AN ORDINANCE ADOPTING ST. MARY'S COUNTY ROAD ORDINANCE #76-7
and
SPECIFICATIONS AND STANDARDS FOR HIGHWAY AND STREET CONSTRUCTION

WHEREAS, Article 11 of Subdivision Regulations for the Town of Leonardtown, Maryland recommends adoption of a Road Ordinance,

WHEREAS, St. Mary's County has adopted Road Ordinance No. 76-7 which includes Specifications and Standards for Highway and Street Construction dated April 5, 1983,

WHEREAS, uniformity of standards is in the best interests of economy, and public safety,

WHEREAS, the Leonardtown Planning and Zoning Commissioners conducted a public hearing May 20, 1985, and there upon recommended adoption of these regulations,

WHEREAS, the Commissioners of Leonardtown conducted a public hearing on June 10, 1985, concerning adoption of these regulations,

NOW, THEREFORE BE IT ORDAINED AND ENACTED by the Commissioners of Leonardtown that the St. Mary's County Road Ordinance #76-7 with Specifications and Standards for Highway and Street Construction as revised herein are hereby adopted.

1.0 DEFINITIONS:

1.1 Leonardtown: The Commissioners of Leonardtown

1.2 Construction Specifications: Construction specifications of Leonardtown adopted herewith, revised and amended from time to time by Leonardtown, and described in the "Specifications and Standards for Highway and Street Construction". The construction specifications indicate requirements for construction methods and work quality.

1.3 Design and Construction Standards: Design and Construction Standards of Leonardtown adopted herewith, revised and amended from time to time by Leonardtown and described in "Specifications and Standards for Highway and Street Construction". The design and construction standards indicate dimensions and materials to be used for various items of work.

2.0 PERMITS:

2.1 General Requirements: No person shall improve any road without first obtaining a permit from the Engineer. Such permit shall be transferable upon application to Engineer's Office and it may be revoked if any provisions thereof, or of the Ordinance are violated. Willful refusal of any permittee to stop construction after receiving notice of such revocation shall be deemed a violation of this Ordinance. Before a permit is issued the following requirements for application, bond, fee, plans and right-of-way must be met.

2.2 Permit Application: Application for permit for road construction shall be made on forms provided by the Engineer and shall, when required by the Engineer, be accompanied by special specifications peculiar to the scope of work covered by the permit and suitable tracings of detailed plans of the work.

2.3 Right-of-way: If subdivision approval is applied for with lots abutting road right-of-way which are less than standard width for the proposed type of roadway, the developer will be required to dedicate the additional right-of-way and slope easements necessary to obtain the necessary width; as to the portion of same that the development fronts on.

2.4 Alternate Standards: Upon determination by the Engineer that the standards and Specifications are not feasible or practicable for a particular project, he may require such alternate or additional Standards and Specifications in accordance with good engineering principles as may be deemed necessary, and such alternate or additional requirements shall be part of and a

condition of the permit.

2.5 Permit Expiration: Such permit shall automatically expire 18 months after its issuance, unless extended in writing by the Engineer stating the reasons for extension. It shall be the responsibility of the permittee to apply for an extension prior to the expiration of the permit. The permittee shall notify the Engineer within two (2) days of the date the work commences.

3.0 PLANS

3.1 Required Plans: The developer shall have prepared and submitted to the Engineer suitable plans of the proposed work, conforming to the following:

3.1-1 Proposed Grade: The proposed road profile shall be on plan and profile sheets showing the adjacent properties with lot and block designations and topography on the plan view and, on the profile section, the computed proposed grade with vertical curve information, curb fillet profiles, and existing ground lines at the centerline, and both right-of-way lines.

3.1-2 Storm Drainage: The storm drainage plan shall show all storm drainage facilities in plan and profile, as well as property lines, curb lines, utilities, ground profiles, and other pertinent features. Complete design data shall be submitted for all storm drainage.

3.1-3 Paving Plans: Paving plans shall show right-of-way, road names, dimensions, topography, location map, north point, scale, coordinates, datum, survey controls, curb and gutter, sidewalks, driveways, types of paving, location of present and proposed inlets with their gutter elevations, and sufficient elevations at all road intersections on the curb, gutter, and paving to assure adequate drainage of the intersection. Profiles of the curb and gutter at intersections may be required. Other information which may be required is typical pavement sections, grading plans, driveway profiles, and ground cross-sections.

3.2 Additional Data: The Engineer may require any necessary additional data pertinent to the scope of the work covered by the permit.

3.3 Plan Approval: Approval of the plans by the Engineer shall be indicated by signature on the plan sheet. Plans may be approved for various phases such as profile grade, storm drainage, and paving details.

3.4 Plan Signature: All plans submitted for approval must be prepared and signed by a Professional Engineer or Land Surveyor registered to practice in Maryland. All plans submitted for approval shall conform to the Standards and Specifications of this Ordinance, unless prior approval has been given for exceptions.

4.0 FEES

4.1 Permit Fee: The fee for issuance of a permit for road improvements and the inspection of the work shall be as established by resolution of the Commissioners of Leonardtown.

5.0 BONDS

5.1 General: No permit for the construction of a road shall be issued until the applicant, as principal, has posted cash or bond with an approved corporate surety, or an acceptable assignment of funds in favor of the Commissioners of Leonardtown as conditioned in subsequent paragraphs or subparagraphs of this Ordinance or an irrevocable letter of credit issued by a financial institution approved by the Town of Leonardtown. Where the estimated cost of the work is less than $500.00, personal security will be accepted; provided however, that the cumulative total in such case for the applicant shall not exceed $1,000.00 or more than two (2) permits outstanding.

5.1-1 The permittee, his agents, and servants shall comply with all the applicable terms, conditions, provisions, requirements, standards and Specifications of this Ordinance.

5.1-2 The permittee, his agents, and servants shall faithfully complete the work for which the permit is issued.

5.1-3 The permittee, his agents, and servants shall save harmless the Town of Leonardtown from any expense incurred through the failure of the permittee, his agents, and servants to complete the work as required by this Ordinance, or from any damages growing out of the negligence of the permitee, or his agents, or servants.

5.2 Performance Bond: A cash or corporate bond or an irrevocable letter of credit issued by a financial institution approved by the Town of Leonardtown equal to the total cost of the project as estimated by the Engineer, including an additional 10% of the cost for contingencies shall be furnished by the appli-

cant conditioned upon the satisfactory completion of all work covered by the permit. Upon acceptance by Leonardtown of the work covered by the permit, the Engineer shall certify such performance bond as being discharged.

5.3 Cash Agreements: In lieu of filing a cash or corporate bond as required by Paragraph 5.2 of this Section, any person may enter into an agreement with The Commissioners of Leonardtown, such agreement to be approved by resolution of the Commissioners, providing that the permittee shall deposit in a depository approved by Leonardtown, such sum of money as is estimated by the Engineer to be the total cost of the project. The agreement shall itemize the several phases of the work or construction. Upon completion of each step or phase, the permittee shall notify the Engineer that he is ready for an inspection. The Commissioners of Leonardtown are hereby authorized to refund to the permittee any installment due under the terms of the agreement upon the receipt of a certificate signed by the Engineer, certifying that the work has been performed by the permittee according to Standards, Specifications and minimum requirements of this Ordinance, including any exception granted pursuant to Section 10.0 hereof, and that the permittee is entitled to the installment due for completion of such work. Upon final completion of all work for which the permit is issued, a final certificate shall be issued and, upon acceptance of the road by the Commissioners of Leonardtown, the final payment shall be made to the permittee. The final draw of payment under the terms of the agreement shall in no event be less than 25% of the total cost of the project.

5.4 Bond Acceptance: Before acceptance, all bonds, irrevocable letters of credit or acceptable assignment of funds shall be approved by the Engineer, the Leonardtown Attorney and the Commissioners of Leonardtown. All bonds, irrevocable letters of credit or assignment of funds covering construction filed hereunder shall be released upon, but not before, acceptance of the completed road by Leonardtown in accordance with Section 8.0 hereof

6.0 DESIGN AND CONSTRUCTION STANDARDS

6.1 General: All construction shall conform to the requirements of these Rules and Regulations and to the "Specifications and Standards for Highway and Street Construction" for the Town of Leonardtown. The Engineer shall be responsible for the interpretation of the "Specifications and Standards".

6.2 Standards: The Design and Construction Standards following herewith and as contained in the "Specifications and Standards for Highway and Street Construction" are hereby prescribed. They may from time to time be amended or revised by official action of The Commissioners of Leonardtown, upon recommendation of the Engineer.

6.3 Storm Drainage: The construction of an adequate storm water drainage system and/or facilities conforming to the "Specifications and Standards for Highway and Street Construction" shall be required in all cases.

6.4 Curb and Gutter and Sidewalks: Concrete curb and gutter and sidewalks shall be required along any road where the majority of the individual lots abutting on such road have a frontage of less than 150 feet, or where any road abuts property being developed for multi-dwelling residential use which is not being subdivided into individual building lots, or where urban construction is required by traffic conditions, as determined by the Engineer.

6.5 Connecting Road: No road, separated from a Leonardtown maintained road or a road maintained by any other public agency shall be improved or accepted by Leonardtown unless suitable connecting road to the existing road be improved.

6.6 Grade: All grades shall conform to the "Specifications and Standards for Highway and Street Construction".

6.7 Alignment: Roads shall be centered in the dedicated public right-of-way wherever possible.

6.8 Widths: Roads shall conform to the requirements of width, curb and gutter, and sidewalks as contained in "Specifications and Standards for Highway and Street Construction".

6.9 Leonardtown Roads: The developer is responsible for constructing curb and gutter, sidewalks, storm drainage, pavement widening, driveway aprons, and sod adjacent to existing Leonardtown roads as to the portion of same the development fronts on if he proposes development of the adjacent property. The level of improvements shall be determined by the classification and function of the road the development fronts on.

6.10 Driveway Entrances:

6.10-1 Driveway entrances shall be placed to obtain the optimum or at

least minimum sight distance.

6.10-2 Driveway entrances to residential properties shall be according to the standard driveway design. No residential driveway apron shall be constructed in, or partially in, any intersection curb fillet.

6.10-3 Driveway entrances to commercial or industrial property shall comply with the standard State Highway Administration driveway design.

7.0 CONSTRUCTION AND MAINTENANCE REQUIREMENTS

7.1 Inspection:

7.1-1 Inspection services will be maintained at all times by the Engineer to assure compliance with the permit.

7.1-2 The permittee shall notify the Engineer at least two (2) days before commencement of any construction thereunder, and in the event that there is an interruption of the work for a period of more than thirty (30) days, then the permittee shall notify the Engineer at the end of each interruption of his intent to actively resume operations.

7.1-3 No paving, curb and gutter, or sidewalk construction or driveway entrances shall be started unless there has been a final inspection and approval of the subgrade.

7.1-4 The permittee and his agents, servants, and subcontractors shall comply with all requirements of the Engineer pertaining to public safety and the avoidance of unnecessary inconvenience to the public during construction and compliance with the Specifications.

7.1-5 The construction work materials, plans and specifications shall at all times be open and available for inspection by duly authorized officials and employees of the Town of Leonardtown.

7.2 Construction Requirements:

7.2-1 All roads to be constructed shall be graded to the full width of the right-of-way.

7.2-2 Earthwork shall include clearing and grubbing, the removal and replacement of all unsuitable material, and the proper preparation of subgrade.

7.2-3 Where necessary, adequate underdrains shall be installed as directed.

7.2-4 No work on road pavement shall be started until all underground

utilities proposed to cross said road have been installed and properly backfilled.

7.2-5 All materials used in construction shall conform in every detail to Leonardtown Standards and Specifications or as otherwise approved and accepted by the Engineer.

7.2-6 The permittee shall be responsible for the maintenance of vehicular and pedestrian traffic on the roadway, and shall provide materials, labor and equipment as necessary to properly maintain traffic. Excavations or other hazards shall be properly barricaded at all times and lighted at night and proper connections shall be made to drives and walks at occupied residences. The permittee is required to keep the roadway shaped up by blading, as necessary, and to correct muddy or soft subgrade by placing temporary gravel or stone. The permittee is responsible for plowing snow sufficiently to maintain access to inhabited residences or other facilities until the road is finally accepted by Leonardtown. It shall be the responsibility of the permittee to remove any dirt and debris deposited on streets in and adjacent to the work area during the construction period.

7.2-7 A thick stand of permanent grass shall be obtained by seeding or sodding. The seeded areas there shall be at least 2 inches of topsoil.

7.2-8 Street signs shall be erected at all intersections. These signs shall show the names of intersecting streets and be of durable metal construction conforming to the Leonardtown standards.

7.2-9 Barricades shall be erected of an approved design.

7.2-10 UTILITY CUTS:

(A) No public utility or other person or organization shall cut into the surface of any road in Leonardtown until a permit for same has been issued by the Engineer and essential notice has been given in writing to the Engineer of the location, nature, extent of the cut, and the length of time it will be open.

(B) In case of an emergency cut, notice shall be given as soon as possible, but not more than 48 hours after it is made.

(C) In case of a cut, the person or organization making it shall be responsible for restoring the roadbase and surface to its former condition, and

repairing paving failures and settlements due to the utility cut. Repairs to cut areas shall be made in conformance with the applicable standards and specifications.

8.0 APPROVAL AND ACCEPTANCE

8.1 Final Approval: Final approval of construction work under any permit shall be given by the Engineer after a field inspection shows to his satisfaction that the work conforms in all respects with the permit, and includes all work required thereby.

8.2 Acceptance: Final approval shall be certified to the Town of Leonardtown by the Engineer. Actual acceptance into the Leonardtown maintenance system for perpetual maintenance shall be only by Order of the Leonardtown Commissioners in each individual case.

8.3 Partial Acceptance: Final approval of a part, less than all, of the work covered by a permit may be requested, and given, and such approved part may be accepted by Leonardtown but no bond shall be released before all work called for by the permit is completed, unless another bond is posted to cover the remaining work. This bond will only be accepted on work that cannot be completed due to extenuating circumstances to be determined by the Engineer as specified under Paragraph 5.2.

9.0 SPECIAL CONDITIONS

No attempt has been made to standardize any construction on rights-of-way other than those mentioned herein. However, each problem will be studied by the Engineer as an individual case and solution will be given for the special conditions. This applies to bridges, culverts, and other structures and their appurtenances, or such conditions encountered on or contiguous to the project.

10.0 PENALTY

The Engineer shall note all violations of or failure to abide by the terms of this Ordinance by service of a STOP WORK ORDER on any person, firm, or corporation in violation.

Any person, firm, or corporation who shall violate any of the provisions of this Ordinance or fail to comply with any of the requirements thereof, or who shall improve any road in violation of any plan submitted or permit issued

hereunder, shall be guilty of a misdemeanor and shall be liable to fine of not more than $100.00.

Each day such violation shall be permitted to exist shall constitute a separate offense.

In addition to other remedies, the Commissioners of Leonardtown may institute injunction, mandamus, abatement, or other appropriate action or proceedings to compel compliance with the provisions of this Ordinance.

11.0 APPEAL

Any person aggrieved by any decision of the Engineer or any agency acting under the provisions of this Ordinance may within thirty (30) days of the notice of the Engineer's decision request a hearing before the Commissioners of Leonardtown. Any person aggrieved by the action of the Commissioners of Leonardtown may appeal to the Circuit Court within thirty (30) days of the notice of the Commissioners' decision.

12.0 VALIDITY

Should any Court Jurisdiction deem any section, paragraph, sentence or phrase of these regulations invalid, it shall apply only to the part or parts declared invalid and not to the entire Ordinance.

BE IT FURTHER ORDAINED AND ENACTED that these regulations supersede Article 11 of the Subdivision Regulations for the Town of Leonardtown, Maryland,

BE IT FURTHER ORDAINED AND ENACTED, that said Ordinance #51 shall become effective immediately upon passage hereof.

COMMISSIONERS OF LEONARDTOWN

Edward A. King
President

Joseph A. Gardner
Vice President

Penny Beasley-Bell
Commissioner

Stephen L. Rollins
Commissioner

J. Maguire Mattingly, Jr.
Commissioner

ATTESTED BY:

Marylin G. Enwright
Marylin G. Enwright
Town Secretary

APPROVED AS TO LEGAL FORM AND SUFFICIENCY:

Joseph R. Densford
Joseph R. Densford
Corporation Counsel

LEONARDTOWN
SPECIFICATIONS AND STANDARDS
FOR HIGHWAY AND STREET CONSTRUCTION

1.0 PURPOSE

The purpose of these Specifications is to establish Design Criteria and Specifications for the planning, construction, improvement, maintenance, and repair of public roads, including sidewalks, curbs and gutters, and storm drainage facilities.

2.0 INTERPRETATION OF STANDARDS

The provisions of these Specifications in their interpretation and application shall be construed as minimum requirements. Should any requirements of these Specifications be found to be in conflict with those imposed by other provisions of law, the more restrictive or higher standards shall prevail.

3.0 APPLICABLE DOCUMENTS

3.1 The following publications shall be referred to as necessary in the design of Leonardtown Roads.

3.1-1 Leonardtown Zoning Ordinance

3.1-2 Leonardtown Subdivision Regulations

3.1-3 Sedimentation Control Ordinance for St. Mary's County adopted July 1, 1971, as amended.

3.1-4 Highway Drainage Manual, Maryland Department of Transportation, State Highway Administration, December 1981, as amended (for design of open drainage systems.)

3.1-5 County of Anne Arundel, Design Manual, July 1972; as amended (for design of closed drainage systems.)

3.1-6 Maryland State Highway Administration; Standard Specifications for Construction Materials, Maryland Department of Transportation, State Highway Administration, January, 1982, as amended (for construction methods and materials.)

3.1-7 Maryland State Highway Administration; Book of Standards, January

1970, as amended (for construction detail.)

3.1-8 Maryland State Highway Administration; Rules and Regulations for Commercial, Subdivision, Industrial and Residential Entrances to State Highways, 1975, as amended.

3.1-9 "A Policy on Geometric Design of Rural Highways" by the American Association of State Highway Transportation Officials (AASHTO).

3.1-10 "A Policy on Design of Urban Highways and Arterial Streets"(AASHTO).

3.1-11 Highway Capacity Manual - Highway Research Board Special Report 87, prepared by the National Academy of Sciences, National Research Council Publications 1328.

3.1-12 Manual on Uniform Traffic Control Devices for Streets and Highways, U.S. Department of Transportation, Federal Highway Administration.

3.2 If a conflict should exist between these Specifications and the provisions of other Leonardtown Ordinances and Regulations, the highest standards shall apply.

4.0 DESIGN SPECIFICATIONS AND STANDARDS

4.1 General

4.1-1 No construction (i.e. grading, etc.) or the installation of utilities will be permitted in the bed of any proposed street until the street grade has been officially established, plat of same approved by the Engineer, and a road construction permit is obtained.

4.1-2 All land within the right-of-way and all construction easements (slope, drainage, etc.) shall be graded and stabilized using methods and materials which will insure stabilization and practicality of maintenance. Methods and materials shall be specified.

4.2 Street Classification

4.2-1 Design standards are hereby issued for the following functional classifications of streets and correspond to those classifications presented

in the plates contained herein.

(A) Place - a cul-de-sac or street, the primary purpose of which is to provide access to and from adjacent dwellings to a higher functional type street. Occasionally, a place will connect with two or three small places. Places do not accommodate through traffic movement.

(B) Alley - a narrow roadway for access to the area of commercial, multi-family or industrial structures.

(C) Minor Local - provides access to places and conducts traffic to a higher functional type street.

(D) Major Local - a street which, in addition to providing access to properties abutting thereon, carries traffic to an activity center or higher classification street. It may be a loop street or may link local and/or collector streets.

(E) Minor Collector - a principal traffic artery within residential areas which may provide routes to local facilities, serves as the main entrance to a sizeable development, or a combination of developments.

(F) Arterials - higher functional type streets, i.e., not meeting functional definitions herein specified, shall meet requirements set by the Engineer with consideration of the Leonardtown Master Plan, Maryland D.O.T. Standards, accepted design manuals, and transportation-traffic requirements projected for the site and area in question.

4.2-2 Rural vs Urban Classifications

(A) Rural - a residential development density of one (1) dwelling or less per acre shall be referred to within these Specifications and Standards as Rural

(B) Urban - a residential development density exceeding one (1) dwelling per acre shall be referred to as Urban.

4.3 Roadway Typical Section

4.3-1 Soil Conditions: Standards for construction of pavement sections as set forth herein are based upon a minimum subgrade value of CBR 5, (California Bearing Ratio). Where the subgrade is less than CBR 5, reinforcing of sections will be required as directed by the Engineer.

4.3-2 Paved driving surfaces shall be crowned with a pitch from centerline of pavement of 1/4" to 1' (2%). Gravel shoulders shall be graded to a pitch of 1/2" to 1' (4%), from edge of pavement to edge of shoulder. Turf shoulders shall be graded to a pitch of 3/4" to 1' (6%).

4.3-3 Sidewalks shall be provided along all streets within urban areas. Within rural communities, sidewalks shall be required along those streets used for pedestrian access to schools, parks, and shopping areas.

4.3-3-1 Where a pedestrian walkway system will be superior to traditional sidewalks in terms of safety, accessibility to all lots in the development, and physical design factors; a pedestrian walkway system may be approved.

4.3-4 Typical Street Sections and Road Design Standards as depicted on plates contained herein are to complied with in the design and construction of streets. Any need to modify these typical sections shall be authorized upon the recommendation of the Engineer and the approval of the Commissioners of Leonardtown.

4.4 Horizontal Alignment (Curvature)

4.4-1 The minimum stopping sight distance for the various functional classifications of streets shall be as depicted on tables contained herein.

4.4-2 Curves shall have sufficient length to provide a smooth flowing alignment where possible (200 to 300 feet minimum).

4.4-3 Horizontal curve data shall be computed by the arc definition of a circular curve.

4.4-4 A tangent length of at least 100' shall be used between reverse

curves except in unusual situations.

4.4-5 Tangents should not be introduced between two curves in the same direction unless the length of the tangent is greater than 500'.

4.5 Vertical Alignment (Grade)

4.5-1 The maximum grade of streets shall be as indicated on tables contained herein.

4.5-2 The minimum grade along rural streets shall be three quarters percent, (0.75%), and one-half percent (0.50%) along urban streets.

4.5-3 Vertical curve lengths shall be designed to provide at least the minimum stopping sight distance required for the road design speed. Crest vertical curves shall be designed for a minimum design speed of 30 MPH.

4.5-4 Vertical curves shall be used in changes of grade exceeding one percent, (1%), minimum length of vertical curves shall be one hundred (100'), grade breaks are to be shown on profile and high points to be shown in plan.

4.6 Street Intersections

4.6-1 "Standards for Street Intersections" are depicted on plates contained herein.

4.6-2 Right angle intersections shall be used whenever practical. No street shall intersect any other street at less than a seventy-five degree (75) angle.

4.6-3 Minimum stopping sight distance shall be provided at all intersections. No proposed street shall be permitted to intersect an existing County road at a location that would result in undue interference with or hazard to the free movement of normal traffic.

4.6-4 Approach grades to all street intersections shall be given careful considerations. The grade of the preference street shall be continued through the intersection and the approach leveling area of at least 75 feet (measured from the intersection of the centerlines) within which the grade shall not exceed a maximum of four percent (4%). In cases where the intersection involves collector or arterial type streets, the design criteria established by the State Highway Administration and contained in the Rules and Regulations for Commercial, Subdivisions, Industrial, and Residential Entrances shall apply.

4.6-5 Acceleration, deceleration, channelization, and bypass lanes at an entrance to or within a proposed development may be required. The necessity for such shall be based upon the ultimate size of the proposed development, and the potential function of the streets and roads.

4.6-6 Streets shall not normally intersect roads classified as minor collector at intervals less then 750 feet.

4.7 Superelevation

4.7-1 Horizontal curves of streets in subdivisions or commercial and industrial developments shall not normally be superelevated.

4.7-2 The maximum rate of superelevation for streets shall be six percent (6%).

4.7-3 Superelevated pavements shall be rotated around the centerline, except where this procedure would adversely affect adequate storm drainage design.

4.7-4 Normally two-thirds of the superelevation transition is accomplished on the tangent. The Design Engineer shall provide the necessary superelevation tables.

4.8 Cul-de-sacs and Tee Turn-Arounds

4.8-1 Permanent dead-end streets shall have a cul-de-sac constructed as shown on plates contained herein.

4.8-2 Temporary dead-end streets shall have a tee

turn-around constructed in place of a cul-de-sac.

4.9 Entrances and Driveways

4.9-1 Driveways shall be constructed in accordance with plates entitled "Typical Driveway Section" as minimum requirements.

4.9-2 Commercial and Industrial entrances shall be constructed in accordance with State Highway Administration practices or as shown on plate(s) contained herein.

4.10 Curbs, Gutters, and Islands

4.10-1 Where required concrete curb and gutter shall conform to the standards shown on plates contained herein.

4.10-2 The minimum grade of a concrete gutter shall be one half of one percent (0.5%).

4.10-3 All islands must be concrete curbed. The pitch of the gutter plan may be reversed for drainage purposes, such as with a superelevation section or the high side of a crown section at the median island.

4.10-4 Minimum curb tangent length between entrances and property lines shall be five (5) feet.

4.10-5 Minimum curb radius rounding shall be two and one half (2 1/2) feet.

4.10-6 Valley gutters shall be used only where approved, but will normally be permitted where no more than 2 cfs flows across an intersection.

4.11 Cross Sections and Quantities

4.11-1 When required, cross sections shall be taken at least every 50' and at all noticeable terrain breaks. The centerline and profile grade line shall be stationed correspondingly.

4.11-2 The Design Engineer shall provide quantity and construction cost estimates. These estimates shall include all quantities for grading, paving, curb and gutter, etc., and shall be tabulated as directed.

4.12 Street and Traffic Control

Street name signs and traffic control signs shall be installed by the developer as directed by the *Town Engineer*. Installation shall be in accordance with the "Manual on Uniform Traffic Control Devices" as currently amended and the plates contained herein. Street name signs and appropriate traffic control signs must be installed prior to the issuance of a Certificate of Occupancy for any lot on that street.

4.13 Guard Railings

4.13-1 Guard railing shall be erected on roadways at points of extreme hazard to a vehicle leaving the travelled portion of the traffic way. Generally, this potential hazard develops at fills over eight (8') feet in vertical depth from the edge of the shoulder to the toe of the slope when the slope ratio is steeper than 4 to 1.

4.13-2 Guard railing shall be placed as shown on the plates depicted Typical Roadway Sections.

4.13-3 Where roadway construction ends in fill areas, guardrail W beam barricades shall be erected.

4.14 Shoulders

Where shoulders and open drainage sections are applicable, the shoulder section shall be as shown in the plates depicting Typical Sections.

5.0 CONSTRUCTION SPECIFICATIONS

5.1 General

5.1-1 All material specifications, methods of construction, and methods of measurements shall be in accordance with the "Standard Specifications for Construction Materials", Maryland Department of Transportation, State Highway Administration, January, 1982, as amended.

5.1-2 If in the event an item(s) proposed to be constructed is not contained in the State Highway Administration specifications, the Design Engineer shall submit special provisions to the *Town Engineer* for approval.

6.0 STORM DRAINAGE

6.1 General

6.1-1 Storm water runoff is to be collected and conveyed in closed conduit systems (inlets, pipes and connectors) and open channel systems (ditches, streams, culverts, rivers, improved open channels).

6.1-2 Existing storm drainage systems which are considered inadequate to accommodate the proposed development must be improved prior to development.

6.1-3 Changes to the limits of natural drainage basins are prohibited and in general, runoff after development shall drain to the same outfall as before development.

6.2 Methods of Computation

6.2-1 In the design of a storm drainage system, the present runoff and future runoff from the development and from the area draining thereto shall be determined on the basis of full development of the watershed in accordance with current zoning for the area. A Registered Professional Engineer or Land Surveyor, as appropriate, shall design the storm water system and certify that the system is adequate to collect and convey storm water runoff from the development and any area contributing thereto, and shall attest to the effects of the storm water runoff to neighboring lands. The following data shall be submitted:

(A) A map at a scale not smaller than one inch equals two thousand feet or as otherwise specified, outlining the entire drainage area that contributes to the water courses which pass through the development. Also, a drainage area map at a scale of 1" = 200' or larger showing the areas draining to each element of the proposed storm drain systems of the development.

(B) A plan showing the facilities to be provided along with flow data and computations developed in the design and the tentative layout of the drainage facilities.

(C) Runoff calculations and assumptions shall be provided in acceptable format for both closed and open systems, giving area, size, quantity, velocity, slope and depth of flows and hydraulic gradient.

6.2-2 The rational method shall, unless otherwise approved, be used to determine quantities of storm water runoff. Normally, the 10 year frequency storm shall be used in the design for storm drainage. The time of concentrations and runoff co-efficients shall be determined in accordance with accepted practice and shall be based upon established sources considering topographic and ground cover conditions.

6.2-3 The minimum size of any culvert or storm drain shall be 18" x11" or an equivalent size pipe.

6.2-4 Storm drains crossing water mains and sanitary sewers shall be constructed with a minimum clearance of twelve (12) inches. Clearance shall be measured between outsides of pipes. A minimum of six (6) inches base material shall be between a storm drain pipe and the surface material in a private driveway, and at least twelve (12) inches in a public street or roadway.

6.3 Closed Storm Water Runoff Systems

6.3-1 Closed Runoff Systems shall generally be required where curb and gutter (urban) street sections are required.

(A) Wherever possible existing natural drainageways shall be preserved as a supplementary element to closed drainage systems. In all cases, closed systems shall discharge into existing natural drainageways as soon as is practical.

(B) Where, as a function of net development densities, closed drainage systems are not essential to serve portions of developments dedicated to permanent open space or portions developed at densities less than one (1) dwelling unit per acre, the use of existing natural or open ditch drainageway systems may be approved. This recommendation and approval shall be based upon findings that:

(a) Urban design solutions are not appropriate.

(b) Open system design is adequate considering existing and projected topographic and ground coverage conditions.

6.3-2 Closed systems shall be designed to carry 10 year frequency storms provided that surcharge overflow from 20 year storms can be carried without damage in public streets, allies, and rights-of-way to a suitable outfall. In sumps and other critical areas where overflow is not permissible, 20 year flows shall govern. The easement or "fee simple" right-of-way required shall extend at least five (5) feet beyond the outside limits of the pipe and shall in no case be less then twenty (20) feet in width.

6.4 Open Runoff Systems

6.4-1 Where development density is equivalent to one dwelling unit or less per acre, and the existing or modified natural channels can safely handle storm water runoff, an open system utilizing drainage ditches, culverts, and natural channels may be utilized. In certain cases, where quantity of flow, topographic, soil or natural channel conditions preclude open systems, then the system shall be fully or partially enclosed as required.

6.4-2 Normally open ditch and culvert systems shall be designed for a 10 year frequency storm; culverts in excess of 24" in diameter for a minimum 25 year storm.

