survey, or submission of road and drainage plans for a particular phase of a development, the minimum standards and specifications in effect when the road and drainage plans were approved shall be followed.

RULE 1.2 DEFINITIONS

1.2.1 A.A.S.H.T.O.

The American Association of State Highway and Transportation Officials.

1.2.2 A.D.A.

The Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, and their implementing regulations, guidelines and standards.

1.2.3 ALLEY

A passage, as through a continuous row of houses, permitting access from the street to backyards, garages, etc.

1.2.4 APPLICANT

A Person who applies for a permit under these rules.

1.2.5 APPROVED EXCAVATED MATERIAL

Material excavated from within the Right-of-Way or from elsewhere (excluding peat, marl, muck, silt, blue clay, frozen material, topsoil, and other organic or hydric soils), that has been classified, optimum moisture and maximum density determined, that meets the criteria set forth in Rule 5.3.1(E) below, that has been tested, and that has been approved by the GTCRC as acceptable for backfill material.

1.2.6 PERMIT APPROVED PLANS

Plans and drawings submitted by the Applicant and approved by the GTCRC as part of permit approval. Approved Plans include notes and comments made by the GTCRC. Approved Plans do not include contracts, proposals and other documents, unless specifically noted in the permit or approved by the GTCRC.

1.2.7 BOARD APPROVED PLANS

Plans and drawings submitted by the applicant and approved by the GTCRC Board as part of a new public road. Approved plans include notes and comments made by the GTCRC

1.2.8 BANNER

Any arrangement of words, lettering, symbols, or decorative device, including holiday decorations, suspended over any portion of a road or adjacent to a travel lane.

1.2.9 BOARD

The Board of County Road Commissioners of the County of Grand Traverse, a statutory Michigan public body corporate.

1.2.10 BOND

A document of financial assurance, satisfactory to the GTCRC, from a surety satisfactory to the GTCRC, that guarantees a specific level of expenditure for restoration of a site, upon which the GTCRC can draw if the Permit Holder does not accomplish in a reasonable time interval the restoration of the Right-of-Way to a safe and acceptable condition as determined by the GTCRC.

1.2.11 BUFFER AREA

An area of the Right-of-Way adjacent to a roadway which serves as a physical divider between vehicular traffic on the travelled portion of the roadway and activity on the adjacent private property.

1.2.12 BUTT JOINT

A saw-cut joint, to provide a clean edge in the existing pavement against which to butt new construction.

1.2.13 CERTIFIED CLOSURE REPORT

A report by a certified consultant, following the removal of an underground storage tank and the remediation of site contamination, which report attests that a former underground storage tank site has been remediated and now conforms to state standards in regards to onsite contaminate concentrations.

1.2.14 CIRCLE DRIVEWAY

A private driveway which enters and leaves private property at two points within the same property's Road Frontage.

1.2.15 CLEAR SIGHT TRIANGLES

An area that should be clear of obstructions that might block a driver's view of potentially conflicting vehicles or objects, as determined by the GTCRC in accordance with standard practices of the GTCRC.

1.2.16 COMMERCIAL DRIVEWAY

A driveway serving a commercial establishment, industry, governmental or educational institution, hospital, church, apartment building, mobile home park, and not included in the definitions of Residential Driveway or Utility Driveway.

1.2.17 CONTRACTOR

Any Person other than the Property Owner or an agent or employee of GTCRC performing any activity, excluding the placement of Banners or conducting an Event, within the Right of Way.

1.2.18 DEVELOPER

The owner of the land of a proposed land development.

1.2.19 DEVELOPMENT

A land development project that may be completed under any part of the Land Division Act, Act 288, PA 1967, the Condominium Act, Act 59, PA 1978, any promulgated administrative rules, municipal ordinance, or any other applicable County, State, or Federal law, and the Board's adopted policies.

1.2.20 DEVELOPMENT'S ENGINEER

A Professional Engineer, licensed by the State of Michigan, and retained by the Developer, or any of their associates, designated to act on their behalf in designing and constructing the development project.

1.2.21 DIRECTIONAL DRIVEWAY

A driveway system designed, with critical turning movements to and from the property restricted at certain access points, so that traffic leaving the road is separated from and does not conflict with traffic entering the road. (Also known as a “one-way” drive.)

1.2.22 DIVIDED DRIVEWAY

A driveway so designed that traffic entering the driveway is separated by a traffic island from the traffic leaving the driveway.

1.2.23 DRIVEWAY OR PRIVATE ROAD PROPERTY

The lot or parcel of property for which a driveway or private road permit is applied or issued.

1.2.24 ENGINEER

The Engineer of the Board, or any of their associates or consultants designated to act on their behalf in carrying out the provisions of the *Land Division Act*, Act 288, PA 1967, the *Condominium Act*, Act 59, PA 1978, any promulgated administrative rules, municipal ordinance, or any other applicable County, State, or Federal law, and the Board’s adopted policies.

1.2.25 ENGINEERING INSPECTOR

An engineer or engineering technician certified and qualified by MDOT, or other recognized agencies, acceptable to the Engineer to perform construction inspection

1.2.26 EMERGENCY ACCESS

Access maintained for the purpose of emergency vehicles, including all police, fire and paramedic equipment**.**

1.2.27 EVENT

A parade, celebration, festival, movie shoot, racing event, or similar activity requiring the closure of any portion of the Right of Way to normal traffic.

1.2.28 FUTURE ROAD RESERVE

Land areas in developments that are dedicated for future road use, sometimes referred to herein as “Outlot”.

1.2.29 GRAND TRAVERSE COUNTY ROAD COMMISSION

A quasi-municipal corporation, its officers, employees or agents, also referred to herein as the GTCRC.

1.2.30 H.M.A.

Hot mix asphalt.

1.2.31 GTCRC

The Board of County Road Commissioners of the County of Grand Traverse, a statutory Michigan public body corporate, also known as the Grand Traverse County Road Commission.

1.2.32 INTRUSIVE TESTING

Testing and Investigation which penetrates the land surface and which may include extraction of physical samples, and/or soil boring, and/or installation of Monitoring Wells. Samplings and testing can be conducted manually, by boring, by drilling rigs, by geo-probe equipment (or the equivalent), and/or by other means.

1.2.33 LANE CLOSURE

Blocking one lane of a multi-lane roadway in such manner that the lane is unavailable for normal traffic usage.

1.2.34 LEGAL DEPARTMENT

An attorney engaged by the GTCRC to represent the GTCRC in the particular matter.

1.2.35 LETTER OF CREDIT

A document issued by a financial institution, or a similar party, assuring payment for GTCRC's costs to restore, repair or replace the Right of Way in the event of the failure of the Applicant, Property Owner, or Permit Holder to comply with these Rules or the permit in a form acceptable to the GTCRC.

1.2.36 LIMITED ACCESS RIGHT-OF-WAY

Right-of-Way in respect to which owners or occupants of abutting lands and other persons have no legal right to access to or from the same, except pursuant to limited areas and manners determined by the public authority having jurisdiction over such road, street or highway.

1.2.37 LOCAL TRAFFIC

Traffic, which uses a particular street or route to access residences, businesses, or other abutting properties and has no alternative route to said residence, business, or other abutting property.

1.2.38 MAJOR ROADS

(A) County Primary Road – A County Primary Road as defined by ACT 51, as amended.
(B) County Local Road – A County Local Road as defined by ACT 51, as amended.

1.2.39 M.D.E.Q.

Michigan Department of Environmental Quality.

1.2.40 M.D.N.R.

Michigan Department of Natural Resources.

1.2.41 M.D.O.T.

Michigan Department of Transportation.

1.2.42 M.D.O.T. STANDARD PLAN

Michigan Department of Transportation Standard Plans, Road Standard Plans I-VI, Bridge Standard Plans X-XII, as amended or current revision.

1.2.43 M.D.O.T. STANDARD SPECIFICATIONS FOR CONSTRUCTION

The current Standard Specifications for Construction which shall also include the current Grand Traverse Road Commission County Supplementary Specifications and Design Standards on file at the GTRCRC.

1.2.44 M.I.O.S.H.A.

Michigan Occupational Safety and Health Act, being Act 154 of 1974, including any and all regulations adopted thereunder and any American National Standards Institute standards adopted by M.I.O.S.H.A. and/or regulations adopted thereunder.

1.2.45 M.U.T.C.D.

The current edition of the Manual of Uniform Traffic Control Devices.

1.2.46 MONITORING WELLS

Temporary subsurface sampling stations (wells) installed to obtain periodic groundwater samples and/or water levels.

1.2.47 M.M.U.T.C.D.

The current edition of the Michigan Manual of Uniform Traffic Control Devices.

1.2.48 MUNICIPAL RESOLUTION

A resolution passed by a local governing body authorizing a specific official or officials to apply to the Traffic Services for an individual permit, or for all permits in the case of a blanket resolution, and wherein the governing body agrees to indemnify and save harmless the Board and all its agents and employees from claims of every kind arising out of activities authorized by the permit or permits issued.

1.2.49 NON-INTRUSIVE TESTING

Testing or investigation that does not penetrate the surface of the soil or involve extraction of physical samples. These will generally include geophysical or hydrogeological investigations or surveys.

1.2.50 NON-STANDARD MAILBOX STRUCTURE

Any mailbox that has one or more of the following characteristics:

(A) Is mounted to a support that is not approved by the U.S. Postal Service; or
(B) Is not made of a lightweight material that will easily break away; or
(C) Has a metal pipe supports with a diameter greater than 2 inches; or
(D) Has wood post supports greater than 4 inches square, or with a diameter of more than 4.5 inches; or
(E) Has post supports that extend more than 24 inches into the ground; or
(F) Has post supports set in concrete.

1.2.51 N.P.E.D.S.

National Pollutant Discharge Elimination System

1.2.52 O.S.H.A.

Occupational Safety and Health Act of 1970 and any and all regulations adopted thereunder.

1.2.53 OWNER AGENT

Contractor, Professional Engineer, Professional Surveyor, or other Authorized Owners Representative.

1.2.54 PERMIT HOLDER

The Person to whom the GTCRC issues a permit pursuant to these Rules. May also be referred to as “License Holder” in GTCRC permits and associated documents. May also refer to an applicant pursuing an approval of a proposed county road.

1.2.55 PERSON

An individual, sole proprietor, partnership, limited liability company, corporation, governmental entity, trustee, association, or any other business, public, private, religious, charitable or community group, organization, entity, fiduciary or functionary.

1.2.56 PRIVATE ROAD

A road which is not under the jurisdiction of a public body and provides access to two or more uses, commercial establishments, industries, governmental or educational institutions, hospitals, churches, apartment buildings, mobile home parks, dwelling units, and other uses not included in the definition of a Utility Driveway.

1.2.57 PROFESSIONAL ENGINEER

The engineer, actively licensed in the State of Michigan as a professional engineer, who is employed by the Applicant to prepare plans or supervise construction.

1.2.58 PROFESSIONAL SURVEYOR

The surveyor, actively licensed in the State of Michigan as a professional surveyor, who is employed by the Applicant to prepare plans or documents.

1.2.59 PROPERTY OWNER

A Person having an ownership interest in the real or personal property involved. For purposes of Banners and Events, the Authorized Applicant.

1.2.60 RESIDENTIAL DRIVEWAY

Driveway(s) serving one single family dwelling.

1.2.61 RIGHT-OF-WAY

The right of passage held by the Public in general to travel on roads, freeways and other thoroughfares, whether by easement or property ownership.

1.2.62 RIGHT-OF-WAY LINE

A boundary along the Road Frontage which denotes the limit of width of the Right-of-Way, from a private property ownership.

1.2.63 ROADBED

With respect to paved roads, that portion of the roadway between the finished edge of the road shoulders or 2 feet behind the curbs; with respect to unpaved roads or roads without shoulders or curbs, that portion of the roadway between two feet outside the traveled portion of the roadway.

1.2.64 ROAD CLOSURE

Physically or operationally blocking all improved lanes of a roadway preventing the flow of Through Traffic. Local Traffic and Emergency Access is maintained where possible.

1.2.65 ROAD FRONTAGE

The portion of private property that abuts the road Right-of-Way.

1.2.66 RULES

These Right of Way Permit Rules, Specifications, and Guidelines.

1.2.67 SAFETY CONCERN

A Safety Concern includes, but is not limited to, the following:

(A) Increased accident rate at or near a Driveway or Private Road.
(B) Increased traffic volume on the Major Road closest to the Driveway or Private Road.
(C) Increased turning movements using Driveway or Private Road.
(D) Improper drainage.
(E) Inadequate Sight Distance.
(F) Excessive grades of Driveway or Private Road.
(G) Improper Driveway or Private Road design for use.
(H) Creation of a potential risk of harm to the public or neighboring properties.

1.2.68 SECURITY

The financial assurance required by Rule 2.10 to insure the restoration of the Right of Way or reimburse the GTCRC for its costs incurred, including Legal Department fees, in connection with a Person's activities within the Right of Way.

1.2.69 SUBCONTRACTOR

Any Person other than the Property Owner performing any activity in the Right of Way at the request of a Contractor.

1.2.70 SIGHT DISTANCE

The length of clear view along a county road required so that a specified object is visible to the driver, or the required distance of clear vision required to safely enter or cross a county road, as defined AASHTO "A Policy on Geometric Design of Highways and Streets", latest edition.

1.2.71 TRAFFIC CONTROL PLAN

A plan identifying all required traffic control devices, including, but not limited to signs, barriers, barricades, plastic drums, traffic signals and pavement marking, in accordance with current *Michigan Manual of Uniform Traffic Control Devices*.

1.2.72 THROUGH TRAFFIC

Traffic whose destination or origin is not to or from residences, businesses, or other properties, which abut a particular street or route.

1.2.73 TRAFFIC REGULATOR

An individual who actively controls the flow of vehicular traffic into and/or through a temporary traffic control zone using hand signal devices or an Automated Flagger Assistance Device as defined in the M.M.U.T.C.D.

1.2.74 TRAFFIC SERVICES

The division within the Grand Traverse County Road Commission which issues permits and inspects activities which take place within the Right-of-Way for compliance with the Board's rules, specifications and procedures.

1.2.75 UTILITY DRIVEWAY

Any driveway serving a farmyard, out-building, cultivated or uncultivated field, timberland, or undeveloped land, or a utility installation or structure, such as a pump house or substation which operates automatically and requires only occasional access.

1.2.76 WORK AUTHORIZATION

A written order by Traffic Services, engaging a GTCRC construction or maintenance crew or an outside contractor, to remove or correct an unsafe condition, or to repair damage to public or private property, or to correct or complete work causing an unacceptable delay or inconvenience to the travelling public. A copy will be sent to the Permit Holder.

1.2.77 ZONE OF INFLUENCE

That area outside of the Roadbed, but within the area defined by a one-on-one slope extended from the edge of the Roadbed.

RULE 1.3 PRESERVATION OF GOVERNMENT LAND CORNER SURVEY MONUMENTS

To ensure compliance with the provisions of Act 74 of 1970, as amended (Public Act 74), being MCL 54.201 et seq., regarding the monumentation of survey monuments and witnesses, the following procedures shall apply to all permit Applicants and Permit Holders, and their engineers, surveyors, contractors, and anyone performing activity within the Right-of-Way under the supervision or control of any of them:

1.3.1 PUBLIC LAND SURVEY CORNERS AND PROPERTY CONTROLLING CORNERS

Public land survey corners and property controlling corners (as defined in Public Act 74) located within a construction area shall be witnessed prior to the commencement of construction and their locations outside of the construction limits shall be noted on plans submitted as part of a permit application. The survey corner or property controlling corners shall then be re-established in accordance with Public Act 74. During the construction activities, the Permit Holder and contractors shall coordinate their activities with a land surveyor licensed in the State of Michigan engaged by the Applicant or Permit Holder, for the purpose of placing monument boxes in new roadway, including any median area:

(A) If a survey corner is located in a public roadway that is hard surfaced, the monument shall be set in accordance with GTCRC specifications.
(B) If a survey corner is located in a public roadway that is not surfaced, the monument shall be set in accordance with GTCRC specifications.
(C) All reestablished monuments shall be in accordance with M.D.O.T. Standard Specifications for Construction and M.D.O.T. standard plan R-11 Series.

1.3.2 LAND CORNER CERTIFICATE

Upon completion of the requirements of Public Act 74, the licensed land surveyor shall submit two copies of the recorded Land Corner Record Certificate (with Liber and Page); one to the GTCRC Highway Engineer and one to the GTCRC Surveyor at the following address:

Grand Traverse County Road Commission
Road Commission Surveyor
1881 LaFranier Road
Traverse City, MI 49696

1.3.4 PRESERVATION OF ROW MONUMENTATION

Preservation of private property monuments. Private issue, Permit Holder or Contractor to replace destroyed property monuments from road construction. Replacement to be by a land surveyor licensed in the state of Michigan.

RULE 1.4 COMPLIANCE

The Applicant and Permit Holder shall be responsible for ensuring that they and their employees, agents, architects, engineers, surveyors, and all contractors, subcontractors, laborers and material, men working under, or in connection with, the permit, are aware of, and comply with, the provisions of these Rules and the laws and requirements cited therein.

RULE 1.5 ISSUANCE OF WORK AUTHORIZATIONS

1.5.1 If the activities of an Applicant or Permit Holder result in a condition that, in the opinion of the Traffic Services, is unsafe, is causing unacceptable delay or inconvenience to the traveling public, or is causing damage to the roadway, drainage systems or appurtenances, or damage to public or private property due to flooding, subsidence or otherwise, the Traffic Services, after efforts it deems reasonable to notify the Permit Holder or its contractor, may issue one or more Work Authorizations to itself, or any third party contractor, to correct the situation. Such Work Authorizations shall provide for labor and equipment to install signs, barricades or barriers, and any and all labor, equipment and materials required to restore the roadway and drainage systems. The costs and expenses of such Work Authorizations, including labor and materials, shall be borne by the Applicant and the Permit Holder, jointly and severally.

1.5.2 Issuance of a Work Authorization shall not release Applicant or Permit Holder from any liability or expense.

RULE 1.6 REVOCATION OF PERMITS

The rights granted by a permit are revocable at the discretion of the GTCRC, and neither the Applicant, nor the Permit Holder, nor any other Person, acquire any rights in or to the Right-of-Way, or any part thereof, as the result of an issuance or revocation of a permit. Applicant and Permit Holder each waive any right to claim any direct or indirect damages or compensation as a result of any revocation of a permit.

PART 2 – PERMITTING PROCESS

RULE 2.1 AUTHORIZED APPLICANT

Applications for permits may be accepted from Property Owners, the Property Owner's contractor or authorized agent, or from government agencies.

Beginning, January 1, 2017, all Contractors performing work in the public right-of-way must have an approved and current Contractor's Prequalification form on file with the Road Commission. The Contractor must be preapproved to perform the work for which they are applying for before a permit will be issued. Prequalification's must be renewed yearly (January 1 through December 31 each year).

In the event that the entity actually performing the work is to be a Subcontractor, the Contractor must fill out any necessary permit application form(s) stating that a Subcontractor will be employed. The Contractor shall specify the name of the Subcontractor on the permit application form. The Subcontractor must also be prequalified to perform work in the public right-of-way.

Property Owners wishing to obtain permits and perform work in the public right-of-way without employing the services of a pre-qualified Contractor may do so at their own risk assuming such work does not include work within the existing or proposed roadway area, as well as any under or above ground infrastructure. All work performed by the Property Owner must meet the same standards and specifications as is required of a Contractor; however, Property Owners are not required to obtain pre-qualification. Any work performed by a Property Owner which fails to pass inspection is subject to the requirement of removal and replacement at the discretion of the County Highway Engineer. The costs associated with this action will be the sole responsibility of the Property Owner. Property Owners will also be held accountable for any work performed without the proper permit(s) and will be charged at 3 times that of the current rate for the permit(s).

The County Highway Engineer may wave requirements based on contractors past proven work experience.

RULE 2.2 PREQUALIFICATION REQUIREMENTS

The Contractor requesting to be prequalified for mainline right-of-way work must satisfy the following requirements. Three categories have been developed which exist as follows; Paving, Earthwork and Utility. The Contractor may submit for one or all categories. All requirements within the selected category must be met to achieve acceptance. It is the Contractor's responsibility to provide all required documentation.

Contractor requesting a Paving prequalify (all aspects of paving) must receive acceptance on the items listed below: This category does NOT include driveway paving.

(A) MDOT prequalified.
(B) Paving Material must come from a Certified Plant.
(C) Must be able to identify a State Certified Lab for testing requirements.
(D) Provide documentation that aggregate is supplied from a qualified source.
(E) Provide a list of construction equipment presently owned and/or leased along with the equipment intended to be used for paving operations.
(F) Paver must have working automation (traverse and longitudinal automation grade control)
(G) Must be able to provide documentation in support of paving as a prime or subcontractor on 3 or more MDOT projects a year for a three year period directly prior to applying.
(H) Not have received more than three violation notices from the Road Commission in the last three years of applying.

(I) The Road Commission has not made a claim against a bond provided by the Contractor or on a project the Contractor performed paving work on more than one time within the last three years of applying.
(J) Provide in writing that the Contractor has read and fully understands the Road Commission Standards including all testing requirements.
(K) Be able to fully bond all work being performed.

Contractor requesting an Earthwork prequalify (restoration, earth excavation, earth embankment, grading) must receive acceptance on the below listed items:

(A) MDOT prequalified.
(B) Must be able to provide documentation in support of Earthwork as a prime or subcontractor on 2 or more MDOT projects a year for a three year period directly prior to applying.
(C) Provide a list of construction equipment presently owned and/or leased along with the equipment intended to be used for paving operations.
(D) Not have received more than three violation notices from the Road Commission in the last three years of applying.
(E) The Road Commission has not made a claim against a bond provided by the Contractor or on a project the Contractor performed paving work on more than one time within the last three years of applying.
(F) Provide in writing that the Contractor has read and fully understands the Road Commission Standards including all testing requirements.
(G) Be able to fully bond all work being performed.

Contractor requesting a Utility installation prequalify (Storm, Sewer, Water, Gas, Phone, Cable, Electric) must receive acceptance on the below listed items:

(When placing Storm, Sewer and Water):

(A) MDOT prequalified.
(B) Must be able to provide documentation in support of Earthwork as a prime or subcontractor on 2 or more MDOT projects a year for a three year period directly prior to applying.

(All Utility installation)

(C) Provide a list of construction equipment presently owned and/or leased along with the equipment intended to be used for paving operations.
(D) Not have received more than three violation notices from the Road Commission in the last three years of applying.
(E) The Road Commission has not made a claim against a bond provided by the Contractor or on a project the Contractor performed paving work on more than one time within the last three years of applying.
(F) Provide in writing that the Contractor has read and fully understands the Road Commission Standards including all testing requirements.
(G) Be able to fully bond all work being performed.

RULE 2.3 APPLICATIONS FOR PERMIT (S)

Applicants shall submit applications for permits in the manner prescribed by, and on the appropriate forms supplied by, Traffic Services, together with the appropriate fees as established by the Board.

The Driveway Permit Application is required for Driveways and Private Roads as defined in these Rules (Rules 1.1.1 (A) and (O)).

The Application and Permit to Construct, Operate, Use or Maintain with the Right-Of-Way, or to Close, a County Road is required for application for permits for activity covered under Rule 1.1.B to Rule 1.1.1.N.

Permits for activities covered under Rule 1.1.1.K and Rule 1.1.1.L shall use the Utility Permit form. Applicants shall submit with the application plans or drawings satisfactory to the Traffic Services containing the information required by Rule 2.3.

Contact GTCRC for all other activities.

RULE 2.4 PLAN REQUIREMENTS FOR PROPOSED RIGHT-OF-WAY ACTIVITY

With each permit application, Applicant shall submit one (1) application with dimensions and specifications shown for Residential Driveways, three (3) sets of plans or drawings for traffic signal permits and one (1) set of plans or drawings for all other permits, Other than residential driveway permits, applications for activities under Rule 1.1.A and Rule 1.1.B shall include plans or drawings, in AutoCad 2008 or later, that clearly indicate the following features, or such other features as Traffic Services may require to adequately review the proposed work and/or activities for which a permit application is made:

2.4.1 Existing road surface, ditches, Right-of-Way and property lines, road appurtenances, medians (if existing) and dimensions thereof, driveways on adjacent property and on property along and opposite the Road Frontage, names of existing and proposed roads, utilities, Sight Distance triangles, and other physical features which may impact the design, approval, and construction of the proposed work. Applicant shall provide a topographic survey for the entire ROW width and for the length of the project.

2.4.2 All buildings, both proposed and existing, appurtenances to any business being conducted, and dimensions thereof, including notations as to present or proposed use of the buildings.

2.4.3 Any and all Driveways or Private Roads, tapers, right turn lanes, passing lanes, and center lanes for left turns, which are to be constructed, reconstructed, relocated, surfaced, resurfaced, operated, used, or maintained, shall be designed in accordance with Part 6 of these Rules and include the following dimensions and features:

(A) Widths of all Driveways or Private Roads.
(B) Radii of Driveway or Private Road returns and other points of curvature.
(C) Driveway grades or profile view of Driveway or Private Road.
(D) Angle of the Driveway(s) or Private Road(s) relative to the roadway edge of pavement if not perpendicular.
(E) Dimensions of roadside control island, other traffic islands adjacent to the road and traffic control island/islands in the road.
(F) Driveway or Private Road surface material and traffic island surface material.
(G) Sight Distance for the approach.
(H) Rumble strips.
(I) Dimensions of all taper lengths, lane widths and length, length of curb.
(J) Cross-section of proposed pavement showing depth and type of material.
(K) Boundary Survey with ROW limits denoted on State Plane Coordinates.
(L) Topographic survey to be on NAVD 1988 Vertical Datum

2.4.4 Distance from existing Driveway(s) and proposed Driveway(s) or Private Roads to the nearest Intersecting street or cross-road, dimensions to property lines, property lines extended to the road pavement, and buildings and business appurtenances.

2.4.5 All roadside features, in addition to driveways, to be constructed within the Right-of-Way including roadside control island, curb, sidewalks, authorized traffic signs, landscaping, and all other roadside features, such as manholes and poles.

2.4.6 All existing and proposed underground and overhead public and private utilities, including but not limited to, water main, storm sewer, sanitary sewer, gas main, electric, and fiber optic structures and facilities.

2.4.7 Existing and proposed drainage structures, ditches, sewers, and controls shall include:

(A) Size and length of culverts, sewer pipe, outlet controls, and/or ditches.
(B) Type of culvert, sewer pipe, outlet control, and/or ditch.
(C) Grade of culvert, sewer pipe, and/or ditch.
(D) Direction of surface water flow on proposed site.
(E) Type, size, and location of drainage structures.
(F) Retention volume and outlet control calculations.
(G) Other hydrologic/hydraulic information as necessary.
(H) Horizontal plan on State Plane Coordinates
(I) Elevation shall be relative to NAVD 1988.

2.4.8 North directional arrow and scale, no smaller than 1"=50', of drawing.

2.4.9 Location map relating the proposed site to Major Roads.

2.4.10 All government land corner survey monuments and witnesses, roadway monuments, and right of way monuments located within the project limits.

2.4.11 The name, address, and phone number of the individual or entities preparing the plan, or preparing portions of the plan. When required by law or the GTCRC, the seal of the Professional Engineer who prepared the plans along with his/her name, address and phone number must appear on the plan.

RULE 2.5 APPLICATION TO BE COMPLETE

2.5.1 No Application shall be accepted by the GTCRC until it includes all of the information and documentation required by these Rules.

RULE 2.6 DESIGN AND PLACEMENT REQUIREMENTS

2.6.1 The design, location, construction, and operation of those activities covered under Rule 1.1.2 and related construction within the Right-of-Way shall meet requirements of the current M.D.O.T. Standard Specifications for Construction, the Guidelines of the American Association of State Highway and Transportation Officials (A.A.S.H.T.O.), the Americans with Disability Act, the design standards set forth in these Rules, and any other standards used by the GTCRC.

RULE 2.7 CONDITIONS AND LIMITATIONS OF PERMITS

All permits issued in accordance with these Rules shall be subject to the following conditions and limitations:

2.7.1 The Permit Holder shall abide by the conditions and specifications contained in the permit application, the permit and these Rules.

2.7.2 Any activity covered under Rule 1.1 shall be allowed only after an approved permit for that activity has been obtained from Traffic Services. The activity allowed shall only be as described in the

approved permit therefor and in the Approved Plans accompanying the permit. Traffic Services, or the County Highway Engineer must approve all changes in plans and drawings.

2.7.3 Prior to commencement of any activity covered by the permit, the Permit Holder must give Traffic Services at least two (2) days (excluding Saturdays, Sundays and Holidays) notice of the date and time of the commencement of the activity. In the event of failure to comply with the terms and conditions of any permit issued in accordance with these Rules or the failure to obtain an appropriate permit, Traffic Services shall have the right, by issuing a stop order, to halt the construction or other permitted activity until such time as satisfactory compliance shall have been made.

2.7.4 Traffic Services shall at all times have the right to inspect and test any driveway, structure, connection, pathway, etc., constructed within the Right-of-Way, and if the work is determined defective or not permitted, the Permit Holder shall reimburse the Board for all actual costs associated with any on-the-job inspection or testing which may be required by the GTCRC. Such inspection and testing may include, without limitation, inspection of materials, soils, construction methods, compaction, grades, drainage, signing, barricading, maintenance, or other safety precautions that may be necessary in emergencies.

2.7.5 If, upon inspection, an activity described in Rule 1.1 is found to be in violation, the Permit Holder shall correct any deficiencies within a period of 30 days, as specified in a notice of violation sent by certified mail to the Permit Holder. The Permit Holder, however, shall immediately correct all dangerous or hazardous conditions. If the Permit Holder fails to make the necessary corrections within the required time period, the Board or its agents may perform the necessary correction(s), with all related costs incurred to be reimbursed to the Board by the Permit Holder.

2.7.6 If the permitted activity is suspended by Stop Order for more than 15 days for any reason, including a dispute between the Permit Holder and the Property Owner, the Permit Holder is responsible for restoring the Right-of-Way and the roadway to a condition acceptable to the GTCRC. Restoration shall include, but is not limited to, paving, stabilization of slopes and ditches (including but not limited to placement of topsoil, seed, fertilizer, mulch, and mulch anchoring), and installation of temporary or permanent drainage facilities or structures. The Permit Holder agrees and understands that the GTCRC will take reasonable actions necessary to ensure safe public travel, preservation of the roadway and drainage, the prevention of soil erosion and sedimentation, and elimination of nuisance to abutting Property Owners. All such costs will be charged to the Permit Holder. If any suspension of work will be protracted, or, will not be completed by the Permit Holder, the Permit Holder shall restore the Right-of-Way to a condition the same or better than the condition that existed prior to issuance of the permit. Should the Permit Holder fail to restore the Right-of-Way, the GTCRC will notify the Permit Holder and request that the Permit Holder's surety under the Bond either complete the work or restore the Right-of-Way.

2.7.7 All costs incurred by the Board in obtaining or enforcing compliance with conditions and standards of the permit, failure to obtain a permit, or defective workmanship or materials, including Legal Department fees, shall be borne by the Applicant, Permit Holder, or Person undertaking the activity without a permit. The GTCRC may order any Permit Holder who conducts activity in a manner detrimental to the GTCRC's statutory obligation of maintaining roads and streets at all times in a reasonably safe and fit condition for the traveling public to cease and desist all activities within the Right-of-Way, other than ordinary public travel. If necessary, additional cash deposits and expense of maintaining a GTCRC inspector (full-time) may be required from the Permit Holder prior to the resumption of any work.

2.7.8 During any and all construction, the Permit Holder shall have a copy of the permit and associated Approved Plans available at the site.

2.7.9 The Permit Holder shall take, provide, and maintain all necessary precautions to prevent injury or damage to persons and property from activities covered by the permit and shall use warning signs

and safety devices which are in accordance with the M.M.U.T.C.D. The Permit Holder shall maintain all activities covered under Rule 1.1 set forth in the permit in a manner so as not to damage, impair, interfere with, or obstruct a public road or create a foreseeable risk of harm to the traveling public. Any Permit Holder who conducts activities in a manner detrimental to the GTCRC's statutory obligation of maintaining roads and streets at all times in a safe and fit condition for the traveling public will be required to cease all activities within the Right-of-Way, other than ordinary public travel. If necessary, additional cash deposits and expenses of maintaining a GTCRC inspector (full-time) may be required from the Permit Holder prior to the resumption of permitted activities.

2.7.10 The Permit Holder shall comply with all applicable OSHA and MIOSHA requirements.

2.7.11 The Permit Holder shall surrender the permit, cease activities, and surrender all rights under the permit, whenever notified to do so by the GTCRC or its representative, because of the need to use the area covered by the permit, because of noncompliance with any condition or provision of the permit, or for any other reason determined by the GTCRC.

2.7.12 Drainage from private property shall not be altered to flow into the Right-of-Way or county road drainage system unless approved by Traffic Services. See Rule 5.9 for storm water discharge requirements.

2.7.13 The GTCRC makes no warranty either expressed or implied to any Property Owner, the Applicant, the Permit Holder, or to any contractor, engineer or surveyor working on their behalf, or to anyone else, as to the suitability of, or condition of, soils and/or ground water that may be encountered during an excavation. Further, the GTCRC makes no warranty as to the suitability of the subsurface for the work or activity proposed.

2.7.14 The road surface may not be used for the storage of materials or any other construction purpose without prior approval of the GTCRC. Depending on traffic volumes and other conditions, the GTCRC may require the Permit Holder to provide by-pass lanes (either paved or unpaved), may allow one-lane traffic using Traffic Regulators or other traffic control measures, or some combination of the two. Permit Holder shall maintain traffic controls in accordance with Part 3 hereof, "Maintaining Traffic and Traffic Controls," and the M.M.U.T.C.D.

2.7.15 The Permit Holder shall remove any and all excavated materials and surplus materials to an area outside of the limits of the Right-of-Way, unless the permit provides the manner of disposal at locations within the Right-of-Way. Excavated material, removed vegetation (including all cuttings, slash and debris) and raw materials or equipment shall not be stockpiled or stored so as to adversely affect the safety of the traveling public. Permit Holder shall be responsible for the proper disposal of, and shall properly dispose of, in compliance with all applicable laws, regulations, ordinances and codes, any and all excavated and/or surplus materials, including without limitation soils or ground water contaminated by petroleum products or other pollutants, whether or not associated with sites found on a list published under the Michigan Environmental Response Act, being Act 307 of 1982, as amended, or on any other list or reported on appropriate release forms for underground storage tanks. Applicant and Permit Holder shall be responsible for obtaining, and shall obtain, all required federal, state and local permits, including from the county enforcing agency or municipal enforcing agency in accordance with Part 91 of Act 451 of 1994. A permit issued pursuant to these Rules does not authorize any work activity or disposal within wetlands or wetland fringes. The Permit Holder shall not dispose of, or allow the disposal of, any materials into or near any lakes, streams, culverts, drainage ditches, wetlands, flood plains, or any other protected area, without the express permission of the local municipality, the Department of Natural Resources or the U.S. Environmental Protection Agency, as applicable, or such other applicable governmental authorities, even if the Property Owner thereof agrees to, or requests, such disposal.

2.7.16 The Permit Holder shall store all materials far enough away from the road surface so that they are not a hazard to the traveling public. The Permit Holder shall maintain sufficient clear areas on the

shoulder that a car can park off the road in an emergency. Materials and equipment shall not block the vision of traffic seeking ingress or egress to or from the road. Only those materials being used in the immediate, on-going permitted activities can be stored in the Right-of-Way. All other materials, equipment, and trailers must be stored in an area outside of the Right-of-Way. Stockpiles may require soil erosion and sediment control measures. The Permit Holder shall ensure that all loading and unloading activities are conducted in a manner that is safe and minimizes congestion and delay to the traveling public, and that proper traffic controls are in place prior to temporary Lane Closures to load or unload materials or equipment. The Permit Holder may close through lanes from 9:00 am to 3:00 pm only to load or unload materials, unless otherwise specified in the permit.

2.7.17 The Permit Holder shall store and manage all polluting materials, including, but not limited to oil, grease, diesel fuel, and gasoline in compliance with current state and federal rules and regulations, and in such a manner as to contain discharges and spills and avoid contamination of the ground or ground water. The Permit Holder is responsible for cleanup and removal of any contaminated soils.

2.7.18 Prior to commencing any work activity, the Permit Holder shall obtain all required soil erosion control permits from Grand Traverse County, the local municipality, and/or all other applicable government agencies. The Permit Holder shall install and maintain all erosion control features shown on the Approved Plans, on the soil erosion and sedimentation control permits, or as may be required during the life of the project. All temporary control measures must be removed prior to final inspection.

2.7.19 The Permit Holder shall prevent erosion and sedimentation during any suspension of operations, including disputes between the Applicant and Permit Holder. If the Permit Holder fails to maintain soil erosion or sedimentation control measures, including temporary topsoil, fertilizer, mulch (hydro or blankets), and/or seeding, the GTCRC shall have the right to undertake such work at the expense of the Permit Holder.

2.7.20 The Permit Holder shall notify Traffic Services in writing of the completion of the permitted activity and request a final inspection. Prior to release of the permit, the Permit Holder shall complete, to the satisfaction of Traffic Services, all work authorized by permit.

2.7.21 The Applicant and Permit Holder are responsible for obtaining any other permits and complying with all applicable federal, state, and local laws, rules, regulations, codes and ordinances. These include, but are not limited to, regulation of inland lakes and streams, wetlands, woodlands, flood plains, filling, occupational safety and hours of operation. Issuance of a GTCRC permit does not authorize activities otherwise regulated by federal, state, and local government agencies.

2.7.22 The Permit Holder, and not the GTCRC, is solely responsible for the correctness and completeness of plans submitted as part of an application for a permit. Any error(s) in the aforementioned plans that become evident after the issuance of a permit and which change the scope of permitted activity is subject to review(s) and may be grounds for revocation of a permit.

2.7.23 The GTCRC reserves the right to limit the number of permits issued to a Permit Holder. The number of active permits the Permit Holder has and the available work force will determine the number of permits that can be issued to a Permit Holder; normally this would be two permits. Failure of a Permit Holder to comply with permit provisions on other permits (active or otherwise) shall constitute just cause to delay or refuse issuance of additional permits.

2.7.24 The Permit Holder is responsible for maintaining a minimum of one acceptable access to all abutting occupied properties, driveways, and side streets, unless otherwise indicated on the Approved Plans. The Permit Holder is further responsible for obtaining the written permission of owners or occupants of properties that may lose access during excavation or other work activity. The local police, fire, or emergency service agencies as well as the GTCRC shall define acceptable access. The Permit Holder is responsible for providing signing and other improvements necessary to ensure adequate access until the roadway, driveway, or side street is restored. The Permit

Holder shall conduct all its permitted activities in such manner as to minimize inconvenience to abutting Property Owners. The GTCRC may restrict the progress of excavation by the Permit Holder based on the rate of roadway and Right-of-Way restoration, including permanent or temporary pavement. The GTCRC may require that excavation be suspended, until satisfactorily backfilling of open trenches or excavations have been completed, and driveways, side streets, and drainage restored.

2.7.25 Permit Holder shall conduct all pumping or de-watering activities in compliance with National Pollutant Discharge Elimination System (N.P.D.E.S.) permits. Permit Holder shall use outlet filters and/or sediment basins to prevent any sediment from reaching roadside ditches, storm sewer inlets, or surface waters. Discharge of water into roadside ditches for extended periods of time is unacceptable. Placement of water discharge lines on or across the surface of the traveled portion of any road is not allowed without advanced written permission from the GTCRC. The Permit Holder shall be responsible for all restoration of the road drainage system. If the GTCRC deems it necessary for the Permit Holder to either alter de-watering operations or to cease de-watering operations altogether for public safety, the Permit Holder shall comply. The Permit Holder shall locate all de-watering facilities as far from the road surface as possible. If, due to extenuating circumstances, de-watering facilities are located closer to the road than the back slope of the ditch, the Permit Holder shall, at a minimum, place a flashing light at each such location, or comply with requirements as directed by Traffic Services.

2.7.26 Normal weight restrictions are in effect at all times, except during the period when reduced seasonal load limitations are in effect. No staging of vehicles or equipment is permitted within the roadway. All vehicles used as part of construction activities shall comply with all applicable federal, state and local laws, codes and regulations governing their operation on public roadways, and Permit Holder shall not utilize any off-road equipment on any county roadway without the prior consent of the GTCRC. Permit Holder shall have road cleaning equipment accessible at all times while construction activities are occurring. The GTCRC holds the right to direct the Permit Holder at any time to clean the roadway of sand, gravel or other debris. Also cost associated with the cleaning of the roadway shall be the responsibility of the Permit Holder. Permit Holder shall either reduce loads carried on the roadway sufficient to eliminate possible damage to the roadway, or enter into an agreement with the GTCRC to make appropriated repairs of the roadway. In either event, Permit Holder is responsible for restoration of any and all damaged roadway caused by heavy and high volume of truck traffic resulting from its activities in the Right-of-Way. The use of tracked or crawler mounted equipment on road pavements is not permitted, unless specifically authorized in advance in writing by the GTCRC. Written authorization for such use will usually require complete replacement or resurfacing of the entire pavement so used.

2.7.27 The Permit Holder shall maintain all work areas in the Right-of-Way in a safe, dust free condition until all work activity in a given area, including the hauling of materials, is completed. At a frequency determined by the GTCRC, the Permit Holder shall provide adequate and permitted dust control measures on any and all unpaved detours, by-passes, and shoulders used by traffic. The GTCRC will not permit the use of oil, and the Permit Holder shall not use chloride for dust control on paved roadways unless approved by the GTCRC. Water for dust control is acceptable.

2.7.28 Any other condition reasonable and necessary for the protection of the public, health, safety, and welfare as determined by the County Highway Engineer.

RULE 2.8 REVIEW OF PERMIT OR PREQUALIFICATION DENIAL OR REQUEST FOR VARIANCE

2.8.1 An Applicant wishing a review of a denial of a permit application, prequalification, or a denial of a request for variance from permit specifications, may submit to Traffic Services a written request for review, stating with specificity the facts in support of the request.

2.8.2 Within 15 business days of submission of the request, Traffic Services shall either grant the request or forward the request and his recommendation to the County Highway Engineer. The Applicant

will be furnished with a copy of the Traffic Services recommendation, and have an opportunity to respond in writing within 5 business days to the recommendation.

2.8.3 Within 15 business days of receiving the recommendation, the County Highway Engineer shall make a final written determination, either granting or denying the request. The GTCRC shall forward a copy of the determination to the Applicant by first class mail. If the request is denied, the response shall set forth the reasons for denial.

2.8.4 Failure of the GTCRC to meet the above time guidelines shall not be construed as an approval of the variance requested or permit denied.

RULE 2.9 INSTALLATIONS WITHOUT PERMIT OR IN NON-COMPLIANCE WITH PERMIT CONDITIONS

2.9.1 In the event the Road Commission should discover that construction work is being, or has been performed in the Public Right-of-Way without proper application and permit issue, a written warning will be given to the Contractor, Subcontractor, or Property Owner requiring them to obtain the proper permit(s). The Contractor, Subcontractor, or Property Owner will be charged at 2 times that of the current rate for the proper permit(s). For a second offense, the Subcontractor or Contractor will be placed on probation for a period of 1 year. Any further failure to obtain proper permit(s) will result in a permanent ban from work in the County Right-of-Way.

2.9.2 If an activity covered under these Rules is constructed, installed or performed in violation of these Rules, a written directive will be given to the Property Owner, Contractor, subcontractor, or Permit Holder to correct the work and bring it into compliance with these rules.

2.9.3 A Driveway or Private Road that was in compliance with current specifications as of December 31, 2013, where the use of the land served by said driveway has not changed may be continued even though the Driveway or Private Road is in violation of these rules until the use of the land served by the Driveway or Private Road is changed or expanded in a manner that creates a Safety Concern.

2.9.4 The notice of violation shall specify which rules are violated, the correction required, and the time for the correction (not less than 30 days), and the GTCRC shall send the notice by certified mail, return receipt requested, to the Property Owner, Permit Holder, Contractor, Subcontractor, or Applicant. A Contractor or Subcontractor who fails to correct the deficiencies within the timelines for completion given will be placed on probation for a period of 1 year with the condition that any further failures (i.e. not meeting the requirements of these Rules) will result in a permanent ban from work within the County Right-of-Way.

2.9.5 If the violation is not corrected in the time required by the notice, the GTCRC may utilize the Security to correct the violation or perform, or hire a third party to perform, the necessary corrections, remove changes, and restore the Right-of-Way to its previous condition; and the GTCRC shall invoice the Property Owner, Applicant, Permit Holder, Contractor, or Subcontractor for the costs it incurred for such work, including allocated overhead.

2.9.6 The procedure of this Rule 2.9 is in addition to, and does not negatively affect, the right of Traffic Services to issue a stop order or of the GTCRC to immediately correct conditions within the Right-of-Way creating hazards to vehicular travel. The costs of such correction shall be the responsibility of the Property Owner, Applicant, Permit Holder, Contractor, or Subcontractor.

RULE 2.10 LIABILITY, INDEMNITY AND INSURANCE

2.10.1 The Permit Holder is responsible for any and all compliance with the terms and conditions of the permit by its employees, agents, contractors, subcontractors, suppliers, laborers and invitees, and

any of their suppliers, laborers, and invitees, and the Permit Holder shall be liable for any and all noncompliance with the terms and conditions of the permit by any or all of them and for any and all damages to public or private property and injuries to Person or Persons by any or all of them while engaged in activities within the Right-of-Way subject to the permit. If Applicant and Permit Holder are not the same Person, they shall be jointly and severally liable.

2.10.2 Prior to commencing any permitted activity in the Right-of-Way, the Permit Holder shall have provided to Traffic Services policy endorsements and certificates of insurance satisfactory to the GTCRC for all permits, in amounts and coverage's specified by the GTCRC. Additionally, the GTCRC shall be provided with an endorsement to the Permit Holder's insurance policies stating that the GTCRC is named as additional insured with the following language appearing either on the certificate or an attachment: *Grand Traverse County Road Commission, its commissioners, officers, employees and agents are named as additional insured.* A minimum of 10 days advance written notice will be provided in the event of cancellation. Failure to provide insurance as required herein shall result in an automatic revocation of the permit

2.10.3 The required insurance policy or policies must be obtained in the name of, and maintained in the name of, the Permit Holder who signed the permit. Variations in the coverage or form of insurance may be reviewed by the GTCRC Legal Department for acceptability. Insurance must be kept in force until the permitted activities are completed, inspected, and approved.

2.10.4 Should insurance coverage be reduced below acceptable coverage or canceled, authorization to continue activity under the permit is suspended, and the GTCRC may take appropriate action to restore or protect the road and appurtenances utilizing any inspection or other fees, security deposits, and Bonds to defray expenses.

2.10.5 Permit applications and permits will contain indemnity and hold harmless provisions satisfactory to the GTCRC, which require the signer to defend, indemnify, and hold the GTCRC and its employees harmless for any and all claims arising out of, or in connection with, any permitted activities or installation and continued existence of any permitted facilities.

RULE 2.11 PERMIT FEES

Prior to issuance of a permit, Applicant shall pay, in the form of a certified check, bank check, cash, or credit card, all amounts indicated on the approved application form for the permit fee, permit deposit, estimated inspection fee, sign fee, signal fee, and pavement striping fee. These amounts may be combined into one certified or bank check.

Personal or corporate checks may be accepted subject to the approval of Traffic Services. No personal checks or corporate checks in excess of $150 will be accepted.

Inspection fees are estimated and any actual amount over and above the amount estimated, including any costs associated with Work Authorizations, shall be deducted by the GTCRC from the permit deposit. The GTCRC shall bill the Permit Holder for any charges in excess of the permit deposit. The GTCRC shall return to the Permit Holder any unused portion of the permit deposit. The Bond and permit will not be released until such payments are received by the GTCRC.

Traffic Services holds the right to waive the permit fee if agreed upon by the County Highway Engineer and the GTCRC Manager. Permit fees for non-profit organizations in connection with their activities will normally be waived.

RULE 2.12 SECURITY FOR ROAD RESTORATION

As a condition for obtaining a permit for any activity covered under these Rules, the Permit Holder shall post Security in the form of cash, a certified check, irrevocable letter of credit, or Bond to secure the cost of restoring the disturbed portion of Right-of-Way to an acceptable and safe

condition as determined by the GTCRC. Such cash deposits, certified checks, letters of credit or Bonds are required for all permits issued which would threaten, or otherwise present a potential for surface damages to the Right-of-Way, and shall provide ready funds or obligations on which the GTCRC can draw if the Permit Holder does not complete in a reasonable time interval the restoration of the Right-of-Way to an acceptable and safe condition as determined by the GTCRC. Permit Holders shall provide Bonds on a form provided by Traffic Services, or in a form approved by the Legal Department. Traffic Services shall determine the amount of the security required for a particular permit. For clarification of the above Bond requirements or other questions call Traffic Services at (231) 922-4848.

RULE 2.13 REFUNDS OF APPLICATION FEES, PERMIT FEES, DEPOSITS, AND UNUSED BALANCES

Application fees are non-refundable, regardless of whether the application is approved or denied. **AN APPLICATION IS NOT A PERMIT**. Permit fees (if any), sign fees, paint fees, and signal fees become non-refundable upon issuance of the permit.

If the activity covered by a permit does not commence, deposits and inspection fees will be refunded to the Permit Holder upon receipt by the GTCRC of a written request from the Permit Holder for the GTCRC to revoke the permit and return the deposit and inspection fees.

If, after completion of the activity covered by the permit, notification of such completion to the GTCRC and final inspection by the GTCRC, any unused balances that remain for restoration deposits or estimated inspection fees, the GTCRC will issue a refund without interest to the Permit Holder. Sign fees and pavement striping fees are non-refundable if the GTCRC has incurred costs in reliance on the permit issuance, even if the permitted activity did not proceed. Final inspection will not occur until the GTCRC has been satisfied that all repairs have been made, vegetation has been established, and that no settlement will occur.

RULE 2.14 INTERPRETATIONS AND APPROVALS

2.14.1 The implementation of, and any variances from, these Rules, and the standards and guidelines cited therein shall be determined in the engineering judgment of the GTCRC. All questions which may arise as to the quality and acceptability of work; the manner of performance and rate of progress of the work; the interpretation of designs, specifications, these Rules and the permit terms conditions; and the satisfactory and acceptable fulfillment of the permit terms and conditions shall be decided by the GTCRC.

2.14.2 Approvals, reviews and inspections of any nature by the GTCRC, shall not be construed as a warranty or assumption of liability on the part of the GTCRC. All such approvals, reviews, and inspections are for the sole and exclusive purposes of the GTCRC, which is acting in a governmental function; and such approvals, reviews and inspections of the GTCRC shall not relieve the Applicant, the Permit Holder, any contractor or any other Person from his, her or its obligations, nor be construed as a warranty of the propriety of the performance of the Applicant, the Permit Holder, any contractor, or any other Person.

RULE 2.15 ENFORCEMENT

In addition to any other remedy or enforcement mechanism set forth herein or provided by law, the GTCRC may enforce these Rules and the provisions of any Permit by seeking Emergency Injunctive Relief under MCR 3.310.

PART 3 – MAINTAINING TRAFFIC AND TRAFFIC CONTROLS

RULE 3.1 SIGNS AND SIGNING

3.1.1 The Permit Holder shall furnish, install, and maintain, in accordance with the current edition of the Michigan Manual of Uniform Traffic Control Devices and part 1.1.2 of these specifications, all necessary signs and sign support standards, barricades, and traffic control devices necessary for the protection of traffic.

3.1.2 In order to facilitate permitted activity but also to prevent misdirection of traffic, the Permit Holder, with the approval of the GTCRC may remove traffic control signs and street name signs, but only provided it temporarily resets them in the locations and maintains them in the manner provided in the current edition of the M.M.U.T.C.D. and in accordance with any directions of the GTCRC, so that they continue to serve their intended purposes and are legible and easily visible to traffic.

3.1.3 Upon completion of the project, the Permit Holder will reset traffic control signs and street name signs in their proper position. If the GTCRC requires the Permit Holder to furnish and erect temporary speed limit signs along the project, the Permit Holder shall relocate and maintain the temporary speed limit signs as directed by the GTCRC.

3.1.4 The Permit Holder shall pay for any and all signs erected or relocated by the GTCRC in connection with the permitted activity, both during and immediately after the permitted activity. All erection and replacement of existing signs which are damaged during the course of construction will be charged to the Permit Holder at the rate of not less than $100.00 for each sign as determined by the GTCRC. The Permit Holder is required to inventory all signs at the beginning of a project. The GTCRC will also inventory all signs at the beginning of a project and upon project completion before final acceptance is made.

3.1.5 The Permit Holder shall protect all traffic control devices within the project area from damage due to any and all permitted and related activity, including material hauling, storage, equipment moves, and parking.

3.1.6 Whenever the GTCRC requires advisory or information signs in order to direct traffic to commercial or public facilities located within the permitted activity area, the Permit Holder shall be responsible for the fabrication, installation, maintenance, and removal of such signs.

3.1.7 Immediately after paving where needed to control traffic, Permit Holder shall place temporary MDOT Type R removable lane markings, as required by Traffic Service.

3.1.8 Prior to the issuance of a permit and prior to the start of any work the Permit Holder shall submit a Work Zone Traffic Control Plan (WZTCP) as illustrated within the current MDOT Standard Specifications for Construction. Based on the size of the project and per the direction of Traffic Services/County Highway Engineer, an aerial, to a readable/workable scale, shall be submitted illustrating the following items at a minimum: (1) identifying all areas within the project limits, (2) all proposed temporary sign placements with illustrated separation distances. The GTCRC must approve of the submitted WZTCP prior to the issuance of a permit.

RULE 3.2 LANE CLOSURES

3.2.1 Where the GTCRC approves a Lane Closure for purposes of open-cut crossings, construction within or immediately adjacent to the traveled portion of the road or parallel to the roadway, the following requirements shall apply.

3.2.2 Before a Lane Closure begins, all required signage shall be placed in accordance with the M.M.U.T.C.D., MDOT Standard Plans, MDOT Specifications for Construction and these Guidelines, and any and all GTCRC required by-pass lanes and other GTCRC required improvements, shall be completed and in place. If any discrepancies between regulations exist the GTCRC shall make the final determination.

3.2.3 Lane Closures are restricted to the hours of 9:00 a.m. to 3:00 p.m. unless otherwise specifically authorized by the GTCRC.

3.2.4 The following MDOT Standard Drawings and signs are included by reference: The 2012 or most recent version shall be used. (See Appendix D)

3.2.5 The Permit Holder shall be responsible for ensuring that all plastic drums, cones, barriers, and other devices used to control or warn traffic are kept clean, visible and promptly reset in place if moved, whether by workmen, wind, traffic, or otherwise.

3.2.6 All traffic control operations shall be conducted in a courteous and professional manner, and every reasonable effort shall be made to minimize delay and congestion in the work area, including cross-streets.

3.2.7 After working hours, inapplicable and inappropriate signs shall be covered or disassembled so that traffic will not be confused.

3.2.8 When a Lane Closure must remain in effect overnight, proper traffic control devices are required.

3.2.9 Upon completion of the work of construction, improvement or repair, or other permitted activity, the Permit Holder shall remove, or see to the removal of, all temporary barriers, cones, traffic control devices, markings and signs placed for the permitted activity.

3.2.10 In the opinion of the GTCRC, when traffic conditions warrant, the GTCRC may require the Permit Holder, during periods of peak traffic hours, to cease operations and/or restore the road to full use.

3.2.11 The GTCRC, based on traffic volumes or project related activities, may require Traffic Regulators or the addition of Traffic Regulators to the project. All cost associated with such activity shall be the responsibility of the Permit Holder.

RULE 3.3 APPROVALS OF ROAD CLOSURES AND DETOUR ROUTES

3.3.1 Prior to closure of any county roads, state Law requires that the GTCRC approve the Road Closure, establish appropriate detour routes and see to the placement of required signage. Prior to closing a road, it is necessary for the GTCRC to approve the time and date and section of road to be closed.

3.3.2 The following items, at a minimum, must be satisfied by the Permit Holder prior to commencing activity which requires Road Closure of a road under the jurisdiction of the GTCRC. At a time approved by Traffic Services prior to the proposed Road Closure, the Permit Holder shall:

(A) Submit to Traffic Services in writing a request to close the road in question and establish a detour, using the road closure request form supplied by the GTCRC for that purpose.

3.3.3 Indicate the date and times of the beginning and ending of the Road Closure.

3.3.4 Illustrate and document existing detour surface condition per Traffic Services.

3.3.5 Submit a proposed detour route showing any and all signage, lane marking, barrier and other traffic control device requirements, in accordance with the M.M.U.T.C.D., MDOT Standard Plans, and MDOT Standard Specifications for Construction.

3.3.6 Submit written approval(s) of the local community or communities involved.

3.3.7 If the proposed detour route involves roads not under the jurisdiction of this Board, submit written indication of the approval or processing of approval to use roads not under the jurisdiction of this Board as detour routes.

3.3.8 Indicate in writing the party responsible for fabricating and installing Road Closure and detour route signing. The Permit Holder shall bear all costs associated with Road Closure and detour signing.

3.3.9 Submit the phone and fax numbers, email and place of business address, for the following:

(A) Office headquarters of the governmental agency or contractor closing the road.
(B) The job supervisor.
(C) The job site.

3.3.10 A 24-hour emergency number.

3.3.11 Upon review and approval of the proposed detour route and signage, Traffic Services will notify the permit Applicant of approval (or denial) and authorize installation of signs for the Road Closure. Advance warning signs detailing the location and dates of Road Closure shall be erected a minimum of one (1) week prior to the scheduled Road Closure. Detour routing signs must be covered until the road is closed and covered or removed immediately after the road is re-opened. The appropriate local officials including police, fire, schools, and ambulances will be notified by the Permit Holder of the Road Closure one-week before the date of commencement. Proof of notification will be provided to GTCRC.

RULE 3.4 DETOURS AND TEMPORARY ROUTES

3.4.1 No road or street shall be closed to Through Traffic without specific permission of the GTCRC.

3.4.2 Requests for permission to close a road or street and the establishment of a detour and/or temporary route shall be made in writing by the Permit Holder. If the Permit Holder makes the request, the Applicant must concur in writing prior to submission to the GTCRC.

3.4.3 No detour or temporary route shall be opened to traffic unless and until all signage, lane markings, barriers and other traffic control devices required by the M.M.U.T.C.D., MDOT Standard Plans, MDOT Standard Specifications for Construction and the GTCRC are in place. Unless other arrangements are expressly approved in advance in writing by the GTCRC, the Permit Holder shall install and maintain all such signage, lane markings, barriers and other traffic control devices for all approved detours and temporary routes, and shall remove all such signage, lane markings, barriers and other traffic control devices as soon as practical when they are no longer needed. When work is suspended for short periods of time, the Permit Holder shall remove or cover all such signage, lane markings, barriers and other devices that are no longer appropriate.

3.4.4 The Permit Holder must give the GTCRC at least three calendar weeks advance notice for all detours and temporary routes. Special information signs, including Road Closure dates, shall be posted at least one week prior to Road Closure.

3.4.5 The GTCRC will initially notify the police, fire department, local schools, and community, etc. The Permit Holder shall notify all concerned parties, such as police and fire departments, school officials, etc., and provide them with a work activity schedule. The GTCRC shall be copied on all submittals by the Permit Holder. Upon completion of use of the detour and/or temporary route, the

Permit Holder shall notify the same concerned parties that the road has been re-opened and that the detour and/or temporary route is no longer in effect.

3.4.6 If, in the opinion of the GTCRC, the road or roads over which the detour or temporary route will be routed cannot reasonably be expected to handle the resulting increased traffic, the GTCRC shall notify the Permit Holder; and, prior to the posting of a detour or temporary route, the Permit Holder shall make all necessary improvements, as directed by the GTCRC, to handle the increased traffic, and shall maintain the route in the improved condition during the use of the detour or temporary route. If conditions warrant, the GTCRC may require additional improvements during the use of the detour or temporary route.

3.4.7 The GTCRC may require additional informational or advisory signs to ensure convenient access to schools, churches, businesses, local residents, or other facilities within the area affected by the Road Closure. The cost of such signs and their installation shall be the responsibility of the Permit Holder.

3.4.8 Upon cessation of use of each detour and/or temporary route and the re-opening of the closed road, The GTCRC shall make a final inspection of the detour and/or temporary route. Prior to release of the permit, the Permit Holder must repair any damage as a result of the use of the detour and/or temporary route.

RULE 3.5 STEEL PLATING

3.5.1 Whenever possible, all excavations will be backfilled and repaired prior to opening for traffic. Whenever small openings (such as "window cuts") are made in a road pavement that must remain open to traffic during the time there is no work activity, they shall be covered with steel plates. The steel plates shall be of adequate size and thickness to support all legal axle loads and shall overlap existing pavement by at least one (1) foot on all sides of the hole for trenches less than 6 feet deep and 2 feet on all sides of the trench for trenches deeper than 6 feet. The following table shows the minimum size and thickness required for a range of hole sizes:

Hole Area	Minimum Plate Size	Minimum Thickness
Up to 3' x 4'	5' x 6'	¾"
Up to 4' x 6'	6' x 8'	¾"
Up to 4' x 10'	6' x 12'	1"

3.5.2 Side by side plating may be used to cover cuts longer than 10 feet, provided the abutting edges are supported by a steel beam of adequate strength and firmly supported on sound earth for at least one (1) foot on each end. Steel plates shall be bedded in cold patch and held in position by bolts or pins at least 3 inches long. Cold patch ramps shall be used along all edges of the plates. Steel plates shall also be used to cover concrete patches during the curing period. Upon removal of the steel plates, all cold patch shall be removed from the pavement and properly disposed of outside the road Right-of-Way. The necessary steel plates must be on the job site before the pavement is removed.

3.5.3 The use of steel plates shall only be allowed when no other option is available and must be approved in advance by the Traffic Services.

3.5.4 If possible, steel plates shall not be used in winter. In order to avoid any conflict with snow removal operations, if steel plates must be used in winter, the Permit Holder shall notify the Traffic Services in writing, one (1) week in advance of the proposed plating.

RULE 3.6 TRAFFIC CONTROL DEVICES AND EQUIPMENT

The Permit Holder shall be responsible for the protection from damage, and interference with, all traffic control devices and equipment, including but not limited to hand holes, conduit, wiring, detectors, cabling, supports, cameras, beacons, signals, control boxes, and any other equipment associated with the control of traffic signals, signs, warning devices, and Intelligent Vehicle Highway Systems. Unless expressly indicated on the permit and on the Approved Plans, the Permit Holder, without the express written permission of the GTCRC Traffic Services, may not remove, adjust, relocate, tamper with, or interfere with, the operation of these traffic control devices. All necessary repairs, restorations, or adjustment to these systems, if required, shall be made, at the expense of the Permit Holder.

RULE 3.7 GUARDRAILS

The Permit Holder shall be responsible for the removal or protection of guardrails, guardrail posts, guideposts, and end treatments that conflict with the permitted work activities of the Permit Holder. No Permit Holder or any other Person shall remove any guardrails, or any part thereof, without prior permission of the GTCRC. If any guardrail is removed, Permit Holder shall place sufficient temporary barricades and/or infrastructure as approved by Traffic Service in place thereof, and shall restore the guardrail as soon as the conflict with the permitted work activities no longer exists. With the permission of the GTCRC, the Permit Holder may elect, at Permit Holder's own expense, to eliminate a guardrail by flattening slopes, removing obstacles, providing grading easements, or other actions that result in the guardrail no longer being warranted by the current A.A.S.H.T.O. guideline. If guardrails and posts, or any part thereof, are removed or damaged, the Permit Holder shall restore them to the current A.A.S.H.T.O. standard for height, type, construction, and end treatment. If the height of the guardrail is changed, in relation to the roadway or shoulder, as a result of the work performed by the Permit Holder, the guardrail must be upgraded at the direction of the GTCRC and at the expense of the Permit Holder. All guardrail construction shall be performed by an M.D.O.T. pre-qualified contractor.

RULE 3.8 PAVEMENT MARKINGS

3.8.1 Unless otherwise expressly indicated in writing on the Approved Plans or the permit, the Permit Holder shall be responsible for the protection, restoration, and replacement of all pavement markings, including lane lines, pedestrian crossings, legends, and reflectorized pavement markings, that may be disturbed or damaged by the permitted activity or by any activity in connection therewith.

3.8.2 Permanent pavement markings shall be installed on replacement pavement, as approved by the Traffic Services, prior to opening up the replacement pavement to traffic. Temporary markings may be used on temporary pavements if approved by Traffic Services, but must be replaced with permanent markings if the temporary pavement is to be used at any time after November 1st to the end of the winter construction season. The Permit Holder is responsible for regular inspection of temporary pavement markings and repair or restoration of damaged or disturbed markings. Only MDOT Type (R) tape shall be used on final surfaces.

3.8.3 At the Permit Holder's expense, the GTCRC shall repair any damaged or disturbed pavement markings, whether temporary or permanent.

PART 4 – TREE REMOVAL, TRIMMING, OR TUNNELING

RULE 4.1 PERMIT REQUIREMENTS

4.1.1. Unless otherwise expressly authorized by the GTCRC in a special situation, no Person shall cut down, remove, trim, or tunnel under, any tree in the Right-of-Way, unless and until the Traffic Services issues the Person a permit to allow such activity. A separate permit is not required if the cutting down, removal, trimming, and/or tunneling under, the tree or trees is expressly included in a permit for other activities in the Right-of-Way, such as the construction of driveways, approaches, turning lanes, pathways, or utility connections; provided, however, that such cutting down, removal, trimming and/or tunneling under is expressly shown on the Approved Plans or expressly included in writing in the permit issued. A residential Property Owner, clearing any trees from his or her Road Frontage along the county road, must obtain a permit, if traffic on the roadway will be impacted by, or the Right-of-Way used for, any such clearing activities.

4.1.2 The Permit Holder is responsible for obtaining any and all permits required by the local municipality for forestry activities, such as cutting down, removing, trimming, and tunneling under trees.

4.1.3 The Applicant for a permit shall show on the construction plans, or on separate sheets similar to construction plans, and in such a way that they are readily identifiable in the field, the individual tree or trees that Applicant proposes to cut down, remove, tunnel under, and/or trim and their location, size, and species. If a tree is to be trimmed, Applicant must indicate the type and extent of trimming.

4.1.4 Before applying for a permit to cut down, remove, trim, and/or tunnel under any tree located in the Right-of-Way not directly fronting the Road Frontage of the Property Owner for whose benefit Applicant requests the permit, Applicant shall obtain a GTCRC wood disposal license agreement form signed by the other Property Owner(s) of the Road Frontage directly fronting the Right-of-Way location of each tree which Applicant applies to cut down, remove, trim and/or tunnel under (the "Abutting Property Owner(s)"). Applicant may obtain GTCRC wood disposal license agreement forms from the Traffic Services. Applicant shall obtain a separate signed wood disposal license agreement form from each Property Owner, other than Applicant, on whose Road Frontage Right-of-Way trees are to be cut down, removed, trimmed, and/or tunneled. The signed wood disposal license agreement form shall be evidence of the Property Owner's desire, or not, to receive the wood of the trees cut down, removed or trimmed by the Permit Holder. It is the responsibility of Applicant to negotiate terms with each Property Owner to obtain a signed wood disposal license agreement. Applicant shall file with the Traffic Services copies of all necessary wood disposal license agreements before the GTCRC issues a permit. The Permit Holder shall notify the Abutting Property Owners before starting to cut down, remove, trim and/or tunnel under any trees opposite the Abutting Property Owner's Road Frontage.

RULE 4.2 DISPOSAL OF MATERIALS

The Permit Holder shall remove all, limbs, litter, and logs from the Right-of-Way. All stumps shall be either removed or ground flush to the existing ground surface, as specified in the permit. The Abutting Property Owner has the first right to the wood. If the Abutting Property Owner elects in the wood disposal license agreement to receive the wood of the trees cut down, removed or trimmed by the Permit Holder, the logs and major limbs may be cut into not less than 8' lengths and piled neatly outside the Right-of-Way on property owned by the abutting property owner. In disposing of stumps, limbs, cuttings, slash, litter and logs, Permit Holder shall comply with the provisions of 2.7 of these Rules.

RULE 4.3 TUNNELING OR BORING UNDER TREES

Tunneling or boring must be below the major root system and extend a distance of one (1) foot on either side of the tree for each 2 inches of trunk diameter measured 4 feet above grade (e.g., an 8-inch diameter tree requires 4 feet of distance on each side of the tree). All voids around the tunneled or bored facility shall be backfilled with Approved Excavated Material and thoroughly compacted to avoid settlement. If the tree is severely damaged, the spacing requirements listed above are not adhered to, or the tree dies within one year as a result of the tunneling or boring, the Permit Holder, at Permit Holder's own expense, shall remove it and plant another tree in its place.

RULE 4.4 REPLACEMENT OF TREES

As a condition of the permit, the Permit Holder may be required to replace trees on a one-for-one basis unless otherwise approved in writing by the GTCRC. Plans submitted with the application for the permit shall show not only the trees to be removed, but also the species, size, and planting location for each replacement tree. Replacement trees shall be of well-formed and sturdy stock of a size and variety approved by the GTCRC.

PART 5 – UNDERGROUND CONSTRUCTION STANDARDS

RULE 5.1 ROAD CROSSINGS

5.1.1. All underground utility crossings of paved roads and gravel primary roads shall be done by an approved method of boring unless so indicated on the Approved Plans or approved in advance by Traffic Services.

5.1.2 If tunneling under the Roadbed is proposed and is an approved procedure by the GTCRC, the tunnel shall be adequately sheeted or shored to prevent the sides and top from collapsing and the pavement from settling or cracking. Voids between shoring and/or sheeting and the side of the excavation shall be eliminated.

5.1.3 Directional Boring. If Directional Boring is approved, the following requirements, at a minimum, shall be followed:

(A) Equipment:

(1) The equipment shall have a radio location boring head.
(2) Location equipment shall be used to track bore head location.
(3) Back reaming shall be done by GTCRC approved methods only.
(4) Compactor back reaming is not allowed.
(5) Proper drilling lubricant shall be used.
(6) Only steerable type boring is allowed, and hammer moles are not allowed.

(B) Operations:

(1) The path of the proposed bore must be marked in advance of the boring to check for conflicts with utility and structures.
(2) The top bore hole shall be a minimum of 72" below the pavement subgrade or ditch line, whichever is deepest.
(3) Bore pits shall be a minimum of 10 feet off the edge of the pavement or behind the curb.
(4) When boring is done near electrical supply cables, proper care shall be taken to protect the operator, locator, and others from shock hazards.
(5) When back reaming pilot holes, and dragging product, the use of compaction type cutter heads is prohibited. The contractor shall use a cutting lead suitable to cutting a hole large enough to accommodate the product and lubricating fluid. Plain water will not be used as a lubricating fluid on bores exceeding 2 inches in diameter.
(6) After boring operations and connections are completed, the contractor shall restore the bore pit areas to the same or better condition than the original condition.
(7) In the event of damage to the pavement or roadside due to drilling operations, the contractor shall repair the pavement or roadside in a manner specified by the GTCRC before further boring operations can continue.
(8) The GTCRC shall be provided with a log of the bores on all conduits over 2 inches in diameter showing the final depth and path of the conduit under the roadway.