6.4-3 For flood plains, bridges, major structures, stream channels, etc., the deisgn criteria shall be established individually.

6.4-4 Roadside drainage shall not be disrupted by private driveways. A minimum 18" x 11" corrugated metal pipe (arch type) is required to permit the free flow of water at those points where a driveway intersects the roadside drainageway. When a paved driveway is located near the crest of a vertical curve, valley gutters may be provided as approved.

6.4-5 The shape and length of culverts, and the grading of culvert inlets and outlets shall be designed to facilitate periodic maintenance to remove obstruction.

6.4-6 Where a development is traversed by a natural drainage course or stream, there shall be provided a drainage easement, a minimum of fifty (50) feet in width, conforming substantially with the line of such watercourse for the purpose of maintaining, improving, or protecting such drainage facilities. This easement area shall be designed to the 100 year flood plain level.

LIST OF TABLES

NO.	TITLE
1	Minimum Rural Road Design Standards
2	Minimum Urban Road Design Standards

MINIMUM RURAL ROAD DESIGN STANDARDS

ROADWAY CLASSIFICATION	NUMBER OF LOTS SERVED	ROW (FT.)	MINIMUM DESIGN STOPPING SIGHT DISTANCE	SPEED LIMIT (MPH)	MINIMUM HORIZONTAL RADIUS (FT.)	MAXIMUM VERTICAL GRADE (%)	ACCESS CONTROL REQUIRED
PLACE	1-30	45	150	20	175	8	ENTRANCE PERMIT
MINOR LOCAL	31-75	50	200	25	290	8	
MAJOR LOCAL	76-150	60	200	25/30	430	8	
MINOR COLLECTOR	151-350	60	250	30/35	600	8	

LOT TO BE INTERPRETED AS DWELLING UNIT.

TABLE I

Revised 3/8/83

MINIMUM URBAN ROAD DESIGN STANDARDS

ROADWAY CLASSIFICATION	NUMBER OF LOTS SERVED	ROW (FT.)	DESIGN STOPPING SIGHT DISTANCE (FT.)	SPEED LIMIT (MPH)	MINIMUM HORIZONTAL RADIUS (FT.)	MAXIMUM VERTICAL GRADE (%)	ACCESS CONTROL REQUIRED
PLACE	1-30	45	150	20	175	8	ENTRANCE PERMIT
MINOR LOCAL	31-75	50	200	25	290	8	
MAJOR LOCAL	76-150	60	200	25/30	430	8	
MINOR COLLECTOR	151-350	60	250	30/35	600	8	

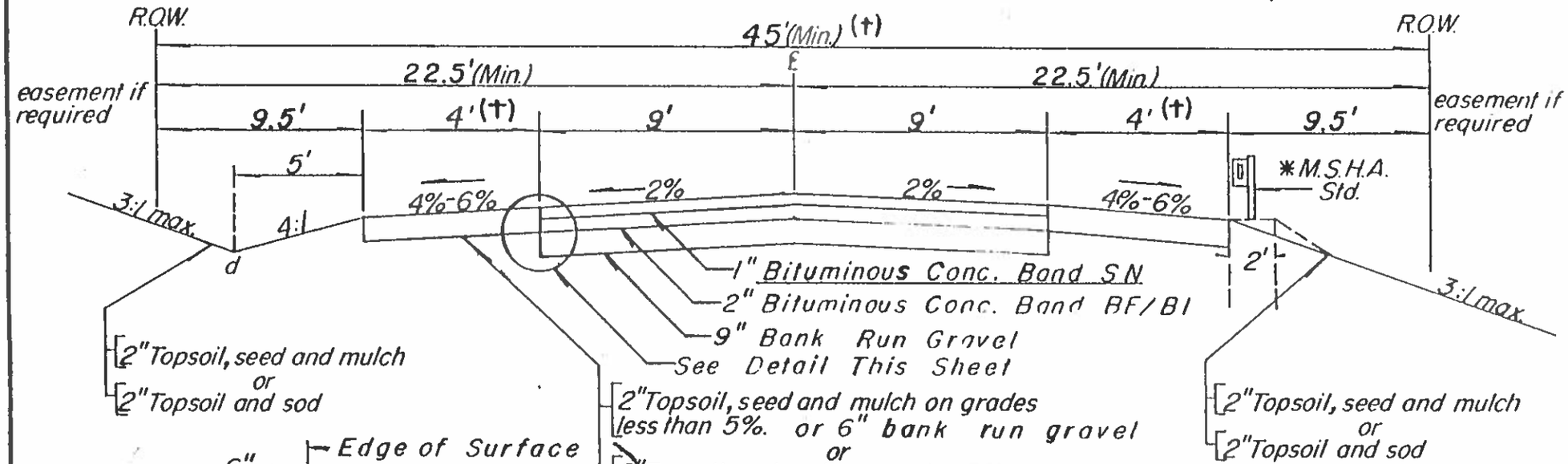
LOT TO BE INTERPRETED AS DWELLING UNIT

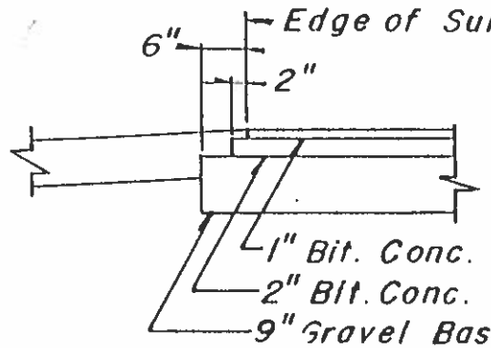
TABLE 2

Ditch lini..d) determined by velocity (fps)
Seed —— V < 2.5
Sod —— 2.5 ≤ V < 4.0
Concrete or Rip-rap —— 4.0 ≤ V

* Guard rail–With fills 15' or greater in height or fills of 8' or more with slopes steeper than 4:1.

Typical easement – 2" topsoil, seed and mulch or topsoil and sod.





Typical Shoulder Detail

Note: Tack Coat required between paving layers at rate of 0.05 - 0.10 gal./s.y.

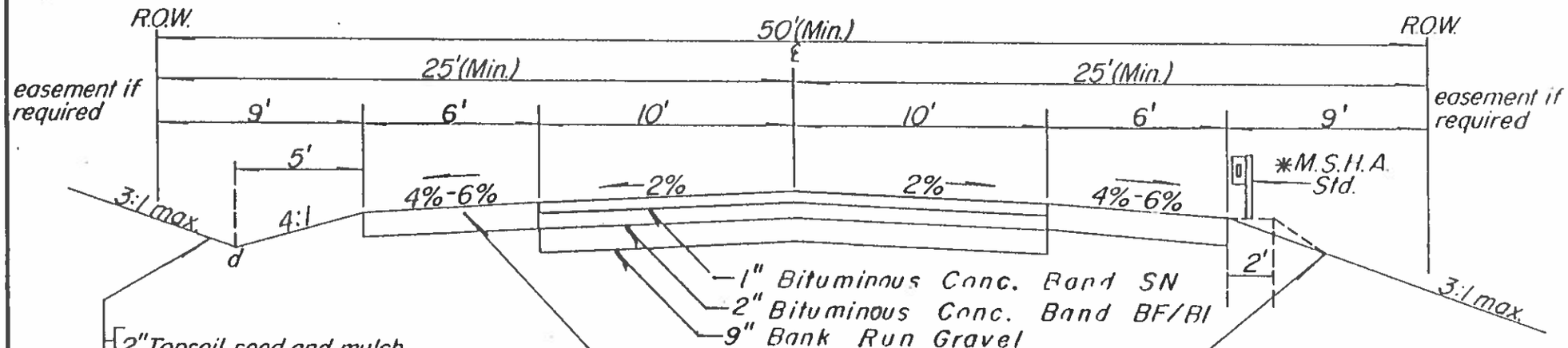
Note (†): Shoulder widths may be reduced to Two (2) feet for Cul-de-sac streets that serve Seven (7) lots or less, and R.O.W. width may be reduced to Forty (40) feet.

DRAWING FURNISHED BY:	APPROVED		
St. Marys County Office of the County Engineer	Edward H. Long 6/10/85 date Pres., Commissioners of Leonardtown Gregory Stevens Gregory Stevens, P.E. Town Engineer	Typical Section Rural Street Place	R/1

Ditch li...d) determined by velocity (fps)
Seed —— V < 2.5
Sod —— 2.5 ≤ V < 4.0
Concrete or Rip-rap —— 4.0 ≤ V

* Guard rail - With fills 15 or greater in height or fills of 8' or more with slopes steeper than 4:1.

Typical easement - 2" topsoil, seed and mulch or topsoil and sod.



[2"Topsoil, seed and mulch
or
[2"Topsoil and sod

Note: Tack coat required between asphalt courses at rate of 0.05 - 0.10 gal. / square yard

[2"Topsoil, seed and mulch on grades less than 5%. or 6" bank run gravel
or
[2"Topsoil and sod on grades 5% or greater.
or
[6"Gravel base with double bituminous surface treatment on grades of 5% or greater.

[Shoulder Slope 6% seed or sod or gravel
4% Bituminous

[2"Topsoil, seed and mulch
or
[2"Topsoil and sod

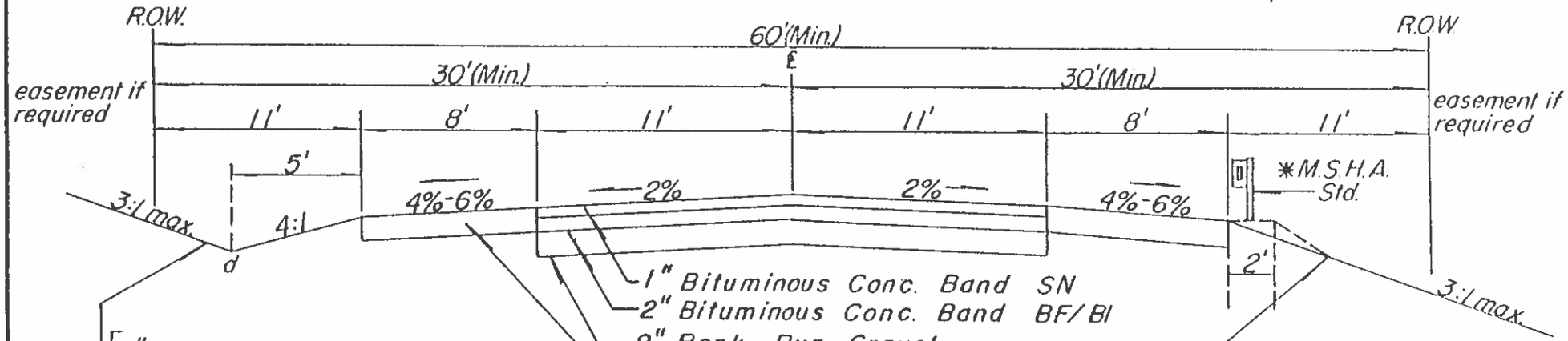
See Sheet R/1 for Typical Shoulder Detail

DRAWING FURNISHED BY:	APPROVED		
St. Marys County Office of the County Engineer	Edward H. Long 6/10/85 date Pres., Commissioners of Leonardtown Gregory Stevens, P.E. Town Engineer	Typical Section Rural Street Minor Local	R/2

Ditch lining (.d) determined by velocity (fps)
Seed —— V < 2.5
Sod —— 2.5 ≤ V < 4.0
Concrete or Rip-rap —— 4.0 ≤ V

* Guard rail - With fills 15 or greater in height or fills of 8' or more with slopes steeper than 4:1.

Typical easement - 2" topsoil, seed and mulch or topsoil and sod.



2" Topsoil, seed and mulch
or
2" Topsoil and sod

Note: Tack coat required between asphalt courses at a rate of 0.05-0.10 gal./square yard

2" Topsoil, seed and mulch on grades less than 5%. or 6" bank run gravel
or
2" Topsoil and sod on grades 5% or greater.
or
6" Gravel base with double bituminous surface treatment on grades of 5% or greater.

Shoulder Slope 6% seed or sod or gravel
4% Bituminous

2" Topsoil, seed and mulch
or
2" Topsoil and sod

See Sheet R/1 for Typical Shoulder Details

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St. Marys County
Office of the
County Engineer

APPROVED
6/10/85
Edward H. Long date
Pres., Commissioners of Leonardtown
Gregory Stevens, P.E. Town Engineer

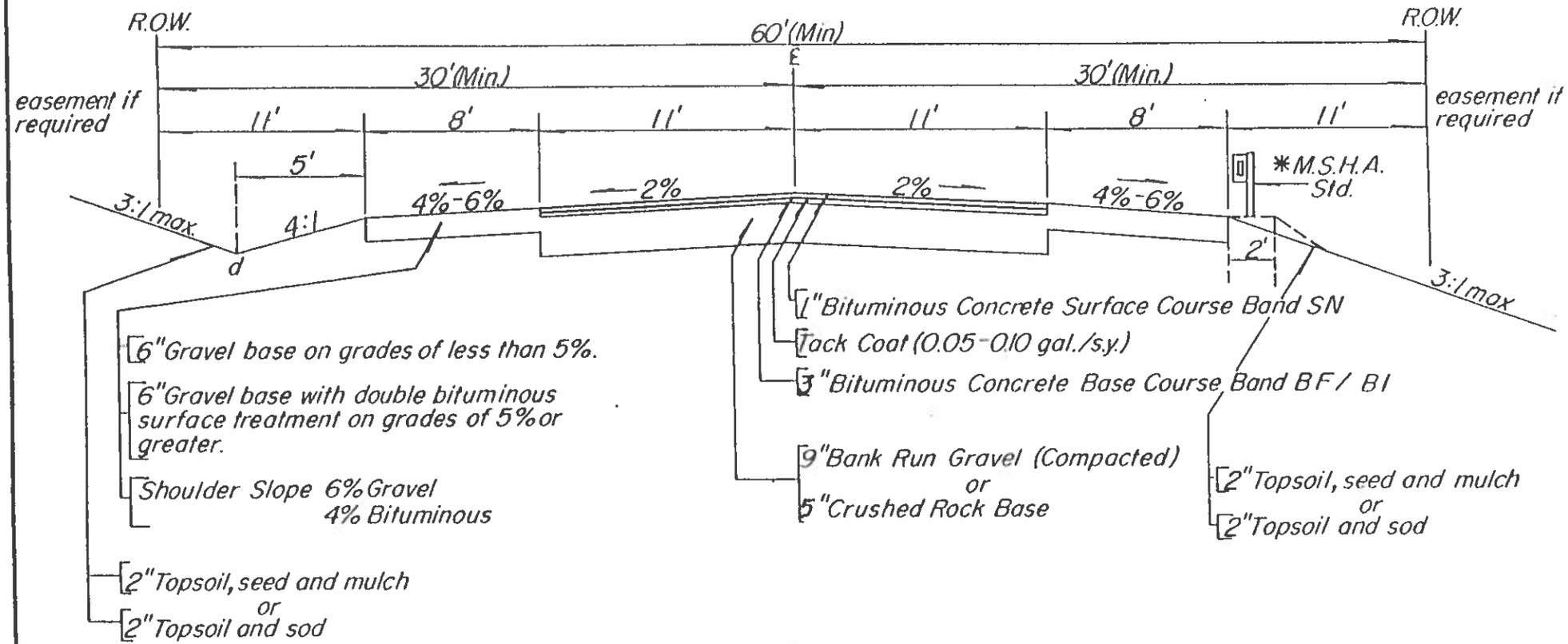
Typical Section Rural Street Major Local

R/3

Ditch lining (sod) determined by velocity (fps)
Seed ——— $V < 2.5$
Sod ——— $2.5 \leq V < 4.0$
Concrete or Rip-rap ——— $4.0 < V$

* Guard rail - With fills 15' or greater in height or fills of 8' or more with slopes steeper than 4:1.

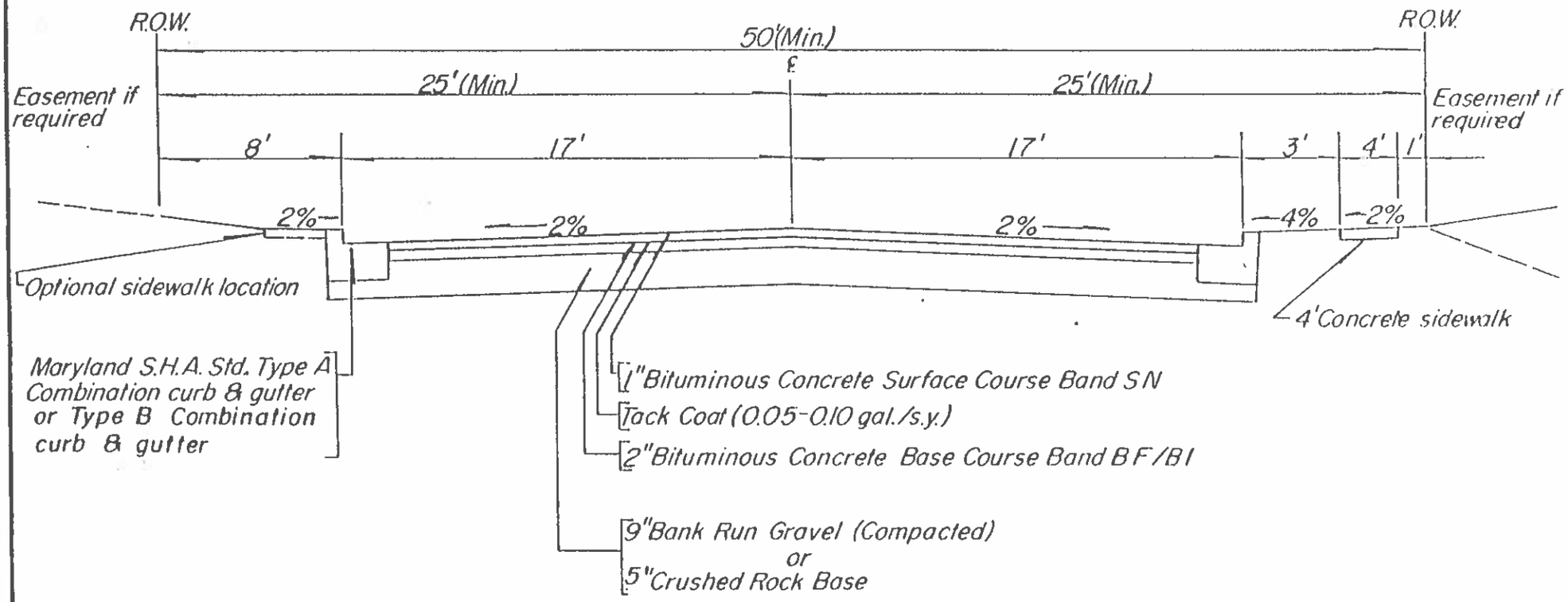
Typical easement - 2" topsoil, seed and mulch or topsoil and sod.



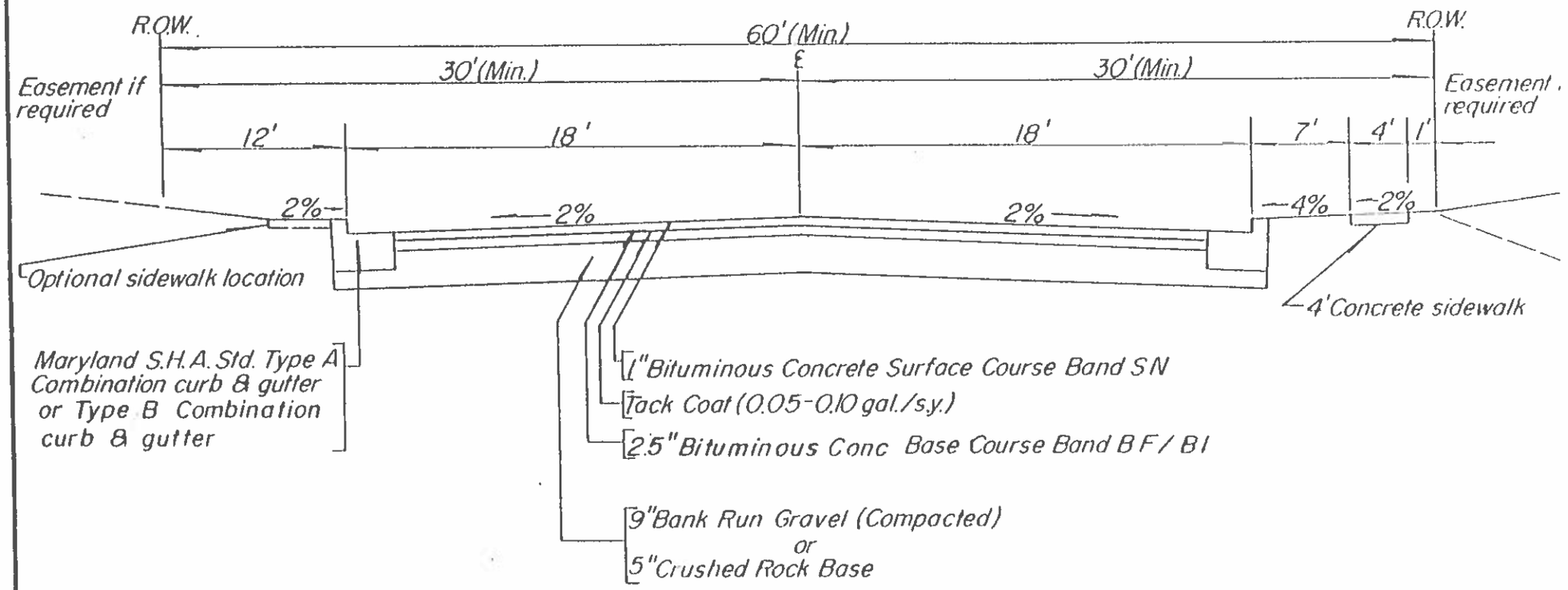
See Sheet R for Typical Shoulder Detail

DRAWING FURNISHED BY:	APPROVED	
St. Marys County Office of the County Engineer	Edward H. Long 6/10/85 date Pres. Commissioners of Leonardtown Gregory Stevens, P.E. Town Engineer	Typical Section Rural Street Minor Collector

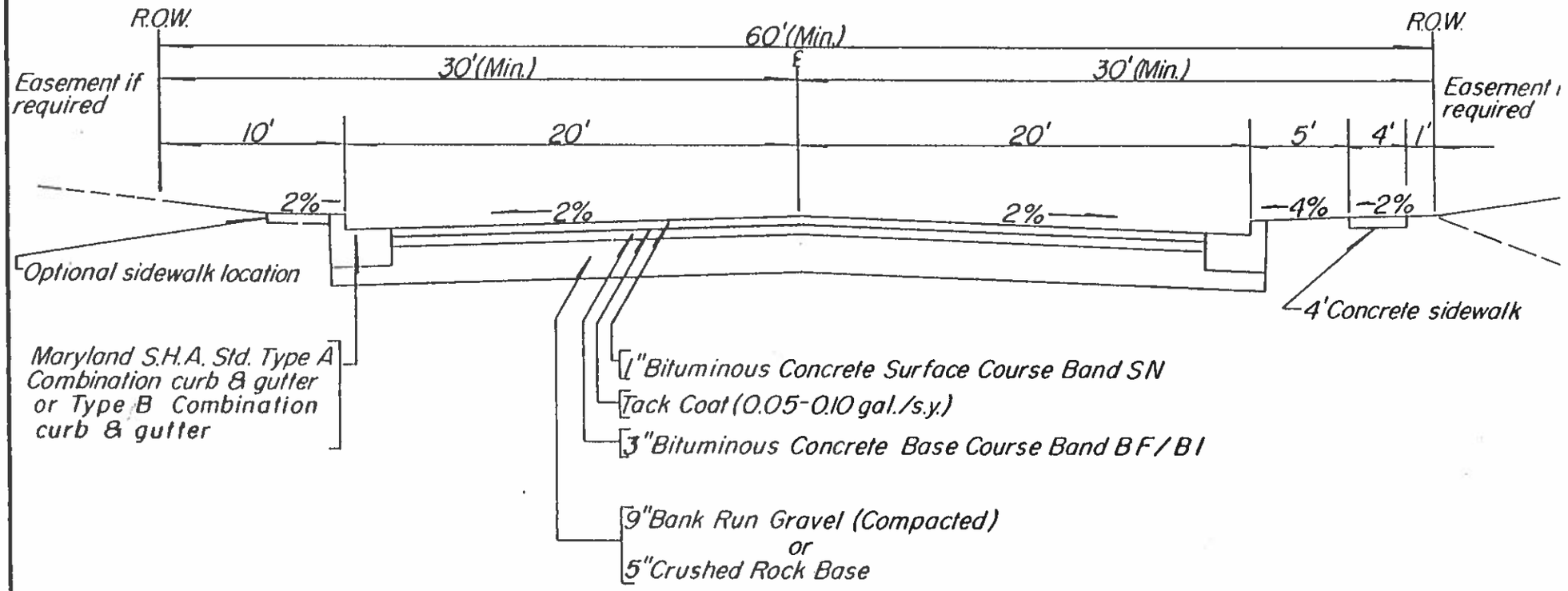
R
4



DRAWING FURNISHED BY:	APPROVED		
St. Marys County Office of the County Engineer	Edward H. Long 6/10/85 date Pres., Commissioners of Leonardtown Gregory Stevens, P.E. Town Engineer	Typical Section Urban Street Minor Local	R 6



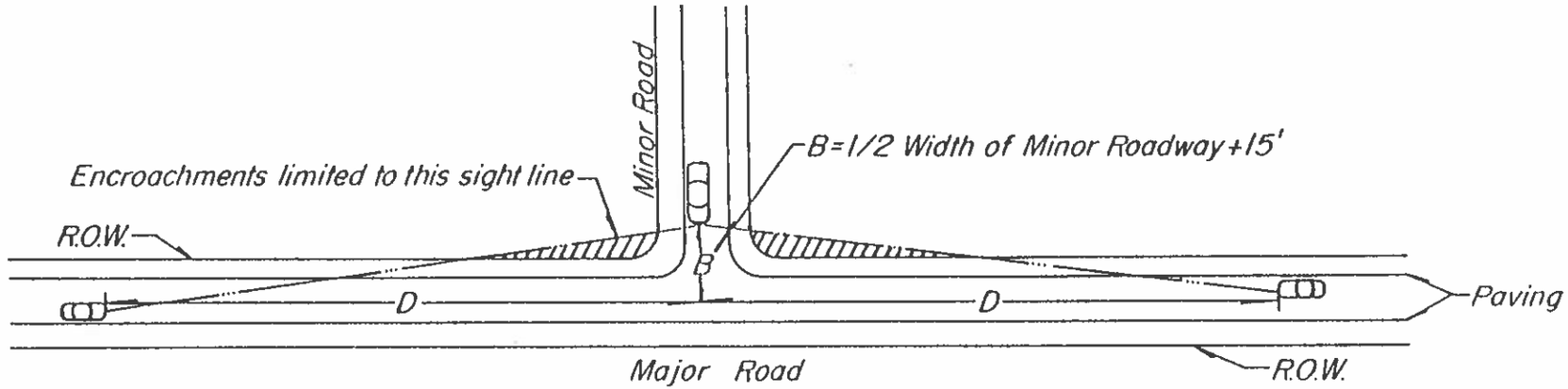
DRAWING FURNISHED BY:	APPROVED		
St Marys County Office of the County Engineer	Edward H. Long 6/10/85 date Pres., Commissioners of Leonardtown Gregory Stevens P.E. Town Engineer	Typical Section Urban Street Major Local	R/7



DRAWING FURNISHED BY:	APPROVED			
St. Marys County Office of the County Engineer	Edward H. Long 6/10/85 date Pres., Commissioners of Leonardtown Gregory Stevens Gregory Stevens, P.E. Town Engineer	Typical Section Urban Street Minor Collector		R/8

Design Speed M.P.H.	Required Sight Distance Feet
30	330
40	540
50	800

R.O.W.: Extra width R.O.W. if required on owners side, to be dedicated to the County.



Note:

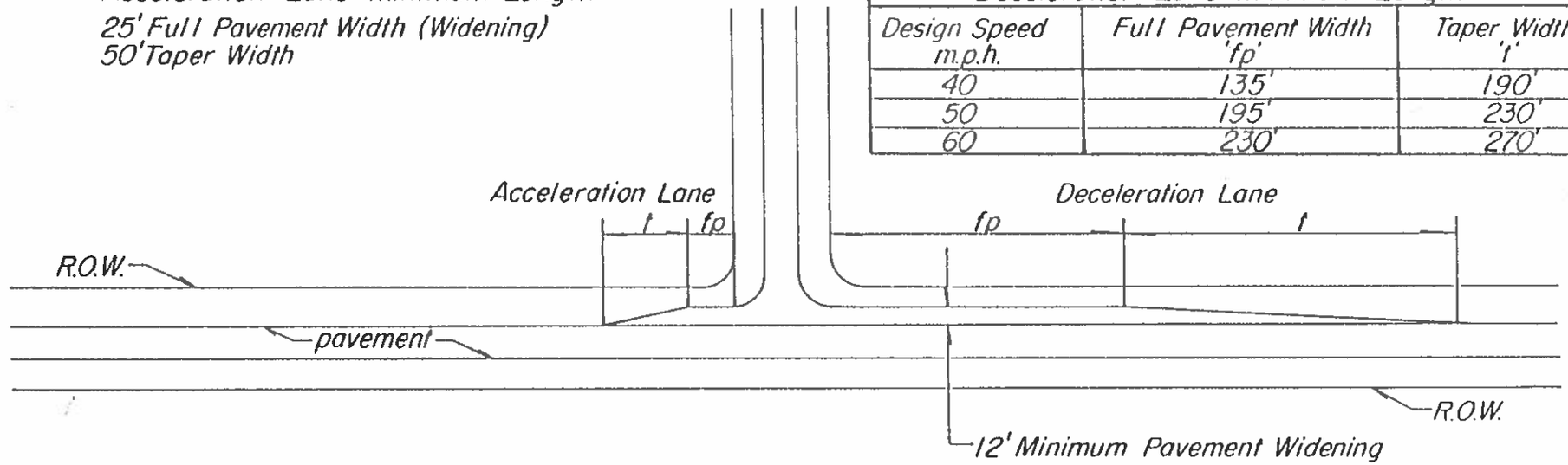
A detailed plan and profile of the intersection of a proposed subdivision street with an existing County Road shall be submitted with the plans and profiles. The detailed plan shall be to a scale of 1"=50'. A profile (1"=5') of the existing County Road shall be shown a minimum of D+50' to either side of intersection.

Design shall be based on a height of eye of 3.75 feet to a top of object of 4.50 feet. These are suggested design guides and all sight distances shall be in accordance with AASHTO and subject to review and approval by the County.

DRAWING FURNISHED BY:	APPROVED		
St. Marys County Office of the County Engineer	Edward H. Long, Pres., Commissioners of Leonardtown — 6/10/85 (date) Gregory Stevens P.E. Town Engineer	Minimum Standards for Street Intersections	R 9

Acceleration Lane Minimum Length
25' Full Pavement Width (Widening)
50' Taper Width

Deceleration Lane Minimum Length		
Design Speed m.p.h.	Full Pavement Width 'fp'	Taper Width 't'
40	135'	190'
50	195'	230'
60	230'	270'



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St. Marys County
Office of the
County Engineer

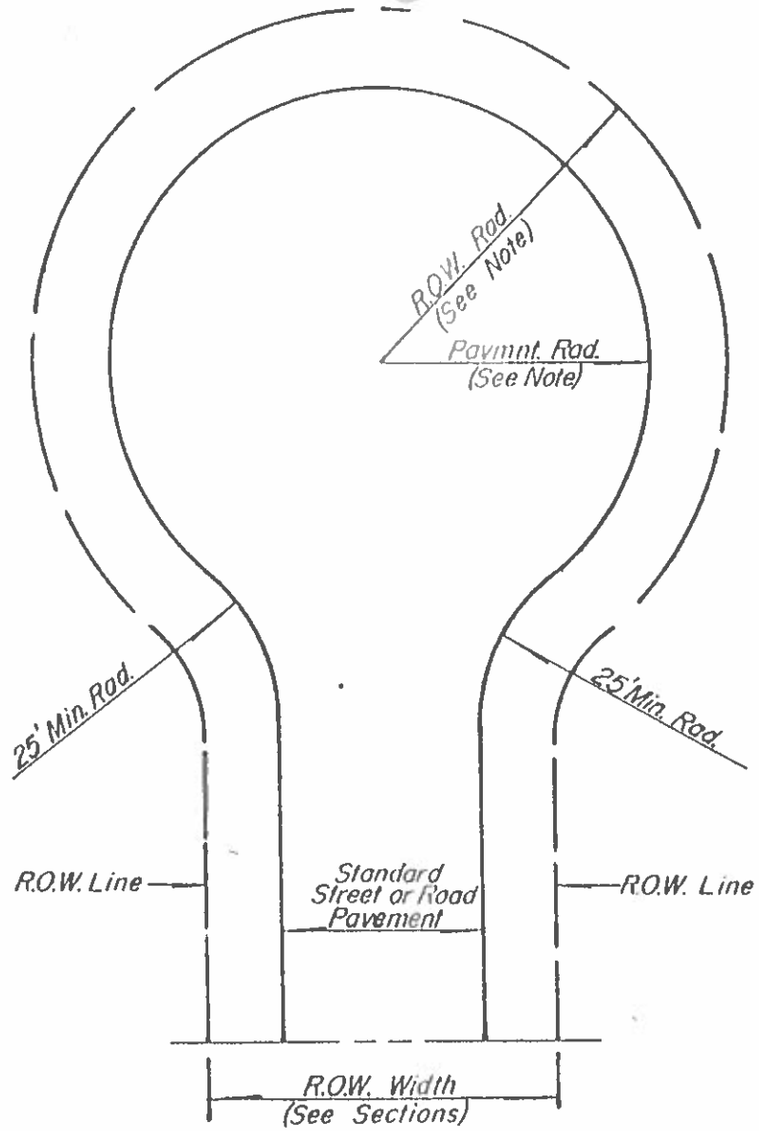
APPROVED

Edward H. Long, 6/10/85
Edward H. Long date
Pres., Commissioners of Leonardtown

Gregory Stevens
Gregory Stevens, P.E. Town Engineer

Standards for Acceleration and Deceleration Lanes

R
10



Notes:

Rural Roads

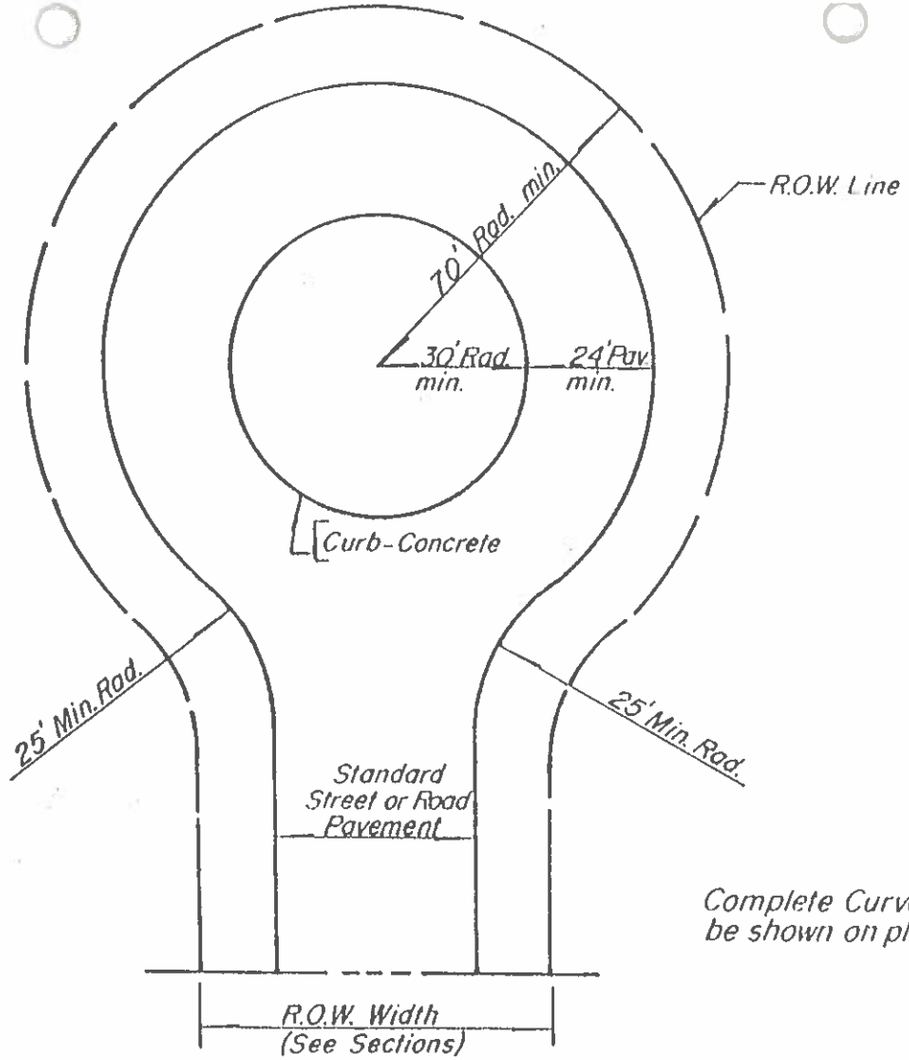
R.O.W.	Paving Radius
45' or 50'	35'
60'	40'

Urban Streets

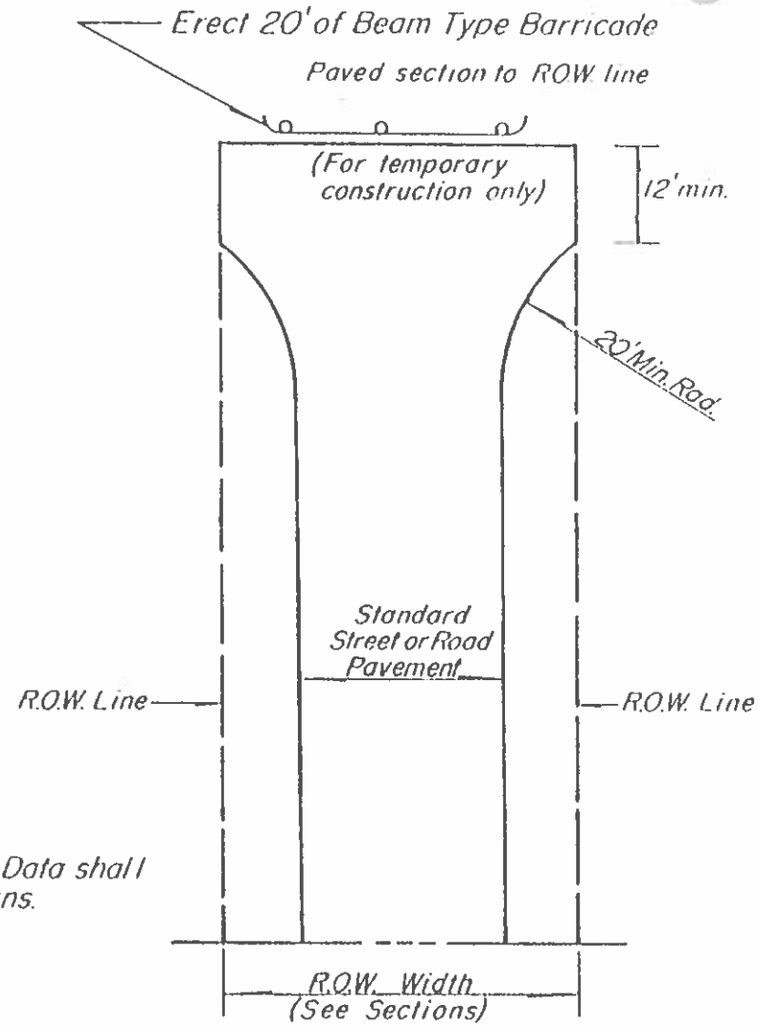
R.O.W.	Paving Radius
45' or 50'	40'
60'	45'

Complete Curve Data shall be shown on plans

DRAWINGS FURNISHED BY:	APPROVED		
St Marys County Office of the County Engineer	Edward H. Long, Pres., Commissioners of Leonardtown — 6/10/85 date Gregory Stevens, P.E. Town Engineer	Standard Cul-De-Sac	R 11



Standard Cul-De-Sac (Landscaped)



Standard 'T' Turnaround

Complete Curve Data shall be shown on plans.

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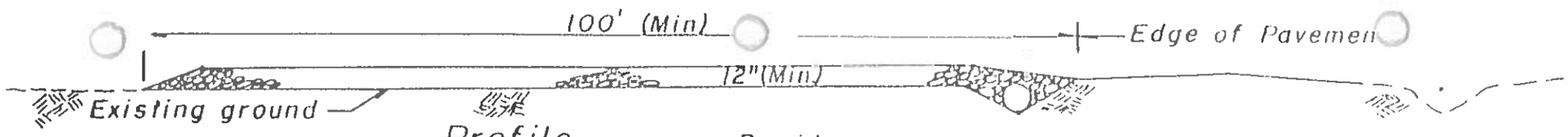
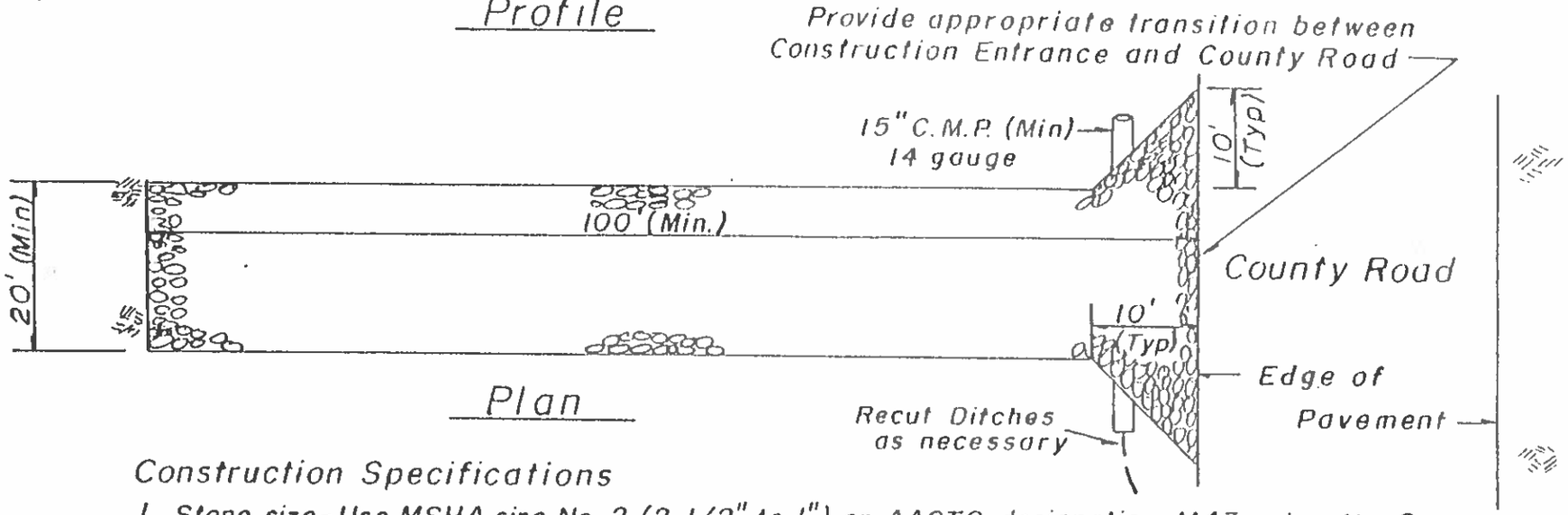
St. Marys County Office of the County Engineer	Edward H. Long 6/10/85 Edward H. Long date Pres., Commissioners of Leonardtown Gregory Stevens Gregory Stevens, P.E. Town Engineer	Standard Cul-De-Sac (Landscaped) Standard 'T' Turnaround		R 12



Profile

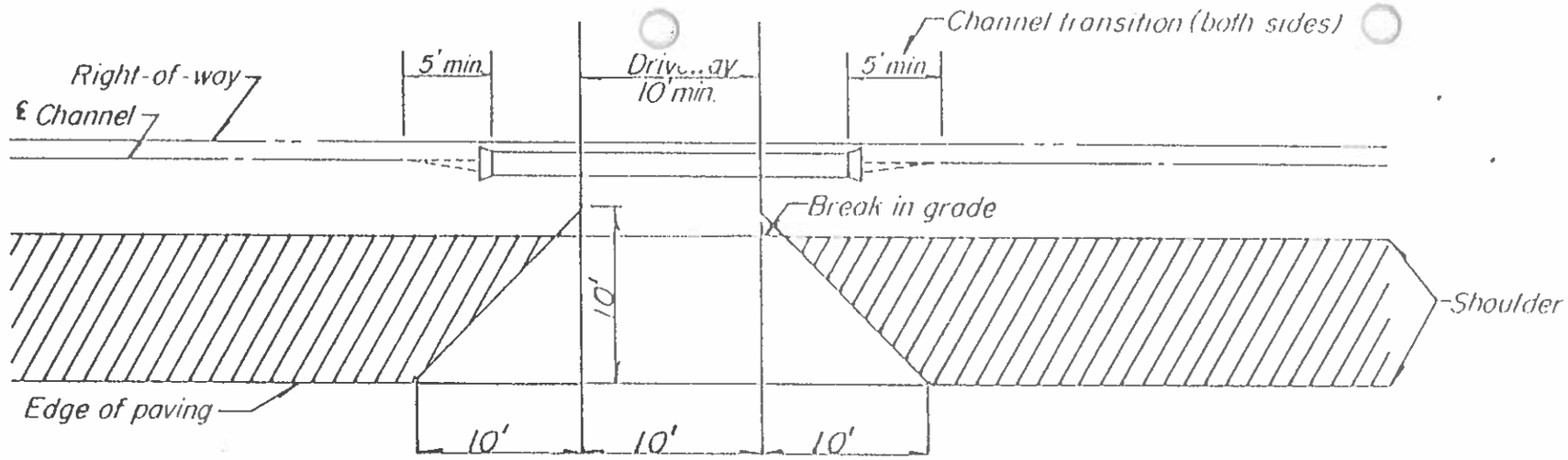


Plan

Construction Specifications

1. Stone size - Use MSHA size No. 2 (2-1/2" to 1") or AASTO designation M43, size No. 2 (2-1/2" to 1-1/2"). Use crushed stone.
2. Length - As effective, but not less than 100 feet.
3. Thickness - Not less than Twelve (12) inches.
4. Width - Not less than 20 feet.
5. Washing - When necessary, wheels shall be cleaned to remove sediment prior to entrance onto public right-of-way. When washing is required, it shall be done on an area stabilized with crushed stone which drains into an approved sediment trap or sediment basin. All sediment shall be prevented from entering any storm drain, ditch, or watercourse through use of sand bags, gravel, boards, or or other approved methods.
6. Maintenance - The entrance shall be maintained in a condition which will prevent tracking and flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed, or tracked onto public rights-of-way must be removed immediately.

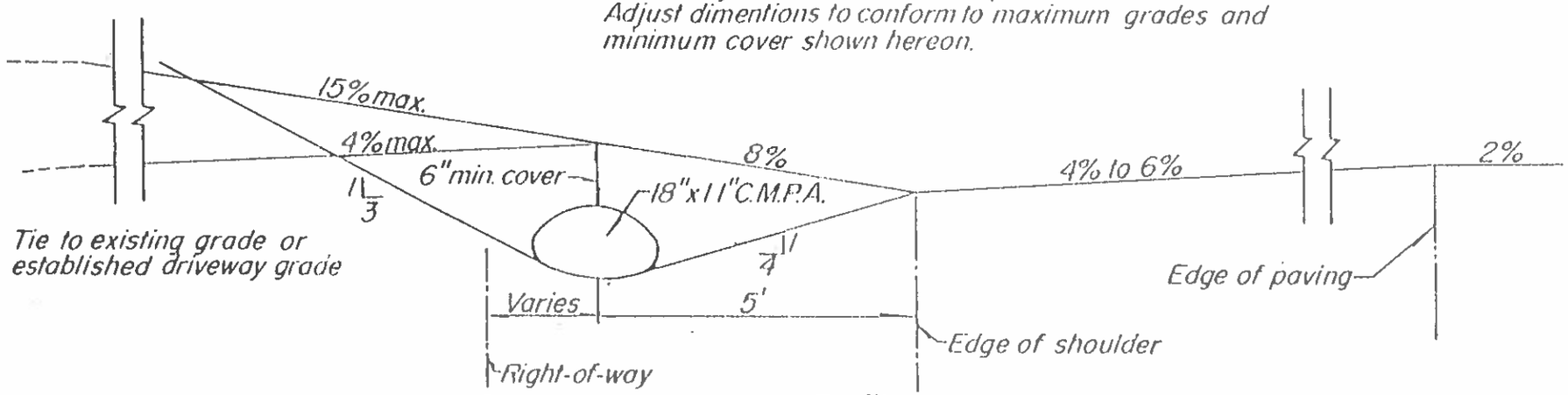
DRAWINGS FURNISHED BY:	APPROVED		
St. Marys County Office of the County Engineer	Edward H. Long 6/10/85 Edward H. Long date Pres., Commissioners of Leonardtown Gregory Stevens, P.E. Town Engineer	Typical Construction Entrance	R/13



Plan View

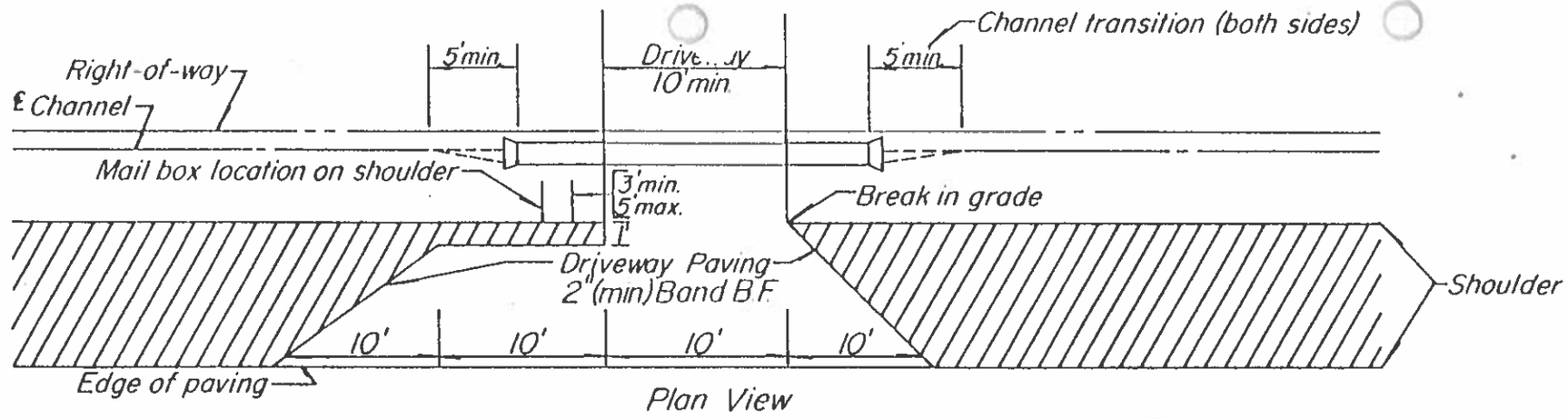
DRIVEWAY SURFACE
A. 9" (min.) B.R. Gravel
B. 2" (min) or Asphalt (Band B.F.)

Notes:
1. A minimum of 20 lin. ft. of C.M.P.A. (16 guage minimum) to be installed. (18"x11" min)
2. Channel protection and velocity dissipators to be provided as required.
3. Driveway details for all other open sections to be similar. Adjust dimentions to conform to maximum grades and minimum cover shown hereon.



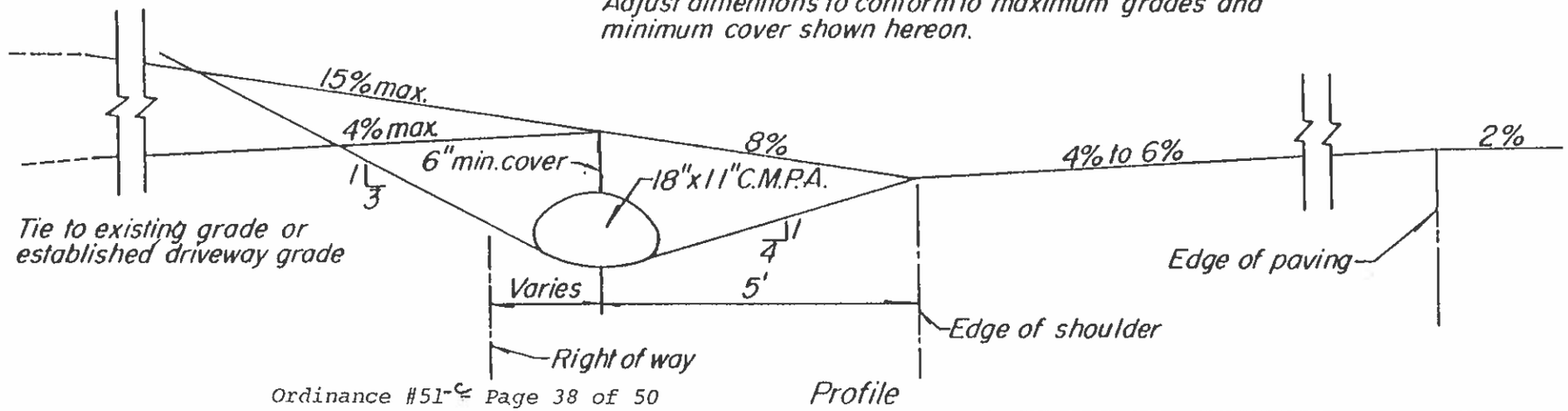
Profile

DRAWINGS FURNISHED BY: St. Marys County Office of the County Engineer	APPROVED 6/10/85 date Edward H. Long Pres., Commissioners of Leonardtown Gregory Stevens, P.E. Town Engineer	Typical Driveway Entrance (Rural)		R 14



Notes:

1. A minimum of 20 lin.ft. of C.M.P.A. (16 guage minimum) to be instal led. (18"x 11"min)
2. Channel protection and velocity dissipators to be provided as required.
3. Driveway details for al l other open sections to be similar. Adjust dimentions to conform to maximum grades and minimum cover shown hereon.



Drawings furnished by:

St. Marys County Office of the County Engineer

APPROVED

Edward H. Long 6/10/85

Edward H. Long date

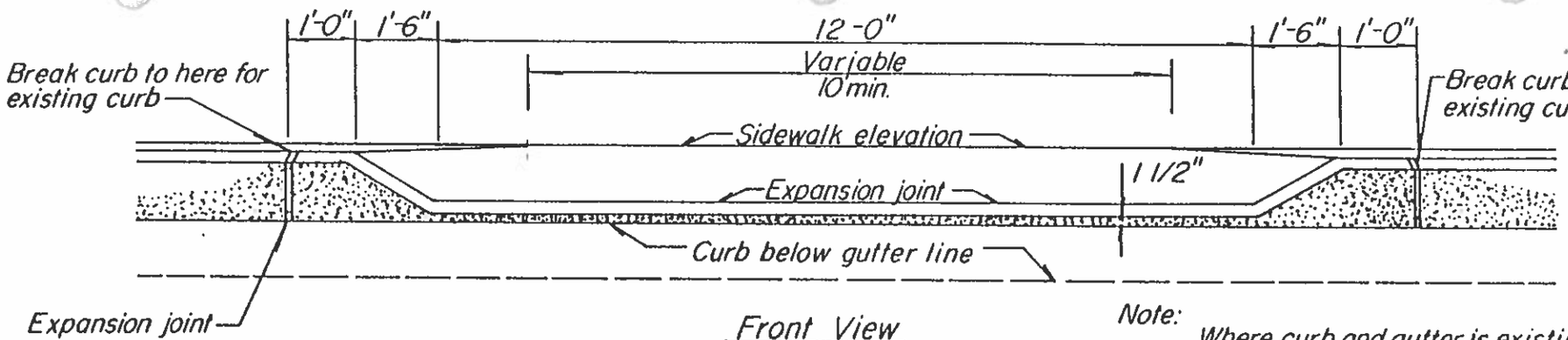
Pres., Leonardtown Commissioners

Gregory Stevens

Gregory Stevens, P.E. Town Engineer

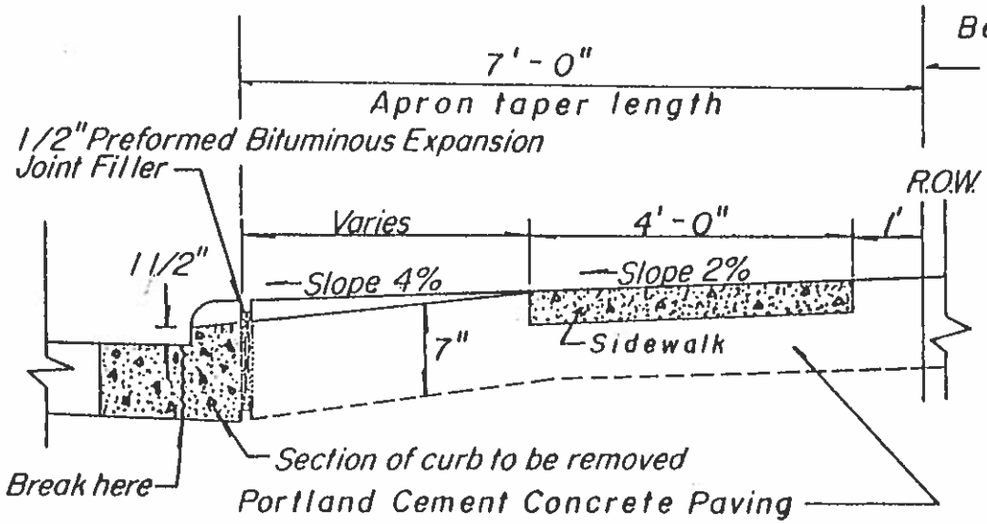
Typical Driveway Entrance (Grass Shoulder)

R/15

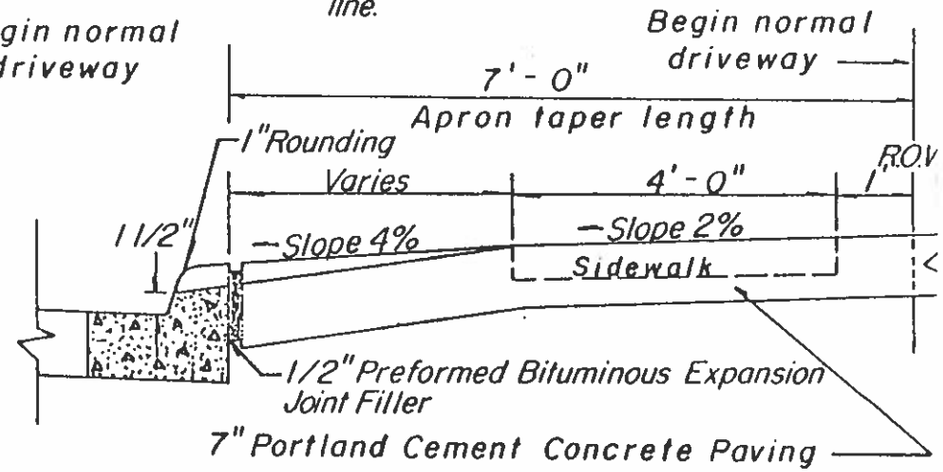


Front View

Note:
Where curb and gutter is existing remove to nearest joint beyond this point. If joint is more than 4' beyond, cut existing curb to nec line.

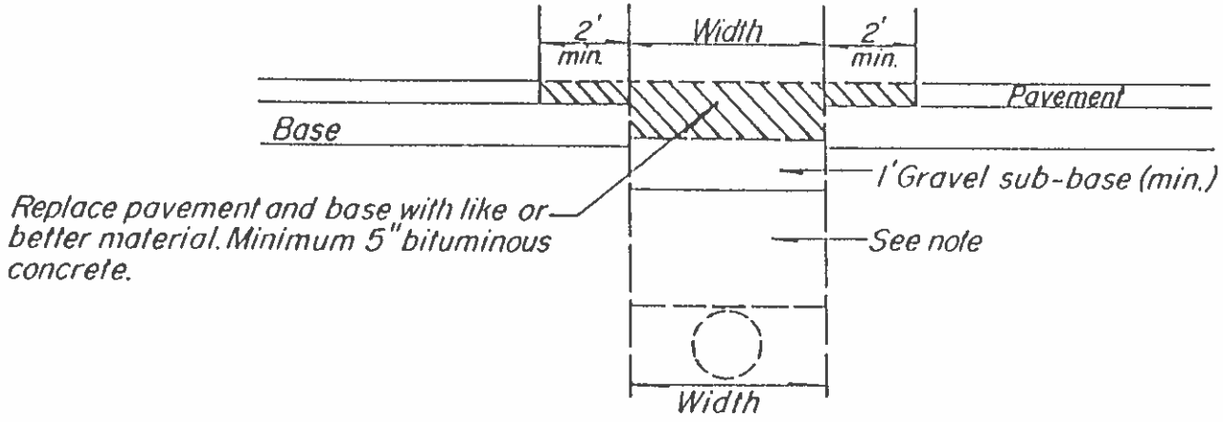


Section - Driveway In Existing Curb



Section - Driveway In New Curb

DRAWINGS FURNISHED BY:	APPROVED		
St. Marys County Office of the County Engineer	Edward H. Long 6/10/85 Edward H. Long date Pres., Commissioners of Leonardtown Gregory Stevens Gregory Stevens, P.E. Town Engineer	Typical Driveway Entrance (Urban)	R 16



Note: Backfill in trenches shall be in accordance with SHA specs. and shall be thoroughly compacted in 6" layers for the full depth of the trenches by tamping or by some other approved method to within 1' of the top of subgrade. The remaining depth of the trench shall be filled with thoroughly compacted crushed stone, slag or gravel. Whenever sheeting or shoring is required to prevent cave-ins or bellying due to the depth of the trench or type of material encountered, the sheeting, wherever found necessary, shall remain in place but cut off 1' below the bottom of the replaced surfacing. All backfill replaced shall be compacted to at least 95% of maximum density in accordance with S.H.A. Specifications.