5.1.4 Boring and Jacking. If boring and jacking is approved, the following requirements, at a minimum, shall be followed:

(A) If a pipe is to be installed under the Roadbed by boring and jacking, the leading edge of the pipe shall precede the auger by ½ times the diameter of the pipe. If the auger cannot be operated inside the utility pipe, a casing pipe is required. A casing pipe may also be required at other times when deemed necessary by the Traffic Services. The casing must be bulkheaded with cementitious material to prevent material infiltration after installation. All pipes greater than 4 inches in diameter shall be bored using an auger.

(B) All shafts or pits shall be located, at a minimum, at least 10 feet off the edge of pavement on Major Roads and 5 feet off the edge of pavement on subdivision roads. If the shaft or pit must be closer to the road than the above dimensions due to the location of the utility to be tapped, sheeting or shoring must be used on all sides of the excavation which are closer to the road than the above requirements. Backfill and compaction methods shall meet GTCRC backfill requirements.

(C) All voids shall be filled by pressure grouting or other GTCRC approved methods.

(D) If any settlement or other change in grade of the roadway, curbs, or ditches occurs, the road and/or drainage facilities shall be repaired or reconstructed to proper grade as directed by the Traffic Services.

5.1.5 Open Cutting. If Open-Cutting is proposed the following requirements shall be followed:

(A) If a crossing cannot be bored due to extenuating circumstances, an Open-Cut crossing may be approved by Traffic Services. Provisions for handling traffic shall be as directed by Traffic Services, and the Permit Holder shall bear all the expenses thereof, including but not limited to signing, pavement marking, and traffic control.

(B) Open-cut crossings shall be made during off-peak traffic hours (9:00 A.M. to 3:00 P.M.), unless otherwise approved by Traffic Services. Lane Closures may not commence before 9:00 a.m. and shall be completed and normal traffic flow restored before 3:00 p.m., unless otherwise approved and/or directed by GTCRC. Lane Closures and work operations and related activities will not be authorized on the day preceding major holiday weekends and during major holiday weekends, including Memorial Day, Fourth of July, Labor Day, and Thanksgiving Day weekends, Cherry Festival week, Film Festival week, and the day before Christmas through the New Year holidays. Open-cut crossings shall not be started until all equipment and material necessary for restoration is on-site or immediately available. Open-cuts shall not begin if inclement weather is threatening, which may impede the contractor's ability to restore the traveled way in a timely manner, and may be prohibited from November 1 to April 1.

(C) Approval of Road Closures requires that detours be installed in accordance with Part 3 of these Rules (Maintaining Traffic and Traffic Controls). Permit Holder shall request Road Closures from Traffic Services in writing, at least three weeks in advance, and include in the written request, the location, length of time the road will be closed, approximate starting and completion dates, reasons for the request, and a diagram showing the detours and all detour signage.

(D) If a Road Closure is not approved, through-traffic must be maintained at all times.

(E) If field conditions warrant sheeting, the Permit Holder shall provide sheeting of the excavation to protect the road.

(F) In the case of multiple open cut crossings (such as might occur during installation of sanitary sewer, water main, etc. in an existing subdivision) the GTCRC, unless otherwise specified, may require permanent repair of the crossing followed by a hot mixed asphalt (H.M.A.) cap over the entire width and length of effected roadway and shall be performed as defined in Rule 5.4 (Pavement Replacement).

RULE 5.2 PAVEMENT REMOVAL

5.2.1 All crossing of Major Roads by the open-cut method shall include removal of the pavement to a minimum width of at least 6 feet and at least 3 feet beyond the limits of the trench and one (1) foot beyond the limits of any damaged pavement.

5.2.2 If the pavement removed is concrete or asphalt over concrete, the remaining slabs shall have a minimum width of at least 5 feet from the patch to an existing joint. The cutting of the pavement shall be made by sawing to a minimum depth of 5 inches. Cuts in concrete Residential Driveways and Commercial Driveways shall be as above described in this Rule 5.2.2, except that the patch width shall be a minimum of 3 feet and the remaining slab width from the patch to the existing joint shall be a minimum of 3 feet.

5.2.3 If the pavement is asphalt, the pavement shall be cut by sawing prior to excavation, unless otherwise indicated on Approved Plans. Cuts in driveways or street approaches may require an overlay of the entire approach as determined by Traffic Services.

5.2.4 All saw-cuts shall be made in a straight line and shall be parallel to existing transverse and longitudinal joints, unless otherwise approved by Traffic Services.

5.2.5 All equipment and material necessary for restoration, including but not limited to compaction equipment and sand, shall be on site prior to beginning any excavation or pavement removal. Material, which cannot be stored, such as HMA, shall be immediately available.

5.2.6 If Permit Holder's work operations or related activities remove or damage 20% or more of the road surface, or the surface is three (3) years or less old, or Traffic Services determines that any open cut will result in substantial surface deterioration, the entire roadway may require an overlay or reconstructed as required by Traffic Services.

5.2.7 Traffic Services shall have final determination on the limits of all pavement removal areas.

RULE 5.3 BACKFILLING AND COMPACTION OF BACKFILL

5.3.1 General requirements:

(A) Compaction shall be accomplished by suitable mechanical compaction equipment and methods as shown on Approved Plans or by methods approved by the GTCRC.

(B) Where granular material is specified on Approved Plans or when required by this Rule 5.3, it shall be M.D.O.T. Class II granular backfill.

(C) Where granular material is not specified on Approved Plans or required by this Rule 5.3.1, Approved Excavated Material capable of meeting identified compaction requirements may be used. Peat, marl, muck, silt, blue clay, frozen material, stones greater than 6" in diameter, topsoil and other organic or hydric soils are not approved materials and shall not be used. Prior to commencing any backfilling operations, the Permit Holder shall (1) identify in writing to the GTCRC the excavated materials to be used, compaction methods, testing requirements, including moisture and density, and handling and material management methods; and (2) receive the GTCRC's approval.

(D) Backfill materials shall be free of broken concrete, stones greater than 6" in diameter, asphalt, woody material, sod, debris, clumps, frozen material, or clods.

(E) Excavated material, which is proposed to be used as backfill, shall be tested and approved at the permit holders cost and submitted to the GTCRC for review and approval prior to commencing any backfilling operations. Soil borings and tests should be submitted with the application. The material must meet granular material, Class II as defined within the current MDOT Standards Specifications for Construction Manual.

5.3.2 Requirements based on excavation locations:

(A) Within Roadbed limits or under concrete or asphalt sidewalks, driveways, or parking areas.

Backfill Requirements:

Class II Granular material shall be used, unless otherwise shown on the Approved Plans or otherwise approved in writing by Traffic Services. If the Permit Holder proposes to use excavated material, not shown on Approved Plans, the GTCRC will require that, prior to use, the Permit Holder agree to material sampling and testing, material storage and handling, and other requirements to determine that the proposed material is Approved Excavated Material at the Permit Holders expense. The Approved Excavated Material shall be placed in layers of not more than 12 inches in thickness. Each layer shall be compacted to not less than 95% of maximum unit weight as determined by an appropriate test method. The GTCRC prefers the Modified Proctor Method. Result of compaction testing shall be provided to the GTCRC with 24 hours of tests.

(B) Outside the Roadbed but within the Zone of Influence or under sidewalks, driveways, or surfaced areas.

Backfill Requirements:
Class II Granular material shall be used unless otherwise shown on the Approved Plans or otherwise approved in writing by Traffic Services. If the Permit Holder proposes to use excavated material, not shown on Approved Plans, the GTCRC will require that, prior to use, the Permit Holder agree to material sampling and testing, material storage and handling, and other requirements to determine that the proposed material is Approved Excavated Material. The Approved Excavated Material shall be placed in layers of not more than 12 inches in thickness. Each layer shall be compacted to not less than 95% of maximum unit weight as determined by appropriate test method.

(C) Outside the Roadbed and Zone of Influence and not under sidewalks, driveways, or surfaced areas.

Backfill Requirements:
Approved Excavated Material may be used provided that requirements of Rule 5.3.1 can be met. The backfill shall be placed in layers of not more than 12 inches in thickness. Each layer shall be thoroughly compacted to 90% of maximum unit weight.

5.3.3 The Permit Holder shall supply the GTCRC with sufficient density tests conducted by an approved independent testing laboratory to assure compliance with GTCRC compaction requirements. The Permit Holder shall notify the GTCRC of the name, address, and phone number of the testing laboratory 72 hours prior to beginning backfill operations. All test results shall be provided to the GTCRC as soon as the results are available.

5.3.4 If the required in-place compaction or stability cannot be obtained, the Permit Holder shall remove the material and class II granular material will be required.

5.3.5 Field compaction test methods shall be employed which give immediate test results.

5.3.6 All under-drain systems that are disturbed shall be rebuilt in a manner that completely restores their function.

5.3.7 Any geotextile fabric or geogrid encountered in the excavation shall be restored in a manner that ensures the integrity of the material as it was originally intended. The GTCRC must approve the material and methods of repair prior to installation.

RULE 5.4 PAVEMENT REPLACEMENT

5.4.1 Temporary Replacement (Patching)

In accordance with the following provisions, the Permit Holder shall temporarily replace any and all pavement removed in crossing and/or paralleling paved county roads, or as a result of damage caused by the Permit Holder: The permit holder shall obtain written approval from Traffic Services prior to any Temporary Patching.

(A) From May 1 through November 1, a minimum of 3 inches compacted thickness of an approved mix placed in two lifts over 6 inches of compacted 22A modified aggregate base, is required. Crushed concrete is not allowed. An appropriate GTCRC approved bond coat shall be applied between placements of asphalt lifts. The GTCRC may require thicker H.M.A in high traffic areas or warranted circumstances if required by Traffic Services.

(B) From November 1 through April 30, if HMA is reasonably available, it shall be used, as required in 5.4.1(A) above, provided suitable weather allows. Open-cutting of pavement will

generally not be allowed if, in the opinion of the GTCRC, the unavailability of H.M.A. or the weather conditions preclude use of that material. If, in the opinion of the GTCRC, H.M.A. is not reasonably available or the weather conditions preclude its use and it is deemed acceptable by the GTCRC, a minimum of 3 inches compacted cold patch asphalt over 12 inches of compacted M.D.O.T. 22A aggregate base shall be used. Based on the GTCRC's anticipated maintenance and traffic considerations, the GTCRC may require a temporary concrete patch. The GTCRC may require thicker H.M.A in high traffic areas or warranted circumstances if required by Traffic Services.

(C) Temporary pavements must be placed immediately after an open cutting operation in the crossing of main roads and within five days after crossing on subdivision streets. Failure to do so shall be just cause for either the temporary suspension or permanent revocation of the Permit Holder's permit.

(D) All temporary pavements must be maintained and kept in good condition by the Permit Holder until the final pavement replacement is made. Costs for emergency repairs by the GTCRC shall be billed to, and paid by, the Permit Holder.

5.4.2 Final Pavement Replacement

(A) Provided suitable compaction methods have been performed and all testing reports have been approved by the GTCRC and no noticeable settlement has taken place over a period of at least four months, final pavement replacement shall be made within the first paving season (May 1 through November 1) following completion of the excavation, unless otherwise directed in writing by the GTCRC. Based on project conditions and solely at the discretion of Traffic Services, the placement of final HMA shall be performed immediately as mix is available.

(B) If more than 20% of the width of a lane of asphalt surfaced road (or section thereof) is removed or damaged by the Permit Holder's operations, the GTCRC at a minimum will require a full cap replacement of the roadway width (or section thereof). The full cap shall consist of an asphalt overlay, of a minimum thickness of 1.5 inches of an approved mix, placed over the entire road (or section thereof), after replacing the damaged pavement or removed asphalt in accordance with these Rules. An appropriate GTCRC approved bond coat shall be applied prior to the placement of the H.M.A. cap. The GTCRC may require a thicker H.M.A. cap in high traffic areas or warranted circumstances if required by Traffic Services.

(C) The GTCRC shall determine the final area of the pavement to be replaced and/or capped. The final repaving shall be done by an approved contractor in accordance with the current GTCRC standards. Before pavement replacement is started, the Permit Holder must submit in writing to the GTCRC the name of the proposed paving contractor and a list of equipment, source and Job Mix Formula of materials that will be used during pavement replacement; and the GTCRC must approve in writing the paving contractor and the equipment and materials. The paving contractor must notify the GTCRC at least two working days before pavement replacement is started. The GTCRC reserves the right, at the Permit Holder's cost, to test and inspect at the point of origin and/or at the time of placement, all materials to be used. The Permit Holder shall restore to the satisfaction of the GTCRC all pavements in the Right-of-Way damaged due to the Permit Holder's operations, including without limitation all traveled lanes including turn lanes, passing lanes, tapers, paved shoulders, driveways, street approaches and any other part of the Right-of-Way that may be damaged directly or indirectly by the work operations or related activities of Permit Holder and those working directly or indirectly for him, including damage due to material handling, trucking, equipment, or temporary roads. Materials that do not meet design specs, shall not be placed and shall be removed from the worksite. Materials placed and found by the GTCRC to be out of specification shall be removed and replaced at the GTCRC's direction and at the Permit Holder's cost.

(D) The GTCRC shall require the Permit Holder to perform testing on all materials being used. At a minimum the Permit Holder shall preform testing requirements/frequencies as stated with MDOT procedures and practices. The GTCRC holds the right to require or preform

testing at any location or at any frequency. The Permit Holder is require to cover all cost associated with testing of materials.

(E) The final pavement replacement at a minimum shall be structurally equivalent to, and of the same type as, the pavement being replaced, and in accordance with the following conditions.

(1) Asphalt on a sand, gravel, unknown or undetermined base:

Asphalt that is found to be over sand will require the sand to be removed and replaced with an aggregate base. Asphalt found over clay or an unsuitable material will require the Permit Holder to remove the clay or unsuitable base and replace with an approved material. It is the responsibility of the applicant to verify underlying material and provide satisfactory documentation to the GTCRC. At a minimum the following shall be required.

(a) Minimum of 3 inches of an approved mix, with appropriate GTCRC approved bond coat between lifts.
(b) Minimum of 8" of 22A modified aggregate base. Compact the aggregate layers to a uniform thickness, no greater than 4 inches. Compact each layer of aggregate base to at least 98 percent of the maximum unit weight at a moisture content no more than optimum for aggregate base under HMA pavement,
(c) Minimum of 15" of Class II granular material shall be required under the aggregate base material. The material shall be spread evenly and compacted to at least 95 percent of the maximum unit weight, at a less-than-optimum moisture content, for its entire thickness. Material can be placed in layers up to 8 inches. Where the required depth is more than 15 inches, place the material in layers of equal thickness.

(2) Asphalt on concrete:

The subbase for new pavement shall match the existing subbase, per discretion of Traffic Services. The pavement may be placed with full-depth H.M.A. equal in thickness to the concrete base and H.M.A. cap, with a minimum pavement thickness of 9 inches constructed as outlined in these Rules. Based on project conditions and scope, Traffic Services may require additional thickness of HMA, if the placement of HMA in place of concrete is approved by Traffic Service. Prior to placement of an asphalt lift, the concrete or asphalt on which each lift is to be placed shall be tacked with an appropriate GTCRC approved bond coat. The Permit Holder shall be responsible for submitting a pavement design for approval by Traffic Services.

(3) Concrete pavement:

Prior to consideration of the placement of Concrete pavement the Permit Holder shall submit a design for review. The concrete shall meet the MDOT special provision **12SP604(B) QUALITY CONTROL AND ACCEPTANCE OF PORTLAND CEMENT CONCRETE**.

(F) Final Pavement restoration shall include wedging as necessary with suitable asphalt to establish or reasonably restore pavement cross-slope, super-elevation, or transitions, including adjustments to driveways, side streets, and paved shoulders. The Permit Holder is responsible for adjustment to shoulders, including the adding of material to achieve a smooth cross-slope. Special care shall be taken to maintain positive drainage at all locations including driveway aprons. The GTCRC may require paved shoulders.

(G) Deviations in pavement design must be approved by Traffic Services prior to construction, and deviations in pavement materials prior to installation.

(H) The Permit Holder and Applicant are responsible for survey or measurement of existing roadway conditions sufficient to allow road restoration prior to removing or disturbing the roadway. This includes, but is not limited to, determining lane widths, shoulder width, cross-

slope, superelevation, vertical or horizontal curve, ditch cross-section and grades, pavement thickness, and subgrade type. Where vertical curves or horizontal curves with super elevations exist, cross-sections shall be provided at maximum 25 feet intervals. Should the Permit Holder and Applicant fail to provide this information on Approved Plans or prior to removal or disruption, then current design guides, per section 1.1.2 of these specification, shall prevail for restoration.

(I) Curb lines shall be milled or otherwise adjusted to accept the new roadway surface. Butt Joints shall be provided at intersections, driveways, at the end of an overlay, and other locations. Said joints shall be clean, straight, and perpendicular or parallel to the roadway. The Permit Holder shall repair any damaged pavement, including subgrade repair, prior to placement of the wearing course of asphalt surfacing.

5.4.3 The Permit Holder shall understand that all placed HMA that does not meet the following criteria shall be rejected and require replacement unless otherwise approved by Traffic Services.

(A) Cross Slope does not meet standards.
(B) Top course of HMA placed in a way where standing water is evident.
(C) Segregation.
(D) Rutting, Flushing, or Cracking.
(E) HMA matt edges are not flush or are not placed in a way to provide an adequate seal.
(F) Rideability – Smoothness of Joints and Patch

5.4.4 The Permit Holder shall supply and receive approval of a Job Mix Formula (JMF) prior to any paving operation.

5.4.5 The following material testing documentation, at a minimum, shall be provided for all paving operations. The GTCRC has the right to require additional testing at any time. All cost for testing shall be the responsibility of the Permit Holder.

(A) Density and Gradation of Subbase
(B) Density and Gradation of Base
(C) Grade Checks – HMA
(D) Extraction of HMA
(E) Density of HMA
(F) Temperature of HMA

RULE 5.5 GRAVEL ROADS

5.5.1 All excavations within the limits of the Roadbed shall be backfilled with material as shown on Approved Plans. Alternate backfill materials must be approved in writing by the GTCRC and are subject to Rule 5.3.

5.5.2 Immediately after the trench is backfilled and compacted, the affected portion of the road and ditches shall be rough graded to the appropriate gravel road cross-section indicated in these specifications, and the affected portion of the road surface shall be stabilized with a minimum of 8 inches of compacted processed road gravel (M.D.O.T. 23A aggregate base or approved equivalent). Cementitious materials such as crushed concrete are not considered equivalent and will not be permitted unless shown on Approved Plans. If road surface areas outside of the excavation are used for storage of construction materials or excavated materials, or are otherwise damaged or contaminated due to construction operations, the Applicant shall ensure a minimum of 6 inches of compacted M.D.O.T. 23A road gravel are placed over such contaminated areas immediately following construction.

5.5.3 All excess construction materials, excavated materials, and any contaminated materials shall be removed prior to the placement of gravel, unless otherwise approved by the GTCRC. The road surface shall be maintained in good, smooth, dust free condition at all times, and gravel of the type

noted above shall be added if settlements occur. Before requesting final inspection, the Permit Holder shall place over the entire road surface within the affected portion of the roadway 6 inches of compacted M.D.O.T. 23A road gravel, suitably stabilized with liquid calcium chloride.

RULE 5.6 UTILITY STRUCTURES

5.6.1 The height of the top of any utility structure constructed, or reconstructed within the Right-of-Way shall be determined as follows.

If the structure falls within a paved road or other paved surface including driveways, side streets, sidewalks, and non-motorized paths, the cover shall be 1/8" below the finished pavement elevation on all sides.

(A) If the structure falls within the Roadbed of a gravel, the cover shall be 6 inches below the finished gravel surface.

(B) If the structure falls within a unpaved shoulder but is adjacent to the HMA shoulder the cover shall be set ½ inch below the paved shoulder finished elevation.

(C) If the structure falls within a ditch, the cover elevation shall be set at top of ditch slope elevation and the ditch shall be relocated around the structure and away from the road with a stable earth berm around the structure. Where called for on the Approved Plans or as directed by the GTCRC, a culvert of adequate length and size shall be installed in order to carry storm water around the structure.

(D) Any structure on the back slope of a ditch shall not protrude more than 6 inches above the slope.

(E) If a utility cover falls within a traveled lane, turn lane, or taper, and final pavement restoration will take place more than 30 days after temporary pavement repair, then such structure covers shall be set flush with the temporary surface or the first course of asphalt. The structure cover shall be re-adjusted at the time of final surface restoration.

5.6.2 Structures within the Right-of-Way shall be able to withstand expected traffic volume and load. Structures shall be of masonry construction or pre-cast concrete construction with all joints and holes sealed with anti-hydro cement, and structures and castings shall meet the requirements of the department owners (such as DPW) and shall be approved by the GTCRC. All castings shall be cleaned by current approved blasting methods. The seating face of the lid and the seat for the same on the frame shall be ground or machined so that the lid will have an even bearing on its seat to prevent rocking or tilting. The castings shall be free of poring faults, blow holes, cracks, and other imperfection; and shall be sound, true to form and thickness, clean, neatly finished, and coated with an approved finish.

5.6.2 Structures that must be located within the roadway shall be located at the road centerline or lane centerline, and not within the wheel track.

RULE 5.7 DEPTH OF UTILITY COVER

All new or replacement utilities, regardless of location within the Right-of-Way, shall be installed a minimum of 3 feet below the gutter, the edge of pavement, the bottom of a ditch, or the shoulder elevation of the road surface, whichever is lower. Where Approved Plans require a depth greater than 4 feet; the approved plan depth shall govern.

RULE 5.8 GEOPHYSICAL AND HYDROGEOLOGICAL INVESTIGATIONS

5.8.1 Application Requirements for Non-Intrusive Testing

Since the character, time limits, area, and particulars of each Non-Intrusive Testing project varies greatly from one to another, such permits are generally addressed on a case by case basis; therefore fees, insurance, general requirements, and performance Bonds will also be handled accordingly. The permit does not sanction drilling or the taking of physical samples, and since there

is a potential for surface damages when moving heavy equipment within the Right-of-Way, permits are also required for such purposes.

5.8.2 Application Requirements for Intrusive Testing

The Applicant is advised that the approval of locations for borings within the Right-of-Way is influenced by the testing method, generally a short term operation followed by an immediate restoration of the disturbed area. If borings are later to be converted into Monitoring Wells, the Applicant is requested to initially indicate this intent on the application. The proposed plans can then be reviewed accordingly, and delay usually lessened.

(A) Prior to issuing permits for borings and/or Monitoring Wells to be situated in the Right-of-Way, the Applicant must obtain written permission from the Property Owners of adjoining lands not owned by the Property Owner for whose benefit Applicant requests the permits. The documented evidence of this permission shall be submitted with the permit application.

(B) Monitoring well locations will not be permitted in the paved or traveled portions of the roadway nor the shoulder. They must be situated outside the shoulders and traveled portions of the road.

(C) Boring locations will not be permitted in the paved or traveled portions of the roadway nor the shoulder unless otherwise approved by the GTCRC. Were at all possible they must be situated outside the shoulders and traveled portions of the road.

(D) Applicants are encouraged, when applying for a permit, to initially identify all borings and/or Monitoring Wells which they reasonably expect to drill and/or install on a site. This will greatly expedite the issuance of permits and reduce the processing time required for permit amendments.

(E) The Applicant should specify the proposed dimensions, including depth, diameter, and location, in its drilling and/or well completion program. The boring and/or completion designs shall be drilled and installed in accordance with MDEQ standards.

(F) Any soil borings located within the Zone of Influence shall be filled with an approved cementitious material at the completion of boring. The Permit Holder, at its own cost and expense, shall remove all excavated materials from the site.

5.8.3 Operational procedures for borings and Monitoring Wells.

(A) All soil and water (drilling muds included) produced during any and all boring, drilling, testing, and/or sampling operations shall be disposed of outside of the Right-of-Way in a manner acceptable to the M.D.E.Q.

(B) In order to minimize interference with landscaping, mowing, pedestrian, and/or automotive traffic using the Right-of-Way, all Monitoring Wells shall have a cap that is mounted flush with the ground or paved surface.

(C) As soon as possible following completion of intrusive test borings and/or abandonment of Monitoring Wells, the Right-of-Way shall be restored to its previous condition; and all borings and Monitoring Wells (whether successful or not) shall be sealed (plugged) and abandoned as prescribed by M.D.E.Q. regulations and GTCRC.

5.8.4 Permit & Restoration Bond release procedures.

The following work must be completed in a permit release request before Traffic Services will release the permit and the restoration Bond; therefore, it is essential for the Permit Holder to report in the permit release request the status of the following work items. Upon submittal of a permit release request by the Permit Holder, Traffic Services shall initiate its release process. (The form for requesting the permit release is included in the permit packet.)

(A) Immediately following the termination of monitoring and/or testing operations, all borings and/or Monitoring Wells (whether successful or not) shall be sealed (plugged) and abandoned as prescribed by the M.D.E.Q. regulations. The metal and/or plastic well casings

associated with these test boring and monitors shall be removed from the ground, and the bore holes filled with a GTCRC approved cementitious material.

(B) The surface area of the Right-of-Way shall be restored to its previous condition or fully restored, and all other tasks designated on the permit shall be completed previous to submittal of the permit release request.

(C) An as-built diagram which identifies the final location of all borings and Monitoring Wells in the Right-of-Way shall be included as an index attachment to the permit release request. If either soil or groundwater contamination was encountered in the Right-of-Way, Permit Holder must submit the official laboratory analyses of all analyzed samples taken from the test wells in the Right-of-Way. It is preferable that this analytical data be submitted to Traffic Services when first received from the laboratory; however, if that did not happen, then this information must accompany the permit release request.

(D) If any boring holes or wells associated with the permit encountered soil and/or groundwater contamination, or if any evidence of contamination was observed in the Right-of-Way, a copy of the Certified Closure Report, as it applies to the Right-of-Way, (or the final remediation report) shall accompany the permit release request submitted to the Traffic Services. It is preferable that this report be submitted to the Traffic Services at the same time it is filed with the M.D.E.Q., since the GTCRC will be asked to comment or review the Certified Closure Report, prior to its approval of the permit and bond releases.

(E) The above described data is should be sent to:

The Grand Traverse County Road Commission
Traffic Services
1881 LaFranier Road
Traverse City, MI 49696

5.8.5 A Permit Holder and its surety remain responsible and liable under the permit and the Bond until the permit and Bond are released. If the responsibilities of the permit are to be transferred from the original Permit Holder and surety to another Person and that other Person's surety, action should be initiated to release the original permit and surety, by having the new Person apply for a new permit. After the new permit is issued, if no open issues remain, the previous permit and Bond will be released. The new Permit Holder shall then be liable for all issues including, but not limited to, any identified in the new site investigations.

RULE 5.9 DISCHARGE OF STORM WATER FROM PRIVATE PROPERTY TO ROAD DRAINAGE SYSTEM

5.9.1 Any water diverted or discharged by the Permit Holder into the GTCRC road drainage system shall not exceed normal agricultural run-off rates of 0.2 cubic feet per second per acre, unless specifically approved by the GTCRC.

5.9.2 Any water diverted or discharged by the Permit Holder shall be done in such a manner as not to cause a hazardous condition to either pedestrian or vehicular traffic or to cause erosion, siltation, or ponding which adversely affects the stability of the roadway or damages adjacent property.

5.9.3 If the existing road drainage system lacks the capacity to handle a new discharge or diversion the GTCRC reserves the right to deny access to the drainage system.

5.9.4 If agricultural rates of discharge cannot be accomplished naturally, the Permit Holder, prior to being granted access to the existing road drainage system, must propose a detention system with an outlet control approved by the controlling government agency.

PART 6 – DRIVEWAY AND PRIVATE ROAD DESIGN STANDARDS

RULE 6.1 DRIVEWAY AND PRIVATE ROAD LOCATIONS AND GRADE

6.1.1 Driveways and Private Roads shall be so located to preclude undue interference with the free movement of road traffic, and to provide the required Sight Distance.

6.1.2 Driveways and Private Roads, including the radii (described in Rule 6.3) but not including right turn lanes, passing lanes, and tapers (also described in Rule 6.3), shall be located entirely within the Road Frontage of the Property Owner for whose benefit the driveway permit is issued. This Road Frontage is determined by projecting the property lines to the centerline of the road. Radii on adjacent Road Frontage shall be permitted only upon obtaining a letter of encroachment from the adjacent Property Owner and/or when Traffic Services has determined that such extension is necessary.

6.1.3 If the driveway or Private Road is to be located adjacent to an intersection, the point of curvature of the driveway radius shall be at least 77 feet from the center line of the intersecting road and at least 17 feet from the future proposed Right-of-Way Line of the cross street, whichever distance is greater. The driveway radius shall not encroach on an intersection radius unless such encroachment is physically unavoidable.

6.1.4 The permit application shall specify the type of Driveway or Private Road requested, including the number of lanes and the proposed traffic flow (e.g., two-way, one-way, divided, etc.) of driveways. Traffic Services may approve the requested driveway plans or may request that the Applicant make changes to insure safe operations and necessary spacing between driveways, based on anticipated traffic volumes on the driveways and on the road, type of traffic to use the driveway, type of roadside development, and other safety and operational considerations. Generally only one driveway will be permitted per parcel or lot.

6.1.5 The number of Residential Driveways that may be permitted shall be determined as follows:

(A) One (1) Residential Driveway shall be permitted for each platted lot or for each unplatted residential parcel.
(B) Two (2) Residential Driveways may be permitted for residential property with more than 300 feet of Road Frontage if, in the opinion of Traffic Services, the additional driveway does not create a safety concern. The surface required for two drives may be reduced by the Traffic Services if there are no safety concerns.
(C) Two (2) Residential Driveways may be permitted on the same residential property, in lieu of the above, to serve a Circle Driveway if the Road Frontage of the residential property is 80 feet or more at the Right-of-Way Line.
(D) Residential Driveways on the same residential property shall be at least 45 feet apart, center-to-center.
(E) Where a Residential Driveway serves two or more residential parcels or lots, and divides outside the Right-of-Way to serve each parcel or lot, so that the other lot or lots have access to the existing public road, Applicant must obtain from the other Property Owners and file with the GTCRC permanent access letters.

6.1.6 The number of Commercial Driveways that may be permitted shall be determined as follows:

(A) One (1) Commercial Driveway may be permitted for each separately owned parcel with less than 100 feet of Road Frontage; provided that the parcel is wide enough for the minimum driveway width, plus the required radii.
(B) Additional Commercial Driveways may be permitted for commercial property with more than 100 feet of Road Frontage; provided that the sum of the driveway widths of these additional driveways does not exceed 15 percent of the Road Frontage in excess of the first 100 feet;

and further provided that any and all GTCRC safety, traffic volume, traffic flow, and operational concerns are met.

(C) Two (2) Commercial Driveways may be permitted, in lieu of the above, to serve as two one-way directional drives if the Road Frontage is 300 feet or more. Commercial Driveways on the same property must be at least 70 feet apart, center to center.

(D) Adjacent Property Owners may, and are encouraged to, consolidate their Commercial Driveways by using either a joint driveway system or a Road Frontage road. All Road Frontage roads are to be placed on private property outside of the future Right-of-Way. If Traffic Services approves such a system, a driveway permit shall be issued to all Property Owners concerned and shall state that there is an agreement that all properties shall have access to the road via the joint driveway and/or Road Frontage road. A copy of this agreement executed by all parties concerned shall accompany the application.

6.1.7. If the road carries one-way traffic, the dimensions given in these Rules may be altered so that the prohibited movements are discouraged. If the driveway system is on the left-hand side of a one-way road, the dimensions used shall be based on the same principles as used on right-hand side driveways.

6.1.8. The driveway or private road grade shall be determined using the following criteria:

(A) If the road is uncurbed, the grade of the driveway shall meet at the existing outside edge of the shoulder.

(B) If the road is curbed, the grade of the driveway shall meet the existing edge of pavement.

(C) The grade of two-way, one-way, and divided commercial driveways shall be reviewed by the GTCRC, using guidance from the current MDOT GEO-680 Series – Geometric Design Guide for Commercial Driveways.

(D) The grade of Residential Driveway and Utility Driveway entrances shall be a maximum of ten (10%) percent.

(E) Vertical curves (50 feet minimum) shall be provided at all changes of grade of four percent or more.

(F) If the sidewalk elevation must be adjusted to meet the driveway, the slope shall not exceed 1/4 inch per foot and all ADA requirements.

RULE 6.2 CLEAR VISION AREAS, BUFFER AREAS, AND SIGHT DISTANCES

6.2.1 At intersections or railroad crossings where the Board controls Limited Access Right-of-Way to provide a Clear Vision Area, no driveway shall enter or cross any part of that Clear Vision Area. Where the Board has an easement for a Clear Vision Area at an intersection or railroad crossing, driveways shall not be permitted through the Clear Vision Area if another reasonable access point is available.

6.2.2 Adjacent to driveways or private roads, a Buffer Area between the Right-of-Way Line and the edge of the county road pavement, as determined by Traffic Services, shall be used to provide both a permanent physical barrier between moving traffic and private property and unobstructed visions on either side of the driveway. This Buffer Area may consist of a lawn area, ditch, or equivalent method, and may require the removal of trees, brush, earthen embankments, and other obstructions. In parts of the Buffer Area where vehicles are allowed to be parked, Traffic Services may require the Buffer Area to be established by curb or equivalent method.

6.2.3 Minimum Sight Distances for Commercial Driveways and Private Road approaches shall be in accordance with Table 6-1.

Minimum Sight Distances for Residential Driveways shall be measured 10 feet from the edge of the traveled portion on gravel roads or 10 feet from the edge of pavement on paved roads in accordance with the following Table 6-1:

Table 6-1: Minimum Sight Distance						
Speed Limit, M.P.H.	25-30	35	40	45	50	55
Commercial Drives/Private Roads	280-335	390	445	500	555	610
(1) Residential Drive	155-200	250	305	360	425	495

Sight Distance will be measured from an eye height of 3.5 feet to an object height of 3.5 feet. Adjustments to sight distances for road grads are allowed in accordance to AASHTO Standards.

6.2.4 The GTCRC recommends, and may require, that the Driveway or Private Road be located in a location that provides Sight Distances in excess of the minimums provided herein, or that improvements be made to provide for Sight Distances in excess of such minimums.

6.2.5 Applications for driveways, which do not provide the minimum Sight Distance, may be denied.

RULE 6.3 DEFINITIONS OF STANDARD DRIVEWAY DIMENSIONS

The design features described herein with their appropriate illustrations of various driveway features as shown in Tables 6-2 through 6-9 shall be used by Applicants in dimensioning proposed driveways or driveway systems on plans accompanying driveway permit applications. These standard dimensions will be used unless conditions require a deviation and the Applicant can show cause for deviation. Traffic Services reserves the right to determine whether a deviation shall be granted, and may specify particular dimensions, in order that a particular driveway system will accommodate the vehicles normally expected without creating undue congestion or hazard on the road. The letters in parentheses accompanying the following design feature titles are used to illustrate these design features in Tables 6-2 through 6-9.

6.3.1 "Intersecting Angle" (A), the clockwise angle from the road edge of pavement, or road centerline if unpaved, to the driveway reference line (the centerline or edge of the driveway)

6.3.2 "Driveway Width**"** (B), the distance between driveway edges of pavement (or edges of the gravel surface, if applicable) measured at the point where the edges of the driveway become parallel (point b in the sketches). If the Right-of-Way Line is so close to the pavement that point b falls on the Driveway Property, then the width of the driveway shall be based on the projected Line at the Right-of-Way.

6.3.3 "Entering Radius" (C), the radius of the driveway edge curve on the right side of a vehicle entering the Driveway Property.

6.3.4 "Exiting Radius" (D), the radius of the driveway edge curve on the right side of a vehicle exiting the Driveway Property.

6.3.5 "Curb Ending" (E), the length of a driveway curb taper from full curb height to ground level shall be a minimum length of ten feet.

6.3.6 "Right-Turn Lane Length" (F), the length of auxiliary lane constructed preceding the driveway to accommodate traffic entering the Driveway Property.

6.3.7 "Entering Radius" (C), the radius of the driveway edge curve on the right side of a vehicle entering the Driveway Property.

6.3.8 Exiting Radius" (D), the radius of the driveway edge curve on the right side of a vehicle exiting the Driveway Property

6.3.9 "Curb Ending" (E), the length of a driveway curb taper from full curb height to ground level shall be a minimum length of ten feet.

6.3.10 "Right-Turn Lane Length" (F), the length of auxiliary lane constructed preceding the driveway to accommodate traffic entering the Driveway Property.

6.3.11 "Right-Turn Lane Width" (G), the width of pavement from the outside edge of the through lane to the outside edge of the Right-Turn Lane, or the width of road from outside edge of the through lane to the outside edge at the full width of the Entering and Exiting tapers.

6.3.12 "Entering Taper" (H), the length of the diagonal pavement widening, preceding the driveway.

6.3.13 "Exiting Taper" (J), the length of the diagonal pavement widening, following the driveway.

6.3.14 "Entrance Drive Width" (K), the width of the entrance half of a Divided or a Directional Driveway which has been designated for the use of a vehicle entering the Driveway Property.

6.3.15 "Exit Drive Width" (L), the width of the exit half of a Divided or a Directional Driveway which has been designated for the use of a vehicle exiting the Driveway Property.

6.3.16 "Island Width" (M), the edge-to-edge distance between the Entrance Drive and Exit Drive of a Divided Driveway.

6.3.17 "Island Length" (N), the distance between ends of the island, measured parallel to the Entrance and Exit Driveways.

6.3.18 "Offset" (O), the distance from centerline of roadway to start of radius of driveway.

6.3.19 "Culvert Offset" (CO), the distance from centerline of roadway to centerline of culvert.

6.3.20 "Nose Offset" (P), the distance between the edge of the turn lane or through lane and the traffic island of a Divided or a Directional Driveway.

6.3.21 "Passing Lane Approach Length" (S), the length of auxiliary lane constructed on the opposite side of the road preceding the driveway to accommodate Through Traffic passing the left turn traffic entering the Driveway Property.

6.3.22 "Passing Lane Departing Length" (T), the length of auxiliary lane constructed on the opposite side of the road following the driveway to accommodate Through Traffic passing the left turn traffic entering the Driveway Property.

6.3.23 "Passing Lane Width" (U), the width of pavement from the outside edge of the through lane to the outside edge of the Passing Lane.

6.3.24 "Passing Lane Approaching Taper' (V), the length of the diagonal pavement widening preceding the Passing Lane.

6.3.25 "Passing Lane Departing Taper" (W), the length of the diagonal pavement widening following the Passing lane.

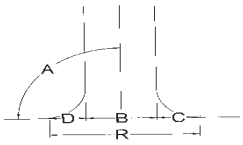
6.3.26 "Exiting Lane Length" (X), the length of auxiliary lane constructed following the driveway to accommodate traffic exiting Driveway Property.

RULE 6.4 STANDARD DIMENSIONS FOR RESIDENTIAL DRIVEWAYS

The dimensions of a Residential Driveway shall conform to those given in Tables 6-2 and 6-3.

Table 6-2:
Residential Driveway

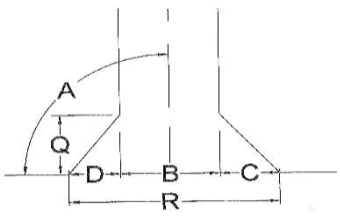
Design Features		Typical	Range
Intersecting Angle	A	90º	70º to 90º
Driveway Width	B	16'	12' to 35'
Entering Radius	C	10’	5' to 35'
Exiting Radius	D	10’	5' to 35'
Total Opening B+C+D=	R	36'	14' to 55'



NOTE:
The TYPICAL dimension shall be used unless Traffic Services specifies or the Applicant shows cause for, and Traffic Services approves, a different value. The RANGE in dimensions indicates the working value for each design feature.

Table 6-3:
Residential Driveway - Subdivision

Design Features		Typical	Range
Intersecting Angle	A	90º	60° to 90°
Driveway Width	B	16'	10' to 25'
Entering Taper Width	C	6'	2' to 15'
Exiting Taper Width	D	6'	2' to 15'
Taper Depth	Q	10'	10' to 20'
Total Opening B+C+D=	R	24'	14' to 55'



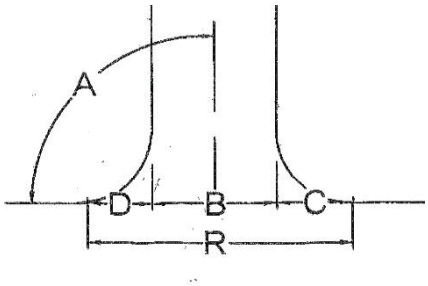
NOTE:
The TYPICAL dimension shall be used unless Traffic Services specifies or the Applicant shows cause for, and Traffic Services approves, a different value. The RANGE in dimensions indicates the working value for each design feature.

RULE 6.5 STANDARD DIMENSIONS FOR COMMERCIAL DRIVEWAYS AND PRIVATE ROADS

6.5.1 Two-way Commercial Driveways shall be designed to accommodate one lane of traffic in each direction. The dimensions of a Two-way Commercial Driveway shall conform to those given in Table 6-4.

Table 6-4:
Two-Way Commercial Driveway Dimensions

Design Features		Typical	Range
Intersecting Angle	A	90º	60° to 90°
Driveway Width	B	24'	22' to 40'
Entering Radius	C	35'	10' to 35'
Exiting Radius	D	35'	10' to 35'
Total Opening B+C+D=	R		42' to 105'

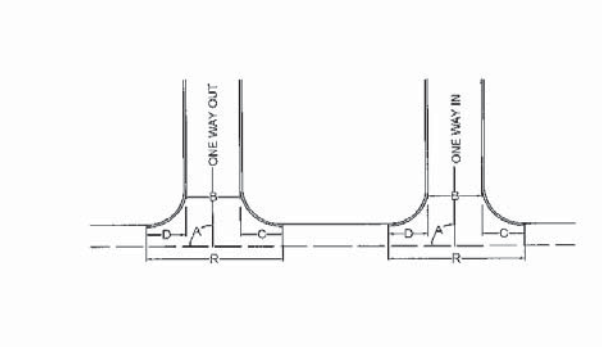


NOTE: The TYPICAL dimension shall be used unless the Traffic Services specifies or the Applicant shows cause for, and the Traffic Services approves, a different value. The RANGE in dimensions indicates the working value for each design feature.

6.5.2 The dimensions of a Directional One-way Commercial Driveway system shall conform to those given in Table 6-5.

Table 6-5:
Directional (One-Way) Commercial Driveway Dimensions

	Design Features		Typical	Range
	Intersecting Angle	A	90º	60° to 90°
	Driveway Width	B	16'	16' to 20'
One Way IN	Entering Radius	C	35'	20' to 35'
	Exiting Radius	D	5'	5' to 10'
One Way Out	Entering Radius	C	5'	5' to 10'
	Exiting Radius	D	35'	10' to 35'
	Total B+C+D=	R	25'	42' to 105'

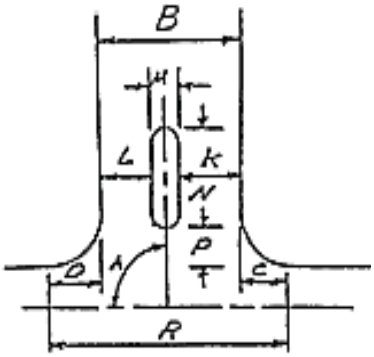


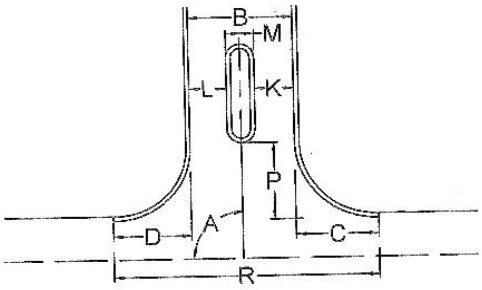
NOTE:
The TYPICAL dimension shall be used unless Traffic Services specifies or the Applicant shows cause for, and the Traffic Services approves, a different value. The RANGE in dimension indicates the working value for each design feature.

6.5.3 A Divided Commercial Driveway shall have a curbed island separating the entrance drive and the exit drive. The radii forming the edges on this island shall be designed to accommodate the largest vehicle that will normally use the driveway. The minimum area of the island shall be 50 square feet. The dimensions of a Divided Commercial Driveway shall conform to those given in Table 6-6.

Table 6-6:

Design Features		**Typical**	**Range**
Intersecting Angle	A	90º	60° to 90°
Driveway Width	B	60'	46' to 78'
Entering Radius	C	35'	15' to 35'
Exiting Radius	D	35'	10' to 35'
Entrance Drive Width	K	22'	20' to 27'
Exit Drive Width	L	22'	20' to 27'
Nose Offset	P	12'	6' to 18'
Island width	M	16'	6' to 24'
Total B+C+D=	R		71' to 148'





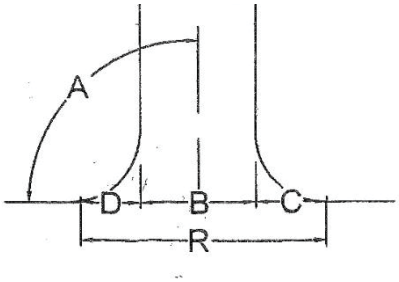
NOTE:
The TYPICAL dimension shall be used unless the Traffic Services specifies or the Applicant shows cause for, and the Traffic Services approves, a different value. The RANGE in dimension indicates the working value for each design feature.

RULE 6.6 STANDARD DIMENSIONS FOR UTILITY DRIVEWAY ENTRANCES

The dimensions of a Utility Driveway entrance shall conform to those given in Table 6-7.

Table 6-7:

Utility Driveway Design Features		**Typical**	**Range**
Intersecting Angle	A	90º	60° to 90°
Driveway Width	B	16'	12' to 35'
Entering Radius	C	10'	5' to 35'
Exiting Radius	D	10'	5' to 35'
Total Opening B+C+D	R	36’	22 to 105’



NOTE:
The TYPICAL dimension shall be used unless Traffic Services specifies or the Applicant shows cause for, and Traffic Services approves, a different value. The RANGE in dimensions indicates the working value for each design feature.

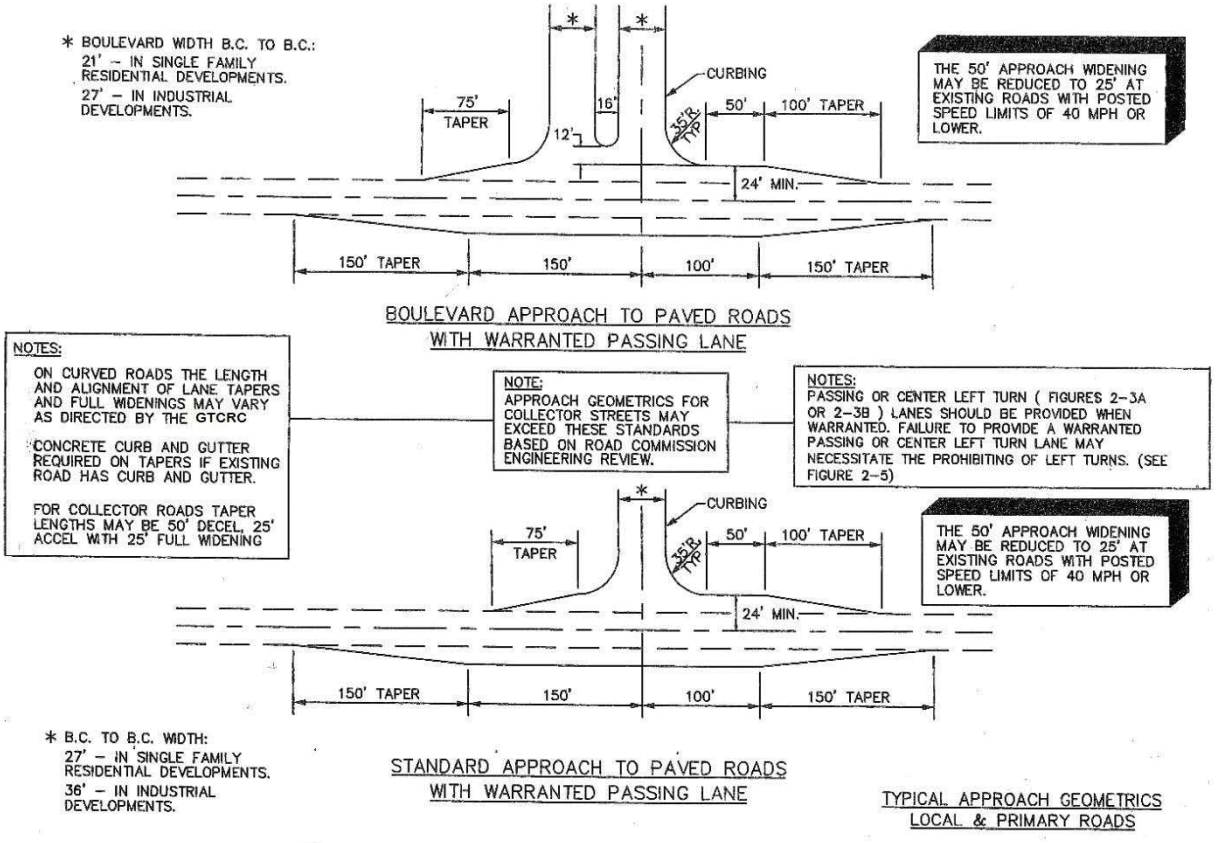
RULE 6.7 AUXILIARY LANE AND TAPER REQUIREMENTS

6.7.1 Applicant is strongly encouraged to consider the benefits of auxiliary right-turn deceleration lanes and left-turn passing lanes. These additional lanes, located at the driveway, will enhance the accessibility, safety and image of the proposed development. Traffic volumes or safety issues may warrant the prohibition of left turns at driveways on two-way, two-lane roads without passing lanes.

6.7.2 Figure 6-2 shows when left turn prohibition is warranted. Table 6-8 shows the dimensions of passing lanes.

Table 6-8:
Passing Lane

Design Features		Typical	Range
Approaching Taper	V	150'	100' to 150'
Departing Taper	W	150'	100' to 150'
Approaching Lane Length	S	150'	100' to 200'
Departing Lane Length	T	100'	50' to 100'
Pavement in Width passing lane	U	12'	11' to 12'



The TYPICAL dimension shall be used unless Traffic Services specifies or the Applicant shows cause for, and the Traffic Services approves, a different value. The RANGE in dimensions indicates the working value for each design feature.

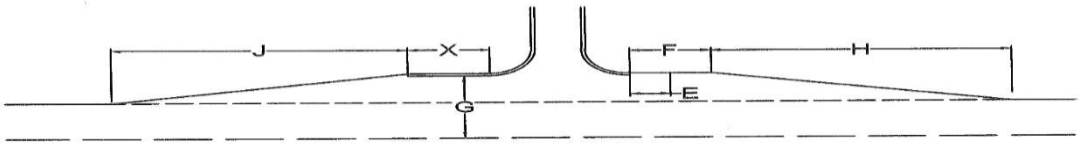
6.7.3 Plan Sheet 603A of the appendix shows when a right-turn deceleration lane or taper is warranted. Table 6-9 shows the dimensions of right-turn deceleration lanes and tapers for Commercial Driveway or Private Road approaches.

Table 6-9:

RIGHT-TURN LANE AND TAPERS FOR COMMERCIAL DRIVEWAYS AND PRIVATE ROAD APPROACHES

		Curbed Road		Uncurbed Road	
Design Features		**Typical**	**Range**	**Typical**	**Range**
Curb Ending	E	Not Applicable		10'	(No Range)
Right-Turn Lane Length	F	25'	0' to 150'	25'	0' to 150'
Pavement/Width from CL of Road	G	24'	22' to 24'	24'	22' to 24'
Entering Taper	H	100'	75' to 150'	100'	75' to 150'
Exiting Lane Length	X	25'	0' to 100'	25'	0' to 100'
Exiting Taper	J	75'	50' to 100'	75'	50' to 100'

NOTE:
The TYPICAL dimension shall be used unless Traffic Services otherwise specifies or the Applicant shows cause for, and Traffic Services approves, a different value. The RANGE in dimensions indicates the working value for each design feature.



6.7.4 Where center left turn operation exists or is warranted due to the proposed approach, see Figures 6-4 and 6-5. Figure 6-4 shall be used for lane shifts of not more than 6 feet. Where an eccentric lane shift is proposed, the taper length shall be in accordance with the MDOT.

6.7.5 If proposed entrance or exit tapers overlap with current existing tapers, the Applicant shall indicate the overall lane length that will result and the A.A.S.H.T.O. required exit taper lengths and signing requirements.

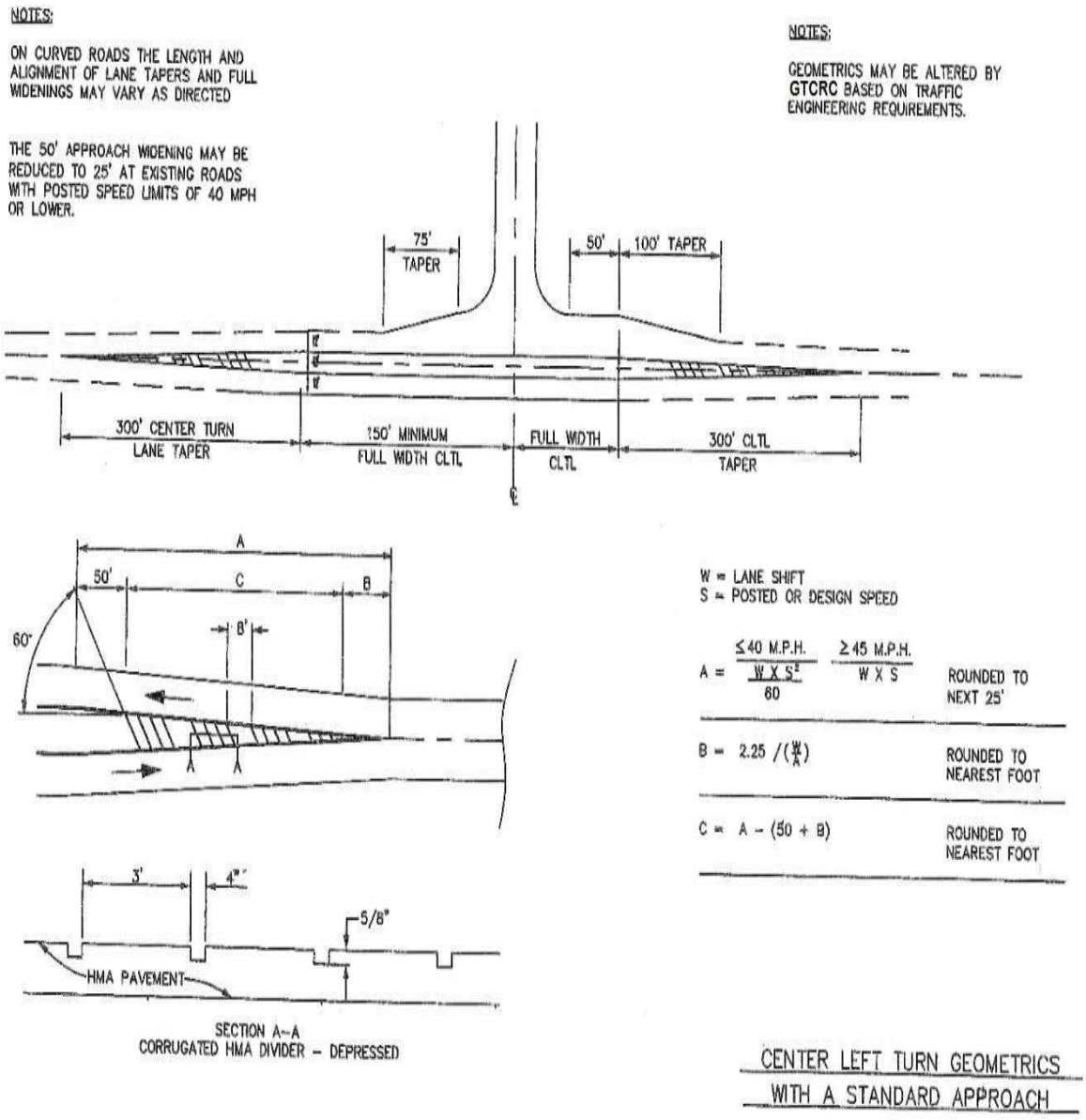

NOTES:
ON CURVED ROADS THE LENGTH AND ALIGNMENT OF LANE TAPERS AND FULL WIDENINGS MAY VARY AS DIRECTED
THE 50' APPROACH WIDENING MAY BE REDUCED TO 25' AT EXISTING ROADS WITH POSTED SPEED LIMITS OF 40 MPH OR LOWER.
NOTES:
GEOMETRICS MAY BE ALTERED BY GTCRC BASED ON TRAFFIC ENGINEERING REQUIREMENTS.
75' TAPER
50'
100' TAPER
300' CENTER TURN LANE TAPER
150' MINIMUM FULL WIDTH CLTL
FULL WIDTH CLTL
300' CLTL TAPER
A
50'
C
B
60°
8'
A
A
3'
4"
5/8"
HMA PAVEMENT
SECTION A-A
CORRUGATED HMA DIVIDER - DEPRESSED
W = LANE SHIFT
S = POSTED OR DESIGN SPEED
A = ≤40 M.P.H. W X S²/60 ≥45 M.P.H. W X S ROUNDED TO NEXT 25'
B = 2.25 /(W/A) ROUNDED TO NEAREST FOOT
C = A - (50 + B) ROUNDED TO NEAREST FOOT
CENTER LEFT TURN GEOMETRICS
WITH A STANDARD APPROACH

FIGURE 6-4

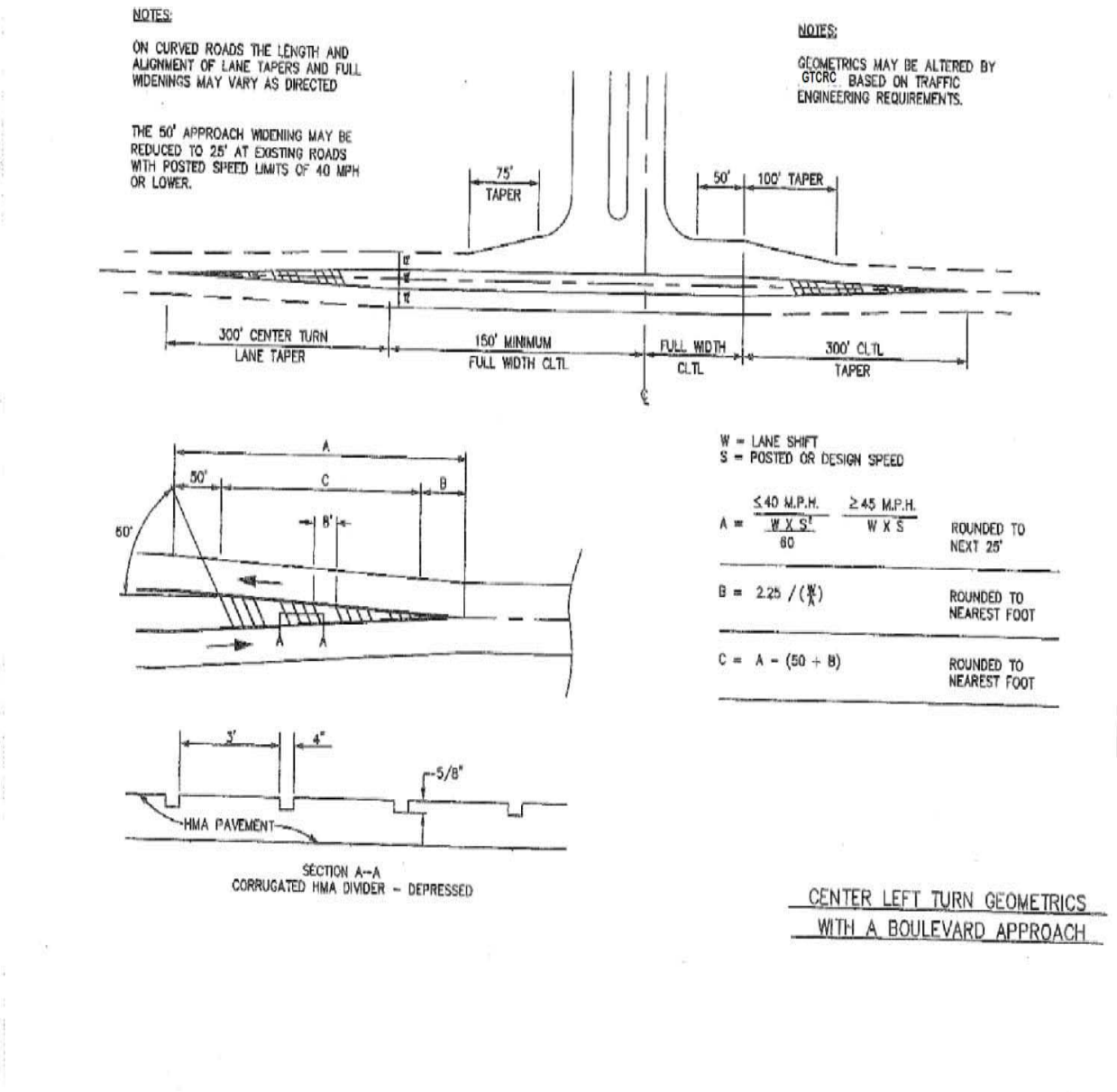

NOTES:
ON CURVED ROADS THE LENGTH AND ALIGNMENT OF LANE TAPERS AND FULL WIDENINGS MAY VARY AS DIRECTED
THE 50' APPROACH WIDENING MAY BE REDUCED TO 25' AT EXISTING ROADS WITH POSTED SPEED LIMITS OF 40 MPH OR LOWER.
NOTES:
GEOMETRICS MAY BE ALTERED BY GTCRC BASED ON TRAFFIC ENGINEERING REQUIREMENTS.
75' TAPER
50'
100' TAPER
300' CENTER TURN LANE TAPER
150' MINIMUM FULL WIDTH CLTL
FULL WIDTH CLTL
300' CLTL TAPER
A
50'
C
B
60'
8'
W = LANE SHIFT
S = POSTED OR DESIGN SPEED
A = ≤40 M.P.H. W X S² / 60 ≥45 M.P.H. W X S
ROUNDED TO NEXT 25'
B = 2.25 / (W/A)
ROUNDED TO NEAREST FOOT
C = A - (50 + B)
ROUNDED TO NEAREST FOOT
3'
4"
5/8"
HMA PAVEMENT
SECTION A-A
CORRUGATED HMA DIVIDER - DEPRESSED
CENTER LEFT TURN GEOMETRICS
WITH A BOULEVARD APPROACH

FIGURE 6-5

RULE 6.8 PAVING AND CURBING

6.8.1 Residential Driveways

(A) If the road has existing curb and gutter, the driveway shall also have curb and gutter matching at the point of curvature. If the road lacks curb and gutter, the curb and gutter ending adjacent to the road shall be located at least 24 feet from the centerline of the pavement and shall be parallel to the road.

(B) Connections to a Paved road:
  (1) Driveways should be paved between the edge of pavement and the existing sidewalk. If there is no existing sidewalk, the surfacing should extend at least 10 feet from the edge of pavement. Curb cuts and/or curb returns shall be constructed based on the current GTCRC standards for curb and gutter. The driveway, where it intersects with existing sidewalk, shall comply with A.D.A. design criteria.
  (2) Pavement cross-sections should be as follows:
    a. 6 inches of concrete over a suitable base.
    b. A minimum of 220 lb/sy of an approved H.M.A. placed over 6 inches of 22A aggregate base.

(C) Connections to an unpaved road:
  (1) If the driveway is to be unpaved, it may be surfaced with MDOT 23A stabilized gravel.
  (2) If the driveway is to be paved, the paving shall extend no closer to the road than one (1) foot behind the driveway culvert location or 5 feet from the edge of the road.
  (3) Pavement cross-section should be as follows:
    a. 6 inches of concrete over a suitable base.
    b. A minimum of 220 lb/sy of an approved H.M.A. placed over 6 inches of 22A aggregate base.

6.8.2 Commercial Driveways and Private Roads

(A) If the road has existing curb and gutter, the driveway shall also have curb and gutter matching at the point of curvature. If the road lacks curb and gutter, the curb and gutter ending adjacent to the road shall be located a minimum of 18 feet from the centerline of the pavement and shall be parallel to the road.

(B) Connections to a Paved road:
  (1) The driveway should be paved between the clean edge of road pavement and the existing sidewalk. If there is no existing sidewalk, the surfacing should extend to the Right-of-Way line or 10 feet from the edge of pavement whichever is greater. Curb cuts and/or curb returns shall be constructed based on approved GTCRC standards for curb and gutter.
  (2) Applicant to provide pavement design to Traffic Services adequate for the proposed use, but at a minimum cross-section should be as follows:
    a. 6 inches of reinforced concrete over a suitable base
    b. A minimum of 330 lb/sy of an approved H.M.A. placed over 6 inches of 22A aggregate base.

(C) Connections to an unpaved road:
  (1) If the driveway is to be unpaved, it may be surfaced with stabilized M.D.O.T. 23A gravel.
  (2) If the driveway is to be paved, the paving shall extend no closer to the road than one (1) foot behind the driveway culvert location or 5 feet from the edge of the road.
  (3) Pavement cross-section at a minimum should be as follows:
    a. 6 inches of reinforced concrete over a suitable base
    b. A minimum of 330 lb/sy of an approved H.M.A. placed over 6 inches of 22A aggregate base.

6.8.3 Utility Driveway entrances may be surfaced with stabilized gravel and may be uncurbed. In certain locations, paving and curbing may be required on Utility Driveways.

6.8.4 Additional lanes and accompanying tapers shall be surfaced with the same material as the pavement of the road, unless the Traffic Services allows the use of an alternate equivalent pavement.

The applicant shall submit the pavement design for review. Pavement cross-section at a minimum should be as follows:

(A) inches of reinforced concrete over a suitable base
(B) A minimum of 330 lb/sy of an approved H.M.A. placed over 6 inches of 22A aggregate base.

6.8.5 The road shoulder adjacent to all additional lanes and tapers shall conform to the current M.D.O.T. Standard Specifications for Construction. Applicant to submit geometric and pavement designs for review by the GTCRC. Designs to be in accordance with section 1.1.2 of these specifications. The applicant shall submit the pavement design for review. Pavement cross-section at a minimum should be as follows**:**

(A) inches of reinforced concrete over a suitable base
(B) minimum of 330 lb/sy of an approved H.M.A. placed over 6 inches of 22A aggregate base.

6.8.6 At the discretion of Traffic Services, curb and gutter shall either be the same detail as the existing curb and gutter, or shall conform to the current GTCRC standards for curb and gutter.

(A) The curb height shall be constant if there is no existing or proposed sidewalk.
(B) Where a driveway grade meets the grade of an existing sidewalk, the curb shall be lowered to provide a sidewalk curb opening.
(C) All walks and curbs shall conform with the requirements of Act 8 of 1973 (MCL 125.1361) and the Americans with Disabilities Act of 1990, which require appropriate curb cuts to walks for handicapped access.

RULE 6.9 RIGHT-OF-WAY DRAINAGE

6.9.1 The driveway shall be constructed so that the drainage of the road is not adversely affected by the driveway. The drainage and the stability of the road subgrade shall not be altered by driveway construction or roadside development.

6.9.2 Drainage from adjacent private property in excess of assumed agricultural run-off should not be discharged directly into the road drainage system. Drainage from areas, which did not previously contribute to the road drainage system, will not be accepted unless specifically authorized by the Traffic Services. (See Rule 5.9)

6.9.3 All culvert pipes used shall be of a size adequate to carry the anticipated flow of the ditch based on a “ten year storm” event. Culverts alongside a roadway shall be no smaller than 15 inches inside diameter, and culverts draining under roadways shall have an inside diameter no smaller than 15 inches. Traffic Services may allow 12” culverts where grade dictates. All culverts, catch basins, drainage channels, and other drainage structures required within the Right-of-Way shall be manufactured or constructed and installed in accordance with the current M.D.O.T. Standard Specifications for Construction. The minimum length of the culvert may be determined as the sum of the width of the driveway plus the adjacent fore slope and back slope, maximum slope of 1 on 3. The use of headwalls on culvert ends will not be permitted. The use of sloped end sections is encouraged and may be required by Traffic Services.

6.9.4 Existing ditches may not be eliminated, reduced in cross-section, or enclosed beyond the end of normal culvert length, unless specifically approved by Traffic Services. An approved ditch enclosure must satisfy the following conditions:

(A) Submittal of one (1) set of plans or drawings clearly indicating the proposed work, including pipe inverts and finished surface grades.
(B) Installation of catch basins to collect surface and road drainage (provide rim elevations). Construction of swales to direct surface and road drainage to catch basins.
(C) Installation of a culvert designed to carry the existing ditch flow consistent with the next culvert upstream, but in no case with a diameter less than 15 inches. Provide calculations of the existing ditch flow and proposed culvert capable of handling a “ten year storm” event.
(D) Approval from the GTCRC Maintenance Department.

RULE 6.10 PARKING AND STORAGE

Permit Holder shall provide adequate storage for vehicles parking or waiting to be serviced, so as not to interfere with pedestrian and vehicular safety, vision requirements, or traffic operations on the road. No parking areas will be allowed in the Right-of-Way other than on street parking as authorized by the Michigan Vehicle Code. No permits will address on-street parking.

RULE 6.11 TRAFFIC CONTROL DEVICES AT DRIVE APPROACHES

At all times during the construction, clean-up and other permitted and related activities, the Permit Holder shall provide and properly maintain temporary traffic control devices, including signs and pavement markings, that are necessary for the safe and proper use of the county road in the vicinity of the driveway approach. All traffic control devices, including signs and pavement markings, shall conform to the M.M.U.T.C.D.

The GTCRC shall determine what permanent signs, markings, and traffic control devices are necessary and install them at the expense of the Permit Holder. Permanent signs, markings, and other traffic control devices shall be in conformity with M.M.U.T.C.D. Sign and pavement marking fees are non-refundable and are payable at the time the permit is issued. Street name signs on Private Roads will be installed following completion of the approach, notification of completion of the permitted work by the Permit Holder, and inspection of the work and worksite by Traffic Services.

RULE 6.12 PRIVATE ROAD APPROACHES

Applications for a permit to connect a Private Road to a county road shall include plans as identified in Rule 2.3. A non-refundable sign fee will be collected at the time of permit issuance, which will cover the cost of fabrication and installation of a stop sign and street name sign at the connection of the Private Road and the county road. The signs will be installed at the completion of the approach work. The installed street sign will be consistent with the M.M.U.T.C.D. No special street lname signs.

RULE 6.13 TEMPORARY DRIVES AND ROAD APPROACHES

Traffic Services may issue a temporary approach permit for a place of access to a county road that will be used for a particular purpose for a specified short period of time not to exceed one year. After said period of time, either a permit for a permanent approach must be obtained and the permanent approach built, or the temporary approach must be removed and the Right-of-Way restored to its original condition.

PART 7 – RESTORATION

RULE 7.1 SHOULDERS

Road shoulders shall be restored to the same type (paved, gravel or grassed), width, slope and thickness as existed prior to the start of work, unless otherwise permitted.

7.1.1 Gravel shoulders that are removed during construction shall be replaced and shall be as directed by Traffic Services, match the existing width or be 3 feet wide, whichever is greater, and shall have 6 inch thick of M.D.O.T. 23A compacted gravel. If the shoulder had a sand subbase, it shall also be replaced.

7.1.2 Gravel shoulders which are not removed but are contaminated, rutted, or otherwise damaged shall be restored. Contaminated material shall be removed and replaced it with M.D.O.T. 23A gravel to the original thickness, width, and slope of the shoulder, and flush with the road surface. If the road is resurfaced, sufficient M.D.O.T. 23A gravel shall be added to bring the shoulder up to the new surface elevation. Positive drainage shall be maintained at all times.

7.1.3 If the shoulders were grass covered, they shall be restored to a stable condition. Where gravel existed under the grass, the finished shoulder shall have gravel under the grass. The grass shall be replaced by methods shown on the Approved Plans or as directed by the GTCRC.

7.1.4 If all or a portion of the shoulder is paved, the Permit Holder shall replace the paved shoulder to a cross-section consistent with the existing roadway, or at a minimum of 3 inches of M.D.O.T. H.M.A over 8 inches of M.D.O.T. 22AA aggregate, whichever is greater. If necessary, the edge of the roadway shall be trimmed to present a smooth edge for attachment of the paved shoulder and treated with a bond coat. The width of the paved shoulder shall be as directed by Traffic Services, match the existing width, or 3 feet wide, whichever is greater.

RULE 7.2 BEYOND THE SHOULDERS

7.2.1 All areas within the Right-of-Way beyond the shoulders, curbs, or edge of gravel of the road which are disturbed, as the result of the Permit Holder's work operations and related activities, shall be restored as soon as possible during the first growing season. This restoration shall not be delayed until project completion. Failure to comply with this Rule shall be just cause for the GTCRC to stop the remaining construction work until the required restoration is completed. The Permit Holder shall maintain ground cover specified on Approved Plans until final settlement of excavated or disturbed areas has occurred and growth is established.

(A) Sod shall be placed at all locations shown on the Approved Plans. Sod may be required by the GTCRC in areas where topsoil, seeding, and mulching cannot (or has not) provided the effective ground cover required because of steep slopes or grades, velocity or volume of water, or other conditions. The GTCRC may also require that sod be placed in areas of established, maintained lawns. All sod shall be placed on 2 inches of topsoil following preparation of the surface. The Permit Holder is responsible for the establishment and growth of vegetation. The permit, Bond, and deposit will not be released until the GTCRC is satisfied that vegetation has been re-established.

(B) Areas that are not to be sodded shall be topsoiled and either seeded and mulched or hydroseeded. The seed shall be M.D.O.T. roadside seed mixture, unless otherwise shown on Approved Plans, and shall be applied at an approved rate. Fertilizer shall be applied at an approved rate. Topsoil shall be placed a minimum of 4 inches deep. Mulch shall be spread over the ground and held in place by methods as approved by Traffic Services.

RULE 7.3 DRAINAGE SYSTEMS

7.3.1 All road drainage shall be restored as soon as possible following construction. Ditches, ditch slopes, and other areas within the Right-of-Way shall be restored to meet the current M.D.O.T. standards, unless otherwise noted or shown on Approved Plans. Roadside ditches will not be required on roads that were never previously ditched, unless otherwise directed by Traffic Services.

7.3.2 All culverts and ditch enclosures removed in good condition by the Permit Holder shall be re-laid in proper position and elevation. All culverts and ditch enclosures or sections thereof, which are not in good condition after removal, shall be replaced with pipe meeting current M.D.O.T. standards unless otherwise shown on Approved Plans. Culverts and other drainage structures that are damaged but not removed during the Permit Holder's work operations and related activities must be fully repaired to the satisfaction of the GTCRC, or be replaced in accordance with current M.D.O.T. standards. Grading or ditching may be required near the inlet or outlet in order to re-establish drainage beyond that shown on Approved Plans.

7.3.3 The Permit Holder is responsible for restoration or re-establishment of drainage patterns or systems disturbed by the permitted work and any related activities of Permit Holder and its employees, agents and contractors. Unless so indicated on the Approved Plans, the Permit Holder shall be responsible for any survey required in order to establish elevations of culverts, ditches, inlets, outlets, or any other structure elevation required in order to restore function to the drainage system. If necessary, the GTCRC may establish these elevations and grades at the expense of the Permit Holder. The Permit Holder shall be required to re-ditch or establish new ditch elevations based on changes to culverts or other structures so that a stable, maintainable ditch results. If the ditches are deep enough or the volume of water is sufficient that erosion of the ditch bottom may occur, then the GTCRC may require Permit Holder to place rip-rap and/or other structural elements in order to stabilize the roadside ditches or their outlets.

7.3.4 Road drainage shall not be diverted onto private property without the written consent of the Property Owner.

7.3.5 If culverts or other drainage structures are discovered during the course of the work, that are not shown on Approved Plans, the Permit Holder shall replace and/or restore such structures as if they were properly shown on Approved Plans, unless the GTCRC approves elimination of the culvert or structure.

7.3.6 Culverts shall be a minimum of 12" in diameter.

RULE 7.4 BORINGS

Unless the GTCRC otherwise specifies in writing, the Permit Holder shall plug, to the satisfaction of the GTCRC, all borings immediately after sampling. The Permit Holder shall not abandon any borings without plugging them.

PART 8 – LANDSCAPING

RULE 8.1 LANDSCAPING REQUIREMENTS

The following Requirements apply to landscaping proposed within Right-of-Way under the jurisdiction of the GTCRC, or in areas that will be transferred to the jurisdiction of the GTCRC.

8.1.1 Plantings or installation of walls, barriers, berms, signs, paths, lighting elements, entrance markers, non-standard Mailbox Structures or structural elements associated with landscaping may not be installed unless Traffic Services issues a permit.

8.1.2 One (1) set of scaled drawings or plans showing, at a minimum, all proposed landscaping work, existing conditions, size, location, species, and dimensions of proposed landscaping elements, Sight Distance triangles at approaches, and a location map must be included with an application for permit.

8.1.3 Application for permit shall include an agreement to maintain the landscaping and landscaping elements located within the Right-of-Way.

8.1.4 If the GTCRC needs to make any improvement in the road or Right-of-Way, it may require the Property Owner to remove and/or relocate the landscaping, or it may remove the landscaping itself. The Property Owner shall pay for all such removal and/or relocation of landscaping.

RULE 8.2 LANDSCAPING GUIDELINES

The following general guidelines shall be used in development and approval of a landscaping plan.

8.2.1 No plantings, walls, barriers, berms, signs, or other structural elements will be permitted within 6 feet from the edge of pavement or shoulder on a 25 m.p.h. street, or 12 feet from the edge of pavement or shoulder on all other county roads, or within 3 feet from the back slope of a ditch on primary county roads. Plantings less than 36 inches high do not require a permit.

8.2.2 Mailbox structures shall be of a break-away design. Any mailbox structure proposed to be of a brick, stone or other non-post like material shall be constructed as a façade style structure mounted to a 4-inch by 4-inch post or 2-inch by 2-inch framing. The post should not be more than 24 inches into the ground and shall not be set in concrete. No mailbox shall pose a fixed object hazard. By following these guidelines, the mailbox post will either break or be moved, rather than be a safety hazard for motorists and residents.

8.2.3 No plantings, walls, signs, entrance markers, or structural elements higher than 36 inches will be permitted within Sight Distance triangles at driveways and street approaches.

8.2.4 No landscaping or landscaping element shall interfere with drainage structures, drainage ditches, any easements, or access to these facilities for maintenance.

8.2.5 Structural elements such as boulders or retaining walls may be no steeper than one (1) foot horizontally to 3 feet vertically, shall not present blunt ends to traffic, and shall be set back from the road as required in Rule 8.2.9. Such wall ends shall be blended into the grade or slope.

8.2.6 Signs, decorative lighting, or other structural elements will not be permitted within a boulevard median in the Right-of-Way of the primary road or mile type local road.

8.2.7 Irrigation systems must be installed and located so that the roadway, non-motorized paths, and sidewalks are not impacted by over-spray, drift, or run-off. Control panels, electrical systems, or water supplies to sprinkler systems shall be located outside of the Right-of-Way.

8.2.8 Landscaping may be permitted within the island of a subdivision or residential street in accordance with the following provisions.

(A) The curb should be non-mountable 6-inch curb (type "B", "C", or "F"). All fixed objects higher than 18 inches must be a minimum of 6 feet behind the curb. Fixed objects of less than 18 inches in height must be a minimum of 3 feet behind the curb.
(B) All trees planted within the island will be ornamental type trees with a maximum expected diameter at breast height (DBH) of 4 inches.

8.2.9 Aesthetic landscaping adjacent to the subdivision/residential street must be a minimum of 5 feet behind the curb or 12 feet from the edge of pavement if the road is not curbed. Functional landscaping such as earth retaining walls will be reviewed on a case by case basis by Traffic Services.

8.2.10 Pillars or subdivision signs may be permitted within the Right-of-Way of the existing Major Road, provided they are at the right of way line and do not reduce existing Sight Distance. Signs in a boulevard island shall be in accordance with Rule 8.2.8.

8.2.11 Ornamental shrubs may be planted in the existing Major Road Right-of-Way, provided they are not expected to attain a height greater than 3 feet and do not interfere with the Sight Distance at the intersection. No trees may be planted in the Major Road Right-of-Way. Plants which grow large enough to reduce Sight Distance or become a roadside hazard may be removed from the Right-of-Way by the GTCRC.

8.2.12 If the GTCRC needs the Right-of-Way for road maintenance or improvement, the Property Owner, on whose behalf the Permit Holder has installed landscaping and improvements, shall remove the landscaping and improvements the Permit Holder has placed in the Right-of-Way, or the GTCRC may remove the landscaping and/or improvements at the Property Owner's expense.

8.2.13 All landscape materials shall comply with Federal and State Invasive Species Laws, including the National Invasive Species Act, Federal Noxious Weeds List, Prohibited and Restricted Invasive Species (from Natural Resources and Environmental Protection Act 451, Part 413 Transgenic and Non-native organisms).

RULE 8.3 NON-MOTORIZED PATHS AND PEDESTRIAN FACILITIES

8.3.1 Non-motorized paths constructed within the Right-of-Way shall be as permitted.

8.3.2 The contractor shall notify the Township, or Village responsible for maintaining sidewalks and/or non-motorized paths, if a sidewalk and/or non-motorized path is removed or damaged during an activity described in Rule 1.1.

8.3.2 All pedestrian facilities shall meet current A.D.A. guidelines. (See Appendix G.)

8.3.3 All pedestrian crossings of signalized intersections of roads or driveways require pedestrian signals. If such an existing intersection is modified, it must be upgraded to current practice and standards, including current A.D.A guidelines. If a road is overlaid, all approaching pedestrian facilities shall be upgraded to current practice and standards, including current A.D.A guidelines.

Rule 8.4 A.D.A. SIDEWALK/PUSHBUTTON REQUIREMENTS

All Sidewalk Ramp requirements are in accordance with M.D.O.T. R-28-J (Sidewalk Ramp Detail) (See Appendix G)

All material for this document was procured from the following sources:

- M.D.O.T. R-28-J (Sidewalk Ramp Detail)
- Federal Highway Administration (FHWA)
- Americans with Disabilities Act (ADA)
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Department of Justice (DOJ)
- Department of Transportation (DOT) Section 504
- Manual on Uniform Traffic Control Devices (MUTCD)
- Michigan Manual on Uniform Traffic Control Devices (MMUTCD)

8.4.1 Sidewalk Ramp

(A) Max. length of 15’
(B) Min. Length = Curb Height / (Ramp Slope – Sidewalk Corridor Cross Slope)
(C) Max. slope of 8.3% (1:12)
(D) Cross slope $\leq$ 2%
(E) Max. flare slope of 10%
(F) Min. Width 4’ (recommended to be 5’ to match landing area)

8.4.2 Detectable Surface

(A) Min. depth of 24”
(B) One corner must be within 8” and no other point of the leading edge may be more than 5’ from the grade break
(C) Domes must be aligned with the path of wheelchair travel
(D) Contrasting color from walk surface by at least 70% (per ADAAG Appendix, Section A29.2)
(E) Contrast=[(B1-B2)]/B1] x 100 where B1=Light Reflective Value (LRV) of lighter area and B2=Light Reflective Value (LRV) of darker area
(F) Truncated domes per M.D.O.T. R-28-J

8.4.3 Pushbutton Location

(A) Min. 30” across x min. 48” deep (running toward crosswalk) level surface (less than 2%) adjacent to pushbutton (min. 5’ x 5’ landing area required next to push button if pedestrians are required to turn or maneuver to use pushbutton)
(B) Installed on side of crosswalk furthest from the center of the intersection
(C) No more than 5’ max. from extended crosswalk line (MMUTCD fig. 4E-2)
(D) 1.5' to 6' from back of curb, however where physical constraints exist, up to 10' is allowed
(E) 10” to 24” side reach the from 30” x 48” level surface
(F) Button at 42” from grade of level surface
(G) Pushbuttons located on the same corner must be a minimum of 10’ apart

8.4.4 Landing Area

(A) Min. 5’ x 5’ landing area required for every ramp
(B) Landing area can be shared by 2 ramps
(C) Must be at top of ramp if ramp is perpendicular to curb
(D) Must be at bottom of ramp if ramp is parallel to curb

8.4.5 Pedestrian Signals

(A) Visible from waiting area and crossing road until within 10’ of curb

8.4.6 2 Crosswalks Sharing Single Ramp

(A) This method may be used if no other method is feasible. This design is not encouraged or recommended.
(B) If this method is required, attempt to separate the 2 ramps with the use of flares in between the 2 ramps. Reduced curb height can be used.
(C) If separating the ramps is not possible, the intersecting crosswalk lines nearest the center of the intersection must intersect at a point 4’ from edge of metal allowing full turning radius for wheel chairs inside of crosswalk.
(D) A combined ramp will require the Landing Area to be at the bottom of the ramps
(E) Landing Area required at top and bottom of ramp

8.4.7 Crosswalks

(A) Continental pavement markings for crosswalks is preferred but not required
(B) The slope between the crosswalk lines crossing the road shall be 2% or less

PART 9 – BANNER PERMITS

RULE 9.1 AUTHORIZED APPLICANTS

A permit for the installation of Banners to be placed within or over the Right-of-Way may be issued by Traffic Services only to the governing body of a city, incorporated village, or township.

RULE 9.2 APPLICATION FORMS

Applications for permits for the erection of Banners shall be in the manner prescribed by, or on the appropriate forms supplied by, Traffic Services. Only the authorized governing body may make application. The community shall obtain permission from the pole's owner for use of any and all poles. GTCRC traffic signals or poles cannot be used for Banners.

RULE 9.3 MINIMUM REQUIREMENTS

9.3.1 Permit applications shall be accompanied by a copy of a Municipal Resolution from the local governing body designating an authorized official of the city, village, or township with the authority to make the application for the city, village, or township. The application should be submitted approximately one month in advance of proposed installation.

9.3.2 Each application shall include the following information:

(A) Activity in connection with which the Banners are to be placed.
(B) Location of the proposed installation including distance to traffic control devices.
(C) A description of the Banners, including any legend or symbol thereon.
(D) The height of an overhead Banner at its lowest point above the surface of the road.
(E) The dates on which the Banner will be erected and removed shall not exceed a time period specified by Traffic Services. An acceptable period of time for Banners, other than Christmas decorations, to be in place is 3 weeks and acceptable duration for Christmas decorations to be in place is 6 weeks.
(F) Such other information as Traffic Services may require.
(G) Proof of Insurance in accordance to GTCRC requirements.

RULE 9.4 DESIGN AND PLACEMENT REQUIREMENTS

9.4.1 The design, method of installation and location of all Banners shall be such that they shall conform to all applicable laws, statutes and regulations, including Act 200 of 1969, these Rules and the M.M.U.T.C.D., shall not be dangerous to those using the road, and shall not unduly interfere with Sight Distance or the free movement of the traffic.

9.4.2 Overhead Banners shall be securely fastened and have a minimum bottom height of 18 feet above the surface of the traveled way, shall be placed not closer than 100 feet on either side of traffic lights or signals, and shall be so placed as to not obstruct a clear view of such traffic lights or signals or other traffic control devices.43 Banners shall not be attached to trees.

9.4.3 Banners shall not have displayed thereon any legend or symbol which, in the judgment of the GTCRC, may, in any way, be construed to advertise or otherwise promote the sale of, or publicize, any merchandise or commodity, or which may be construed to be political in nature.

9.4.4 Banners shall not have displayed thereon any device which is, purports to be, imitates, resembles, or may be mistaken for, a traffic control device, or which attempts to direct the movement of traffic.

9.4.5 Decorations shall not include flashing lights.

RULE 9.5 CONDITIONS OF ISSUANCE OF BANNER PERMITS

9.5.1 Permits for the erection or installation of Banners may be cancelled by Traffic Services if it determines in its sole judgment that such installation shall become dangerous to those using the road or unduly interfere with the free movement of traffic. If it becomes necessary to remove the Banner due to safety reasons, the cost of removal shall be borne by the Permit Holder, and the Permit Holder shall reimburse the GTCRC for any and all costs or expenses the GTCRC may have incurred in connection with such removal.

9.5.2 The city, village, or township making application shall faithfully fulfill all permit requirements and shall indemnify and save harmless the Board from claims of every kind arising out of, or on account of, permitted activities.

9.5.3 Traffic Services may issue permits to cities, villages, or townships for the installation of Banners at approved locations for a period of not more than three (3) years, subject to the conditions above.

PART 10 – EVENT PERMITS

RULE 10.1 AUTHORIZED APPLICANTS

A permit granting permission for temporary use of the ROW or the temporary Road Closure of a county road for a reasonable length of time for an Event or for the use of a county road as a detour for traffic around an Event may be issued by Traffic Services only to the governing body of a city, incorporated village, or township.

RULE 10.2 APPLICATION FORMS

Application for permits to close or partially close or to use as a detour a county road for an Event shall be in the manner prescribed by, or on the appropriate forms supplied by, Traffic Services. Only the authorized governing body may make application.

RULE 10.3 MINIMUM REQUIREMENTS

A copy of a Municipal Resolution shall accompany permit applications from the city, village, or township requesting permission for the Road Closure or partial Road Closure or use as a detour. The application shall state the nature of the activity for which the Road Closure or partial Road Closure or use as a detour is being requested, the dates and times it is proposed to close and reopen the road to traffic, or to use it as a detour, and such other information as Traffic Services may require.

10.3.1 Each application shall include the following information:

(A) Activity in connection with which the Event is being conducted.
(B) Location of the proposed installation including distance to traffic control devices.
(C) A description of the Event, including any legend or symbol thereon.
(D) The dates on which the Event will be held, include the dates and time period any facilities within the ROW will be erected and removed, the time period shall not exceed a time period specified by Traffic Services.
(E) Such other information as Traffic Services may require.
(F) Proof of Insurance in accordance to GTCRC requirements.
(G) Documentation of Traffic Control methods, Law Enforcement notification, and contact information for emergency services, law enforcement, volunteers, staff, event security, and all others as required by Traffic Services.

RULE 10.4 ROAD CLOSURE PERMIT CONDITIONS

All permits allowing a Road Closure or a partial Road Closure or the use of a county road for a detour shall be subject to the following conditions:

10.4.1 The Road Closure or partial Road Closure or the use of a county road as a detour route shall not unduly interfere with the safe and free movement of traffic.

10.4.2 A suitable alternate location that is more acceptable for traffic safety and offers less interruption of traffic is not available for the parade, celebration, or festival.

10.4.3 Normally, Road Closures or partial Road Closures shall be allowed only during daylight hours. In the special case where a temporary nighttime Road Closure is permitted for a parade, celebration or festival, all points of potential hazard and all barricades and warning traffic signs must be lighted at the Applicant's expense; and such lighting must be in accordance with requirements and specifications of the GTCRC.

10.4.4 All traffic control devices installed in conjunction with the Road Closure or partial Road Closure and the detour route shall conform to the provisions of the M.M.U.T.C.D.

10.4.5 Required traffic control devices may be furnished and installed either by the local governing body or by the Board; but, in either event, all costs arising from the installation, maintenance and removal of such devices shall be borne by the Applicant.

10.4.6 The local governing body shall be responsible for necessary police supervision and the establishment and posting of any and all necessary detours, and also shall assume liability for any and all damage claims which may arise as a result of the Road Closure or partial Road Closure or detour.

10.4.7 Road Closures or partial Road Closures shall not be permitted for the purpose of allowing private commercial activities, such as advertising or sale of goods, wares or produce.

10.4.8 The Applicant, at its own expense and within a reasonable time after the permitted Event, shall clean up any litter, debris, etc., occurring in the Right-of-Way as a result of the Event or use. If the GTCRC must do any cleanup work, the Applicant shall reimburse the Board for the cost thereof.

10.4.9 The Applicant shall provide proof of insurance in accordance to GTCRC requirements.

RULE 10.5 ANNUAL EVENT PERMITS

Traffic Services may issue an annual permit to villages, or townships that conduct multiple Events using the same or similar routes or locations. Such permits shall be subject to the conditions above, and such other conditions as the GTCRC may require. The Permit Holder shall notify the Traffic Services at least three weeks prior to each Event.

PART 11 - DESIGN STANDARDS FOR NEW PUBLIC ROADS WITHIN A PLAT

RULE 11.1 MIMIMUM REQUIREMENTS

The owner of the developed lands, or his agent, shall be required to grade, drain and surface the roads and alleys shown within the development in accordance with the latest issue of the standards and specifications of the Grand Traverse County Road Commission. The County Highway Engineer may add to or delete requirements as listed.

11.1.1 Only Public Roadways within a Plat will be considered for acceptance by the Grand Traverse County Road Commission. Roads within a Plat must conform to the standards set forth herein and all requirements of the Plat Act in order for the Grand Traverse County Road Commission to accept roadways within a Plat.

11.1.2 Alleys are defined as secondary access to abutting lands which shall not be accepted by the Grand Traverse County Road Commission.

RULE 11.2 GENERAL REQUIREMENTS

Applicant shall follow general requirements as they relate to the Project submittal.

11.2.1 All roads shall be constructed on the center of the right-of-way.

11.2.2 Design speeds for Residential, Commercial, and Industrial roads shall be 30 MPH. All other routes shall have a design speed of 60 mph.

11.2.3 Depending on site conditions and as determined by the County Highway Engineer, driveways may be required to be designed and incorporated within the approved project plans.

11.2.4 Future road purpose areas shall be cleared, graded and constructed to the top of the granular sub-base, as shown in Appendix D, and shall be restored with topsoil and seed.

11.2.5 Placement of the gravel base and pavement surface construction within a future road reserve shall be the responsibility of future applicants.

11.2.6 Roadway layout shall conform to the general pattern established by roads in adjacent land areas. All public roads, right-of-ways and the interconnections from existing land developments may be required to connect with the proposed road system of a new development project.

11.2.7 Suitable access from isolated developments to the public road system must be provided by easement or permanent dedication.

11.2.8 Driveway access from lots to Arterial or Collector roads will not be permitted.

11.2.9 Vehicular access limitations shall be included within a development's covenants, restrictions, or other recorded governing documents.

RULE 11.3 ROADWAY SECTIONS

Applicant shall provide roadway typicals and site specific roadway cross-sections that clearly illustrate the design intent.

11.3.1 Roadway typicals shall be in accordance with Appendix D unless otherwise approved. The County Highway Engineer will make the determination if curbed or uncurbed typicals will be required.

11.3.3 Well drained granular material is required within the sub-grade

11.3.4 Ditches shall be a minimum of two feet in depth below the shoulder point and deeper where necessary to place the minimum cover over culverts or to provide independent ditches for adequate flow characteristics.

11.3.5 The level of the finished roadway subbase shall be at least 4.0 feet above the maximum seasonal groundwater elevation.

RULE 11.4 ROADWAY STRUCTURE REQUIREMENTS

A pavement structure design shall be submitted for every project. The Road Commission at any time may require additional analysis or documentation. This section identifies minimum requirements, additional requirement may be required.

11.4.1 All roads shall have a pavement structure design based upon the *Design Guidelines – AASHTO Interim Structural Pavement Design Procedure Adopted for All Season County Roads*, approved by the County Road Association of Michigan (CRAM) Engineering Committee, Jan. 1988 (revised 1989), or current addition.

(A) The minimum design shall be based upon 60 axle loads per dwelling unit for construction, and 1400 axle loads per year for buses, garbage trucks and snow removal trucks.

(B) The pavement design shall be submitted that is expected to withstand normal traffic projections for a minimum period of 20 years.

11.4.2 The minimum roadway section shall be as illustrated within Appendix D.

11.4.3 Hot Mix Asphalt shall be in accordance with the latest MDOT Hot Mix Asphalt (HMA) Selection Guidelines as illustrated within Appendix E.

11.4.4 Superpave mixtures shall be used unless otherwise specifically allowed or directed by the County Highway Engineer.

11.4.5 The maximum time limit the aggregate base course may be open to the weather is 1 month without prior approval.

11.4.6 Approval of the aggregate base by the Road Commission is required prior to placement of a HMA surface.

11.4.7 Approval of the HMA base course shall be required prior to placement of the HMA Leveling course.

11.4.8 Approval of the HMA leveling course shall be required prior to placement of the HMA top course.

11.4.9 The top course of HMA shall be placed no more than one year after placement of the HMA base course.

RULE 11.5 GEOMETRICS

Applicant shall provide supporting documentation for all geometrics. Turning movement diagrams shall be provided for all intersections and approaches.

11.5.1 Alignments

(A) Minimum centerline horizontal curve radii shall be 275 feet for a design speed of 30 mph and shall not require super-elevation.

(B) Minimum centerline horizontal curve radii shall be shall 1300 feet for a design speed of 60 mph.
(C) Minimum tangent length between any reversing horizontal curves not requiring super-elevation shall be 100 feet.
(D) Minimum tangent length, equal to the required super-elevation transitions, must be provided between curves using super-elevation.
(E) Use of super-elevation on curves shall be designed according to the current AASHTO publication *A Policy on Geometric Design of Highways and Streets* or current MDOT standard plan R-107 whichever is more restrictive.
(F) Vertical curves shall be used at all changes in grade.
(G) Permissible longitudinal grades on any public road shall be within the range of 0.5% to 7.0% for a design speed of 30 mph and within the range of 0.5% to 6.0% for a design speed of 60 mph.
(H) Permissible longitudinal grades on any Cul-de-sacs shall be within the ranges of 1.0% to 2.0%.

11.5.2 Intersections

(A) Intersection layouts shall be in accordance with intersection details as found in Appendix D.
(B) Detailed grades shall be shown on design plans at all intersections.
(C) It is desirable that all intersecting roads meet at right angles, but in no case shall the intersecting angle be less than 70 degrees.
(D) Sight distance triangles at intersections shall be shown on the design plans and meet AASHTO requirements for design speeds.
(E) Clear sight triangles should be provided when warranted.
(F) Sight distances, alignments and clear sight triangles will be approved by the County Highway Engineer and shall be in accordance with the current AASHTO publication *A Policy on Geometric Design of Highways and Streets* and as may be modified or annotated herein.
(G) Where intersections have limited sight distance, easements outside of the public right-of-way will be required and shall be prepared to necessary restrictions to ensure sight distance is not impaired. Land title shall be conveyed to the Road Commission.
(H) No intersections will be allowed along grades steeper than 6% percent.
(I) The gradient of intersecting roads should be as flat as practical on those sections that are to be used for storage of stopped vehicles. Intersecting roads shall have a minimum 50 feet of landing area of no more than a 2% percent grade, sloping away from the main through road having the traffic right-of-way. Additional storage may be required based on site condition or as determined by a traffic study.
(J) Intersections on opposite sides of an intersecting road shall be located either opposite each other or a minimum of 300 feet apart, centerline to centerline.
(K) Intersections on the same side of an intersecting road shall be located a minimum of 360 feet apart, centerline to centerline.
(L) Based on a submitted and an approved traffic study, center lanes for left turns and passing flares may be required.
(M) Intersection improvements will be required based on projected traffic volumes for the total buildout of proposed developments. Intersection improvements that are not warranted until later land development may be required prior to any public road acceptance.
(N) Boulevard sections located on a public road may be allowed only as approved by the County Highway Engineer. If the County Highway Engineer approves then the following apply, at a minimum;
    1. Vegetative cover inside boulevard islands will be limited to not more than 24 inches in height, and may not interfere with the clear vision of the intersection.
(O) Signs are prohibited in boulevard islands.
(P) Roundabouts may be allowed only as approved by the County Highway Engineer. If the County Highway Engineer approves then the following apply, at a minimum;
    1. Vegetative cover inside islands will be limited to not more than 24 inches in height, and may not interfere with the clear vision of the intersection.

11.5.3 Cul-de-sacs

(A) Cul-de-sacs shall be in accordance with the Cul-de-sac Details in Appendix D.
(B) Every effort shall be made to eliminate cul-de-sacs from a road layout.
(C) The minimum length of any road ending in a cul-de-sac shall be 360 feet, measured from the centerline of the intersecting road to the center of the cul-de-sac.
(D) No more than five driveways will be permitted to access the cul-de-sac area beyond the entering point of curvature.

RULE 11.6 SHOULDERS

Shoulders shall be design to provide an adequate structure to the Roadway system and shall not be designed to hinder drainage.

11.6.1 Shoulders shall be in accordance with shoulder Details in Appendix D.

11.6.2 Shoulder classification shall follow, at a minimum, the 3r guidelines unless otherwise directed by the County Highway Engineer, see Appendix E.

11.6.3 All HMA shoulders will have a minimum width of 5 feet.

RULE 11.7 CURBING

The following requirements apply to curbing along a public roadway.

11.7.1 Integral bituminous curbing may be approved by County Highway Engineer for limited use.

11.7.2 Curbing shall not extend for a distance greater than 400 lineal feet, unless otherwise approved, on either side of the pavement surface, without a spillway to discharge storm water.

11.7.3 Only concrete curb and gutter will be allowed in areas served by enclosed drainage systems.

RULE 11.8 DRAINAGE

11.8.1 Applicant shall ensure no retention or detention is provided within the proposed right-of-way without approval from the County Highway Engineer. Applicant shall also ensure that drainage from the development will not adversely impact the proposed ROW.

(A) The Road Commission may require that the drainage system become part of a county or municipal drain system.
(B) Requirement for drainage easements may be required outside of the ROW.
(C) Approval of preliminary or a final Plat with drainage easements will not require or obligate the Road Commission to maintain a drainage system area outside the County's existing or proposed road right-of-ways.
(D) The Road Commission does not have authority to approve of drainage related items which do not impact or effect existing or proposed right-of-ways.

11.8.2 Storm Pipe Systems

(A) Drainage facility design shall be based on a runoff analysis utilizing the SCS, HMS, or equal modeling program. At a minimum the design shall utilize a 25 year storm for storm pipe systems. Rainfall durations shall be appropriate for the watershed, generally based on time of concentration of the watershed.
(B) Storm catch basin inlets along a curb line shall be placed at a maximum spacing of 300 feet.

(C) Additional capacity for storm piping and inlets may be required to satisfy future maintenance concerns.
(D) Minimum diameter of storm pipe shall be 12 inches unless specifically allowed by the County Highway Engineer.
(E) Concrete pipe under the road system or approaches and corrugated metal pipe or concrete pipe under driveways will be required unless otherwise approved by the County Highway Engineer.
(F) Standard flared end sections shall be used on all roadway cross culverts and maybe required on culvert adjacent to the roadway.
(G) Steel marker posts with a green reflector shall be placed beside the ends of cross culverts to mark their location.

11.8.3 Ditch Systems

(A) Drainage facility design shall be based on a runoff analysis utilizing the SCS, HMS, or equal modeling program. At a minimum the design shall utilize a 100 year storm for an open drain. Rainfall durations shall be appropriate for the watershed.
(B) Minimum diameter of storm pipe within an open drainage system shall be 12 inches unless specifically allowed by the County Highway Engineer.
(C) Retention ponds or detention basins will not be allowed to be constructed within road right-of-ways.
(D) Minimum longitudinal ditch grade shall be 1% and designed to not pond water.

11.8.4 Drainage Facilities Structural Requirements

(A) All culverts, bridges, storm sewers and appurtenances shall be designed per AASHTO Design Standards for HS-20 at a minimum on all roads. Minimum loading requirements may be increased as determine by the County Highway Engineer.

RULE 11.9 GEOTECHNICAL

11.9.1 Soil identification and characteristics shall be provided to determine the need for road sub-grade drainage.

11.9.2 Soil bore depths shall be adequate to identify ground water tables and soil types relevant to proposed activities and plan elevations.

11.9.3 An adequate number of borings and/or geotechnical investigations shall be provided to reasonably identify the soil type boundaries.

11.9.4 The County Highway Engineer may require additional soil borings for sites or roads and require bearing capacities of organic and compressible soil types.

RULE 11.10 CLEARING AND GRUBBING

11.10.1 All trees, stumps, brush and roots shall be entirely removed from within the proposed right-of-way. Disposal of such items shall not be within the right-of-way.

RULE 11.11 RESTORATION

11.11.1 All restoration work shall be done in accordance with the Special Provision as found in Appendix F.

RULE 11.12 SIGNS AND PAVEMENT MARKING

11.12.1 Signs and pavement markings shall be placed in accordance with the current version of the *Michigan Manual on Uniform Traffic Control Devices*.

11.12.2 Road name signs will be placed at all intersections.

11.12.3 Pavement markings may not be required on residential public roadways.

11.12.4 When pavement markings are required, materials shall be selected by the County Highway Engineer.

RULE 11.13 PUBLIC AND PRIVATE UTILITES

11.13.1 Private utilities are not allowed within the public right-of-way unless approved by the County Highway Engineer.

11.13.2 The grounds located within the utility easement that supply energy and communication services shall be benched and graded per the associated utility Owners requirements.

11.13.4 All underground utility crossings shall be made 90 degrees to the centerline of the public roadway.

11.13.5 All energy and communication underground utilities shall be placed in conduits.

11.13.6 Conduits shall be placed for all future utility crossings.

11.13.7 Energy and communication utilities shall be placed a minimum of 48 inches below the road surface between ditch lines and shall have a minimum cover of 36 inches elsewhere within the right-of-way.

11.13.8 The location of overhead utility poles and streetlights will be approved on an individual project basis, by permit application.

11.13.9 Water mains, sanitary sewer mains, manholes and appurtenances including but not limited to; valves boxes, curb stop boxes, cleanouts and other utility access structures shall be located outside of the roadway, at a minimum distance as defined within Appendix D.

11.13.10 All Water mains, sewer mains and appurtenances must be placed at an offset distance from the roadway as not to influence the roadway during initial installation or during future maintenance.

11.13.11 Protective casing for utilities may be required to protect the utility from future work within the right-of-way.

11.13.12 No manhole or appurtenance such as but not limited to; valve boxes and sanitary cleanouts shall be allowed within the proposed pavement surface, gravel shoulder or ditch bottom.

11.13.13 Where utilities are located within the existing right-of-way result in conflicts, the County Highway Engineer may require the utility to be relocated. The County Highway Engineer may determine and proposed alternate utility locations.

11.13.14 All public utilities shall be installed prior to the completion of the road sub-grade, approaches and driveways.

RULE 11.14 INSPECTION

Full time inspection shall be provided for all items within the proposed right-of-way. At any time the Road Commission may require additional testing prior to any acceptance.

11.14.1 Full time inspection shall be required during infrastructure construction within the proposed public right-of-way.

(A) All inspectors shall be MDOT certified for testing density, granular and aggregate materials, bituminous mixtures and concrete.

(B) At a minimum, the following items shall be inspected or tested:

1. Sub-grade compacted to a 95 percent of Theoretical Maximum Density (TMD) at 12 inches minimum depth; minimum testing frequency. (1-test per 1,000 Cyds of material)
2. Sub-base material analysis, depth and density (95 percent TMD); minimum testing frequency: (1-test per 500 ft by 24 ft width or less)
3. Aggregated base material analysis, depth and density (98 percent TMD) of maximum unit weight;); minimum testing frequency 1-test per 500 ft by 24 ft width or less)
4. Bituminous pavement surfacing: with approved mix formula, with continuous visual inspection during placement, yield calculations, depth tests, crown/slope checks, temperature checks and extraction tests (and including density if required by the County Highway Engineer);
5. Concrete: with approved mix design, batch proportions, elapsed time, slump, unit weight/yield calculations, mix and air temperature checks, percent air entrained, compressive strength tests (min. 4 cylinders/test, 1-7 day test, 2-28 day test, with 1 spare test cylinder);
6. Testing of any construction material as required by the County Highway Engineer. Manufacturer's certification may be acceptable for re-rod, pipe, castings, etc.

(C) The inspection and testing frequencies shall be made in accordance with the required MDOT specifications, or as otherwise approved by the County Highway Engineer.

(D) Testing documentation shall be furnished to the Road Commission within 7 days after completion of any construction work activity or item.

1. Failure to furnish construction documentation in a timely manner will require onsite testing by an independent third party laboratory, the cost to be assessed against the applicant, and paid by the applicant within 30 days after the independent testing is invoiced.
2. Failure to perform the required inspections or to provide the required documentation may result, in non-acceptance of road.

(E) A 72 hour written notice, or reproducible electronic notice, which is confirmed as being received by the Road Commission, for inspection services as listed below will be required:

1. After sub-grading is completed, and prior to placement of sand sub-base, aggregate layers or restoration topsoil is placed;
2. Prior to placing bituminous pavement surfacing;

(F) An additional fee will be charged to cover the cost of each additional inspection based on time and materials required to perform the inspection.

(G) There will be no inspection of construction work accepted during the winter months between November 14 to April 16, or during such times when the ground is covered with snow at the construction site.

RULE 11.15 RIGHT-OF-WAY REQUIREMENTS

(A) County right-of-way widths will be determined by 11.15 (C) for the given National Functional Classification (NFC).

(B) Where Developments are adjacent to Public Roadways, right-of-way widths of one half of the right-of-way width shall be described and dedicated to the Grand Traverse County Road Commission.

(C) The following minimum right-of-way widths shall be required for all Public Roadways (See Appendix H):
1. Alleys ---66'
2. County Local --- 66'
3. County Primary not designated by NFC --- 66'
4. Minor Collectors ---100'
5. Major Collectors ---120'
6. Minor Arterials ---150'
7. Principal Arterial–-200'

(D) The Board may determine that right-of-way widths can be reduced to the next lower Functional Classification along existing roads constructed with multi-lane cross-sections, however in no case shall they be less than 66'.

(E) Greater right-of-way widths may be required by the Board when considered necessary.

(F) Right-of-way widths shall be increased by an additional 20 feet unless utilities providing energy and communication services are located in separate easements located adjacent to and outside of road right-of-way.

(G) New section line, quarter-section line and eighth-section line roads shall be centered on those lines, unless an exception is approved by the County Highway Engineer.

(H) Half width dedication of road right-of-way will be acceptable only when the proposed development boundary coincides with the boundary of an existing development on which the other half-road right-of-way has previously been dedicated to the public, or along an existing County road.

(I) Minimum right-of-way curve fillet radii at all intersections is 35 feet.

RULE 11.16 INTERCONNECTION TO ABUTTING PROPERTY

(A) When the proposed development abuts land that can be developed in the future, road extensions designated for Future Road Reserve shall be provided in such form as the Road Commission may require to the boundary line of areas with future development potential. In locations where the adjoining lands are limited by size and shape, subject to natural barriers or topographic features, this requirement may be modified by the GTCRC.

(B) A Future Road Reserve shall be the same width as the proposed road right-of-way and be of a length not less than the distance between the cross-street and property line adjoining the development and the adjacent property.

(C) No direct access will be allowed over Future Road Reserves from adjoining properties without the express written consent of the Board.

(D) A certified survey complying with Act 132, P.A. 1970, of the Future Road Reserve shall be completed along with necessary conveyancing documents and provided to the Board for recordation at the developer's expense.

(E) Interconnections to adjacent development property shall have not less than one interconnection for every approximate 1,300 feet or 1/4 mile of development boundary unless deemed unnecessary by the County Highway Engineer.

RULE 11.17 ROAD MAINTENANCE

(A) It shall be the responsibility of the applicant to maintain all proposed public roads in good condition until they are accepted by the Board.
1. The Contractor shall ensure and guarantee maintenance of eroded areas until roads are accepted by the Board or until the designated bonding has expired.

PART 12 - PUBLIC ROAD SUBMITTAL REQUIREMENTS

RULE 12.1 GENERAL PUBLIC ROAD SUBMITTAL INFORMATION

All requirements per the Subdivision Control Act, Michigan Land Division Act of 1967 (Act 288 of 1967) for submittal of documents shall be followed.

12.1.1 The *Public Road Review Process* flowchart, provided in Appendix C, gives an overview of the procedural steps from the inception of a development with a public road to the final acceptance for County road maintenance. Road Commission staff will be available to interpret these regulations at no cost to inquiring parties.

(A) Applicants that request Road Commission verbal comments on conceptual designs shall make an appointment and pay the currently adopted consultation fee (see Appendix A).
(B) It is recommended that Public Road Projects be submitted to the County Land Development Review Committee for conceptual review.
(C) The Preliminary Public Road Project checklist of required submittal documents for Board approval are provided in Appendix C.
(D) The Road Commission will set reasonable times for review of submitted documents, along with other assigned work.Document review comments and recommendations will be available to the applicant, or their agent, within 30 days of completed Preliminary Public Road Project submittal.
(E) Road Commission staff will give formal written comment and recommendations on items not consistent with the Board's policies, and may provide suggestions beyond written policy for the applicant's consideration.
(F) In the event that documents are rejected and resubmitted, succeeding staff reviews may include new items associated with the required changes which were not previously foreseen.
(G) The Final Checklist for Public Road Project acceptance of required submittal documents for Board approval are provided in Appendix C.

RULE 12.2 PRELIMINARY (PLAT) PUBLIC ROAD PROJECT REVIEW REQUIREMENTS

12.2.1 In order that development plans may be prepared in conformity with Board direction, developers shall have prepared preliminary plans of the area that is proposed to be developed. The recommendations of the Grand Traverse County Planning Commission's Land Development Review Committee will be considered when granting preliminary approval.

Minimum Submittal Package Requirements

12.2.2 The Preliminary Plat shall be prepared under the direction of a Licensed Professional Surveyor or Professional Engineer, and shall meet the following minimum submittal requirements. Plan submittals shall be prepared and detailed enough to be used as construction plans. Submitted drawings shall show the proposed horizontal curve radii, vertical curve lengths, percent of grade of all roads and the location of drainage facilities and structures, horizontal and vertical scale, as well as any other pertinent construction information.

Through the review process the County Highway Engineer reserves the right to require additional items.

(A) A plan of the proposed development, at a scale not smaller than 1"=100'.
(B) The name of the proposed development.
(C) The section and Township of the proposed development.
(D) A topographic survey of the proposed development and adjacent physical features.
    1. Roads and/or drives within 300' of the development shall be shown.
    2. Sufficient topographic data to determine sight distances on roadways shall be provided.

3. Site topography at a minimum 200 feet past future road extension or as deemed necessary based on existing features.

(E) Legal Description of the Parcel

(F) Current land use and proposed land use.

(G) Descriptions and locations of proposed and existing roads, parcels, and proposed and existing easements.

(H) Pavement sections, roadways, alignments, profiles, dimensions, and sections.

(I) Typical roadway sections.

(J) Traffic control plans during construction.

(K) Permanent traffic control plan, including pavement markings and signs.

(L) Existing and proposed public and private utilities.

(M) Soil erosion control plans.

(N) Proposed sub-grade facilities.

(O) Drainage plan indicating how storm water is to be collected and dispersed. Shall include at a minimal slopes, sizes, materials, and details for all existing and proposed drainage facilities.

(P) Names of public and private existing and proposed roads. These will require approval from the municipality with jurisdiction, the County Equalization Department, and the Grand Traverse County Road Commission.

(Q) Traffic Study.

(R) Existing soil data.

(S) Proposed and future utility plan for gas, energy and communication services.

(T) Traffic signal plan, if applicable.
1. Timing permit
2. Cross-walks and ramps with detail grades

(U) All documentation required for review including but not limited to; Guardrail worksheets and design calculations, drainage calculation, specifications and special provisions, and a cost estimate associated with all right-of-way improvements.

(V) Two copies of the preliminary Public Road Project shall be submitted to the Grand Traverse County Road Commission with a letter requesting preliminary approval. The submittal shall include the following:
1. Plans and specifications, sealed by the applicant's engineer and/or surveyor.
2. Fees as shown in the Fee Schedule (Appendix A).
3. All information and documents in accordance with the Public Road Project Review Checklist (Appendix C).

12.2.3 Schedule for reviews

(A) Within 30 days of the completed submittal, the Grand Traverse County Road Commission may:
1. Approve as submitted.
2. Approval with conditions and/or amendments.
3. Reject the Submittal.

(B) Each and any re-submittal following rejection with revisions, additions, modifications, or amendments will increase review time by an additional 30 days.

PART 13 -ACCEPTANCE OF PUBLIC ROADS

RULE 13.1 CONSIDERATION BY THE BOARD

13.1.1 Before acceptance of the constructed roads in any development, easements describing the proposed future road interconnections and road right-of-ways must be provided in favor of the Board.

(A) Upon recordation of a subdivision plat or land division survey, release of right-of-way warranty deeds conveying title to the proposed and future roads to the Board must be provided by the applicant.

(B) All document recording fees, title insurance policies, and the other current requirements of the Board. It is the developer's sole responsibility for obtaining any approvals required by municipal ordinance, County, State or Federal statute, or promulgated administrative rule, in effect at the time of the conveyance of land title of a future road or outlot area, drainage easement or public road right-of-way shall be complied with and are the responsibility of the developer to assure their completion.

(C) In accordance with the provisions of Sections 164 and 165 of the *Land Division Act*, Act 288, PA 1967, a developer or their agent shall submit to the Board all copies of the final plat documents prepared in conformity with the requirements of the legislative act.

(D) Delivery of final plat documents to the Board shall be made at least two weeks in advance of their next regularly scheduled meeting.

(E) The Board will consider, and either approve or reject, the final plat within 15 days after it receives their staff's recommendations.

(F) If approved, the final plat will be signed by the Board on the Road Commission certificate of approval transcribed on the plat document, and shall return the approved final plat drawings to the developer as may be required.

(G) If the Board rejects the final plat for any reason, it shall give written notice of such rejection and its reason therefore to the applicant or their agent, and shall send a copy of the written notice to the clerk of the municipality or township in which the plat is located.

13.1.2 Guarantee of Improvements

(A) **The road will not be accepted** if the developer has not completed the grading, restoration, drainage improvements and surfacing of the roads in a land development prior to submitting the final documentation to the Board for their approval unless the proprietor posts a deposit with the board in an amount that the board determines to be sufficient to ensure performance of the proprietor's obligation to make the required improvements within the time specified. All project related items on approved plans must be completed.

13.1.3 Public Road Acceptance

(A) Prior to the Board's acceptance of any development's roads into the County road system, all required documentation and conveyances of title must be submitted, in a complete and acceptable form, to the Engineer no later than November 1st of the current road acceptance year.

(B) Current required review documents include, but are not limited to

1. Developer's Engineer's Certification of Completion
2. Deposit of Developer's guarantee of completion
3. Construction inspection reports
4. Conveyance of proposed County right-of-ways
5. Conveyance of proposed future road reserve/outlot areas
6. Title Policy for the conveyance road right-of-ways
7. Development covenants, restrictions, master deed or by-law documents

8. Final Checklist (see Appendix C)

(C) All title insurance policies insuring the Board's future interest in any land development, and land, right-of-way and easement conveyance documents that are to be recorded, shall be submitted within 30 days of final document preparation and execution, and no later than September 1st for the current calendar year road acceptances.

(D) All construction documentation shall be submitted within 30 days of completion of each particular construction work activity or item, and no later than November 1st of the calendar year for road acceptances, or whichever occurs first.

(E) Winter road maintenance (snow plowing) will begin only after a road has been accepted by the Board, on which there are legally occupied residences or businesses that have Road Commission permitted access that road.

13.1.4 Private Roads

(A) If the development includes roads or alleys which are private, the developer shall record notice in the chain of title for all lots or units in the development project, placing all transferees of lots or units within the development that the roads and alleys are not required to be maintained by the Board, as outlined in Section 261 of the *Land Division Act*, Act 288, PA 1967. The recorded notice shall be provided to the Board.

13.1.5 Public Road Certification

(A) After completion of construction, the Developer's engineer shall certify that all work has been completed in accordance with the Board approved plans and specifications.

(B) The certification shall be in accordance with the sample certification letter. (see Appendix C)

(C) The submittal shall include:

1. Inspection and Testing reports.
2. Reproducible As-Constructed plans (DWG or PDF format)
3. As constructed cross-sections and specifications.

PART 14 - PUBLIC ROW SURVEY STANDARDS

RULE 14.1 SURVEYS AND MONUMENTS

14.1.1 All government survey corners shall comply with the requirements of the *Corner Recordation Act*, Act 74, P.A. 1970, as amended.

14.1.2 Survey corners located within all plats, land division surveys or site condominiums with proposed public roads, shall comply with the requirements of Section 125 of the *Land Division Act*, Act 288, P.A. 1967, as amended.

14.1.3 Survey corners located in any paved roadway to come under the jurisdiction of the Grand Traverse County Road Commission shall comply with the Road Commission's adopted *Specification for Land Corner Monuments and Monument Boxes*, as depicted in the Appendix D, and a recordable Certificate of Survey of the proposed road alignment and right-of-ways will be included with the right-of-way and land title conveyances.

14.1.4 Survey marks shall consist of iron rods, or pipes, not less than ½ inch in diameter and 18 inches in length, and preferably concrete monuments consistent with the specifications of the legislative act are placed at the road right-of-ways.

14.1.5 The developer will be required to retain the services of a Professional Surveyor to monument alignment points,

14.1.6 Alignment points located within the paved road surface shall be placed in monument boxes, if required by the County Highway Engineer.

14.1.7 Concrete monuments are to be set, at a minimum, at the intersection lines of the public roads with the boundaries of subdivision projects, the intersection of private roads, alleys, all points of curvature, tangency, compound curvature, reverse curvature and angle points in the sidelines or right-of-ways of proposed roads within, and adjacent to a development project, or as directed by the County Highway Engineer.

14.1.8 The developer's surveyor shall certify and document that all survey markers and corners have been properly installed and recorded, where applicable.

PART 15 - ADMINISTRATIVE

RULE 15.1 ROADS FROM THE SEASONAL ROAD SYSTEM

15.1.1 In the event that lands fronting a seasonal road are improved with year-round residences or businesses, and County snow plowing is desired, the Board will require any applicant requesting winter maintenance to improve the seasonal road system to a standard that will be acceptable to the Road Commission.

15.1.2 All costs for planning, engineering, right-of-way acquisition, construction, testing, certification, legal etc., and acceptance, are at the sole expense of the applicant, not the Road Commission.

15.1.3 Requests for winter maintenance are to be submitted in writing to the Board, to allow a suitable amount of time in which to approve and reconstruct the particular seasonal road section.

15.1.4 Requests must include the name of the road, location section numbers, municipality name, beginning and terminus points, and the lineal footage distance to be considered.

15.1.5 All requests shall contain the applicant's name, mailing address, and telephone number, to allow the Engineer to review the road location, and meet with the applicant if necessary.

15.1.6 Any petition to change the length of a seasonal road is subject to a public hearing, and may be approved or rejected by the Board.

15.1.7 The minimum improvements will require the following;

(A) A minimum 24 foot wide cleared horizontal distance between trees, stumps, hedges, rocks or other obstructions which might damage trucks, plows, wings, or other equipment.
(B) A minimum 14 feet of vertical clearance of tree branches or utility wires from the finished grade of the road surface.
(C) A minimum of 24' width cleared of all organic material such as topsoil, peat or wood prior to shaping and grading.
(D) A minimum 20 foot wide aggregate (gravel) surface to County Road Commission standards.
(E) The material shall consist of a minimum six inch layer of compacted in place MDOT standard specification for construction 22A or 23A gravel, and shall be approved by the Engineer.
(F) The grade shall be constructed a minimum of 12 inches above the adjacent existing ground surface.
(G) The road alignment shall provide horizontal and vertical sight distance.
(H) Realignment may be required.
(I) Additional ROW may be required.
(J) Adequate drainage shall be provided.
(K) If no outlet is available, a permanent turn-around easement area which relieves the Road Commission of any liability should be furnished by an adjacent property owner.
(L) A standard or modified cul-de-sac is acceptable.
(M) Existing road or driveway intersections are acceptable if the configuration is sufficient size and shape to accommodate the Road Commissions Equipment.

15.1.8 Upon completion, the Road Commission will maintain these roads at equal standards with other similarly categorized roads within the County.

RULE 15.2 CONVERTING PRIVATE ROADS TO COUNTY ROADS

15.2.1 Property owners who request that their private roads become County roads shall retain the services of qualified engineers and surveyors to prepare plans and drawings, and hire their own

road building contractors to perform the required construction work in meeting the adopted Road Commission standards and specifications.

15.2.2 Property owners shall provide the Board with conveyances of title, and certificates of survey, in order for the entire road right-of-way to become public, in accordance with the Board's adopted policies and procedures

15.2.3 The Board may reject any proposal, at its discretion. If the Board determines that a private road is of insufficient public value, or that the cost of construction exceeds the benefits of converting the road into a public use, it will not be accepted.

15.2.4 In no case shall the private roadway be converted to a public road unless it meets the adopted Road Commission standards and specifications of Public Road Acceptance as stated in 13.1.3.

RULE 15.3 CHANGING ROAD NAMES

15.3.1 All road names must be secured in coordination with Grand Traverse County Equalization, and are subject to the approval of the Board and concurrence by the municipality in which they reside.

15.3.2 The location and length of the road being renamed shall be specified in a written request and petition to the Board, accompanied by written agreement by all property owners whose lands abut the subject renamed portion of roadway, which they consent to the requested road name change.

15.3.3 The petition must be presented to the Board at a regularly scheduled meeting, for approval or denial of the proposed road name change, and may be the subject of a public hearing.

15.3.4 Upon approval, the Road Commission will furnish and erect road name sign at the expense of the petitioning party.

RULE 15.4 FEES

15.4.1 In accordance with State law, the Board may adopt a schedule of fees to be charged to applicants seeking approval of proposed land developments, and for work or use of the County ROW.

15.4.2 For review of new public roads, the Board requires fees to be paid at the time of document submittal for review
(A) No project approval will occur if fees have not been paid.

15.4.3 See Appendix A for a schedule of fees.

Appendix

A

GRAND TRAVERSE COUNTY ROAD COMMISSION
PERMIT AND LAND DEVELOPMENT FEE AND COST SCHEDULE
July 17, 2014

GENERAL CONDITIONS

- All permitted activity within county road right-of-way requires financial assurance acceptable to the Road Commission and/or an appropriate certificate of insurance.
- Payments are to be credit card, cash, check or bank money order made payable to "GTCRC."
- All fees on applications are non-refundable, whether approved or denied.
- Fines for failure to obtain a permit are twice the posted rate.
- Additional requirements are described on the permit forms.
- Emergency Permits - 24 Hour Turnaround - $100
- Non-Profit Organizations – Zero fee for documented non-profit organizations conducting fundraising in road right-of-way.

RIGHT-OF-WAY USE APPLICATIONS

1) <u>Driveway Permits</u>

- Residential — Gravel: $25 Asphalt/Concrete: $75
- Commercial / Utility (temporary & permanent) — $150
- Driveways requiring road improvements — $500
  (Combination-driveway and turn lane passing flare, etc. Commercial driveways shall be completed by a contractor with financial assurance acceptable to the Road Commission.)
- Intersecting Private Street Approaches — $500
- Agricultural Entrance — $ 25

2) <u>Land Division Applications</u> — $50+ $30 each new parcel

- Reapplication of a Denied LDA — $25 for reapplications w/in 90 days of denial.

3) <u>Land Development Reviews and Services</u>

- Consultation Fee of up to one hour — $100
- Conceptual Review of Land Development Site Plan (Report or permit for townships, planning, developers) — $250 (up to 20 lots) $400 (>20 lots)
- Preliminary Design Plan Review with Roads (Recommendations for land division, site condo, plats, etc.) — $500/development + $10/Lot + $0.15/LF
- Service fee to install traffic control devices — Current Cost paid in advance of construction
- Construction Review Prior to take over — $100 per inspection

- Final review of master deeds, by-laws, right-of-way and title work for developments with joint maintenance responsibilities of public county roads refunded to actual cost. No fee if current GTCRC final agreements/grants document language are used. — Included in Preliminary Design Plan Review

UTILITY PERMITS

Financial assurance acceptable to the Road Commission and/or a Certificate of Insurance is required for all utility installations.

• Annual Permits	$500/yr
• Annual Renewal & Removal of Monitoring Wells	$50 Per well
• Bore, Jack, Tunnel	$150
• Extension of Utility Permit	15% of the original fee for ea. month extended.
• Miscellaneous Permit Fee (i.e., events and/or trees)	$50
• Monitoring Wells	$100 each
• Road Cutting	$500
• Seismic	$50 per crossing
• Soil boring	$100 up to 4+$20@ add'l (per permit or location)

TRANSPORT PERMITS - STATEWIDE FEES PER CRAM

Financial assurance acceptable to the Road Commission and/or Certificate of Insurance is required for all transport permits.

• Annual Cab Permit (oversize only)	$100
• Non-trailered Overweight	$50 each
• Single Move: Round Trip/Multiple Trips	$25/$50
• Utility & Move Permits during Frost Laws	$100 each

MISCELLANEOUS FEES

• Abandonment Proceedings (actual costs)	$300
• Private Road Sign w/post, and/or stop sign	$300 (sign & installation)
• Non-road name sign(s)	$250(1), $350(2)
• Event Fees	$50 (0-250 Participants) $100 (250+ Participants)

Appendix

B

GRAND TRAVERSE COUNTY ROAD COMMISSION
1881 LaFranier Road, Traverse City, MI 49696
Phone: (231)922-4848 Fax: (231)929-1836
www.gtcrc.org

PLEASE MAKE CHECKS TO: G.T.C.R.C.

- ☐ Gravel Residential / Agricultural $25
- ☐ Asphalt / Concrete Residential $75
- ☐ Private Roads / Utility $150
- ☐ Commercial $150

RECEIPT #_____

DRIVEWAY PERMIT APPLICATION FORM

PERMIT APPLICATION # DATE:

OWNER (Current owner of property- proof of ownership may be required)	CONTRACTOR/EXCAVATOR **AN ACCEPTABLE INSURANCE CERTIFICATE IS REQUIRED
NAME:	COMPANY
ADDRESS:	ADDRESS:
CITY, STATE, ZIP:	CITY, STATE, ZIP:
DAYTIME PHONE:	DAYTIME PHONE:
EMAIL ADDRESS:	FAX NO. / EMAIL ADDRESS:

SITE INFORMATION

THIS INFORMATION MUST BE COMPLETE FOR FIELD INSPECTION OR PERMIT ISSUANCE MAY BE DELAYED

ROAD NAME: _____ TOWNSHIP: _____

LOT NO. AND/OR ADDRESS: _____ IN _____ SUBDIVISION

PIN NO.: 28-_____ (PROPERTY ID NO.) JOB#_____

PROVIDE DIRECTIONS FROM NEAREST INTERSECTION TO YOUR PROPERTY. MUST BE COMPLETE FOR THE PERMIT TO PROCESS.

THE SITE IS LOCATED: MILES/FEET N S E W FROM ROAD ON THE N S E W

Please select one of the following:

1) ☐ PAVE EXISTING DRIVE 2) ☐ REPAIR/EXTEND EXISTING DRIVE 3) ☐ NEW DRIVE

WIDTH ' CIRCLE NUMBER OF DRIVES: 1 2 3

FINISHED SURFACE TYPE: ☐ GRAVEL ☐ ASPHALT ☐ CONCRETE

REMARKS:_____ DATE SITE WILL BE FLAGGED: _____

Authorized Signature:

NOTICE: It is responsibility of the applicant to flag the proposed driveway location so the inspector will be able to determine the exact proposed location. Failure to flag by the specified date may result in a considerable delay. Please allow up to ten business days for processing the permit. Any construction performed before permit is issued may not meet Road Commission standards and is subject to revision or removal at the applicant's expense and could result in a fee being assessed. **An acceptable Insurance Certificate is required for the contractor or homeowner performing work showing $500,000.00 of Liability Coverage for the duration of project or permit will not be issued.

ROAD COMMISSION USE ONLY

DATE REVIEWED:		BY:		
ROAD NAME:		TOWNSHIP:		
EXACT LOCATION				
CURRENT SURFACE TYPE:	WIDTH:	NO. OF DRIVES:	CULVERT:	' OF "
REMARKS:				

CRA 100 (03/2005)

TERMS AND CONDITIONS

1. **Specifications**. All work performed under this permit must be done in accordance with the application, plans, specifications, maps and statements filed with the County Road Commission ("Road Commission") and must comply with the Road Commission's current procedures and regulations on file at its offices and the current MDOT Standard Specifications for Construction, if applicable.

2. **Fees and Costs**. The Permit Holder shall be responsible for all costs incurred by the Road Commission in connection with this permit and shall deposit estimated fees and costs as determined by the Road Commission, at the time the permit is issued.

3. **Bond**. The Permit Holder shall provide a cash deposit, irrevocable letter of credit or bond in a form and amount acceptable to the Road Commission at the time permit is issued.

4. **Insurance**. The Permit Holder shall furnish proof of general liability insurance in amounts not less than $1,000,000 each occurrence and general aggregate, proof of automobile liability in amounts not less than $1,000,000 combined single limit for each accident, bodily injury per accident, and property damage per accident, and in an amount not less than $500,000 for bodily injury per person. Such proof of insurance shall include a valid certificate of insurance demonstrating that the Road Commission is an additional insured party on the policy. Such insurance shall cover a period not less than the term of this permit and shall provide that it cannot be cancelled without 30 days advance written notice to the Road Commission, by certified mail, first-class, return receipt requested. This permit is invalid if insurance expires during the authorized period of work described herein.

5. **Indemnification**. In addition to any liability or obligation of the Permit Holder that may otherwise exist, Permit Holder shall, to the fullest extent permitted by law, indemnify and hold harmless the Road Commission and its commissioners, officers, agents, and employees from and against any and all claims, actions, proceedings, liabilities, losses, and damages thereof, and any and all costs and expenses, including legal fees, associated therewith which the Road Commission may sustain by reason of claims for or allegations of the negligence or violation of the terms and conditions of this permit by the Permit Holder, its officers, agents, or employees, arising out of the work which is the subject of this permit, or arising out of work not authorized by this permit, or arising out of the continued existence of the operation or facility, which is the subject of this permit.

6. **Miss Dig**. The Permit Holder must comply with the requirements of Act 53 of Public Acts of 1974, as amended. CALL MISS DIG AT (800) 482-7171 or www.missdig.org AT LEAST THREE (3) FULL WORKING DAYS, BUT NOT MORE THAN FOURTEEN (14) CALENDAR DAYS, BEFORE YOU START WORK. The Permit Holder assumes all responsibility for damage to or interruption of underground utilities.

7. **Notification of Start and Completion of Work**. The Permit Holder must notify the Road Commission at least 48 hours before starting work, when work is completed, and additionally as directed by the Road Commission.

8. **Time Restrictions**. All work shall be performed Mondays through Fridays between 8:00 a.m. and 5:00 p.m. unless written approval is obtained from the Road Commission, and work shall be performed only during the period set forth in this permit. Perform no work except emergency work, unless authorized by the Road Commission on Saturdays, Sundays, or from 3:00 p.m. on the day proceeding until the normal starting time the day after the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.

9. **Safety**. Furnish, install and maintain all necessary traffic controls and protection during Permit Holder's operations in accordance with the *Michigan Manual of Uniform Traffic Control Devices, Part 6* and any supplemental specifications set forth herein.

10. **Restoration and Repair of Road**. The construction, operation and maintenance of the activity covered by this permit shall be performed by the Permit Holder without cost to the Road Commission unless specified herein. The Permit Holder shall also be responsible for the cost of restoration and repair of the right-of-way determined by the Road Commission to be damaged as a result of the activity which is the subject of this permit. Restoration shall meet or exceed conditions when work is commenced and be in accordance with specifications. The Permit Holder shall be responsible for costs incurred by the Road Commission for emergency repairs performed by or on behalf of the Road Commission for the safety of the motoring public. Said repairs shall be performed with or without notice to the Permit Holder if immediate action is required. This determination shall be in the sole and reasonable opinion of the Road Commission.

11. **Limitation of Permit**. Issuance of this permit does not relieve Permit Holder from meeting any and all requirements of law, or of other public bodies or agencies. The Permit Holder shall be responsible for securing and shall secure any other permits or permission necessary or required by law from cities, villages, townships, corporations, property owners, or individuals for the activities hereby permitted. Any work not described by the application, including the time and place thereof, is strictly prohibited in the absence of the application for and issuance of an additional permit or amendment to this permit.

12. **Revocation of Permit**. This permit may be suspended or revoked at will, and the Permit Holder shall surrender this permit and alter, relocate or remove its facilities at its expense at the request of the Road Commission. It is understood that the rights granted herein are revocable at the will of the Road Commission and that the Permit Holder acquires no rights in the right-of-way and expressly waives any right to claim damages or compensation in case this permit is revoked.

13. **Assignability**. This permit is not assignable and not transferable unless specifically agreed to by the Road Commission.

14. **Authority.** The statutory authority of the Road Commission to require compliance with permit requirements is predicated upon its jurisdictional authority and is set forth in various statutes including, without limitation and in no particular order, MCL §247.321 etseq; MCL §224.19b; MCL §560.101 et seq; and MCL §247.171 et seq.

Grand Traverse County Road Commission
1881 LaFranier Rd.
Traverse City, MI 49696-8911
Phone 231.922.4848 / Fax 231.929.1836

Application No. _____
Permit No. _____
Issue Date _____

APPLICATION AND PERMIT TO CONSTRUCT, OPERATE, USE AND/OR MAINTAIN WITHIN THE RIGHT-OF-WAY OF; OR TO CLOSE, A COUNTY ROAD.

APPLICATION

An applicant is defined as an owner of property adjacent to the right-of-way, the property owner's authorized representative; or an authorized representative of a private or public utility who applies for a permit to construct, operate, use, and/or maintain a facility within the right-of-way for the purpose outlined within the application. A contractor who makes application on behalf of a property owner or utility must provide documentation of authority to apply for a permit.

APPLICANT		CONTRACTOR	
	Name:		Company:
	Address:		Address:
	Phone No: Cell No:		Phone No: Cell No:
	Fax No:		Fax No:
	Email Address:		Email Address:

Applicant/Contractor request a permit for the following work within the right of way of a county road:

LOCATION: County Road _____ Between _____ And _____

Township _____ Section____ T___ R___ Side of Road N S E W Property ID _____

DATE: Work to begin on_____; Work to be completed by_____

I certify and acknowledge that (1) the information contained in this application is true and correct, (2) the commencement of the work described in this application shall constitute acceptance of the permit as issued, including all terms and conditions thereof and, (3) if this permit is for commercial or residential driveway work, I am the legal owner of the property that this driveway will serve, or I am the authorized representative.

Applicant's Signature: _____	Contractor's Signature: _____
Title: Date:	Title: Date:

PERMIT

The term "Permit Holder" in the terms and conditions set forth on the reverse side hereof, refers to the applicant and the contractor, where applicable. By performing work under this permit, the Permit Holder acknowledges and agrees that this permit is subject to all the rules, regulations, terms and conditions set forth herein, including on the reverse side hereof. Failure to comply with any of said rules, regulations, terms and conditions shall render this permit NULL AND VOID.

REQUIREMENTS	FEE TYPE	AMOUNT	RECEIPT NO	DATE
	Application Fee			
	Permit Fee			
	Inspection Fee			
	Bond			
	Deposit			
	Other			
	To Be Billed			

Letter of Credit $_____	☐ Y	☐ N
Surety Bond $_____	☐ Y	☐ N
Retainer Letter	☐ Y	☐ N
Approved Plans on File	☐ Y	☐ N
Certificate of Insurance	☐ Y	☐ N
Attachments/Supplemental Specifications	☐ Y	☐ N

OTHER REQUIREMENTS: _____

_____

_____

_____

_____

Recommended For Issuance By:

_____

Title: _____ Date: _____

Approved By:

_____

Title: _____ Date: _____

TERMS AND CONDITIONS

1. **Specifications**. All work performed under this permit must be done in accordance with the application, plans, specifications, maps and statements filed with the County Road Commission ("Road Commission") and must comply with the Road Commission's current procedures and regulations on file at its offices and the current MDOT Standard Specifications for Construction, if applicable.
2. **Fees and Costs**. The Permit Holder shall be responsible for all costs incurred by the Road Commission in connection with this permit and shall deposit estimated fees and costs as determined by the Road Commission, at the time the permit is issued.
3. **Bond**. The Permit Holder shall provide a cash deposit, irrevocable letter of credit or bond in a form and amount acceptable to the Road Commission at the time permit is issued.
4. **Insurance**. The Permit Holder shall furnish proof of general liability insurance in amounts not less than $1,000,000 each occurrence and general aggregate, proof of automobile liability in amounts not less than $1,000,000 combined single limit for each accident, bodily injury per accident, and property damage per accident, and in an amount not less than $500,000 for bodily injury per person. Such proof of insurance shall include a valid certificate of insurance demonstrating that the Road Commission is an additional insured party on the policy. Such insurance shall cover a period not less than the term of this permit and shall provide that it cannot be cancelled without 30 days advance written notice to the Road Commission, by certified mail, first-class, return receipt requested. This permit is invalid if insurance expires during the authorized period of work described herein.
5. **Indemnification**. In addition to any liability or obligation of the Permit Holder that may otherwise exist, Permit Holder shall, to the fullest extent permitted by law, indemnify and hold harmless the Road Commission and its commissioners, officers, agents, and employees from and against any and all claims, actions, proceedings, liabilities, losses, and damages thereof, and any and all costs and expenses, including legal fees, associated therewith which the Road Commission may sustain by reason of claims for or allegations of the negligence or violation of the terms and conditions of this permit by the Permit Holder, its officers, agents, or employees, arising out of the work which is the subject of this permit, or arising out of work not authorized by this permit, or arising out of the continued existence of the operation or facility, which is the subject of this permit.
6. **Miss Dig**. The Permit Holder must comply with the requirements of Act 53 of Public Acts of 1974, as amended. CALL MISS DIG AT (800) 482-7171 or www.missdig.org AT LEAST THREE (3) FULL WORKING DAYS, BUT NOT MORE THAN FOURTEEN (14) CALENDAR DAYS, BEFORE YOU START WORK. The Permit Holder assumes all responsibility for damage to or interruption of underground utilities.
7. **Notification of Start and Completion of Work**. The Permit Holder must notify the Road Commission at least 48 hours before starting work, when work is completed, and additionally as directed by the Road Commission.
8. **Time Restrictions**. All work shall be performed Mondays through Fridays between 8:00 a.m. and 5:00 p.m. unless written approval is obtained from the Road Commission, and work shall be performed only during the period set forth in this permit. Perform no work except emergency work, unless authorized by the Road Commission on Saturdays, Sundays, or from 3:00 p.m. on the day proceeding until the normal starting time the day after the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.
9. **Safety**. Furnish, install and maintain all necessary traffic controls and protection during Permit Holder's operations in accordance with the *Michigan Manual of Uniform Traffic Control Devices, Part 6* and any supplemental specifications set forth herein.
10. **Restoration and Repair of Road**. The construction, operation and maintenance of the activity covered by this permit shall be performed by the Permit Holder without cost to the Road Commission unless specified herein. The Permit Holder shall also be responsible for the cost of restoration and repair of the right-of-way determined by the Road Commission to be damaged as a result of the activity which is the subject of this permit. Restoration shall meet or exceed conditions when work is commenced and be in accordance with specifications. The Permit Holder shall be responsible for costs incurred by the Road Commission for emergency repairs performed by or on behalf of the Road Commission for the safety of the motoring public. Said repairs shall be performed with or without notice to the Permit Holder if immediate action is required. This determination shall be in the sole and reasonable opinion of the Road Commission.
11. **Limitation of Permit**. Issuance of this permit does not relieve Permit Holder from meeting any and all requirements of law, or of other public bodies or agencies. The Permit Holder shall be responsible for securing and shall secure any other permits or permission necessary or required by law from cities, villages, townships, corporations, property owners, or individuals for the activities hereby permitted. Any work not described by the application, including the time and place thereof, is strictly prohibited in the absence of the application for and issuance of an additional permit or amendment to this permit.
12. **Revocation of Permit**. This permit may be suspended or revoked at will, and the Permit Holder shall surrender this permit and alter, relocate or remove its facilities at its expense at the request of the Road Commission. It is understood that the rights granted herein are revocable at the will of the Road Commission and that the Permit Holder acquires no rights in the right-of-way and expressly waives any right to claim damages or compensation in case this permit is revoked.
13. **Assignability**. This permit is not assignable and not transferable unless specifically agreed to by the Road Commission.
14. **Authority.** The statutory authority of the Road Commission to require compliance with permit requirements is predicated upon its jurisdictional authority and is set forth in various statutes including, without limitation and in no particular order, MCL §247.321 et seq; MCL §224.19b; MCL §560.101 et seq; and MCL §247.171 et seq.