UTILITY	COVER
telephone cable	24" min.
electric cable	36" 6" ±
sewer line	48" min ±
water line	42" min.
concrete, steel pipes	12" min.
± frost depth	18"

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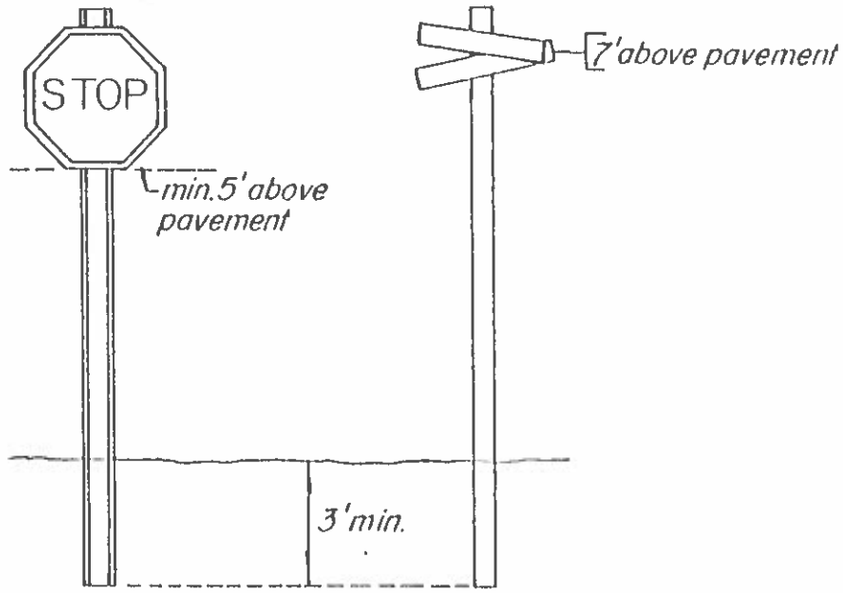
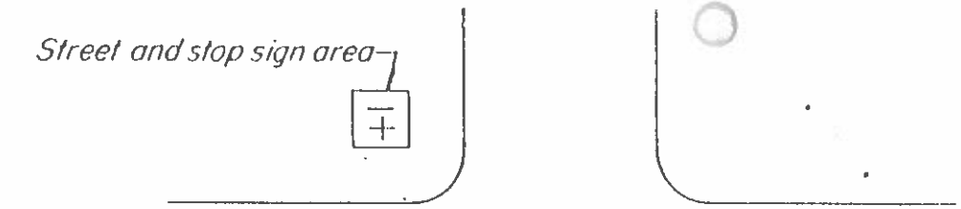
St. Marys County Office of the County Engineer

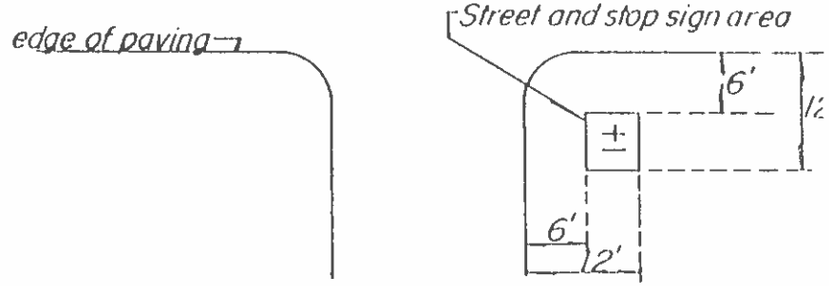
APPROVED
6/10/85
Edward H. Long date
Pres. COMMISSIONERS OF LEONARDTOWN
Gregory Stevens, P.E. Town Engineer

Utility Cuts

R
17







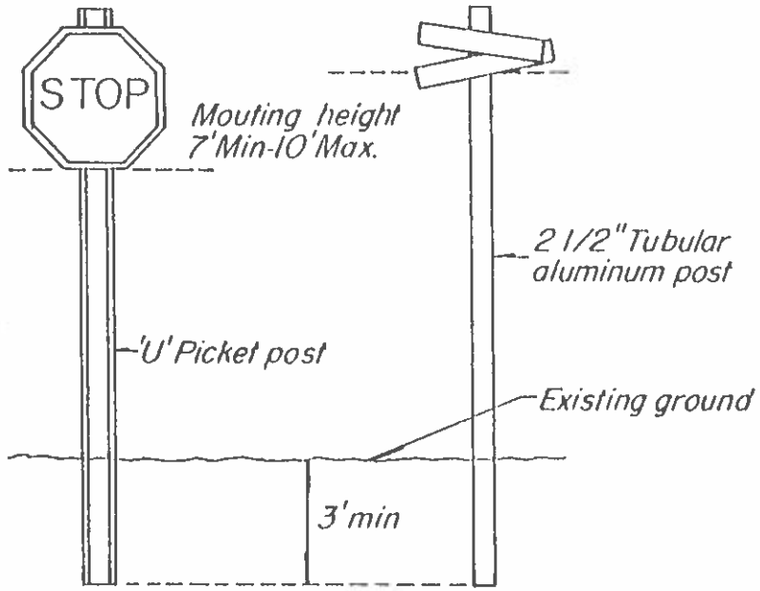
Street name signs to be Grimco model SN-2 or equivalent, embrossed aluminum, beaded legend and border, 4" characters, white letters on green background.

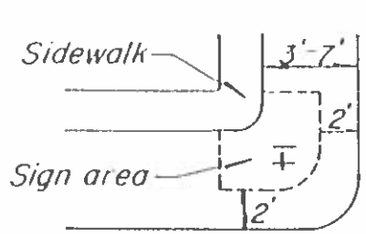
Posts will be 10 LF min., 4"x4" penta treated, placed a minimum of 3' in depth.

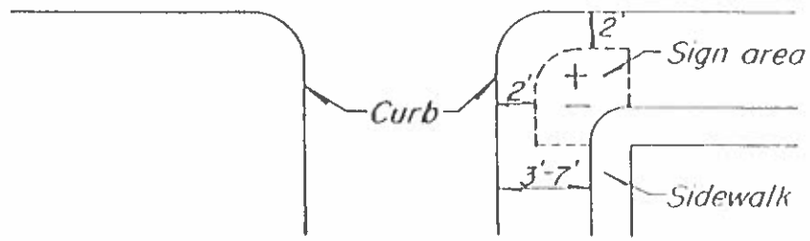
Note:

Location of signs must not obscure any potential traffic hazard. At any location where the typical placement of a sign interferes with a safe sight distance, an alternate location must be found.

DRAWINGS FURNISHED BY:	APPROVED		
St. Marys County Office of the County Engineer	Edward H. Long, Pres., Commissioners of Leonardtown — 6/10/85 date Gregory Stevens, P.E. Town Engineer	Sign Location Rural Road	R 18





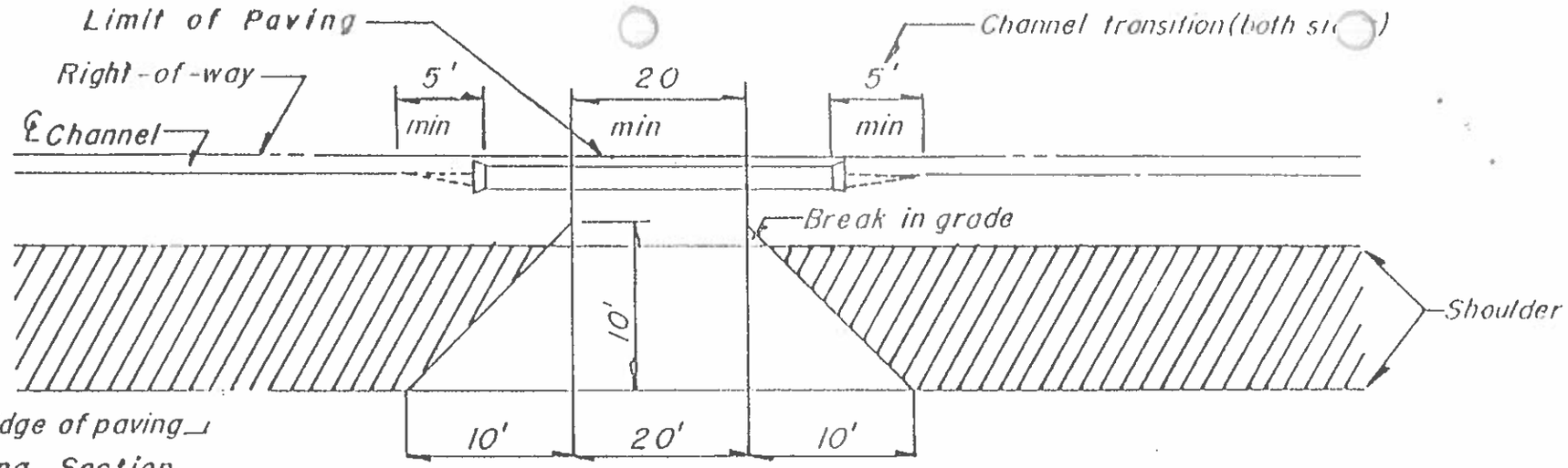


Street name signs to be Grimco model SN-2 or equivalent, embrossed aluminum, beaded legend and border, 4" characters, white letters on green background.

Note:

Location of signs must not obscure any potential traffic hazard. At any location where the typical placement of a sign interferes with a safe sight distance, an alternate location must be found.

DRAWINGS FURNISHED BY:	APPROVED		
St. Marys County Office of the County Engineer	Edward H. Long 6/10/85 Edward H. Long date Pres., Commissioners of Leonardtown Gregory Stevens, P.E. Town Engineer	Sign Location Urban Street	R 19



Plan View

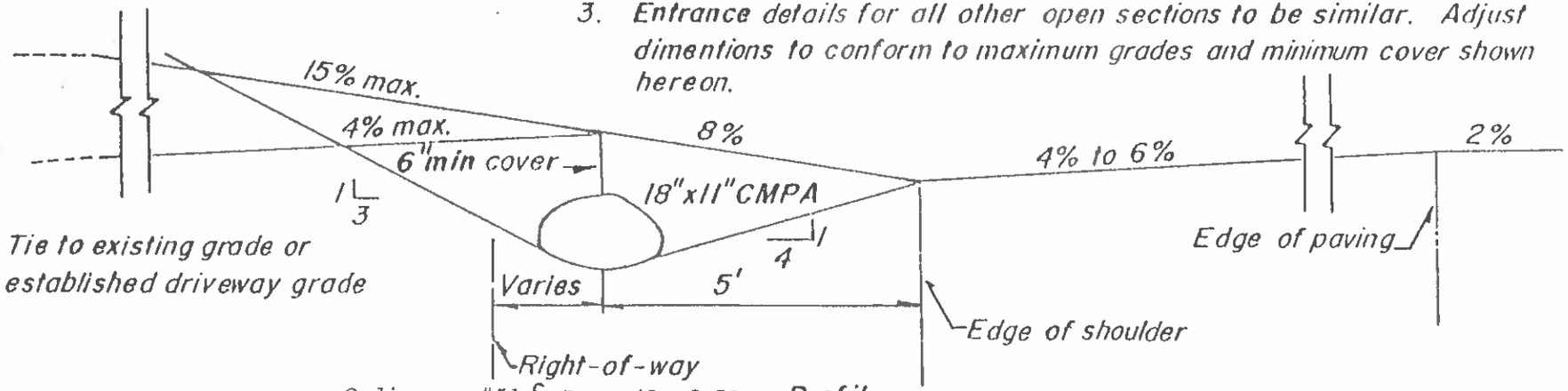
Paving Section

1½" Bit. Conc., Band SN

2½" Bit. Conc., Band BF

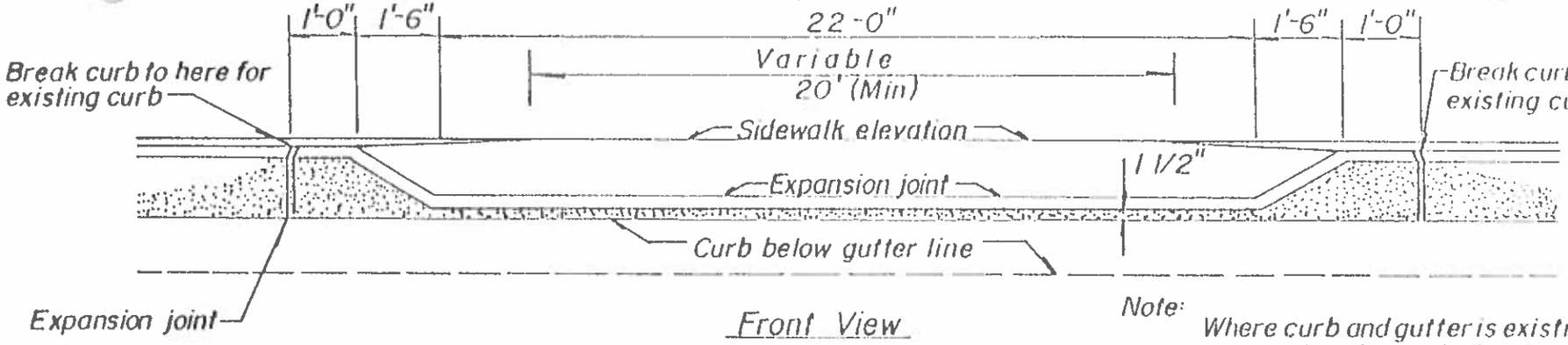
9" Bank Run Gravel

Notes:
1. A minimum of 30 lin. ft. of C.M.P.A. (16 guage minimum) to be installed. (18"x 11" min)
2. Channel protection and velocity dissipators to be provided as required
3. Entrance details for all other open sections to be similar. Adjust dimentions to conform to maximum grades and minimum cover shown hereon.



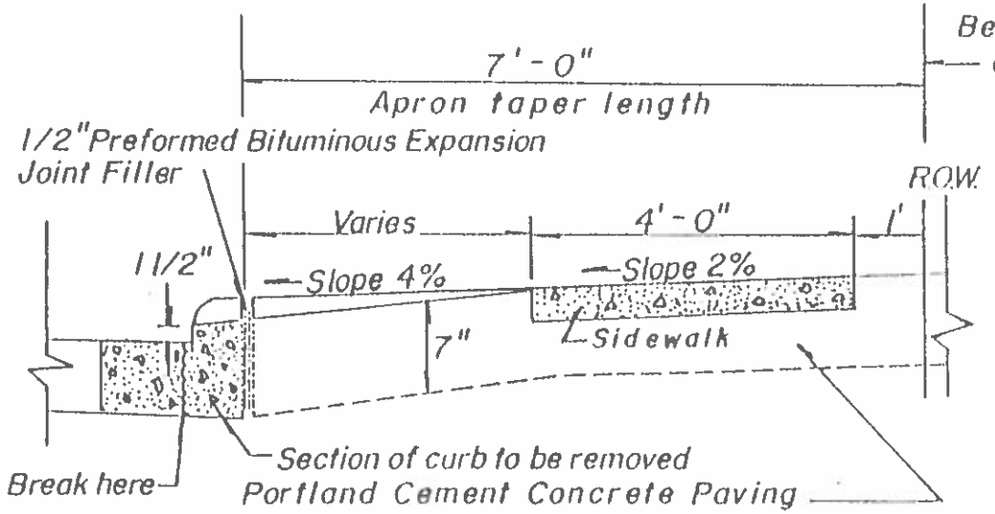
Profile

DRAWINGS FURNISHED BY:	APPROVED		
St Marys County Office of the County Engineer	Edward H. Long 6/10/85 date Pres., Commissioners of Leonardtown Gregory Stevens Gregory Stevens, P.E. Town Engineer	Typical Entrance To Minor Subdivisions	R 20

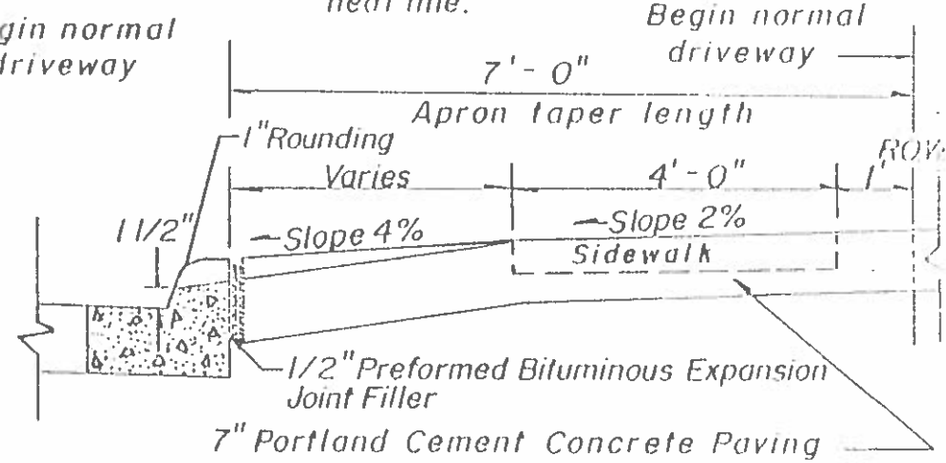


Front View

Note: Where curb and gutter is existing remove to nearest joint beyond this point. If joint is more than 4' beyond, cut existing curb to neat line.



Section-Driveway In Existing Curb



Section-Driveway In New Curb

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St. Marys County Office of the County Engineer

APPROVED

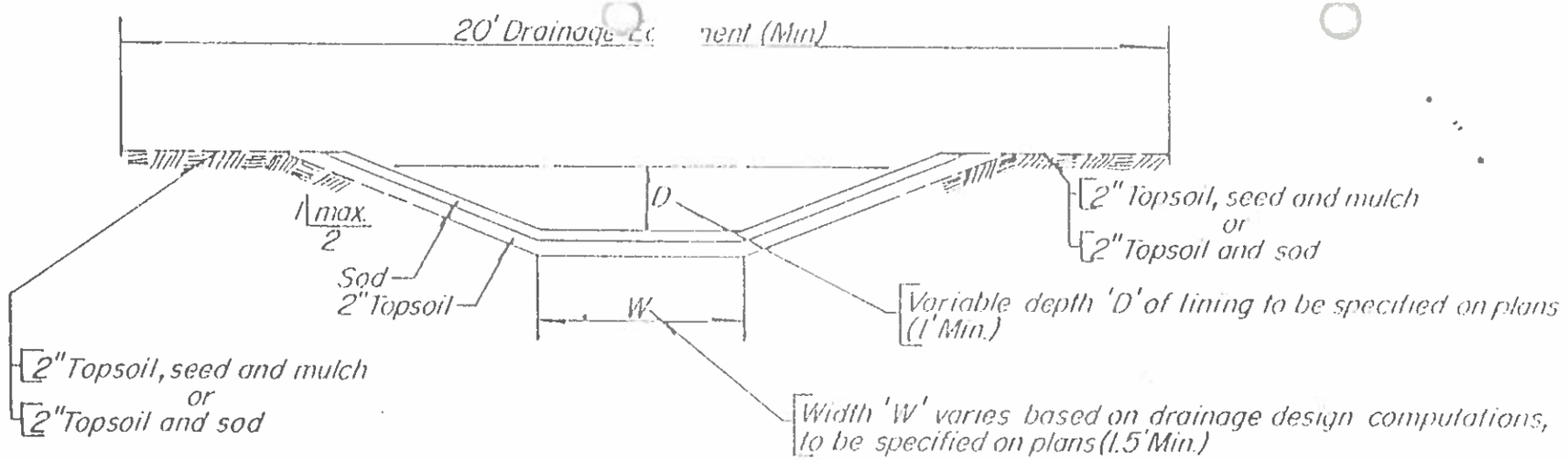
6/10/85

Edward H. Long date
Pres., Commissioners of Leonardtown

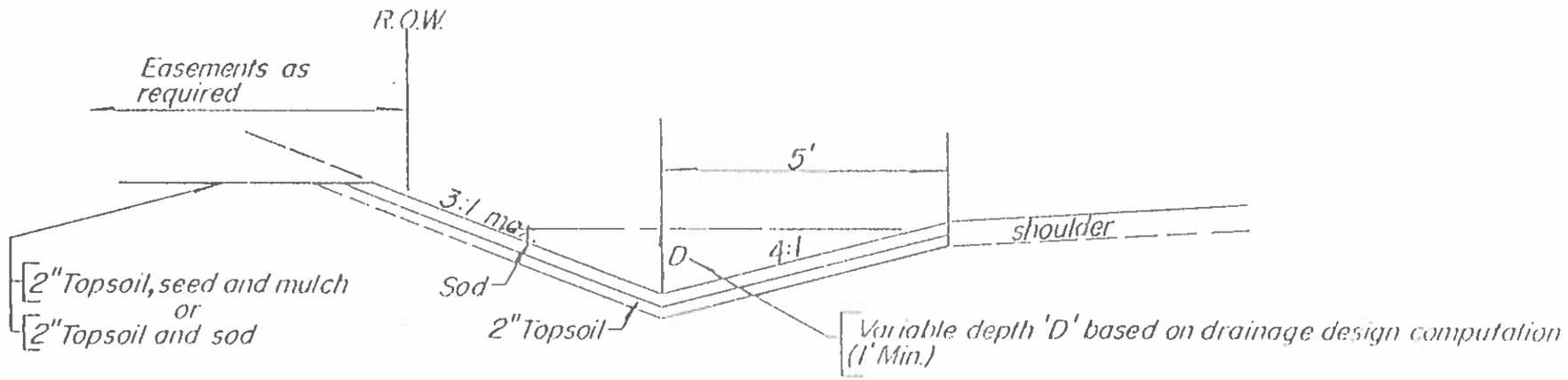
Gregory Stevens, PE, Town Engineer

Multiple Driveway Entrance (Urban)

R-21

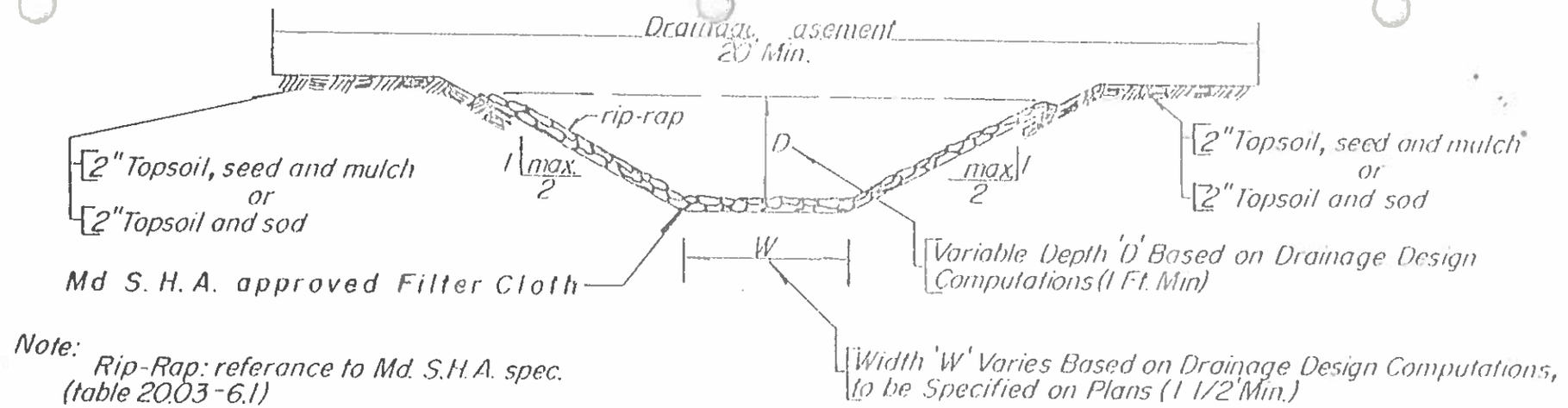


Typical Sod Outfall Channel



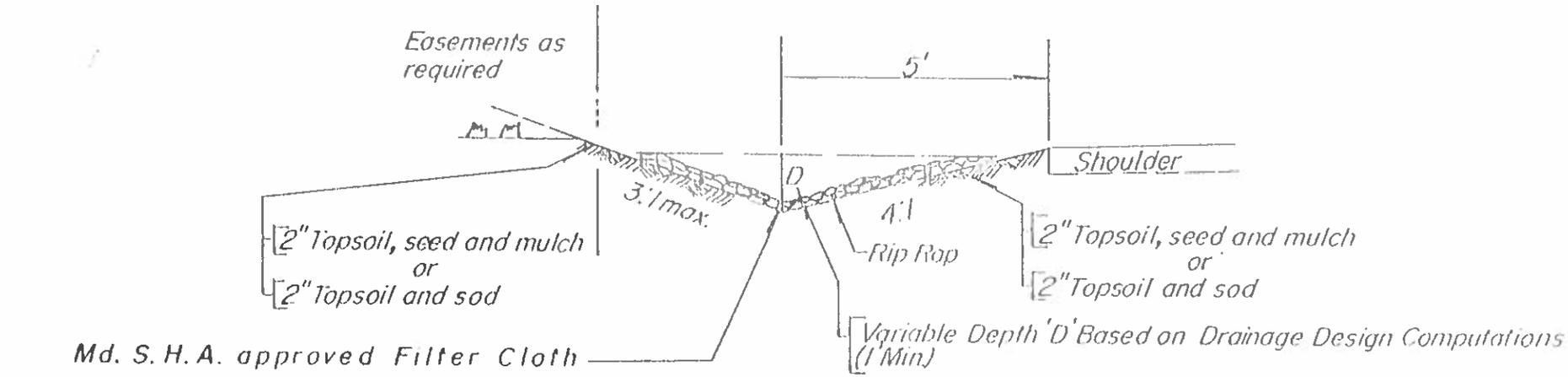
Typical Roadside Sod Ditch

DRAWINGS FURNISHED BY:	APPROVED		
St Marys County Office of the County Engineer	Edward H. Long 6/10/85 date Pres., Commissioners of Leonardtown Gregory Stevens, P.E. County Engineer	Typical Sections Roadside Sod Ditch & Sod Outfall Channel	D 1



Note:
Rip-Rap: reference to Md. S.H.A. spec. (table 20.03-6.1)

Typical Rip Rap Outfall Channel



Typical Rip Rap Ditch

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St Marys County
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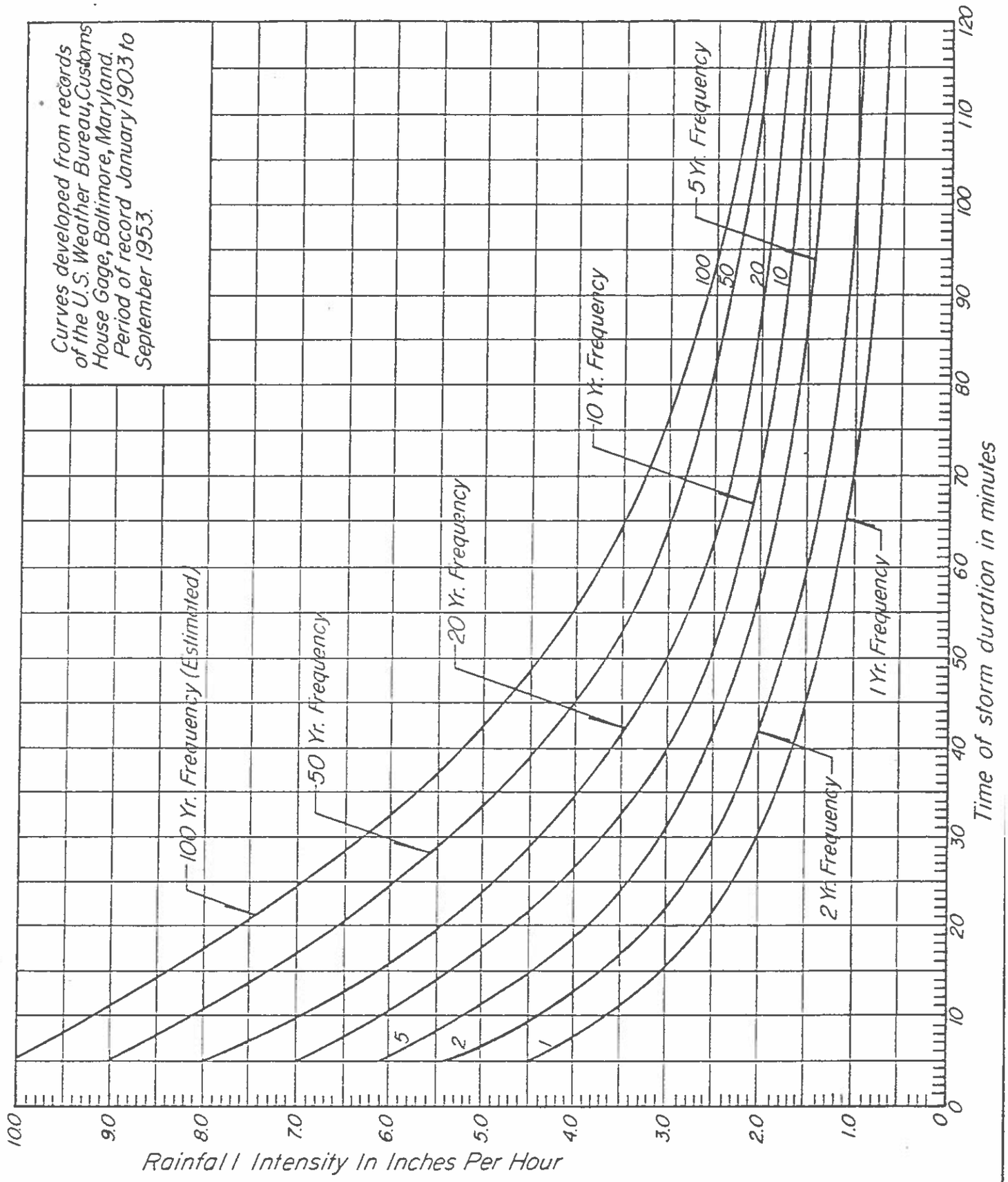
County Engineer

approved
6/10/85
Edward H. Long date
Pres., Commissioners of Leonardtown
Gregory Stevens, P.E. Town Engineer

Typical Sections
Rip Rap Ditch
&
Outfall Channel

D
2



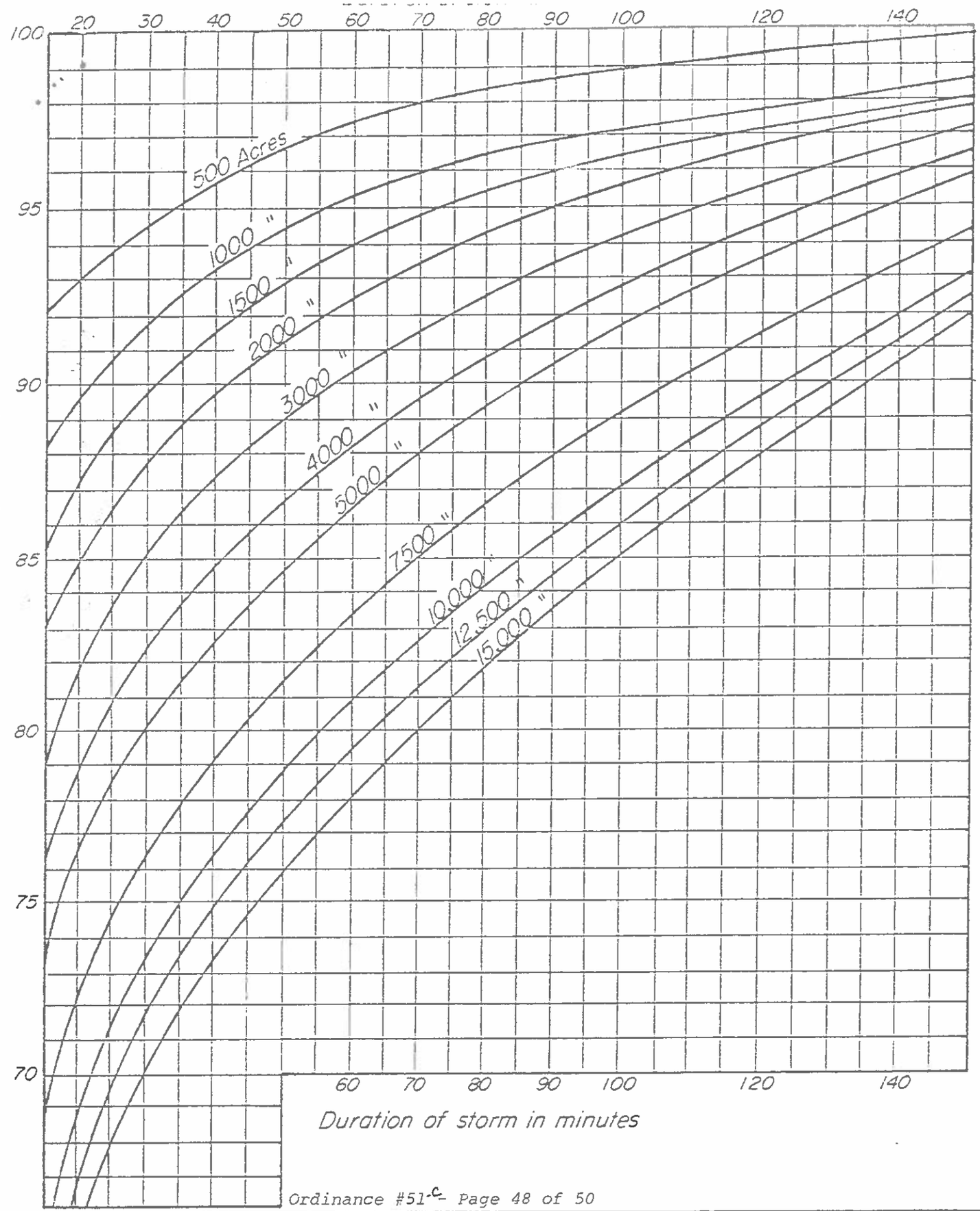
DRAWING FURNISHED BY.
St. Marys County
Office of the
County Engineer

APPROVED
Edward H. Long 6/10/85
Edward H. Long date
Pres. Commissioners of Leonardtown
Gregory Stevens
Gregory, Stevens, P.E. Town Engineer

Rainfall Intensity Chart

Revised:

D
3



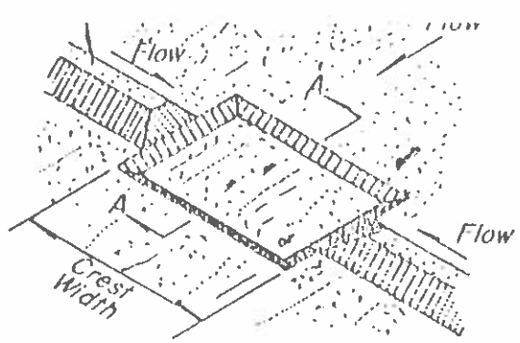
DRAWING FURNISHED BY:
St. Marys County
Office of the
County Engineer

APPROVED
6/10/85
Edward H. Long date
Pres. Leonardtown Commissioners
Gregory Stevens, P.E. Town Engineer

Rainfall Intensity Chart
500-15,000 Ac.