UTILITY PERMIT

UTILITY APPLICATION AND PERMIT TO CONSTRUCT, OPERATE, USE AND/OR REMOVE WITHIN A COUNTY ROAD RIGHT-OF-WAY.

BOARD OF COUNTY ROAD COMMISSIONERS OF GRAND TRAVERSE COUNTY
1881 LAFRANIER ROAD TRAVERSE CITY MI 49696
Phone (231)922-4848 * Fax (231)929-1836

THIS SPACE FOR GTCRC USE ONLY
PERMIT NO.
ISSUED DATE

APPLICANT **(PLEASE PRINT)**	**CONTRACTOR** (REQUIRED TO ISSUE PERMIT)
CONTACT PERSON / COMPANY TITLE	COMPANY CONTACT PERSON
ADDRESS	ADDRESS
SIGNATURE	SIGNATURE
EMAIL	EMAIL
PHONE DATE	PHONE DATE

REQUIREMENTS	**ATTACHMENTS**	**UTILITY USE**
PERMIT FEE $	PLANS	JOB NO.
☐ Check ☐ Credit Card ☐ Billed		
RECEIPT NO.	BOND / LETTER OF CREDIT	

If applicant hires a contractor to perform the work, BOTH must complete this form and BOTH assume responsibility for the provisions of this Application and Permit.

Applicant and/or Contractor request a Permit for the purpose indicated in the attached plans and specifications at the following location:

ROAD TOWNSHIP SECTION

LOCATION

FOR A PERIOD BEGINNING _____ AND ENDING _____ AND AGREES TO THE TERMS OF THIS PERMIT

_____

_____

_____

_____

_____

A permit is granted with the foregoing application for the period stated above, subject to the specifications on the reverse side of this permit and are agreed to by the permit holder.

BOARD OF COUNTY ROAD COMMISSIONERS
GRAND TRAVERSE COUNTY, MICHIGAN

APPROVED FOR GRAND TRAVERSE COUNTY ROAD COMMISSION BY:

WILLIAM MOUSER
CARL BROWN
MARC MCKELLAR
JOHN NELSON
ANDY MAREK

Investigator

1. SPECIFICATIONS-All work performed under this permit must be done in accordance with the plans, specifications, maps, and statements filed with the Grand Traverse County Road Commission, hereafter known as the Commission, and must comply with the Commission's current requirements and specifications on file at its office and the Michigan Department of Transportation (MDOT) specifications.
2. FEES AND COSTS-Permit Holder shall be responsible for all fees incurred by the Commission in connection with this permit and shall deposit estimated fees and costs as determined by the Commission, at the time the permit is issued.
3. LETTER OF CREDIT-Permit Holder shall provide a cash deposit and/or letter of credit if required in a form and amount acceptable to the Commission at the time the permit is issued.
4. INSURANCE-Permit Holder shall furnish proof of liability and property damage insurance in the amount specified by the Commission and naming the Commission as an AAdditional Insured.@ Such insurance shall cover a period not less than the term of this permit and shall provide that it cannot be canceled without ten (10) days advance written notice by certified mail with return receipt required to the Commission.
5. MISS DIG-The Permit Holder must comply with the requirements of Act 53 Public Acts of 1974, as amended. CALL MISS DIG (800) 482-7171, AT LEAST THREE (3) FULL WORKING DAYS, BUT NOT MORE THAN TWENTY-ONE (21) CALENDAR DAYS, BEFORE YOU START WORK. Permit Holder assumes all responsibility for damage to or interruption of underground and overhead utilities.
6. NOTIFICATION OF START AND COMPLETION OF WORK-Permit Holder must notify the Commission at least 48 hours before starting work and must notify the Commission when work is completed.
7. TIME RESTRICTIONS-Contact the Commission regarding current working hours. Inspections performed during current hours will be billed at regular hourly rates. All other inspections will be billed at overtime rates.
8. SAFETY-Permit Holder agrees to work under this permit in a safe manner and to keep the area affected by this permit in a safe condition until the work is complete. All work site conditions shall comply with Michigan Manual of Uniform Traffic Control Devices.
9. RESTORATION AND REPAIR OF ROAD-Permit Holder agrees to restore the road and/or right-of-way to a condition equal to or better than its condition before the work began, and to repair any damage to the road right-of-way which is the result of the facility whenever it occurs or appears.
10. LIMITATIONS OF PERMIT-This permit does not relieve Permit Holder from meeting other applicable laws and regulations of other agencies. Permit Holder is responsible for obtaining additional permits or releases which may be required in connection with this work from other governmental agencies, public utilities, corporations and individuals, including property owners. Permission may be required from the adjoining property owners.
11. REVOCATION OF PERMIT-This permit may be suspended or revoked at will, and the Permit Holder shall surrender this permit and alter, relocate, or remove their facilities at their expense at the request of the Commission.
12. VIOLATION OF PERMIT-This permit shall become immediately null and void if Permit Holder violates the terms of this permit, and the Commission may require immediate removal of Permit Holder's facilities, or the Commission may remove them without notice at Permit Holder's expense.
13. TRAFFIC CONTROL SIGNS-Traffic control signs that require relocation as part of permit activity within the road right-of-way shall not be removed without prior approval of the traffic technician or superintendent. Removal and relocation of signs shall be by the Commission Sign Shop and the cost of same will be billed to the Permit Holder.
14. TIME PERIOD-The period applied for and granted in this application and permit covers activity within the right-of-way. Failure of the applicant to begin work within one (1) year from the date of issuance shall cancel this permit. Renewal may be obtained for an additional year upon payment of the permit fee. The obligation to operate, use, and/or maintain the facility to the satisfaction of the Commission remains in force as long as the facility exists and is within an area under the jurisdiction of the Commission.
15. This permit is subject to supplemental specifications on file with the Commission and Act 200 of Public Acts of 1969.
16. INDEMNIFICATION-Permit Holder shall hold harmless and indemnify, and keep indemnified, the Commission, its officers, and employees from all claims, suits, and judgments to which the Commission, its officers or employees maybe subject and for all costs and actual attorney fees which may be incurred on account of injury to persons or damage to property, including property of the Commission, whether due to the negligence of the Permit Holder or the joint negligence of the Permit Holder and the Commission, arising out of work under this permit, or in connection with work not authorized by this permit, or resulting from failure to comply with the terms of this permit, or arising out of the continued existence of the work product which is the subject of this permit.
17. OBLIGATIONS OF THE PERMIT HOLDER- The Permit Holder shall surrender the permit herein applied for; surrender all rights hereunder; cease operations; and remove, alter, relocate at the applicant's own expense the facilities for which this permit is granted whenever ordered to do so by the Commission because of the need for the area covered by this permit for public uses or because of a default in any of the conditions of the permit. Upon failure to remove, alter, relocate or surrender the facilities pursuant to the order of the Commission, reimburse the Commission for its cost in doing same. The obligation to operate, use and/or maintain the facility to the satisfaction of the Commission remains in force as long as the facility exists and is within the area under the jurisdiction of the Commission.

I have read this and understand I am responsible:

Signature_____Date_____

Revised January 2000

1. PERMIT-The individual in charge of the work shall have the permit and the approved plans or sketches in their possession on the job at all times.
2. CONCRETE DRIVEWAYS-Concrete used shall be 1990 MDOT Type 35P, 35S or 35HE. The reinforcement and formwork must be inspected by a representative from the Commission prior to placement of concrete. Contact the Commission to arrange for an inspection during normal business hours at least 24 hours prior to anticipated time formwork will be ready. Formwork may need to be modified prior to placement of concrete. Concrete placed within road right-of-way prior to inspection is subject to removal by the Commission. Drainage improvements, such as the placement, replacement, or extension of a culvert on an existing drive, may be required prior to any concrete work.
3. EXCAVATION and DISPOSAL of EXCAVATED MATERIAL-The Contractor and/or the Utility Company shall provide and place the necessary sheeting, shoring, and bracing required to prevent caving, loss or settlement of foundation material supporting the pavement, or any other highway installation such as sewers, culverts, etc. The Contractor and/or Utility Company shall assume the full responsibility for this protection. Excavated material shall be stocked in such locations that it does not obstruct vision on the traveled portion of the highway and in such a manner that it will not interfere with the flow of traffic. The applicant shall dispose of all surplus and unsuitable material outside of the limits of the Right-of-Way unless the permit provides for disposal at approved manner. BERMS WILL NOT BE ALLOWED UNLESS SHOWN AND APPROVED ON THE PERMIT.
4. OPEN CUTS-Excavated area shall be backfilled with the same material that was removed or as directed by county inspector. (Wet clay cannot be compacted satisfactorily). Material shall be placed in 6" lifts and compacted to 98% maximum density with a vibratory compactor. Density tests shall be taken by personnel acceptable to the Commission and documentation shall be made available to the Commission. The cost of density testing will be borne by the permitee. Gravel base shall be 6" CIP or M.D.O.T. Spec. 22A gravel compacted to at least 98% of maximum density, or match existing gravel thickness, whichever is greater. The existing pavement shall be neatly sawcut around the hole before placing the pavement patch. Minimum patch to be 6' x 6'. Bituminous surface course shall be 1 1/2" of 13A bituminous mixture at 165 pounds/syd and base course shall be 1 1/2" of 13A bituminous mixture at 165 pounds/syd. The contractor shall match the existing pavement thickness or provide specified 3" as indicated, whichever is greater. Gravel patch will not be allowed overnight without prior approval of the Commission. A representative from the Road Commission must be on site while backfill and pavement restoration work is completed.
5. GRAVEL ROAD CROSSINGS-All trenches across the roadbed shall be backfilled as specified in Paragraph 4 to within 10" of the finished road surface. The top 10" shall be constructed with 23 A aggregate with 100% crushed material.
6. CROSSING ROADBED by BORING and JACKING or DIRECTIONAL BORING-No air-powered apparatus or "missiles" allowed. Bore pits must be located a minimum of 15' from the edge of pavement and a minimum of 4' below the road surface. When the pipe is installed by this method without cutting the existing pavement, all remaining voids around the installation shall be filled by a method approved by the Commission inspector. Pressure grouting shall be required when deemed necessary. When the traveled portion of a road is tunneled or bored and jacked, the length of the pipe or casing shall extend 15' beyond the edge of the road. A representative from the Commission must be on site while boring is completed.
7. DEPTH OF COVER MATERIAL-Depth of cover for underground facilities shall be determined at the time of application for a permit. In no case shall there be less than four (4) feet of cover between the surface of the traveled portion of the road and the facility being placed, and not less than three (3) feet below the flow line of the ditches.
8. REMOVAL or TREE PROTECTION -Applicant must offer affected property owners right-of-first refusal for any salvageable wood: a) REMOVAL-Dispose of all limbs, logs, stumps, and litter in a manner acceptable to the Commission and local or state requirements. b) PROTECTION-Underground facilities that interfere with trees in the right-of-way shall be bored 6" for each inch of tree diameter in all directions from the base of the tree.
9. RESTORATION and FINAL CLEAN UP- Final clean up shall be such that it will provide a condition equal to or better than the original condition.
10. PROTECTION of ESTABLISHED SURVEY POINTS and DATUM-The Permit Holder shall protect, preserve, and/or restore at their own expense, any established survey points and datum within the limits of the work covered by this permit.
11. TRAFFIC AND SAFETY-When this permit allows the closing of a road, or the use of one or more traffic lanes, or where construction is in proximity to the traveled portion of the road, signs, signals, lights, etc., shall be placed and maintained in accordance with the Michigan Manual of Uniform Traffic Control Devices and/or Commission specifications. The traffic control called for shall be minimal and the contractor shall erect and maintain at their own expense all signs, signals, etc., for safety as directed by Traffic Services and/or Maintenance Supervisor of the Commission.
12. Any operation in the right-of-way not covered by these specifications shall be done in accordance with the instructions of the County Highway Engineer, and/or the inspector assigned to the project.
13. Full compliance is required with any regulations of the Public Service Commission and the Municipal or State Regulations.
14. SEASONAL RESTRICTIONS-No activity allowed within road right-of-way between November 1 and April 1 without verbal permission from the Commission on a daily basis.

1881 LaFranier Rd.
Traverse City, Mi. 49696
231-922-4848 Phone
231-929-1836 Fax

GRAND TRAVERSE

COUNTY ROAD COMMISSION
SINGLE MOVE PERMIT

Permit Nbr_____
Effective Date_____
Expiration Date_____
Receipt Number_____

$ 25 per Round Trip up to 5 business days
$ 50 Multiple Trips up to 5 business days

As owner, I (we) hereby request permission to transport the following oversize and/or overweight vehicle(s) on the roads under the jurisdiction of the Road Commission and attest that these loads do not exceed the weights and dimensions listed below.

APPLICANT_____ADDRESS_____

CITY/STATE/ZIP CODE _____PHONE_____

SIGNATURE_____ TITLE_____FAX_____

It is understood this Single Move Permit is being issued for vehicles with the following axle loading or overall dimensions and that exceeding these limits will **void** the permit. Failure to follow the Special Provisions on reverse or attached will **void** the permit.

Power Unit Number_____Make/Model/Year_____ License_____VIN Nbr_____

Overall Width_____Overall Height_____Overall Length_____Vehicle Width_____

Axle Number	Axle Weight in Pounds Loaded Vehicle	Number of tires, Tire Size and Tire Width (in inches)	Axle Spacing in Feet and Inches	
1			1 to 2	6 to 7
2			Ft. In.	Ft. In.
3			2 to 3	7 to 8
4			Ft. In.	Ft. In.
5			3 to 4	8 to 9
6			Ft. In.	Ft. In.
7			4 to 5	9 to 10
8			Ft. In.	Ft. In.
9			5 to 6	10 to 11
10			Ft. In.	Ft. In.
11			Total Number of Tires	Tot. Tire Width on Axle
Total				

Load Desc:_____

Route is as follows:_____

If the proposed move utilizes state highways or city streets, permission must be obtained from the state or local authorities

Recommended For Issuance By:

_____

Title:_____Date:_____

Approved By:

_____

Title:_____Date:_____

SINGLE MOVE PERMIT SPECIAL PROVISIONS

1. Permits are automatically invalidated by the violation of any of the conditions specified by the terms of the permit or by false information given on the application. Failure to comply with the conditions of this permit shall be just cause for the immediate suspension or revocation of any or all permits and the operator and/or owner of the vehicle subject to appropriate legal action.

2. Oversize permits are issued for daylight hours only, Monday through Saturday. Permits are not valid from 12 noon on the day preceding and continuing until daylight of the 1st day after the holidays here listed: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas, except with the approval of the Permits Department when emergency repair movements are necessary in the best interest of public safety and welfare. Permit valid only if favorable driving and traffic provisions prevail.

3. The movement shall not impede other traffic in an unreasonable manner and at no time shall traffic be blocked from use of the highway. Vehicles and loads shall not be parked on the highway at any time.

4. Vehicles shall be registered as required by the Michigan vehicle code and will not violate any statute or valid ordinance, rule or regulation by any state agency or sub-division of the state. Vehicles are to comply with all statutory provisions as to other permits, licensing, motor vehicle equipment and operation.

5. The driver of the vehicle shall carry an approved copy of the permit in the vehicle to which it applies and shall have it available for inspection by any police officer or weighmaster of a Road Commission or Motor Carrier Officer.

6. Applicant shall be responsible for any damage caused to wires, mailboxes, trees, buildings, or the road, including the structures and appurtenances, and shall reimburse the appropriate parties for any damage caused by the moving of said vehicle or load. Applicant shall save harmless, indemnify, defend, and represent the Board against any and all claims for bodily injury or property damage, or any other claim arising out of or related to the moving of said vehicle, load, or its presence on or use of the highway by said vehicle and load.

7. Permits are not valid if insurance expires. Applicant to present evidence that at least the following insurance coverage is in full force and effect on each vehicle while operating on the public highways under special permit:

Bodily Injury liability – each person	$500,000.00
Bodily Injury liability – each accident	$1,000,000.00
Property Damage liability – each accident	$1,000,000.00
Single Limit policy	$1,000,000.00
Worker's Compensation	Statutory Coverage

8. The permitee or contractor shall name the Road Commission as additional insured and certificate holder, by name, on any general comprehensive liability insurance or commercial general liability insurance carried by the permitee or contractor worded as follows:
   The Board of (Name) County Road Commissioners, the (Name) County Road Commission, and their officers, agents and employees, are named as additional insured parties.

9. Permits will be issued only for vehicles owned by the applicant or operated under a bona fide lease or rental agreement. The applicant may be required to deposit a reasonable inspection fee and to furnish a good and sufficient cash bond to cover any damage that might occur to roads, bridges, or highway structures, by the movement of vehicles and objects under the proposed permit.

10. Permits will not be issued for oversize or overweight vehicles or loads that can be readily dismantled, reduced or otherwise rearranged to come within the legal limits or lightest load possible. Permits will in no way supersede posted axle loading limits on any bridge or highway. The applicant agrees to reimburse the Road Commission for any damage resulting from disregard of such postings.

11. The equipment shall be loaded on the vehicle in such a manner to reduce to a minimum the excess over statutory size or weight limitations and the least width or length dimensions becomes the width of the load. On movements exceeding legal height, the permitee certifies that he has checked the route as necessary for vertical clearance and overhead obstructions prior to any movement. Striking or damage to any structure or facility will be perceived to be noncompliance with this section and will result in termination of this permit.

12. The Road Commission may temporarily suspend or revoke a Single Move Permit, either in its entirety or in respect to certain of its provisions, due to **seasonal conditions, other special conditions** or if it is in the interest of the public's safety.

13. The vehicle shall not be loaded or unloaded within the outer shoulder limits of any county road unless permitted by an officer or the Road Commission.

14. The movement requires the display of clean, plain, red or orange flags of at least 18 inches square. One flag shall be displayed at each of the four corners of the vehicle or load; and if any portion of the load extends beyond the width of the corner flag, one additional flag shall be displayed at the widest point on each side of the vehicle or load. Flags should be securely fastened by at least one corner or securely mounted on a staff.

15. When width exceeds 12 feet: Shall be followed by one escort vehicle (passenger car or pickup truck) with at least one flashing or rotating amber light on top of cab, a reasonable distance in rear of the movement when moving on 4 or more lanes. To be preceded by one escort vehicle (passenger car or pickup truck) with at least on flashing or rotating amber light on top of cab, a reasonable distance in front of the movement when on less than 4 lanes. Amber lights are to be visible for 360 degrees for a distance of 500 ft.

16. The vehicle covered by this permit shall not exceed 35 M.P.H. at any time.

revised 03/08/05

Print Form

COUNTY ROAD COMMISSION
EXTENDED MOBILE HOME TRANSPORTATION PERMIT

Grand Traverse County

Permit Number_____

$100 annual, per county, per power unit

Date Issued_____

Receipt Number_____

As owner, I (we) hereby request permission to transport oversize mobile home(s) on the roads under the jurisdiction of the Road Commission and attest that these loads do not exceed legal axle loads.

APPLICANT_____ ADDRESS_____

CITY/STATE/ZIP CODE_____ PHONE_____

SIGNATURE_____ TITLE_____ FAX_____

POWER UNIT NUMBER_____ MAKE_____ VIN NBR_____

MODEL_____ YEAR_____ LICENSE NBR_____

Failure to follow the Special Provisions on reverse or attached will **void** the permit

Effective Date:_____ **Expiration Date:**_____

Recommended By:_____ **Attachments:** _____

This permit requires applicant to give 48 hour notification of each move and providing intended route.

This permit valid ONLY when the dimensions DO NOT EXCEED the following:

WIDTH: 14 feet in actual body width and fixtures not to exceed 3 inches on each side.
HEIGHT: 14 feet.
LENGTH: 80 ft. in body length of the mobile home or module; 95 feet overall length with towing vehicle.

Remarks/Routing: _____

_____

_____

_____

_____

Recommended For Issuance By:

_____

Title:_____ Date:_____

Approved By:

_____

Title:_____ Date:_____

MOBILE HOME TRANSPORTATION PERMIT SPECIAL PROVISIONS

1. Permits are automatically invalidated by the violation of any of the conditions specified by the terms of the permit or by false information given on the application. Failure to comply with the conditions of this permit shall be just cause for the immediate suspension or revocation of any or all permits and the operator and/or owner of the vehicle subject to appropriate legal action.

2. Permit valid only if favorable driving and traffic conditions prevail. Daylight hours only. Permits are not valid on Saturdays, Sundays, nor during the period beginning at 12 noon on the day before and continuing until 12 noon of the 1st day after the holidays here listed: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. When the holiday occurs on a Friday or Monday, permits will not be valid for the period beginning the noon before the three-day weekend, and ending the noon of the 1st day after the three-day weekend.

3. All axle weights must be legal. Permit not valid on highways which are posted for lighter than normal loadings and vehicle exceeds axle loadings as posted, or when restricted loadings are in effect.

MOBILE HOME TRANSPORTATION PERMIT SPECIAL PROVISIONS

4. The movement shall not impede other traffic in an unreasonable manner and at no time shall traffic be blocked from use of the highway. Vehicles and loads shall not be parked on the highway at any time.

5. Vehicles shall be registered as required by the Michigan vehicle code and will not violate any statute or valid ordinance, rule or regulation by any state agency or sub-division of the state. Vehicles are to comply with all statutory provisions as to other permits, licensing, motor vehicle equipment and operation.

6. The driver of the power unit shall carry an approved copy of the permit in the vehicle to which it applies and shall have it available for inspection by any police officer, Motor Carrier Officer or Road Commission employee.

7. Applicant shall be responsible for any damage caused to wires, mailboxes, trees, buildings, or the road, including the structures and appurtenances, and shall reimburse the appropriate parties for any damage caused by the moving of said vehicle or load. Applicant shall save harmless, indemnify, defend, and represent the Board against any and all claims for bodily injury or property damage, or any other claim arising out of or related to the moving of said vehicle, load, or its presence on or use of the highway by said vehicle and load.

8. Permits are not valid if insurance expires. Applicant to present evidence that at least the following insurance coverage is in full force and effect on each vehicle while operating on the public highways under special permit:

Bodily Injury liability – each person	$500,000.00
Bodily Injury liability – each accident	$1,000,000.00
Property Damage liability – each accident	$1,000,000.00
Single Limit policy	$1,000,000.00
Worker's Compensation	Statutory Coverage

9. The permitee or contractor shall name the Road Commission as additional insured and certificate holder, by name, on any general comprehensive liability insurance or commercial general liability insurance carried by the permitee or contractor worded as follows:
   The Board of (Name) County Road Commissioners, the (Name) County Road Commission, and their officers, agents and employees, are named as additional insured parties.

10. Permits will be issued only for vehicles owned by the applicant or operated under a bona fide lease or rental agreement. The applicant may be required to deposit a reasonable inspection fee and to furnish a good and sufficient cash bond to cover any damage that might occur to roads, bridges, or highway structures, by the movement of vehicles and objects under the proposed permit.

11. Towing vehicle shall be at least a 1½ ton truck with dual rear wheels. Each vehicle within a combination of vehicles used in transporting building modules (tractor & trailer or tractor & semi-trailer) must have a valid permit.

12. When width exceeds 12 feet: Shall be followed by one escort vehicle (passenger car or pickup truck) with at least one flashing or rotating amber light on top of cab, a reasonable distance in rear of the movement when moving on 4 or more lanes. To be preceded by one escort vehicle (passenger car or pickup truck) with at least one flashing or rotating amber light on top of cab, a reasonable distance in front of the movement when on less than 4 lanes. Amber lights are to be visible for 360 degrees for a distance of 500 ft.

13. The Road Commission may temporarily suspend or revoke a Mobile Home Permit, either in its entirety or in respect to certain of its provisions, due to **special conditions** or if it is in the interest of the public's safety.

14. The vehicle shall not be loaded or unloaded within the outer shoulder limits of any county road unless permitted by an officer or the Road Commission.

15. Units exceeding 80 feet in overall combination length: At least 2 flashing or rotating amber lights to be placed on extreme rear of load and one on top of the towing vehicle. All flashing or rotating amber lights are to be visible for a distance of 500 feet.

16. To be equipped with 2 OVERSIZE LOAD signs of black, block lettering on Interstate yellow background. One 6' X 18" sign with 12" lettering on front bumper of towing vehicle. One 8' X 18" sign with 16" lettering on rear of load not less than 7" above highway. Towing vehicle headlights to be turned on low beam.

17. Movement shall display 6 clean, plain red flags at least 18" square, one on each end of front bumper of towing vehicle supported on a short shaft at an angle so as to wave freely, and one on each corner of mobile home or building module so placed that they can be clearly seen by approaching traffic.

18. Maximum gauge of mobile home or vehicle transporting a module shall be 9'6" or less from center of wheel to center of wheel.

19. Speed: Length 80 feet or less - 50 MPH – 4 or more lanes
    - 45 MPH – less than 4 lanes
    Length in excess of 80 feet - 45 MPH

20. Any of the following actions shall immediately void the permit and subject the applicant to appropriate legal action: (a) Misrepresentation of information set forth in an application for permit. (b) Noncompliance with the conditions, restrictions or provisions on which a permit is issued (c) An alteration on a permit.

GRAND TRAVERSE COUNTY ROAD COMMISSION

CRA 110
FEB 2010

ROUTE NOTIFICATION APPLICATION

SEASONAL PUBLIC UTILITY/AGRICULTURAL NON-EMERGENCY EXEMPTION PERMIT

Route Review:

PER MCL 257.722

Seasonal Permit Number: _____

The applicant shall have a copy of notification provided to a County Road Commission in the driver's possession while performing the relevant non-emergency work.

Company Name: _____

Notification Date: _____ **Date of Move:** _____ **Time of Move:** _____

Contact Person: _____ **Email:** _____

Phone No.: _____ **Fax No.:** _____ **Cell No.:** _____

Utility Company Working For: _____

Unique Unit or VIN #: _____

Location or Address of Non-Emergency Work: _____

_____

_____

Requested Route to Work Site: _____

_____

_____

By signing this notification, I certify that I have read and will abide by the rules and regulations.

Signature: _____ **Date:** _____

For Road Commission Use:

☐ Route is approved – The driver of the above vehicle must carry a copy of the Seasonal Public Utility / Agricultural Non-Emergency Exemption Permit Rules and a copy of this notification.

☐ Route is denied.

Approved By:

_____ Date:_____ Time:_____

County Road Association OF MICHIGAN

CRA Seasonal Ag
Revision 10-19-15

Permit Number

Fee

Inspection/Other

Receipt Number

Seasonal Agricultural Transportation

SPRING RESTRICTION LOAD EXEMPTION
In compliance with MCL 257.722(5)

☐ Single Trip

☐ Seasonal

Year Valid _____

Applicant	Contact
Name: _____	Name: _____
Address: _____	Email: _____
City/St/Zip: _____	Phone: _____

Applicant shall have a copy of this permit and the Route Notification Request provided to the Road Agency in their possession while performing the relevant agricultural commodity transportation travel. Use of restricted roads during weight restrictions will be minimized and only utilized when necessary to perform work using the agricultural vehicle or agricultural vehicle configuration (shown below) and non-restricted roads shall be used for travel when available for route travel. Permittee must notify the _____ County Road Agency by submitting a Route Notification Request form via fax or electronically at least 48 hours prior to the movement; unless otherwise approved by an authorized representative of the Road Agency.

1. Speed limit not to exceed 35 mph.
2. Normal Legal Loadings only.
3. Time of day _____
4. The Road Agency has the right to suspend this permit if weather or road conditions warrant such action.
5. Any of the following actions shall immediately void this permit and subject the applicant to appropriate legal action:
   (a) Misrepesentation of information set forth in an application for permit.
   (b) Noncompliance with the conditions, rules and regultions on which this permit was issued.
   (c) A change or erasure on a permit.
6. The permittee shall be responsible for damage to the highway, to persons and to property caused by or rising from operations covered by this permit.
7. Additional conditions agreed upon _____

Origination: _____ Destination: _____

Route: _____

Attached Map _____ Yes _____ No

Year	Make/Model	VIN	Unit No.	License No.

Authorized Signature	Title	Date

This Area for Road Agency Use Only

A permit is granted for the stated period and is subject to conditions on the reverse side of this permit. The Road Agency retains the right to suspend this permit if weather or road conditions warrant such action.

Approved and issued:

Authorized Signature	Title	Date

AGENCY CONTACT INFORMATION

Permit Section _____ Phone: _____ Fax: _____ Email: _____

RULES AND REGULATIONS

1) Permits are automatically invalidated by the violation of any of the conditions specified by the terms of the permit or false information given on the application. Failure to comply with the conditions of this permit shall be just cause for the immediate suspension or revocation of any or all permits and the operator and /or owner of the vehicle subject to appropriate legal action.

2) Applicant shall provide notification to the Road Agency 48 hours in advance using a Route Notification Request form provided by the Road Commission.

3) Travel on seasonally restricted roads during springtime weight restrictions will be minimized and only when necessary to perform work using the agricultural vehicle or agricultural vehicle configuration. Unrestricted roads shall be used for travel when available and for routine travel. The movement of vehicle and load upon said highway (s) shall be restricted to the specified hours as stated on permit. Recommended movements are early mornings when the ground is more stable.

4) The movement shall not impede other traffic in an unreasonable manner and at no time shall traffic be blocked from use of the highway. Vehicles and loads shall not be parked loaded or unloaded on the highway at any time.

5) Vehicles shall be registered as required by the Michigan Vehicle Code and will not violate any statute or valid ordinance rule or regulation by any state agency or sub-division of the state. Vehicles are to comply with all statutory provisions as to other permits, licensing, motor vehicle equipment and operations.

6) The driver of the vehicle shall carry this permit, route notification and rules in the vehicle to which it applies and shall have these documents available for inspection by any police officer, Motor Carrier Officer or duly authorized Road Commission agents. Permit not valid unless accompanied by supplemental route notification..

7) Applicant shall be responsible for any damage caused to wires, mailboxes, trees, buildings or the road including any appurtenances, and shall reimburse the appropriate parties for any damage caused by moving of said vehicle or load.

8) Permits are not valid if insurance expires. Applicant shall present evidence of insurance coverage on each vehicle and carry proof of insurance while operating on the highway.

9) Permits will be issued only for vehicles owned by the applicant or operated under a bona fide lease or rental agreement.

10) The vehicle transporting agricultural commodities shall not exceed "Normal Legal Loading" which is: 18,000 lbs/single axle; 13,000 lbs/tandem axle; 16,000 lbs/tandem axle on a designated county route. For all axle configurations the weight shall not exceed 700 lbs/inch of tire width. Permits will in no way supersede posted axle loading limits on any bridge/structure or highway.

11) The Road Agency may temporarily suspend or amend a permit, either in its entirety or in certain of its provisions due to seasonal or other special conditions.

12) The fee schedule is subject to change based on annual cost allocation method.

AGENCY CONTACT INFORMATION

Permit Section_____ Phone: _____ Fax: _____ Email: _____

Print Form

COUNTY ROAD COMMISSION
EXTENDED MOBILE HOME TRANSPORTATION PERMIT

Grand Traverse County

Permit Number_____

$100 annual, per county, per power unit

Date Issued_____

Receipt Number_____

As owner, I (we) hereby request permission to transport oversize mobile home(s) on the roads under the jurisdiction of the Road Commission and attest that these loads do not exceed legal axle loads.

APPLICANT_____ ADDRESS_____

CITY/STATE/ZIP CODE_____ PHONE_____

SIGNATURE_____ TITLE_____ FAX_____

POWER UNIT NUMBER_____ MAKE_____ VIN NBR_____

MODEL_____ YEAR_____ LICENSE NBR_____

Failure to follow the Special Provisions on reverse or attached will **void** the permit

Effective Date:_____ **Expiration Date:**_____

Recommended By:_____ **Attachments:** _____

This permit requires applicant to give 48 hour notification of each move and providing intended route.

This permit valid ONLY when the dimensions DO NOT EXCEED the following:

WIDTH: 14 feet in actual body width and fixtures not to exceed 3 inches on each side.
HEIGHT: 14 feet.
LENGTH: 80 ft. in body length of the mobile home or module; 95 feet overall length with towing vehicle.

Remarks/Routing: _____

_____

_____

_____

_____

Recommended For Issuance By:

_____

Title:_____ Date:_____

Approved By:

_____

Title:_____ Date:_____

MOBILE HOME TRANSPORTATION PERMIT SPECIAL PROVISIONS

1. Permits are automatically invalidated by the violation of any of the conditions specified by the terms of the permit or by false information given on the application. Failure to comply with the conditions of this permit shall be just cause for the immediate suspension or revocation of any or all permits and the operator and/or owner of the vehicle subject to appropriate legal action.

2. Permit valid only if favorable driving and traffic conditions prevail. Daylight hours only. Permits are not valid on Saturdays, Sundays, nor during the period beginning at 12 noon on the day before and continuing until 12 noon of the 1st day after the holidays here listed: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. When the holiday occurs on a Friday or Monday, permits will not be valid for the period beginning the noon before the three-day weekend, and ending the noon of the 1st day after the three-day weekend.

3. All axle weights must be legal. Permit not valid on highways which are posted for lighter than normal loadings and vehicle exceeds axle loadings as posted, or when restricted loadings are in effect.

MOBILE HOME TRANSPORTATION PERMIT SPECIAL PROVISIONS

4. The movement shall not impede other traffic in an unreasonable manner and at no time shall traffic be blocked from use of the highway. Vehicles and loads shall not be parked on the highway at any time.

5. Vehicles shall be registered as required by the Michigan vehicle code and will not violate any statute or valid ordinance, rule or regulation by any state agency or sub-division of the state. Vehicles are to comply with all statutory provisions as to other permits, licensing, motor vehicle equipment and operation.

6. The driver of the power unit shall carry an approved copy of the permit in the vehicle to which it applies and shall have it available for inspection by any police officer, Motor Carrier Officer or Road Commission employee.

7. Applicant shall be responsible for any damage caused to wires, mailboxes, trees, buildings, or the road, including the structures and appurtenances, and shall reimburse the appropriate parties for any damage caused by the moving of said vehicle or load. Applicant shall save harmless, indemnify, defend, and represent the Board against any and all claims for bodily injury or property damage, or any other claim arising out of or related to the moving of said vehicle, load, or its presence on or use of the highway by said vehicle and load.

8. Permits are not valid if insurance expires. Applicant to present evidence that at least the following insurance coverage is in full force and effect on each vehicle while operating on the public highways under special permit:

Bodily Injury liability – each person	$500,000.00
Bodily Injury liability – each accident	$1,000,000.00
Property Damage liability – each accident	$1,000,000.00
Single Limit policy	$1,000,000.00
Worker's Compensation	Statutory Coverage

9. The permitee or contractor shall name the Road Commission as additional insured and certificate holder, by name, on any general comprehensive liability insurance or commercial general liability insurance carried by the permitee or contractor worded as follows:
   The Board of (Name) County Road Commissioners, the (Name) County Road Commission, and their officers, agents and employees, are named as additional insured parties.

10. Permits will be issued only for vehicles owned by the applicant or operated under a bona fide lease or rental agreement. The applicant may be required to deposit a reasonable inspection fee and to furnish a good and sufficient cash bond to cover any damage that might occur to roads, bridges, or highway structures, by the movement of vehicles and objects under the proposed permit.

11. Towing vehicle shall be at least a 1½ ton truck with dual rear wheels. Each vehicle within a combination of vehicles used in transporting building modules (tractor & trailer or tractor & semi-trailer) must have a valid permit.

12. When width exceeds 12 feet: Shall be followed by one escort vehicle (passenger car or pickup truck) with at least one flashing or rotating amber light on top of cab, a reasonable distance in rear of the movement when moving on 4 or more lanes. To be preceded by one escort vehicle (passenger car or pickup truck) with at least one flashing or rotating amber light on top of cab, a reasonable distance in front of the movement when on less than 4 lanes. Amber lights are to be visible for 360 degrees for a distance of 500 ft.

13. The Road Commission may temporarily suspend or revoke a Mobile Home Permit, either in its entirety or in respect to certain of its provisions, due to **special conditions** or if it is in the interest of the public's safety.

14. The vehicle shall not be loaded or unloaded within the outer shoulder limits of any county road unless permitted by an officer or the Road Commission.

15. Units exceeding 80 feet in overall combination length: At least 2 flashing or rotating amber lights to be placed on extreme rear of load and one on top of the towing vehicle. All flashing or rotating amber lights are to be visible for a distance of 500 feet.

16. To be equipped with 2 OVERSIZE LOAD signs of black, block lettering on Interstate yellow background. One 6' X 18" sign with 12" lettering on front bumper of towing vehicle. One 8' X 18" sign with 16" lettering on rear of load not less than 7" above highway. Towing vehicle headlights to be turned on low beam.

17. Movement shall display 6 clean, plain red flags at least 18" square, one on each end of front bumper of towing vehicle supported on a short shaft at an angle so as to wave freely, and one on each corner of mobile home or building module so placed that they can be clearly seen by approaching traffic.

18. Maximum gauge of mobile home or vehicle transporting a module shall be 9'6" or less from center of wheel to center of wheel.

19. Speed: Length 80 feet or less - 50 MPH – 4 or more lanes
    - 45 MPH – less than 4 lanes
    Length in excess of 80 feet - 45 MPH

20. Any of the following actions shall immediately void the permit and subject the applicant to appropriate legal action: (a) Misrepresentation of information set forth in an application for permit. (b) Noncompliance with the conditions, restrictions or provisions on which a permit is issued (c) An alteration on a permit.

GRAND TRAVERSE COUNTY ROAD COMMISSION

WOOD DISPOSAL LICENSE

Project Name: _____ Project No: _____ Parcel No: _____

Regarding property ("Property") commonly known as:
(Part of) Tax Parcel No:.

Name of Property Owner:

Address of Property Owner:

The undersigned owner:

☐ Wants to receive the wood resulting from the Grand Traverse County Road Commission's removal of tress that are on the Property, and the undersigned understands that the wood will be cut into 8 foot lengths or greater and piled outside of the right-of-way on property owned by the abutting property owner.

☐ Does not want to receive the wood resulting from the Grand Traverse County Road Commission's removal of tress that are on the Property.

If the undersigned owner has checked the box indicating that it wants to receive the wood, it hereby gives permission to the Grand Traverse County Road Commission to enter the Property in order to place the wood on the Property.

This License does *not* transfer an interest in your Property to the Board or any of its agents; it does *not* need to be recorded with the Grand Traverse County Register of Deeds; and it does *not* cause a change in your property boundary lines.

This License contains the entire understanding between the undersigned and the Grand Traverse County Road Commission, and there are no other verbal promises between the two parties except as shown herein.

IN WITNESS HEREOF, the undersigned hereby agrees to the terms and provisions herein as of this _____day of _____, 20__.

WITNESS: Signed By:

_____ _____

Its:

Appendix

C

CONTRACTOR'S PREQUALIFICATION APPLICATION

As of Fiscal Year End
(MM/DD/YY)
_____

Instructions: each item must be answered: Whenever a particular item does not apply, write 'none" or "n/a" (not applicable). Please type or print legibly in dark ink when preparing the application. If additional space is needed, attach a separate sheet, maintaining application in page order throughout.

Legal Company Name: _____

Mailing Address:_____

City: _____ State: _____ Zip Code:_____

Company Telephone Number: _____ Company Fax Number: _____

Company's Website Address: _____

Contact/Person Completing Application: _____

Contact Email Address: _____

Submit the fully completed application to:
Grand Traverse County Road Commission
1881 LaFranier Rd
Traverse City, MI 49696

Preliminary Checklist for:

Paving Prequalification
(All aspects of paving)

Complete all items:	Date / Comment	Ck'd by
☐ **MDOT Prequalified**	_____	_____
☐ **Certified Plant for Paving Material**	_____	_____
☐ **State Certified Lab for Testing Requirements**	_____	_____
☐ **Qualified source for Aggregate**	_____	_____
☐ **List of construction equipment presently owned and/or leased along with the equipment intended to be used for paving operations.** __ Paver must have working automation (traverse and longitudinal Automation grade control.	_____	_____
☐ **Paving as prime or subcontractor on 3 or more MDOT projects a year for a three year period directly prior to applying.**	_____	_____
☐ **No more than three violation notices from the Road Commission in the last three years of applying**	_____	_____
☐ **The Road Commission has not made a claim against a bond provided by the Contractor or on a project the Contractor performed paving work on more than one time within the last three years of applying**	_____	_____
☐ **Provide, in writing, that the Contractor has read and fully understands the Road Commission Standards including all testing requirements.**	_____	_____
☐ **Ability to fully bond all work being performed.**	_____	_____

Preliminary Checklist for:

Earthwork Prequalify
(Restoration, earth excavation, earth embankment, grading)

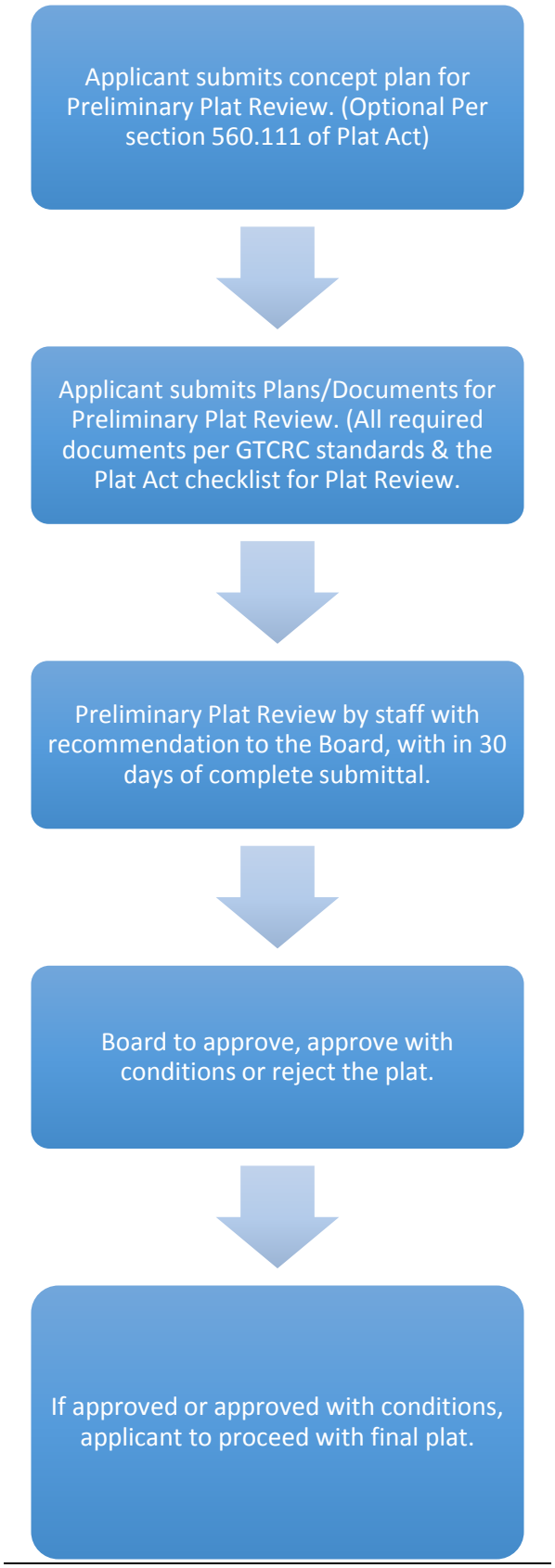
Complete all items:		Date / Comment	Ck'd by
☐	**MDOT Prequalified**	_____	_____
☐	**Earthwork as a prime or subcontractor on 2 or more MDOT projects a year for a three year period directly prior to applying.**	_____	_____
☐	**List of construction equipment presently owned and/or leased along with the equipment intended to be used for paving operations.**	_____	_____
☐	**No more than three violation notices from the Road Commission in the last three years of applying**	_____	_____
☐	**The Road Commission has not made a claim against a bond provided by the Contractor or on a project the Contractor performed paving work on more than one time within the last three years of applying**	_____	_____
☐	**Provide, in writing, that the Contractor has read and fully understands the Road Commission Standards including all testing requirements.**	_____	_____
☐	**Ability to fully bond all work being performed.**	_____	_____

Preliminary Checklist for:

Utility Installation Prequalify
(Storm, sewer, water, gas, phone, cable, electric)

Complete all items:		Date / Comment	Ck'd by
☐	**MDOT Prequalified**	_____	_____
☐	**Earthwork as a prime or subcontractor on 2 or more MDOT projects a year for a three year period directly prior to applying.**	_____	_____
	(All Utility Installation)		
☐	**List of construction equipment presently owned and/or leased along with the equipment intended to be used for paving operations.**	_____	_____
☐	**No more than three violation notices from the Road Commission in the last three years of applying**	_____	_____
☐	**The Road Commission has not made a claim against a bond provided by the Contractor or on a project the Contractor performed paving work on more than one time within the last three years of applying**	_____	_____
☐	**Provide, in writing, that the Contractor has read and fully understands the Road Commission Standards including all testing requirements.**	_____	_____
☐	**Ability to fully bond all work being performed.**	_____	_____

Plat Approval Process – Flow Chart



Consulting Fee Acknowledgement

The following is provided as an acknowledgement of the established consulting fees in the Grand Traverse County Road Commission's publication *Right of Way Permitting and Public Road Standards*.

This acknowledgement is to be completed by the applicant prior to the Road Commission's staff consulting on a conceptual plat plan or site design. The applicant agrees to compensate the Road Commission at it's currently established rate for consultations and understands that no written reports or letters will be generated or issued to any person, organization or government agency unless found necessary by staff.

Applicant: _____ **Design Engineer:** _____

Plat Name: _____ **Type of development:** Plat Land Div. Other

Project Location: _____ , _____ , _____
Existing Intersecting Road Name(s) Sec./Town/Range Township

Billing Information:

Name: _____

Address: _____

City/State/Zip: _____

Telephone: _____ Fax: _____

I, _____ , of _____
(Applicant) (Company Name)

hereby acknowledge and agree to pay to the Grand Traverse County Road Commission all associated consulting fees established by the Road Commission's *Right of Way Permitting and Public Road Standards* and understand that these fees will not be included or applied to any future review fees. It is also understood that if further consultations are needed that this agreement will remain in force until such time as all associated fees and documents have been submitted and accepted as complete for Preliminary Plan Review, on behalf of the Board of County Road Commissioners.

_____ _____
Signature Date

- For Agency Use Only -

Staff reviewer: _____ Hours charged: _____
Print Name

_____ _____
Signature Date

Preliminary Checklist

for Plat Review (Public Road Submittal)

(To be completed by the applicant and included with preliminary plans at time of submission)

PLEASE NOTE: The following checklist is provided as an overview to the Grand Traverse County Road Commission's publication ***Procedures and Regulations for Developing Public and Private Roads***. The checklist is intended to assist the design consultant in preparing preliminary plans, for Staff review and Board consideration, and is not intended to replace the currently adopted policies or standards. **It is the responsibility of the design consultant to incorporate all of the Road Commission design standards when preparing the preliminary plans.** Failure to follow the published procedures, regulations, standards, or to complete and return this checklist, may result in the project plans being returned for revision and resubmission.

Plat Name:_____ **Type of development:** _____
(Plat, Land Division)

Parcel Identification:_____

Location: _____ , _____ , _____
Nearest intersecting road name(s) Sec./Town/Range Township

Engineer: _____ **Applicant:** _____

Company Name:_____ Company Name _____

Address _____ Address _____

City/State/Zip _____ City/State/Zip _____

Professional Surveyor:_____

Address _____

City/State/Zip _____

License Number_____

Complete all items:

		Date / Comment	Ck'd by
☐	**County Planning/Land Development Review Committee** __ All Committee comments should be addressed in the preliminary plans	_____	_____
☐	**Preliminary Plat** __ Submit 3 copies of plan with letter requesting approval	_____	_____
☐	**Review Fee** __ Base + lot/acre + lineal ft. of roadway, see adopted fee schedule (Roadway fee is calculated from proposed centerline POB to POE)	_____	_____
☐	**Certification of company & principal owners** __ Submit certification letter declaring project's owners	_____	_____
☐	**Title Insurance Commitment** __ Submit commitment to Board for R/Ws, outlots, easements, etc.	_____	_____
☐	**Drainage Plan** __ Include Drain Commissioner's approval, soil borings & perk rates, wetland & floodplain boundaries, drainage basins & easements.	_____	_____

Complete all items:

Date / Comment | Ck'd by

☐ **Traffic Study** _____ _____

☐ **Road Layout Plan** _____ _____

__ Access restrictions clearly marked on plans
__ Cul-de-sacs (min. length as per spec., drain center to ditches)
__ Provide temporary turn-around easement (when applicable)
__ Free flowing alignment (avoid permanent dead ends)
__ Provide Future Road corridor access to adjacent lands (when applicable)
__ Provide extra topography beyond road ends demonstrating ability to be constructed in the future & are placed in a practical location

☐ **Right-of-Way Widths** _____ _____

__ Existing & proposed shown w/ road classifications

☐ **Road Names** (Include Co. Equalization's approval) _____ _____

☐ **Road Plan & Profile Design** _____ _____

__ Minimum 275 ft. horizontal centerline radii
__ No back to back reverse curves
__ Maximum 6% vertical grade on main through roads at intersections
__ Include Horizontal & Vertical road centerline tangent & curve information, stationing at PC-PI-PT, bearings & distances on existing & proposed roads
__ Include minimum of one permanent bench mark at 600 ft. intervals along alignment, elevation & location, referenced to a known Federal datum
__Roadway cross-sections every 50' (additional sections may be required as needed)
__Roadway Typicals

☐ **Intersection Design & Calculations** _____ _____

__ Intersecting angle of not less than 70°, *preferably perpendicular*
__ Include AASHTO sight distance calculations on intersecting roads
__ Intersection offset distances (300' opposite side, 360' same side)
__ Passing flares or 3 lane sections (where required, provide plan & profile drawings, with cross sections for work on existing public roads)
__ School bus loading flare (Provide statement from school system)

☐ **Clearing & Grubbing Limits** _____ _____

☐ **Grading Limits** _____ _____

__ Provide grading easements on existing & proposed roads where needed

☐ **Utilities** _____ _____

__ Existing & proposed easement locations must be clearly marked on plans
__Plan and profiles of water and sewer utilities with pertinent details.
__All water and sewer valving and manholes clearly illustrated identifying offset distances from center line of roadway where applicable.

☐ **Pavement Structure** _____ _____

__ Include pavement design calculations if non-granular soils are present, or more than 200 dwellings are proposed

Complete all items:

☐ **Traffic Control Plan & Quantities** _____ _____

__ Include signs, barricades, construction warning devices, etc.
__ Road name signs & pavement markings as required by the MMUTCD
__Provide traffic work plan for all work within an exisiting ROW

☐ **Private Roads** _____ _____

__If the development includes roads or alleys which are private, the developer shall record notice in the chain of title for all lots or units in the development project, placing all transferees of lots or units within the development that the roads and alleys are not required to be maintained by the Board, as outlined in Section 261 of the ***Land Division Act***, Act 288, PA 1967. The recorded notice shall be provided to the Board.

I, _____, of _____
(applicant) (company name)

hereby certify that all design components of the Grand Traverse County Road Commission's ***Right of Way Permitting and Public Road Standards***., have been fully complied with and are included in the accompanying set of preliminary plans. I also understand that if all items are not checked off, submitted or included, that the plans may be returned for revision or further design requirements, and that additional fees for plan review may be incurred.

Signature:_____ Date:_____

☐ (For additional comments attach separate sheet.)

Final Checklist

for

Land Development closeout & Road Acceptance

(To be completed by the design consultant and included with final closeout documents)

PLEASE NOTE: The following checklist is provided as a schedule for the completion of the requirements for acceptance of new roads under the Grand Traverse County Road Commission's publication *Procedures and Regulations for Developing Public and Private Roads*. The developer's consultant is responsible for completing the checklist in preparing the final closeout land development projects for Road Commission review and consideration for acceptance. Roads will be recommended for acceptance when they meet the published rules and regulations, and comply with the project's preliminary approval conditions. The completed checklist and all supporting documents are to be submitted within 30 days of the completion of construction or no later than **November 1st** of the calendar year proposed for acceptance.

Plat Name:_____ **Type of development:** _____
(Plat, Land Division)

Parcel Identification:_____

Location: _____ , _____ , _____.
Nearest intersecting road name(s) Sec./Town/Range Township

Engineer: _____ **Applicant:** _____

Company Name:_____ Company Name _____

Address _____ Address _____

City/State/Zip _____ City/State/Zip _____

Professional Surveyor:_____

Address _____

City/State/Zip _____

License Number_____

Complete all items that apply:		Date / Comment	Ck'd by CRC staff
☐ **Sub-grade:**			
	Density		
	Gradation		
	Depth Checks		
☐ **Aggregate:**			
	Density		
	Gradation		
	Depth Checks		
☐ **Bituminous:**			
	Plant Inspection Reports		
	Yield Calculations		
	Temperature Checks		
	Cross Slope Checks		
	Mix Designs		

Plat Name: _____

		Date / Comment	Ck'd by CRC staff
☐	**Concrete:**		
	Slump	_____	_____
	Air	_____	_____
	Compression	_____	_____
☐	**Construction Engineer's Certification:**	_____	_____
☐	**Report of Road Costs** (GASB-34)**:**	_____	_____
☐	**Conflict of Interest Certification** (when applicable)	_____	_____
☐	**Plats** (for Act 288 subdivision plats)		
	Submit: Final Plat mylar for approval by Board	_____	_____
	Restrictive covenants	_____	_____
	Title insurance policy to transfer project's roads	_____	_____
☐	**Land Division parcels**		
	Submit: Deed/road Restrictions	_____	_____
	Copy of Act 132 Survey of Land Division	_____	_____
	Certified Act 132 Survey of the new road(s)	_____	_____
	Title insurance policy to transfer project's Roads	_____	_____
☐	**Future Road Reserves** (where required)		
	Submit: Warranty Deed of outlot conveyance	_____	_____
	Certified Act 132 Survey of Future Road	_____	_____
	Title insurance policy to transfer ownership	_____	_____
☐	**Deposit to Guarantee Completion (LOC):** (Amount to be determined by Co. Rd. Comm.)	_____	_____
☐	**As-Built Plans** (when required)	_____	_____

I, _____ , of _____
(Applicant) (Company Name)

hereby certify that all design components of the Grand Traverse County Road Commission's ***Procedures and Regulations*** have been fully complied with and are included in the accompanying set of final documents. I understand that that additional fees for final plan review and inspection may be incurred. I also understand that if all items are not checked off, submitted or included, that the proposed roads may not be accepted by the County Road Commission, and that the cost and responsibility for the continued maintenance and up keep of the roads will be at the developer's expense.

Signature:_____ Date:_____

☐ (For additional comments attach separate sheet.)

(GASB-34)

REPORT OF ROAD COSTS

Road Name: _____

Plat Name: _____

Item	Cost
Land Cost (Right-of-way)	_____
Sub-base, Tree Removal, Ditching	_____
Gravel, Asphalt and Shoulders	_____
Bridges and Structures	_____
Signs and Guardrail	_____
Culverts	_____
Storm Sewer	_____
Restoration	_____
_____	_____
_____	_____
TOTAL COST	**$**_____

Signature of Applicant: _____

Title: _____

Date: _____

Applicant shall submit a MERL (Michigan Engineer Resource Library) form illustrating all pay items and associates bid unit prices.

Office Use Only

Township: _____ T ___ N, R____W, Section _____

Date Taken into System: _____ Liber: _____ Page: _____

SAMPLE LETTERS

Required prior to Preliminary Approval

SAMPLE CERTIFICATION

of CONSTRUCTION ENGINEER and CONTRACTOR
to ACCOMPANY PRELIMINARY LAND DEVELOPMENTS

(SUBMIT WITH PRELIMINARY LAND DEVELOPMENT
NAMES OF ALL COMPANY AND PRINCIPAL OWNERS)

This letter is to be signed by the applicant(s) who are authorized to retain consultants and contractors for the project..

Owners of the Plat
or Corporate Principles: _____
_____
_____
_____

All Members of the Corporation: _____
_____
_____
_____

Surveyor: _____

Design Engineer: _____

Construction Engineer: _____

Construction Contractor: _____

This certification can be changed in the future by filing an amended certification with the Grand Traverse County Road Commission.

- Is the Construction Engineer an owner, shareholder, member, employee, associate or officer of the Owner or applicant(s) or a business organization of which the Owner or applicant(s) is an employee, associate, owner, shareholder, officer or member ?
  __ Yes
  ___ No

- Is the Construction Engineer an owner, shareholder, member, employee, associate or officer of the Construction Contractor or a business organization of which the Construction Contractor is an associate, owner, shareholder, officer employee or member?
  ___Yes
  ___No

- Does the Construction Engineer selected by the applicant have any other apparent or undeclared conflict of interest?
  ___Yes
  ___No

- NOTE: The term “Construction Engineer” shall include the Design Engineer and the Construction Engineer, their employees or subcontractors.

If the answer is “Yes” to any of the above, the Grand Traverse County Road Commission will require that independent, non-associated, Construction Engineers and certified technicians be retained by the applicant to provide certification of construction.

_____ _____

Signature of Applicant Date

REQUIRED PRIOR TO FINAL PLAT/LAND DIVISION
APPROVAL & ROAD ACCEPTANCE

SAMPLE ENGINEER'S CERTIFICATE

(on Engineer's letterhead)

_____, 20____

Board of County Road Commissioners
Grand Traverse County Road Commission
1881 LaFranier Road
Traverse City, MI 49686

RE: Plat/ Land Division of _____

Section(s) _____ , T_____N, R_____W, _____Township

Dear Sirs:

I hereby certify that all roads and drainage improvements in the above-named plat are complete and have been done in accordance with the Board approved plans and specifications of _____ , 20___ . Further, all monuments as shown on the plat are in place and were in good condition at the time of placement or that proper requirements in accordance with Section 125 of the Subdivision Control Act of 1967 (as amended) have been provided for.

To the fullest extent permitted by law, I shall defend, indemnify and hold the Grand Traverse County Road Commission (GTCRC), its agents, officials and employees harmless from and against all claims, damages, losses and expenses, including reasonable attorney fees and defense costs, arising out of or connected in any way with the roads and drainage improvements that are caused in whole or in part as a result of the roads or drainage improvements failure to be in accordance with the Board approved plans and specifications. I expressly acknowledge and agree that this indemnification provision is indeed to be as broad and inclusive as is permitted by law and that if any portion thereof is held invalid, it is agreed that the balance shall, not withstanding continue in full legal force and effect. This provision is not intended to waive the defense of governmental immunity that may be asserted by the GTCRC in an action against it.

_____ _____

Developer's Certifying Engineer Engineer's License Number

(Seal)

REQUIRED PRIOR TO FINAL APPROVAL
WHEN APPLICABLE

SAMPLE LETTER
TO ACCOMPANY DEPOSIT TO GUARANTEE COMPLETION OF PRIVATE ROADS/DRAINAGE IMPROVEMENTS IN PLATS

_____, 20____

Board of County Road Commissioners
Grand Traverse County Road Commission
1881 LaFranier Road
Traverse City, MI 49686

RE: Plat of _____ , Section(s) _____ , T_____N, R_____W,
_____Township

Dear Sirs:

The enclosed _____ in the amount of _____ is hereby submitted to guarantee the completion and improvement of the private roads and drainage improvements in the Plat of _____ in accordance with County Road Commission Standards and Specifications. I understand that the deposit will be deposited in a non-interest bearing account and will be utilized by the Road Commission to complete the roads and road drainage improvements within the plat in the event that I do not complete such improvements. Additionally, I understand that if the cost to complete such improvements exceeds the amount deposited herewith, I will be liable to the Road Commission the additional amount to complete the improvements. This additional amount may include a charge for actual time spent by Road Commission employees in completing the improvements in addition to the cost of construction and outside engineering. In the event that the Road Commission has to take legal action to enforce this, I will be liable to the Road Commission for its costs and fees, including attorney fees.

In the event that the improvements are completed and approved byt the Road Commission, this deposit, less any costs or fees incurred by the Road Commission, will be returned to me without interest.

I understand that even after completion of the improvements, I will be responsible for maintenance of the improvements.

Yours truly,

_____
Developer

REQUIRED PRIOR TO FINAL LAND DEVELOPMENT APPROVAL
AND ROAD ACCEPTANCE WHEN APPLICABLE

SAMPLE LETTER
TO ACCOMPANY DEPOSIT TO GUARANTEE COMPLETION OF PUBLIC ROADS

_____, 20____

Board of County Road Commissioners
Grand Traverse County Road Commission
1881 LaFranier Road
Traverse City, MI 49686

RE: Plat/Condominium/Land Division of _____

Section(s) _____ , T_____N, R_____W, _____Township

Dear Sirs:

The enclosed _____ in the amount of _____ is hereby submitted to guarantee the improvement of the public roads and drainage improvements in the Plat of _____ in accordance with County Road Commission Standards and Specifications. I understand that the deposit will be deposited in a non-interest bearing account and will be utilized by the Road Commission to complete the roads and road drainage improvements within the _____ Plat in the event that I do not complete such improvements. Additionally, I understand that if the cost to complete such improvements exceeds the amount deposited herewith, I will be liable to the Road Commission the additional amount to complete the improvements. This additional amount may include a charge for actual time spent by Road Commission employees in completing the improvements in addition to the cost of construction and outside engineering. In the event that the Road Commission has to take legal action to enforce this, I will be liable to the Road Commission for its costs and fees, including attorney fees.

I understand that I will be responsible for the maintenance of the roads and drainage improvements in said development until they have been approved and accepted by the County Road Commission.

I also understand that the County Road Commission will furnish and erect road name and traffic controls signs at my expense.

In the event that the improvements are completed and approved by the Road Commission, this deposit, less any costs or fees incurred by the Road Commission, will be returned to me without interest.

Yours truly,

_____
Developer

REQUIRED PRIOR TO FINAL ROAD ACCEPTANCE
and/or PLAT APPROVAL WHEN APPLICABLE

SAMPLE
of IRREVOCABLE COMMERCIAL
LETTER OF CREDIT

_____, 20____

Board of County Road Commissioners
Grand Traverse County Road Commission
1881 LaFranier Road
Traverse City, MI 49686

RE: Plat/Condominium/Land Division of _____
Section(s) _____ , T_____N, R_____W, _____Township

Dear Sirs:
We hereby open our Irrevocable Letter of Credit, in your favor, for account of _____ , (City, State, Zip) for a sum not exceeding _____ Dollars.

We are advised that _____ is to install roads and drainage improvements in the (Plat/Condominium/Land Division) of _____, Section _____ , T ____ N, R _____ W, _____ Township, in accordance with the plans and specifications approved by your Board.

In the event _____ shall fail to install roads and drainage improvements you may draw a draft at sight on _____ Bank, (City, State, Zip) for amounts not exceeding in aggregate the aforesaid sum of _____ Dollars when accompanied by:

"Your signed **Statement** certifying that _____ failed to install roads and drainage improvements."

Upon receipt of your Resolution authorizing a release in the amount you will accept under this Credit, we shall issue our formal Amendment reducing our liability to an amount equal to the original amount of this credit, less any amounts released by your Resolution and drawings hereunder.

All drafts drawn under this Credit must be marked "Drawn under Letter of Credit dated _____." Any amendments to the terms of this Credit must be in writing over authorized signatures of the Bank. This Credit is subject to the Uniform Customs and Practice for Documentary Credits (1983 Revision), International Chamber of Commerce, Publication 400.

We agree with you that all drafts drawn hereunder and in compliance with the terms this Credit will be duly honored on delivery of your Statement as specified, if presented at this office on or before **December 31, 20___**.

Very truly yours,

Authorized Bank Official

REQUIRED PRIOR TO FINAL ACCEPTANCE WHEN APPLICABLE

SAMPLE

LETTER OF UNDERSTANDING
from Township Board
to accompany
SITE CONDOMINIUMS with **PROPOSED PUBLIC ROADS**
(must be on township's letterhead)

Board of County Road Commissioners
Grand Traverse County Road Commission
1881 LaFranier Road
Traverse City, MI 49686

RE: _____

Dear Sirs:

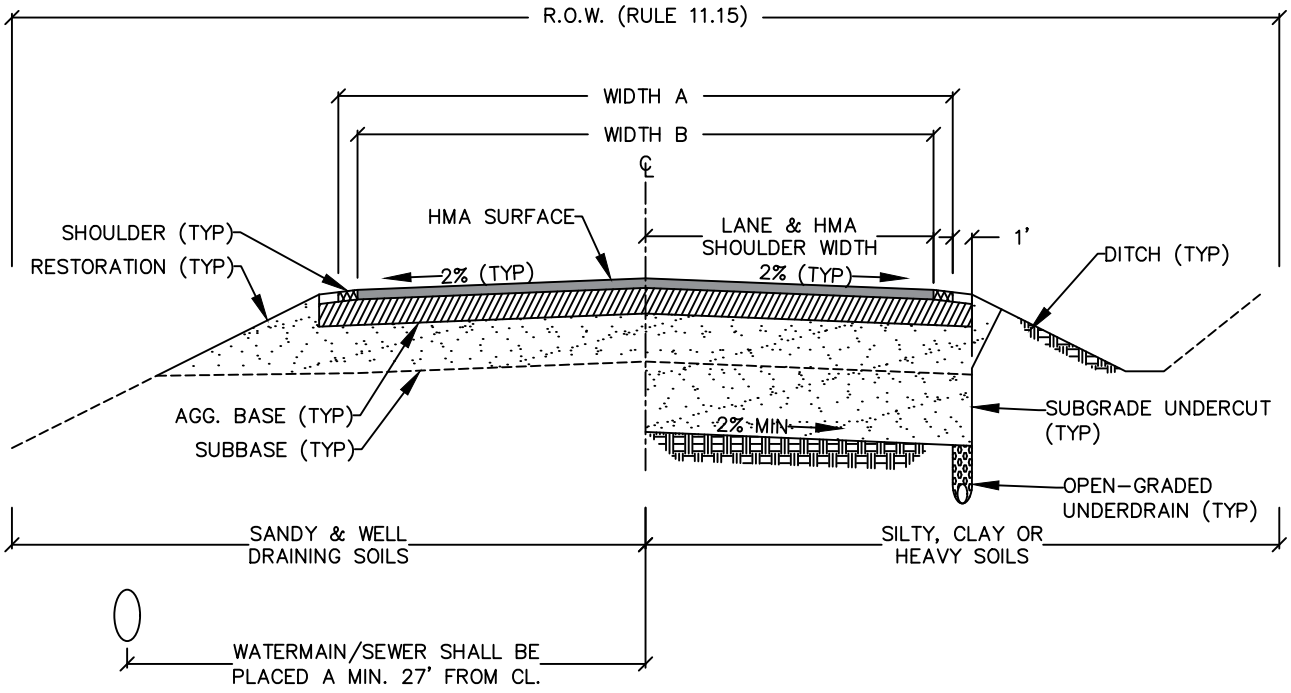
The _____ Township Board of Trustees, at a meeting held on _____ passed a motion of understanding that _____ Township is aware of the site condominium development known as _____ and referenced above. Also, _____ Township with the concept of the roads in _____ condominium development becoming part of the county road system, and also states that _____Township will administer in the future, requests for special assessment districts for road improvements within, adjacent to, or serving said development the same as they would for any other requests for special assessment districts for road improvements.

_____
Township Supervisor

_____
Township Clerk

Appendix

D



ROAD DIMENSIONS					
ROAD CLASSIFICATION	WIDTH A (FT)	WIDTH B (FT)	LANE WIDTH (FT)	PAVED SHOULDER (FT)	AGGREGATE SHOULDER (FT)
ALLEYS (RECD. DIMENSIONS)	24	22	11	0	1
COUNTY PRIMARY / LOCAL	34	32	11	5	1
INDUSTRIAL	42	40	12	8	1
MINOR COLLECTOR	42	40	12	8	1
MAJOR COLLECTOR	42	40	12	8	1
MINOR ARTERIAL	42	40	12	8	1

- ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO CURRENT MDOT CONSTRUCTION SPECIFICATIONS.
- HMA SURFACE MINIMUM THICKNESS SHALL BE 3.5" AND SHALL FOLLOW THE MDOT HMA SELECTION GUIDELINES AND APPLICATION RATES.
- AGGREGATE BASE MINIMUM THICKNESS SHALL BE 8".
- SUBBASE MINIMUM THICKNESS SHALL BE 15".
- SHOULDERS SHALL BE A MINIMUM THICKNESS OF 4" AND SHALL BE SHOULDER CLASS II.
- WHERE SILTY, CLAY OR HEAVY SOILS SUSCEPTIBLE TO FROST HEAVE ARE PRESENT THE MINIMUM UNDERCUT DEPTH SHALL BE 4' FROM TOP OF AGGREGATE BASE'. SUBGRADE UNDERCUTTING SHALL CONFORM TO MDOT SPECIFICATIONS FOR SUBGRADE UNDERCUTTING TYPE II.
- OFFSET DISTANCE FORM EDGE OF PAVEMENT FOR OPEN-GRADED UNDERDRAINS MAY DIFFER FROM ILLUSTRATED AND BE OFFSET AT A GREATER DISTANCE DEPENDING ON SITE CONDITIONS. UNDERDRAIN PIPES SHALL BE A MINIMUM OF 6" OR AS REQUIRED BY SITE CONDITIONS AND SHALL CONFORM TO MDOT SPECIFICATIONS FOR OPEN-GRADED UNDERDRAINS.
- BASED ON ROAD CLASS AND VOLUMES, ADDITIONAL LANES AND/OR INCREASED SHOULDER WIDTH MAY BE REQUIRED.