Revised:

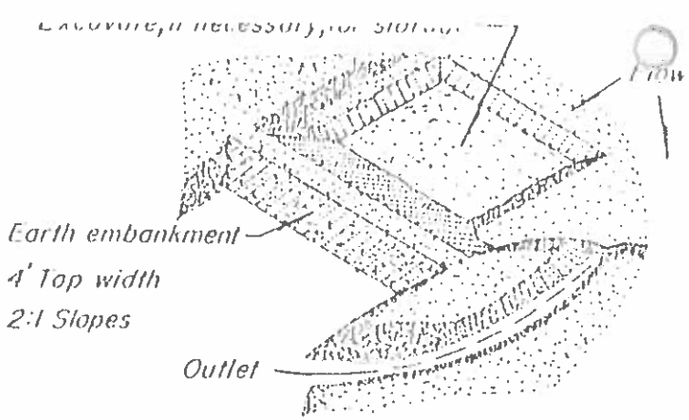
D
4



Dike if required to divert water to trap

Section A-A

Excavated Earth Outlet Sediment Trap



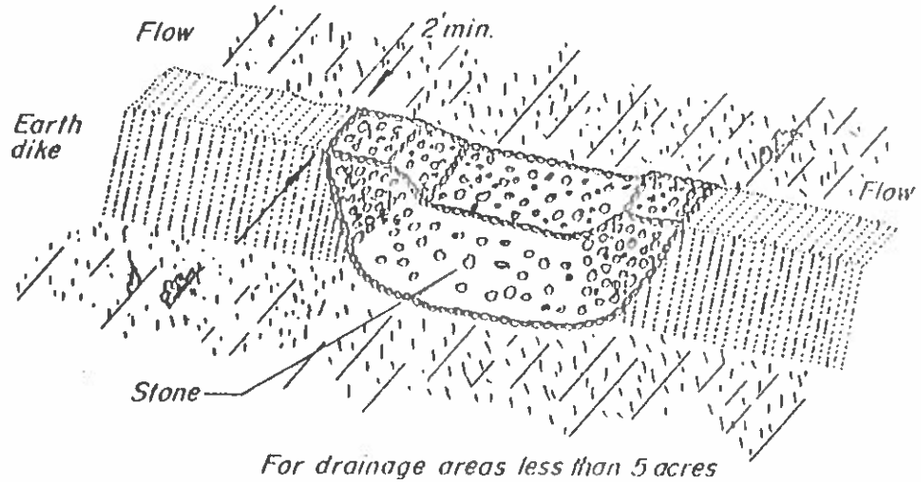
Width (ft.)=
6x Drainage Area (Acres)
Outlet Section

Embankment Earth Outlet Sediment Trap

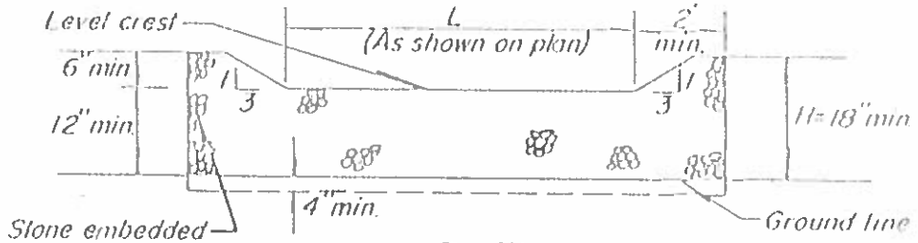
Construction Specifications

1. Area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots or other woody vegetation as well as oversized stones, rocks, organic material, or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.
3. Sediment shall be removed and traps restored to their original dimensions when the sediment has accumulated to 1/2 the design depth of the traps. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
4. The structure shall be inspected after each rain and repairs made as needed.
5. Construction operations shall be carried out in such a manner that erosion and water pollution are minimized.
6. The structure shall be removed and area stabilized when the drainage area has been properly stabilized.
7. All cut and fill slopes shall be 2:1 or flatter.
8. Outlet crest elevation shall be at least one foot below the top of the embankment.

DRAWINGS FURNISHED BY:	APPROVED		Revised:	
St. Marys County Office of the County Engineer	Edward H. Long, Pres., Leonardtown Commissioners — 6/10/85 (date) Gregory Stevens, P.E., Town Engineer	Earth Outlet Sediment Trap		SC 1



For drainage areas less than 5 acres



Profile

Construction Specifications

1. The stone shall be crushed stone. Gravel may be used if crushed stone is not available. The stone shall meet MSHA Size No. 2 or AASHTO designation M43 Size No. 2 or 24
2. The crest of the stone dike shall be at least 6" lower than the lowest elevation of the top of the earth dike and shall be level.
3. The stone outlet structure shall be embedded into the soil a minimum of 4".
4. The minimum length, in feet, of the crest of the stone outlet structure shall be equal to six times the number of acres of contributing drainage area.
5. The stone outlet structure shall be inspected after each rain, and the stone shall be replaced when the structure ceases to function as intended due to silt accumulation among the stone, washout, construction traffic damage, ect.

DRAWINGS FURNISHED BY:	APPROVED		Revised:	
St Marys County Office of the County Engineer	6/10/86 Edward H. Long date Pres., Leonardtown Commissioners Gregory Stevens, P.E. Town Engineer	Stone Outlet Structure		SC 2

LEONARDTOWN
SPECIFICATIONS AND STANDARDS
FOR HIGHWAY AND STREET CONSTRUCTION

1.0 PURPOSE

The purpose of these Specifications is to establish Design Criteria and Specifications for the planning, construction, improvement, maintenance, and repair of public roads, including sidewalks, curbs and gutters, and storm drainage facilities.

2.0 INTERPRETATION OF STANDARDS

The provisions of these Specifications in their interpretation and application shall be construed as minimum requirements. Should any requirements of these Specifications be found to be in conflict with those imposed by other provisions of law, the more restrictive or higher standards shall prevail.

3.0 APPLICABLE DOCUMENTS

3.1 The following publications shall be referred to as necessary in the design of Leonardtown Roads.

3.1-1 Leonardtown Zoning Ordinance

3.1-2 Leonardtown Subdivision Regulations

3.1-3 Sedimentation Control Ordinance for St. Mary's County adopted July 1, 1971, as amended.

3.1-4 Highway Drainage Manual, Maryland Department of Transportation, State Highway Administration, December 1981, as amended (for design of open drainage systems.)

3.1-5 County of Anne Arundel, Design Manual, July 1972; as amended (for design of closed drainage systems.)

3.1-6 Maryland State Highway Administration; Standard Specifications for Construction Materials, Maryland Department of Transportation, State Highway Administration, January, 1982, as amended (for construction methods and materials.)

3.1-7 Maryland State Highway Administration; Book of Standards, January

1970, as amended (for construction detail.)

3.1-8 Maryland State Highway Administration; Rules and Regulations for Commercial, Subdivision, Industrial and Residential Entrances to State Highways, 1975, as amended.

3.1-9 "A Policy on Geometric Design of Rural Highways" by the American Association of State Highway Transportation Officials (AASHTO).

3.1-10 "A Policy on Design of Urban Highways and Arterial Streets"(AASHTO).

3.1-11 Highway Capacity Manual - Highway Research Board Special Report 87, prepared by the National Academy of Sciences, National Research Council Publications 1328.

3.1-12 Manual on Uniform Traffic Control Devices for Streets and Highways, U.S. Department of Transportation, Federal Highway Administration.

3.2 If a conflict should exist between these Specifications and the provisions of other Leonardtown Ordinances and Regulations, the highest standards shall apply.

4.0 DESIGN SPECIFICATIONS AND STANDARDS

4.1 General

4.1-1 No construction (i.e. grading, etc.) or the installation of utilities will be permitted in the bed of any proposed street until the street grade has been officially established, plat of same approved by the Engineer, and a road construction permit is obtained.

4.1-2 All land within the right-of-way and all construction easements (slope, drainage, etc.) shall be graded and stabilized using methods and materials which will insure stabilization and practicality of maintenance. Methods and materials shall be specified.

4.2 Street Classification

4.2-1 Design standards are hereby issued for the following functional classifications of streets and correspond to those classifications presented

in the plates contained herein.

(A) Place - a cul-de-sac or street, the primary purpose of which is to provide access to and from adjacent dwellings to a higher functional type street. Occasionally, a place will connect with two or three small places. Places do not accommodate through traffic movement.

(B) Alley - a narrow roadway for access to the area of commercial, multi-family or industrial structures.

(C) Minor Local - provides access to places and conducts traffic to a higher functional type street.

(D) Major Local - a street which, in addition to providing access to properties abutting thereon, carries traffic to an activity center or higher classification street. It may be a loop street or may link local and/or collector streets.

(E) Minor Collector - a principal traffic artery within residential areas which may provide routes to local facilities, serves as the main entrance to a sizeable development, or a combination of developments.

(F) Arterials - higher functional type streets, i.e., not meeting functional definitions herein specified, shall meet requirements set by the Engineer with consideration of the Leonardtown Master Plan, Maryland D.O.T. Standards, accepted design manuals, and transportation-traffic requirements projected for the site and area in question.

4.2-2 Rural vs Urban Classifications

(A) Rural - a residential development density of one (1) dwelling or less per acre shall be referred to within these Specifications and Standards as Rural

(B) Urban - a residential development density exceeding one (1) dwelling per acre shall be referred to as Urban.

4.3 Roadway Typical Section

4.3-1 Soil Conditions: Standards for construction of pavement sections as set forth herein are based upon a minimum subgrade value of CBR 5, (California Bearing Ratio). Where the subgrade is less than CBR 5, reinforcing of sections will be required as directed by the Engineer.

4.3-2 Paved driving surfaces shall be crowned with a pitch from centerline of pavement of 1/4" to 1' (2%). Gravel shoulders shall be graded to a pitch of 1/2" to 1' (4%), from edge of pavement to edge of shoulder. Turf shoulders shall be graded to a pitch of 3/4" to 1' (6%).

4.3-3 Sidewalks shall be provided along all streets within urban areas. Within rural communities, sidewalks shall be required along those streets used for pedestrian access to schools, parks, and shopping areas.

4.3-3-1 Where a pedestrian walkway system will be superior to traditional sidewalks in terms of safety, accessibility to all lots in the development, and physical design factors; a pedestrian walkway system may be approved.

4.3-4 Typical Street Sections and Road Design Standards as depicted on plates contained herein are to complied with in the design and construction of streets. Any need to modify these typical sections shall be authorized upon the recommendation of the Engineer and the approval of the Commissioners of Leonardtown.

4.4 Horizontal Alignment (Curvature)

4.4-1 The minimum stopping sight distance for the various functional classifications of streets shall be as depicted on tables contained herein.

4.4-2 Curves shall have sufficient length to provide a smooth flowing alignment where possible (200 to 300 feet minimum).

4.4-3 Horizontal curve data shall be computed by the arc definition of a circular curve.

4.4-4 A tangent length of at least 100' shall be used between reverse

curves except in unusual situations.

4.4-5 Tangents should not be introduced between two curves in the same direction unless the length of the tangent is greater than 500'.

4.5 Vertical Alignment (Grade)

4.5-1 The maximum grade of streets shall be as indicated on tables contained herein.

4.5-2 The minimum grade along rural streets shall be three quarters percent, (0.75%), and one-half percent (0.50%) along urban streets.

4.5-3 Vertical curve lengths shall be designed to provide at least the minimum stopping sight distance required for the road design speed. Crest vertical curves shall be designed for a minimum design speed of 30 MPH.

4.5-4 Vertical curves shall be used in changes of grade exceeding one percent, (1%), minimum length of vertical curves shall be one hundred (100'), grade breaks are to be shown on profile and high points to be shown in plan.

4.6 Street Intersections

4.6-1 "Standards for Street Intersections" are depicted on plates contained herein.

4.6-2 Right angle intersections shall be used whenever practical. No street shall intersect any other street at less than a seventy-five degree (75) angle.

4.6-3 Minimum stopping sight distance shall be provided at all intersections. No proposed street shall be permitted to intersect an existing County road at a location that would result in undue interference with or hazard to the free movement of normal traffic.

4.6-4 Approach grades to all street intersections shall be given careful considerations. The grade of the preference street shall be continued through the intersection and the approach leveling area of at least 75 feet (measured from the intersection of the centerlines) within which the grade shall not exceed a maximum of four percent (4%). In cases where the intersection involves collector or arterial type streets, the design criteria established by the State Highway Administration and contained in the Rules and Regulations for Commercial, Subdivisions, Industrial, and Residential Entrances shall apply.

4.6-5 Acceleration, deceleration, channelization, and bypass lanes at an entrance to or within a proposed development may be required. The necessity for such shall be based upon the ultimate size of the proposed development, and the potential function of the streets and roads.

4.6-6 Streets shall not normally intersect roads classified as minor collector at intervals less then 750 feet.

4.7 Superelevation

4.7-1 Horizontal curves of streets in subdivisions or commercial and industrial developments shall not normally be superelevated.

4.7-2 The maximum rate of superelevation for streets shall be six percent (6%).

4.7-3 Superelevated pavements shall be rotated around the centerline, except where this procedure would adversely affect adequate storm drainage design.

4.7-4 Normally two-thirds of the superelevation transition is accomplished on the tangent. The Design Engineer shall provide the necessary superelevation tables.

4.8 Cul-de-sacs and Tee Turn-Arounds

4.8-1 Permanent dead-end streets shall have a cul-de-sac constructed as shown on plates contained herein.

4.8-2 Temporary dead-end streets shall have a tee

turn-around constructed in place of a cul-de-sac.

4.9 Entrances and Driveways

4.9-1 Driveways shall be constructed in accordance with plates entitled "Typical Driveway Section" as minimum requirements.

4.9-2 Commercial and Industrial entrances shall be constructed in accordance with State Highway Administration practices or as shown on plate(s) contained herein.

4.10 Curbs, Gutters, and Islands

4.10-1 Where required concrete curb and gutter shall conform to the standards shown on plates contained herein.

4.10-2 The minimum grade of a concrete gutter shall be one half of one percent (0.5%).

4.10-3 All islands must be concrete curbed. The pitch of the gutter plan may be reversed for drainage purposes, such as with a superelevation section or the high side of a crown section at the median island.

4.10-4 Minimum curb tangent length between entrances and property lines shall be five (5) feet.

4.10-5 Minimum curb radius rounding shall be two and one half (2 1/2) feet.

4.10-6 Valley gutters shall be used only where approved, but will normally be permitted where no more than 2 cfs flows across an intersection.

4.11 Cross Sections and Quantities

4.11-1 When required, cross sections shall be taken at least every 50' and at all noticeable terrain breaks. The centerline and profile grade line shall be stationed correspondingly.

4.11-2 The Design Engineer shall provide quantity and construction cost estimates. These estimates shall include all quantities for grading, paving, curb and gutter, etc., and shall be tabulated as directed.

4.12 Street and Traffic Control

Street name signs and traffic control signs shall be installed by the developer as directed by the *Town Engineer*. Installation shall be in accordance with the "Manual on Uniform Traffic Control Devices" as currently amended and the plates contained herein. Street name signs and appropriate traffic control signs must be installed prior to the issuance of a Certificate of Occupancy for any lot on that street.

4.13 Guard Railings

4.13-1 Guard railing shall be erected on roadways at points of extreme hazard to a vehicle leaving the travelled portion of the traffic way. Generally, this potential hazard develops at fills over eight (8') feet in vertical depth from the edge of the shoulder to the toe of the slope when the slope ratio is steeper than 4 to 1.

4.13-2 Guard railing shall be placed as shown on the plates depicted Typical Roadway Sections.

4.13-3 Where roadway construction ends in fill areas, guardrail W beam barricades shall be erected.

4.14 Shoulders

Where shoulders and open drainage sections are applicable, the shoulder section shall be as shown in the plates depicting Typical Sections.

5.0 CONSTRUCTION SPECIFICATIONS

5.1 General

5.1-1 All material specifications, methods of construction, and methods of measurements shall be in accordance with the "Standard Specifications for Construction Materials", Maryland Department of Transportation, State Highway Administration, January, 1982, as amended.

5.1-2 If in the event an item(s) proposed to be constructed is not contained in the State Highway Administration specifications, the Design Engineer shall submit special provisions to the *Town Engineer* for approval.

6.0 STORM DRAINAGE

6.1 General

6.1-1 Storm water runoff is to be collected and conveyed in closed conduit systems (inlets, pipes and connectors) and open channel systems (ditches, streams, culverts, rivers, improved open channels).

6.1-2 Existing storm drainage systems which are considered inadequate to accommodate the proposed development must be improved prior to development.

6.1-3 Changes to the limits of natural drainage basins are prohibited and in general, runoff after development shall drain to the same outfall as before development.

6.2 Methods of Computation

6.2-1 In the design of a storm drainage system, the present runoff and future runoff from the development and from the area draining thereto shall be determined on the basis of full development of the watershed in accordance with current zoning for the area. A Registered Professional Engineer or Land Surveyor, as appropriate, shall design the storm water system and certify that the system is adequate to collect and convey storm water runoff from the development and any area contributing thereto, and shall attest to the effects of the storm water runoff to neighboring lands. The following data shall be submitted:

(A) A map at a scale not smaller than one inch equals two thousand feet or as otherwise specified, outlining the entire drainage area that contributes to the water courses which pass through the development. Also, a drainage area map at a scale of 1" = 200' or larger showing the areas draining to each element of the proposed storm drain systems of the development.

(B) A plan showing the facilities to be provided along with flow data and computations developed in the design and the tentative layout of the drainage facilities.

(C) Runoff calculations and assumptions shall be provided in acceptable format for both closed and open systems, giving area, size, quantity, velocity, slope and depth of flows and hydraulic gradient.

6.2-2 The rational method shall, unless otherwise approved, be used to determine quantities of storm water runoff. Normally, the 10 year frequency storm shall be used in the design for storm drainage. The time of concentrations and runoff co-efficients shall be determined in accordance with accepted practice and shall be based upon established sources considering topographic and ground cover conditions.

6.2-3 The minimum size of any culvert or storm drain shall be 18" x11" or an equivalent size pipe.

6.2-4 Storm drains crossing water mains and sanitary sewers shall be constructed with a minimum clearance of twelve (12) inches. Clearance shall be measured between outsides of pipes. A minimum of six (6) inches base material shall be between a storm drain pipe and the surface material in a private driveway, and at least twelve (12) inches in a public street or roadway.

6.3 Closed Storm Water Runoff Systems

6.3-1 Closed Runoff Systems shall generally be required where curb and gutter (urban) street sections are required.

(A) Wherever possible existing natural drainageways shall be preserved as a supplementary element to closed drainage systems. In all cases, closed systems shall discharge into existing natural drainageways as soon as is practical.

(B) Where, as a function of net development densities, closed drainage systems are not essential to serve portions of developments dedicated to permanent open space or portions developed at densities less than one (1) dwelling unit per acre, the use of existing natural or open ditch drainageway systems may be approved. This recommendation and approval shall be based upon findings that:

(a) Urban design solutions are not appropriate.

(b) Open system design is adequate considering existing and projected topographic and ground coverage conditions.

6.3-2 Closed systems shall be designed to carry 10 year frequency storms provided that surcharge overflow from 20 year storms can be carried without damage in public streets, allies, and rights-of-way to a suitable outfall. In sumps and other critical areas where overflow is not permissible, 20 year flows shall govern. The easement or "fee simple" right-of-way required shall extend at least five (5) feet beyond the outside limits of the pipe and shall in no case be less then twenty (20) feet in width.

6.4 Open Runoff Systems

6.4-1 Where development density is equivalent to one dwelling unit or less per acre, and the existing or modified natural channels can safely handle storm water runoff, an open system utilizing drainage ditches, culverts, and natural channels may be utilized. In certain cases, where quantity of flow, topographic, soil or natural channel conditions preclude open systems, then the system shall be fully or partially enclosed as required.

6.4-2 Normally open ditch and culvert systems shall be designed for a 10 year frequency storm; culverts in excess of 24" in diameter for a minimum 25 year storm.

6.4-3 For flood plains, bridges, major structures, stream channels, etc., the deisgn criteria shall be established individually.

6.4-4 Roadside drainage shall not be disrupted by private driveways. A minimum 18" x 11" corrugated metal pipe (arch type) is required to permit the free flow of water at those points where a driveway intersects the roadside drainageway. When a paved driveway is located near the crest of a vertical curve, valley gutters may be provided as approved.

6.4-5 The shape and length of culverts, and the grading of culvert inlets and outlets shall be designed to facilitate periodic maintenance to remove obstruction.

6.4-6 Where a development is traversed by a natural drainage course or stream, there shall be provided a drainage easement, a minimum of fifty (50) feet in width, conforming substantially with the line of such watercourse for the purpose of maintaining, improving, or protecting such drainage facilities. This easement area shall be designed to the 100 year flood plain level.

LIST OF TABLES

NO.	TITLE
1	Minimum Rural Road Design Standards
2	Minimum Urban Road Design Standards

MINIMUM URBAN ROAD DESIGN STANDARDS

ROADWAY CLASSIFICATION	NUMBER OF LOTS SERVED	ROW (FT.)	DESIGN STOPPING SIGHT DISTANCE (FT.)	SPEED LIMIT (MPH)	MINIMUM HORIZONTAL RADIUS (FT.)	MAXIMUM VERTICAL GRADE (%)	ACCESS CONTROL REQUIRED
PLACE	1-30	45	150	20	175	8	ENTRANCE PERMIT
MINOR LOCAL	31-75	50	200	25	290	8	
MAJOR LOCAL	76-150	60	200	25/30	430	8	
MINOR COLLECTOR	151-350	60	250	30/35	600	8	

LOT TO BE INTERPRETED AS DWELLING UNIT

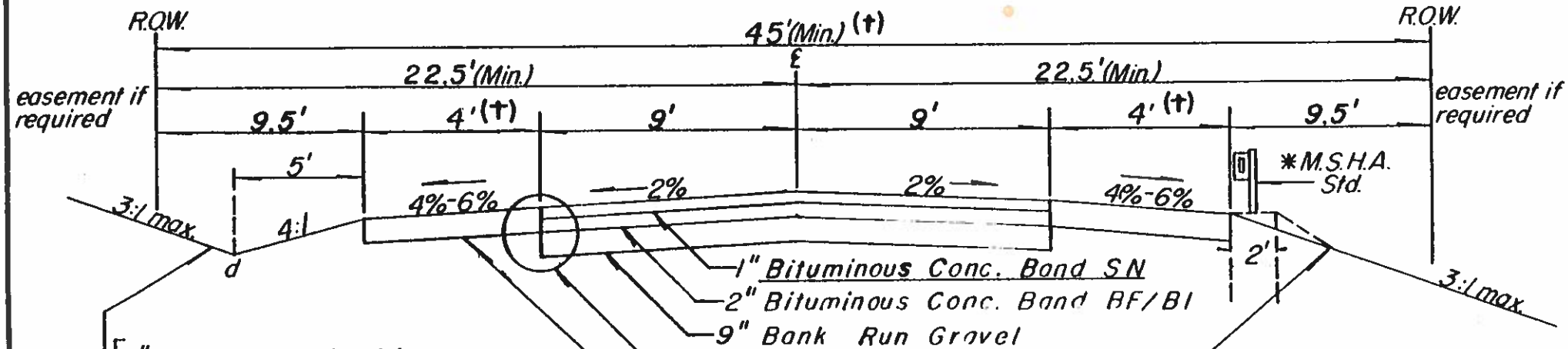
TABLE 2

Revised 3/8/83

Ditch lining (d) determined by velocity (fps)
Seed ——— V < 2.5
Sod ——— 2.5 ≤ V < 4.0
Concrete or Rip-rap ——— 4.0 ≤ V

* Guard rail – With fills 15' or greater in height or fills of 8' or more with slopes steeper than 4:1.

Typical easement – 2" topsoil, seed and mulch or topsoil and sod.



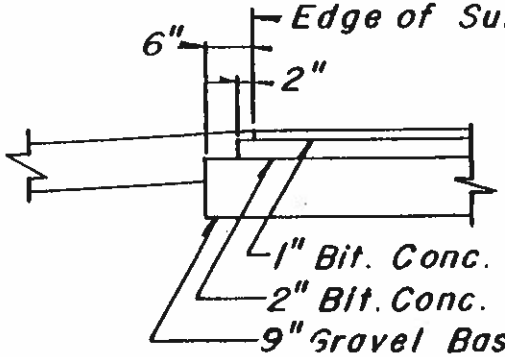
2" Topsoil, seed and mulch
or
2" Topsoil and sod

2" Topsoil, seed and mulch on grades less than 5%. or 6" bank run gravel
or
2" Topsoil and sod on grades 5% or greater.
or
6" Gravel base with double bituminous surface treatment on grades of 5% or greater.

Shoulder Slope 6% seed or sod or gravel
4% Bituminous

Note: Tack Coat required between paving layers at rate of 0.05 - 0.10 gal./s.y.

2" Topsoil, seed and mulch
or
2" Topsoil and sod



Typical Shoulder Detail

Note (†): Shoulder widths may be reduced to Two (2) feet for Cul-de-sac streets that serve Seven (7) lots or less, and R.O.W. width may be reduced to Forty (40) feet.

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APPROVED
Edward H. Long 6/10/85
Edward H. Long date
Pres., Commissioners of Leonardtown
Gregory Stevens
Gregory Stevens, P.E. Town Engineer

Typical Section Rural Street Place

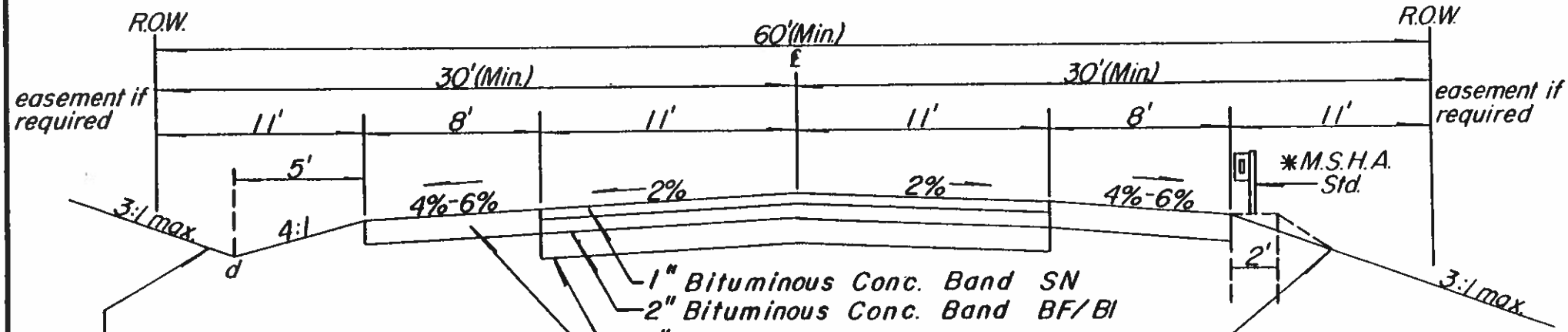
Revised
11-1-79
5-1-85
12-24-85

R/1

Ditch lining (d) determined by velocity (fps)
Seed —— V < 2.5
Sod —— 2.5 ≤ V < 4.0
Concrete or Rip-rap —— 4.0 ≤ V

* Guard rail - With fills 15 or greater in height or fills of 8' or more with slopes steeper than 4:1.

Typical easement - 2" topsoil, seed and mulch or topsoil and sod.



1" Bituminous Conc. Band SN
2" Bituminous Conc. Band BF/Bl
9" Bank Run Gravel

2" Topsoil, seed and mulch
or
2" Topsoil and sod

Note: Tack coat required between asphalt courses at a rate of 0.05-0.10 gal./square yard

2" Topsoil, seed and mulch on grades less than 5%. or 6" bank run gravel
or
2" Topsoil and sod on grades 5% or greater.
or
6" Gravel base with double bituminous surface treatment on grades of 5% or greater.

Shoulder Slope 6% seed or sod or gravel
4% Bituminous

2" Topsoil, seed and mulch
or
2" Topsoil and sod

See Sheet R/1 for Typical Shoulder Details

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Gregory Stevens, P.E. Town Engineer

Typical Section
Rural Street
Major Local

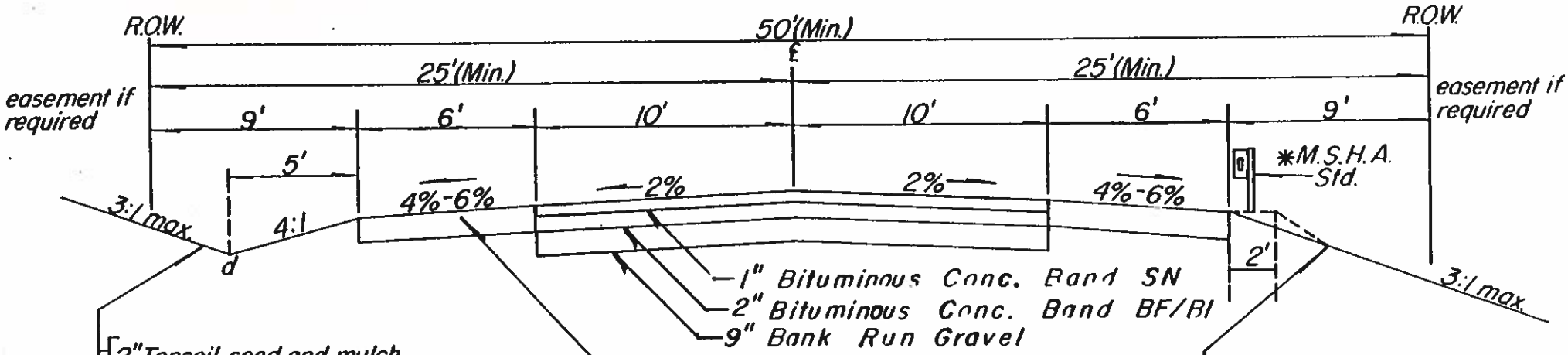
Revised
11-1-79
11-1-80
5-6-83

R/3

Ditch lining (if required) determined by velocity (fps)
Seed —— $V < 2.5$
Sod —— $2.5 \leq V < 4.0$
Concrete or Rip-rap —— $4.0 \leq V$

* Guard rail - With fills 15' or greater in height or fills of 8' or more with slopes steeper than 4:1.

Typical easement - 2" topsoil, seed and mulch or topsoil and sod.



2" Topsoil, seed and mulch
or
2" Topsoil and sod

Note: Tack coat required between asphalt courses at rate of 0.05 - 0.10 gal. / square yard

2" Topsoil, seed and mulch on grades less than 5%. or 6" bank run gravel
or
2" Topsoil and sod on grades 5% or greater.
or
6" Gravel base with double bituminous surface treatment on grades of 5% or greater.

Shoulder Slope 6% seed or sod or gravel
4% Bituminous

2" Topsoil, seed and mulch
or
2" Topsoil and sod

See Sheet R/1 for Typical Shoulder Detail

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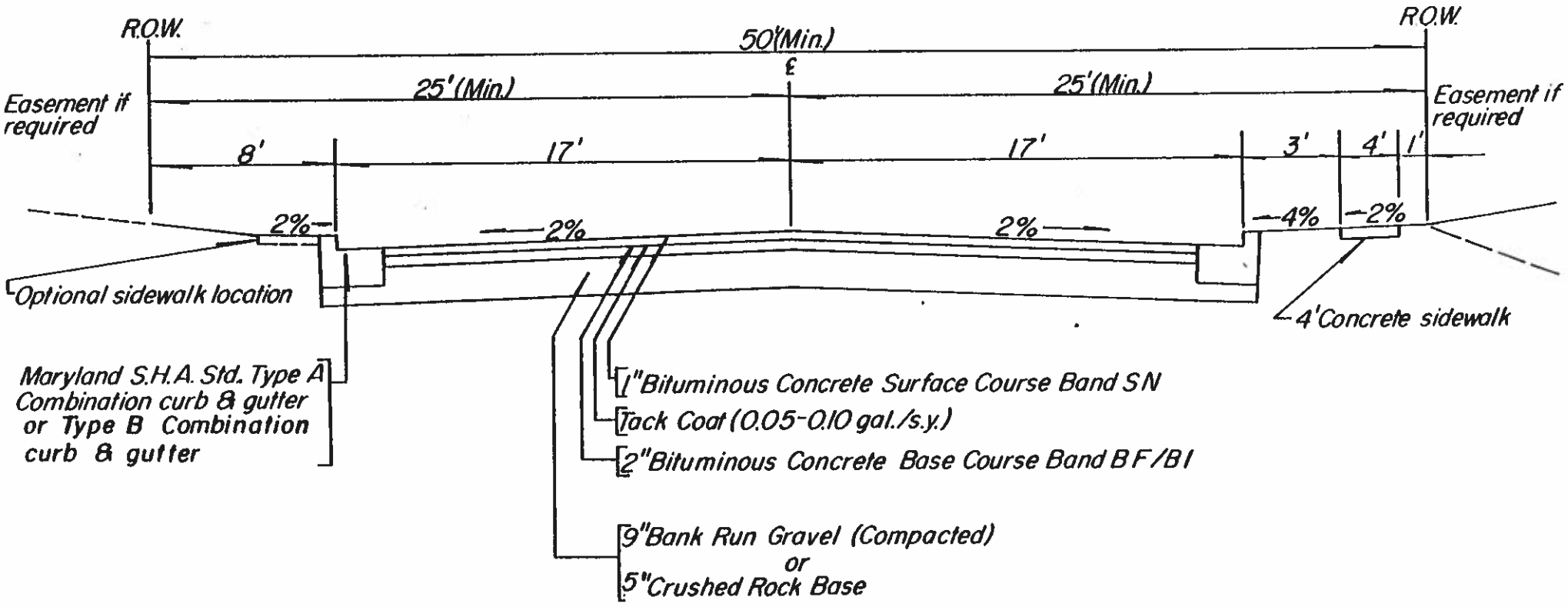
Gregory Stevens, P.E. Town Engineer

Typical Section Rural Street Minor Local

R/2



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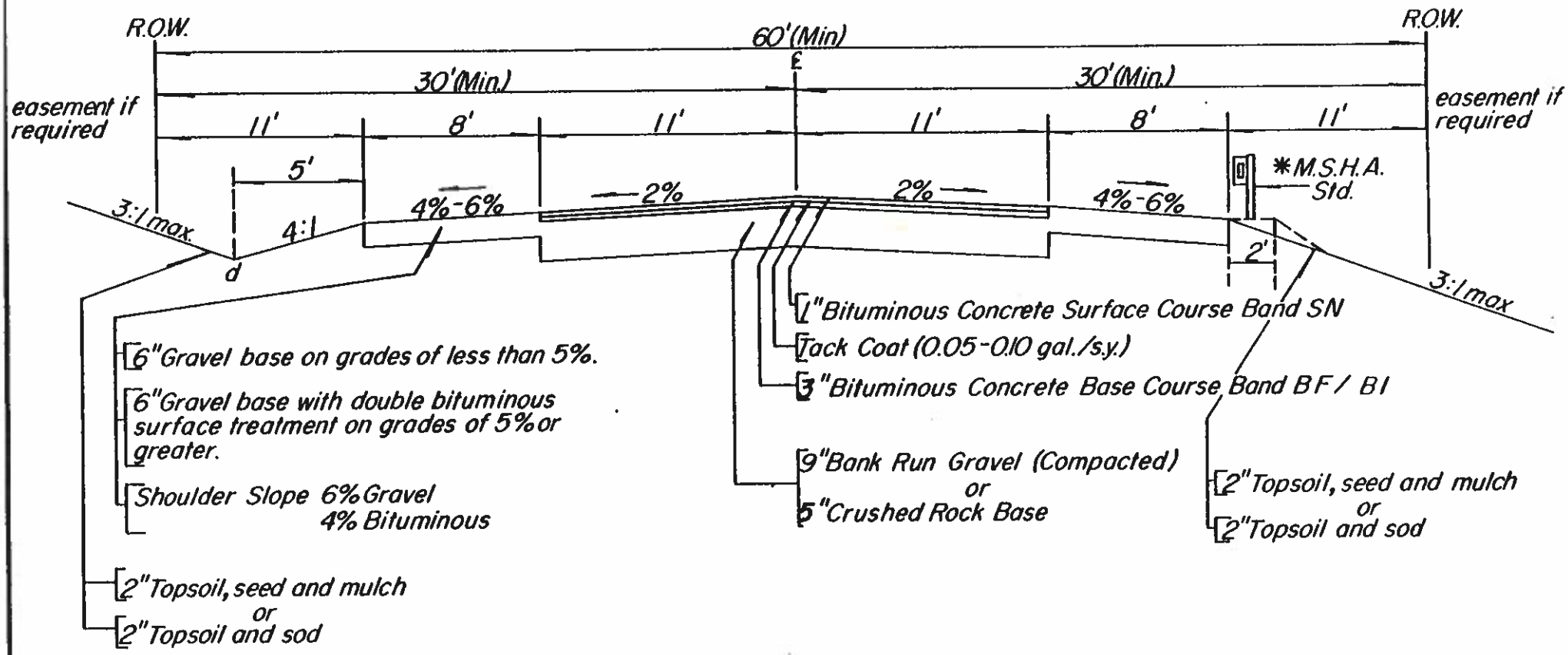
Ditch lining (d) determined by velocity (fps)
Seed——— V < 2.5
Sod——— 2.5 ≤ V < 4.0
Concrete or Rip-rap ——— 4.0 ≤ V

* Guard rail – With fills 15' or greater in height or fills of 8' or more with slopes steeper than 4:1.

Typical easement – 2" topsoil, seed and mulch or topsoil and sod.



See Sheet R for Typical Shoulder Detail

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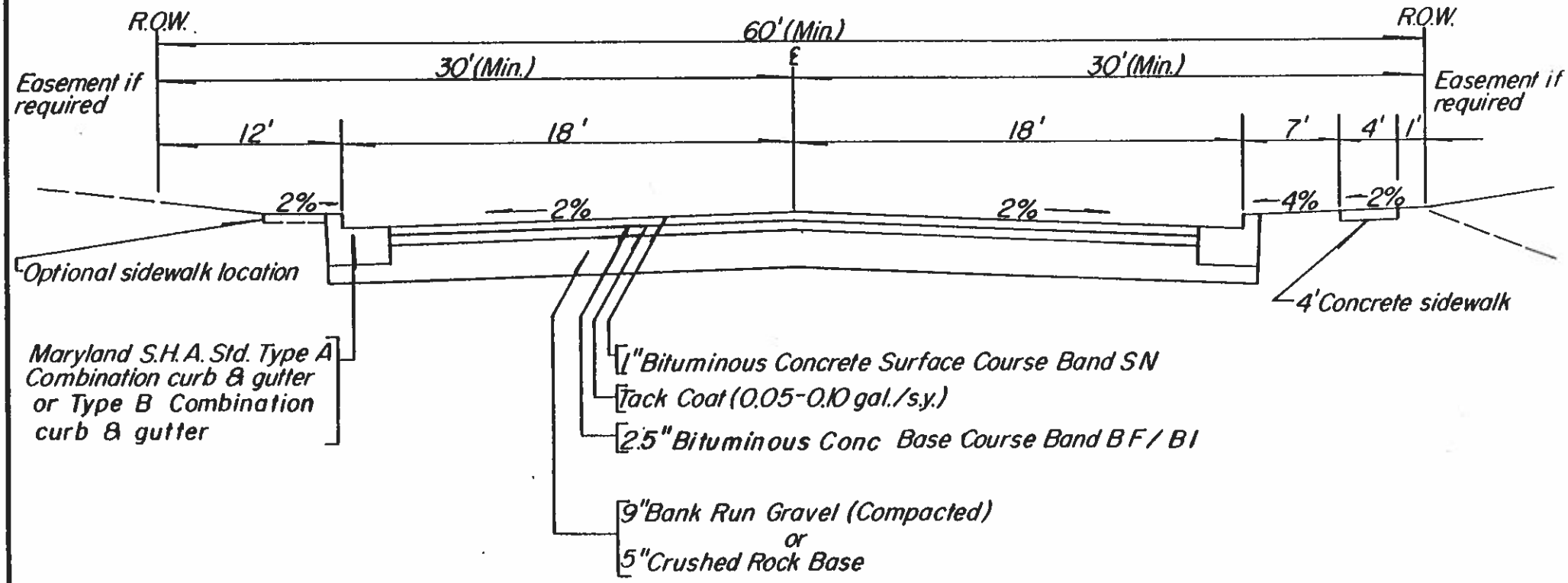
Gregory Stevens, P.E. Town Engineer

Typical Section Rural Street Minor Collector

R/4



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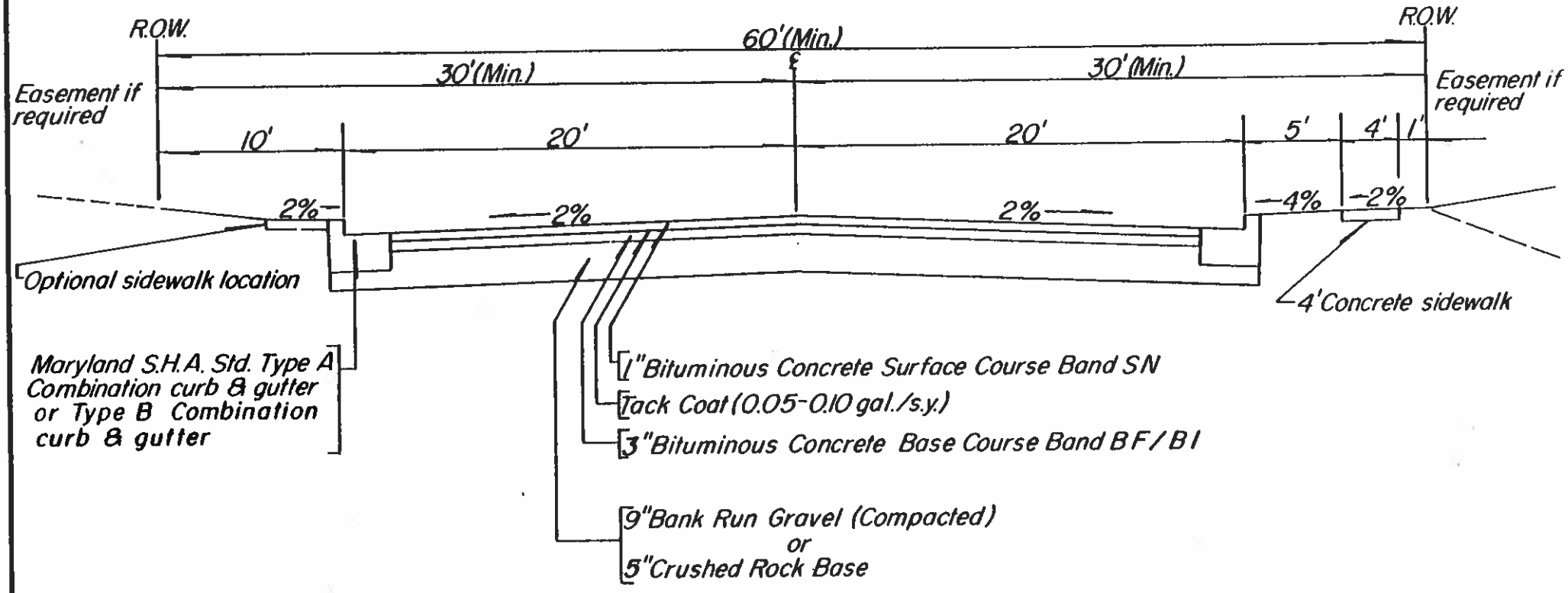
Typical Section Urban Street Major Local

R/7



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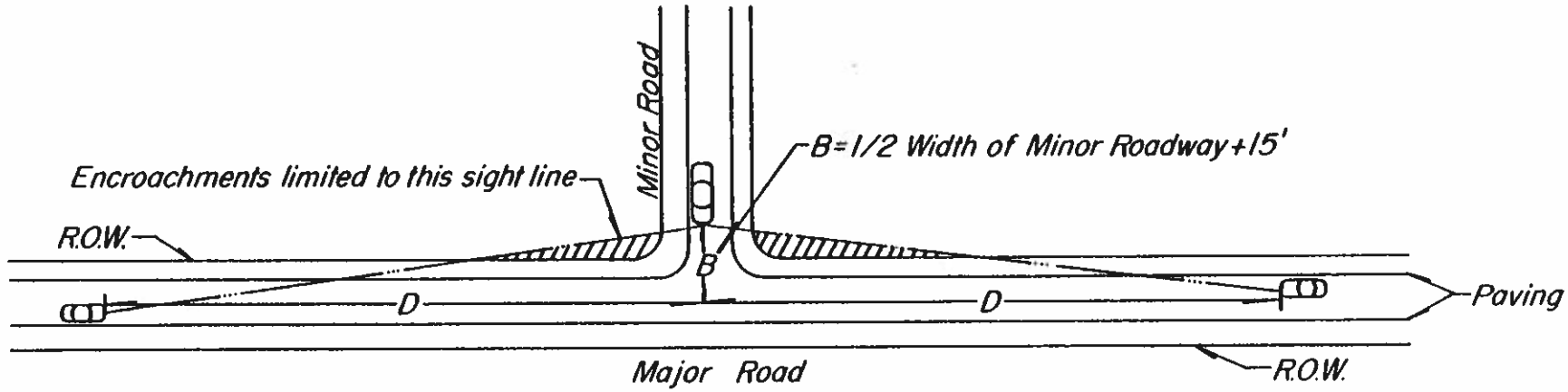
Typical Section Urban Street Minor Collector

R
8

Design Speed M.P.H.	Required Sight Distance Feet
30	330
40	540
50	800

R.O.W.: Extra width R.O.W. if required on owners side, to be dedicated to the County.



Note:

A detailed plan and profile of the intersection of a proposed subdivision street with an existing County Road shall be submitted with the plans and profiles. The detailed plan shall be to a scale of 1"=50'. A profile (1"=5') of the existing County Road shall be shown a minimum of D+50' to either side of intersection.

Design shall be based on a height of eye of 3.75 feet to a top of object of 4.50 feet. These are suggested design guides and all sight distances shall be in accordance with AASHTO and subject to review and approval by the County.

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Gregory Stevens P.E. Town Engineer

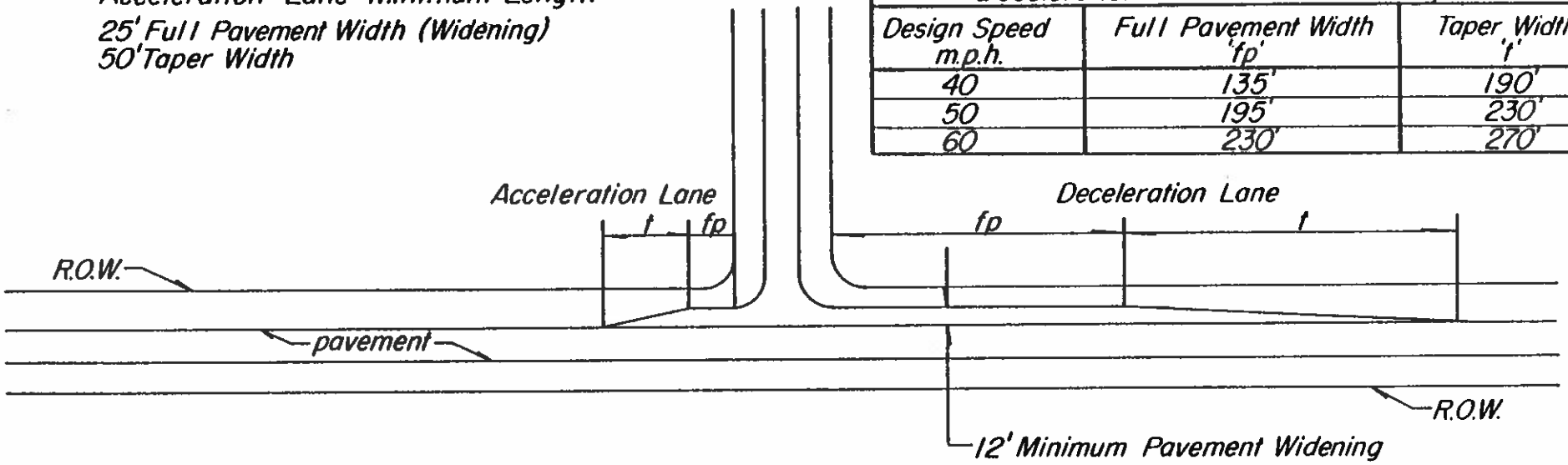
Minimum Standards for Street Intersections

Revised: 3-8-83

R/9

Acceleration Lane Minimum Length
25' Full Pavement Width (Widening)
50' Taper Width

Deceleration Lane Minimum Length		
Design Speed m.p.h.	Full Pavement Width 'fp'	Taper Width 't'
40	135'	190'
50	195'	230'
60	230'	270'



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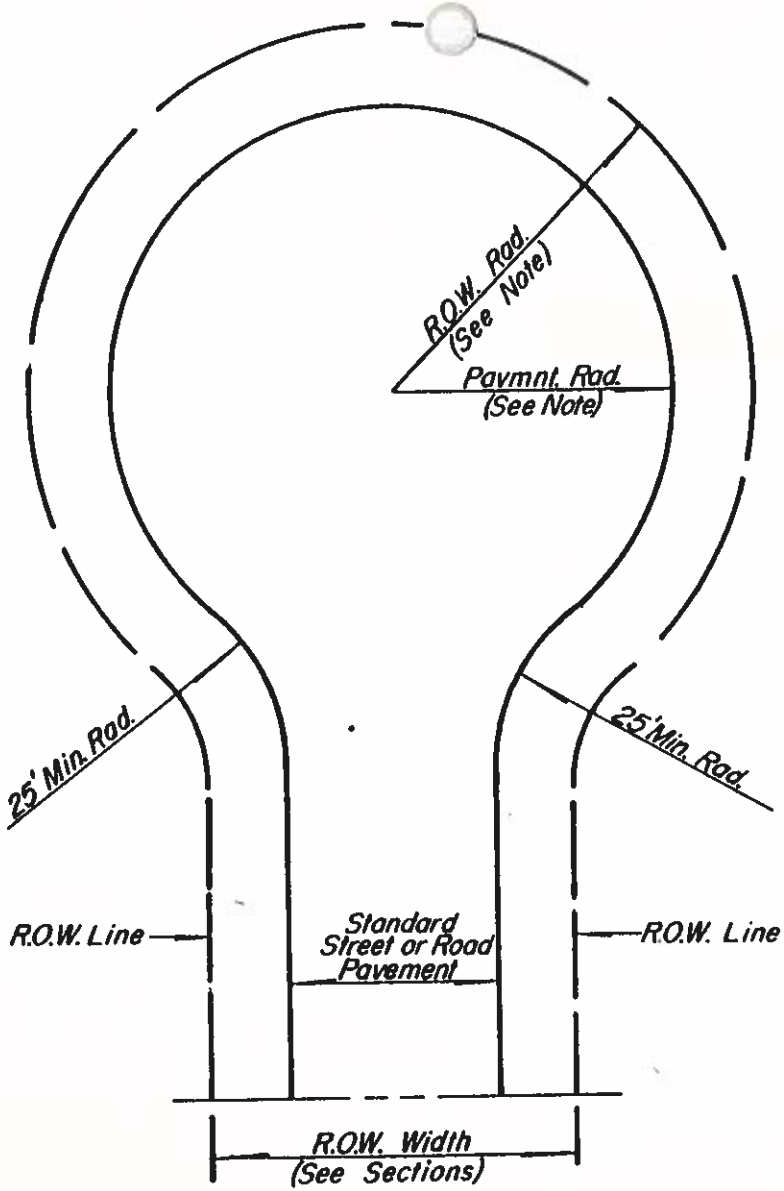
Standards for Acceleration and Deceleration Lanes

R
10



Notes:

Rural Roads

R.O.W.	Paving Radius
45' or 50'	35'
60'	40'

Urban Streets

R.O.W.	Paving Radius
45' or 50'	40'
60'	45'

Complete Curve Data shall be shown on plans

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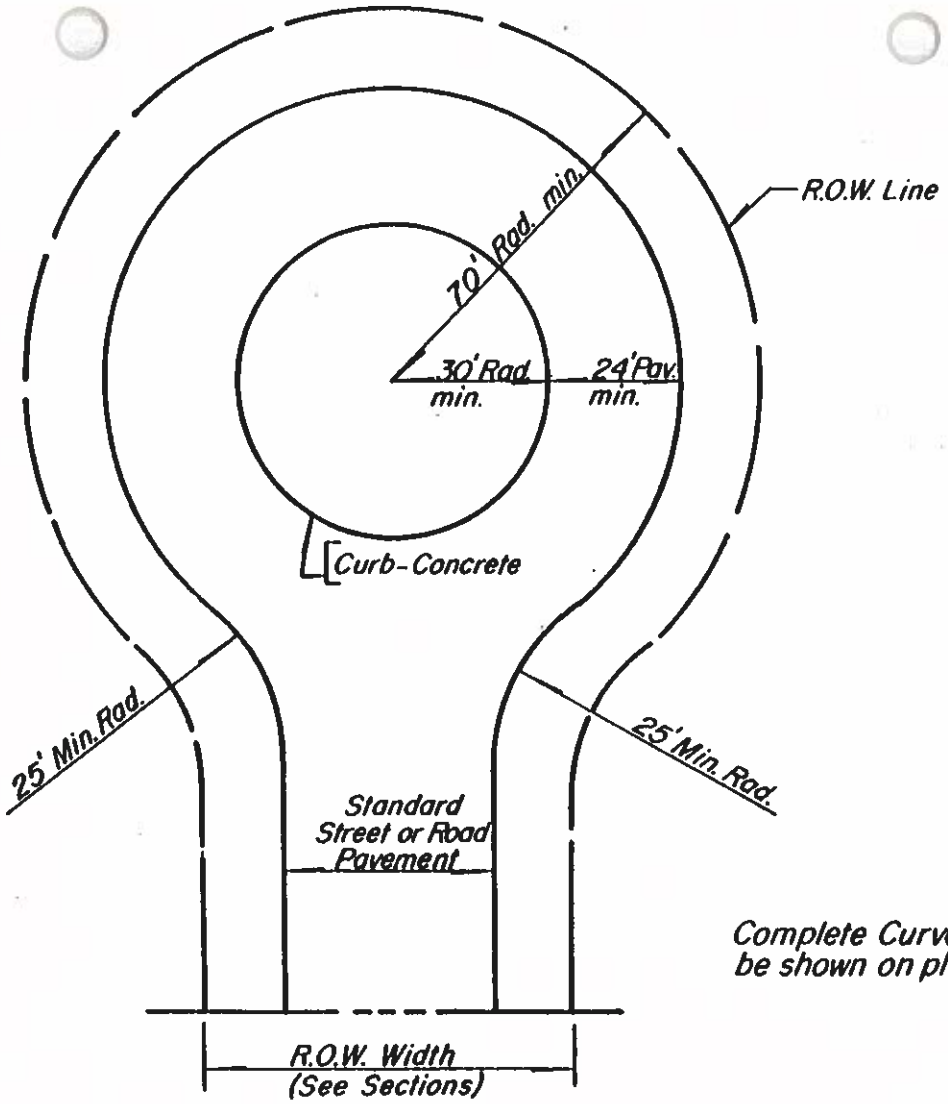
Gregory Stevens

Gregory Stevens, P.E. Town Engineer

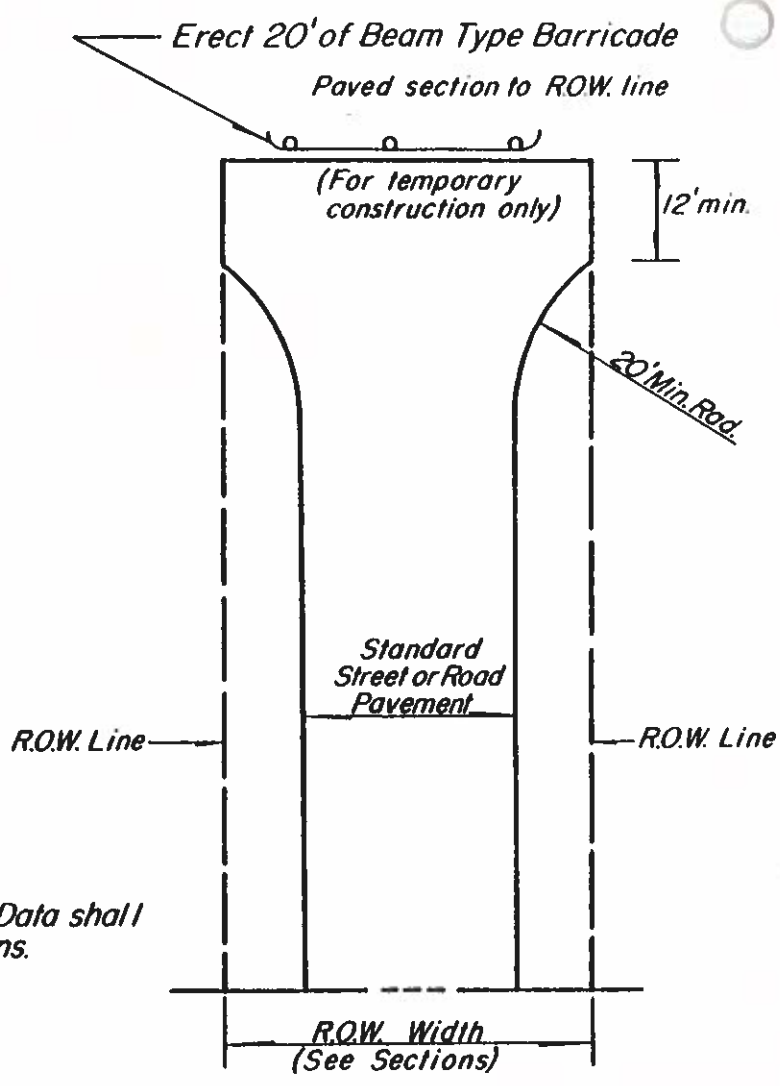
Standard Cul-De-Sac

Revised

R / 11



Standard Cul-De-Sac (Landscaped)



Standard 'T' Turnaround

Complete Curve Data shall be shown on plans.