GRAND TRAVERSE COUNTY ROAD COMMISSION
1881 LaFRANIER ROAD
TRAVERSE CITY, MI 49686-8911

231.922.4848 PHONE
231.929.1836 FAX

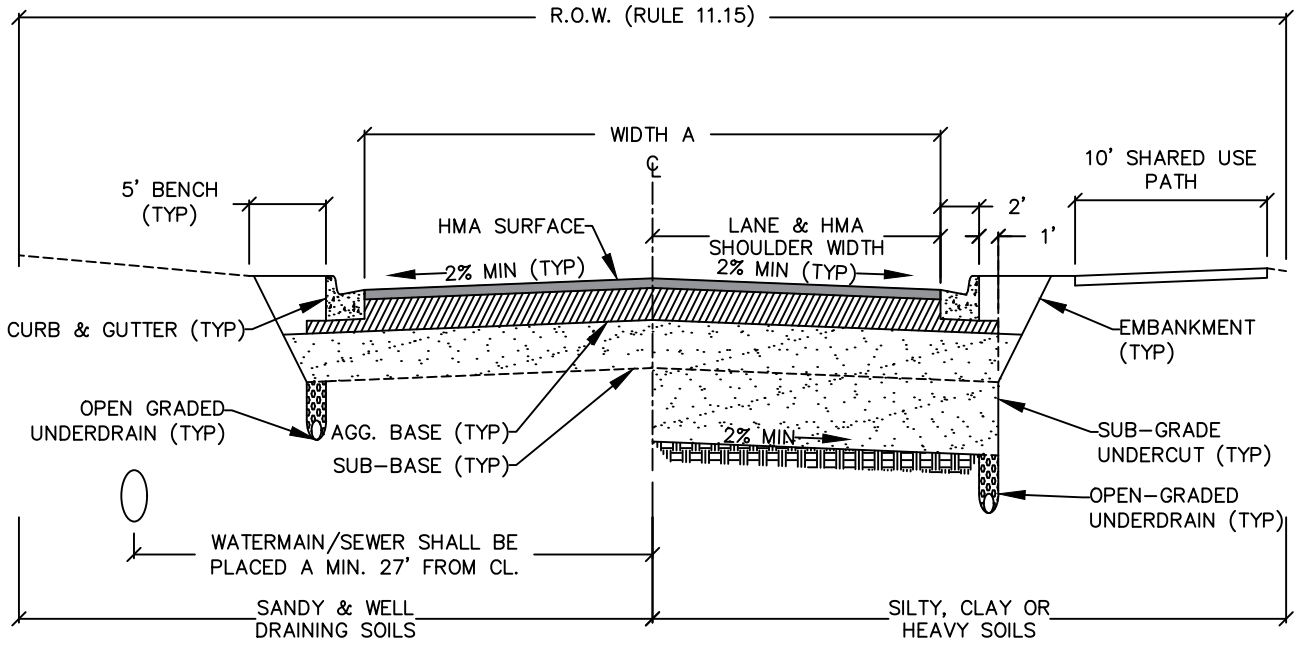
STANDARD PLAN

TYPICAL ROAD CROSS SECTION WITHOUT CURB DETAIL

REVISIONS

DATE: 04-01-2016
GTCRC NO.
DRAWN J. SLONECKI
CHECKED JPJ

SHEET 1 OF 1



ROAD DIMENSIONS			
ROAD CLASSIFICATION	WIDTH A (FT)	LANE WIDTH (FT)	HMA SHOULDER (FT)
ALLEYS (RECD. DIMENSIONS)	22	11	0
COUNTY PRIMARY / LOCAL	32	11	5
INDUSTRIAL	40	12	8
MINOR COLLECTOR	40	12	8
MAJOR COLLECTOR	40	12	8
MINOR ARTERIAL	40	12	8

- ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO CURRENT MDOT CONSTRUCTION SPECIFICATIONS.
- HMA SURFACE MINIMUM THICKNESS SHALL BE 3.5" AND SHALL FOLLOW THE MDOT HMA SELECTION GUIDELINES AND APPLICATION RATES.
- AGGREGATE BASE MINIMUM THICKNESS SHALL BE 10".
- SUBBASE MINIMUM THICKNESS SHALL BE 15".
- CURB AND GUTTER SHALL BE MDOT DETAIL F4 AND SHALL BE PLACED ON A MINIMUM 4" AGGREGATE BASE COMPACTED TO 98% MAX DENSITY. AGGREGATE BASE SHALL NOT CONTAIN MORE THAN 2% EXPANSIVE MATERIAL.
- WHERE SILTY, CLAY OR HEAVY SOILS SUSCEPTIBLE TO FROST HEAVE ARE PRESENT THE MINIMUM UNDERCUT DEPTH SHALL BE 4' FROM TOP OF AGGREGATE BASE. SUBGRADE UNDERCUTTING SHALL CONFORM TO MDOT SPECIFICATIONS FOR SUBGRADE UNDERCUTTING TYPE II.
- OFFSET DISTANCE FORM EDGE OF PAVEMENT FOR OPEN-GRADED UNDERDRAINS MAY DIFFER FROM ILLUSTRATED AND BE OFFSET AT A GREATER DISTANCE DEPENDING ON SITE CONDITIONS. UNDERDRAIN PIPES SHALL BE A MINIMUM OF 6" OR AS REQUIRED BY SITE CONDITIONS AND SHALL CONFORM TO MDOT SPECIFICATIONS FOR OPEN-GRADED UNDERDRAINS.
- BASED ON ROAD CLASS AND VOLUMES, ADDITIONAL LANES AND/OR INCREASED LANE WIDTH MAY BE REQUIRED.
- SHARED USE PATH NOT REQUIRED BUT IF CONSTRUCTED PATH IS TO BE MAINTAINED BY LOCAL GOVERNMENT OTHER THAN GTCRC. MAINTENANCE AGREEMENT REQUIRED FOR APPROVAL OF PATH IN ROW.

GRAND TRAVERSE COUNTY ROAD COMMISSION
1881 LaFRANIER ROAD
TRAVERSE CITY, MI 49686-8911

231.922.4848 PHONE
231.929.1836 FAX

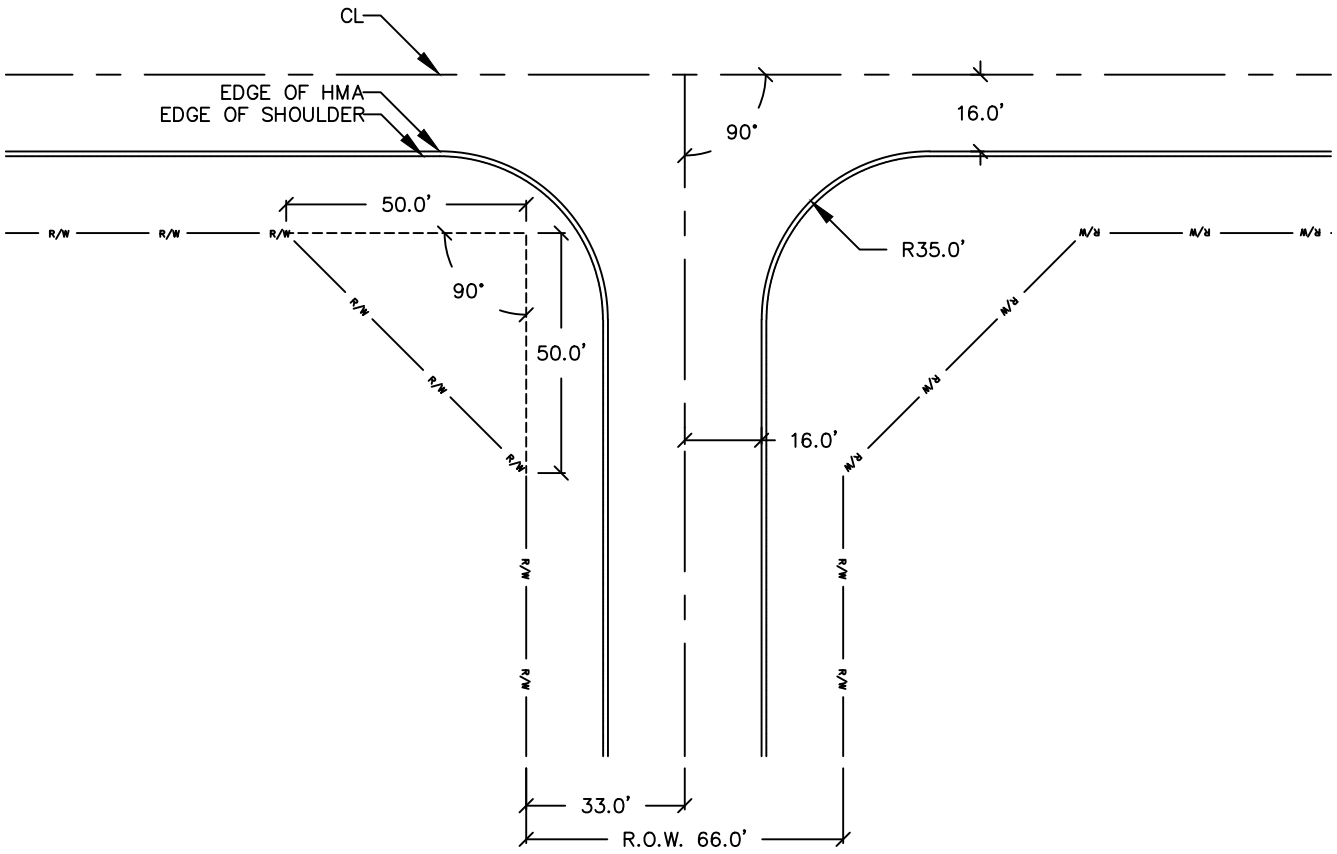
STANDARD PLAN

TYPICAL ROAD CROSS SECTION WITH CURB DETAIL

REVISIONS

DATE: 04-01-2016
GTCRC NO.
DRAWN J. SLONECKI
CHECKED JPJ

SHEET 1 OF 1



- BASED ON PROJECT REVIEW THE ROAD COMMISSION MAY REQUIRE LARGER INTERSECTION RADII OR INFRASTRUCTURE SUCH AS CURBING.

GRAND TRAVERSE COUNTY ROAD COMMISSION
1881 LaFRANIER ROAD
TRAVERSE CITY, MI 49686-8911

231.922.4848 PHONE
231.929.1836 FAX

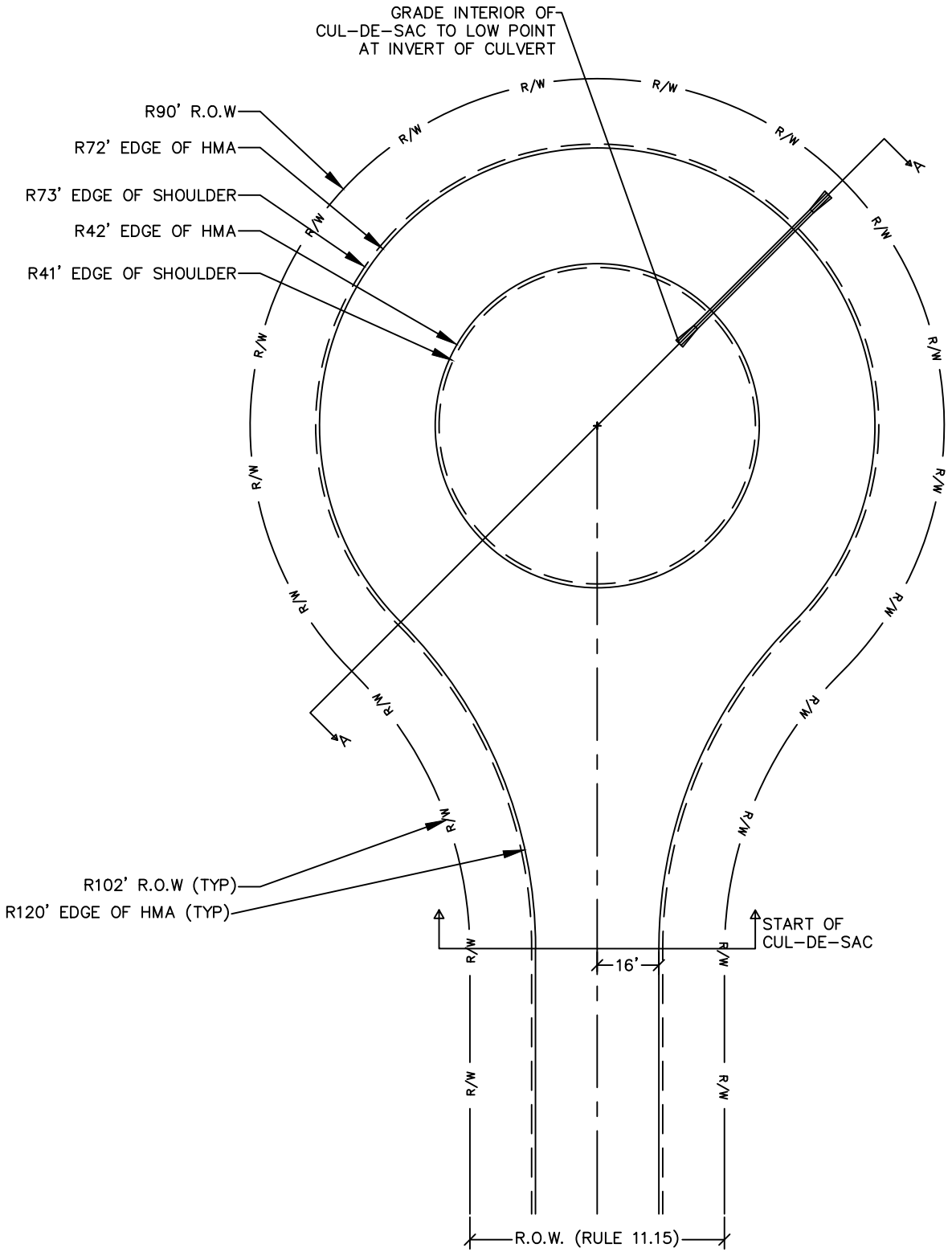
STANDARD PLAN

TYPICAL LOCAL INTERSECTION DETAIL

REVISIONS

DATE: 04-01-2016
GTCRC NO.
DRAWN J. SLONECKI
CHECKED JPJ

SHEET 1 OF 1



GRAND TRAVERSE COUNTY ROAD COMMISSION
1881 LaFRANIER ROAD
TRAVERSE CITY, MI 49686-8911

231.922.4848 PHONE
231.929.1836 FAX

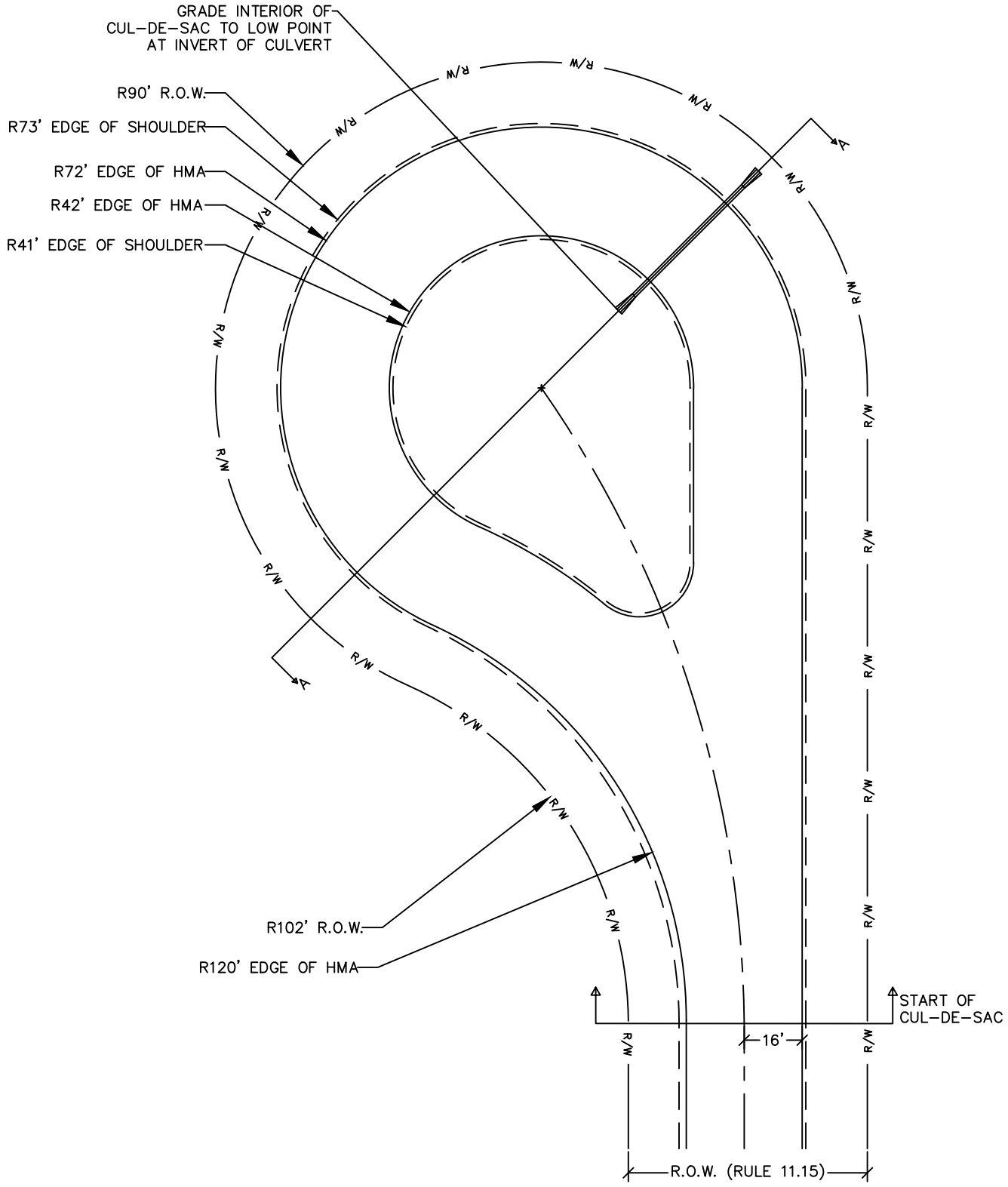
STANDARD PLAN

TYPICAL CUL-DE-SAC DETAIL

REVISIONS

DATE:	04-01-2016
GTCRC NO.	
DRAWN	J. SLONECKI
CHECKED	JPJ

SHEET 1 OF 3



GRAND TRAVERSE COUNTY ROAD COMMISSION
1881 LaFRANIER ROAD
TRAVERSE CITY, MI 49686-8911

231.922.4848 PHONE
231.929.1836 FAX

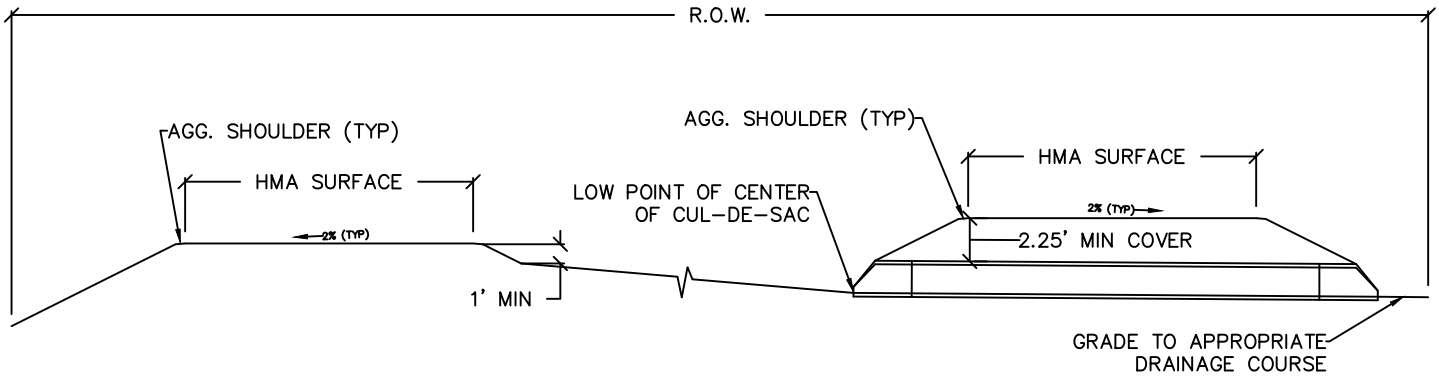
STANDARD PLAN

TYPICAL CUL-DE-SAC OFFSET DETAIL

REVISIONS

DATE: 04-01-2016
GTCRC NO.
DRAWN J. SLONECKI
CHECKED JPJ

SHEET 2 OF 3



- ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO CURRENT MDOT CONSTRUCTION SPECIFICATIONS.
- MINIMUM SLOPE ACROSS CENTER OF CUL-DE-SAC SHALL BE NO LESS THAN 1%
- RETENTION/DETENTION NOT ALLOWED IN CENTER OF CUL-DE-SAC
- FILL SLOPES SHALL BE 1:4 WITH A MINIMUM HEIGHT OF 1' PRIOR TO GRADE CHANGE ACROSS CENTER OF CUL-DE-SAC.
- MINIMUM CULVERT SIZE SHALL BE 12" AND SHALL BE MDOT CLASS E AND SHALL HAVE CONC END SECTIONS INSTALLED.
- THE LOCATION OF THE OUTLET CULVERT MAY DIFFER FROM ILLUSTRATED AND CARE SHALL BE TAKEN TO ENSURE THAT STORM WATER IS DRAINED TO AN APPROPRIATE FACILITY UNDER THE MAINTENANCE RESPONSIBILITY OF THE ROAD COMMISSION.

GRAND TRAVERSE COUNTY ROAD COMMISSION
1881 LaFRANIER ROAD
TRAVERSE CITY, MI 49686-8911

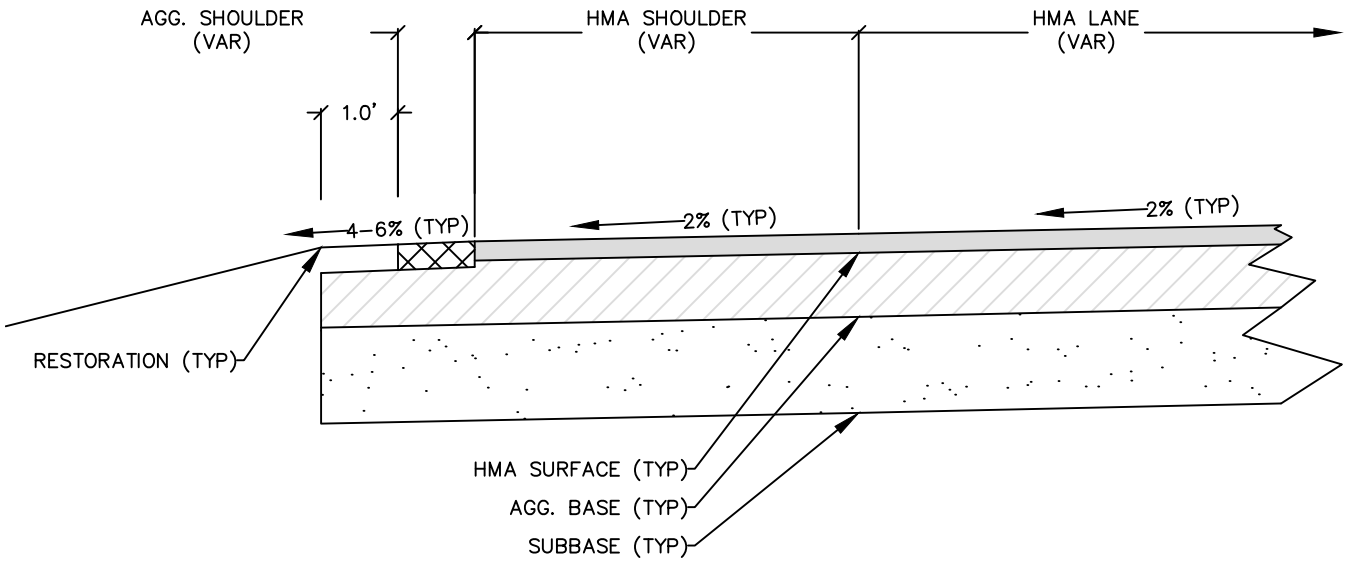
231.922.4848 PHONE
231.929.1836 FAX

STANDARD PLAN

TYPICAL CUL-DE-SAC DETAIL SECTION A-A

REVISIONS

DATE: 04-01-2016
GTCRC NO.
DRAWN J. SLONECKI
CHECKED JPJ



- ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO CURRENT MDOT CONSTRUCTION METHODS
- HMA, AGGREGATE BASE, AND SUB-BASE SHALL BE OF SAME MATERIAL AND PLACED IN SAME THICKNESSES AS THE MAIN LINE TRAVEL LANE.
- HMA SHOULDERS SHALL BE PLACED AT 2% CROSS SLOPE UNLESS OTHERWISE APPROVED BY THE GTCRC.
- AGGREGATE BASE AND SUB-BASE SHALL BE PLACED A MINIMUM 1' BEYOND THE EDGE OF THE AGGREGATE SHOULDER.
- AGGREGATE SHOULDERS SHALL BE MDOT CLASS II, A MINIMUM 4" THICK, AND PLACED AT A CROSS SLOPE OF 4% TO 6%. AGGREGATE SHALL NOT BE PLACED IN A MANNER THAT MAY IMPEDE THE FLOW OF WATER FROM THE HMA SHOULDER.
- TOPSOIL SHALL BE PLACED IN A MANNER THAT DOES NOT IMPEDE THE FLOW OF WATER FROM THE AGGREGATE SHOULDER AND SHALL BE PLACE AT A SLOPE THAT MATCHES THE AGGREGATE SHOULDER SLOPE.

GRAND TRAVERSE COUNTY ROAD COMMISSION
1881 LaFRANIER ROAD
TRAVERSE CITY, MI 49686-8911

231.922.4848 PHONE
231.929.1836 FAX

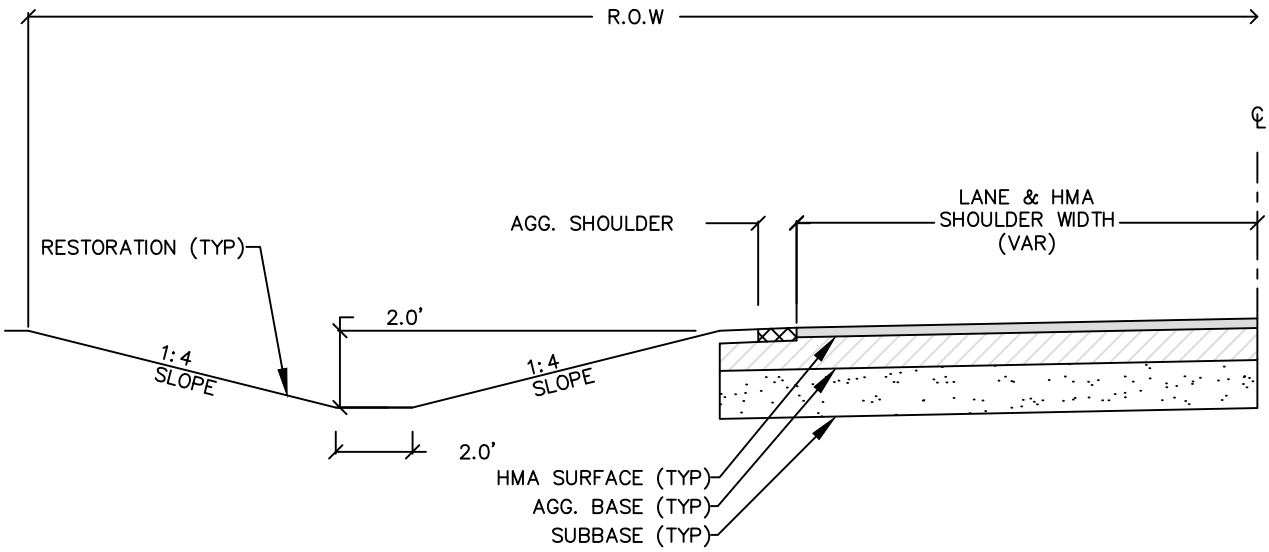
STANDARD PLAN

TYPICAL SHOULDER DETAIL

REVISIONS

DATE:	04-01-2016
GTCRC NO.	
DRAWN	J. SLONECKI
CHECKED	JPJ

SHEET 1 OF 1



- ALL MATERIAL AND CONSTRUCTION METHODS SHALL CONFORM TO CURRENT MDOT CONSTRUCTION SPECIFICATIONS
- DEPTH OF DITCH SHALL BE A MINIMUM OF 2'. DESIGN CALCULATIONS USED TO DETERMINE REQUIRED DITCH DEPTH SHALL BE SUBMITTED TO THE GTCRC FOR REVIEW.
- DITCH BOTTOM SHALL BE A FLAT BOTTOM WITH A MINIMUM WIDTH OF 2'.
- MINIMUM LONGITUDINAL SLOPE OF DITCH SHALL BE 1%
- MAXIMUM LONGITUDINAL SLOPE IS 5%, IF DITCH GRADE EXCEEDS 5% REINFORCMENT IS REQUIRED AND DESIGN SHALL BE SUBMITED TO GTCRC FOR APPROVAL.
- BACK SLOPE MAY BE VARIED TO MAINTAIN CONSTRUCTION WITHIN THE R.O.W. IF APPROVED BY THE GTCRC

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1881 LaFRANIER ROAD
TRAVERSE CITY, MI 49686-8911

231.922.4848 PHONE
231.929.1836 FAX

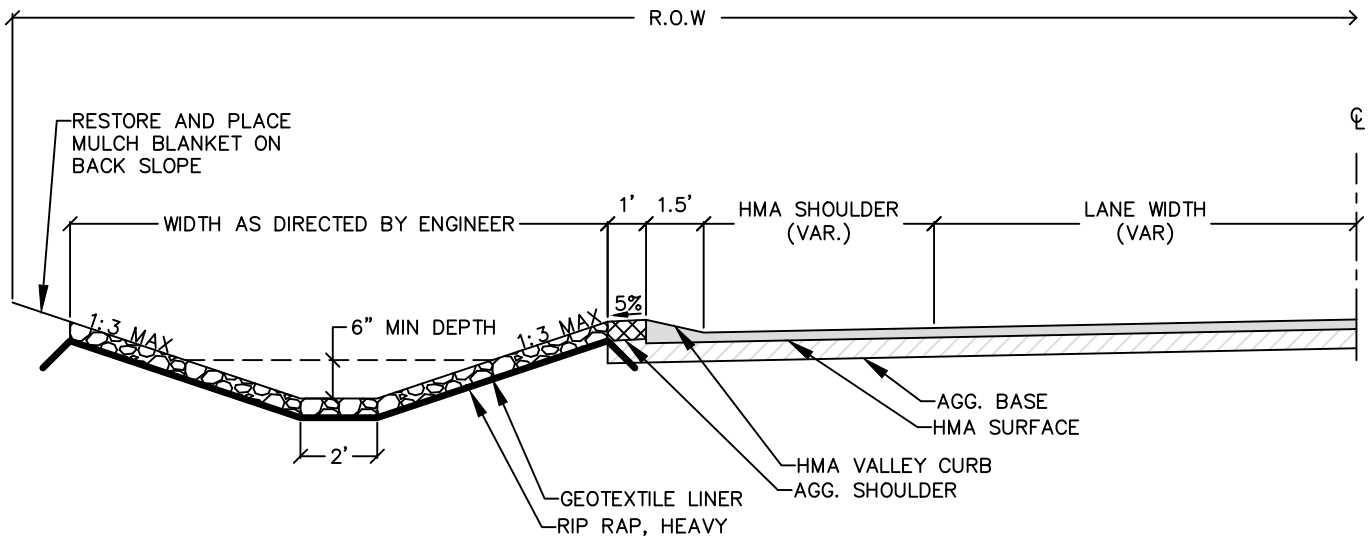
STANDARD PLAN

TYPICAL DITCH DETAIL

REVISIONS

DATE: 04-01-2016
GTCRC NO.
DRAWN J. SLONECKI
CHECKED JPJ

SHEET 1 OF 1



- ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO CURRENT MDOT CONSTRUCTION SPECIFICATIONS
- DEPTH OF COBBLE DITCH SHALL BE A MINIMUM OF 6 INCHES. DESIGN CALCULATIONS USED TO DETERMINE REQUIRED DITCH DEPTH SHALL BE SUBMITTED TO THE GTCRC FOR REVIEW.
- MINIMUM ELEVATION OF TOP OF RIP RAP ON COBBLE DITCH BACK SLOPE TO BE EQUAL TO ELEVATION OF TOP OF HMA CURB.
- GEOTEXTILE LINER SPECIFICATIONS SHALL BE SUBMITTED TO THE GTCRC FOR REVIEW AND SHALL BE APPROVED PRIOR TO PLACEMENT.
- GEOTEXTILE LINER SHALL BE KEYED IN AT TOP OF FRONT AND BACK SLOPE A MINIMUM OF 12 INCHES.
- BROKEN PAVEMENT WILL NOT BE ALLOWED FOR USE AS RIP RAP, HEAVY.
- BACK SLOPE MAY BE VARIED TO MAINTAIN CONSTRUCTION WITHIN THE R.O.W. IF APPROVED BY THE ROAD COMMISSION

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STANDARD PLAN

TYPICAL COBBLE DITCH DETAIL

REVISIONS

DATE: 02-12-2016
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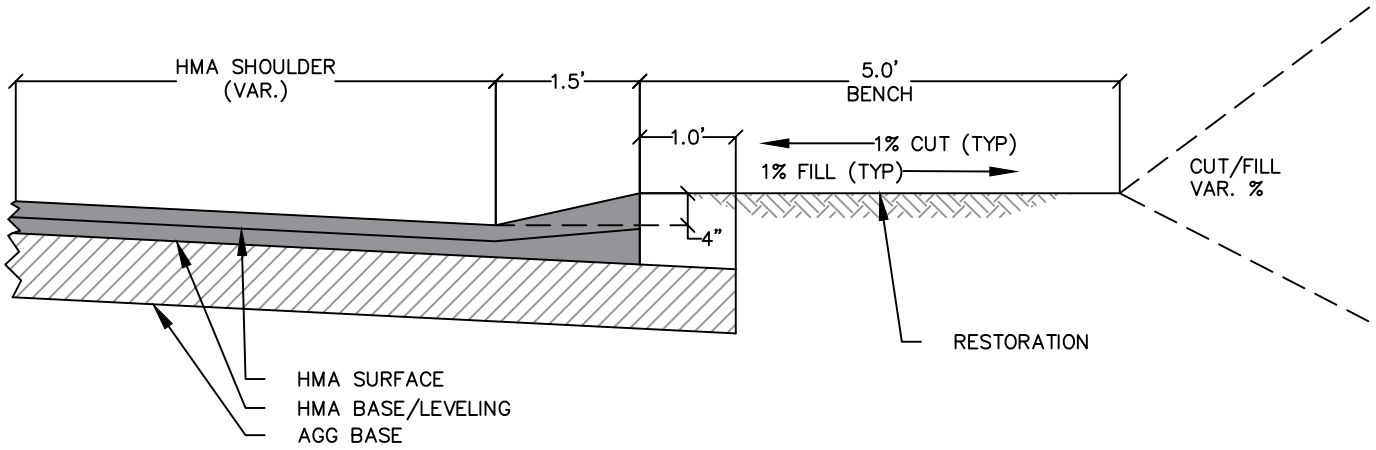

- ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO CURRENT MDOT CONSTRUCTION SPECIFICATIONS.
- HMA CURB SHALL BE PLACED INTEGRAL WITH THE TOP/WEARING, AND BASE/LEVELING COURSES OF HMA.
- SHOULDER SLOPE SHALL BE A MINIMUM 2% TOWARD THE HMA CURB.
- HMA CURB SHALL BE COMPACTED WITH A MINIMUM 40 LBS ROLLER AT TIME OF PLACEMENT.
- SPILLWAY PLACEMENT SHALL BE SPACED TO ENSURE STORM WATER DOES NOT ENCROACH ON THE TRAVEL WAY. SEE GTCRC DETAIL FOR SPILLWAY CONSTRUCTION.

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STANDARD PLAN

TYPICAL HMA VALLEY CURB DETAIL

REVISIONS

DATE: 04-01-2016
GTCRC NO.
DRAWN J. SLONECKI
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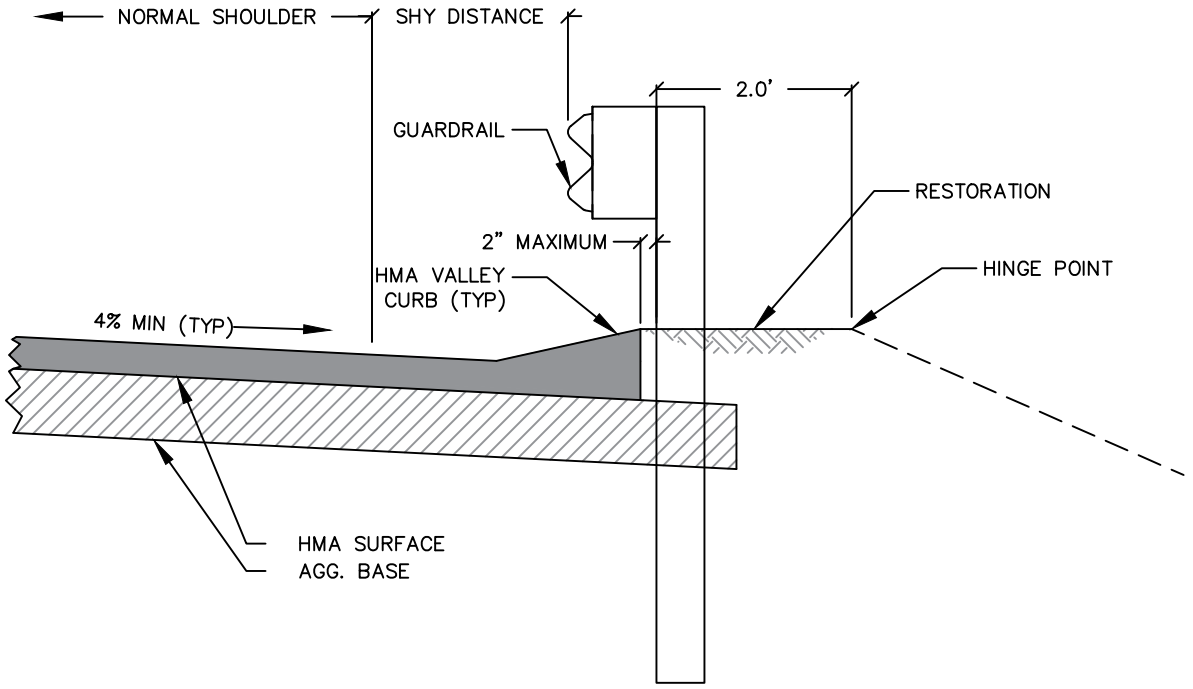
SHEET 1 OF 1



- ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO CURRENT MDOT CONSTRUCTION SPECIFICATIONS.
- GUARDRAIL SHALL BE OF THE TYPE AND KIND REQUIRED BY MDOT/AASHTO GUIDANCE.
- HMA CURB SHALL BE COMPACTED WITH A MINIMUM 40 LBS ROLLER AT TIME OF PLACEMENT.
- SPILLWAY PLACEMENT SHALL BE SPACED TO ENSURE STORM WATER DOES NOT ENCROACH ON THE TRAVEL WAY, AND SO AS TO AVOID EROSION OF THE SLOPE AND SUPPORT OF THE GUARD RAIL. SEE GTCRC DETAIL FOR SPILLWAY CONSTRUCTION.
- SHOULDER WIDTHS SHALL BE AS SPECIFIED ON GTCRC TYPICAL CROSS SECTIONS FOR RURAL AND/OR URBAN ROADS.
- GUARDRAIL WORKSHEETS SHALL BE SUBMITTED TO THE GTCRC FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
- BASED ON PLAN/WORKSHEET REVIEW SHY DISTANCE REQUIREMENTS MAY BE INCREASED AS DETERMINED BY THE GTCRC.

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STANDARD PLAN

TYPICAL GUARDRAIL DETAIL

REVISIONS

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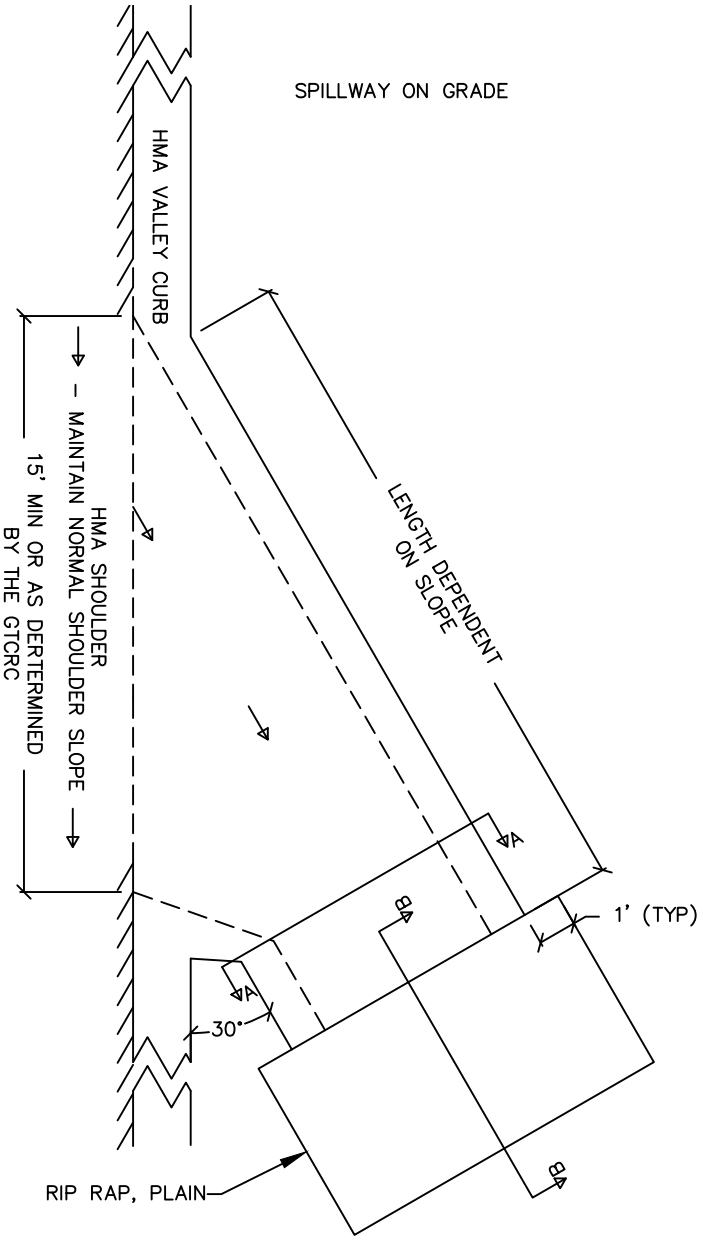
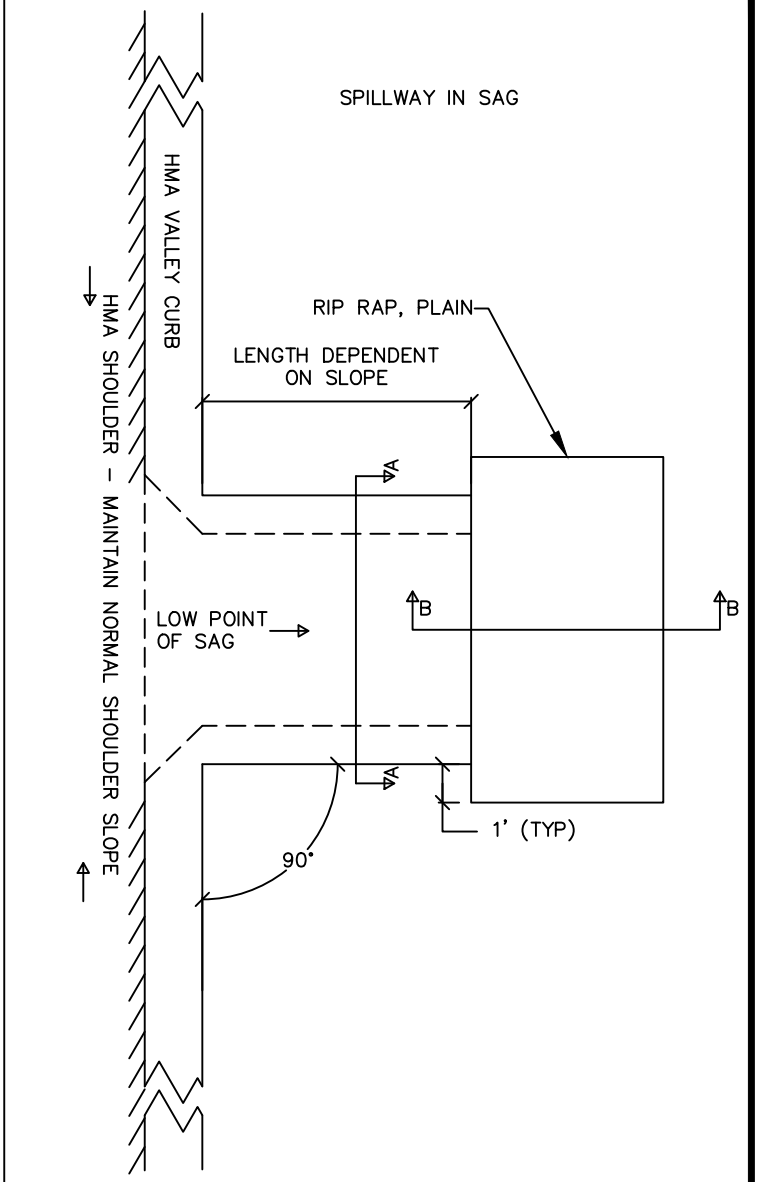
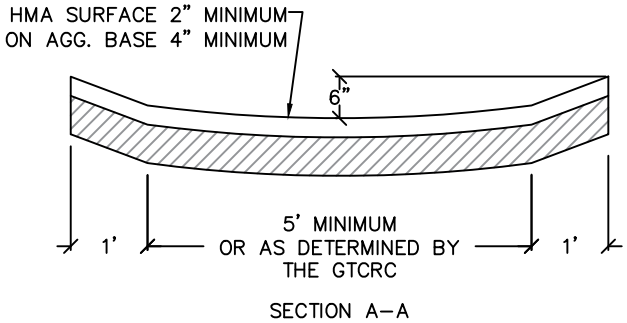
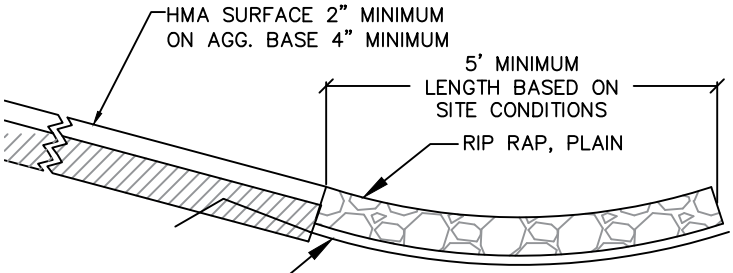
SHEET 1 OF 1







SECTION A–A



SECTION B–B

- ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO CURRENT MDOT CONSTRUCTION SPECIFICATIONS.

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STANDARD PLAN

TYPICAL HMA SPILLWAY DETAIL

REVISIONS

DATE:	04–01–2016
GTCRC NO.	
DRAWN	J. SLONECKI
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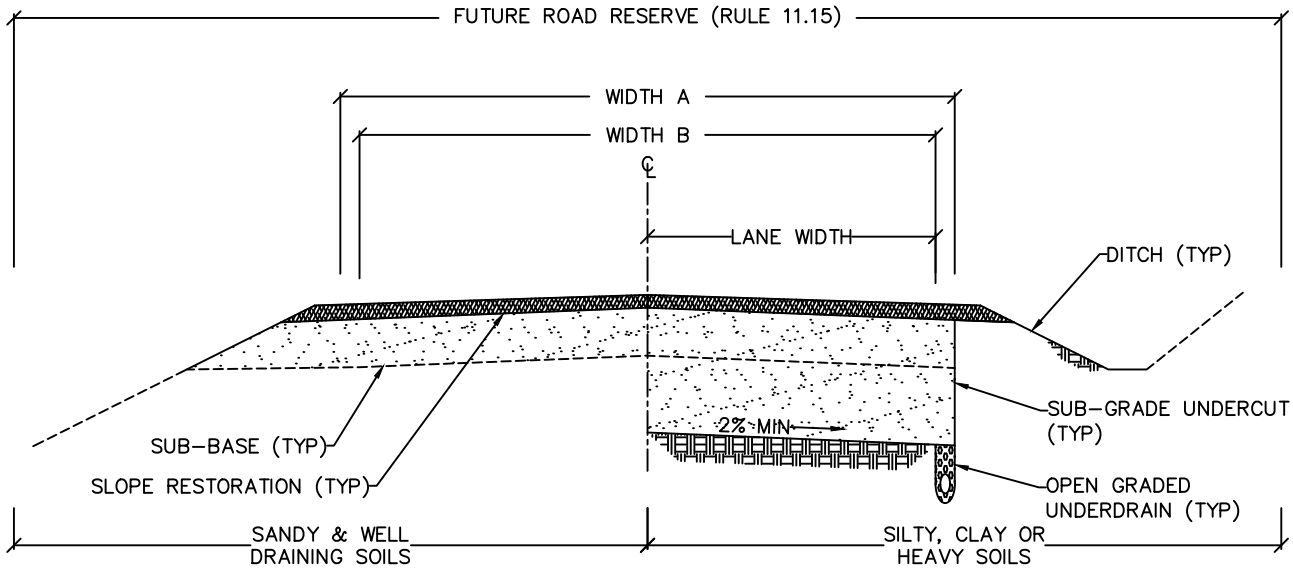

ROAD DIMENSIONS					
ROAD CLASSIFICATION	WIDTH A (FT)	WIDTH B (FT)	LANE WIDTH (FT)	PAVED SHOULDER (FT)	AGGREGATE SHOULDER (FT)
ALLEYS (RECD. DIMENSIONS)	24	22	11	0	1
COUNTY PRIMARY / LOCAL	34	32	11	5	1
INDUSTRIAL	42	40	12	8	1
MINOR COLLECTOR	42	40	12	8	1
MAJOR COLLECTOR	42	40	12	8	1
MINOR ARTERIAL	42	40	12	8	1

- ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO CURRENT MDOT CONSTRUCTION SPECIFICATIONS.
- HMA SURFACE MINIMUM THICKNESS SHALL BE 3.5" AND SHALL FOLLOW THE MDOT HMA SELECTION GUIDELINES AND APPLICATION RATES.
- AGGREGATE BASE MINIMUM THICKNESS SHALL BE 8".
- SUBBASE MINIMUM THICKNESS SHALL BE 15".
- WHERE SILTY, CLAY OR HEAVY SOILS SUSCEPTIBLE TO FROST HEAVE ARE PRESENT THE MINIMUM UNDERCUT DEPTH SHALL BE 4' FROM TOP OF AGGREGATE BASE. SUBGRADE UNDERCUTTING SHALL CONFORM TO MDOT SPECIFICATIONS FOR SUBGRADE UNDERCUTTING TYPE II.
- OFFSET DISTANCE FORM EDGE OF PAVEMENT FOR OPEN-GRADED UNDERDRAINS MAY DIFFER FROM ILLUSTRATED AND BE OFFSET AT A GREATER DISTANCE DEPENDING ON SITE CONDITIONS. UNDERDRAIN PIPES SHALL BE A MINIMUM OF 6" OR AS REQUIRED BY SITE CONDITIONS AND SHALL CONFORM TO MDOT SPECIFICATIONS FOR OPEN-GRADED UNDERDRAINS.

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STANDARD PLAN

TYPICAL ROAD CROSS SECTION FUTURE ROAD DETAIL

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GTCRC NO.
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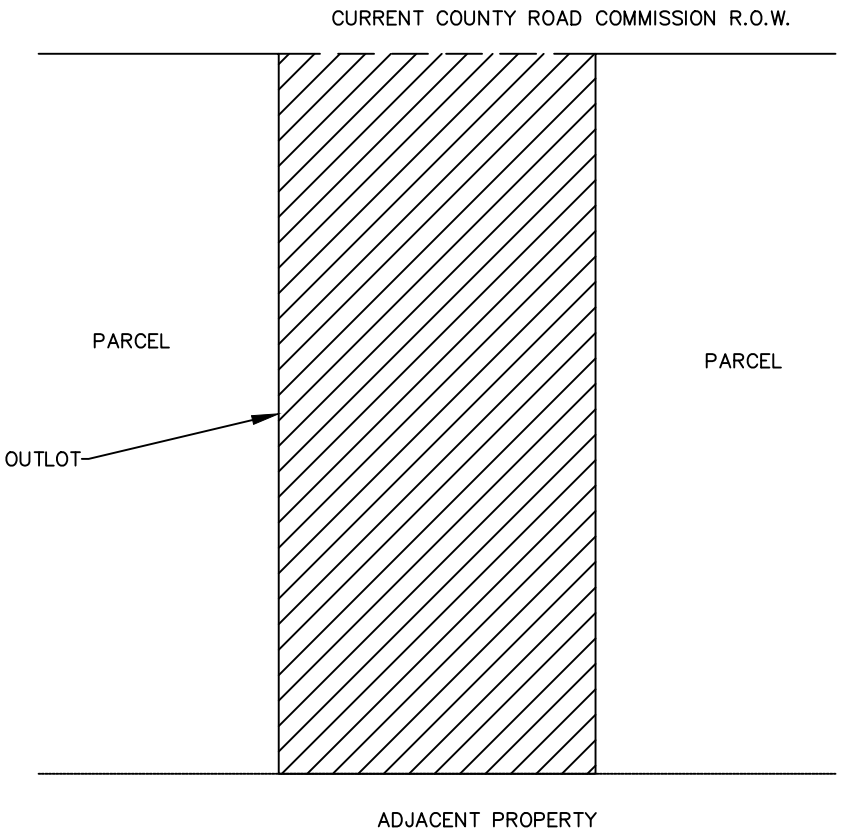

EXISTING OUTLOT IS NOT CONVEYED TO THE GTCRC

- WHERE OUTLOT IS NOT CONVEYED TO THE ROAD COMMISSION AND A PUBLIC ROAD CONNECTION IS PROPOSED, THE FOLLOWING WILL BE REQUIRED.
  - CONVEYANCE OF OUTLOT TO THE GTCRC
  - REQUIRES REPLAT
  - ALL OWNERS AGREE
- WHERE OUTLOT IS NOT CONVEYED TO THE ROAD COMMISSION AND A PRIVATE ROAD CONNECTION IS PROPOSED, THE FOLLOWING WILL BE REQUIRED. (UNDER THE ASSUMPTION THAT THE LANGUAGE WITHIN THE DEED RESTRICTIONS ALLOWS FOR THE EXTENSION OF A FUTURE ROAD).
  - CONNECTION OF A PRIVATE ROAD TO BE CONSIDERED UNDER A PERMIT WITH POSSIBLE CONDITIONS. SUCH CONDITIONS MAY INCLUDE BUT ARE NOT LIMITED TO: TURN AROUND REQUIREMENTS (I.E. CUL–DE–SAC WITH AGREEMENT).

EXISTING OUTLOT IS CONVEYED TO THE GTCRC

- WHERE OUTLOT IS CONVEYED TO THE ROAD COMMISSION AND A PUBLIC OR PRIVATE ROAD CONNECTION IS PROPOSED, THE FOLLOWING WILL BE REQUIRED.
  - CONNECTION OF A PUBLIC OR PRIVATE ROAD IS ALLOWED IF ONLY POINT OF ACCESS.
  - IF PROPOSED CONNECTION IS NOT THE ONLY POINT OF ACCESS THE GTCRC WILL REVIEW FOR CONSIDERATION.
  - ALL PROPOSED CONNECTIONS TO BE APPROVED UNDER A PERMIT WITH POSSIBLE CONDITIONS. SUCH CONDITIONS MAY INCLUDE BUT ARE NOT LIMITED TO: TURN AROUND REQUIREMENTS (I.E. CUL–DE–SAC WITH AGREEMENT).

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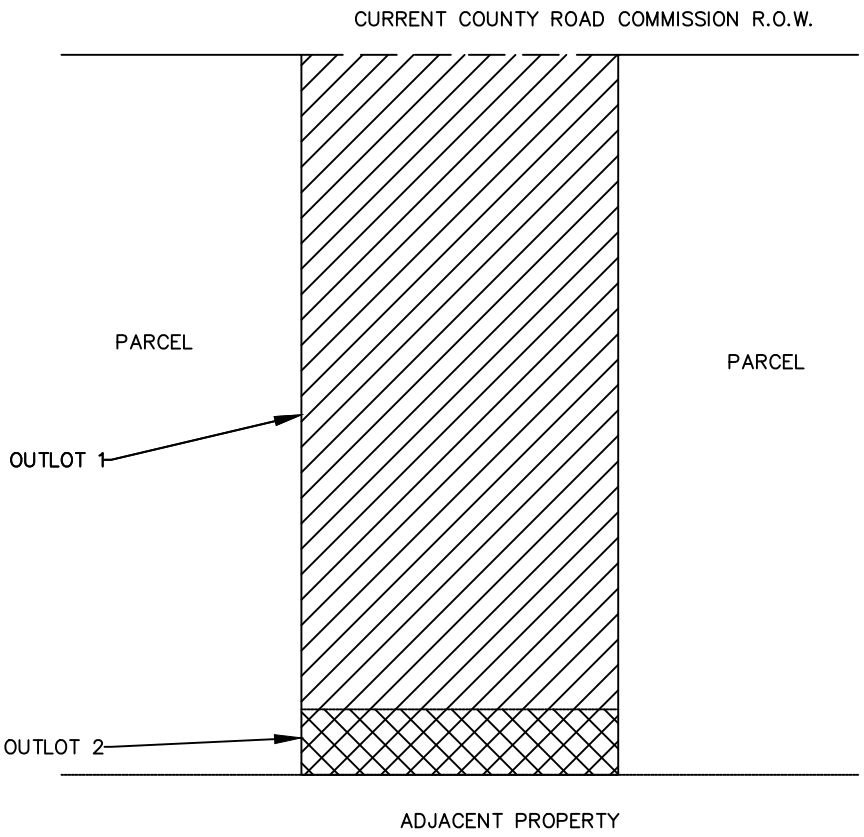
STANDARD PLAN

FUTURE ROAD SCENARIO "A"

REVISIONS

DATE: 04–01–2016
GTCRC NO.
DRAWN J. SLONECKI
CHECKED JPJ



EXISTING OUTLOT 1 OR OUTLOT 2 IS NOT CONVEYED TO THE GTCRC

- WHERE OUTLOT 2 IS NOT CONVEYED TO THE ROAD COMMISSION AND A PUBLIC ROAD CONNECTION IS PROPOSED, THE FOLLOWING WILL BE REQUIRED.
  - CONVEYANCE OF OUTLOT 2 TO THE GTCRC
  - REQUIRES REPLAT
  - ALL OWNERS AGREE
- WHERE OUTLOT 2 IS NOT CONVEYED TO THE ROAD COMMISSION AND A PRIVATE ROAD CONNECTION IS PROPOSED, THE FOLLOWING WILL BE REQUIRED. (UNDER THE ASSUMPTION THAT THE LANGUAGE WITHIN THE DEED RESTRICTIONS ALLOWS FOR THE EXTENSION OF A FUTURE ROAD).
  - CONNECTION OF A PRIVATE ROAD TO BE CONSIDERED UNDER A PERMIT WITH POSSIBLE CONDITIONS. SUCH CONDITIONS MAY INCLUDE BUT ARE NOT LIMITED TO: TURN AROUND REQUIREMENTS (I.E. CUL–DE–SAC WITH AGREEMENT).
- ADDITIONAL CONSIDERATIONS FOR CONNECTIONS:
  - CONNECTION OF A PRIVATE OR PUBLIC ROAD IS ALLOWED IF ONLY POINT OF ACCESS.
  - IF PROPOSED CONNECTION IS NOT THE ONLY POINT OF ACCESS THE GTCRC WILL REVIEW FOR CONSIDERATION.

EXISTING OUTLOT 1 OUTLET 2 IS CONVEYED TO THE GTCRC

- WHERE OUTLOT IS CONVEYED TO THE ROAD COMMISSION AND A PUBLIC OR PRIVATE ROAD CONNECTION IS PROPOSED, THE FOLLOWING WILL BE REQUIRED.
  - CONNECTION OF A PUBLIC OR PRIVATE ROAD IS ALLOWED IF ONLY POINT OF ACCESS.
  - IF PROPOSED CONNECTION IS NOT THE ONLY POINT OF ACCESS THE GTCRC WILL REVIEW FOR CONSIDERATION.
  - ALL PROPOSED CONNECTIONS TO BE APPROVED UNDER A PERMIT WITH POSSIBLE CONDITIONS. SUCH CONDITIONS MAY INCLUDE BUT ARE NOT LIMITED TO: TURN AROUND REQUIREMENTS (I.E. CUL–DE–SAC WITH AGREEMENT).

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STANDARD PLAN

FUTURE ROAD SCENARIO "B"

REVISIONS

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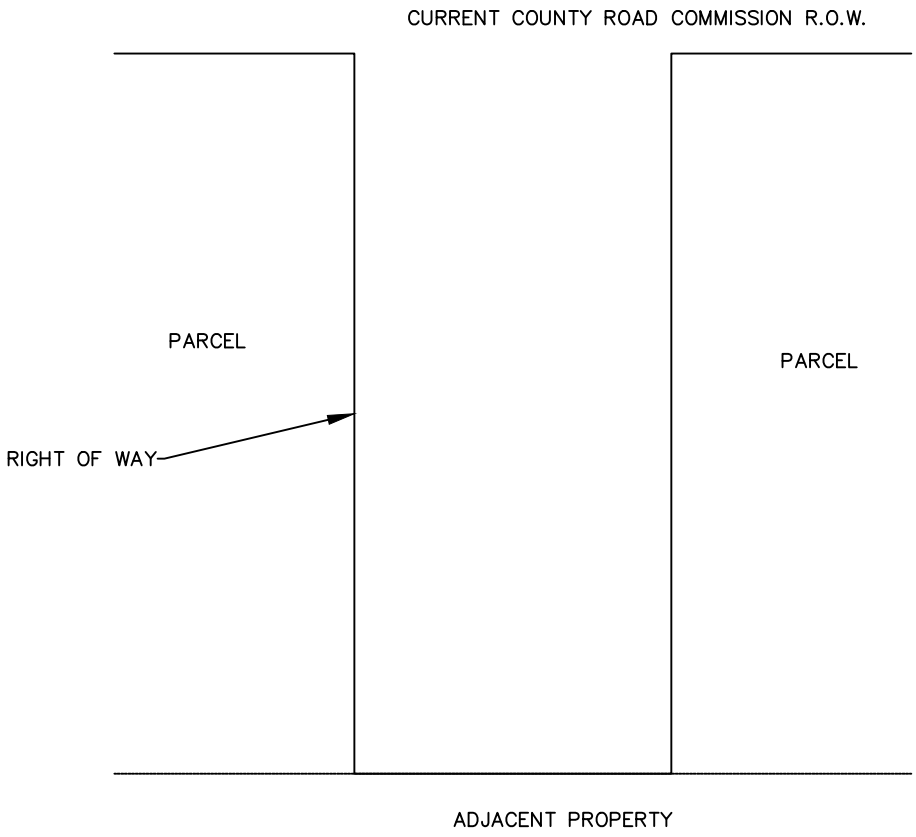

EXISTING GTCRC ROW EXTENDED TO ADJACENT PROPERTY

- WHERE EXISTING ROW IS EXTENDED TO ADJACENT PROPERTY AND ROW IS UNDER THE CONTROL OF THE GTCRC, THE FOLLOWING IS ALLOWED/ REQUIRED.
  - CONNECTION OF A PUBLIC OR PRIVATE ROAD IS ALLOWED IF ONLY POINT OF ACCESS.
  - IF PROPOSED CONNECTION IS NOT THE ONLY POINT OF ACCESS THE GTCRC WILL REVIEW FOR CONSIDERATION.
  - ALL PROPOSED CONNECTIONS TO BE APPROVED UNDER A PERMIT WITH POSSIBLE CONDITIONS. SUCH CONDITIONS MAY INCLUDE BUT ARE NOT LIMITED TO: TURN AROUND REQUIREMENTS (I.E. CUL–DE–SAC WITH AGREEMENT).

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STANDARD PLAN

FUTURE ROAD SCENARIO "C"

REVISIONS

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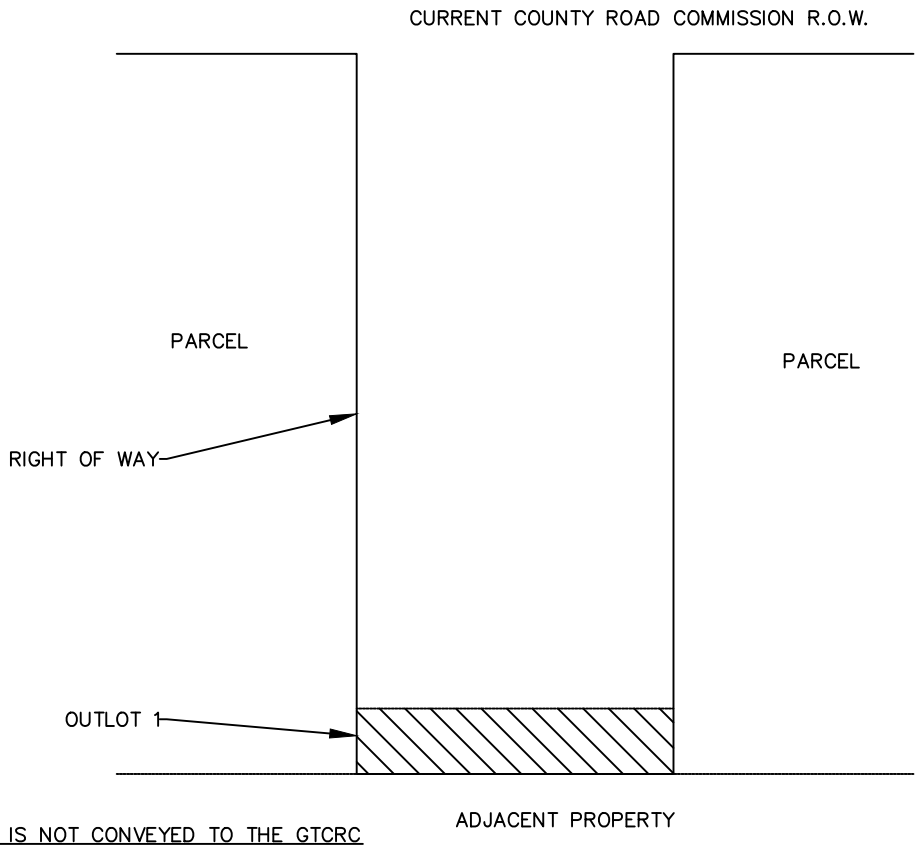

EXISTING OUTLOT IS NOT CONVEYED TO THE GTCRC

- WHERE OUTLOT IS NOT CONVEYED TO THE ROAD COMMISSION AND A PUBLIC ROAD CONNECTION IS PROPOSED, THE FOLLOWING WILL BE REQUIRED.
  - CONVEYANCE OF OUTLOT TO THE GTCRC
  - REPLAT
  - ALL OWNERS AGREE
- WHERE OUTLOT IS NOT CONVEYED TO THE ROAD COMMISSION AND A PRIVATE ROAD CONNECTION IS PROPOSED, THE FOLLOWING WILL BE REQUIRED. (UNDER THE ASSUMPTION THAT THE LANGUAGE WITHIN THE DEED RESTRICTIONS ALLOWS FOR THE EXTENSION OF A FUTURE ROAD).
  - ALL PROPOSED CONNECTIONS TO BE APPROVED UNDER A PERMIT WITH POSSIBLE CONDITIONS. SUCH CONDITIONS MAY INCLUDE BUT ARE NOT LIMITED TO: TURN AROUND REQUIREMENTS (I.E. CUL–DE–SAC WITH AGREEMENT)..
- ADDITIONAL CONSIDERATIONS FOR CONNECTIONS:
  - CONNECTION OF A PRIVATE OR PUBLIC ROAD IS ALLOWED IF ONLY POINT OF ACCESS.
  - IF PROPOSED CONNECTION IS NOT THE ONLY POINT OF ACCESS THE GTCRC WILL REVIEW FOR CONSIDERATION.

EXISTING OUTLOT IS CONVEYED TO THE GTCRC

- WHERE OUTLOT IS CONVEYED TO THE ROAD COMMISSION AND A PUBLIC OR PRIVATE ROAD CONNECTION IS PROPOSED, THE FOLLOWING WILL BE REQUIRED.
  - CONNECTION OF A PUBLIC OR PRIVATE ROAD IS ALLOWED IF ONLY POINT OF ACCESS.
  - IF PROPOSED CONNECTION IS NOT THE ONLY POINT OF ACCESS THE GTCRC WILL REVIEW FOR CONSIDERATION.
  - ALL PROPOSED CONNECTIONS TO BE APPROVED UNDER A PERMIT WITH POSSIBLE CONDITIONS. SUCH CONDITIONS MAY INCLUDE BUT ARE NOT LIMITED TO: TURN AROUND REQUIREMENTS (I.E. CUL–DE–SAC WITH AGREEMENT).