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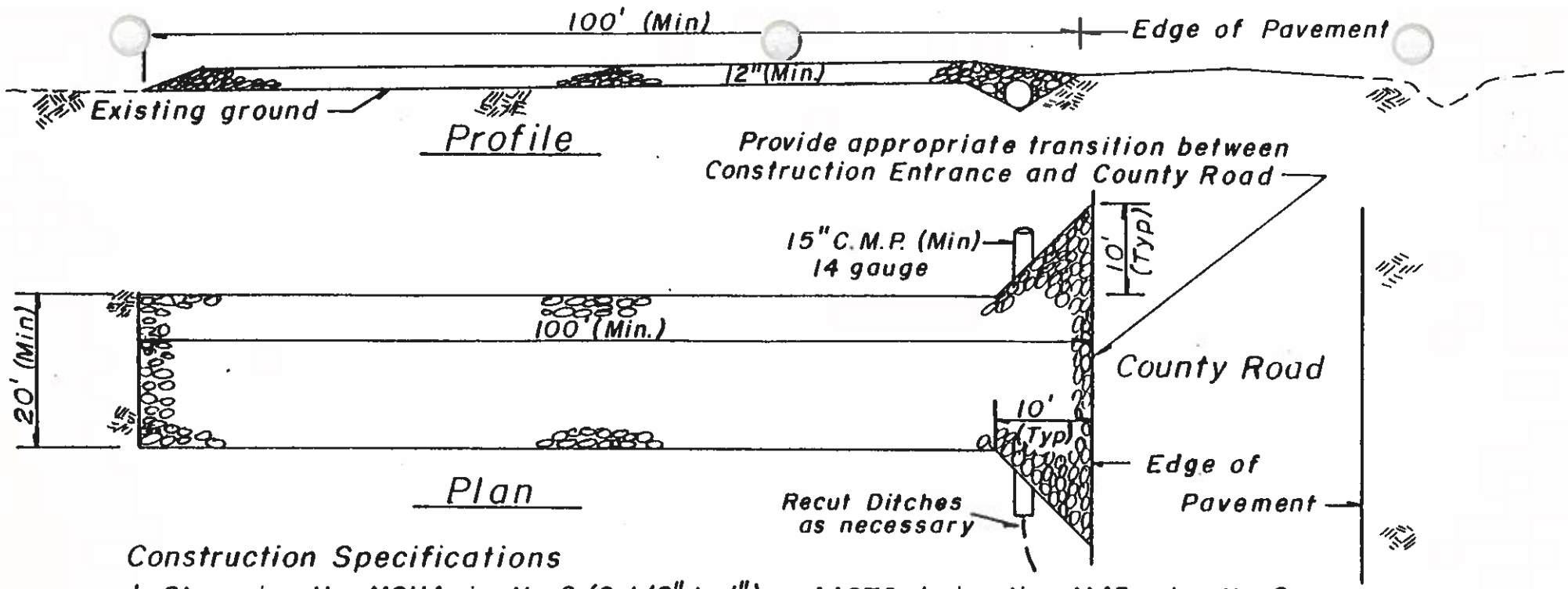

Construction Specifications

1. Stone size - Use MSHA size No. 2 (2-1/2" to 1") or AASTO designation M43, size No. 2 (2-1/2" to 1-1/2"). Use crushed stone.
2. Length - As effective, but not less than 100 feet.
3. Thickness - Not less than Twelve (12) inches.
4. Width - Not less than 20 feet.
5. Washing - When necessary, wheels shall be cleaned to remove sediment prior to entrance onto public right-of-way. When washing is required, it shall be done on an area stabilized with crushed stone which drains into an approved sediment trap or sediment basin. All sediment shall be prevented from entering any storm drain, ditch, or watercourse through use of sand bags, gravel, boards, or or other approved methods.
6. Maintenance - The entrance shall be maintained in a condition which will prevent tracking and flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed, or tracked onto public rights-of-way must be removed immediately.

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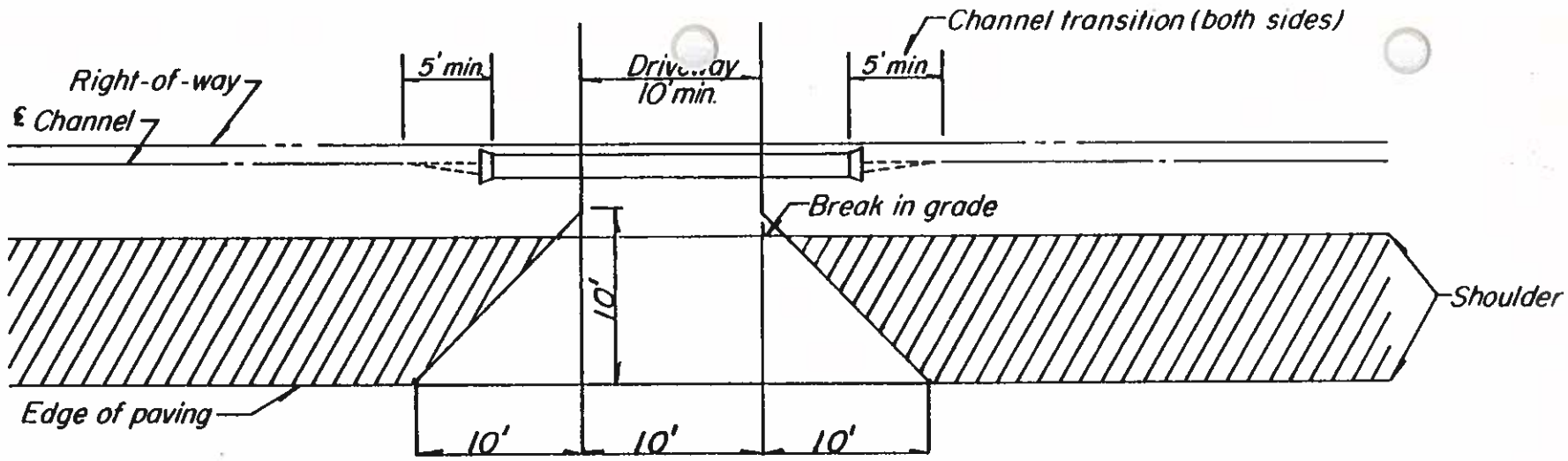
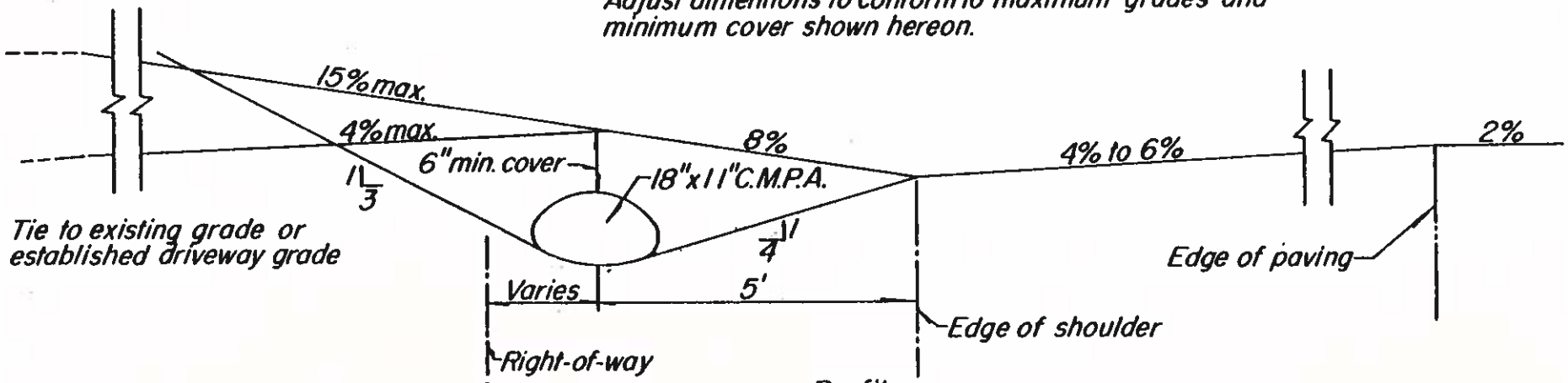


Plan View

DRIVEWAY SURFACE
A. 9" (min.) B.R. Gravel
B. 2" (min.) Asphalt (Band B.F.) or

Notes:
1. A minimum of 20 lin. ft. of C.M.P.A. (16 guage minimum) to be installed. (18"x11"min)
2. Channel protection and velocity dissipators to be provided as required.
3. Driveway details for all other open sections to be similar. Adjust dimentions to conform to maximum grades and minimum cover shown hereon.



Profile

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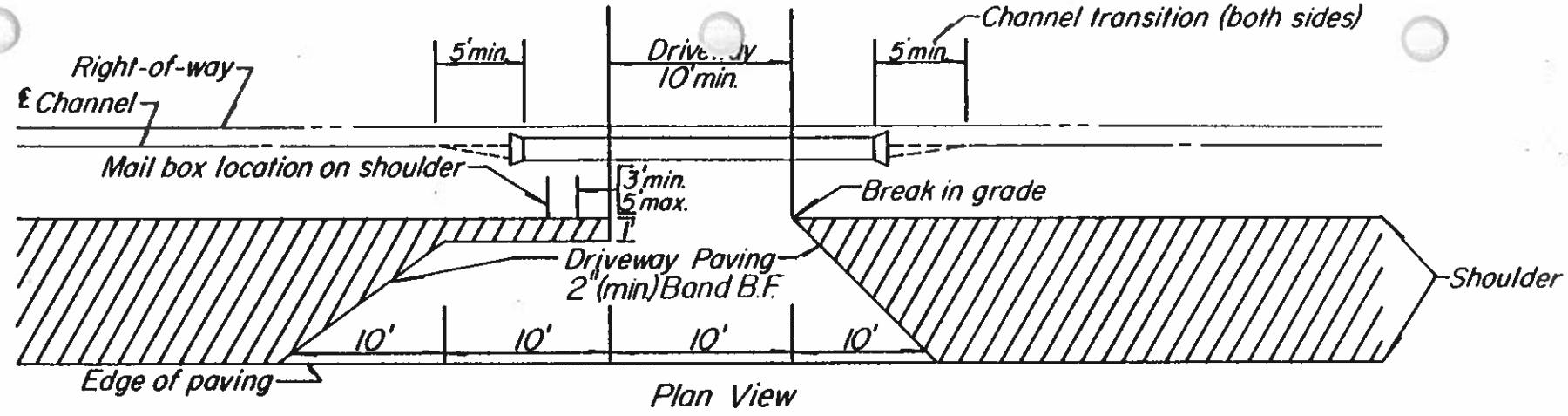
Edward H. Long 6/10/85
Edward H. Long date
Pres., Commissioners of Leonardtown
Gregory Stevens
Gregory Stevens, P.E. Town Engineer

Typical Driveway Entrance (Rural)

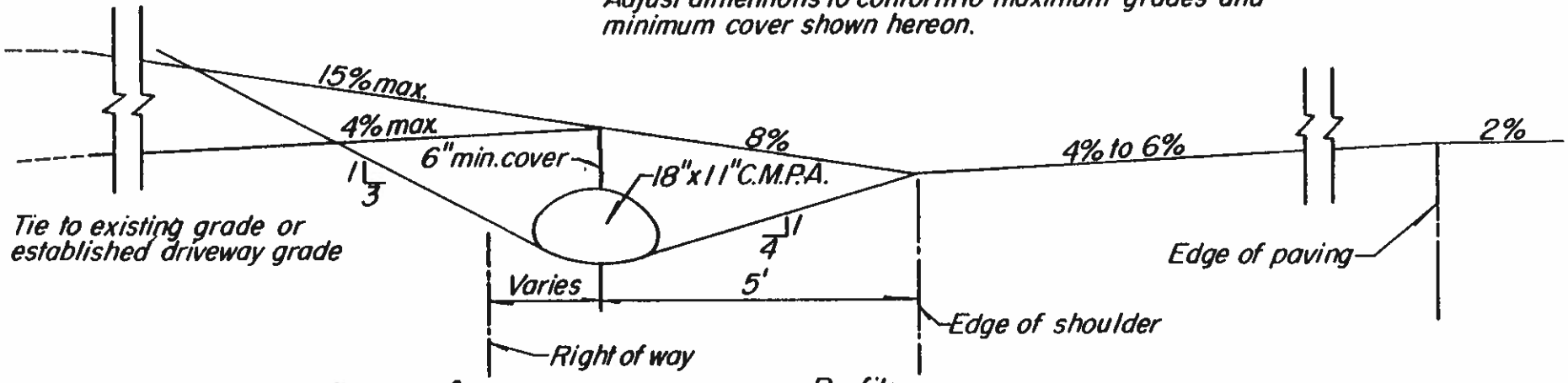
Revised 11-1-79

R/14



Notes:

1. A minimum of 20 lin.ft. of C.M.P.A. (16 guage minimum) to be instal led. (18"x 11"min)
2. Channel protection and velocity dissipators to be provided as required.
3. Driveway details for al l other open sections to be similar. Adjust dimentions to conform to maximum grades and minimum cover shown hereon.



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Edward H. Long date

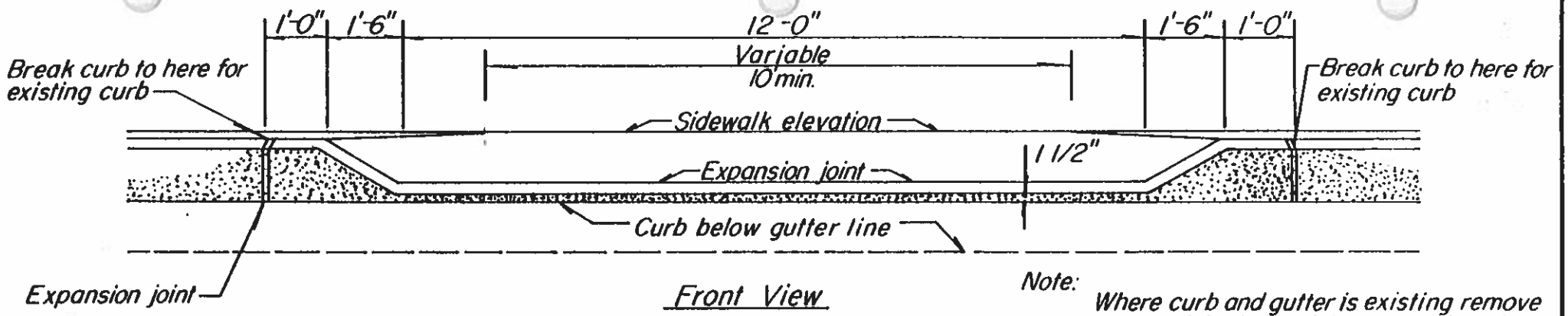
Pres., Leonardtown Commissioners

Gregory Stevens

Gregory Stevens, P.E. Town Engineer

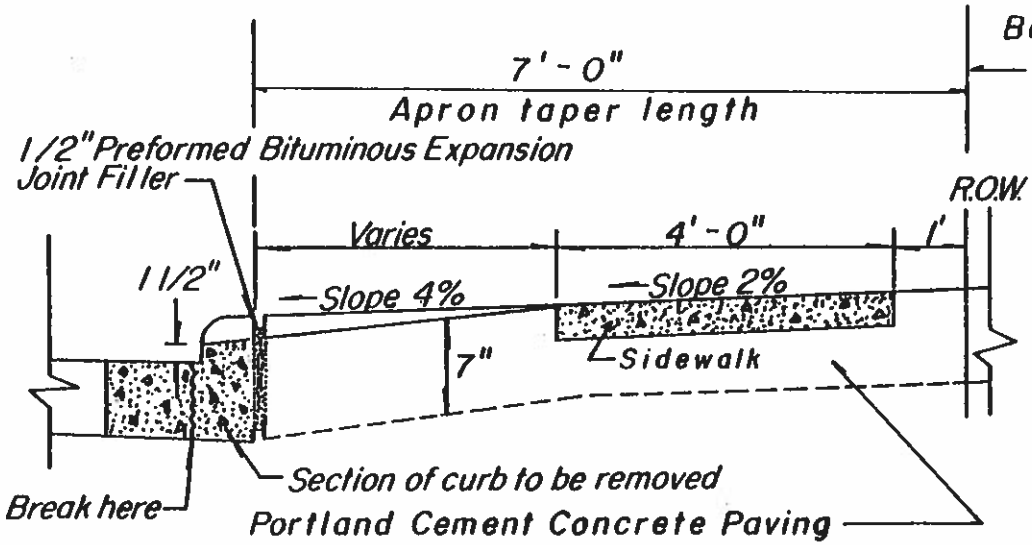
Typical Driveway Entrance (Grass Shoulder)

R/15

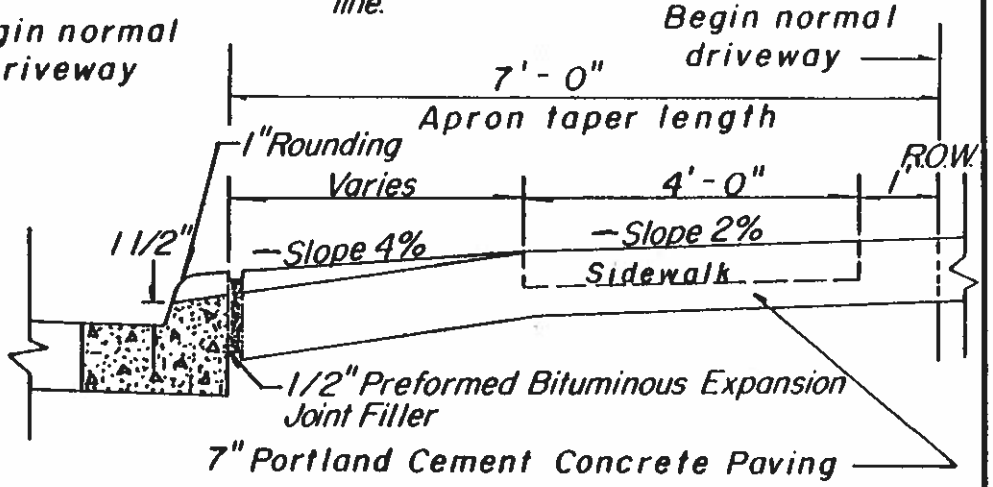


Front View

Note:
Where curb and gutter is existing remove to nearest joint beyond this point. If joint is more than 4' beyond, cut existing curb to neat line.



Section - Driveway In Existing Curb



Section - Driveway In New Curb

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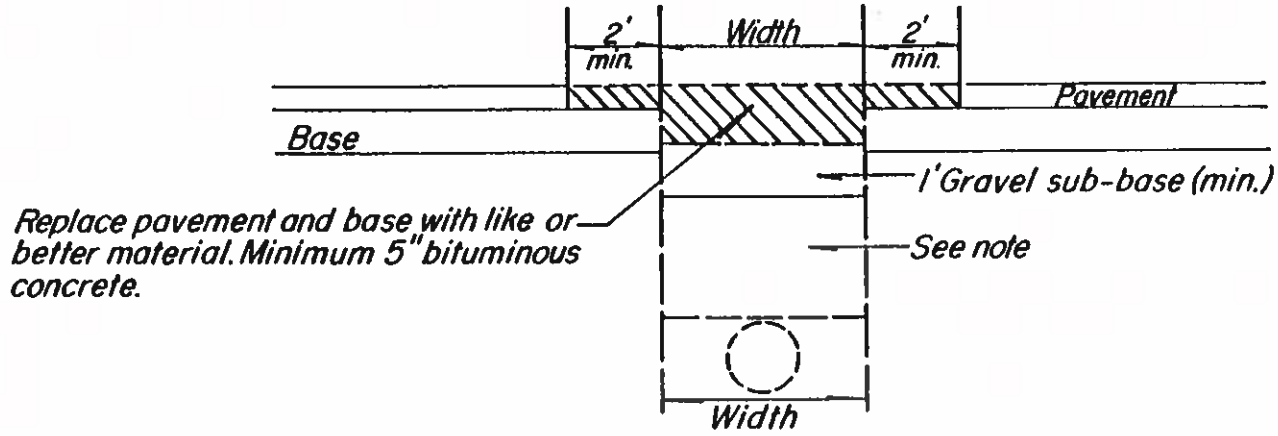

Note: Backfill in trenches shall be in accordance with SHA specs. and shall be thoroughly compacted in 6" layers for the full depth of the trenches by tamping or by some other approved method to within 1' of the top of subgrade. The remaining depth of the trench shall be filled with thoroughly compacted crushed stone, slag or gravel. Whenever sheeting or shoring is required to prevent cave-ins or bellying due to the depth of the trench or type of material encountered, the sheeting, wherever found necessary, shall remain in place but cut off 1' below the bottom of the replaced surfacing. All backfill replaced shall be compacted to at least 95% of maximum density in accordance with S.H.A. Specifications.

UTILITY	COVER
telephone cable	24" min.
electric cable	36" 6" ±
sewer line	48" min ‡
water line	42" min.
concrete, steel pipes	12" min.
‡ frost depth	18"

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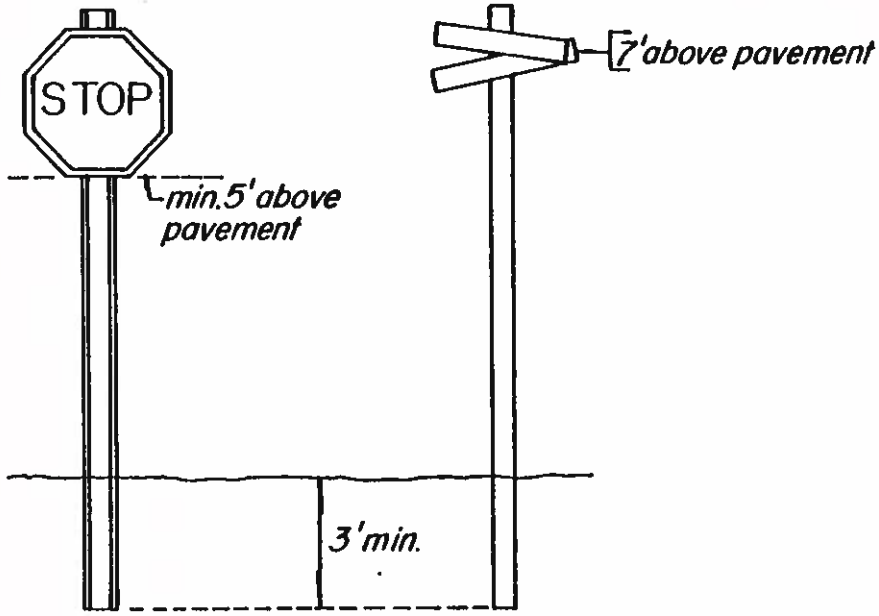
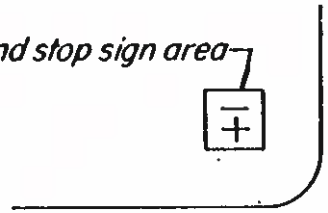
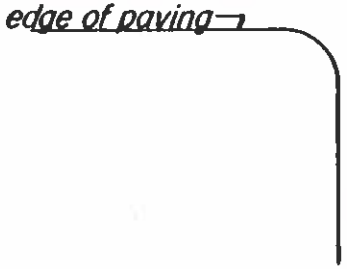
Pres. COMMISSIONERS OF LEONARDTOWN
Gregory Stevens
Gregory Stevens, P.E. Town Engineer

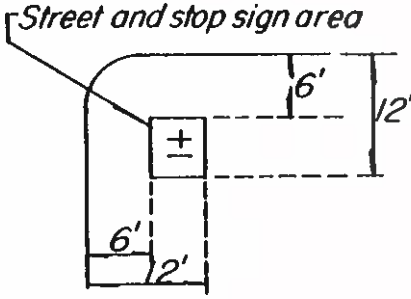
Utility Cuts

R
17









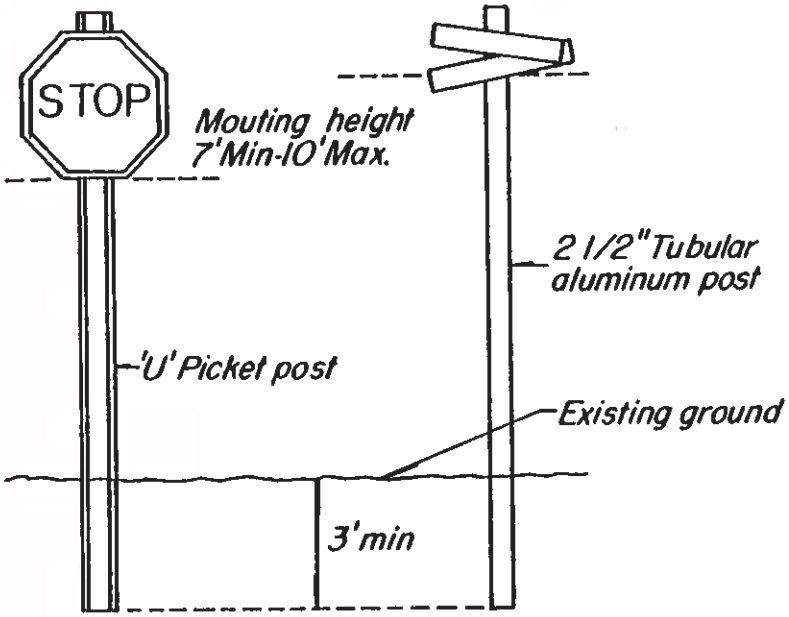
Street name signs to be Grimco model SN-2 or equivalent, embrossed aluminum, beaded legend and border, 4" characters, white letters on green background.

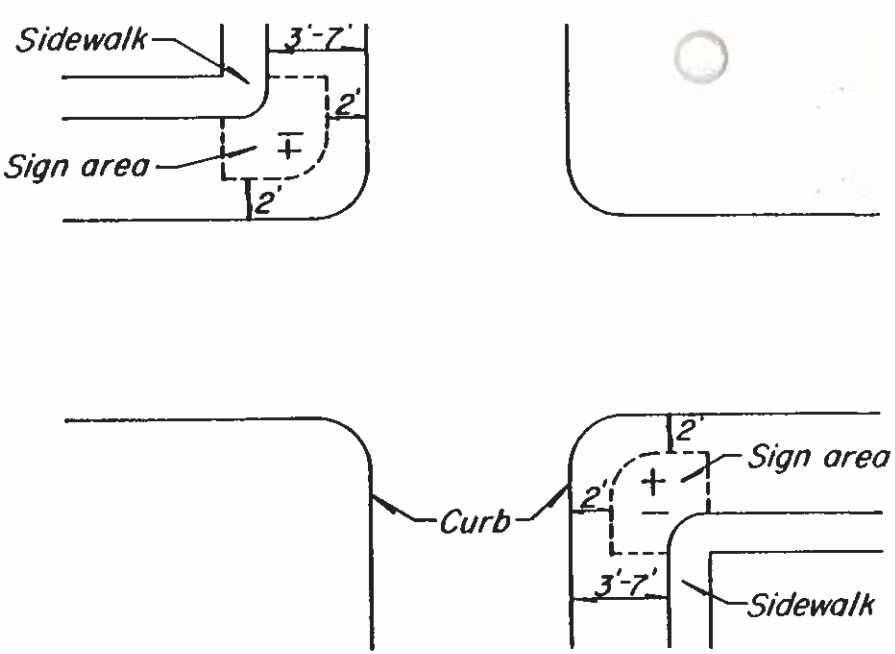
Posts will be 10 LF min., 4"x4" penta treated, placed a minimum of 3' in depth.

Note:

Location of signs must not obscure any potential traffic hazard. At any location where the typical placement of a sign interferes with a safe sight distance, an alternate location must be found.

DRAWINGS FURNISHED BY:	APPROVED		
St. Marys County Office of the County Engineer	Edward H. Long, Pres., Commissioners of Leonardtown — 6/10/85 date Gregory Stevens, P.E. Town Engineer	Sign Location Rural Road	R 18





Street name signs to be Grimco model SN-2 or equivalent, embrossed aluminum, beaded legend and border, 4" characters, white letters on green background.

Note:

Location of signs must not obscure any potential traffic hazard. At any location where the typical placement of a sign interferes with a safe sight distance, an alternate location must be found.

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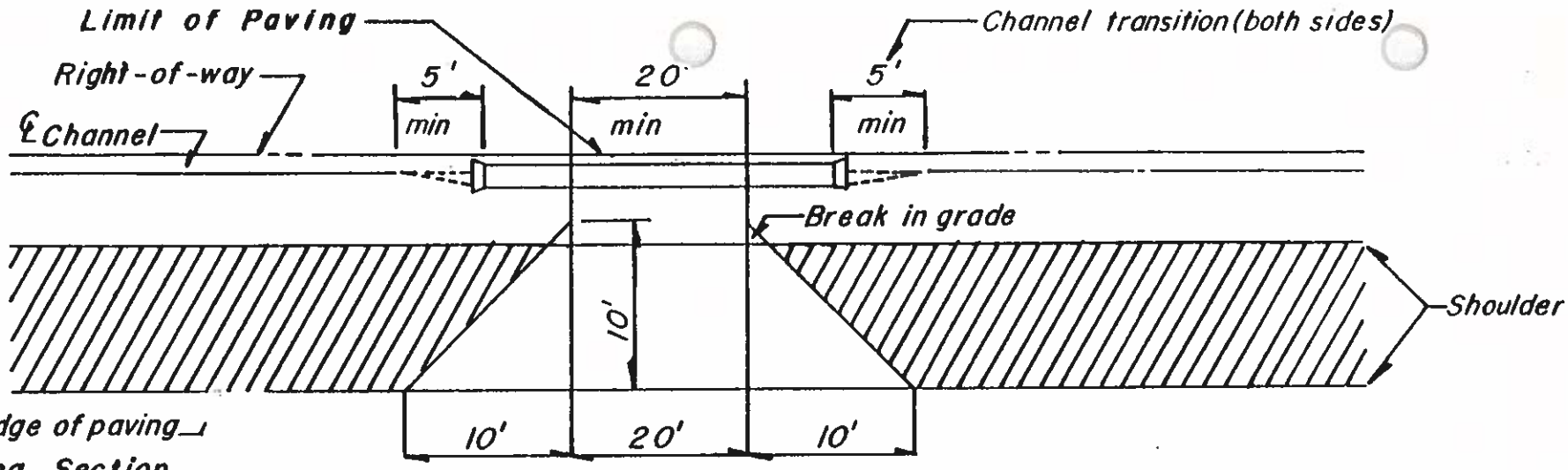


Plan View

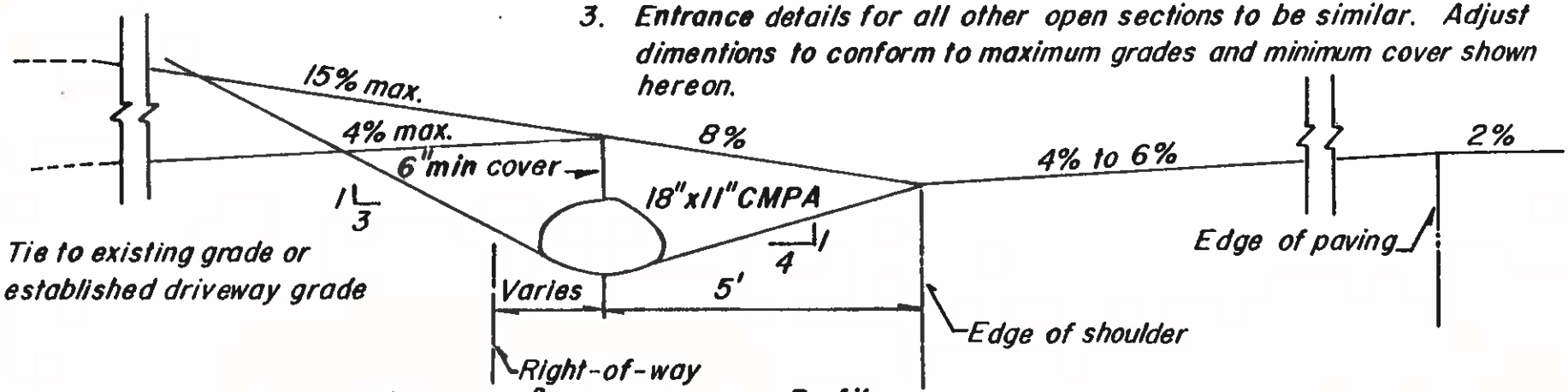
Paving Section

1½" Bit. Conc., Band SN

2½" Bit. Conc., Band BF

9" Bank Run Gravel

Notes:
1. A minimum of 30 lin.ft. of C.M.P.A. (16 guage minimum) to be installed. (18"x 11" min)
2. Channel protection and velocity dissipators to be provided as required
3. Entrance details for all other open sections to be similar. Adjust dimentions to conform to maximum grades and minimum cover shown hereon.



Profile

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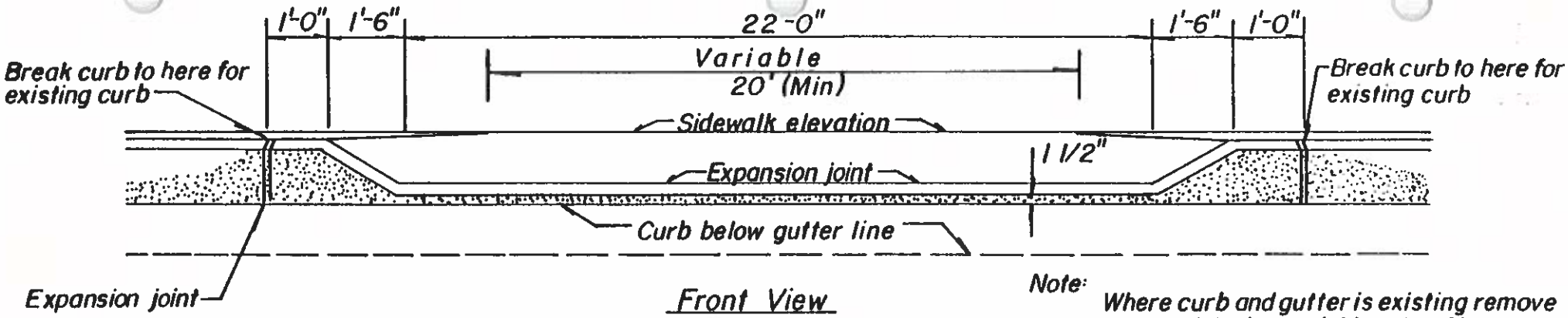
Gregory Stevens
Gregory Stevens, P.E. Town Engineer

Typical Entrance To Minor Subdivisions

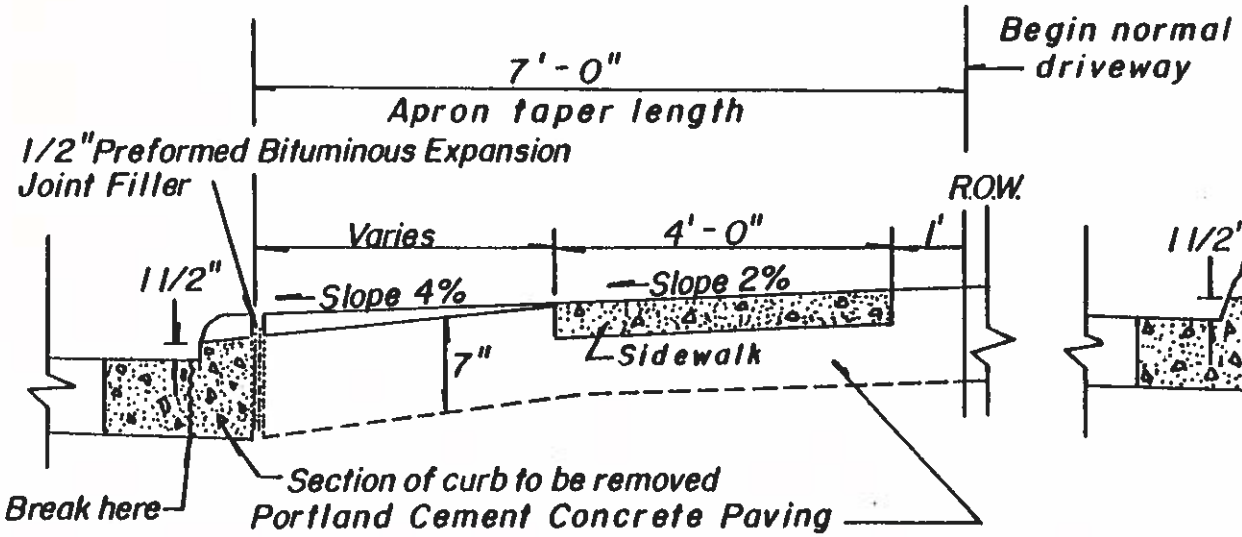
Revised:

R 20

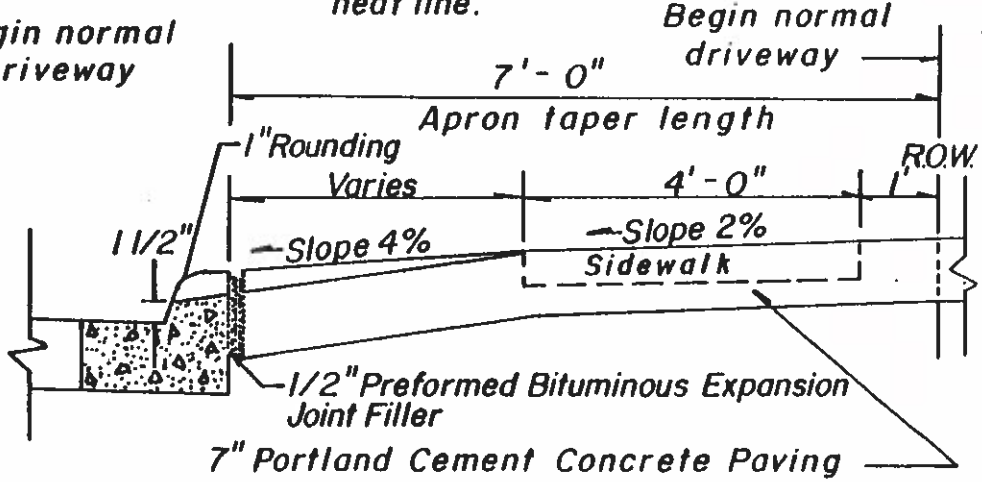


Front View

Note: Where curb and gutter is existing remove to nearest joint beyond this point. If joint is more than 4' beyond, cut existing curb to neat line.



Section-Driveway In Existing Curb



Section-Driveway In New Curb

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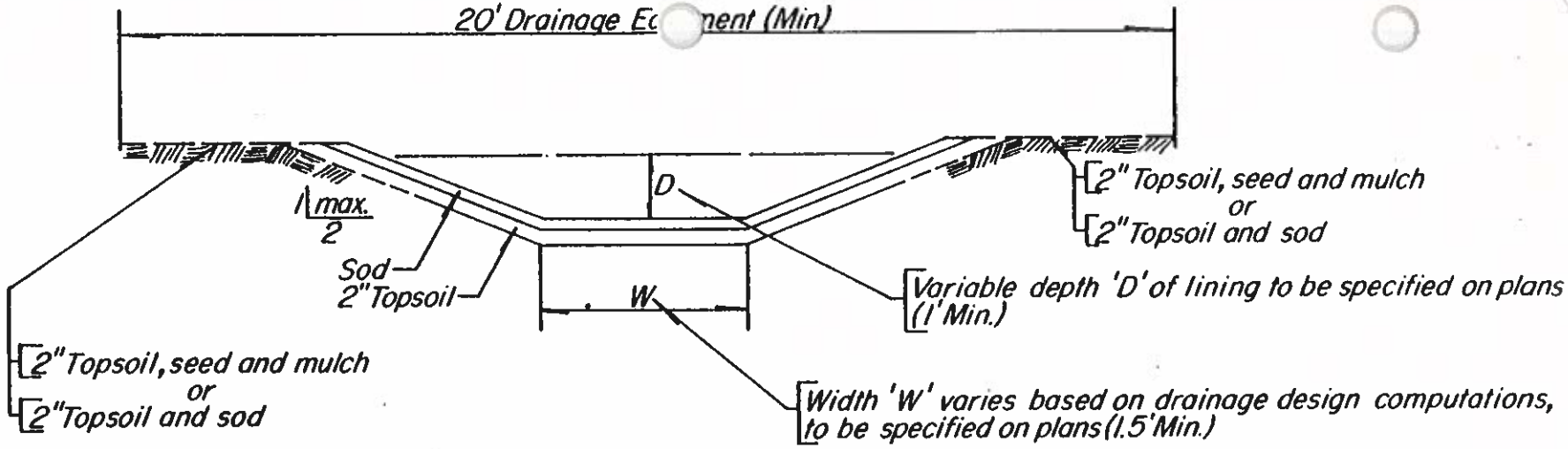
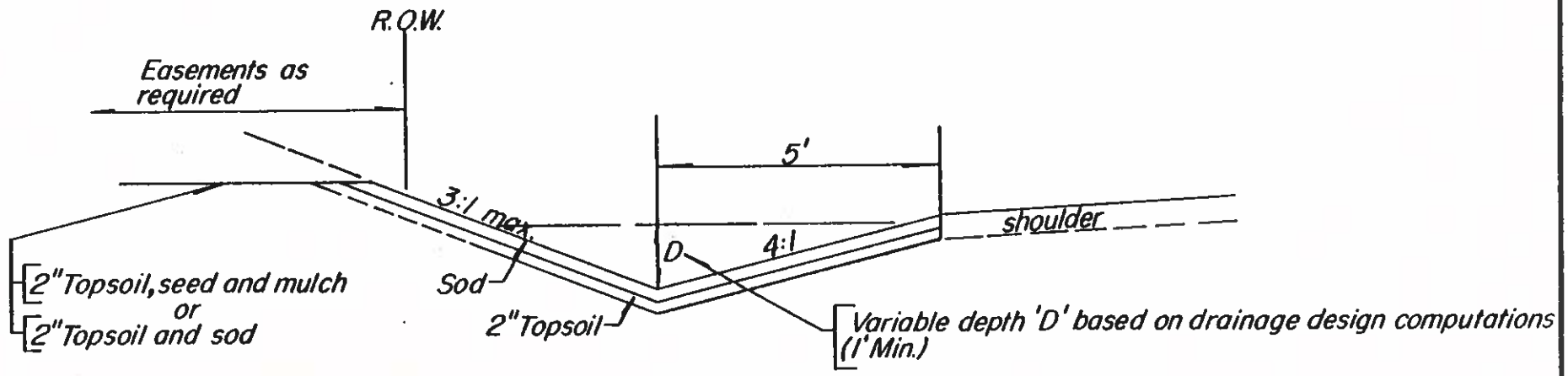
Multiple Driveway Entrance (Urban)

Revised

R
21



Typical Sod Outfall Channel



Typical Roadside Sod Ditch

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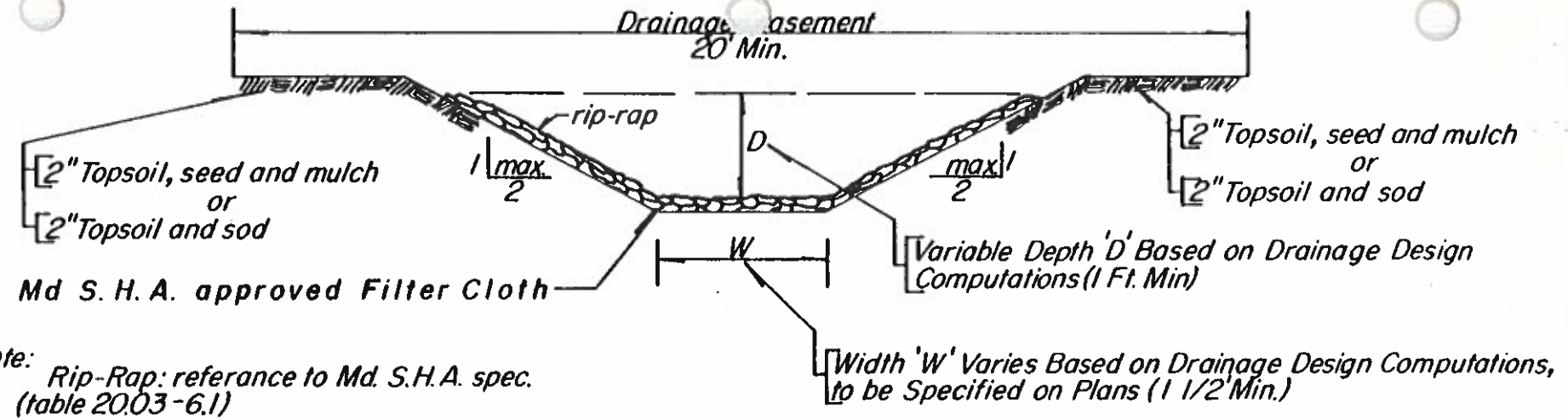
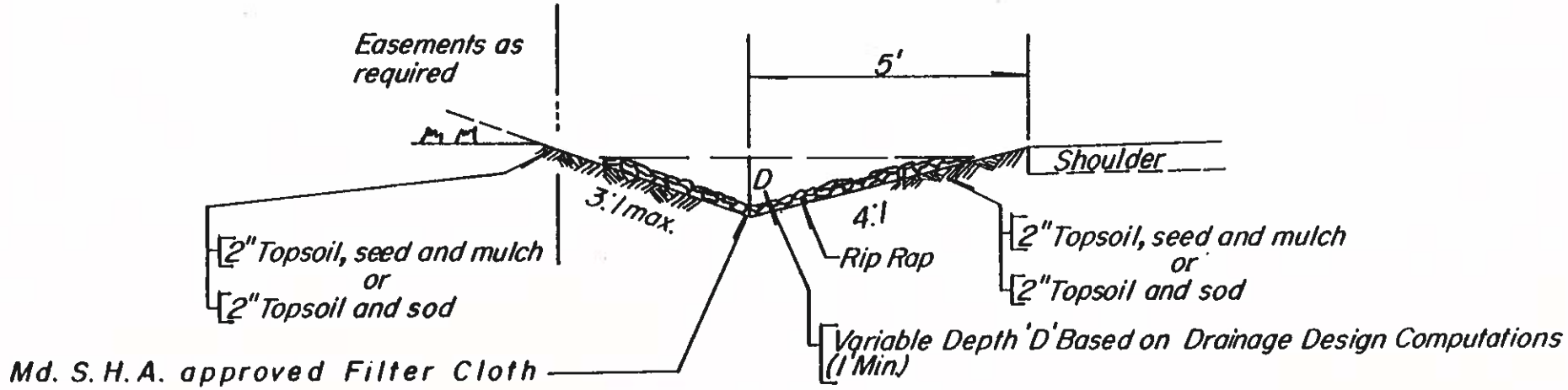


Note:
Rip-Rap: referance to Md. S.H.A. spec. (table 20.03-6.1)

Typical Rip Rap Outfall Channel



Typical Rip Rap Ditch

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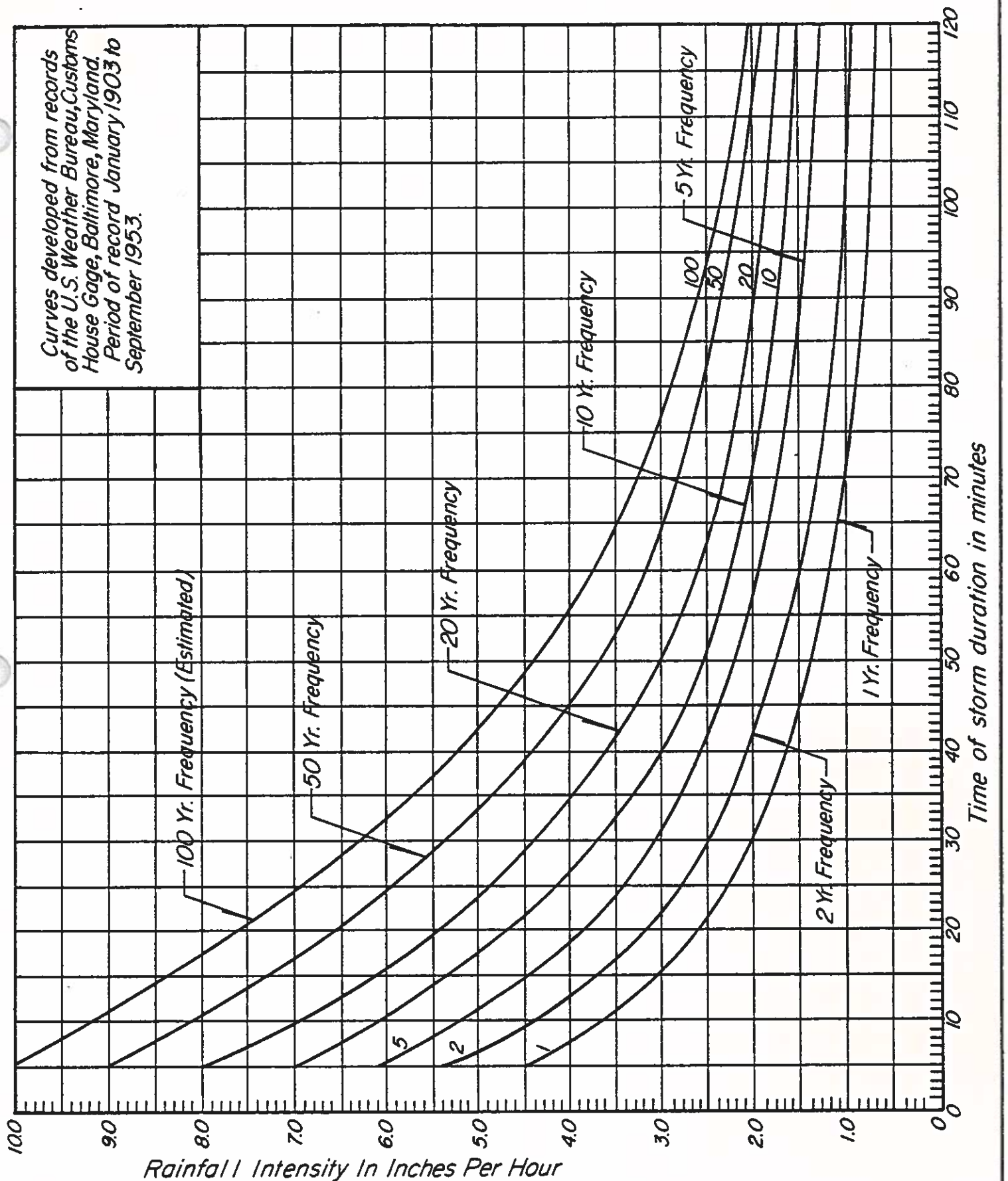
Typical Sections Rip Rap Ditch & Outfall Channel

Revised: 3-8-85

D/2



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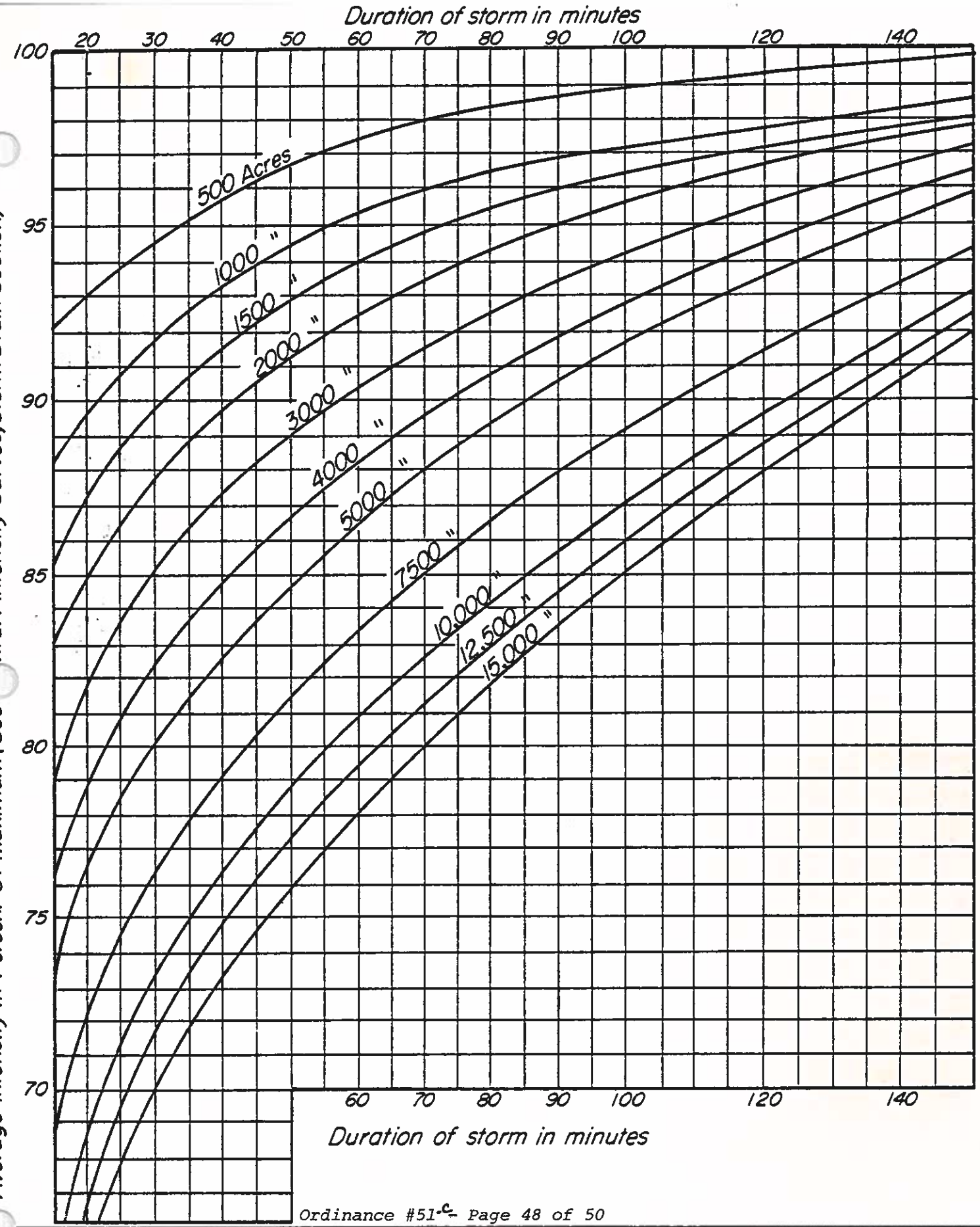
Rainfall Intensity Chart

Revised:

D
3



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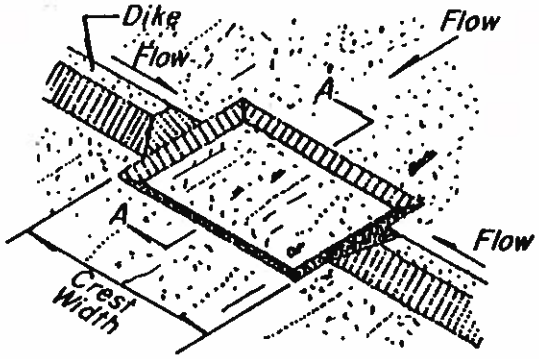
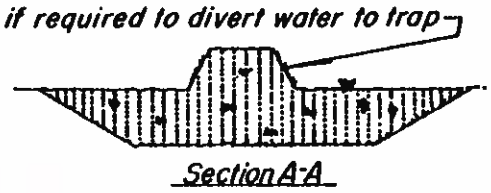
Rainfall Intensity Chart
500-15,000 Ac.

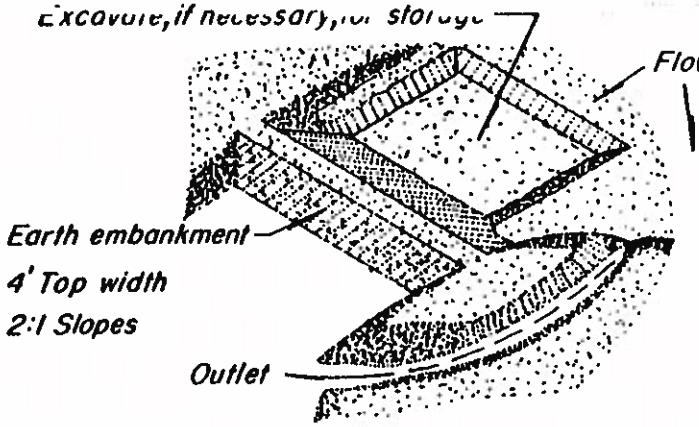
Revised:

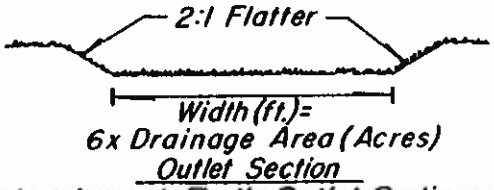
D
4





Excavated Earth Outlet Sediment Trap





Embankment Earth Outlet Sediment Trap

Construction Specifications

1. Area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots or other woody vegetation as well as oversized stones, rocks, organic material, or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.
3. Sediment shall be removed and traps restored to their original dimensions when the sediment has accumulated to 1/2 the design depth of the traps. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
4. The structure shall be inspected after each rain and repairs made as needed.
5. Construction operations shall be carried out in such a manner that erosion and water pollution are minimized.
6. The structure shall be removed and area stabilized when the drainage area has been properly stabilized.
7. All cut and fill slopes shall be 2:1 or flatter.
8. Outlet crest elevation shall be at least one foot below the top of the embankment.

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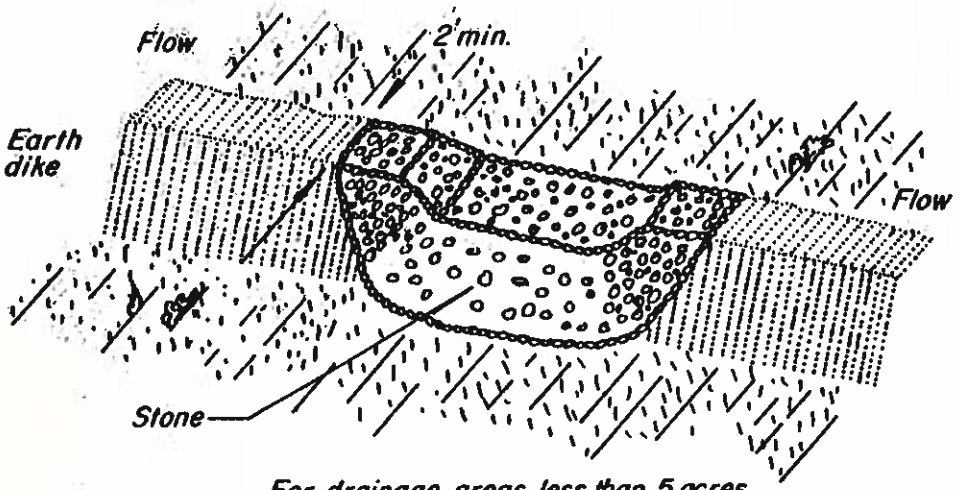
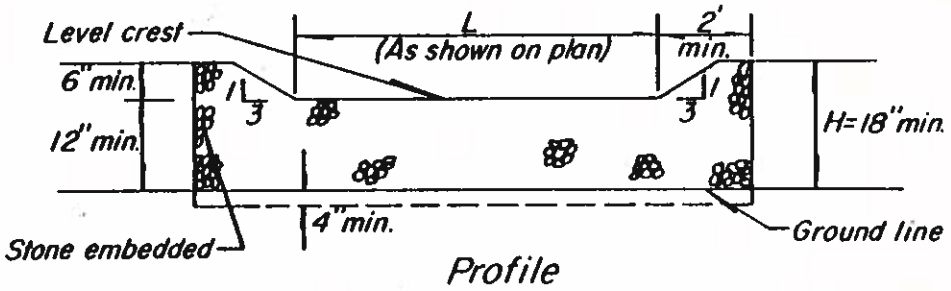
Earth Outlet Sediment Trap

Revised:

SC
1



For drainage areas less than 5 acres



Profile

Construction Specifications

1. The stone shall be crushed stone. Gravel may be used if crushed stone is not available. The stone shall meet MSHA Size No. 2 or AASHTO designation M43 Size No. 2 or 24
2. The crest of the stone dike shall be at least 6" lower than the lowest elevation of the top of the earth dike and shall be level.
3. The stone outlet structure shall be embedded into the soil a minimum of 4".
4. The minimum length, in feet, of the crest of the stone outlet structure shall be equal to six times the number of acres of contributing drainage area.
5. The stone outlet structure shall be inspected after each rain, and the stone shall be replaced when the structure ceases to function as intended due to silt accumulation among the stone, washout, construction traffic damage, ect.

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Stone Outlet Structure

Revised:

SC
2