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STANDARD PLAN

FUTURE ROAD SCENARIO "D"

REVISIONS

DATE: 04–01–2016
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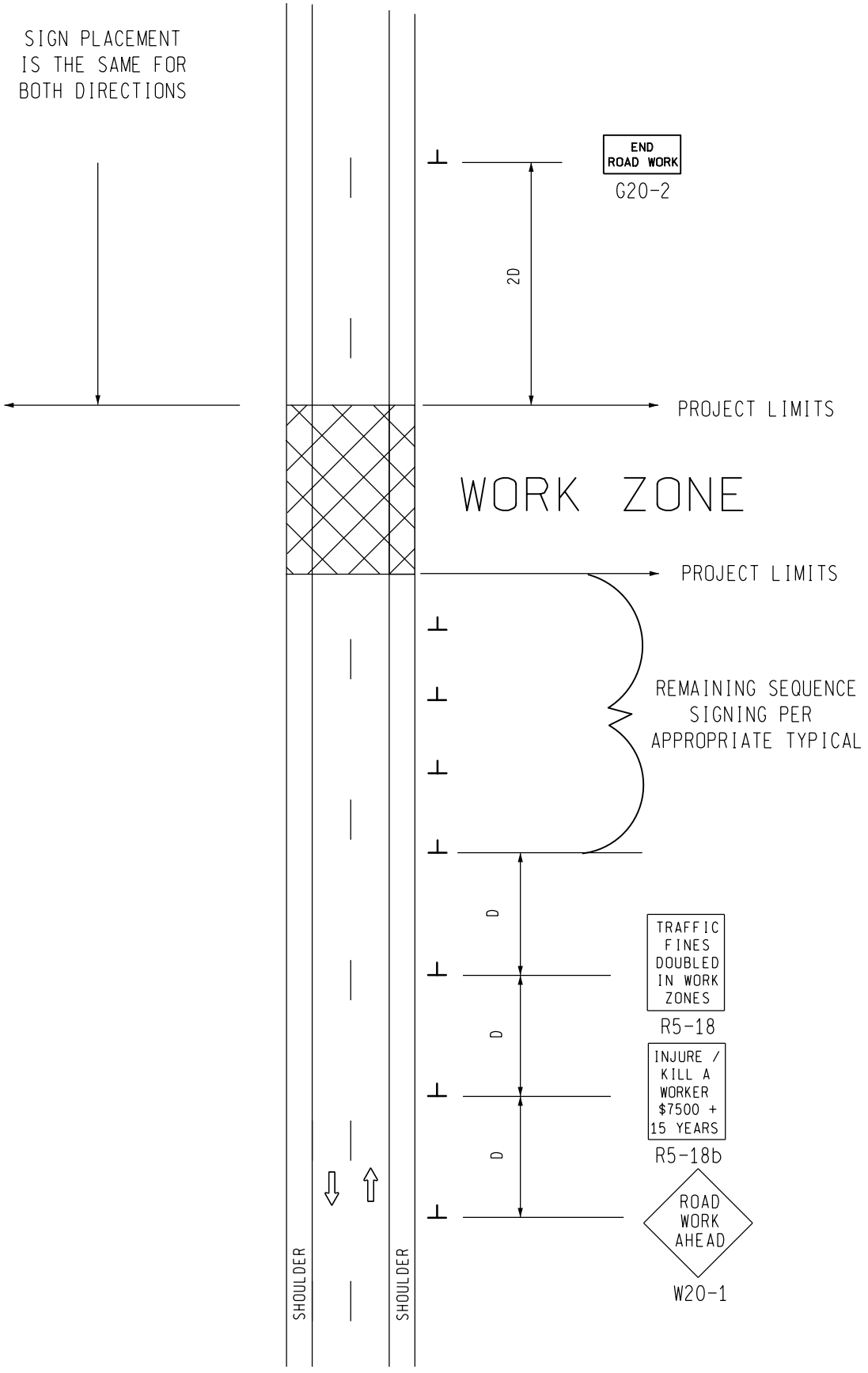
SIGN PLACEMENT
IS THE SAME FOR
BOTH DIRECTIONS



SIGN = 48 ft2 - TYPE B
FOR ONE DIRECTION OF TRAFFIC
W20-1 QUANTITY INCLUDED WITH
APPROPRIATE TYPICAL FOR
SEQUENCE SIGNING

NOT TO SCALE

MDOT
Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC
TYPICAL

TYPICAL ADVANCE SIGNING TREATMENT FOR INTERMEDIATE AND SHORT TERM STATIONARY WORK ZONE OPERATIONS WHERE ALL TRAFFIC CONTROL DEVICES ARE REMOVED AT END OF EACH WORK DAY ON AN UNDIVIDED TWO-WAY ROADWAY

DRAWN BY: CON:AE:djf	OCTOBER 2011	M0050a	SHEET 1 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0050a.dgn REV. 10/13/2011			

NOTES

30. THE APPROPRIATE ADVANCE SIGNING SEQUENCE(S), (M0030a THROUGH M0080a) SHALL BE USED ON ALL PROJECTS.

35. THESE SIGNS ARE INTENDED TO BE USED WITHIN THE LIMITS OF THE TEMPORARY SEQUENCE SIGNING AS IS SHOWN ON 1 OF 2. THESE SIGNS ARE NOT TO BE INTERMINGLED WITH ANY OTHER TEMPORARY SEQUENCE SIGNING EXCEPT AS SHOWN.

SIGN SIZES

G20-2	-	48" x 24"
R5-18	-	48" x 60"
R5-18b	-	48" x 60"
W20-1	-	48" x 48"

NOT TO SCALE

MDOT Michigan Department of Transportation

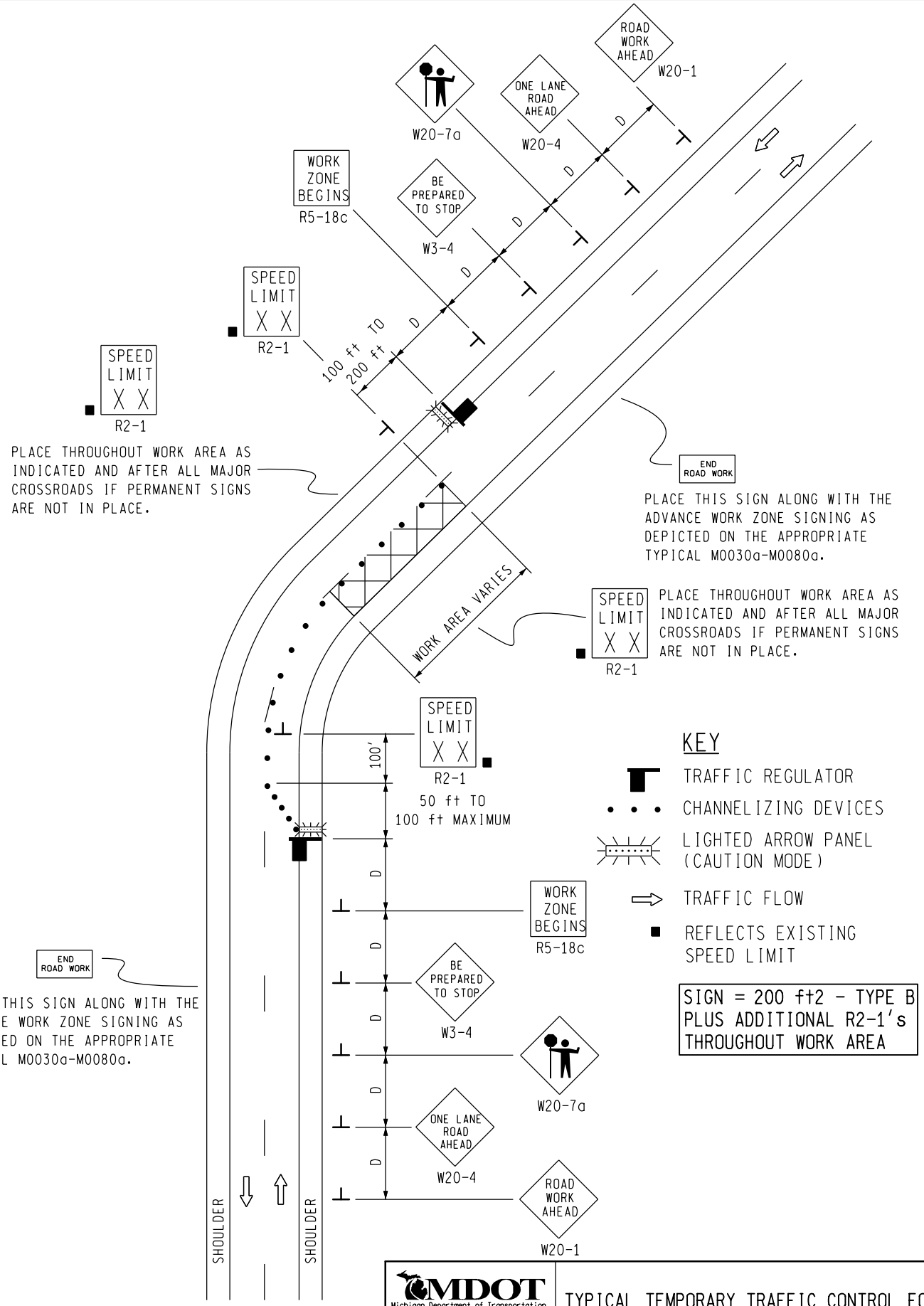
TRAFFIC AND SAFETY

MAINTAINING TRAFFIC TYPICAL

TYPICAL ADVANCE SIGNING TREATMENT FOR INTERMEDIATE AND SHORT TERM STATIONARY WORK ZONE OPERATIONS WHERE ALL TRAFFIC CONTROL DEVICES ARE REMOVED AT END OF EACH WORK DAY ON AN UNDIVIDED TWO-WAY ROADWAY

DRAWN BY: CON:AE:djf	OCTOBER 2011	M0050a	SHEET 2 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		

FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0050a.dgn REV. 10/13/2011



NOT TO SCALE

MDOT Michigan Department of Transportation

TRAFFIC AND SAFETY

MAINTAINING TRAFFIC TYPICAL

TYPICAL TEMPORARY TRAFFIC CONTROL FOR A TWO-LANE TWO-WAY ROADWAY WHERE ONE LANE IS CLOSED UTILIZING TRAFFIC REGULATORS, NO SPEED REDUCTION

DRAWN BY: CON:AE:djf	OCTOBER 2011	M0140a	SHEET 1 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0140a.dgn REV. 10/04/2011			

NOTES

1H. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES AND LENGTH OF LONGITUDINAL BUFFERS SEE **M0020a** FOR "D" VALUES.

2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.

3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.

4A. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES IN THE TAPER AREA(S) SHOULD BE 15 FEET AND SHOULD BE EQUAL IN FEET TO TWICE THE POSTED SPEED IN MILES PER HOUR IN THE PARALLEL AREA(S).

5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.

6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.

7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

9. ALL TRAFFIC REGULATORS SHALL BE PROPERLY TRAINED AND SUPERVISED.

9A. IN ANY OPERATION INVOLVING MORE THAN ONE TRAFFIC REGULATOR, ONE PERSON SHOULD BE DESIGNATED AS HEAD TRAFFIC REGULATOR.

10. ALL TRAFFIC REGULATORS' CONDUCT, THEIR EQUIPMENT, AND TRAFFIC REGULATING PROCEDURES SHALL CONFORM TO THE CURRENT EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD) AND THE CURRENT EDITION OF THE MDOT HANDBOOK ENTITLED "TRAFFIC REGULATORS INSTRUCTION MANUAL."

11. WHEN TRAFFIC REGULATING IS ALLOWED DURING THE HOURS OF DARKNESS, APPROPRIATE LIGHTING SHALL BE PROVIDED TO SUFFICIENTLY ILLUMINATE THE TRAFFIC REGULATOR'S STATIONS.

12E. THE MAXIMUM DISTANCE BETWEEN THE TRAFFIC REGULATORS SHALL BE NO MORE THAN 2 MILES IN LENGTH UNLESS RESTRICTED FURTHER IN THE SPECIAL PROVISIONS FOR MAINTAINING TRAFFIC. ALL SEQUENCES OF MORE THAN 2 MILES IN LENGTH WILL REQUIRE WRITTEN PERMISSION FROM THE ENGINEER BEFORE PROCEEDING.

13. WHEN INTERSECTING ROADS OR SIGNIFICANT TRAFFIC GENERATORS (SHOPPING CENTERS, MOBILE HOME PARKS, ETC.) OCCUR WITHIN THE ONE-LANE TWO-WAY OPERATION, INTERMEDIATE TRAFFIC REGULATORS AND APPROPRIATE SIGNING SHALL BE PLACED AT THESE LOCATIONS.

14. ADDITIONAL SIGNING AND/OR ELONGATED SIGNING SEQUENCES SHOULD BE USED WHEN TRAFFIC VOLUMES ARE SIGNIFICANT ENOUGH TO CREATE BACKUPS BEYOND THE W3-4 SIGNS.

15. THE HAND HELD (PADDLE) SIGNS REQUIRED BY THE MMUTCD TO CONTROL TRAFFIC WILL BE PAID FOR AS PART OF FLAG CONTROL.

28E. THE TRAFFIC REGULATORS SHOULD BE POSITIONED AT OR NEAR THE SIDE OF THE ROAD SO THAT THEY ARE SEEN CLEARLY AT A MINIMUM DISTANCE OF 500 FEET. THIS MAY REQUIRE EXTENDING THE BEGINNING OF THE LANE CLOSURE TO OVERCOME VIEWING PROBLEMS CAUSED BY HILLS AND CURVES.

SIGN SIZES

DIAMOND WARNING - 48" x 48"
R2-1 REGULATORY - 48" x 60"
R5-18c REGULATORY - 48" x 48"

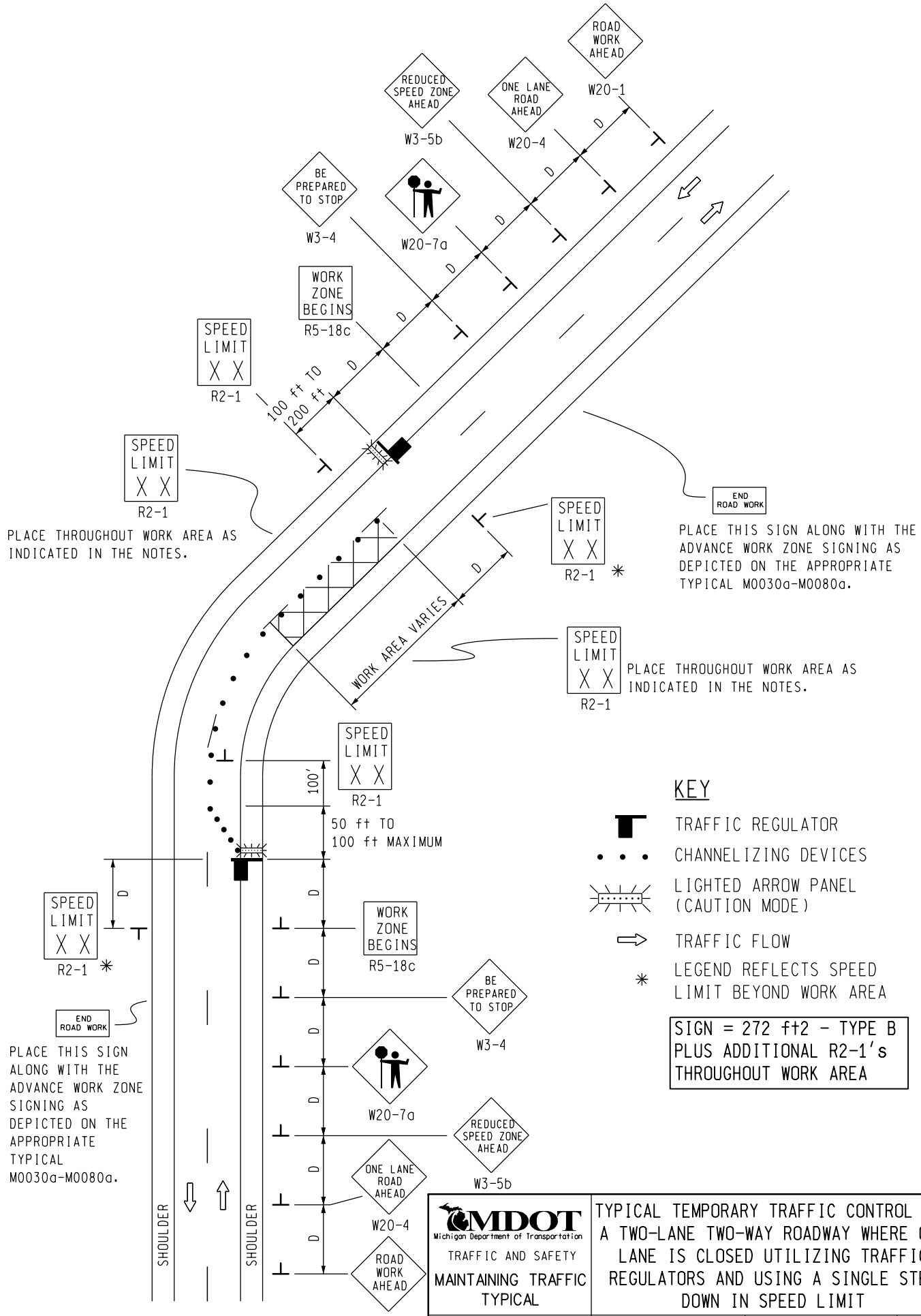
NOT TO SCALE

MDOT Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC TYPICAL

TYPICAL TEMPORARY TRAFFIC CONTROL FOR A TWO-LANE TWO-WAY ROADWAY WHERE ONE LANE IS CLOSED UTILIZING TRAFFIC REGULATORS, NO SPEED REDUCTION

DRAWN BY: CON:AE:djf	OCTOBER 2011	M0140a	SHEET 2 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		

FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0140a.dgn REV. 10/04/2011



MDOT Michigan Department of Transportation

TRAFFIC AND SAFETY

MAINTAINING TRAFFIC TYPICAL

TYPICAL TEMPORARY TRAFFIC CONTROL FOR A TWO-LANE TWO-WAY ROADWAY WHERE ONE LANE IS CLOSED UTILIZING TRAFFIC REGULATORS AND USING A SINGLE STEP DOWN IN SPEED LIMIT

DRAWN BY: CON:AE:djf	OCTOBER 2011	M0150a	SHEET 1 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0150a.dgn REV. 10/04/2011			

NOTES

1H. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES AND LENGTH OF LONGITUDINAL BUFFERS SEE M0020a FOR "D" VALUES.

2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.

3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.

4A. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES IN THE TAPER AREA(S) SHOULD BE 15 FEET AND SHOULD BE EQUAL IN FEET TO TWICE THE POSTED SPEED IN MILES PER HOUR IN THE PARALLEL AREA(S).

5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.

6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.

7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

9. ALL TRAFFIC REGULATORS SHALL BE PROPERLY TRAINED AND SUPERVISED.

9A. IN ANY OPERATION INVOLVING MORE THAN ONE TRAFFIC REGULATOR, ONE PERSON SHOULD BE DESIGNATED AS HEAD TRAFFIC REGULATOR.

10. ALL TRAFFIC REGULATORS' CONDUCT, THEIR EQUIPMENT, AND TRAFFIC REGULATING PROCEDURES SHALL CONFORM TO THE CURRENT EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD) AND THE CURRENT EDITION OF THE MDOT HANDBOOK ENTITLED "TRAFFIC REGULATORS INSTRUCTION MANUAL."

11. WHEN TRAFFIC REGULATING IS ALLOWED DURING THE HOURS OF DARKNESS, APPROPRIATE LIGHTING SHALL BE PROVIDED TO SUFFICIENTLY ILLUMINATE THE TRAFFIC REGULATOR'S STATIONS.

12E. THE MAXIMUM DISTANCE BETWEEN THE TRAFFIC REGULATORS SHALL BE NO MORE THAN 2 MILES IN LENGTH UNLESS RESTRICTED FURTHER IN THE SPECIAL PROVISIONS FOR MAINTAINING TRAFFIC. ALL SEQUENCES OF MORE THAN 2 MILES IN LENGTH WILL REQUIRE WRITTEN PERMISSION FROM THE ENGINEER BEFORE PROCEEDING.

13. WHEN INTERSECTING ROADS OR SIGNIFICANT TRAFFIC GENERATORS (SHOPPING CENTERS, MOBILE HOME PARKS, ETC.) OCCUR WITHIN THE ONE-LANE TWO-WAY OPERATION, INTERMEDIATE TRAFFIC REGULATORS AND APPROPRIATE SIGNING SHALL BE PLACED AT THESE LOCATIONS.

14. ADDITIONAL SIGNING AND/OR ELONGATED SIGNING SEQUENCES SHOULD BE USED WHEN TRAFFIC VOLUMES ARE SIGNIFICANT ENOUGH TO CREATE BACKUPS BEYOND THE W3-4 SIGNS.

15. THE HAND HELD (PADDLE) SIGNS REQUIRED BY THE MMUTCD TO CONTROL TRAFFIC WILL BE PAID FOR AS PART OF FLAG CONTROL.

16A. ADDITIONAL SPEED LIMIT SIGNS REFLECTING THE REDUCED SPEED SHALL BE PLACED AFTER EACH MAJOR CROSSROAD THAT INTERSECTS THE WORK AREA WHERE THE REDUCED SPEED IS IN EFFECT, AND AT INTERVALS ALONG THE ROADWAY SUCH THAT NO SPEED LIMIT SIGNS REFLECTING THE REDUCED SPEED ARE MORE THAN TWO MILES APART.

16B. WHEN REDUCED SPEED LIMITS ARE UTILIZED IN THE WORK AREA, ADDITIONAL SPEED LIMIT SIGNS RETURNING TRAFFIC TO ITS NORMAL SPEED SHALL BE PLACED BEYOND THE LIMITS OF THE REDUCED SPEED AS INDICATED.

16E. WHEN EXISTING SPEED LIMITS ARE REDUCED MORE THAN 10 MPH, THE SPEED LIMIT SHALL BE STEPPED DOWN IN NO MORE THAN 10 MPH INCREMENTS.

28E. THE TRAFFIC REGULATORS SHOULD BE POSITIONED AT OR NEAR THE SIDE OF THE ROAD SO THAT THEY ARE SEEN CLEARLY AT A MINIMUM DISTANCE OF 500 FEET. THIS MAY REQUIRE EXTENDING THE BEGINNING OF THE LANE CLOSURE TO OVERCOME VIEWING PROBLEMS CAUSED BY HILLS AND CURVES.

SIGN SIZES

DIAMOND WARNING	- 48" x 48"
RECTANGULAR REGULATORY	- 48" x 60"
R5-18c REGULATORY	- 48" x 48"

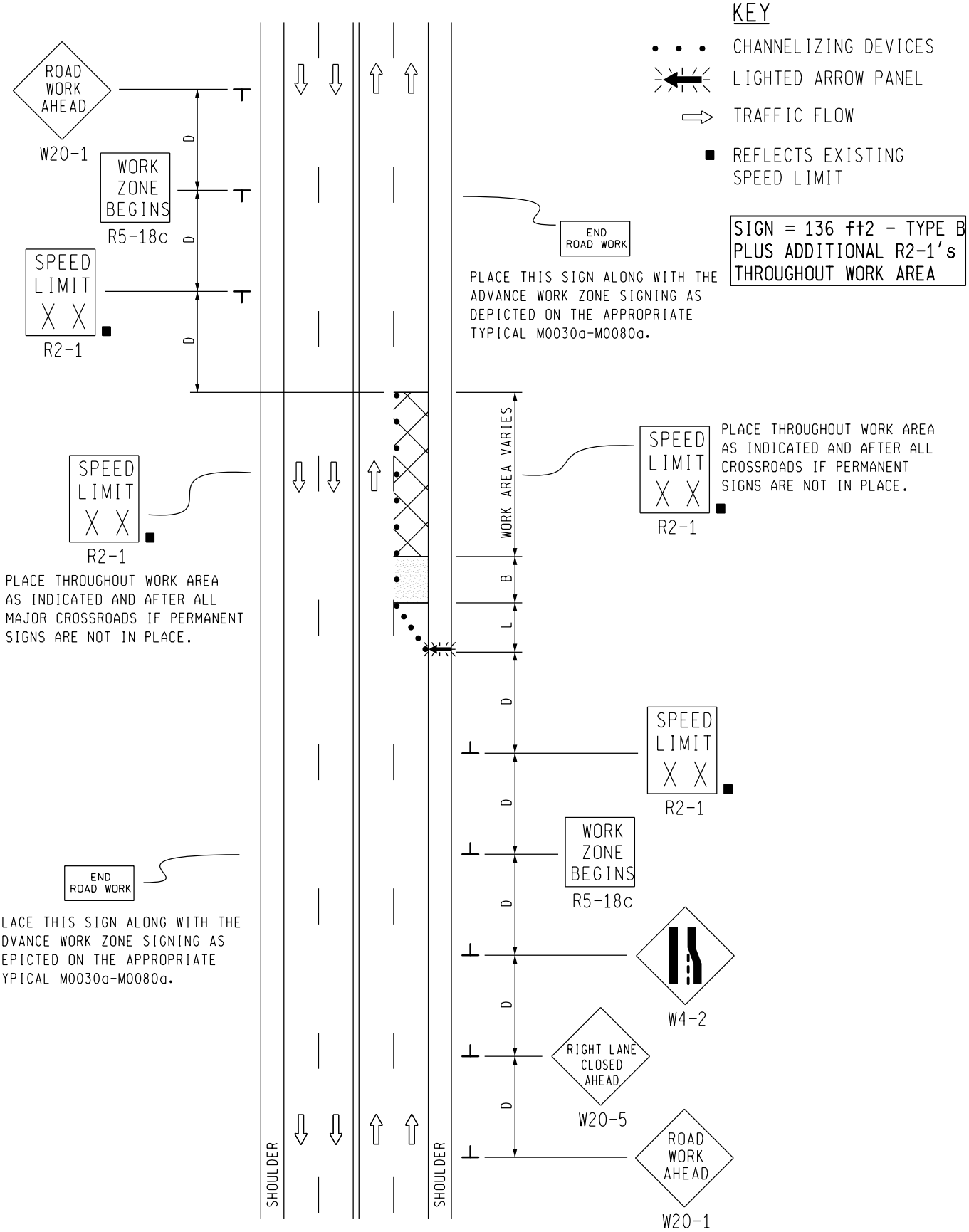
NOT TO SCALE

MDOT Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC TYPICAL

TYPICAL TEMPORARY TRAFFIC CONTROL FOR A TWO-LANE TWO-WAY ROADWAY WHERE ONE LANE IS CLOSED UTILIZING TRAFFIC REGULATORS AND USING A SINGLE STEP DOWN IN SPEED LIMIT

DRAWN BY: CON:AE:djf	OCTOBER 2011	M0150a	SHEET 2 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		

FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0150a.dgn REV. 10/04/2011



NOT TO SCALE

MDOT Michigan Department of Transportation

TRAFFIC AND SAFETY

MAINTAINING TRAFFIC TYPICAL

TYPICAL TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON AN UNDIVIDED MULTI-LANE ROADWAY, NO SPEED REDUCTION

DRAWN BY: CON:AE:djf	OCTOBER 2011	M0240a	SHEET 1 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		

FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0240a.dgn REV. 10/11/2011

NOTES

1B. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
L = MINIMUM LENGTH OF TAPER
B = LENGTH OF LONGITUDINAL BUFFER
SEE M0020a FOR "D," "L," AND "B" VALUES

2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.

3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.

4E. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES SHOULD BE EQUAL IN FEET TO THE POSTED SPEED IN MILES PER HOUR ON TAPER(S) AND TWICE THE POSTED SPEED IN THE PARALLEL AREA(S).

5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.

6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.

7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

8. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.

21. ALL EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH EITHER PROPOSED CHANGES IN TRAFFIC PATTERNS OR PROPOSED TEMPORARY TRAFFIC MARKINGS, SHALL BE REMOVED BEFORE ANY CHANGE IS MADE IN THE TRAFFIC PATTERN. EXCEPTION WILL BE MADE FOR DAYTIME-ONLY TRAFFIC PATTERNS THAT ARE ADEQUATELY DELINEATED BY OTHER TRAFFIC CONTROL DEVICES.

26. THE LIGHTED ARROW PANEL SHALL BE LOCATED AT THE BEGINNING OF THE TAPER AS SHOWN. WHEN PHYSICAL LIMITATIONS RESTRICT ITS PLACEMENT AS INDICATED, THEN IT SHALL BE PLACED AS CLOSE TO THE BEGINNING OF THE TAPER AS POSSIBLE.

SIGN SIZES

DIAMOND WARNING - 48" x 48"
R2-1 REGULATORY - 48" x 60"
R5-18c REGULATORY - 48" x 48"

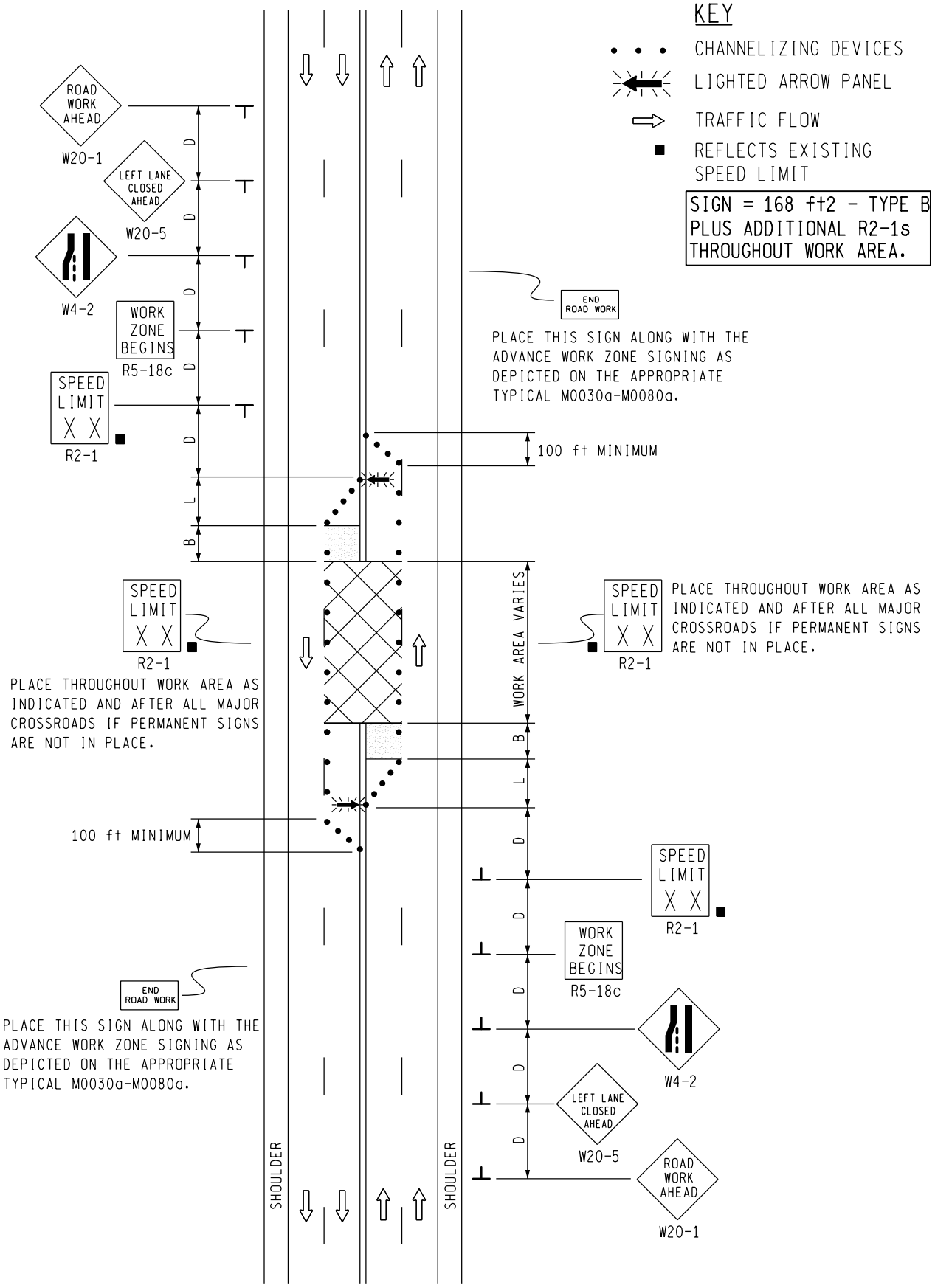
NOT TO SCALE

MDOT Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC TYPICAL

TYPICAL TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON AN UNDIVIDED MULTI-LANE ROADWAY, NO SPEED REDUCTION

DRAWN BY: CON:AE:djf	OCTOBER 2011	M0240a	SHEET 2 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		

FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0240a.dgn REV. 10/11/2011



NOT TO SCALE

MDOT Michigan Department of Transportation TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL	TYPICAL TEMPORARY TRAFFIC CONTROL FOR CLOSING THE CENTER TWO LANES OF A MULTI-LANE UNDIVIDED ROADWAY,(NO CLFLTO) NO SPEED REDUCTION		
DRAWN BY: CON:AE:djf CHECKED BY: BMM:CRB	OCTOBER 2011 PLAN DATE:	M0270a	SHEET 1 OF 2
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0270a.dgn REV. 10/12/2011			

NOTES

1B. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
L = MINIMUM LENGTH OF TAPER
B = LENGTH OF LONGITUDINAL BUFFER
SEE M0020a FOR "D," "L," AND "B" VALUES

2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.

3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.

4B. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES SHOULD BE EQUAL IN FEET TO THE POSTED SPEED IN MILES PER HOUR ON MERGING TAPER(S), TWICE THE POSTED SPEED IN THE PARALLEL AREA(S), AND 25 FEET IN THE DOWNSTREAM TAPER AREA(S).

5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.

6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.

7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

8. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.

21. ALL EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH EITHER PROPOSED CHANGES IN TRAFFIC PATTERNS OR PROPOSED TEMPORARY TRAFFIC MARKINGS, SHALL BE REMOVED BEFORE ANY CHANGE IS MADE IN THE TRAFFIC PATTERN. EXCEPTION WILL BE MADE FOR DAYTIME-ONLY TRAFFIC PATTERNS THAT ARE ADEQUATELY DELINEATED BY OTHER TRAFFIC CONTROL DEVICES.

26C. THE LIGHTED ARROW PANEL SHALL BE LOCATED AT THE BEGINNING OF THE MERGING TAPER AS SHOWN. WHEN PHYSICAL LIMITATIONS RESTRICT ITS PLACEMENT AS INDICATED, THEN IT SHALL BE PLACED AS CLOSE TO THE BEGINNING OF THE MERGING TAPER AS POSSIBLE.

SIGN SIZES

DIAMOND WARNING - 48 " x 48 "
R2-1 REGULATORY - 48 " x 60 "
R5-18c REGULATORY - 48 " x 48 "

NOT TO SCALE

MDOT Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC TYPICAL

TYPICAL TEMPORARY TRAFFIC CONTROL FOR CLOSING THE CENTER TWO LANES OF A MULTI-LANE UNDIVIDED ROADWAY,(NO CLFLTO) NO SPEED REDUCTION

DRAWN BY: CON:AE:djf	OCTOBER 2011	M0270a	SHEET 2 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		
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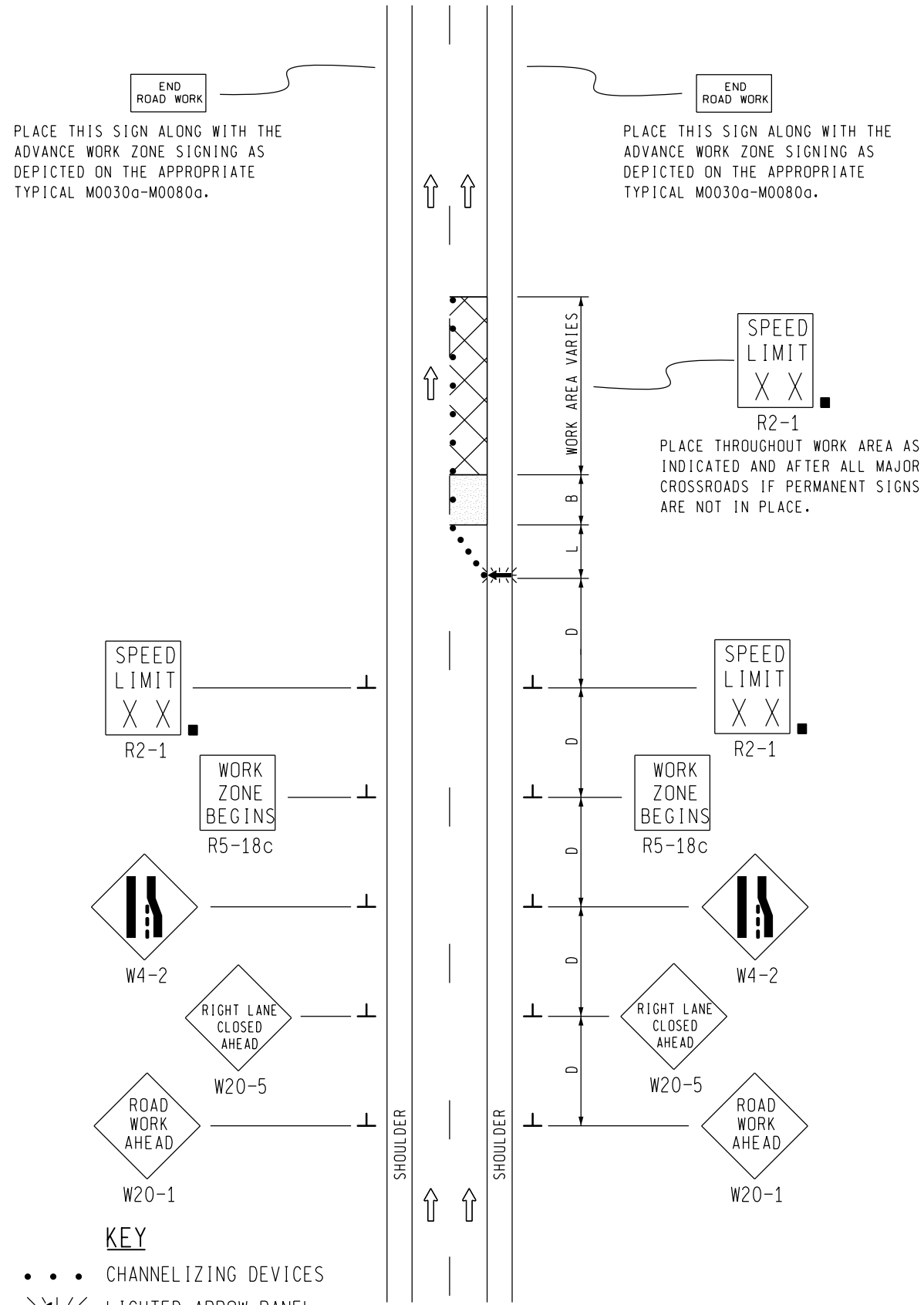

KEY

- • • • CHANNELIZING DEVICES
- LIGHTED ARROW PANEL
- ⇨ TRAFFIC FLOW
- ■ REFLECTS EXISTING SPEED LIMIT

SIGN = 168 ft2 - TYPE B
PLUS ADDITIONAL R2-1's
THROUGHOUT WORK AREA

NOT TO SCALE

MDOT Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC TYPICAL

TYPICAL TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON A DIVIDED ROADWAY, NO SPEED REDUCTION

DRAWN BY: CON:AE:djf	OCTOBER 2011	M0730a	SHEET 1 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0730a.dgn REV. 10/26/2011			

NOTES

1B. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
L = MINIMUM LENGTH OF TAPER
B = LENGTH OF LONGITUDINAL BUFFER
SEE M0020a FOR "D," "L," AND "B" VALUES

2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.

3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.

4E. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES SHOULD BE EQUAL IN FEET TO THE POSTED SPEED IN MILES PER HOUR ON TAPER(S) AND TWICE THE POSTED SPEED IN THE PARALLEL AREA(S).

5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.

6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.

7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

8. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.

21. ALL EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH EITHER PROPOSED CHANGES IN TRAFFIC PATTERNS OR PROPOSED TEMPORARY TRAFFIC MARKINGS, SHALL BE REMOVED BEFORE ANY CHANGE IS MADE IN THE TRAFFIC PATTERN. EXCEPTION WILL BE MADE FOR DAYTIME-ONLY TRAFFIC PATTERNS THAT ARE ADEQUATELY DELINEATED BY OTHER TRAFFIC CONTROL DEVICES.

26. THE LIGHTED ARROW PANEL SHALL BE LOCATED AT THE BEGINNING OF THE TAPER AS SHOWN. WHEN PHYSICAL LIMITATIONS RESTRICT ITS PLACEMENT AS INDICATED, THEN IT SHALL BE PLACED AS CLOSE TO THE BEGINNING OF THE TAPER AS POSSIBLE.

SIGN SIZES

DIAMOND WARNING - 48" x 48"
R2-1 REGULATORY - 48" x 60"
R5-18c REGULATORY - 48" x 48"

NOT TO SCALE

MDOT Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC TYPICAL

TYPICAL TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON A DIVIDED ROADWAY, NO SPEED REDUCTION

DRAWN BY: CON:AE:djf	OCTOBER 2011	M0730a	SHEET 2 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		

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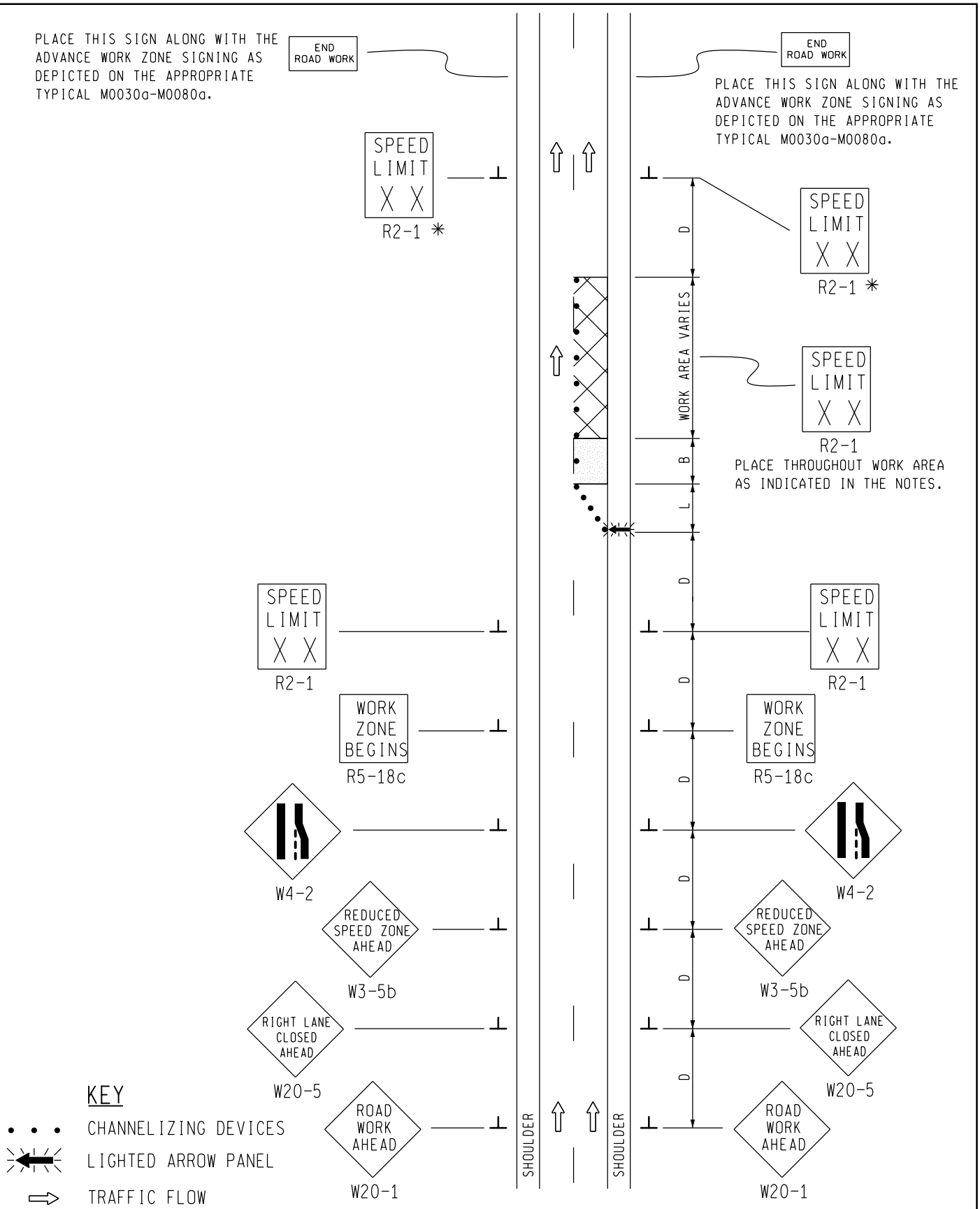


MDOT Michigan Department of Transportation

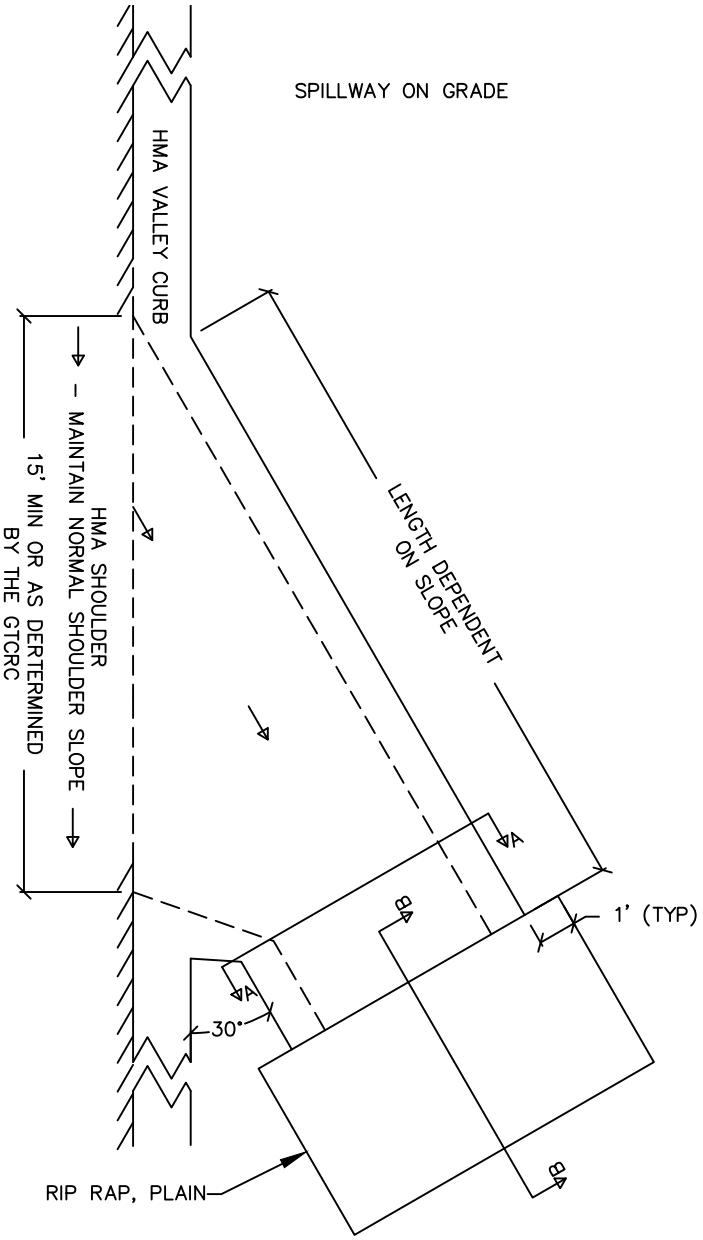
TRAFFIC AND SAFETY

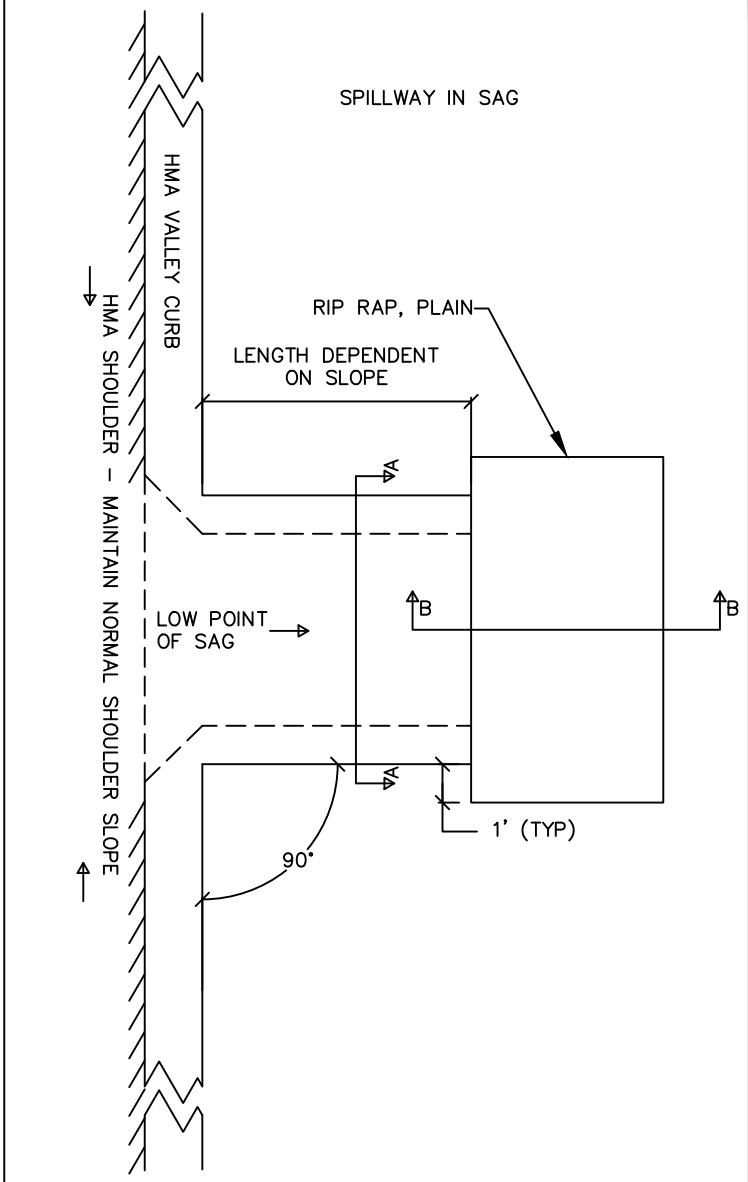
MAINTAINING TRAFFIC TYPICAL

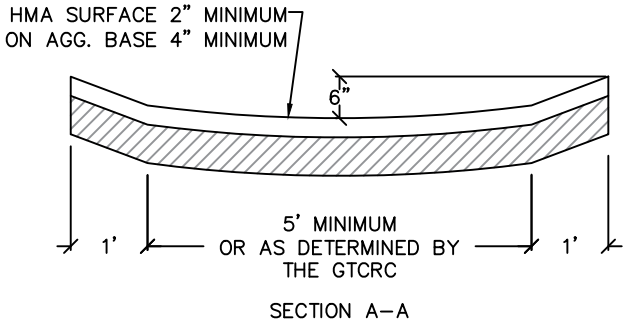
TYPICAL TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON A DIVIDED ROADWAY USING A SINGLE STEP DOWN IN SPEED LIMIT

DRAWN BY: CON:AE:djf	OCTOBER 2011	M0740a	SHEET 1 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		

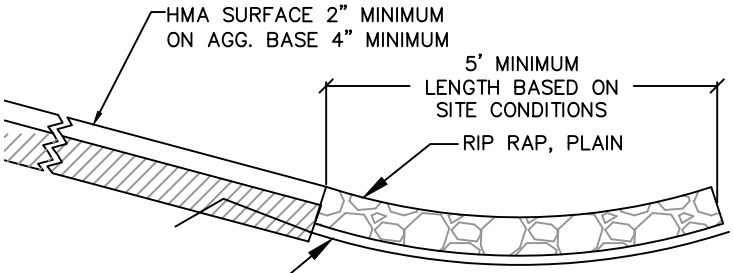
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0740a.dgn REV. 10/26/2011







SECTION A–A



SECTION B–B

- ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO CURRENT MDOT CONSTRUCTION SPECIFICATIONS.

GRAND TRAVERSE COUNTY ROAD COMMISSION
1881 LaFRANIER ROAD
TRAVERSE CITY, MI 49686-8911

231.922.4848 PHONE
231.929.1836 FAX

STANDARD PLAN

TYPICAL HMA SPILLWAY DETAIL

REVISIONS

DATE:	04–01–2016
GTCRC NO.	
DRAWN	J. SLONECKI
CHECKED	JPJ

SHEET 1 OF 1

NOTES

1B. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
L = MINIMUM LENGTH OF TAPER
B = LENGTH OF LONGITUDINAL BUFFER
SEE M0020a FOR "D," "L," AND "B" VALUES

2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.

3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.

4E. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES SHOULD BE EQUAL IN FEET TO THE POSTED SPEED IN MILES PER HOUR ON TAPER(S) AND TWICE THE POSTED SPEED IN THE PARALLEL AREA(S).

5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.

6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.

7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

8. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.

16A. ADDITIONAL SPEED LIMIT SIGNS REFLECTING THE REDUCED SPEED SHALL BE PLACED AFTER EACH MAJOR CROSSROAD THAT INTERSECTS THE WORK AREA WHERE THE REDUCED SPEED IS IN EFFECT, AND AT INTERVALS ALONG THE ROADWAY SUCH THAT NO SPEED LIMIT SIGNS REFLECTING THE REDUCED SPEED ARE MORE THAN TWO MILES APART.

16B. WHEN REDUCED SPEED LIMITS ARE UTILIZED IN THE WORK AREA, ADDITIONAL SPEED LIMIT SIGNS RETURNING TRAFFIC TO ITS NORMAL SPEED SHALL BE PLACED BEYOND THE LIMITS OF THE REDUCED SPEED AS INDICATED.

16E. WHEN EXISTING SPEED LIMITS ARE REDUCED MORE THAN 10 MPH, THE SPEED LIMIT SHALL BE STEPPED DOWN IN NO MORE THAN 10 MPH INCREMENTS.

21. ALL EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH EITHER PROPOSED CHANGES IN TRAFFIC PATTERNS OR PROPOSED TEMPORARY TRAFFIC MARKINGS, SHALL BE REMOVED BEFORE ANY CHANGE IS MADE IN THE TRAFFIC PATTERN. EXCEPTION WILL BE MADE FOR DAYTIME-ONLY TRAFFIC PATTERNS THAT ARE ADEQUATELY DELINEATED BY OTHER TRAFFIC CONTROL DEVICES.

26. THE LIGHTED ARROW PANEL SHALL BE LOCATED AT THE BEGINNING OF THE TAPER AS SHOWN. WHEN PHYSICAL LIMITATIONS RESTRICT ITS PLACEMENT AS INDICATED, THEN IT SHALL BE PLACED AS CLOSE TO THE BEGINNING OF THE TAPER AS POSSIBLE.

SIGN SIZES

DIAMOND WARNING	- 48" x 48"
RECTANGULAR REGULATORY	- 48" x 60"
R5-18c REGULATORY	- 48" x 48"

NOT TO SCALE

MDOT Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC TYPICAL

TYPICAL TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON A DIVIDED ROADWAY USING A SINGLE STEP DOWN IN SPEED LIMIT

DRAWN BY: CON:AE:djf	OCTOBER 2011	M0740a	SHEET 2 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0740a.dgn REV. 10/26/2011			

MINIMUM MERGING TAPER LENGTH "L" (FEET)

OFFSET	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)										
FEET	25	30	35	40	45	50	55	60	65	70	
1	10	15	20	27	45	50	55	60	65	70	TAPER LENGTH "L" IN FEET
2	21	30	41	53	90	100	110	120	130	140	
3	31	45	61	80	135	150	165	180	195	210	
4	42	60	82	107	180	200	220	240	260	280	
5	52	75	102	133	225	250	275	300	325	350	
6	63	90	123	160	270	300	330	360	390	420	
7	73	105	143	187	315	350	385	420	455	490	
8	83	120	163	213	360	400	440	480	520	560	
9	94	135	184	240	405	450	495	540	585	630	
10	104	150	204	267	450	500	550	600	650	700	
11	115	165	225	293	495	550	605	660	715	770	
12	125	180	245	320	540	600	660	720	780	840	
13	135	195	266	347	585	650	715	780	845	910	
14	146	210	286	374	630	700	770	840	910	980	
15	157	225	307	400	675	750	825	900	975	1050	

THE FORMULAS FOR THE MINIMUM LENGTH OF A MERGING TAPER IN DERIVING THE "L" VALUES SHOWN IN THE ABOVE TABLES ARE AS FOLLOWS:

$$"L" = \frac{W \times S^2}{60}$$ WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 40 MPH OR LESS

"L" = S x W WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 45 MPH OR GREATER

L = MINIMUM LENGTH OF MERGING TAPER
S = POSTED SPEED LIMIT IN MPH PRIOR TO WORK AREA
W = WIDTH OF OFFSET

TYPES OF TAPERS	TAPER LENGTH
UPSTREAM TAPERS	
MERGING TAPER	L - MINIMUM
SHIFTING TAPER	1/2 L - MINIMUM
SHOULDER TAPER	1/3 L - MINIMUM
TWO-WAY TRAFFIC TAPER	100 ' - MAXIMUM
DOWNSTREAM TAPERS (USE IS OPTIONAL)	100 ' - MINIMUM (PER LANE)

MDOT Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC TYPICAL

TABLES FOR "L", "D" AND "B" VALUES

DRAWN BY: CON:AE:djf	JUNE 2006 PLAN DATE:	M0020a	SHEET 1 OF 2
CHECKED BY: BMM			
FILE: K:/DGN/TSR/STDS/ENGLISH/MNTTRF/M0020a.dgn	REV. 08/21/2006		

DISTANCE BETWEEN TRAFFIC CONTROL DEVICES "D" AND LENGTH OF LONGITUDINAL BUFFER SPACE ON "WHERE WORKERS PRESENT" SEQUENCES

"D" DISTANCES	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)									
	25	30	35	40	45	50	55	60	65	70
D (FEET)	250	300	350	400	450	500	550	600	650	700

GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE "B"

SPEED* MPH	LENGTH FEET
20	33
25	50
30	83
35	132
40	181
45	230
50	279
55	329
60	411
65	476
70	542

* POSTED SPEED, OFF PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED

1 BASED UPON AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) BRAKING DISTANCE PORTION OF STOPPING SIGHT DISTANCE FOR WET AND LEVEL PAVEMENTS (A POLICY ON GEOMETRIC DESIGN OF HIGHWAY AND STREETS), AASHTO. THIS AASHTO DOCUMENT ALSO RECOMMENDS ADJUSTMENTS FOR THE EFFECT OF GRADE ON STOPPING AND VARIATION FOR TRUCKS.

MDOT Michigan Department of Transportation

TRAFFIC AND SAFETY

MAINTAINING TRAFFIC TYPICAL

TABLES FOR "L", "D" AND "B" VALUES

DRAWN BY: CON:AE:djf	JUNE 2006	M0020a	SHEET 2 OF 2
CHECKED BY: BMM	PLAN DATE:		
FILE: K:/DGN/TSR/STDS/ENGLISH/MNTTRF/M0020a.dgn	REV. 08/21/2006		

Specification for
Land Corner Monuments
and
Monument Boxes

1. SURVEY CORNER MONUMENTS: Pursuant to the *Corner Recordation Act*, if a survey corner is located in, or under, the paved surface of a roadway under the jurisdiction of the Grand Traverse County Road Commission, the corner monument shall be, at a minimum, of a size and material as prescribed by State law. The corner monument shall be set below the road surface and contained within a covered metal circular opening, commonly known as a Monument Box.

2. REMONUMENTATION CORNER MONUMENTS: For survey corners to be monumented under the *State Survey and Remonumentation Act*, the corner monument shall be, at a minimum, of a size and material as prescribed by the *Grand Traverse County Remonumentation Program*, and shall also be set within a monument box in paved roadways.

3. MONUMENT BOXES: Any monument box to be installed in the paved roadway surface, shall be of a type, size, or style, as specified and/or approved by the County Highway Engineer.

4. CORNER CONSTRUCTION: The top of the corner monument shall be set, at a minimum, 6 inches (0.50 ft.) below the paved roadway surface, in the compacted gravel sub-grade, with the monument box to be centered over the monument. The top rim of the monument box is to be not less than ¼ inches (0.02 ft.), nor more than _ inches (0.03 ft.), below the surrounding pavement surface. The monument box shall have a minimum of 3 inches (0.25 ft.) of compacted bituminous or non-shrinking grouting material placed both horizontally and vertically around the top of the monument box, above the compacted gravel sub-grade (see installation detail). A copy of the recorded Land Corner Recordation Certificate shall be forwarded to the County Highway Engineer after completion of the corner construction.

5. CORNER EXCAVATION: Where a survey corner, located in a paved roadway, requires excavation below the road surface to determine the corner monument location, the surveyor and/or their employees, sub-contractors, etc., shall notify the County Highway Engineer as to the corner location, not less than 24 hours in advance of the excavation. The surveyor and/or their employees, sub-contractors, etc., shall be liable for any damage and/or cost of repairs to the road surface and it's supporting structures.

Adopted: *January 18,2001 by the*
Board of County Road Commissioners
of Grand Traverse County

MONUMENT BOX INSTALLATION DETAIL

NOT TO SCALE

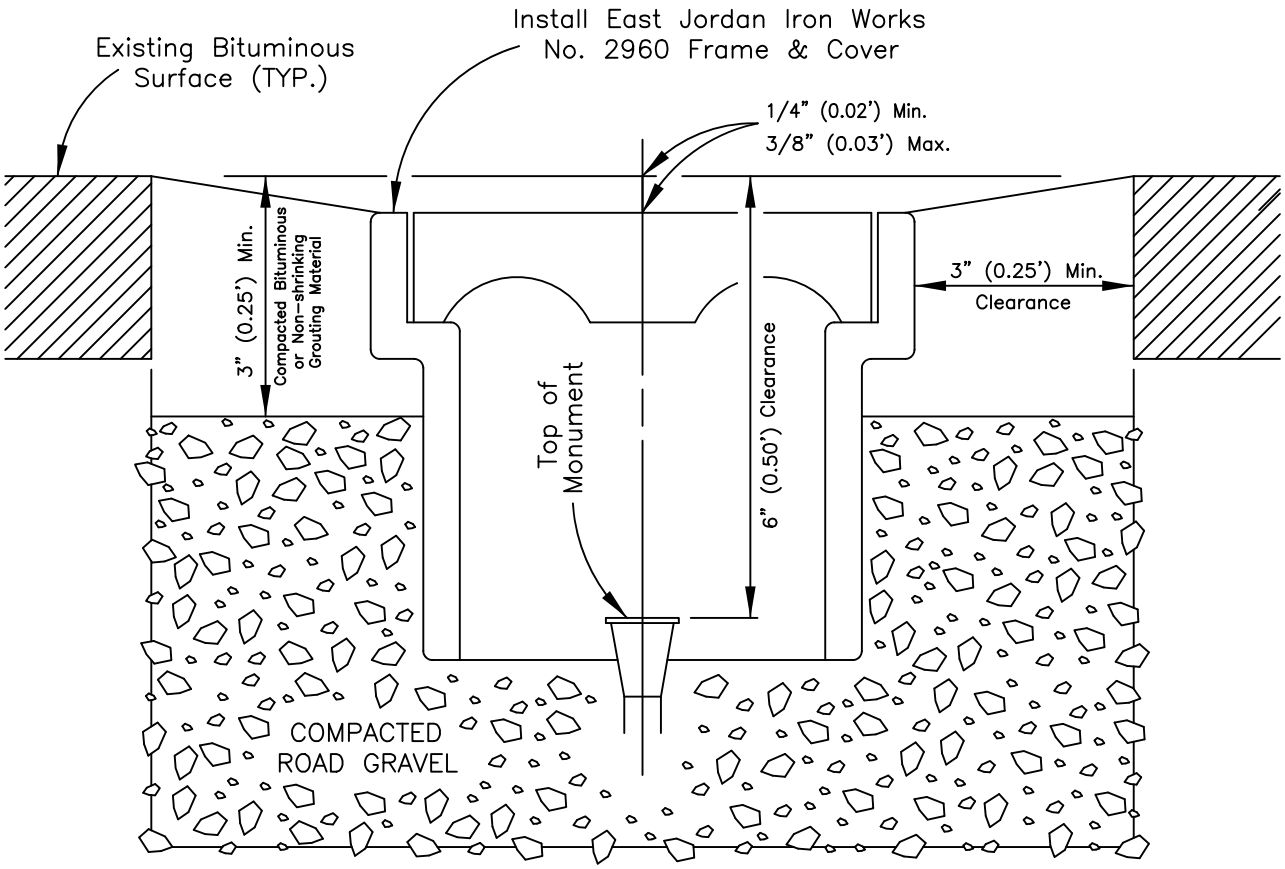


Figure No. 13

GRAND TRAVERSE COUNTY ROAD COMMISSION

ADOPTED: JANUARY 18, 2001

Appendix

E

MDOT
Michigan Department of Transportation

LOCAL AGENCY PROGRAMS
GUIDELINES FOR GEOMETRICS
ON
LOCAL AGENCY PROJECTS

2014 Edition

INCLUDING GUIDELINES FOR:

New Construction/Reconstruction (4R)
Resurfacing, Restoration, and Rehabilitation (3R)
Preventive Maintenance (PM)
and
Design Exceptions

Approved: _____ 3-4-14
Development Services Division Administrator — Date
Michigan Department of Transportation

TABLE OF CONTENTS

Section

GENERAL

(Section A)

GENERAL

This manual provides information and guidelines upon which to base the design of federal and state funded local agency road and bridge projects administered through Local Agency Programs (LAP) of the Michigan Department of Transportation (MDOT). Depending upon the type of project work, these guidelines allow some latitude from the road and bridge geometrics required by the American Association of State Highway and Transportation Officials (AASHTO).

A project may be designed based upon one of two different guidelines: 1) The AASHTO current edition of *A Policy on Geometric Design of Highways and Streets*, or applicable MDOT guidelines for new construction/reconstruction; or 2) this document, *Michigan Department of Transportation Local Agency Programs Guidelines for Geometrics*. The latter includes guidelines for New Construction/Reconstruction (4R); Resurfacing, Restoration and Rehabilitation (3R); Preventive Maintenance; and Design Exceptions.

The guidance supplied by AASHTO's *A Policy on Geometric Design of Highways and Streets* is based on established practices supplemented by recent and continuing research. The intent of this publication is to provide a reference manual for assisting in the design of roads and bridges. As stated in the foreword to AASHTO's *A Policy on Geometric Design of Highways and Streets:*

> "The intent of this policy is to provide guidance to the designer by referencing a recommended range of values for critical dimensions. Sufficient flexibility is permitted to encourage independent designs tailored to particular situations. Minimum values are either given or implied by the lower value in a given range of values. The larger values within the ranges will normally be used where the social, economic, and environmental (S.E.E.) impacts are not critical."

TRB Special Report 214, *Designing Safer Roads: Practices for Resurfacing, Restoration, and Rehabilitation, 1987* is the basis of the 3R guidelines in this document.

Design of projects on roads, streets, and bridges under local jurisdiction which are listed on the National Highway System (NHS), shall be in accordance with applicable AASHTO guidelines and MDOT Non-Freeway NHS 3R guidelines.

Summary of Changes:

The following is a summary of the major changes from the LAP Guidelines for Geometrics on Local Agency Projects dated 08/28/08 to address changes in ADA requirements and how standards apply for a project with 3R and 4R work:

The changes in ADA ramps, is based on a joint briefing memo that FHWA and Department of Justice (DOJ) to address different interpretations of when ADA ramps are required for road projects that are considered alterations. The main change is certain Preventative Maintenance treatments will now be considered an alteration and will require ADA ramps to be upgraded. For multiple treatments, if more than one of those treatments contains aggregate and/or filler, the combination will be considered an alteration.

For a project that includes 3R and 4R work, the applicable standards will correspond individually to each work type (3R or 4R) within the limits of that work.

NEW CONSTRUCTION / RECONSTRUCTION (4R)

(Section B)

NEW CONSTRUCTION/RECONSTRUCTION (4R)

The design of any federal or state funded new construction or reconstruction project on a road or bridge under local jurisdiction shall, at a minimum, be designed using AASHTO guidelines.

Projects that are mainly comprised of the following types of work are considered new construction or reconstruction:

1. Complete removal and replacement of pavement.
2. Major alignment improvements.
3. Adding lanes for through traffic.
4. New roadways and/or bridges.
5. Complete bridge deck or superstructure replacement.
6. Reconstruction of the roadway pavement, including more than fifty (50) percent of the subbase or subgrade, exclusive of such work as rubblizing, crushing and shaping.
7. On aggregate surface roadways, reconstruction is defined as involving more than fifty (50) percent of the subbase.

The above list is not all inclusive, but is intended to give typical examples of new construction or reconstruction work.

Refer to Michigan Design Manual, Road Design Section 3.08.01.B for current definition of 4R projects. If any discrepancies exist between these guides and Section 3.08.01.B, then Section 3.08.01.B shall prevail except for Items 6 and 7 listed above. The following type of work found in Section 3.08.01.B is exempt from these 4R guidelines, "Intermittent grade lifts that leave the existing pavement in service for less than 50% of the total project length."

Bridge Widths:

- For new construction or reconstruction, bridges should be designed to the minimum clear roadway width recommended by AASHTO in A Policy on Geometric Design of Highways and Streets. Bridge widths in excess of minimum AASHTO guidelines must be justified.
- Bridges designed to a width less than the minimum recommended by AASHTO will require a design exception. However, in no case may the approach roadway width used to determine the clear bridge width be less than the corresponding lane/shoulder widths in the 3R guidelines.
- The "traveled way" in the AASHTO bridge width tables refers to the minimum width of traveled way (i.e., total lane width) for new or reconstructed roadways, as shown in the appropriate AASHTO table. Approach roadway width is the width of traveled way plus graded shoulders, also as shown in AASHTO.

New construction or reconstruction for road or bridge projects on the NHS must be designed, at a minimum, to applicable AASHTO guidelines.

Design Speed

The design speed selected for new construction or reconstruction projects shall be in accordance with the following criteria:

- The recommended design speed is 5 mph over the posted or regulatory speed.
- The minimum design speed without a design exception is the posted or regulatory speed, or 55 mph if the road is not posted in rural areas, or 25 mph if the road is not posted in urban areas.

Shoulder Width

The shoulder width for new construction or reconstruction should be in accordance with AASHTO and the following criteria:

- If the approach roadway shoulder exceeds 4 ft., then a minimum 4 ft. (3 ft. paved) shoulder is acceptable adjacent to right turn lanes.
- However, if AASHTO requirements are less than 4 ft., then the shoulder width adjacent to the right turn lane should meet the AASHTO requirements.

NON-NHS

RESURFACING, RESTORATION AND REHABILITATION (3R)

(Section C)

INDEX

Non-NHS
Resurfacing, Restoration, and Rehabilitation (3R)

APPLICATION OF THE 3R GUIDELINES

These guidelines for Resurfacing, Restoration, and Rehabilitation (3R) are applicable to federal or state funded projects on roads and bridges under local agency jurisdiction which are not on the National Highway System (NHS) in Michigan. For features not addressed in these 3R guidelines, the requirements of AASHTO's current guide entitled *A Policy on Geometric Design of Highways and Streets* or applicable Michigan Department of Transportation guidelines will govern.

The 3R work is defined in 23 CFR (Code of Federal Regulations) as "*work undertaken to extend the service life of an existing highway and enhance highway safety. This includes placement of additional surface material and/or other work necessary to return an existing roadway, including shoulders, the roadside and appurtenances to a condition of structural or functional adequacy. This work may include upgrading of geometric features, such as widening, flattening curves or improving sight distances*." Examples of this type of work include:

1. Resurfacing, milling or profiling.
2. Lane and/or shoulder widening (no increase in number of through lanes).
3. Roadway base correction.
4. Minor alignment improvements.
5. Bridge deck overlay and/or minor widening (no increase in the number of through lanes).
6. Roadside safety improvements.
7. Signing, pavement marking and traffic signals.
8. Intersection and railroad crossing upgrades.
9. Bridge painting, joint replacements, and pin and hanger replacements.
10. Pavement joint repair.
11. Crush and shape and resurfacing.
12. Rubblize and resurface.
13. Passing relief lanes.
14. Reconstruction of the roadway pavement, including <u>less</u> than fifty (50) percent of the subbase or subgrade

Refer to the Michigan Department of Transportation Road Design Manual, Section 3.08.01.A for current definition of 3R projects. If any discrepancies exist between these guides and Section 3.08.01.A then Section 3.08.01.A shall prevail except for Item 14 listed above. The following type of work found in Section 3.08.01.A is exempt from these 3R guidelines, “Intermittent grade lifts that leave the existing pavement in service for more than 50% of the total project length.”

<u>Combined 3R and 4R Work</u>

If a project includes 3R and 4R work, the applicable standards are governed by the standards that correspond individually to each work type (3R or 4R). Identify the logical limits of each work

type on the project information sheet to distinguish where 3R guidelines and 4R standards are separately applied. Work type overlap between separation limits may cause a default to 4R standards within the overlap. When other work types are combined with 3R or 4R projects, they are also governed separately and identified as such on the project information sheet. See Section 3.08.01D.

Controlling Elements Subject to Formal Design Exception:

1. Design Speed
2. Shoulder Width
3. Lane Width
4. Bridge Width
5. Structural Capacity
6. Horizontal Alignment
7. Vertical Alignment
8. Stopping Sight Distance
9. Grade
10. Cross Slope
11. Superelevation
12. Vertical Clearance
13. Horizontal Clearance (not including clear zone)

When 3R guidelines are not met for any of these controlling elements, a formal request for an exception should be prepared during the scoping process by the local agency representative preparing the scope and sent to the appropriate Local Agency Programs Staff Engineer for approval. Each request for a design exception should be accompanied by a justification explaining why non-freeway 3R minimum guidelines are not being met. It should include a crash history evaluation, the estimated total cost required to attain non-freeway 3R guidelines, and a simple cost benefit analysis. When requesting exceptions to design elements on Heritage Routes, it is important to address the fact that the requested exception is based on historic, economic, or environmental concerns for the preservation of the natural beauty or historic nature of the facility.

The design exception requests are to be submitted on MDOT form number FC26. See link: http://mdotcf.state.mi.us/public/webforms/public/FC26.pdf for further guidance on design exceptions. Refer to Section E, Guidance Exception, within this document.

Geometric Elements	3R Minimum Guidelines: Non-NHS		
Design Speed **Shoulder Width** *NOTE: Minimum shoulder widths apply for posted speeds greater than 45 mph. Restrictions such as right of way and roadside context sensitivity issues may preclude the use of minimum shoulders within city, village or township limits with posted speeds of 45 mph and less.*	**Posted Speed Minimum**		
	Current ADT Two-Way	Inside and Outside Shoulder Width	
	≤750	2'-0" (Gravel)	
	750-2000	3'-0" (Paved desired)	
	>2000	6'-0" (with 3'-0" Paved desired)	
	Multi-Lane (Divided & Undivided)	Inside (Divided)	Outside (Both sides for un-divided)
		3'-0" Paved	6'-0" (3'-0" Paved)
Lane Width	Current ADT Two-Way	Lane Width * (excluding curb and gutter or shy distance from face of curb)	
	≤750	10'-0" (Lane width may be 9' where design speed ≤ 35 mph and ADT ≤250)	
	>750	11'-0"	
		10'-0" lanes with curb and gutter may be retained in urban areas for multi-lane un-divided (regardless of ADT) and multi-lane divided (ADT < 10,000) without crash concentration. 12'-0" lanes are desirable on designated truck routes and the Priority Commercial Network (PCN) or where truck traffic ≥10%	
Bridge Width, Structural Capacity & Horizontal Clearances (Existing Bridges to remain in place)	ADT Two-Way (Design Year)	Minimum Design Loading	Usable Width
	0-750	H15	Width of approach lanes.
	751-1500	HS 15	Width of approach lanes.
	1501-2000	HS15	Width of approach lanes plus 1' each side.
	2001-4000	HS15	Width of approach lanes plus 2' each side.
	>4000	HS15	Width of approach lanes plus 3' each side.
Horizontal/Vertical Alignment and Stopping Sight Distance	Vertical	0-20 mph less than project design speed may be retained without crash concentration.	
	Horizontal	0-15 mph less than project design speed may be retained without crash concentration.	
Grade	Review crash data. Existing grade may be retained without crash concentration.		
Cross Slopes	1.5% Minimum – 2% Maximum (refer to page C-6 for further guidance)		
Superelevation	MDOT Standard Plan R-107-Series; reduced maximum (6%) Straight Line Superelevation chart; or AASHTO requirements with max e=6%.		
Vertical Clearance	Maintain 14'-0" minimum.		

*Outside lanes: Lane width for outside lanes are measured to the edge of metal of the curb and gutter, or in the case of concrete pavement with integral curb, a 1 foot minimum shy distance from face of curb will be maintained and may not be considered as lane width.

CRASH ANALYSIS

A safety review (3-year period) shall be performed on each 3R project before starting design work. This review should include an analysis of available crash data to determine where safety enhancements are warranted.

The 3R project should incorporate features that alleviate any excessive crash patterns identified during the review. This should be considered regardless of other minimum requirements shown elsewhere in this guideline.

DESIGN TRAFFIC VOLUME (ADT)

According to Special Report 214 (recommendation 14, page 204), "The design traffic volume for a given highway feature should match the average traffic anticipated over the expected performance period of that feature." Therefore, the design ADT for a given feature should match the average ADT anticipated over the service life of the affected feature such as alignment and widths. However, based on the type of proposed work, the ADT may range from the present design life to the anticipated design life.

DESIGN SPEED

There are two methods that can be used to select the design speed for 3R projects. These may be used alone or in combination.

- Select an overall design speed greater than or equal to the posted regulatory or prima facie speed on the section being improved.
- Determine the 85th percentile speed for the feature being designed, such as horizontal curves or vertical curves. (Documented speed study is required to apply this method.)

BRIDGES TO REMAIN

If lane widening is planned as part of the 3R project, the usable bridge width should be compared to the approach width after widening.

- These values do not apply to bridges greater than 100 feet in length. These structures should be evaluated individually according to clear width provided, traffic volume, remaining life of the structure, pedestrian volume, snow storage, design speed, crash record, and other pertinent factors.

The designer should evaluate retention of an existing bridge if the bridge is less than 100 feet long and the usable width or structural loading of the bridge is less than shown in the table on page C-3.

When evaluating the replacement or widening, consider the following:

- Cost of replacing the existing bridge with a wider bridge designed to AASHTO guidelines for new bridges.
- Cost of widening the existing bridge (if practical).
- Review of available crash data.
- Structural condition of the existing bridge.

If the guidelines for bridge width and structural capacity are not met, a design exception is required.

All approach guardrails must be properly anchored to the bridge.

BRIDGE RAILINGS

Evaluation of all existing bridge railings to be left in service that have not been successfully crash-tested should be made. Retro-fitting the existing bridge railing to provide additional strength and safety characteristics in lieu of replacement of the entire rail system with a crash-tested rail may be cost effective and feasible.

- Existing bridge rail may remain in place if it meets AASHTO static load requirements. Otherwise, the bridge rail shall be replaced or retrofitted to meet current AASHTO guidelines.

HORIZONTAL/VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE

Horizontal Curves

Without crash concentrations that warrant revision, existing horizontal curves with a design speed which is 0-15 mph less than the posted speed may be retained without further documentation. However, the operation and safety should be improved to the extent feasible through such elements as superelevation modifications, removing crown, and removal of sight obstructions to improve stopping sight distance. When the horizontal alignment does not meet the posted speed, applicable traffic control devices should be installed according to the current Michigan Manual of Uniform Traffic Control Devices.

A decision not to reconstruct an existing horizontal curve where the curve design speed is more than 15 mph below the posted speed shall be supported with a design exception.

Vertical Curves

CREST - Without crash concentration and/or other geometric features such as:

- intersections
- lane drops
- horizontal curves warranting consideration

Existing vertical curves with a design speed 0-20 mph less than the posted speed do not require a design exception. However, designers should examine the nature of potential hazards in relation to sight distance and provide warning signs when appropriate.

SAG - In general, all sag vertical curves may be retained unless a safety review indicates a problem with crashes.

3R SAFETY CONSIDERATIONS

The designer should consider site specific conditions to determine the appropriateness for making improvements to side slopes and/or clear zones. Considerations include an evaluation of the costs as well as the impacts of improvement alterations. Documentation of the decision making process should be placed in the project file.

SIDE SLOPES

Side slopes should be flattened as much as cost considerations and conditions permit. Review crash history for improvement needs. Special consideration should be given to the following:

- Where run-off road crashes are likely to occur (i.e., outside of sharp horizontal curves), side slopes steeper than 1:3 within existing right-of-way should be flattened as much as conditions permit.
- Retain the current rate of side slopes when widening lanes and/or shoulders, unless steeper slopes are warranted by special circumstances. This often requires new ditches; however, the fore-slopes should not be steepened beyond the existing fore-slope rate (existing rates flatter than 1:4, may be steepened to 1:4).

CROSS-SLOPES AND SUPERELEVATION

- 3R projects that include resurfacing pavement, cross-slopes should be restored to new construction standards.
- The 2% maximum cross-slope can vary if supported by AASHTO requirements based on roadway classification.
- Superelevation rates on horizontal curves should be increased if necessary, to the appropriate rate for new construction for the design speed.

CLEAR ZONE

A uniform clear zone (i.e., a uniform distance from the edge of pavement to the tree line, utility poles, etc.) is desirable for the project length. Special consideration should be given to the following:

- Removing, relocating, and/or shielding isolated roadside obstacles on the fore-slope or roadside ditches, particularly in target areas and non-recoverable fore-slopes.
- Removing, relocating and/or shielding roadside obstacles with recorded crash concentrations.
- If run-off road crashes are not concentrated in any location, but there is a significant number distributed throughout the project, consider widening the average clear zone for the length of the project.

TREE REMOVAL

Tree removal will be selective and generally "fit" conditions within the existing right-of-way and character of the road. The AASHTO *Roadside Design Guide* presents ideal clear zone distance criteria; however, these distances are not always practical in Michigan. Consequently, trees within the clear zone should be considered for removal subject to the following criteria:

- **Crash Frequency** - Where there is evidence of vehicle-tree crashes either from actual crash reports or scarring of the trees.
- **Outside of Horizontal Curves** - Trees in target position on the outside of curves with a radius of 3000 feet or less.
- **Intersections and Railroad** - Trees that are obstructing adequate sight distance or are particularly vulnerable to being hit.
- **Volunteer Tree Growth** - Consider removal of volunteer trees within the originally intended tree line. Volunteer trees are those that have naturally occurred since original construction of the road.
- **Maintain Consistent Tree Line** - Where a generally established tree line exists, consider removing trees that break the continuity of this line within the clear zone.
- **Clear Zone –** Refer to Michigan Design Manual Road Design Section 7.01.11B for treatment/consideration of obstacles inside the calculated project clear zone. Review crash history for need for spot improvements.

ROADSIDE OBSTACLES

Roadside improvements should be considered to enhance safety. Improvements may include removal, relocation, redesign, or shielding of obstacles such as culvert headwalls, utility poles, and bridge supports that are within the clear zone as referenced in Michigan Design Manual Road Design Section 3.09.03C.

A review of crash history will provide guidance for possible treatments. However, treatment of some obstacles such as large culverts can add significantly, perhaps prohibitively, to the cost of a project. This means that in most instances only those obstacles that can be cited as specifically related to crashes or can be improved at low-cost should be included in the project. Ends of culverts that are within the clear zone should be considered for blending into the slope.

GUARDRAIL

An analysis (including an onsite inspection of height, length and overall condition) should be made of all existing guardrail installations to determine if continued existence or removal is appropriate. Refer to MDOT Road Design Manual for further guidance on guardrail requirements. The allowable variation from standard height is detailed in Michigan Design Manual Road Design Section 7.01.41B.

Evaluation of Guardrail and Bridge Rail

- Onsite inspection of height, length, and overall condition should be done to determine guardrail upgrading needs
- Type A guardrail may be retained on cul-de-sacs or "T" intersections. Type A guardrail and two cable guardrail will be replaced at other locations
- Blunt ends and turned down endings shall be upgraded to current standard terminals.
- Unconnected guardrail to bridge rail transitions shall be connected or upgraded to current standards.
- Existing bridge rail may remain in place if it meets AASHTO static load requirements. Otherwise, the bridge rail shall be replaced or retrofitted to meet current AASHTO guidelines.
- By Federal mandate, existing Breakaway Cable Terminals (BCT) must be removed on 3R projects on the National Highway System (NHS). Refer to Michigan Design Manual Road Design Section 7.01.41B for upgrading guardrail terminal guidelines.

Refer to AASHTO Roadside Design Guide when determining if the installation of guardrail is warranted. Special consideration should be made to fill sections (AASHTO fig 5.1), clear zone is not free of obstacles, slopes are non-recoverable with hazards at the landing zone, or at any location that requires guardrail based on the traffic crash history analysis.

INTERSECTION DESIGN

Designers should evaluate existing intersections when design traffic volumes on either roadway exceed 1,500 vehicles per day or there is evidence of crashes related to existing conditions. Such intersections should be reviewed during design and safety improvements and should be included in the project where practical and feasible. All available crash data should be utilized in the field review of the intersection.

Safety measures, as discussed in the Supplemental Safety Measures herein, can be utilized to mitigate safety concerns at intersections. Warning panels/signs should be installed where appropriate.

TRAFFIC CONTROL DEVICES

Signs, pavement markings, and traffic signal controls shall be installed in accordance with the current *Michigan Manual of Uniform Traffic Control Devices*.

SIGNING

Consideration should be given to upgrading sign reflectivity, supports, and locations.

SUPPLEMENTAL SAFETY MEASURES

The design of highways provides a range of supplemental measures that can be utilized alone or in combination with others to mitigate deficiencies in controlling elements to provide for safer roadways. Where reconstruction of a roadway feature, such as a horizontal curve, vertical curve, intersection or bridge, is not feasible or prudent because of economic, social or environmental concerns, alternative safety measures should be considered. Some of these are:

Geometric Concern	Supplemental Safety Measure	
Narrow lanes and shoulders	Pavement edge lines Paved shoulders Permanent pavement markers Post delineators Warning signs	
Steep side slopes; roadside obstacles	Warning signs Round ditches Breakaway hardware Install guardrail	Slope flattening Obstacle removal Post delineators
Narrow bridge	Traffic control devices Approach guardrail Pavement markings Warning signs	
Poor sight distance at hill crest	Traffic control devices Shoulder widening Driveway relocation Warning signs	
Sharp horizontal curve	Traffic control devices Appropriate superelevation Slope flattening Pavement anti-skid treatment Permanent pavement markers	Shoulder widening Advisory signs Obstacle removal Post delineators
Problem intersections	Traffic control devices Fixed lighting Advisory signs Pavement anti-skid treatment	Traffic signalization Speed controls Rumble strips

PREVENTIVE MAINTENANCE (PM)

(Section D)

PREVENTIVE MAINTENANCE

Preventive maintenance projects are defined as cost-effective projects designed to preserve the existing pavement and base, and give extended life to a roadway without undertaking reconstruction or major rehabilitation. The intent of a preventive maintenance program is to implement a planned strategy of cost effective treatments to an existing roadway system and its appurtenances that preserve the system, retards future deterioration, and maintains or improves the functional condition of the system without increasing structural capacity.

Preventive maintenance projects have the following characteristics:

- Do NOT increase lane widths.
- Do extend pavement life (typically 1-7 years).
- Do NOT exceed an application thickness of more than 1.5 inches of hot mix asphalt (HMA) material; however, in certain cases the use of 2 inch overlays may be approved.
- Have base courses in good condition. If base or sub-grade rutting appears to be present, preventive maintenance projects should not be applied until the structural deficiency is corrected.

Approved Preventive Maintenance Treatments

There are many acceptable ways to effectively extend the service life of a roadway, and a list of the currently approved treatments is included as Appendix D-1. Distress guidelines are provided for the application of each approved treatment utilizing the Pavement Surface Evaluation and Rating (PASER) system. In order to qualify as an approved preventive maintenance treatment the majority of the pavement which the treatment is applied to shall be within the PASER guidelines outlined in Appendix D-1 or as an alternative preventative maintenance treatment outlined below.

PASER ratings that are acceptable for the evaluation of guidelines include ratings from the Transportation Asset Management Council's annual statewide data collection effort or from a PASER data collection effort by the local agency, at the discretion of the agency that has jurisdictional ownership of the pavement in question.

Brief descriptions of the approved preventive maintenance treatments are included in Appendix D-2.

Complementary Treatments

The use of two or more preventive maintenance treatments is acceptable when they serve a complimentary purpose. For example, crack filling or repair of a pavement prior to applying a chip seal is an acceptable practice and will extend the life of the chip seal. Where complementary treatments are planned to be utilized, the less restrictive PASER range of the two treatments as shown in Appendix D-1 shall apply.

Approval of Alternative Preventive Maintenance Treatments

A local agency can request to use an alternate treatment not included in Appendix D-1. The local agency will need to provide information to demonstrate that the alternative treatment will extend the service life of the roadway in a cost effective manner and has benefits (financial, operational, or otherwise) exceeding existing approved treatments. Proposed treatments may not be accepted by MDOT if adequate information is not supplied on the proposed treatment. The information provided to MDOT must indicate why the alternative treatment is desired and the expected results of the treatment. The information must include supporting documentation to substantiate the anticipated benefit of the treatment and the anticipated life extending benefit to the pavement. If the alternative treatment has not been widely used in Michigan, information must also be submitted that demonstrates it is a suitable treatment when Michigan's climate is considered.

Design Exceptions

Design exceptions are not required and are not allowed for preventive maintenance projects.

Safety Review

A 3-year safety review is required for preventive maintenance projects. At a minimum, the safety review should contain the most recent 3 years of crash data and a letter signed by a licensed engineer that describes the crash history and determines if there is a correctable crash pattern in areas that the project could reasonably address.

Where the safety review indicates an existing problem, area the project shall be modified in accordance with 3R, AASHTO, or applicable MDOT guidelines; however, geometric changes will not be required on preventive maintenance projects. At a minimum, pavement markings shall be applied to the roadway as part of the preventive maintenance project, existing guardrail conditions along the route shall meet the criteria detailed in Section C (3R) of these guidelines, and signs that are damaged or are without reflectivity must be replaced with new signs with reflective sheeting. Signs required by the Michigan Manual of Uniform Traffic Control Devices that are not currently installed must be installed as part of a preventive maintenance project.

All preventive maintenance projects should consider appropriate ways to maintain or enhance the current level of safety and accessibility. Isolated or obvious deficiencies should always be addressed. Safety enhancements such as the removal or shielding of roadside obstacles, mitigation of edge drop-offs, addition of paved or stabilization of unpaved shoulders, or installation of milled rumble strips, should be encouraged and included in projects where they are determined to be a cost effective way to improve safety. MDOT may require these safety features to be added to a project at the time of the grade inspection meeting. To maintain preservation program flexibility and in accordance with 23 U.S.C. 109(q), safety enhancements can be deferred and included within an operative safety management system or included in a future project in the STIP. In no way shall preventive maintenance type projects adversely impact the safety of the traveled way or its users.

Pavement Warranties

Pavement warranties shall not be used on preventive maintenance projects.

Testing and Material Certification

Quality control provisions, quality assurance provisions, material certifications, material testing requirements, and construction engineering requirements cannot be waived or lowered on preventive maintenance projects. This requirement applies on projects that are competitively bid or constructed. For projects completed under a force account authorization, standard force account requirements apply. FHWA and/or MDOT will review all preventive maintenance projects to ensure such measures are in place.

Federal highway Compliance

The majority of preventative maintenance projects are deemed "alterations" and must meet ADA requirements (for public rights of way) by including sidewalk ramps and all other ADA compliance within the scope of the project. The only exception for ADA compliance would be those projects that meet the definition of "maintenance" as defined by the DOJ. DOJ defines "maintenance" projects as projects that are exempt from ADA.

By agreement with FHWA, "Maintenance" projects that are exempt from ADA are limited to only the following: crack filling and sealing, surface sealing, single chip seals, slurry seal, fog seals, scrub sealing, joint crack seals, joint repairs, dowel retrofit, spot high-friction treatments, diamond grinding, pavement patching, and pavement markings. Any combination of the above treatments in one project that cause the use of any two or more treatments that contain aggregate or filler of any kind will constitute an "alteration" and must be ADA compliant. All other preventative maintenance projects must comply with ADA requirements. All existing ADA or safety features which are relocated or reconstructed must be brought up to the current governing standard.

Transportation Improvement Plan Listing

Preventative maintenance projects must be listed on the Statewide Transportation Plan (STIP) (or Transportation Improvement Plan (TIP) in urbanized areas). Such projects may be included in a group or listed individually. The TIP description must indicate that the project is a preventive maintenance project. Metropolitan Planning Organizations (MPOs), the MPO's Federal Aid Committees, and Rural Task Forces are encouraged to develop programmatic guidelines for their member agencies to follow in order to have preventive maintenance projects selected by the agency's respective committees.

Federal funds can be used on preventive maintenance projects unless the funding source would prohibit maintenance type work.

Routine Maintenance

Operations such as filling potholes, mowing, plowing, etc., are considered reactive or routine maintenance and are not eligible for federal or state aid.

Appendix D-1:

Approved Preventive Maintenance Treatments

Fix Type	Life Extension (in years) *	Life Extension (in years)	Life Extension (in years)	PASER Rating	ADA Required (Yes/No)
	Flexible	Composite	Rigid		
HMA Crack Treatment	1-3	1-3	N/A	6-7	N
Overband Crack Filling	1-2	1-2	N/A	6-7	N
One Course Non-Structural HMA Overlay	5-7	4-7	N/A	4-5****	Y
Mill and One Course Non-Structural HMA Overlay	5-7	4-7	N/A	3-5	Y
Single Course Chip Seal	3-6	N/A	N/A	5-7	N
Double Chip Seal	4-7	3-6	N/A	5-7	Y
Single Course Micro-Surface	3-5	**	N/A	5-6	Y
Multiple Course Micro-Surface	4-6	**	N/A	4-6****	Y
Ultra-Thin HMA Overlay	3-6	3-6	N/A	4-6****	Y
Paver Placed Surface Seal	4-6	**	N/A	5-7	Y
Full Depth Concrete Repair	N/A	N/A	3-10	4-5 ***	N
Concrete Joint Resealing	N/A	N/A	1-3	5-8	N
Concrete Spall Repair	N/A	N/A	1-3	5-7	N
Concrete Crack Sealing	N/A	N/A	1-3	4-7	N
Diamond Grinding	N/A	N/A	3-5	4-6	N
Dowel Bar Retrofit	N/A	N/A	2-3	3-5 ***	N
Longitudinal HMA Wedge / Scratch Coat with Surface Treatment	3-7	N/A	N/A	3-5****	Y

* The time range is the expected life extending benefit given to the pavement, not the anticipated longevity of the treatment.

** Data is not available to quantify the life extension.

*** The concrete slabs must be in fair to good condition

**** Can be used on a pavement with a PASER rating = 3 when the sole reason for rating is rutting or severe raveling of the surface asphalt layer

Standard Capital Preventive Maintenance Treatments

The following table lists all standard allowable Preventive Maintenance treatments and indicates whether the treatment is a pavement seal or a functional enhancement.

Standard Capital Preventive Maintenance Treatments	
Pavement Seal	Functional Enhancement
• HMA Crack Treatment • Concrete Crack Treatment • Concrete Joint Resealing with Minor Spall Repair • Overband Crack Fill- Pretreatment • Chip Seals • Micro-surfacing • Ultra-Thin HMA Overlay-Low Volume • (<1" thick) • Paver Placed Surface Seal	• Non-Structural HMA Overlay (1.5") • Surface Milling with Non-Structural • HMA Overlay (1.5") • HMA Shoulder Ribbons • Full Depth Concrete Pavement Repairs • Diamond Grinding • Dowel Bar Retrofit • Concrete Pavement Restoration *# • Underdrain Outlet Clean Out and Repair

*# Includes: joint spall repair, surface spall repair, joint/crack sealing, full depth repairs, and diamond grinding.

Appendix D-2:

Definitions of Preventive Maintenance Treatments

HMA Crack Treatment and Overband Crack Filling

This is a generalized treatment category including crack sealing, crack filling, and crack repair. This crack seal treatment is used on all types of cracks. It involves using a hot air lance or compressed air to blow out the debris in the crack, then filling with a sealant. This class of treatments is intended to seal the cracks from water infiltration and incompressible material entering the pavement system.

Non Structural HMA Overlays:

Non-structural overlays are considered to have an application thickness of 1.5 inches or less of hot mix asphalt HMA material; however, in certain cases the use of 2 inch overlays may be approved. Pre-approved cases include the use of 2 inch overlays for crown correction, the use of superpave mixes that require 2 inch lifts, the use of a scratch course prior to a 1.5 inch overlay in areas where there is a concern with crack sealing materials, and where it is necessary to mill 2 inches to address distress (such as rutting). Use of 2 inch overlays is still the exception to the rule and the use of 2 inches of HMA in the preventive maintenance program for any reason other than the pre-approved reasons listed above will require approval from the MDOT Local Agency Staff Engineer, the MDOT Local Agency Engineer, and the Development Services Division Administrator. Approval will be on a case by case basis. Preventive maintenance projects should not be applied to a roadway that has a significant level of distress that should be addressed by a 3R or reconstruction type project.

Longitudinal HMA Wedge/Scratch Coat with Surface Treatment:

Longitudinal HMA wedge/scratch coat with surface treatment consists of a paver-placed HMA material to correct the cross section of the roadway often done on lower volume roads in combination with a chip seal, but can also be used in combination with a micro-surface, ultra thin overlay, and conventional overlay. This is not to be used in small isolated areas such as a pothole repair. This is to be used for the majority of the length of the project (using engineering judgment) so that the proper increase in ride quality can be achieved.

Chip Seal

A chip seal is the application of an asphalt emulsion with a cover aggregate. A chip seal will seal and/or retard the oxidation of an existing pavement surface, improve skid resistance of the pavement surface; seal fine surface cracks in the pavement, thus reducing the intrusion of water into the pavement structure; and retard the raveling of aggregate from a weathered pavement surface. Chip seals may be constructed using a single or multiple layers of asphalt emulsion and aggregate cover. Chip seals may be applied in conjunction with crack sealing.

Micro-Surface

Micro-surfacing is a mixture of polymer modified asphalt emulsion, mineral aggregate, mineral filler, water, and other additives placed on a paved surface. A single course micro-surfacing will retard oxidation and improve skid resistance in the pavement surface. A multiple course micro-surfacing is used to correct certain pavement surface deficiencies including severe rutting, minor surface profile irregularities, polished aggregate or low skid resistance and light to moderate raveling. Micro-surfacing is typically used on flexible or composite pavements and can perform under all traffic volumes.

Ultra Thin HMA Overlay

Ultra Thin HMA Overlay is a dense graded bituminous mixture limited to an application rate of 72lbs/syd, and a maximum average thickness of 0.75 inches which is applied to retard oxidation and improve skid resistance in the pavement surface.

Full Depth Concrete Repair

The work consists of complete removal and replacement of the concrete pavement at the deteriorated joint or open crack. The new concrete repair should include load transfer (dowel bars), pavement reinforcement if the pavement is a joint reinforce concrete pavement, contraction and/or expansion joints with joint seals. Repairs adjacent to ADA ramps will be reviewed on a case by case basis to determine if the fix is an “alteration” or “maintenance” with regard to ADA compliance.

Concrete Joint Resealing

The purpose of resealing the concrete pavement joints is to prevent water and incompressibles from entering the pavement structure, thus slowing the rate of deterioration of the concrete pavement. Concrete joint resealing includes the removal of the existing joint seals and resealing the transverse and longitudinal joint with preformed neoprene, silicones, or low-modulus hot-poured rubber.

Concrete Spall Repair

Spall repair is done to remove distress from the pavement and to increase the life of the repair versus typical reactive methods that use temporary asphaltic filler or cover materials. The work repairs spalled concrete by removing all unsound concrete, cleaning the area, and placing a filler material consisting of a fast-set mortar or a rapid setting polymer concrete. Spalling may occur along transverse or longitudinal joints or cracks, or be located somewhere on the pavement surface. Filler materials are typically pre-packaged and are placed according to recommendations from the supplier.

Concrete Crack Sealing

The purpose of sealing the cracks in the concrete pavement is to reduce the water and incompressible from entering the pavement structure and thus slowing the deterioration rate of the pavement. This treatment is can be used in conjunction with other treatments of rigid pavements such as joint resealing and minor spall repair and /or full depth concrete joint repair.

Diamond Grinding

Diamond grinding is used to restore the surface longitudinal profile and crown of a concrete pavement that provides an improved ride quality. Benefits from diamond grinding include the removal of joint and crack faults, the removal of wheel ruts caused by tire wear, the restoration of transverse drainage, and the improvement of skid resistance. Often other repairs should be performed prior to diamond grinding.

Dowel Bar Retrofit

A dowel bar retrofit treatment restores the effective load transfer at faulted joints and cracks, significantly reduces the recurrence of faulting, and increases the structural capacity of the pavement. Dowel bar retrofit is an operation in which slots are cut into the concrete pavement across faulted joints and cracks, and dowel bars are placed in the slots to restore the load transfer. The work consists of five operations:

- cutting the slots
- preparing the slots
- placing the dowel bars
- backfilling the slots
- opening the pavement to traffic

Paver Placed Surface Seal

A special paver places a polymer modified asphalt emulsion followed immediately by a gap-graded, ultra-thin HMA surface course. A paver placed surface seal is a non-structural HMA overlay in combination with a bonding/sealing polymer modified asphalt emulsion. It assists in sealing the existing pavement surface to reduce the intrusion of water into the pavement structure; improve friction; slow the rate of pavement deterioration; correct minor pavement surface deficiencies; and improve the ride, noise, and skid qualities of the pavement.

DESIGN EXCEPTIONS

(Section E)

DESIGN EXCEPTIONS

Exceptions to particular design elements of AASHTO's *A Policy on Geometric Design of Highways and Streets* and Michigan's local agency 3R guidelines may be warranted on projects at individual locations. These design exceptions shall be submitted to MDOT Local Agency Programs by the project owner. A design exception must show the need for the exception and must demonstrate that it would not create or maintain a potential or existing crash situation.

The need for a design exception should be discussed with Local Agency Programs during the early stages of the project's development. The design exception request form should be completed and submitted to Local Agency Programs along with the project program application.

MDOT Form FC26 can be obtained at: http://mdotcf.state.mi.us/public/webforms/public/FC26.pdf

The following information must be included in a design exception request:

1. Feature and location not meeting the minimum design guideline.
2. Minimum design value that will be obtained.
3. Estimated cost of meeting the design guideline.
4. Environmental or physical constraints that prevent the design from meeting the design guideline.
5. Past traffic crash analysis at the site specific location that might be related to this design element. (If such crashes have occurred, further analysis will be required to show why upgrading is not cost effective.)
6. Discussion of whether some compromise design value could be used that would at least enhance the existing condition (include estimated cost of compromise solution).
7. Discussion of mitigation measures being utilized for the design exception. Safety Features and Supplemental Safety Measures discussed herein should be considered.

If any of the 13 controlling design elements listed on page C-2 are not satisfied for the applicable standards, then a design exception must be submitted.

The design exception does not apply to preventive maintenance projects.

DESIGN GUIDELINES

AASHTO INTERIM STRUCTURAL PAVEMENT

DESIGN PROCEDURE

ADOPTED FOR ALL SEASON COUNTY ROADS

and

APPROVED BY THE COUNTY ROAD ASSOCIATION OF MICHIGAN

ENGINEERING COMMITTEE

ON

JANUARY 18, 1988

AS REVISED JANUARY 1989

PREFACE

This January 1989 edition of the 'Design Guidelines Adopted for All Season County Roads contains minor revisions of the guidelines approved in 1988

Primarily, it corrects minor errors in the original edition, some further editing, and updating of the artwork.

If you have any questions, or suggestions for improving these guidelines, please contact

Local Services Division
Michigan Department of Transportation
P O Drawer 30050
Lansing MI 48909

INTRODUCTION

The two more critical elements of the design procedure are

1 Traffic, particularly commercial.

2. Subgrade soils

The normal design period for AASHTO pavement design is twenty (20) years However it was decided that, in some cases a minimum design period of ten (10) years could be used for resurfacing or rehabilitation projects

A serviceability index of 2.0 is used for most county roads and city streets and the index is the same for both flexible and rigid pavements. If the ADT (Average Daily Traffic) exceeds 5000 a serviceability index of 2.5 is used.

Traffic and the conversion into equivalent 18 Kip Axle loads are applied in the same way for flexible and rigid pavement design.

Life cycle costing has not been applied in this analysis.

Drainage is one of the most important factors in road performance. It is not only important during design and construction, but also must be maintained. Water in the subgrade or base must be controlled by under drainage. Pavements and shoulders should be built to proper crown and slope Run-off water must be controlled by ditches or under drainage Proper maintenance of shoulders to prevent berms or secondary ditches cannot be over emphasized. Ditches should be maintained by cleaning out as required and brush should be removed. Underdrains should be checked periodically for cleanout or broken sections

Treatment of swamps was discussed and it was decided that existing roads may be floated over swamps depending on economics and environmental effects. Before a decision is made to float over a swamp the depth and extent of the swamp as well as the depth of and type of existing fill should be known With this information and an evaluation of environmental effects a decision can be made whether to excavate and backfill the swamp or whether to float the existing fill. If not treated, expect maintenance costs and try to inform the public of future maintenance.

If you require more assistance, or if resurfacing on a concrete pavement is proposed contact the Local Services Division or the district soils and materials engineers for assistance.

ALL SEASON LOADING OUTLINE FLEXIBLE PAVEMENT

I. SERVICEABILITY INDEX p_t

A. As developed in the AASHTO road test, reflects pavement condition at end of design period, usually 20 years.

B For most reconstruction widenings resurfacings secondary trunklines turnbacks federal aid secondary county primary and other lower volume routes with ADT's less than 5000 use p_t = 2.0 chart.

When the ADT exceeds 5000 use p_t = 2.5 Chart

C. Both serviceability index charts are attached. Attachment C (pp 9 and 10)

II. SOILS Soil Support Value S

A. Are plans available showing existing typical cross section and subgrade textures?

B If not borings should be made.

1 Boring locations and depth

a. Approximately 300' to 1000' depending on uniformity of existing cross section thicknesses and subgrade. Closer spaced borings if necessary

b Vary pattern from side to side

c. 3 to 5 depth. 5 recommended

d. Concentrate on distressed areas to determine whether base correction is needed. May require closer boring pattern.

e. Determine water table, if present.

f. If widening existing pavement obtain borings in shoulder and determine whether subbase is full width.

g. If peat or muck is present, borings or soundings should outline the extent (depth including depth of existing fill width within proposed cross section and length)

C. In the application of the soil support value the following is assumed

1 Subgrades have been corrected where required to prevent frost heaves

2. Proper grade heights are designed.

3 Unsuitable material such as topsoil peat, etc. has been removed

4 Suitable compaction has been obtained

D Soil Support Values S A Measure of Subgrade Support

1 Value ranges from 1 to 10 Use information from old plans borings soils maps soils surveys, and engineering judgment to determine soil texture of subgrade. Reduce value for combination of wet soils and grade below recommended heights.

2. See Attachment A (Soil Support Chart, page 7) to determine soil support value, which is based on texture of subgrade.

III. TRAFFIC FACTORS

A. Information Sources

1 Traffic counts submitted for highway needs studies Are they current? Generally for all season design, current traffic counts should be made and percent commercial should be counted.

2. Note that average daily traffic counts (ADT) are for both directions

3 The ADT used for geometrics is the same as the ADT used for pavement design.

B Traffic Estimate

1 For reconstruction, use a 20 year projection date. For some resurfacing, rehabilitation, or other projects a 10 year projection may be used.

2. If 20-year projection is not available use a compounded growth factor of 3% a year (Current traffic count x 1 03 compounded, at 3% growth per year compounded over twenty years, traffic will approximately double) Use judgment to modify or use the expansion factor for your county as shown in the county road association design manual.

3 Determine traffic in one direction only For design purposes place all traffic in one direction in one lane (1/2 ADT) On multi lane highways use a percent usually 70-80% in the design lane reflecting lane distribution.

4 Determine commercial traffic percentage in design lane Use percent commercial based on updated traffic counts For most county primary roads percent commercial ranges from 8 to 10 unless there is a large commercial traffic generator on the route. In most cases passenger traffic is ignored. Find number of commercial vehicles

5 Find equivalent 18 kip single axle loads (commercial ADT x conversion factor) Conversion factor is 0.544 for medium commercial This is the conversion factor most commonly used Multiply the commercial ADT x 0.544 to determine the Equivalent Single Axle Load (ESAL)

IV REGIONAL FACTOR R Climatic factor considering rainfall, drainage freeze thaw cycles spring breakup

A. Higher factors are more critical for Michigan.

R = 3.0 South 2 tiers of counties
R = 3.5 Districts 5, 6, and remainder of districts 7, 8, and Metro
R = 4.0 Districts 3 & 4
R = 4.5 Districts 1 & 2

Engineering judgment may be used to modify these factors dependent on job conditions

V PRELIMINARY STRUCTURAL NUMBER $\overline{SN}$

A. Use Design Chart for Flexible Pavement Attachment C (pages 9 and 10)

p_t = 2.0 ADT < 5000

p_t = 2.5 ADT > 5000

B Enter S = Soil Support Value.

C. Enter traffic information. Equivalent 18 Kip Axle loads (Note that chart is set up for daily or total 18 kip loads) If daily traffic is used on chart, it should be for a 20 year design period. If the design is for other than a 20 year design period the total repetition traffic count must be used.

D Read $\overline{SN}$ at appropriate intersect.

VI. WEIGHTED STRUCTURAL NUMBER SN

Is an indication of required total pavement strength, i.e. subbase, base and surfacing

A. Enter $\overline{SN}$ Preliminary Structure Number

B Enter R Regional Factor

C. Read SN weighted structural number

D Pavement sections (layer thickness x material coefficient summation see VIII page 5) should approximate or exceed the SN number

E. Existing Section Layer coefficients (See VIII, page 5) x thickness can be applied to an existing road. If the weighted structural number of the existing road is less than that which is required from the design procedure then the layer coefficient x thickness of proposed additional aggregate, bituminous layers etc. required to meet the design weighted structural number can be determined.

F Modify with engineering judgment and experience. Consider costs material availability traffic maintenance ease of construction etc.

VII. CONTROLS

A. Subbase minimum thickness 12 compacted. May require a thicker subbase For natural sand soils use an available subbase depth of 12

B Aggregate Base minimum thickness 6" compacted. May require thicker aggregate base. (Note that specifications require that the maximum lift thickness of aggregate base for compaction not exceed 6")

C. Bituminous Base (Not required and is more expensive, but may be used to reduce subbase or aggregate base thickness) minimum thickness 2 if used.

D Minimum total thickness of bituminous pavement shown in Bituminous Pavement Design guidelines (Attachment D pages 11 15) Minimum 2.5 (270 pounds per square yard in two courses)

E. The weighted structural number for the above minimum section is 3 07 (12 subbase 6 aggregate, 2.5" bituminous)

VIII COEFFICIENTS = Per Inch of Material

A. Subbase
See Soil Support Chart (Attachment A, page 7) Ranges from 0 05 to 0 13 usually 0 10

B Aggregate Layers
See Soil Support Chart (Attachment A, page 7) Ranges from 0 12 to 0 15 usually 0 14

Existing Aggregate Base	0 14
Bank Run Aggregate Base	0.12

C. Bituminous Layers (1 of Bituminous on one square yard weighs approximately 110 pounds)

Top		0 42
Leveling		0 42
Binder		0 44
Bit. Base		0.32
Seal Coat		0 14
Recycled Cold Mix Base w/Bituminous Stabilization		0 25
Pulverized Bituminous Base		0 20
Existing Bituminous Surface (Dependent on Condition)	0 14	0 30
Existing Seal Coat		0 14

IX. SAMPLE PROBLEM Refer To Attachment F (pp 20-31)

A. Use Chart p_t = 2.0 Attached (page 9)

B Select and enter soil support value S

C. Determine and enter traffic information

D Read Preliminary Structural Number $\overline{SN}$

E. Select and enter Regional Factor R.

F Read weighted Structural Number SN

G Using trial thicknesses try alternate pavement sections using coefficients for various layers

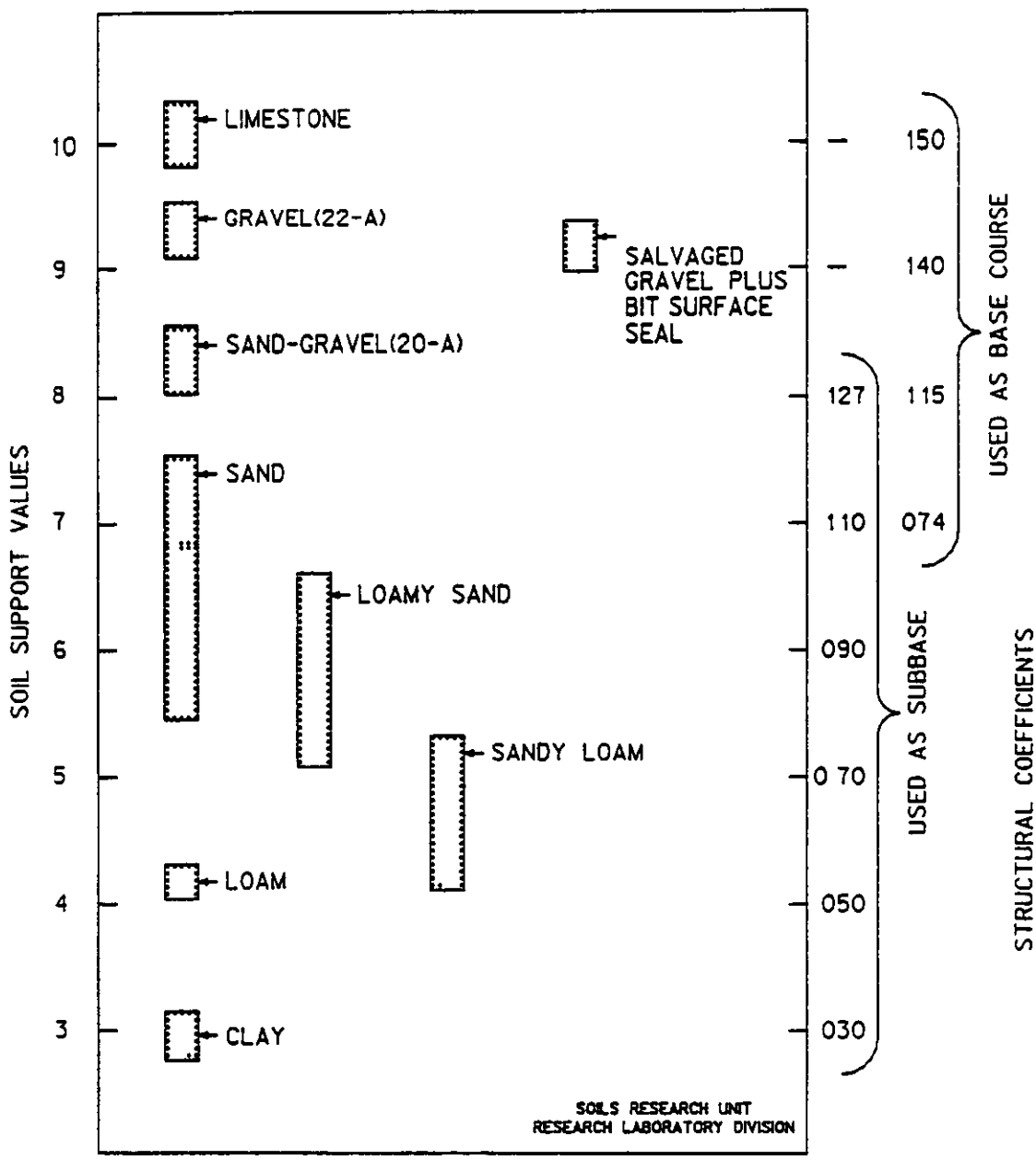
H. Select sections with weighted structural number close to chart value.

I. Determine comparable costs.

J Keep in mind that thicker sections may require more excavation and earthwork, deeper ditches and wider right-of way

K. Make selection based on H J plus engineering judgment.

ATTACHMENT A

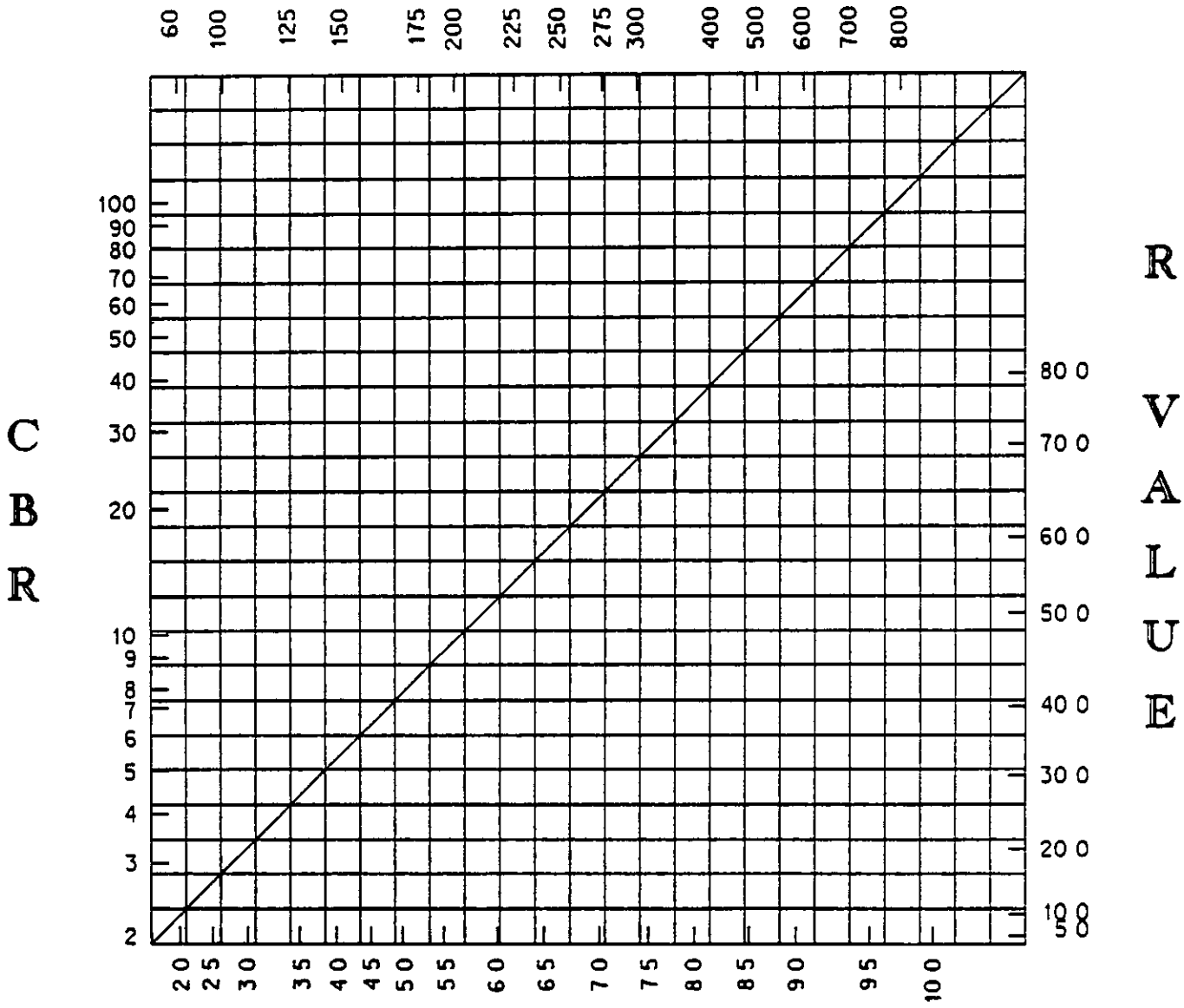


RANGE OF SOIL SUPPORT VALUES AND COEFFICIENTS FOR VARIOUS MATERIALS.

ATTACHMENT B
(FOR INFORMATION ONLY)

APPROXIMATE CORRELATION BETWEEN
K SSV CBR AND R-VALUE •

MODULUS OF SUBGRADE REACTION (K)



SOIL SUPPORT VALUE (SSV)

•COMPOSITE BASED ON INFORMATION FROM 13 AGENCIES
INVOLVED IN RIGID AND/OR FLEXIBLE PAVEMENT DESIGN

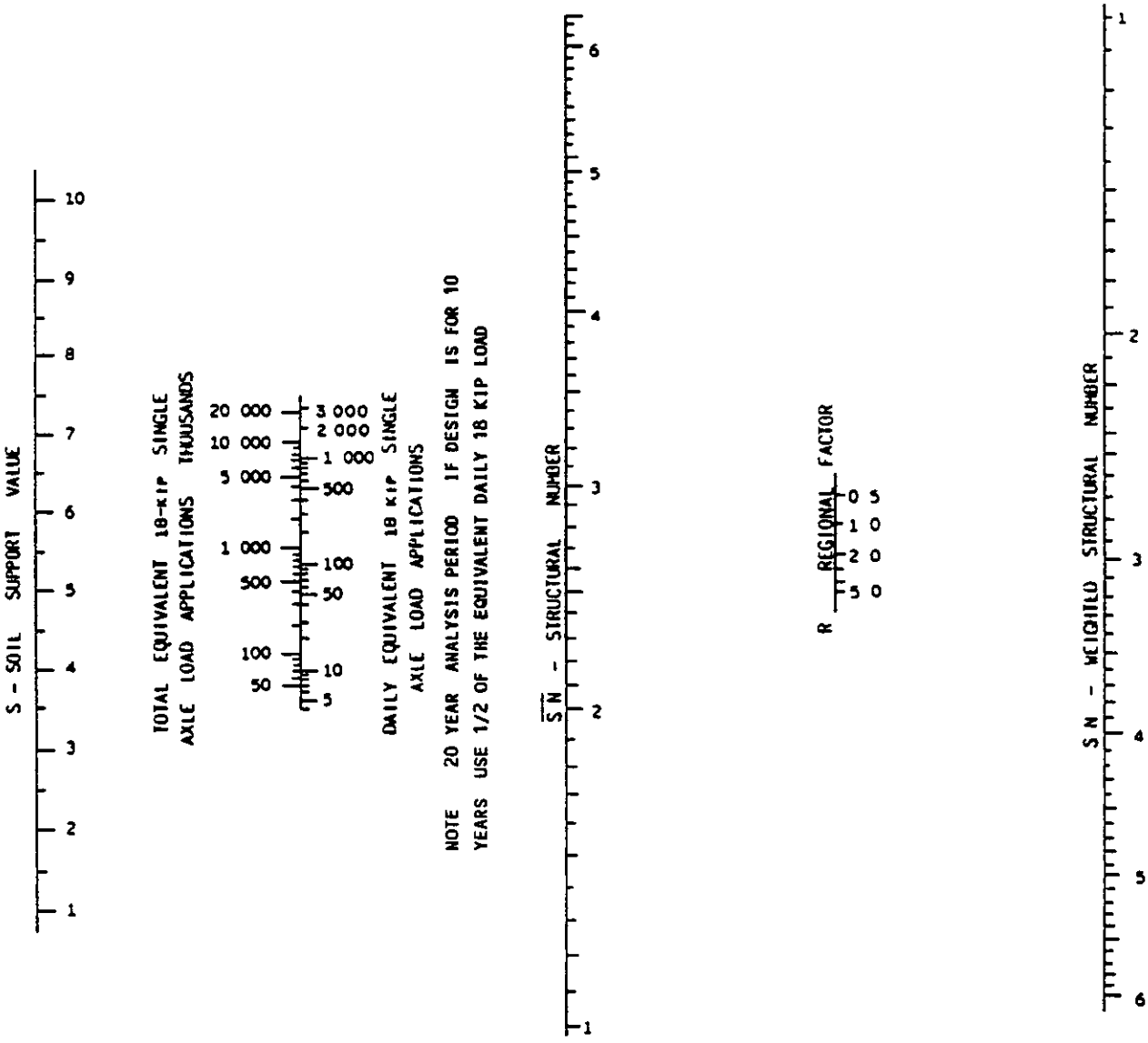


Figure II-2 Design Chart for Flexible Pavements $p_t = 2\ 0$

ATTACHMENT C 2

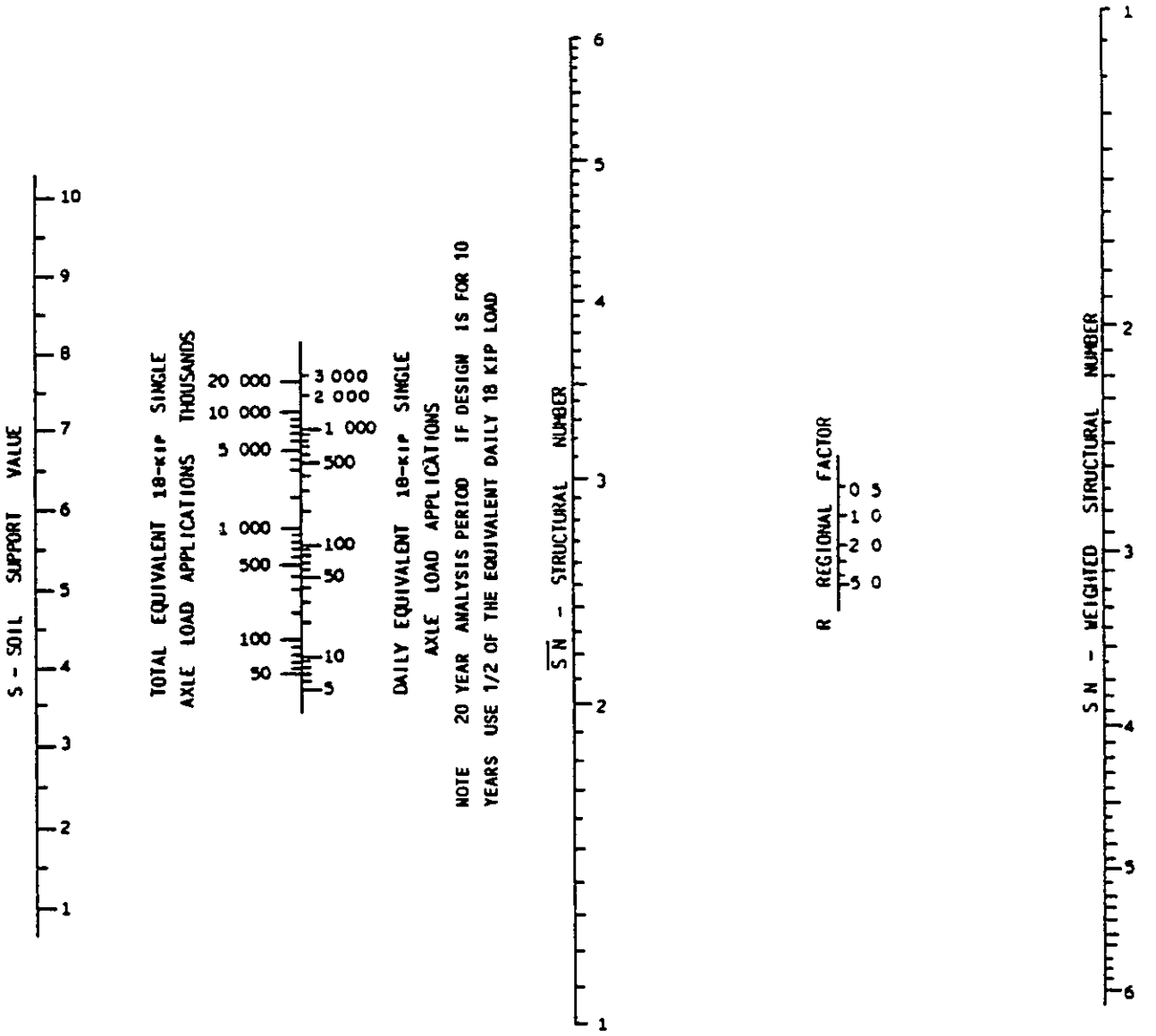


Figure II-1 Design Chart for Flexible Pavements $p_t = 2.5$

ATTACHMENT D-1

ROADWAY

BITUMINOUS PAVEMENT DESIGN GUIDELINES [1]

Existing Surface	Deterioration [10]	Existing [11] and Proposed Pavement Section	Bituminous [2] Mixture Stability (Lbs)	Current Commercial ADT in Right Lane [3 5]				
				0-100	100-200	200-500	500-1000	Over 1000
CONCRETE	Moderate	Top A / Leveling B / Bit Base C / Old Concrete	900	A-140 B-130				
			1100		A-140 B-130	A-140 B-130		
			1300				A-140 B-130	
			1500					A-140 B-130 or A-120 B-130 C-440
			1800					Approved by E O C
	Severe		900					
			1100	A-140 B-130	A-140 B-130			
			1300			A-140 B-130		
			1500				A-160 B-160	A-160 B-160 or A-130 B-140 C-440
			1800					Approved by E O C
BITUMINOUS over CONCRETE	Moderate	Top A / Leveling B / Bit Base C / Old Bituminous / Old Concrete	900	A-160 [7]				
			1100		A-160 [7] or A-130 B-120	A-160 [7] or A-130 B-120		
			1300				A-140 B-130	
			1500					A-140 B-130 or A-120 B-130 C-440
			1800					Approved by E O C
	Severe [12]		900					
			1100	A-130 B-120	A-130 B-120			
			1300			A-140 B-130		
			1500				A-160 B-160	A-160 B-160 or A-130 B-140 C-440
			1800					Approved by E O C

Rev 9-22-88

B1-1

ATTACHMENT D-2

ROADWAY

BITUMINOUS PAVEMENT DESIGN GUIDELINES [1]

Existing Surface	Deterioration	Existing [11] and Proposed Pavement Section	Bituminous [2] Mixture Stability (Lbs)	Current Commercial ADT in Right Lane [3 5]				
				0-100	100-200	200-500	500-1000	Over 1000
BITUMINOUS over AGGREGATE	Moderate	Top A / Leveling B / Bit Base C	900	A-160 [7]				
			1100		A-160 [7] or A-130 B-120	A-160 [7] or A-130 B-120		
			1300				A-140 B-130	
			1500					A-140 B-130 or A-120 B-130 C-440
			1800					Approval by E O C
	Severe [12]	Old Bituminous / Aggregate Base	900					
			1100	A-130 B-120	A-130 B-120			
			1300			A-140 B-130		
			1500				A-160 B-160	A-160 B-160 or A-130 B-140 C-440
			1800					Approval by E O C
BITUMINOUS over AGGREGATE	(New Construction)	Top A / Leveling B / Bit Base C / New Aggregate Base	Final approval by E O C 900					Delete Agg Base (but retain Agg Base - Bit for working platform)
			1100	A-140 B-130	A-140 B-130			
			1300			A-140 B-130		Use combination of A B & C to satisfy required Structural Number
			1500				A-140 B-130	
			1800					

Rev 9-22-88

B1-1a

ATTACHMENT D-3

ROADWAY

ASPHALT PENETRATION (VISCOSITY) RATES [1] [6]

Bituminous Mixture	Current Commercial ADT in Right Lane [3]	
	0 400	Over 400
#500 700 Stability Bit Base	120 150 (AC 5)	85 100 (AC 10)
#900 thru 1800 Stability Bit Surf	120 150 (AC 5)[17]	85 100 (AC 10)
Open Graded Asphalt Friction Course	85 100 (AC 10)	85 100 (AC 10)

GENERAL GUIDELINES FOR RANGE OF APPLICATION RATES

Stability		Aggregate		Application Range lbs /sq yd
		Type	Max Size	
500		20C	1 1/2	220 Minimum
700		20C	1 1/2	220 Minimum
8	900	20B/20A	3/4	130 200
	1100	20A/20AA[10]	3/4	120 200
	1300	20AAA	3/4	120 160
	1500	20AAA	3/4	120 160
	1800	20AAA	3/4	120 160
Open Graded Asphalt Friction Course [9]		31A Mod	1/2	90 120

ATTACHMENT D-4

SHOULDERS

TREATMENT

	Type of Road Construction		Type of Existing Shoulder	Shoulder Treatment
Freeways	New Construction		——	Shoulder type per E O C (See minutes dated 2-3-72) Refer to Standard Plan V-112 Series
	Stabilization in place		Bit mat or seal	Stabilize to 6 max depth Mat thickness same as road resurfacing [15]
	Resurfacing		Bit mat or seal	Surface shoulder same thickness as pavement Substitute Mixture #500 for lower course
	(No work on road)		Bit mat seal or gravel	Stabilize in place 4 depth Bit Mix #1100 mat @ 150 lbs / sq yd min [15]
Rural Free Access Trunklines	New Const	Concrete	——	Bit Mixture #1100 @ 170 lbs / sq yd Bit Mixture #500 @ 300 lbs / sq yd (See Design Note S1 3)
		Bituminous	——	
	Stabilization in place		Bit mat seal or gravel	Stabilize to same depth as roadway 4 min Bit Mix #1100 mat @ 150 lbs / sq yd min [15]
	Resurfacing		Bit mat or seal	Surface shoulder same thickness as road Consider stabilization in place if shoulder is deteriorated [15]
			Gravel	Gravel or 3' bit shoulder ribbon
	(No work on road)		Gravel	Stabilize in place 4 depth plus Bit Mix #1100 mat @ 150 lbs /sq yd min or 3' bituminous shoulder ribbon [15]

3' BITUMINOUS SHOULDER RIBBON

		Current Passenger Vehicle ADT Per Lane [4 5]						
		0 2000		2000 5000			Over 5000	
Lane Width		10'-11' [14]	12'	10'	11' [14]	12'	10'-11'	12'
Lbs per Sq Yd	#500 700	——	——	Widen Pavement	150	——	Widen Pavement	150
	#1100 [19]	250	170 [13]		150	200		150
Penetration [16]		200 250	200 250		200 250	200 250		200 250

Rev 12-15-81

81-1c

ATTACHMENT D-5

FOOTNOTES FOR TABLES

1 THE INFORMATION ON THESE CHARTS IS TO BE USED AS A GUIDE ONLY The Department may vary the design from this criteria if it is determined that there is an excessive amount of commercial traffic excessive stopping, lane concentration steep grades or other warranting conditions

2 The bituminous mixture stability will usually be determined on G I On more important projects it may be selected by T & R

3 To determine volume of commercial vehicles in right lane divide total commercial vehicle count by 2 For 4 lanes or more divide total commercial vehicle count by 2 and multiply by 80%

4 When using " 3' Bituminous Shoulder Ribbon " table on page B1-1c consider five lanes same as four seven same as six etc

5 For new construction use ADT 10 years hence or stage construction

6 For steep grades or heavy commercial traffic change 120 150 penetration to 85 100

7 Provide additional quantity if recommended on G I to correct severe wheel rutting or other distortion

8 Avoid rates of application for leveling and top greater than 200 and less than 250 lbs / sq yd as being too thick for one course and too thin for two courses

9 To be used as an open textured surface course when recommended by G I where speed is 40 mph or more Use in conjunction with a top course unless existing surface is smooth and undistorted bituminous Do not use on existing pavements that are prone to extensive reflective cracking

10 All Bituminous Mixture #1100 in urban areas will be 20AA

11 The term leveling course " is here used as a generic term referring to a first course intended to be covered by a surface or top course It does <u>not</u> refer to Mixture #12LC

12 Consider recycling of all or part of existing surfacing

13 The bituminous shoulder ribbon should be placed on a suitable aggregate base Base requirements and bituminous thickness to be determined on G.I

14 Consider alternate of doing any future widening now in lieu of 3' shoulder ribbon

15 Minimum practical width possible by present stabilization in place equipment is 3' The stabilization should be the same width as the shoulder surfacing

16 If ribbon is paved in conjunction with road resurfacing penetration can be changed to that of road material

17 For rural projects in the northern part of the state consider the use of 200 250 penetration for #900 and #1100 mixes

18 The determination of whether moderate or severe will be made by the Design Division Field Engineer (Lansing) on G I The estimated additional cost for resurfacing severe deterioration (as compared to moderate) is $0 65 per sq yd based on a price of $25 / ton of mix

19 Bituminous shoulder ribbon should be same mixture as traveled lanes if paved in conjunction with road resurfacing

ALL SEASON LOADING OUTLINE RIGID PAVEMENT DESIGN

I Serviceability Index p_t

A. As developed in the AASHTO road test, reflects pavement condition at end of design period, usually 20 years

B For most reconstruction, widenings resurfacings secondary trunklines turnbacks federal aid secondary county primary and other lower volume routes with ADT's less than 5000 use p_t = 2.0 Chart.

When the ADT exceeds 5000 use p_t = 2.5 Chart

C. Both serviceability index charts are attached. Attachment E 1 E 2 (pp 18 and 19)

II. TRAFFIC FACTORS ESTIMATED

A. Information Sources

1 Traffic counts submitted for highway needs studies Are they current? Generally for all season design current traffic counts should be made and percent commercial should be counted

2. Note that average daily traffic counts (ADT) are for both directions

3 The ADT used for geometrics is the same as the ADT used for pavement design

B Traffic Estimate

1 For reconstruction, use a 20 year projection date For some resurfacing, rehabilitation or other projects a 10 year projection may be used

2. If 20-year projection is not available use a compounded growth factor of 3% a year (Current traffic count x 1 03 compounded at 3% growth per year compounded over twenty years traffic will approximately double) Use judgment to modify or use the expansion factor for your county as shown in the county road association design manual.

3 Determine traffic in one direction only For design purposes, place all traffic in one direction in one lane (1/2 ADT) On multi lane highways use a percent, usually 70-80% in the design lane reflecting lane distribution

4 Determine commercial traffic percentage in design lane Use percent commercial based on updated traffic counts. For most county primary roads percent commercial ranges from 8 to 10 unless there is a large commercial traffic generator on the route. In most cases passenger traffic is ignored. Find number of commercial vehicles

5 Find equivalent 18 kip single axle loads (commercial ADT x conversion factor) Conversion factor is 0.544 for medium commercial. This is the conversion factor most commonly used. Multiply the commercial ADT x 0 544 to determine the Equivalent Single Axle Load (ESAL)

III. CONCRETE WORKING STRESS f_t

A. Concrete 6 sack mix using Type IA cement, minimum 28 day Modulus of Rupture 650 psi. (From current 1984 MDOT Specifications)

B Working stress f_t equals seventy five percent of Modulus of Rupture. f_t = (650 x 0 75) = 490 psi working stress. May be varied in special cases

IV MODULUS OF SUBGRADE REACTION K

A. K equals 200 for normal 10-12 subbases over clay soil. Based on plate load tests See MDOT Soils Manual page 121

B In the application of the Modulus of Subgrade Reaction the following is assumed

1 Subgrades have been corrected where required to prevent frost heaves

2. Proper grade heights are designed.

3 Unsuitable material such as topsoil peat, etc. has been removed.

4 Suitable compaction has been obtained

V CONTROLS

A. Minimum subbase thickness 10" (Preferred)

B Usual aggregate base thickness 4 Open graded drainage course used on all high volume routes and other selected projects.

C. Minimum slab thickness 7" maximum 11 usually 9 thickness

VI SAMPLE PROBLEM Refer To Attachment F (pp 20-31)

A. Use Design Chart for Rigid Pavements Attachment E (pages 18 & 19)

p_t = 2.0 ADT < 5000

p_t = 2.5 ADT > 5000

B Determine and enter traffic information

C. Enter working stress of concrete f_t.

D Intersect pivot line with straight line determined by points above

E. Enter modulus of subgrade support K.

F Determine straight line from K to pivot point.

G Read D slab thickness inches

H. Round up thickness to nearest 1/4

ATTACHMENT E 1

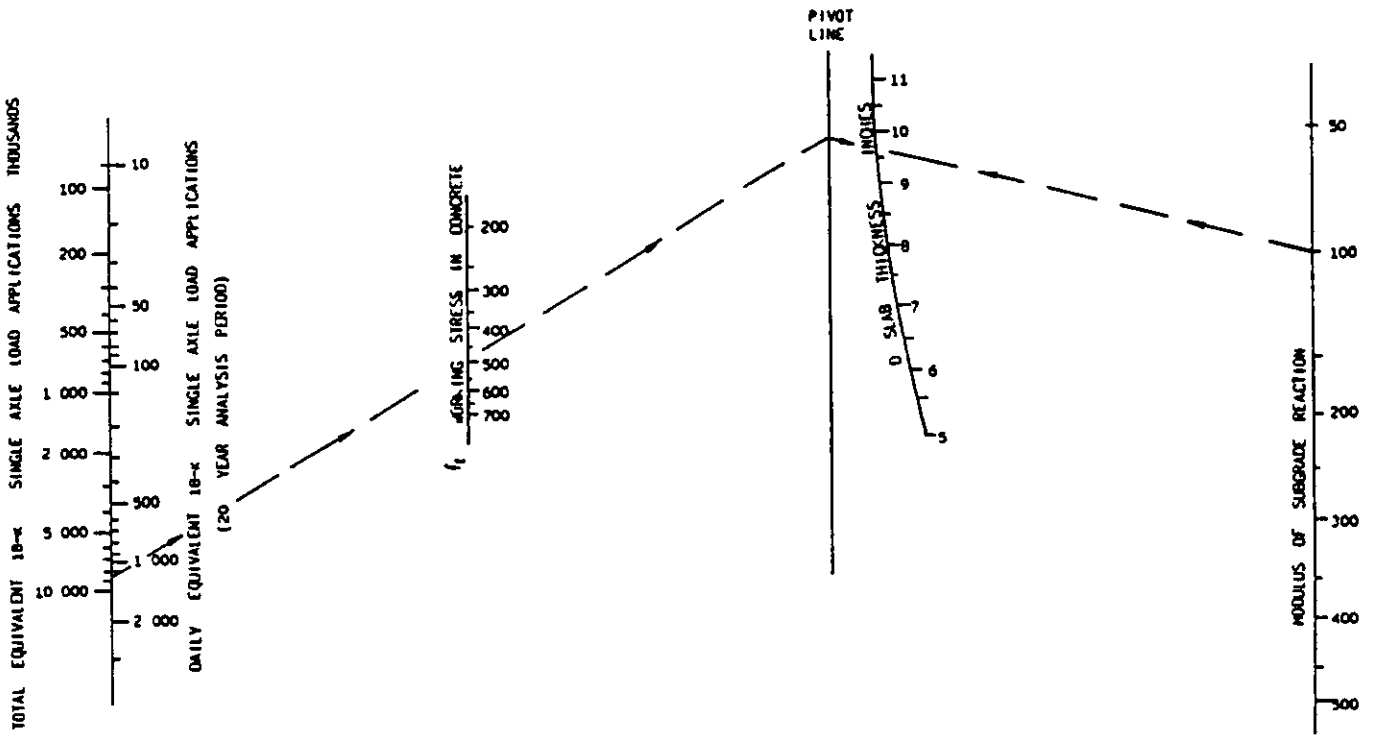
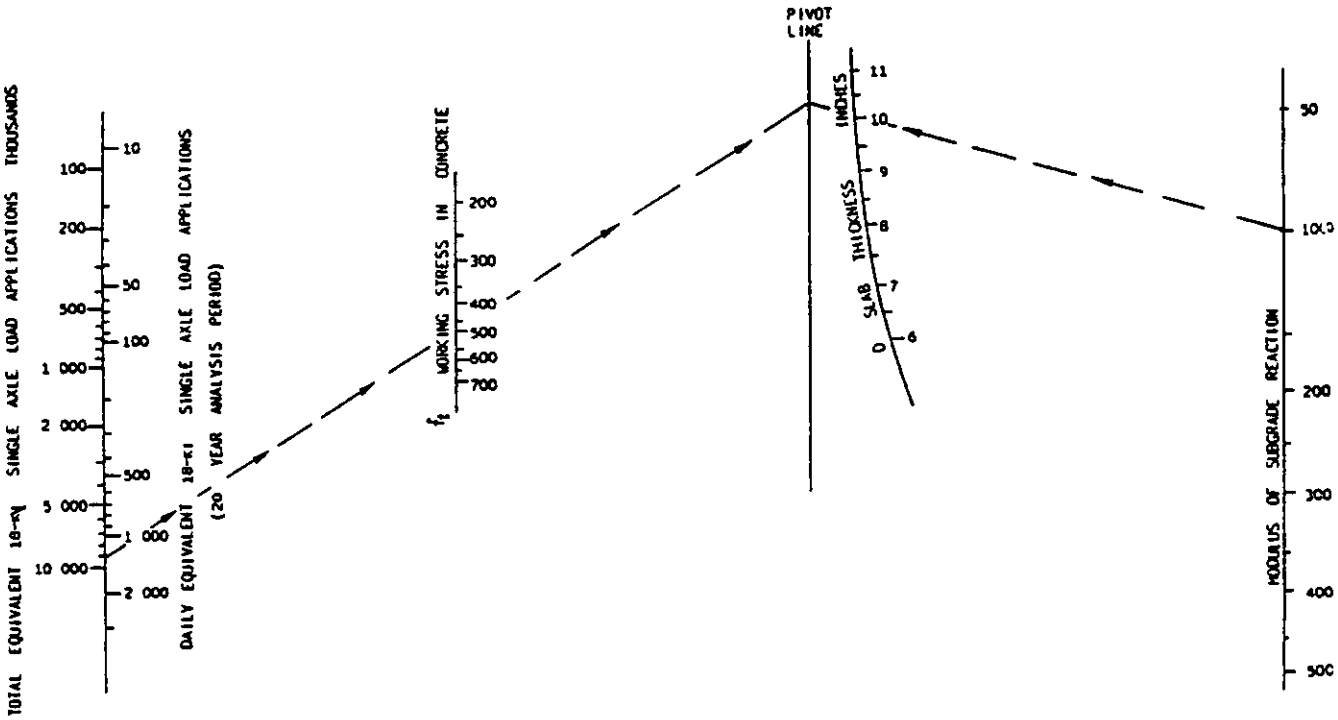


Figure III 2 Desig Chart fo Rigid Paveme ts p_t 2 0

ATTACHMENT E 2



Figu e III-1 Design Chart for Rigid Pavements p_t 2 5

ATTACHMENT F

Example Problem and Computations

for

Flexible and Rigid Pavement Design

ATTACHMENT F 1

Soil Borings

T H #6 0 25 Mile North of Primary Road & 5.3 Left of Right Edge of Metal

0 00	0.35	Bituminous
0.35	0 75	Gravel
0 75	1 50	Stiff Sandy Gray Brown Clay w/ Occasional Pebbles
1 50	2.60	Fine Brown Sandy Loam w/ Traces of Topsoil
2.60	3 00	Fine Light Brown Sandy Loam
3 00	3.50 +	Mottled Plastic Silty Clay

T H #7 0 75 Mile North of Primary Road & 2 Left of Right Edge of Metal

0 00	0 45	Bituminous
0 45	0 80	Gravel
0 80	1 60	Mottled Plastic Sandy Clay
1 60	1 90	Dark Sandy Loam Topsoil
1 90	3 00'	Plastic Sandy Clay Loam w/ Pebbles
3 00'+		Mottled Plastic Sandy Clay w/ Pebbles

T H #8 1 25 Miles North of Primary Road & 8' Left of Right Edge of Metal

0 00	0.35	Bituminous
0 35	1 20	Gravel
1 20	1 80	Mixture of Pebbly Sandy Loam & Firm Sandy Clay
1 80	2.50	Firm Sandy Clay w/ Pebbles
2.50	3 00'+	Plastic Sandy Clay

T H #9 1 7 Miles North of Primary Road & 2 Left of Right Edge of Metal

0 00	0 20'	Bituminous
0 20	0 60	Oil Aggregate
0 60	0 90	Gravel
0 90	1 20	Dark Pebbly Sandy Loam
1.20	1 90	Dark Loam Topsoil
1 90	3.30	Plastic Yellow Brown Sandy Clay Loam w/Pebbles
3.30	3.50'+	Plastic Yellow Brown Sandy Clay

ATTACHMENT F 2

TH #10 2.2 Miles North of Primary Road & 7' Left of Right Edge of Metal

0 00	0 25	Concrete
0 25	0.55	Oil Aggregate
0 55	1 20	Gravel
1 20	1 60	Stiff Gray Sandy Clay
1 60	2.00	Stiff Gray Brown Clay
2.00	3 00 +	Firm Mottled Gray Brown Clay

TH #11 2.7 Miles North of Primary Road & 2 Left of Right Edge of Metal

0 00	0.30	Bituminous
0.30	0.50	Oil Aggregate
0.50	1 00	Gravel
1 00	3 00	Mixture of Dark Sandy Loam and Plastic Gray Brown Sandy Clay
3 00 +		Plastic Mottled Gray Brown Clay

ATTACHMENT F 3

Regional Factor = 3.5 (Mid Michigan Area, District 6)

Existing Bituminous Depth = 4

Existing Gravel Base Depth = 6

Soil Support Value = 3 (Loams and Clays)

Present Traffic Volumes = 1500 ADT at 4% Commercial

Step 1 Convert Traffic to Equivalent 18 Kip Single Axle Load (ESAL)

Existing ESAL =

Step 1

1 Determine traffic in one direction only and for design lane. Proposed two lane pavement. Divide ADT by 2

$$\frac{1500}{2} = 750$$

2. Determine commercial traffic percentage in design lane

750 x 0 04 = 30 Commercial ADT in Design Lane

3 Convert commercial traffic to equivalent 18 Kip Single Axle Loads (ESAL)

30 x 0.544 = 16.3 Existing ESAL/Day

Step 2

Evaluate Four (4) Alternatives

1 New Bituminous Pavement
2. New Concrete Pavement
3 Overlay Existing Pavement
4 Mill 2 Bituminous (to be hot recycled) Pulverize Remaining 2 Bituminous Overlay with Recycled Hot Mix

ATTACHMENT F-4

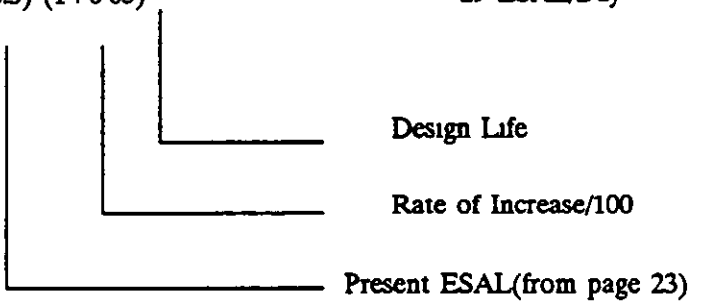
Alternative 1 New Bituminous Pavement

Design Life = 20 Years

Terminal Serviceability p = 2.0

Anticipated Rate of Traffic Increase = 3%

Year 20 ESAL = $(16.3)(1+0.03)^{20}$ = 29 ESAL/Day



From Nomograph (Attachment C-1 page 9) Required SN = 3.5
(Refer to Attachment F-4a, page 25)

Try Minimum Section (Coefficients from page 5)

270 psy Leveling & Top	$\frac{270\ (0.42)}{110}$	=	1.03
6 Aggregate Base	(6") (0.14)	=	0.84
12 Subbase	(12)(0.10)	=	1.20
	SN	=	3.07
			(Does Not Meet)

Increase Leveling & Top and Subbase

160 psy Top Course 170 psy Leveling	$\frac{330\ (0.42)}{110}$	=	1.26
6" Aggregate Base	(6")(0.14)	=	0.84
15 Subbase	(15")(0.10)	=	1.50
	SN	=	3.60
			(O.K. Meets)

ATTACHMENT F-4a

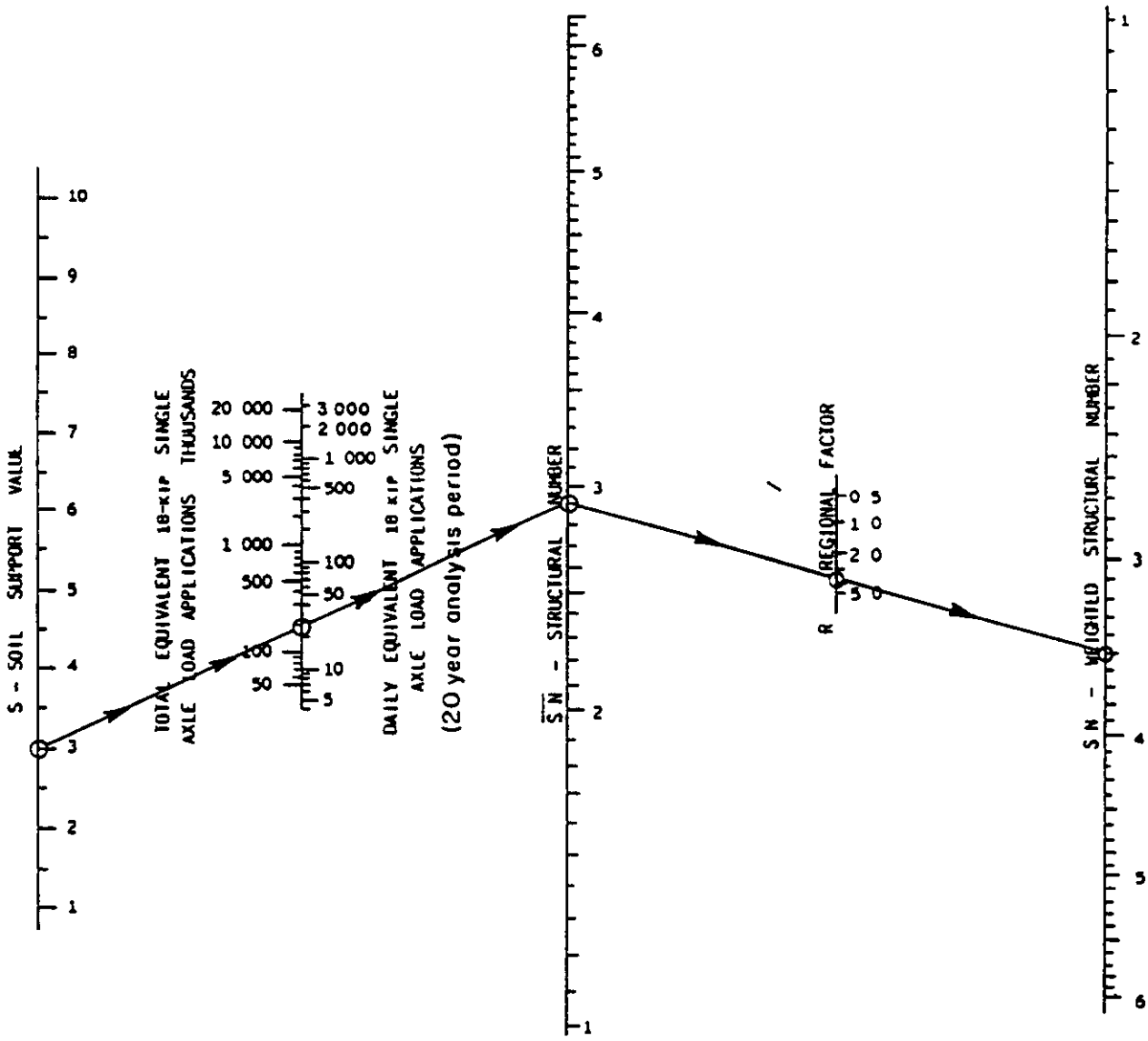


Figure II-2 Design Chart for Flexible Pavements $p_t = 2.0$

ATTACHMENT F 5

Alternative 2 New Concrete Pavement (Refer to Attachment E 1 page 18)

Design Life	=	20 years
Terminal Serviceability p_t	=	2.0
Concrete Working Stress f_c (Refer to page 17)	=	490
Year 20 ESAL	=	29 ESAL/Day(See Alternative 1 Attachment F-4 page 24)
Modulus of Subgrade Reaction K (Refer to page 17)	=	200 (on 10" Subbase)

From Nomograph (Attachment F 5a, page 27) Depth Required = 5
(Refer to Attachment F 5a, page 27)

Use minimum of 7" on 10" Subbase
+ 4 aggregate base-concrete or open graded aggregate.

ATTACHMENT F 5a

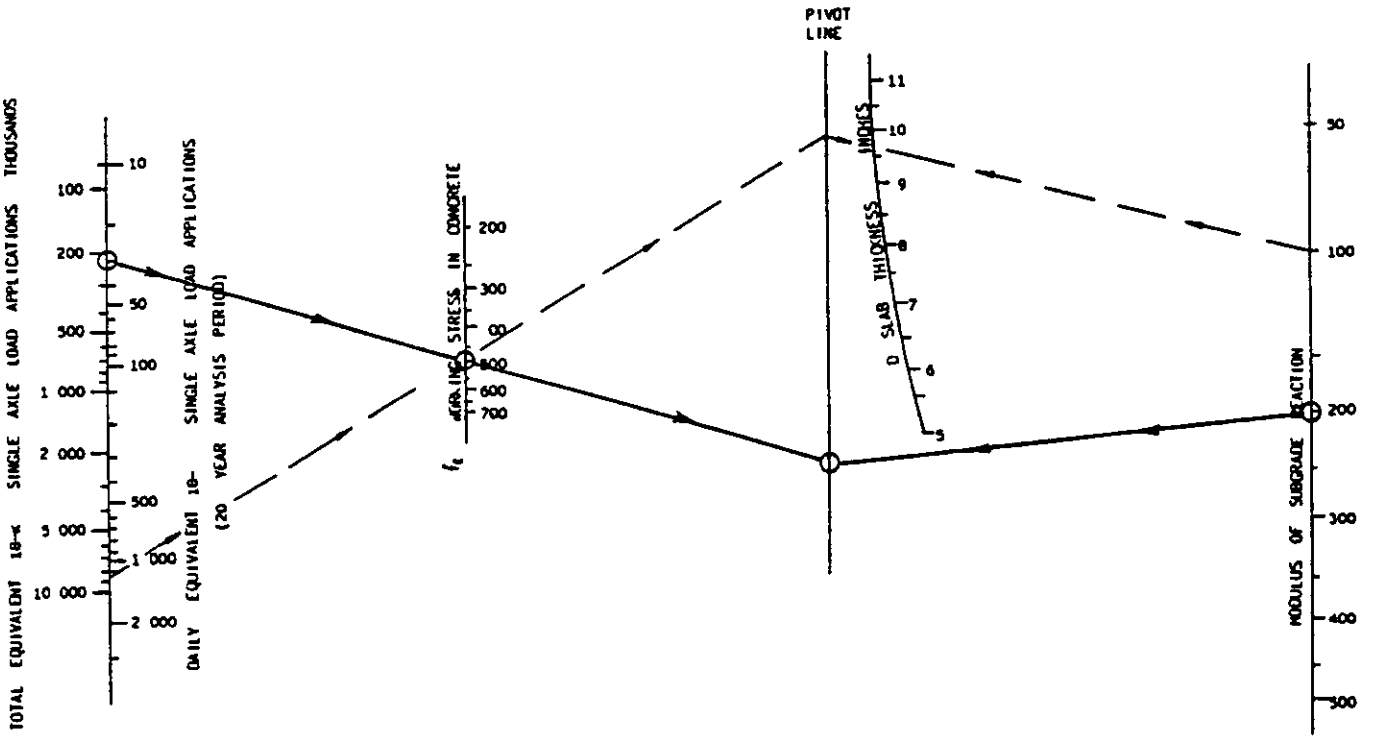


Figure III-2 Design Chart for Rigid Pavements $p_t = 2.0$

ATTACHMENT F-6

Alternative 3 Overlay

Design Life	=	10 Years
Serviceability Index P_t	=	2.0
Year 10 ESAL = (16.3) (1 03)^{10} (16.3 from page 23)	=	22 ESAL/Day
10 Year Accumulated ESAL	=	22 (365)(10) = 80,000

Use Accumulated ESAL of 80 000 on Nomograph (Attachment F-6a, page 29) (Daily ESAL applies only to 20 year design life)

From Nomograph Required SN	=	3 1 (Refer to Attachment F-6a, page 29)
Existing Bituminous In Poor Condition	=	Try A Structural Coefficient of 0 14 to 0 20 (From page 5)

Existing Section (Refer to Attachment F 3 page 23)

Bituminous (4") (0 14) to 4 (0.20)	=	0.56 to 0 80 (Coefficients from page 5)
Existing Aggregate Base (6") (0 14)	=	0 84 (Coefficient from page 5)
Existing SN	=	1 40 to 1 64

Additional Structural Number Required Ranges From (3 1 1 64 or 3 1 1 40) = From 1 46 To 1 70

Additional Bituminous Leveling & Top Thickness Required

$$= \frac{1\,46}{0\,42} \text{ or } \frac{1\,70}{0\,42}$$ Ranges from 3 5 to 4 0

Based on County Engineer's experience with overlays on roadways in other areas in this condition with similar soils and traffic, a 10 year life for a 3 1/2 overlay is reasonable Use 180 psy Top Course and 200 psy Leveling Course.

$$\text{Additional SN} = \frac{380\ (0\,42)}{110} = 1\,45$$

Total SN ranges from (1 40 + 1 45 = 2.85) to (1 64 + 1 45 = 3 09)
Meets required SN of 3 1 O.K.

Note that existing cracks will show through as reflective cracking.

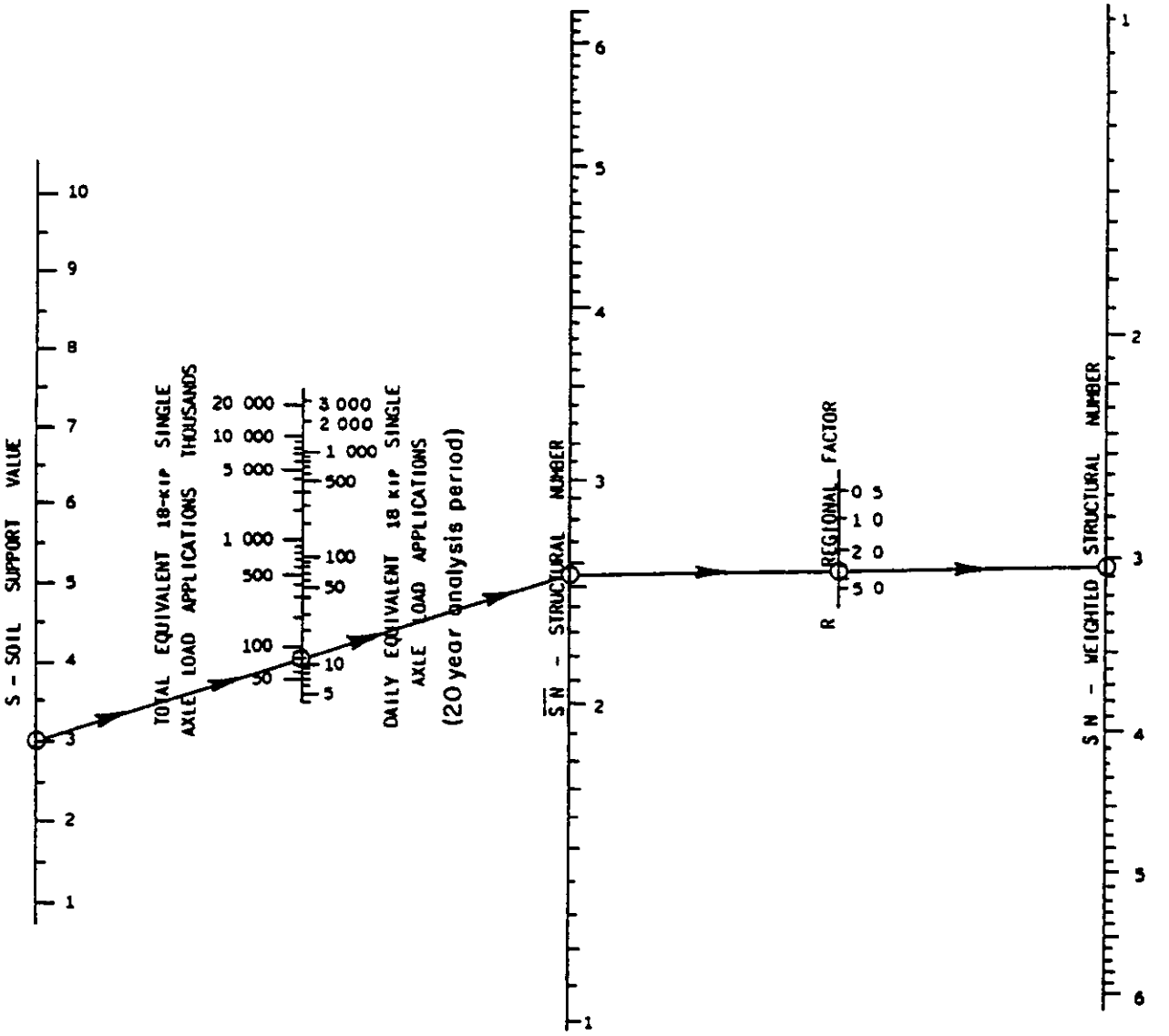


Figure II-2 Design Chart for Flexible Pavements $p_t = 2\ 0$

ATTACHMENT F 7

Alternative 4 Mill, Pulverize, and Overlay

Design Life	=	20 Years	
Required SN	=	3.5(See Alternative 1 Attachment F-4 page 24)	

Try 270 psy Overlay

270 psy Leveling & Top	$\frac{270\ (0.42)}{110}$	=	1 03
Pulverized Bituminous	(2") (0.20)	=	0 40 (Coefficients from page 5)
Existing Aggregate Base	(6") (0 14)	=	0 84 (Coefficients from page 5)
	SN	=	2.27 Not Adequate

Additional Bituminous Base Try 330 psy(3")(0.32) = 0 96 (Coefficients from page 5)
Total SN = 0 96 + 2.27 SN = 3 23 (Does Not Meet)

Try adding aggregate base try 2

270 psy Leveling & Top	$\frac{270\ (0.42)}{110}$	=	1 03
330 psy Bituminous Base	(3) (0.32)	=	0 96
Pulverized Bituminous	(2") (0.20)	=	0.40
8" Aggregate Base (Ex. 6 + 2 Additional)	(8) (0 14)	=	1 12
	SN	=	3.51 (O K. Meets SN)

Other combinations with different depths of milling (0-4") and different depths of pulverizing (0-4) may be considered.

ATTACHMENT F-8

1 Make a cost estimate of the four (4) alternatives.

2. Consider maintaining or detouring traffic; ease and time of construction, availability of materials and future maintenance costs of each alternative.

3 Consider that thicker sections may require more excavation and earthwork, deeper ditches and wider right-of way

4 Make final decision of pavement section based on above. Realize that alternative three (3) is for 10 years while the others are for 20 years.

LOCAL AGENCY PROGRAMS
HOT MIX ASPHALT (HMA) SELECTION GUIDELINES

JUNE, 2009

The following guidelines have been developed at the request of Local Agency Engineers for use on Local Agency projects. These guidelines have been reviewed and approved by the County Road Association of Michigan Engineering Committee. Previous experience and performance shall permit variations from these guidelines.

A. HMA Mixture Type and Binder selection

Selection is based on present day two-way Commercial ADT. The Commercial ADT ranges for each of the mixture types have taken into account an assumed future traffic growth rate.

Com. ADT.	Com. ADT 0-300	Com. ADT 301-700	Com. ADT 701-1000	Com. ADT 1001-3400	Com. ADT 3401- 9999
Mixture Type					
Top	13A, 36A, or LVSP	4C 5E1	5E3, or 4E3	5E10, or 4E10	5E30, or 5E10
Leveling	13A or LVSP	3C 4E1	4E3	4E10	4E30
Base	13A	2C	3E3	3E10	3E30
Binder Grades by Region					
Superior	PG 58-34	PG 58-34	PG 58-34	PG 58-34	
Metro	PG 58-22	PG 64-22	PG 64-22	PG 64-22	PG 70-22P
All Other	PG 58-28	PG 64-28	PG 64-28	PG 64-28	PG 70-28P

Note: The recommended PG binder grades for mixtures used as a base course is PG 58-22 for all regions, except in the Superior Region use PG 58-28. **The base course is defined as all layers below 4 inches of the surface. For mixture layers which fall within the 4 inch threshold, the following rule applies: If less than 25% of a mixture layer is within 4 inches of the surface, the mixture layer should be considered to be a base course.**

Note: The **Special Provision for Marshall Hot Mix Asphalt Mixtures** specifies a design air void of 4% for 13A and 36A. If the designer wishes to reduce the target air voids on projects that call for a 13A and 36A to 3.0%, a note needs to be added to the plans near the HMA Application Table stating that the air voids have been changed to 3.0% for that particular project.

Note: The mixture type in each traffic category listed in the above table is specifically designed to perform under its respective Commercial ADT. Selecting a mixture type that is specifically designed for a Commercial ADT higher than the project being designed may adversely affect performance.

Note: One course overlays are considered preservation projects with a design life less than 20 years. On these projects the prevention of cold temperature related thermal cracking is not a concern. Therefore decrease the cold temperature number of the PG binder by one grade to help reduce costs.

> Example: For a one course overlay in the Superior Region on a composite project, the recommended PG binder would be PG 58-28 instead of PG 58-34.

Note: The standard pay item **High Stress Hot Mix Asphalt Mixture** is used for pavements in traffic areas that are more susceptible to rutting early in pavements life, such as at signalized intersections and other areas of stop/start traffic. The difference between the High Stress HMA Mixture and the typical HMA pay item is the Performance Graded binder. The increase in the high temperature number results in an asphalt binder with improved high temperature stiffness or rutting resistance for both the leveling and top course.

> Example: For a high stress application for a mixture type 5E3 placed in an intersection, the recommended binder grade is PG 70-28P instead of PG 64-28.

Following are the recommended guides for the proper application of the Special Provision for High Stress Hot Mix Asphalt Mixture.

a. Use this pay item 1000 feet on either side of the center of signalized intersections and other areas where stop/start traffic occurs on the mainline (for quantity calculations use 1100 feet).

b. There are cases where the signalized intersections are spaced 1 mile or less over the entire length of the project. When this occurs, specify the High Stress HMA Mixture pay item for the entire length.

c. All HMA approaches that are adjacent to the High Stress HMA Mixture areas should be specified using this pay item.

B. Application Rates

HMA application rates shown in the table below are the recommended minimum and maximum rates for each of the specific mixtures. Pavement designs requiring a HMA greater than the recommended maximum will require multiple lifts of the leveling and/or base mixes.

Mixture Type	Marshall Mixture					Superpave Mixture			
	36A	13A	2C	3C	4C	LVSP	3E_	4E_	5E_
Min. #/syd	110	165	350	220	165	165 Top or Leveling	330	220	165
Max. #/syd	165	275	500	330	275	220 Top 250 Leveling	410	275	220

Note: Application rate of 110 #/syd per inch of HMA thickness

Note: When shoulders of 8 ft. width or greater are being paved as a separate operation on a project, the following note should be added to the plans near the HMA Application Table:

> For shoulders only, the mix design and/or JMF target value for Air Voids are to be adjusted to 2.5 percent.

If it is not known whether the shoulders will be placed as a separate paving operation, the note should be added

Aggregate Wear Index (All Projects)

Aggregate Wear Index (AWI) is required for all aggregates used in HMA top course mixtures. The following table identifies the required minimum AWI, based on the present average daily traffic (vehicular and commercial) per lane (ADT/Lane):

ADT/Lane	Minimum AWI
<100	None
100 - 2000	220
>2000	260

Alternative Mixes

These guidelines provide for the selection of Hot Mixed Asphalt (HMA) and application rates utilizing the Superpave mix design system along with the Marshall mix design system. The substitution of another HMA mixture type other than the recommended mixture is acceptable if it has demonstrated to perform under similar traffic conditions. If a local agency desires to use an HMA mixture or grade of binder other than what is recommended, the local agency must request the change, in writing, to the MDOT Local Agency Program (LAP) staff engineer who is responsible for delivering the project through the MDOT letting system. At minimum, the letter must include the following:

- request to use an alternate mix design,
- the proposed alternate mix design
- justifications and supporting documentation for the request, and
- a statement that the local agency accepts responsibility for the outcome of the performance of the mix design that is used in lieu of the recommended mixture.

Appendix

F

GRAND TRAVERSE COUNTY ROAD COMMISSION
SPECIAL PROVISION
FOR
SLOPE RESTORATION

a. Description:

This work shall be done in accordance with the requirements of section 816 of the 2012 Edition of the Michigan Department of Transportation Standard Specifications for Construction, except as specified herein.

b. Materials:

The following materials shall meet the requirements of Section 917 of the 2012 Standard Specifications for Construction, and as shown below:

Material	Application Rate
Topsoil Surface	3 inch
Seeding, Mixture TDS	220 #/Acre
Fertilizer, Chemical Nutrient, Cl A	176 #/Acre
Hydro-Mulch	1500 #/Acre (Must be from Approved Products list)

c. Construction Methods:

Topsoil, seed, fertilizer, and hydro-much will be placed on disturbed areas beyond the roadway shoulder where directed by the Engineer. Topsoil will be comprised entirely of salvaged material, or a combination of delivered and salvaged material. Topsoil bust be friable and be free of roots, rocks, and other debris. Salvaged topsoil to be used must have prior approval from the Engineer. The topsoil depth shall be not less than 3 inches thick. The Contractor is responsible for determining the amount of existing topsoil that can be salvaged. Seed and fertilizer shall be placed as a hydro-mulch slurry. The slurry, consisting of seed, fertilizer, and mulch, shall be applied by hose and nozzle, to achieve approximately 85% coverage. The mulch shall be biodegradable, consisting of either wood fiber or paper mulch, with tackifier. The seed and fertilizer shall be delivered to the site unmixed in standard, sealed, undamaged containers with tags. The species of seed, and application rate of seed and fertilizer shall meet the requirements of the 2012 MDOT Standard Specifications for Construction.

d. Measurement and Payment:

The completed work shall be measured and paid for at the contract unit price for the following contract pay item and includes all materials, equipment and labor necessary to complete this item as described above.

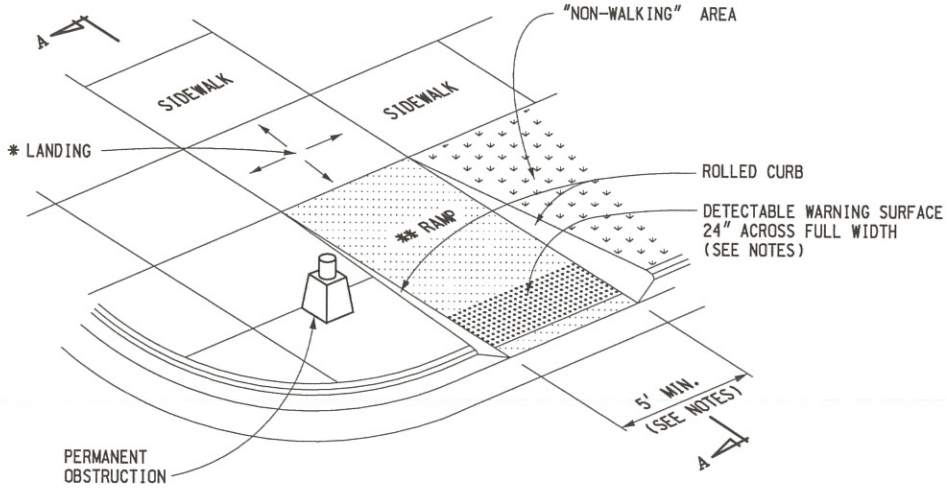
Pay Item	**Unit**
Slope Restoration	Square Yard

Appendix

G

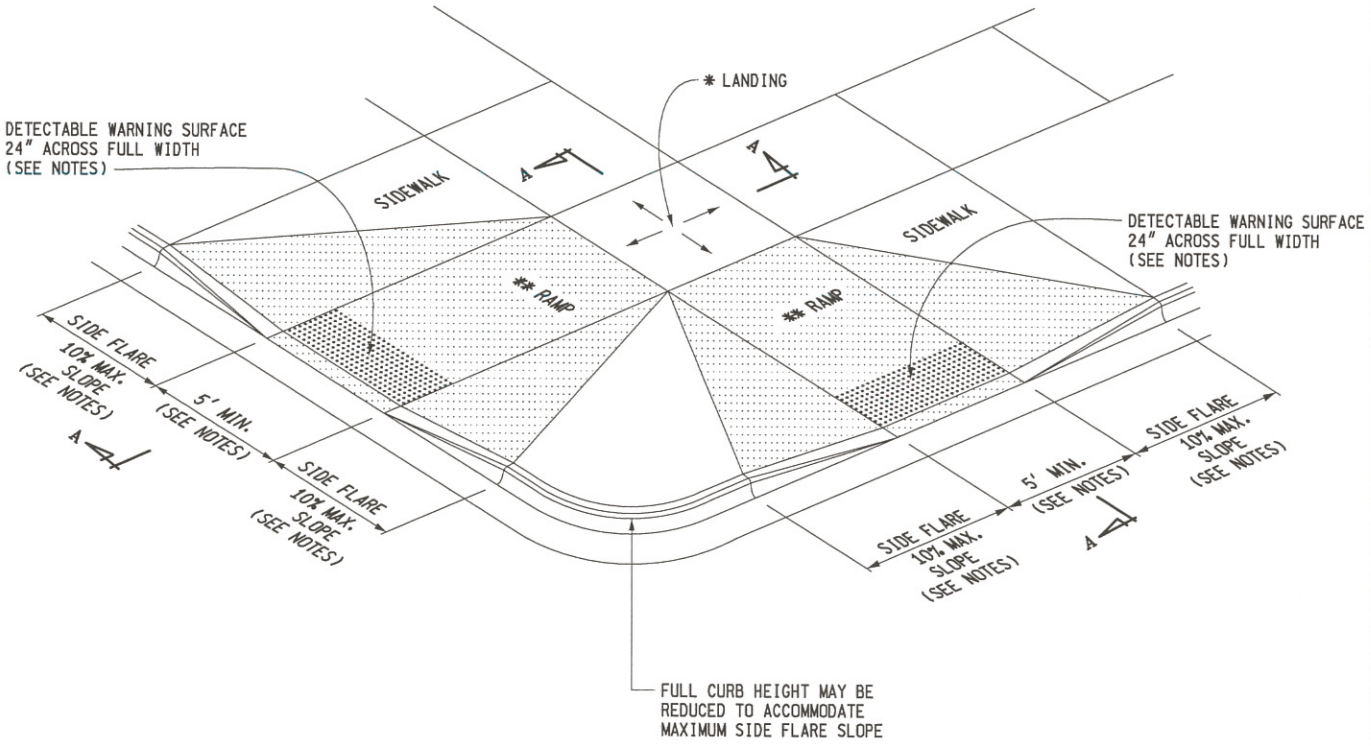
* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.



SIDEWALK RAMP TYPE R

(ROLLED SIDES)



SIDEWALK RAMP TYPE F

(FLARED SIDES, TWO RAMPS SHOWN)

MDOT Michigan Department of Transportation

PREPARED BY DESIGN DIVISION

DRAWN BY: B.L.T.

CHECKED BY: W.K.P.

DEPARTMENT DIRECTOR
Kirk T. Steudle

APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: _____
DIRECTOR, BUREAU OF DEVELOPMENT

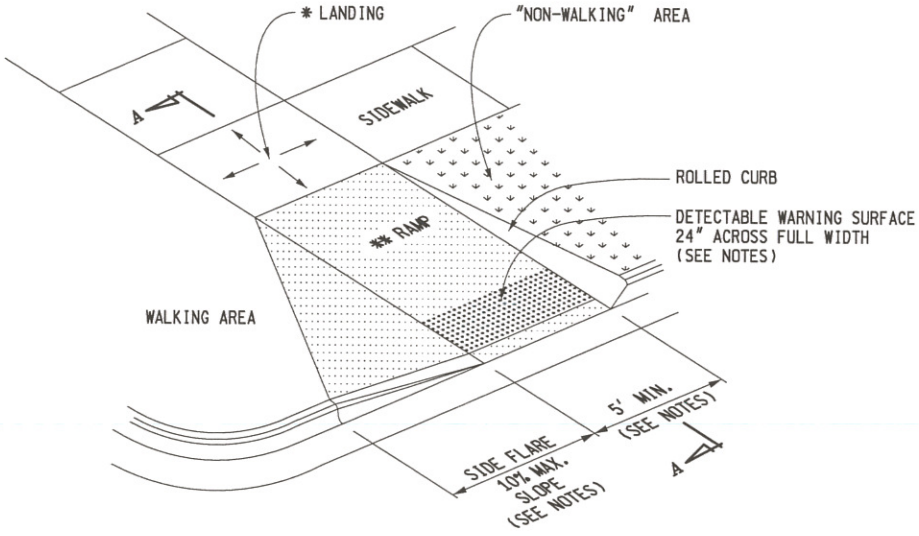
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

F.H.W.A. APPROVAL	3-15-2016 PLAN DATE	R-28-J	SHEET 1 OF 7

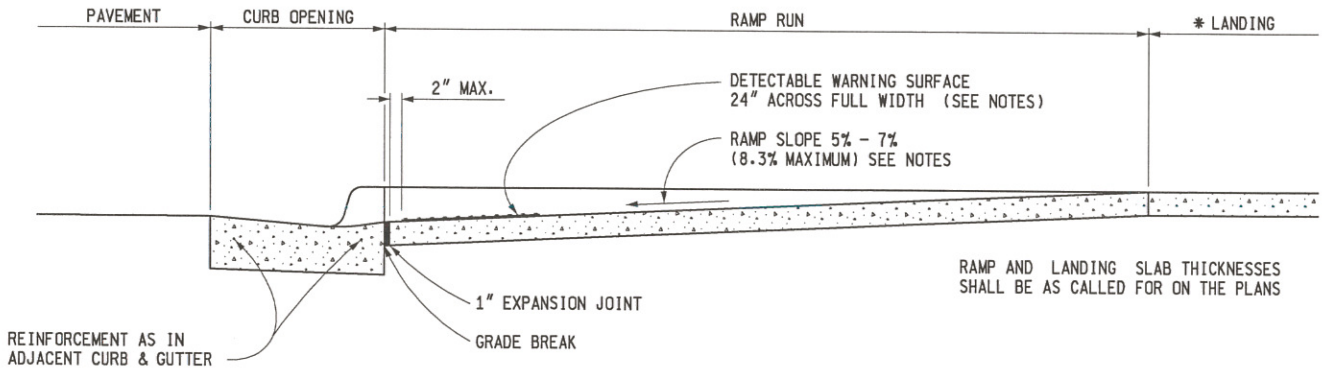
* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%, RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.



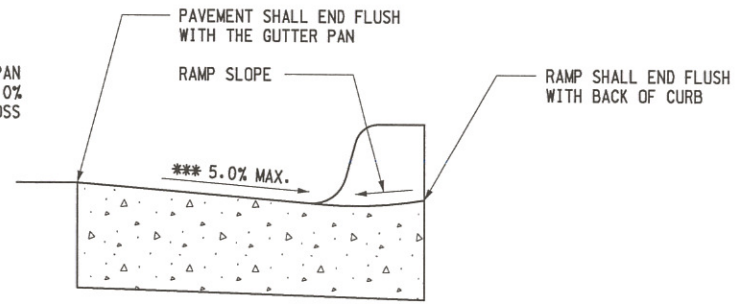
SIDEWALK RAMP TYPE RF

(ROLLED / FLARED SIDES)



SECTION A-A

*** TRANSITION ADJACENT GUTTER PAN CROSS SECTION TO PROVIDE 5.0% MAXIMUM COUNTER SLOPE ACROSS THE RAMP OPENING.



SECTION THROUGH CURB OPENING

(TYPICAL ALL RAMP TYPES)

MICHIGAN DEPARTMENT OF TRANSPORTATION

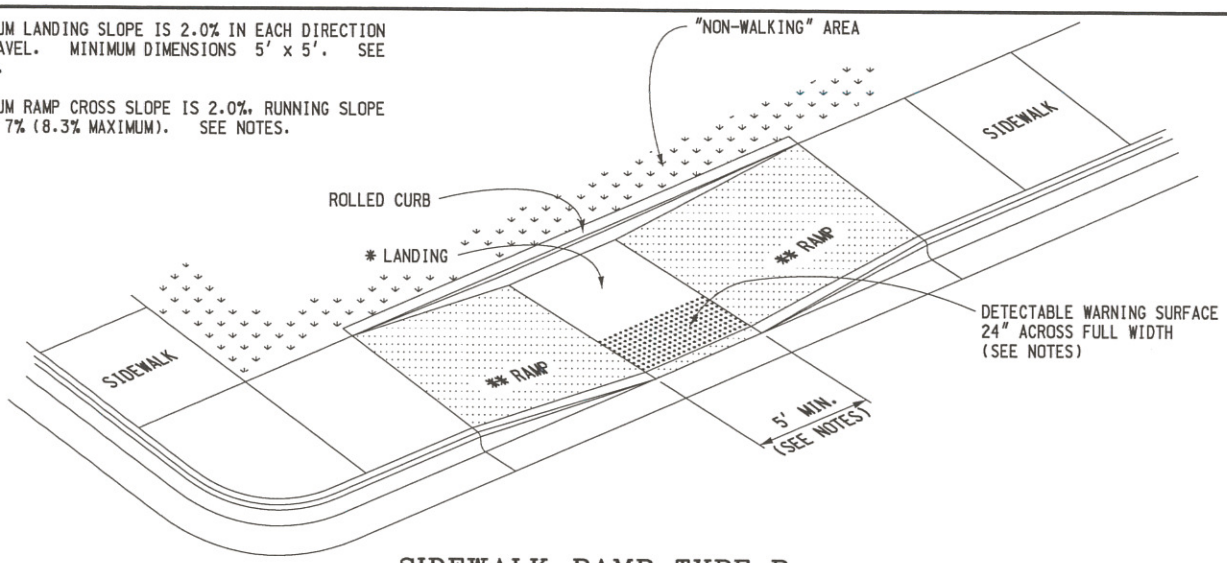
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

F.H.W.A. APPROVAL	3-15-2016 PLAN DATE	R-28-J	SHEET 2 OF 7

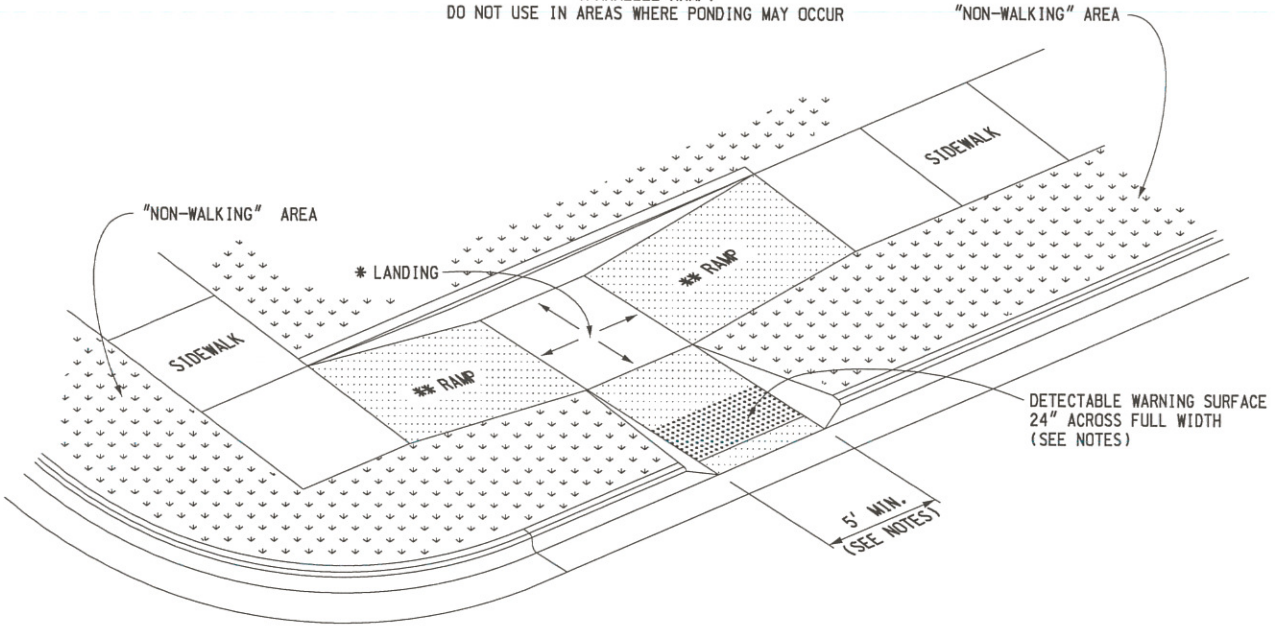
* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.



SIDEWALK RAMP TYPE P

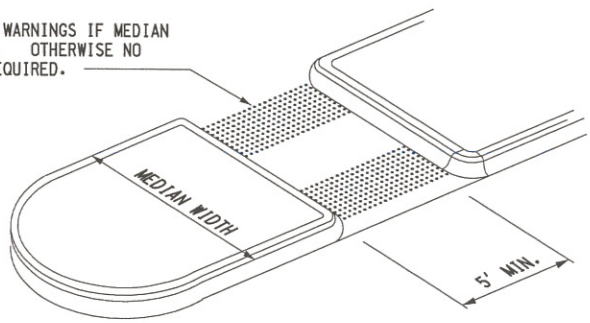
(PARALLEL RAMP)
DO NOT USE IN AREAS WHERE PONDING MAY OCCUR



SIDEWALK RAMP TYPE C

(COMBINATION RAMP)

USE 24" DEEP DETECTABLE WARNINGS IF MEDIAN WIDTH IS AT LEAST 6'-0". OTHERWISE NO DETECTABLE WARNING IS REQUIRED.



SIDEWALK RAMP TYPE M

(MEDIAN ISLAND)

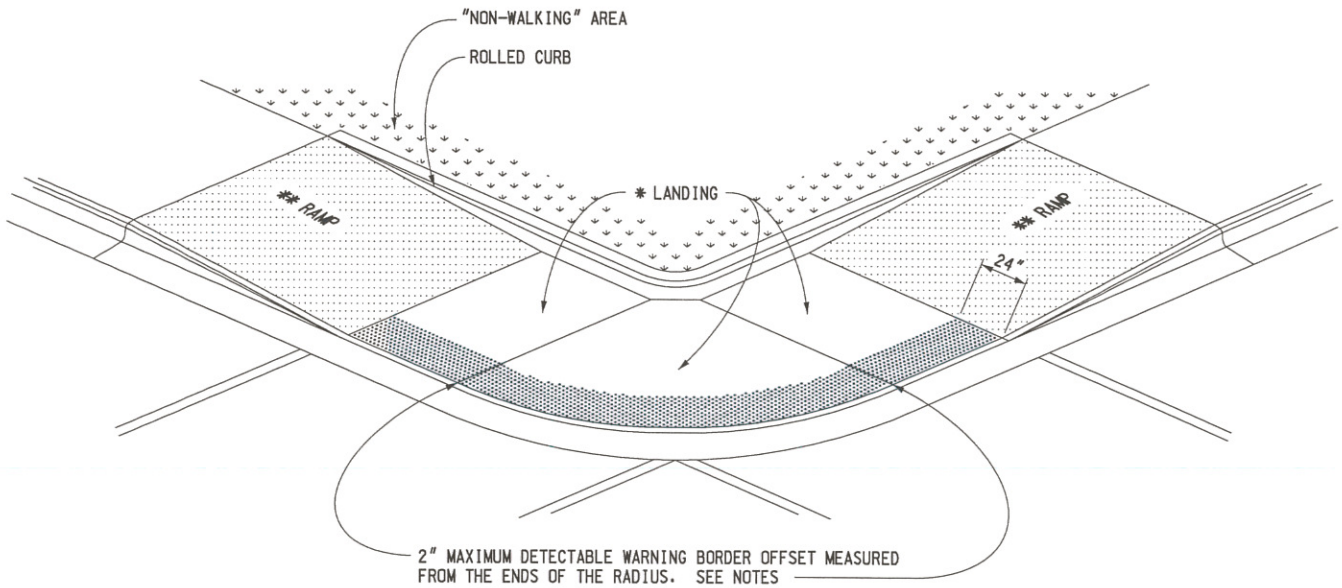
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

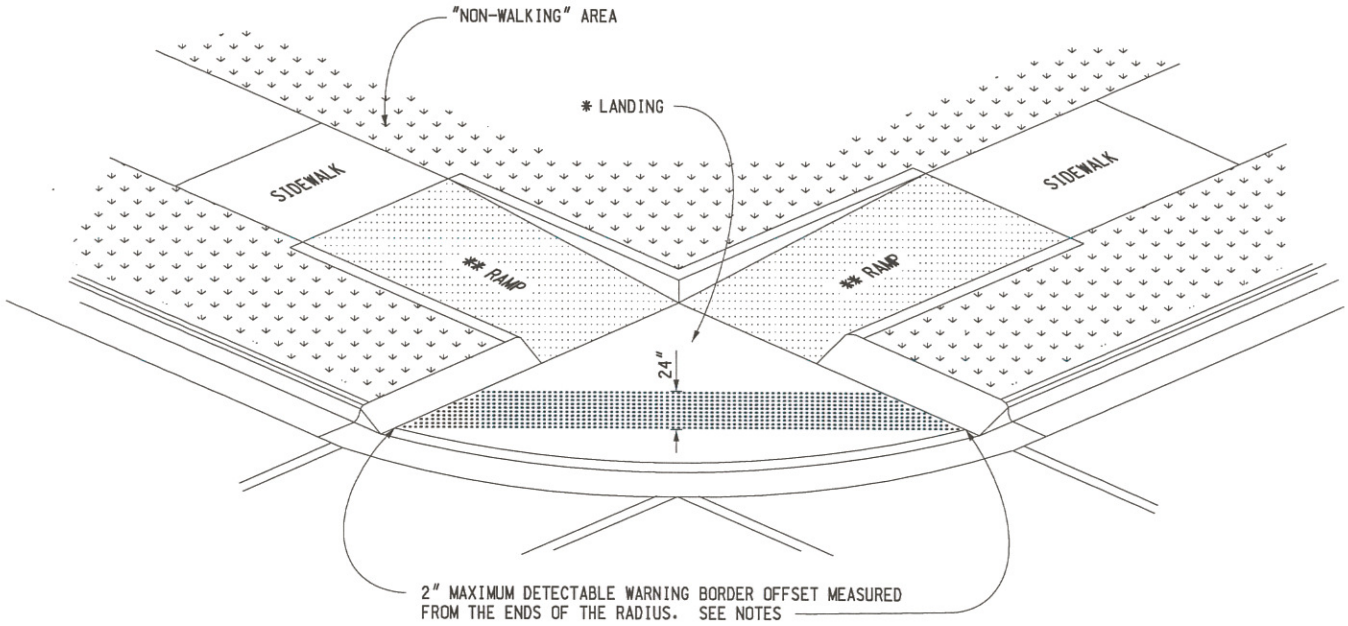
F.H.W.A. APPROVAL	3-15-2016 PLAN DATE	R-28-J	SHEET 3 OF 7

* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. MINIMUM DIMENSIONS 5′ x 5′. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% – 7% (8.3% MAXIMUM). SEE NOTES.



(RADIAL DETECTABLE WARNING SHOWN)



(TANGENT DETECTABLE WARNING SHOWN)

SIDEWALK RAMP TYPE D

(DEPRESSED CORNER)

USE ONLY WHEN INDEPENDENT DIRECTIONAL RAMPS CAN NOT BE CONSTRUCTED FOR EACH CROSSING DIRECTION

MICHIGAN DEPARTMENT OF TRANSPORTATION
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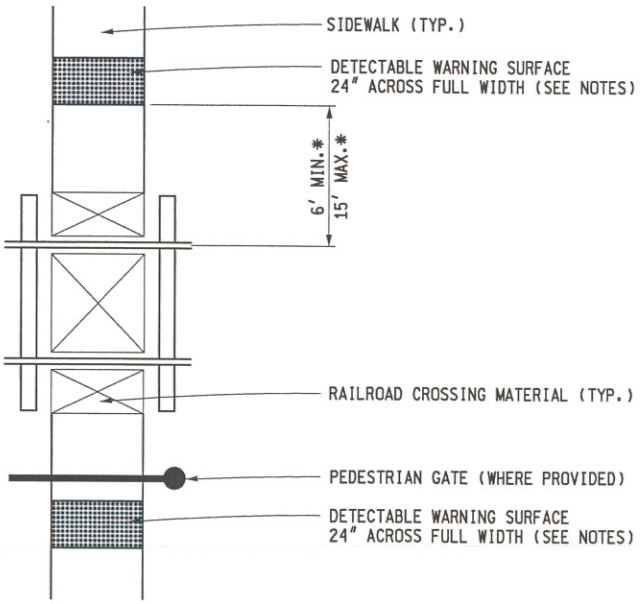
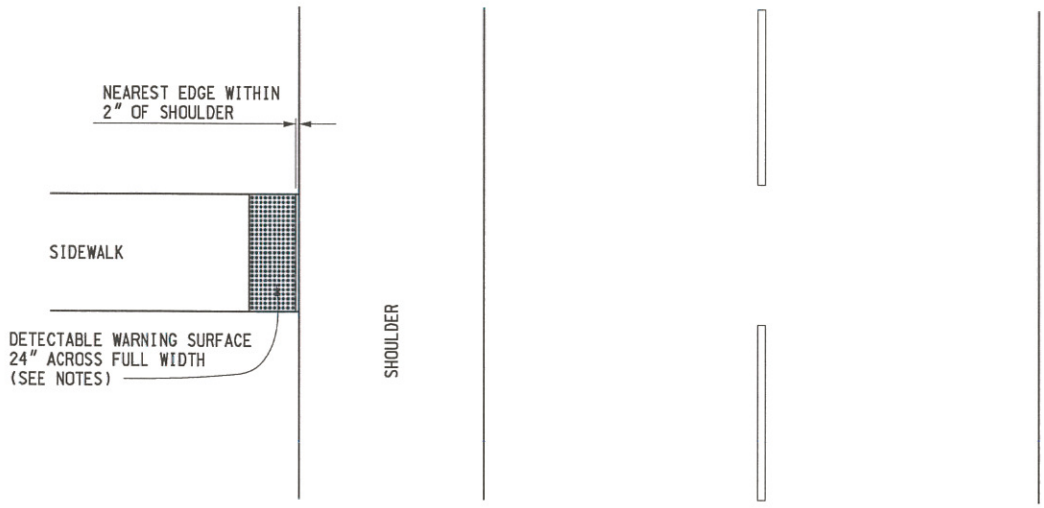
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

F.H.W.A. APPROVAL	3-15-2016 PLAN DATE	R-28-J	SHEET 4 OF 7

* THE DETECTABLE WARNING SURFACE SHALL BE LOCATED SO THAT THE EDGE NEAREST THE RAIL CROSSING IS 6' MINIMUM AND 15' MAXIMUM FROM THE CENTERLINE OF THE NEAREST RAIL. DO NOT PLACE DETECTABLE WARNING ON RAILROAD CROSSING MATERIAL.



DETECTABLE WARNING AT RAILROAD CROSSING



DETECTABLE WARNING AT FLUSH SHOULDER OR ROADWAY

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

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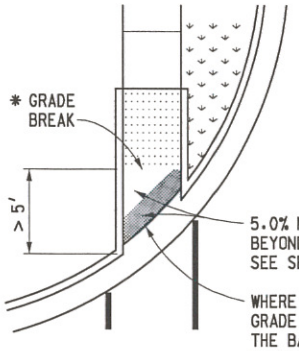
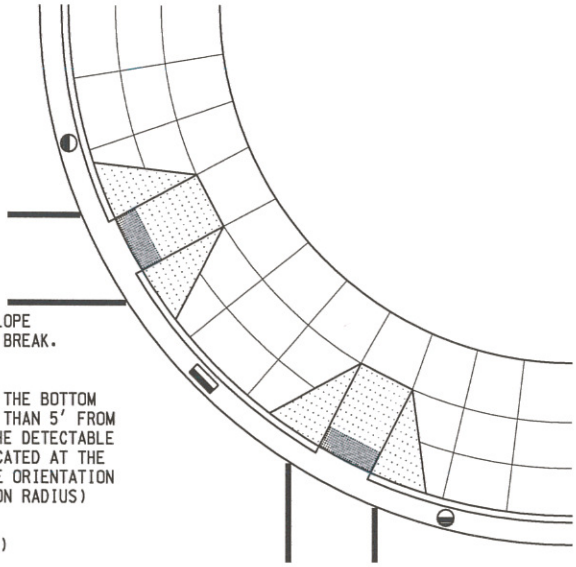
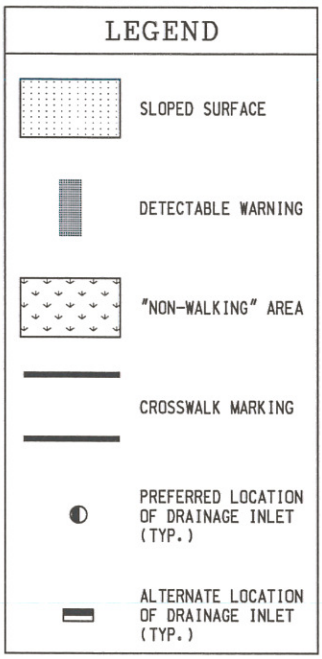


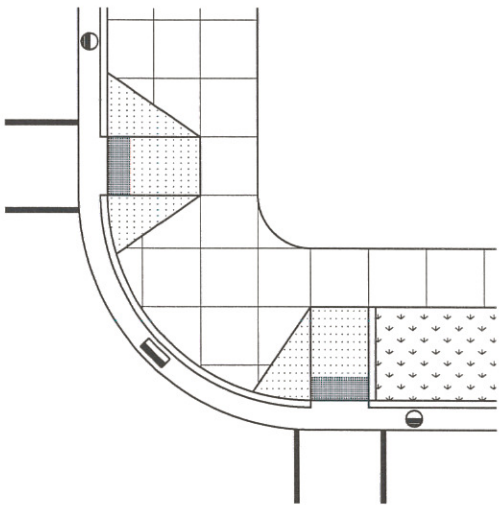
SIDEWALK RAMP LOCATED IN RADIUS (TYPE R SHOWN)
(GRADE BREAK GREATER THAN 5')



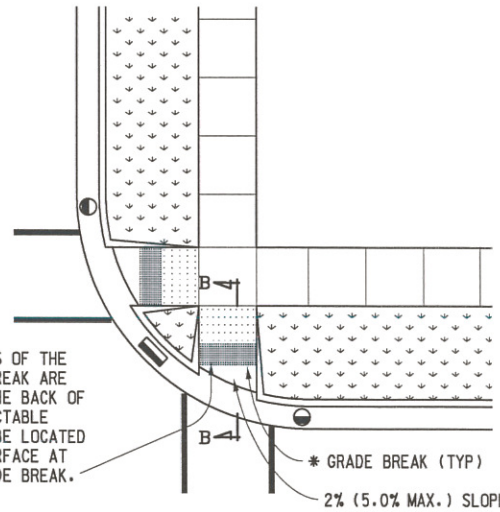
SIDEWALK RAMP PERPENDICULAR TO RADIAL CURB (TYPE F SHOWN)

(USE WITH RADIAL CURB WHEN THE CROSSWALK AND SIDEWALK RAMP ARE NOT ALIGNED)

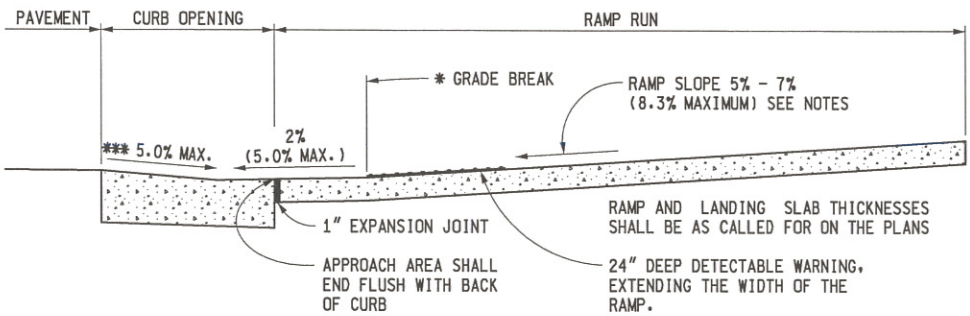




SIDEWALK RAMP PERPENDICULAR TO TANGENT CURB
(TYPE F AND TYPE RF SHOWN)



SIDEWALK RAMP LOCATED IN RADIUS (TYPE R SHOWN)
(GRADE BREAK LESS THAN 5')



* GRADE BREAKS AT THE TOP AND BOTTOM OF CURB RAMPS SHALL BE PERPENDICULAR TO THE DIRECTION OF TRAVEL.

*** TRANSITION ADJACENT GUTTER PAN CROSS SECTION TO PROVIDE 5.0% MAXIMUM COUNTER SLOPE ACROSS THE RAMP OPENING.

SECTION B-B

SIDEWALK RAMP ORIENTATION

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

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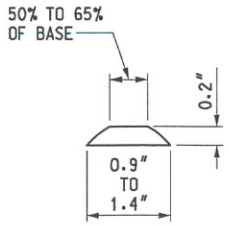
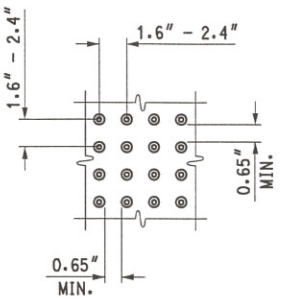
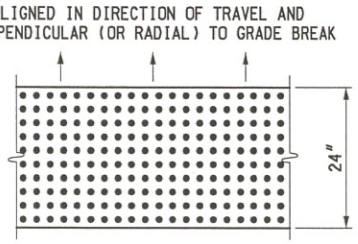


DOME SECTION



DOME SPACING



DOME ALIGNMENT

DETECTABLE WARNING DETAILS

NOTES:

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION, RECONSTRUCTION, OR ALTERATION OF STREETS, CURBS, OR SIDEWALKS IN THE PUBLIC RIGHT OF WAY.

SIDEWALK RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB. RAMPS SHALL ALSO BE PROVIDED AT MARKED AND/OR SIGNALIZED MID-BLOCK CROSSINGS.

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE RUNNING SLOPE.

SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK.

CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP. WHERE CONDITIONS PERMIT, IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.

WHEN 5′ MINIMUM WIDTHS ARE NOT FEASIBLE, RAMP WIDTH MAY BE REDUCED TO NOT LESS THAN 4′ AND LANDINGS TO NOT LESS THAN 4′ x 4′.

DETECTABLE WARNING SURFACE COVERAGE IS 24″ MINIMUM IN THE DIRECTION OF RAMP/PATH TRAVEL AND THE FULL WIDTH OF THE RAMP/PATH OPENING EXCLUDING CURBED OR FLARED CURB TRANSITION AREAS. A BORDER OFFSET NOT GREATER THAN 2″ MEASURED ALONG THE EDGES OF THE DETECTABLE WARNING IS ALLOWABLE. FOR RADIAL CURB THE OFFSET IS MEASURED FROM THE ENDS OF THE RADIUS.

FOR NEW ROADWAY CONSTRUCTION, THE RAMP CROSS SLOPE MAY NOT EXCEED 2.0%. FOR ALTERATIONS TO EXISTING ROADWAYS, THE CROSS SLOPE MAY BE TRANSITIONED TO MEET AN EXISTING ROADWAY GRADE. THE CROSS SLOPE TRANSITION SHALL BE APPLIED UNIFORMLY OVER THE FULL LENGTH OF THE RAMP.

THE MAXIMUM RUNNING SLOPE OF 8.3% IS RELATIVE TO A FLAT (0%) REFERENCE. HOWEVER, IT SHALL NOT REQUIRE ANY RAMP OR SERIES OF RAMPS TO EXCEED 15 FEET IN LENGTH.

DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS. THE LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER THE LOCATION OF THE DRAINAGE STRUCTURE. WHERE EXISTING DRAINAGE STRUCTURES ARE LOCATED IN THE RAMP PATH OF TRAVEL, USE A MANUFACTURER'S ADA COMPLIANT GRATE. OPENINGS SHALL NOT BE GREATER THAN $\frac{1}{2}$″. ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

TRANSITION THE GUTTER PAN CROSS SECTION SUCH THAT THE COUNTER SLOPE IN THE DIRECTION OF RAMP TRAVEL IS NOT GREATER THAN 5.0%. MAINTAIN THE NORMAL GUTTER PAN CROSS SECTION ACROSS DRAINAGE STRUCTURES.

THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES".

FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED ALONG THE ROADSIDE CURB LINE, SHALL BE PROVIDED WHERE AN UNOBSTRUCTED CIRCULATION PATH LATERALLY CROSSES THE SIDEWALK RAMP. FLARED SIDES ARE NOT REQUIRED WHERE THE RAMP IS BORDERED BY LANDSCAPING, UNPAVED SURFACE OR PERMANENT FIXED OBJECTS. WHERE THEY ARE NOT REQUIRED, FLARED SIDES CAN BE CONSIDERED IN ORDER TO AVOID SHARP CURB RETURNS AT RAMP OPENINGS.

DETECTABLE WARNING PLATES MUST BE INSTALLED USING FABRICATED OR FIELD CUT UNITS CAST AND/OR ANCHORED IN THE PAVEMENT TO RESIST SHIFTING OR HEAVING.

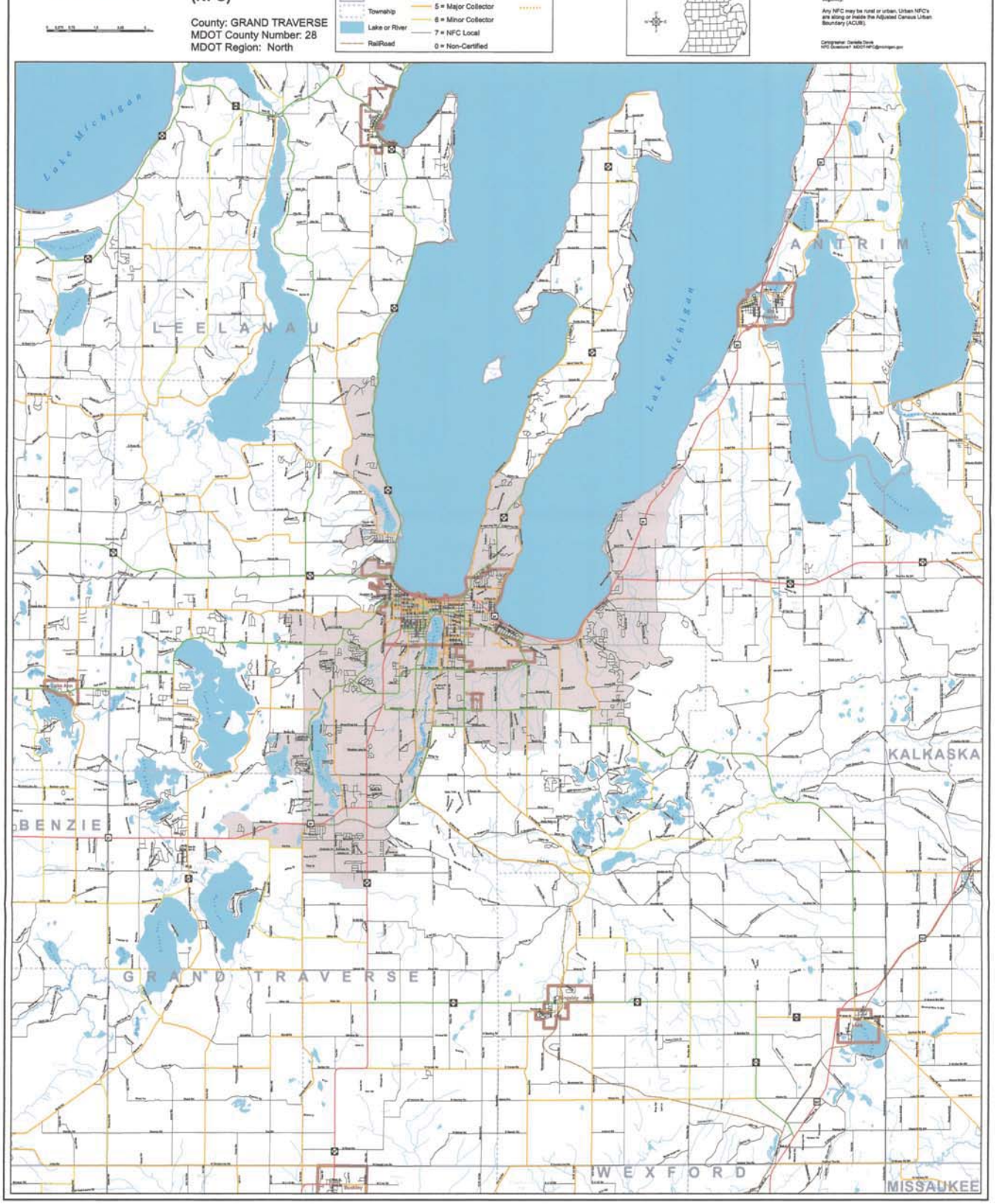
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

F.H.W.A. APPROVAL	3-15-2016 PLAN DATE	R-28-J	SHEET 7 OF 7

Appendix

H


National Functional Classification (NFC)
County: GRAND TRAVERSE
MDOT County Number: 28
MDOT Region: North
Legend
City
ACUB
County
Township
Lake or River
RailRoad
NFC
1 = Interstate
2 = Other Freeway
3 = Other Principal Arterial
4 = Minor Arterial
5 = Major Collector
6 = Minor Collector
7 = NFC Local
0 = Non-Certified
Future NFC
MGF v14, July 2014, MDOT Asset Management.
Per MAP-21 legislation, Federal-Aid highways for Surface Transportation Program funds are NFC interstate through Minor Collector minus rural minor collectors.
Rural minor collectors do have limited federal-aid eligibility.
Any NFC may be rural or urban. Urban NFC's are along or inside the Adjusted Census Urban Boundary (ACUB).
Lake Michigan
LEELANAU
ANTRIM
KALKASKA
BENZIE
GRAND TRAVERSE
WEXFORD
MISSAUKEE